

Advance AWS

AWS Assessment Project 6

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Course:

Advance AWS Cloud Computing with DevOps
Fundamentals

Institute:

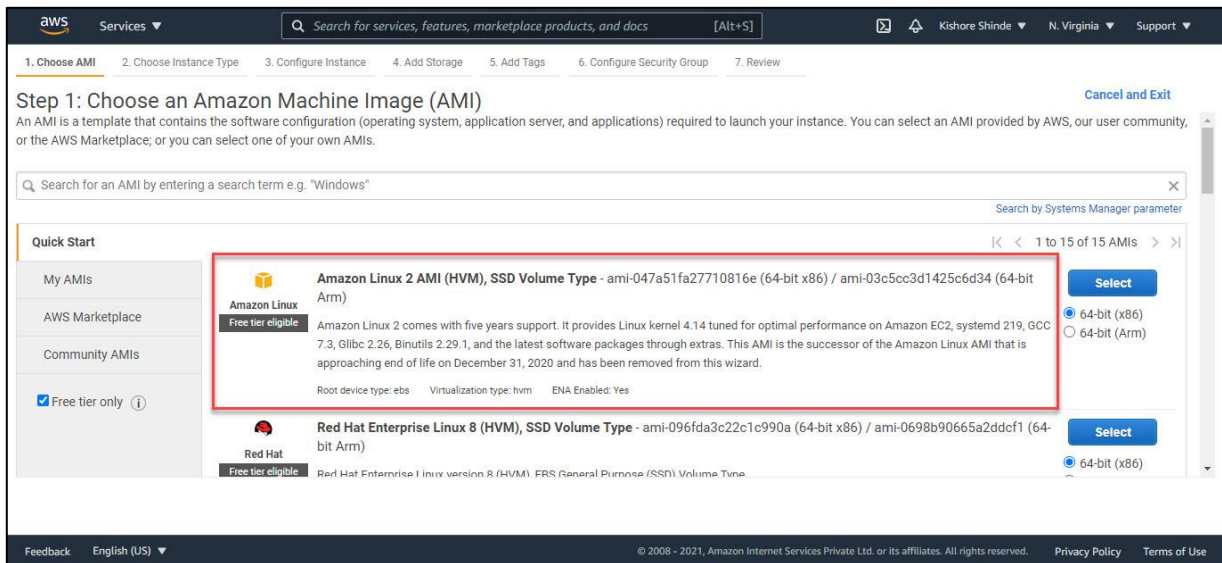
Lets Upgrade

Project: Installing & Configuring Apache Tomcat Server on Linux

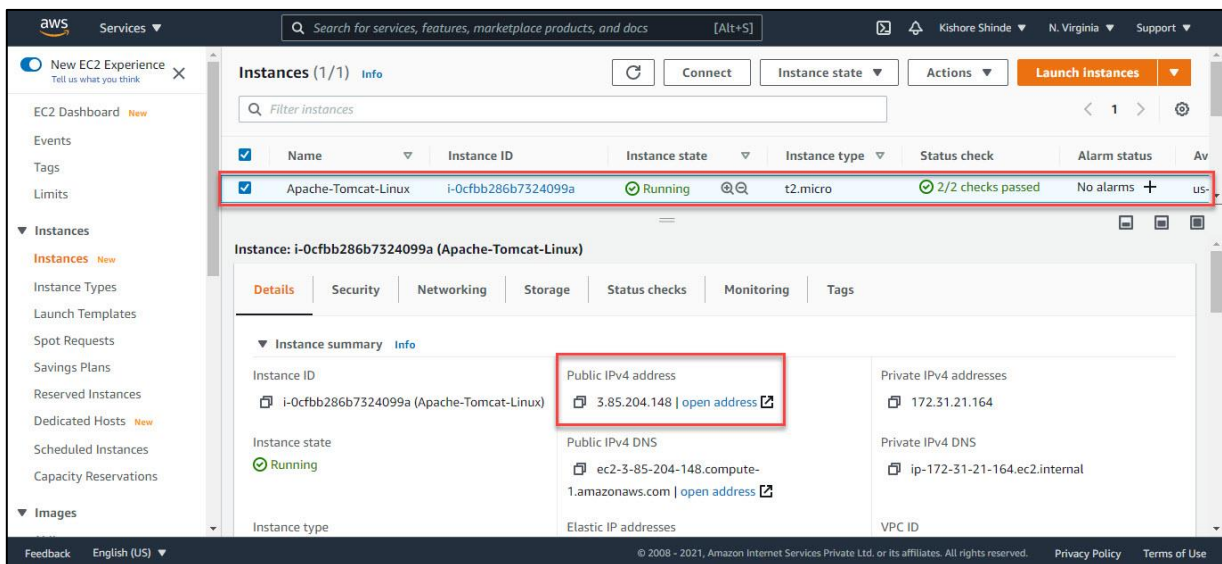
Task 1	Create a Linux Instance
Task 2	Install Java
Task 3	Install Tomcat

TASK 1: Create a Linux Instance

- Linux Instance Selection (Amazon Linux 2 AMI)



