RabbitMQExampleAdapterESP51SP03
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Overview

The Internet of Things (IoT) connects the physical world with the online world. RabbitMQ can provide a powerful message or event queuing mechanism for real-time data collected from sensors in the physical world. SAP ESP provides a powerful platform for filtering and analyzing real-time event streams.

The ESP adapter toolkit supports rapid development of specialized data adapters. This document describes an adapter, created with the ESP adapter toolkit, to transport and parse data from a RabbitMQ queue into ESP. With adapters like this example, ESP can receive and process massive quantities of event data from the Internet of Things.

Highway traffic events are one example of an Internet of Things. In many roads in the US there are inductive loop traffic detectors. From these detectors we can extract data such as status, speed, volume, long vehicle volume and update time. The Texas Department of Transportation (TxDOT) has an online site that produces Dallas highway traffic data every 30 seconds.

http://en.wikipedia.org/wiki/Induction_loop

http://dfwtraffic.dot.state.tx.us/DfwTrafficData/

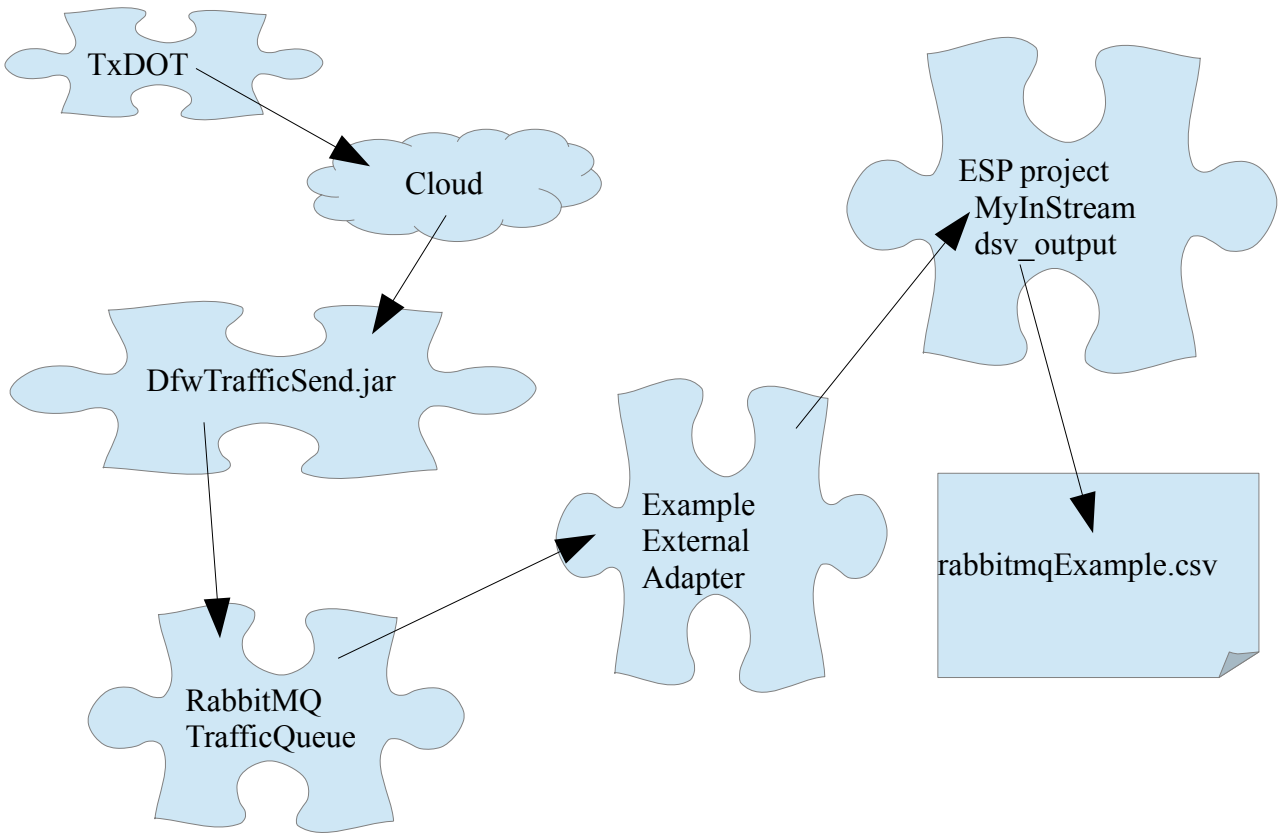
In this example, we will use the ESP adapter toolkit to create an adapter between the TxDOT highway traffic data and a simple ESP project. The goal of this example is to:

- capture the Dallas traffic data and enqueue that data into a RabbitMQ queue
- dequeue that data and publish it into an ESP input stream via an external adapter

Following the arrows

The TxDOT site produces Dallas highway traffic data every 30 seconds. Via the "Cloud", the simple DfwTrafficSend.jar application fetches Dallas traffic data from the TxDOT site, extracts data from the xml style information and en-queues '^' delimited key value pairs as strings into the RabbitMQ queue named DfwTrafficRealDataQueue.

The example external adapter de-queues traffic data from the RabbitMQ queue named DfwTrafficRealDataQueue and publishes those traffic events into an input stream inside an ESP 5.1 SP03 project. The simple ESP project performs an ATTACH INPUT ADAPTER to the external adapter, uses a flex window to filter the events and an output window to write all the traffic data into a csv file named rabbitmq.csv.



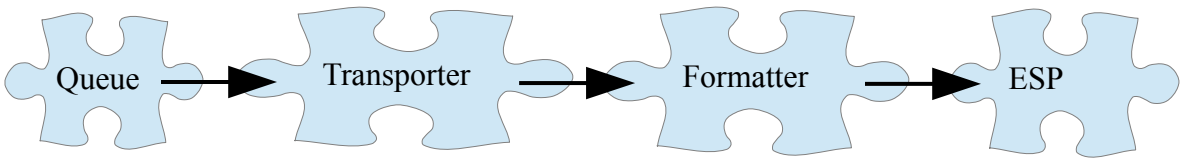
Notes

I have tried to keep this example as simple as possible and so there is some brittleness to the code. The RabbitMQ setup is as simple as possible and not (yet) configurable. I also made it very verbose and noisy. There is a great deal of text written to the screen and to the log files.

Adapter

The example external adapter tranporter module dequeues data from the RabbitMQ queue and sends data to the formatter module. The formatter module then parses the data and by way of the espconnector module publishes that data into an ESP input stream. Tranporter and formatter modules are discussed in the building_custom_adapters.pdf. That pdf is currently at:

http://infocenter.sybase.com/help/topic/com.sybase.infocenter.dc01982.0513/doc/pdf/building_custom_adapters.pdf



DfwTrafficSend.jar

The java application DfwTrafficSend.jar uses a t.join(80000) to wait and timeout on the thread that captures data from TxDOT. Therefore you should see two captures during those 80 seconds that enqueue data into RabbitMQ and then the application will exit. You can just re-start the application to get more data as the adapter is blocking on the other side of the queue waiting for more asynchronous data.

The java application DfwTrafficSend.jar parses the nearly xml style data it receives and enqueues it as key value pairs delimited by the '^' character. The resultant format in the RabbitMQ queue has data that looks like the following example:

'^DataSourceId^10134^Id^10134 203^Name^NB IH35E @ Walnut Hill Lane 4

NB^PhysicalDetectorId^2^TmcId^DalTrans^Type^MainLane^xmlns:xsd^http://www.w3.or

g/2001/XMLSchema^xmlns:xsi^http://www.w3.org/2001/XMLSchema-instance^Id^203^Last

Updated^2013-11-25T07:56:19.734375-06:00^LongVolume^2^Occupancy^8^Speed^54^Statu

s^Normal^Volume^17

ESP Project

This example includes a small ESP project, with four components, which performs some minimal processing on the TxDOT traffic events. Briefly the four components are:

1. The Input Adapter, which connects the External Adapter to ESP.
2. An Input Stream, which receives the events from the Input Adaptor.
3. A Flex Operator, which sets the primary key and filters events which do not have a good status flag. The composite primary key resolves to a unique detector in a specific lane at a location.
4. An Output Adaptor which writes the traffic events to a csv file.

