

CHAPTER 5: IBM HTTP SERVER AND PLUG-IN

Theory

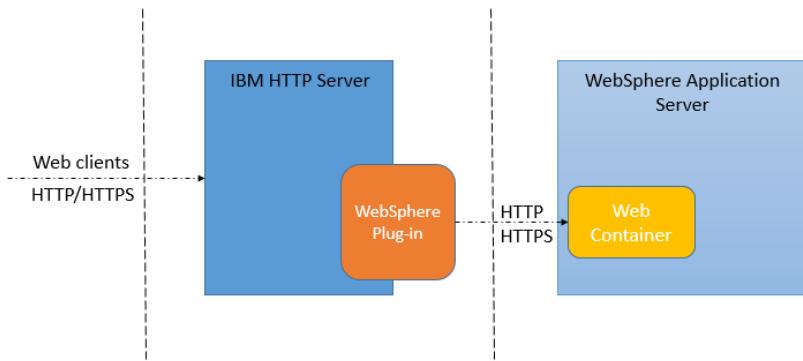
Web servers are one of the most important part of the multi-tier architecture and they provide scalability, security and performance. Web servers are defined to WebSphere Application Server as either managed or unmanaged node and in both configurations, they can be managed through administrative console. 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 AIX, 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 application 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.

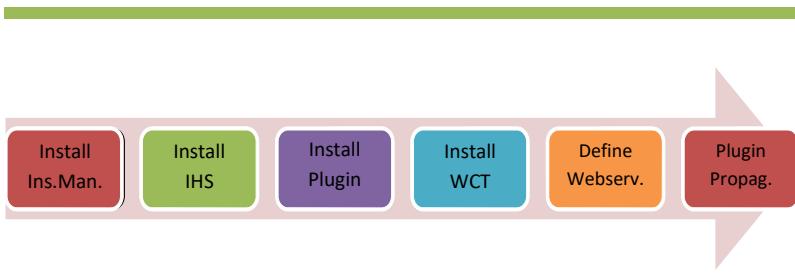
AIM

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.

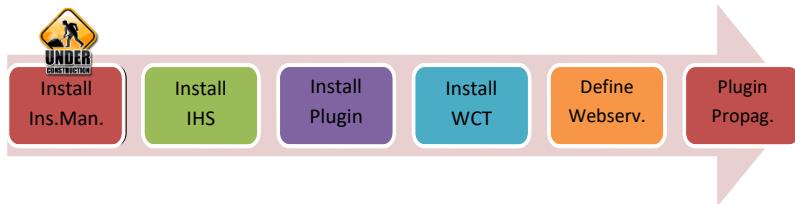
In order to achieve this, you need following steps:

- 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

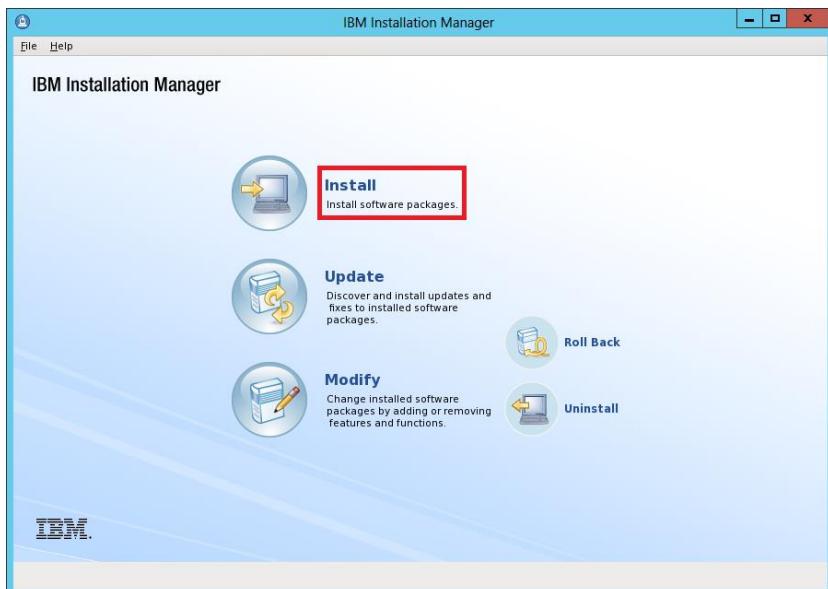


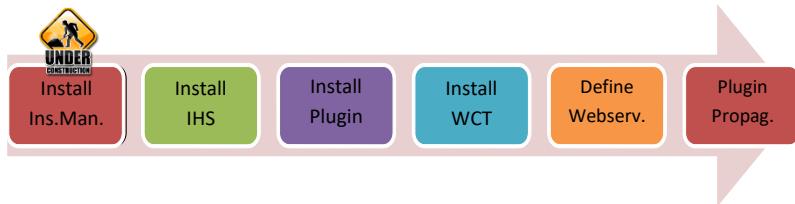
1. **Install IBM Installation Manager**
2. **Install IBM HTTP Server**
3. **Install WebSphere Plug-ins**
4. **Install WebSphere Customization Toolbox**
5. **Create web server definition**
6. **Generate and propagate plug-in**



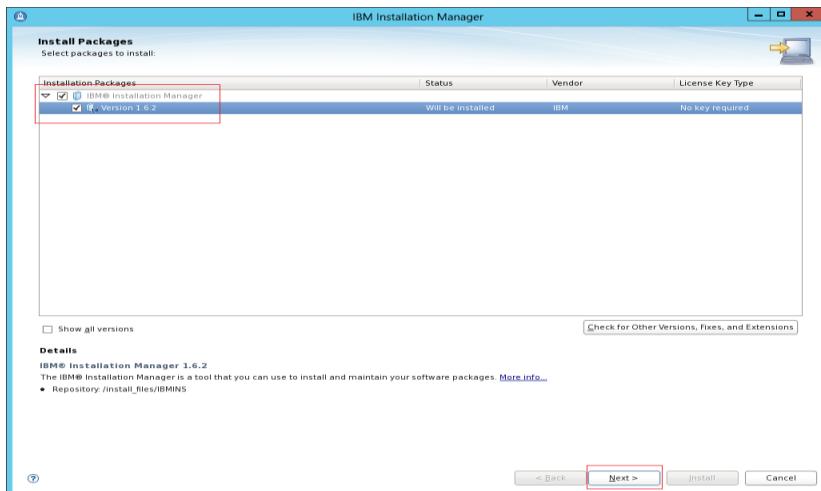
Task 1: Install IBM Installation Manager

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

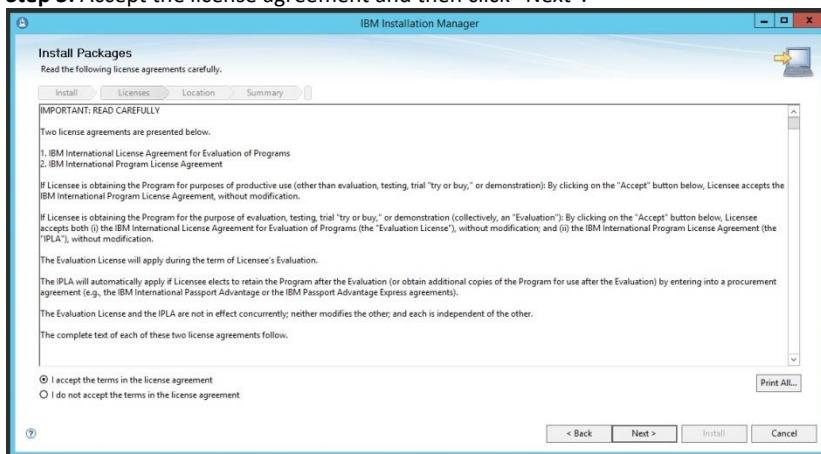


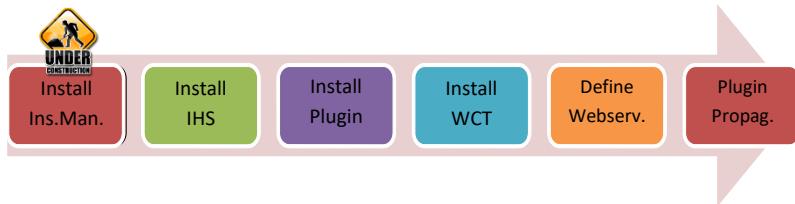


Step 2: Select “IBM Installation Manager” and then click “Next”.

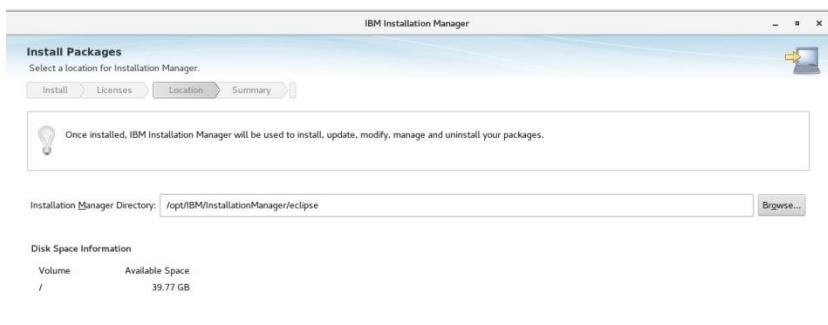


Step 3: Accept the license agreement and then click “Next”.

