

## Laboratório 5 - Gerência de redes

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### Instalação do Apache

```
root@xxxx-370E4K:/home/xxxx# apt-get install apache2 -y
```

### Instalando dependências necessárias

```
ubuntu@ip-172-31-19-0:/var/www/html$ sudo apt-get install snmp php-snmp rrdtool librrds-perl unzip curl git gnupg2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

### Instalando pacotes necessários (MariaDB, PHP e outras extensões PHP necessárias).

```
no in guests are running outdaced hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-19-0:/var/www/html$ sudo apt-get install mariadb-server php php-mysql libapache2-mod-php php-xml php-ldap php-mbstring
php-gd php-gmp -y
Reading package lists... Done
```

### Editar os arquivos php.ini

```
ubuntu@ip-172-31-19-0:/etc/php/8.1$ sudo nano apache2/php.ini
ubuntu@ip-172-31-19-0:/etc/php/8.1$
```

```
ubuntu@ip-172-31-19-0:/etc/php/8.1/cli$ sudo nano php.ini
ubuntu@ip-172-31-19-0:/etc/php/8.1/cli$
```

memory\_limit = 512M

max\_execution\_time = 60

date.timezone = America/Sao\_Paulo

### Reinicie o Apache

```
ubuntu@ip-172-31-19-0:/etc/php/8.1/apache2$ nano php.ini
ubuntu@ip-172-31-19-0:/etc/php/8.1/apache2$ sudo systemctl restart apache2
ubuntu@ip-172-31-19-0:/etc/php/8.1/apache2$
```

### Configurar servidor MariaDB

edite o arquivo de configuração padrão do MariaDB e ajuste algumas configurações

```
ubuntu@ip-172-31-19-0:/etc/mysql/mariadb.conf.d$ sudo nano 50-server.cnf
```

Modificar ou adicionar as seguintes linhas:

collation-server = utf8mb4\_unicode\_ci

character-set-server=utf8mb4

max\_heap\_table\_size = 128M

tmp\_table\_size = 64M

innodb\_buffer\_pool\_instances=9

join\_buffer\_size = 64M

innodb\_file\_format = Barracuda

```
innodb_large_prefix = 1
innodb_buffer_pool_size = 1G
innodb_flush_log_at_timeout = 3
innodb_read_io_threads = 32
innodb_write_io_threads = 16
innodb_io_capacity = 5000
innodb_io_capacity_max = 10000
```

## Reiniciar o MariaDb

```
ubuntu@ip-172-31-19-0:/etc/mysql/mariadb.conf.d: sudo nano 00-server.conf
ubuntu@ip-172-31-19-0:/etc/mysql/mariadb.conf.d: sudo systemctl restart mariadb
ubuntu@ip-172-31-19-0:/etc/mysql/mariadb.conf.d:
```

## Login no shell MariaDB

```
ERROR 1698 (28000): Access denied for user 'root'@'localhost'
ubuntu@ip-172-31-19-0:/etc/mysql/mariadb.conf.d: sudo mysql -u root -p
Enter password:
```

## Preparando banco de dados para o Cacti

```
mysql> create database cacti;
MariaDB [(none)]> create database cacti;
Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]> GRANT ALL ON cacti.* TO cactiuser@localhost IDENTIFIED BY 'cactiuser';
Query OK, 0 rows affected (0.002 sec)
```

```
MariaDB [(none)]> flush privileges;
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> exit
Bye
```

```
ubuntu@ip-172-31-19-0:/etc/mysql/mariadb.conf.d: cd ..
ubuntu@ip-172-31-19-0:/etc/mysql: sudo mysql mysql < /usr/share/mysql/mysql_test_data_timezone.sql
ubuntu@ip-172-31-19-0:/etc/mysql:
```

```
MariaDB [(none)]> GRANT SELECT ON mysql.time_zone_name TO cactiuser@localhost;
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> flush privileges;
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> exit
Bye
```

## Instalação e configuração o Cacti

```
ubuntu@ip-172-31-19-0:~$ wget https://www.cacti.net/downloads/cacti-latest.tar.gz
2023-05-15 00:03:00 https://www.cacti.net/downloads/cacti-latest.tar.gz
cacti-1.2.24/include/config.php.dist
ubuntu@ip-172-31-19-0:~$ tar -zxvf cacti-latest.tar.gz
```

```
ubuntu@ip-172-31-19-0:~$ sudo mv cacti-1* /var/www/html/cacti
ubuntu@ip-172-31-19-0:~$ mysql cacti < /var/www/html/cacti/cacti.sql
ERROR 1698 (28000): Access denied for user 'ubuntu'@'localhost'
ubuntu@ip-172-31-19-0:~$ sudo mysql cacti < /var/www/html/cacti/cacti.sql
```

Abrir o arquivo de configuração do php

