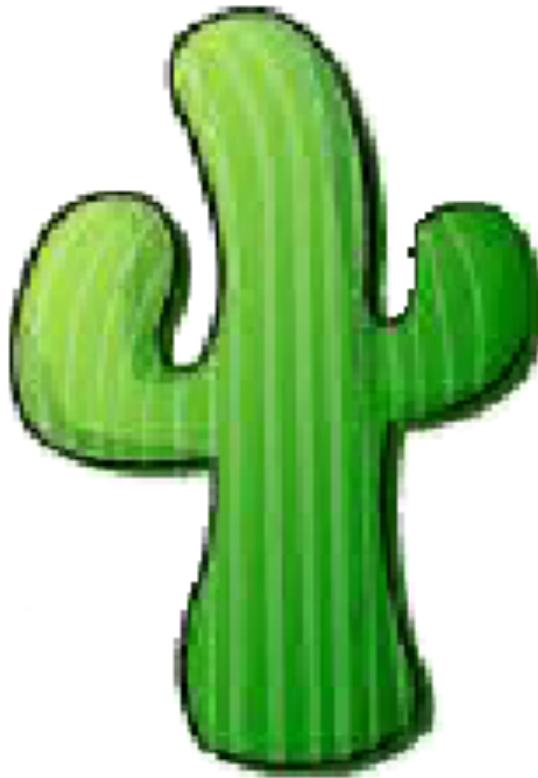


Cacti: Monitoreo de Tendencias



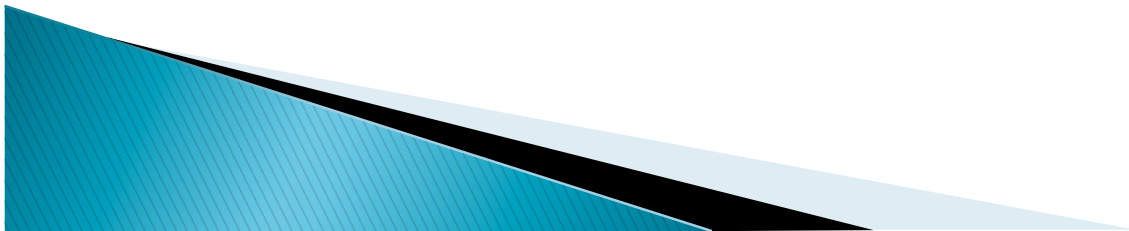
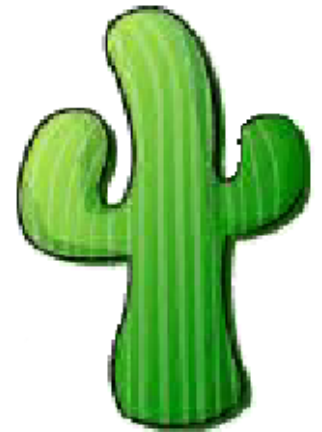
Hervey Allen
Carlos Armas

Material preparado por Chris O'Flaherty

Introduction

Cacti:

- ▶ Usa RRDtool, PHP, y MySQL.
- ▶ Soporta SNMP
- ▶ Interfaz grafica



Descripción

1. Un grupo de scripts PHP
2. “poller.php” corre cada 5 minutos
3. Reside en /usr/share/cacti/site.
4. poller.php necesita estar en el cron

5.

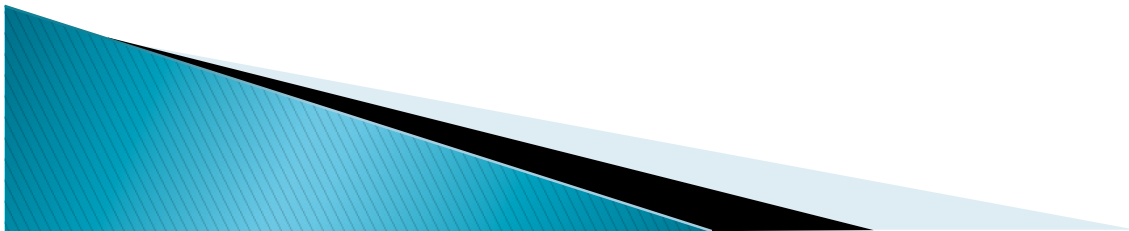
```
MAILTO=root
```

```
*/5 * * * * www-data php /usr/share/cacti/site/poller.php >/dev/null 2>/  
var/log/cacti/poller-error.log
```

4. Cacti usa RRDtool para crear graficos para cada dispositivo
5. Los datos de RRD se guardan en una base de datos MySQL
6. Los files de RRD estanb localizados en/var/lib/cacti/rra.

Ventajas

- ▶ **Mide disponibilidad, carga, errores, y otros y se guarda la historia de las mediciones (tendencias)**
- ▶ **Representacion Grafica**
- ▶ **Versatilidad**



Ventajas

Coleccion de datos:

- Soporta SNMP via *php-snmp* o *net-snmp*
- Las fuentes de datos pueden ser actualizadas via SNMP, o via scripts

Plantillas

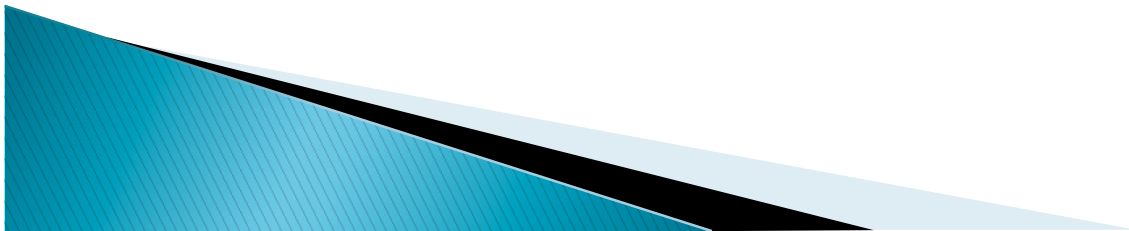
- Se definen plantillas para re-usar definiciones (y evitar duplicacion de esfuerzos)

Arquitectura de plugins

- Muchos plugins! MySQL, otros

Manejo de usuarios

- Localmente o via LDAP, se pueden asignar niveles de acceso



Disadvantages

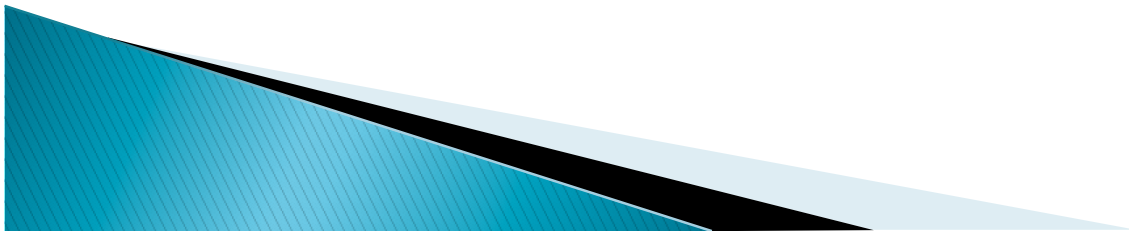
Configuracion de interfaces es tediosa

Configuracion de plugins es compleja

-La actualizacion a nuevas versiones puede ser tambien compleja

Consejo:

Usar scripts y herramientas para automatizar la configuracion de Cacti.