- Instance Details



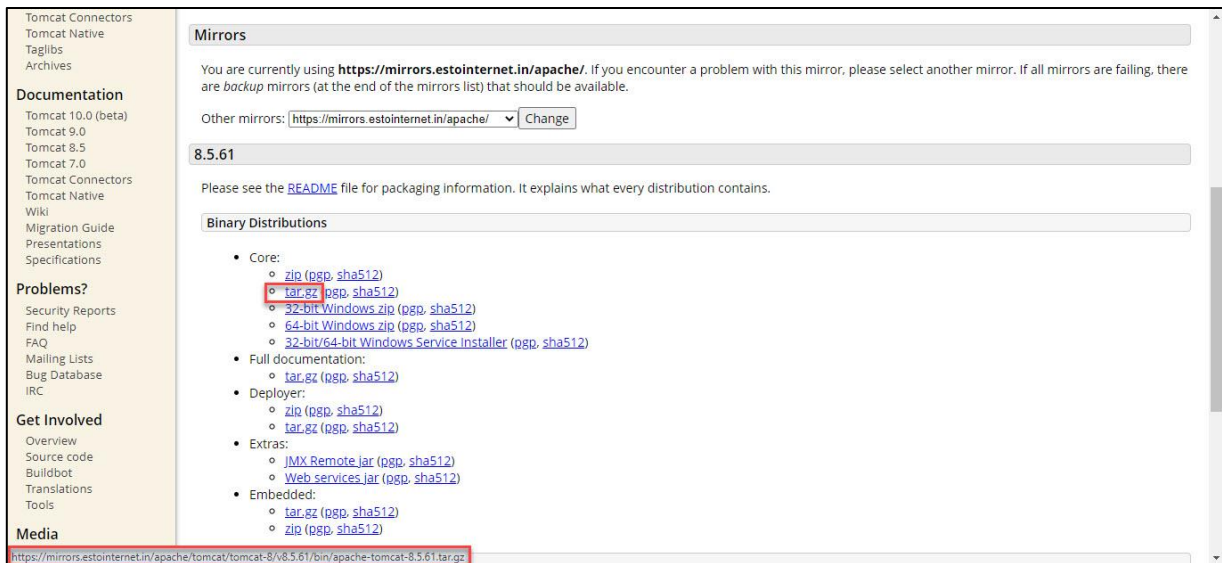
Sr. No.	Instance Name	Public IP	Private IP
1.	Apache-Tomcat-Linux	3.85.204.148	172.31.21.164

TASK 3: Install Tomcat

- `cd /opt` – Move to opt folder

```
Complete!  
[root@ip-172-31-21-164 ec2-user]# cd /opt  
cd /opt  
[root@ip-172-31-21-164 opt]#  
  
i-0cfbb286b7324099a (Apache-Tomcat-Linux)  
Public IPs: 3.85.204.148 Private IPs: 172.31.21.164
```

- Download Apache-Tomcat tar.gz file



URL:

<https://mirrors.estointernet.in/apache/tomcat/tomcat8/v8.5.61/bin/apache-tomcat-8.5.61.tar.gz>

- **wget <URL>** - To get the apache-tomcat file (Replace the URL with above URL path)

```
Complete!
[root@ip-172-31-21-164 ec2-user]# cd /opt
cd /opt
[root@ip-172-31-21-164 opt]# wget https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.61/bin/apache-tomcat-8.5.61.tar
--2021-02-02 09:39:14-- https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.61/bin/apache-tomcat-8.5.61.tar
Resolving mirrors.estointernet.in (mirrors.estointernet.in)... 43.255.166.254, 2403:8940:3:1::f
Connecting to mirrors.estointernet.in (mirrors.estointernet.in)|43.255.166.254|:443... connected.
HTTP request sent, awaiting response... 404 Not Found
2021-02-02 09:39:15 ERROR 404: Not Found.

[root@ip-172-31-21-164 opt]# wget https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.61/bin/apache-tomcat-8.5.61.tar.gz
--2021-02-02 09:40:45-- https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.61/bin/apache-tomcat-8.5.61.tar.gz
Resolving mirrors.estointernet.in (mirrors.estointernet.in)... 43.255.166.254, 2403:8940:3:1::f
Connecting to mirrors.estointernet.in (mirrors.estointernet.in)|43.255.166.254|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 10492067 (10M) [application/octet-stream]
Saving to: 'apache-tomcat-8.5.61.tar.gz'

100%[=====>] 10,492,067  3.21MB/s  in 3.1s

2021-02-02 09:40:49 (3.21 MB/s) - 'apache-tomcat-8.5.61.tar.gz' saved [10492067/10492067]

[root@ip-172-31-21-164 opt]#
```

i-0cfbb286b7324099a (Apache-Tomcat-Linux)

