

# Documentación

# PRÁCTICA 3

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Ingeniería de Servidores



**UNIVERSIDAD  
DE GRANADA**

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# Índice

<b>Versiones</b>	<b>3</b>
<b>Instalación en Ubuntu</b>	<b>4</b>
Zabbix Server	4
Zabbix Agent	7
Zabbix FrontEnd	7
Pruebas de diferentes configuraciones	12
Añadir usuario	12
Añadir grupos de usuarios	13
Añadir Hosts (máquinas que se monitorean)	15
Muestra de errores	16
Gráficas	17
<b>Instalación en CentOS</b>	<b>18</b>
Zabbix Agent	18
Problemas en la instalación	21
<b>Monitorización de SSH</b>	<b>22</b>
Ubuntu Server	22
Comprobación de funcionamiento	23
CentOS	25
<b>Monitorización de HTTP</b>	<b>26</b>
Ubuntu Server y CentOS	26
<b>Finalmente</b>	<b>27</b>
<b>Bibliografía</b>	<b>27</b>



# Instalación de Zabbix en Ubuntu Server y CentOS

Zabbix es un Sistema de Monitorización de Redes creado por Alexei Vladishev. Está diseñado para monitorizar y registrar el estado de varios servicios de red, Servidores, y hardware de red.

Usa MySQL, PostgreSQL, SQLite, Oracle o IBM DB2 como base de datos. Su backend está escrito en C y el frontend web está escrito en PHP. Zabbix ofrece varias opciones de monitorización:

Chequeos simples que pueden verificar la disponibilidad y el nivel de respuesta de servicios estándar como SMTP o HTTP sin necesidad de instalar ningún software sobre el host monitorizado.

Un agente Zabbix puede también ser instalado sobre máquinas UNIX y Windows para monitorizar estadísticas como carga de CPU, utilización de red, espacio en disco, etc.

Como alternativa a instalar el agente sobre los host, Zabbix incluye soporte para monitorizar vía protocolos SNMP, TCP y ICMP, como también sobre IPMI, JMX, SSH, telnet y usando parámetros de configuración personalizados. Zabbix soporta una variedad de mecanismos de notificación en tiempo real, incluyendo XMPP.

Lanzado sobre los términos de la versión 2 de la GNU General Public License, Zabbix es Software Libre.

## Versiones

- Ubuntu 16.04.5 LTS
- CentOS 7
- Zabbix 3.4

# Instalación en Ubuntu

## Zabbix Server

*La conexión a la máquina Ubuntu es a través de ssh*

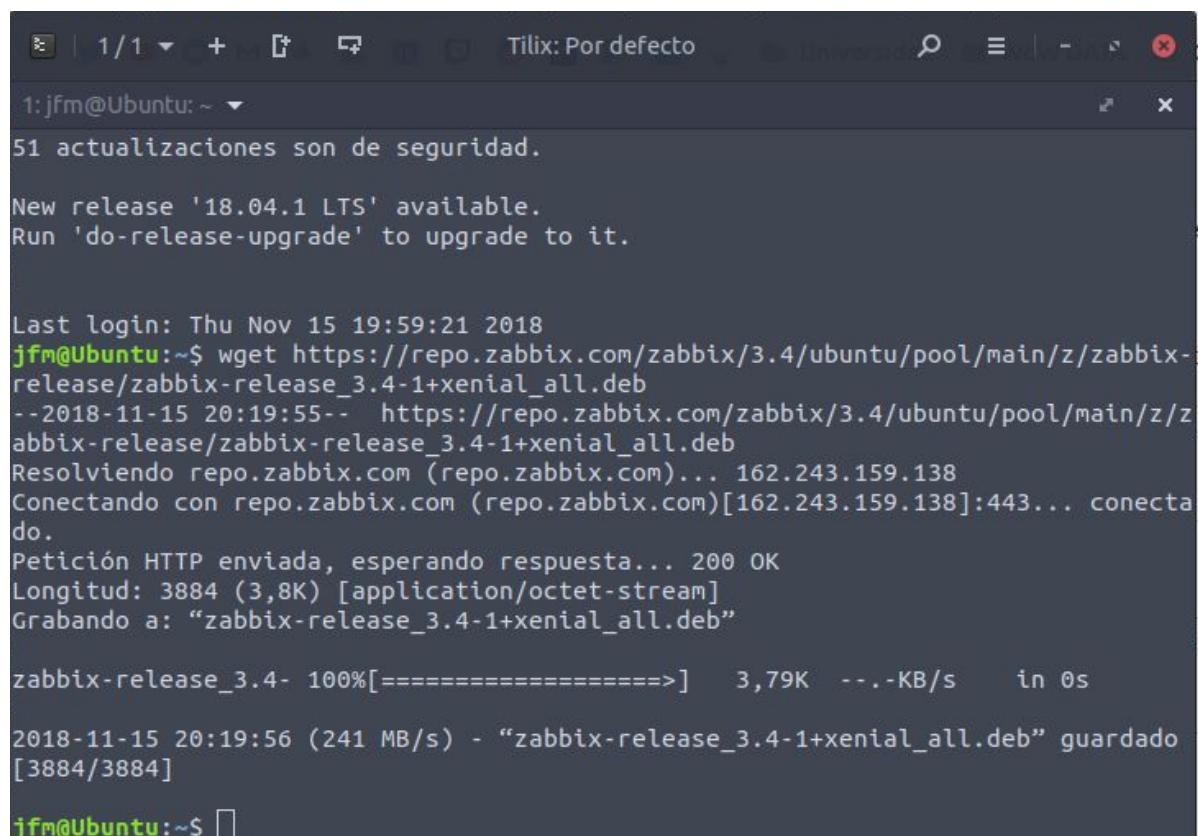
Para la instalación de Zabbix en Ubuntu he utilizado la propia guía que aparece en la documentación de la versión del programa [\(1\)](#), apoyándome también en diferentes páginas web [\(3\)](#) que, junto a ellas, podía asegurarme que hacía las cosas correctamente.

La instalación la he realizado a través de los paquetes del repositorio oficial de la aplicación [\(2\)](#)

```
wget  
https://repo.zabbix.com/zabbix/3.4/ubuntu/pool/main/z/zabbix-release/zab  
bix-release_3.4-1+xenial_all.deb
```

```
dpkg -i zabbix-release_3.4-1+xenial_all.deb
```

```
apt update
```



