

APPLICATION SERVER SETUP

Lab Application Server Setup (Linux)

The Supercar-Trader application you will be working with in the labs is a simple Struts application which provides for an online supercar store which has some performance/code issues. The application is a Java WAR file that you will deploy on a Linux host where you have installed MySQL 5.7 and Apache Tomcat 9.0.50 using the instructions provided below.

It is recommended that you use one of the following Linux host/[vm](#) types with the following resource requirements:

- Amazon Linux 2 (AL2)
- [CentOS 7](#)
- CPU: 2 Cores (Minimum)
- Memory: 8 GB RAM (Minimum), 16 GB RAM (Recommended)
- Storage: 40 GB (Minimum), 60 GB (Recommended)

You should ensure that the agents running on the Lab Application Server have connectivity to your [AppDynamics](#) Platform so they can establish a one-way outbound HTTP or HTTPS connection. The most common ports that need to be open to connect to an on-prem [AppDynamics](#) Platform are listed below:



Port Name	Default
Controller port (HTTPS)	443

- Amazon Linux 2 (AL2)
- [CentOS 7](#)
- CPU: 2 Cores (Minimum)
- Memory: 8 GB RAM (Minimum), 16 GB RAM (Recommended)
- Storage: 40 GB (Minimum), 60 GB (Recommended)

You should ensure that the agents running on the Lab Application Server have connectivity to your [AppDynamics](#) Platform so they can establish a one-way outbound HTTP or HTTPS connection. The most common ports that need to be open to connect to an on-prem [AppDynamics](#) Platform are listed below:

Port Name	Default
Controller port (HTTPS)	443

Please **install a fresh copy of MySQL 5.7 and Tomcat 9.0.50 on your Linux host as per the instructions provided here** and be sure to use the versions mentioned, **otherwise, the application will not work** and you will [lose valuable](#) time troubleshooting unnecessary problems.

You will be performing the following setup steps for the lab application dependencies:

- Download Lab Artifacts Zip File
- Install Java v1.8
- Install MySQL v5.7
- Initialize Application Database
- Install and Configure Tomcat v9.0.50
- Install [PhantomJS](#) v2.1.1

Download Lab Artifacts Zip File

When you change ownership of the `/opt/appdynamics` directory in the next step, please ensure that you use the same OS user and group when you change ownership of the directory where you install Tomcat.

Before you download the lab artifacts zip file, use the commands below to create the directory where you'll copy the file to.

```
cd /opt sudo mkdir appdynamics
sudo chown -R [your-os-user]:[your-os-group] /opt/appdynamics
cd /opt/appdynamics mkdir lab-artifacts
```

If `wget` is not already installed on your Linux host you can try using the command below to install it. (command may vary based on your Linux distro)

```
sudo yum install wget
```

Use below command to download the zip file.

```
wget https://povplaybook.appdpartnerlabs.net/zip/lab-artifacts.zip
```

Once you have the zip file in the `/opt/appdynamics/lab-artifacts` directory, use the command below to unzip the file.

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	<p>When you change ownership of the <code>/opt/appdynamics</code> directory in the next step, please ensure that you use the same OS user and group when you change ownership of the directory where you install Tomcat.</p> <p>Before you download the lab artifacts zip file, use the commands below to create the directory where you'll copy the file to.</p> <pre>cd /opt sudo mkdir appdynamics sudo chown -R [your-os-user]:[your-os-group] /opt/appdynamics cd /opt/appdynamics mkdir lab-artifacts</pre> <p>If <code>wget</code> is not already installed on your Linux host you can try using the command below to install it. (command may vary based on your Linux distro)</p> <pre>sudo yum install wget</pre> <p>Use below command to download the zip file.</p> <pre>wget https://povplaybook.appdpartnerlabs.net/zip/lab-artifacts.zip</pre> <p>Once you have the zip file in the <code>/opt/appdynamics/lab-artifacts</code> directory, use the commands below to unzip the file.</p> <pre>cd /opt/appdynamics/lab-artifacts unzip lab-artifacts.zip</pre> <p>Install Java v1.8</p>	

```
wget https://povplaybook.appdpartnerlabs.net/zip/lab-artifacts.zip
```