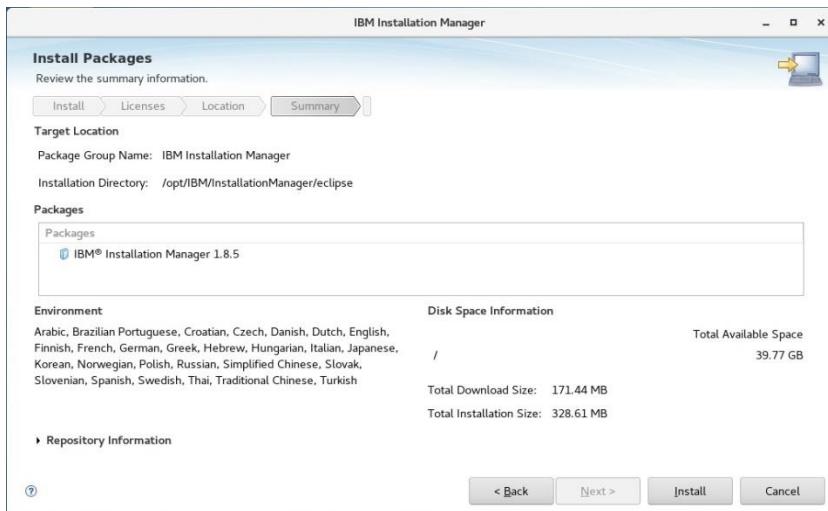


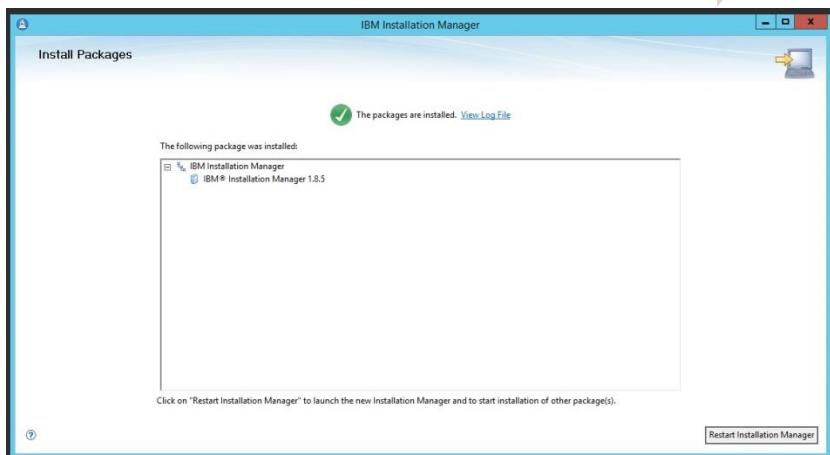
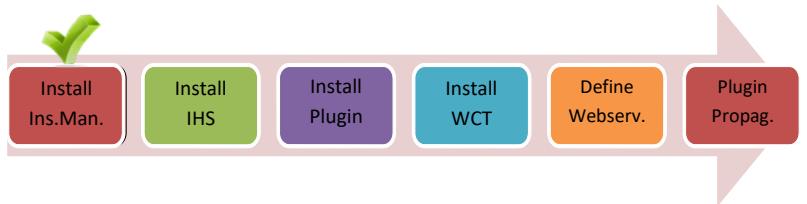


Step 4: Use the default installation directory (/opt/IBM/Installation Manager/eclipse), click “Next”.

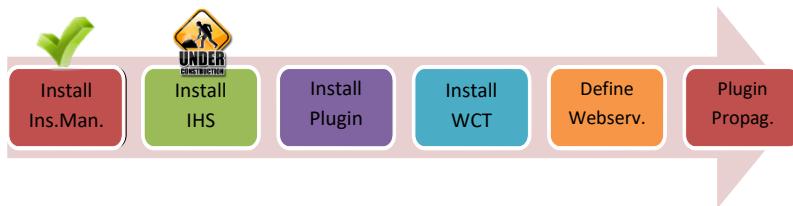


Step 5: Review the summary and then click “Install”.



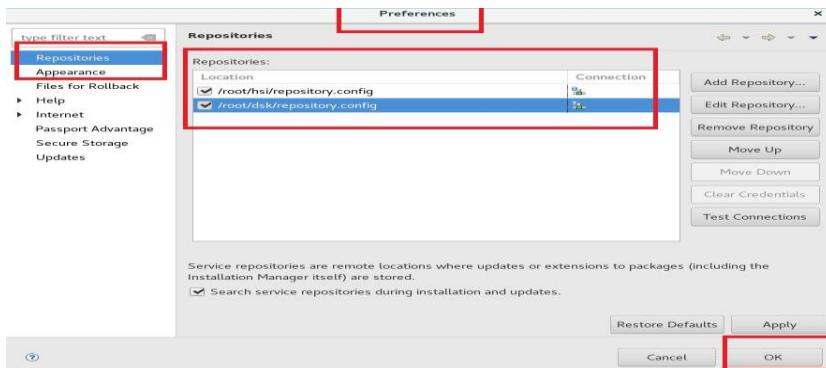


Task 1 is complete!



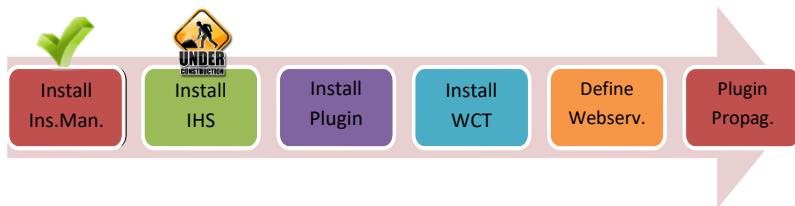
Task 2: Install IBM HTTP Server

Step 1: Start IBM Installation Manager issuing command “IBMIM” under the directory “/opt/IBM/InstallationManager/eclipse”. 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.

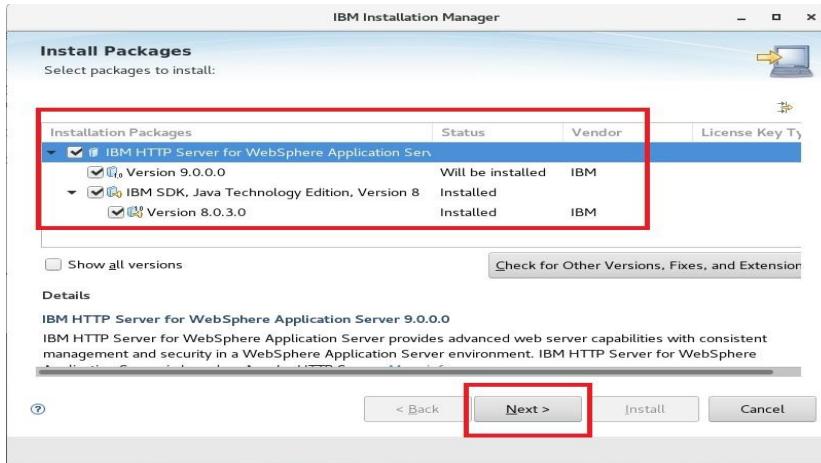


Step 2: Click “Install” to start installation.

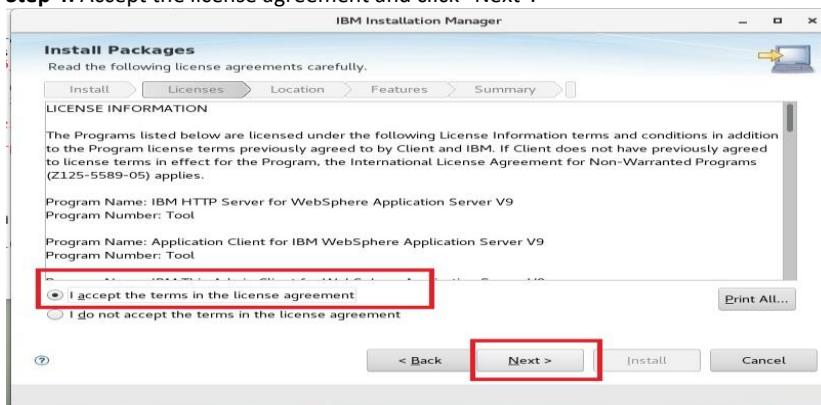


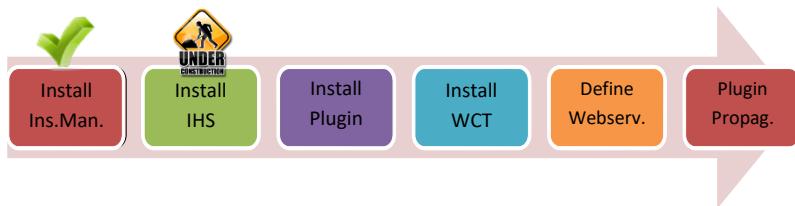


Step 3: Select IBM HTTP Server and then click “Next”.