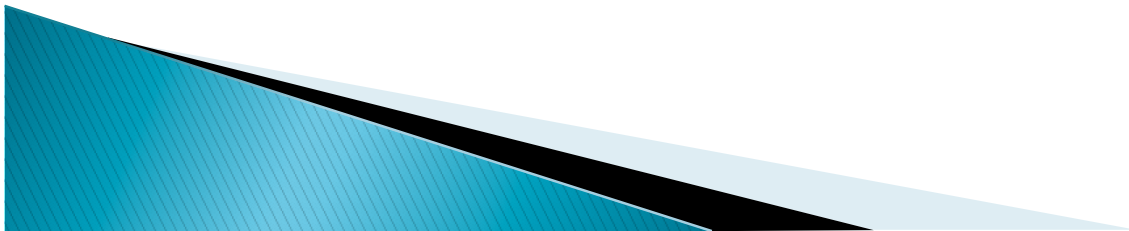


Instalacion: Ubuntu Server 9.10

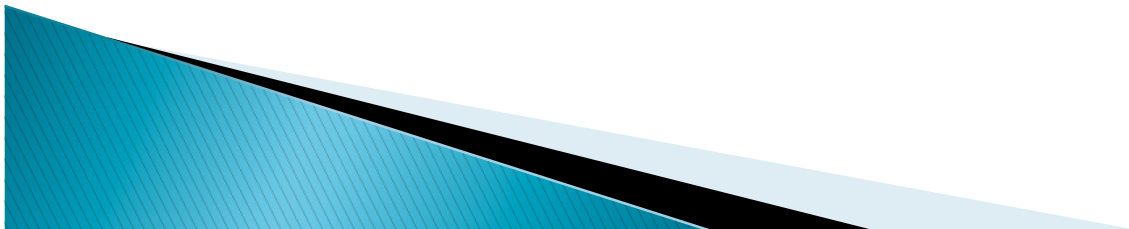
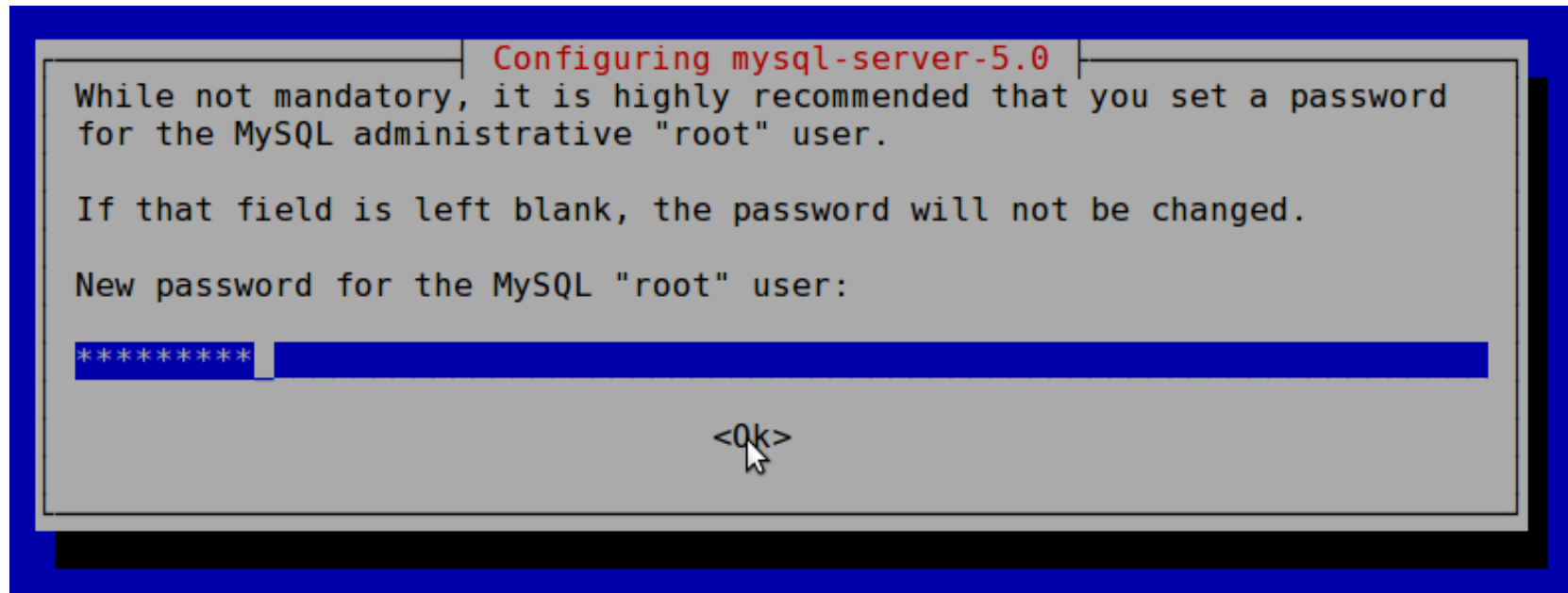


Disponible en RPM, y paquetes para Gentoo, Red Hat, Fedora, SuSE, FreeBSD, etc.

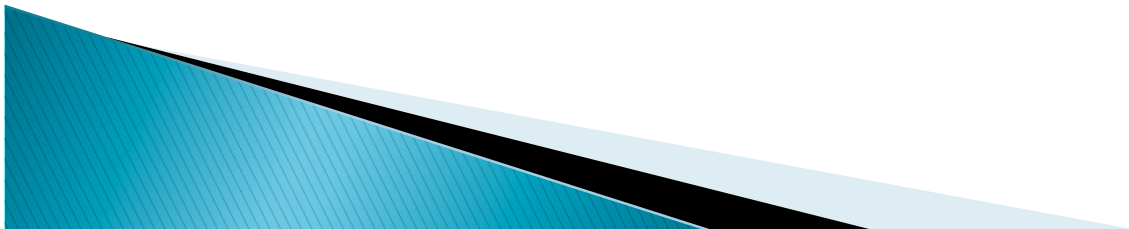
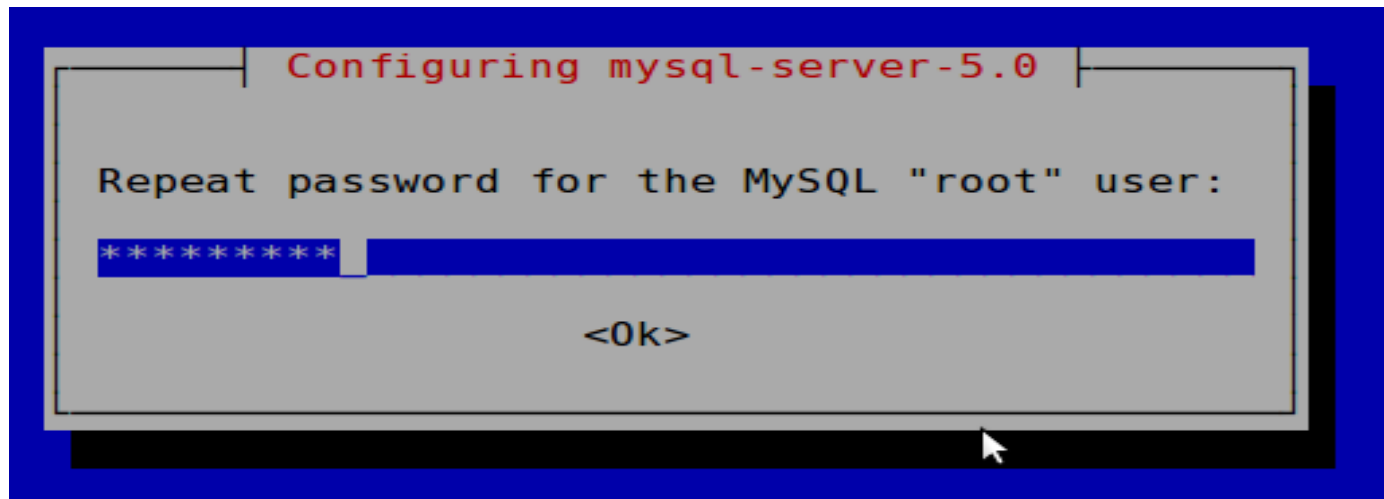
```
# apt-get install cacti
```



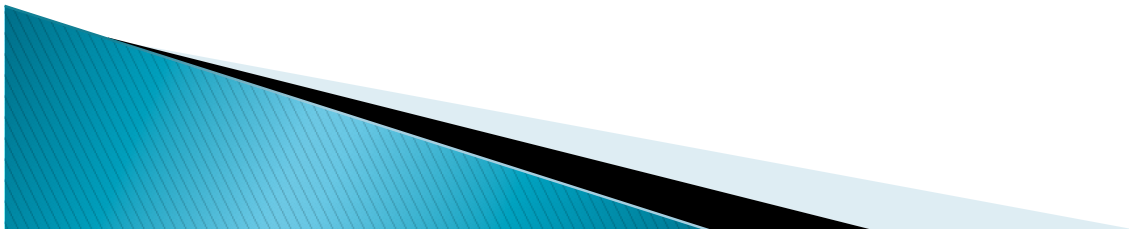
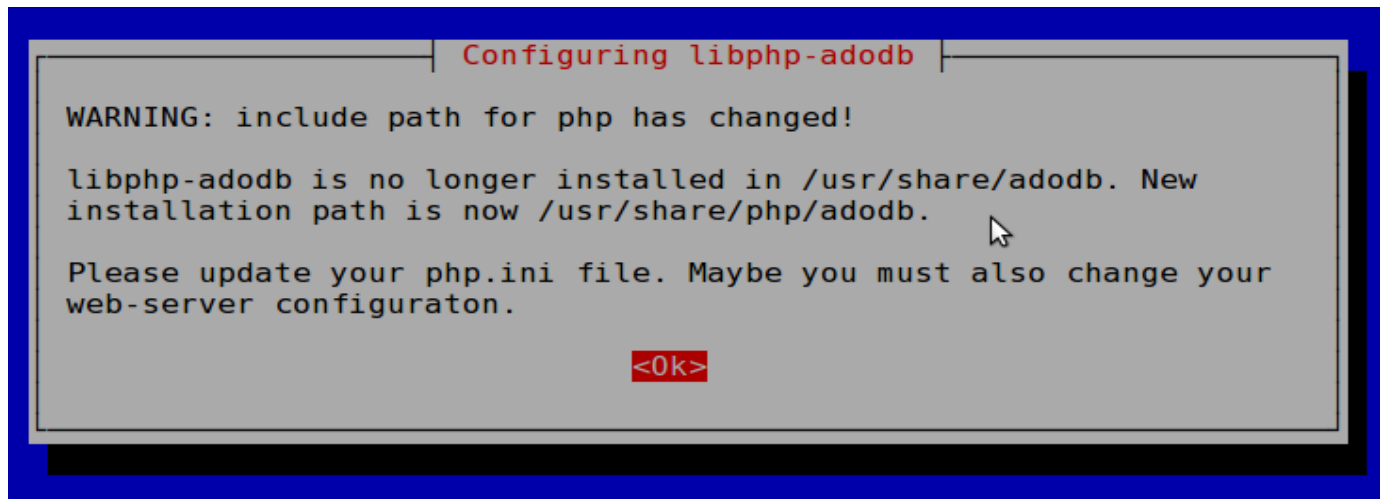
Instalacion: 2