Clearly, more sophisticated processing can be done in ESP to create application specific behavior.

Manifest

The download from sap.github.io includes:

- The Eclipse external adapter project that woks with ESP 5.1 SP03
- The Eclipse DfwTrafficSend project which fetches traffic data from TxDOT and enqueues data into RabbitMQ
- The rabbitmq ESP project that attaches to the example external adapter and writes to the csv file
- The current building_custom_adapters.pdf
- This pdf file

Installation

1)Install Java

```
c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>java -version
java version "1.7.0_40"
Java(TM) SE Runtime Environment (build 1.7.0_40-b43)
Java HotSpot(TM) 64-Bit Server VM (build 24.0-b56, mixed mode)
```

2)Install RabbitMQ

This example is using RabbitMQ 3.1.5, Erlang R16B02

3)Install Eclipse IDE

Optionally, if you are planning to write an adapter. The Eclipse About for the example shows:

Eclipse Java EE IDE for Web Developers.

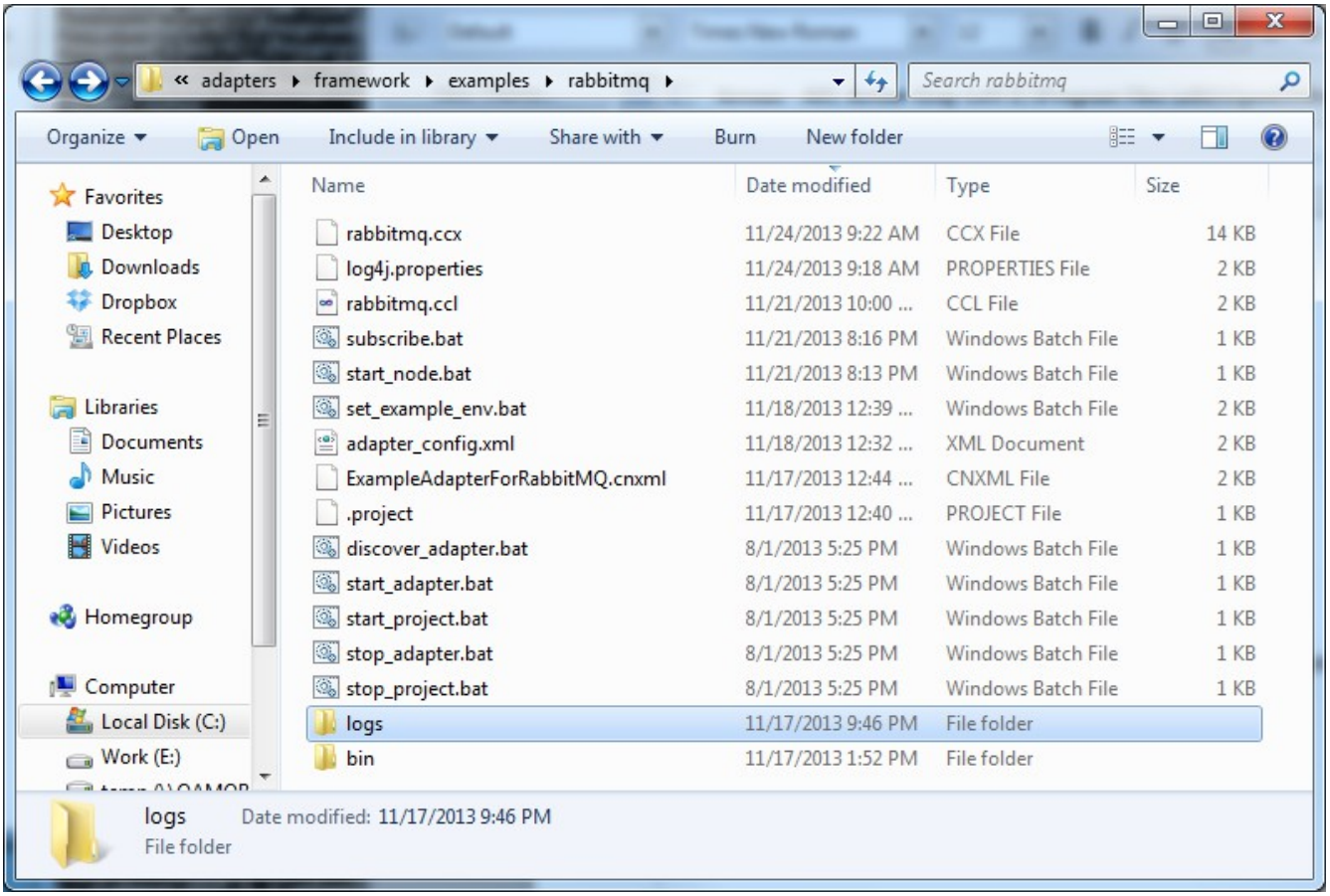
Version: Kepler Service Release 1

Build id: 20130919-0819

4)Install ESP 5.1 SP03

5)Download the RabbitMQExampleAdapter for ESP51 SP03 from http://sap.github.io

For this example I use : c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>



Before running the example

1. Setup environment variables
2. Copy cnxml to `$ESP_HOME/ESP-5_1/lib/adapters`
3. Copy csi_local.xml C:\Sybase\ESP-5_1\security (is this necessary?)
4. Copy jar files to C:\Sybase\ESP-5_1\adapters\framework\libj
5. Edit/check the baseDir property in the rabbitmq.ccl file
6. Delete the rabbitmq.ccx file and let the start_project.bat re-generate it.

Setup environment variables

Please ensure that environment variables such as ESP_HOME, PATH and other SYBASE and SYBASE_ environment variables are correctly set for your system.

My DOS set command shows:

c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>set

```
ALLUSERSPROFILE=C:\ProgramData
APPDATA=C:\Users\david\AppData\Roaming
asl.log=Destination=file
CommonProgramFiles=C:\Program Files\Common Files
CommonProgramFiles(x86)=C:\Program Files (x86)\Common Files
CommonProgramW6432=C:\Program Files\Common Files
COMPUTERNAME=QAMOBILE1
ComSpec=C:\Windows\system32\cmd.exe
CP=.;C:\RabbitMQ\rabbitmq-java-client-bin-3.1.5\commons-cli-1.1.jar;C:\RabbitMQ\
rabbitmq-java-client-bin-3.1.5\commons-io-1.1.jar;C:\RabbitMQ\rabbitmq-java-clie
nt-bin-3.1.5\rabbitmq-client.jar
ERLANG_HOME=C:\Program Files\erl5.10.3
ESP_HOME=C:\Sybase\ESP-5_1
FP_NO_HOST_CHECK=NO
HOMEDRIVE=C:
HOMEPATH=\Users\david
INCLUDE=C:\Sybase\OCS-15_0\include;
LIB=C:\Sybase\OCS-15_0\lib;
LOCALAPPDATA=C:\Users\david\AppData\Local
LOGONSERVER=\\QAMOBILE1
NUMBER_OF_PROCESSORS=8
OS=Windows_NT
Path=C:\Sybase\OCS-15_0\lib3p64;C:\Sybase\OCS-15_0\lib3p;C:\Sybase\OCS-15_0\dll;
C:\Sybase\OCS-15_0\bin;C:\Sybase\SCC-3_2\bin;C:\Windows\system32;C:\Windows;C:\W
indows\System32\Wbem;C:\Windows\System32\WindowsPowerShell\v1.0\;c:\Program File
s (x86)\Microsoft SQL Server\100\Tools\Binn\;c:\Program Files\Microsoft SQL Serv
er\100\Tools\Binn\;c:\Program Files\Microsoft SQL Server\100\DTS\Binn\;C:\Python
27\;C:\RabbitMQ\;C:\Program Files\Java\jdk1.7.0_40\bin
PATHEXT=.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE=AMD64
PROCESSOR_IDENTIFIER=Intel64 Family 6 Model 30 Stepping 5, GenuineIntel
PROCESSOR_LEVEL=6
PROCESSOR_REVISION=1e05
ProgramData=C:\ProgramData
ProgramFiles=C:\Program Files
ProgramFiles(x86)=C:\Program Files (x86)
ProgramW6432=C:\Program Files
PROMPT=$P$G
PSModulePath=C:\Windows\system32\WindowsPowerShell\v1.0\Modules\
PUBLIC=C:\Users\Public
SCC_JAVA_HOME=C:\Sybase\Shared\JRE-7_0_1_64BIT
SESSIONNAME=Console
SYBASE=C:\Sybase
SYBASE_JRE7=C:\Sybase\Shared\JRE-7_0_1_64BIT
SYBASE_JRE7_32=C:\Sybase\Shared\JRE-7_0_1_32BIT
SYBASE_JRE7_64=C:\Sybase\Shared\JRE-7_0_1_64BIT
```

