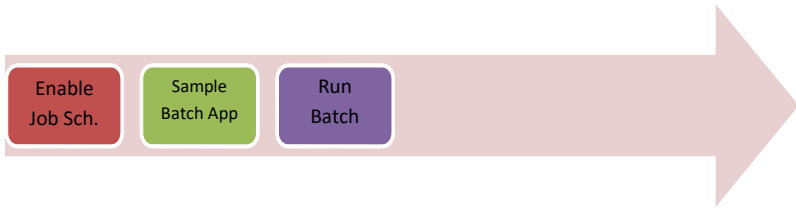
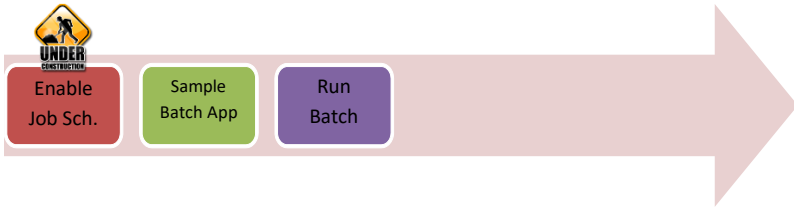


Lab Exercise 13: JOB MANAGEMENT

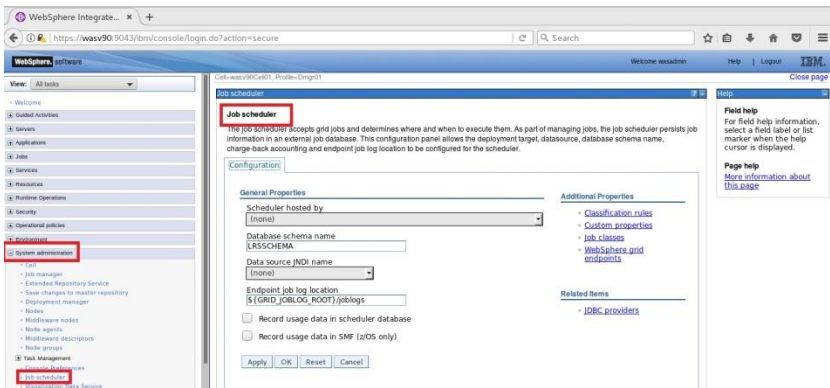


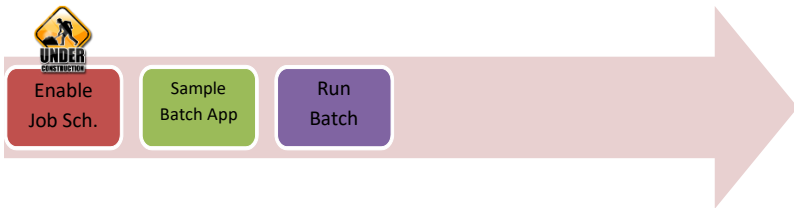
1. **Enable Job Scheduler**
2. **Install a sample batch application**
3. **Run a batch job**



Task 1: Enable Job Scheduler

Step 1: Navigate to “System administration>Job scheduler”.





Step 2: Select the host to be used as scheduler and use “(none)” as JNDI name and click “OK”.

WebSphere Integration console screenshot showing the Job scheduler configuration page. The page title is "Job scheduler". The description states: "The job scheduler accepts grid jobs and determines where and when to execute them. As part of managing jobs, the job scheduler persists job information in an external job database. This configuration panel allows the deployment target, datasource, database schema name, charge-back accounting and endpoint job log location to be configured for the scheduler."

The configuration panel is divided into two main sections: "General Properties" and "Additional Properties".

General Properties:

- Scheduler hosted by:** A dropdown menu showing "WebSphere:cell=wasv90Cell01,node=wasv90Node02,server=server2".
- Database schema name:** A text input field containing "_JRSSHEMA".
- Data source JNDI name:** A dropdown menu showing "(none)".
- Endpoint job log location:** A text input field containing "[\${GRID_JOBLOG_ROOT}]joblogs".
- Record usage data in scheduler database:** A checked checkbox.
- Record usage data in SMF (z/OS only):** An unchecked checkbox.

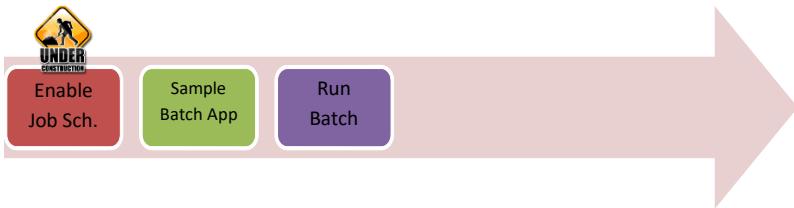
Additional Properties:

- Classification rules:** A link to "Classification rules".
- Custom properties:** A link to "Custom properties".
- Job classes:** A link to "Job classes".
- Security role to configure mapping:** A link to "Security role to configure mapping".
- WebSphere grid endpoints:** A link to "WebSphere grid endpoints".

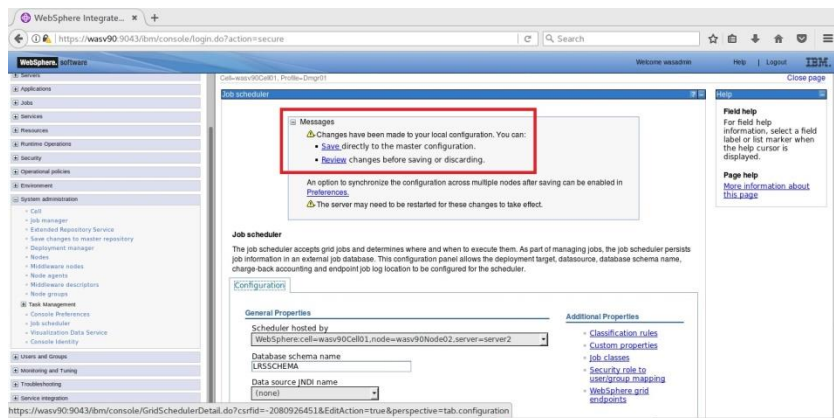
Related Items:

- JDBC providers:** A link to "JDBC providers".

Buttons at the bottom: Apply, OK, Reset, Cancel.



Step 3: Click “Save” to write changes. Please pay attention that “jdbc/lnsched” is created and selected automatically.





Enable
Job Sch.

