

# How to Install Cacti with Cacti-Spine in Debian and Ubuntu

Source : <https://www.tecmint.com/install-cacti-with-cacti-spine-in-debian-and-ubuntu/>

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In this tutorial we'll learn how to install and configure Cacti network monitoring tool in the latest version of Debian and Ubuntu 16.04 LTS. Cacti will be build and installed from source files during this guide.

Cacti is an open source monitoring tool created for monitoring networks, especially network devices, such as switches, routers, servers via SNMP protocol. Cacti interacts with end-users and can be administered via a web tool interface.

## Requirements

1. [LAMP Stack Installed in Debian 9](#)
2. [LAMP Stack Installed in Ubuntu 16.04 LTS](#)

## Step 1: Install and Configure Prerequisites for Cacti

1. In Debian 9, open sources list file for editing and add the contrib and non-free repositories to the file by changing the following lines:

```
# nano /etc/apt/sources.list
```

Add following lines to sources.list file.

```
deb http://ftp.ro.debian.org/debian/ stretch main contrib non-free
deb-src http://ftp.ro.debian.org/debian/ stretch main
deb http://security.debian.org/debian-security stretch/updates main contrib non-free
deb-src http://security.debian.org/debian-security stretch/updates main
```

```
GNU nano 2.7.4 File: /etc/apt/sources.list
#
# deb cdrom:[Debian GNU/Linux 9.1.0 _Stretch_ - Official amd64 NETINST 20170722-11:28]/ stretch main contrib non-free
#deb cdrom:[Debian GNU/Linux 9.1.0 _Stretch_ - Official amd64 NETINST 20170722-11:28]/ stretch main contrib non-free
deb http://ftp.ro.debian.org/debian/ stretch main contrib non-free
deb-src http://ftp.ro.debian.org/debian/ stretch main contrib non-free
deb http://security.debian.org/debian-security stretch/updates main contrib non-free
deb-src http://security.debian.org/debian-security stretch/updates main contrib non-free
# stretch-updates, previously known as 'volatile'
deb http://ftp.ro.debian.org/debian/ stretch-updates main contrib non-free
deb-src http://ftp.ro.debian.org/debian/ stretch-updates main contrib non-free
```

*Add Repositories to Debian*

2. Afterwards, make sure to update the system by issuing the below command.

```
# apt update
# apt upgrade
```

3. In your LAMP stack make sure the following PHP extensions are present in the system.

```
# apt install php7.0-snmp php7.0-xml php7.0-mbstring php7.0-json php7.0-gd
php7.0-gmp php7.0-zip php7.0-ldap php7.0-mcrypt
```

4. Next, edit PHP configuration file and change the time zone setting to match your server's physical location, by issuing the below command.

```
# echo "date.timezone = Europe/Bucharest" >> /etc/php/7.0/apache2/php.ini
```

5. Next, log in to MariaDB or MySQL database from your LAMP stack installation and create a database for installing Cacti by issuing the following commands.

Replace cacti database name, user and password to match your own configurations and choose a strong password for cacti database.

```
# mysql -u root -p

mysql> create database cacti;

mysql> grant all on cacti.* to 'cactiuser'@'localhost' identified by
'password1';

mysql> flush privileges;

mysql> exit
```

```
root@ubuntu:~# mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 5
Server version: 5.7.20-0ubuntu0.16.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database cacti;
Query OK, 1 row affected (0.00 sec)

mysql> grant all privileges on cacti.* to 'cactiuser'@'localhost' identified by 'password1';
Query OK, 0 rows affected, 1 warning (0.00 sec)

mysql> flush privileges;
Query OK, 0 rows affected (0.00 sec)

mysql> exit
Bye
root@ubuntu:~#
```

*Create Cacti Database*

6. Also, issue the below commands to allow cacti user select permissions to MySQL data.timezone setting by issuing the below commands.

```
# mysql -u root -p mysql < /usr/share/mysql/mysql_test_data_timezone.sql

# mysql -u root -p -e 'grant select on mysql.time_zone_name to
cactiuser@localhost'
```

7. Next, open MySQL server configuration file and add the following lines at the end of the file.

```
# nano /etc/mysql/mariadb.conf.d/50-server.cnf [For MariaDB]

# nano /etc/mysql/mysql.conf.d/mysqld.cnf [For MySQL]
```

