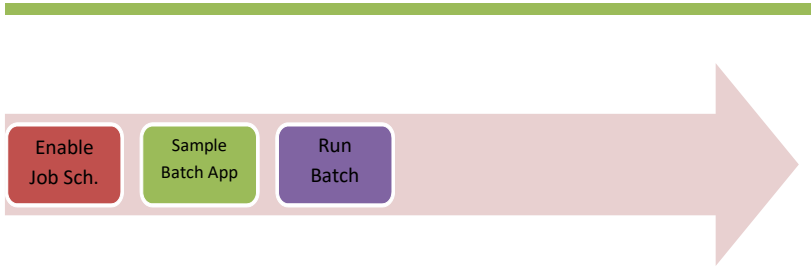
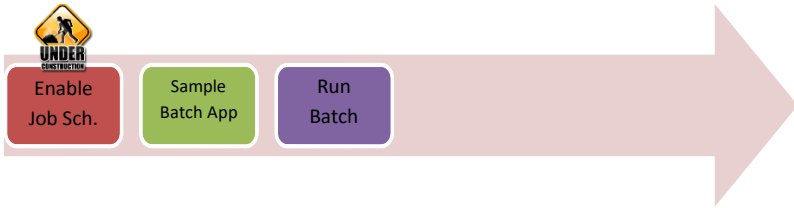


## Lab Exercise 13: JOB MANAGEMENT

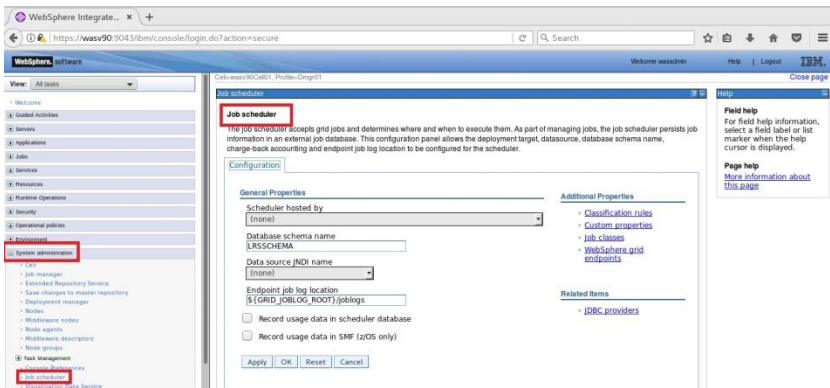


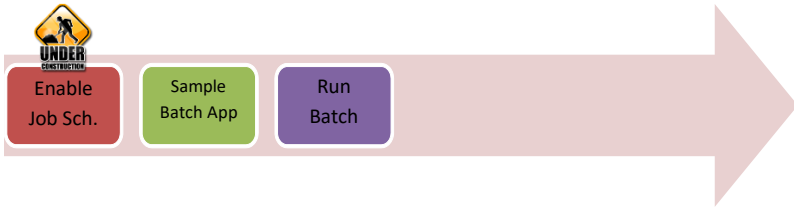
1. **Enable Job Scheduler**
2. **Install a sample batch application**
3. **Run a batch job**



## 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 Developer Console

Job Scheduler Configuration

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.

**General Properties**

Scheduler hosted by: WebSphere:cell=wasv90Cell01,node=wasv90Node02,server=server2

Database schema name: JRSSHEMA

Data source JNDI name: (none)

Endpoint job log location: [\${GRID\_JOBLOG\_ROOT}]joblogs

☒ Record usage data in scheduler database

☐ Record usage data in SMF (z/OS only)

Buttons: Apply, OK, Reset, Cancel

**Additional Properties**

- Classification rules
- Custom properties
- Job classes
- Security role to configure mapping
- WebSphere grid endpoints

**Related Items**

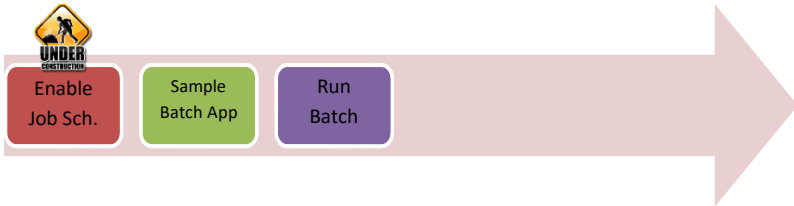
- JDBC providers

**Field help**

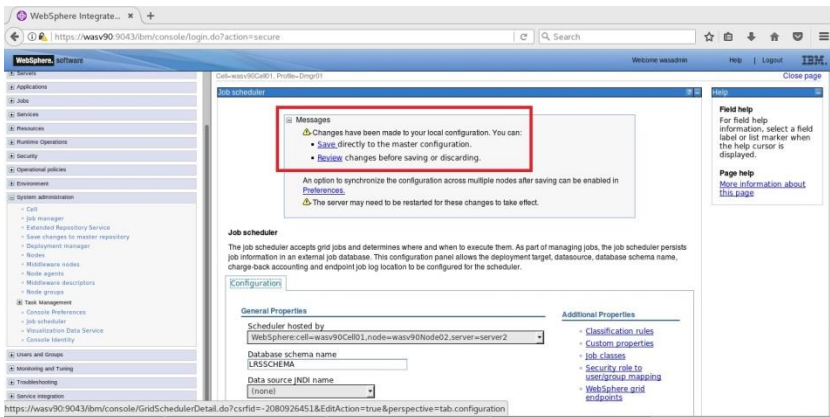
For field help information, select a field label or list marker when the help cursor is displayed.