Sample
Batch App

Run
Batch

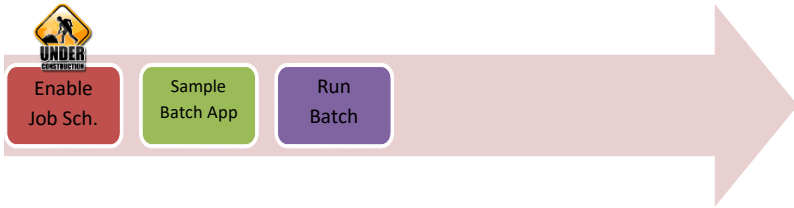
Step 4: Click on “Security role to user/group mapping”.

The screenshot shows the WebSphere Integration console interface. The left sidebar contains a navigation tree with categories like Applications, Services, Resources, Planning Operations, Security, Operational policies, and Environment. The 'Security' category is expanded, showing 'Operational policies' and 'Security'. The 'Security' sub-category is further expanded, showing 'Security role to user/group mapping' and 'WebSphere user endpoints'. The main content area displays the 'Job scheduler' configuration page. The 'General Properties' section includes fields for 'Scheduler hosted by', 'Database schema name', 'Data source (JNDI name)', and 'Endpoint job log location'. The 'Additional Properties' section includes 'Classification rules', 'Custom properties', 'Job classes', and 'Security role to user/group mapping'. The 'Security role to user/group mapping' link is highlighted in the left sidebar and the main content area.

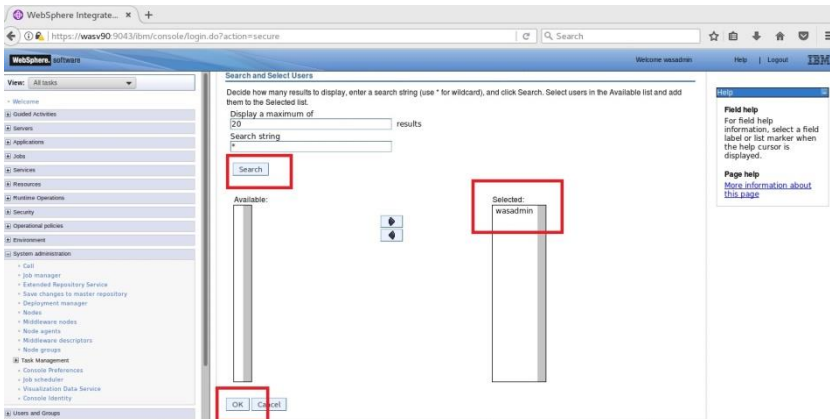
Step 5: Select all the roles and click “Map users”.

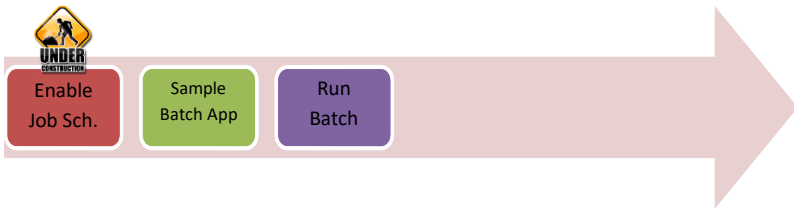
The screenshot shows the 'Security role to user/group mapping' page in the WebSphere Integration console. The page title is 'Job scheduler > Security role to user/group mapping'. The main content area displays a table with columns: 'Select', 'Role', 'Special subjects', 'Mapped users', and 'Mapped groups'. The 'Select' column has checkboxes for 'monitor', 'submitter', and 'admin'. The 'Special subjects' column has 'None' for all roles. The 'Mapped users' and 'Mapped groups' columns are empty. The 'Map Users' button is highlighted in the top left corner of the table area.

Select	Role	Special subjects	Mapped users	Mapped groups
<input checked="" type="checkbox"/>	monitor	None		
<input checked="" type="checkbox"/>	submitter	None		
<input checked="" type="checkbox"/>	admin	None		

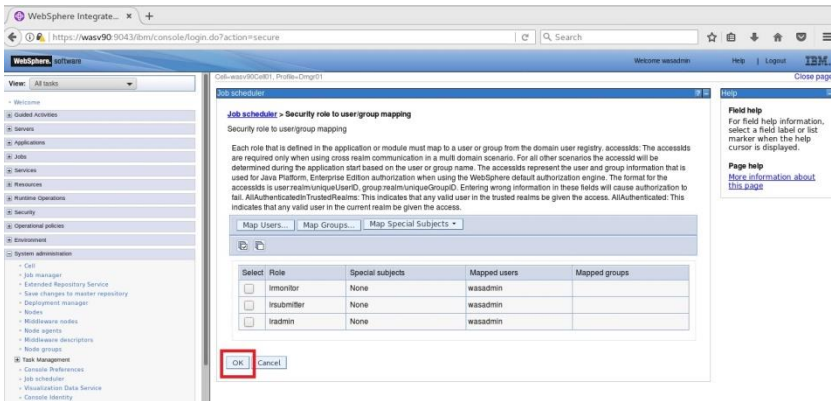


Step 6: Search the administrative user and using arrows add to the selected area and click “OK”.

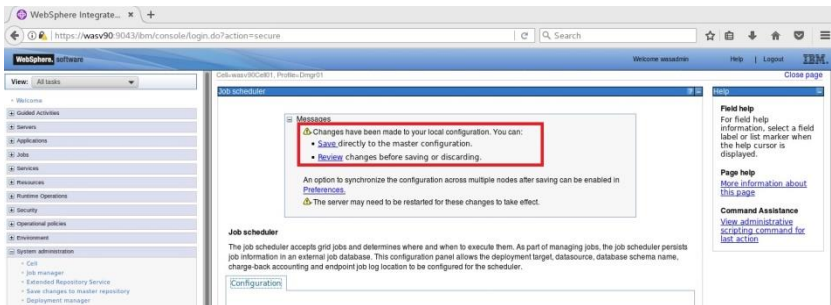


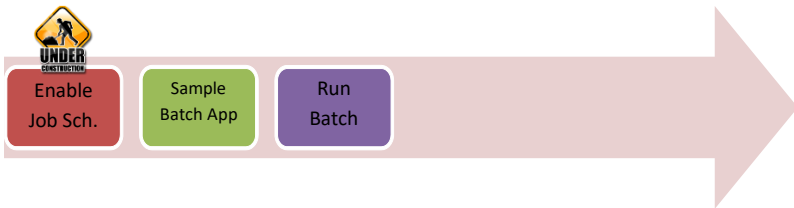


Step 7: Click “OK”.



Step 8: Click “Save” to write changes.





