# CHAPTER 5: IBM HTTP SERVER AND PLUG-IN

## Theory

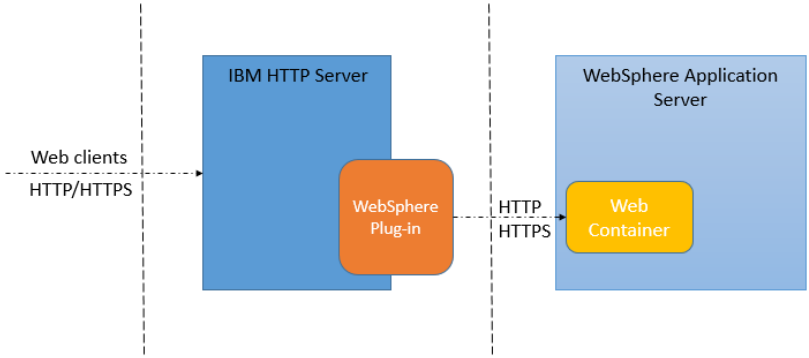
Web servers are one of the most important part of the multi-tier architecture and they provide scalability, security and performance. Web servers are defined to WebSphere Application Server as either managed or unmanaged node and in both configurations, they can be managed through administrative console. WebSphere Application Server can work with different web servers such as Apache HTTP Server, Microsoft Internet Information Services (IIS) and surely with IBM HTTP Server.

IBM HTTP Server (IHS) is a web server solution that is based on Apache HTTP Server. From version 7.0, Apache 2.2.8 version is used to build HIS. It can run on different operating systems such as AIS, Linux, Solaris and Microsoft Windows.

There are couple features added to Apache HTTP Server:

- WebSphere Integrated Solutions Console support
- Consistent installation via IBM Installation Manager
- Fast Response Cache Accelerator (FRCA), that improves serving of static contents, is available for AIX 5 and later and certain Windows operating systems.
- Dynamic content generation with FastCGI
- Multiple language and platform support.

The IBM WebSphere Application Server Web server plug-in is the connector between a web server and WebSphere Application Server. The main responsibility of the plug-in is to forward http requests from web server to the application server. Based on the applications that would be routed by the web server, there is a web server plug-in configured using the *plugin-cfg.xml* file.




In a multiple applciation server environment, it is possible to configure plug-in as load balancer with failover capability. The plug-in also increase performance by serving the static content directly from the web server. It also increases security by putting an extra layer between the web server and the application server and having the possibility of using secure HTTP protocol.

WebSphere Customization Toolbox, (WCT), is a set of tools to manage, configure and migrate different parts of WebSphere Application Server. It has two different offerings with different combinations of tools:

- Embedded: It is installed during WebSphere Application Server installation and contains the “Profile Management Tool” and the “Configuration Migration” tool.
- Stand-alone: It is installed separately using IBM Installation Manager and contains the “Web Server Plug-ins Configuration Tool”, “z/OS Profile Management Tool”, “z/OS Migration Management Tool” and “Remote Installation Tool for IBM i”.

The “Web Server Plug-ins Configuration Tool” is used to configure web server plug-ins on distributed and on Windows operating systems. It can be used also to create web server configuration definition in the application server.

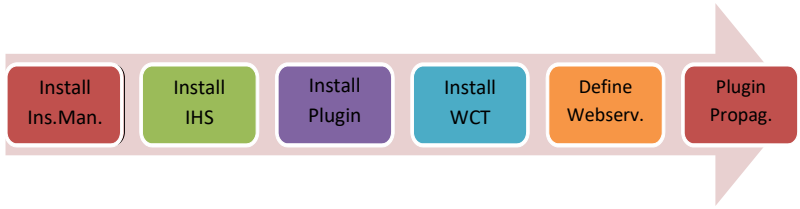
## AIM

The aim of the lab exercise is to install IBM HTTP Server, WebSphere Web Server Plug-ins and WebSphere Customization Toolbox using IBM Installation Manager. You will need to configure the web server and the Plug-ins to work together. Later, define the web server in application server using the configuration script created by WebSphere Customization Toolbox. When all the installations and configurations are ready, you will generate and then propagate the plug-ins via IBM Integrated Solutions Console for the sample application installed during the WebSphere Application Server.

In order to achieve this, you need following steps:

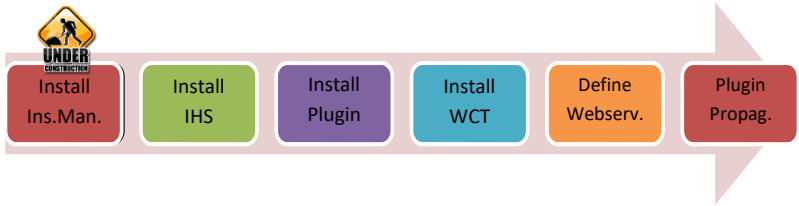
- Install IBM Installation Manager
- Install IBM HTTP Server
- Install WebSphere Plug-ins
- Install WebSphere Customization Toolbox
- Create web server definition using scripts created by WCT
- Generate and propagate plug-in for the default application

# Lab Exercise 5: IBM HTTP SERVER AND PLUG-IN




1. **Install IBM Installation Manager**
2. **Install IBM HTTP Server**
3. **Install WebSphere Plug-ins**
4. **Install WebSphere Customization Toolbox**
5. **Create web server definition**
6. **Generate and propagate plug-in**

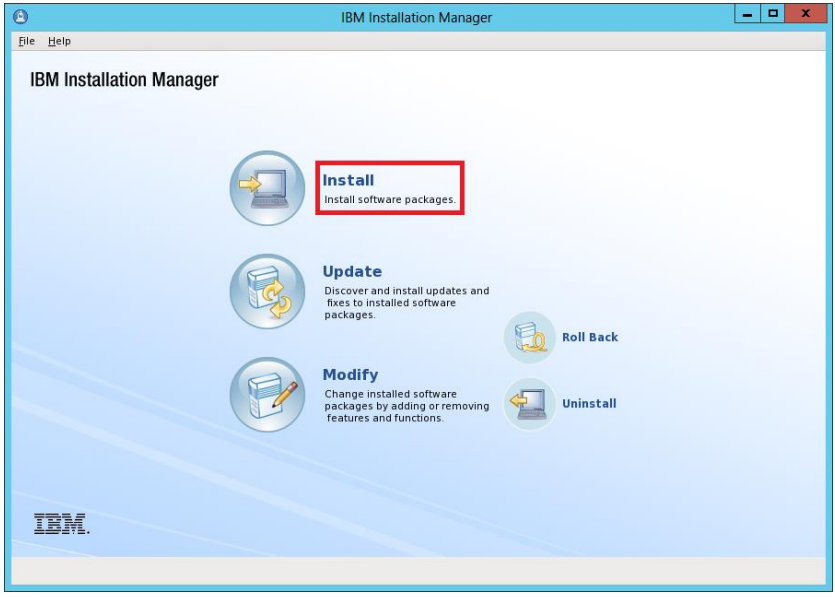
**Note: Tasks 1 & 2 has been done already as part of lab environment setup, it can be skipped.**

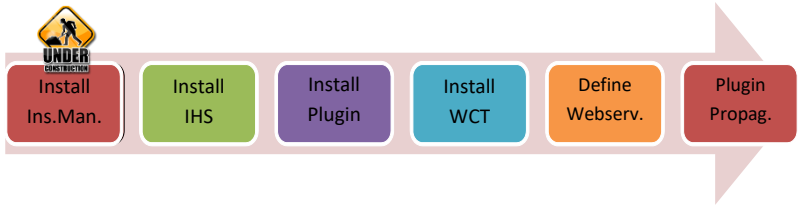



## Task 1: Install IBM Installation Manager

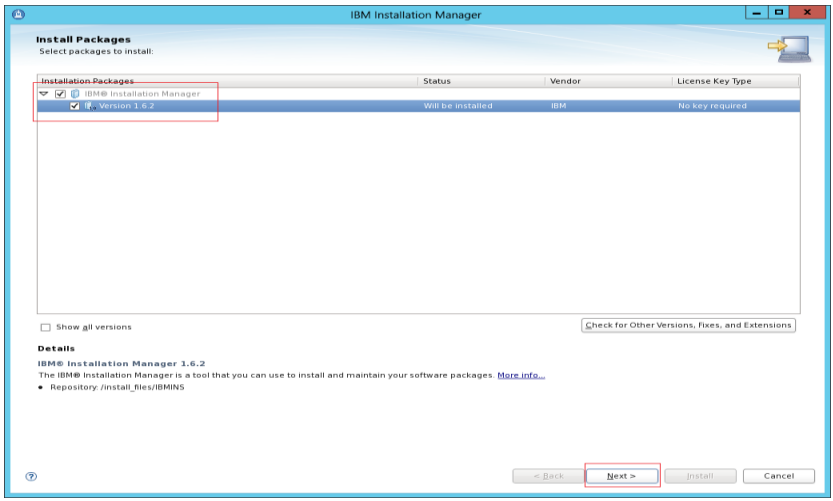
**Note: This task has been done already as part of lab environment setup, it can be skipped.**

**Step 1:** Change directory to the installation folder and then run “install”. From the interface, click on “Install” to start installation.

