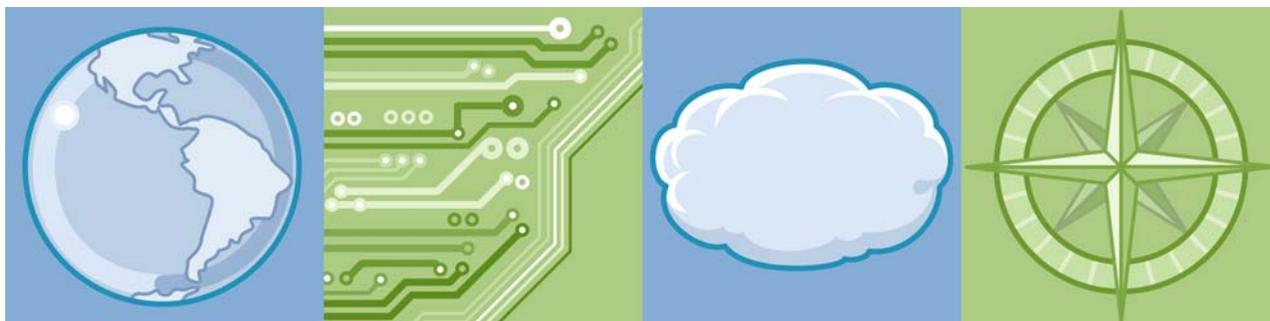**IBM**

IBM Training
Lab Setup Guide

Essentials of IBM UrbanCode Deploy V6.1

Course code QQ147 ERC 1.0

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Contents

Overview

The purpose of this lab setup guide is to assist the classroom preparer in setting up the QQ147 classroom lab environment. These instructions were developed for a Linux cloud environment. The classroom must be ready to run lab exercises *before the day of class.* You will want to create a virtualized environment that you can maintain and reuse. *Test the entire setup thoroughly* to avoid problems during class time.
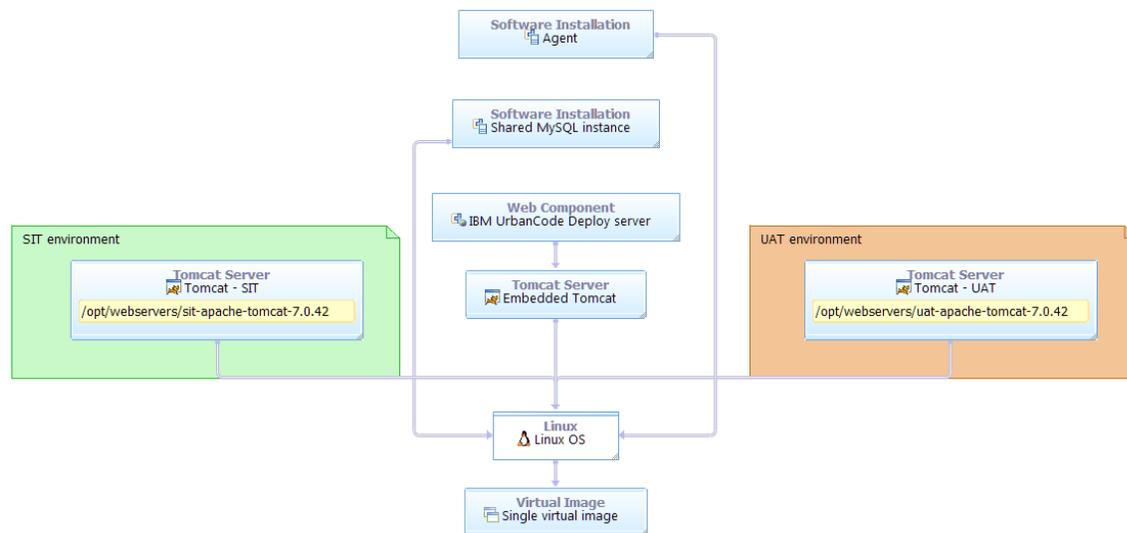
If you experience problems and need assistance, contact the IBM Help Desk:
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Figure 1. Illustration of lab setup

The picture shown above illustrates that there are two Tomcat Servers – one for the (Software integration test) SIT environment and one for the (User acceptance test) UAT environment. SIT is on port 8085 and UAT is on port 8086.

