

CHAPTER 4: ADMINISTRATION VIA SCRIPTS

Theory

WebSphere Application Server provides several command line tools for you to stop, start, and check status of application server processes or nodes. Those command line tools can run only local servers and nodes. They are located under 'bin' directory of application server or deployment manager profiles.

While using command line tools, you have to keep in mind that all names of application servers, nodes, or cells are case sensitive. If you fail to supply proper name, scripts will fail.

You should be also careful with running those scripts with proper rights. If you have installed Websphere as administrator on Microsoft operating systems, you have to run some of the commands as administrator.

You cannot run command line tools on a remote server. In order to manage servers remotely, you can use "wsadmin" scripting that connects to deployment manager using SOAP port.

"wsadmin" scripting also allows you to automate repeating tasks more easily and consistently. It gives you a full range of administrative activities.

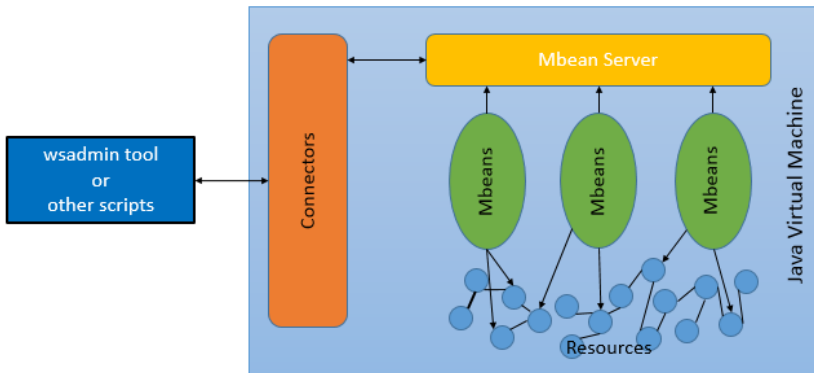
The wsadmin tool has 5 objects available:

- AdminApp contains set of commands to manage installation, removal and editing of the applications.
- AdminConfig contains set of commands to create, remove and modify the elements of WebSphere Application Server.
- AdminControl contains commands that are used for operational control of the objects within the configurations such as start or stop an application server.
- AdminTask has a set of commands that are used for more administration specific tasks such as creating an application server or creating a cluster. Most of the things you can do with AdminTask commands can be done by using other objects, but they will take more lines to perform same thing.

- Help object provides help for each command and object or for the methods, attributes and notifications of MBeans.

The wsadmin tool can work both on local and remote systems. On local mode, you can even work when the application server is down where on remote mode, you have to have the application server up and running. On the other hand, local mode can have issues due to multiple access triggered synchronization of changes.

The wsadmin tool supports Jacl and Jython scripting languages. Although Jacl is the default language for wsadmin, you can change it by giving “-lang jython” parameter or editing the “wsadmin.properties” file under the properties folder of the given profile.



Jacl is a Tcl implementation written in Java and works on Java Virtual Machine. It can also enable communication between Java and Tcl interpreters and that allows you to use scripting functionality in to an existing Java applications.

Jython is a Python programming language implementation written in Java. Jython uses both Python modules and Java classes. You can also import and use any Java class. Jython compiles Python source code to Java bytecodes either on demand or statically.

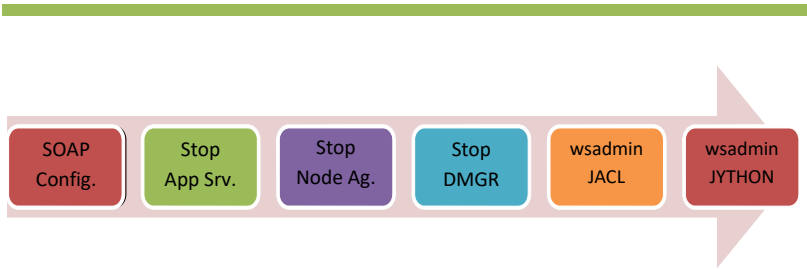
AIM

The aim of the lab exercise is to perform fundamental administrative operations such as stop, start an application server, a node agent and a deployment manager. You will be able to perform those using built-in command line tools and also with Jacl and Jython scripts.