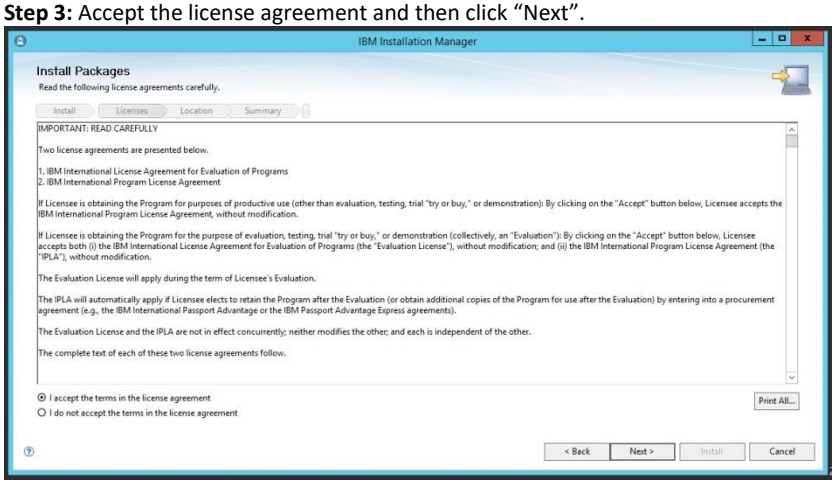


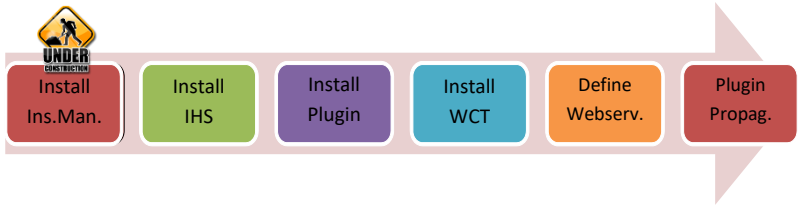



**Step 2:** Select “IBM Installation Manager” and then click “Next”.

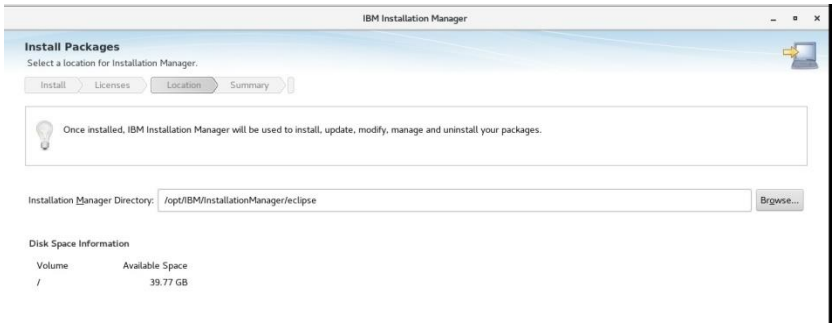



**Step 3:** Accept the license agreement and then click “Next”.

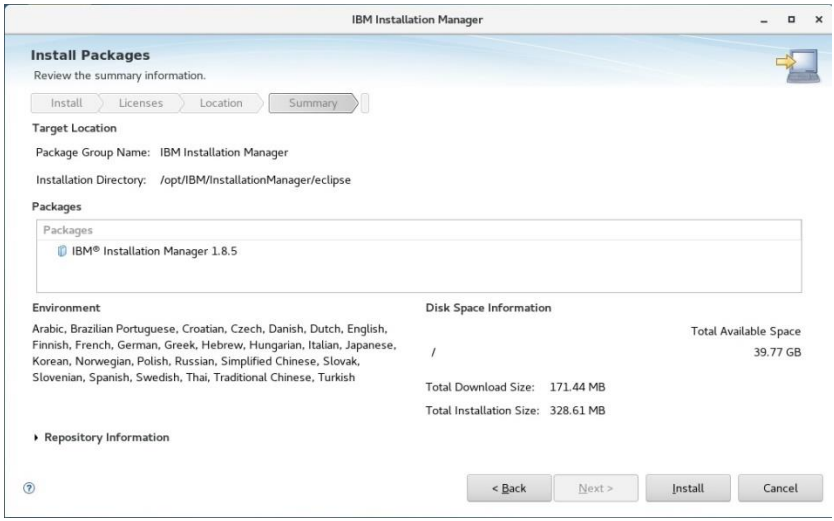


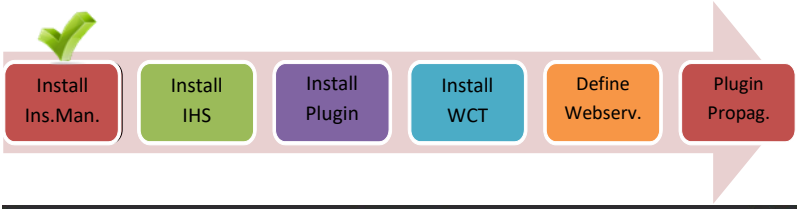


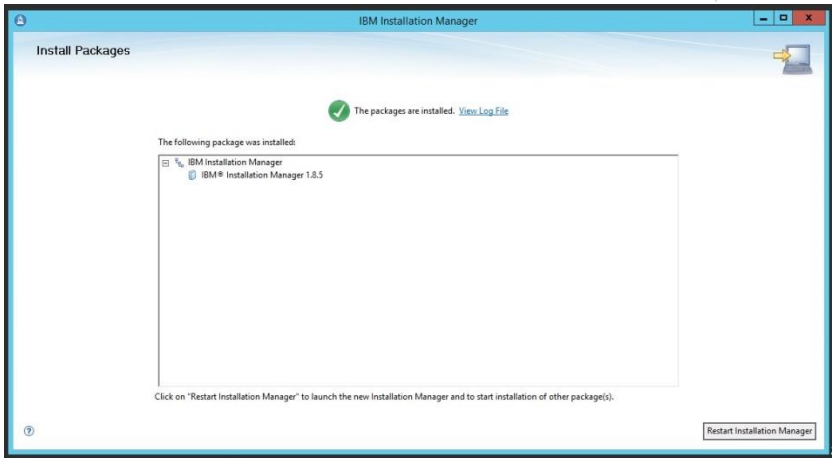

**Step 4:** Use the default installation directory (/opt/IBM/Installation Manager/eclipse), click “Next”.



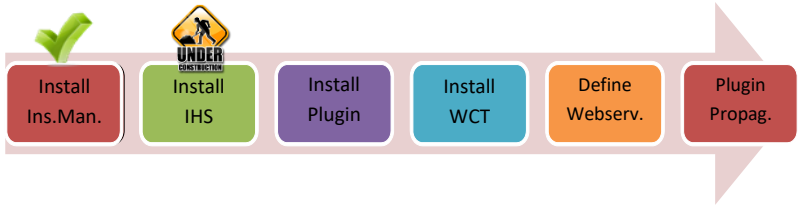

**Step 5:** Review the summary and then click “Install”.






**Task 1 is complete!**



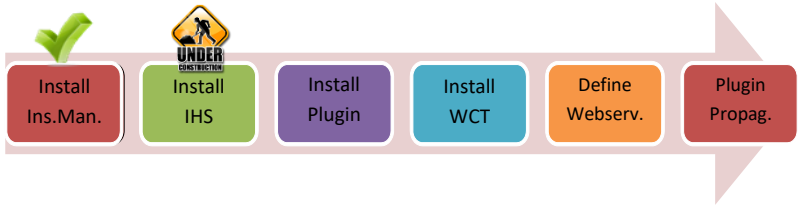

## Task 2: Install IBM HTTP Server

**Note: This task has been done already as part of lab environment setup, it can be skipped.**

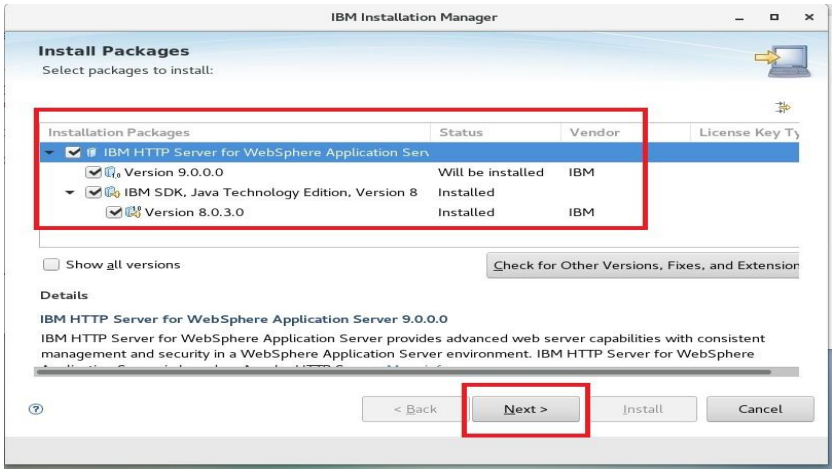
**Step 1:** Start IBM Installation Manager under the directory. Add the repository via "File>Preferences". Add IBM HTTP Server repository and IBM SDK v8.8.0. SDK is already installed but required as package for installation.

http://www.ibm.com/software/repositorymanager/V9WASBase

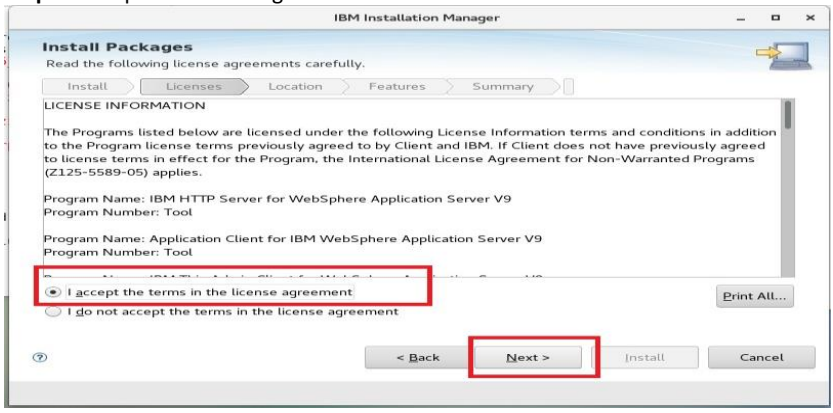
**Step 2:** Click "Install" to start installation.

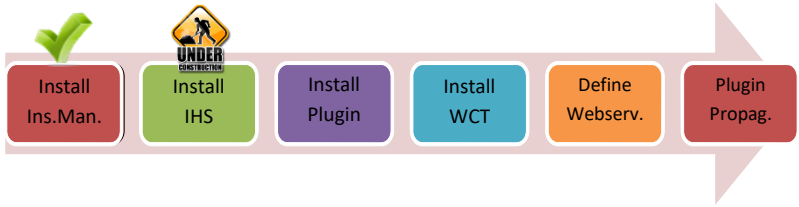



**Step 3:** Select IBM HTTP Server and then click “Next”.

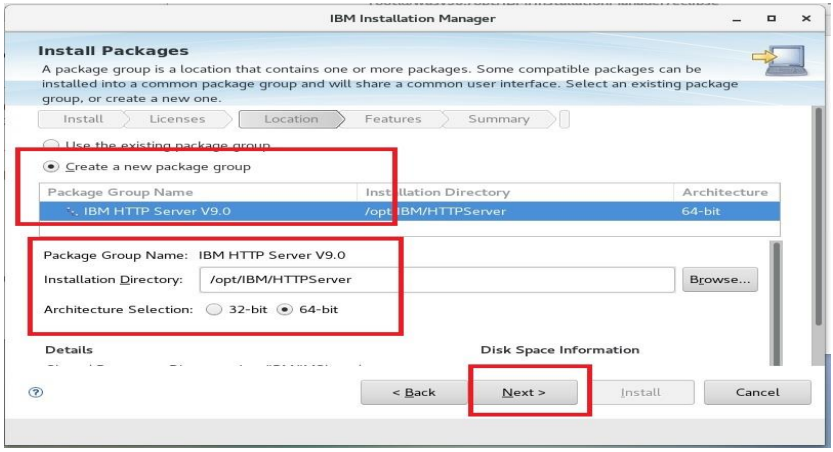


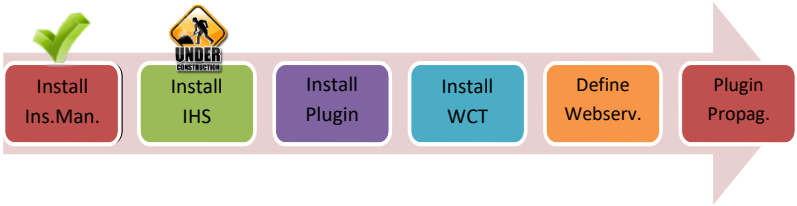

**Step 4:** Accept the license agreement and click “Next”.



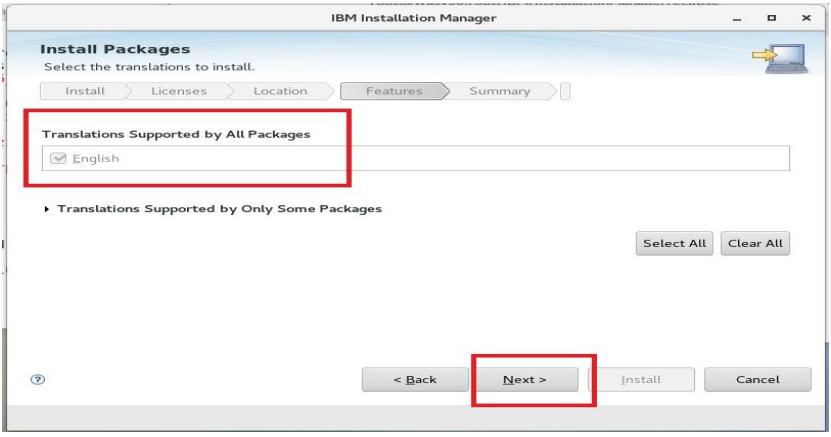



**Step 5:** Accept default directory (/opt/IBM/ HTTPServer) and click “Next”.

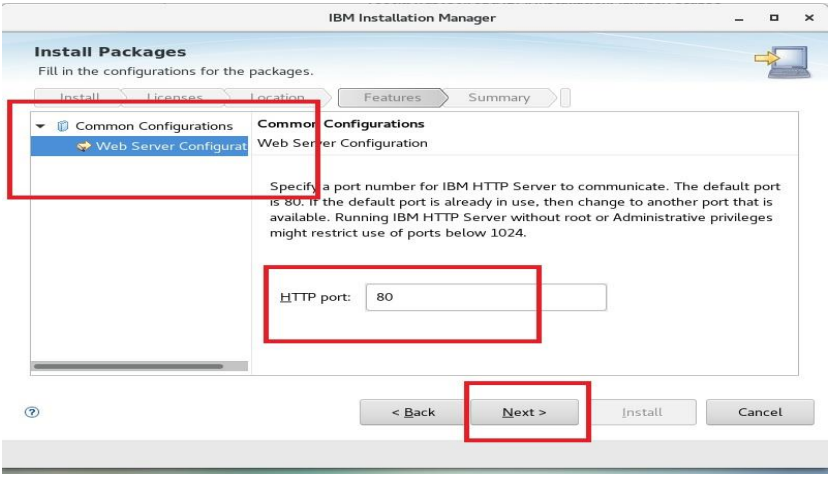


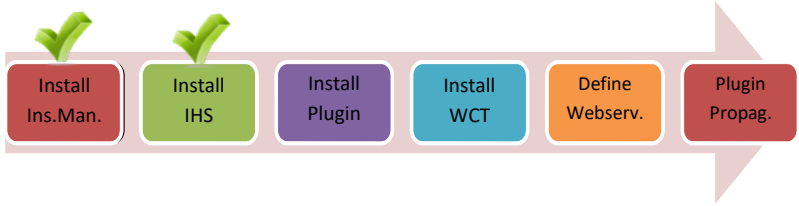



**Step 6:** Select language translation support and then click on “Next”.

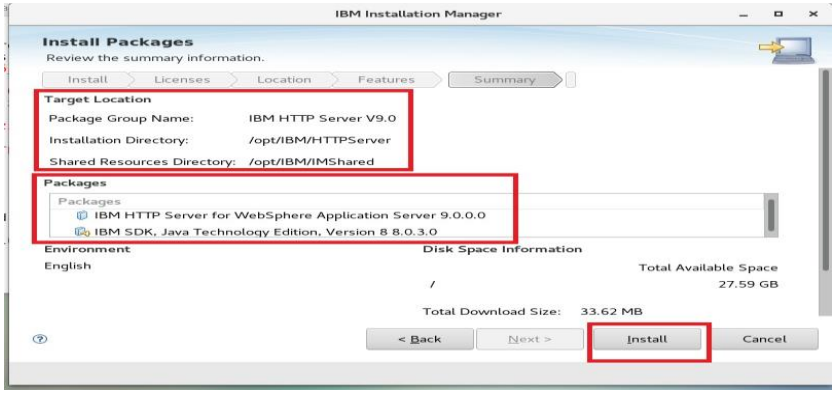



**Step 7:** Define the port that IHS will use (default is 80), we will use port 81 because default is already being used and click “Next”.

