

LibreNMS

Campus Network Design Workshop

Configuring LibreNMS

Goals

- Learn how to configure the LibreNMS Network Management System

Introduction

In this exercise, we will set up **LibreNMS** as our network monitoring package.

Connecting to your LibreNMS server

LibreNMS is running on your db server, that is you can connect to the server by going to:

`db.campusY.ws.nsrc.org`

You should do this for these first few steps, then when you are ready to view LibreNMS in your web browser you will go to:

`http://librenms.campusY.ws.nsrc.org`

Setting the SNMP community

First, let's change the SNMP community that LibreNMS will try when discovering and adding new devices.

First, if you not already root, you should do:

```
$ sudo bash
```

Next, edit the file `/opt/librenms/config.php`,

```
# editor /opt/librenms/config.php
```

and find the line:

```
$config['snmp']['community'] = array("public");
```

And change it to:

```
$config['snmp']['community'] = array("NetManage");
```

(this may already be done)

Tell LibreNMS which subnets it's allowed to scan automatically

By default, LibreNMS will try ask for the list of “neighbors” that network devices “see” on the network. This is done using the Link Layer Discovery Protocol (LLDP) or Cisco's CDP (Cisco Discovery Protocol).

But to be on the safe side, and not scan networks outside your organization, LibreNMS needs to be told which subnets it's allowed to scan for new devices.

Still in the file `/opt/librenms/config.php`, find the lines that look like this:

```
#$config['nets'][] = "10.0.0.0/8";  
#$config['nets'][] = "172.16.0.0/12";  
#$config['nets'][] = "192.168.0.0/16";
```

And change this block of nets to look like:

```
$config['nets'][] = "100.68.Y.128/28";  
$config['nets'][] = "172.2Y.0.0/16";
```

Remember, to replace “Y” with your campus number.

We need to make one more change...

Tell LibreNMS not to add duplicate devices

A situation can happen where two devices have duplicate SNMP *sysName*. (that's *hostname* in IOS) They could be two different devices, so it would be a good idea to have LibreNMS automatically add and monitor them.

But it can also happen that the SAME device is seen multiple times by LibreNMS - once using LLDP/CDP, and another time via OSPF (for example).

In that case, it ends up added twice. For instance, you may suddenly see two devices called *rtr2-fa0-0.ws.nsrc.org* and *rtr2*, and this is not what we want.

Since “both” devices are in fact the same, their SNMP *sysName* will be identical, and we can tell LibreNMS to **NOT** add devices if one already exists with the same *sysName* - after all, this shouldn't happen in a well configured network! :)

Here's an example of this:

```
2016-07-06 20:16:47 rtr4 discovery Device rtr4 (10.10.0.224) (port FastEthernet0/0) autodis  
2016-07-06 20:09:45 rtr4-fa0-0 discovery Device rtr4-fa0-0.ws.nsrc.org (10.10.0.224) (port )
```

To avoid this, add the following line at the bottom of the config.php file:

(this may already be done)

```
$config['allow_duplicate_sysName'] = false;
```

... this will prevent LibreNMS from adding the device if it exists already with the same *sysName*. You will be able to see if there are duplicate devices detected in the *Event Log* (Overview -> Event Log).

After you've added the above setting, save the file and exit - we're nearly done!

Add a host

Let's add localhost (i.e.: YOUR virtual server), using the following commands. Later you'll do this from the Web interface:

```
# cd /opt/librenms
# php addhost.php localhost NetManage v2c
```

You should see:

```
Added device localhost (1)
```

Notice we explicitly tell LibreNMS which SNMP community to use. We also assume it's SNMP v2c. If you're using v3, there are additional steps which aren't provided here.

Final Configuration

Discover and Poll newly added hosts

LibreNMS first "discovers" each host that has been added. This means that it methodically examines each host you added and figures out what it should monitor. The *discover.php* script does not automatically scan your network to find new devices. To run this script do:

```
# cd /opt/librenms
# sudo -u librenms php discovery.php -h all
```

NOTE: This could take some time. If you try to add devices that do not yet have an snmp service configured, then the discovery script takes a while to time out.

Once this has finished you can now "poll" the hosts. This means LibreNMS now knows what it wishes to monitor for each host, but it has yet to populate its database with initial values for each item. To do this we do:

```
# sudo -u librenms php poller.php -h all
```

As you can see the *poller.php* script does quite a bit with just a few devices. When we add it to a cronjob below this helps explain why LibreNMS is a resource intensive tool.