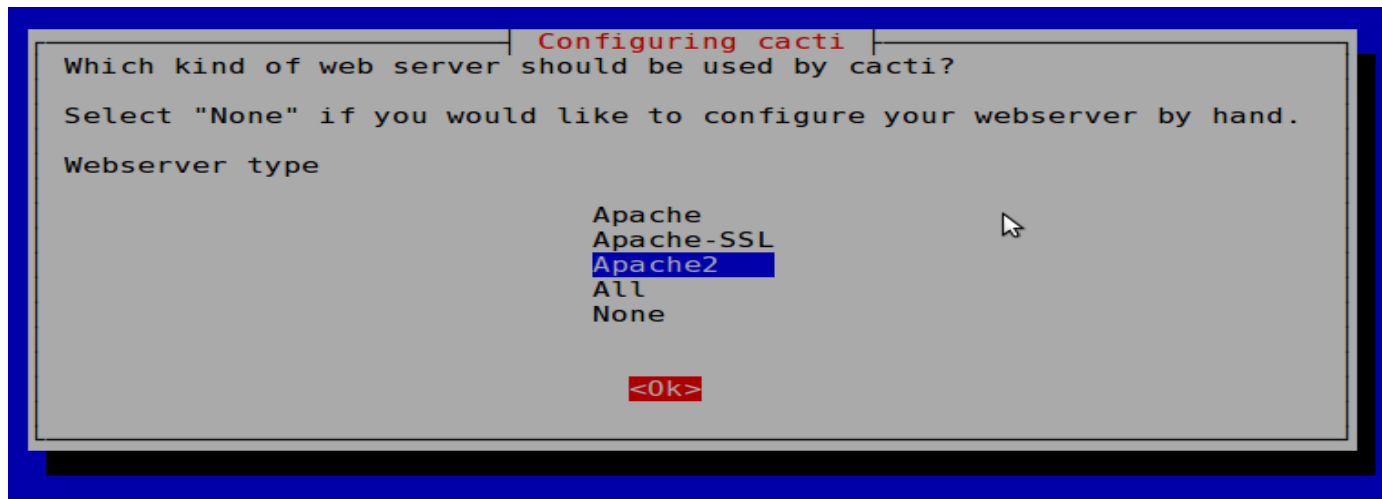
Instalacion: 3



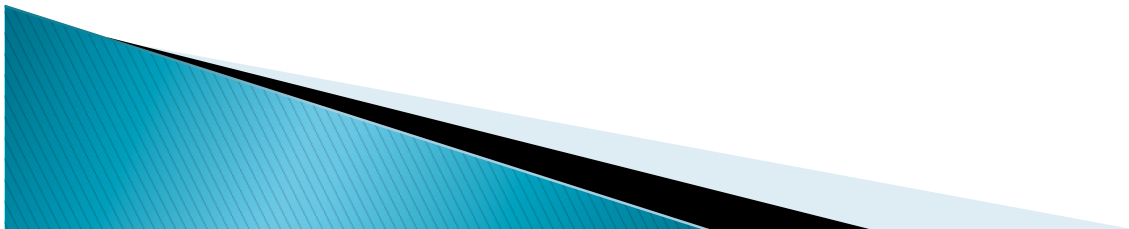
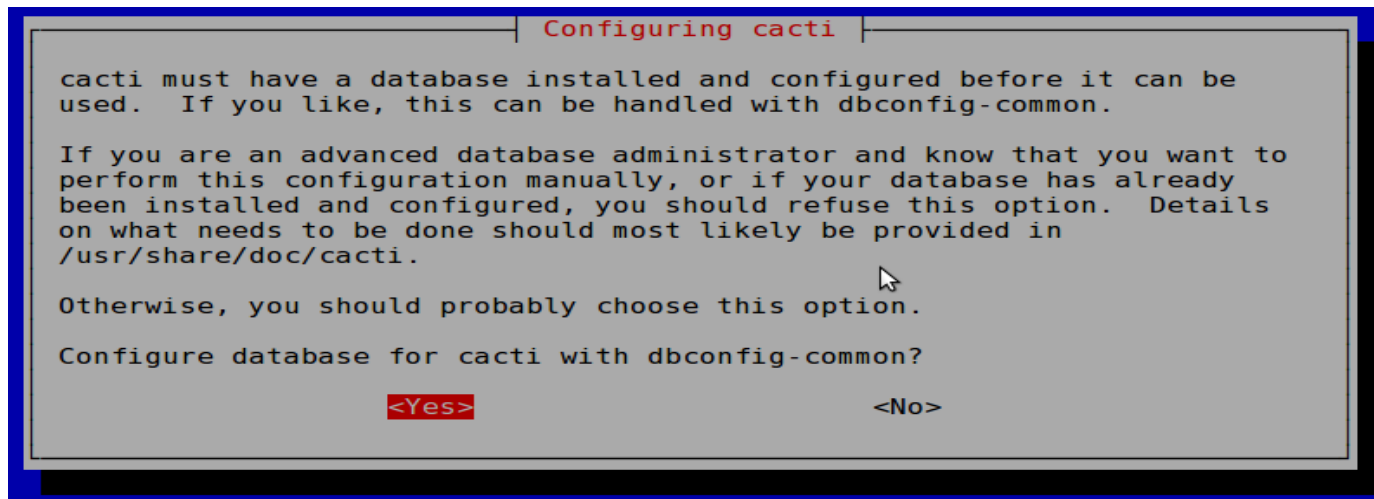
Instalacion: 4



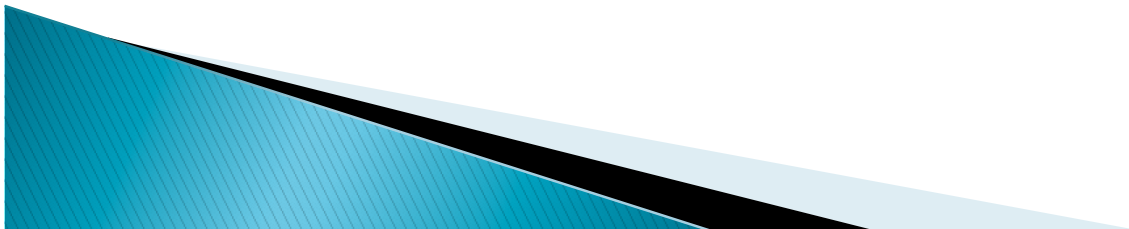
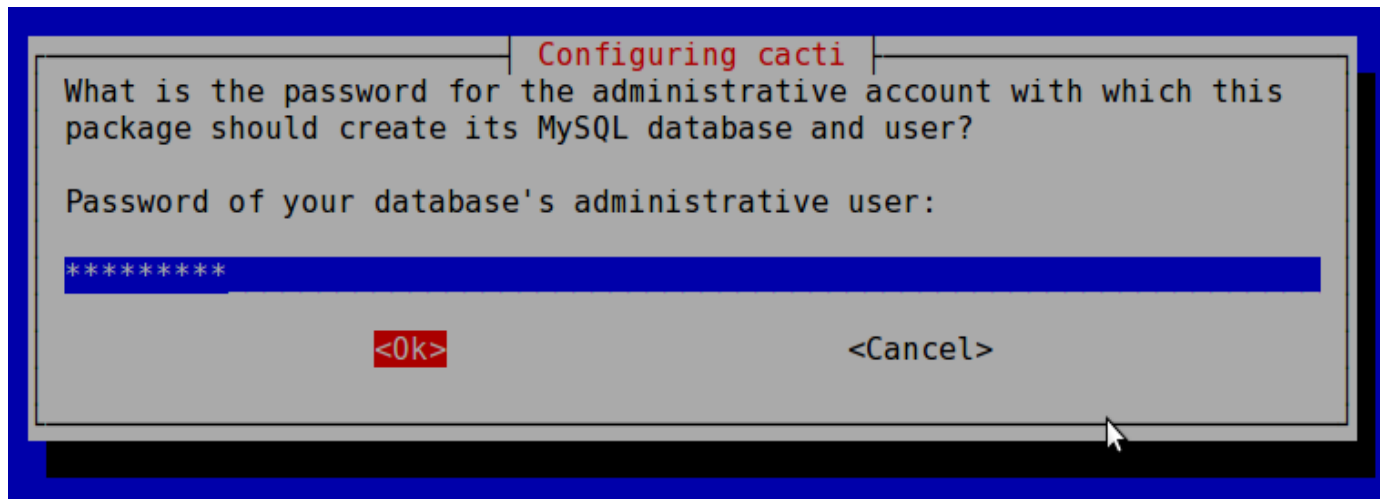
Instalacion: 5