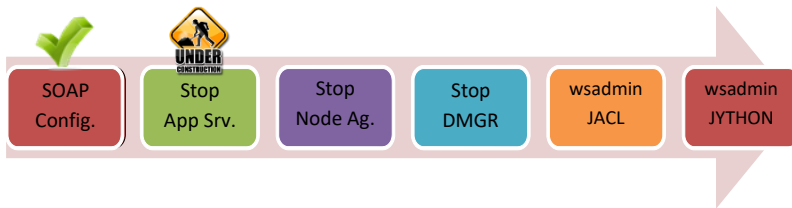
In order to achieve this goal, you will need to perform following tasks:

- Stop & Start Application Server
- Stop & Start Node Agent
- Stop & Start Deployment Manager
- wsadmin scripting with Jacl
- wsadmin scripting with Jython

Lab Exercise 4: ADMINISTRATION VIA SCRIPTS



1. **Stop Application Server**
2. **Start Application Server**
3. **Stop & Start Node Agent**
4. **Stop & Start Deployment Manager**
5. **wsadmin scripting with Jacl**
6. **wsadmin scripting with Jython**



Task 1: Stop Application Server

Step 1: To stop the application server, change directory to the “bin” directory of the profile that server runs and issue command “**stopServer.sh server_name**”.

```

root@wasv90: /opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin
File Edit View Search Terminal Help
[root@wasv90 bin]# ./stopServer.sh server1
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/server1/stopServer.log
ADMU0128I: Starting tool with the AppSrv01 profile
ADMU3100I: Reading configuration for server: server1
ADMU3201I: server stop request issued. Waiting for stop status.
ADMU4000I: server server1 stop completed.

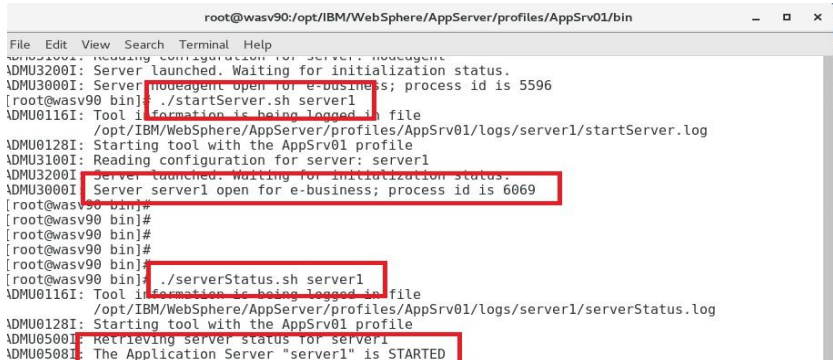
[root@wasv90 bin]# ./serverStatus.sh server1
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/server1/serverStatus.log
ADMU0128I: Starting tool with the AppSrv01 profile
ADMU0500I: Retrieving server status for server1
ADMU0509I: The Application Server "server1" cannot be reached. It appears to be
stopped.
[root@wasv90 bin]#
[root@wasv90 bin]#

```

Task 1 is complete!

Task 2: Start Application Server

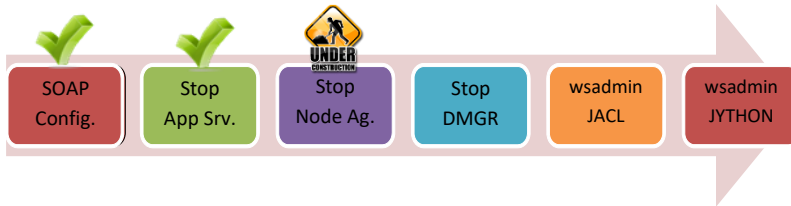
Step 2: For starting, run “startServer.sh server_name”. You can check the status of the server via “serverStatus.sh server_name”.



```

root@wasv90:/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin
File Edit View Search Terminal Help
ADMU0100I: Reading configuration for server: nodeagent
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server nodeagent open for e-business; process id is 5596
[root@wasv90 bin]# ./startServer.sh server1
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/server1/startServer.log
ADMU0128I: Starting tool with the AppSrv01 profile
ADMU3100I: Reading configuration for server: server1
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server server1 open for e-business; process id is 6069
[root@wasv90 bin]#
[root@wasv90 bin]#
[root@wasv90 bin]#
[root@wasv90 bin]#
[root@wasv90 bin]# ./serverStatus.sh server1
[root@wasv90 bin]#
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/server1/serverStatus.log
ADMU0128I: Starting tool with the AppSrv01 profile
ADMU0500I: Retrieving server status for server1
ADMU0500I: The Application Server "server1" is STARTED
  
```

Task 2 is complete!