```
ubuntu@ip-172-31-19-0:~$ sudo nano /var/www/html/cacti/include/config.php
```

Alterar as seguintes linhas

```
$database_type = 'mysql';
$database_default = 'cacti';
$database_hostname = 'localhost';
$database_username = 'cactiuser';
$database_password = 'cactiuser';
$database_port = '3306';
```

Criar arquivo de log

```
ubuntu@ip-172-31-19-0:/var/www/html/cacti/include$ sudo touch /var/www/html/cacti/log/cacti.log
```

Liberando acesso ao diretório

```
ubuntu@ip-172-31-19-0:/var/www/html/cacti/include$ sudo chown -R www-data:www-data /var/www/html/cacti/
ubuntu@ip-172-31-19-0:/var/www/html/cacti/include$ sudo chmod -R 775 /var/www/html/cacti/
```

Criando novo arquivo de tarefa cacti

```
ubuntu@ip-172-31-19-0:/var/www/html/cacti/include$ sudo nano /etc/cron.d/cacti
ubuntu@ip-172-31-19-0:/var/www/html/cacti/include$
```

```
*/* * * * * www-data php /var/www/html/cacti/poller.php > /dev/null 2>&1
```

## Configurando o Apache para o Cacti

```
ubuntu@ip-172-31-19-0:/var/www/html/cacti/include$ sudo nano /etc/apache2/sites-available/cacti.conf
ubuntu@ip-172-31-19-0:/var/www/html/cacti/include$ sudo nano /etc/apache2/sites-available/cacti.conf
```

Alias /cacti /var/www/html/cacti

<Directory /var/www/html/cacti>

Options +FollowSymLinks

AllowOverride None

<IfVersion >= 2.3>

Require all granted

</IfVersion>

<IfVersion < 2.3>

Order Allow,Deny

Allow from all

</IfVersion>

AddType application/x-httpd-php .php

<IfModule mod\_php.c>

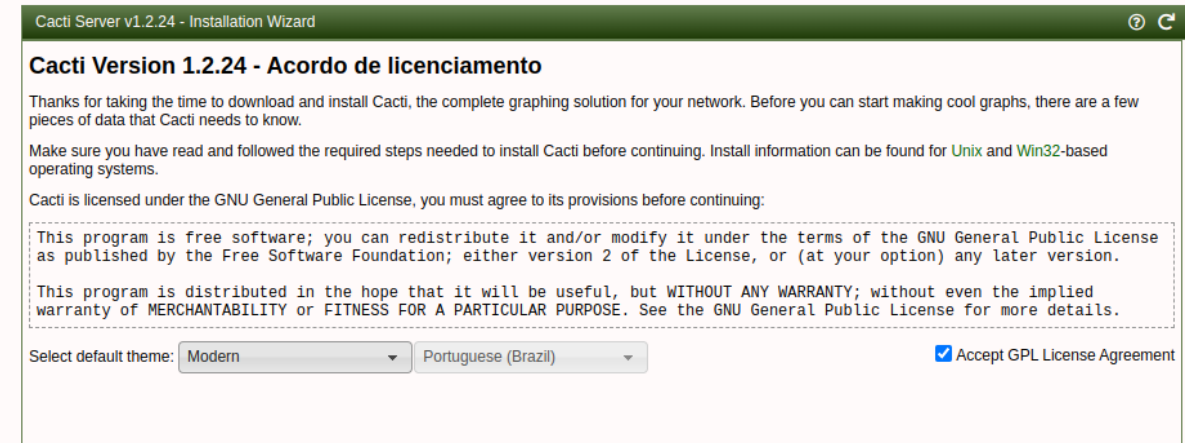
php\_flag magic\_quotes\_gpc Off

```
php_flag short_open_tag On
php_flag register_globals Off
php_flag register_argc_argv On
php_flag track_vars On
# this setting is necessary for some locales
php_value mbstring.func_overload 0
php_value include_path .
</IfModule>
```