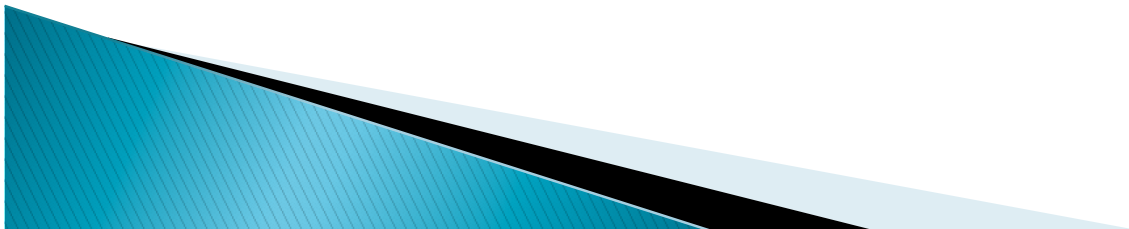
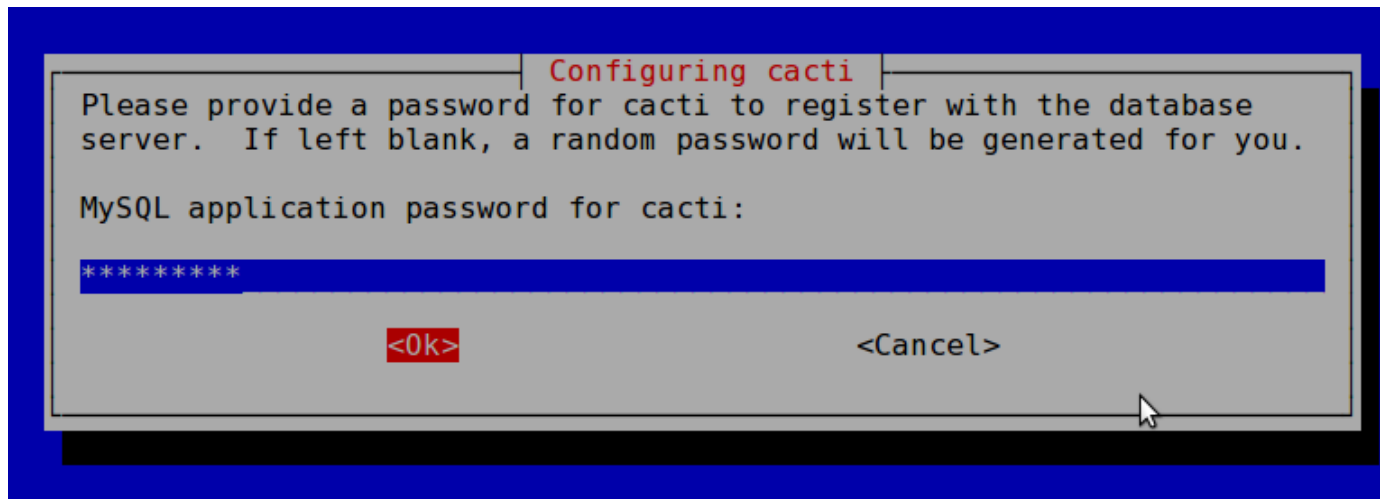
Instalacion: 6



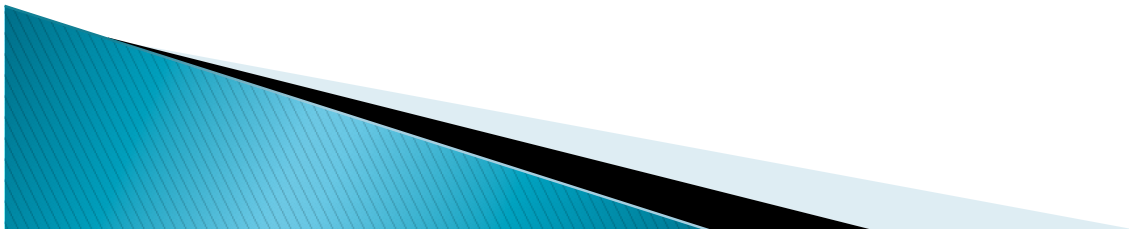
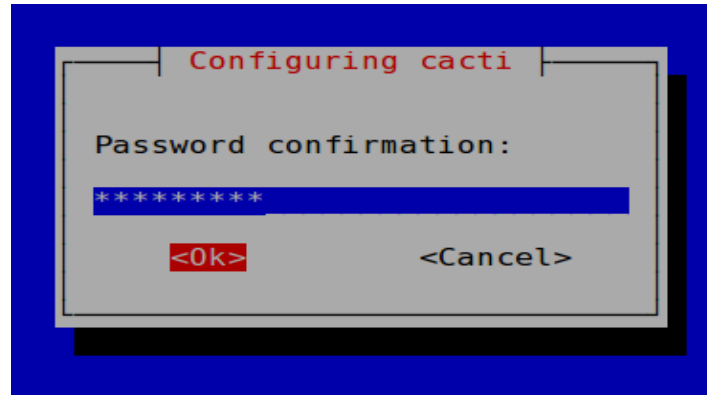
Instalacion: 7



Instalacion: 8



Instalacion: 9

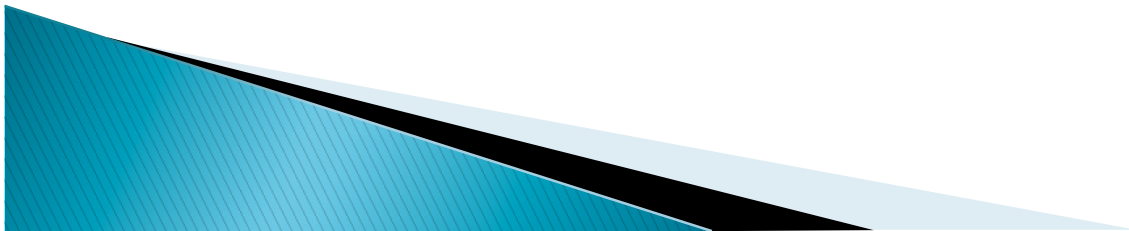


Cacti: Instalacion – Web

Una vez instalado:

<http://localhost/cacti>

Y....



Cacti: Instalacion – Web

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.

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.

Next >>

Cacti: Instalacion – Web

Cacti Installation Guide

Please select the type of installation

New Install

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

Database User: cacti

Database Hostname:

Database: cacti

Server Operating System Type: unix

Next >>

Cacti: Instalacion – Web

Cacti Installation Guide

Make sure all of these values are correct before continuing.

[FOUND] RRDTool Binary Path: The path to the rrdtool binary.

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

[FOUND] snmpwalk Binary Path: The path to your snmpwalk binary.

[FOUND] snmpget Binary Path: The path to your snmpget binary.

[FOUND] snmpbulkwalk Binary Path: The path to your snmpbulkwalk binary.

[FOUND] snmpgetnext Binary Path: The path to your snmpgetnext binary.

[FOUND] Cacti Log File Path: The path to your Cacti log file.

SNMP Utility Version: The type of SNMP you have installed. Required if you are using SNMP v2c or don't have embedded SNMP support in PHP.