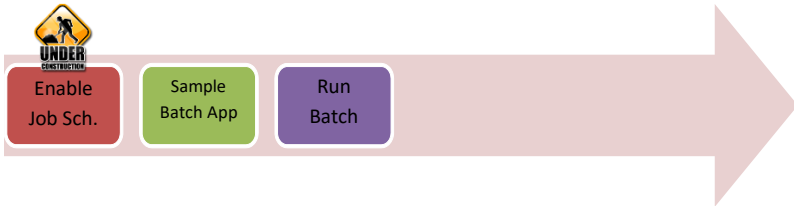
**Page help**

More information about this page

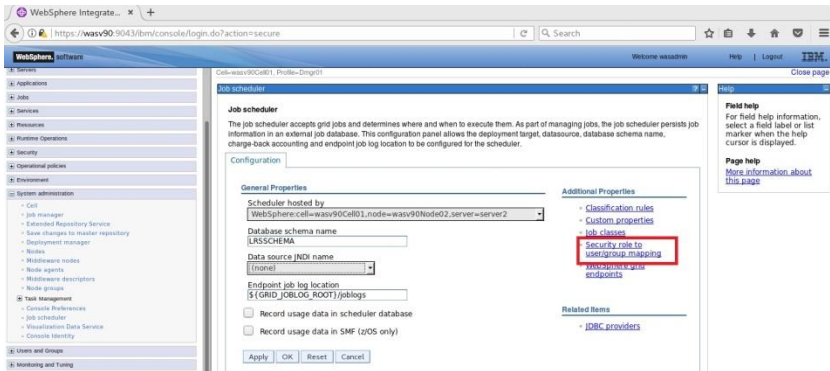


**Step 3:** Click “Save” to write changes. Please pay attention that “jdbc/lnsched” is created and selected automatically.

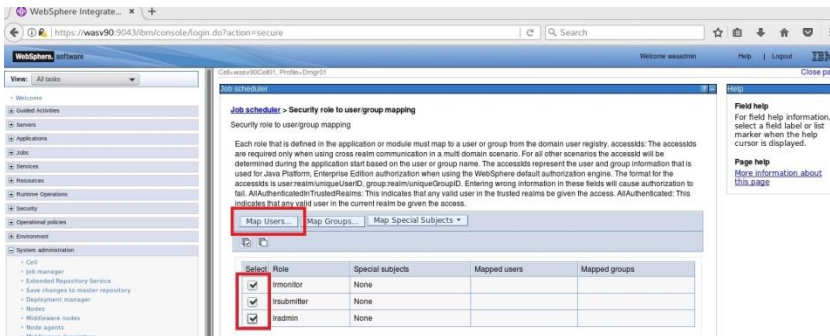


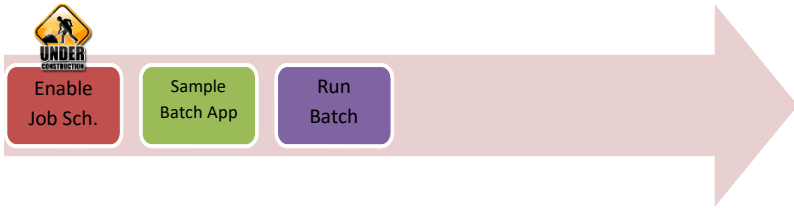


**Step 4:** Click on “Security role to user/group mapping”.

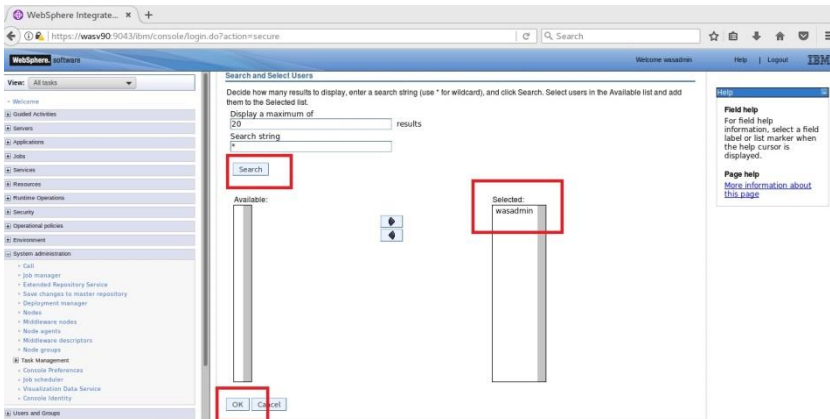


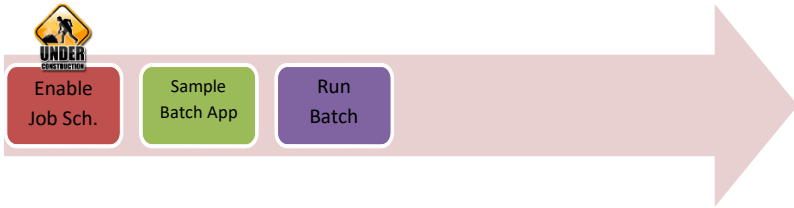
**Step 5:** Select all the roles and click “Map users”.