Public IPs: 3.85.204.148 Private IPs: 172.31.21.164

- **tar -zxvf apache-tomcat-8.5.61.tar.gz** - Extract apache-tomcat.tar.gz file

```
Connecting to mirrors.estointernet.in (mirrors.estointernet.in)|43.255.166.254|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 10492067 (10M) [application/octet-stream]
Saving to: 'apache-tomcat-8.5.61.tar.gz'

100%[=====>] 10,492,067  3.21MB/s  in 3.1s

2021-02-02 09:40:49 (3.21 MB/s) - 'apache-tomcat-8.5.61.tar.gz' saved [10492067/10492067]

[root@ip-172-31-21-164 opt]# tar -zxvf apache-tomcat-8.5.61.tar.gz
apache-tomcat-8.5.61/conf/
apache-tomcat-8.5.61/conf/catalina.policy
apache-tomcat-8.5.61/conf/catalina.properties
apache-tomcat-8.5.61/conf/context.xml
apache-tomcat-8.5.61/conf/jaspic-providers.xml
apache-tomcat-8.5.61/conf/jaspic-providers.xsd
apache-tomcat-8.5.61/conf/logging.properties
apache-tomcat-8.5.61/conf/server.xml
apache-tomcat-8.5.61/conf/tomcat-users.xml
apache-tomcat-8.5.61/conf/tomcat-users.xsd
apache-tomcat-8.5.61/conf/web.xml
apache-tomcat-8.5.61/bin/
apache-tomcat-8.5.61/lib/
apache-tomcat-8.5.61/logs/
apache-tomcat-8.5.61/temp/
```

i-0cfbb286b7324099a (Apache-Tomcat-Linux)

Public IPs: 3.85.204.148 Private IPs: 172.31.21.164

- `cd bin` - Go to bin folder
- `ps -ef|grep tomcat` – To check if tomcat process is running
- `ls -ltr` – To list files with their permissions

```
[root@ip-172-31-21-164 opt]# ls
apache-tomcat-8.5.61  apache-tomcat-8.5.61.tar.gz  aws  rh
[root@ip-172-31-21-164 opt]# cd apache-tomcat-8.5.61
[root@ip-172-31-21-164 apache-tomcat-8.5.61]# cd bin
[root@ip-172-31-21-164 bin]# ps -ef|grep tomcat
root      4521  4499  0 09:56 pts/1    00:00:00 grep --color=auto tomcat
[root@ip-172-31-21-164 bin]# ls -ltr
total 868
-rw-r----- 1 root root  3460 Dec  3 14:05 setclasspath.bat
```

- Check file permissions of startup.sh and shutdown.sh

```
-rwxr-x--- 1 root root  1908 Dec  3 14:05 version.sh
-rwxr-x--- 1 root root  5540 Dec  3 14:05 tool-wrapper.sh
-rw-r----- 1 root root 421399 Dec  3 14:05 tomcat-native.tar.gz
-rwxr-x--- 1 root root  1904 Dec  3 14:05 startup.sh
-rwxr-x--- 1 root root  1902 Dec  3 14:05 shutdown.sh
-rwxr-x--- 1 root root  3708 Dec  3 14:05 setclasspath.sh
-rwxr-x--- 1 root root  1965 Dec  3 14:05 digest.sh
-rwxr-x--- 1 root root  9100 Dec  3 14:05 daemon.sh
-rwxr-x--- 1 root root  1922 Dec  3 14:05 configtest.sh
-rw-r----- 1 root root 208136 Dec  3 14:05 commons-daemon-native.tar.gz
-rwxr-x--- 1 root root  1997 Dec  3 14:05 ciphers.sh
-rwxr-x--- 1 root root 25121 Dec  3 14:05 catalina.sh
-rw-r----- 1 root root  1664 Dec  3 14:07 catalina-tasks.xml
[root@ip-172-31-21-164 bin]#
```

i-0cfbb286b7324099a (Apache-Tomcat-Linux)

Public IPs: 3.85.204.148 Private IPs: 172.31.21.164

- Modify permissions for startup.sh and shutdown.sh

```
-rw-r----- 1 root root 16655 Dec 3 14:05 catalina.bat
-rw-r----- 1 root root 36132 Dec 3 14:05 bootstrap.jar
-rw-r----- 1 root root 2026 Dec 3 14:05 version.bat
-rw-r----- 1 root root 4574 Dec 3 14:05 tool-wrapper.bat
-rw-r----- 1 root root 51204 Dec 3 14:05 tomcat-juli.jar
-rw-r----- 1 root root 2022 Dec 3 14:05 startup.bat
-rw-r----- 1 root root 2020 Dec 3 14:05 shutdown.bat
-rwxr-x--- 1 root root 1908 Dec 3 14:05 version.sh
-rwxr-x--- 1 root root 5540 Dec 3 14:05 tool-wrapper.sh
-rw-r----- 1 root root 421399 Dec 3 14:05 tomcat-native.tar.gz
-rwxr-x--- 1 root root 1904 Dec 3 14:05 startup.sh
-rwxr-x--- 1 root root 1902 Dec 3 14:05 shutdown.sh
-rwxr-x--- 1 root root 3708 Dec 3 14:05 setclasspath.sh
-rwxr-x--- 1 root root 1965 Dec 3 14:05 digest.sh
-rwxr-x--- 1 root root 9100 Dec 3 14:05 daemon.sh
-rwxr-x--- 1 root root 1922 Dec 3 14:05 configtest.sh
-rw-r----- 1 root root 208136 Dec 3 14:05 commons-daemon-native.tar.gz
-rwxr-x--- 1 root root 1997 Dec 3 14:05 ciphers.sh
-rwxr-x--- 1 root root 25121 Dec 3 14:05 catalina.sh
-rw-r----- 1 root root 1664 Dec 3 14:07 catalina-tasks.xml
[root@ip-172-31-21-164 bin]# chmod +x startup.sh
[root@ip-172-31-21-164 bin]# chmod +x shutdown.sh
[root@ip-172-31-21-164 bin]# █
```

i-0cfbb286b7324099a (Apache-Tomcat-Linux)

Public IPs: 3.85.204.148 Private IPs: 172.31.21.164

- Give execute permission to both the files:
 - *chmod +x startup.sh*
 - *chmod +x shutdown.sh*

- Create a softlink :

Note: soft link will help to execute the command from any folder need not to go specific folder to execute the file.