Requirements

These instructions describe how to manually create the lab environment that is needed to conduct the lab exercises in this course. There are also Linux shell scripts that may be used to do automatically many of the steps in these instructions. As the classroom provider, you are responsible for providing the following configuration for this class. The total number of systems required for a class is one system for the instructor plus one system for each participant.Each class participant has their own cloud instance.

These instructions were developed on a single server cloud instance of the FIT IWD cloud, using an image of Red Hat 5.6 64-bit Linux. These could be adapted for other cloud environments but there may be minor differences. They could also be adapted to create a VMware image. These instructions assume that you have a Linux server such as RedHat where you install UrbanCode Deploy along with Tomcat. You log in as the root user.

The image can be created more quickly by using scripts. The scripts were written and tested using Red Hat Linux 6.4 with UrbanCode Deploy 6.1. The files to do the installation with scripts are:

Name	Date modified	Type	Size
agent_install.properties.remote	2/4/2015 2:36 PM	REMOTE File	1 KB
install.properties.ucd61.remote	3/4/2015 2:34 PM	REMOTE File	1 KB
labconfigure_remote.sh	3/4/2015 3:33 PM	SH File	3 KB
lab-UCD-MySQL.txt	1/22/2015 1:08 PM	Text Document	1 KB
RemoteLabEnvInstallInstructions.txt	3/5/2015 10:03 AM	Text Document	4 KB
tomcat-users7.xml	1/22/2015 1:26 PM	XML File	2 KB

Class participants access the cloud from their own client computers. They may choose to do the lab virtually or in a live classroom. Either way the class participants can access the completed lab environment on the cloud from a web browser.

System requirements

For complete system requirements for the IBM UrbanCode Deploy server, agent, and related systems, see the following page: http://www-01.ibm.com/support/docview.wss?uid=swg27038801

The server provides services such as the user interface used to configure application deployments, the workflow engine, the security service, and the artifact repository, among others. Installing the server in-volves specifying configuration information for the server, such as the ports that the server uses.The server must have network access to the following ports:

- The server must be able to initiate connections to the license server. The default port for Rational® Common Licensing is 27000. Instructions are not included in this Lab Setup guide for connecting to the license server. A demonstration version of the product is installed initially but it is strongly recommended you also install the License Server and use a valid license.
- The server must be able to accept connections from agents and agent relays. By default, agents and relays connect on port 7918.

- Users and agents that do not use a relay must be able to initiate connections to the server through HTTP or HTTPS, depending on the configuration. The default ports are 8080 for HTTP and 8443 for HTTPS.
- If you configure the server to contact agents through a network relay, the server must be able to initiate connections to the port that you specify.
- Installing agents remotely requires the server to initiate connections to the SSH port of the agent computer. The default port for SSH is 22.
- Remote discovery of agents requires the server to initiate connections to port 22 for Linux agents and port 135 for Windows agents.
- The server might require access to other ports if you connect to external systems, such as an SMTP server for notifications.

Some additional guidelines are as follows:

- Because agent activity can sometimes become resource intensive, agents are usually installed on systems other than the one where the IBM UrbanCode Deploy server is located. However, in the lab topology one agent is installed in the single cloud instance.
- IBM UrbanCode Deploy runs well as a root user (or local system user on Windows), and running this way is the easiest method to avoid permission errors.
- Ideally, the agent account is dedicated to IBM UrbanCode Deploy. Because IBM UrbanCode Deploy agents run remote commands, it is best to create a user specifically for the agent and grant this user only the appropriate privileges.
- Installing multiple agents on the same system is not necessary because a single agent can run parallel deployments as different users. While idle agents use minimal resources, many agents on the same system might have a noticeable impact.
- For best server performance, install the server on a system that is dedicated to the server and does not run any other major software.

