## **An Introduction to LibreNMS**

Neil Lathwood NLNOG-day 2017, Sept 8th



# History

#### Fork of Observium

- Actual fork was Oct 2013
- Last GPL code May 2012
- 18 months code regression

#### Initial fork was done by:

- Paul Gear (Project founder) (@paulgear1)
- Tyler Christiansen (@supertylerc)

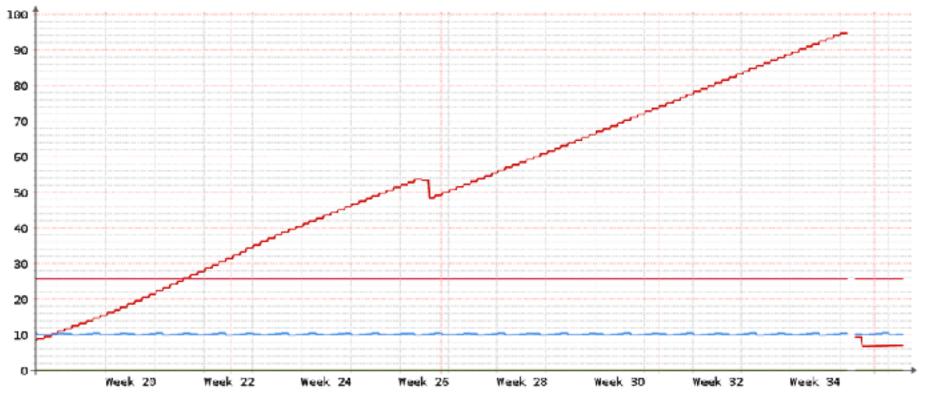
# Auto-discovering NMS.

- PHP / MySQL based
- Data collection is done via SNMP
- Data storage via RRDTool / InfluxDB / Graphite / OpenTSDB
- Network and Inventory information
- Graphing via RRDTool up and to the right

### Like this



### But not like this :(



## Overview

Community driven project

#### Aim to be inclusive to everyone

Open-source (GPLv3)

## Github statistics

400+ Contributors

14k Commits

4k+ Pull requests

2k+ Issues

## Features

#### Auto-discovery

CDP, LLDP or FDP

**SNMP** Scan

Even OSPF, ARP and BGP

#### Dashboards

| Dashboarda NOC Vien + Gr 1 +  |   |  |  |   |
|---|---|--|--|---|
| Availability mag  | Devicer   | summary finite   |  | Washinap  |
|   | Devices 266 264 Parts 15007 6210 Devices 16 16  | Down         Ignored         Disabled           0         3         0           6225         78         190           0         0         0  |  |   |
| Top 5 devices (last 10 minutes)<br>traition CPU Land Device | Newary usage minut<br>Device<br>Execut          | Interface         Total Institic           abled         athat           swr         1           abled         athat           swr         2           swr         2           swr         2           swr         2 |  |   |
| Akra  |   |  | Eventiog                                 |   |
| Ratus Rule Hostname   | Q. Search Ø 50<br>Timestamp Searcity Advandedge | Procedure Datations  | V Hostnania Type                         | Q search I so - H-  |
|   | 2017-09-08 worreley •                           | Open S107-09-05 10127:<br>2017-09-05 10126:<br>2017-09-05 10126:<br>2017-09-05 10126:  | 57 brans-mdi-lan 4<br>57 brans-mdi-lan 4 | NoperStatus: down -> up<br>HightSpeed: 100 -> 10<br>Repend: 100000001 -> 10000000 |
| 4 5 1 2 F   | Showing 1 to 1                                  | of 1 eroise<br>2017-09-05 10:20:1<br>2017-09-05 10:20:1<br>2017-09-05 10:20:1<br>2017-09-05 10:20:1  | 57 trans-mdf-lan 9                       | BilghSpeed: 10 -> 1000<br>HSpeed: 10000000 -> 100000000<br>BilghSpeed: 1000 -> 10 |

## Alerting

#### Simple rule

%bgpPeers.bgpPeerState != "established" && ×

%macros.device\_up = "1" && 🚿

#### Not so simple



## Transports

20+ Transports available

Email, IRC, Slack, + more

Even obscure ones like Syslog and Elasticsearch

## Templates

- %title
- Severity: %severity
- {if %state == 0}Time elapsed: %elapsed
- {/if}Timestamp: %timestamp
- Unique-ID: %uid
- Rule: {if %name}%name{else}%rule{/if} {if %faults}Faults:
- {foreach %faults} #%key: %value.string
  {/foreach}{/if}Alert sent to: {foreach %contacts}
  %value <%key> {/foreach}