Task 3: Stop & Start Node Agent

Step 1: In order to stop the node agent, please issue the command “stopNode.sh”.

```

root@wasv90:/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin
File Edit View Search Terminal Help
[root@wasv90 bin]# ./serverStatus.sh -all
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/serverStatus.log
ADMU0128I: Starting tool with the AppSrv01 profile
ADMU0500I: Retrieving server status for all servers
ADMU0500I: Servers found in configuration:
ADMU0506I: Server name: nodeagent
ADMU0506I: Server name: server1
ADMU0508I: The Node Agent "nodeagent" is STARTED
ADMU0508I: The Application Server "server1" is STARTED
[root@wasv90 bin]#
[root@wasv90 bin]#
[root@wasv90 bin]# ./stopNode.sh
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/nodeagent/stopServer.log
ADMU0128I: Starting tool with the AppSrv01 profile
ADMU3100I: Reading configuration for server: nodeagent
ADMU3201I: Server stop request issued. Waiting for stop status.
ADMU4000I: Server nodeagent stop completed.
[root@wasv90 bin]#
[root@wasv90 bin]# ./serverStatus.sh nodeagent
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/nodeagent/serverStatus.log
ADMU0500I: Retrieving server status for nodeagent
ADMU0509I: The Node Agent "nodeagent" cannot be reached. It appears to be
stopped.
[root@wasv90 bin]#
[root@wasv90 bin]#

```

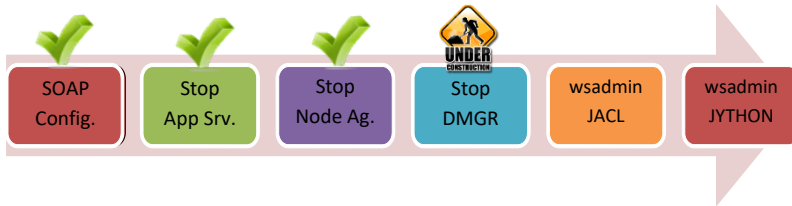
Step 2: Run “startNode.sh” to start the node agent.

```

root@wasv90:/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin
File Edit View Search Terminal Help
[root@wasv90 bin]#
[root@wasv90 bin]# ./serverStatus.sh nodeagent
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/nodeagent/serverStatus.log
ADMU0128I: Starting tool with the AppSrv01 profile
ADMU0500I: Retrieving server status for nodeagent
ADMU0509I: The Node Agent "nodeagent" cannot be reached. It appears to be
stopped.
[root@wasv90 bin]#
[root@wasv90 bin]# ./startNode.sh
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/nodeagent/startServer.log
ADMU0128I: Starting tool with the AppSrv01 profile
ADMU3100I: Reading configuration for server: nodeagent
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server nodeagent open for e-business; process id is 8863
[root@wasv90 bin]# ./serverStatus.sh nodeagent
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/nodeagent/serverStatus.log
ADMU0128I: Starting tool with the AppSrv01 profile
ADMU0500I: Retrieving server status for nodeagent
ADMU0508I: The Node Agent "nodeagent" is STARTED
[root@wasv90 bin]#
[root@wasv90 bin]#

```

Task 3 is complete!