- `find / -name startup.sh` – To find the startup.sh path for soft link creation

Note: Use same path for creating soft link for shutdown.sh

```
[root@ip-172-31-21-164 bin]# echo $PATH
/sbin:/bin:/usr/sbin:/usr/bin
[root@ip-172-31-21-164 bin]# ls
bootstrap.jar      ciphers.sh          daemon.sh           shutdown.bat       tomcat-native.tar.gz
catalina.bat      commons-daemon.jar  digest.bat         shutdown.sh        tool-wrapper.bat
catalina.sh       commons-daemon-native.tar.gz  digest.sh          startup.bat        tool-wrapper.sh
catalina-tasks.xml  configtest.bat     setclasspath.bat  startup.sh         version.bat
ciphers.bat       configtest.sh       setclasspath.sh   tomcat-juli.jar   version.sh
[root@ip-172-31-21-164 bin]# find / -name startup.sh
/opt/apache-tomcat-8.5.61/bin/startup.sh
[root@ip-172-31-21-164 bin]#
```

- Tomcat up softlink:

`ln -s /opt/apache-tomcat-8.5.61/bin/startup.sh /usr/bin/tomcatup`

- Tomcat down softlink:

`ln -s /opt/apache-tomcat-8.5.61/bin/shutdown.sh /usr/bin/tomcatdown`

```
[root@ip-172-31-21-164 bin]# echo $PATH
/sbin:/bin:/usr/sbin:/usr/bin
[root@ip-172-31-21-164 bin]# ls
bootstrap.jar      ciphers.sh          daemon.sh           shutdown.bat       tomcat-native.tar.gz
catalina.bat      commons-daemon.jar  digest.bat         shutdown.sh        tool-wrapper.bat
catalina.sh       commons-daemon-native.tar.gz  digest.sh          startup.bat        tool-wrapper.sh
catalina-tasks.xml  configtest.bat     setclasspath.bat  startup.sh         version.bat
ciphers.bat       configtest.sh       setclasspath.sh   tomcat-juli.jar   version.sh
[root@ip-172-31-21-164 bin]# find / -name startup.sh
/opt/apache-tomcat-8.5.61/bin/startup.sh
[root@ip-172-31-21-164 bin]# ln -s /opt/apache-tomcat-8.5.61/bin/startup.sh /usr/bin/tomcatup
[root@ip-172-31-21-164 bin]#
[root@ip-172-31-21-164 bin]# ln -s /opt/apache-tomcat-8.5.61/bin/shutdown.sh /usr/bin/tomcatdown
[root@ip-172-31-21-164 bin]#
```

- `tomcatup` – To start tomcat server

- `tomcatdown` – To stop tomcat server

```
[root@ip-172-31-21-164 bin]# ls -ls
total 868
36 bootstrap.jar          204 commons-daemon-native.tar.gz    4 setclasspath.sh          8 tool-wrapper.bat
20 catalina.bat          4 configtest.bat                4 shutdown.bat            8 tool-wrapper.sh
28 catalina.sh           4 configtest.sh                 4 shutdown.sh             4 version.bat
4 catalina-tasks.xml    12 daemon.sh                   4 startup.bat            4 version.sh
4 ciphers.bat           4 digest.bat                    4 startup.sh
4 ciphers.sh            4 digest.sh                     52 tomcat-juli.jar
28 commons-daemon.jar   4 setclasspath.bat             412 tomcat-native.tar.gz
[root@ip-172-31-21-164 bin]# tomcatup
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.61
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.61
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.61/temp
Using JRE_HOME:        /
Using CLASSPATH:       /opt/apache-tomcat-8.5.61/bin/bootstrap.jar:/opt/apache-tomcat-8.5.61/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
[root@ip-172-31-21-164 bin]# tomcatdown
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.61
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.61
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.61/temp
Using JRE_HOME:        /
Using CLASSPATH:       /opt/apache-tomcat-8.5.61/bin/bootstrap.jar:/opt/apache-tomcat-8.5.61/bin/tomcat-juli.jar
Using CATALINA_OPTS:
[root@ip-172-31-21-164 bin]#
```

i-0cfbb286b7324099a (Apache-Tomcat-Linux)

Public IPs: 3.85.204.148 Private IPs: 172.31.21.164

Note : Whenever you do changes, do 'tomcatdown' and then 'tomcatup' to see the impact of changes done.