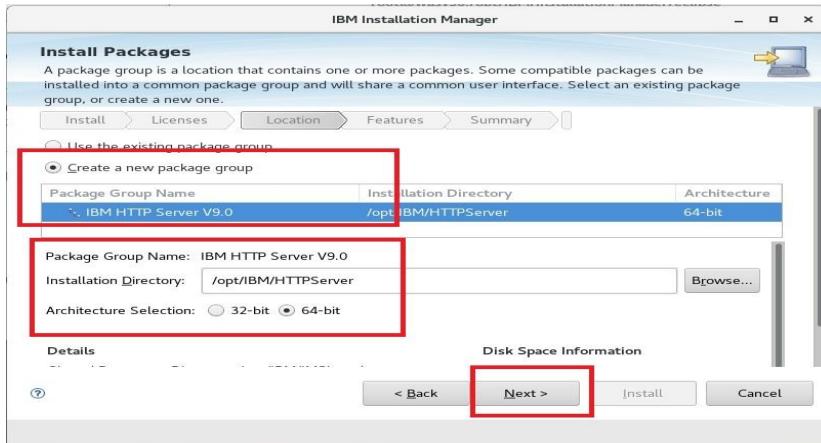


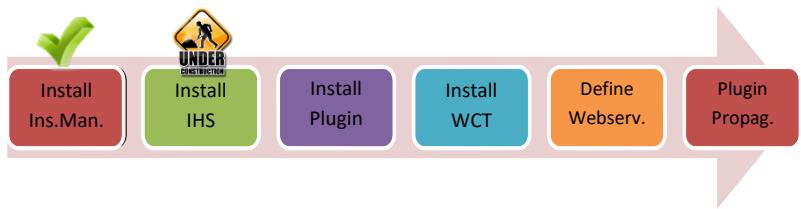
Step 4: Accept the license agreement and click “Next”.



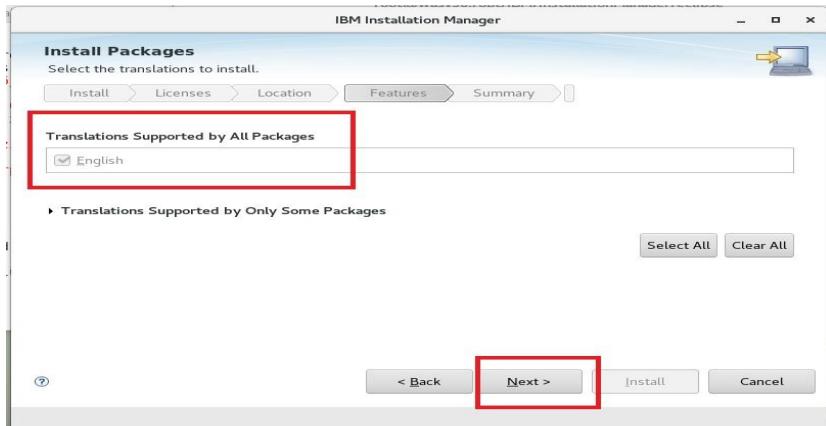


Step 5: Accept default directory (/opt/IBM/ HTTPServer) and click “Next”.

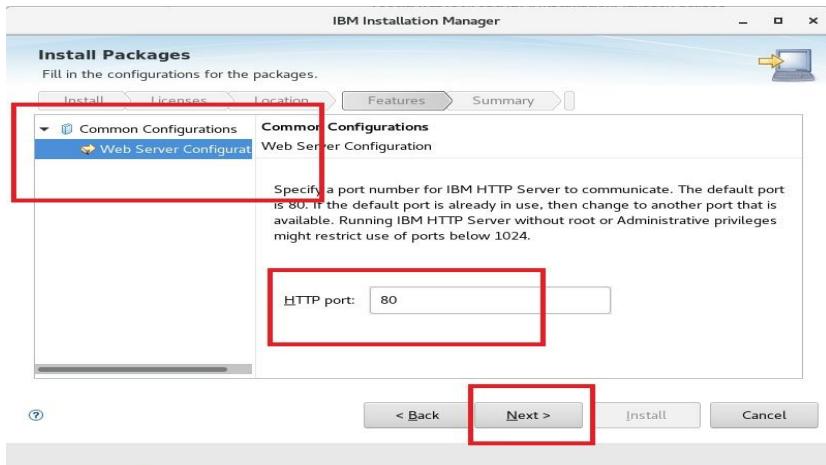


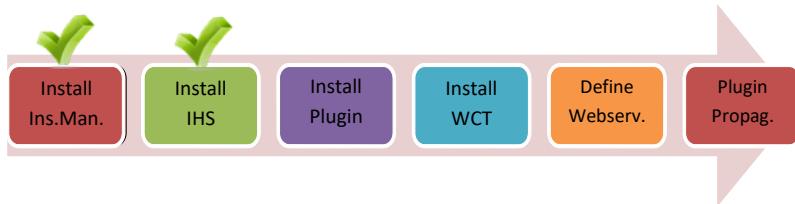


Step 6: Select language translation support and then click on “Next”.

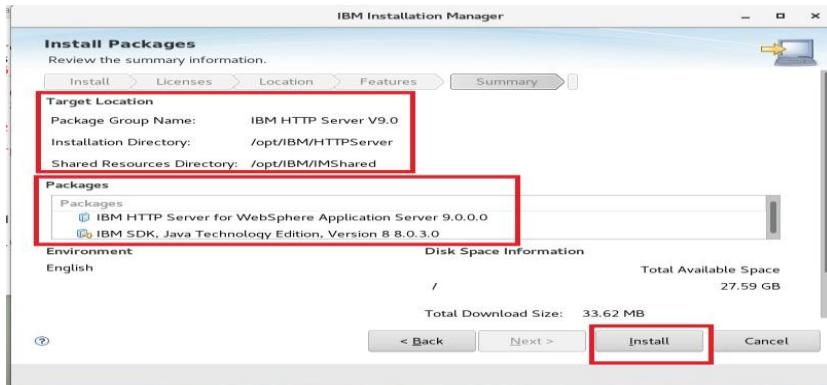


Step 7: Define the port that IHS will use (default is 80) and click “Next”.

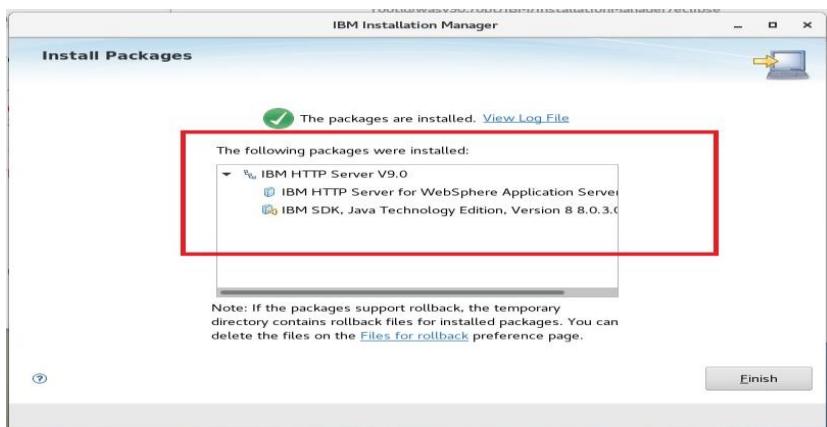




Step 8: Review the summary and then click “Install” to complete installation.



Step 9: Click “Finish” to finalize installation.

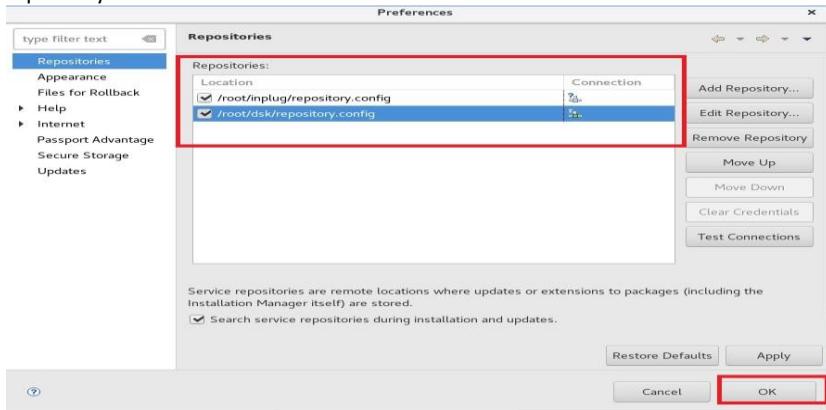


Task 2 is complete!



Task 3: Install WebSphere Plug-ins

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

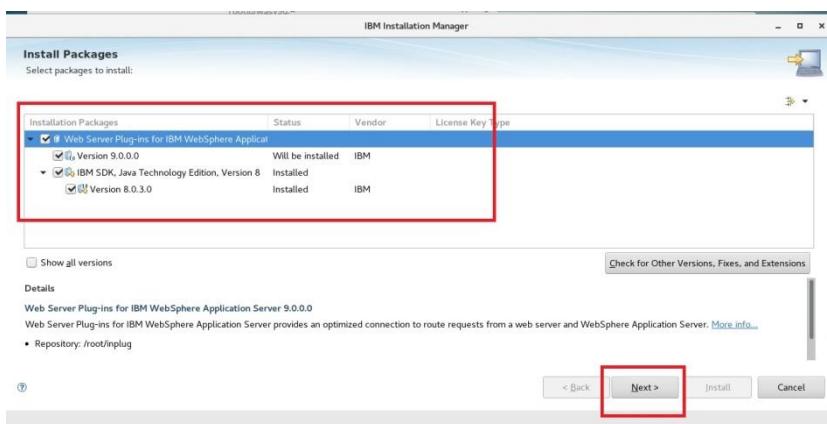


Step 2: Click “Install” to start installation.

