

Part 2 - Install LibreNMS

In this section, there are steps for installing LibreNMS. For more detail about installing LibreNMS refer to the documentation - <https://docs.librenms.org/Installation/Install-LibreNMS/>

The steps to complete this section are:

- Update software
- Install required software
- Add custom repositories
- Install required packages
- Add librenms user
- Download and configure LibreNMS
- Install PHP dependencies
- Configure MariaDB and Create a Database
- Configure PHP
- Configure Apache (web server)
- Configure snmpd
- Connect to Web GUI and configure LibreNMS
- Add a device

Update the software and install required software

```
sudo apt-get update && sudo apt-get install -y software-properties-common apt-transport-https git acl
```

Password = training

Don't forget to use `sudo` at the start of the commands if not running as root user.

Add a new repository for universe.

```
sudo add-apt-repository universe
```

Add a new repository for an older version of php and mariadb.

```
sudo add-apt-repository ppa:ondrej/php
```

Please **enter** to continue to add the repo.

Download the MariaDB repository setup script.

```
wget https://downloads.mariadb.com/MariaDB/mariadb_repo_setup
wget https://downloads.mariadb.com/MariaDB/mariadb_repo_setup.sha256
```

Confirm the file has not been tampered with by comparing the official checksum with the calculated checksum of the downloaded file

```
ls -l
cat mariadb_repo_setup.sha256 | sha256sum -c -
```

You can confirm the latest checksum by opening the website <https://downloads.mariadb.com/MariaDB>, locate the **mariadb_repo_setup.sha256** file. Download the file and open in a text editor to confirm the official checksum.

Run the downloaded script to configure the Mariadb repository.

```
chmod +x mariadb_repo_setup
sudo ./mariadb_repo_setup --mariadb-server-version="mariadb-10.5"
```

Update the software and install required packages

```
sudo apt-get update && sudo apt-get -y dist-upgrade && \
sudo apt-get install -y curl apache2 composer fping git graphviz imagemagick \
libapache2-mod-php8.1 mariadb-client mariadb-server mtr-tiny nmap php8.1-cli \
php8.1-curl php8.1-gd php8.1-mbstring php8.1-mysql php8.1-snmp php8.1-xml php8.1-zip \
python3-memcache python3-mysqldb rrdtool snmp snmpd whois python3-pip unzip
```

Create a LibreNMS user, setting the default directory to **/opt/librenms** and make the user a member of the **www-data** group.

```
sudo useradd librenms -d /opt/librenms -M -r
sudo usermod -a -G librenms www-data
```

Download and setup LibreNMS.

```
cd /opt
sudo git clone https://github.com/Librenms/Librenms.git
```

Set the correct permissions for the downloaded LibreNMS files

```
sudo chown -R librenms:librenms /opt/librenms
sudo chmod 770 /opt/librenms
sudo setfacl -d -m g::rwx /opt/librenms/rrd /opt/librenms/logs /opt/librenms/bootstrap/cache/ /opt/librenms/storage/
sudo setfacl -R -m g::rwx /opt/librenms/rrd /opt/librenms/logs /opt/librenms/bootstrap/cache/ /opt/librenms/storage/
```

Install PHP dependencies.

Change to the librenms user context

```
sudo su
su - librenms
```

Install the dependencies

```
./scripts/composer_wrapper.php install --no-dev
```

Return to the apnic user context

```
exit
exit
```

Configure MySQL database.

Restart MySQL and login to the MySQL shell

```
sudo systemctl restart mysql
sudo mysql --user=root mysql
```

Password = training

Create a new database and a new user called librenms.

```
CREATE DATABASE librenms CHARACTER SET utf8 COLLATE utf8_unicode_ci;
CREATE USER 'librenms'@'localhost' IDENTIFIED BY 'training';
```

```
GRANT ALL PRIVILEGES ON librenms.* TO 'librenms'@'localhost';
FLUSH PRIVILEGES;
exit
```

Update the "mysqld" section in the database configuration **/etc/mysql/mariadb.conf.d/50-server.cnf** file to include the following.

