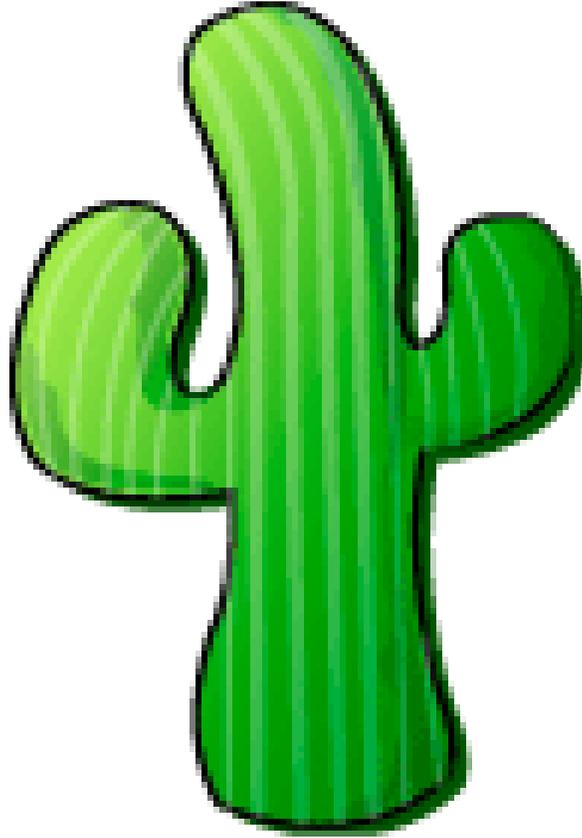


# Installing Cacti on Ubuntu Server 12.04



Last Modified 5 Nov 2013

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## How to install cacti 0.8.8 with on Ubuntu 12.04

### Cacti Installation

This tutorial show you how to install cacti 0.8.8b on Ubuntu 12.04 server edition. It will then take you through the install of the cacti plugins Weathermap, thold, and Discovery. Weathermap is used to show a graphical representation of your network and the amount of data that is moving on the network. Thold will act similar to nagios and will notify you when something is not functioning properly on your network. Discovery ping all the ip's on your network and attempts to access them with your SNMP strings.

Please note that the \$ is not part of the commands. Some commands take more than one line so the \$ simply shows where the next command begins.

### Get Server updates

```
$ sudo apt-get update
$ sudo apt-get upgrade
```

Install Cacti Dependencies. During this process it will ask you to create a root password for mysql. Be sure to do it.

```
$ sudo apt-get install php5 php5-mysql php5-snmp
php5-gd mysql-server apache2 rrdtool snmp snmpd
```

Download and extract cacti. Rename the folder to cacti and chown the directory to www-data.

```
$ cd /var/www
$ sudo wget
http://www.cacti.net/downloads/cacti-0.8.8b.tar.gz
$ sudo tar -xvzf cacti-0.8.8b.tar.gz
$ sudo mv cacti-0.8.8b cacti
$ sudo chown -R www-data:www-data cacti
```

Setup mysql database and cacti user password.

```
$ cd cacti
$ mysql -u root -p

mysql> create database cacti;
mysql> GRANT ALL ON cacti.* TO cactiuser@localhost
IDENTIFIED BY 'ThisIsMyCactiPassword';
mysql> flush privileges;
mysql> exit;

$ mysql -u root cacti < cacti.sql -p
$ sudo nano include/config.php
```

In the config.php file, change the username and password to the same username and password that you setup in mysql.

```
$database_type = "mysql";
$database_default = "cacti";
$database_hostname = "localhost";
$database_username = "cactiuser";
$database_password = "ThisIsMyCactiPassword";
$database_port = "3306";
$database_ssl = false;
```

Restart Apache

```
$ sudo service apache2 restart
```

Setup the cron job

```
$ sudo crontab -u www-data -e
```

Add the highlighted line to the end of the crontab

```
# For more information see the manual pages of
crontab(5) and cron(8)
```

```
#
# m h dom mon dow   command
* * * * * php5 /var/www/cacti/poller.php
```

From this point on, you will finish setting up cacti from the browser. Point your browser to `server_ip_address/cacti`

**Cacti Installation Guide**

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.

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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.

[Next >>](#)

After going through the setup, you will be prompted to login. The default login information is

User Name: admin

Password: admin

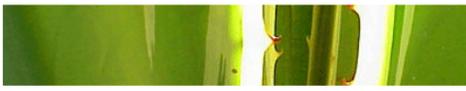


**User Login**

Please enter your Cacti user name and password below:

User Name:

Password:



**User Login**

**\*\*\* Forced Password Change \*\*\***

Please enter a new password for cacti:

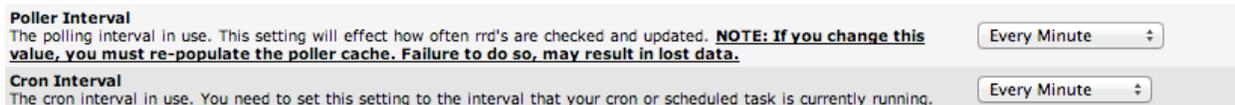
Password:

Confirm:

After logging in, you will be forced to change the password.

Next we will update the poller interval. We will decrease it from the default five

minutes to only one minute. In the configuration section, go to Settings then click the Poller tab. The Poller Interval and Cron Interval should both be set to Every Minute.



Congratulations! You have successfully installed cacti.

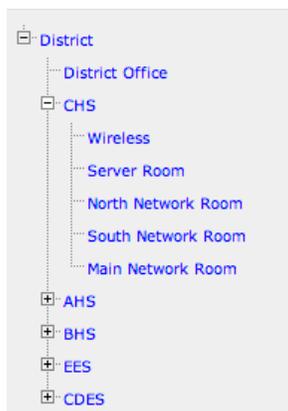
---

## Cacti setup

Now that cacti is installed, we can start getting everything ready for our data.