Step 9: Navigate to “Servers>Server Types>WebSphere application servers” and select the job scheduler host and click “Restart”.

WebSphere Integration console screenshot showing the 'Application servers' page. The left sidebar shows the navigation tree with 'Servers' and 'Server Types' highlighted. The main area shows a table of application servers with columns for Name, Node, Host Name, Version, Cluster Name, and Status. The 'server2' row is selected, and the 'Restart' button is highlighted.

Select	Name	Node	Host Name	Version	Cluster Name	Status
<input type="checkbox"/>	App_Server01	wasv90Node01	wasv90	ND 9.0.0.0	WAS_CLUSTER	→
<input type="checkbox"/>	App_Server02	wasv90Node02	wasv90	ND 9.0.0.0	WAS_CLUSTER	→
<input type="checkbox"/>	server1	wasv90Node01	wasv90	ND 9.0.0.0		→
<input checked="" type="checkbox"/>	server2	wasv90Node02	wasv90	ND 9.0.0.0		→

Application server must be restarted successfully.



Enable
Job Sch.

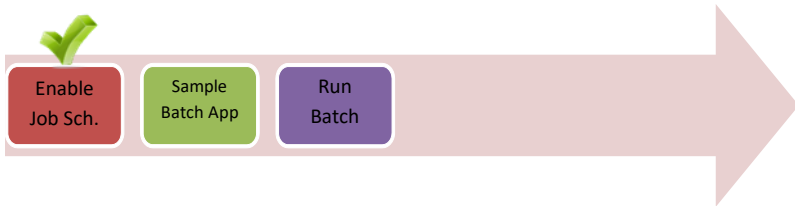
Sample
Batch App

Run
Batch

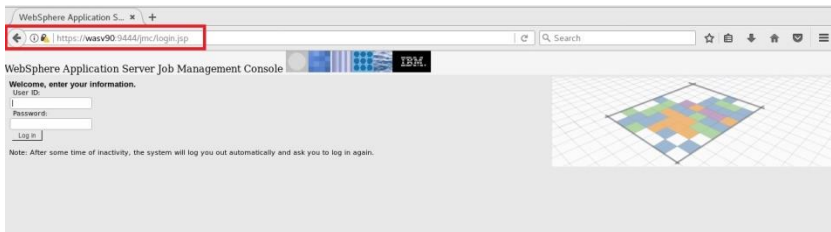
Step 10: Check “WC_defaulthost_secure” port under “Ports” for the job scheduler hosting application server.

The screenshot shows the WebSphere Integration Center console. The left sidebar contains a navigation tree with categories like Servers, Server Types, Clusters, and Applications. The main content area displays the 'Ports' configuration page for the 'WCDEFAULTHOST' server. A table lists various ports and their addresses. The port 'WC_DEFAULTHOST_SECURE' is highlighted with a red box, showing its address as 5063.

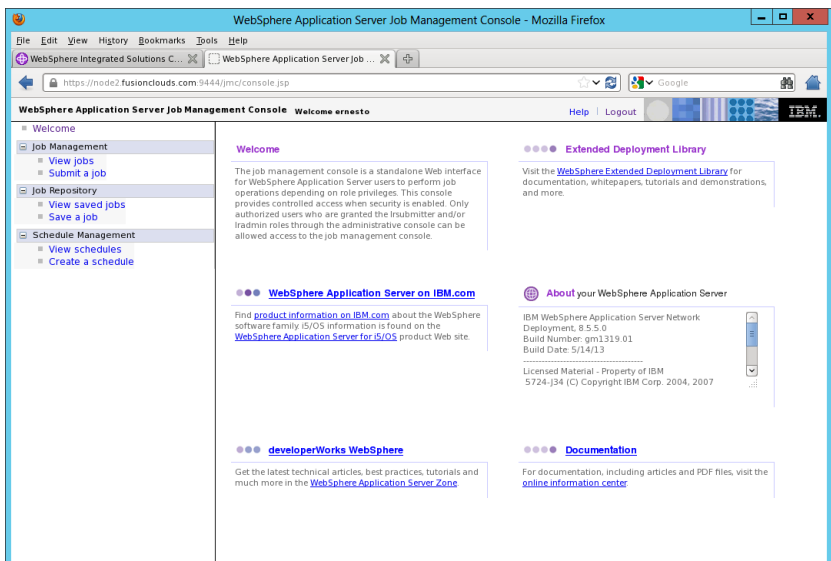
Port Name	Port	Details
BOOTSTRAP_ADDRESS	2812	
SOAP_CONNECTOR_ADDRESS	8882	
ORB_LISTENER_ADDRESS	0	
SAS_SSL_SERVERAUTH_LISTENER_ADDRESS	9407	
CSIV2_SSL_SERVERAUTH_LISTENER_ADDRESS	9408	
CSIV2_SSL_MUTUALAUTH_LISTENER_ADDRESS	9409	
WC_adminhost	9062	
WC_defaulthost	9081	
DCS_UNICAST_ADDRESS	9356	
WC_adminhost_https	9045	
WC_defaulthost_secure	9444	
SIP_DEFAULTHOST	5062	
SIP_DEFAULTHOST_SECURE	5063	
OVERLAY_UDP_LISTENER_ADDRESS	11009	
OVERLAY_TCP_LISTENER_ADDRESS	11010	
IPC_CONNECTOR_ADDRESS	9634	
SIB_ENDPOINT_ADDRESS	7278	
SIB_ENDPOINT_SECURE_ADDRESS	7287	
SIB_MQ_ENDPOINT_ADDRESS	5559	
SIB_MQ_ENDPOINT_SECURE_ADDRESS	5579	



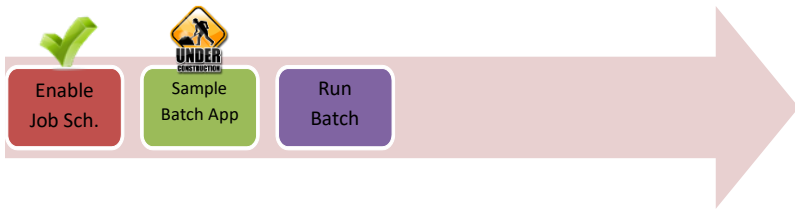
Step 11: Navigate to “https://wasv90:9444/jmc”.



You should be able to login using administrative username and password.