The screenshot shows a terminal window titled 'Tilix: Por defecto' with a dark theme. The session starts with a system message about 51 security updates. It then shows the user running 'apt update'. Below this, the user runs 'wget' to download the Zabbix release package from the official repository. The terminal then displays the progress of the download, showing a speed of 241 MB/s and a total size of 3,884 bytes. The download completes successfully at 20:19:56.

```
1:jfm@Ubuntu:~  
51 actualizaciones son de seguridad.  
New release '18.04.1 LTS' available.  
Run 'do-release-upgrade' to upgrade to it.  
  
Last login: Thu Nov 15 19:59:21 2018  
jfm@Ubuntu:~$ wget https://repo.zabbix.com/zabbix/3.4/ubuntu/pool/main/z/zabbix-  
release/zabbix-release_3.4-1+xenial_all.deb  
--2018-11-15 20:19:55-- https://repo.zabbix.com/zabbix/3.4/ubuntu/pool/main/z/z  
abbix-release/zabbix-release_3.4-1+xenial_all.deb  
Resolviendo repo.zabbix.com (repo.zabbix.com)... 162.243.159.138  
Conectando con repo.zabbix.com (repo.zabbix.com)[162.243.159.138]:443... conectado.  
Petición HTTP enviada, esperando respuesta... 200 OK  
Longitud: 3884 (3,8K) [application/octet-stream]  
Grabando a: "zabbix-release_3.4-1+xenial_all.deb"  
  
zabbix-release_3.4- 100%[=====] 3,79K ---KB/s in 0s  
2018-11-15 20:19:56 (241 MB/s) - "zabbix-release_3.4-1+xenial_all.deb" guardado  
[3884/3884]  
jfm@Ubuntu:~$
```

```
1:root@Ubuntu:/home/jfm ~
root@Ubuntu:/home/jfm# dpkg -i zabbix-release_3.4-1+xenial_all.deb
Selezionando el paquete zabbix-release previamente no seleccionado.
(Leyendo la base de datos ... 62768 ficheros o directorios instalados actualmente.)
Preparando para desempaquetar zabbix-release_3.4-1+xenial_all.deb ...
Desempaquetando zabbix-release (3.4-1+xenial) ...
Configurando zabbix-release (3.4-1+xenial) ...
root@Ubuntu:/home/jfm# apt update
Des:1 http://security.ubuntu.com/ubuntu xenial-security InRelease [107 kB]
Obj:2 http://es.archive.ubuntu.com/ubuntu xenial InRelease
Des:3 http://es.archive.ubuntu.com/ubuntu xenial-updates InRelease [109 kB]
Des:4 http://es.archive.ubuntu.com/ubuntu xenial-backports InRelease [107 kB]
Des:5 http://repo.zabbix.com/zabbix/3.4/ubuntu xenial InRelease [7.093 B]
Des:6 http://repo.zabbix.com/zabbix/3.4/ubuntu xenial/main Sources [900 B]
Des:7 http://repo.zabbix.com/zabbix/3.4/ubuntu xenial/main amd64 Packages [2.493 B]
Des:8 http://repo.zabbix.com/zabbix/3.4/ubuntu xenial/main i386 Packages [2.501 B]
Descargados 336 kB en 1s (285 kB/s)
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias
Leyendo la información de estado... Hecho
Se pueden actualizar 74 paquetes. Ejecute «apt list --upgradable» para verlos.
root@Ubuntu:/home/jfm#
```

Instalamos ahora el servidor de Zabbix para que funcione con la base de datos MySQL

```
apt install zabbix-server-mysql
```

Y el frontend que nos proporciona la interfaz de web

```
apt install zabbix-frontend-php
```

Para el servidor de Zabbix es necesario crear una base de datos con unos ciertos permisos

```
mysql -uroot -ppracticas,ISE
```

```
mysql> create database zabbix character set utf8 collate utf8_bin;
```

```
mysql> grant all privileges on zabbix.* to zabbix@localhost identified by 'practicas,ISE';
```

```
mysql> quit;
```

```
1:root@Ubuntu:/home/jfm ~
root@Ubuntu:/home/jfm# mysql -uroot -ppracticas,ISE
mysql: [Warning] Using a password on the command line interface can be insecure.
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 5.7.24-0ubuntu0.16.04.1 (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 zabbix character set utf8 collate utf8_bin
      -> ;
Query OK, 1 row affected (0,01 sec)
```

```
mysql> grant all privileges on zabbix.* to zabbix@localhost identified by 'practicas,ISE';
Query OK, 0 rows affected, 1 warning (0,00 sec)

mysql> █
```

Ahora realizaremos la copia del initial schema y datos a la base de datos creada

```
zcat /usr/share/doc/zabbix-server-mysql/create.sql.gz | mysql -uzabbix
-p zabbix
```

```
1:root@Ubuntu:/home/jfm ~
root@Ubuntu:/home/jfm# zcat /usr/share/doc/zabbix-server-mysql/create.sql.gz |
mysql -uzabbix -p zabbix
Enter password:
root@Ubuntu:/home/jfm# █
```

En el siguiente paso, como se indica en la documentación, debemos modificar el archivo de configuración del servidor `/etc/zabbix/zabbix_server.conf` con los siguientes parámetros:

```
DBHost=localhost
DBName=zabbix
DBUser=zabbix
DBPassword=practicas,ISE
```

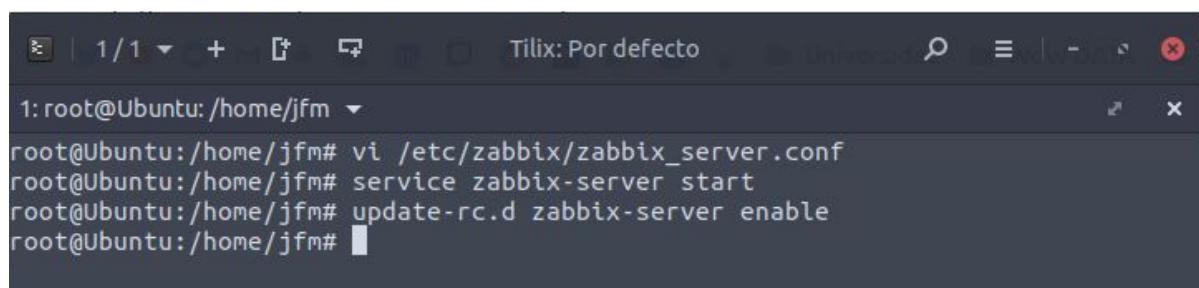
Tras modificar el archivo de configuración, el servidor está listo para ser lanzado

```
service zabbix-server start
```

```
update-rc.d zabbix-server enable
```

Reiniciamos el servicio de apache

```
service apache2 restart
```



A screenshot of a terminal window titled "Tilix: Por defecto". The window shows a command-line session with the following history:

```
1:root@Ubuntu:/home/jfm ~
root@Ubuntu:/home/jfm# vi /etc/zabbix/zabbix_server.conf
root@Ubuntu:/home/jfm# service zabbix-server start
root@Ubuntu:/home/jfm# update-rc.d zabbix-server enable
root@Ubuntu:/home/jfm#
```

## Zabbix Agent

Procedemos a instalar igual que con el servidor, aunque ahora es mucho más sencillo

```
apt install zabbix-agent
```

