



All in one network graphing and monitoring

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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 more
 - See <http://docs.librenms.org/Support/Features/>
 - Over 100 supported!
 - Routers, Switches, Access Points, Security gateways, Hosts, Printers, ...



Available metrics

- CPU, memory and storage statistics
- Interface traffic, packet and detailed error statistics (L2 and L3)
- Temperature, fan speed, voltage, amperage, power humidity and frequency sensors
- Users, processes, load average and uptime statistics



Available metrics cont.

- Linux distribution detection
- Real-time interface traffic graphing
- Device inventory collection (useful!)
- Detailed IPv4, IPv6, TCP and UDP stack statistics
- BGP and OSPF information
- MAC <-> IP address lookup
 - Find which port an IP/MAC was last seen on



Features

- Dashboard
- Status Map
- Many extensions, including:
 - Host monitoring well supported using check_mk and support scripts
 - Billing module
- Integration with other tools:
 - Smokeping, collectd, syslog (receive logs from devices)/graylog, Rancid/Oxidized (config management)



Philosophy

- LibreNMS' approach is that the network monitoring shouldn't take long to set up
 - You've already worked hard to build your network and configure it
 - LibreNMS is easier to understand if you understand its philosophy



Philosophy (2)

- Configure equipment correctly
 - community
 - xDP (CDP or LLDP)
 - sysName
 - sysLocation
- ... and LibreNMS will do the rest
 - Auto discovery of devices and resources
 - Optional use of sysServices to map which services (ports) are running on a device



Philosophy (3)

- Concept of enabled vs. ignored
 - By default, LibreNMS will monitor (collect data) all ports/interfaces it finds.
 - If a port is configured to be up, but it's operationnally up, LibreNMS will complain about
 - You can tell LibreNMS to ignore these ports - or better, shut them down if they're not used
 - When they're used, bring them up



SNMP or nothing

- Be aware that for LibreNMS to function, SNMP **must** be enabled
- LibreNMS makes use of CDP/LLDP/OSPF information to detect neighbors and automatically scan for neighboring devices and add them to the monitoring
 - ... but this information is fetched using SNMP!



Availability

LibreNMS

- Fork of Observium. Open Source, Free and GPL
- <https://github.com/librenms/librenms>
- <https://github.com/librenms/librenms/blob/master/doc/General/Welcome-to-Observium-users.md>



Screenshots

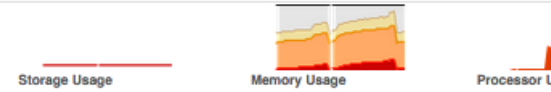
These are from LibreNMS. This is the version we will use in class and in our labs.





localhost

Sitting on the Dock of the Bay

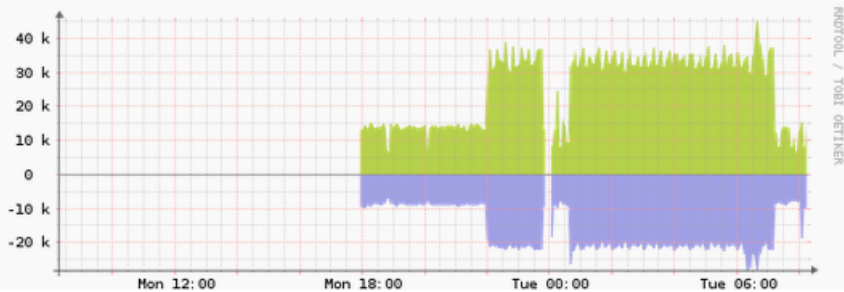


- Overview
- Graphs
- Health
- Ports
- Map
- Inventory
- Logs
- Alerts
- Alert Stats
- Performance
- Notes