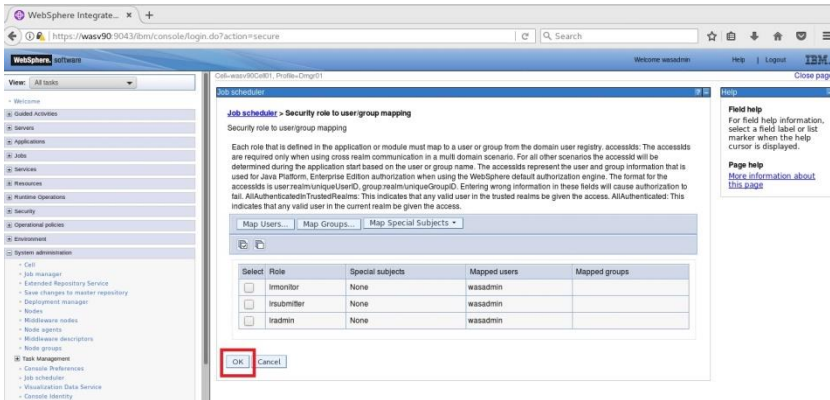


**Step 6:** Search the administrative user and using arrows add to the selected area and click “OK”.

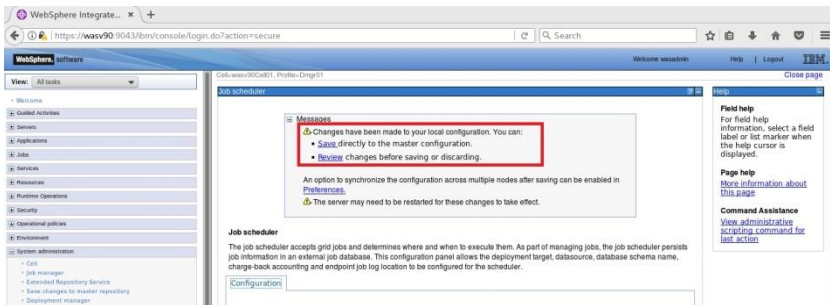


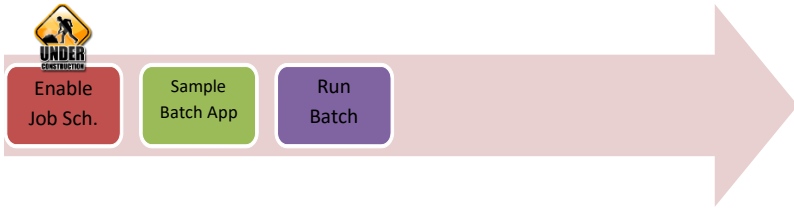


**Step 7:** Click “OK”.



**Step 8:** Click “Save” to write changes.





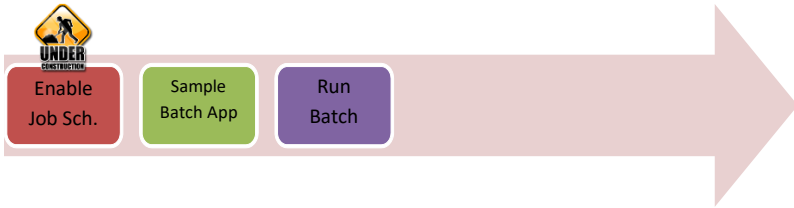
**Step 9:** Navigate to “Servers>Server Types>WebSphere application servers” and select the job scheduler host and click “Restart”.

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. The 'Restart' button is highlighted in the top toolbar. The table lists three servers: App\_Server01, App\_Server02, and server2. The 'server2' row is selected with a checkbox.

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 checked="" type="checkbox"/>	server2	wasv90Node02	wasv90	ND 9.0.0.0		➔

Application server must be restarted successfully.

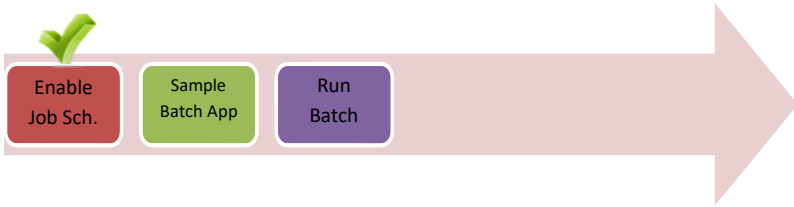




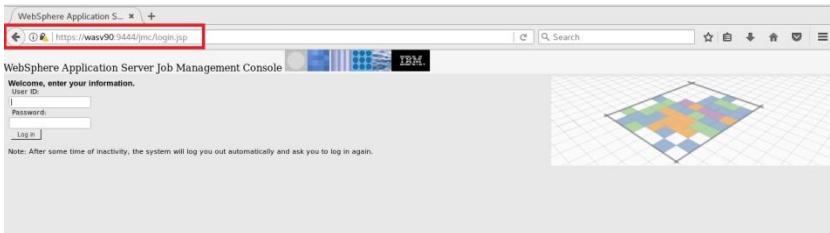
**Step 10:** Check “WC\_defaulthost\_secure” port under “Ports” for the job scheduler hosting application server.

The screenshot shows the WebSphere Integration console interface. On the left, a navigation pane lists various server types and components. The main area displays the 'Ports' tab for a selected server. A table lists various ports and their corresponding addresses. The port 'WC\_defaulthost\_secure' is highlighted with a red box, showing its address as 9444.

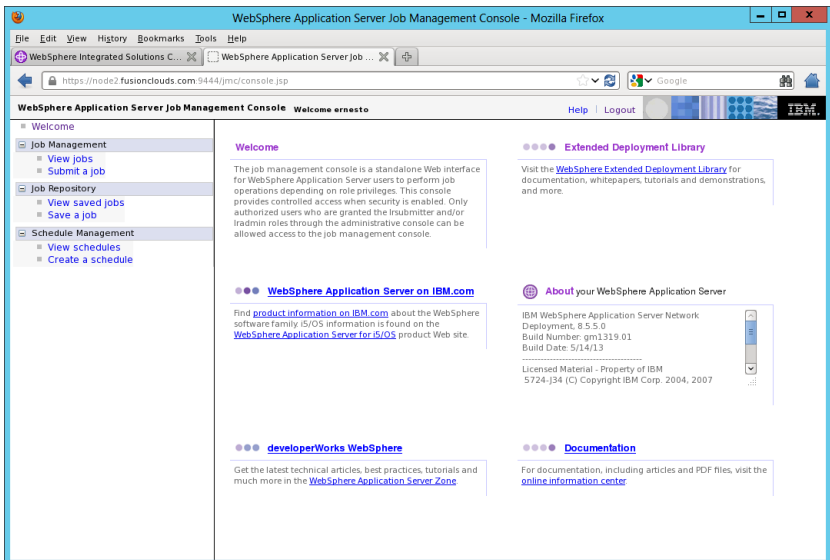
Port Name	Port	Details
BOOTSTRAP_ADDRESS	2812	
SOAP_CONNECTOR_ADDRESS	8882	
ORB_LISTENER_ADDRESS	0	
SAS_SSL_SERVERAUTH_LISTENER_ADDRESS	9407	
CSIV2_SSL_SERVERAUTH_LISTENER_ADDRESS	9408	
CSIV2_SSL_MUTUALAUTH_LISTENER_ADDRESS	9409	
WC_adminhost	9062	
WC_defaulthost	9081	
DCS_UNICAST_ADDRESS	9356	
DCS_UNICAST_ADDRESS	9045	
WC_adminhost_https	9444	
WC_defaulthost_secure	9444	
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	



