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# Intro and Definition

Tomcat is an open-source application server developed by the Apache Software Foundation. It is a servlet container that implements the Java Servlet and JavaServer Pages (JSP) specifications, providing a platform for running Java-based web applications.

Tomcat is used to deploy, manage, and serve Java web applications, making it a popular choice for hosting dynamic websites and web services written in Java.

**Note**:

* The vendor of Tomcat is Apache
* Tomcat is used to deploy Java web based applications
* .ear and .war applications can be deployed in JBoss

# Tomcat Installation and configuration

👉 script on github: [devops\_masterclass/installations/tomcat\_install\_process.txt at git\_l\_l · DevOps-Team-Cam/devops\_masterclass (github.com)](https://github.com/DevOps-Team-Cam/devops_masterclass/blob/git_l_l/installations/tomcat_install_process.txt)

1. **Prerequisites and Installation**

AWS Acccount.

Create Redhat EC2 T2.micro Instance.

Create Security Group and open Tomcat ports or Required ports.22,

8080 ..etc

Attach Security Group to EC2 Instance.

Install java openJDK 1.8+

***Note***: The script below is ready for full run, or one can go step by step for better understanding of the steps.

#!/bin/bash

#TOMCAT.sh

#1. Steps for Installing tomcat9 on rhel7&8

# install Java JDK 1.8+ as a pre-requisit for tomcat to run.

# https://github.com/DevOps-Team-Cam/devops\_masterclass/blob/git\_l\_l/installations/tomcat\_install\_process.txt

sudo hostnamectl set-hostname tomcat

cd /opt

# install Java JDK 1.8+ as a pre-requisit for tomcat to run.

sudo yum install git wget vim -y

sudo yum install java-1.8.0-openjdk-devel -y

# Download tomcat software and extract it.

# dowanload and extract tomcat software

sudo wget https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.83/bin/apache-tomcat-9.0.83.zip

sudo yum install unzip -y

sudo unzip apache-tomcat-9.0.83.zip

sudo rm -rf apache-tomcat-9.0.83.zip

### rename tomcat for good naming convention

sudo mv apache-tomcat-9.0.83 tomcat9

### assign executable permissions to the tomcat home directory

sudo chmod 777 -R /opt/tomcat9

sudo chown ec2-user -R /opt/tomcat9

### start tomcat

sudo sh /opt/tomcat9/bin/startup.sh

# create a soft link to start and stop tomcat from anywhere

# to manage tomcat as a service

sudo ln -s /opt/tomcat9/bin/startup.sh /usr/bin/starttomcat

sudo ln -s /opt/tomcat9/bin/shutdown.sh /usr/bin/stoptomcat

sudo starttomcat

echo "end on tomcat installation"

sudo su - ec2-user

**Exploring the Tomcat Home Directory**

Our Tomcat Home Directory (THD) = /opt/tomcat9

👉THD is where tomcat software is downloaded and extracted. It is not completely standard, meaning different organizations can choose different paths. Common use cases for THD are:

/opt/tomcat9

/usr/local/tomcat

/app/tomcat

**Contents of the THD are folders and files as follows**

bin : Contains some important binary files, like **startup.sh, shutdown.sh etc**

conf : we have configurations files like **server.xml, tomcat-users.xml etc..**

webapps : we effect deployments in Tomcat in this directory = default directory

lib : contains all jar files

logs :contains **catalina.out**, **host-manager.log**, etc check logs if service is not running...

LICENSE

temp

work

README.md

BUILDING.txt

RELEASE-NOTES

RUNNING.txt

CONTRIBUTING.md

**IQ:** What are the log files available in the tomcat log directory?

**Ans**: lets run ls command to check

**Verify if the tomcat service/process is running**

ps -ef | grep tomcat

curl -v localhost:8080

on the browser: <ip\_address>:8080

1. **Tomcat configuration**

#####################################################

#Tomcat server configuration:

#Search for the files server.xml and context.xml

sudo find / -name server.xml

sudo find / -name context.xml

sudo vi /opt/tomcat9/conf/server.xml # you can change the port number here

# inside the connector tag

# lets change the to port 8177, ensure to restart tomcat to effect the changes

# To enable external access to tomcat server,

sudo vi /opt/tomcat9/webapps/manager/META-INF/context.xml

# Comment the following line of code in context.xml

<!--

<Valve className="org.apache.catalina.valves.RemoteAddrValve"

allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1" />

-->

sudo vi /opt/tomcat9/conf/tomcat-users.xml # to add users

<user username="fewa" password="admin" roles="manager-gui,admin-gui"/>

<user username="YourName" password="PassWord" roles="manager-gui,admin-gui"/>

After the above are done, we can access tomcat gui on the web using our ip address and appropriate port number.

# Deploying maven web app in tomcat

👉a. Manually by uploading the .war file to tomcat using gui

👉b. Automatically deploying web application from maven server directly to tomcat

# Once tomcat and maven servers are running and configured,

cd ts # cd into ts folder

mv maven-web-application/ web # rename the folder to web preferably

cd web/ # cd into web folder, here you'll find the target folder

ls target/ # here you'll find all your built artifacts

vi key.pem # create key.pem in which you pass your tomcat server keypair that you saved

ls -l key.pem # ensure your key is available and see the permissions

chmod 400 key.pem # secure the permisions and allow read-only right to user, run previews command to verify

scp -i key.pem target/<your-artifact.war> ec2-user@<public-ip-address>:/opt/tomcat9/webapps/ # deploy .war app to tomcat

# for example

# scp -i key.pem tesla.war ec2-user@44.204.71.5:/opt/tomcat9/webapps/

✅ In server.xml, we can verify that unpackWARs=”true” and autoDeploy = “true”, this means that any changes we do on the .war file is automatically deployed and is reflected on the application.

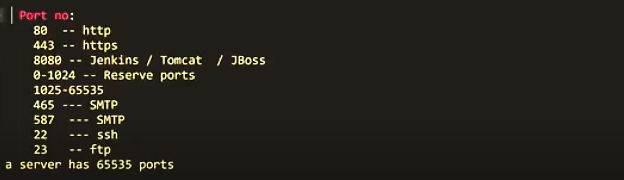
👉To verify this, we can perform a hotfix on our application by vi into home.jsp file like so;

sudo vi /opt/tomcat9/webapps/tesla/jsps/home.jsp

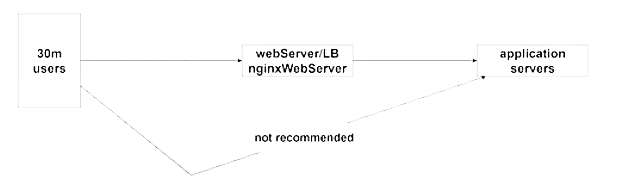
and performing some changes on the texts found there, then refreshing our running app to verify.



🤔A reminder of some default ports to note



👉 Note that for end users to access the application, they must be routed through a webServer or load balancer like nginx, before they access the app on an application server like tomcat. This is also for security reasons. Concept is illustrated below;



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