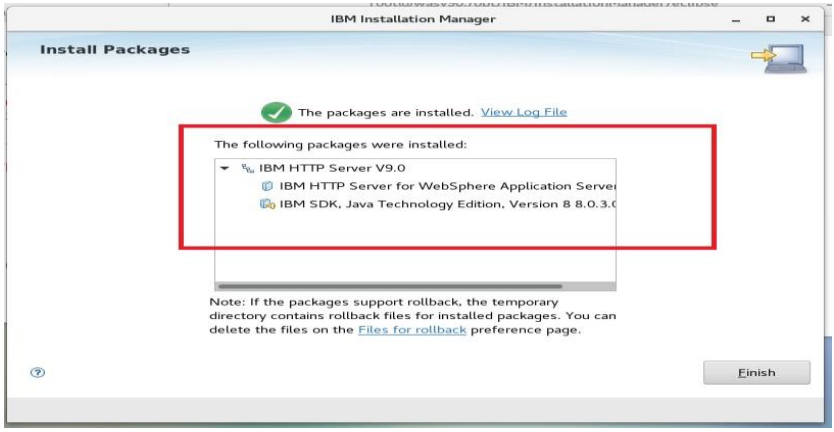




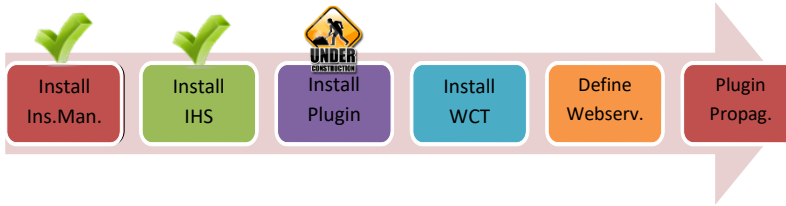

**Step 8:** Review the summary and then click “Install” to complete installation.




**Step 9:** Click “Finish” to finalize installation.




**Task 2 is complete!**

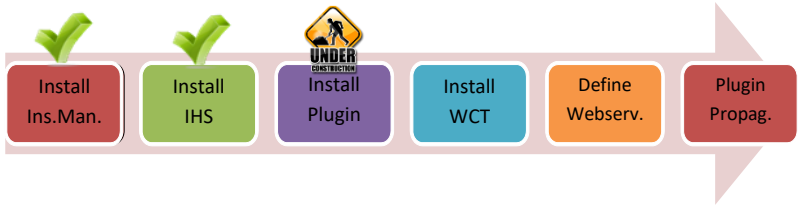



## Task 3: Install WebSphere Plug-ins

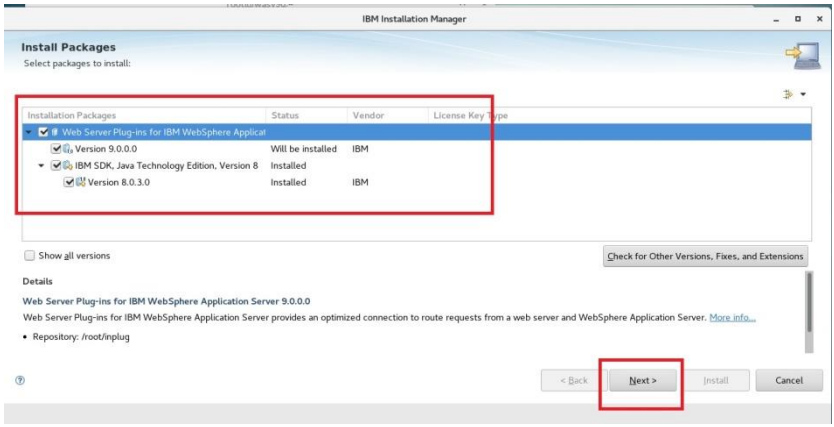
**Step 1:** Start IBM Installation Manager issuing command “IBMIM” and add the repository via “File>Preferences”.

http://www.ibm.com/software/repositorymanager/V9WASBase

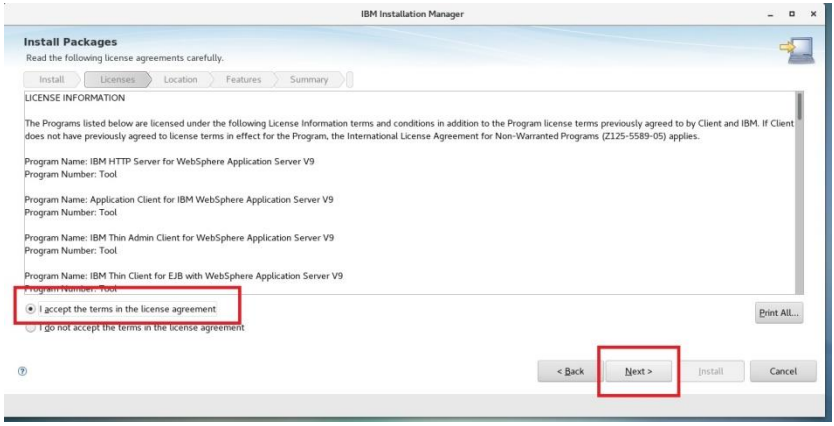
**Step 2:** Click “Install” to start installation.