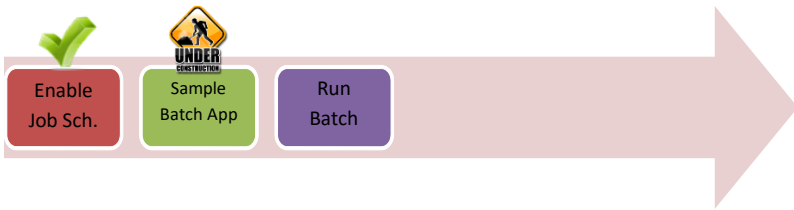
**Step 11:** Navigate to “https://wasv90:9444/jmc”.



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



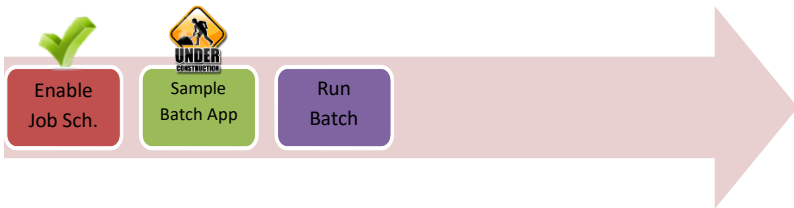
**Task 1 is complete!**



## 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

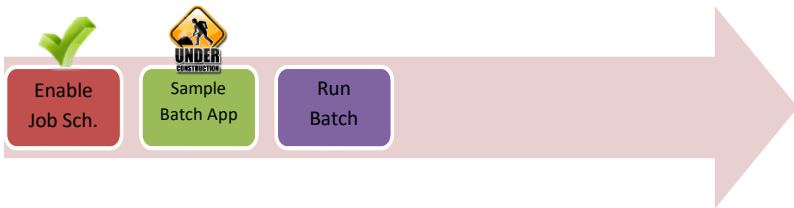
CONNECT 'jdbc:derby:IVTDB;create=true';
ij> DROP TABLE "IVTSCHEMA"."IVTTABLE";
ERROR 42Y07: Schema 'IVTSCHEMA' does not exist
ij> CREATE TABLE "IVTSCHEMA"."IVTTABLE" (

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

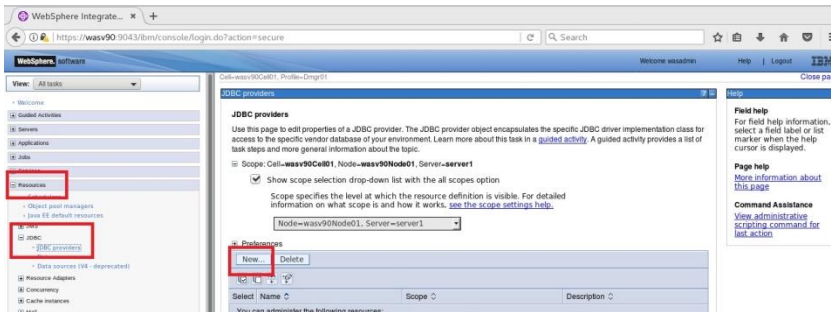
0 rows inserted/updated/deleted
ij> ALTER TABLE "IVTSCHEMA"."IVTTABLE"