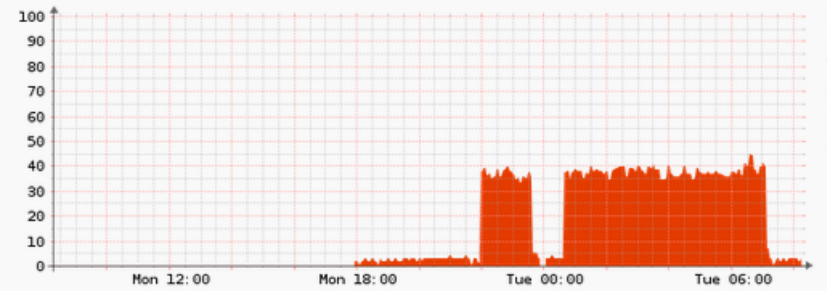
Linux noc.ws.nsrc.org 3.13.0-91-generic #138-Ubuntu SMP Fri Jun 24 15:58:13 UTC 2016 i686

System Name	noc.ws.nsrc.org
Resolved IP	127.0.0.1
Hardware	Generic x86
Operating System	Linux 3.13.0-91-generic
Object ID	enterprises.8072.3.2.10
Contact	Me <me@example.org>
Location	Sitting on the Dock of the Bay
Uptime	1h 6m 28s

Overall Traffic

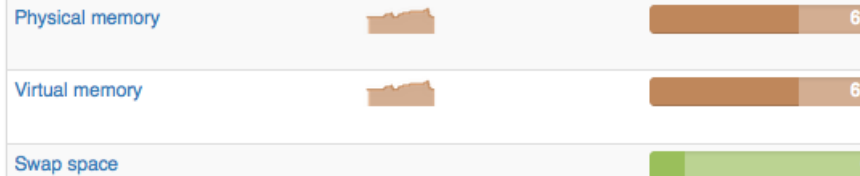


Processors



QEMU Virtual version 2.0.0 x1

Memory Pools



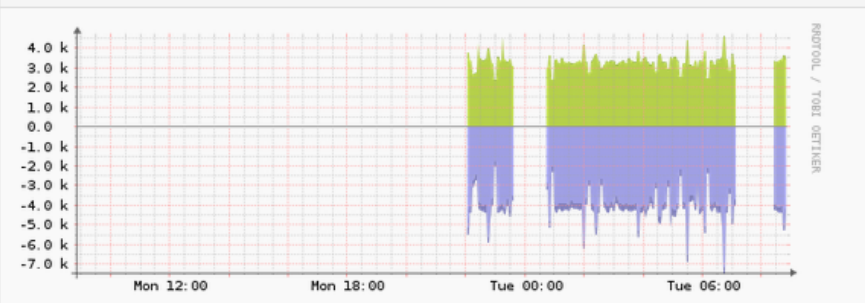
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Cisco IOS Software, 7200 Software (C7200-ADVIPSERVICESK9-M), Version 15.1(4)M4, RELEASE SOFTWARE (fc1) Technical Support: <http://www.cisco.com/techsupport> Copyright (c) 1986-2012 by Cisco Systems, Inc. Compiled Tue 20-Mar-12 22:36 by prod_rel_team

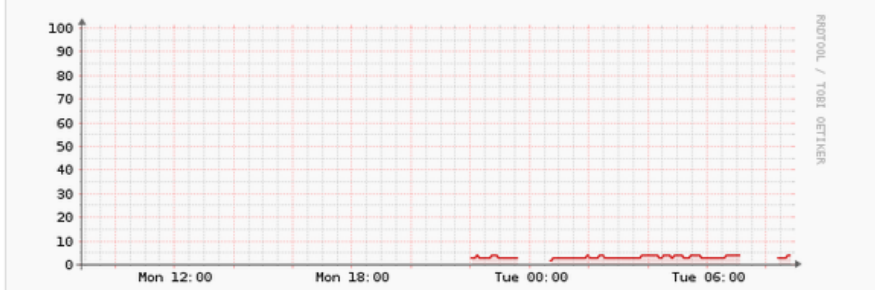
System Name	rtr1
Resolved IP	10.10.0.221
Hardware	cisco7206VXR
Operating System	Cisco IOS 15.1(4)M4 (ADVIPSERVICESK9)
Serial	4279256517
Object ID	enterprises.9.1.222
Uptime	34m 1s