### Graph Trees

The first step should be to add graph trees. On the console tab in the Management section find “graph trees” and select it. There will already be one tree that is created that is the default tree, you can delete it and start new or rename it. The tree layout will depend mainly on the organizational structure of your district. If all the techs throughout your district have rights to view all of the graphs in the district, then you can create one main tree and branch the schools from that tree. If some of the techs have permissions to only view a specific school, then you might want to consider creating several main trees, one for each location. Tree items will be sub-locations, you can go in as many layers as needed. Later, we will make each host/device be a leaf to the tree.



## User Management

Next you can create all the rules for the users that should have rights to cacti. This is in the Utilities section under “User Management”. To add a new user click “Add” in the top right corner. Fill out all of the users information and be sure to enable the account. In this example, we are giving a user the ability to only view graphs. After clicking the create button, we will have more options as to specify which tree this user has rights on.

**User Management [new]**

<b>User Name</b> <small>The login name for this user.</small>	<input type="text" value="jsmith"/>
<b>Full Name</b> <small>A more descriptive name for this user, that can include spaces or special characters.</small>	<input type="text" value="John Smith"/>
<b>Password</b> <small>Enter the password for this user twice. Remember that passwords are case sensitive!</small>	<input type="password" value="....."/> <input type="password" value="....."/>
<b>Enabled</b> <small>Determines if user is able to login.</small>	<input checked="" type="checkbox"/> Enabled
<b>Account Options</b> <small>Set any user account-specific options here.</small>	<input type="checkbox"/> User Must Change Password at Next Login <input checked="" type="checkbox"/> Allow this User to Keep Custom Graph Settings
<b>Graph Options</b> <small>Set any graph-specific options here.</small>	<input type="checkbox"/> User Has Rights to Tree View <input checked="" type="checkbox"/> User Has Rights to List View <input checked="" type="checkbox"/> User Has Rights to Preview View
<b>Login Options</b> <small>What to do when this user logs in.</small>	<input checked="" type="radio"/> Show the page that user pointed their browser to. <input type="radio"/> Show the default console screen. <input type="radio"/> Show the default graph screen.
<b>Authentication Realm</b> <small>Only used if you have LDAP or Web Basic Authentication enabled. Changing this to a non-enabled realm will effectively disable the user.</small>	<input type="text" value="Local"/>

**Realm permissions control which sections of Cacti this user will have access to.**

**Realm Permissions**

<input type="checkbox"/> User Administration <input type="checkbox"/> Data Input <input type="checkbox"/> Update Data Sources <input type="checkbox"/> Update Graph Trees <input type="checkbox"/> Update Graphs <input checked="" type="checkbox"/> View Graphs <input type="checkbox"/> Console Access <input type="checkbox"/> Update Round Robin Archives <input type="checkbox"/> Update Graph Templates	<input type="checkbox"/> Update Data Templates <input type="checkbox"/> Update Host Templates <input type="checkbox"/> Data Queries <input type="checkbox"/> Update CDEF's <input type="checkbox"/> Global Settings <input type="checkbox"/> Export Data <input type="checkbox"/> Import Data <input type="checkbox"/> Plugin Management
---	---

After creating the user, we can see that the graph permissions tab is now available. By default, all of the graphs will be disabled to the user. To allow this user to see a specific tree, you can allow the graph permissions by graph, device, and template. Then deny the tree permissions and add just those that this user should have access to.

Realm Permissions	Graph Permissions	Graph Settings
<b>Graph policies will be evaluated in the order shown until a match is found.</b>		
<b>Graph Permissions (By Graph)</b>		
<b>Default Policy</b> The default allow/deny graph policy for this user.		Deny ▾
No Graphs		
Add Graph:	Localhost - Load Average ▾	Add
<b>Graph Permissions (By Device)</b>		
<b>Default Policy</b> The default allow/deny graph policy for this user.		Deny ▾
No Devices		
Add Host:	Localhost (127.0.0.1) ▾	Add
<b>Graph Permissions (By Graph Template)</b>		
<b>Default Policy</b> The default allow/deny graph policy for this user.		Deny ▾
No Graph Templates		
Add Graph Template:	Cisco - CPU Usage ▾	Add
<b>Tree Permissions</b>		
<b>Default Policy</b> The default allow/deny graph policy for this user.		Deny ▾
1) District Office ✖		

## SNMP

Before discussing devices, we need to briefly discuss SNMP. SNMP stands for Simple Network Management Protocol. It is the protocol used to query your devices. It can be set to be read-only, meaning that it can not modify any settings on any switch or server that you query. In order to keep your information safe, SNMP requires a community string (a password) when making the query. Every device has a different way to install SNMP. The best way to set up your devices would be to google it. A few examples are “Cisco SNMP configuration”, “Windows SNMP setup”, “SNMP on Ubuntu Server”. With a little searching, you will find several SNMP setup guides. You will want to document these methods and save the best ones in your favorites for easy access in the future. Remember that not every device has SNMP capabilities and that at times other methods will be used.

#### [Microsoft Windows XP - Install the SNMP service](#)

[www.microsoft.com/resources/.../windows/xp/all/.../en.../snmp\\_install.ms... ▾](#)  
Open **Windows** Components wizard In Components, click Management and ... Select the **Simple Network Management Protocol** check box, and click OK. ... Certain **Windows** components require **configuration** before they can be used.

#### [How to Install SNMP and Configure the Community String](#)

[support.powerdnn.com > ... > AppZone > Hosting > Dedicated Servers ▾](#)  
Aug 21, 2012 - While **configuring SNMP**, you may find that certain values are already ... **Configure** an **SNMP** Agent and Community String in **Windows** 2012.

#### [How to set up Windows SNMP Service - iReasoning Inc.](#)

[ireasoning.com/articles/setup\\_snmp\\_service.php ▾](#)  
Install **SNMP** service. Open "Control Panel/Program and Features", click "Turn **Window** features on or off", and check **SNMP: Configure SNMP** service.

#### [How To Enable SNMP in Windows 7 \(by Tony Fortunato\)](#)

[www.lovelymytool.com/.../how-to-enable-snmp-in-windows-7-by-tony-fo... ▾](#)  
Feb 14, 2012 - After poking around for about 30 minutes I discovered that all I had to do was fill in a silly **SNMP config** box. Enjoy Continue reading other ...