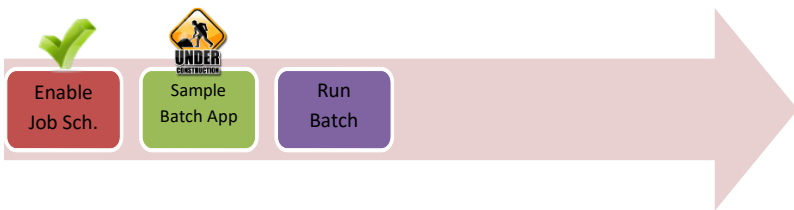
Task 1 is complete!



Task 2: Install a sample batch application

Step 1: Unzip the sample_ivt.zip to “/opt/IBM/”.

```
root@wasv90:~/softwares
File Edit View Search Terminal Help
[root@wasv90 softwares]#
[root@wasv90 softwares]#
[root@wasv90 softwares]#
[root@wasv90 softwares]#
[root@wasv90 softwares]# unzip sample_ivt.zip -d /opt/IBM/
```



Step 2: Change directory to “/opt/IBM/WebSphere/AppServer/derby/databases” and run “java -Djava.ext.dirs=/opt/IBM/WebSphere/AppServer/derby/lib -Dij.protocol=jdbc:derby: org.apache.derby.tools.ij /opt/IBM/IVT/scripts/CreateIVTTablesDerby.ddl”.

```
File Edit View Search Terminal Help
root@wasv90 databases# java -Djava.ext.dirs=/opt/IBM/WebSphere/AppServer/derby/lib -Dij.protocol=jdbc:derby: org.apache.derby.tools.ij /opt/IBM/IVT/scripts/CreateIVTTablesDerby.ddl
ij version 10.11
ij> -- Scriptfile to create a Derby database for the CGI test bucket application. This script
-- can be modified if needed to change the name of database or name of the Schema used. Default
-- database name is IVTDB and default schema name is IVTSCHEMA
-- The script will produce the IVTDB Derby database in the directory
-- from which it is invoked.
-- Process This script in the ij command line processor.
-- Example
-- java -Djava.ext.dirs=C:/WebSphere/AppServer/derby/lib -Dij.protocol=jdbc:derby: org.apache.derby.tools.ij CreateIVTTablesDerby.ddl

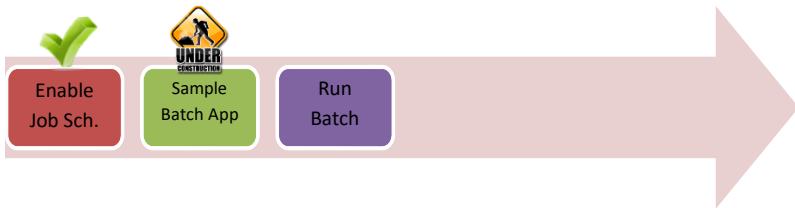
CONNECT 'jdbc:derby:IVTDB;create=true';
ij> DROP TABLE "IVTSCHEMA"."IVTTABLE";
ERROR 42Y07: Schema 'IVTSCHEMA' does not exist
ij> CREATE TABLE "IVTSCHEMA"."IVTTABLE" (

    "JOBID" VARCHAR(250) NOT NULL ,
    "COUNT" INTEGER NOT NULL,
    "RECORD" VARCHAR(256) )

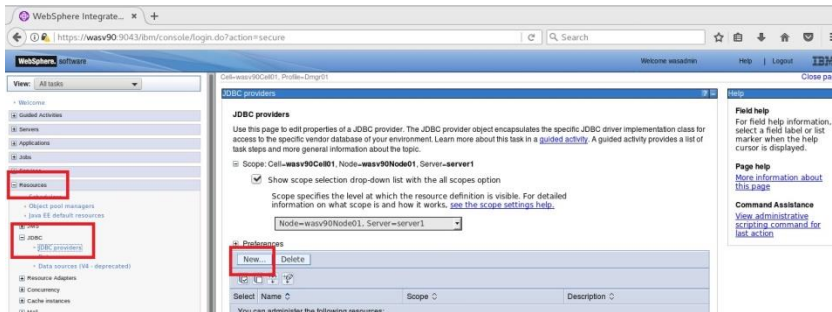
0 rows inserted/updated/deleted
ij> ALTER TABLE "IVTSCHEMA"."IVTTABLE"

    ADD CONSTRAINT "PK_ACCOUNT" PRIMARY KEY

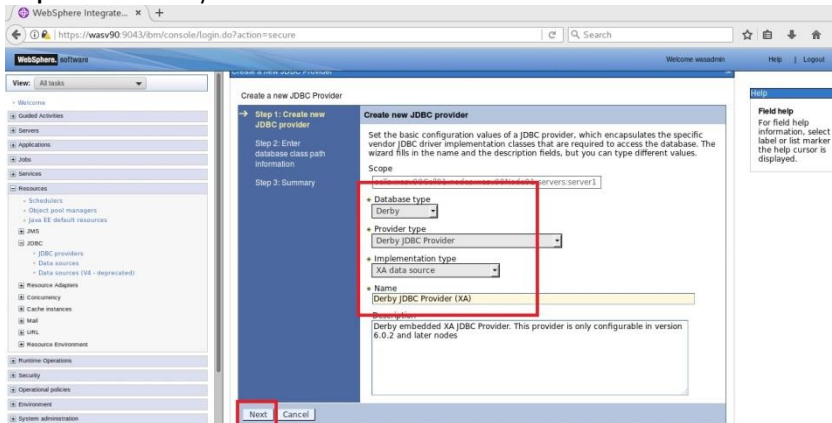
    ("JOBID","COUNT");
0 rows inserted/updated/deleted
ij> COMMIT WORK;
ij> DISCONNECT;
root@wasv90 databases#
```

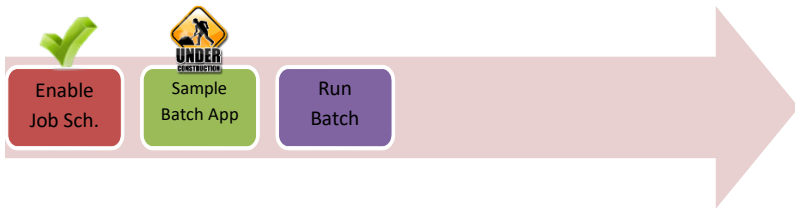


Step 3: Navigate to “Resources>JDBC>JDBC providers” and click “New”.