Software setup instructions with scripts

Creating the lab environment using these instructions is quick and easy. It can all be done in about an hour.

These instructions use Putty (putty.exe) for SSH to contact the server to log in and run commands from a windows client and pscp (pscp.exe) to copy files to the server. They are free and available from www.putty.org or http://www.chiark.greenend.org.uk/ . You can use other programs such as Cygwin with SSH to do the same thing. Create a folder on your computer for the downloads. Put putty and pscp and the other download files all in the same folder.

Prerequisites:

The image must have:

- The JAVA_HOME variable specified with the location of the JRE. To make sure that the JAVA_HOME variable is set, run this command, which prints the value of the variable:

  ```
  echo $JAVA_HOME
  ```

A common problem is that often the JAVA_HOME variable is set to `/root/jrel.7.0_67` (that's got a lower-case "L" in there) instead of the correct value of `/root/jre1.7.0_67` (with a number "1" in there). This is a common typo so beware!

If you do not have the SUN JRE see step 4, 5a, 5b **Download and transfer the Sun JRE file** in the Standard Software setup instructions.

- Linux operating system; these instructions were tested on Red hat enterprise linux version 6.4.

- A license server; but this might also work with a trial license, in which case you can skip step 1.

The image must be connected to a package manager server such as yum or apt-get server so you can get the SQL server software in step 7 and other software.

Instructions:

1. Open the file **install.properties.ucd61.remote** (which is provided with these instructions) and add the following line to the end:

```
rcl.server.url=licenseString
```

For `licenseString`, use the connection information for the license server. For example:

```
rcl.server.url=27000@RCLServer.example.com
```

Or for a more complicated license setup:

```
rcl.server.url=27000@RCLServer.example.com;27000@backupRCLServer.example.com
```

2. Download the UrbanCode Deploy installation archive file from [Request free trial](). Extract the file **in-stall.properties.** The install properties file has a line that looks like the following:

```
version=6.1.0.0.520466
```

3. In the **install.properties.ucd61.remote** file, find the matching line and update that version number to match.

The version number in **the install.properties.ucd61.remote** file must match the version number in the UrbanCode Deploy installation archive file.

4. Using cygwin scp or pscp, copy the files that are included with these instructions to the Virtual machine, into the folder /root .

- agent_install.properties.remote

- install.properties.ucd61.remote

- labconfigure_remote.sh

- lab-UCD-MySQL.txt

- tomcat-users7.xml

- The mysql client JAR file, mysql-connector-java-5.1.27-bin.jar.

- The UCD 6.1 installation archive ZIP file. The generally available version is named CIZ30ML.zip, but the UrbanCode Deploy 6.1 trial version will work here, too. You can get it from [Request free trial]() or internally at the following location: [https://ausgsa.ibm.com/projects/d/devops/deploy/releases/6.1.0/CIZ30ML.zip]()

5. Using cygwin ssh or putty, log in to the remote server as the root user.

6. Unzip the UCD installation file. For example, if the file is named CIZ30ML.zip, run the following command:

```
unzip -q CIZ30ML.zip
```

7. Install MySQL server. For distributions that use yum, such as Red Hat, run the following command:

```
yum install -y mysql mysql-server
```

Or, for distributions that use apt, run the following command:

```
apt-get -y install mysql mysql-server
```

8. Change the permissions for the installation script so you can run it:

```
chmod +x labconfigure_remote.sh
```

9. Run the installation script. This script installs MySQL, sets up the database, installs the UCD server and agent, and installs two Tomcat servers.

```
./labconfigure_remote.sh
```

10. In a web browser, go to https://{hostname}:8443, where {hostname} is the host name of the instance. Ignore the security warning.