    ADD CONSTRAINT "PK_ACCOUNT" PRIMARY KEY

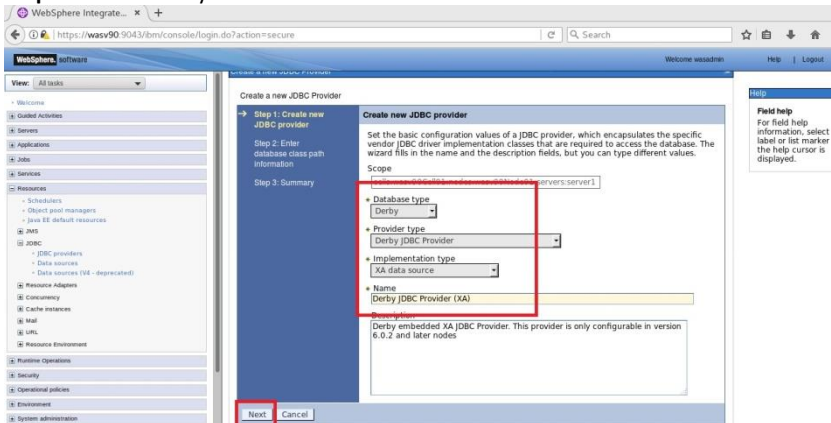
    ("JOBID","COUNT");
0 rows inserted/updated/deleted
ij> COMMIT WORK;
ij> DISCONNECT;
root@wasv90 databases#
  
```

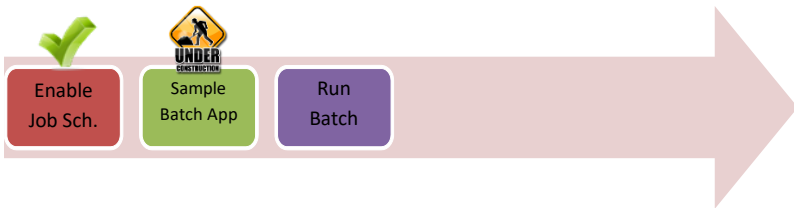


**Step 3:** Navigate to “Resources>JDBC>JDBC providers” and click “New”.

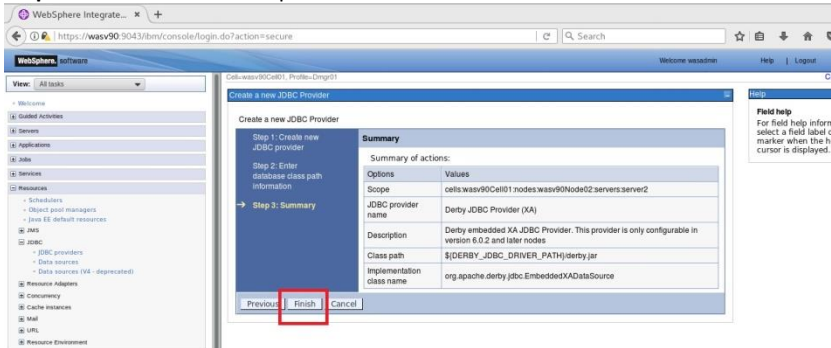


**Step 4:** Add a “Derby” database as follows.

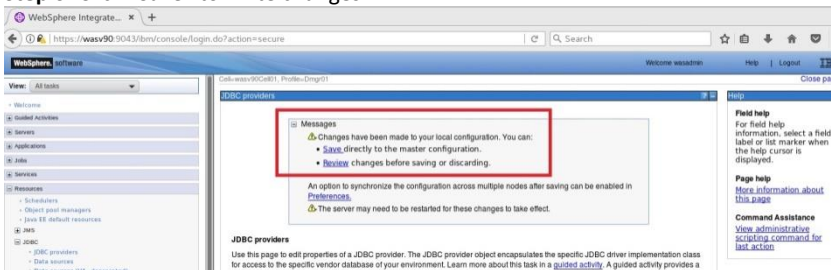


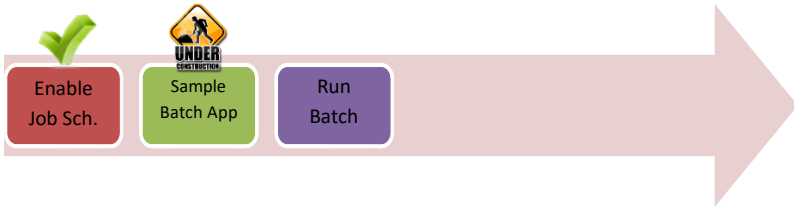


**Step 5:** Click “Finish” to complete.

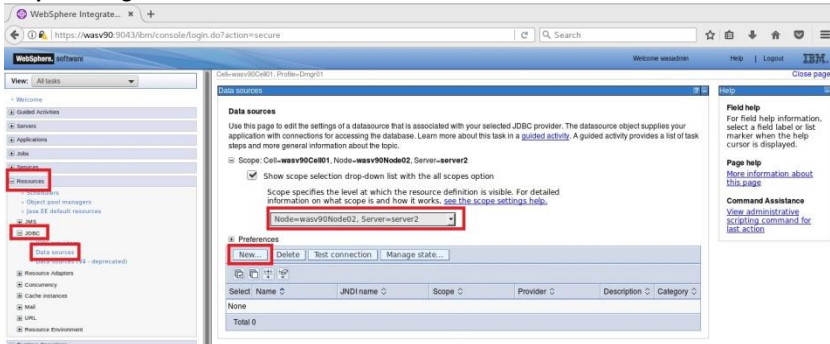


**Step 6:** Click “Save” to write changes.

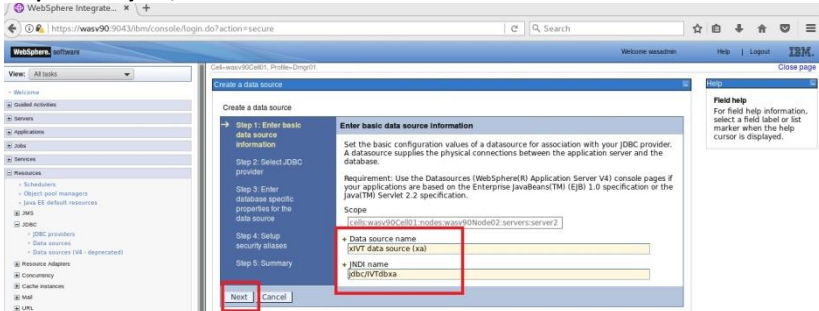


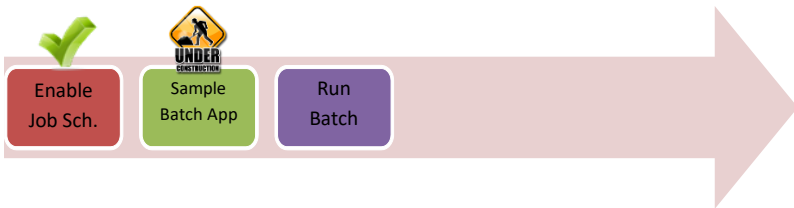


**Step 7:** Navigate to “Resources>JDBC>Data sources” and click “New”.



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





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

WebSphere Integrated Solutions console - Create a data source wizard

Step 2: Select JDBC provider

Select a JDBC provider to support the datasource. If you choose to create a new JDBC provider, it will be created at the same scope as the datasource. If you are selecting an existing JDBC provider, only those providers at the current scope are available from the list.

☐ Create new JDBC provider

☒ Select an existing JDBC provider

Derby JDBC Provider (XA)

Previous Next Cancel

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

WebSphere Integrated Solutions console - Create a data source wizard

Step 3: Enter database specific properties for the data source

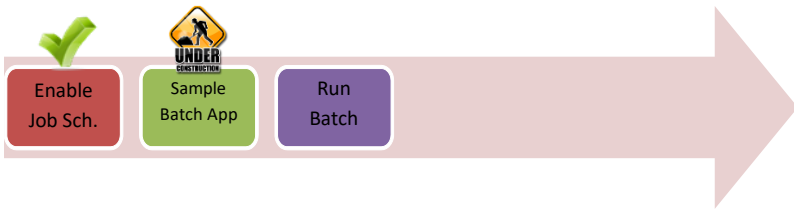