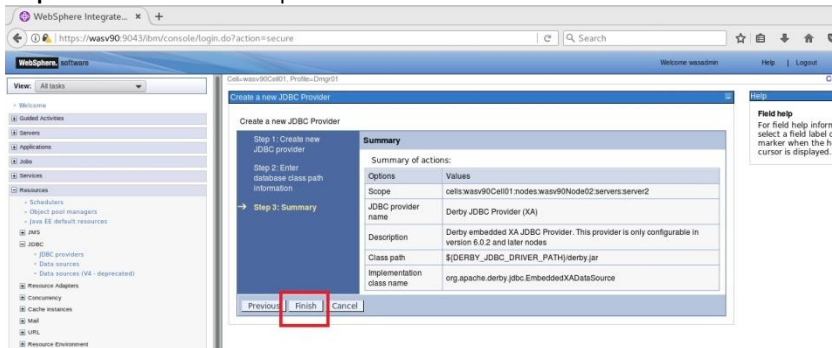


Step 4: Add a “Derby” database as follows.

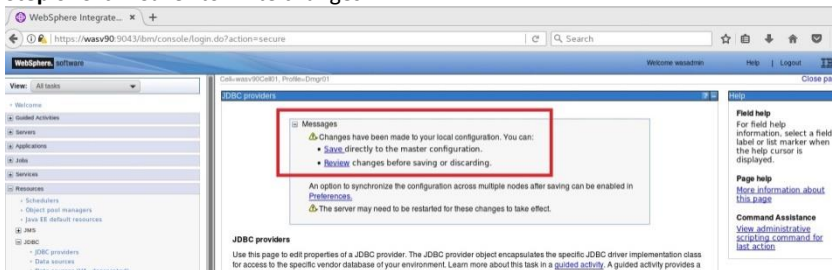


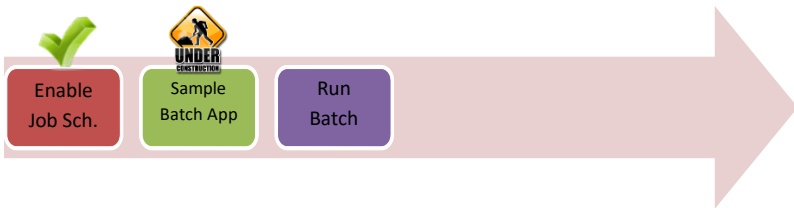


Step 5: Click “Finish” to complete.

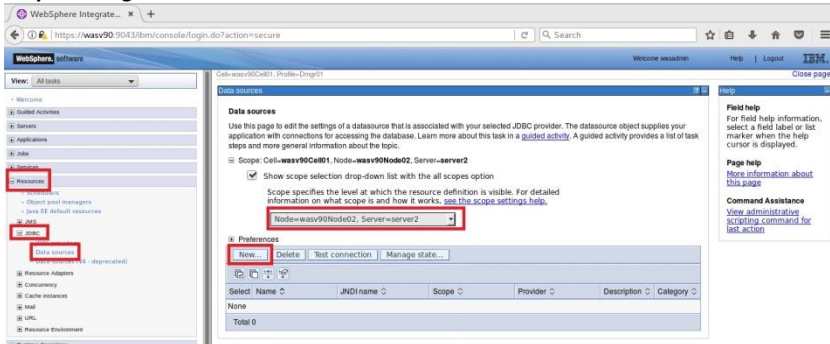


Step 6: Click “Save” to write changes.

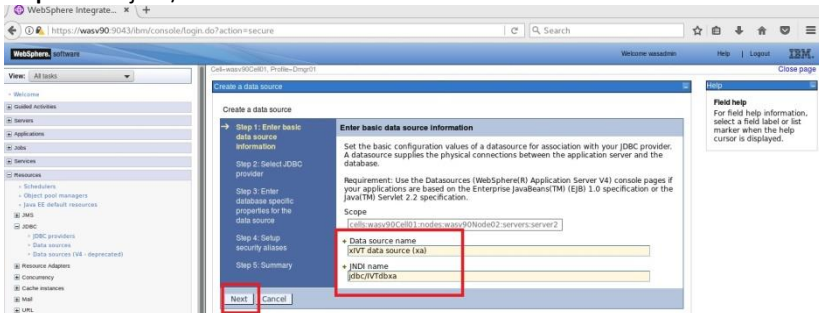


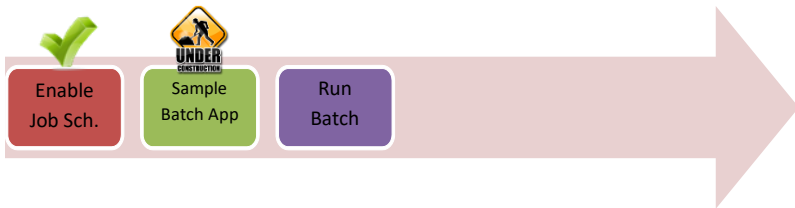


Step 7: Navigate to “Resources>JDBC>Data sources” and click “New”.



Step 8: Use “jdbc/IVTdbxa” as JDNI name and click “Next”.



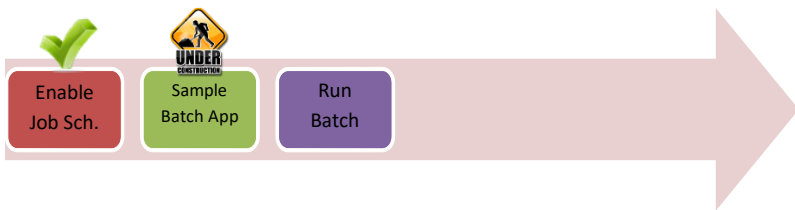


Step 9: Select “Derby JDBC Provider (XA)” and click “Next”.

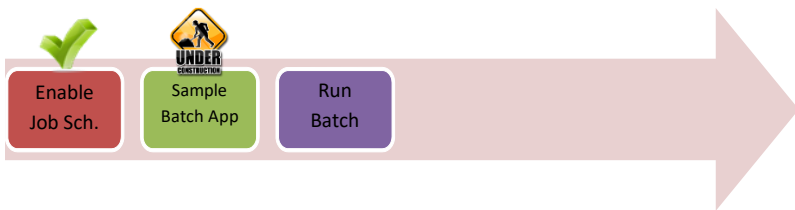
WebSphere Integration Center console screenshot showing the 'Create a data source' wizard. The wizard is at Step 2: Select JDBC provider. The 'Select an existing JDBC provider' option is selected, and 'Derby JDBC Provider (XA)' is chosen from the dropdown menu. The 'Next' button is highlighted with a red box.

Step 10: Enter “/opt/IBM/WebSphere/AppServer/derby/databases/IVTDB” and click “Next”.