Create cronjob

Create the cronjob which will run periodic tasks required by LibreNMS:

```
# cd /opt/librenms
# cp librenms.nonroot.cron /etc/cron.d/librenms
```

One last thing: edit the file */etc/cron.d/librenms* ...

```
# editor /etc/cron.d/librenms
```

...and find the line:

```
*/5 * * * * librenms /opt/librenms/cronic /opt/librenms/poller-wrapper.py 16
```

And change the ‘16’ at the end to ‘4’ (we have a single processor, and 4 threads is plenty)

```
*/5 * * * * librenms /opt/librenms/cronic /opt/librenms/poller-wrapper.py 4
```

Save, and exit.

Install complete

That’s it! You now should be able to log in to <http://librenms.campusY.ws.nsrc.org/> and begin to explore the information being collected for your monitored devices.

You can add some additional devices via the LibreNMS web interface. Why not add:

- bdr1.campusY.ws.nsrc.org
- core1.campusY.ws.nsrc.org
- dist1-b1.campusY.ws.nsrc.org
- dist1-b2.campusY.ws.nsrc.org

What about your other servers? `srv[1..6].campusY.ws.nsrc.org`, `db.campusY.ws.nsrc.org`?

Using the class `snmp` community. See if you can figure out how to do this on your own.

NOTE: When you first add a device it may end up in the “Generic” devices group. This is because LibreNMS needs to run it’s cron job to poll all devices, obtain more specific device information and then classify the device in the proper group. This could take 5 to 10 minutes from the time you add the device.

PLEASE NOTE: We have not covered HTTPS setup in this example, so your LibreNMS install is not secure by default. Please do not expose it to the public Internet unless you have configured HTTPS and taken appropriate web server hardening steps.

Customize your Installation

When you first log in to LibreNMS your default screen is empty. This is because you are allowed to edit your default screen using the Dashboard editing tool to make it look as you prefer. To do this do:

- * Click on the Edit Dashboard icon that looks like a Pencil next to a Red icon of a garbage can.
- * Name your Dashboard or leave it as "Default"
- * If you select Private then your dashboard is only available to your user.
- * If you make it Shared (Read) then you control the look, but other can use it.
- * If you make it just Shared, then anyone can update the look and feel of the dashboard.
- * Click on Add Widgets and select items you would like to see by default when you log in.
 - * Place the selected widget on the screen where you want it.
- * You can click on the "X" to close the notice about editing dashboards so that it does not appear next time you log in.
- * If you want specific graphs you can select the "Graph" widget and customize this.
- * Many people use the Top-devices and Top-interfaces widgets.
 - * For Top-interfaces note you can set the details on this widget. When done, press the "Set"

Remember, you can resize the widgets as you like.

When you are done press the "Update" button. Note that the top-devices and top-interfaces widgets will take some time before they populate with interesting information, so they will appear as largely blank for a while.

If you create multiple Dashboards you can switch between your default log in Dashboard by going to the person icon, selecting "My Settings" and going down to "Default Dashboard".

View a Real-Time Graph on an Interface

In the LibreNMS interface do:

- * Select Devices ==> All Devices ==> Server
- * Select a server from the resulting screen (click on it's name)
- * Click on the "Ports" item near the top.
- * Click on network interface "eth0"
- * Next to the Graphs item select "Real time"
- * Select a "Polling Interval" that is long enough to see information.
- * Click on "60s"

If you do not see any traffic, go to that server and do something... Like,

```
$ ping srvX.campusY.ws.nsrc.org
```

Or some other device or machine, or run an apt-get update, etc...

A few other items

Creating an Alert

From top LibreNMS menu you can start creating an alert by click on the “Alerts” menu item, then:

- * Click on Rules
- * Click the box that says: "Click here to create the default alert rules"

Now you wil have a sample alert collection you can work from. You can always create your own custom alert, but having this collection helps to figure out how to do this.

Global Frontpage Map

It is possible to create a global map of all your entries that is displayed by LibreNMS. If you are interested you can view the LibreNMS documentation on this at:

- * <http://docs.librenms.org/Extensions/Globe-Frontpage/>
- * <http://docs.librenms.org/Support/SNMP-Configuration-Examples/>

You must use the sysLocation snmp variable on your servers and network devices providing latitude and longitude information for each item for this to work.

About Daily Updates

LibreNMS performs daily updates by default. At 00:15 system time every day, a *git pull --no-edit --quiet* is performed. If you don't want this, change the default by editing your 'config.php' file. Remove the comment (the '#' mark) on the line:

```
#$config['update'] = 0;
```

so that it looks like this:

```
$config['update'] = 0;
```