Tomcat

Introduction

Tomcat or Apache Tomcat is a light weight, open source web container used to deploy and running the java based web applications, developed by Apache Software Foundation (ASF).

What is Webserver?

A Web server is a program that uses HTTP (Hypertext Transfer Protocol) protocol to serves web content (HTML and static content) to users.

Examples

Apache HTTP server
Nginx (pronounced engine
X) IBM HTTP server (IHS)
Oracle iplanet web server
Internet Information Server (IIS)

What is Application Server?

An application server is a container upon which you can build and expose business logic and processes to client applications through various protocols including HTTP in a n-tier architecture.

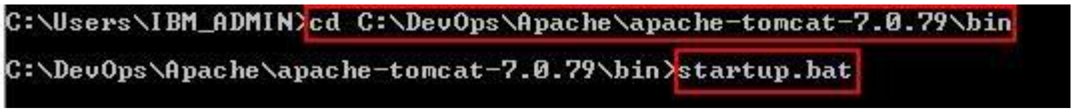
Examples

Apache Tomcat
JBoss/WildFly -
RedHat WebLogic -
Oracle
WebSphere Application Server -
IBM WebSphere Liberty Profile -
IBM Galssfish

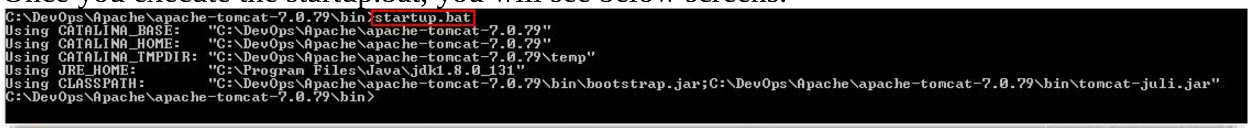
Tomcat installation

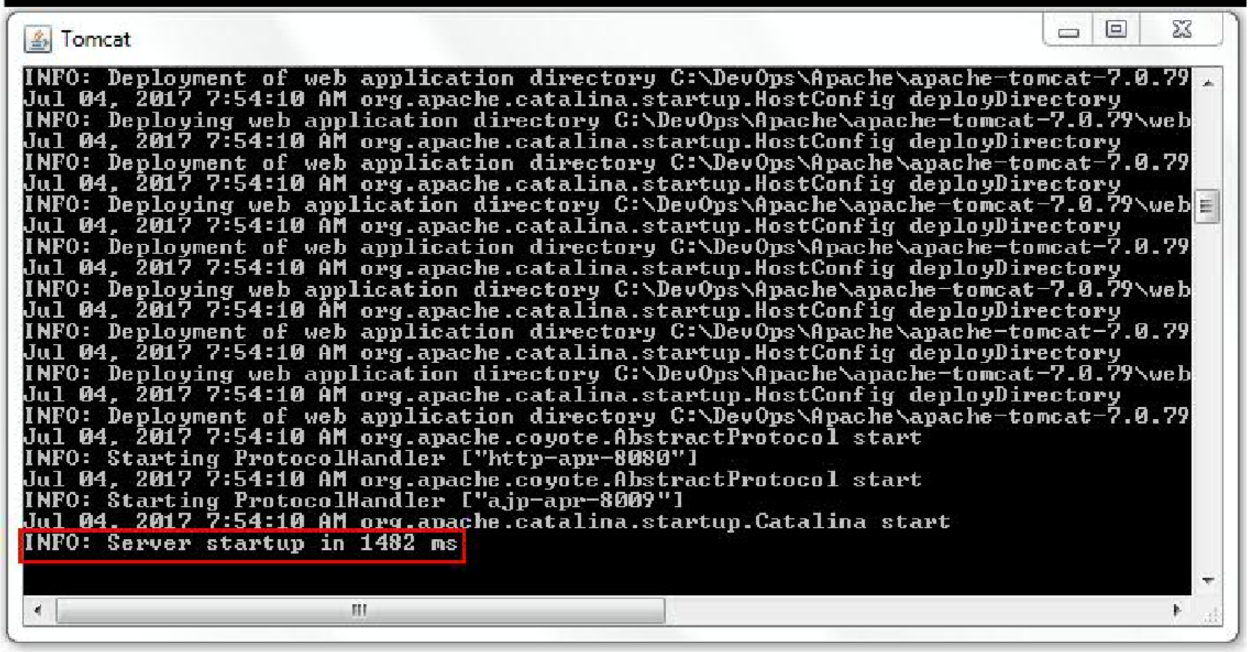
Tomcat software will available as a zip file. So, we can unzip it and use as follows.
Step 1: Create the folder called **Apache** in any directory and Unzip apache software into that folder.
Step 2: Open the command prompt and execute the below commands.
>cd C:\DevOps\Apache\apache-tomcat-7.0.79\bin
>startup.bat (OR) > catalina.bat start ---> Starting the Tomcat server.

MAC/Linux:
sh startup.sh (OR) > sh catalina.sh start ---> Starting the Tomcat server.



Once you execute the startup.bat, you will see below screens.





Tomcat server is started successfully.
Use the below URL and open in
browser. http://localhost:8080

Note: Tomcat by default will run in 8080 port number.