#### [Enable SNMP on Windows 7 - YouTube](#)



[www.youtube.com/watch?v=cdcZjbla6PQ ▾](#)  
Jan 29, 2012 - Uploaded by The Technology Firm  
thought it would be worth while to show how to **configure snmp** on **windows** 7. Enjoy Lovemytool Blog:  
<http://www.lovelymytool.com/blog/tony-f>.

## Devices

Next, under the management section click on devices. Go ahead and add a device. All you will need is the ip address of the device and the community string as discussed above. After clicking on create, scroll to the top and “create graphs for this host” You will be presented with a list of graphs that are available for the template that you are using. When done selecting, click “create” at the bottom.

Now let’s make our graph visible. Go back to the graph trees and choose the tree where you want this host to show up. Click Add on the right. Choose the parent item and select “host” from the tree item type. The select the host. This will add all of the graphs that you created for that host to the specified tree. What’s best is that you won’t have to go back and add graphs individually if you decide to create more graphs for that host.

Tree Items	
<b>Parent Item</b> Choose the parent for this header/graph.	----- Main Network Room ▾
<b>Tree Item Type</b> Choose what type of tree Item this is.	Host ▾
Tree Item Value	
<b>Host</b> Choose a host here to add it to the tree.	Test Switch (205.125.62.215) ▾
<b>Graph Grouping Style</b> Choose how graphs are grouped when drawn for this particular host on the tree.	Graph Template ▾
<b>Round Robin Archive</b> Choose a round robin archive to control how Graph Thumbnails are displayed when using Tree Export.	Hourly (1 Minute Average) ▾

Now you should have the knowledge of how to create trees, users, and devices on cacti. Go ahead and add a few devices.

## Templates

As you probably noted while adding devices, there are only a few common devices that come standard with cacti. For this reason, cacti has also developed a way to add “templates” to your configuration. Templates are created by cacti users and then shared online. To browse through the templates, go to <http://docs.cacti.net/templates>.

dell disk disks dns dnx docsis dropped eaton eltek emc lifeline enterasys entry storage server equallogic esx everest fan fastiron fcx filer finjan firewall flatpack flatpack2 freebsd fwiffable geist generic gmirror google highband hipath hirschmann hit ratio host host resources mib hp http ibm ics idp shibboleth inrow intel iops ipmitool ips ipso isg 1000 itwatchdogs itwatchdogs weathergoose minigoose microgoose ive juniper kerio kwh ldap lefthand lexmark linux lmsensors logged m2400s m900s mactrack mail mailstats mbm5 memory messaging metered mib-dell-10892 mib microsoft mini mirapoint mlx mlx-16 mlx-32 mlx-4 mlx-8 monitoring mos motorola mx2800 mx960 nagios named nas nat net-snmp netapp netiron netscreen netware noise margin nokia novell ntp operator oracle output power p4500 pdu performance counter pfsense plugin ports power poweralert powerconnect powerware printer process proxy proxyav

Even though that is the official repository, don't stop looking there if you can't find what you want. The cacti forums are full of templates and scripts that people are willing to share. Google is your friend.

<b>Host Template</b> Choose the Host Template to use to define the default Graph Templates and Data Queries associated with this Host.	<input checked="" type="checkbox"/> None <input type="checkbox"/> Cisco Router <input type="checkbox"/> Generic SNMP-enabled Host <input type="checkbox"/> Karlnet Wireless Bridge <input type="checkbox"/> Local Linux Machine <input type="checkbox"/> Netware 4/5 Server <input type="checkbox"/> ucd/net SNMP Host <input type="checkbox"/> Windows 2000/XP Host
<b>Number of Collection Threads</b> The number of concurrent threads to use for polling this device. This applies to the Spine poller only.	
<b>Disable Host</b> Check this box to disable all checks for this host.	
Availability/Reachability Options	
<b>Downed Device Detection</b> The method Cacti will use to determine if a host is available for polling. <small>NOTE: It is recommended that at a minimum, SNMP should be selected.</small>	

Each template should contain installation instructions. **Be sure that any scripts**

that you add are chowned to the www-data user so that they can run. It is the easiest thing to forget and easiest thing to fix.

---

## Thold Setup

Now we will setup the cacti plugin Thold. This is the plugin that gives you the ability to receive alerts the next time that anything goes wrong with your network. To install the plugin, ssh into your cacti server and navigate to the cacti plugins folder. Then you simply download and unzip. The thold plugin requires the settings plugin to run so we will download that one too.

```
$ cd /var/www/cacti/plugins
$ sudo wget
http://docs.cacti.net/_media/plugin:settings-v0.71-1.tgz
Z
$ sudo wget
http://docs.cacti.net/_media/plugin:thold-v0.5.0.tgz
$ sudo tar -xvzf plugin\:thold-v0.5.0.tgz --force-local
$ sudo tar -xvzf plugin\:settings-v0.71-1.tgz
--force-local
```

Make sure that you also change the owner of the downloaded files to www-data

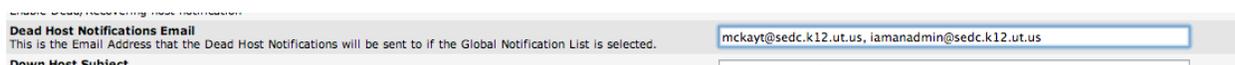
```
$ sudo chown -R www-data:www-data *
```

Now if we log back into cacti, we should be able to go to the configuration section to “Plugin Management” To finish the installation, click the blue arrows under “Actions” You then can enable and start using Thold.

Showing All 2 Rows				
Actions	Name	Version	Load Order	Description**
	Settings	0.71		Global Plugin Settings
	Thold	0.5		Thresholds
Showing All 2 Rows				

You will immediately see two new options under the Management section.

Notification List and Thresholds. Lets go ahead and open Notification List and take a look around. A notification list is just a list of people that can be notified when a device goes down. Before creating any lists you should know that there is already a “global list” that exists. The global list will hold all of the admins over the entire organization. In order to modify the “global list” you must go to Configuration:Settings > Thresholds. Find Emailing Options:Dead Host Notifications Email and add any super-admin email addresses separated by commas.



