

Nombre:

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Práctica Guiada DAW2 Instalación de Apache Tomcat en AWS EC2 (Linux)

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1. Datos de la instancia EC2

- AMI utilizada: Ubuntu Server 24.04
- Tipo de instancia: t3.micro
- IP pública: 44.223.68.79
- Clave (.pem): Las claves utilizadas en todas mis instancias “claveAWS.pem”
- Puertos abiertos: 22(SSH), 8080(TCP)

The screenshot shows the AWS CloudWatch Metrics interface for the instance i-0099f975281ad55fd. The top navigation bar includes tabs for 'ApacheTomcat' (selected), 'i-0099f975281ad55fd' (instance ID), 'En ejecución' (running), 't3.micro' (instance type), '3/3 comprobador' (check status), 'Ver alarmas' (alarms), 'us-east-1f' (region), 'ec2-100-48-105-167.co...' (source IP), '100.48.105.167' (target IP), and a date range selector.

The main content area displays two tables of security group rules:

Reglas de entrada (Inbound Rules):

Nombre	ID de la regla del grupo ...	Intervalo de p...	Protocolo	Origen	Grupos de seguridad	Descripción
-	sgr-0eb9540905c6e5e85	22	TCP	0.0.0.0/0	launch-wizard-6	-
-	sgr-0deedfbdb1a54c1f5	8080	TCP	0.0.0.0/0	launch-wizard-6	-

Reglas de salida (Outbound Rules):

Nombre	ID de la regla del grupo ...	Intervalo de p...	Protocolo	Destino	Grupos de seguridad	Descripción
-	sgr-04386226a78dee61a	Todo	Todo	0.0.0.0/0	launch-wizard-6	-

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2. Conexión por SSH

Comando utilizado:

```
ssh -i "D:\Usuarios\daw214\Downloads\claveAWS.pem" ubuntu@100.48.105.167
```

```
PS C:\WINDOWS\system32> ssh -i "D:\Usuarios\daw214\Downloads\claveAWS.pem" ubuntu@100.48.105.167
The authenticity of host '100.48.105.167 (100.48.105.167)' can't be established.
ED25519 key fingerprint is SHA256:jEAuZ17FqZPitKehlhsDrTKeSCLJ/yPTExysXCBq49M.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '100.48.105.167' (ED25519) to the list of known hosts.

Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-1015-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Fri Dec 12 15:50:14 UTC 2025

System load:  0.0          Temperature:      -273.1 °C
Usage of /:   25.8% of 6.71GB  Processes:        111
Memory usage: 22%           Users logged in:   0
Swap usage:   0%            IPv4 address for ens5: 172.31.68.127

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-68-127:~$ |
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3. Actualización de paquetes

Comando:

```
sudo apt update
```

```
ubuntu@ip-172-31-68-127:~$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1378 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [224 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [21.6 kB]
Get:11 http://security.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [9488 B]
Get:12 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [916 kB]
Get:13 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [207 kB]
Get:14 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [71.4 kB]
Get:15 http://security.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [19.4 kB]
Get:16 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [2266 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:22 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [1675 kB]
```

Comando:

```
sudo apt upgrade
```

```
ubuntu@ip-172-31-68-127:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following NEW packages will be installed:
  linux-aws-6.14-headers-6.14.0-1018 linux-aws-6.14-tools-6.14.0-1018 linux-headers-6.14.0-1018-aws
    linux-image-6.14.0-1018-aws linux-modules-6.14.0-1018-aws linux-tools-6.14.0-1018-aws
The following upgrades have been deferred due to phasing:
  dhcpcd-base
The following packages will be upgraded:
  apparmor bind9-dnsutils bind9-host bind9-libs gir1.2-glib-2.0 gir1.2-packagekitglib-1.0 intel-microcode
    landscape-common libapparmor1 libdrm-common libdrm2 libglib2.0-0t64 libglib2.0-bin libglib2.0-data libnetplan1
    libpackagekit-glib2-18 libpng16-16t64 libpython3-stdlib libpython3.12-minimal libpython3.12-stdlib libpython3.12t64
    libssh-4 libxml2 linux-aws linux-headers-aws linux-image-aws linux-tools-common netplan-generator netplan.io
    packagekit packagekit-tools python-apt-common python3 python3-apt python3-minimal python3-netplan python3-urllib3
    python3.12 python3.12-minimal snapd ubuntu-pro-client ubuntu-pro-client-l10n
42 upgraded, 6 newly installed, 0 to remove and 1 not upgraded.
```

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5. Instalacion de JDK