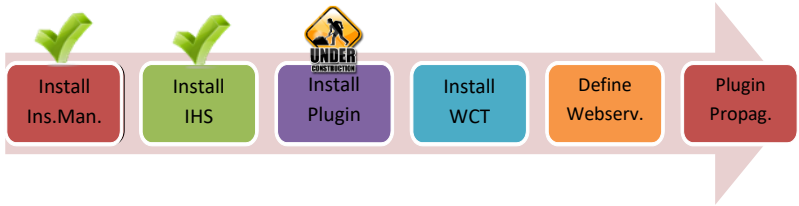



**Step 3:** Select the "Web Server Plug-ins for IBM WebSphere Application Server" package and click "Next".

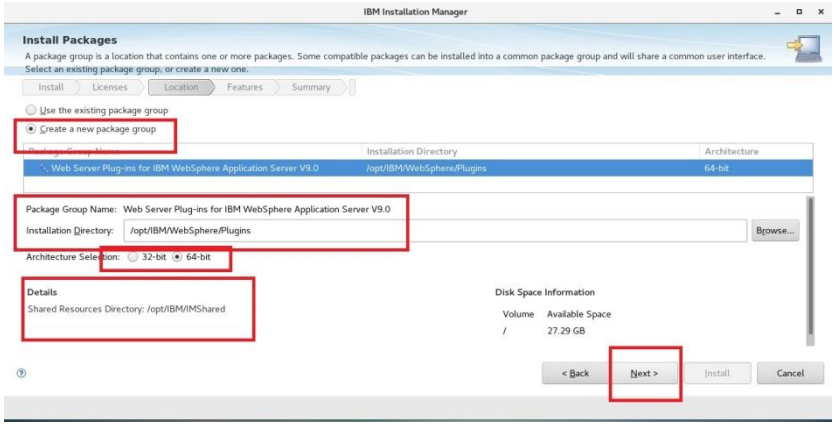



**Step 4:** Accept the license agreement and then click "Next" to continue.

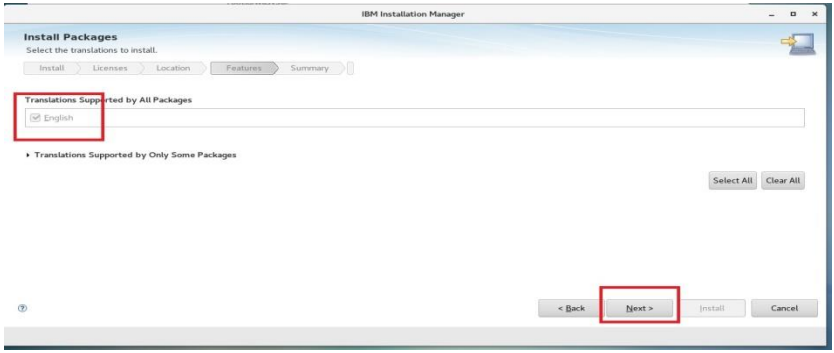


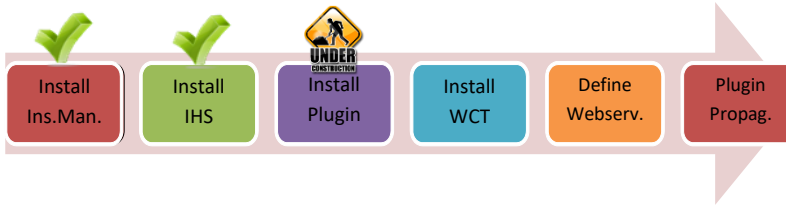



**Step 5:** Set the installation directory as /opt/IBM/WebSphere/Plugins and click "Next".

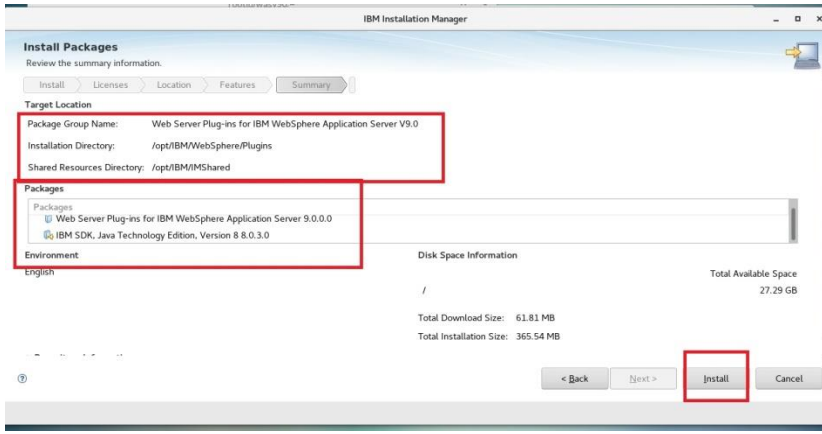



**Step 6:** Select the supported language and then click "Next".

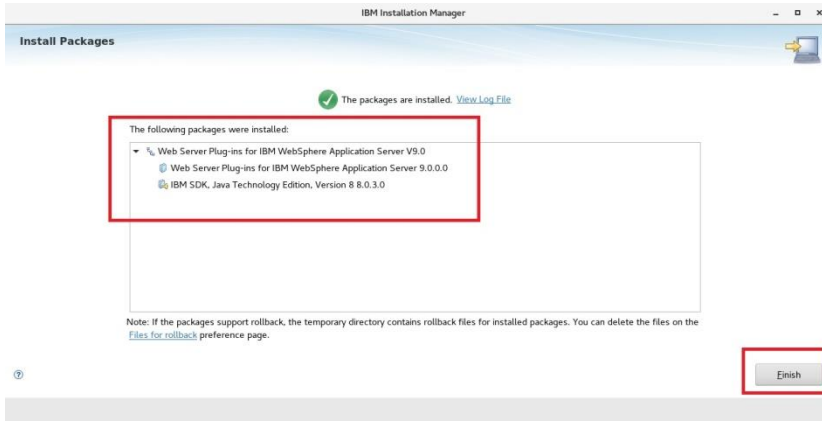




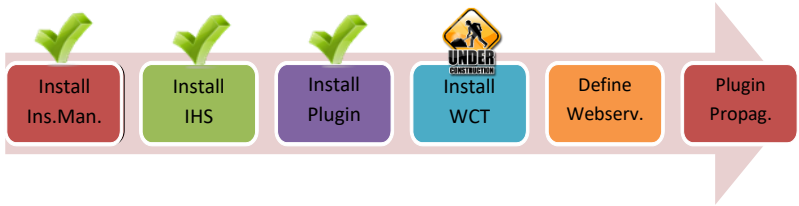

**Step 7:** Click “Install” to start installation.




**Step 8:** Finalize installation by clicking “Finish”.




## Task 3 is complete!

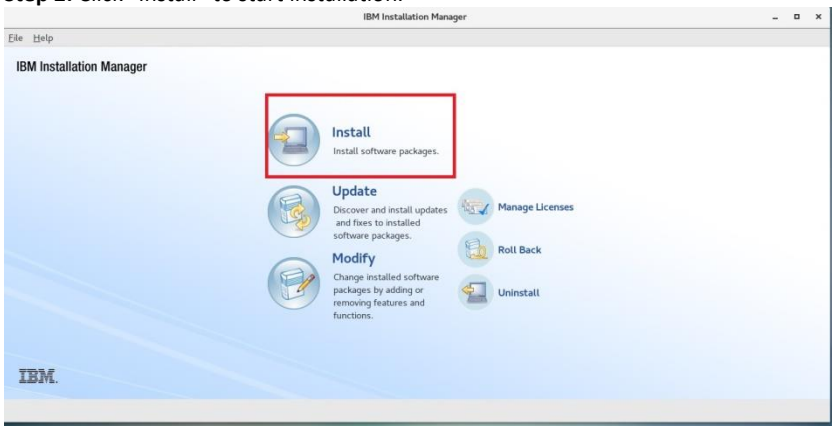


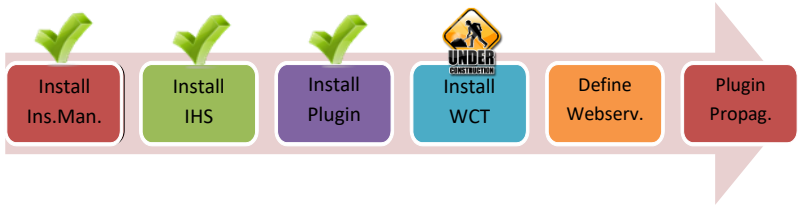

## Task 4: Install WebSphere Customization Toolbox

**Step 1:** Start IBM Installation Manager issuing command “IBMIM” under the directory “/opt/IBM/InstallationManager/eclipse”. Add the repository via “File>Preferences”.

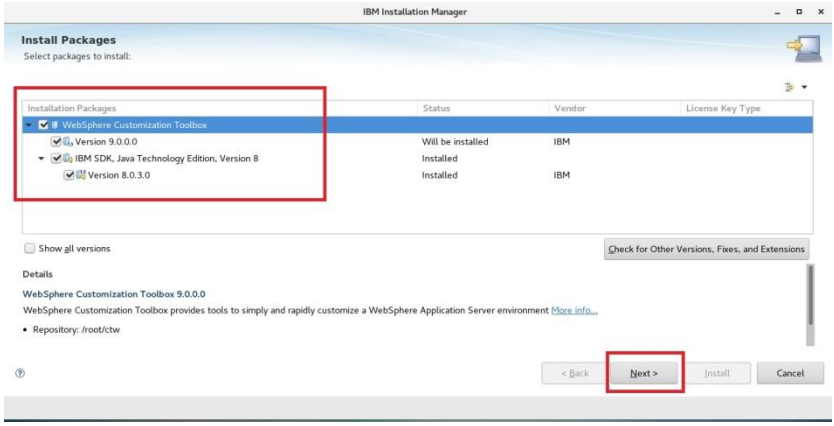
http://www.ibm.com/software/repositorymanager/V9WASBase