The “Global List” is the “Dead Host Notification Email”

Go ahead and add some users to the global list. We will wait until we talk about Thresholds before we create any other groups.

After you are done with the global list, go into devices and pick a device that you added previously. You will now notice in the General Host Options section that there is a Thold Up/Down Email Notification. The global list is the default option, you can change this for any host that also needs to notify the local techs that a host is down.



In most cases, you will probably want to email the global list but you still have the option of using a notification list.



Even though these are designed for sending emails, there might be a way to also get a text message. Go to

<http://www.email-unlimited.com/stuff/send-email-to-phone.htm> and find out

your phones “email address” Many providers have a way to email to text.

### “Dead Hosts”

The default definition for a dead host is a failure count of two consecutive times. These settings can be changed if you go to Configuration:Settings > Poller. If you scroll to the bottom of this page you will see the Host Up/Down Setting.

### Mail setup

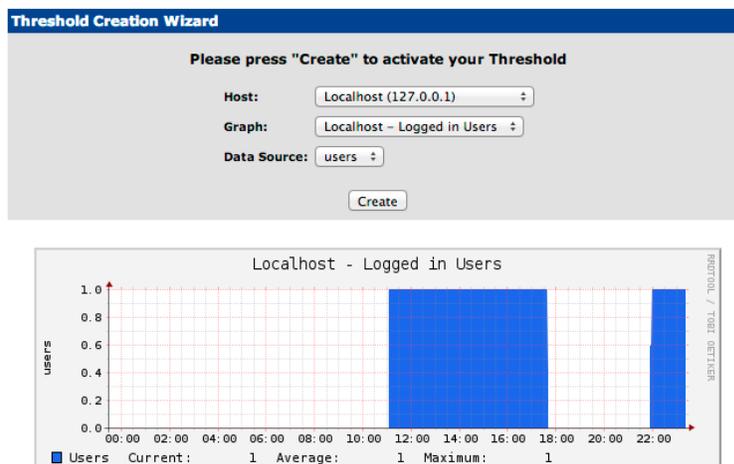
Next we will configure mail settings. Go to Configuration:Setting > Mail / DNS and in all of your mail settings. Next you will be able to check if your mail is configured correctly. After you are done making the config changes, click “Save” at the bottom. After saving you should be able to “Send a Test Email” at the top of the same page. Note that if the sending/receiving email are the same, your mail program may not notify you that you got a new message.

If you want to modify the emails that you get from cacti (Maybe to optimize them as a text message) then go to Configuration:Settings > Thresholds and scroll down to the Emailing Options section. You can then modify these messages to your needs.

<p><b>Down Host Subject</b> This is the Email subject that will be used for Down Host Messages.</p>	<input type="text" value="Host Error: &lt;DESCRIPTION&gt; (&lt;HOSTNAME&gt;) is DOWN"/>
<p><b>Down Host Message</b> This is the message that will be displayed as the message body of all UP / Down Host Messages (255 Char MAX). HTML is allowed, but will be removed for text only Emails. There are several descriptors that may be used. &lt;HOSTNAME&gt; &lt;DESCRIPTION&gt; &lt;UPTIME&gt; &lt;UPTIMETEXT&gt; &lt;DOWNTIME&gt; &lt;MESSAGE&gt; &lt;SUBJECT&gt; &lt;DOWN/UP&gt; &lt;SNMP_HOSTNAME&gt; &lt;SNMP_LOCATION&gt; &lt;SNMP_CONTACT&gt; &lt;SNMP_SYSTEM&gt; &lt;LAST_FAIL&gt; &lt;AVAILABILITY&gt; &lt;TOT_POLL&gt; &lt;FAIL_POLL&gt; &lt;CUR_TIME&gt; &lt;AVG_TIME&gt; &lt;NOTES&gt;</p>	<input type="text" value="System Error : &lt;DESCRIPTION&gt; (&lt;HOSTNAME&gt;) is &lt;DOWN/UP&gt; &lt;br&gt;Reason: &lt;MESSAGE&gt; &lt;br&gt; &lt;br&gt;Average system response : &lt;AVG_TIME&gt; ms&lt;br&gt;System availability: &lt;AVAILABILITY&gt; &lt;br&gt;Total Checks Since Clear: &lt;TOT_POLL&gt; &lt;br&gt;Total Failed Checks: &lt;FAIL_POLL&gt; &lt;br&gt;Last Date Checked DOWN : &lt;LAST_FAIL&gt; &lt;br&gt;Host Previously UP for: &lt;DOWNTIME&gt; &lt;br&gt;NOTE: &lt;NOTES&gt;"/>
<p><b>Recovering Host Subject</b> This is the Email subject that will be used for Recovering Host Messages.</p>	<input type="text" value="Host Notice: &lt;DESCRIPTION&gt; (&lt;HOSTNAME&gt;) returned from DOWN state"/>

### Custom Thresholds

As of now, we have only talked about the host being up or down. Thold can also notify you if a custom threshold has been exceeded. To create a custom Threshold, go to Management:Thresholds and click “Add” in the top right corner. You will then have to specify the host, graph, and source.



Creating a custom threshold is pretty straightforward. The threshold type that we will most likely use is “High / Low Values.” “High / Low” allows you to specify warning and alert values. One good example is if you were monitoring the humidity of your server room. You would specify Alert values of when the air is too humid and when the air is too dry. You would also specify warning values for when these values are being approached. You then have Alert and Warning email lists. Unfortunately, it doesn’t appear that you can use the notification lists (Including the global list) that we talked about earlier. If you have several techs that need to be notified then you may want to consider creating a google group and sending all the notifications there instead of using the built-in notification lists. In the end it may be easier to maintain instead of having to modify each threshold individually.