SYBASE_OCS=OCS-15_0
SystemDrive=C:
SystemRoot=C:\Windows
TEMP=C:\Users\david\AppData\Local\Temp
TMP=C:\Users\david\AppData\Local\Temp
USERDOMAIN=QAMOBILE1
USERNAME=david
USERPROFILE=C:\Users\david
VBOX_INSTALL_PATH=C:\Program Files\Oracle\VirtualBox\
VS100COMNTOOLS=C:\Program Files (x86)\Microsoft Visual Studio 10.0\Common7\Tools
\windir=C:\Windows

Copy ExampleAdapterForRabbitMQ.cnxml to $ESP_HOME/ESP-5_1/lib/adapters

c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>

copy ExampleAdapterForRabbitMQ.cnxml $ESP_HOME/ESP-5_1/lib/adapters

Copy csi_local.xml C:\Sybase\ESP-5_1\security

- edit csi_local.xml to set the username to sybase.
- use esp_cluster_admin.exe –encode_text to generate the SHA-256 password.
- copy that csi_local.xml into C:\Sybase\ESP-5_1\security

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<configuration xmlns="http://www.sybase.com/csi/3.1/config">
        <authenticationProvider controlFlag="sufficient"
name="com.sybase.security.core.PreConfiguredUserLoginModule">
                <options name="username" value="sybase"/>
                <options name="password" value="{SHA-
256:x/cl8eOHZU0=}lGSx8d889GTP9eKVKIx9+S52W53j0CacFTsPQ3ZQ/lM="/>
        </authenticationProvider>
        <provider name="com.sybase.security.core.NoSecAttributer" type="attributer"/>
        <provider name="com.sybase.security.core.NoSecAuthorizer" type="authorizer"/>
</configuration>
```

Copy jar files to C:\Sybase\ESP-5_1\adapters\framework\libj

c:\Users\david\workspace\RabbitMQExampleInputTransporter\bin>
copy RabbitMQExampleInputTransporter.jar C:\Sybase\ESP-5_1\adapters\framework\libj

c:\Users\david\workspace\RabbitMQExampleInputFormatter\bin>
copy RabbitMQExampleInputFormatter.jar c:\Sybase\ESP-5_1\adapters\framework\libj

copy C:\RabbitMQ\rabbitmq-java-client-bin-3.1.5\commons-cli-1.1.jar C:\Sybase\ESP-5_1\adapters\framework\libj

copy C:\RabbitMQ\rabbitmq-java-client-bin-3.1.5\commons-io-1.2.jar C:\Sybase\ESP-5_1\adapters\framework\libj

copy C:\RabbitMQ\rabbitmq-java-client-bin-3.1.5\rabbitmq-client.jar C:\Sybase\ESP-5_1\adapters\framework\libj

Edit/check the baseDir property in the rabbitmq.ccl file

```
ATTACH INPUT ADAPTER Example_Adapter_with_schema_rabbitmq1
  TYPE ExampleAdapterForRabbitMQ
  TO MyInStream
  PROPERTIES
    baseDir ='C:/Sybase/ESP-5_1/adapters/framework/examples/rabbitmq'
  ;
```

Delete the rabbitmq.ccx file and let the start_project.bat re-generate it.

Modulesdefine.xml

The building_custom_adapters.pdf has a great deal of discussion regarding the modulesdefine.xml file. That pdf is currently at:
http://infocenter.sybase.com/help/topic/com.sybase.infocenter.dc01982.0513/doc/pdf/building_custom_adapters.pdf

C:\Sybase\ESP-5_1\adapters\framework\config\modulesdefine.xml has 2 additions for this example. They are for the transporter module and the formatter module.

```
<TransporterDefnList>
  <TransporterDefn>
    <Name>RabbitMQExampleInputTransporter</Name>
    <Class>RabbitMQExampleInputTransporter</Class>
    <OutputData>String</OutputData>
  </TransporterDefn>


<FormatterDefnList>
  <FormatterDefn>
    <Name>RabbitMQExampleInputFormatter</Name>
    <Class>RabbitMQExampleInputFormatter</Class>
    <InputData>String</InputData>
    <OutputData>ESP</OutputData>
  </FormatterDefn>
```

QuickStart Run Example

To run this example you will need to start two DOS command shells and an ESP Studio session.

From DOS command shell 1: start_node.bat
c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>start_node.bat

From DOS command shell 2: start_project.bat
c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>start_project.bat

From ESP Studio:

1. Connect to server esp://localhost:19011 with both user and password of sybase
2. Expand everything and open MyInStream in Stream View

From DOS command shell 5 run DfwTrafficSend.jar to send data into RabbitMQ:
c:\Users\david\workspace\testJars>java -jar DfwTrafficSend.jar

NOTE: you can also use the get_txdot_traffic.bat and DfwTrafficSend.jar in the rabbitmq folder.

Open the logfile and csv file
C:\Sybase\ESP-5_1\cluster\examples\projects\example_modules.rabbitmq.0\logs\frameworkadapter.log
C:\Sybase\ESP-5_1\cluster\examples\projects\example_modules.rabbitmq.0\logs\rabbitmqExample.csv

QuickStart Build Example

You can build the example by following these steps.

From DOS command shell 3 create RabbitMQExampleInputTransporter.jar

c:\Users\david\workspace\RabbitMQExampleInputTransporter\bin>
jar cf RabbitMQExampleInputTransporter.jar RabbitMQExampleInputTransporter.class

and copy it to C:\Sybase\ESP-5_1\adapters\framework\libj

c:\Users\david\workspace\RabbitMQExampleInputTransporter\bin>
copy RabbitMQExampleInputTransporter.jar C:\Sybase\ESP-5_1\adapters\framework\libj

From DOS command shell 4
create RabbitMQExampleInputFormatter.jar

c:\Users\david\workspace\RabbitMQExampleInputFormatter\bin>
jar cf RabbitMQExampleInputFormatter.jar RabbitMQExampleInputFormatter.class

and copy it to C:\Sybase\ESP-5_1\adapters\framework\libj

c:\Users\david\workspace\RabbitMQExampleInputFormatter\bin>
copy RabbitMQExampleInputFormatter.jar C:\Sybase\ESP-5_1\adapters\framework\libj

Running the Example

Note: For a first time run or after you make modifications to the rabbitmq.ccl file it is best to delete the rabbitmq.**ccx** file and let the ensuing start_project.bat re-generate that rabbitmq.**ccx** file.

For this longer version of running the project, you will need to start 5 DOS command shells and an ESP Studio session to run the example.

From DOS command shell 1: start_node.bat

```
c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>start_node.bat
SAP Sybase Event Stream Processor Engine 5.1.0/20130801.1/SP03 PL00/winnt/x86_64
/64-bit/OPT/Thu Aug  1 13:58:39 PDT 2013

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or for any purpose without the express permission of SAP AG. The
information contained herein may be changed without prior notice.