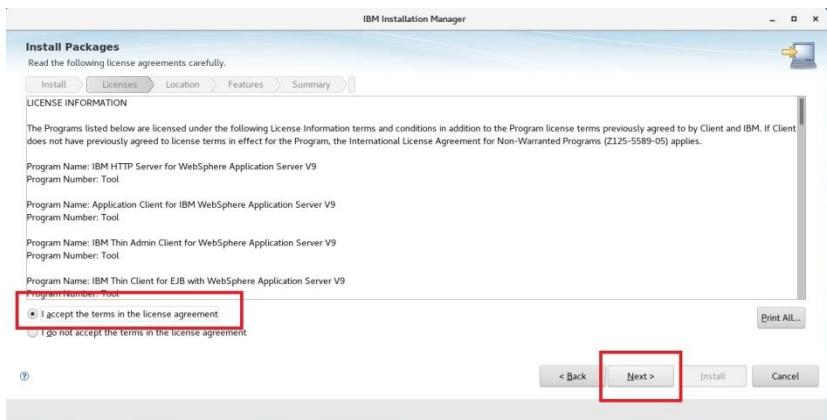




Step 3: Select the “Web Server Plug-ins for IBM WebSphere Application Server” package and click “Next”.

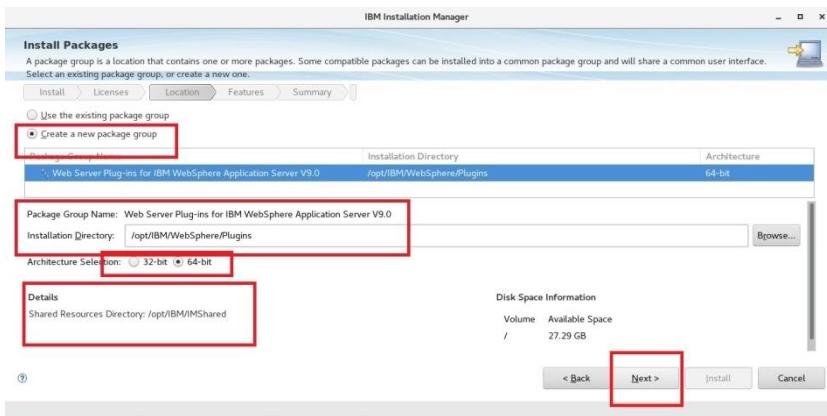


Step 4: Accept the license agreement and then click “Next” to continue.

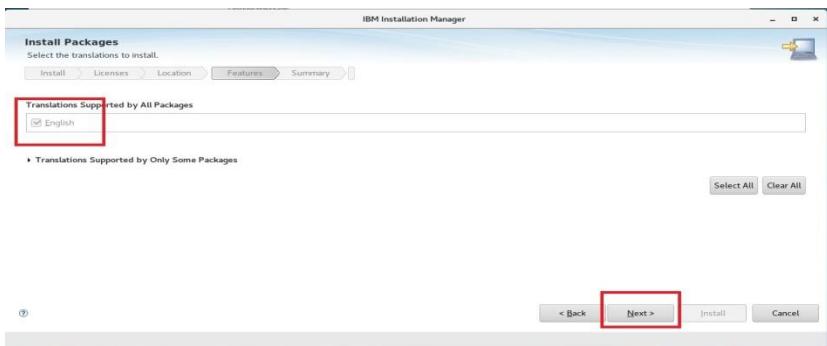




Step 5: Set the installation directory as /opt/IBM/WebSphere/Plugins and click “Next”.

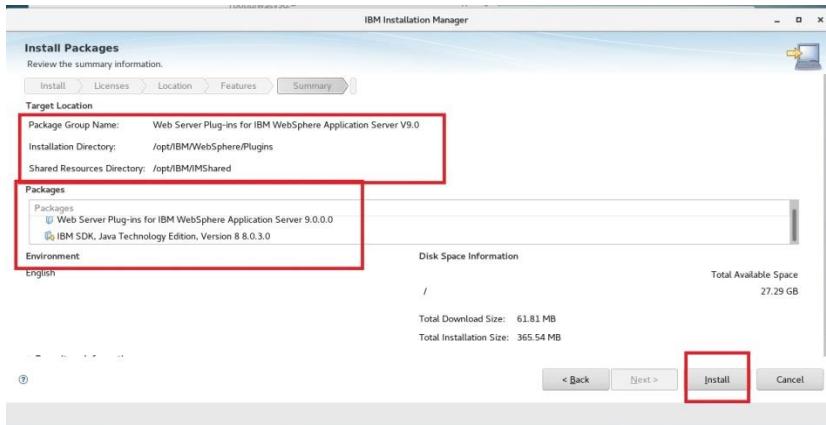


Step 6: Select the supported language and then click “Next”.

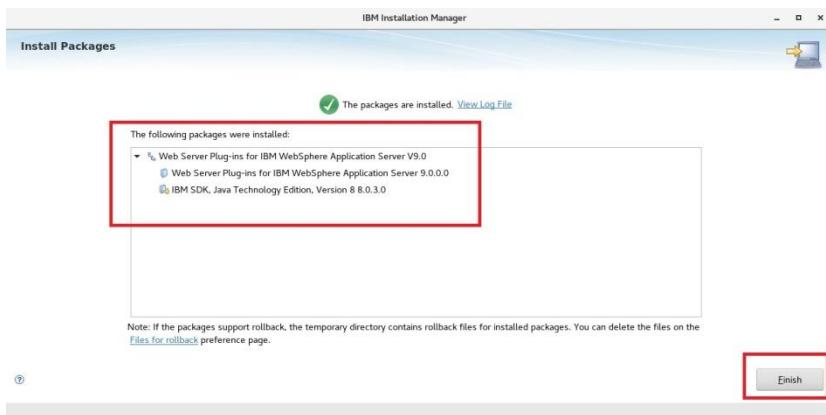




Step 7: Click “Install” to start installation.



Step 8: Finalize installation by clicking “Finish”.

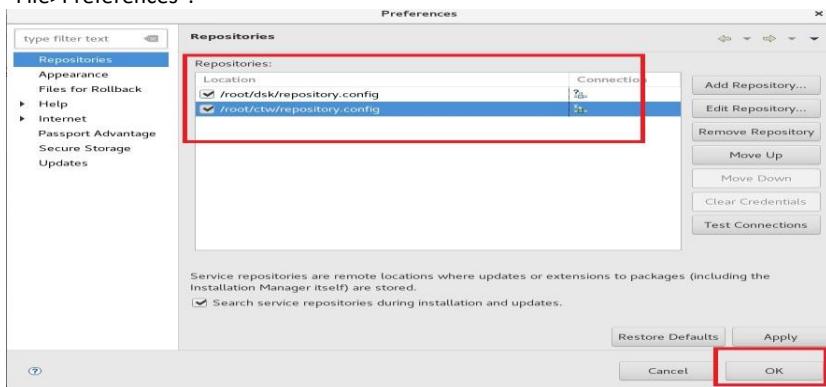


Task 3 is complete!



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”.

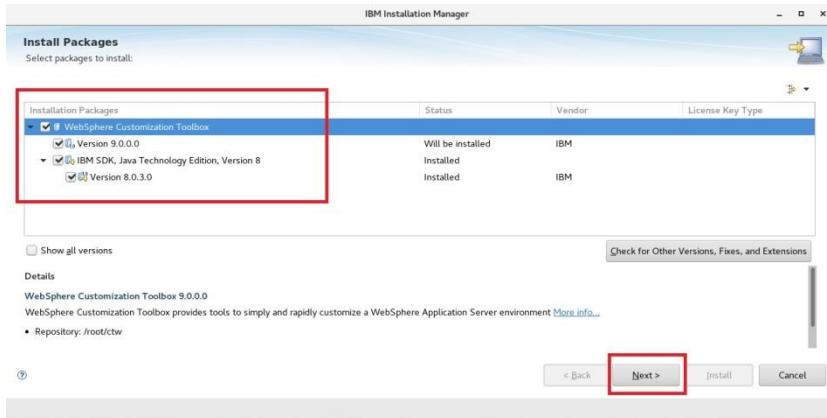


Step 2: Click “Install” to start installation.

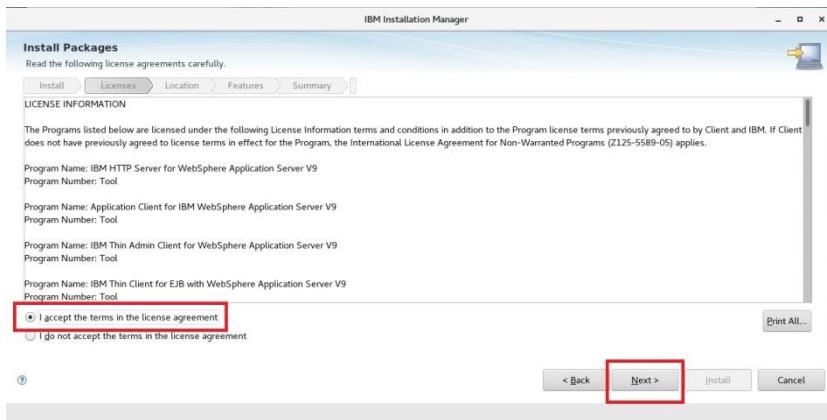




Step 3: Select “WebSphere Customization Toolbox” to install and click “Next”.