Once you have the zip file in the `/opt/appdynamics/lab-artifacts` directory, use the commands below to unzip the file.

```
cd /opt/appdynamics/lab-artifacts unzip lab-artifacts.zip
```

Install Java v1.8

Use the command below to install Java 1.8 (command may vary based on your Linux `distro`)

```
sudo yum install java-1.8.0
```

Use the command below to validate the Java 1.8 install.

```
java -version
```

The output should look similar to this.

```
openjdk version "1.8.0_265"  
OpenJDK Runtime Environment (build 1.8.0_265-b01)  
OpenJDK 64-Bit Server VM (build 25.265-b01, mixed mode)
```

Begin Installing MySQL v5.7

Use the commands below to install MySQL 5.7 Community Version (assumes you already have `wget` installed)

```
wget https://dev.mysql.com/get/mysql57-community-release-el7-9.noarch.rpm  
sudo rpm -ivh mysql57-community-release-el7-9.noarch.rpm  
sudo yum install mysql-server
```

Resolving GPG Key Error

If you get a GPG public key error like the one seen below, then follow the next steps to resolve it.

```
Public key for mysql-community-libs-compat-5.7.37-1.el7.x86_64.rpm is not  
installed Failing package is: mysql-community-libs-compat-5.7.37-  
1.el7.x86_64 GPG Keys are configured as: file:///etc/pki/rpm-gpg/RPM-GPG-  
KEY-mysql
```

Use the commands below to install MySQL 5.7 Community Version (assumes you already have `wget` installed)

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sudo rpm -ivh mysql57-community-release-el7-9.noarch.rpm  
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Failing package is: mysql-community-libs-compat-5.7.37-1.el7.x86_64  
GPG Keys are configured as: file:///etc/pki/rpm-gpg/RPM-GPG-KEY-mysql
```

Create a new public key file using the commands below.

```
cd /tmp  
touch mysql_pubkey.asc
```

Now use the link below to get the updated public key and copy it into the '`mysql_pubkey.asc`' file you just created.

MySQL 5.7 Reference Manual

```
wget https://dev.mysql.com/get/mysql57-community-release-el7-9.noarch.rpm  
sudo rpm -ivh mysql57-community-release-el7-9.noarch.rpm  
sudo yum install mysql-server
```

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Failing package is: mysql-community-libs-compat-5.7.37-1.el7.x86_64  
GPG Keys are configured as: file:///etc/pki/rpm-gpg/RPM-GPG-KEY-mysql
```

Create a new public key file using the commands below.

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cd /tmp  
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Now use the link below to get the updated public key and copy it into the '`mysql_pubkey.asc`' file you just created.

MySQL 5.7 Reference Manual

<http://pgp.mit.edu/pks/lookup?op=vindex&search=0x467B942D3A79BD29>

Search results for '0x467b942d3a79bd29'

Type bits/keyID cr. time exp time key expir

```
pub 4096R/3A79BD29 2021-12-14
uid by50_Release_Engineering_mysql-build@oss.oracle.com
sig sig3 3A79BD29 2021-12-14 2023-12-14 [selfsig]
sub 4096R/67D4C346 2021-12-14
sig sbind 3A79BD29 2021-12-14 2023-12-14 []
```

<http://pgp.mit.edu/pks/lookup?op=get&search=0x467B942D3A79BD29>

Open the above link and copy the contents of the key to key file.