```
DirectoryIndex index.php
</Directory>
```

```
ubuntu@ip-172-31-19-0:/var/www/html/cacti/include$ a2ensite cacti
Site cacti already enabled
ubuntu@ip-172-31-19-0:/var/www/html/cacti/include$ sudo systemctl restart apache2
```

## Configurando o Cacti no navegador



The screenshot shows the 'Cacti Server v1.2.24 - Installation Wizard' window. The title bar is green with a white question mark icon and a refresh icon. The main content area has a light pink background. At the top, it says 'Cacti Version 1.2.24 - Acordo de licenciamento'. Below this, there is a paragraph of text: '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.' This is followed by another paragraph: '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.' Then, it states: 'Cacti is licensed under the GNU General Public License, you must agree to its provisions before continuing:'. Below this is a dashed box containing the full text of the GNU General Public License. At the bottom, there are two dropdown menus: 'Select default theme:' with 'Modern' selected, and 'Portuguese (Brazil)' selected. To the right of these is a checkbox labeled 'Accept GPL License Agreement' which is checked.

Cacti Server v1.2.24 - Installation Wizard

### Cacti Version 1.2.24 - Acordo de licenciamento

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.

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

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

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.

Select default theme: Modern Portuguese (Brazil) ☒ Accept GPL License Agreement

## Tipo de instalação

### 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 Primary site.

New Primary Server ▼

The following information has been determined from Cacti's configuration file. If it is not correct, please edit "include/config.php" before continuing.

### Local Database Connection Information

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

Anterior

Próximo

## Directory Permission Checks

Please ensure the directory permissions below are correct before proceeding. During the install, these directories need to be owned by the Web Server user. These permission changes are required to allow the Installer to install Device Template packages which include XML and script files that will be placed in these directories. If you choose not to install the packages, there is an 'install\_package.php' cli 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.

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

### Potential permission issues



### Required Writable at Install Time Only



### Required Writable after Install Complete



Cacti Server v1.2.24 - Installation Wizard

### Critical Binary Locations and Versions

Make sure all of these values are correct before continuing.

PHP Binary Path	/usr/bin/php	✓
RRDtool Binary Path	/usr/bin/rrdtool	✓
snmpwalk Binary Path	/usr/bin/snmpwalk	✓
snmpget Binary Path	/usr/bin/snmpget	✓
snmpbulkwalk Binary Path	/usr/bin/snmpbulkwalk	✓
snmpgetnext Binary Path	/usr/bin/snmpgetnext	✓
snmptrap Binary Path	/usr/bin/snmptrap	✓
Sendmail Path	/usr/sbin/sendmail	✓
Spine Binary File Location	/usr/local/spine/bin/spine	✓
Spine Config File Path	Enter a valid file path	✓
Cacti Log Path	/var/www/html/cacti/log/cacti.log	✓
Poller Standard Error Log Path	/var/www/html/cacti/log/cacti_stderr.log	✓
RRDtool Version	RRDtool 1.7.2+	

Cacti Server v1.2.24 - Installation Wizard

### Input Validation Whitelist Protection

Cacti Data Input methods that call a script can be exploited in ways that a non-administrator can perform damage to either files owned by the poller account, and in cases where someone runs the Cacti poller as root, can compromise the operating system allowing attackers to exploit your infrastructure.

Therefore, several versions ago, Cacti was enhanced to provide Whitelist capabilities on the these types of Data Input Methods. Though this does secure Cacti more thoroughly, it does increase the amount of work required by the Cacti administrator to import and manage Templates and Packages.

The way that the Whitelisting works is that when you first import a Data Input Method, or you re-import a Data Input Method, and the script and or arguments change in any way, the Data Input Method, and all the corresponding Data Sources will be immediatly disabled until the administrator validates that the Data Input Method is valid.

To make identifying Data Input Methods in this state, we have provided a validation script in Cacti's CLI directory that can be run with the following options:

- php -q input\_whitelist.php --audit** - This script option will search for any Data Input Methods that are currently banned and provide details as to why.
- php -q input\_whitelist.php --update** - This script option un-ban the Data Input Methods that are currently banned.
- php -q input\_whitelist.php --push** - This script option will re-enable any disabled Data Sources.

It is strongly suggested that you update your config.php to enable this feature by uncommenting the **\$input\_whitelist** variable and then running the three CLI script options above after the web based install has completed.

Check the Checkbox below to acknowledge that you have read and understand this security concern

☒ I have read this statement

Cacti Server v1.2.24 - Installation Wizard

### Default Profile

Please select the default Data Source Profile to be used for polling sources. This is the maximum amount of time between scanning devices for information so the lower the polling interval, the more work is placed on the Cacti Server host. Also, select the intended, or configured Cron interval that you wish to use for Data Collection.

Default Profile	5 Minute Collection
Cron Interval	A cada 5 Minutos

### Default Automation Network

Cacti can automatically scan the network once installation has completed. This will utilise the network range below to work out the range of IPs that can be scanned. A predefined set of options are defined for scanning which include using both 'public' and 'private' communities.

If your devices require a different set of options to be used first, you may define them below and they will be utilized before the defaults

All options may be adjusted post installation

#### Opções padrão

Modo de Digitalização	On
Network Range	192.168.1.0/24
Additional Defaults	On

Cacti Server v1.2.24 - Installation Wizard

### Configuração do Tema

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

Modelos				
Nome	Descrição	Autor	Página Inicial	
Apache_Webserver.xml.gz	Apache Webserver Device Package	The Cacti Group	cacti.net	<input checked="" type="checkbox"/>
Cacti_Stats.xml.gz	Cacti Stats Device Package	The Cacti Group	cacti.net	<input checked="" type="checkbox"/>
Cisco_Router.xml.gz	Cisco Router Device Package	The Cacti Group	cacti.net	<input checked="" type="checkbox"/>
Citrix_NetScaler_VPX.xml.gz	Citrix NetScaler VPX Package	The Cacti Group	cacti.net	<input checked="" type="checkbox"/>
ESXi_Device.xml.gz	ESXi Device Device Package	The Cacti Group	cacti.net	<input checked="" type="checkbox"/>
Generic_SNMP_Device.xml.gz	Generic SNMP Device Package	The Cacti Group	cacti.net	<input checked="" type="checkbox"/>
Local_Linux_Machine.xml.gz	Local Linux Machine Device Package	The Cacti Group	cacti.net	<input checked="" type="checkbox"/>
NetSNMP_Device.xml.gz	Net-SNMP Device Package	The Cacti Group	cacti.net	<input checked="" type="checkbox"/>
PING_Advanced_Ping.xml.gz	PING - Advanced Ping Graph Template Package	The Cacti Group	cacti.net	<input checked="" type="checkbox"/>
Synology_NAS.xml.gz	Synology NAS Device Package	The Cacti Group	cacti.net	<input checked="" type="checkbox"/>
Windows_Device.xml.gz	Windows Device Package	The Cacti Group	cacti.net	<input checked="" type="checkbox"/>

Cacti Server v1.2.24 - Installation Wizard

### Server Collation

Your server collation appears to be UTF8 compliant

### Database Collation

Your database default collation appears to be UTF8 compliant

### Table Setup

All your tables appear to be UTF8 and Dynamic row format compliant

Cacti Server v1.2.24 - Installation Wizard

### Confirm Installation

Your Cacti Server is almost ready. Please check that you are happy to proceed.

**NOTE:** Press 'Confirm Installation' then click 'Instalar' to complete the installation process after selecting your Device Templates.

☒ Confirm Installation



## Completo

Your Cacti Server v1.2.24 has been installed/updated. You may now start using the software.

### Process Log