Add the following lines to the end of the 50-server.cnf or mysqld.cnf file.

```
max_heap_table_size          = 98M

tmp_table_size                = 64M

join_buffer_size              = 64M

innodb_buffer_pool_size       = 485M

innodb_doublewrite            = off

innodb_flush_log_at_timeout   = 3

innodb_read_io_threads = 32

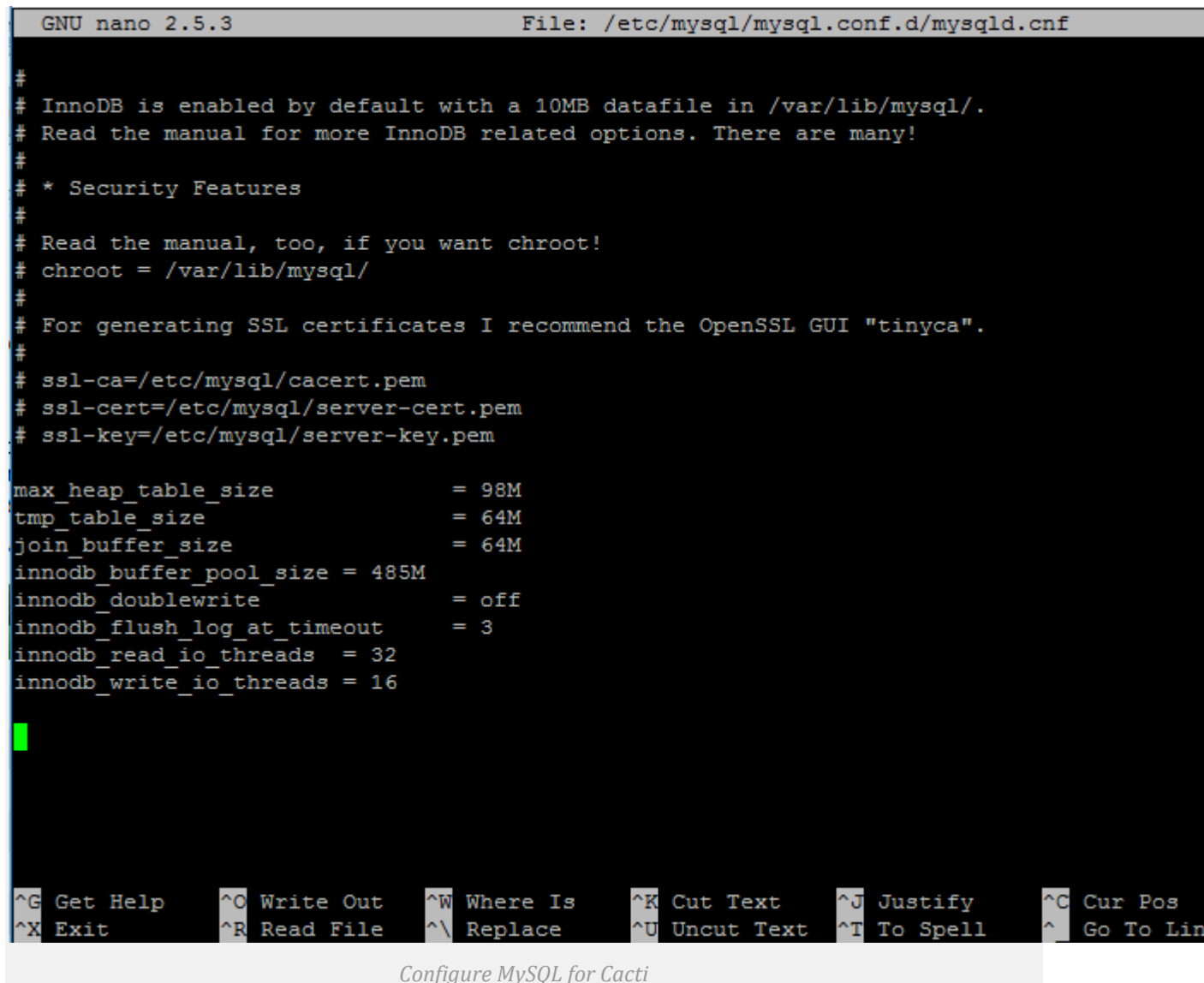
innodb_write_io_threads       = 16
```