Public Key Server -- Get "0x467b942d3a79bd29 "

```
-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: SKS 1.1.6
Comment: Hostname: pgp.mit.edu
```

```
mQIBOQ4urcEACrbsRa755ySFFk8+KX5M9Rxyq087Bu107skReefq4/y727pGvIDZL
mDv/1K0tPLa3bnvsl0IE1trfLi+2E562kaQ6hePPgn2RqxyZirt2se51323n3j1Eg+m5dh
Aul6+bHnqov+YVb+R8u014o08Y2mefkVP5mP1d3RQ8v40PTHTx8KxkvVSPCLL+jQ4R
2cQ8rjyJbLDB72u0C0z3fuhwHnB8Lh8p7571qfyrcCuf71a1q2E1v8wH1fcp3r2
xS9aet2tU0V2pHMB7K13p2t0u4kdl/uu98Q0L2vHb288p0u0u0D6KcpK18dumTx5
z9euLFF0U027PECC0z3ve7ur79CKOLE1+39Hr8r0H2K0H5r9ta1PTrnV0cayIG0SHZ8C
YfLett91133k1hQ8B1dUChVtU7J45vCLQ79T4d9Q0zq4BPm0D0d319j7u1L7u8vB8Lugg1r
RTPVfnsC64H05PEF+uTb8Fh2L1F3u07m0u0m0Hf/sdHf0faiTE1v2uqndvU6Abd4/
y1/hiyy7uIQJ5C0m3uFfjJY0T477DUuHFD0u4Hf9v+oqsp3Xn6eQHTU2C/QHtrfjN3
Agkpp283G05d/0ekH2sok1H0uX5FvH3VCHP2aH6pp2hsQARAQAB0ZmVhcnV0eWVhcnV0
YXN1eWV2ZmVhcnV0eWVhcnV0eWVhcnV0eWVhcnV0eWVhcnV0eWVhcnV0eWVhcnV0
IG5FeXk+YVb+R8u014o08Y2mefkVP5mP1d3RQ8v40PTHTx8KxkvVSPCLL+jQ4R
AQI+AQI+AQI+AQI+AQI+AQI+AQI+AQI+AQI+AQI+AQI+AQI+AQI+AQI+AQI+AQI+AQI+
Q3rEE1/0Vag1D8AueK4LCC0407uohH0H01Ubd0ck5x28pg55p1Qp0XK1K9P2Hel/INTb9
853H21z40ab0E06E52TupttHf8pC9T29Lub7JCHXKUCa1Cxd9YcrN72eq5q2F0ds
aeLafmff0ee27d8K0hbyXkna/4jdio7p80730gr/TBco2H2qJ5VP1471J15HhvcJu
o7Vqatd4rff/j2dG6F1/AL6B2Yb0B0u0B0e0C0Lubh8K8q0d1LH0dmcu34u7x1
4RAV1nQFcp/7EioXkuey8/1qeVUIE89UATef05Lh/hx2j5dQV/NQKthTb9H0HmPna5BV
A3PVu02R2p2n2CxDATh0e10Ktue3PCm2BF/0T6c65aQ4ao7j0v4h787Q1Q9Fridu
nTz+4Hh2U/MB2yL243n1u4s9e2V1g/4H11K0u357Qgy1yLq1g1y1fzHf1y5d0PYK30a
ScnvYB03Bxw7XV4uXK1a1p9vVp9b77Adn1j5131Q000+22Vv85+8c4b35At
Y8HtX5u4RL1V53c0hF0L1uAcPqdK21Ex307xR3d65n0Havj4F72X0QZ7U2m0LKCQ0h
uLq3ARAARy7qf0YCL0KvH0Bn1X29v7Wn1y27pEPU1B8X0V0z5/ALV4Hq14THHm
mUhtnd028KCK508j0b+K515+842esB450DmIhu30zu8Xa11F1FpHkQubU27v301a2
pF7ash3y2m0a0H536LdP5L1XtyfHf1Hf69V/4h0r1eF0Q2/0pP1L8Q1fjucD0P
1v9LhT12v2n/8J07X12u4P6c256VAp0wH02ZFPh0e2H0Qh0ndm4en0/0X0Z20eb
Qo1L0uG44H87p6nXfnp5Rn1RnsgC7ehc4r084/6r1Xp7vSwqL21Q13mZK1cv7711R
```

```
rNE3IQ50bR15Az10/fG7Ia65vQGhOCOTLpgChTbcZhtozefqva41eEgE4xH+6r8itgSYeGGD
RmeHEVfPH9dzQ0bf+5vGd58u2z9f2agPK1H32c69RLoA0mHRe7Hkv41zeJUC5tumUY0e80jd
enZiZT3hJLh6tH+mrp20wnQIoed4LxUu1dhH0j0rYXv61aLGJ1FswSe5ke7ohBLCf88TKnHC
BohROMy2E63nggfsdn3UYzfqZ0cfbXetkXuLS/0H3M0b1Njg+ELVzjg9irkayu7yLakZx+mx6
sHP1JYm2h3knimG29d5mG17ZT9emP9b+CfqQUxoX7kjs0gnD144buG70dmI8u3ajVAaH00Xy
Y/zdDMGjskfEYbNXCAY2FRZSE58tg7vPKD++Kd2KGp1U2EIF77JYfKhHAB50GfHx92HUIid
sTSKHe+QnnnoFau4gnaDU311
=Xqbo
-----END PGP PUBLIC KEY BLOCK-----
```