**Step 2:** Click “Install” to start installation.

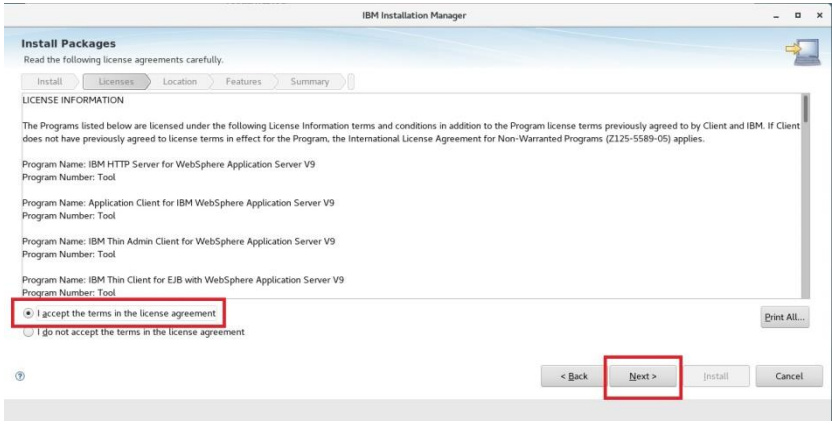


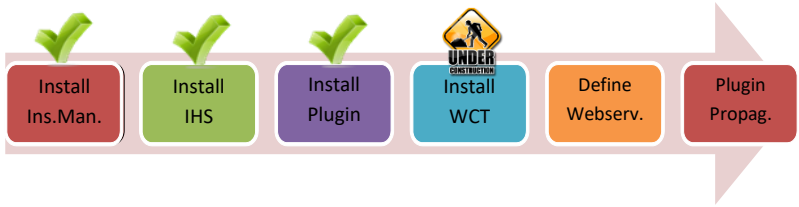



**Step 3:** Select “WebSphere Customization Toolbox” to install and click “Next”.

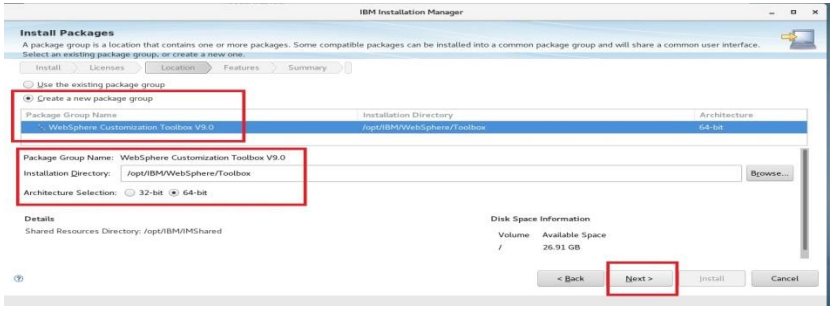



**Step 4:** Accept the license agreement to continue and then click “Next”.

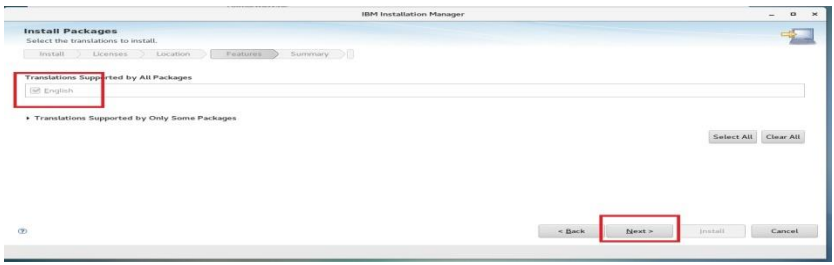


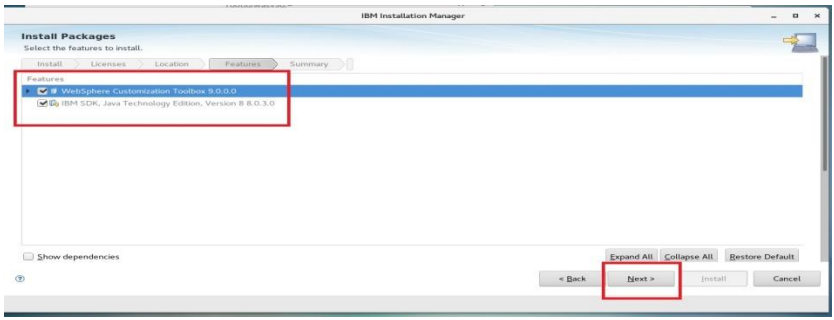


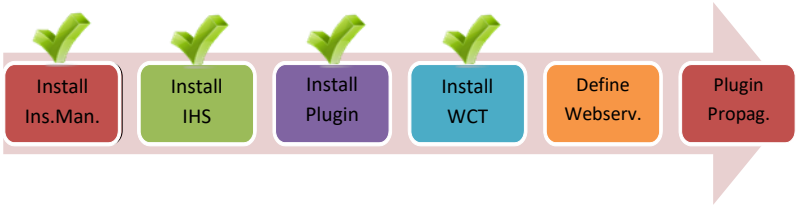

**Step 5:** Use the default installation directory, "/opt/IBM/WebSphere/Toolbox" and click "Next".



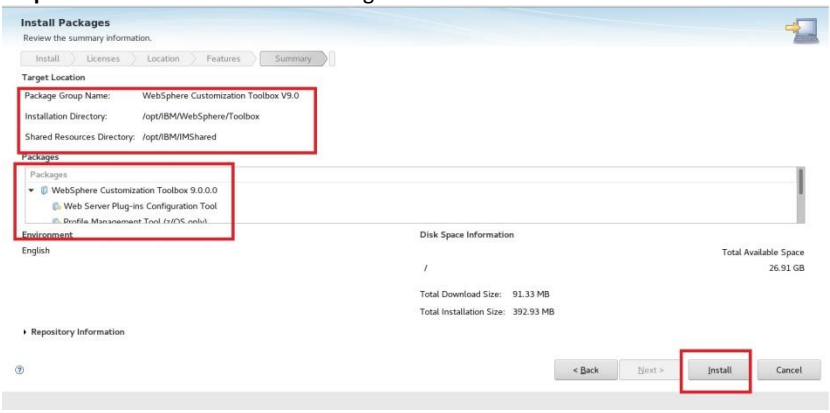

**Step 6:** Select language and features to install and click "Next".



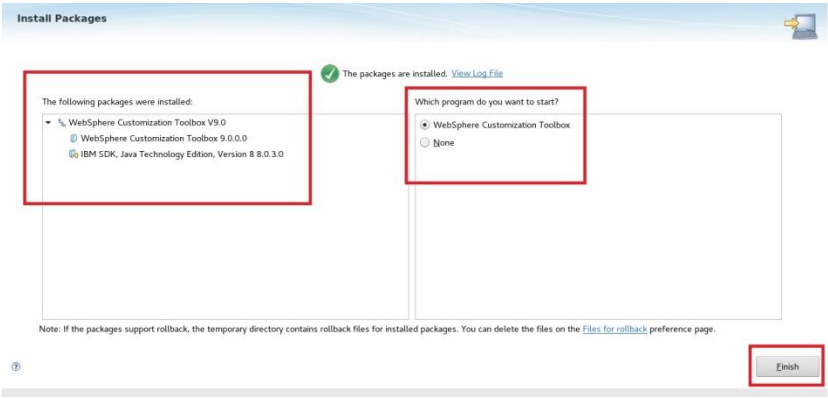





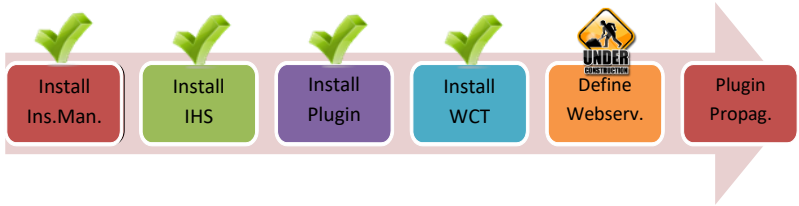

**Step 7:** Click “Install” to start installing files.




**Step 8:** Click “Finish” to finalize installation.

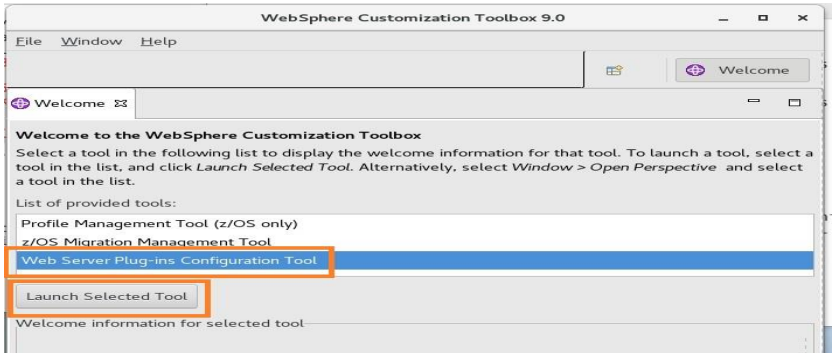



## Task 4 is complete!

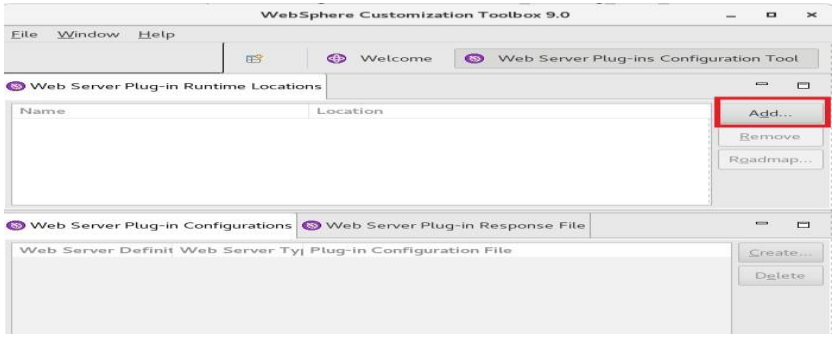


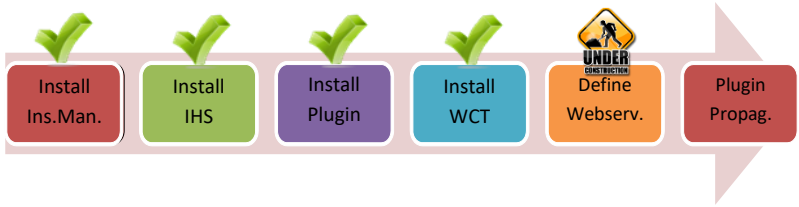

## Task 5: Create web server definition

**Step 1:** Start WebSphere Customization Toolbox by issuing "wct.sh" command under "/opt/IBM/WebSphere/Toolbox/WCT" directory.

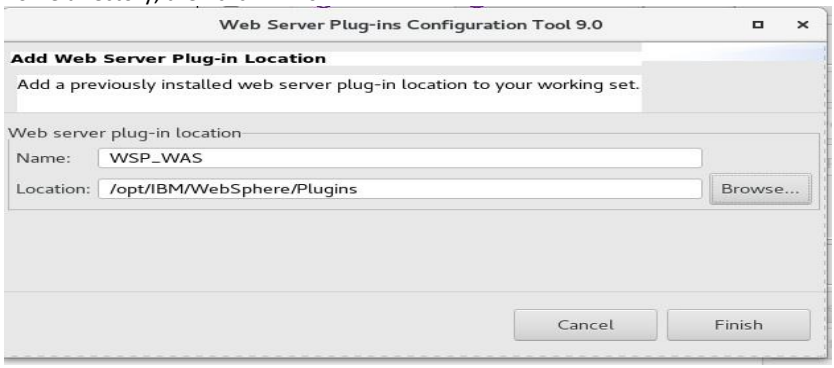



**Step 2:** Click "Add" to create a new plug-in runtime.

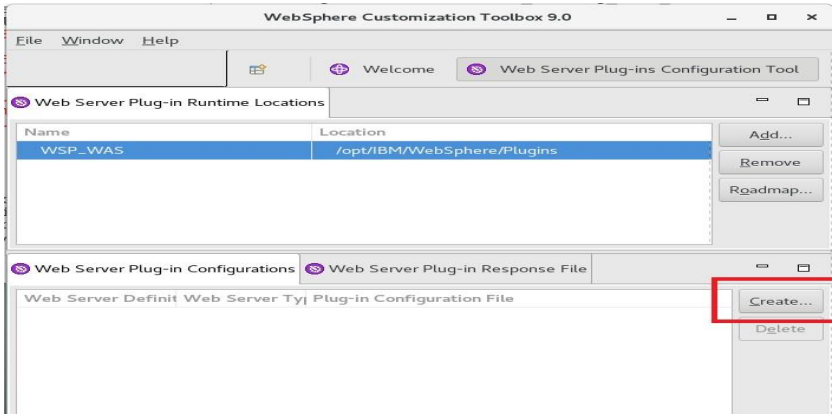


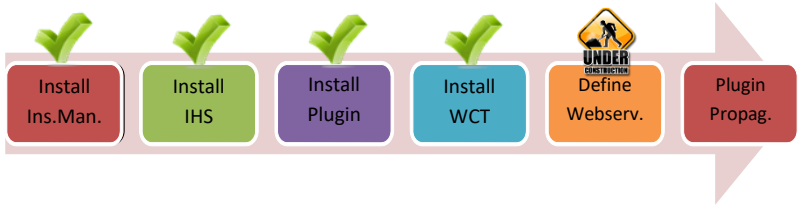



**Step 3:** Give a unique name as for definition and set the location of the Plugin-ins home directory, then click “Finish”.

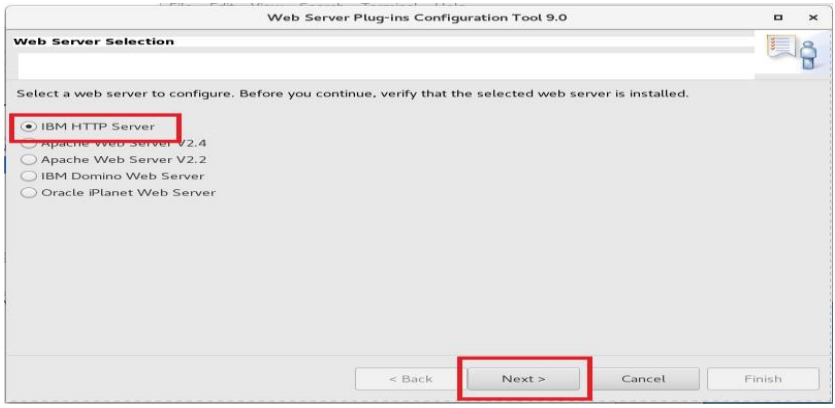



**Step 4:** Click “Create” to add a web server definition.

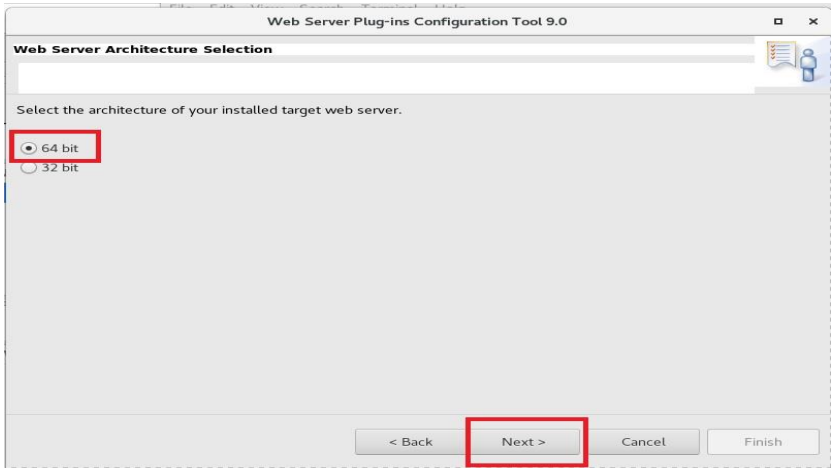


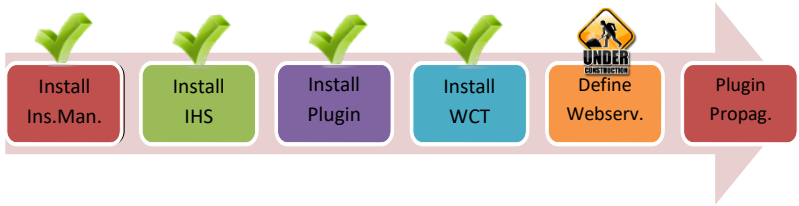



**Step 5:** Select “IBM HTTP Server v8.5” and click “Next”.

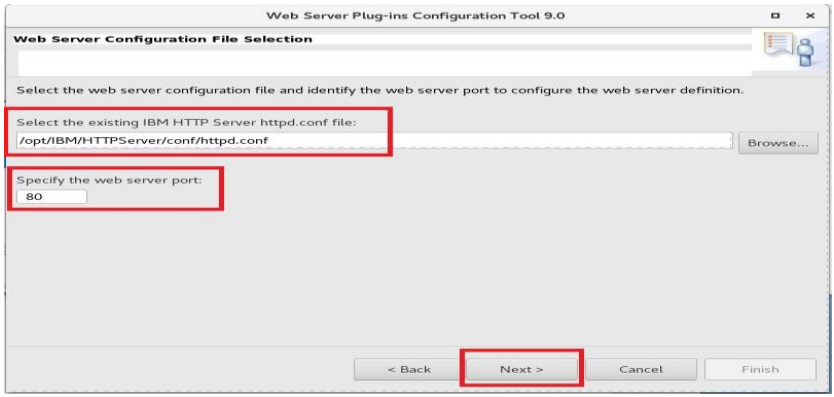



**Step 6:** Select the architecture (32 bit or 64 bit) and then click “Next”

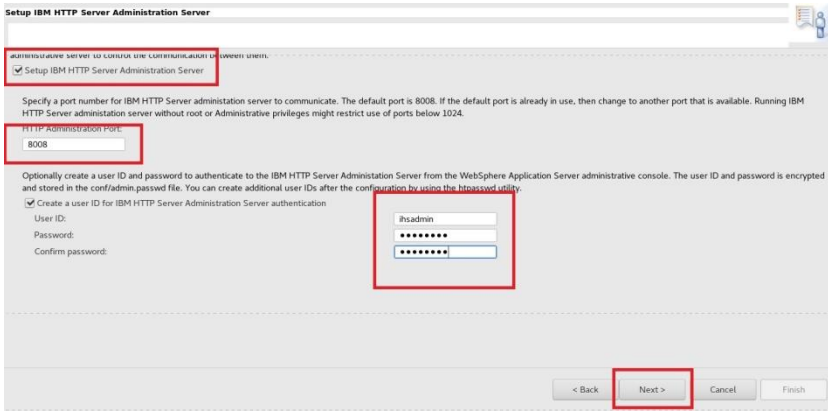


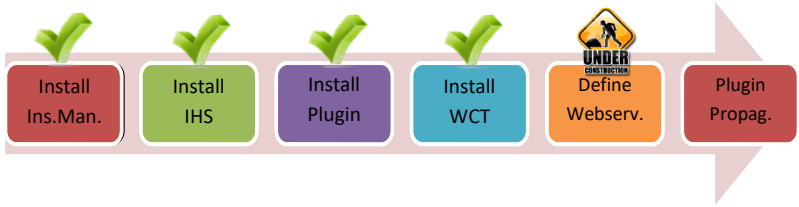



**Step 7:** Select the IBM HTTP Server conf file and web server port. (/opt/IBM/HTTPServer/conf/httpd.conf, port 81)



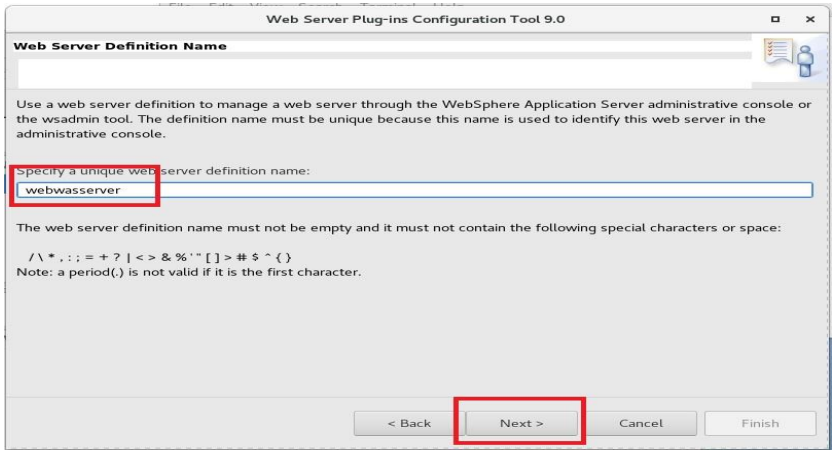

**Step 8:** Mark “Setup IBM HTTP Server Administration Server” and use ‘8008’ as “HTTP Administration Port”. Enter credentials for the IHS administration and click “Next”.