For MariaDB database also add the following line to the end of the 50-server.cnf file:

```
innodb_additional_mem_pool_size      = 80M
```

```
GNU nano 2.5.3                               File: /etc/mysql/mysql.conf.d/mysqld.cnf
#
# InnoDB is enabled by default with a 10MB datafile in /var/lib/mysql/.
# Read the manual for more InnoDB related options. There are many!
#
# * Security Features
#
# Read the manual, too, if you want chroot!
# chroot = /var/lib/mysql/
#
# For generating SSL certificates I recommend the OpenSSL GUI "tinyca".
#
# ssl-ca=/etc/mysql/cacert.pem
# ssl-cert=/etc/mysql/server-cert.pem
# ssl-key=/etc/mysql/server-key.pem
#
max_heap_table_size                    = 98M
tmp_table_size                        = 64M
join_buffer_size                      = 64M
innodb_buffer_pool_size = 485M
innodb_doublewrite                    = off
innodb_flush_log_at_timeout           = 3
innodb_read_io_threads                = 32
innodb_write_io_threads               = 16
#

```



8. Finally, restart MySQL and Apache services to apply all settings and verify both services status by issuing the following commands.

```
# systemctl restart mysql apache2

# systemctl status mysql apache2
```

## Step 2: Download and Prepare Cacti Installation

9. Start install Cacti from sources by downloading and extracting the latest version of Cacti archive and copy all the extract files to Apache web document root, by issuing the following commands.

```
# wget https://www.cacti.net/downloads/cacti-latest.tar.gz

# tar xzf cacti-latest.tar.gz

# cp -rf cacti-1.1.27/* /var/www/html/
```

10. Remove index.html file from /var/www/html directory, create the Cacti log file and grant Apache with write permissions to web root path.

```
# rm /var/www/html/index.html

# touch /var/www/html/log/cacti.log

# chown -R www-data:www-data /var/www/html/
```

11. Next, edit cacti configuration file and modify the following lines as shown in the below example.

```
# nano /var/www/html/include/config.php
```

Cacti config.php file sample. Replace cacti database name, user and password accordingly.

```
$database_type      = 'mysql';

$database_default   = 'cacti';

$database_hostname  = 'localhost';
```

```
$database_username = 'cactiuser';

$database_password = 'password1';

$database_port      = '3306';

$database_ssl       = false;

$url_path = '/';
```

```
GNU nano 2.5.3                               File: /var/www/html/include/config.php

| Cacti: The Complete RRDtool-based Graphing Solution |
+-----+
| This code is designed, written, and maintained by the Cacti Group. See |
| about.php and/or the AUTHORS file for specific developer information. |
+-----+
| http://www.cacti.net/ |
+-----+
*/

/* make sure these values reflect your actual database/host/user/password */

$database_type      = 'mysql';
$database_default   = 'cacti';
$database_hostname   = 'localhost';
$database_username   = 'cactiuser';
$database_password   = 'password1';
$database_port       = '3306';
$database_ssl        = false;

/* when the cacti server is a remote poller, then these entries point to
 * the main cacti server. otherwise, these variables have no use.
 * and must remain commented out. */

#$rdatabase_type      = 'mysql';
#$rdatabase_default   = 'cacti';
#$rdatabase_hostname   = 'localhost';
#$rdatabase_username   = 'cactiuser';
#$rdatabase_password   = 'cactiuser';
#$rdatabase_port       = '3306';

^G Get Help      ^O Write Out     ^W Where Is      ^K Cut Text      ^J Justify       ^C Cur Pos
^X Exit          ^R Read File     ^\ Replace       ^U Uncut Text    ^T To Spell      ^_ Go To Lin

Cacti Configuration Settings
```

12. Next, populate cacti database with the cacti.sql script from /var/www/html/ directory by issuing the below command.

```
# mysql -u cactiuser cacti -p < /var/www/html/cacti.sql
```