Nov 24 2013 09:22:34.260 INFO main com.sybase.esp.cluster.FactoryNode - SAP Syba
se Event Stream Processor Cluster Node 5.1.0/20130801.1/SP03 PL00/winnt/x86_64/6
4-bit/OPT/Thu Aug  1 15:02:36 PDT 2013
Nov 24 2013 09:22:34.331 INFO main com.sybase.esp.cluster.impl.ManagerConfig - C
ODE_700204 | ApplicationHeartbeatTimeout [7500] milliseconds
Nov 24 2013 09:22:34.332 INFO main com.sybase.esp.cluster.impl.RpcConfig - CODE_
700033 | Using http protocol
Nov 24 2013 09:22:34.332 INFO main com.sybase.esp.cluster.impl.RpcConfig - CODE_
700034 | Rpc port [19011]
Nov 24 2013 09:22:34.404 INFO main com.sybase.esp.cluster.impl.RpcService - CODE
_700056 | Using http port [19011]
Nov 24 2013 09:22:34.524 INFO main com.sybase.esp.cluster.impl.CacheService - CO
DE_700068 | Using TcpIp Cache join
Nov 24 2013 09:22:34.555 INFO main com.sybase.esp.cluster.plugins.apptypes.Proje
ct - CODE_700166 | Initializing HaProject Application type
Nov 24 2013 09:22:34.557 INFO main com.sybase.esp.cluster.plugins.apptypes.Proje
ct - CODE_700166 | Initializing Project Application type
Nov 24 2013 09:22:34.592 INFO main com.sybase.esp.cluster.impl.SecurityService -
 CODE_700124 | Initializing Policy service
Nov 24 2013 09:22:34.592 INFO main com.sybase.esp.cluster.impl.SecurityService -
 CODE_700125 | Initialization of Policy service failed because policy file is no
t found or empty...Authorization will not be enforced
Nov 24 2013 09:22:34.593 INFO main com.sybase.esp.cluster.impl.Node - CODE_70002
2 | Node is starting
Nov 24 2013 09:22:34.593 INFO main com.sybase.esp.cluster.impl.CacheService - CO
DE_700076 | Cache starting
Nov 24 2013 09:22:36.168 INFO main com.sybase.esp.cluster.impl.CacheService - CO
DE_700077 | Cache started
Nov 24 2013 09:22:36.169 INFO main com.sybase.esp.cluster.impl.SecurityService -
 CODE_700130 | Security service starting
Nov 24 2013 09:22:36.169 INFO main com.sybase.esp.cluster.impl.SecurityService -
 CODE_700131 | Security service started
Nov 24 2013 09:22:36.170 INFO main com.sybase.esp.cluster.impl.RpcService - CODE
_700061 | Web server starting
Nov 24 2013 09:22:36.268 INFO main com.sybase.esp.cluster.impl.RpcService - CODE
_700062 | Web server started
Nov 24 2013 09:22:36.305 INFO main com.sybase.esp.cluster.impl.Node - CODE_70002
3 | Node is started
```
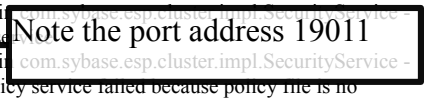



From DOS command shell 2: start_project.bat

```
c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>start_project.bat
File:c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq\rabbitmq.ccl  Line:3
3  [ESP-4-159212] No retention policy has been specified for the flex stream out
put window testWindow. The amount of memory used may grow without bound.

[done]

[done]

c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>
```

At this point you can optionally run the subscribe.bat command script from DOS shell 2.

If you also run subscribe.bat from DOS shell 2, you will see the data as it arrive at the input stream:

```
c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>call "c:\Sybase\ESP-5_1\a
dapters\framework\examples\rabbitmq\set_example_env.bat"
C:\Sybase\ESP-5_1
localhost:19011/example_modules/rabbitmq
-c sybase:sybase
MyInStream
<MyInStream ESP_OPS="i"  dataTime="2013-11-24 15:42:42" detectorName="EB SH183 @
 Wingren EBL3of3" direction="XX" detectorID1="40629" detectorID2="40630" detecto
rStatus="0" speed="40631" volume="40632" occupancy="40633" longVehicleVol="40634
"/>
<MyInStream ESP_OPS="i"  dataTime="2013-11-24 15:42:42" detectorName="EB SH183 @
 Wingren EBL2of3" direction="XX" detectorID1="40635" detectorID2="40636" detecto
rStatus="0" speed="40637" volume="40638" occupancy="40639" longVehicleVol="40640
"/>
<MyInStream ESP_OPS="i"  dataTime="2013-11-24 15:42:42" detectorName="EB SH183 @
 Wingren EBL1of3" direction="XX" detectorID1="40641" detectorID2="40642" detecto
rStatus="0" speed="40643" volume="40644" occupancy="40645" longVehicleVol="40646
"/>
<MyInStream ESP_OPS="i"  dataTime="2013-11-24 15:42:42" detectorName="WB SH183 @
 Empire Central WBL3of3" direction="XX" detectorID1="40647" detectorID2="40648"
detectorStatus="0" speed="40649" volume="40650" occupancy="40651" longVehicleVol
="40652"/>
<MyInStream ESP_OPS="i"  dataTime="2013-11-24 15:42:42" detectorName="WB SH183 @
 Empire Central WBL2of3" direction="XX" detectorID1="40653" detectorID2="40654"
detectorStatus="0" speed="40655" volume="40656" occupancy="40657" longVehicleVol
="40658"/>

and so on...
```

If you run subscribe.bat you will later use ^C to stop it and answer Y to the quiz.

^CTerminate batch job (Y/N)? y

From DOS command shell 3: stop_adapter.bat and start_adapter.bat

It seems to work best if you stop the adapter, stop it again to ensure that it is "not running" and then re-start it. It takes a while to shut the adapter down so please ensure that you see the correct message after the second stop_adapter.bat.

From DOS command shell 3: stop_adapter.bat

```
c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>stop_adapter.bat
11-24-2013 15:44:50.448 INFO [main] (Framework.main) stop c:\Sybase\ESP-5_1\adap
ters\framework\examples\rabbitmq\adapter_config.xml
11-24-2013 15:44:50.831 INFO [main] (XmlUtils$1.resolveResource) C:\Sybase\ESP-5
_1/adapters/framework/config/parametersdefine.xsd
11-24-2013 15:44:50.840 INFO [main] (XmlUtils$1.resolveResource) C:\Sybase\ESP-5
_1/adapters/framework/config/module_parametersdefine.xsd
11-24-2013 15:44:50.841 INFO [main] (PortAllocator.queryFromDataCenter) Trying t
o get global lock ...
11-24-2013 15:44:50.842 INFO [main] (PortAllocator.queryFromDataCenter) Success
to get global lock.
11-24-2013 15:44:51.223 INFO [main] (PortAllocator.queryFromDataCenter) Trying t
o contact the current running adapter...
11-24-2013 15:44:51.238 INFO [main] (AdapterController.init) Port 19082 is used
to accept the control command.
11-24-2013 15:44:51.280 INFO [main] (AdapterController.sendCommand) stop C:\Syba
se\ESP-5_1\adapters\framework\examples\rabbitmq\adapter_config.xml
11-24-2013 15:44:51.414 INFO [main] (AdapterController.executeStop) Stop message
 is successfully sent to adapter.
c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>
```

This shows that a "stop" message was sent to the adapter.

Again From DOS command shell 3: stop_adapter.bat

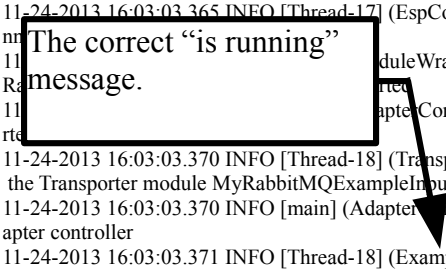
The second stop_adapter command shows the correct "is not running" message.

