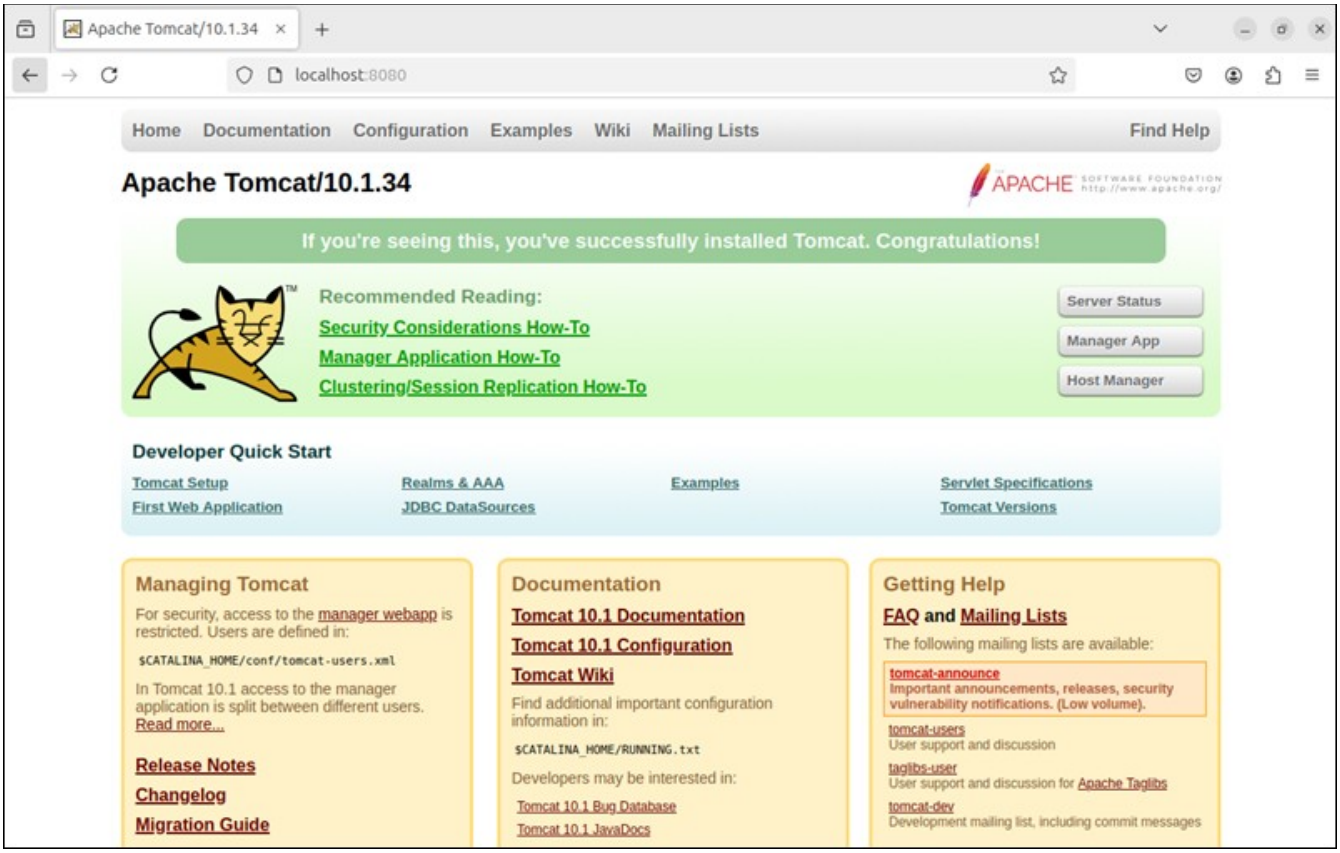

JAVA server installation through **Apache Tomcat**

Java is a popular programming language widely used for building application. However, there is no direct "Java server" that can run Java applications. Instead, we use Apache Tomcat, which is a lightweight and powerful Java-based web server and servlet container designed to deploy and run Java applications. Follow step-by-step to install Apache Tomcat on your ubuntu machine.