13. Now install some additional resources, as Cacti engine collects devices data via the SNMP protocol and displays graphics by using RRDtool. Install all of them by issuing following command.

```
# apt install snmp snmpd snmp-mibs-downloader rrdtool
```

14. Verify if SNMP service is up and running by restarting snmpd daemon by issuing the below command. Also check the snmpd daemon status and its open ports.

```
# systemctl restart snmpd.service
# systemctl status snmpd.service
# ss -tulpn | grep snmp
```

## Step 3: Download and Install Cacti-Spine

15. Cacti-Spine is a C written replacement for the default cmd.php poller. Cacti-Spine provides a faster execution time. To compile Cacti-Spine pooler from sources install the below required dependencies in your system.

```
----- On Debian 9 -----
# apt install build-essential dos2unix dh-autoreconf help2man libssl-dev
libmysql++-dev librrds-perl libsnmp-dev libmariadb-dev libmariadbclient-dev
----- On Ubuntu -----
# apt install build-essential dos2unix dh-autoreconf help2man libssl-dev
libmysql++-dev librrds-perl libsnmp-dev libmysqlclient-dev libmysqld-dev
```

16. After you've installed the above dependencies, download the latest version of Cacti-Spine archive, extract the tarball and compile cacti-spine by issuing the following series of commands.

```
# wget https://www.cacti.net/downloads/spine/cacti-spine-latest.tar.gz

# tar xzf cacti-spine-latest.tar.gz

# cd cacti-spine-1.1.27/
```



17. Compile and install Cacti-Spine from sources by issuing the following commands.

```
# ./bootstrap
# ./configure
# make
# make install
```

18. Next, make sure spine binary is owned by root account and set the suid bit for the spine utility by running the following commands.

```
# chown root:root /usr/local/spine/bin/spine
# chmod +s /usr/local/spine/bin/spine
```

19. Now, edit Cacti Spine configuration file and add the cacti database name, user and password to the Spine conf file as illustrated in the below example.

```
# nano /usr/local/spine/etc/spine.conf
```

Add following configuration to spine.conf file.

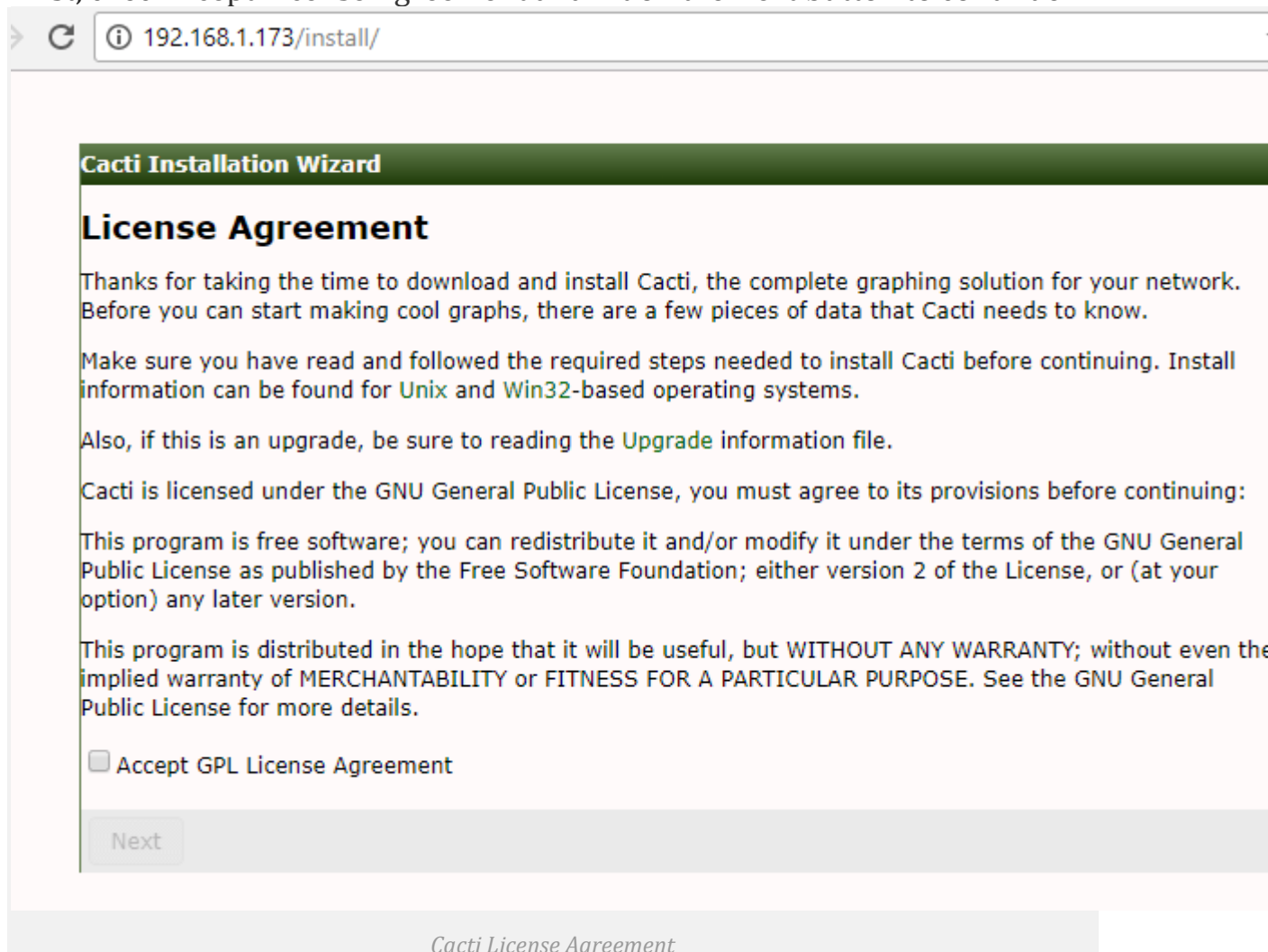
```
DB_Host localhost
DB_Database cacti
DB_User cactiuser
DB_Pass password1
DB_Port 3306
DB_PreG 0
```