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Tomcat Directory Structure

Tomcat installation provides these directories:
bin: for Tomcat's binaries and startup scripts.
conf: global configuration applicable to all the webapps. The default installation provides: One Policy File: catalina.policy for specifying security policy.
Two Properties Files: catalina.properties and logging.properties,
Four Configuration XML Files: server.xml (Tomcat main configuration file), web.xml (global web application deployment descriptors), context.xml (global Tomcat-specific configuration options) and tomcat-users.xml (a database of user, password and role for authentication and access control).
The conf also contain a sub-directory for each engine, e.g., Catalina, which in turn contains a

sub-sub-directory for each of its hosts, e.g., localhost. You can place the host-specific context information (similar to context.xml, but named as webapp.xml for each webapp under the host).
lib: Keeps the JAR-file that are available to all webapps. The default installation include servlet- api.jar (Servlet), jasper.jar (JSP) and jasper-el.jar (EL). You may also keep the JAR files of external package here, such as MySQL JDBC driver (mysql-connector-java-5.1.{xx}-bin.jar) and JSTL (jstl.jar and standard.jar).
logs: contains the engine logfile Catalina.{yyyy-mm-dd}.log, host logfile localhost.{yyyy-mm-dd}.log, and other application logfiles such as manger and host-manager. The access log (created by the AccessLogValve) is also kept here.
webapps: the default appBase - web applications base directory of the host localhost.
work: contains the translated servlet source files and classes of JSP/JSF. Organized in hierarchy of engine name (Catalina), host name (localhost), webapp name, followed by the Java classes package structure.
temp: temporary files.

How to change the port number in Tomcat?

Go to the conf directory and open the server.xml and you will find below lines.

```
<Connector port="8080"
        protocol="HTTP/1.1"
        connectionTimeout="20000"
        redirectPort="8443" />
```

Replace the 8080 with any port number.

How to stop the tomcat server?

>cd APACHE_HOME Dir\bin
>shutdown.bat (OR) > catalina.bat stop
MAC/Linux:
shutdown.sh (OR) > catalina.sh stop

Install Tomcat in Linux

cd /opt
wget http://apache.spinellicreations.com/tomcat/tomcat-9/v9.0.16/bin/apache-tomcat-9.0.16.zip unzip apache-tomcat-9.0.16.zip
cd /opt/apache-tomcat-9.0.16/bin chmod u+x *.sh

#sh /opt/apache-tomcat-9.0.16/bin/startup.sh

ln -s /opt/apache-tomcat-9.0.16/bin/startup.sh /usr/bin/startTomcat
ln -s /opt/apache-tomcat-9.0.16/bin/shutdown.sh

/usr/bin/stopTomcat For starting/stopping tomcat we will below

commands

startTomcat --> Starting Tomcat
stopTomcat --> Stopping Tomcat

Admin Console

Tomcat provides a web based administration console which can be started via the following

link: http://localhost:8080/manager/html

Tomcat manager is the web application, using this we manage applications running on tomcat. By default access is restricted to this application.

- Remove the restriction to manager application
Open the /webapps/manager/META-INF/context.xml file
and remove the <Value>
.....</Value> from this file.

- Add user to access tomcat manager application as follows.
Open the tomcat-users.xml file which is available in conf
directory.

The tomcat-users.xml file should look something like this:

```
<tomcat-users>
<!--
        <role rolename="tomcat"/>
        <role rolename="role1"/>
        <user username="tomcat" password="tomcat" roles="tomcat" />
        <user username="role1" password="tomcat" roles="role1" />
        <user username="both" password="tomcat" roles="tomcat,role1" />
-->
```

<!-- **Note:** While copy pate above line you have to remove double quotes and type manually. -->

<user username="admin" password="admin" roles="manager-gui,admin-gui"/>
<user username="mithun" password="passw0rd" roles="manager-gui,admin-gui"/>

</tomcat-users>

Server Status & Manager App

To access the server status application and Manager app, tomcat 7 onwards below roles as introduced.

manager-gui : allows access to the HTML GUI and the Server Status and Manager App pages

admin-gui : allows access to the Host Manager page.

If you provide add below line in tomcat-users.xml, we will get the access for below apps(Buttons)

<user username="admin" password="passw0rd" roles="**manager-gui**"/>

http://localhost:8083/manager/status

http://localhost:8083/manager/html

Host Manager

To access the host manager application, tomcat 7 onwards below roles as introduced. admin-gui - allows access to the HTML GUI

If you provide add below line in tomcat-users.xml, we will get the access for below apps(Buttons)

<user username="admin" password="passw0rd" roles="**admin-gui**"/>

http://localhost:8083/host-manager/html

Stop the server

./shutdown.sh (OR) sh catalina.sh stop

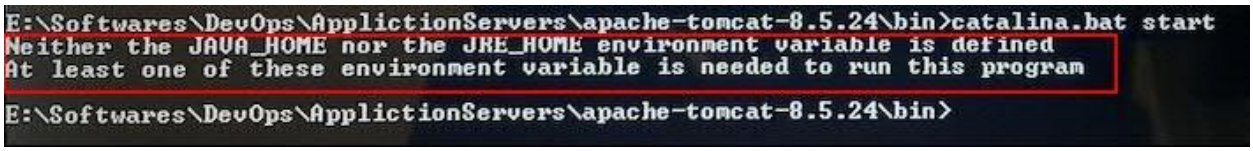
Deployment

Deploying the application in Tomcat server is nothing but, putting war file in Tomcat's webapps directly.

For every application deployment need to restart the tomcat server.

Once the server restart, tomcat starts it will unpack the war and make the application available.

Error 1



Solution:

If you see this error set the class path for Java.

Error 2:

Solution:

<Listener className="org.apache.catalina.core.AprLifecycleListener" **SSLEngine="on"**

/> By default SSLEngine=”on” , make it to off, like below.

<Listener className="org.apache.catalina.core.AprLifecycleListener" **SSLEngine="off"** />