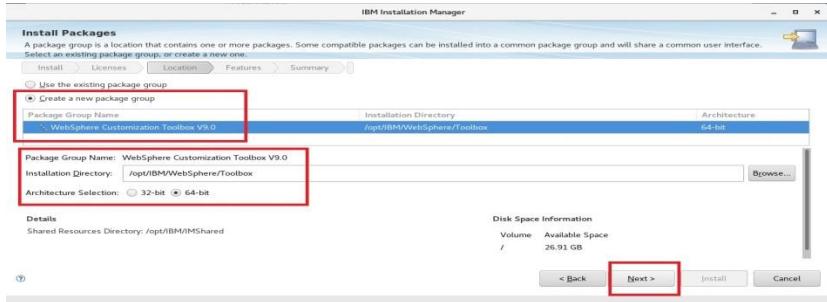


Step 4: Accept the license agreement to continue and then click “Next”.

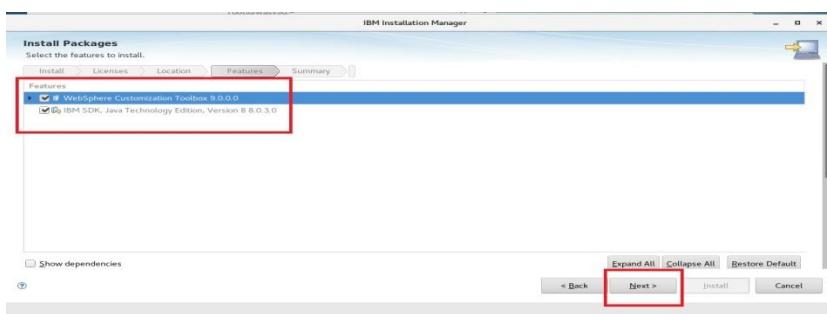


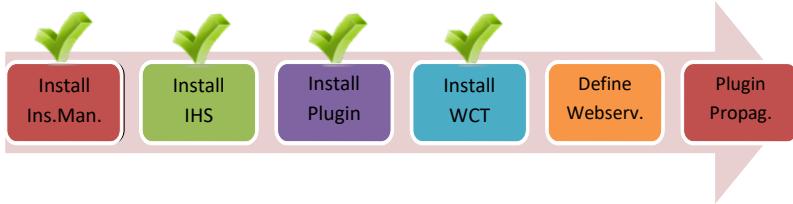


Step 5: Use the default installation directory, “/opt/IBM/WebSphere/Toolbox” and click “Next”.

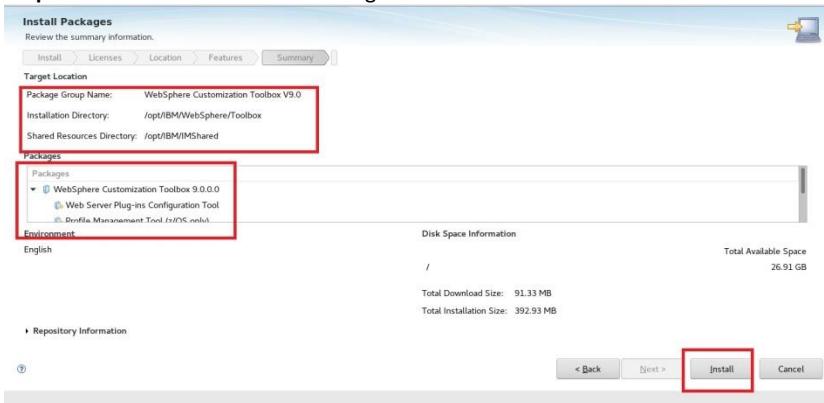


Step 6: Select language and features to install and click “Next”.





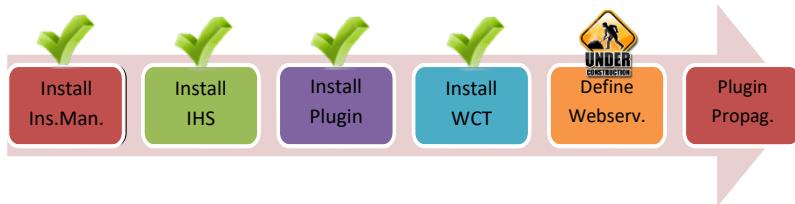
Step 7: Click “Install” to start installing files.



Step 8: Click “Finish” to finalize installation.

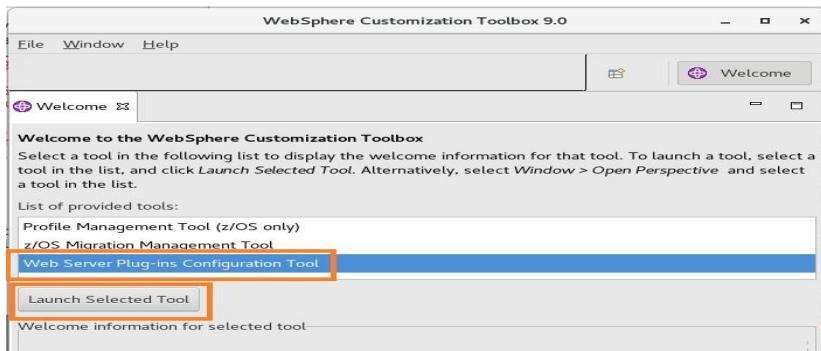


Task 4 is complete!

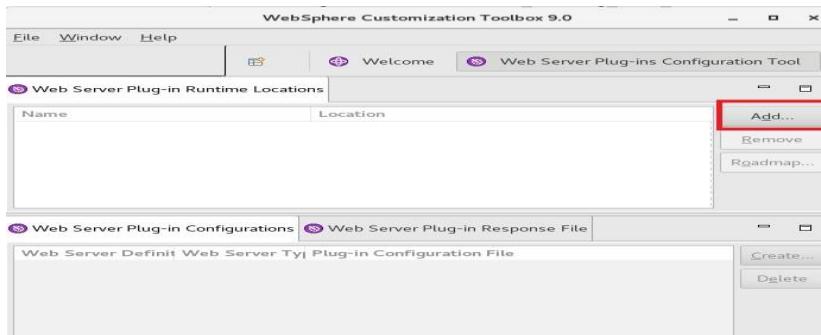


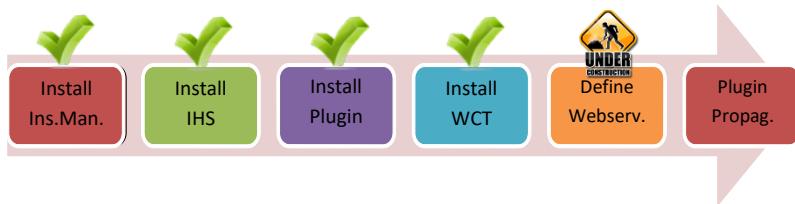
Task 5: Create web server definition

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

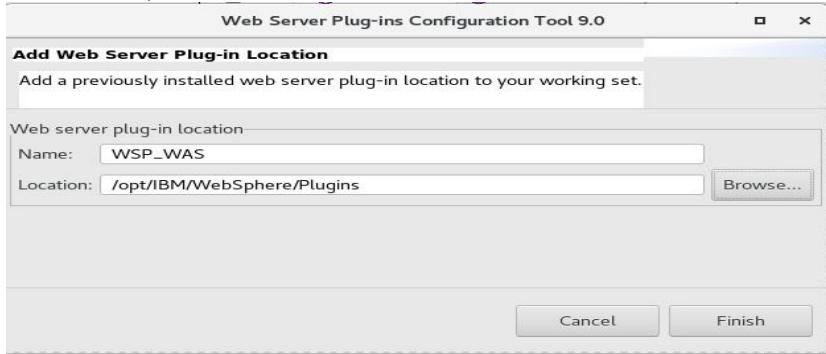


Step 2: Click “Add” to create a new plug-in runtime.

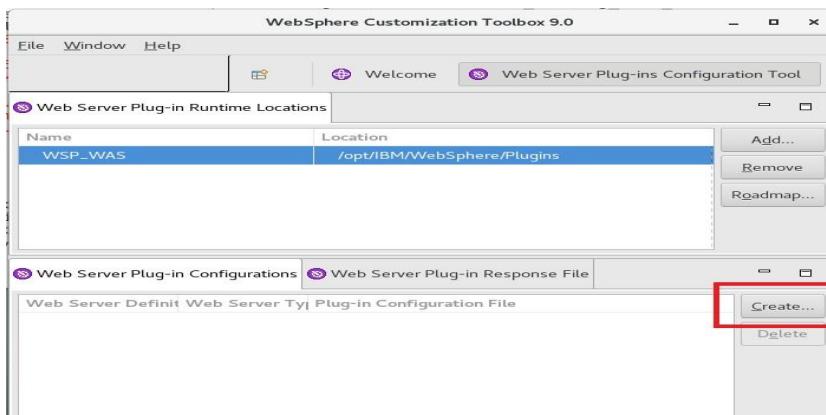


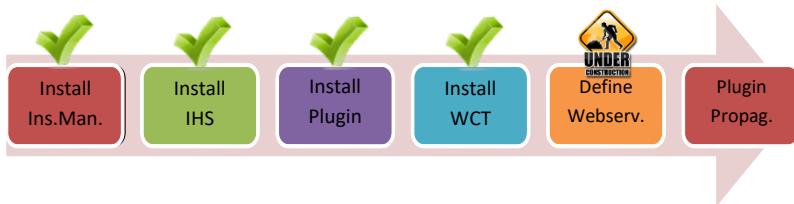


Step 3: Give a unique name as for definition and set the location of the Plugin-ins home directory, then click “Finish”.