## Step 4: Cacti Installation Wizard Setup

20. To install Cacti, open a browser and navigate to your system IP address or domain name at the following URL.

```
http://your_IP/install
```

First, check Accept License Agreement and hit on the Next button to continue.



The screenshot shows a web browser window with the address bar displaying "192.168.1.173/install/". The main content area is titled "Cacti Installation Wizard" and "License Agreement". It contains several paragraphs of text explaining the GNU General Public License and providing instructions for installation. At the bottom, there is a checkbox labeled "Accept GPL License Agreement" and a "Next" button. The footer of the page reads "Cacti License Agreement".

**Cacti Installation Wizard**

### License Agreement

Thanks for taking the time to download and install Cacti, the complete graphing solution for your network. Before you can start making cool graphs, there are a few pieces of data that Cacti needs to know.

Make sure you have read and followed the required steps needed to install Cacti before continuing. Install information can be found for [Unix](#) and [Win32](#)-based operating systems.

Also, if this is an upgrade, be sure to reading the [Upgrade](#) information file.

Cacti is licensed under the GNU General Public License, you must agree to its provisions before continuing:

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This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

☐ Accept GPL License Agreement

Next

*Cacti License Agreement*

21. Next, check if system requirements and hit Next button to continue.

**Cacti Installation Wizard****Pre-installation Checks****MySQL TimeZone Support**

Your Cacti database account has access to the MySQL TimeZone database and that database is populated with information.

**PHP Timezone Support**

Your Web Servers PHP is properly setup with a Timezone.

**Required PHP Module Support**

Cacti requires several PHP Modules to be installed to work properly. If any of these are not installed, you will be unable to complete the installation until corrected. In addition, for optimal system performance Cacti should be run with certain MySQL settings. Please follow the MySQL recommendations at your discretion. Always seek the MySQL documentation if you are unsure.

The following PHP extensions are mandatory, and MUST be installed before continuing your Cacti install.

**Required PHP Modules**

Name	Required	Installed
PHP Version	5.2.0+	7.0.22-0ubuntu0.16.04.1
posix	Yes	Yes
session	Yes	Yes
sockets	Yes	Yes
PDO	Yes	Yes
pdo_mysql	Yes	Yes
xml	Yes	Yes
ldap	Yes	Yes
mbstring	Yes	Yes
pcre	Yes	Yes
json	Yes	Yes
openssl	Yes	Yes
gd	Yes	Yes
zlib	Yes	Yes

**Optional PHP Module Support**

The following PHP extensions are recommended, and should be installed before continuing your Cacti install.

