install tomcat in ubuntu

Step 1: Install OpenJDK

Tomcat requires Java to be installed. We'll install OpenJDK , which is the default Java development and runtime in Ubuntu 18.04.

The installation of Java is pretty simple. Begin by updating the package index:

```
sudo apt update
```

Install the OpenJDK package by running:

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

Step 2: Create Tomcat User

For security purposes, Tomcat should not be run under the root user. We will create a new system user and group with home directory `/opt/tomcat` that will run the Tomcat service:

```
sudo useradd -r -m -U -d /opt/tomcat -s /bin/false tomcat
```

Step 3: Install Tomcat

We will download the latest binary release of Tomcat 9 from the Tomcat 9 downloads page .

At the time of writing, the latest version is `9.0.27`. Before continuing with the next step, you should check the download page for a new version. If there is a new version, copy the link to the Core `tar.gz` file, which is under the Binary Distributions section.

Start by download the Tomcat archive in the `/tmp` directory using the following `wget` command:

```
wget http://www-eu.apache.org/dist/tomcat/tomcat-9/v9.0.27/bin/apache-tomcat-9.0.27.tar.gz -P /tmp
```

Once the download is complete, extract the Tomcat archive and move it to the `/opt/tomcat` directory:

```
sudo tar xf /tmp/apache-tomcat-9*.tar.gz -C /opt/tomcat
```

To have more control over Tomcat versions and updates, create a symbolic link called `latest` that points to the Tomcat installation directory:

```
sudo ln -s /opt/tomcat/apache-tomcat-9.0.27 /opt/tomcat/latest
```

Later if you want to upgrade your Tomcat instance, simply unpack the newer version and change the symlink to point to the latest version.

As we mentioned in the previous section Tomcat will run under the `tomcat` user. This user needs to have access to the tomcat installation directory.

The following command changes the directory ownership to user and group tomcat:

```
sudo chown -RH tomcat: /opt/tomcat/latest
```

The scripts inside `bin` directory must have executable flag :

```
sudo sh -c 'chmod +x /opt/tomcat/latest/bin/*.sh'
```

Step 4: Create a systemd Unit File

To run Tomcat as a service you need to create a new unit file.

Open your text editor and create a file named `tomcat.service` in the `/etc/systemd/system/`:

```
sudo nano /etc/systemd/system/tomcat.service
```

Paste the following configuration:

/etc/systemd/system/tomcat.service

```
[Unit]
Description=Tomcat 9 servlet container
After=network.target

[Service]
Type=forking

User=tomcat
Group=tomcat

Environment="JAVA_HOME=/usr/lib/jvm/default-java"
Environment="JAVA_OPTS=-Djava.security.egd=file:///dev/urandom -Djava.
awt.headless=true"

Environment="CATALINA_BASE=/opt/tomcat/latest"
Environment="CATALINA_HOME=/opt/tomcat/latest"
Environment="CATALINA_PID=/opt/tomcat/latest/temp/tomcat.pid"
Environment="CATALINA_OPTS=-Xms512M -Xmx1024M -server -XX:
+UseParallelGC"

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

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

Modify the value of `JAVA_HOME` if the path to your Java installation is different.

Save and close the file and notify systemd that we created a new unit file:

```
sudo systemctl daemon-reload
```

Start the Tomcat service by executing:

```
sudo systemctl start tomcat
```

Check the service status with the following command:

```
sudo systemctl status tomcat
* tomcat.service - Tomcat 9 servlet container
   Loaded: loaded (/etc/systemd/system/tomcat.service; disabled; vendor
preset: enabled)
   Active: active (running) since Wed 2018-09-05 15:45:28 PDT; 20s ago
  Process: 1582 ExecStart=/opt/tomcat/latest/bin/startup.sh
(code=exited, status=0/SUCCESS)
 Main PID: 1604 (java)
    Tasks: 47 (limit: 2319)
   CGroup: /system.slice/tomcat.service
```

If there are no errors enable the Tomcat service to be automatically started at boot time:

```
sudo systemctl enable tomcat
```

Step 5: Adjust the Firewall

If your server is protected by a firewall and you want to access Tomcat from the outside of your local network, you need to open port `8080`.

To allow traffic on port `8080` type the following command:

```
sudo ufw allow 8080/tcp
```

Usually when running a Tomcat application in a production environment you will have a load balancer or reverse proxy . It’s a best practice to restrict access to port `8080` only to your internal network.

Step 6: Configure Tomcat Web Management Interface

Now that Tomcat is installed and running, the next step is to create a user with access the web management interface.

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Tomcat users and roles are defined in the `tomcat-users.xml` file. This file is a template with comments and examples describing how to configure user or role.