Import the new public key file using the commands below.

```
pgp --import mysql_pubkey.asc
sudo rpm --import mysql_pubkey.asc
```

Now run the installation again using the commands below. The installation should now succeed.

```
sudo yum install mysql-server
```

I=

Finish Installing MySQL v5.7

Start the MySQL service using the command below.

```
sudo systemctl start mysqld
```

Verify the MySQL service.

```
service mysqld status
```

The output should look similar to this.

```
Redirecting to /bin/systemctl status mysqld.service * mysqld.service -
MySQL Server Loaded: loaded (/usr/lib/systemd/system/mysqld.service;
enabled; vendor preset: disabled) Active: active (running) since Thu 2021-
07-08 17:16:33 UTC; 5 days ago Docs: man:mysqld(8)
http://dev.mysql.com/doc/refman/en/using-systemd.html Process: 6099
ExecStart=/usr/sbin/mysqld --daemonize --pid-
file=/var/run/mysqld/mysqld.pid $MYSQLD_OPTS (code=exited,
```

The output should look similar to this.

```
Redirecting to /bin/systemctl status mysqld.service • mysqld.service -
MySQL Server Loaded: loaded (/usr/lib/systemd/system/mysqld.service;
enabled; vendor preset: disabled) Active: active (running) since Thu 2021-
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http://dev.mysql.com/doc/refman/en/using-systemd.html Process: 6099
ExecStart=/usr/sbin/mysqld --daemonize --pid-
file=/var/run/mysqld/mysqld.pid $MYSQLD_OPTS (code=exited,
status=0/SUCCESS) Process: 6049 ExecStartPre=/usr/bin/mysqld_pre_systemd
(code=exited, status=0/SUCCESS) Main PID: 6102 (mysqld) CGroup:
/system.slice/mysqld.service └─6102 /usr/sbin/mysqld --daemonize --pid-
file=/var/run/mysqld/mysqld.pid Jul 08 17:16:28 ip-172-31-44-9.us-east-
2.compute.internal systemd[1]: Starting MySQL Server... Jul 08 17:16:33
ip-172-31-44-9.us-east-2.compute.internal systemd[1]: Started MySQL
Server.
```

Secure MySQL - During the installation process, a temporary password is generated for the MySQL root user. Locate it in the `mysqld.log` with this command.

```
sudo grep 'temporary password' /var/log/mysqld.log
```

Make note of the password, which you will need in the next step to secure the installation and where you will be forced to change it. Execute the secure `mysql` installation tool with the command below.

```
mysql_secure_installation
```

Make sure the new password you enter next is **Welcome1!** otherwise the application will not be able to connect to the database.

Now enter the following.

```
file=/var/run/mysqld/mysqld.pid Jul 08 17:16:28 ip-172-31-44-9.us-east-
2.compute.internal systemd[1]: Starting MySQL Server... Jul 08 17:16:33
ip-172-31-44-9.us-east-2.compute.internal systemd[1]: Started MySQL
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```
mysql_secure_installation
```

Make sure the new password you enter next is **Welcome1!** otherwise the application will not be able to connect to the database.