```
2023-05-14 22:36:44 - INSTALL: always: Installation was started at 2023-05-15 01:36:24, completed at 2023-05-15 01:36:44
2023-05-14 22:36:44 - INSTALL: always: Finished INSTALL Process for v1.2.24
2023-05-14 22:36:44 - INSTALL: always: Generating RSA Key Pair
2023-05-14 22:36:43 - INSTALL: always: Repopulating SNMP Agent cache
2023-05-14 22:36:43 - INSTALL: always: Repopulating poller cache
2023-05-14 22:36:43 - INSTALL: always: Adding Device to Default Tree
2023-05-14 22:36:43 - INSTALL: always: Creating Graphs for Default Device
2023-05-14 22:36:43 - INSTALL: always: Device Template for First Cacti Device is 7
2023-05-14 22:36:43 - INSTALL: always: Updating automation network (1), mode "on" => "on", subnet "192.168.1.0/24" =>
192.168.1.0/24"
2023-05-14 22:36:43 - INSTALL: always: Mapping Automation Template for Device Template 'Cisco Router'
2023-05-14 22:36:43 - INSTALL: always: Mapping Automation Template for Device Template 'Windows Device'
2023-05-14 22:36:43 - INSTALL: always: Mapping Automation Template for Device Template 'Net-SNMP Device'
2023-05-14 22:36:43 - INSTALL: always: Repairing Automation Rules
2023-05-14 22:36:43 - INSTALL: always: Import of Package #11 'Windows_Device.xml.gz' under Profile '1' succeeded
2023-05-14 22:36:42 - INSTALL: always: About to import Package #11 'Windows_Device.xml.gz'.
2023-05-14 22:36:42 - INSTALL: always: Import of Package #10 'Synology_NAS.xml.gz' under Profile '1' succeeded
2023-05-14 22:36:40 - INSTALL: always: About to import Package #10 'Synology_NAS.xml.gz'.
2023-05-14 22:36:40 - INSTALL: always: Import of Package #9 'PING_Advanced_Ping.xml.gz' under Profile '1' succeeded
2023-05-14 22:36:39 - INSTALL: always: About to import Package #9 'PING_Advanced_Ping.xml.gz'.