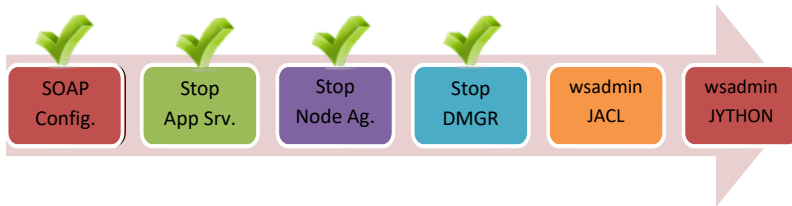
Task 4: Stop & Start Deployment Manager

Step 1: Change directory to the “bin” directory of the deployment manager and run “stopManager.sh” to stop.

```

root@wasv90:/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/bin
File Edit View Search Terminal Help
[root@wasv90 bin]# ./serverStatus.sh dmgr
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/logs/dmgr/serverStatus.l
og
ADMU0128I: Starting tool with the Dmgr01 profile
ADMU0500I: Retrieving server status for dmgr
ADMU0508I: The Deployment Manager "dmgr" is STARTED
[root@wasv90 bin]# ./stopServer.sh dmgr
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/logs/dmgr/stopServer.log
ADMU0128I: Starting tool with the Dmgr01 profile
ADMU3100I: Reading configuration for server: dmgr
ADMU3201I: Server stop request issued. Waiting for stop status.
ADMU4000I: Server dmgr stop completed.

[root@wasv90 bin]#
[root@wasv90 bin]# ./serverStatus.sh dmgr
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/logs/dmgr/serverStatus.l
og
ADMU0128I: Starting tool with the Dmgr01 profile
ADMU0500I: Retrieving server status for dmgr
ADMU0509I: The Deployment Manager "dmgr" cannot be reached. It appears to be
stopped.
[root@wasv90 bin]#
  
```

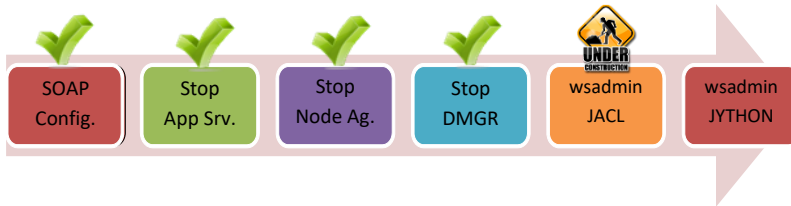
Step 2: Run “startManager.sh” to start deployment manager. You can always run “serverStatus.sh dmgr” to check the status of deployment manager.

```

root@wasv90:/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/bin
File Edit View Search Terminal Help
[root@wasv90 bin]# ./serverStatus.sh dmgr
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/logs/dmgr/serverStatus.l
og
ADMU0128I: Starting tool with the Dmgr01 profile
ADMU0500I: Retrieving server status for dmgr
ADMU0509I: The Deployment Manager "dmgr" cannot be reached. It appears to be
stopped
[root@wasv90 bin]# ./startServer.sh dmgr
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/logs/dmgr/startServer.lo
g
ADMU0128I: Starting tool with the Dmgr01 profile
ADMU3100I: Reading configuration for server: dmgr
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server dmgr open for e-business; process id is 9685
[root@wasv90 bin]# ./serverStatus.sh dmgr
ADMU0116I: Tool information is being logged in file
/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/logs/dmgr/serverStatus.l
og
ADMU0128I: Starting tool with the Dmgr01 profile
ADMU0500I: Retrieving server status for dmgr
ADMU0508I: The Deployment Manager "dmgr" is STARTED
[root@wasv90 bin]#

```

Task 4 is complete!



Task 6: “wsadmin” Scripting with Jacl

Step 1: Change directory to

“/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/bin” run the command “wsadmin.sh”.