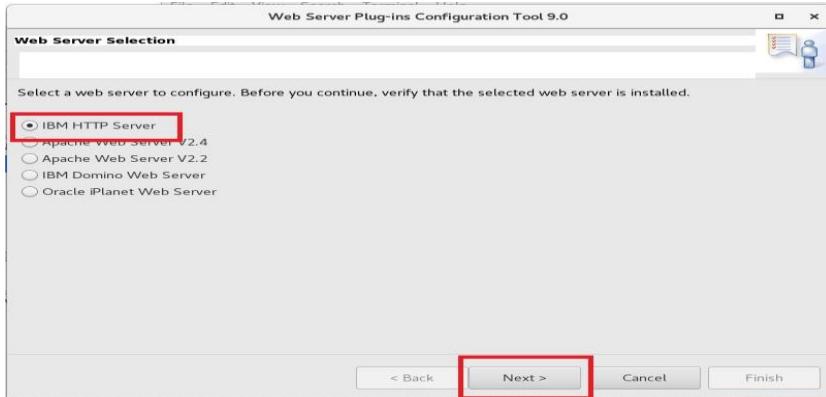


Step 4: Click “Create” to add a web server definition.

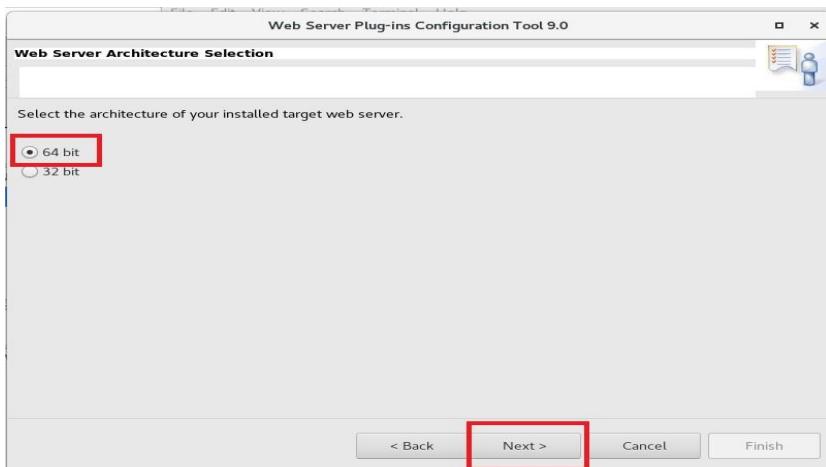


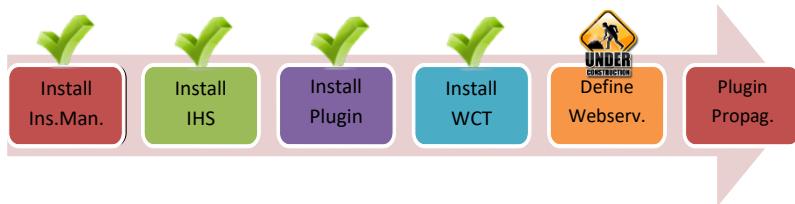


Step 5: Select “IBM HTTP Server v8.5” and click “Next”.



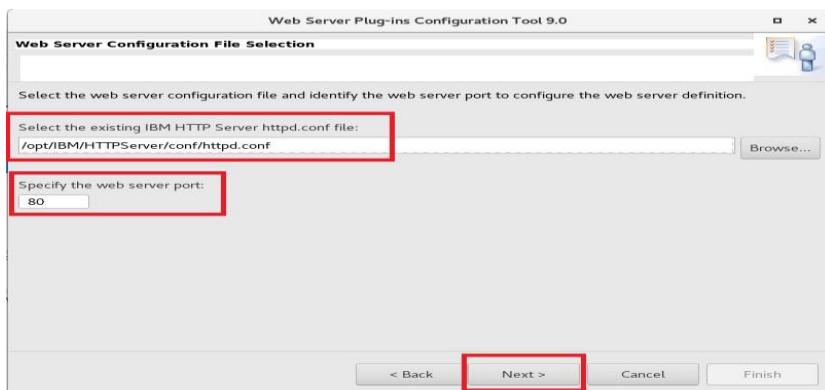
Step 6: Select the architecture (32 bit or 64 bit) and then click “Next”



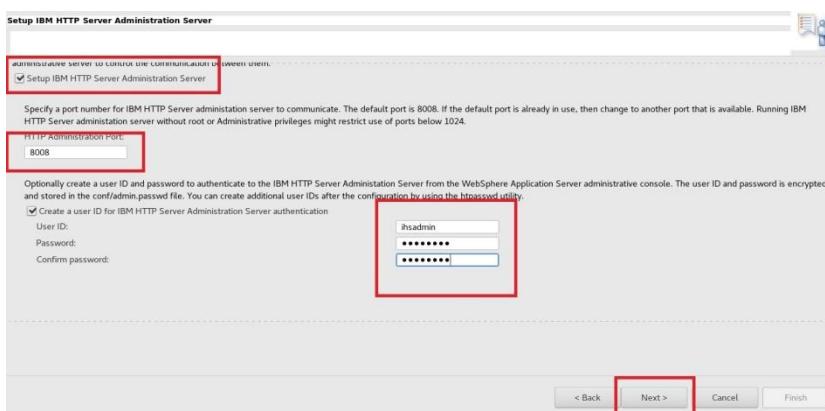


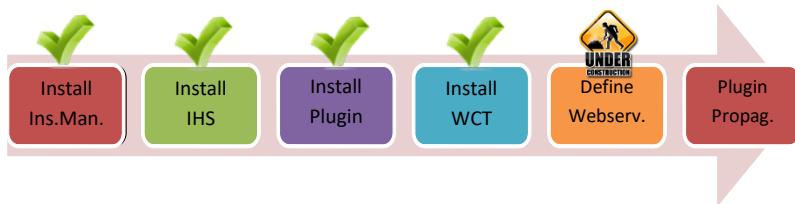
Step 7: Select the IBM HTTP Server conf file and web server port.

(/opt/IBM/HTTPServer/conf/httpd.conf, port 80)



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”.

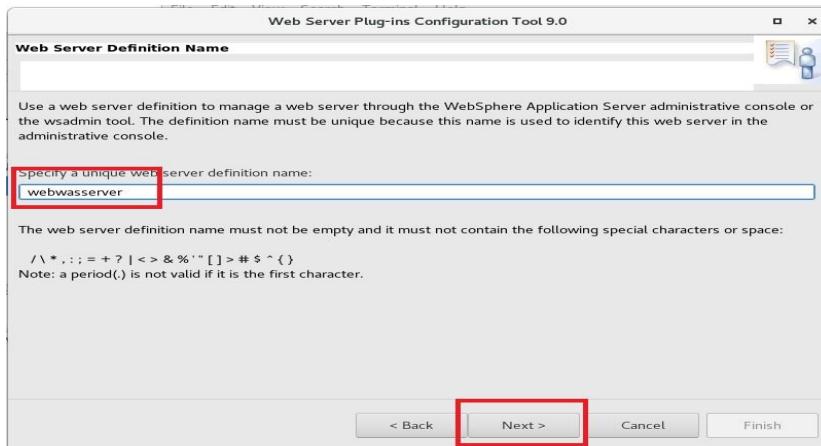


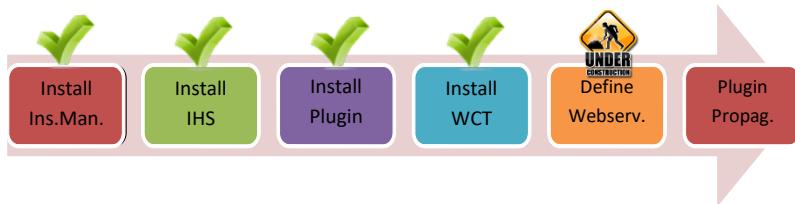


Step 9: Specify the system user and group that can write to configuration files of IHS and Plugins.

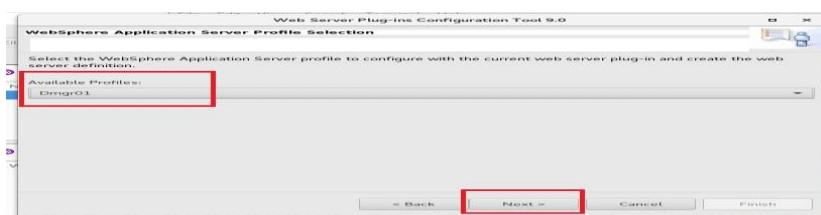


Step 10: Define a unique name for the web server definition.