- Change the port to 8090 in server.xml – Purpose is, it should not conflict with the Jenkins port 8080
- Go to server.xml path and edit server.xml

```
[root@ip-172-31-21-164 bin]# cd ..  
[root@ip-172-31-21-164 apache-tomcat-8.5.61]# cd conf  
[root@ip-172-31-21-164 conf]# vi server.xml
```

- `cd ..` – To come out of bin folder
- `cd conf` – To move into conf folder
- `vi server.xml` – To open the file for editing

```
Documentation at /docs/config/service.html  
-->  
<Service name="Catalina">  
  
  <!--The connectors can use a shared executor, you can define one or more named thread pools-->  
  <!--  
  <Executor name="tomcatThreadPool" namePrefix="catalina-exec-"  
    maxThreads="150" minSpareThreads="4"/>  
  -->  
  
  <!-- A "Connector" represents an endpoint by which requests are received  
  and responses are returned. Documentation at :  
  Java HTTP Connector: /docs/config/http.html  
  Java AJP  Connector: /docs/config/ajp.html  
  APR (HTTP/AJP) Connector: /docs/apr.html  
  Define a non-SSL/TLS HTTP/1.1 Connector on port 8080  
  -->  
  <Connector port="8090" protocol="HTTP/1.1"  
    connectionTimeout="20000"  
    redirectPort="8443" />  
  <!-- A "Connector" using the shared thread pool-->  
  <!--  
  <Connector executor="tomcatThreadPool"  
  -- INSERT --  
  
i-0cfbb286b7324099a (Apache-Tomcat-Linux)  
Public IPs: 3.85.204.148 Private IPs: 172.31.21.164
```

- Search for *Connector port* text and change the port from 8080 to 8090

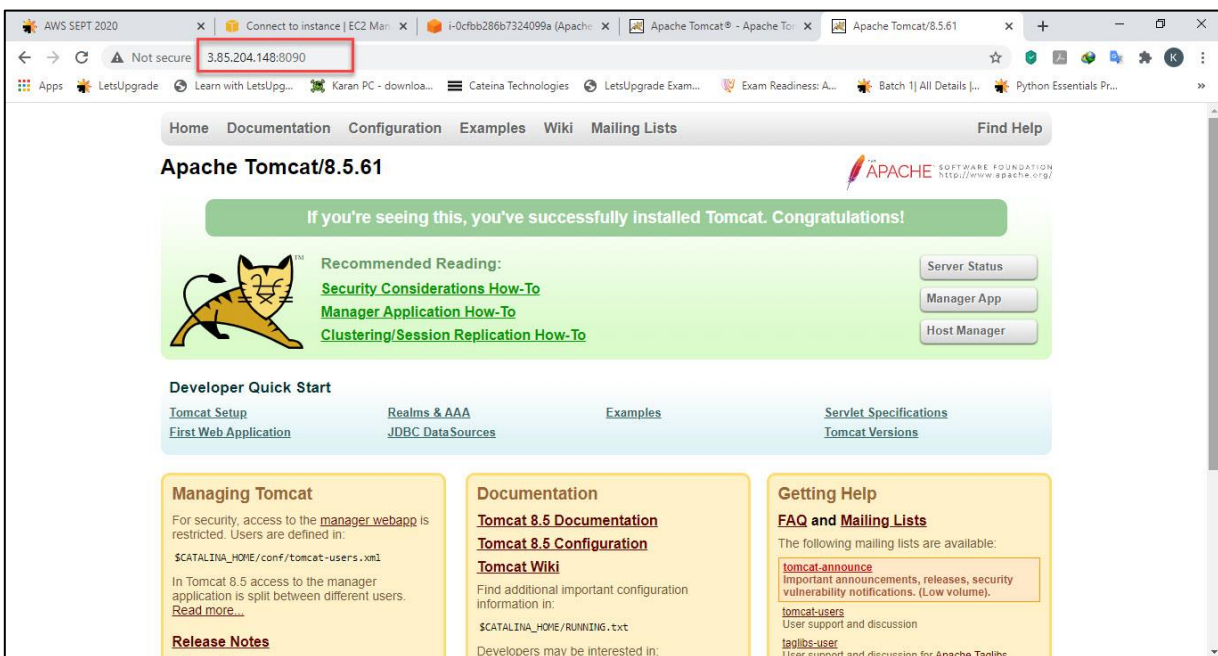
- Save the file and restart tomcat(tomcatdown – tomcatup)

```
<!-- A "Connector" represents an endpoint by which requests are received
and responses are returned. Documentation at :
Java HTTP Connector: /docs/config/http.html
Java AJP Connector: /docs/config/ajp.html
APR (HTTP/AJP) Connector: /docs/apr.html
Define a non-SSL/TLS HTTP/1.1 Connector on port 8080
-->
<Connector port="8090" protocol="HTTP/1.1"
connectionTimeout="20000"
redirectPort="8443" />
<!-- A "Connector" using the shared thread pool-->
<!--
<Connector executor="tomcatThreadPool"
"server.xml" 171L, 7588C written
[root@ip-172-31-21-164 conf]# tomcatup
Using CATALINA_BASE: /opt/apache-tomcat-8.5.61
Using CATALINA_HOME: /opt/apache-tomcat-8.5.61
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.61/temp
Using JRE_HOME: /
Using CLASSPATH: /opt/apache-tomcat-8.5.61/bin/bootstrap.jar:/opt/apache-tomcat-8.5.61/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
[root@ip-172-31-21-164 conf]#
```

i-0cfbb286b7324099a (Apache-Tomcat-Linux)