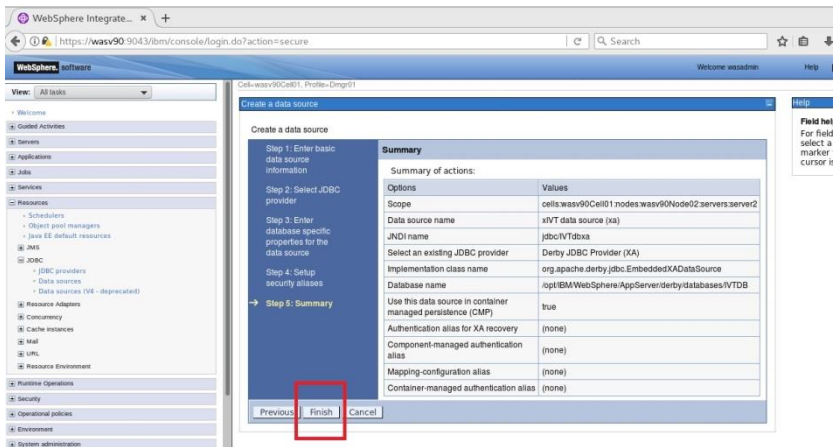
WebSphere Integration Center console screenshot showing the 'Create a data source' wizard. The wizard is at Step 3: Enter database specific properties for the data source. The 'Database name' field is filled with '/opt/IBM/WebSphere/AppServer/derby/databases/IVTDB'. The 'Use this data source in container managed persistence (CMP)' checkbox is checked. The 'Next' button is highlighted with a red box.



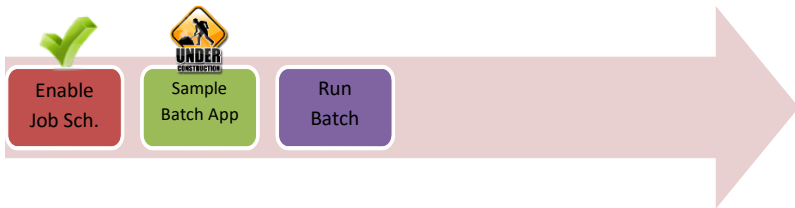
Step 11: Click “Next” to continue.



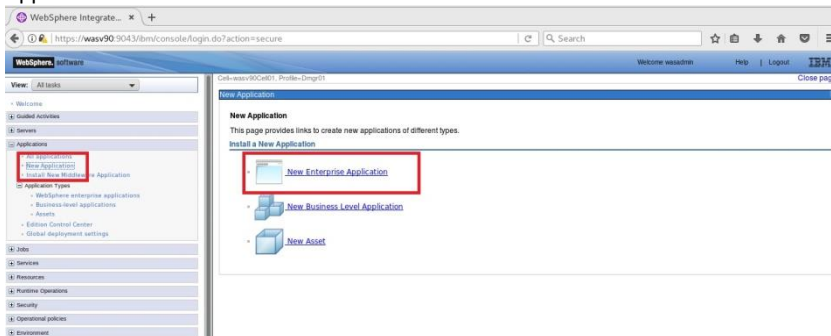
Step 12: Click “Finish” to complete.



Select the new data source and click “Test connection” to verify the database connectivity.

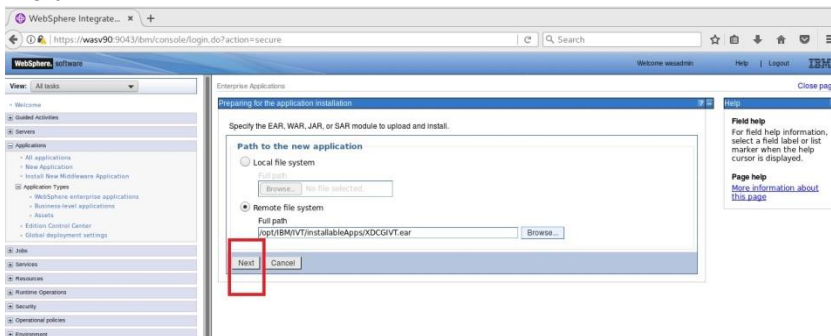


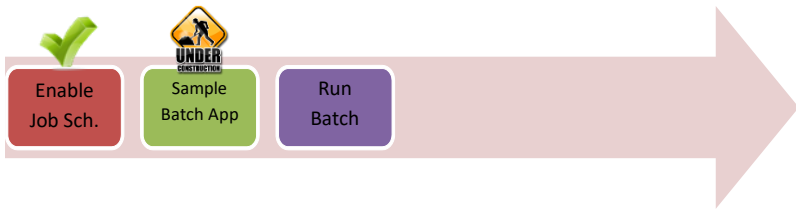
Step 14: Navigate to “Applications>New Application” and click “New Enterprise Application”.



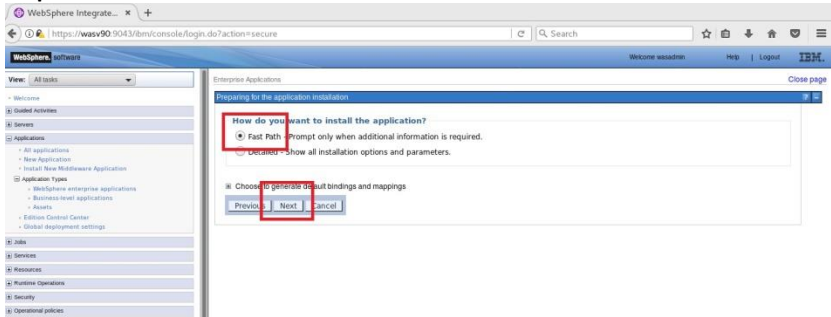
Step 15: Browse

“/opt/IBM/sample_ivt/sample_ivt/IVT/installableApps/XDCGIVT.ear” and click “Next”.

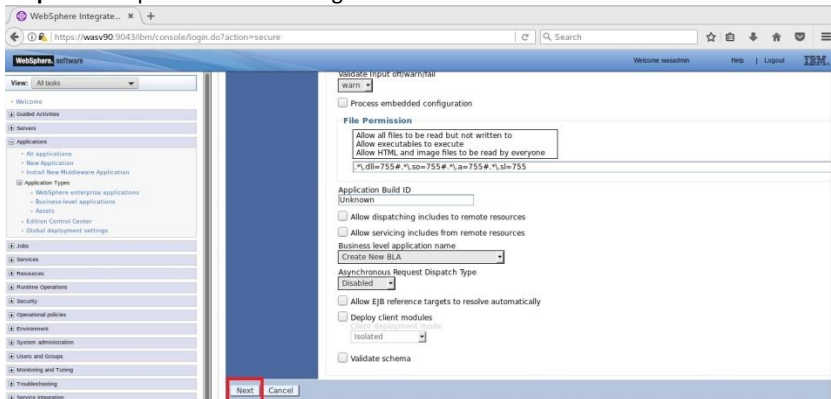


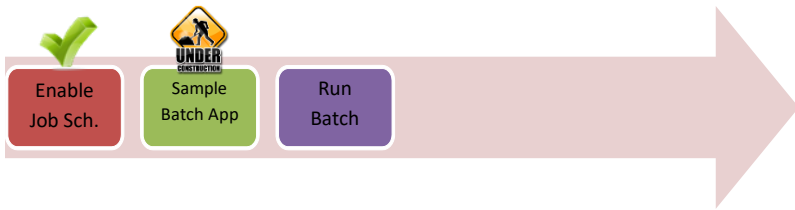


Step 16: Select “Fast Path” and click “Next”.