“\$Help help” command will show you the basic help information.

```

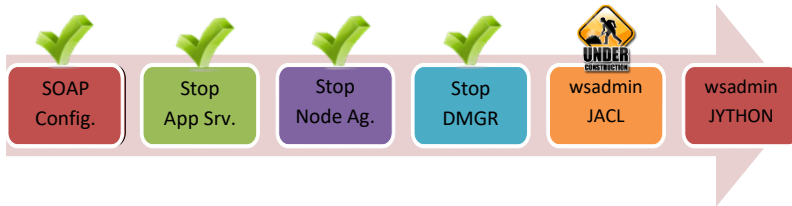
root@wasv90:/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/bin
File Edit View Search Terminal Help
root@wasv90 bin# ./wsadmin.sh
IASX7209I: Connected to process "dmgr" on node wasv90CellManager01 using SOAP connector; The type of
process is: DeploymentManager
root@wasv90 bin# $Help help
IASX7031I: For help, enter: "print Help.help()"
wsadmin>$Help help
IASX7020I: The Help object has two purposes:

    First, provide general help information for the objects
    supplied by wsadmin for scripting: Help, AdminApp, AdminConfig,
    AdminControl and AdminTask.

    Second, provide a means to obtain interface information about
    MBeans running in the system. For this purpose, a variety of
    commands are available to get information about the operations,
    attributes, and other interface information about particular
    MBeans.

    The following commands are supported by Help; more detailed
    information about each of these commands is available by using the
    "help" command of Help and supplying the name of the command
    as an argument.

attributes          Given an MBean, returns help for attributes
operations           Given an MBean, returns help for operations
constructors         Given an MBean, returns help for constructors
description          Given an MBean, returns help for description
notifications        Given an MBean, returns help for notifications
classname           Given an MBean, returns help for classname
all                 Given an MBean, returns help for all the above
help                Returns this help text
adminControl         Returns general help text for the AdminControl object
adminConfig          Returns general help text for the AdminConfig object
adminApp             Returns general help text for the AdminApp object
  
```



Step 2: Run the command “`$AdminConfig list Cell`” to list all the cells. When you get the list of the cells, run “`$AdminConfig showAttribute cell_id name`” where *cell_id* is the output of previous command, to get the name of the cell.

```

root@wasv90:/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/bin

File Edit View Search Terminal Help

[root@wasv90 bin]#
[root@wasv90 bin]# wsadmin
bash: wsadmin: command not found...
[root@wasv90 bin]# ./ws
wsadmin.sh          wsdbgen.sh          wsimport.sh         wsschema.sh
ws_ant.sh           wsdeploy.sh         wsjpaversion.sh
wsappid.sh          wsenhancer.sh       wsmapping.sh
wsdb2gen.sh         wsadmin.sh          wsreversemapping.sh

[root@wasv90 bin]# ./wsadmin.sh
WASX7209I: Connected to process "dmgr" on node wasv90CellManager01 using SOAP connector; The type of
process is: DeploymentManager
WASX7203I: For help, enter "print Help.help()"
wsadmin>$AdminConfig list Cell
wasv90Cell01(cells/wasv90Cell01|cell.xml#Cell_1)
wsadmin>$AdminConfig showAttribute wasv90Cell01(cells/wasv90Cell01|cell.xml#Cell_1) name
wasv90Cell01
wsadmin>

```

Step 3: Run “`$AdminConfig list Node cell_id`” to list all the nodes under the cell provided.

“`$AdminConfig showAttribute node_id name`” will give you the name of the node. *node_id* can be gathered from the previous command.

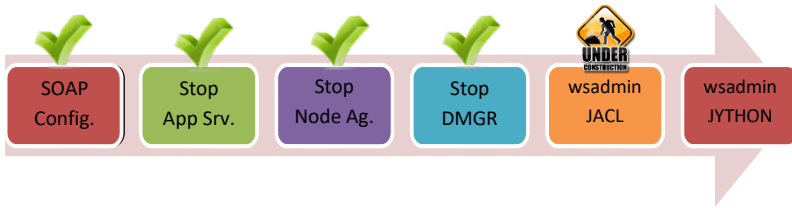
```

root@wasv90:/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/bin

File Edit View Search Terminal Help

wsadmin>
wsadmin>
wsadmin>
wsadmin>$AdminConfig list Cell
wasv90Cell01(cells/wasv90Cell01|cell.xml#Cell_1)
wsadmin>$AdminConfig list Node wasv90Cell01(cells/wasv90Cell01|cell.xml#Cell_1)
wasv90CellManager01(cells/wasv90Cell01/nodes/wasv90CellManager01|node.xml#Node_1)
wasv90Node01(cells/wasv90Cell01/nodes/wasv90Node01|node.xml#Node_1)
wsadmin>$AdminConfig showAttribute wasv90CellManager01(cells/wasv90Cell01/nodes/wasv90CellManager01|no
de.xml#Node_1) name
wasv90CellManager01
wsadmin>$AdminConfig showAttribute wasv90Node01(cells/wasv90Cell01/nodes/wasv90Node01|node.xml#Node_1)
name
wasv90Node01
wsadmin>