Now enter the following.

```
New password: Welcome1!
Remove anonymous users? n
Disallow root login remotely? n
Remove test database and access to it? n
Reload privilege tables now? y
```

```
5. 54.82.154.242 (centos)
of the plugin.
Using existing password for root.

Estimated strength of the password: 100
Change the password for root ? ((Press y|Y for Yes, any other key for No) : y

New password:

Re-enter new password:

Estimated strength of the password: 100
Do you wish to continue with the password provided?(Press y|Y for Yes, any other key for No) : y
By default, a MySQL installation has an anonymous user,
allowing anyone to log into MySQL without having to have
a user account created for them. This is intended only for
testing, and to make the installation go a bit smoother.
You should remove them before moving into a production
environment.

Remove anonymous users? (Press y|Y for Yes, any other key for No) : n

... skipping.

Normally, root should only be allowed to connect from
'localhost'. This ensures that someone cannot guess at
the root password from the network.

Disallow root login remotely? (Press y|Y for Yes, any other key for No) : n

... skipping.
By default, MySQL comes with a database named 'test' that
anyone can access. This is also intended only for testing,
and should be removed before moving into a production
environment.

Remove test database and access to it? (Press y|Y for Yes, any other key for No) : n
```

```
5. 54.82.154.242 (centos)
By default, a MySQL installation has an anonymous user,
allowing anyone to log into MySQL without having to have
a user account created for them. This is intended only for
testing, and to make the installation go a bit smoother.
You should remove them before moving into a production
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Remove anonymous users? (Press y|Y for Yes, any other key for No) : n

... skipping.

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'localhost'. This ensures that someone cannot guess at
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Disallow root login remotely? (Press y|Y for Yes, any other key for No) : n

... skipping.
By default, MySQL comes with a database named 'test' that
anyone can access. This is also intended only for testing,
and should be removed before moving into a production
environment.

Remove test database and access to it? (Press y|Y for Yes, any other key for No) : n

... skipping.
Reloading the privilege tables will ensure that all changes
made so far will take effect immediately.

Reload privilege tables now? (Press y|Y for Yes, any other key for No) : y
Success.

All done!
[root@ip-172-31-46-124 lab-artifacts]#
[root@ip-172-31-46-124 lab-artifacts]#
[root@ip-172-31-46-124 lab-artifacts]#
```


Initialize Application Database

Now we will run the database scripts that create the database schema, the tables, and the data for our application. Change directory to where the database scripts are located.

```
cd /opt/appdynamics/lab-artifacts/db-scripts
```

Use the following commands to run the database scripts.

```
mysql -u root -pWelcome1! < mysql-01.sql
mysql -u root -pWelcome1! < mysql-02.sql
mysql -u root -pWelcome1! < mysql-03.sql
```

Install and Configure Tomcat v9.0.50

Use the following commands to create the directory for Tomcat, download it, and install it. (assumes you already have `wget` installed)

```
cd /usr/local
sudo mkdir apache
cd /usr/local/apache
sudo wget https://archive.apache.org/dist/tomcat/tomcat-
9/v9.0.50/bin/apache-tomcat-9.0.50.tar.gz
sudo tar -zxvf apache-tomcat-9.0.50.tar.gz -C /usr/local/apache
```

```
5. 54.82.154.242 (centos) x
... skipping.

Normally, root should only be allowed to connect from
'localhost'. This ensures that someone cannot guess at
the root password from the network.

Disallow root login remotely? (Press y|Y for Yes, any other key for No) : n
... skipping.
By default, MySQL comes with a database named 'test' that
anyone can access. This is also intended only for testing,
and should be removed before moving into a production
environment.

Remove test database and access to it? (Press y|Y for Yes, any other key for No) : n
... skipping.
Reloading the privilege tables will ensure that all changes
made so far will take effect immediately.

Reload privilege tables now? (Press y|Y for Yes, any other key for No) : y
Success.

All done!
[root@ip-172-31-46-124 lab-artifacts]#
[root@ip-172-31-46-124 lab-artifacts]#
[root@ip-172-31-46-124 lab-artifacts]# cd db-scripts/
[root@ip-172-31-46-124 db-scripts]#
[root@ip-172-31-46-124 db-scripts]#
[root@ip-172-31-46-124 db-scripts]# mysql -u root -pWelcome1! < mysql-01.sql
mysql: [Warning] Using a password on the command line interface can be insecure.
[root@ip-172-31-46-124 db-scripts]# mysql -u root -pWelcome1! < mysql-02.sql
mysql: [Warning] Using a password on the command line interface can be insecure.
[root@ip-172-31-46-124 db-scripts]# mysql -u root -pWelcome1! < mysql-03.sql
mysql: [Warning] Using a password on the command line interface can be insecure.
[root@ip-172-31-46-124 db-scripts]#
```



```
cd /usr/local
sudo mkdir apache
cd /usr/local/apache
sudo wget https://archive.apache.org/dist/tomcat/tomcat-
9/v9.0.50/bin/apache-tomcat-9.0.50.tar.gz
sudo tar -zxpvf apache-tomcat-9.0.50.tar.gz -C /usr/local/apache
```

When you change ownership of the `/usr/local/apache` directory in the next step, please ensure that you use the same OS user and group you used when changing ownership of the `/opt/appdynamics` directory previously.