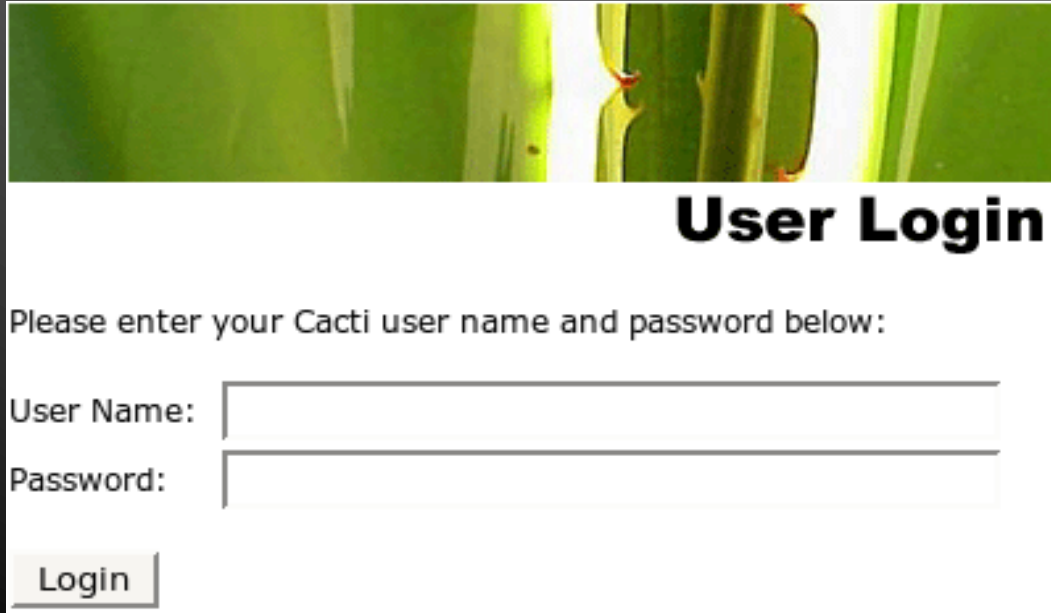
RRDTool Utility Version: The version of RRDTool that you have installed.

NOTE: Once you click "Finish", all of your settings will be saved and your database will be upgraded if this is an upgrade. You can change any of the settings on this screen at a later time by going to "Cacti Settings" from within Cacti.

Finish

Nota!
Asegurarse que "RRDTool 1.2.x" se seleccione y no "1.0.x".

Cacti: Primer Login

A screenshot of the Cacti web application's login page. At the top, there is a banner image showing a close-up of green cactus stems. Below the image, the title "User Login" is displayed in a bold, black font. Underneath the title, a message reads "Please enter your Cacti user name and password below:". This is followed by two input fields: "User Name:" and "Password:". Below these fields is a "Login" button. The entire form is set against a white background.

User Login

Please enter your Cacti user name and password below:

User Name:

Password:

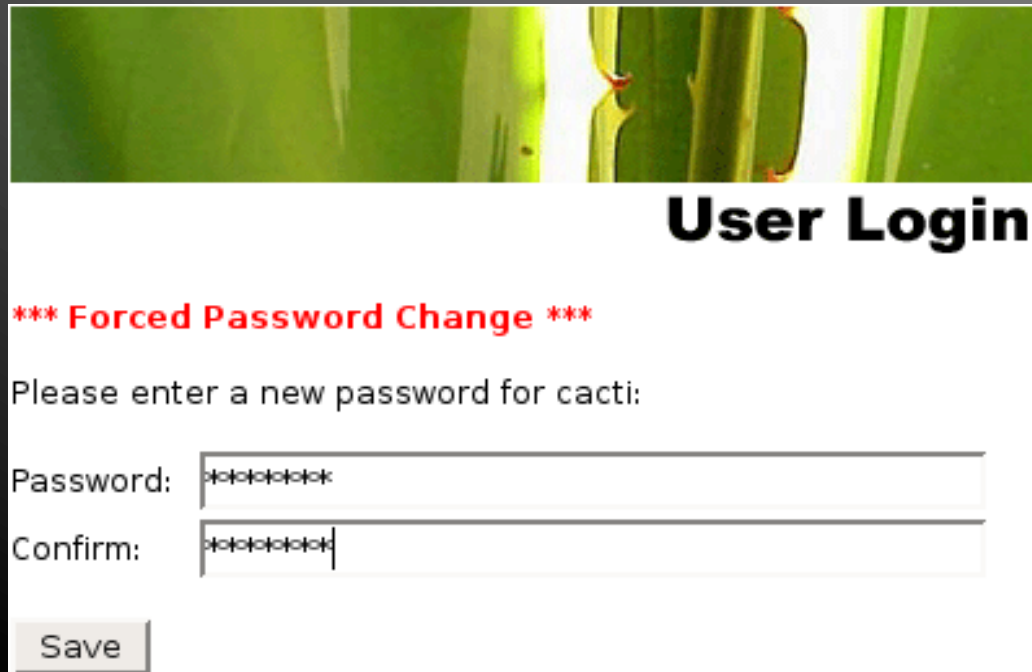
Login

Primer uso:

User Name: *admin*

Password: *admin*

Cacti: Cambie Password



The image shows a screenshot of the Cacti web interface. At the top, there is a header image of a green cactus. Below the header, the title "User Login" is displayed in bold black text. A red message "*** Forced Password Change ***" is shown. Below this, the text "Please enter a new password for cacti:" is displayed. There are two input fields: "Password:" and "Confirm:", both containing masked characters (asterisks). A "Save" button is located at the bottom left of the form area.

User Login

*** Forced Password Change ***

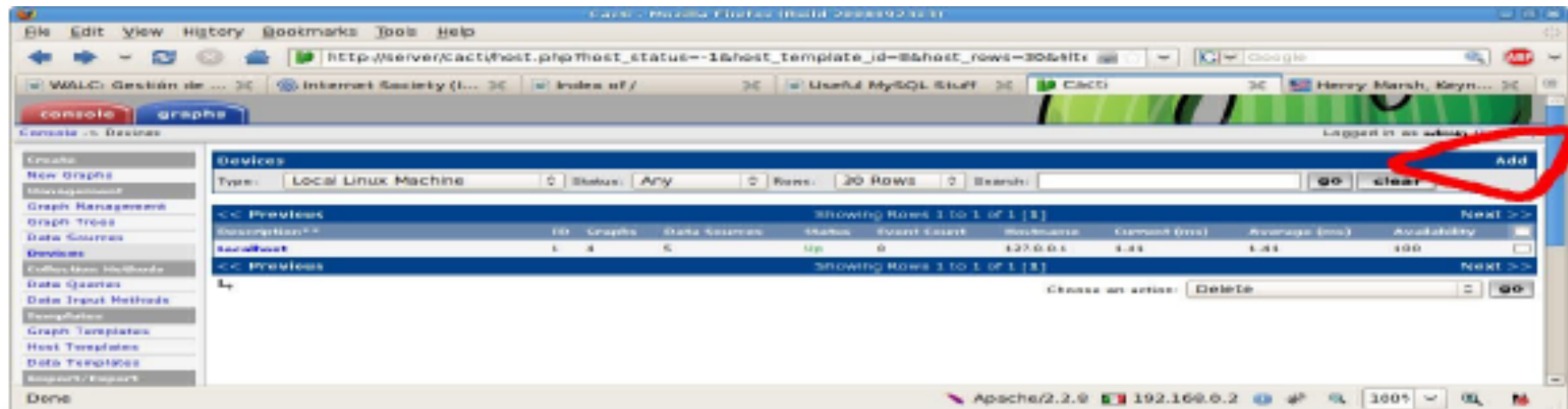
Please enter a new password for cacti:

Password:

Confirm:

Añadir un dispositivo

Management -> Devices -> Add
Especificar atributos del dispositivo



Añadir un dispositivo

Devices [edit: Gateway Router Group 1]

General Host Options

Description
Give this host a meaningful description.

Gateway Router Group 1

Hostname
Fully qualified hostname or IP address for this device.

pc1-pc9-gw.aroc

Host Template
Choose what type of host, host template this is. The host template will govern what kinds of data should be gathered from this type of host.

Cisco Router

Disable Host
Check this box to disable all checks for this host.

☐ Disable Host

Availability/Reachability Options

Downed Device Detection
The method Cacti will use to determine if a host is available for polling.
NOTE: It is recommended that, at a minimum, SNMP always be selected.

Ping and SNMP

Ping Method
The type of ping packet to send.
NOTE: ICMP on Linux/UNIX requires root privileges.

UDP Ping

Ping Port
TCP or UDP port to attempt connection.