```



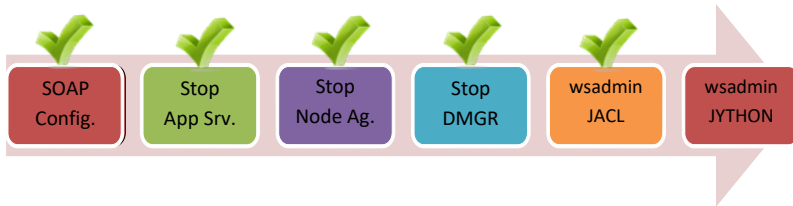
Step 4: In order to stop an application server, please issue the following command:

"\$AdminControl stopServer server_name node_name"

```
wsadmin>
wsadmin>
wsadmin>$AdminControl stopServer server1 wasv90Node01
WASX7337I: Stop completed for server "server1" on node "wasv90Node01" - Waiting for stop completion.
wsadmin>
wsadmin>
```

Step 5: Run ***"\$AdminControl startServer server_name node_name"*** to start an application server.

```
wsadmin>
wsadmin>
wsadmin>$AdminControl startServer server1 wasv90Node01
WASX7262I: Start completed for server "server1" on node "wasv90Node01"
wsadmin>
wsadmin>
```



Step 6: In order to stop a node agent, please issue following 2 commands in “wsadmin” environment:

“set node_agent_name [\$AdminControl queryNames type=NodeAgent,node=*node_name*,*]”
 “\$AdminControl invoke \$node_agent_name stopNode”

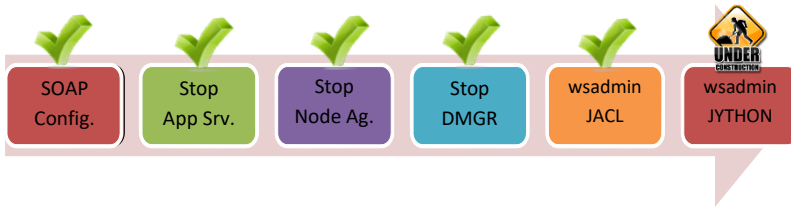
```
wsadmin>
wsadmin>
wsadmin>
wsadmin>set node agent name [$AdminControl queryNames type=NodeAgent,node=wasv90Node01,*]
WebSphere: name=NodeAgent, process=nodeagent, platform=common, node=wasv90Node01, diagnosticProvider=true, version=9.0.0.0, type=NodeAgent, mbeanIdentifier=NodeAgent, cell=wasv90Cell01, spec=1.0
wsadmin>$AdminControl invoke $node_agent_name stopNode
wsadmin>
wsadmin>
```

Step 7: Run following commands to check the status of an application server.

“set server_name [\$AdminControl completeObjectName cell=*cell_name*, node=*node_name*, name=*server_name*, type=Server,*]”
 “\$AdminControl getAttribute \$server_name state”

```
wsadmin>
wsadmin>
wsadmin>set server name [$AdminControl completeObjectName cell=wasv90Cell01,node=wasv90Node01,name=server1,type=Server,*]
WebSphere: name=server1, process=server1, platform=proxy, node=wasv90Node01, j2eeType=J2EEServer, version=9.0.0.0, type=Server, mbeanIdentifier=cells/wasv90Cell01/nodes/wasv90Node01/servers/server1/server.xml#Server_1525949690683, cell=wasv90Cell01, spec=1.0, processType=ManagedProcess
wsadmin>$AdminControl getAttribute $server_name state
STARTED
```

Task 5 is complete!