Various authentication methods:

- Active Directory
- HTTP
- LDAP
- Radius
- 2FA

#### Syslog + Graylog2

| A   | II Devices          | All Program | 5              | All Priorities   |         |
|-----|---------------------|-------------|----------------|--|---------|
|     | 'rom                | То          | Filter         |  |         |
|     |                     |             |                | Q Search C 50  | - II-   |
|     | Datetime V          | Hostname    | Program        | Message  | Message |
| я̂н | 2017-09-05 19:07:13 | demo        | RRDCACHED      | removing old journal<br>/var/lib/mdcached/journal/rrd.journal.1504631233.762573                            | з       |
| 棗   | 2017-09-05 19:07:13 | demo        | RRDCACHED      | started new journal<br>/var/lib/mdcached/journal/md.journal.1504638433.762537                              | 3       |
| эřе | 2017-09-05 19:07:13 | demo        | RRDCACHED      | rotating journals  | 3       |
| 亷   | 2017-09-05 19:07:13 | demo        | RRDCACHED      | flushing old values  | 3       |
| 0   | 2017-09-05 19:07:01 | demo        | CRON           | pam_unix(cron:session): session closed for user root   | 0       |
| Ø   | 2017-09-05 19:07:01 | demo        | /USR/SBIN/CRON | (root) CMD ( /opt/librenms/alerts.php >> /dev/null 2>81)   | 0       |
| 0   | 2017-09-05 19:07:01 | demo        | CRON           | pam_unix(cron:session): session opened for user root by (uid=0)  | 0       |
| 0   | 2017-09-05 19:05:27 | demo        | CRON           | pam_unix(cron:session): session closed for user root   | 0       |
| Ø   | 2017-09-05 19:06:01 | demo        | CRON           | pam_unix(cron:session): session closed for user root   | 0       |
| 0   | 2017-09-05 19:06:01 | demo        | /USR/SBIN/CRON | (root) CMD ( /opt/librenms/alerts.php >> /dev/null 2>81)   | 0       |
| 0   | 2017-09-05 19:06:01 | demo        | CRON           | pam_unix(cron:session): session opened for user root by (uid=0)  | 0       |
| 0   | 2017-09-05 19:05:52 | demo        | POSTFIX/SMTPD  | disconnect from unknown[31.149.66.65]  | 0       |
| Ø   | 2017-09-05 19:05:52 | demo        | POSTFIX/SMTPD  | connect from unknown[31.149.66.65]   | 0       |
| A   | 2017-09-05 19:05:52 | demo        | POSTFIX/SMTPD  | warning: hostname static.kpn.net does not resolve to<br>address 31.149.66.65: Name or service not known    | 1       |
| 0   | 2017-09-05 19:05:32 | demo        | SSHD           | PAM 2 more authentication failures; logname= uid=0<br>euid=0 tty=ssh ruser= rhost=113.195.145.21 user=root | 0       |

#### Oxidized + Rancid

#### Oxidized

| Hostname | Last Status | Last Update             | Model  | Group   |
|----------|-------------|-------------------------|--------|---------|
| rtr01    |             | 2017-09-05 19:12:35 UTC | Edgeos | default |
| sw01     |             | 2017-09-05 19:12:40 UTC | IOS    | default |

#### Oxidized + Rancid

| Node: rtr01                           |
|---------------------------------------|
| <b>IP:</b> 192.168.80.1               |
| Model: Edgeos                         |
| Last Sync: 2017-09-05 19:12:35<br>UTC |

#### Hide line numbers

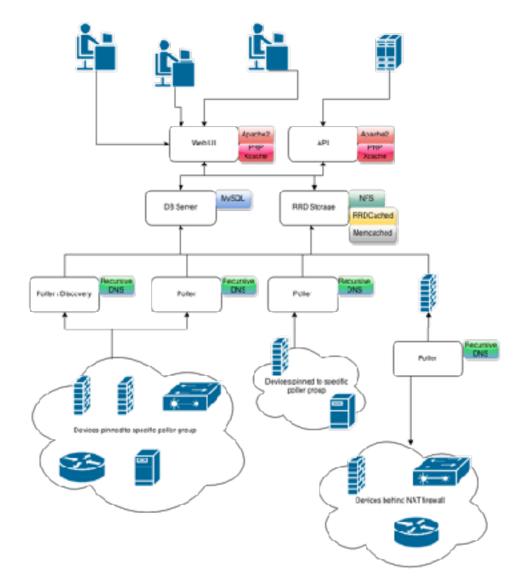
- 1. firewall (
- all-ping enable
- broadcast-ping disable
- group {

| Config<br>version | *2 :: 2017-09 | -05 20:12:35 +0100 | ŧ |
|-------------------|---------------|--------------------|---|
| Version           | Show version  | Show diff          |   |