Step i. Java installation:

1. Check if java is installed through : *java -version*

*2.*If not installed, install it through *:* *sudo apt update && sudo apt install default-jdk -y*

Step ii. Create TomCat user and group:

1. Create a new */opt/tomcat* directory for your Tomcat installation: *sudo mkdir - p /opt/tomcat*

2. To create a new group called `tomcat`, enter: *sudo groupadd tomcat*

3. Create a system user named `tomcat`, assign it to the `tomcat` group, and set */opt/tomcat* as the home directory*:* *sudo useradd -s /bin/false -g tomcat -d /opt/tomcat tomcat*

Step iii. Download Tomcat:

To download the latest stable Apache Tomcat version...

1. Open a browser and visit tomcat official download page.

2. In the Binary Distributions section, under Core, right-click the tar.gz link and copy the URL.

3. In the terminal, move to the */tmp* directory: *cd /tmp*

4. Use the curl command and paste the tar.gz link you copied to download the package: *curl -O* **https://dlcdn.apache.org/tomcat/tomcat-10/v10.1.34/bin/apache-tomcat-10.1.34.tar.gz**

Step iv. Verify Tomcat File Integrity:

Verify the integrity of the **tar.gz** file using its **checksum**…

1. Copy the SHA-512 checksum URL for the corresponding Tomcat binary file from the Apache website.

2. Use the wget command and the URL to download the SHA-512 checksum file for Apache Tomcat version 10.1.34: *wget https://dlcdn.apache.org/tomcat/tomcat-10/v10.1.34/bin/apache-tomcat-10.1.34.tar.gz.sha512*

3. Compare the checksum of the downloaded Tomcat package with the one in the checksum file: *sha512sum -c apache-tomcat-10.1.34.tar.gz.sha512*

Step v: Extract tar.gz File:

While still in the /tmp directory, **extract the tar.gz file** into the /opt/tomcat/ directory using the following command: *sudo tar xzvf apache-tomcat-10*tar.gz -C /opt/tomcat –strip-components=1*

Step vi: Modify Tomcat User Permission:

1. Use the chown command to grant the `tomcat` user and group ownership over the installation directory: *sudo chown -RH tomcat: /opt/tomcat*
2. Change script permissions to ensure all scripts in the */opt/tomcat/bin/* directory are executable: *sudo sh -c 'chmod +x /opt/tomcat/bin/*.sh'*

Step vii: Create System Unit File:

1. Enter the following command to retrieve the Java installation package path (`JAVA_HOME`): *sudo update-java-alternatives -l*

2. Use a text editor like Nano to create a *tomcat.service* file in the */etc/systemd/system* directory: *sudo nano /etc/systemd/system/tomcat.service*

3. 3. Add the following configuration in the *tomcat.service* file and replace the `JAVA_HOME` path with your Java installation path:

[Unit]

Description=Apache Tomcat Web Application Container

After=network.target

[Service]

Type=forking

User=tomcat

Group=tomcat

Environment="JAVA_HOME=/usr/lib/jvm/java-1.21.0-openjdk-amd64"

Environment="CATALINA_BASE=/opt/tomcat"

Environment="CATALINA_HOME=/opt/tomcat"

Environment="CATALINA_PID=/opt/tomcat/temp/tomcat.pid"

Environment="JAVA_OPTS=-Djava.security.egd=file:///dev/urandom -Djava.awt.headless=true"

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

4. **Save** and **Exit** the file (**Ctrl+X**, followed by **y**[es] and **Enter**).

5. Reload the system **daemon**: *sudo systemctl daemon-reload*

6. Start the Tomcat service: *sudo systemctl start tomcat*

7. Enable Tomcat to start on boot: *sudo systemctl enable tomcat*

8. Verify the Apache Tomcat service is running: *sudo systemctl status tomcat*

Now visit http://<your-server-ip>:8080 to check if apache server is running.

Thank You.