2023-05-14 22:36:39 - INSTALL: always: Import of Package #8 'NetSNMP_Device.xml.gz' under Profile '1' succeeded
2023-05-14 22:36:37 - INSTALL: always: About to import Package #8 'NetSNMP_Device.xml.gz'.
2023-05-14 22:36:37 - INSTALL: always: Import of Package #7 'Local_Linux_Machine.xml.gz' under Profile '1' succeeded
2023-05-14 22:36:37 - INSTALL: always: About to import Package #7 'Local_Linux_Machine.xml.gz'.
2023-05-14 22:36:37 - INSTALL: always: Import of Package #6 'Generic_SNMP_Device.xml.gz' under Profile '1' succeeded
2023-05-14 22:36:36 - INSTALL: always: About to import Package #6 'Generic_SNMP_Device.xml.gz'.
2023-05-14 22:36:36 - INSTALL: always: Import of Package #5 'ESXi_Device.xml.gz' under Profile '1' succeeded
2023-05-14 22:36:35 - INSTALL: always: About to import Package #5 'ESXi_Device.xml.gz'.
2023-05-14 22:36:35 - INSTALL: always: Import of Package #4 'Citrix_NetScaler_VPX.xml.gz' under Profile '1' succeeded
2023-05-14 22:36:28 - INSTALL: always: About to import Package #4 'Citrix_NetScaler_VPX.xml.gz'.
```

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[console](#) [Gráficos](#) [Relatórios](#) [Registros](#)

[console](#)

Logado como admin

Version 1.2.24

Main Console

Criar

Gerenciamento

Coleta de Dados

Modelos

Automação

Predefinições

Importar/Exportar

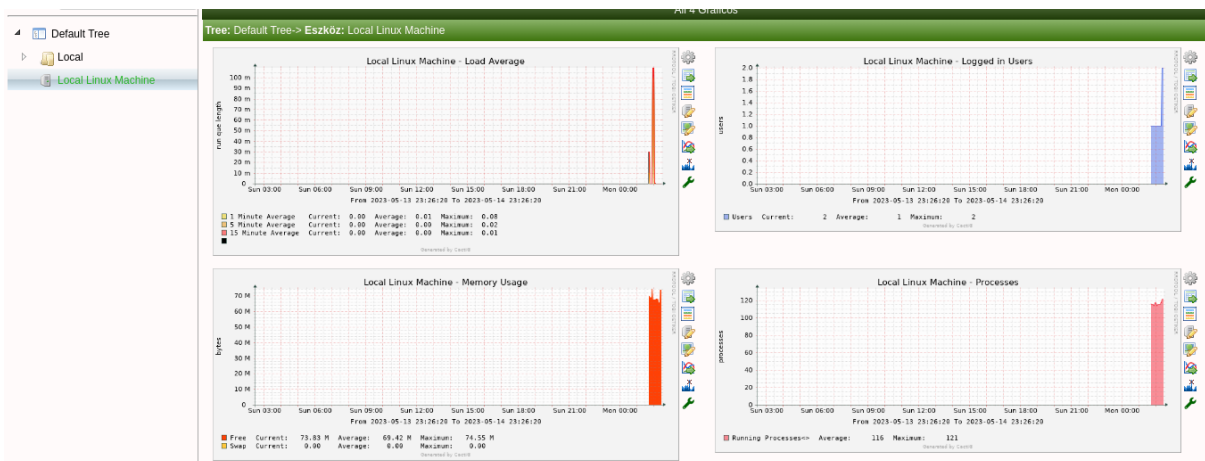
Configuração

Ferramentas

Solução de problemas

You are now logged into **Cacti**. You can follow these basic steps to get started.

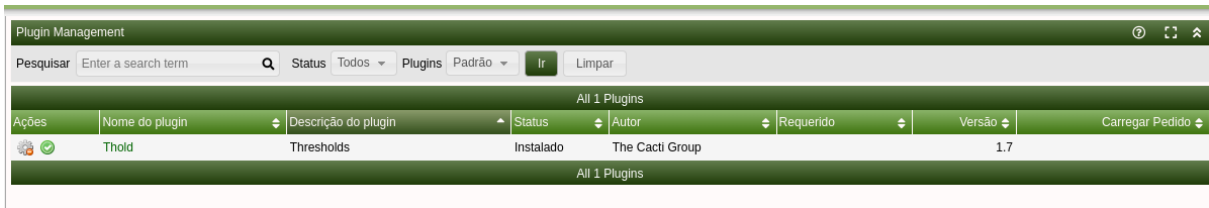
- Create devices for network
- Create graphs for your new devices
- View your new graphs





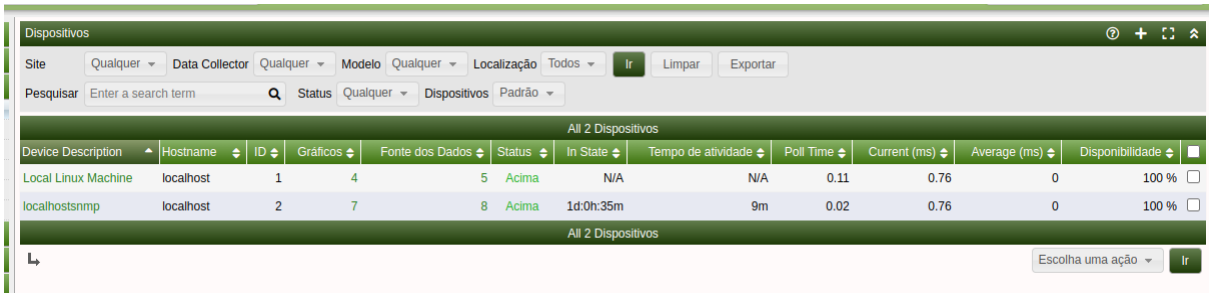
Instalando plugin Thold no Cacti