```
c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>stop_adapter.bat
11-24-2013 15:48:00.697 INFO [main] (Framework.main) stop c:\Sybase\ESP-5_1\adap
ters\framework\examples\rabbitmq\adapter_config.xml
11-24-2013 15:48:01.040 INFO [main] (XmlUtils$1.resolveResource) C:\Sybase\ESP-5
_1/adapters/framework/config/parametersdefine.xsd
11-24-2013 15:48:01.048 INFO [main] (XmlUtils$1.resolveResource) C:\Sybase\ESP-5
_1/adapters/framework/config/module_parametersdefine.xsd
11-24-2013 15:48:01.375 INFO [main] (PortAllocator.queryFromDataCenter) Trying t
o get global lock ...
11-24-2013 15:48:01.377 INFO [main] (PortAllocator.queryFromDataCenter) Success
to get global lock.
11-24-2013 15:48:01.378 INFO [main] (PortAllocator.queryFromDataCenter) Trying t
o contact the current running adapter...
11-24-2013 15:48:01.379 WARN [main] (PortAllocator.queryFromDataCenter) The adap
ter is not running.
c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>
```

The correct message "is not running".

From DOS command shell 3: start_adapter.bat

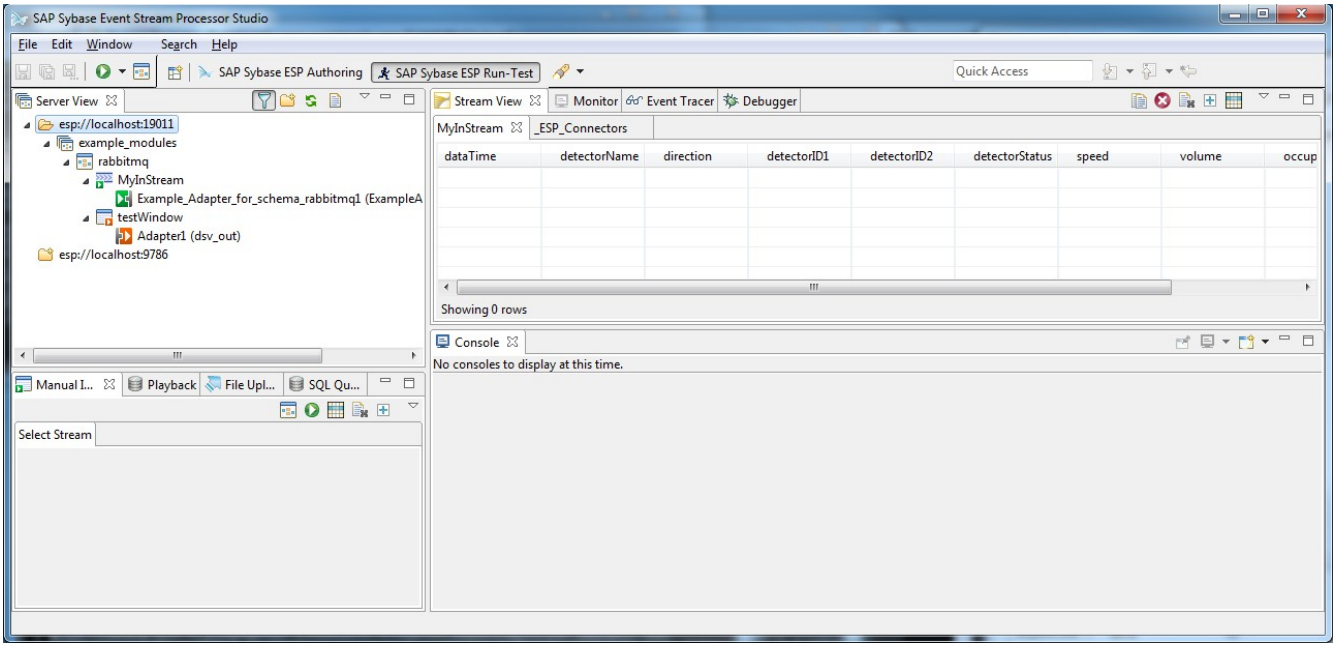
```
c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>start_adapter.bat
11-24-2013 16:02:59.375 INFO [main] (Framework.main) start c:\Sybase\ESP-5_1\ada
pters\framework\examples\rabbitmq\adapter_config.xml
11-24-2013 16:02:59.721 INFO [main] (XmlUtils$1.resolveResource) C:\Sybase\ESP-5
_1/adapters/framework/config/parametersdefine.xsd
11-24-2013 16:02:59.729 INFO [main] (XmlUtils$1.resolveResource) C:\Sybase\ESP-5
_1/adapters/framework/config/standard_module_parametersdefine.xsd
11-24-2013 16:03:00.046 INFO [main] (PortAllocator.allocateFromDataCenter) Tryin
g to get global lock ...
11-24-2013 16:03:00.048 INFO [main] (PortAllocator.allocateFromDataCenter) Succe
ss to get global lock.
11-24-2013 16:03:00.280 INFO [main] (AdapterController.init) Port 19082 is used
to accept the control command.
11-24-2013 16:03:00.317 INFO [main] (AdapterController.sendCommand) start C:\Syb
ase\ESP-5_1\adapters\framework\examples\rabbitmq\adapter_config.xml
11-24-2013 16:03:01.409 INFO [Thread-0] (Server.doStart) jetty-7.6.1.v20120215
11-24-2013 16:03:01.465 INFO [Thread-0] (ContextHandler.startContext) started o.
e.j.s.ServletContextHandler{/,null}
11-24-2013 16:03:01.525 INFO [Thread-0] (AbstractConnector.doStart) Started Sele
ctChannelConnector@0.0.0.0:19082
11-24-2013 16:03:02.407 INFO [main] (AdapterController.executeStart) Adapter con
troller is started.
11-24-2013 16:03:02.407 INFO [main] (AdapterController.executeStart) Starting ad
apter
11-24-2013 16:03:02.430 INFO [main] (EspProjectInfo.connect) Login to esp://loca
lhost:19011/example_modules/rabbitmq
11-24-2013 16:03:03.172 INFO [main] (ModuleWrapper.initQue) Buffer Size for modu
le MyInStream_Publisher is 10240.
11-24-2013 16:03:03.175 INFO [main] (ModuleWrapper.initParallelParameters) Paral
lel setting of module MyInStream_Publisher is true.
11-24-2013 16:03:03.175 INFO [main] (EspPublisher.init) EspPublisher is initiali
zing
11-24-2013 16:03:03.183 INFO [main] (EspPublisher.init) Transaction buffer size
is 256.
11-24-2013 16:03:03.209 INFO [main] (ModuleWrapper.initQue) Buffer Size for modu
le MyRabbitMQExampleInputTransporter is 10240.