**Warning High / Low Settings**

**Warning High Threshold**  
If set and data source value goes above this number, warning will be triggered

**Warning Low Threshold**  
If set and data source value goes below this number, warning will be triggered

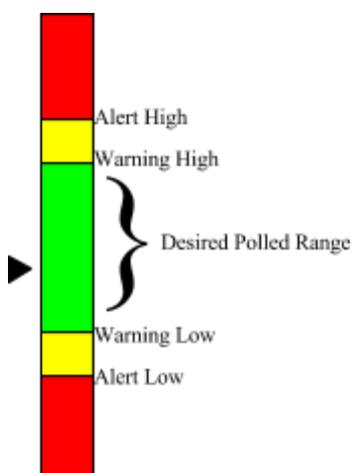
**Warning Breach Duration**  
The amount of time the data source must be in breach of the threshold for a warning to be raised.

**Alert High / Low Settings**

**High Threshold**  
If set and data source value goes above this number, alert will be triggered

**Low Threshold**  
If set and data source value goes below this number, alert will be triggered

**Breach Duration**  
The amount of time the data source must be in breach of the threshold for an alert to be raised.



Just think of the Threshold being breached when the polled value climbs above or falls below the set warning/alert values.

## Weathermap setup

As with other plugins, you'll need to download the plugin and put it into your plugins directory. Also make sure that it is chowned to the www-data user.

```
$ cd /var/www/cacti/plugins
$ sudo wget
http://www.network-weathermap.com/files/php-weathermap-
0.97c.zip
$ sudo apt-get install unzip
$ sudo unzip php-weathermap-0.97c.zip
$ sudo chown -R www-data:www-data weathermap
$ sudo nano weathermap/editor.php
```

In order to make the weathermap browser editor available, we have to enable it. Change the false to a true and save the file. The reason that the editor is not activated by default is because it does not fall under cacti's login umbrella. This means that anybody would be able to get into the editor without logging in. Next we will fix this by using apache's .htaccess to require a username/password to get into the editor.

```
// so that you can't have the editor active, and not
know about it.
$ENABLED=true;

if(! $ENABLED)
{
```

Back on the browser, we want to navigate to the Configuration:plugin Management section. You will then see Weathermap listed with a blue arrow pointing down. Click the blue arrow to finish the installation. After clicking on the blue arrow, you will see that the weathermap tab is created.

### Apache .htaccess

Now we will fix the security for the Editor. We will create an .htaccess file and an .htpasswd file. We will then make a change to our apache config then we'll be set.

```
$ sudo nano /var/www/cacti/plugins/weathermap/.htaccess
```

```
AuthUserFile /var/apacheAccess/.htpasswd
AuthType Basic
AuthName "Weathermaps Editor"
Require valid-user
```

```
$ sudo mkdir /var/apacheAccess
$ sudo nano /var/apacheAccess/.htpasswd
```

The .htpasswd file is a list of usernames and hashed passwords. Each username/password combo has to be on it's own line. An example .htaccess file looks like this.

```
sam:$apr1$BTs4OvSd$deLuVBUqrlBc/AFnwxBwY0
john:$apr1$fM1SgEZG$Mwmhag6bj8YGwW6KyA44Y/
```

To make your `.htaccess` file, go to google and type in “htpasswd generator.” The first few results should all work. The generator will ask for your username and password and when you submit, it will create the `htpasswd` line. All you should have to do is copy the text and paste it into your `.htpasswd` file. Remember that each entry should be on its own line.

Next `chown` the files to `www-data` and make sure that they can be run by `www-data`.

```
$ sudo chown www-data:www-data
/var/apacheAccess/.htpasswd
$ sudo chown www-data:www-data
/var/www/cacti/plugins/weathermap/.htaccess
$ sudo chmod 655 /var/apacheAccess/.htpasswd
$ sudo chmod 655
/var/www/cacti/plugins/weathermap/.htaccess
```

To finish up, we will have to make the change to the apache setup.

```
$ sudo nano /etc/apache2/sites-available/default
```

In the `<Directory /var/www/>` section, be sure to change the `AllowOverride` to `All`.

```
<Directory /var/www/>
    Options Indexes FollowSymLinks MultiViews
    AllowOverride All
```

```

    Order allow,deny
    allow from all
</Directory>

```

After that we can save and exit and restart apache. Now whenever we try to open the editor, it will require a password before letting us continue.

```
$ sudo service apache2 restart
```

### Weathermaps

Let's create our first weathermap. In the browser on the weathermap tab, open the editor which is found in the bottom right corner. We will create a new map, we will use this map as a template for the rest of our maps. Name this one template.conf and click "create." The .conf is required.



After creating the template, the editor will open. Take a moment to look through all the options at the top of the editor. The first thing that you should change is the size. Select "Map Properties" at the top. Adjust the map size to be slightly smaller than the size of your screen, this will allow us to use the entire screen to build our map. At this point, any image that you set as the map background will resize the map to fit that image. If you really want to use a background, it would be best to create a custom sized image and upload it to your server.

After changing the size of the map, take a look at the other options in Map Properties and in Map Style. You will also want to add a legend and possibly reposition the Timestamp. When you are done with your template, click "Change File" in the top left corner.

Next we will create a new map based on our template. Give this map a descriptive name without spaces and make sure it ends with .conf. As soon as it

opens, go to “Map Properties” and change the map title. This title can have spaces. Now, start to add a few nodes. You can do this by clicking Add Node in the top left and then clicking anywhere on your canvas. Don’t worry too much about placement because nodes can be moved. These nodes will represent the hosts on your network whether they be servers, access points, switches, or anything else. Just think about the layout of your network. As you create these nodes, be sure to give them descriptive labels which can be accessed by clicking on the node. The example below shows my “Test Switch” node. Later we will discuss customizing the nodes.

**Node Properties**

Position

Internal Name

Label

Info URL

'Hover' Graph URL  [\(Pick from Cacti\)](#)

Icon Filename

The name used for this node when defining links

After you get a few nodes in place, start creating links between them. To do this click “Add Link” then click on the first node and then the second. After the link is created, you can click on the link to open the Link Properties. The maximum bandwidth is your pipe size. The Data Source is the graph that this link will retrieve its data from. You will then be able to find your switch and select the port that you are monitoring. Pay close attention to your inputs and outputs because one nodes input is the other nodes output.