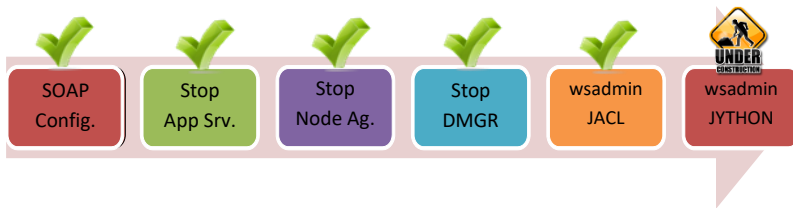
Task 6: “wsadmin” Scripting with Jython

Step 1: Download “wsadminlib.py.zip” from

<http://public.dhe.ibm.com/software/dw/wes/samplescripts/wsadminlib.py.zip> and

“unzip wsadminlib.py.zip” to /opt/IBM/WebSphere/AppSrv/bin and then run “wsadmin”.

```
[root@wasv90 bin]#
[root@wasv90 bin]#
[root@wasv90 bin]#
[root@wasv90 bin]# ./wsadmin.sh
WASX7209I: Connected to process "dmgr" on node wasv90CellManager01 using SOAP connector; The type of
process is: DeploymentManager
WASX7031I: For help, enter: "print Help.help()"
wsadmin>
wsadmin>
wsadmin>
```

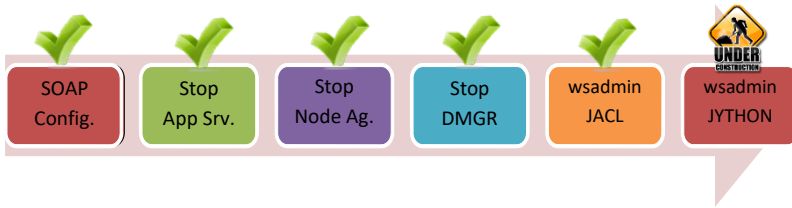


Step 2: Issue command “`execfile('wsadminlib.py')`” to load the file.

```
root@wasv90:/opt/IBM/WebSphere/AppServer/bin
File Edit View Search Terminal Help
wsadmin>execfile("wsadminlib.py")
Id: wsadminlib.py 115 2011-01-03 15:51:00Z dingsor $
wsadmin>
wsadmin>
wsadmin>
wsadmin>
```

Step 3: Issue command “`whatEnv()`” to see your installation whether stand-alone or Network Deployment.

```
root@wasv90:/opt/IBM/WebSphere/AppServer/bin
File Edit View Search Terminal Help
wsadmin>
wsadmin>
wsadmin>
wsadmin>whatEnv()
'nd'
wsadmin>
```

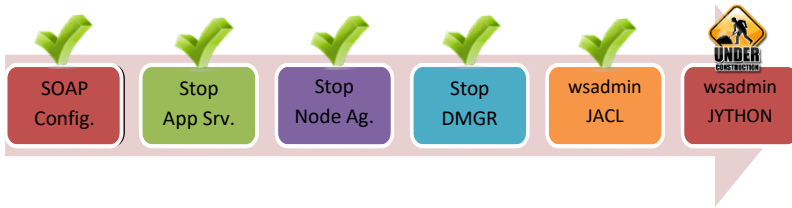


Step 4: “getCellName()” will give you the name of your cell.

```
root@wasv90:/opt/IBM/WebSphere/AppServer/bin
wsadmin>
wsadmin>
wsadmin>getCellName()
u'wasv90Cell01'
wsadmin>
wsadmin>
```

Step 5: “listNodes()” will list all the nodes except for deployment manager node and to see that run “getDmgrNodeName()” command.

```
root@wasv90:/opt/IBM/WebSphere/AppServer/bin
wsadmin>
wsadmin>
wsadmin>listNodes()
(u'wasv90Node01')
wsadmin>
wsadmin>getDmgrNodeName()
u'wasv90CellManager01'
wsadmin>
wsadmin>
wsadmin>
wsadmin>
```