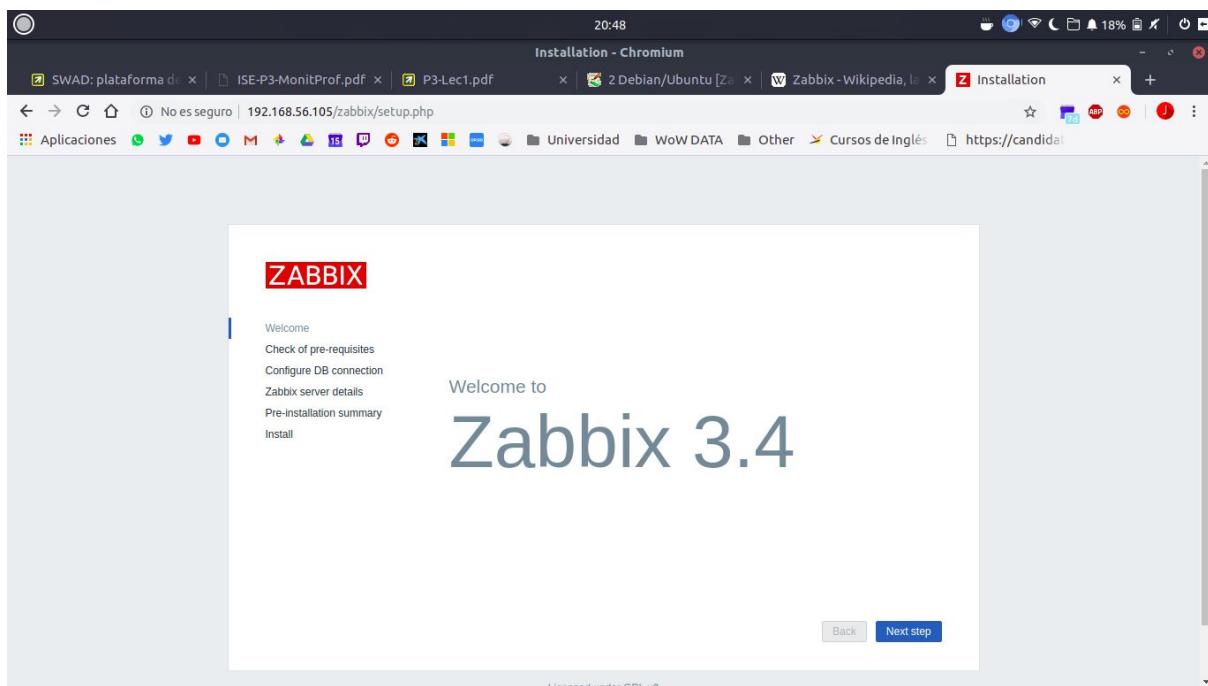
```
service zabbix-agent start
```

## Zabbix FrontEnd

Configuramos el archivo del frontend /etc/apache2/conf-enabled/zabbix.conf

```
php_value date.timezone Europe/Madrid
```

Accedemos en el navegador a la dirección <http://192.168.56.105/zabbix> que es donde se aloja nuestro FrontEnd y seguimos las instalación tal y como muestran las imágenes:



## Comprobación de dependencias

This screenshot shows the "Check of pre-requisites" step of the installation. The title bar has the Zabbix logo. The main content is a table titled "Check of pre-requisites" with four columns: "Current value", "Required", and two status columns labeled "OK" (green) and "NOT OK" (red). The table lists various PHP configuration options and their status. At the bottom right are "Back" and "Next step" buttons.

	Current value	Required	
PHP version	7.0.32-0ubuntu0.16.04.1	5.4.0	OK
PHP option "memory_limit"	128M	128M	OK
PHP option "post_max_size"	16M	16M	OK
PHP option "upload_max_filesize"	2M	2M	OK
PHP option "max_execution_time"	300	300	OK
PHP option "max_input_time"	300	300	OK
PHP option "date.timezone"	Europe/Madrid		OK
PHP databases support	MySQL		OK
PHP bcmath	on		OK
PHP mbstring	on		OK
PHP option "mbstring.func_overload"	off	off	OK

# ZABBIX

## Configure DB connection

Please create database manually, and set the configuration parameters for connection to this database.  
Press "Next step" button when done.

Welcome

Check of pre-requisites

Configure DB connection

Zabbix server details

Pre-installation summary

Install

Database type

Database host

Database port  0 - use default port

Database name

User

Password

[Back](#)

[Next step](#)

# ZABBIX

## Zabbix server details

Please enter the host name or host IP address and port number of the Zabbix server, as well as the name of the installation (optional).

Welcome

Check of pre-requisites

Configure DB connection

Zabbix server details

Pre-installation summary

Install

Host

Port

Name

[Back](#)

[Next step](#)

# ZABBIX

## Pre-installation summary

Please check configuration parameters. If all is correct, press "Next step" button, or "Back" button to change configuration parameters.

Welcome  
Check of pre-requisites  
Configure DB connection  
Zabbix server details  
Pre-installation summary  
**Install**

Database type MySQL  
Database server localhost  
Database port default  
Database name zabbix  
Database user zabbix  
Database password \*\*\*\*\*

Zabbix server localhost  
Zabbix server port 10051  
Zabbix server name Zabbix ISE

[Back](#)

[Next step](#)

# ZABBIX

## Install

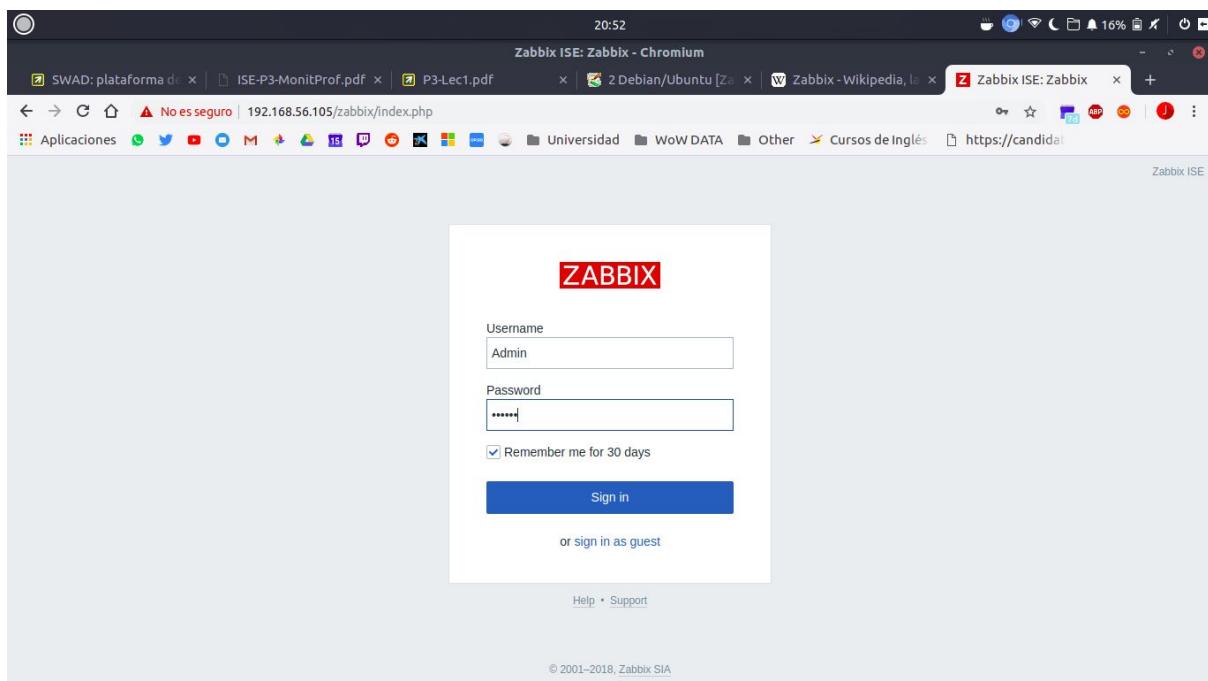
Welcome  
Check of pre-requisites  
Configure DB connection  
Zabbix server details  
Pre-installation summary  
**Install**

**Congratulations! You have successfully installed Zabbix frontend.**

Configuration file "/usr/share/zabbix/conf/zabbix.conf.php" created.