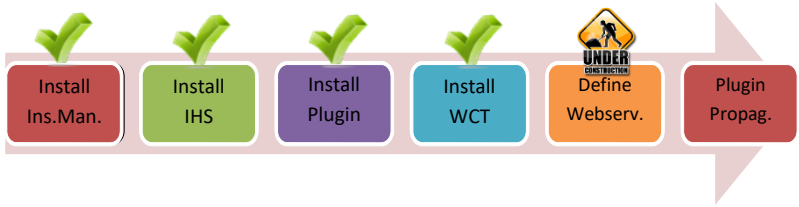




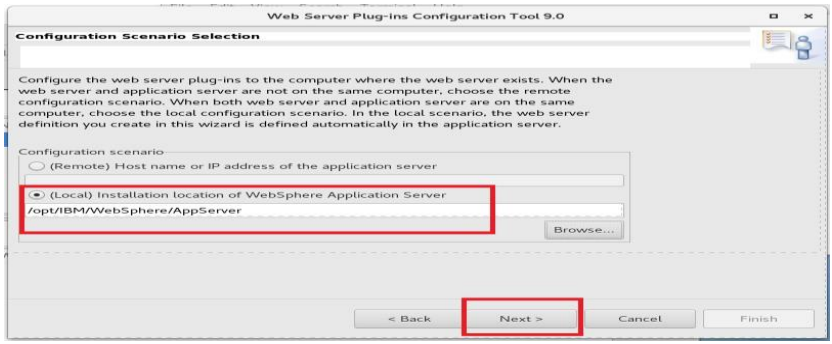

**Step 9:** Specify the system user and group that can write to configuration files of IHS and Plugins.

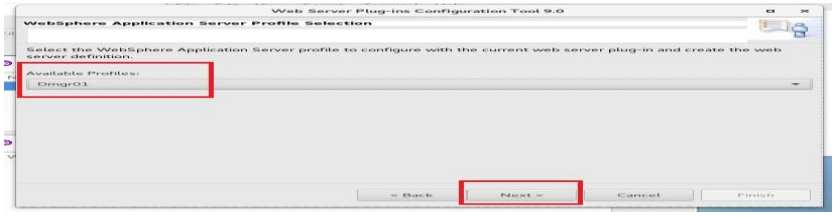

**Step 10:** Define a unique name for the web server definition.



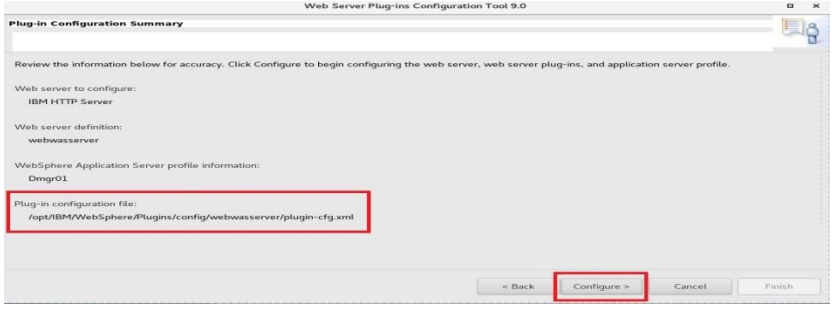


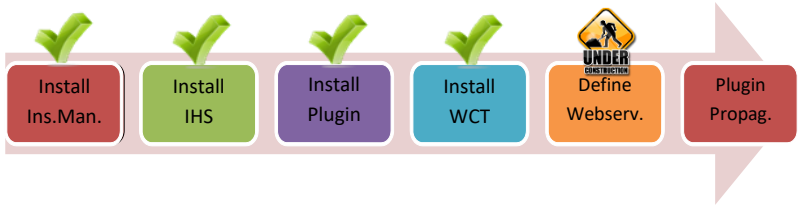

**Step 11:** Specify the hostname or IP address of the application server and then click "Next". Select Profile and Next.



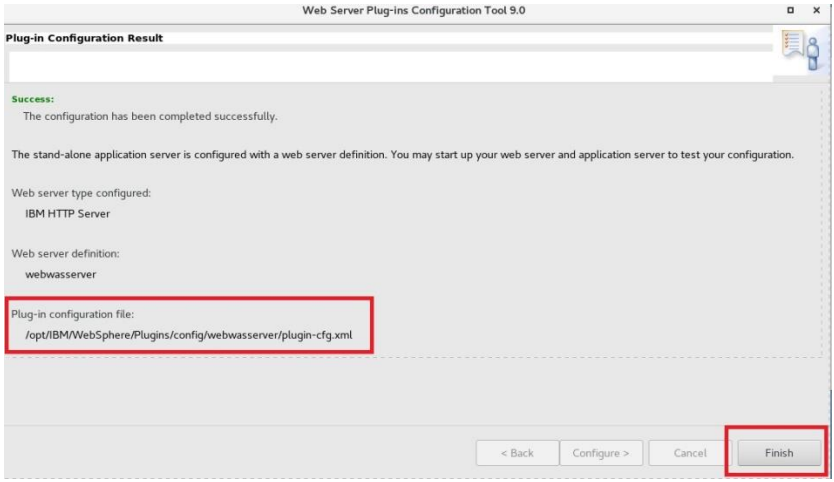




**Step 12:** Review the summary and then click "Configure".

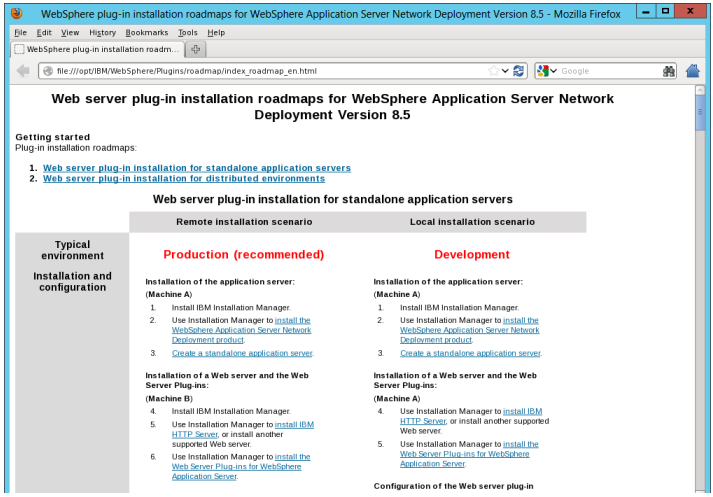


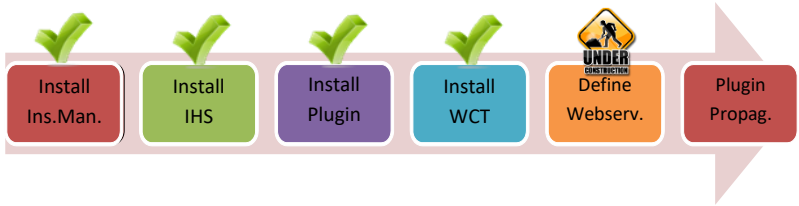



**Step 13:** Click “Finish” to complete configuration.

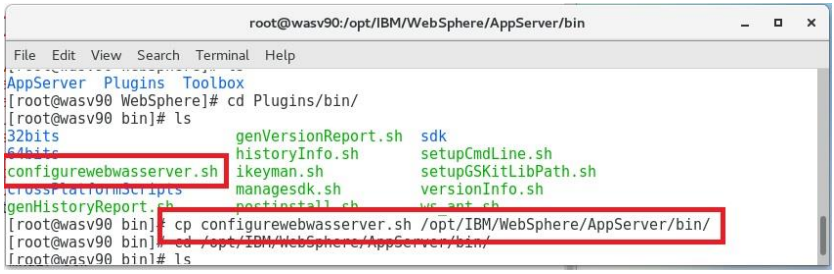



**Step 14:** This page will guide you complete the rest of the steps.

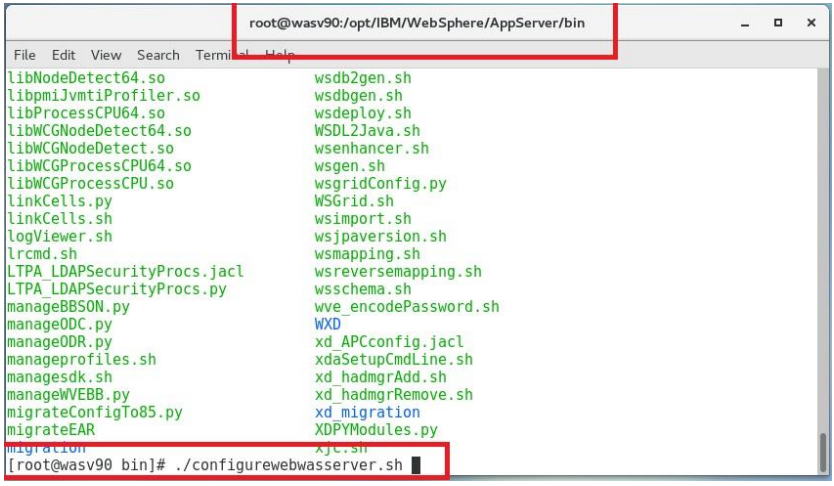


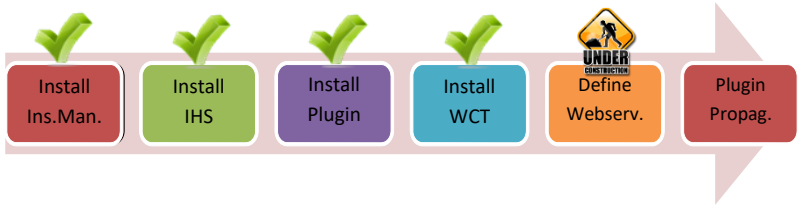



**Step 15:** Find newly created configuration script under "/opt/IBM/WebSphere/Plugins/bin" directory, with name "configure*webserver_name*.sh". Copy that file to the application server bin directory."/opt/IBM/WebSphere/AppServer/bin/".