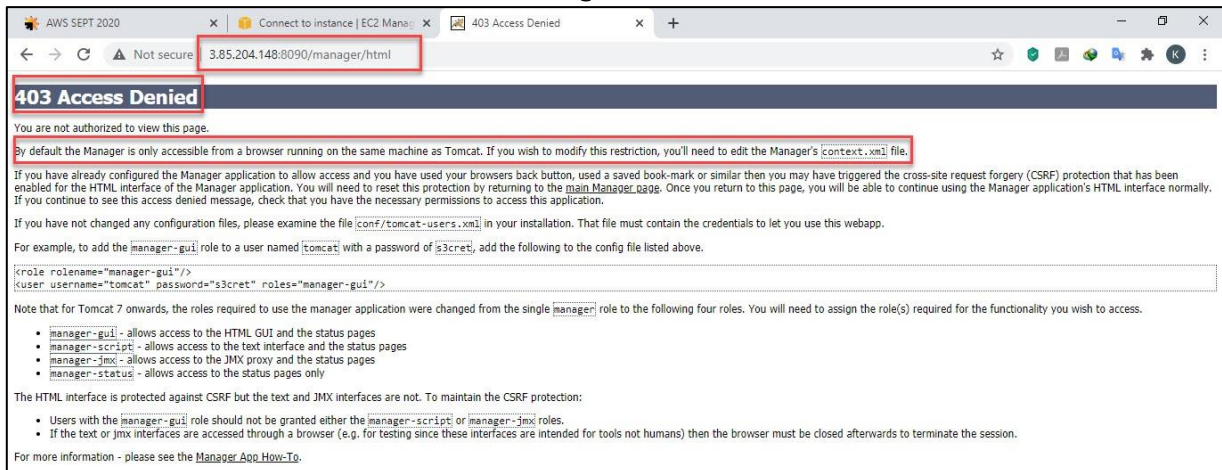
Public IPs: 3.85.204.148 Private IPs: 172.31.21.164

- Go to Internet Browser and type the public ip of Linux instance along with port number (3.85.204.148:8090) to check Apache Tomcat installation



If you can see the Apache Tomcat page that means you have installed it properly

- To check the manager apps access type the following in browser address
 - **3.85.204.148:8090/manager/html**



If you see **403 Access Denied** that means the manager app access is only allowed to specific IP mentioned in context.xml

- **find / -name context.xml** - to find the path of context.xml

```
[root@ip-172-31-21-164 conf]# find / -name context.xml
/opt/apache-tomcat-8.5.61/conf/context.xml
/opt/apache-tomcat-8.5.61/webapps/examples/META-INF/context.xml
/opt/apache-tomcat-8.5.61/webapps/host-manager/META-INF/context.xml
/opt/apache-tomcat-8.5.61/webapps/manager/META-INF/context.xml
[root@ip-172-31-21-164 conf]# vi /opt/apache-tomcat-8.5.61/webapps/manager/META-INF/context.xml
```

- **vi /opt/apache-tomcat-8.5.61/webapps/manager/META-INF/context.xml** – open the context.xml for editing

```
<?xml version="1.0" encoding="UTF-8"?>
<!--
 Licensed to the Apache Software Foundation (ASF) under one or more
 contributor license agreements. See the NOTICE file distributed with
 this work for additional information regarding copyright ownership.
 The ASF licenses this file to You under the Apache License, Version 2.0
 (the "License"); you may not use this file except in compliance with
 the License. You may obtain a copy of the License at

 http://www.apache.org/licenses/LICENSE-2.0

 Unless required by applicable law or agreed to in writing, software
 distributed under the License is distributed on an "AS IS" BASIS,
 WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
 See the License for the specific language governing permissions and
 limitations under the License.
-->
<Context antiResourceLocking="false" privileged="true" >
  <CookieProcessor className="org.apache.tomcat.util.http.Rfc6265CookieProcessor"
    sameSiteCookies="strict" />
  <!-- <Valve className="org.apache.catalina.valves.RemoteAddrValve"
    allow="127.\d+\.\d+\.\d+:::1|0:0:0:0:0:0:0:1" /> -->
  <Manager sessionAttributeValueClassNameFilter="java\.lang\.(?:Boolean|Integer|Long|Number|string)|org\.apache\.catalina\
    filters\.CsrfPreventionFilter\$LruCache(?:\$1)?|java\.util\.(?:Linked)?HashMap"/>
</Context>
-- INSERT --

i-0cfbb286b7324099a (Apache-Tomcat-Linux)
Public IPs: 3.85.204.148 Private IPs: 172.31.21.164
```