11. Log in to the UrbanCode Deploy user interface as user **admin** with password **admin.**

12. Install the TOmcat and DBUpgrader plugins in the UrbanCode deploy user interface.

To install the Tomcat and DBUpgrader plugins:

a) Download the plugin files to your computer from the following locations:
https://developer.ibm.com/urbancode/plugin/ibm-urbancode-deploy-dbupgrader-ibmucd/
https://developer.ibm.com/urbancode/plugin/tomcat-ibmucd/

Tomcat-4.455075.zipDBUpgrader-1.530255.zip (note do not worry about the version)

b) In the UrbanCode Deploy user interface, click **Settings > Automation Plugins**.
c) Click **Load Plugin**.
d) Browse and select the Tomcat plugin and click **Submit**.
e) In the same way, click **Load Plugin** and load the DBUpgrader plugin.

Note: the JPetStore lab artifacts for the class are installed on the UrbanCode Deploy server when you run the scripts.

Standard software setup instructions

Total estimated setup time for the lab software setup is approximately eight hours depending upon installer experience and download times. The time estimate is lower if the automated scripts are used.

These instructions use Putty (putty.exe) for SSH to contact the server to log in and run commands from a windows client and pscp (pscp.exe) to copy files to the server. They are free and available from www.putty.org or http://www.chiark.greenend.org.uk/ . You can use other programs such as Cygwin with SSH to do the same thing. Create a folder on your computer for the downloads. Put putty and pscp and the other download files all in the same folder.

1. Download and post UrbanCode Deploy:

Download the UrbanCode Deploy (UCD) trial edition or the full version of UCD and the license key server (RCL) to your own computer in the same folder as putty and pscp. The trial edition is good for 60 days after which you need to change the settings to refer to a license. To download the product go to: Request free trial.

These instructions use Putty (putty.exe) for SSH to contact the server to log in and run commands from a windows client and pscp (pscp.exe) to copy files to the server. They are free and available from www.putty.org or http://www.chiark.greenend.org.uk/ . You can use other programs such as Cygwin with SSH to do the same thing.

IMPORTANT PUTTY AND CYGWIN NOTE: DO NOT USE CTRL+C to copy or CTRL+V to paste. Ctrl+C is the "cancel command" command in Linux; the paste command is right-click in Putty and Ctrl+Insert in Cygwin.

2. Open a Windows command line window on your laptop, change to the folder with the installation file using the `cd` command, and run the following command to copy the file to the server:

```
pscp -l root [filename] [host name of server]:
```

Note that there is a colon immediately after the host name of the server. For example:

```
pscp -l root URBANCODE_DEPLOY_V6.1.0.1_EN_EVAL.zip fit-mv15-201.rtp.rose.ibm.com:
```

3. Download and transfer the Linux MySql JAR file:

You'll first need a free Oracle account.
http://dev.mysql.com/downloads/file.php?id=453403

Download to your own computer the Linux MySql JAR file **mysql-connector-java-5.1.32.zip** from the same page.

Put the MySQL file in the same folder as the pscp.exe file and transfer it to the server just like you did for the UCD installation file.

For example:

```
pscp -l root mysql-connector-java-5.1.32.zip fit-mv15-201.rtp.rose.ibm.com:
```

4. **Download and transfer the Sun JRE file:**

Download to your computer the Sun JRE jre-7u67-linux-x64.tar.gz. UCD does not like IBM JREs.
http://javadl.sun.com/webapps/download/AutoDL?BundleId=95116

Put the JRE file in the same folder as the pscp.exe file and transfer it to the server just like you did for the UCD installation file.