23

Ping Timeout Value
The timeout value to use for host ICMP and UDP pinging. This host SNMP timeout value applies for SNMP pings.

400

Ping Retry Count
The number of times Cacti will attempt to ping a host before failing.

1

SNMP Options

SNMP Version
Choose the SNMP version for this device.

Version 2

SNMP Community
SNMP read community for this device.

s3cr3t

SNMP Port
Enter the UDP port number to use for SNMP (default is 161).

161

SNMP Timeout
The maximum number of milliseconds Cacti will wait for an SNMP response (does not work with php-snmp support).

500

Maximum OID's Per Get Request
Specified the number of OID's that can be obtained in a single SNMP Get request.

10

Additional Options

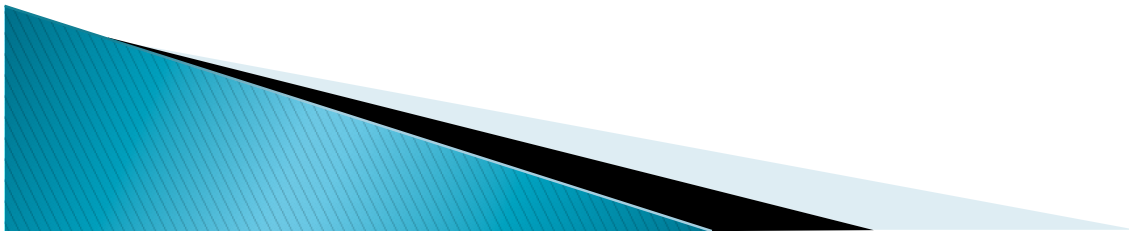
Notes
Enter notes to this host.

cancel

save

Añadir un dispositivo

- ▶ SNMP version 2 o 3
 - Use version 3 que es mas segura
- ▶ Para “Downed Device Detection” se recomienda g
Ping and SNMP, o solo *Ping*.



Añadir un dispositivo

Note las “Associated Data Queries”:

- Por defecto Cacti no usa snmp para interrogar un dispositivo. Asegurese de añadir:

Associated Graph Templates

Graph Template Name	Status
1) Cisco - CPU Usage	Not Being Graphed

Add Graph Template:

add

Associated Data Queries

Data Query Name	Debugging	Re-Index Method	Status
1) Karlnet - Wireless Bridge Statistics	(Verbose Query)	Uptime Goes Backwards	Success [0 Items, 0 Rows]

Add Data Query:

Re-Index Method:

add

cancel save

Añadir un dispositivo

Para un enrutador, vera' una gran cantidad de posibles interfaces una vez que se ha añadido un grupo de consulta de datos (data query) :

Associated Data Queries			
Data Query Name	Debugging	Re-Index Method	Status
1) Karlnet - Wireless Bridge Statistics	(Verbose Query)	Uptime Goes Backwards	Success [0 Items, 0 Rows]
2) SNMP - Interface Statistics	(Verbose Query)	Uptime Goes Backwards	Success [59 Items, 7 Rows]

Add Data Query: Re-Index Method:

Solo añade las interfaces que necesite

Crear Graficos

- ▶ Seleccione “Create graphs for this host”
- ▶ En Graph Templates generalmente se chequea en el tope superior *todos* los graficos disponibles:

Gateway Router Group 2 (pc10-pc18-gw.aroc) Cisco Router

Host: Graph Types: [*Edit this Host](#) [*Create New Host](#)

Graph Templates

Graph Template Name

Create: Cisco - CPU Usage

Create:

Data Query [SNMP - Interface Statistics]

Index	Status	Description	Name (IF-MIB)	Alias (IF-MIB)	Type	Speed	Hardware Address	IP Address	☐
1	Up	Ethernet0/0	Et0/0		ethernetCsmacd(6)	10000000	00:10:7B:18:41:81	192.168.17.3	☒
2	Up	Ethernet0/1	Et0/1		ethernetCsmacd(6)	10000000	00:10:7B:18:41:82	192.168.5.161	☒
3	Down	Ethernet1/0	Et1/0		ethernetCsmacd(6)	10000000	00:10:7B:18:41:91		☒
4	Down	Ethernet1/1	Et1/1		ethernetCsmacd(6)	10000000	00:10:7B:18:41:92		☒
5	Down	Serial0/0	Se0/0		propPointToPointSerial(22)	1544000			☒
6	Down	Serial0/1	Se0/1		propPointToPointSerial(22)	1544000			☒
8	Up	Null0	Nu0		other(1)	4294967295			☒

Select a graph type:

Create Graphics: 2

The screenshot shows a web application interface for creating graphics. At the top, there are tabs for 'console' and 'graphs', with 'graphs' being the active tab. Below the tabs, a breadcrumb trail reads 'Console -> Create New Graphs -> Create Graphs from Data Query'. In the top right corner, it says 'Logged in as admin (Logout)'. On the left is a sidebar menu with various options: 'Create', 'New Graphs', 'Management', 'Graph Management', 'Graph Trees', 'Data Sources', 'Devices', 'Collection Methods', 'Data Queries', 'Data Input Methods', 'Templates', 'Graph Templates', 'Host Templates', 'Data Templates', 'Import/Export', 'Import Templates', 'Export Templates', 'Configurations', 'Settings', 'Utilities', 'System Utilities', 'User Management', and 'Logout User'. At the bottom of the sidebar is a green cactus icon. The main content area displays three templates for creating graphs from data queries. Each template has a title, a 'Graph Items' field, and a 'Legend Color' field. The first template is 'Create Graph from Linux - Memory Usage', the second is 'Create Graph from Unix - Load Average', and the third is 'Create Graph from Unix - Logged in Users'. The fourth template is 'Create Graph from Unix - Processes', and the fifth is 'Create 1 Graph from Unix - Get Mounted Partitions'. The 'Legend Color' field for the first three templates shows the hex code '4658E4'. The 'Legend Color' field for the fourth template shows the hex code 'F51D30'. The fifth template has a 'cancel' and 'create' button at the bottom right.

console graphs

Console -> Create New Graphs -> Create Graphs from Data Query

Logged in as admin (Logout)

Create

New Graphs

Management

Graph Management

Graph Trees

Data Sources

Devices

Collection Methods

Data Queries

Data Input Methods

Templates

Graph Templates

Host Templates

Data Templates

Import/Export

Import Templates

Export Templates

Configurations

Settings

Utilities

System Utilities

User Management

Logout User

Create Graph from 'Linux - Memory Usage'

Create Graph from 'Unix - Load Average'

Create Graph from 'Unix - Logged in Users'

Graph Items [Template: Unix - Logged in Users]

Legend Color

The color to use for the legend.

4658E4

Create Graph from 'Unix - Processes'

Graph Items [Template: Unix - Processes]

Legend Color

The color to use for the legend.

F51D30

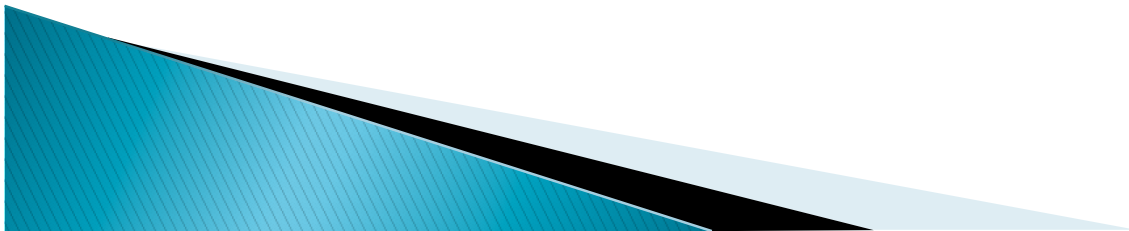
Create 1 Graph from 'Unix - Get Mounted Partitions'

cancel create

You'll see this screen later when you are creating graphics for hosts vs. routers

Ver los graficos

- ▶ Coloque el nuevo dispositivo en la localizacion adecuada en el arbol jerarquico
- ▶ Como construir el arbol jerarquico es una cuestion de gusto de cada persona
 - Bajo Management → Graph Trees
seleccione el Default Tree hierarchy (o crear uno a su gusto)



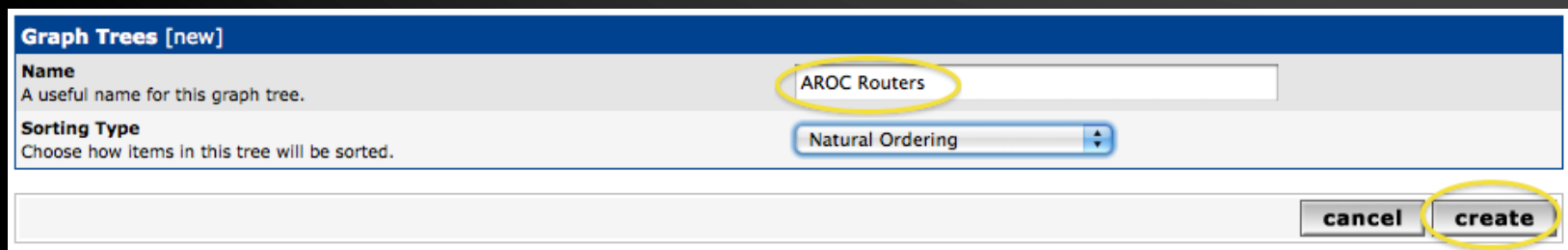
Arbol de Graficos

Presione “Add” si desea un nuevo arbol de graficos



Graph Trees	
Name	
Default Tree	

Nombre el arbol y seleccione el tipo de ordenamiento, y presione “create”:



Graph Trees [new]	
Name	AROC Routers
A useful name for this graph tree.	
Sorting Type	Natural Ordering
Choose how items in this tree will be sorted.	
cancel create	

Graficos

Añada dispositivos al arbol:

Graph Trees [edit: AROC Routers]

Name
A useful name for this graph tree.