```
ubuntu@ip-172-31-19-0:/var/www/html$ cd /var/www/html/cacti/plugins/
ubuntu@ip-172-31-19-0:/var/www/html/cacti/plugins$
ubuntu@ip-172-31-19-0:/var/www/html/cacti/plugins$ sudo wget -O thold.zip https://github.com/Cacti/plugin_thold/archive/develop.zip
ubuntu@ip-172-31-19-0:/var/www/html/cacti/plugins$ unzip thold.zip
Archive: thold.zip
  inflating: plugin_thold-develop/
root@ip-172-31-19-0:/var/www/html/cacti/plugins# sudo mv plugin_thold-develop thold
```



Atividade prática

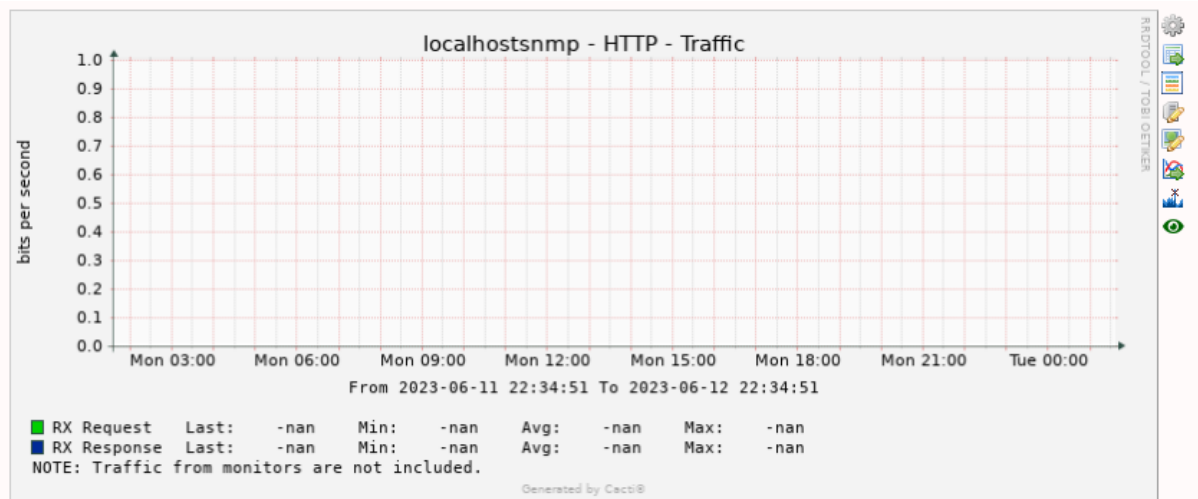
1. Adicione um ou mais dispositivos no Cacti, lembrando caso o dispositivo seja Windows é preciso habilitar o SNMP, caso seja Linux é preciso ter o SNMP instalado no dispositivo.



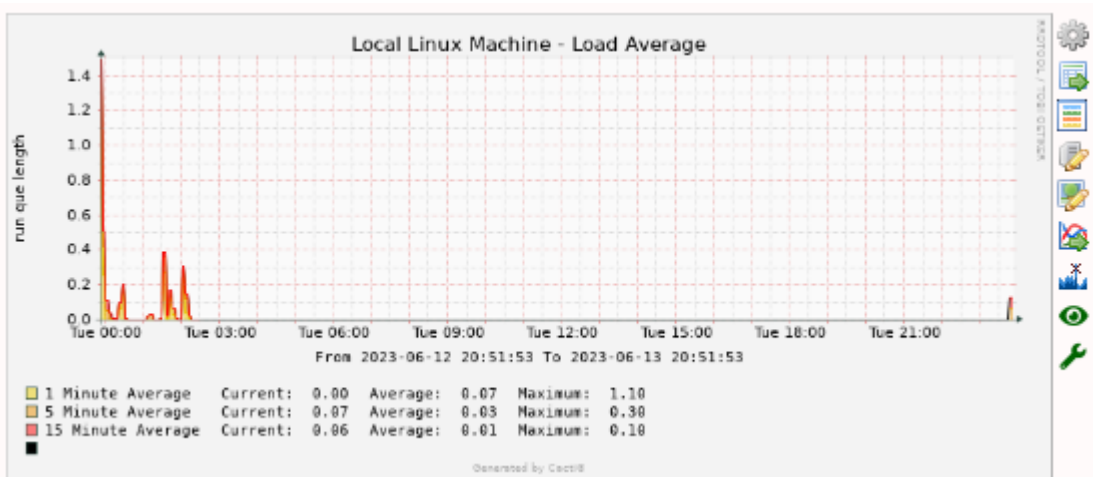
2. Adicione os seguintes gráficos aos dispositivos criados.



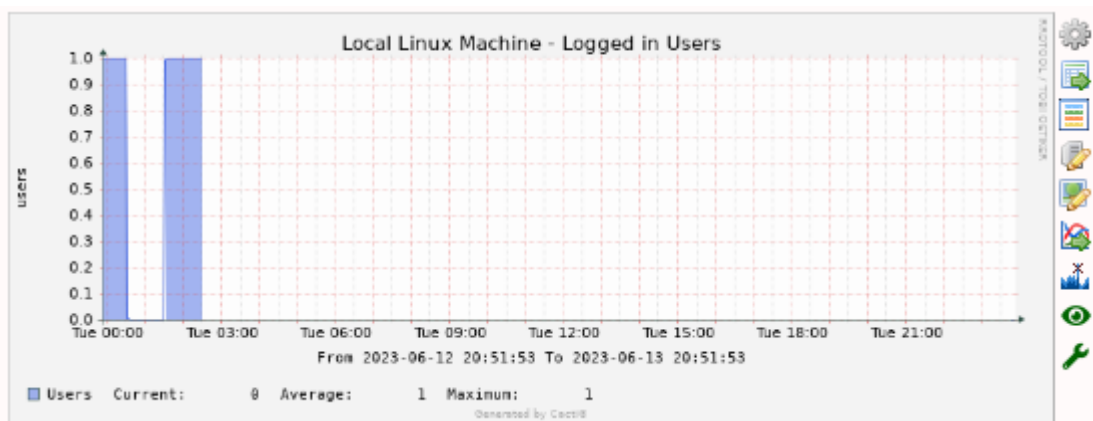
(a) Tráfego de uma interface do dispositivo;



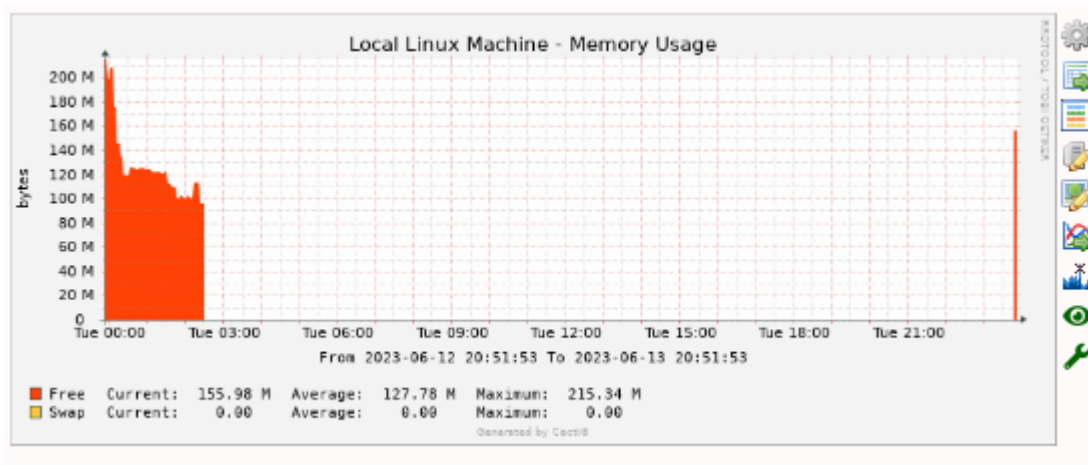
(b) Carga média (Load Average);