```
sudo apt install default-jdk
```

```
ubuntu@ip-172-31-68-127:~$ sudo apt install default-jdk
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
adwaita-icon-theme alsamixer-conf at-spi2-common at-spi2-core ca-certificates-java
dconf-gsettings-backend dconf-service default-jdk-headless default-jre default-jre-headless fontconfig
fontconfig-config fonts-dejavu-core fonts-dejavu-extra fonts-dejavu-mono gsettings-desktop-schemas
gtk-update-icon-cache hicolor-icon-theme humanity-icon-theme java-common libasound2-data libasound2c64
libatk-bridge2.0-0t64 libatk-wrapperv2.0-0t64 libavahi-client3
libavahi-common-data libavahi-common3 libcairo-gobject2 libcairo2 libcolor2 libcups2t64 libdatrie1 libdconf1
libdeflate0 libdrm-amdgpu1 libdrm-intel1 libepoxy0 libfontconfig1 libgbm1 libgdk-pixbuf-2.0-0 libgdk-pixbuf2.0-bin
libgdk-pixbuf2.0-common libgif7 libgl1 libgl1-mesa-dri libglvnd0 libglx-mesa0 libglx0 libgraphite2-3 libgtk-3-0t64
libgtk-3-bin libgtk-3-common libharfbuzz0b libice-dev libice6 libjbig0 libjpeg-turbo8 libjpeg8 liblcms2-2 liblrc4
liblvm20 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0 libpcaccess0 libpcssclite1 libpixman-1-0
libpthread-stubs0-dev librsvg2-2 librsvg2-common libsharpypuv0 libsm-dev libsm6 libthai-data libthai0 libtiff6
libvulkan1 libwayland-client0 libwayland-cursor0 libwayland-egl1 libwayland-server0 libwebp7 libx11-dev libx11-xcb1
libxau-dev libxaw7 libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-randr0 libxcb-render0 libxcb-shape0 libxcb-shm0
libxcb-sync1 libxcb-xfixes0 libxcb1-dev libcomposite1 libcursor1 libxdamage1 libxdmcp-dev libxfixes3 libxft2
libxi6 libxinerama1 libxbfile1 libxmu6 libxpm4 libxrandr2 libxrender1 libxshmfence1 libxt-dev libxt6t64 libxtst6
libxv1 libxxf86dg1 libxxf86vml mesa-libgallium mesa-vulkan-drivers openjdk-21-jdk openjdk-21-jdk-headless
openjdk-21-ire openjdk-21-ire-headless session-migration ubuntu-mono x11-common x11-utils x11proto-dev
```

6. Configuración de Usuario y Directorios

el grupo y el usuario tomcat:

```
Sudo groupadd tomcat
```

```
ubuntu@ip-172-31-68-127:~$ sudo groupadd tomcat
```

```
sudo useradd -M -s /bin/false -g tomcat tomcat
```

```
ubuntu@ip-172-31-18-119:~$ sudo useradd -M -s /bin/false -g tomcat tomcat
```

Crear el directorio de instalación:

```
Sudo mkdir /opt/tomcat
```

```
ubuntu@ip-172-31-68-127:~$ sudo mkdir /opt/tomcat
```

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7. Instalo TomCat

```
ubuntu@ip-172-31-18-119:/tmp$ wget https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.113/bin/apache-tomcat-9.0.113.tar.gz
```

```
ubuntu@ip-172-31-18-119:/tmp$ wget https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.113/bin/apache-tomcat-9.0.113.tar.gz
--2025-12-16 14:17:41--  https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.113/bin/apache-tomcat-9.0.113.tar.gz
Resolving dlcdn.apache.org (dlcdn.apache.org)... 151.101.2.132, 2a04:4e42::644
Connecting to dlcdn.apache.org (dlcdn.apache.org)|151.101.2.132|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 13049663 (12M) [application/x-gzip]
Saving to: 'apache-tomcat-9.0.113.tar.gz'

apache-tomcat-9.0.113.tar 100%[=====] 12.44M --.-KB/s   in 0.03s

2025-12-16 14:17:42 (366 MB/s) - ‘apache-tomcat-9.0.113.tar.gz’ saved [13049663/13049663]
```

```
sudo tar xvzf apache-tomcat-9.0.113.tar.gz -C /opt/tomcat --strip-components=1
```

```
ubuntu@ip-172-31-18-119:/tmp$ sudo mkdir -p /opt/tomcat
ubuntu@ip-172-31-18-119:/tmp$ sudo tar xvzf apache-tomcat-9.0.113.tar.gz -C /opt/tomcat --strip-components=1
apache-tomcat-9.0.113/conf/
apache-tomcat-9.0.113/conf/catalina.policy
apache-tomcat-9.0.113/conf/catalina.properties
apache-tomcat-9.0.113/conf/context.xml
apache-tomcat-9.0.113/conf/jaspic-providers.xml
apache-tomcat-9.0.113/conf/jaspic-providers.xsd
apache-tomcat-9.0.113/conf/logging.properties
apache-tomcat-9.0.113/conf/server.xml
apache-tomcat-9.0.113/conf/tomcat-users.xml
apache-tomcat-9.0.113/conf/tomcat-users.xsd
apache-tomcat-9.0.113/conf/web.xml
apache-tomcat-9.0.113/bin/
apache-tomcat-9.0.113/lib/
apache-tomcat-9.0.113/logs/
apache-tomcat-9.0.113/temp/
apache-tomcat-9.0.113/webapps/
```

Le damos permisos