[Back](#)

[Finish](#)



## Credenciales de Admin: Admin - zabbix

### Primera visión de Zabbix

# Pruebas de diferentes configuraciones

## Añadir usuario

The screenshot shows two windows from the Zabbix ISE web interface.

The top window is titled "Zabbix ISE: Configuration of users - Chromium". It displays the "Users" configuration page. The user being created has the following details:

- Alias: user
- Name: Test
- Surname: user
- Groups: Zabbix administrators (selected)
- Password: (redacted)
- Password (once again): (redacted)
- Language: English (en\_GB)
- Theme: System default
- Auto-login: (checkbox unchecked)
- Auto-logout: (checkbox checked) 15m
- Refresh: 30s
- Rows per page: 50

The bottom window is titled "Zabbix ISE: Media - Chromium". It displays the "Media" configuration dialog. The configuration includes:

- Type: Email
- Send to: (empty field)
- When active: 1-7:00:00-24:00
- Use if severity: (checkbox checked) Not classified, followed by checkboxes for Information, Warning, Average, High, and Disaster.
- Enabled: (checkbox checked)

Zabbix ISE: Configuration of users - Chromium

21:00

SWAD: plataforma de x | ISE-P3-MonitProf.pdf | P3-Lec1.pdf | 2 Debian/Ubuntu [Zabbix] | Zabbix - Wikipedia, la enciclopedia libre | Zabbix ISE: Configuration of users - Chromium

No es seguro | 192.168.56.105/zabbix/users.php?cancel=1&sid=bce5f49163e3dc83

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ZABBIX Monitoring Inventory Reports Configuration Administration

General Proxies Authentication User groups Users Media types Scripts Queue

Users

User group: All | Create user

Filter ▾

Alias	Name	Surname	User type	Groups	Is online?	Login	Frontend access	Debug mode	Status
<input type="checkbox"/>	Admin	Zabbix	Administrator	Zabbix administrators	Yes (2018-11-15 20:59:55)	Ok	System default	Disabled	Enabled
<input type="checkbox"/>	guest		Zabbix User	Guests	Yes (2018-11-15 20:52:34)	Ok	System default	Disabled	Enabled
<input type="checkbox"/>	user	Test	User	Zabbix administrators	No	Ok	System default	Disabled	Enabled

Displaying 3 of 3 found

0 selected | Unblock | Delete

Zabbix 3.4.15. © 2001–2018, Zabbix SIA

## Añadir grupos de usuarios

Zabbix ISE: Configuration of user groups - Chromium

21:00

SWAD: plataforma de x | ISE-P3-MonitProf.pdf | P3-Lec1.pdf | 2 Debian/Ubuntu [Zabbix] | Zabbix - Wikipedia, la enciclopedia libre | Zabbix ISE: Configuration of user groups - Chromium

No es seguro | 192.168.56.105/zabbix/usergrps.php?ddreset=1

Aplicaciones | Cursos de Inglés | https://candidato.com

ZABBIX Monitoring Inventory Reports Configuration Administration

General Proxies Authentication User groups Users Media types Scripts Queue

User groups

Create user group

Filter ▾

Name	#	Members	Frontend access	Debug mode	Status
<input type="checkbox"/>	Disabled	Users	System default	Disabled	Disabled
<input type="checkbox"/>	Enabled debug mode	Users	System default	Enabled	Enabled
<input type="checkbox"/>	Guests	Users 1 guest	System default	Disabled	Enabled
<input type="checkbox"/>	No access to the frontend	Users	Disabled	Disabled	Enabled
<input type="checkbox"/>	Zabbix administrators	Users 2 Admin (Zabbix Administrator), user (Test User)	System default	Disabled	Enabled

Displaying 5 of 5 found

0 selected | Enable | Disable | Enable debug mode | Disable debug mode | Delete

Zabbix 3.4.15. © 2001–2018, Zabbix SIA

21:02

Zabbix ISE: Configuration of user groups - Chromium

SWAD: plataforma de | ISE-P3-MonitProf.pdf | P3-Lec1.pdf | 2 Debian/Ubuntu [Z | Zabbix - Wikipedia, la | Zabbix ISE: Configure x +

Aplicaciones

ZABBIX Monitoring Inventory Reports Configuration Administration

User groups Users Media types Scripts Queue

User groups

User group Permissions

Group name Zabbix administrators

Users In group

Admin (Zabbix Administrator)  
user (Test User)

Other groups All

guest

Frontend access System default

Enabled Enabled

Debug mode

Update Delete Cancel

192.168.56.105/zabbix/usergrps.php?form=update&usrgrp[0]=7#permissionsTab Zabbix 3.4.15. © 2001–2018, Zabbix SIA

21:02

Zabbix ISE: Configuration of user groups - Chromium

SWAD: plataforma de | ISE-P3-MonitProf.pdf | P3-Lec1.pdf | 2 Debian/Ubuntu [Z | Zabbix - Wikipedia, la | Zabbix ISE: Configure x +

Aplicaciones

ZABBIX Monitoring Inventory Reports Configuration Administration

User groups Users Media types Scripts Queue

User groups

User group Permissions

Permissions Host group Permissions

All groups None

type here to search Select Read-write Read Deny None

Include subgroups

Add

Update Delete Cancel

192.168.56.105/zabbix/usergrps.php?form=update&usrgrp[0]=7#permissionsTab Zabbix 3.4.15. © 2001–2018, Zabbix SIA

## Añadir Hosts (máquinas que se monitorean)

The screenshot shows the Zabbix ISE interface for managing hosts. At the top, there's a navigation bar with tabs for Monitoring, Inventory, Reports, Configuration, and Administration. Below that is a sub-navigation bar with Host groups, Templates, Hosts, Maintenance, Actions, Event correlation, Discovery, and Services. The main area is titled "Hosts" and contains a table of existing hosts. The table columns include Name, Applications, Items, Triggers, Graphs, Discovery, Web, Interface, Templates, Status, Availability, Agent encryption, and Info. One host entry is visible: "Zabbix server" with ID 11, IP 127.0.0.1:10050, and Template App Zabbix Server, Template OS Linux (Template App Zabbix Agent). The status is "Disabled". Below the table are buttons for "Enable", "Disable", "Export", "Mass update", and "Delete".