Overall Traffic



3	3	0	0
Fa0/0, Fa0/1, Null0			

Processors



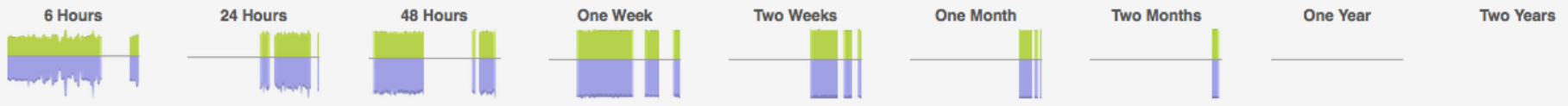
Processor 1	x1	<div style="width: 4%; background-color: #76923c; height: 15px;"></div>	4%
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Memory Pools

Processor	<div style="width: 76%; background-color: #c0392b; height: 15px;"></div>	76%
I/O	<div style="width: 18%; background-color: #76923c; height: 15px;"></div>	18%

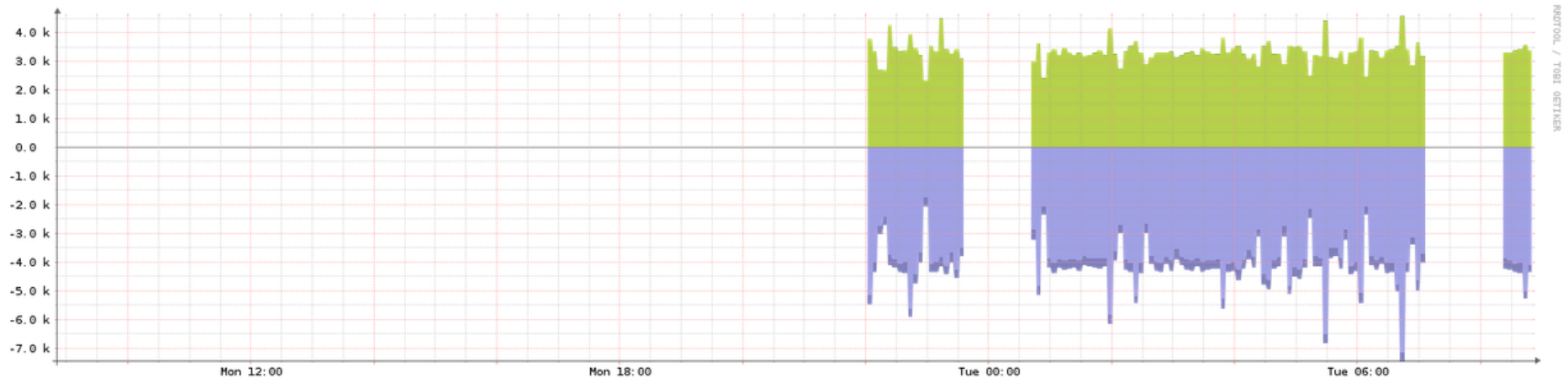
Temperature

I/O Cont Inlet	<div style="width: 10%; background-color: #e74c3c; height: 10px;"></div>	22°C
I/O Cont Outlet	<div style="width: 10%; background-color: #e74c3c; height: 10px;"></div>	22°C
NPE Inlet	<div style="width: 10%; background-color: #e74c3c; height: 10px;"></div>	22°C
NPE Outlet	<div style="width: 10%; background-color: #e74c3c; height: 10px;"></div>	22°C
I/O Cont Inlet 0	<div style="width: 10%; background-color: #e74c3c; height: 10px;"></div>	22°C



From 2016-07-11 10:50 To 2016-07-12 10:50 Update

[Show Legend](#) | [Show Previous](#) | [Show RRD Command](#)




[-]  **CISCO7206VXR (Chassis)**

Cisco 7206VXR, 6-slot chassis

[Serial No. 4279256517](#)