Use the command below to change ownership of the Tomcat directory structure.

```
sudo chown -R [your-os-user]:[your-os-group] /usr/local/apache
```

Now **rename the Tomcat install directory** and set the required `CATALINA_HOME` environment variable using commands below.

```
mv apache-tomcat-9.0.50 apache-tomcat-9
echo "export CATALINA_HOME='/usr/local/apache/apache-tomcat-9/'" >>
~/.bashrc
source ~/.bashrc
```

By default no user or account is allowed to access to the Tomcat Manager Web Page and Admin Page. Use the command below to edit the file `"/usr/local/apache/apache-tomcat-9/conf/tomcat-users.xml"`

```
vi /usr/local/apache/apache-tomcat-9/conf/tomcat-users.xml
```

Application Server Setup - Word (Product Activation Failed)

PAGE LAYOUT REFERENCES MAILINGS REVIEW VIEW

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Use the command below to change ownership of the Tomcat directory structure.

```
sudo chown -R [your-os-user]:[your-os-group] /usr/local/apache
```

Now **rename the Tomcat install directory** and set the required `CATALINA_HOME` environment variable using commands below.

```
mv apache-tomcat-9.0.50 apache-tomcat-9
echo "export CATALINA_HOME='/usr/local/apache/apache-tomcat-9/'" >>
~/.bashrc
source ~/.bashrc
```

By default no user or account is allowed to access to the Tomcat Manager Web Page and Admin Page. Use the command below to edit the file `"/usr/local/apache/apache-tomcat-9/conf/tomcat-users.xml"`

```
vi /usr/local/apache/apache-tomcat-9/conf/tomcat-users.xml
```

Add the following lines to the end of the file just before the last XML tag you see in the file named `</tomcat-users>` and then save the file.

```
<!-- User linuxtech1 who can access only manager section --> <role  
rolename="manager-gui" /> <user username="admin" password="welcome1"  
roles="manager-gui" />
```

By default no remote access is allowed for the Tomcat Manager Web Page. Use the command below to edit the file `"/usr/local/apache/apache-tomcat-9/webapps/manager/META-INF/context.xml"`

```
vi /usr/local/apache/apache-tomcat-9/webapps/manager/META-INF/context.xml
```

Comment out the following lines for the Valve tag in the file as seen below and then save the file.

```
<!-- <Valve className="org.apache.catalina.valves.RemoteAddrValve"  
allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1" /> -->
```

Add the following lines to the end of the file just before the last XML tag you see in the file named `</tomcat-users>` and then save the file.

```
<!-- User linuxtech1 who can access only manager section --> <role  
rolename="manager-gui" /> <user username="admin" password="welcome1"  
roles="manager-gui" />
```

By default no remote access is allowed for the Tomcat Manager Web Page. Use the command below to edit the file `"/usr/local/apache/apache-tomcat-9/webapps/manager/META-INF/context.xml"`

```
vi /usr/local/apache/apache-tomcat-9/webapps/manager/META-INF/context.xml
```

Comment out the following lines for the Valve tag in the file as seen below and then save the file.

```
<!-- <Valve className="org.apache.catalina.valves.RemoteAddrValve"  
allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1" /> -->
```

Start Tomcat using the commands below.

```
cd /usr/local/apache/apache-tomcat-9/bin  
./startup.sh
```

Verify you can access the Tomcat Manager Web page from your browser.

```
http://{ip-address-or-hostname}:8080/manager/html
```

```
<!-- <Valve className="org.apache.catalina.valves.RemoteAddrValve"
allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1" /> -->
```

Start Tomcat using the commands below.

```
cd /usr/local/apache/apache-tomcat-9/bin
./startup.sh
```

Verify you can access the Tomcat Manager Web page from your browser.

```
http://{ip-address-or-hostname}:8080/manager/html
```

Enter the user name and password you added to the `tomcat-users.xml` file previously.