**Step 16:** On application server, run the configuration script.

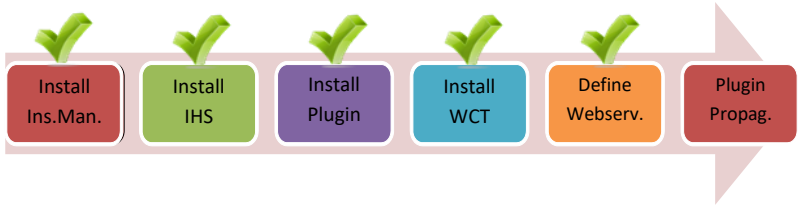




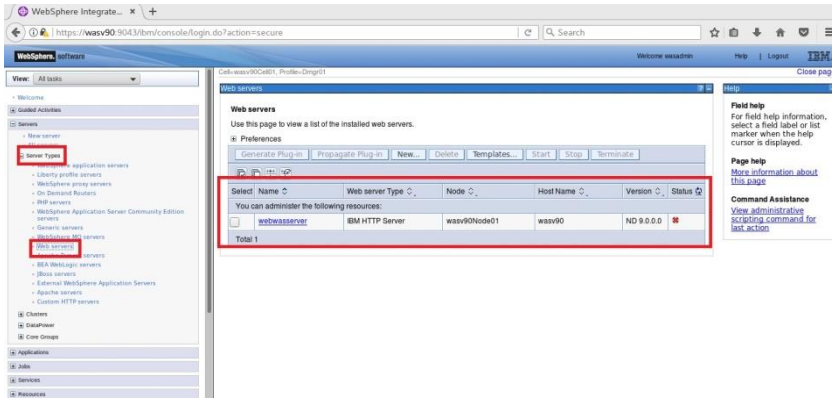

**Step 17:** You should see the configuration summary and the success message.

```
root@wasv90:/opt/IBM/WebSphere/AppServer/bin
File  Edit  View  Search  Terminal  Help
WASX7303I: The following options are passed to the scripting environment and are available a
s arguments that are stored in the argv variable: "[webwasserver, IHS, /opt/IBM/HTTPServer,
/opt/IBM/HTTPServer/conf/httpd.conf, 80, MAP_ALL, /opt/IBM/WebSphere/Plugins, unmanaged, was
v90-node, wasv90, linux, 8008, ihsadmin, ihsadmin]"

Input parameters:

   Web server name             - webwasserver
   Web server type             - IHS
   Web server install location - /opt/IBM/HTTPServer
   Web server config location  - /opt/IBM/HTTPServer/conf/httpd.conf
   Web server port             - 80
   Map Applications            - MAP_ALL
   Plugin install location     - /opt/IBM/WebSphere/Plugins
   Web server node type        - unmanaged
   Web server node name        - wasv90-node
   Web server host name        - wasv90
   Web server operating system - linux
   IHS Admin port              - 8008
   IHS Admin user ID           - ihsadmin
   IHS Admin password          - ihsadmin
   IHS service name            - ""
```

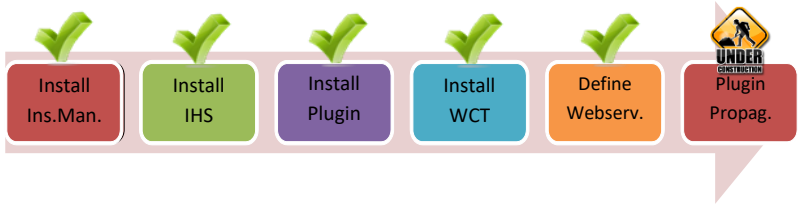
```
root@wasv90:/opt/IBM/WebSphere/AppServer/bin
File  Edit  View  Search  Terminal  Help
Start updating the target mappings for the application DefaultApplication.
ADMA5075I: Editing of application DefaultApplication started.
ADMA5058I: Application and module versions are validated with versions of deployment targets
.
ADMA5005I: The application DefaultApplication is configured in the WebSphere Application Ser
ver repository.
ADMA5005I: The application DefaultApplication is configured in the WebSphere Application Ser
ver repository.
ADMA5005I: The application DefaultApplication is configured in the WebSphere Application Ser
ver repository.
ADMA5005I: The application DefaultApplication is configured in the WebSphere Application Ser
ver repository.
ADMA5113I: Activation plan created successfully.
ADMA5011I: The cleanup of the temp directory for application DefaultApplication is complete.
ADMA5076I: Application DefaultApplication edited successfully. The application or its web mo
dules may require a restart when a save is performed.
Target mapping is updated for the application DefaultApplication.

Start saving the configuration.

Configuration save is complete.
[root@wasv90 bin]#
[root@wasv90 bin]#
```




**Step 18:** Login to administration console, check whether newly added web server is listed under “Servers>Server Types>Web servers”.

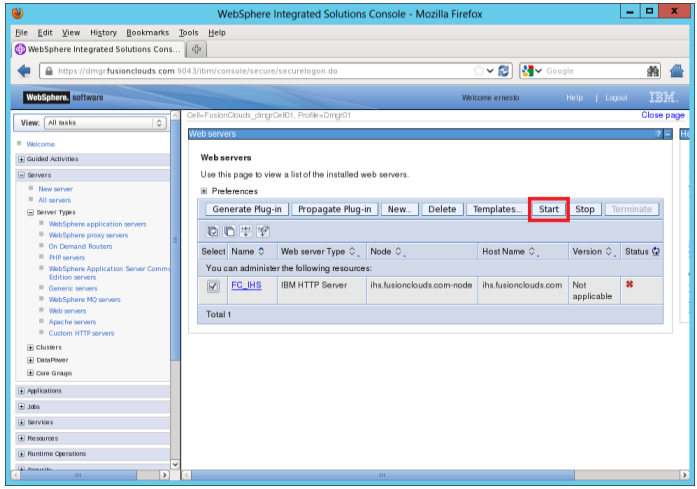



**Task 5 is complete!**

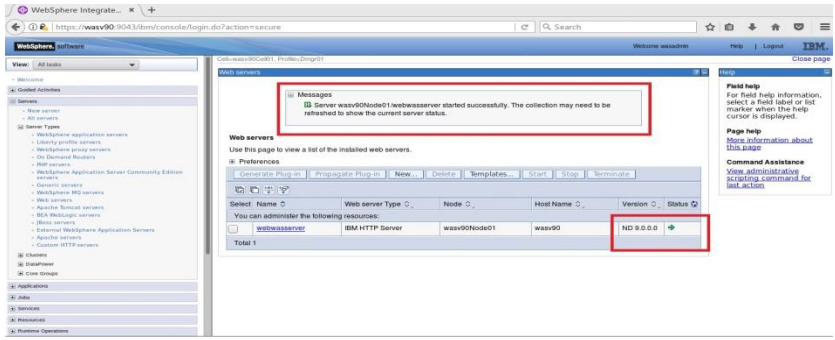


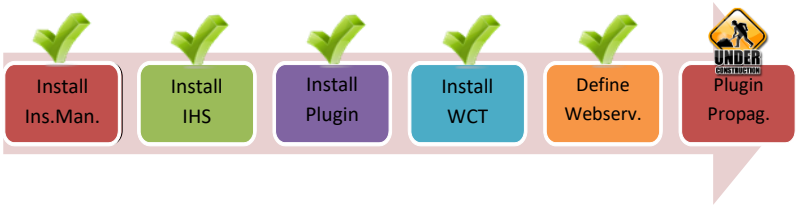

## Task 6: Generate and propagate plug-in

**Step 1:** Login to admin console and select the web server under “Servers>Server Types>Web servers” and then click “Start” to start.