AROC Routers

Sorting Type
Choose how items in this tree will be sorted.

Natural Ordering

Tree Items

Add

Item

Value

No Graph Tree Items

cancel save

Se añaden “Headers” (separadores), para ordenar graficos o hosts:

Tree Items

Parent Item
Choose the parent for this header/graph.

[root]

Tree Item Type
Choose what type of tree item this is.

Host

Tree Item Value

Host
Choose a host here to add it to the tree.

Gateway Router Group 1 (pc1-pc9-gw.aroc)

Graph Grouping Style
Choose how graphs are grouped when drawn for this particular host on the tree.

Graph Template

cancel create

Arbol de Graficos

Save Successful.

Graph Trees [edit: AROC Routers]

Name

A useful name for this graph tree.

AROC Routers

Sorting Type

Choose how items in this tree will be sorted.

Manual Ordering (No Sorting)

Tree Items

Add



Item

Value

Host: Gateway Router Group 1 (pc1-pc9-gw.aroc) (Edit host)

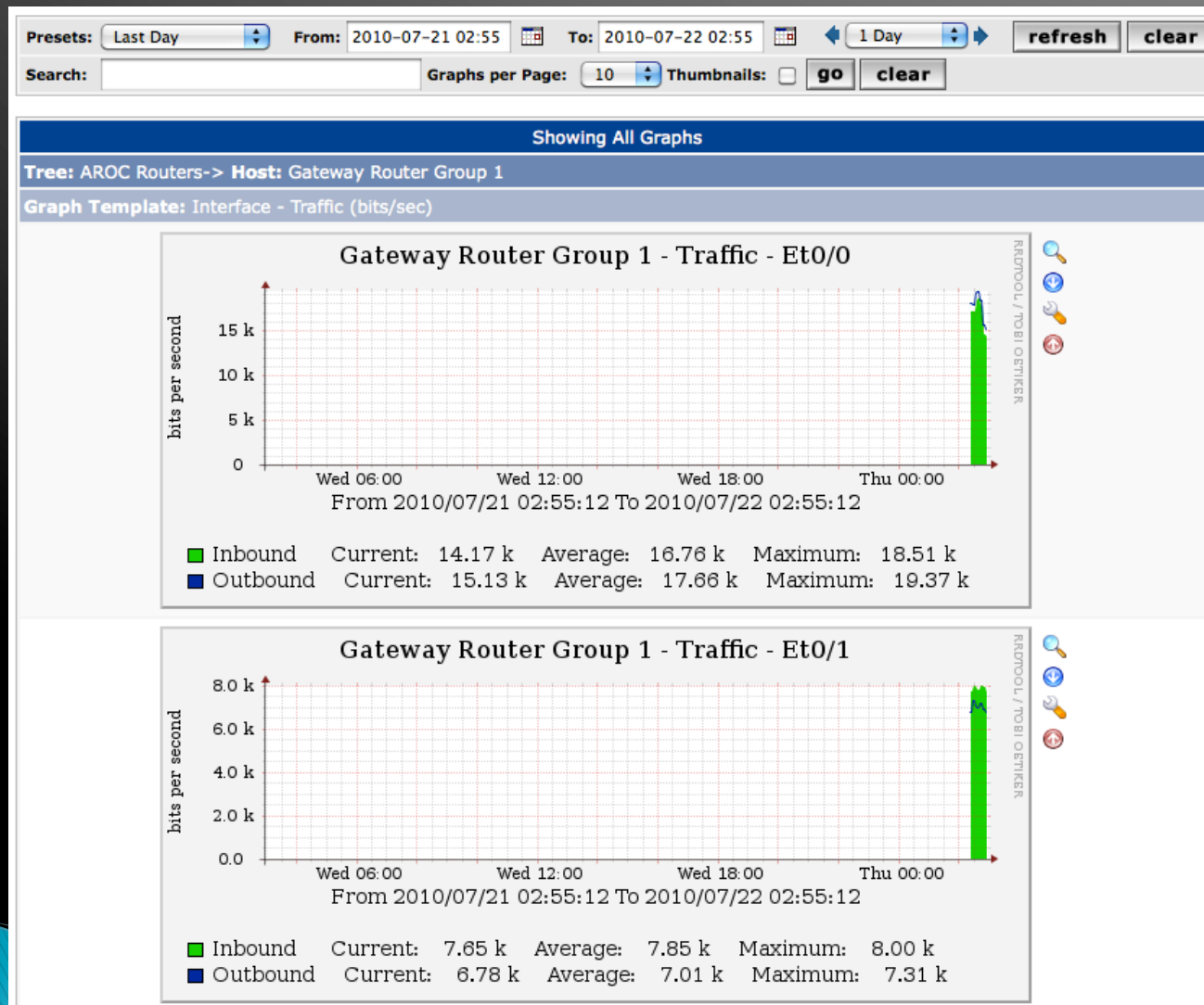
Host



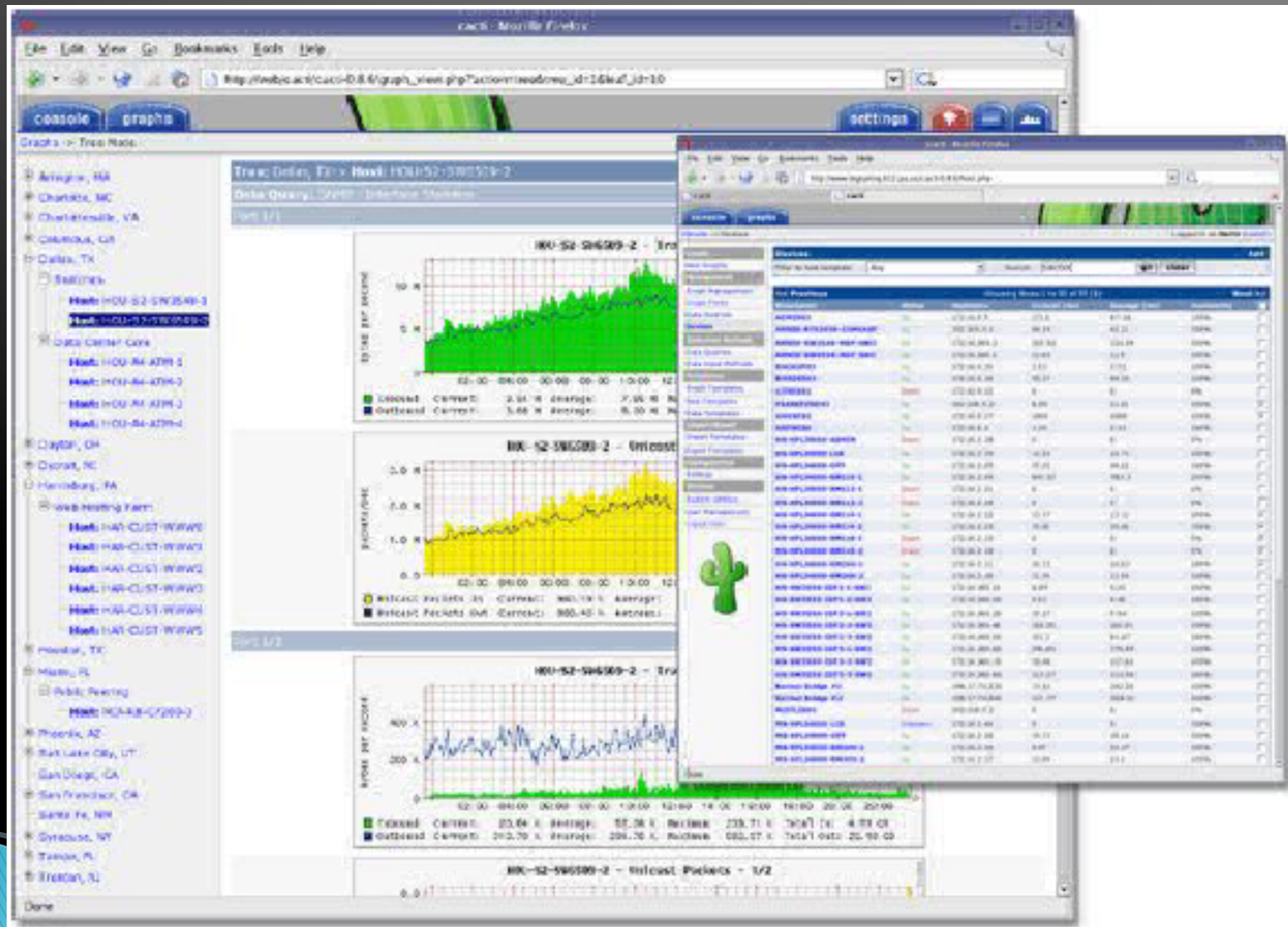
cancel

save

Graficos iniciales



Con el tiempo, tendencias

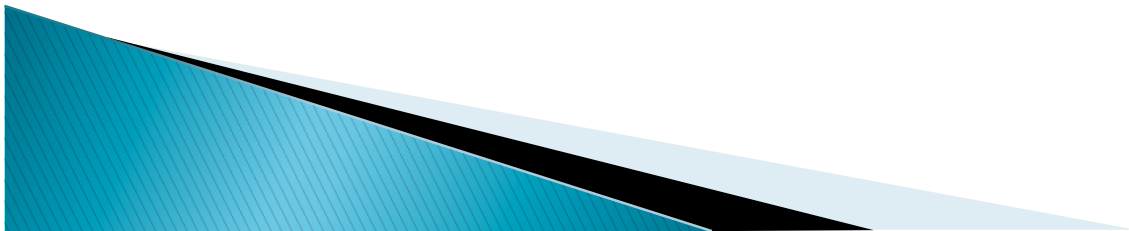


Despues

- Extender cacti instalando Cacti Plugin Architecture:
<http://cactiusers.org/wiki/PluginArchitectureInstall>
- Muchos Cacti plugins:
 - Nagios
 - NTOP
 - PHP Weathermap
 - Smokeping
 - Syslog-NG
- Buenos lugares para empezar:
- <http://cactiusers.net> and Google.
- To send email to RT from Cacti via rt-mailgate you can use the Cacti “settings” plugin:
<http://docs.cacti.net/plugin:settings>

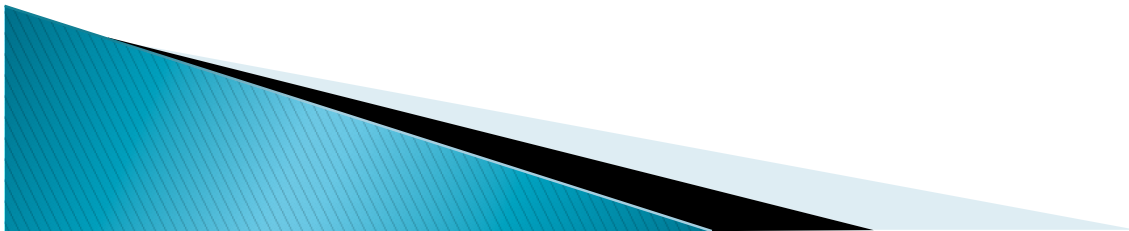
Conclusiones

- ▶ Cacti es flexible debido al uso de plantillas
- ▶ Una vez familiarizado, como Cacti trabaja es mas facil de entender
- ▶ La jerarquia de visualization permite organizar dispositivos mas facilmente