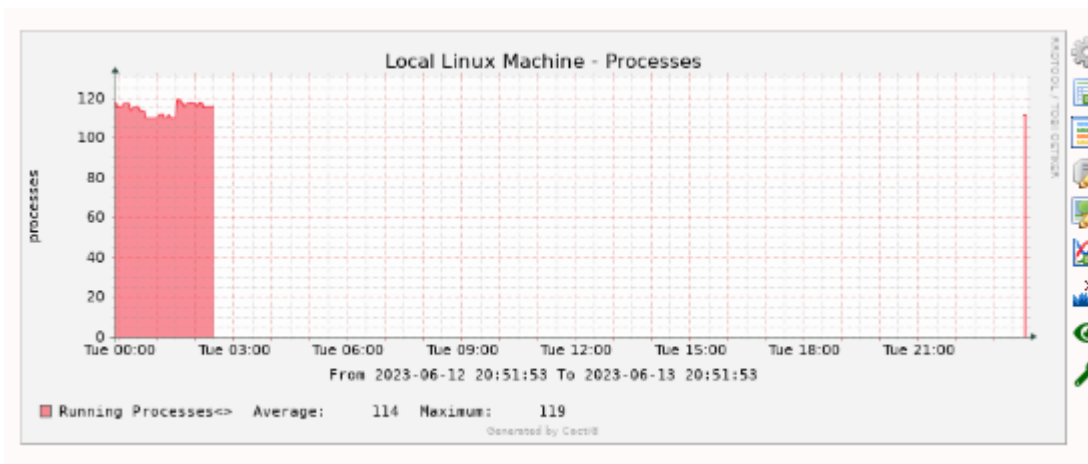
(c) Usuários Logados (Logged Users);



**(d) Uso de memória (Memory usage);**



**(e) Processos (Process);**



**3. Na aba configuração, crie um grupo de usuários com o nome de sua preferência e adicione um novo usuário neste grupo.**

Gerenciamento de grupos de usuários

Pesquisar   Grupos

Nome do Grupo	Membros	Descrição
PraticaCacti	1	

↩

Gerenciamento de grupos de usuários [editar: PraticaCacti]

Pesquisar  Insira um termo de pesquisa  Usuários Padrão ☒ Membros do Show

Nome do usuário	Nome Completo	EU IA	Membros
teste		4	Membro do grupo

All 1 Usuários

4. na aba Gerenciamento, na opção Notification list crie uma notificação para um usuário de sua preferência.

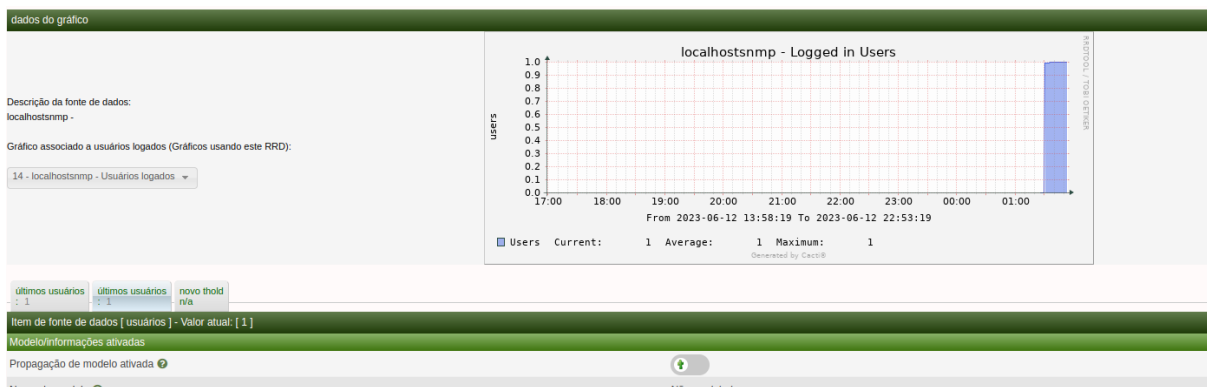
Notification Lists

Pesquisar  Enter a regular expression  Listas Padrão

Lista de nomes	Dispositivos	Limiares	Modelos	Descrição	E-mails
notificação pratica Cacti	0	Warn: 0, Alert: 0	Warn: 0, Alert: 0	notificação da pratica de cacti	roberto.coutinho2014@gmail.com

All 1 Listas

5. Na aba Gerenciamento, na opção Thresholds crie uma notificação, para o gráfico de usuários conectados ou logados.



- (a) Perigo Alto - se o número de usuários for maior que 5
- (b) Perigo Baixo - se o número de usuários for menor que 3
- (c) Alerta alto - se o número de usuários for maior que 4
- (d) Alerta baixo - se o número de usuários for menor que 2

Warning - High / Low Settings

Limiar Alto

Limiar Baixo

Breach Duration

Alert - High / Low Settings

Limiar Alto

Limiar Baixo

Breach Duration

Data Manipulation

(e) Envie as notificações para o usuário criado na questão anterior.

Configurações de notificação

Warning Notification List

Alert Notification List

Alert Emails

Warning Emails



**13. Você sentiu falta de algum recurso adicional no Cacti? Qual?**

Não seria um recurso, mas uma interface mais intuitiva para manipular a visualização dos gráficos seria interessante.