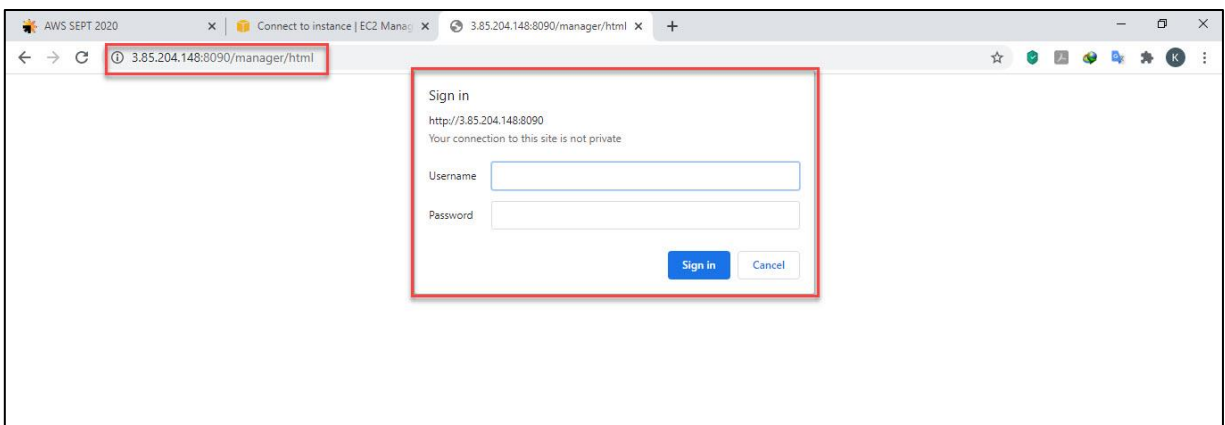
- Comment the line with **Valve className** which allows specific IP address & save the file.

Note : Also do the similar changes in file with below path :
/opt/apache-tomcat-8.5.61/webapps/host-manager/META-INF/context.xml

- Again restart tomcat (*tomcatdown – tomcatup*)

```
-->
<Context antiResourceLocking="false" privileged="true" >
  <CookieProcessor className="org.apache.tomcat.util.http.Rfc6265CookieProcessor"
    sameSiteCookies="strict" />
<!-- <Valve className="org.apache.catalina.valves.RemoteAddrValve"
  allow="127.\d+.\d+.\d+|::1|0:0:0:0:0:0:0:1" /> -->
  <Manager sessionAttributeValueClassNameFilter="java\.lang\.(?:Boolean|Integer|Long|Number|string) |org\.apache\.catalina\
  filters\.CsrfPreventionFilter\$LruCache(?:\$1)?|java\.util\.(?:Linked)?HashMap"/>
</Context>
"/opt/apache-tomcat-8.5.61/webapps/manager/META-INF/context.xml" 24L 1360C written
[root@ip-172-31-21-164 conf]# tomcatdown
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.61
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.61
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.61/temp
Using JRE_HOME:        /
Using CLASSPATH:        /opt/apache-tomcat-8.5.61/bin/bootstrap.jar:/opt/apache-tomcat-8.5.61/bin/tomcat-juli.jar
Using CATALINA_OPTS:
[root@ip-172-31-21-164 conf]# tomcatup
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.61
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.61
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.61/temp
Using JRE_HOME:        /
Using CLASSPATH:        /opt/apache-tomcat-8.5.61/bin/bootstrap.jar:/opt/apache-tomcat-8.5.61/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
[root@ip-172-31-21-164 conf]#
```

- Go to the internet browser and again check for manager app access



- You should see the login page

Now we will need to edit tomcat-users.xml to add the roles & users

- *vi tomcat-users.xml*

```
[root@ip-172-31-21-164 conf]# ls
Catalina catalina.properties jaspic-providers.xml logging.properties tomcat-users.xml web.xml
catalina.policy context.xml jaspic-providers.xsd server.xml tomcat-users.xsd
[root@ip-172-31-21-164 conf]# vi tomcat-users.xml
```

```
application.
-->
<!--
NOTE: The sample user and role entries below are intended for use with the
examples web application. They are wrapped in a comment and thus are ignored
when reading this file. If you wish to configure these users for use with the
examples web application, do not forget to remove the <!-- ... --> that surrounds
them. You will also need to set the passwords to something appropriate.
-->
<role rolename="manager-gui"/>
<role rolename="manager-script"/>
<role rolename="manager-jmx"/>
<role rolename="manager-status"/>
<user username="admin" password="admin123" roles="manager-gui,manager-script,manager-jmx,manager-status"/>
<user username="deployer" password="admin123" roles="manager-script"/>
<user username="tomcat" password="admin123" roles="manager-gui"/>
-->
<!--
<role rolename="tomcat"/>
<role rolename="role1"/>
<user username="tomcat" password="<must-be-changed>" roles="tomcat"/>
<user username="both" password="<must-be-changed>" roles="tomcat,role1"/>
<user username="role1" password="<must-be-changed>" roles="role1"/>
-->
</tomcat-users>
-- INSERT --

i-0cfbb286b7324099a (Apache-Tomcat-Linux)
Public IPs: 3.85.204.148 Private IPs: 172.31.21.164
```

Add the lines containing the roles and the users as shown above & save the file.