**Link Properties** Cancel Submit

Link from 'node08236' to 'node08251'

Maximum Bandwidth Into 'node08236' 100M bits/sec

Maximum Bandwidth Out of 'node08236'  Same As 'In' or  bits/sec

Data Source  [\[Pick from Cacti\]](#)

Link Width 5 pixels

Info URL

'Hover' Graph URL

IN Comment  95% ▾

OUT Comment  5% ▾

Delete Link Edit Vert Horiz Via

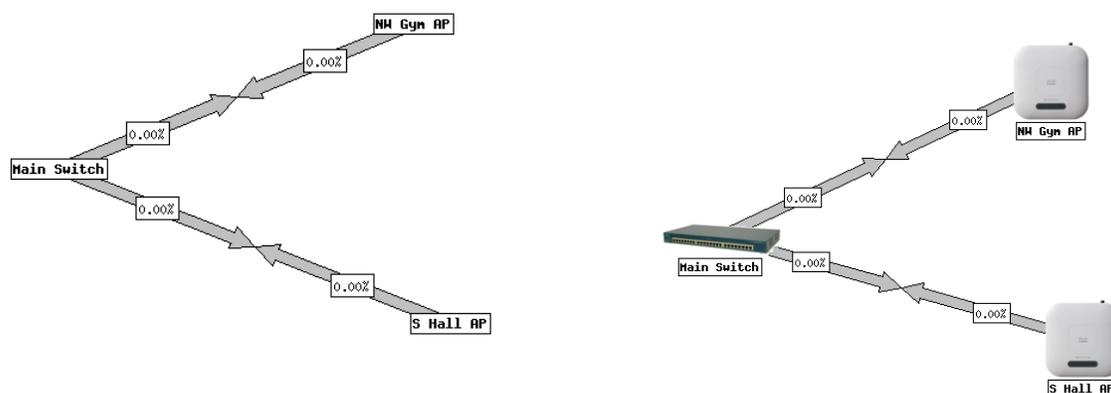
The bandwidth from the first node to the second node

After we create the link and add the data, we won't see anything different on the graph. The percentages will still remain 0.00% while in the editor. We will have to go back to cacti to actually see data flowing on the network.

You should now be able to do the basics of adding nodes and creating links between your nodes. Go ahead and start laying out your network and graphing the data that is flowing across it. Although we are not all the way done with weathermaps, we can at this point create a fully functional map. We will next talk about adding some neat features to the maps like customized nodes and mouseover graphs.

### Customizing Weathermap Nodes

This section is not required but it will show how a little bit of work can make our graphs look a lot better.



We will create a short script that will allow us to download an image from the internet, resize it, make it transparent, and drop it in our weathermap images folder while taking care of all the permissions for us. This script will use imagemagick so we will start by installing this.

```
$ sudo apt-get install imagemagick
$ cd /var/www/cacti/plugins/weathermap/images
$ sudo mkdir scripts
$ sudo chown www-data:www-data scripts
$ cd scripts
$ sudo nano getImage
```

Now with nano, write the following script.

```
#!/bin/bash
DOWNLOAD="$1"
SIZE="$2"
OUTPUT="$3"
wget $DOWNLOAD -O tempImage
convert tempImage -transparent white -resize $SIZE $OUTPUT
chown www-data:www-data $OUTPUT
mv $OUTPUT ../
rm tempImage
```

The script that you just made will copy an image from the internet and turn all the white part of the image transparent. It will then resize the image and put it in

the weathermap images folder. It will take care of chowning the downloaded picture file for you.

Now make this script executable and change the owner of the script.

```
$ sudo chown www-data:www-data getImage
$ sudo chmod 755 getImage
```

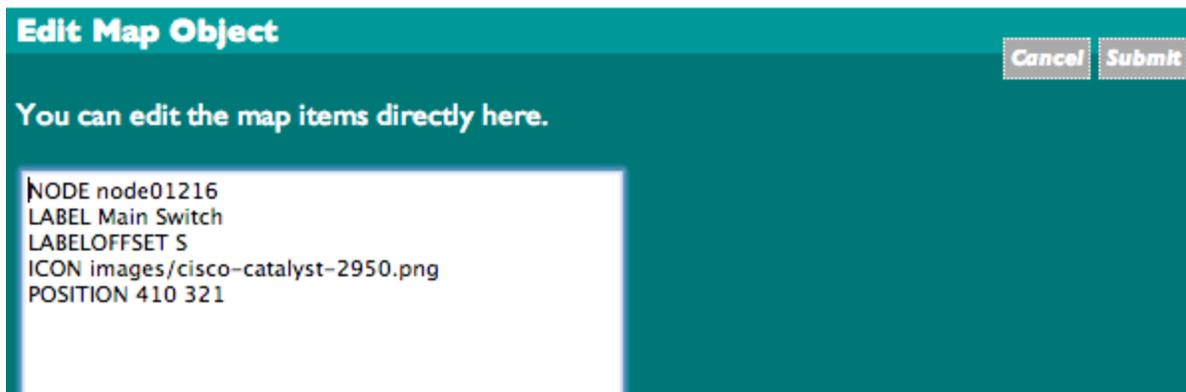
Ok, you're set. To run this script you must provide the url of the image you want to download, the size you want, and the output name. Be sure that all of your outputs are in the png form. Now you can do a google search for the image that you want. Try to find ones with a white background.

```
$ sudo ./getImage [image URL] [width]x[height] [output
name ending in .png]
```

Here is an example.

```
$ sudo ./getImage www.example.com/image.jpg 80x80
output.png
```

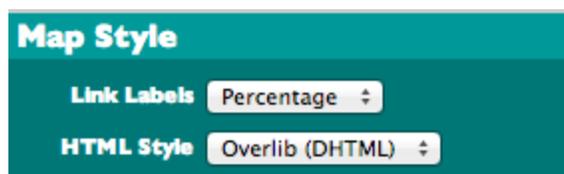
The next time that you refresh your editor you will see that you can change the node "Icon Filename" that is found in the Node Properties to your new image that you just created. You will also notice that the label covers the image, to fix this select the node again and click edit. Add LABELOFFSET S to the configuration. This will move the label below the icon.



Go ahead and download a few images and go in and make any changes to your nodes that you want to.