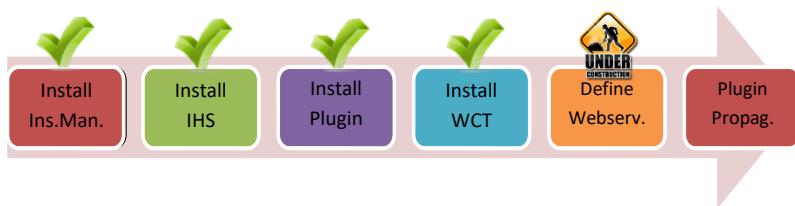


Step 11: Specify the hostname or IP address of the application server and then click "Next". Select Profile and Next.

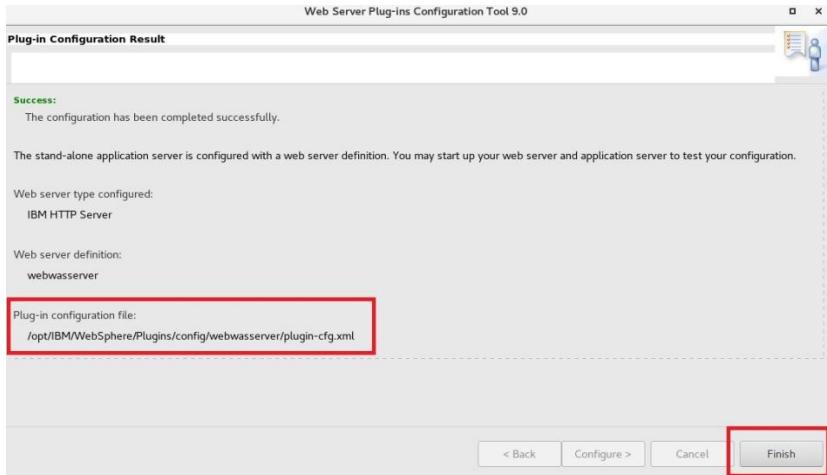


Step 12: Review the summary and then click "Configure".

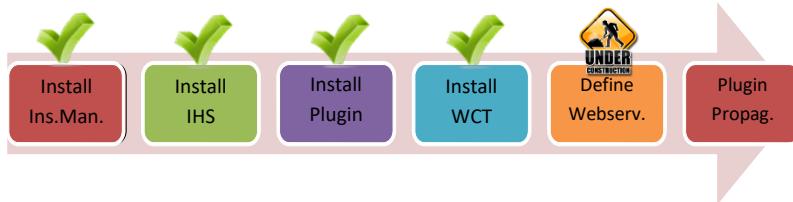




Step 13: Click “Finish” to complete configuration.



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



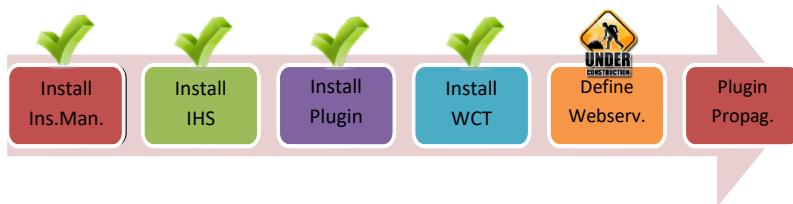
Step 15: Find newly created configuration script under "/opt/IBM/WebSphere/Plugins/bin" directory, with name "configurewebserver_name.sh". Copy that file to the application server bin directory."/opt/IBM/WebSphere/AppServer/bin/".

```
root@wasv90:/opt/IBM/WebSphere/AppServer/bin
File Edit View Search Terminal Help
AppServer Plugins Toolbox
[root@wasv90 WebSphere]# cd Plugins/bin/
[root@wasv90 bin]# ls
32bits genVersionReport.sh sdk
64bits historyInfo.sh setupCmdLine.sh
configurewebwasserver.sh ikeyman.sh setupGSKLibPath.sh
crossPlatformScripts managesdk.sh versionInfo.sh
genHistoryReport.sh postInstall.sh ws_ant.sh
[root@wasv90 bin]# cp configurewebwasserver.sh /opt/IBM/WebSphere/AppServer/bin/
[root@wasv90 bin]# cd /opt/IBM/WebSphere/AppServer/bin/
[root@wasv90 bin]# ls

```

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

```
root@wasv90:/opt/IBM/WebSphere/AppServer/bin
File Edit View Search Terminal Help
libNodeDetect64.so wsdb2gen.sh
libpmiVmtiProfiler.so wsdbgen.sh
libProcessCPU64.so wsdeploy.sh
libWCGNodeDetect64.so WSDL2Java.sh
libWCGNodeDetect.so wsenhancer.sh
libWCGProcessCPU64.so wsgen.sh
libWCGProcessCPU.so wsgridConfig.py
linkCells.py WSGrid.sh
linkCells.sh wsimport.sh
logViewer.sh wsjpaVersion.sh
lrcmd.sh wsmapping.sh
LTPA_LDAPSecurityProcs.jacl wsreverseMapping.sh
LTPA_LDAPSecurityProcs.py wsschema.sh
manageBSON.py wve_encodePassword.sh
manageDC.py WXD_
manageODR.py xd_APConfig.jacl
manageprofiles.sh xdaSetupCmdLine.sh
managesdk.sh xd_hadmngrAdd.sh
manageWEBB.py xd_hadmngrRemove.sh
migrateConfigTo85.py xd_migration
migrateEAR XDPYModules.py
migration AJC.sh
[root@wasv90 bin]# ./configurewebwasserver.sh
```

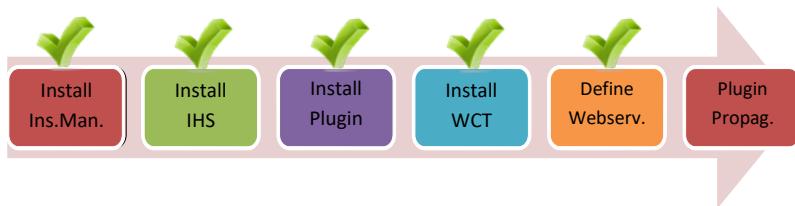


Step 17: You should see the configuration summary and the success message.

```
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 as 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, wasv90-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 Server repository.
ADMA5005I: The application DefaultApplication is configured in the WebSphere Application Server repository.
ADMA5005I: The application DefaultApplication is configured in the WebSphere Application Server repository.
ADMA5005I: The application DefaultApplication is configured in the WebSphere Application Server 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 modules may require a restart when a save is performed.
Target mapping is updated for the application DefaultApplication.

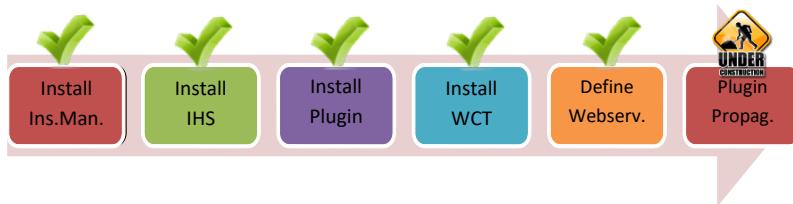
Start saving the configuration.
Configuration save is complete.
[root@wasv90 bin]#
```



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

Selected	Name	Web server Type	Node	Host Name	Version	Status
<input type="checkbox"/>	websv90server	IBM HTTP Server	wavs90Node01	wavs90	ND 9.0.0.0	*

Task 5 is complete!



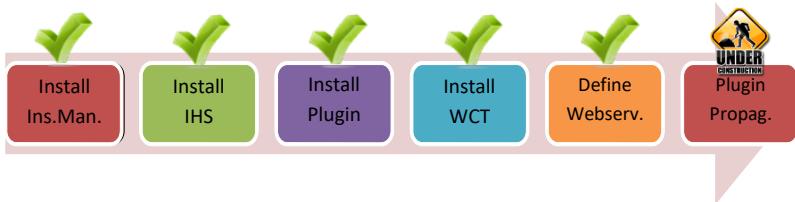
Task 6: Generate and propagate plug-in

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

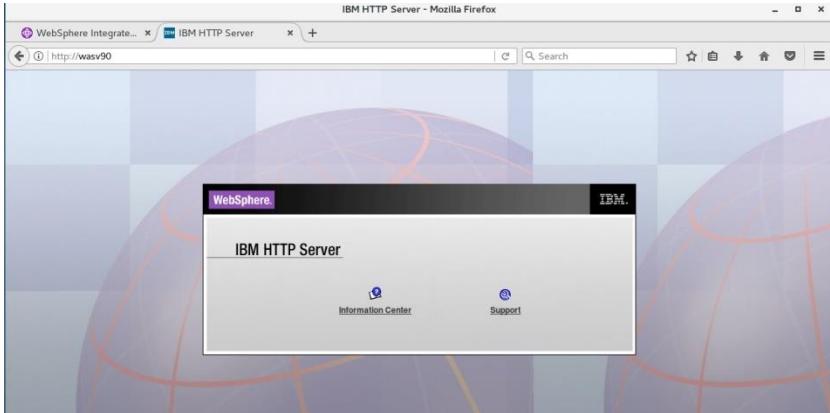
The screenshot shows the 'Web servers' page of the WebSphere Integrated Solutions Console. On the right, there's a table listing a single server: 'FC_IHS' (IBM HTTP Server) with host name 'ihs.fusionclouds.com'. The 'Status' column shows a red asterisk. Below the table, a message says 'Total 1'. On the left, the navigation tree shows 'Server Types' expanded, with 'Web servers' selected. At the top, there are buttons for 'Generate Plug-in', 'Propagate Plug-in', 'New...', 'Delete', 'Templates...', 'Start', 'Stop', and 'Terminate'. The 'Start' button is highlighted with a red box.