```
Cd /opt/tomcat
```

```
ubuntu@ip-172-31-18-119:/tmp$ cd /opt/tomcat
sudo chgrp -R tomcat /opt/tomcat
sudo chmod -R g+r conf
sudo chmod -R g+x conf
sudo chown -R tomcat webapps/ work/ temp/ logs/
```

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Sudo nano /etc/systemd/system/tomcat.service

```
ubuntu@ip-172-31-18-119:/opt/tomcat$ sudo nano /etc/systemd/system/tomcat.service
```

Añadimos la configuracion

```
GNU nano 7.2          /etc/systemd/system/tomcat.service *
[Unit]
Description=Apache Tomcat Web Application Container
After=network.target

[Service]
Type=forking
User=tomcat
Group=tomcat

Environment="JAVA_HOME=/usr/lib/jvm/java-21-openjdk-amd64"
Environment="CATALINA_HOME=/opt/tomcat"
Environment="CATALINA_BASE=/opt/tomcat"
Environment="CATALINA_PID=/opt/tomcat/temp/tomcat.pid"
Environment="CATALINA_OPTS=-Xms512M -Xmx1024M -server -XX:+UseParallelGC"

ExecStart=/opt/tomcat/bin/startup.sh
ExecStop=/opt/tomcat/bin/shutdown.sh

[Install]
WantedBy=multi-user.target
```

Compruebo el estado y le reinicio

Sudo systemctl daemon-reload

Sudo systemctl restart tomcat

Sudo systemctl status tomcat

```
ubuntu@ip-172-31-18-119:/opt/tomcat$ sudo systemctl daemon-reload
sudo systemctl restart tomcat
sudo systemctl status tomcat
● tomcat.service - Apache Tomcat Web Application Container
   Loaded: loaded (/etc/systemd/system/tomcat.service; enabled; preset: enabled)
   Active: active (running) since Tue 2025-12-16 14:26:17 UTC; 19ms ago
     Process: 14190 ExecStart=/opt/tomcat/bin/startup.sh (code=exited, status=0/SUCCESS)
    Main PID: 14197 (java)
       Tasks: 3 (limit: 1008)
      Memory: 7.2M (peak: 7.2M)
        CPU: 18ms
       CGroup: /system.slice/tomcat.service
               └─14197 /usr/lib/jvm/java-21-openjdk-amd64/bin/java -Djava.util.logging.config.file=/opt>

Dec 16 14:26:17 ip-172-31-18-119 systemd[1]: Starting tomcat.service - Apache Tomcat Web Application >
Dec 16 14:26:17 ip-172-31-18-119 startup.sh[14190]: Tomcat started.
Dec 16 14:26:17 ip-172-31-18-119 systemd[1]: Started tomcat.service - Apache Tomcat Web Application >
Lines 1-14/14 (END)
```

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Y compruebo que funciona en el navegador

http://44.223.68.79:8080

The screenshot shows the Apache Tomcat 9.0.113 homepage. At the top, there's a navigation bar with links to Home, Documentation, Configuration, Examples, Wiki, and Mailing Lists, along with a 'Find Help' search bar. The main title 'Apache Tomcat/9.0.113' is displayed above a green banner that says 'If you're seeing this, you've successfully installed Tomcat. Congratulations!'. To the left of the banner is a cartoon cat icon. Below the banner, there's a section titled 'Recommended Reading:' with links to 'Security Considerations How-To', 'Manager Application How-To', and 'Clustering/Session Replication How-To'. On the right side of the banner, there are three buttons: 'Server Status', 'Manager App', and 'Host Manager'. The 'Developer Quick Start' section includes links to 'Tomcat Setup', 'First Web Application', 'Realms & AAA', 'JDBC DataSources', 'Examples', 'Servlet Specifications', and 'Tomcat Versions'. The 'Managing Tomcat' section contains links to 'Release Notes', 'Changelog', 'Migration Guide', 'Security Notices', 'manager webapp', and information about user definitions in '\$CATALINA_HOME/conf/tomcat-users.xml'. The 'Documentation' section has links to 'Tomcat 9.0 Documentation', 'Tomcat 9.0 Configuration', and 'Tomcat Wiki', along with information about configuration files like '\$CATALINA_HOME/RUNNING.txt'. The 'Getting Help' section includes links to 'FAQ and Mailing Lists', 'tomcat-announce' (for announcements), 'tomcat-users' (user support), 'taglibs-user' (user support for Taglibs), and 'tomcat-dev' (development mailing list). At the bottom, there are links for 'Other Downloads' (Tomcat Connectors, Tomcat Native, Taglibs Deployer), 'Other Documentation' (Tomcat Connectors, mod_jk Documentation, Tomcat Native, Deployer), 'Get Involved' (Overview, Source Repositories, Mailing Lists, Wiki), 'Miscellaneous' (Contact, Legal, Sponsorship, Thanks), and 'Apache Software Foundation' (Who We Are, Heritage, Apache Home, Resources). A copyright notice at the very bottom states 'Copyright ©1999-2025 Apache Software Foundation. All Rights Reserved'.