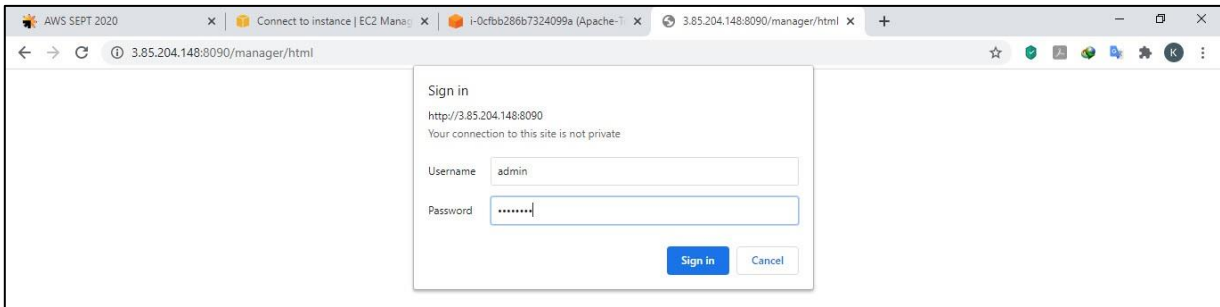
Note down the admin user name and password which we will use for login.

- Again, restart the tomcat (*tomcatdown – tomcatup*)

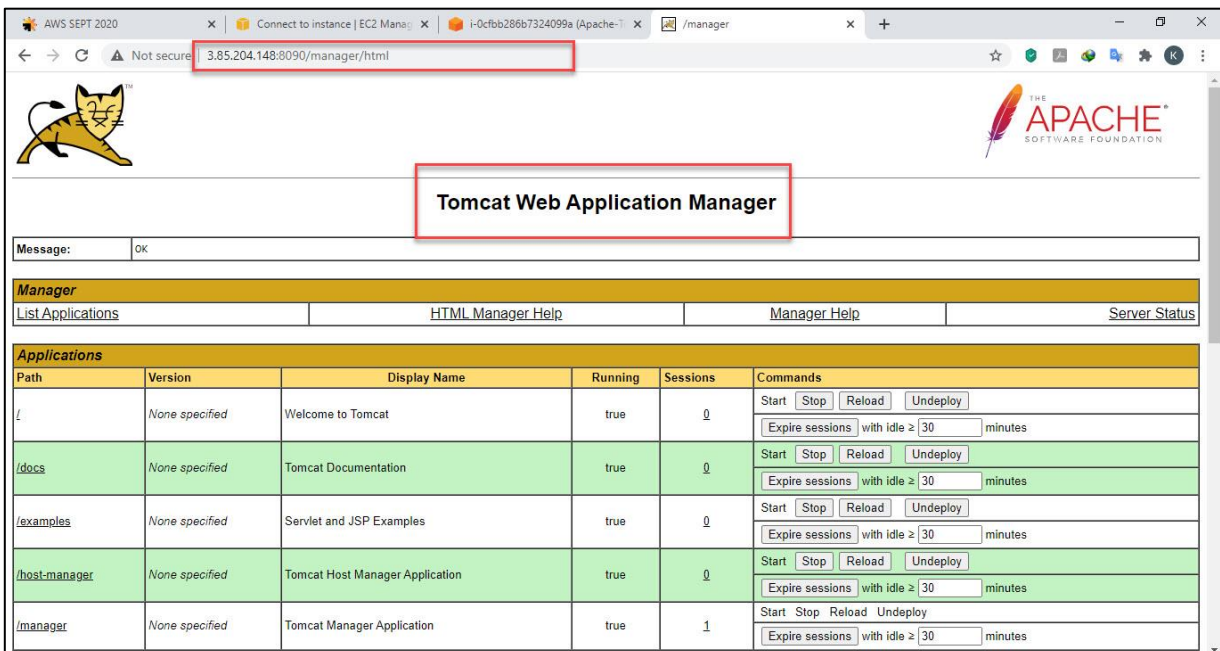
```
<!--
<role rolename="tomcat"/>
<role rolename="role1"/>
<user username="tomcat" password="<must-be-changed>" roles="tomcat"/>
<user username="both" password="<must-be-changed>" roles="tomcat,role1"/>
<user username="role1" password="<must-be-changed>" roles="role1"/>
"tomcat-users.xml" 52L, 2555C written
[root@ip-172-31-21-164 conf]# tomcatdown
Using CATALINA_BASE: /opt/apache-tomcat-8.5.61
Using CATALINA_HOME: /opt/apache-tomcat-8.5.61
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.61/temp
Using JRE_HOME: /
Using CLASSPATH: /opt/apache-tomcat-8.5.61/bin/bootstrap.jar:/opt/apache-tomcat-8.5.61/bin/tomcat-juli.jar
Using CATALINA_OPTS:
[root@ip-172-31-21-164 conf]# tomcatup
Using CATALINA_BASE: /opt/apache-tomcat-8.5.61
Using CATALINA_HOME: /opt/apache-tomcat-8.5.61
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.61/temp
Using JRE_HOME: /
Using CLASSPATH: /opt/apache-tomcat-8.5.61/bin/bootstrap.jar:/opt/apache-tomcat-8.5.61/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
[root@ip-172-31-21-164 conf]# █

i-0cfbb286b7324099a (Apache-Tomcat-Linux)
Public IPs: 3.85.204.148 Private IPs: 172.31.21.164
```


- Now go to Internet browser and login with the admin user



- After login you should be able to see the Tomcat Web Application Manager



Thus, you have successfully installed and configured Apache-Tomcat Server on Linux.

xxx---AWS Assessment Project 6 Ends Here---xxx