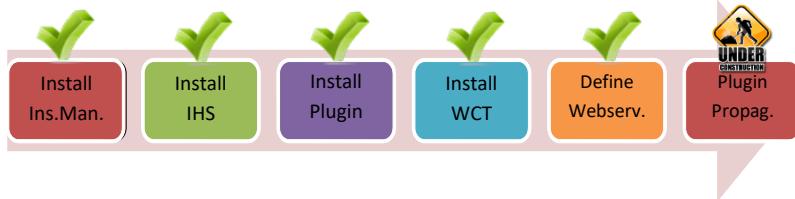
Step 2: Make sure that IHS is started.

This screenshot shows the same 'Web servers' page after the server has been started. The 'Status' column now displays 'ND 9.0.0.0'. A red box highlights this status entry. The rest of the interface is identical to the previous screenshot, with the 'Start' button no longer highlighted.



Step 3: Check if your web server is working.





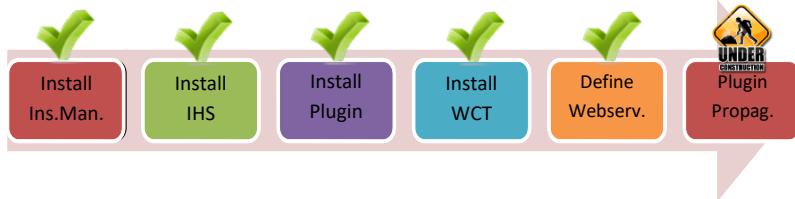
Step 4: Select the web server and then click “Generate Plug-in”.

Web servers

Select	Name	Web server Type	Node	Host Name	Version	Status
<input checked="" type="checkbox"/>	webwasserver	IBM HTTP Server	wav90Node01	wav90	ND 9.0.0.0	
Total: 1						

Messages

Server wav90Node01 webwasserver started successfully. The collection may need to be refreshed to show the current server status.



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

Web servers

Use this page to view a list of the installed web servers.

Select	Name	Web server Type	Node	Host Name	Version	Status
<input checked="" type="checkbox"/>	webwasserver	IBM HTTP Server	wasv90Node01	wasv90	ND 9.0.0	
Total: 1						

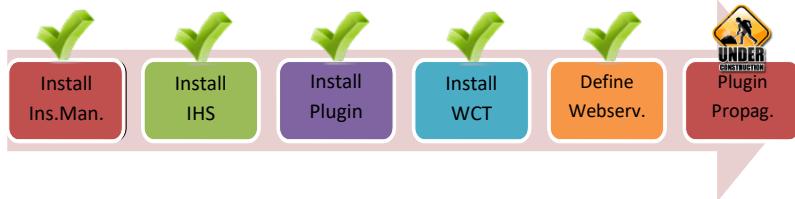
Messages

- PLC0062: The plug-in configuration file is propagated from /opt/IBM/WebSphere/AppServer/profiles/Dmgr01/config/cells/wasv90Cell01/nodes/wasv90Node01/servers/webwasserver/plugin-cfg.xml to /opt/IBM/WebSphere/Plugins/config/webwasserver/plugin-cfg.xml. The propagation of the Web server completed.
- PLC0074: The plug-in configuration file is complete for the Web server, wasv90Cell01/wasv90Node01/webwasserver.
- PLC0074: The node is already synchronized and the plug-in configuration file is already propagated. wasv90Cell01/wasv90Node01.

Web servers

Use this page to view a list of the installed web servers.

Select	Name	Web server Type	Node	Host Name	Version	Status
<input type="checkbox"/>	webwasserver	IBM HTTP Server	wasv90Node01	wasv90	ND 9.0.0	
Total: 1						



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

WebSphere Integrated Solutions Console - Mozilla Firefox

Cell-wasv90Cell01, Profile-Dmgr01

Web servers

Use this page to view a list of the installed web servers.

Web servers

Generate Plug-in Propagate Plug-in New... Delete Templates... Start Stop Terminate

Select	Name	Web server Type	Node	Host Name	Version	Status
<input checked="" type="checkbox"/>	webserver	IBM HTTP Server	wasv90Node01	wasv90	ND 9.0.0.0	
Total: 1						

Help

Field help
For field help information, select a field label or list marker when the help cursor is displayed.

Page help
More information about this page

Command Assistance
View administrative scripting command for last action

WebSphere Integrated Solutions Console - Mozilla Firefox

Cell-wasv90Cell01, Profile-Dmgr01

Web servers

Messages

Server wasv90Node01\webserver stopped successfully. The collection may need to be refreshed to show the current server status.

Web servers

Use this page to view a list of the installed web servers.

Web servers

Generate Plug-in Propagate Plug-in New... Delete Templates... Start Stop Terminate

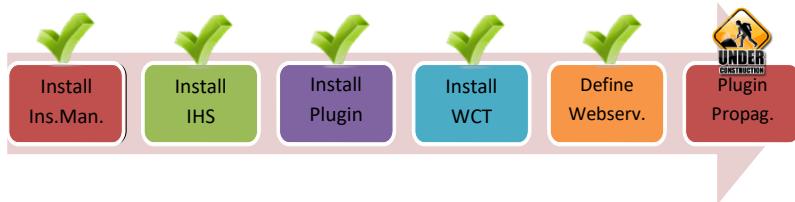
Select	Name	Web server Type	Node	Host Name	Version	Status
<input type="checkbox"/>	webserver	IBM HTTP Server	wasv90Node01	wasv90	ND 9.0.0.0	
Total: 1						

Help

Field help
For field help information, select a field label or list marker when the help cursor is displayed.

Page help
More information about this page

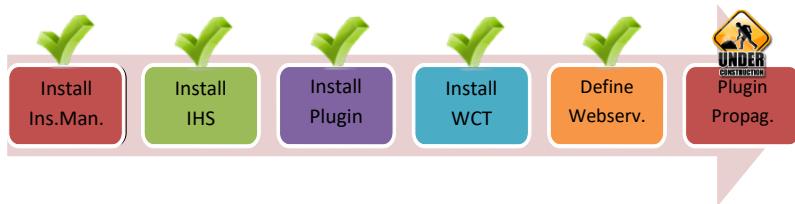
Command Assistance
View administrative scripting command for last action



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

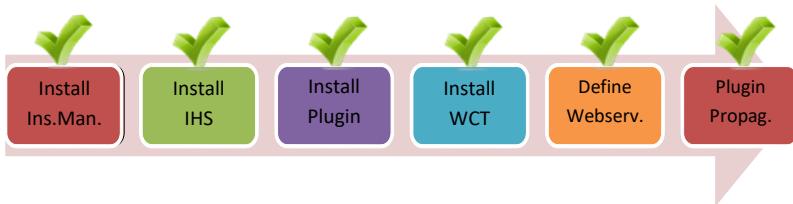
Select	Name	Web server Type	Node	Host Name	Version	Status
<input checked="" type="checkbox"/>	webwasserver	IBM HTTP Server		wasv90	ND 9.0.0	
Total 1						

Select	Name	Web server Type	Node	Host Name	Version	Status
<input type="checkbox"/>	webwasserver	IBM HTTP Server		wasv90Node01	wasv90	
Total 1						



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

```
root@wasv90:/opt/IBM/HTTPServer/bin
File Edit View Search Terminal Help
codeset gsk8          java   man     swidtag
[root@wasv90 HTTPServer]# cd bin/
[root@wasv90 bin]# ls
ab           fcgistarter      htdbm      postinst
adminctl    genHistoryReport.sh htpasswd  postinstall.sh
apachectl   genVersionReport.sh httpd    rotatelogs
apr-1-config gskcapicmd      httxt2dbm  sdk
apu-1-config gskcmd         ikeyman    setupadm
apxs         gsk_envvars     logresolve sidd
dbmmanage   gskver          lua        sslistash
envvars     historyInfo.sh  luac       versionInfo.sh
envvars-std htcacheClean    managesdk.sh
[root@wasv90 bin]#
[root@wasv90 bin]#
[root@wasv90 bin]#
[root@wasv90 bin]#
root@wasv90 bin]# ./apachectl stop
root@wasv90 bin]# ./adminctl stop
httpd (no pid file) not running
root@wasv90 bin]# ./adminctl start
root@wasv90 bin]# ./apachectl start
root@wasv90 bin]#
```



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://waspv90/snoop>)

Screenshot of Mozilla Firefox showing the "Snoop Servlet - Request/Client Information" page. The URL `http://waspv90/snoop` is entered in the address bar. The page displays the following information:

- Requested URL:** `http://waspv90/snoop`
- Servlet Name:** Snoop Servlet
- Servlet Context Initialization Parameters**
 - `WELD_CONTEXT_ID_KEY`: DefaultApplication#DefaultWebApplication.war

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.ihc.doc/ihc/welcome_ihc.html<http://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_manual_WebIHS80.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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