- ▶ Añadir muchos dispositivos es un procedimiento largo y tedioso
- ▶ Software como Netdot, Netdisco, IPPlan, TIPP actualizanla base de datos MySQL de Cacti directamente => muy util

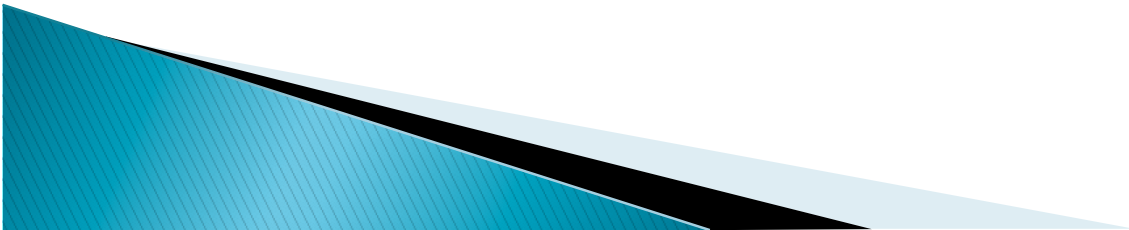


Referencias

- Cacti:
<http://www.cacti.net/>
- Grupo de Discusion:
<http://forums.cacti.net/>



Preguntas?



En versiones mas viejas

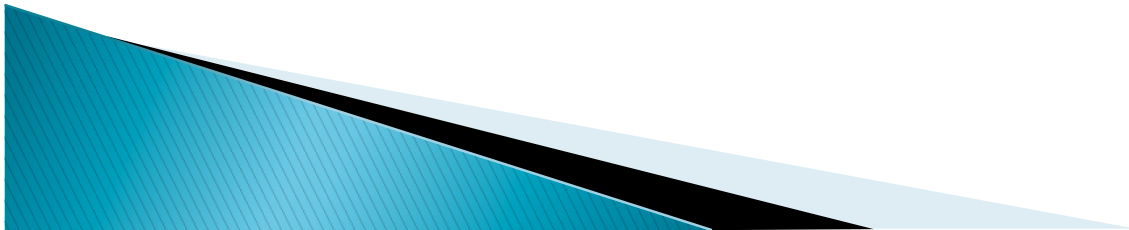
- ▶ Cacti usa MySQL, en versiones de Ubuntu mas viejas se necesita crear las bases de datos y permisos manualmente

```
# mysqladmin --user=root create cacti
# mysql cacti < cacti.sql
# mysql --user=root mysql

mysql> GRANT ALL ON cacti.* TO cactiuser@localhost IDENTIFIED BY 'cacti_pass';
mysql> flush privileges;
```

- Tambien especificar los parametros de conexion a la base datos en /etc/cacti/db.php:

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

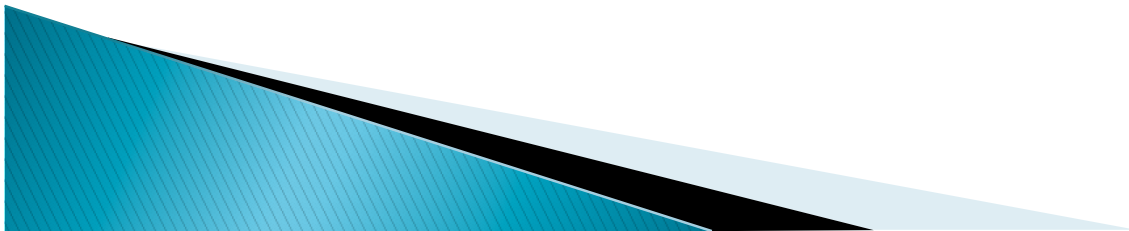


En versiones mas viejas

- ▶ Asegure que haya un cron habilitado:
/etc/cron.d/cacti
- ▶ Asi

```
*/5 * * * * www-data php /usr/share/cacti/site/poller.php >/dev/null \ 2>/  
var/log/cacti/poller-error.log
```

- ▶ No necesario con el paqueteDebian en Ubuntu
8.10, y mas recientes



Usando *cactid* (encuestador alternativo)

```
# tar xvzf cacti-cactid-0.8.6.tar.gz
# cd cactid-0.8.6
# ./configure
# make
# make install
```

```
# vi /usr/local/cactid/bin/cactid.conf
DB_Host      localhost
DB_Database  cacti
DB_User      cactiuser
DB_Pass      cacti_pass
DB_Port      3306
```

En la Web interface:

- **Configuration -> Settings -> Paths -> Cactid Poller File Path** y especifique la localizacion de cactid.
- **En Poller**, en la seccion **Poller Type**, seleccione **cactid**