Step 6: “listAllServers()” command will list all application servers.

```

root@wasv90:/opt/IBM/WebSphere/AppServer/bin
File Edit View Search Terminal Help
wsadmin>
wsadmin>
wsadmin>
wsadmin>
wsadmin>
wsadmin>listAllServers()
[[u'wasv90Node01', u'server1']]
wsadmin>
wsadmin>
wsadmin>
wsadmin>

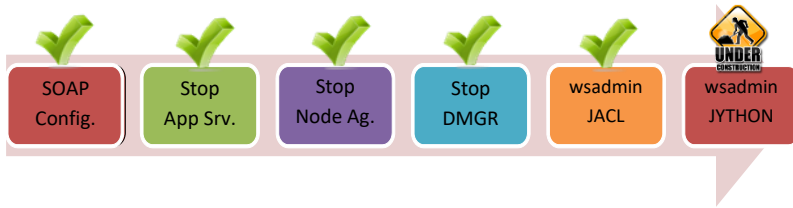
```

Step 7: To stop an application server, “stopServer(“node_name”, “server_name”)”.

```

root@wasv90:/opt/IBM/WebSphere/AppServer/bin
File Edit View Search Terminal Help
wsadmin>execfile("wsadminlib.py")
$Id: wsadminlib.py 115 2011-01-03 15:51:00Z dingsor $
wsadmin>stopServer("WASV90Node01", "server1")
wsadmin>
wsadmin>
wsadmin>
wsadmin>

```



Step 8: “startServer('node_name','server_name')” will start an application server.

```
wsadmin>
wsadmin>
wsadmin>startServer('WASV90Node01',"server1")
wsadmin>
```

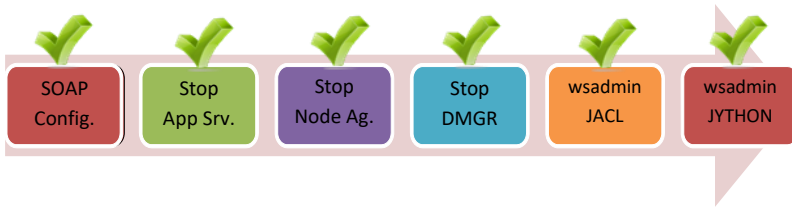
Step 9: It is also possible to create our own python scripts using the existing ones. Create a file named “wsadmin_restart_server.py” and add following lines to the file.

```
execfile('./wsadminlib.py')
enableDebugMessages()
```

```
servername = 'server1' #change with your server name
nodename = 'WASV90Node01' #change with your node name
```

```
#Stop Server server1
stopServer(nodename, servername)
```

```
#Start Server server1
startServer(nodename,servername)
```



Run the following command to restart the configured application server.

`"execfile("wsadmin_restart_server.py")"`

```
wsadmin>
wsadmin>
wsadmin>execfile("wsadmin_restart_server.py")
pid: wsadminlib.py 115 2011-01-03 15:51:00Z dingsor $
pid: wsadminlib.py 115 2011-01-03 15:51:00Z dingsor $
[2018-0506-1317-3400] enableDebugMessages Verbose trace messages are now enabled
; future debug messages will now be printed.
[2018-0506-1317-3500] stopServer: stopping server WASU90Node01.server1 immediate
=0 terminate=0
WASX7337I: Invoked stop for server "server1" on node "WASU90Node01"; Waiting for
stop completion.
[2018-0506-1318-0600] stopServer: stop complete for server WASU90Node01.server1
[2018-0506-1318-0600] startServer: starting server WASU90Node01.server1
[2018-0506-1318-0600] startServer: startServer(server1,WASU90Node01)
[2018-0506-1318-3900] startServer: server WASU90Node01.server1 not running yet.
waiting another 15 secs
wsadmin>
wsadmin>
wsadmin>
```

SUMMARY

WebSphere Applications Server provides you to use several options to perform administration. There are already built in command line tools that gives you the possibility to perform operations such as stop, start, add, remove an application server, node, and cell and so on. It is also possible to use scripting for administration purposes. For that, you can use either Jacl or Jython using 'wsadmin' tool. It is both possible to send commands one by one through 'wsadmin' tool and feeding files of scripts to 'wsadmin' tool. Scripting allows you to manage Websphere remotely.

REFERENCES

- <http://en.wikipedia.org/wiki/Wsadmin>
- <http://www.ibm.com/developerworks/websphere/library/samples/SampleScripts.html>
- http://pic.dhe.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=%2Fcom.ibm.websphere.nd.multiplatform.doc%2Finfo%2Fae%2Fae%2Fcxml_javamanagementx.html

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