The screenshot shows the Zabbix ISE interface for creating a new host. The top navigation bar and sub-navigation bar are identical to the previous screenshot. The main area is titled "Host" and contains a form for entering host details. The "Host name" field is filled with "Ubuntu ISE", and the "Visible name" field is filled with "Ubuntu Server ISE". Under the "Groups" section, "Linux servers" is selected from the "In groups" list. In the "Other groups" list, several options are listed: Discovered hosts, Hypervisors, Templates, Templates/Applications, Templates/Databases, Templates/Modules, Templates/Network Devices, Templates/Operating Systems, Templates/Servers Hardware, and Templates/Virtualization. Below the group selection, there's a "New group" input field. The "Agent interfaces" section shows one entry with IP address 192.168.56.105, DNS name empty, Connect to IP, Port 10050, and Default selected. There are "Add" and "Remove" buttons for this section. Below it are sections for "SNMP interfaces", "JMX interfaces", and "IPMI interfaces", each with an "Add" button.

## Muestra de errores

The screenshot shows the Zabbix ISE Dashboard. At the top, there are three tabs: SWAD: plataforma, ISE-P3-MonitPro!, P3-Lec1.pdf, 2 Debian/Ubuntu, Zabbix - Wikipedia, Zabbix ISE: Dashboard, and performance-H. The dashboard has a dark blue header with the Zabbix logo and navigation links: Monitoring, Inventory, Reports, Configuration, Administration, Dashboard, Problems, Overview, Web, Latest data, Triggers, Graphs, Screens, Maps, Discovery, Services, and Edit dashboard.

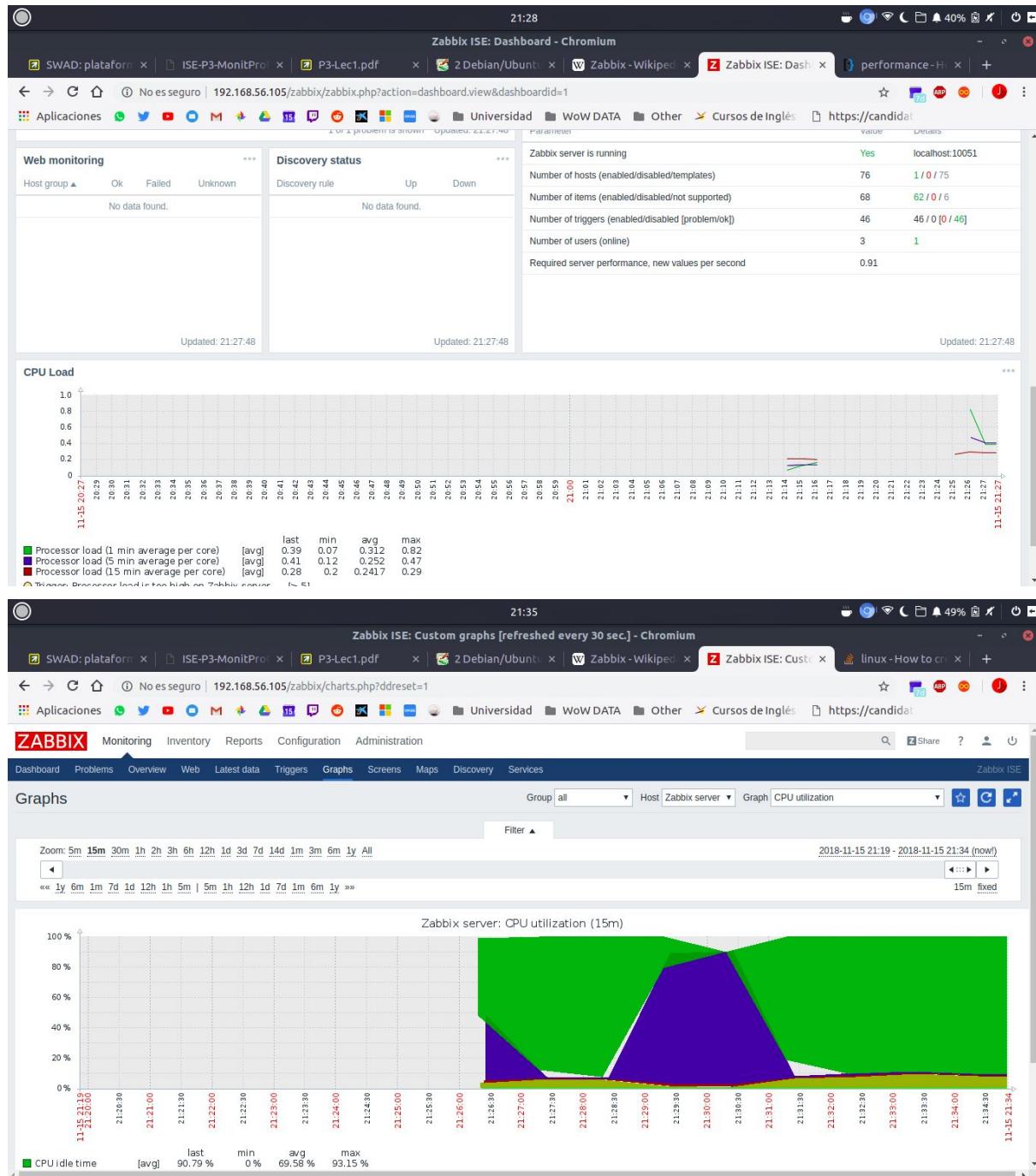
The main area is divided into several sections:

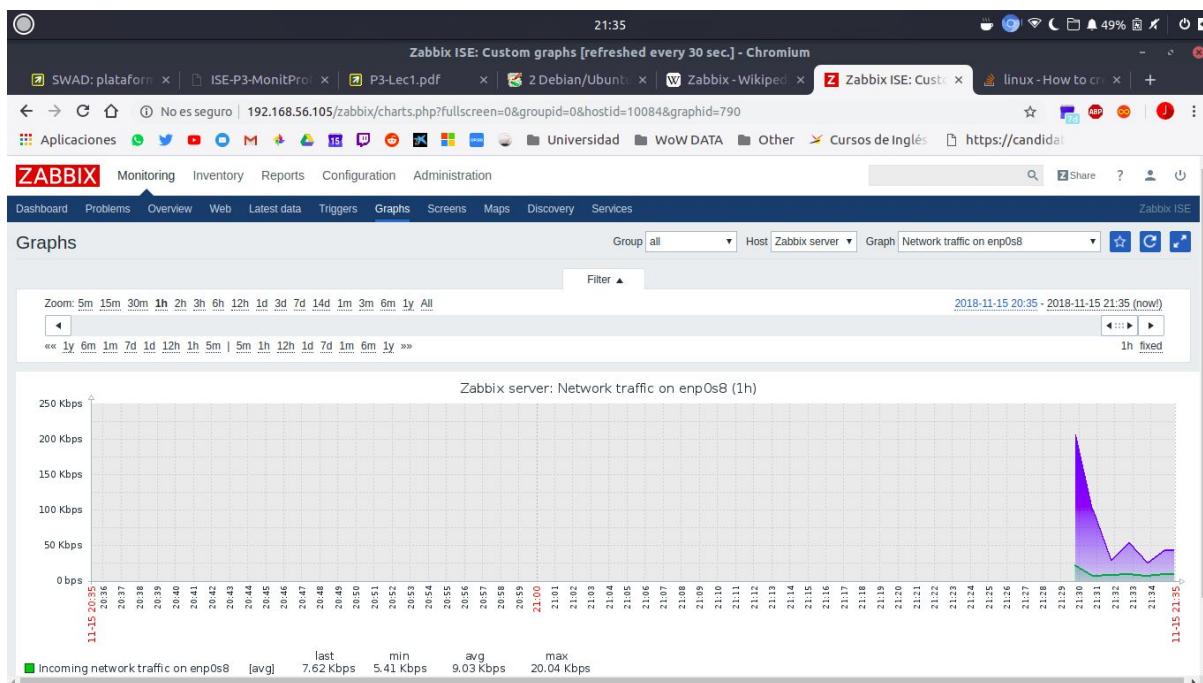
- Favourite graphs:** No graphs added.
- Favourite screens:** No screens added.
- Favourite maps:** No maps added.
- Host status:** Host group: Zabbix servers. Without problems: 1, With problems: 1, Total: 1.
- Problems:** A table showing a single problem: Zabbix agent on Zabbix server is unreachable for 5 minutes. The problem was created at 21:22:30 and last updated at 21:26:08. The status is "No".
- System status:** Host group: Zabbix servers. Disaster: 0, High: 1, Average: 0, Warning: 0, Information: 0, Not classified: 0.