**Optional Modules**

Name	Optional	Installed
------	----------	-----------

22. In the next window, select New Primary Server and hit on Next button to continue.

192.168.1.173/install/index.php

## Cacti Installation Wizard

### Installation Type

Please select the type of installation

Installation options:

- **New Primary Server** - Choose this for the Primary site.
- **New Remote Poller** - Remote Pollers are used to access networks that are not readily accessible to the

New Primary Server ▼

The following information has been determined from Cacti's configuration file. If it is not correct, please edit "in continuing.

#### Local Cacti database connection information

Database: **cacti**  
 Database User: **cactiuser**  
 Database Hostname: **localhost**  
 Port: **3306**  
 Server Operating System Type: **unix**

Previous Next

Select Cacti Installation Type

23. Next, verify critical binary locations and versions and change Spine binary path to /usr/local/spine/bin/spine. When you finish, hit Next button to continue.

## Cacti Installation Wizard

### Critical Binary Locations and Versions

Make sure all of these values are correct before continuing.

**RRDtool Binary Path:** The path to the rrdtool binary.



**PHP Binary Path:** The path to your PHP binary file (may require a php recompile to get this file).



**snmpwalk Binary Path:** The path to your snmpwalk binary.



**snmpget Binary Path:** The path to your snmpget binary.



**snmpbulkwalk Binary Path:** The path to your snmpbulkwalk binary.



**snmpgetnext Binary Path:** The path to your snmpgetnext binary.



**snmptrap Binary Path:** The path to your snmptrap binary.



**Spine Binary File Location:** The path to Spine binary.



**Cacti Log Path:** The path to your Cacti log file.



**Theme:** Please select one of the available Themes to skin your Cacti with.

**RRDtool Version:** The version of RRDtool that you have installed.

24. Next, check if all web server directory permissions are in place (write permissions are set) and hit on Nextbutton to continue.

*i* 192.168.1.173/install/index.php

**Cacti Installation Wizard**

**Directory Permission Checks**

Please ensure the directory permissions below are correct before proceeding. During the install, these directories will be changed to be writable by the Web Server user. These permission changes are required to allow the Installer to install Device Template packages, Device Template XML and script files that will be placed in these directories. If you choose not to install the packages, there is an uninstall script that can be used from the command line after the install is complete.

After the install is complete, you can make some of these directories read only to increase security.

**Required Writable at Install Time Only**

/var/www/html/resource/snmp\_queries is Writable

/var/www/html/resource/script\_server is Writable

/var/www/html/resource/script\_queries is Writable

/var/www/html/scripts is Writable

**Required Writable after Install Complete**

/var/www/html/log is Writable

/var/www/html/cache/boost is Writable

/var/www/html/cache/mibcache is Writable

/var/www/html/cache/realtime is Writable

/var/www/html/cache/spikekill is Writable

All folders are writable

**NOTE:** If you are installing packages, once the packages are installed, you should change the scripts directory to be read only. This directory presents some exposure to the web site.

Previous

Next

Cacti Directory Permission Checks

25. On the next step check all the templates and hit on Finish button in order to finish the installation process.

## Cacti Installation Wizard

### Template Setup

Please select the Device Templates that you wish to use after the Install. If your Operating System is Windows, you select the 'Windows Device' Template. If your Operating System is Linux/UNIX, make sure you select the 'Local Linux Machine' Device Template.

Device Templates allow you to monitor and graph a vast assortment of data within Cacti. After you select the device templates, press 'Finish' and the installation will complete. Please be patient on this step, as the importation of the Device Templates may take several minutes.