#### API

```
"status": "ok",
"devices": [
  {
     "device_id": "279",
     "hostname": "localhost",
     "sysName": "web01.1.novalocal",
     "ip": null,
     "community": "librenms",
     "icon": "centos.svg",
     "poller_group": "0",
     "override_sysLocation": "0",
     "notes": null,
     "port_association_mode": "2"
  }
```

### **Distributed polling**



## Traffic billing

CDR or Quota based

Billing day

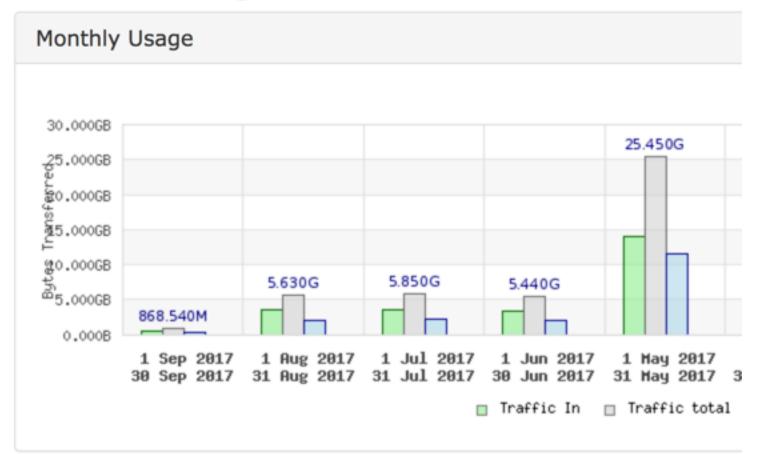
Customer and billing references

Data available via API

Granular graphs available

## Traffic billing

#### Historical Usage



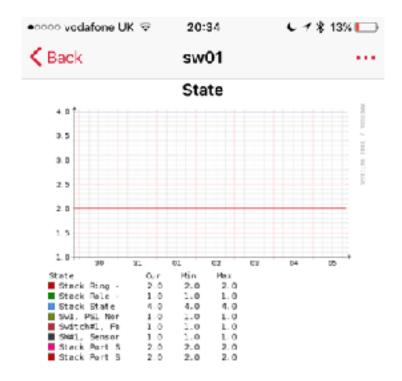
#### Automatic updates

Two available update channels:

Stable (GitHub releases)

Development (master branch)

#### iPhone and Android Apps



|                        | ♥ 20:36                             | ビザ第12% 📘         |
|------------------------|-------------------------------------|------------------|
|                        | Syslog                              | Cance            |
| ventLog                | 5yslog                              | AuthLog          |
|                        | overy of failed - Ch<br>05 18:33:30 | eck name lookup  |
| LLDP disc<br>Check nar | overy of home.lath<br>ne lookup     | wood.uk failed - |
| 2017-09-0              | 5 18:33:30                          |                  |
|                        |                                     |                  |
| LLDP disc              | overy of failed - Ch                | eck name lookup  |
|                        | overy of failed - Ch<br>05 12:33:31 | eck name lookup  |
| 2017-09-0              | overy of home.lath                  | -                |

#### Made available courtesy of Paul @ WaveDirect

# Installation

Manual install:

- Master branch is development.
- Monthly stable releases available (v1.31) currently.

Virtual images available including 3rd party docker container.

User contributed automated scripts

- Ansible
- Chef

## **Device support**

Detection for over 350 vendors

Each month 30+ new or improved vendors added

Working to simplify adding additional support

- Moving to yaml for detection
- OS Discovery done
- Health / Sensor discovery done

#### How you think Open Source apps are maintained



#### How Open Source apps are really maintained



CommitStrip.com

# Getting help

- IRC Primary method
- Community site
- Reddit
- GitHub for bugs

## Getting involved

#### Code

Docs

Help others

Find / report bugs and ask for device support

## Contact

- https://github.com/librenms/librenms
- https://community.librenms.org
- y
- https://www.twitter.com/librenms



https://www.facebook.com/LibreNMS/



https://www.reddit.com/r/LibreNMS/



- <u>team@librenms.org</u>
- **#irc** ##librenms on freenode