This screenshot shows the same Zabbix ISE Dashboard after the issue has been resolved. The "Problems" section now displays a green box indicating the problem is fixed: "Zabbix agent on Zabbix server is unreachable for 5 minutes" (fixed at 21:27:07).

The rest of the dashboard structure remains the same, including the Favourite graphs, Favourite screens, Favourite maps, Host status, and System status sections.

# Gráficas





## Instalación en CentOS

*La gran parte de la conexión a la máquina CentOS es a través de ssh*

Procediendo igual que en Ubuntu, la instalación será guiada por la documentación del programa

## Zabbix Agent

```
rpm -ivh
https://repo.zabbix.com/zabbix/3.4/rhel/7/x86_64/zabbix-release-3.4-2.el
7.noarch.rpm
```

```
1:jfm@localhost:/home/jfm ~
[root@localhost jfm]# ifup enp0s3
Conexión activada con éxito (D-Bus active path: /org/freedesktop/NetworkManager/
ActiveConnection/1)
[root@localhost jfm]# rpm -ivh https://repo.zabbix.com/zabbix/3.4/rhel/7/x86_64/
zabbix-release-3.4-2.el7.noarch.rpm
Recuperando https://repo.zabbix.com/zabbix/3.4/rhel/7/x86_64/zabbix-release-3.4-
2.el7.noarch.rpm
advertencia:/var/tmp/rpm-tmp.J39jzh: EncabezadoV4 RSA/SHA512 Signature, ID de cl
ave a14fe591: NOKEY
Preparando... ###### [100%]
Actualizando / instalando...
1:zabbix-release-3.4-2.el7 ###### [100%]
[root@localhost jfm]#
```

```
yum install zabbix-agent
```

```
1:jfm@localhost:/home/jfm ~
6_64.rpm: EncabezadoV4 RSA/SHA512 Signature, ID de clave a14fe591: NOKEY
No se ha instalado la llave pública de zabbix-agent-3.4.15-1.el7.x86_64.rpm
zabbix-agent-3.4.15-1.el7.x86_64.rpm | 369 kB 00:01
Obteniendo clave desde file:///etc/pki/rpm-gpg/RPM-GPG-KEY-ZABBIX-A14FE591
Importando llave GPG 0xA14FE591:
  UsuarioID : "Zabbix LLC <packager@zabbix.com>"
  Huella     : a184 8f53 52d0 22b9 471d 83d0 082a b56b a14f e591
  Paquete   : zabbix-release-3.4-2.el7.noarch (installed)
  Desde     : /etc/pki/rpm-gpg/RPM-GPG-KEY-ZABBIX-A14FE591
Está de acuerdo [s/N]:s
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Advertencia: Las bases de datos (RPMDB) han sido modificadas por un elemento ajeno a yum.
Instalando  : zabbix-agent-3.4.15-1.el7.x86_64 1/1
Comprobando : zabbix-agent-3.4.15-1.el7.x86_64 1/1

Instalado:
 zabbix-agent.x86_64 0:3.4.15-1.el7

¡Listo!
[root@localhost jfm]#
```

```
service zabbix-agent start
```

Listo, ya está el agente instalado. Ahora hay que configurar el archivo `/etc/zabbix/zabbix_agentd.config` y añadir en las líneas que aparezca Servidor la ip correspondiente

```
Servidor=192.168.56.105
```

En CentOS es necesario modificar el SELinux y el firewall para abrir los puertos que utiliza Zabbix (10050 - 10051 tcp).

Lo primero es modificar la variable `zabbix_can_network` del SELinux a `on`

```
setsebool -P zabbix_can_network on
```

```
CentOS ISE PR NoCrypt (Fresh Server install raid installed) [Corriendo] - Oracle VM V... - x
Archivo Máquina Ver Entrada Dispositivos Ayuda
[root@localhost ~]# getsebool -a | grep zabb
httpd_can_connect_zabbix --> off
zabbix_can_network --> off
[root@localhost ~]# setsebool -P zabbix_can_network on
[root@localhost ~]# getsebool -a | grep zabb
httpd_can_connect_zabbix --> off
zabbix_can_network --> on
[root@localhost ~]# systemctl restart zabbix-agent
[root@localhost ~]#
```

Abrimos los puertos de Zabbix

```
firewall-cmd --add-port=10050/tcp --permanent
```

```
firewall-cmd --add-port=10050/tcp
```

```
firewall-cmd --add-port=10051/tcp --permanent
```

```
firewall-cmd --add-port=10051/tcp
```

```
CentOS ISE PR NoCrypt (Fresh Server install raid installed) [Corriendo] - Oracle VM V... - x
Archivo Máquina Ver Entrada Dispositivos Ayuda
### Option: EnableRemoteCommands
# Whether remote commands from Zabbix server are allowed.
# 0 - not allowed
# 1 - allowed
#
# Mandatory: no
# Default:
# EnableRemoteCommands=0

[root@localhost ~]# semanage port -l | grep za
zabbix_agent_port_t          tcp      10050
zabbix_port_t                tcp      10051
zafrafa_port_t               tcp      236, 237
[root@localhost ~]# firewall-cmd --add-port=10050/tcp --permanent
success
[root@localhost ~]# firewall-cmd --add-port=10050/tcp
success
[root@localhost ~]# firewall-cmd --add-port=10051/tcp
success
[root@localhost ~]# firewall-cmd --add-port=10051/tcp --permanent
success
[root@localhost ~]# firewall-cmd --reload
success
[root@localhost ~]# _
```

Solo queda añadir un host tal y como se mostró antes pero con la ip=192.168.56.110