### Weathermaps MOUSEOVER effect

Now we will setup our weathermaps to show the graph when you hover over the link between the nodes. The first thing you need to verify is that the “HTML Style” is set to Overlib. This is found in the Map Style section of the editor. By default, it appears that the HTML Style is set to Overlib however it is not in the actual config file yet until you click “submit”



You can verify that the change is actually in your config by opening your config and checking it there. Go to the configs directory and nano your config file to make sure.

```
$ cd /var/www/cacti/plugins/weathermap/configs
$ ls
```

You will then see a list of config files. Type in nano and the name of the file.

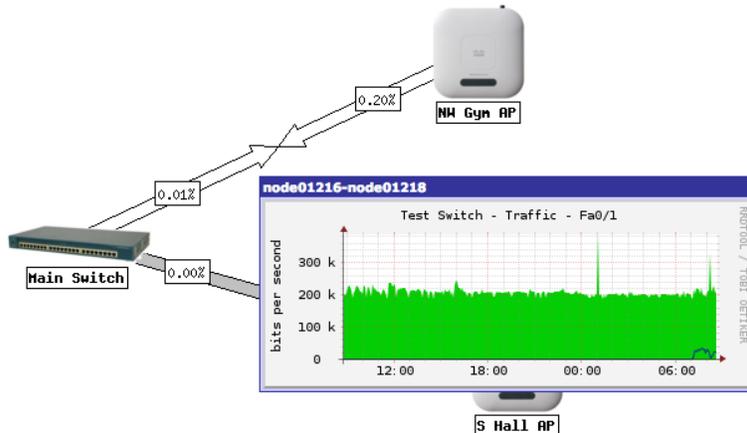
```
$ sudo nano example.conf
```

```
# Automatically generated by php-weathermap v0.97c

WIDTH 900
HEIGHT 725
HTMLSTYLE overlib
TITLE District Office
```

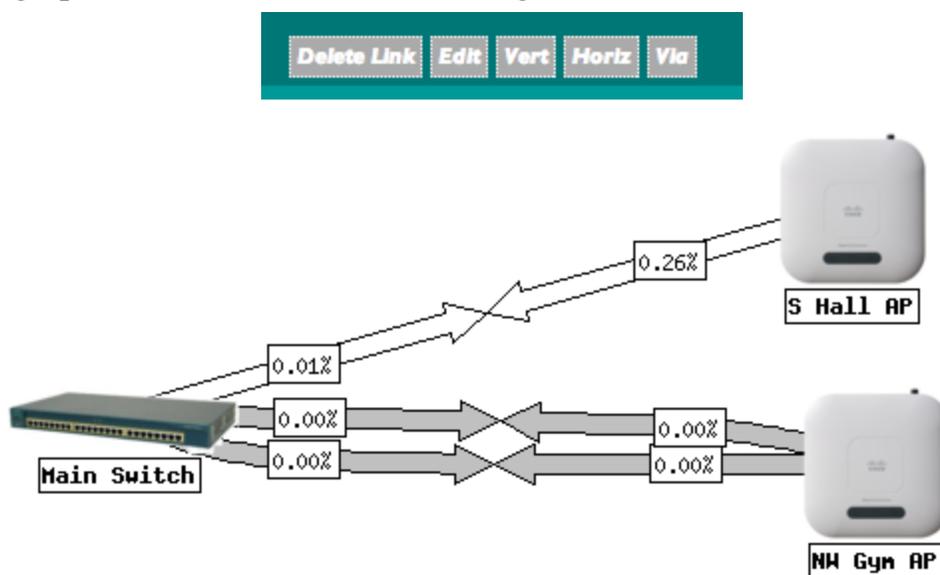
If you see the HTMLSTYLE overlib in there, then you are set. After we leave

the editor and return to cacti, we will be able to see the hover effect of the graphs.

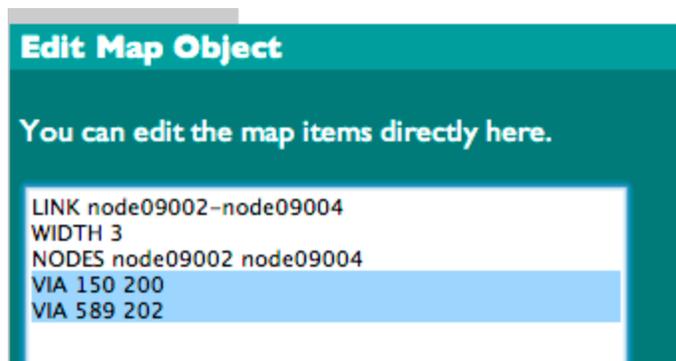


## VIA

Via could be very useful in the design of yourweathermap. Via allows you to change the links from straight lines into curved lines. This allows you to get around objects or even allows you to create two links between nodes and be able to see the data from both nodes. Via is found in the Link Properties box at the bottom. Again, to access the Link Properties, just click a link. After selecting via, your mouse will turn into crosshairs and you will be able to select a location on your graph for that link to travel through.



You can add more than one via point for the link by hard-coding it into the configuration. Click on “Edit” at the bottom of Link Properties and on the Edit Map Object box you can add another VIA point. You will probably have to play around with it to get them in the perfect spots. Whenever your mouse is a set of crosshairs, you will be able to see the coordinates and can use that to make placement easier.



### Adding graphs to cacti.

After creating your graphs, you will want to jump onto the weathermaps tab but will be only disappointed to see the message “*You Have No Maps*”. No need to worry at this point. Go back to the console tab and go to Management:Weathermaps. In the top right corner click Add.

Weathermaps							Add
Config File	Title	Group	Active	Settings	Sort Order	Accessible By	
ALL MAPS	(special settings for all maps)			standard			
simple.conf	test	Weathermaps	Yes	standard	↕	admin	✘
district.conf	District Office	Weathermaps	Yes	standard	↕	admin	✘

Last Completed Run: Fri, 01 Nov 13 15:04:03 -0600: 2 maps were run in 1 seconds with 0 warnings.