#### Templates

Name	Description	Author	Homepage
Cisco Router	The Cisco Device Template	The Cacti Group	<a href="http://www.cacti.org/">http://www.cacti.org/</a>
Generic SNMP Device	The Generic SNMP Device Template	The Cacti Group	<a href="http://www.cacti.org/">http://www.cacti.org/</a>
Local Linux Machine	The Local Linux Device Template	The Cacti Group	<a href="http://www.cacti.org/">http://www.cacti.org/</a>
Net-SNMP Device	The Net-SNMP Device Template	The Cacti Group	<a href="http://www.cacti.org/">http://www.cacti.org/</a>
Windows Device	The Windows Device Template	The Cacti Group	<a href="http://www.cacti.org/">http://www.cacti.org/</a>

**NOTE:** Press 'Finish' to complete the installation process after selecting your Device Templates.

[Previous](#)[Finish](#)

*Cacti Template Setup*

26. Log in to Cacti web interface with the default credentials shown below and change the admin password, as illustrated in the following screenshots.

Username: admin

Password: admin



## User Login

Username

Password

☐ Keep me signed in

Version 1.1.27 | (c) 2004-2017 - The Cacti Group





## Change Password

Please enter your current password and your new Cacti password.

Current password

New password

Confirm new password

Password must be at least 8 characters!

Version 1.1.27 | (c) 2004-2017 - The Cacti Group

*Change Cacti Admin Password*

27. Next, go to Console -> Configuration -> Settings -> Poller and change the Poller Type from cmd.php to Spinebinary and scroll down to Save button to save the configuration.

← → ↻ ⓘ 192.168.1.173/settings.php?tab=poller&

Console Graphs Reporting Logs

Console Cacti Settings

Create Management Data Collection Templates Automation Presets Import/Export Configuration Settings Users User Groups User Domains Plugin Management Utilities

Cacti Poller Settings

General Paths Device Defaults Poller Data Storage Visual Authentication Data Sources

**Cacti Settings (Poller)**

**General**

**Data Collection Enabled** ☒ Data Col

If you wish to stop the polling process completely, uncheck this box.

**Poller Type**

The poller type to use. This setting will take effect at next polling interval.

**Poller Interval**

The polling interval in use. This setting will effect how often RRDfiles are checked and updated. **NOTE: If you change this value, you must re-populate the poller cache. Failure to do so, may result in lost data.**

**Cron Interval**

The cron interval in use. You need to set this setting to the interval that your cron or scheduled task is currently running.

**Maximum Concurrent Poller Processes**

The number of concurrent processes to execute. Using a higher number when using cmd.php will improve performance. Performance improvements in spine are best resolved with the threads parameter

**Balance Process Load** ☒ Balance

If you choose this option, Cacti will attempt to balance the load of each poller process by equally distributing poller items per process.

**Disable increasing OID Check** ☐ Disable i

Controls disabling check for increasing OID while walking OID tree.

**Spine Specific Execution Parameters**

**Invalid Data Logging**

How would you like Spine output errors logged? The options are: 'Detailed' which is similar to cmd.php logging: 'Summary' which provides

*Cacti Poller Settings*

28. Then, go to Console -> Configuration -> Settings -> Paths and add the following path to Cacti-Spineconfiguration file:

```
/usr/local/spine/etc/spine.conf
```

Hit on Save button to apply configuration.

file).

### Logging

**Cacti Log Path**   
 The path to your Cacti log file (if blank, defaults to /log/cacti.log)

**Rotate the Cacti Log** ☐ Rotate the Cacti Log  
 This option will rotate the Cacti Log periodically.

**Rotation Frequency**   
 At what frequency would you like to rotate your logs?

**Log Retention**   
 How many log files do you wish to retain? Use 0 to never remove any logs. (0-365)

### Alternate Poller Path

**Spine Binary File Location**   
 The path to Spine binary.

**Spine Config File Path**   
 The path to Spine configuration file. By default, in the cwd of spine, or /etc if not specified.

### RRD Cleaner

**RRDfile Auto Clean** ☐ RRDfile Auto Clean  
 Automatically Delete, Archive, or Delete RRDfiles when removed from Cacti

*Add Cacti Spine Configuration*

29. The final setup which enables Cacti poller to start collecting data from monitored devices is to add a new crontab task in order to query each device via SNMP every 5 minutes.