For example:
```
pscp -l root jre-7u67-linux-x64.tar.gz fit-mv15-201.rtp.rose.ibm.com:
```

5. **Login to the server and unzip the files:**

Log in to the server via an SSH program, such as Cygwin or Putty.

   a) Run the `ls` command to show the files in the current directory on the server. You should see the MySQL file, the UCD install file, and the JRE file.

   b) Unzip and install the JRE with the following three commands, one at a time:

```
tar -xf jre-7u67-linux-x64.tar.gz
echo "export JAVA_HOME=/root/jre1.7.0_67" >> .bash_profile
export JAVA_HOME=/root/jre1.7.0_67
```

   c) Unzip the UCD installation file:

```
unzip -q URBANCODE_DEPLOY_V6.1.0.1_EN_EVAL.zip
```

Now the installation files are available in the ibm-ucd-install folder.

   d) Unzip the MySQL file:

```
unzip -q mysql-connector-java-5.1.32.zip
```

   e) Copy the MySQL JAR file to the lib/ext folder of the UCD install folder:

```
cp mysql-connector-java-5.1.32/mysql-connector-java-5.1.32-bin.jar ibm-ucd-
install/lib/ext/
```

6. **Install set and start MySQL**:

   f) Install MySQL:

```
yum install -y mysql mysql-server
```

   g) Set MySQL to run on startup:

```
chkconfigmysqld on
```

h) Start MySQL:

```
/etc/init.d/mysqld start
```

i) Log in to MySQL:

```
mysql -u root
```

The prompt changes to "mysql>" because you are now working within MySQL.

j) Create a MySQL user for UCD:

```
CREATE USER 'ibm_ucd'@'localhost' IDENTIFIED BY 'password';
```

Response from MySQL: Query OK, 0 rows affected (0.00 sec)

7. **Create the databases for UrbanCode Deploy:**

```
CREATE DATABASE ibm_ucd;
```

Response from MySQL: Query OK, 1 row affected (0.00 sec)

a) Give the user permission to use the database:

```
GRANT ALL ON ibm_ucd.* TO 'ibm_ucd'@'%' IDENTIFIED BY 'password' WITH GRANT
OPTION;
```

Response from MySQL: Query OK, 0 rows affected (0.00 sec)

b) Create the database for the SIT environment:

```
create database jpetstoreSIT;
```

Response from MySQL: Query OK, 1 row affected (0.00 sec)

c) Create the database for the UAT environment:

```
create database jpetstoreUAT;
```

Response from MySQL: Query OK, 1 row affected (0.00 sec)

d) Create the user for the sample application:

```
create user 'jpetstore'@'localhost' identified by 'jppwd';
```

Response from MySQL: Query OK, 0 rows affected (0.00 sec)

e) Grant privileges for the SIT environment:

```
grant all privileges on jpetstoreSIT.* to 'jpetstore'@'localhost';
```

Response from MySQL: Query OK, 0 rows affected (0.00 sec)

f) Grant privileges for the UAT environment:

```
grant all privileges on jpetstoreUAT.* to 'jpetstore'@'localhost';
```

Response from MySQL: Query OK, 0 rows affected (0.00 sec)

g) Quit MySQL:

```
quit;
```

8. Install UrbanCode Deploy:

Run the UrbanCode Deploy installation program:

```
./ibm-ucd-install/install-server.sh
```

Respond as follows when you are prompted with questions on the installation: (press Enter to accept default):

Print full license on screen: f
Accept license: y
Install folder: accept default
Create directory: Y
JRE/JDK: accept default; should be /root/jre1.7.0_67
Host name: accept default
Always use secure connections: accept default
Port for HTTPS requests: accept default (8443)
Port for HTTP request: 8081
(The default port is changed because the JPetStore application uses port 8080 and it's easier to change UCD than JPetStore.)
Port for agent communication: accept default
Mutual authentication: accept default (N)
License key server: accept default to use trial license
Create database schema: accept default (y)
Database type: mysql
Database driver class: accept default
Database connection string: jdbc:mysql://localhost:3306/ibm_ucd
Database username: accept default
Database password: accept default
(UrbanCode Deploy installs. When it's done, press Enter to exit the installation program.)