- innodb_file_per_table=1
- lower_case_table_names=0

```
grep -n "\[mysql" -A 2 /etc/mysql/mariadb.conf.d/50-server.cnf
sudo sed -i '/\[mysqld/a innodb_file_per_table=1\nlower_case_table_names=0\n' /etc/mysql/mariadb.conf.d/50-server.cnf
grep -n "\[mysql" -A 3 /etc/mysql/mariadb.conf.d/50-server.cnf
```

Restart the database server.

```
sudo systemctl restart mysql
```

Configure PHP

Ensure date.timezone is set in php.ini to your preferred time zone. See <http://php.net/manual/en/timezones.php> for a list of supported timezones. Valid examples are: "America/New_York", "Australia/Brisbane", "Etc/UTC".

Start by confirming current timezone for the Server that you are logged into

```
date | cut -d " " -f 7
```

To update the Apache2 timezone for php to UTC, type the following

```
grep -in "\;date.timezone \=" /etc/php/8.1/apache2/php.ini
sudo sed -i 's/;date.timezone \=/date.timezone \= Etc\/UTC/' /etc/php/8.1/apache2/php.ini
grep -in "^date.timezone" /etc/php/8.1/apache2/php.ini
```

To update the timezone for php CLI to UTC, type the following

```
grep -in "\;date.timezone \=" /etc/php/8.1/cli/php.ini
sudo sed -i 's/;date.timezone \=/date.timezone \= Etc\/UTC/' /etc/php/8.1/cli/php.ini
grep -in "^date.timezone" /etc/php/8.1/cli/php.ini
```

After changing the timezone, apply the changes by typing the following:

```
sudo a2enmod php8.1
sudo a2dismod mpm_event
```

```
sudo a2enmod mpm_prefork
```

There may be some messages about **module already enabled or disabled** or other types of error messages. These can be ignored.

Configure Apache.

Create a new file called **librenms.conf** and copy to /etc/apache2/sites-available

```
cat > ~/librenms.conf <<EOL

<VirtualHost *:80>
DocumentRoot /opt/librenms/html/
ServerName group30-server.apnictraining.net
AllowEncodedSlashes NoDecode
<Directory "/opt/librenms/html/">
    Require all granted
    AllowOverride All
    Options FollowSymlinks MultiViews
</Directory>
</VirtualHost>
EOL

sudo cp ~/librenms.conf /etc/apache2/sites-available/librenms.conf
```

To enable the new configuration, reload Apache2

```
sudo a2ensite librenms.conf
sudo a2enmod rewrite
sudo systemctl restart apache2
```

Delete any other default configurations from the sites-enabled folder

```
sudo rm /etc/apache2/sites-enabled/000-default.conf
sudo systemctl restart apache2
```

Enable the distribution script, so as to detect client operating systems for the snmpd modules.

```
sudo curl -o /usr/bin/distro \
https://raw.githubusercontent.com/Librenms/Librenms-agent/master/snmp/distro
sudo chmod +x /usr/bin/distro
sudo systemctl restart snmpd
```

Enable a Cron job, for various maintenance task that is needed for Librenms to function correctly. To do this copy the sample file from librenms to the cron.d location.