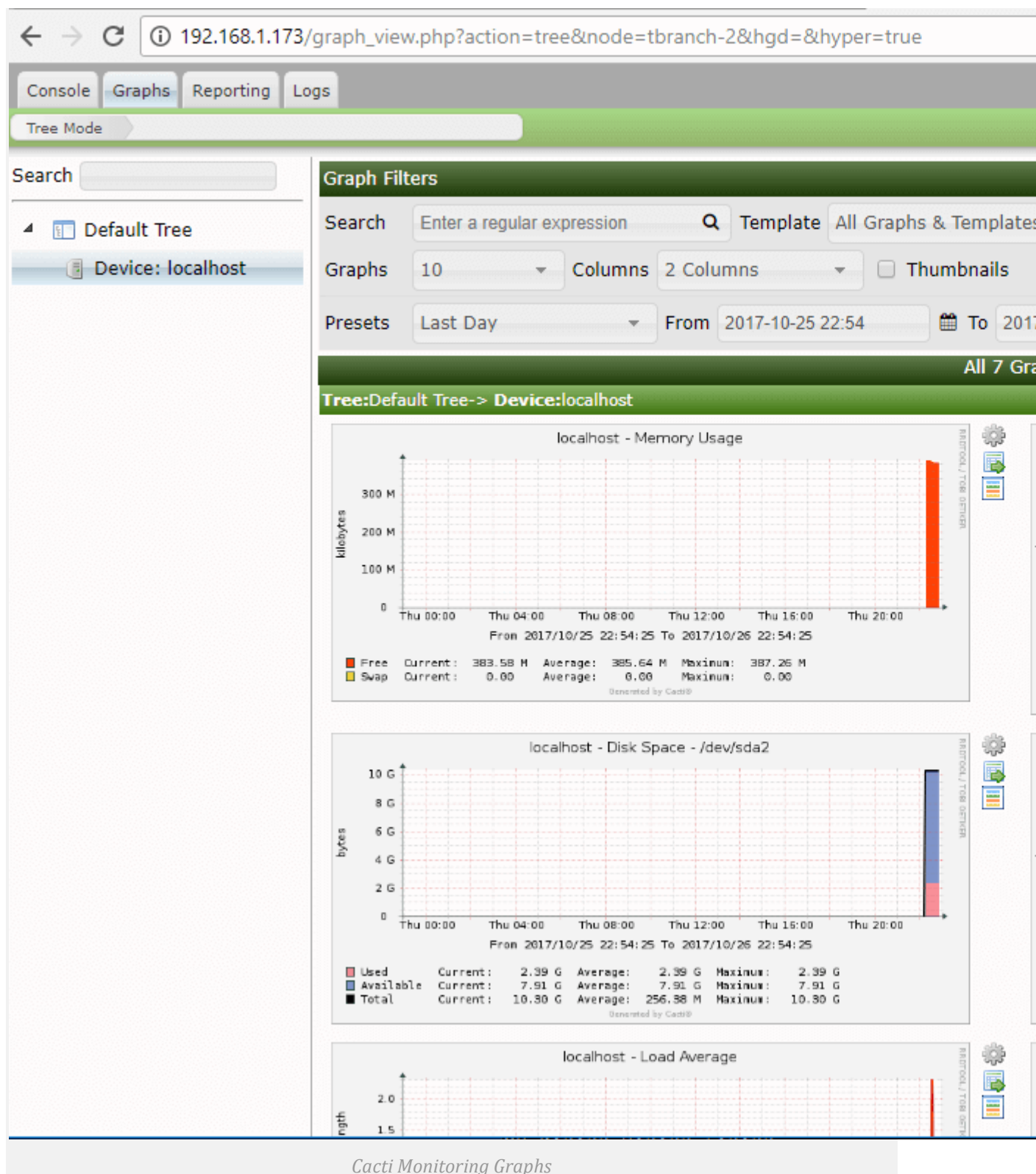
The crontab job must be owned by www-data account.

```
# crontab -u www-data -e
```

Add Cron file entry:

```
*/5 * * * * /usr/bin/php /var/www/html/poller.php
```

30. Wait a few minutes for Cacti to collect data and go to the Graphs -> Default Tree and you should see the graphs collected for your monitored devices.



That's all! You have successfully installed and configured Cacti with Cacti-Spine pooler, from sources, in the latest release of Debian 9 and Ubuntu 16.04 LTS server.