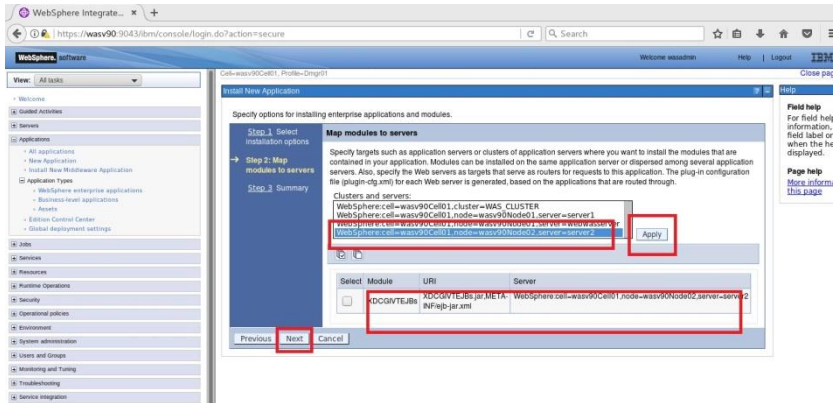


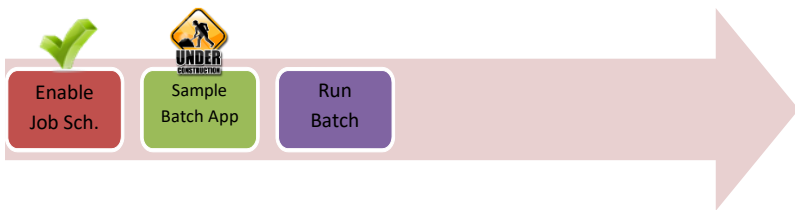
Step 17: Accept the default settings and click “Next”.



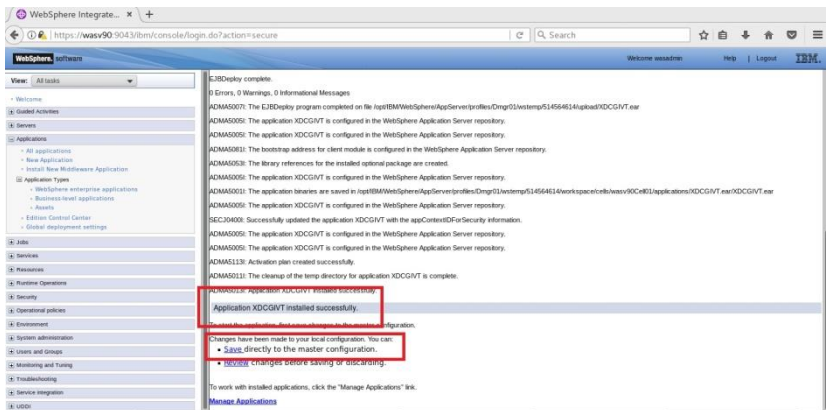


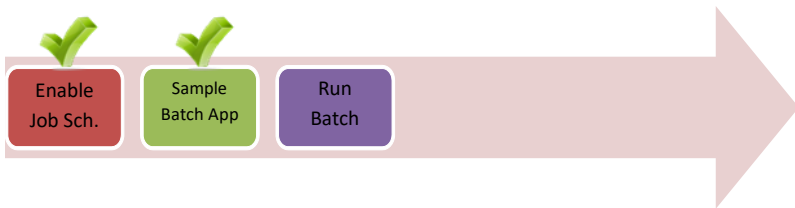
Step 18: Map the application to the application server selected as host of the job scheduler and click “Next”.





Step 19: Click “Finish”. You should see the success message then click “Save”.





Step 21: Restart the application servers.

WebSphere Integrated Solutions console

Application servers

Use this page to view a list of the application servers in your environment and the status of each of these servers. You can also use this page to change the status of a specific application server.

Preferences

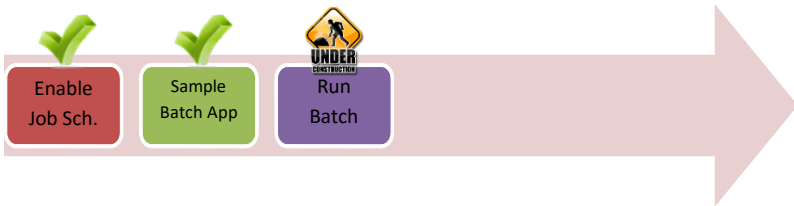
New... Delete... Templates... Start... Stop... **Restart**... ImmediateStop... Terminate...

Selected	Name	Node	Host Name	Version	Cluster Name	Status
<input type="checkbox"/>	App_Server01	wasv90Node01	wasv90	ND 9.0.0.0	WAS_CLUSTER	+
<input type="checkbox"/>	App_Server02	wasv90Node02	wasv90	ND 9.0.0.0	WAS_CLUSTER	+
<input type="checkbox"/>	server1	wasv90Node01	wasv90	ND 9.0.0.0		+
<input checked="" type="checkbox"/>	server2	wasv90Node02	wasv90	ND 9.0.0.0		+

Total: 4

Make sure that restart is successful.

Task 2 is complete!