Set these database specific properties, which are required by the database vendor JDBC driver to support the connectors that are managed through the datasource.

Name	Value
Database name	/opt/IBM/WebSphere/AppServer/derby/databases/IVTDB

☒ Use this data source in container managed persistence (CMP)

Previous Next Cancel





**Step 11:** Click “Next” to continue.

WebSphere Integration Developer

Cell: wasv90Cell1, Profile: Dmgr01

WebSphere.wasv90

Help | Logout

View: All tasks

Resources

- Guided Activities
- Services
- Applications
- Jobs
- Resources
  - Schedulers
  - Object pool managers
  - Java EE default resources
  - JMS
  - JDBC
    - JDBC providers
    - Data sources (V4 - deprecated)
  - Resource Adapters
  - Concurrency
  - Cache instances
  - Mail
  - URLs
  - Resource Environment
  - Runtime Operations
  - Security
  - Operational policies
  - Environment

Create a data source

Step 1: Enter basic data source information

Step 2: Select JDBC provider

Step 3: Enter database specific properties for the data source

→ Step 4: Setup security aliases

Step 5: Summary

Setup security aliases

Select the authentication values for this resource.

Authentication alias for JA recovery  
(none)

Component-managed authentication alias  
(none)

Mapping-configuration alias  
(none)

Container-managed authentication alias  
(none)

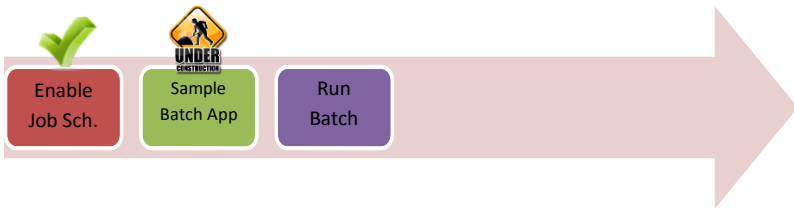
Note: You can create a new J2C authentication alias by accessing one of the following links. Clicking on a link will cancel the wizard and your current wizard selections will be lost.

[Global J2C authentication alias](#)

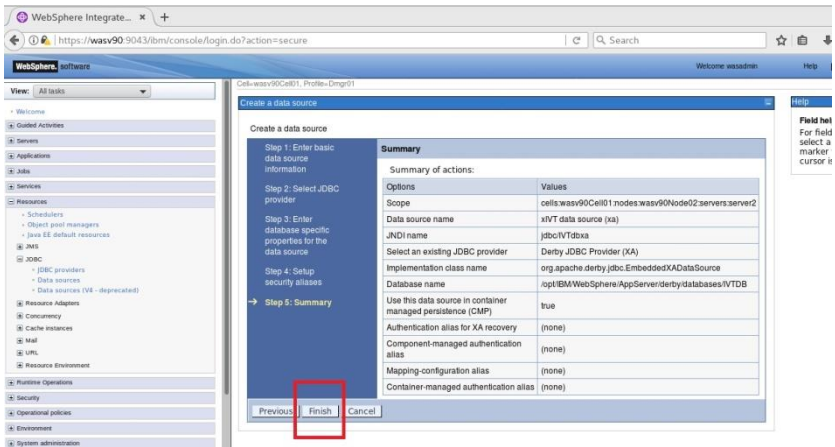
[Security domains](#)

Previous Next Cancel