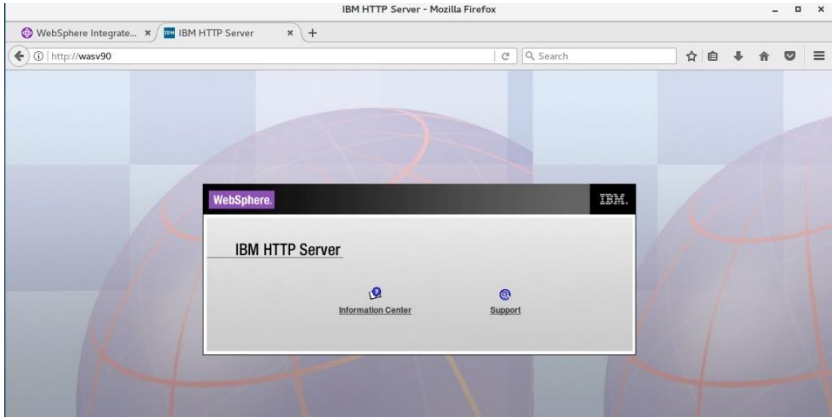


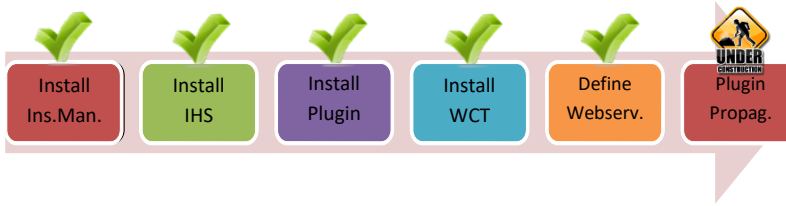

**Step 2:** Make sure that IHS is started.



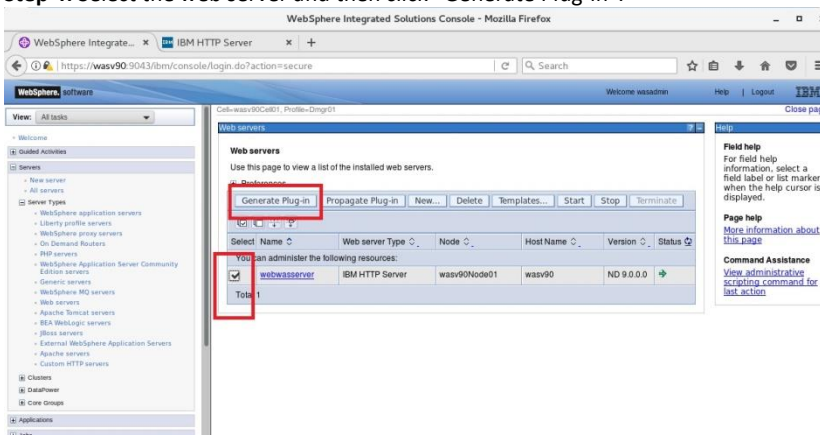


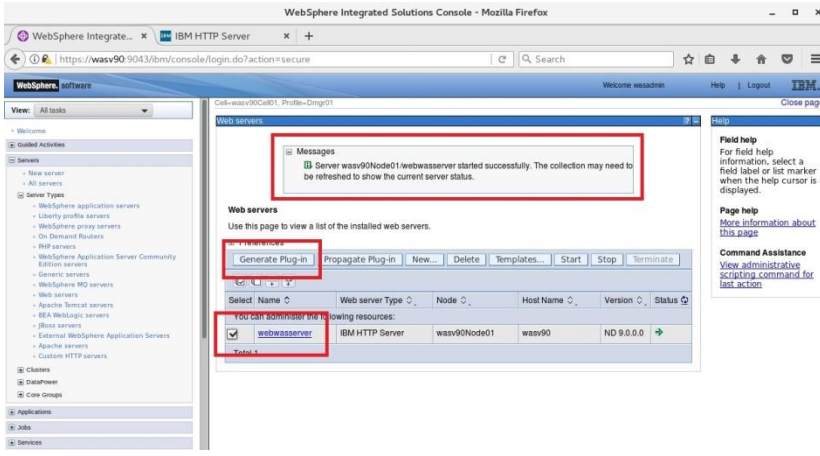

**Step 3:** Check if your web server is working.

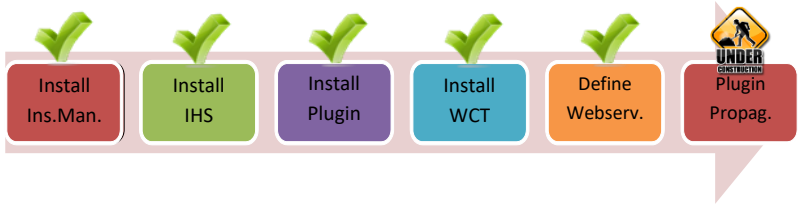




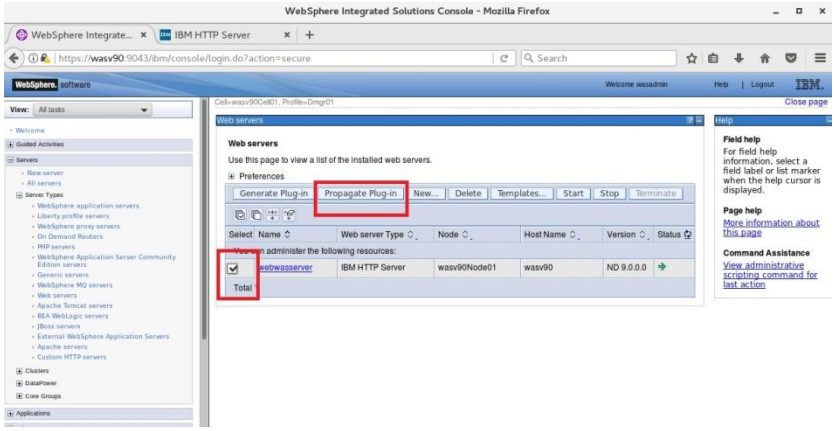

**Step 4:** Select the web server and then click “Generate Plug-in”.

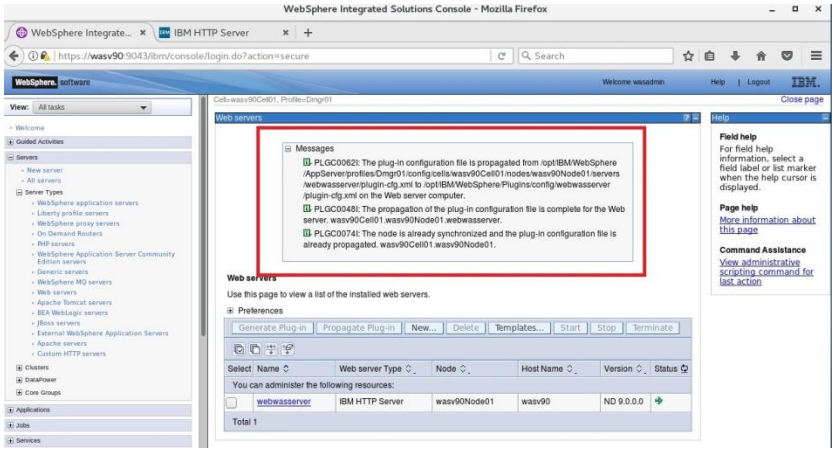


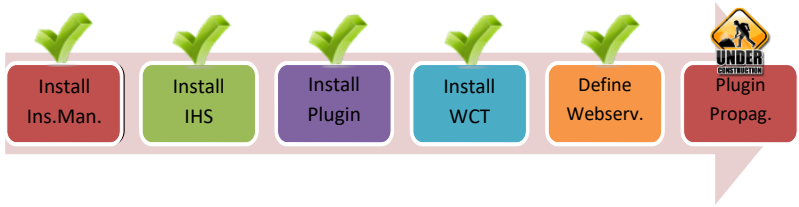





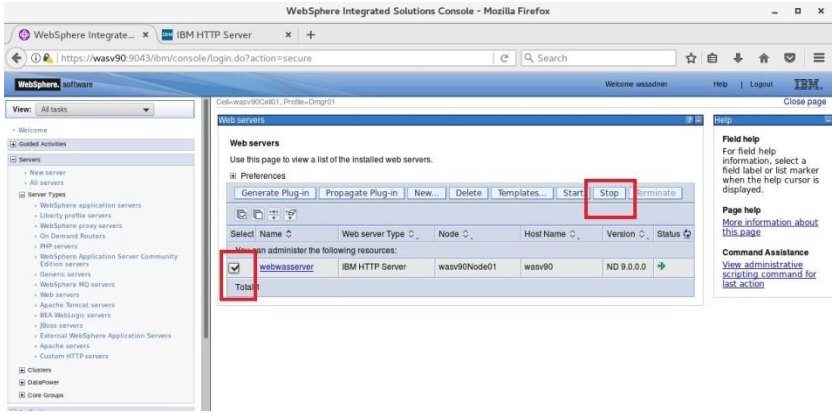

**Step 5:** Select the web server and then click on “Propagate Plug-in”.

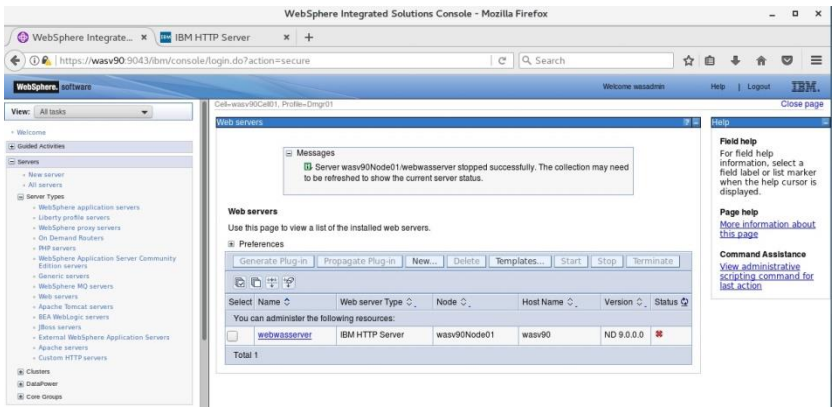


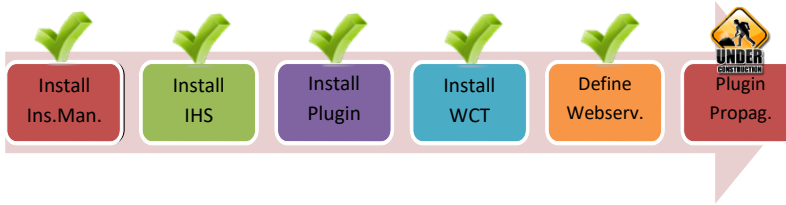





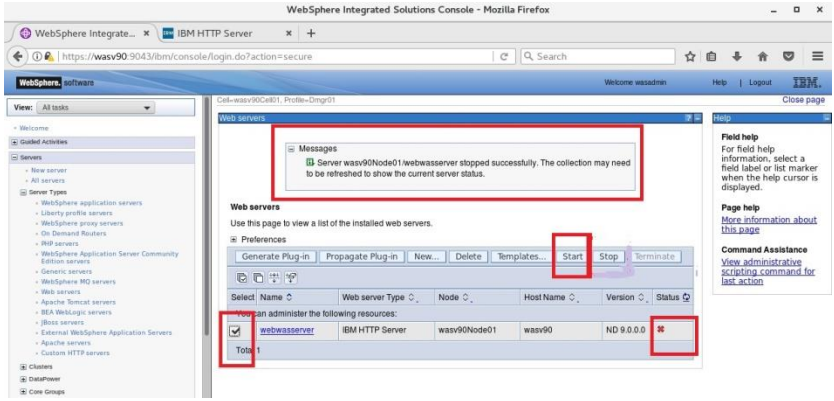

**Step 6:** In order to take changes affect, you need to restart the web server. Select the web server and then click “Stop”.

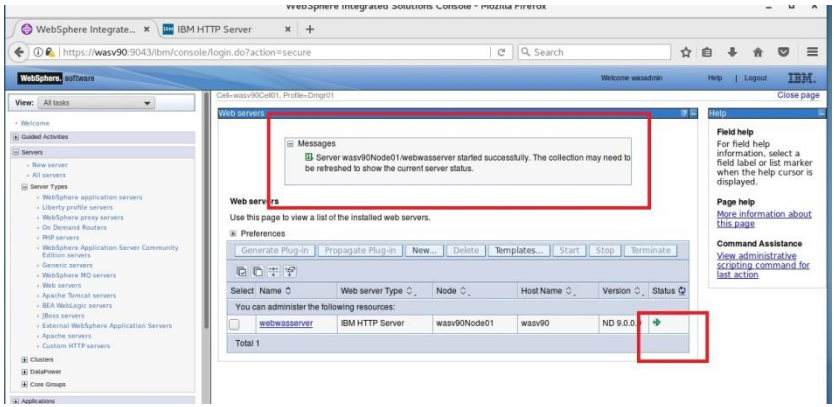


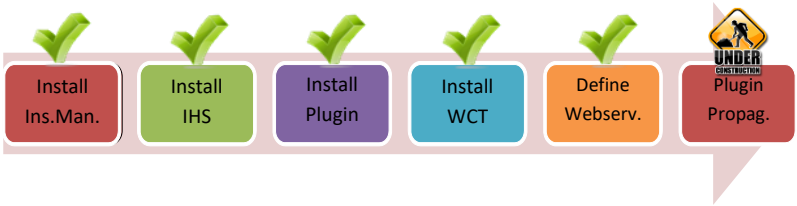





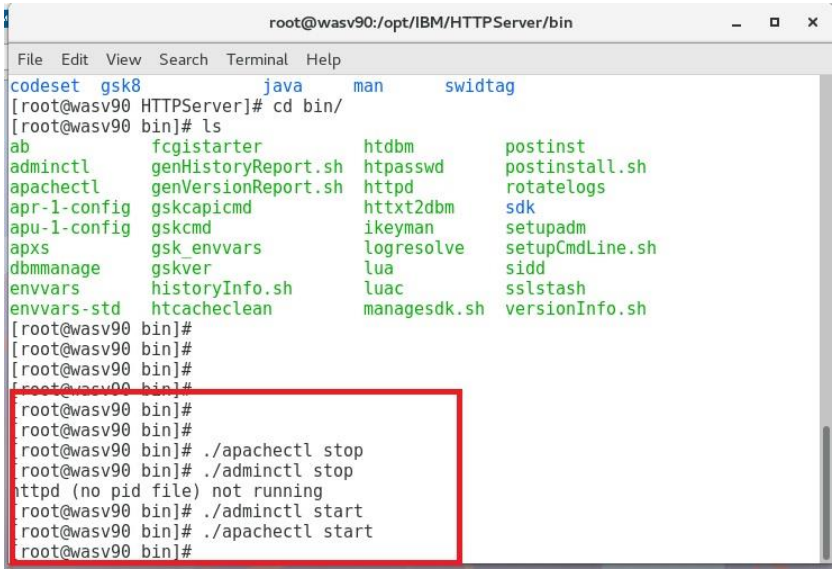

**Step 7:** To start, select the web server and then click “Start”.

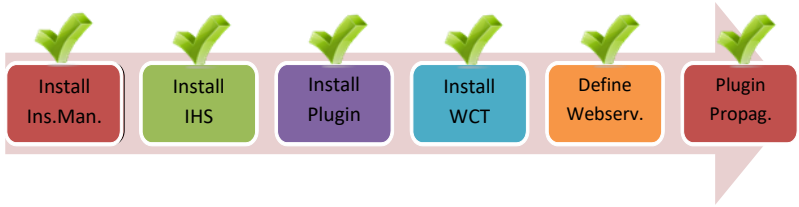


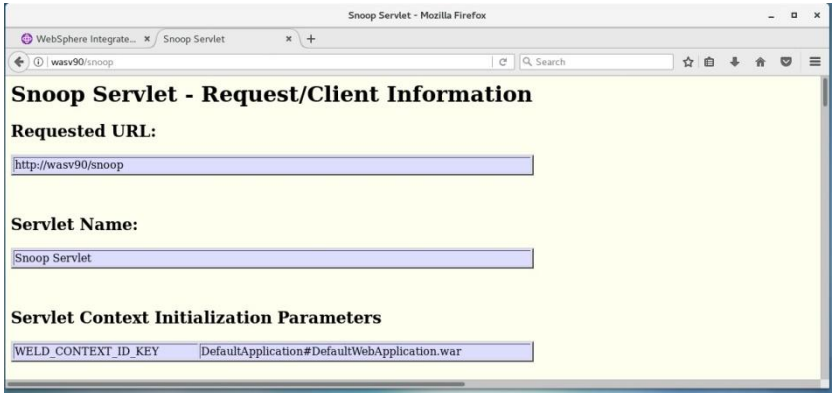



**Step 8:** Alternatively, you can use command line commands to restart web server.






**Step 9:** To test the plugin generation and propagation, we can use the "Default Application" deployed during the installation of WebSphere Application Server. Type the URL "http://URL_of_webserver/snoop". (eg. http://wasv90/snoop)




**Task 6 is complete!**

## SUMMARY

Web servers are one of the most important components of the multi-tier architectures. Numerous numbers of web servers such as Apache HTTP Server, Microsoft IIS, and IBM HTTP Server, are supported by IBM WebSphere Application Server. WebSphere Plug-ins provides better performance and security by adding a smart layer between the web server and WebSphere Application Server. For easier and better configuration of plug-in, IBM has introduced a tool as part of the WebSphere Customization Toolbox, called “Web Server Plug-ins Configuration Tool”. Web servers can be managed via administrative console where you can generate and propagate the plug-in configuration for the applications that are configured in the application server.

REFERENCES


- http://www-01.ibm.com/support/knowledgecenter/SSAW57_8.5.5/com.ibm.websphere.ihs.doc/ihs/welcome_ihs.htmlhttp://www.ibm.com/developerworks/websphere/library/samples/SampleScripts.html
- http://pic.dhe.ibm.com/infocenter/wasinfo/v8r5/index.jsp?topic=%2Fcom.ibm.websphere.nd.doc%2Fae%2Ftins_manualWebIHS80.html
- http://pic.dhe.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/tins_road_plugins.html

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