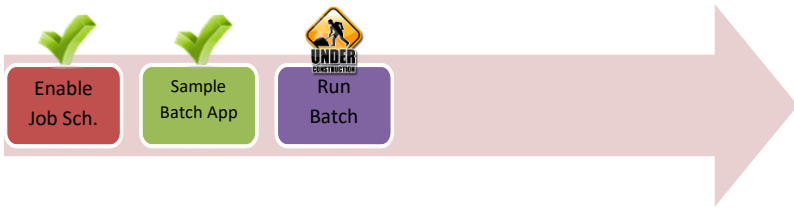
Task 3: Run a batch job

Step 1: Change "inputDataStream" and "outputDataStream" values according to your environment for the "XDCGIVTtxt2txtJCL.xml", "XDCGIVTbyte2bytexJCL.xml" and "XDCGIVTtxt2db2txtJCL.xml" files under "scripts" folder.

```
db2inst1@wasv90:/opt/IBM/IVT/scripts
File Edit View Search Terminal Help
</props>
<substitution-props>
  <prop name="supportclassIn" value="com.ibm.websphere.batch.devfr
amework.datastreams.patterns.TextFileReader" />
  <prop name="supportclassOut" value="com.ibm.websphere.batch.devfr
amework.datastreams.patterns.TextFileWriter" />
  <prop name="inputDataStream" value="/tmp/input-text.txt" />
  <prop name="outputDataStream" value="/tmp/output-text.txt" />
  <prop name="numberRecords" value="100" />
  <prop name="checkPoint" value="10" />
  <prop name="debugEnabled" value="false" />
  <prop name="perfEnabled" value="true" />
  <!-- fileEncoding property needs to be updated appropriately -->
  <!-- prop name="fileEncoding" value="1047" /-->
  <prop name="fileEncoding" value="8859_1"/>
</substitution-props>

<checkpoint-algorithm name="chkpt">
  <classname>com.ibm.wsspi.batch.checkpointalgorithms.recordbased<
/classname>
  <props>
    <prop name="recordcount" value="${checkPoint}" />
  </props>
</checkpoint-algorithm>

<results-algorithms>
-- INSERT --
```

Step 2: Login to “Job Management Console” and click on “Submit a job”. Browse “XDCGIVTtxt2txtJCL.xml” file in “Local file system” and select “Update substitution properties” and click “Submit”.

WebSphere Application Server Job Management Console - Mozilla Firefox

File Edit View History Bookmarks Tools Help

WebSphere Application Server Job Ma...

https://node2.fusionclouds.com:9444/jmc/console.jsp

WebSphere Application Server Job Management Console Welcome ernesto Help Logout

Job Management

- View jobs
- Submit a job**
- Job Repository
 - View saved jobs
 - Save a job
- Schedule Management
 - View schedules
 - Create a schedule

Submit a job

Submit a job
Specify the job definition to submit as a job. The job definition can originate from the local file system. If a job has substitution properties without values, you will be prompted to specify them.

Job Definition

- ☒ Local file system
 - Specify path to xJCL
/opt/IBM/sample_ivt/sample_ivt/scripts/XDCGIVTtxt2txtJCL.xml Browse...
- ☐ Job repository
 - Specify job name
Browse...

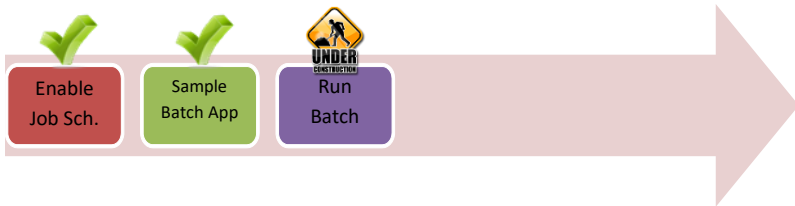
☒ Update substitution properties

☐ Delay submission

Start date (yyyy-MM-dd)
2014-08-31

Start time (HH:mm:ss)
17:09:06

Submit Cancel



Step 3: You can change properties and click “OK”.

WebSphere Application Server Job Management Console - Mozilla Firefox

File Edit View History Bookmarks Tools Help

WebSphere Application Server Job Ma... https://node2.fusionclouds.com:9444/jmc/console.jsp

WebSphere Application Server Job Management Console Welcome ernesto Help Logout

Substitution properties

The job XDCGIVTst2txtJCL.xml has substitution properties. Specify the required substitution properties, then click OK to submit this job.

Property	Value
checkPoint	10
debugEnabled	false
fileEncoding	8859_1
inputDataStream	/tmp/input-text.txt
numberRecords	100
outputDataStream	/tmp/output-text.txt
perfEnabled	true
supportClassName	com.ibm.webSphere.batch.devframework.datastreams.patterns.Te

OK Cancel

Step 4: You should see the job submission success message as follows.

WebSphere Application Server Job Management Console Welcome ernesto Help Logout

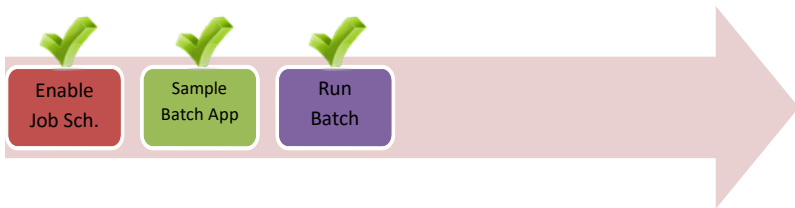
Submit a job

Messages

Successfully submitted the job definition XDCGIVTst2txtJCL.xml with job ID XDCGIVT.000001.

Submit a job

Specify the job definition to submit as a job. The job definition can originate from the local file system. If a job has substitution properties without values, you will be prompted to specify them.



Step 5: You can take actions under “Job Management>View jobs” for the specific job.

WebSphere Application Server Job Management Console - Mozilla Firefox

WebSphere Application Server Job Management Console: Welcome ernesto

Job Management

- View jobs
- Submit a job

Job Repository

- View saved jobs
- Save a job

Schedule Management

- View schedules
- Create a schedule

Jobs

View the list of all jobs submitted to the job scheduler. To perform a job operation, select a job, choose an action from the Select action menu, and click Apply. Reduce the job list view using the filter control.

Preferences

Apply

Select	Job ID	Submitter	Last Update	State	Node	Associated Server
<input type="checkbox"/>	XDC-QJVT-000001	ernesto	2014-05-31 21:32:42.543	Submitted		

Filtered: 1 Total: 1

Task 3 is complete!

SUMMARY

Batch applications are used to run complex and long tasks that contain typically transactional and multi-step processes. WebSphere Application Server uses an XML based language, xJCL, to provide consistent architecture that is optimized for Java and long running batch applications. A batch job contains directives to run one or more batch applications. Batch applications are Java EE applications that are designed to run in a non-interactive mode to complete business critical jobs.

REFERENCES

- http://pic.dhe.ibm.com/infocenter/rsahelp/v8/index.jsp?topic=%2Fcom.ibm.server.tools.doc%2Ftopics%2Fbatch%2Fr_profiletemplate_WAS8.html
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