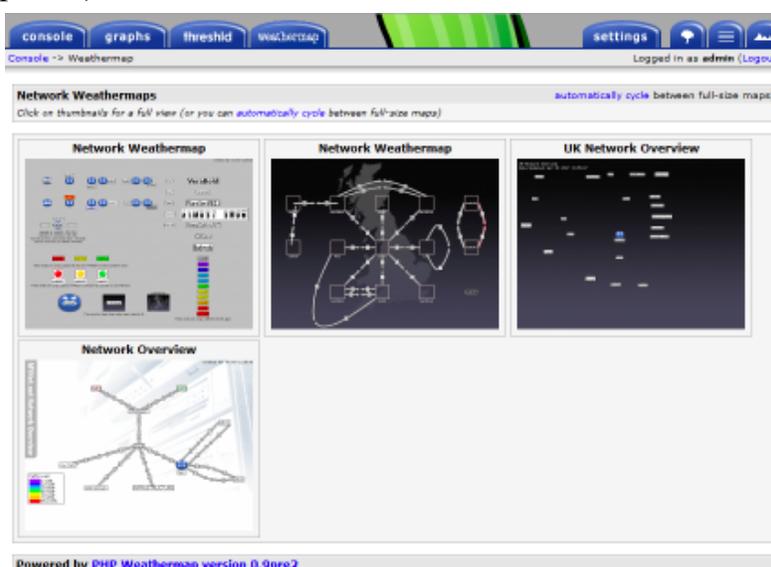
Local Documentation -- Weathermap Website -- Weathermap Editor -- This is version 0.97c

You will then be presented a list of all the maps you created. Go ahead and click Add by each of them. Now when you go to the weathermap tab, you will see the message that the map hasn’t been created yet. Wait 5 or 10 minutes and your map will be created. Make sure that you try out the Mouseover effect on the links.

### When Nodes represent Networks.

Oftentimes you will run into the case where a node represents a network. For

example, in your district, you will have the backbone of your network. You will be able to see all of the schools and the amount of data flowing to/from them. Now we will briefly discuss if you wanted to be able to click on a node and show you that schools network. When you have at least two weathermaps formed and added to cacti, you will notice that each map will have its own unique url. To be sure you are in the right spot, go to cacti and then click the weathermap tab. Now when you click on a graph, you will see that graphs url. (Note that if you change maps at this point, the url of the first map that you clicked will stay in the address bar. You will have to click the weathermap tab to reset this in order to get another maps url)



Now, copy the url of the sub-networks map. In this example you would copy the url of the schools weathermap. Now return to the editor and open the district configuration. You can then click on the node that represents the specific school and paste the url in the Info URL section. Now you can save it and return to the cacti weathermaps tab and try it out. If everything goes right, you should be able to navigate your maps just by clicking on the nodes.

### Discovery Plugin

The last plugin that we will discuss makes finding hosts to add to cacti very simple. In short, the plugin will ping all the addresses on your network and if it gets a response, it will try to access them with a list of community strings that you give it. It will even tell you the hosts name and all the information about the host if it gets a positive match with a community string.

Install this plugin like you did the other plugins.

```
$ cd /var/www/cacti/plugins
$ sudo wget
http://docs.cacti.net/_media/plugin:discovery-v1.5-1.tgz
z
$ sudo tar -xvzf plugin\:discovery-v1.5-1.tgz
--force-local
$ sudo chown -R www-data:www-data discovery/
```

Now return to the browser and go to plugin management to finish installing it. By clicking on the circle with the arrow in it.

After it is all the way installed, we will have to configure it before first use. Go to Configuration:Settings and click on the Misc tab. Fill out as much information that you can. You can enter in more than one SNMP community by separating them with a colon ':'. I strongly suggest making sure public and private are in the list so you know which hosts have the default community strings and need to be changed. Also make sure that you change the Poller

Frequency from disabled. This will allow us to run the poller manually for the first time.

Cacti Settings (Misc)	
Discover	
<b>Subnet(s) to scan</b> This is the subnet we will scan. (Use commas for multiple subnets. ex: 192.168.100.*,192.168.0.0/24)	192.168.1.*
<b>DNS Server</b> This is the DNS Server used to resolve names. Leave blank to disable resolving.	8.8.8.8
<b>Ping Method</b> This is the type of protocol used by Ping to determine if the host is responding. Once it pings, it will be scanned for snmp availability.	UDP
<b>SNMP Communities</b> Fill in the list of available SNMP Community Names to test for this device. Each Community Name must be separated by a colon ':'. These will be tested sequentially.	public:private:MyCrAzY5tRing:5  Mp
<b>Poller Frequency</b> Choose how often to attempt to find devices on your network.	Every Day
<b>Start Time for Polling</b> When would you like the first polling to take place. All future polling times will be based upon this start time. A good example would be 12:00AM.	12:00am
<b>Rerun Data Queries</b> This option will rerun all data queries on current hosts, and will create graphs for all assigned graph templates and data queries.	<input type="checkbox"/> Rerun Data Queries
<b>Create Graphs for Up Interfaces Only</b> This option will create graphs for interfaces that are showing as Up.	<input type="checkbox"/> Create Graphs for Up Interfaces Only

After you have as much as you can filled out save your changes and return to your SSH session to run the poller manually.

```
$ cd discovery
$ sudo php findhosts.php -d -f
```

The poller will then proceed to ping all of the addresses and will try all the community strings that you have given it. It will try both versions of SNMP too. As soon as it is done, you can return to the browser and go to the Discovery tab. You should see the list populated with devices on your network. Go ahead and add the ones that you need to monitor.

1	NP101E006	HP ETHERNET MULTI-ENVIRONMENT,ROM G.06.00,JETDIRECT,JD33,EEPROM G.08.49	7 days 1 hours	Up	Up
7	IR-ADV C5250	Canon IR-ADV C5250 /P	7 days 0 hours	Up	Up
3				Down	Up
2				Down	Up
1				Down	Up

This concludes this tutorial on cacti and a few of its plugins. The best way to become familiar with cacti is to jump in with both feet. Even though this training wasn't a complete training on cacti, it should have given you the ability to navigate cacti and add plugins. You should refer to your maps/graphs often, especially while troubleshooting things such as slow networks.