11-24-2013 16:03:03.211 INFO [main] (ModuleWrapper.initParallelParameters) Paral
lel setting of module MyRabbitMQExampleInputTransporter is true.
11-24-2013 16:03:03.212 INFO [main] (TransporterWrapper.init) Before initializin
g the Transporter module MyRabbitMQExampleInputTransporter
11-24-2013 16:03:03.212 INFO [main] (RabbitMQExampleInputTransporter
.init) RabbitMQExampleInputTransporter is initializing
11-24-2013 16:03:03.329 INFO [main] (RabbitMQExampleInputTransporter
.init)  [REAL Thread] Waiting for messages...
11-24-2013 16:03:03.335 INFO [main] (TransporterWrapper.init) After initializing
 the Transporter module MyRabbitMQExampleInputTransporter
11-24-2013 16:03:03.349 INFO [main] (ModuleWrapper.start) Before starting module
 MyInStream_Publisher
11-24-2013 16:03:03.361 INFO [main] (EspPublisher.start) Publisher of stream MyI
nStream is started
11-24-2013 16:03:03.362 INFO [main] (ModuleWrapper.start) After module MyInStrea
m_Publisher started
11-24-2013 16:03:03.365 INFO [main] (ModuleWrapper.start) Before starting module
 MyRabbitMQExampleInputTransporter
11-24-2013 16:03:03.365 INFO [main] (RabbitMQExampleInputTransporter
.start) RabbitMQExampleInputTransporter is starting
11-24-2013 16:03:03.365 INFO [Thread-17] (EspConnectorWrapper.run) Running EspCo
nn
11                                                  duleWrapper.start) After module MyExample
Ra                                                  rted
11                                                  apterController.executeStart) Adapter sta
rte
11-24-2013 16:03:03.370 INFO [Thread-18] (TransporterWrapper.run) Before running
 the Transporter module MyRabbitMQExampleInputTransporter
11-24-2013 16:03:03.370 INFO [main] (AdapterController.executeStart) Starting ad
apter controller
11-24-2013 16:03:03.371 INFO [Thread-18] (ExampleRabbitMQDiscoverableInputTransp
orter.execute) RabbitMQExampleInputTransporter is running
```



From ESP Studio:

3. Create a New Server URL for localhost port 19011. Set both user and password to sybase.
4. Right click on that new server instance and choose Connect.
5. Expand everything under server esp://localhost:19011
6. Double click on MyInStream
7. Double click on testWindow
8. Double click on Example_Adapter_for_schema_rabbitmq
9. Click on the Stream View for MyInStream

You should see something like

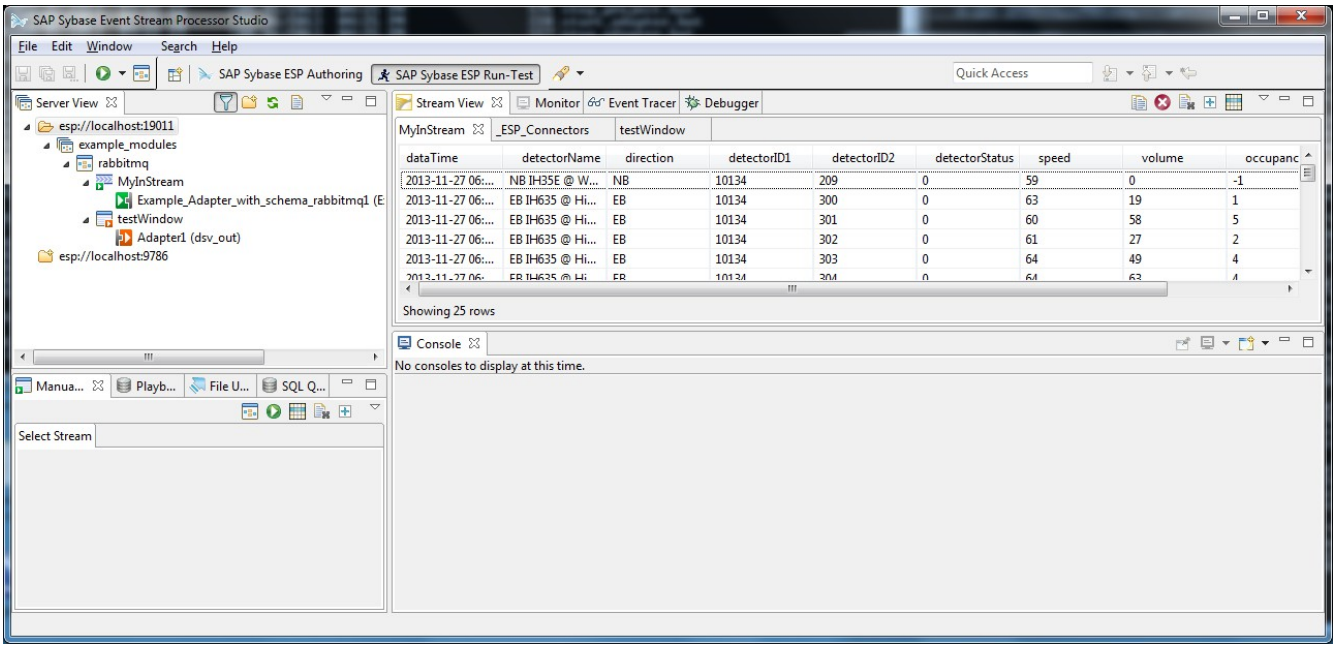


From DOS command shell 5 run DfwTrafficSend.jar to send data into RabbitMQ:

NOTE: you can also use the get_txdot_traffic.bat and DfwTrafficSend.jar in the rabbitmq folder.

c:\Users\david\workspace\testJars>java -jar DfwTrafficSend.jar
```
t.start()...
t.join(80000)...
[1] Sent '^DataSourceId^10043^Id^10043 2176^Name^EB SH183 @ Wingren
EBL3of3^PhysicalDetectorId^113^TmcId^DalTrans^Type^MainLane^xmlns:xsd^http://www.w3.org/2001/XM
LSchema^xmlns:xsi^http://www.w3.org/2001/XMLSchema-instance^Id^2176^LastUpdated^2013-11-
24T10:39:26.9375-06:00^Occupancy^3^Speed^58^Status^Normal^Volume^8'
[2] Sent '^DataSourceId^10043^Id^10043 2191^Name^EB SH183 @ Wingren
EBL2of3^PhysicalDetectorId^114^TmcId^DalTrans^Type^MainLane^xmlns:xsd^http://www.w3.org/2001/XM
LSchema^xmlns:xsi^http://www.w3.org/2001/XMLSchema-instance^Id^2191^LastUpdated^2013-11-
24T10:39:26.9375-06:00^Occupancy^1^Speed^63^Status^Normal^Volume^1'