Now **stop Tomcat** using the commands below. (We'll start it up again after we've applied the [AppDynamics Java Agent](#) in the next lab)

```
cd /usr/local/apache/apache-tomcat-9/bin ./shutdown.sh
```

Install [PhantomJS v2.1.1](#)

Use the commands below to install [PhantomJS](#) that will be needed to provide the load generation for the lab application.

```
cd /tmp
sudo yum install glibc fontconfig freetype freetype-devel fontconfig-devel
wget bzip2
cd /tmp
wget https://bitbucket.org/ariya/phantomjs/downloads/phantomjs-2.1.1-linux-x86_64.tar.bz2
cd /tmp
sudo tar xvf phantomjs-2.1.1-linux-x86_64.tar.bz2 -C /usr/local/share/
sudo ln -sf /usr/local/share/phantomjs-2.1.1-linux-x86_64/bin/phantomjs
/usr/local/bin
```

Now use the command below to [validate](#) the install of [PhantomJS](#)

```
phantomjs --version
```

You should see output from the command like below.

Now use the command below to validat the install of PhantomJS

```
phantomjs --version
```

You should see output from the command like below.

```
[ec2-user@ip-172-31-44-9 phantomjs]$ phantomjs --version 2.1.1
```

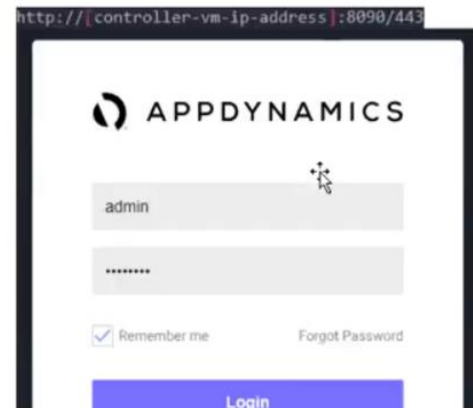
DOWNLOAD JAVA APM AGENT

In this exercise you will access your AppDynamics Controller from your web browser and download the Java APM agent from there.

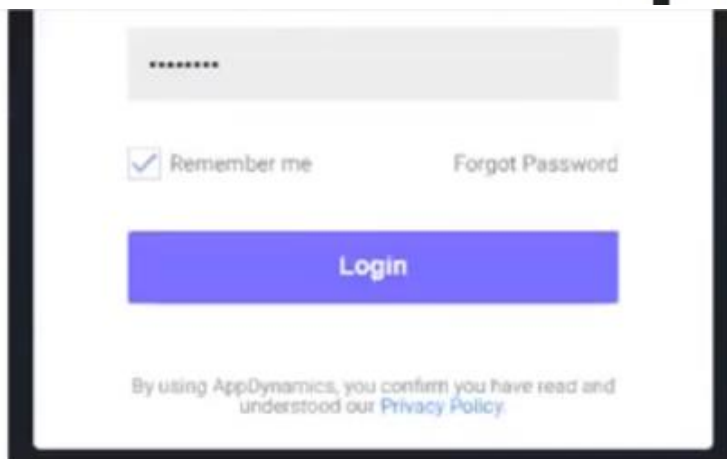
Login to your controller

Use the URL below to login to your controller from your web browser. Use 8090 incase of On-prem and 443 port incase of SaaS controller

http://[controller-vm-ip-address]:8090/443



The image shows a web browser window displaying the AppDynamics login page. The URL bar shows 'http://[controller-vm-ip-address]:8090/443'. The page has the AppDynamics logo at the top. Below the logo, there are two input fields: the first contains 'admin' and the second contains a masked password '*****'. To the right of the password field is a 'Forgot Password' link. Below the input fields is a checked checkbox labeled 'Remember me' and a 'Login' button.



The image shows a web browser window displaying the AppDynamics login page. The URL bar shows 'http://[controller-vm-ip-address]:8090/443'. The page has the AppDynamics logo at the top. Below the logo, there are two input fields: the first contains 'admin' and the second contains a masked password '*****'. To the right of the password field is a 'Forgot Password' link. Below the input fields is a checked checkbox labeled 'Remember me' and a 'Login' button.

Navigate to the Getting Started Wizard

1. Select the **Home** tab at the top left of the screen.
2. Select the **Getting Started** tab.
3. Click **Getting Started Wizard**.