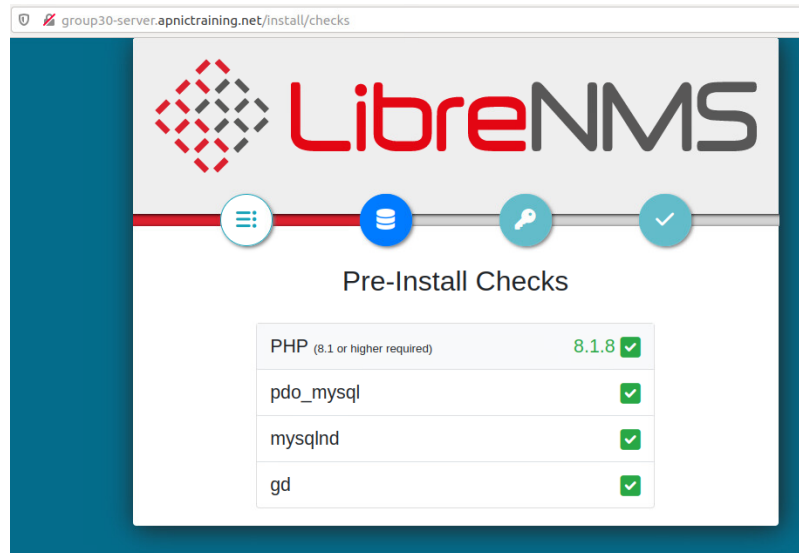
```
sudo cp /opt/librenms/librenms.nonroot.cron /etc/cron.d/librenms
sudo crontab -l
sudo crontab -u librenms -l
```

Librenms has updated this to a new poller (dispatcher) service. For more detail refer to <https://docs.librenms.org/Extensions/Dispatcher-Service/#watchdog>

Configure LibreNMS Web GUI

Please follow the configuration steps which are self explanatory. Following screenshots are attached as reference.

Use Firefox and browse to the LibreNMS HTTP server `http://group30-server.apnictraining.net` this should open with the Pre-Install checks.



Confirm all have a green tick before continuing.

Click on the DB icon. Put `training` as password. Rest of the information will remain same and click on **Check Credentials**

group30-server.apnictraining.net/install/database

LibreNMS

1 Configure Database

Database Credentials

Host

localhost

Port

3306

Unix-Socket

Only use for custom socket path

User

librenms

Password

Database Name

librenms

Check Credentials

If asked to save credentials in the firefox browser, click **Don't save**.

Expand Build Database and click Build Database

group30-server.apnictraining.net/install/database

LibreNMS

Configure Database

Database Credentials

Build Database

Build Database

Please Wait...

Create an admin user. For the lab, the admin username would be apnic and password training .

group30-server.apnictraining.net/install/user



1

Create Admin User

Username 2


Password 3

Email 4

5


If asked to save credentials in the firefox browser, click **Don't save**.

LibreNMS will confirm that the user **apnic** as been added successfully



4

Create Admin User

 **apnic**

Click on the tick icon and finish the installation. Validate the installation if required.



If you click on "validate your install" you will be prompted to login. Use the Admin account for apnic that was created in a previous step.

Optional - The web installer might prompt to create a config.php file in the librenms install location manually, copying the content displayed on-screen to the file. If you have to do this, please remember to set the permissions on config.php after you copied the on-screen contents to the file, by typing the following in a terminal window for the LibreNMS server:

```
sudo chown librenms:librenms /opt/librenms/config.php
```

OPTIONAL - Before continuing validate the LibreNMS installation via the Command Line Interface (CLI).

The next steps are to be completed on the 192.168.30.10 (Group30-Server.apnictraining.net). Return to the open terminal window and complete the following:

Change to the librenms user context:

```
sudo su
su - librenms
```

Run the **validate.php** script.

```
./validate.php
```

Return to the apnic user context

```
exit  
exit
```

Complete any of the recommendations before continuing. For example:

Create a global shortcut to run lnms

```
sudo -u librenms which lnms  
sudo ln -s /opt/librenms/lnms /usr/local/bin/lnms
```

Setup bash autocompletion

```
sudo cp /opt/librenms/misc/lnms-completion.bash /etc/bash_completion.d/
```