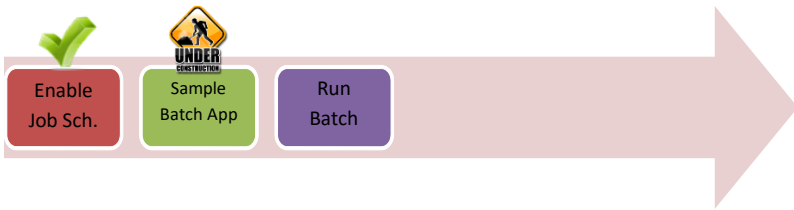
Field help  
For field help inform select a field label or marker when the he cursor is displayed.



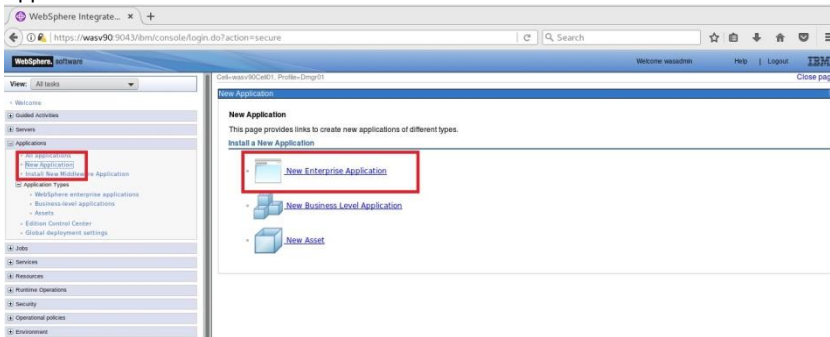
**Step 12:** Click “Finish” to complete.



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

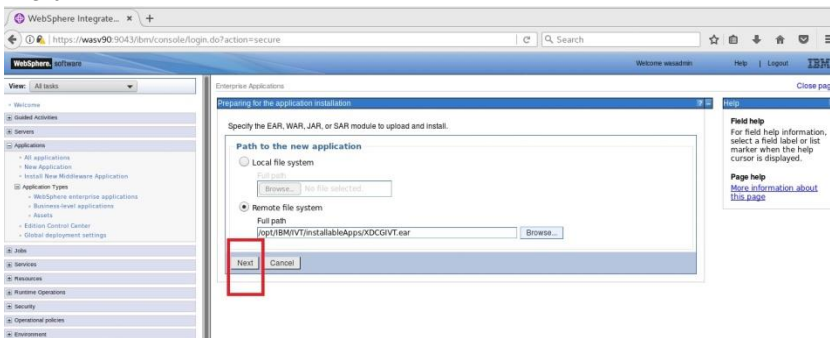


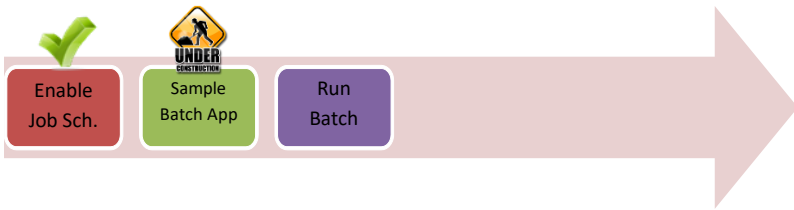
**Step 14:** Navigate to “Applications>New Application” and click “New Enterprise Application”.



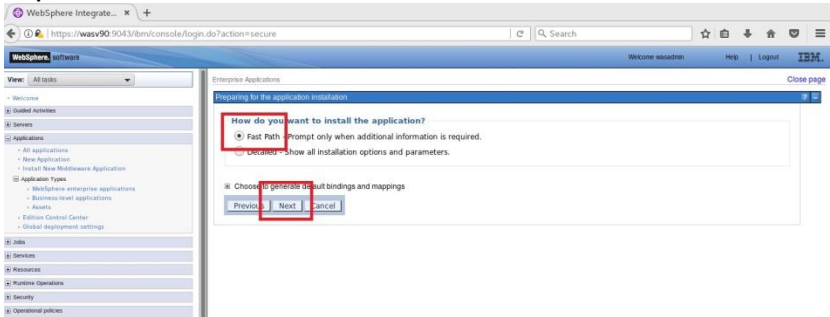
**Step 15:** Browse

“/opt/IBM/sample\_ivt/sample\_ivt/IVT/installableApps/XDCGIVT.ear” and click “Next”.

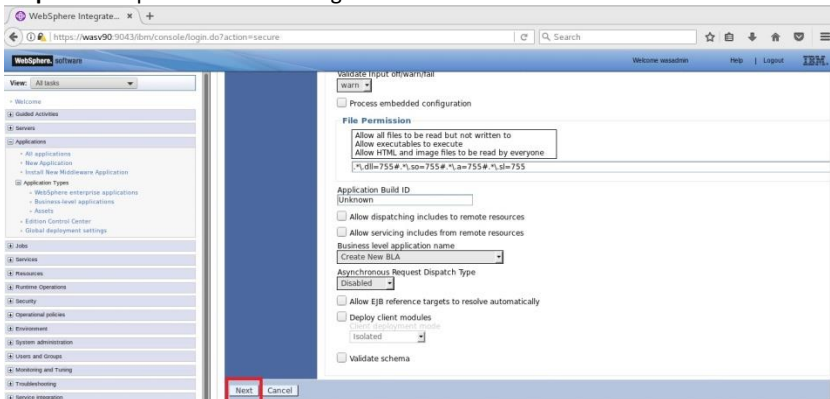


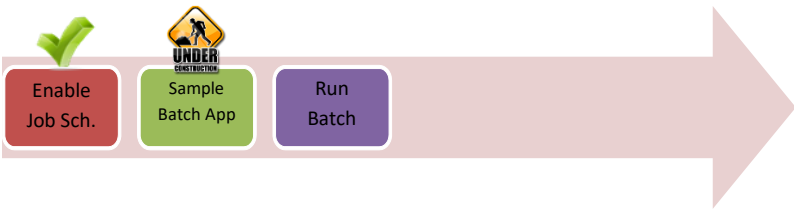


### Step 16: Select “Fast Path” and click “Next”.

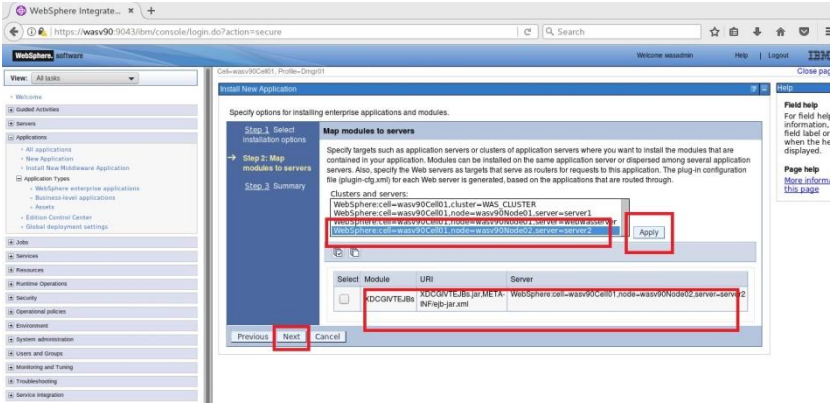


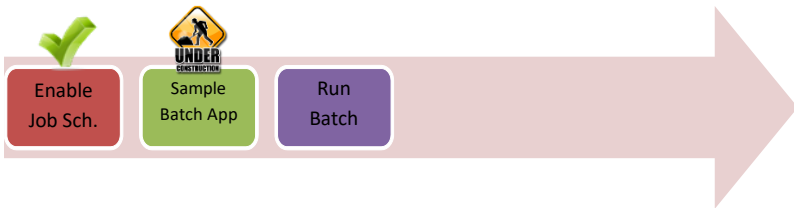
### Step 17: Accept the default settings and click “Next”.



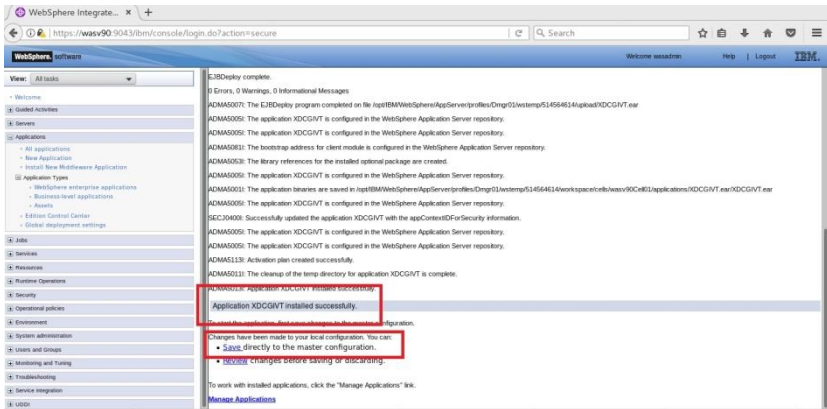


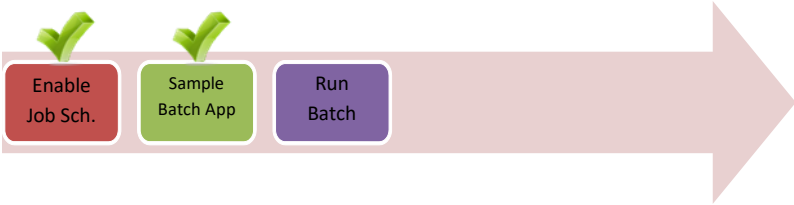
**Step 18:** Map the application to the application server selected as host of the job scheduler and click “Next”.



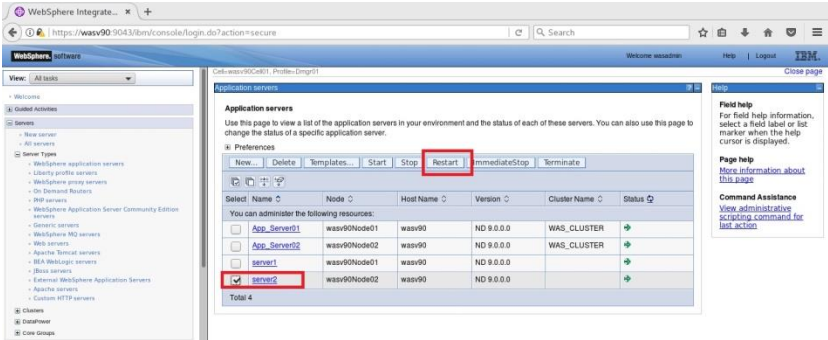


**Step 19:** Click “Finish”. You should see the success message then click “Save”.



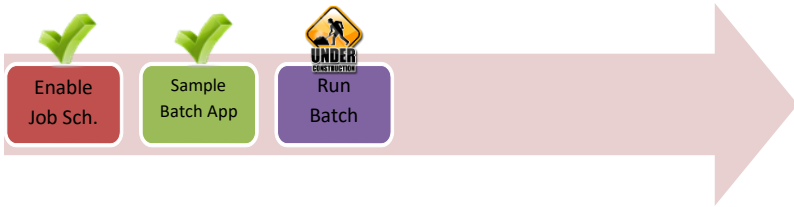


**Step 21:** Restart the application servers.



Make sure that restart is successful.

**Task 2 is complete!**



### Task 3: Run a batch job

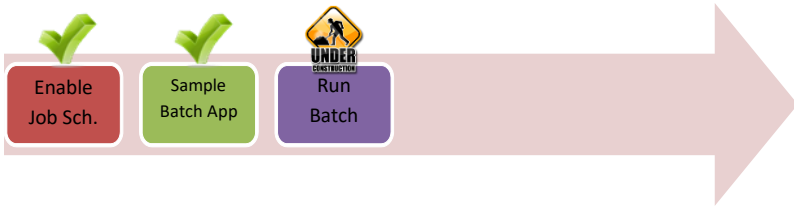
**Step 1:** Change "inputDataStream" and "outputDataStream" values according to your environment for the "XDCGIVTtxt2txtJCL.xml", "XDCGIVTbyte2bytexJCL.xml" and "XDCGIVTtxt2db2txtJCL.xml" files under "scripts" folder.