[-]  **1. I/O and CPU Slot 0**

I/O and Processor Slot Container

[+]  **1. NPE-400 (NPE400 0)**

Cisco 7200VXR Network Processing Engine NPE-400

[Serial No. 11111111](#)

[+]  **2. C7200-I/O-2FE/E (module 0)**

I/O Dual FastEthernet Controller

[Serial No. 00000000](#)

•  **2. PA Slot 1**

PA Slot Container

•  **3. PA Slot 2**

PA Slot Container

•  **4. PA Slot 3**

PA Slot Container

•  **5. PA Slot 4**

PA Slot Container

•  **6. PA Slot 5**

PA Slot Container

•  **7. PA Slot 6**

PA Slot Container

[+]  **8. PEM 0**

Power Supply Container

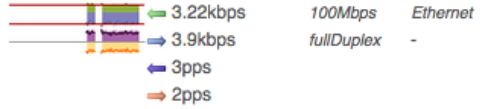
[+]  **9. PEM 1**

Power Supply Container



1. FastEthernet0/0

FastEthernet0/0
10.10.0.221/24



100Mbps Ethernet
fullDuplex -

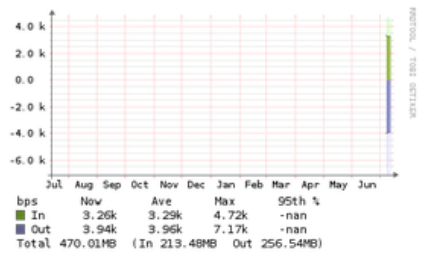
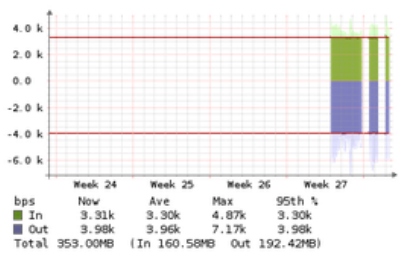
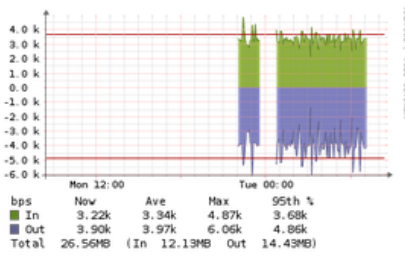
ca:00:64:6b:00:08
MTU 1500

- + FastEthernet0/0 on rtr8 v4
- FastEthernet0/0 on rtr5 v4
- FastEthernet0/0 on rtr6 v4
- [...]

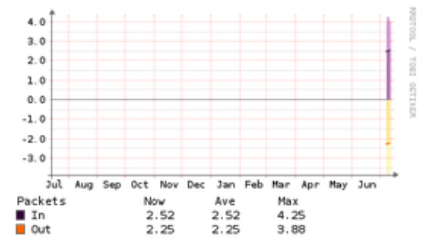
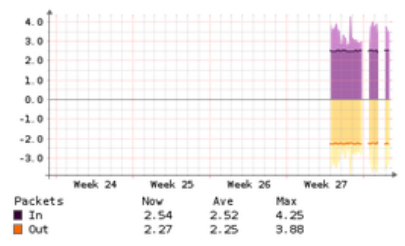
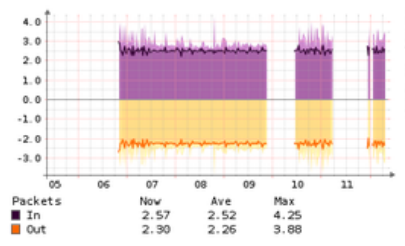
Graphs | Real time | ARP Table | Eventlog | Notes

Create Bill

Interface Traffic



Interface Packets



Online LibreNMS demo

Is available at:

- <https://demo.librenms.org/>
- Log on as demo / demo

Workshop installation at:

- <http://librenms.ws.nsrc.org/>



Questions/Discussion?

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