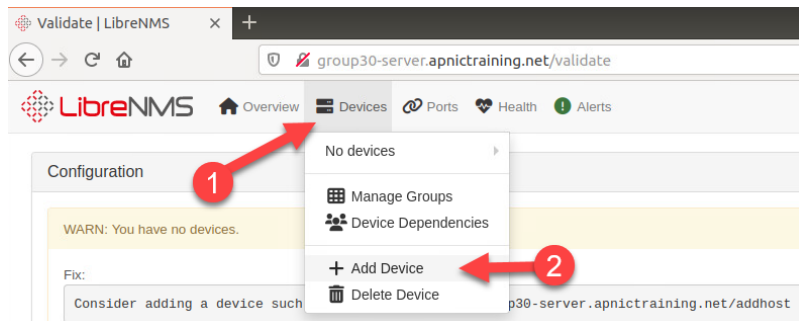
Setup log rotation

```
sudo cp /opt/librenms/misc/librenms.logrotate /etc/logrotate.d/librenms
```

Update the permissions for the downloaded LibreNMS files

```
sudo chown -R librenms:librenms /opt/librenms  
sudo chmod 770 /opt/librenms  
sudo setfacl -d -m g::rwx /opt/librenms/rrd /opt/librenms/logs /opt/librenms/bootstrap/cache/ /opt/librenms/storage/  
sudo setfacl -R -m g::rwx /opt/librenms/rrd /opt/librenms/logs /opt/librenms/bootstrap/cache/ /opt/librenms/storage/
```

Once you have access to the LibreNMS web GUI, add a new device by clicking on **Devices > Add Device**.



To add the Group30-server, fill in the form with the following details

- Hostname = `group30-server.apnictraining.net`
- Community = `training`

Add Device

Devices will be checked for Ping/SNMP reachability before being probed. 1

Hostname or IP group30-server.apnictraining.net

SNMP ON

SNMP Version v2c port udp

Port Association Mode ifIndex

SNMPv1/2c Configuration

Community training 2

Force add (No ICMP or SNMP checks performed) OFF

3 Add Device

To add the Group30-router, fill in the form with the following details

- Hostname = group30-router.apnictraining.net
- Community = training

group30-server.apnictraining.net/addhost

Overview Devices Ports Health Alerts

Adding host group30-server.apnictraining.net community training port 161 using udp

Device added group30-server.apnictraining.net (1)

Add Device

Devices will be checked for Ping/SNMP reachability before being probed.

Hostname or IP

SNMP ☒

SNMP Version

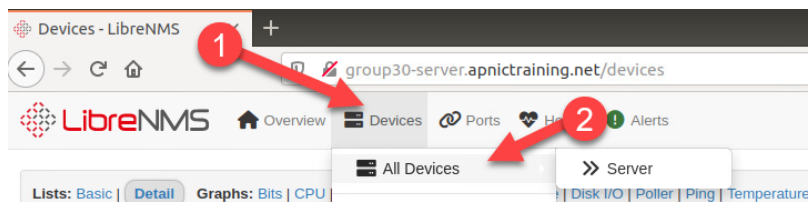
Port Association Mode

SNMPv1/2c Configuration

Community

Force add (No ICMP or SNMP checks performed) ☐

Click on **Devices** > **All Devices** to see all the devices that were added.



This will show a list of all the devices

Devices - LibreNMS

group30-server.apnictraining.net/devices

LibreNMS Overview Devices Ports Health Alerts

Lists: Basic | Detail | Graphs: Bits | CPU | Load | Memory | Uptime | Storage | Disk I/O | Poller | Ping | Temperature

S.	Id	M.	Vendor	Device	Metrics	Platform	Operating System	Up/Down Time	Location	Actions
2			Cisco	group30-router.apnictraining.net	1.3.6p		Cisco IOS-XE			
1				group30-server.apnictraining.net		Generic x86 64-bit	Linux 5.4.0-73-generic	3h 7m 38s	Brisbane, Australia	

Showing 1 to 2 of 2 entries

Please click the Next button to continue.