```
sudo nano /opt/tomcat/latest/conf/tomcat-users.xml
```

To add a new user with access to the Tomcat web interface (manager-gui and admin-gui) we need to define the user in the `tomcat-users.xml` file, as shown below. Make sure you change the username and password to something more secure:

/opt/tomcat/latest/conf/tomcat-users.xml

```
<tomcat-users>
<!--
    Comments
-->
   <role rolename="admin-gui"/>
   <role rolename="manager-gui"/>
   <user username="admin" password="admin_password" roles="admin-gui,
manager-gui"/>
</tomcat-users>
```

By default Tomcat web management interface is configured to restrict access to the Manager and Host Manager apps only from the localhost.

If you want to be able to access the web interface from a remote IP, you will have to remove these restrictions. This may have various security implications, and it is not recommended for production systems.

To enable access to the web interface from anywhere open the following two files and comment or remove the lines highlighted in yellow.

For the Manager app, open the following file:

```
sudo nano /opt/tomcat/latest/webapps/manager/META-INF/context.xml
```

For the Host Manager app, open the following file:

```
sudo nano /opt/tomcat/latest/webapps/host-manager/META-INF/context.xml
```

context.xml

```
<Context antiResourceLocking="false" privileged="true" >
<!--
  <Valve className="org.apache.catalina.valves.RemoteAddrValve"
         allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1" />
-->
</Context>
```

Another option is to allow access to the to the Manager and Host Manager apps only from a specific IP. Instead of commenting the blocks you can simply add your IP address to the list.

For example if your public IP is `45.45.45.45` you would make the following change:

context.xml

```
<Context antiResourceLocking="false" privileged="true" >
  <Valve className="org.apache.catalina.valves.RemoteAddrValve"
         allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1|45.45.45.45" />
</Context>
```

The list of allowed IP addresses is a list separated with vertical bar `|`. You can add single IP addresses or use a regular expressions.

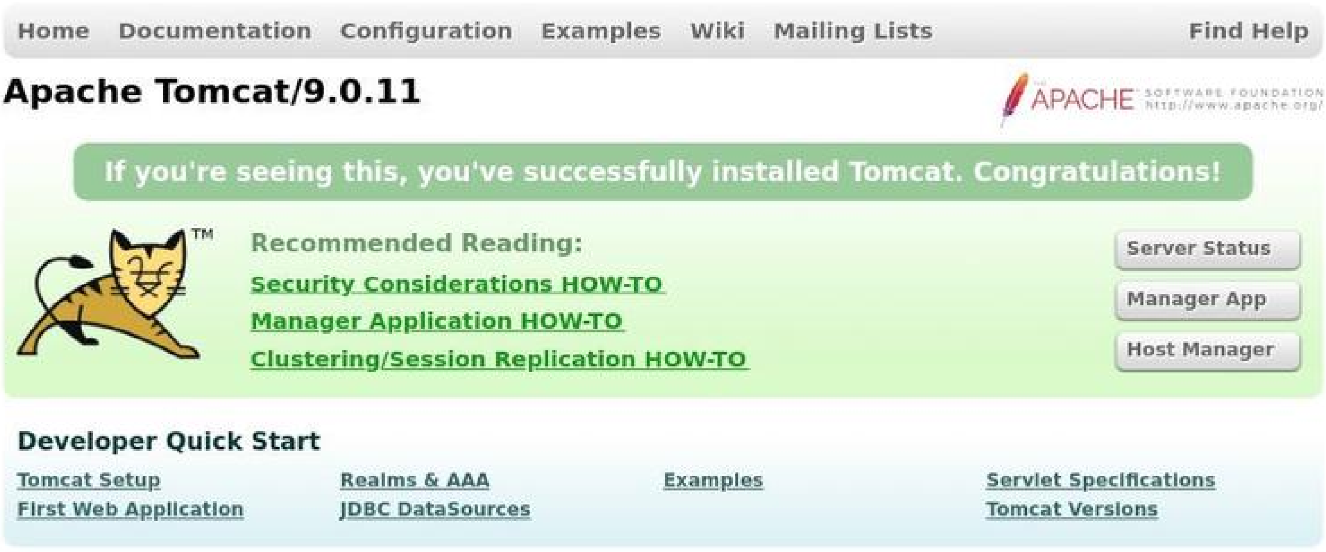
Remember to restart the Tomcat service each time you edit Tomcat configuration files for changes to take effect:

```
sudo systemctl restart tomcat
```

Step 6: Test the Tomcat Installation

Open your browser and type: `http://<your_domain_or_IP_address>:8080`

Assuming the installation is successful, a screen similar to the following should appear:

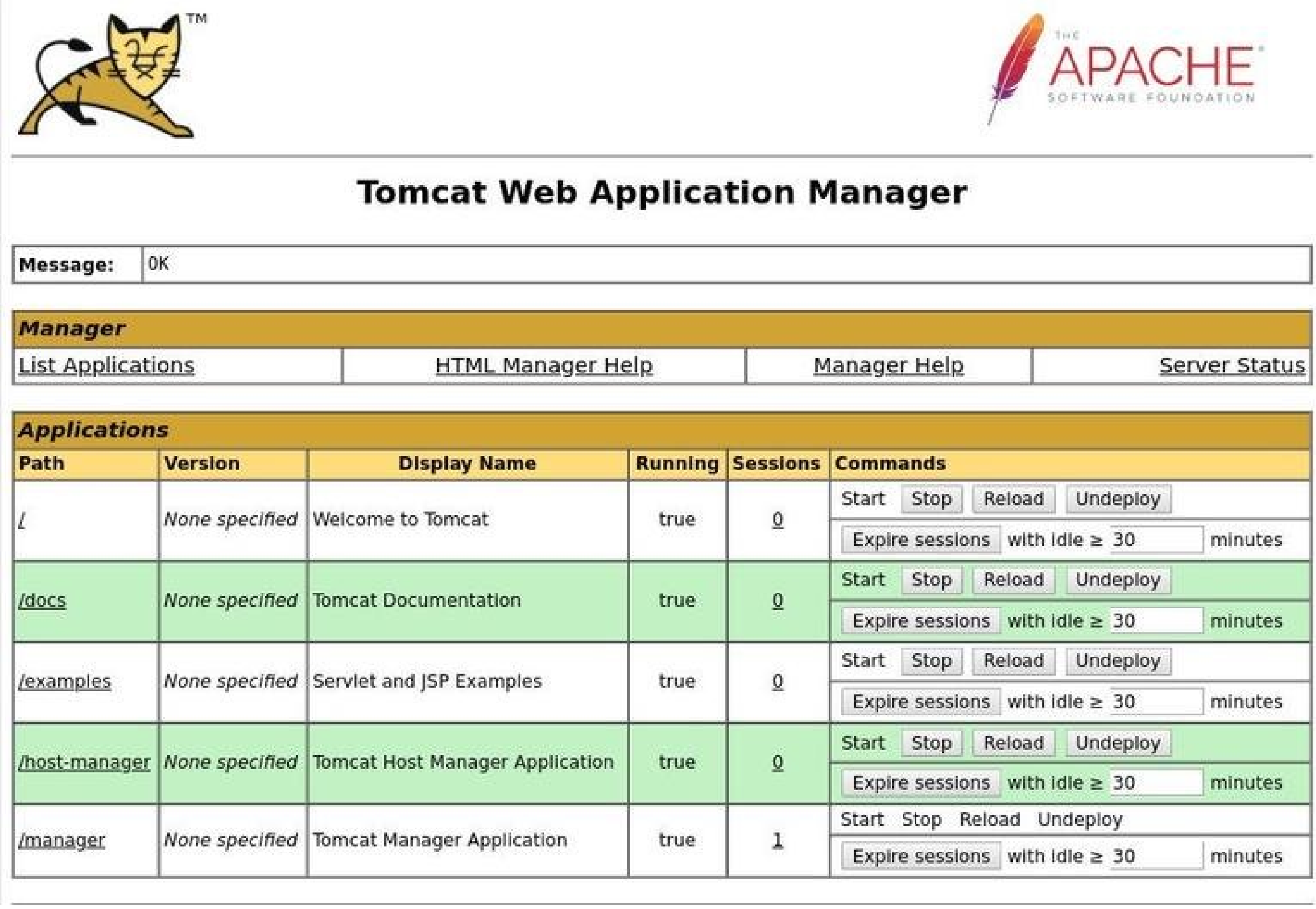


Apache Tomcat/9.0.11

If you're seeing this, you've successfully installed Tomcat. Congratulations!

Tomcat web application manager dashboard is available at `http://<your_domain_or_IP_address>:8080/manager/html`. From here, you can deploy, undeploy, start, stop, and reload your applications.

You can sign in with the user you have created in `Step 6`.



Tomcat Web Application Manager

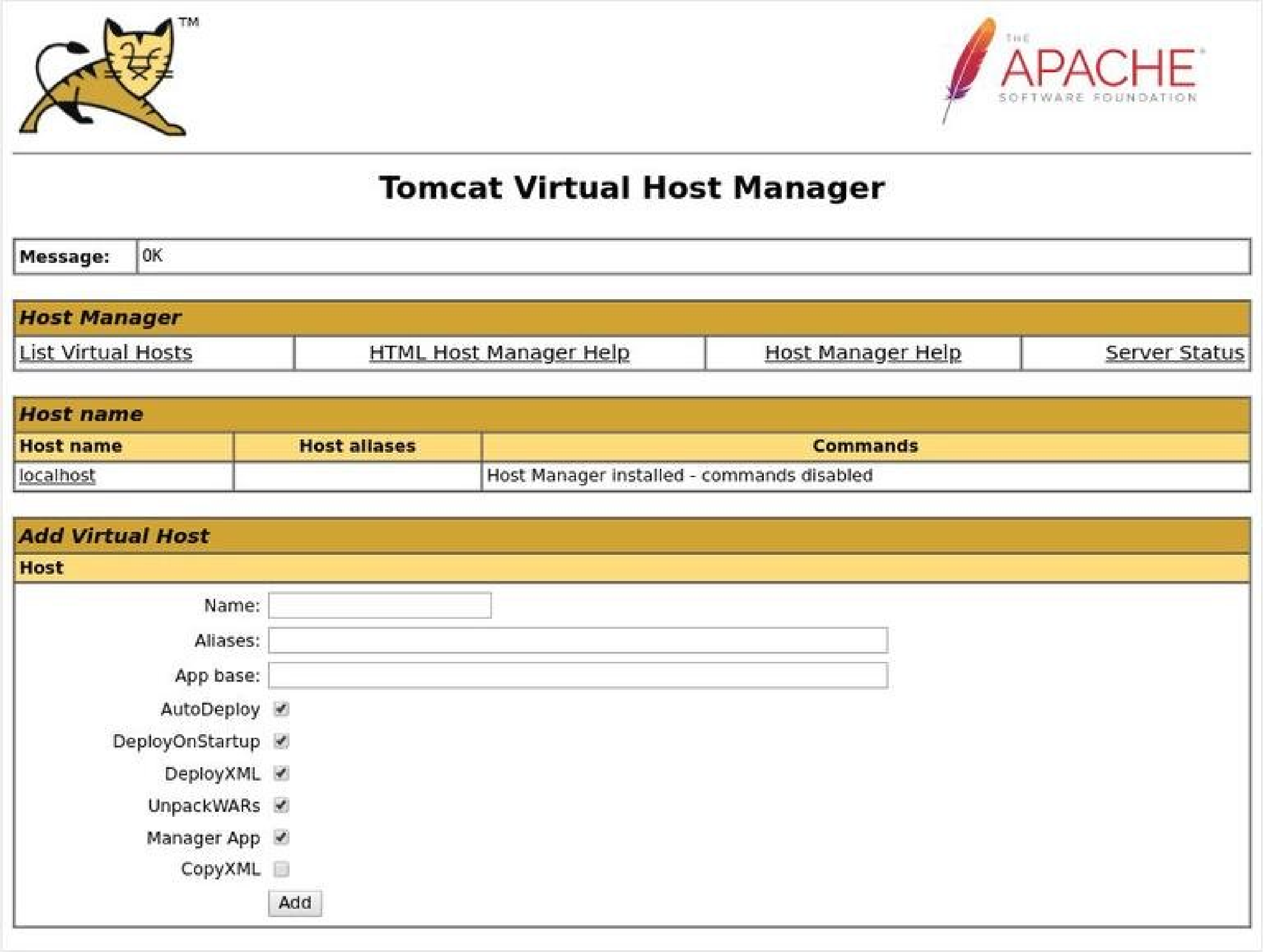
Message:	OK

Manager			
List Applications	HTML Manager Help	Manager Help	Server Status

Applications

Path	Version	Display Name	Running	Sessions	Commands
/	*None specified*	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	*None specified*	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	*None specified*	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/host-manager	*None specified*	Tomcat Host Manager Application	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/manager	*None specified*	Tomcat Manager Application	true	1	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

Tomcat virtual host manager dashboard is available at `http://<your_domain_or_IP_address>:8080/host-manager/html`. From here, you can create, delete and manage Tomcat virtual hosts.



Tomcat Virtual Host Manager

Message:	OK

Host Manager			
List Virtual Hosts	HTML Host Manager Help	Host Manager Help	Server Status

Host name

Host name	Host aliases	Commands
localhost		Host Manager installed - commands disabled

Add Virtual Host

Host

Name:

Aliases:

App base:

AutoDeploy ☑

DeployOnStartup ☑

DeployXML ☑

UnpackWARs ☑

Manager App ☑

CopyXML □

Conclusion

You have successfully installed Tomcat 9 on your Ubuntu 18.04 system. You can now visit the official Apache Tomcat 9 Documentation and learn more about the Apache Tomcat features.

If you hit a problem or have feedback, leave a comment below.