9. Start the Server and login to UrbanCode Deploy:

From the printout on the screen from the UrbanCode Deploy install program, copy the URL for the new UrbanCode Deploy server. For example: https://fit-mv15-201.rtp.rose.ibm.com:8443

Start the server:
```
/opt/ibm-ucd/server/bin/server start
```

Wait 30 seconds for the server to start, then from your own computer visit the URL (as you copied it) in your browser. You may see a security warning because security is not configured; you can safely add an exception for the UrbanCode Deploy server.

When the login box appears sign in to UrbanCode Deploy as user: admin with the password: admin. You will see an error at the top of the page because no agents are configured. You will also see a warning if you are using the server in evaluation mode and do not have a license.

10. Install an Agent in the user interface:

Install an agent:

a. In the UrbanCode Deploy interface, click **Resources**.
b. Click **Create Top-Level Group**.
c. Name the new resource **Agents** and click **Save**.
d. Click **Resources > Agents** (the Agents tab is at the second level of tabs, which is just above the Create Top-Level Group button).
e. Click **Install New Agent**.
f. Click **SSH**.
g. In the Install New Agent window, specify the following properties:
> Target Hosts: specify the host name of the system, such as fit-mv15-201.rtp.rose.ibm.com
> SSH port: 22
> Username: root
> Use Public Key Authentication: leave unselected
> Password: password for the root account on the server
> Agent name: Local agent

h. Next to Agent Installation Properties, click **New**.
i. In the Edit Agent Installation Properties window, specify the following properties:
> Name: Default for local agents
> Java Home Path: /root/jre1.7.0_67

j. Accept all other defaults and click **Save**.
k. Click**Save** again to install the agent.In 30 seconds, click Refresh at the bottom of the page. The new agent appears in the table of agents.
l. Click **Settings > System Settings**.
m.Under General Settings, in the **Agent for Version Imports** list, select the agent and click **Save**.

11. Install the Tomcat server and DBUpgrader plugins:

To install the Tomcat and DBUpgrader plugins:

f) Download the plugin files to your computer from the following locations:
https://developer.ibm.com/urbancode/plugin/ibm-urbancode-deploy-dbupgrader-ibmucd/
https://developer.ibm.com/urbancode/plugin/tomcat-ibmucd/
Tomcat-4.455075.zipDBUpgrader-1.530255.zip

g) In UCD, click **Settings > Automation Plugins**.
h) Click **Load Plugin**.
i) Browse and select the Tomcat plugin and click **Submit**.
j) In the same way, click **Load Plugin** and load the DBUpgrader plugin.

Now you have the server and an agent installed.

12. Install two instances of Tomcat in the image:

a) In Putty, on the UrbanCode Deploy server, download the Tomcat installation file with this command:

```
wget http://archive.apache.org/dist/tomcat/tomcat-7/v7.0.42/bin/apache-
tomcat-7.0.42.tar.gz
```

b) Unzip the install file:

```
tar -xf apache-tomcat-7.0.42.tar.gz
```

c) Move the Tomcat folder to the correct location:

```
mkdir /opt/webservers
```

```
mv apache-tomcat-7.0.42/ /opt/webservers
```

d) Change the name of the folder to indicate that it is for the SIT environment:

```
mv /opt/webservers/apache-tomcat-7.0.42/ /opt/webservers/sit-apache-tomcat-7.0.42/
```

e) Add the user and role entries for Tomcat. If you were viewing the VM over a visual connection such as VNC (what does this stand for), you can use the gedit text editor:

```
gedit/opt/webservers/sit-apache-tomcat-7.0.42/conf/tomcat-users.xml
```

However, this editor does not work over cygwin or Putty. For these programs, use the nano text editor:

f) Open the file in nano:

```
nano /opt/webservers/sit-apache-tomcat-7.0.42/conf/tomcat-users.xml
```

Using the arrow keys and the delete and backspace keys (not the mouse), remove the comments from the user block. This section:

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

Looks like this now:

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


</tomcat-users>
```

c. Paste the following text in, immediately before the </tomcat-users> tag.