Name	Applications	Items	Triggers	Graphs	Discovery	Web	Interface	Templates	Status	Availability	Agent encryption	Info
CentOS	Applications 11	Items 68	Triggers 46	Graphs 11	Discovery 2	Web 192.168.56.110:10050		Template App Zabbix Server, Template OS Linux (Template App Zabbix Agent)	Enabled	ZBX SNMP JMX IPMI	NONE	
Ubuntu Server	Applications 11	Items 87	Triggers 52	Graphs 16	Discovery 2	Web 127.0.0.1: 10050		Template App Zabbix Server, Template OS Linux (Template App Zabbix Agent)	Enabled	ZBX SNMP JMX IPMI	NONE	
Zabbix server	Applications 11	Items 87	Triggers 52	Graphs 16	Discovery 2	Web 127.0.0.1: 10050		Template App Zabbix Server, Template OS Linux (Template App Zabbix Agent)	Disabled	ZBX SNMP JMX IPMI	NONE	

## Problemas en la instalación

Tras la instalación del agente, al intentar iniciar el servicio se quedaba en activating (auto-restart) pero nunca llegaba a estar en ejecución (zabbix-agent.service failed with result 'resources'). Observando los logs, en concreto /var/log/zabbix/zabbix\_agentd.log y decenas de foros, descubrí que el problema residía en una falta de recursos relacionada con los semáforos: *cannot create semaphore set: [28] No space left on device*. Siguiendo los pasos de este foro ([7](#)) conseguí modificar el límite de semáforos directamente en las variables del kernel, y así poder ejecutar el servicio.

```
$>cat /proc/sys/kernel/sem
output: 250 32000 32 128

$>ipcs -s | grep -c "^\0x"
output: 128

the last value, 128 is the max limit reached for semaphore arrays, so i
needed to increase that, by doing:
$>echo "kernel.sem = 250 32000 32 256" >> /etc/sysctl.conf
$> sysctl -p /etc/sysctl.conf
output: kernel.sem = 250 32000 32 256

After this, i needed to check the new sempahore array:
$> cat /proc/sys/kernel/sem
output: 250 32000 32 256
```

Tras este problema solucionado, otro más apareció a la hora de conectar el agente de CentOS con el Servidor en Ubuntu, dandome un error: No route to host.

Tras muchas comprobaciones y búsquedas, descubrí que me faltaba por tocar ciertos parámetros del firewall para que me permitiera realizar la conexión. [\(4\)](#)

## Monitorización de SSH

### Ubuntu Server

Para poder monitorizar este servicio disponemos de Templates específicas dentro de Zabbix por defecto, donde una de ellas es SSH.

Para añadirla y hacer uso de ella debemos acceder a la configuración del host Ubuntu Server anteriormente configurado, y añadir en la pestaña Templates la plantilla *Template App SSH Service*

The screenshot shows the Zabbix interface for managing hosts. The top navigation bar includes 'Monitoring', 'Inventory', 'Reports', 'Configuration', and 'Administration'. The main menu has tabs for 'Host groups', 'Templates', 'Hosts', 'Maintenance', 'Actions', 'Event correlation', 'Discovery', and 'Services'. On the right, there are icons for search, share, help, and power. The current page is 'Hosts' for 'Ubuntu Server', with the 'Enabled' filter selected. The 'Templates' tab is active. Under 'Linked templates', two items are listed: 'Template App Zabbix Server' and 'Template OS Linux', each with 'Unlink' and 'Unlink and clear' options. Below this is a search field with placeholder 'type here to search' and a 'Select' button. At the bottom are buttons for 'Update', 'Clone', 'Full clone', 'Delete', and 'Cancel'.



The screenshot shows the Zabbix 'Hosts' configuration page. At the top, there are navigation links: Monitoring, Inventory, Reports, Configuration, Administration, and a search bar. Below that is a secondary navigation bar with Host groups, Templates, Hosts, Maintenance, Actions, Event correlation, Discovery, and Services. The 'Hosts' tab is selected. Under 'Hosts', it says 'All hosts / Ubuntu Server Enabled ZBX SNMP JMX IPMI Applications 11 Items 87 Triggers 52 Graphs 16 Discovery rules 2 Web scenarios'. The main content area shows a table of linked templates for the host 'Ubuntu Server'. There are two rows: 'Template App Zabbix Server' and 'Template OS Linux', each with 'Unlink' and 'Unlink and clear' actions. Below this is a section for 'Link new templates' with a search bar containing 'Template App SSH Service' and a 'Select' button. At the bottom are buttons for 'Update', 'Clone', 'Full clone', 'Delete', and 'Cancel'.

Haciendo click en Add y Update, tenemos la plantilla añadida.

Esta nos creará un nuevo Item y un nuevo Trigger que funcionará cada minuto y controlará el servicio SSH.

Cabe decir que esta template utiliza el puerto por defecto de ssh, y debido a que nosotros teníamos un puerto diferente al predeterminado, debemos cambiarlo en el ítem que es creado, modificando la key `net.tcp.service[ssh]` por `net.tcp.service[ssh,,22022]`.

En mi caso, he tenido que reinstalar las máquinas decenas de veces por diversos problemas y estos cambios no los tengo implementados.

The screenshot shows the Zabbix 'Items' configuration page. At the top, there are navigation links: Monitoring, Inventory, Reports, Configuration, Administration, and a search bar. Below that is a secondary navigation bar with Host groups, Templates, Hosts, Maintenance, Actions, Event correlation, Discovery, and Services. The 'Hosts' tab is selected. Under 'Hosts', it says 'All hosts / Ubuntu Server Enabled ZBX SNMP JMX IPMI Applications 12 Items 88 Triggers 53 Graphs 16 Discovery rules 2 Web scenarios'. The main content area shows a table of items for the host 'Ubuntu Server'. One item is visible: 'Template App SSH Service: SSH service is running' with a trigger 'Triggers 1 net.tcp.service[ssh] 1m 1w 365d Simple check SSH service Enabled'. At the bottom, it says 'Displaying 1 of 1 found'.

## Comprobación de funcionamiento

Desactivamos para ello el servicio en Ubuntu

```
systemctl stop sshd

Last login: Wed Nov 21 14:43:43 2018
jfm@Ubuntu:~$ sudo su
[sudo] password for jfm:
root@Ubuntu:/home/jfm# systemctl stop sshd
root@Ubuntu:/home/jfm# systemctl status sshd
● ssh.service - OpenBSD Secure Shell server
  Loaded: loaded (/lib/systemd/system/ssh.service; enabled; vendor preset: enabled)
  Active: inactive (dead) since mié 2018-11-21 14:58:58 CET; 5s ago
    Process: 3209 ExecStart=/usr/sbin/sshd -D $SSH_OPTS (code=exited, status=0/SUCCESS)
   Main PID: 3209 (code=exited, status=0/SUCCESS)

nov 21 14:54:21 Ubuntu sshd[5056]: Disconnected from 127.0.0.1 port 46242 [preauth]
nov 21 14:54:22 Ubuntu sshd[5061]: Accepted password for jfm from 127.0.0.1 port 46246
nov 21 14:54:22 Ubuntu sshd[5061]: pam_unix(sshd:session): session opened for user jfm
nov 21 14:54:52 Ubuntu sshd[5114]: Accepted password for jfm from 127.0.0.1 port 46326
nov 21 14:54:52 Ubuntu sshd[5114]: pam_unix(sshd:session): session opened for user jfm
nov 21 14:56:30 Ubuntu sshd[5180]: Connection closed by 127.0.0.1 port 46588 [preauth]
nov 21 14:57:30 Ubuntu sshd[5206]: Connection closed by 127.0.0.1 port 46758 [preauth]
nov 21 14:58:30 Ubuntu sshd[5227]: Connection closed by 127.0.0.1 port 46928 [preauth]
nov 21 14:58:58 Ubuntu systemd[1]: Stopping OpenBSD Secure Shell server...
nov 21 14:58:58 Ubuntu systemd[1]: Stopped OpenBSD Secure Shell server.

root@Ubuntu:/home/jfm#
```

All dashboards / Dashboard

**Favourite graphs**

No graphs added.

