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Webservers
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=> Server is a software which is used to run web applications.

=> The process of executing web application by using server is called as Deployment.

=> Server is responsible to handle user requests & response.

=> Users can access web application by sending request to server.

=> End Users will use client s/w to send request to server

        Ex: Browser (google chrome, Firefox, Edge)

=> We have several servers in the market to run our web applications.

        1) Tomcat
        2) JBOSS
        3) Web Logic (oracle, licensed)
        4) Web Sphere (ibm, licensed)
        5) IIS (for dot net)

Note: To run web application, server is mandatory.

=> As a devops engineer we are responsible for project "build and deployment" process.

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What is Build & Deployment
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        Build = Compile + Execute Test cases + Package

        Deployment = Executing project using Server

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Tomcat Server
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=> Tomcat is free & open source s/w

=> Tomcat is a web server developed by Apache Organization.

=> Tomcat server developed using Java language.

Note: To run tomcat server, java s/w should be installed.

=> Tomcat server is used to run Java based Web Applications.

=> Tomcat supports multiple operating systems.

=> Tomcat server runs on 8080 port number (we can change it).

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Tomcat Setup In Linux
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=> Create Linux VM using Amazon Linux AMI in AWS Cloud (t2.micro).

=> Connect to Linux VM using ssh client

=> Install maven software
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        ex: sudo yum install maven

Note: When we install maven, java s/w also gets installed automatically.

        mvn -version
        java -version

=> We can download tomcat software from its offical website

  URL : https://tomcat.apache.org/download-90.cgi

=> Download tomcat server zip file

$ wget https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.104/bin/apache-tomcat-9.0.104.zip

=> Extract zip file

        Ex: unzip <zip-file-name>

=> Go inside tomcat directory and see directory structure

        $ cd <tomcat-dir>

        $ ls -l

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Tomcat Server directory structure
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1) bin : It contains files to start & stop server (windows : .bat , Linux : .sh)

                windows: startup.bat & shutdown.bat

                Linux : statup.sh & shutdown.sh

2) conf : It contains tomcat server configuration files.

        ex: server.xml, tomcat-users.xml, context.xml

3) webapps : It is called as deployment folder. We will keep war files here for execution.

4) lib : It contains libraries required for server (jars).

5) temp : Temporary files will be created here (We can delete them).

6) logs : Server log messages will be stored here.


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Web app deployment process
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## Step-1 :: Create Maven web application in ec2-user home directory ##

mvn archetype:generate -DgroupId=in.ashokit -DartifactId=my-web-app -DarchetypeArtifactId=maven-
archetype-webapp -DarchetypeVersion=1.4 -DinteractiveMode=false

cd <project-dir>

ls -l

## Step-2 :: Build project using maven goal ##

mvn clean package
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ls -l

ls -l target

## Step-3 :: Copy application war file into tomact-server webapps folder for execution ##

cp <app-war-file-path> <tomcat-webapps-dir-path>

Ex: cp my-web-app/target/my-web-app.war tomcat/webapps/

## Step-4 :: Start tomcat server from bin directory ##

cd apache-dir/bin

ls -l

chmod 777 catalina.sh
chmod 777 startup.sh

# Run tomcat server
sh startup.sh


## Step-5 :: Enable Tomcat server port number 8080 in Ec2 VM Security Group Inbound Rules.

## Step-6 :: Access our web application using browser

                URL : http://public-ip:8080/my-web-app/


Note: To edit msg displaying in the web-application we need to modify index.jsp file

$ vi my-web-app/src/main/webapp/index.jsp

Note: After modifying index.jsp file we need to re-build and re-deploy our application.


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How to change tomcat server port number ?
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=> Tomcat server default port is 8080

=> We can change this port number by using "server.xml" file

                File location : tomcat-dir/conf/server.xml

                $ vi tomcat-dir/conf/server.xml

                $ sed -i 's/8080/9090/g' tomcat-dir/conf/server.xml

=> After changing the port number stop and start tomcat server.

                cd tomcat-dir/bin
                sh shutdown.sh
                sh startup.sh

=> Enable new port number in EC2 VM Security Group inbound rules.

=> Access our web application using browser

        URL : http://public-ip:new-port/my-web-app/
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Tomcat - Summary
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1) What is client-server architecture

2) What is Tomcat

3) Tomcat Setup in Linux

4) Tomcat Server directory structure

5) War file deployment

6) Accessing Web app in browser

7) Changing Tomcat Server Port Number