```
<role rolename="manager"/>
<role rolename="manager-gui"/>
<role rolename="manager-script"/>
<role rolename="manager-jmx"/>
<role rolename="manager-status"/>
<user username="demo" password="demo" roles="manager,manager-gui,
manager-script,manager-jmx,manager-status"/>
```

The end of the file looks like this:

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

<role rolename="manager"/>
<role rolename="manager-gui"/>
<role rolename="manager-script"/>
<role rolename="manager-jmx"/>
<role rolename="manager-status"/>
<user username="demo" password="demo" roles="manager,manager-gui,
```

```
manager-script,manager-jmx,manager-status"/>
```

```
</tomcat-users>
```

d. Press Ctrl+X to close the file.e. Press Y and then Enter to save the file.

e. In the file /opt/webservers/sit-apache-tomcat-7.0.42/conf/server.xml, change port 8080 to 8085 and change port 8443 to port 8445. You can do this in nano, in gedit, or through the command line with the following two commands. These commands run a find-replace on the file:

```
sed -i 's/8080/8085/g' /opt/webservers/sit-apache-tomcat-7.0.42/conf/server.xml
```

```
sed -i 's/8443/8445/g' /opt/webservers/sit-apache-tomcat-7.0.42/conf/server.xml
```

13. Start the SIT server:

```
/opt/webservers/sit-apache-tomcat-7.0.42/bin/startup.sh
```

In a web browser, verify that you can access the Tomcat server at http:[hostname]:8085 . You should see a Tomcat welcome page that says: Apache Tomcat/7.0.42

14. Stop the SIT server:

```
/opt/webservers/sit-apache-tomcat-7.0.42/bin/shutdown.sh
```

15. Duplicate the Tomcat folder for the UAT environment:

```
cp -r /opt/webservers/sit-apache-tomcat-7.0.42/ /opt/webservers/uat-apache-tomcat-
7.0.42/
```

16. In the Tomcat instance for the UAT environment, change the following ports:

    Change 8085 to 8086
    Change 8445 to 8446
    Change 8005 to 8006

You can do this in gedit or in nano, or you can use the following sed commands:

```
sed -i 's/8085/8086/g' /opt/webservers/uat-apache-tomcat-7.0.42/conf/server.xml
```

```
sed -i 's/8445/8446/g' /opt/webservers/uat-apache-tomcat-7.0.42/conf/server.xml
```

```
sed -i 's/8005/8006/g' /opt/webservers/uat-apache-tomcat-7.0.42/conf/server.xml
```

17. Start and then stop the UAT Tomcat server:

```
/opt/webservers/uat-apache-tomcat-7.0.42/bin/startup.sh
```

Verify that you can reach the UAT Tomcat server in a web browser: http:[hostname]:8086. You should see the Tomcat welcome page.

Stop the UAT server:

```
/opt/webservers/uat-apache-tomcat-7.0.42/bin/shutdown.sh
```

Test the lab setup

1. **Test that you can access the UrbanCode Deploy server environment:**

   Now that everything is installed you access UrbanCode Deploy with a URL such as this:
   https://fit-mv18-234.rtp.rose.ibm.com:8443/#dashboard

   > **Login**:admin
   > **Password**:admin

2. **Prepare the JPetStore lab artifacts for use in the class by putting them in the location where UCD is installed:**

From the root directory where you have been doing most of the work for this setup and using Putty, do the following:

```
wget
https://download.boulder.ibm.com/ibmdl/pub/software/rationalsdp/documentation/produ
ct_doc/UrbanCode/uDeploy/version_6-1/artifacts.zip


unzip –q artifacts.zip
```

3. The files are now in `/root/shared/app` for the app component and `/root/shared/db` for the db component and `/root/shared/web` for the web component.

You are ready to start the class.