and so on...
```

Use ^C or wait for DfwTrafficSend to stop in 80 seconds. Esp Studio should show something like:



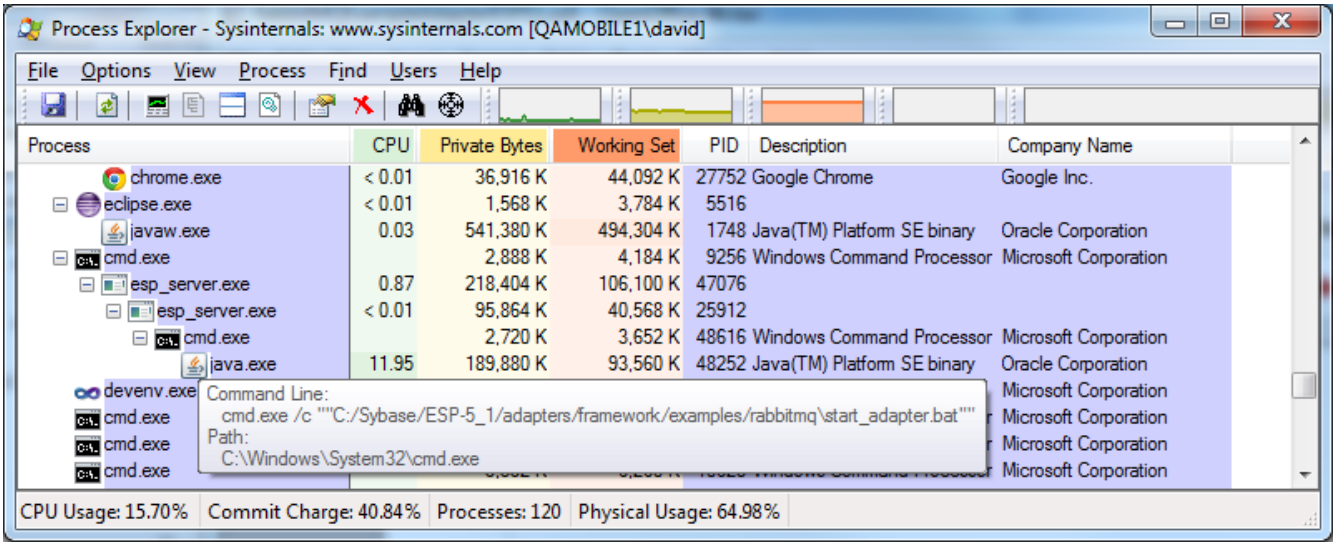
C:\Sybase\ESP-5_1\cluster\examples\projects\example_modules.rabbitmq.0 has log files.
They are esp_server.log, stdstreams.log and the esp_server.ccx file.

C:\Sybase\ESP-5_1\cluster\examples\projects\example_modules.rabbitmq.0\logs has two files.

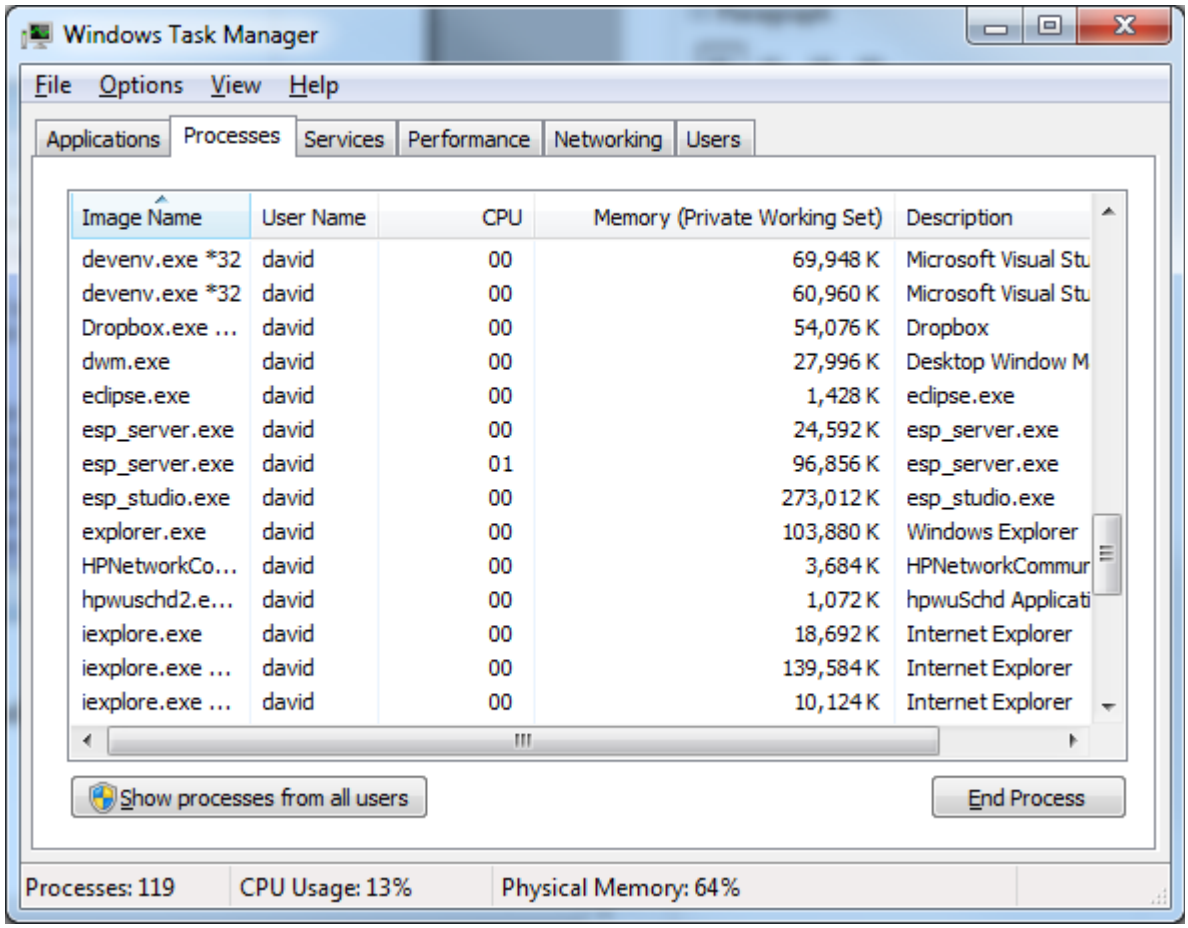
The main log file is frameworkadapter.log file and it should have new text after each run.

The csv output file from the ESP project is rabbitmqExample.csv, its hould have new data like:
```
2013-11-25T13:41:51,EB SH183 @ Wingren EBL3of3,XX,57,58,0,59,60,61,62
2013-11-25T13:41:51,EB SH183 @ Wingren EBL2of3,XX,63,64,0,65,66,67,68
```

Process Explorer should show two instances of esp_server:



And the Task Manager should show us the two instances of esp_server and esp_studio:



Stopping the example

Stop adapter twice (see the output in the above section “Running the Example”):

From DOS command shell 4: stop_adapter.bat
Check for the “Stop message is successfully sent to adapter” message.

From DOS command shell 4: stop_adapter.bat
Check for the “The adapter is not running.” message.

Stop project:

From DOS command shell 2: stop_project.bat

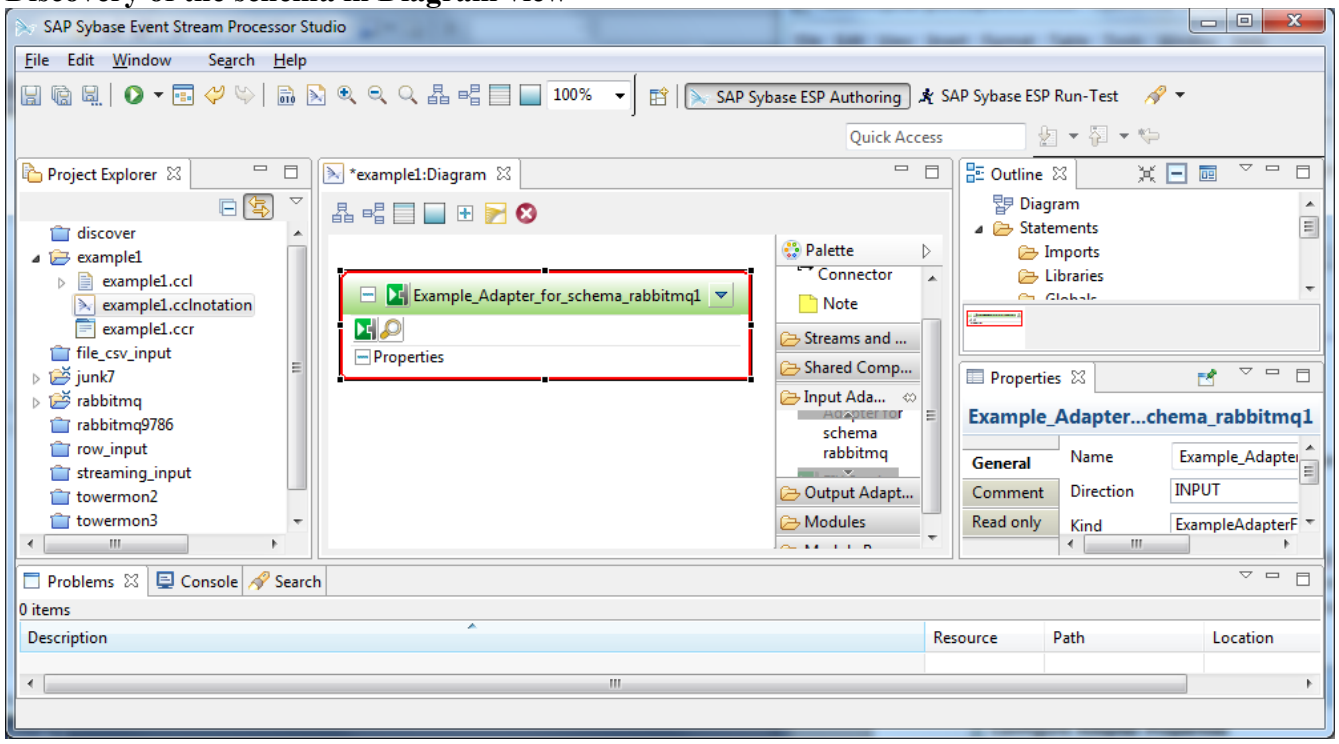
```
c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>stop_project.bat