```
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...

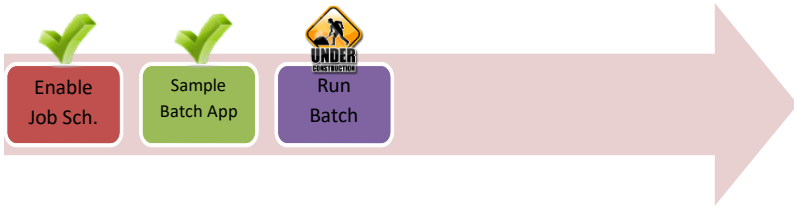
☒ Update substitution properties

☐ 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

WebSphere Application Server Job Management Console - Welcome ernesto

Submit a job

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

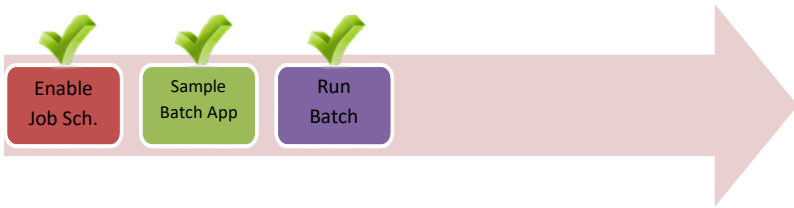
Submit a job

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.

The screenshot shows the WebSphere Application Server Job Management Console in a Mozilla Firefox browser. The left sidebar contains a navigation menu with the following items: Welcome, Job Management (expanded), Job Repository, and Schedule Management. Under 'Job Management', the 'View jobs' option is highlighted. The main content area displays the 'Jobs' page, which includes a table of submitted jobs. The table has columns for Select, Job ID, Submitter, Last Update, State, Node, and Associated Server. A single job is listed with Job ID 'XDC-QJVT-000001', Submitter 'ernesto', Last Update '2014-05-31 21:32:42.543', and State 'Submitted'. The table is filtered to show 1 of 1 total jobs.

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](http://pic.dhe.ibm.com/infocenter/rsahelp/v8/index.jsp?topic=%2Fcom.ibm.server.tools.doc%2Ftopics%2Fbatch%2Fr_profiletemplate_WAS8.html)
- [http://www.ibm.com/developerworks/websphere/techjournal/1106\\_alcott/1106\\_alcott.html](http://www.ibm.com/developerworks/websphere/techjournal/1106_alcott/1106_alcott.html)

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