**Favourite screens**

No screens added.

**Favourite maps**

No maps added.

**Host status**

Host group ▲

- Linux servers
- Zabbix servers

Updated: 15:01:59      Updated: 15:01:59      Updated: 15:01:59

### Problems

Time ▼	Recovery time	Status	Info	Host	Problem * Severity	Duration	Ack	Actions
15:01:30		PROBLEM		Ubuntu Server	SSH service is down on Ubuntu Server	29s	No	
15:00								
14:52:21		PROBLEM		Ubuntu Server	Ubuntu Server has just been restarted	9m 38s	No	
14:44:09	14:50:09	RESOLVED		Ubuntu Server	Disk I/O is overloaded on Ubuntu Server	6m	No	
14:44:02	14:45:02	RESOLVED		CentOS	Zabbix self-monitoring processes more than 75% busy	1m	No	
14:44:01	14:45:01	RESOLVED		CentOS	Zabbix proxy poller processes more than 75% busy	1m	No	

The screenshot shows the Zabbix web interface with the following sections:

- Header:** ZABBIX, Monitoring, Inventory, Reports, Configuration, Administration.
- Top navigation bar:** Dashboard, Problems, Overview, Web, Latest data, Triggers, Graphs, Screens, Maps, Discovery, Services.
- Dashboard section:**
  - Favourite graphs:** No graphs added. Updated: 15:02:54
  - Favourite screens:** No screens added. Updated: 15:02:55
  - Favourite maps:** No maps added. Updated: 15:02:55
  - Host status:** Host group ▲, Linux servers, Zabbix servers.
- Problems section:** A table listing problems:
 

Time	Recovery time	Status	Info	Host	Problem • Severity	Duration	Ack	Actions
15:01:30	15:02:30	RESOLVED		Ubuntu Server	SSH service is down on Ubuntu Server	1m	No	
15:00								
14:52:21	15:02:21	RESOLVED		Ubuntu Server	Ubuntu Server has just been restarted	10m	No	
14:44:09	14:50:09	RESOLVED		Ubuntu Server	Disk I/O is overloaded on Ubuntu Server	6m	No	

Como podemos observar, cuando este está desactivado, aparece el warning.

## CentOS

En CentOS debemos proceder de igual manera que en Ubuntu ya que hace uso de la misma template.

The screenshot shows the Zabbix web interface with the following sections:

- Header:** ZABBIX, Monitoring, Inventory, Reports, Configuration, Administration.
- Top navigation bar:** Host groups, Templates, Hosts, Maintenance, Actions, Event correlation, Discovery, Services, Zabbix ISE.
- Items section:**
  - Filter:** Host group (CentOS), Type (all), Type of information (all), State (all), Host (CentOS), Update interval, History, Trends, Application (SSH service), Name, Key, Status (all), Triggers (all), Template (all).
  - Subfilter:** Subfilter affects only filtered data.
  - Table:** Displays one item:
 

Triggers	Key	Interval	History	Trends	Type	Applications	Status	Info
Triggers 1	net.tcp.service[ssh]	1m	1w	365d	Simple check	SSH service	Enabled	

 Displaying 1 of 1 found.

# Monitorización de HTTP

## Ubuntu Server y CentOS

Procederemos igual que a la hora de monitorizar SSH, ya que existe otra plantilla pero para el servicio HTTP.

The screenshot shows a list of template items. The 'Template App HTTP Service' item is selected, indicated by a checked checkbox and highlighted with a yellow background. Other items listed are 'Template App Generic Java JMX', 'Template App HTTPS Service', and 'Template App IMAP Service'. The interface is a standard Zabbix configuration screen with a navigation bar at the top.

This screenshot shows the 'Items' configuration screen for an 'Ubuntu Server' host group. A single item is listed: 'Template App HTTP Service: HTTP service is running'. The configuration details are: Trigger key: 'net.tcp.service[http]', Interval: '1m', History: '1w', Trends: '365d', Type: 'Simple check', Applications: 'HTTP service', Status: 'Enabled'. The 'Create Item' button is visible in the top right corner.

This screenshot shows the 'Items' configuration screen for a 'CentOS' host group. A single item is listed: 'Template App HTTP Service: HTTP service is running'. The configuration details are identical to the previous screenshot: Trigger key: 'net.tcp.service[http]', Interval: '1m', History: '1w', Trends: '365d', Type: 'Simple check', Applications: 'HTTP service', Status: 'Enabled'. The 'Create Item' button is visible in the top right corner.

Para CentOS, no siendo una novedad, es necesario abrir el puerto 80 tcp para que Zabbix pueda hacer las comprobaciones de http, que por defecto, son en ese puerto.

```
firewall-cmd --add-port=80/tcp --permanent  
firewall-cmd --add-port=80/tcp
```

## Finalmente

Finalmente, aquí tenemos ambos servicios monitoreados en ambas máquinas.

Host	Name	Last check	Last value
Ubuntu Server	HTTP service (1 Item)	2018-11-21 17:15:32	Up (1)
Ubuntu Server	HTTP service is running	2018-11-21 17:15:34	Up (1)
CentOS	HTTP service (1 Item)	2018-11-21 17:15:30	Up (1)
CentOS	HTTP service is running	2018-11-21 17:15:31	Up (1)
Ubuntu Server	SSH service (1 Item)	2018-11-21 17:15:32	Up (1)
Ubuntu Server	SSH service is running	2018-11-21 17:15:34	Up (1)
CentOS	SSH service (1 Item)	2018-11-21 17:15:30	Up (1)
CentOS	SSH service is running	2018-11-21 17:15:31	Up (1)

## Bibliografía

- (1) <https://www.zabbix.com/documentation/3.4/manual>
- (2) <https://www.zabbix.com/documentation/3.4/manual/installation>
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- (4) <https://support.zabbix.com/browse/ZBX-12981>
- (5) <https://wiki.centos.org/TipsAndTricks/SelinuxBooleans>
- (6) <https://es.wikipedia.org/wiki/Zabbix>
- (7) <https://support.zabbix.com/browse/ZBX-11334>
- (8) [https://www.zabbix.com/documentation/3.4/manual/appendix/items/service\\_check\\_details](https://www.zabbix.com/documentation/3.4/manual/appendix/items/service_check_details)
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