[done]

[done]

c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>
```

Stop node:
From DOS command shell 1: You will use ^C to stop it and answer Y to the quiz.

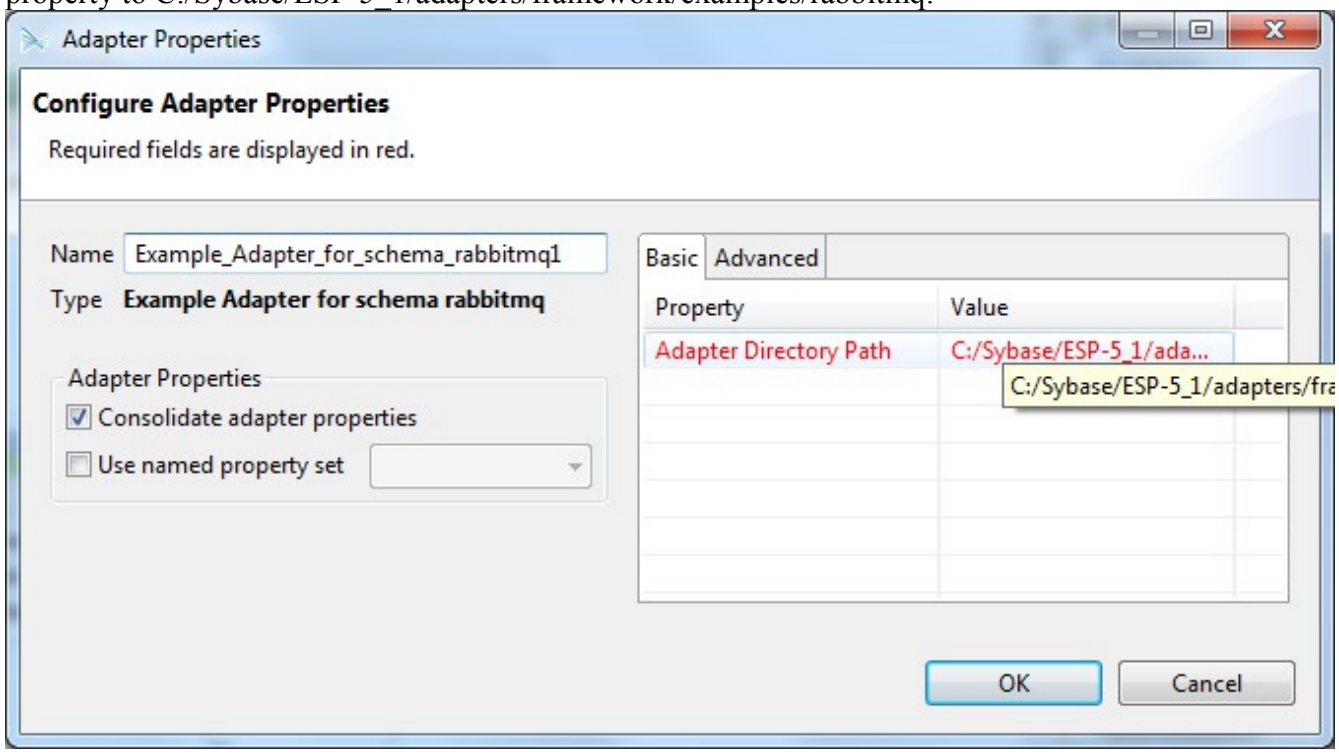
```
^CTerminate batch job (Y/N)? y

c:\Sybase\ESP-5_1\adapters\framework\examples\rabbitmq>
```

ESP Notes

Discovery of the schema in Diagram view

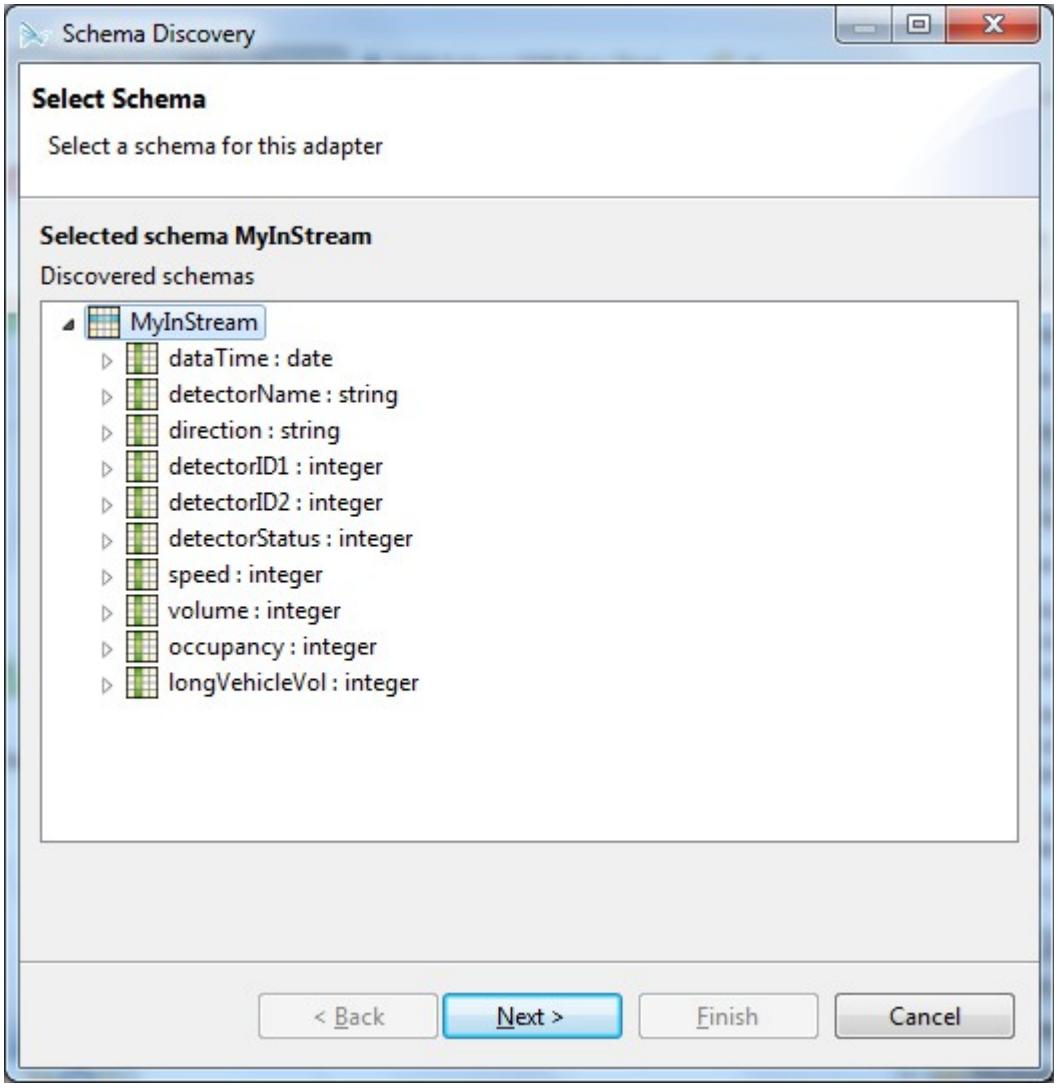


The example adapter's schema is discoverable in ESP Studio after setting the Adapter Directory Path property to C:/Sybase/ESP-5_1/adapters/framework/examples/rabbitmq.



Click OK and then click the Schema Discovery magnifying glass icon.

You should expand MyInStream and see:



Finding the log files:

NOTE: the config folder has a log4j.properties file has the following:

```
# file appender
log4j.appender.R=org.apache.log4j.DailyRollingFileAppender
log4j.appender.R.File=logs/frameworkadapter.log
```

The output csv file from the ESP project, rabbitmqExample.csv, and the frameworkadapter.log file both wind up in:

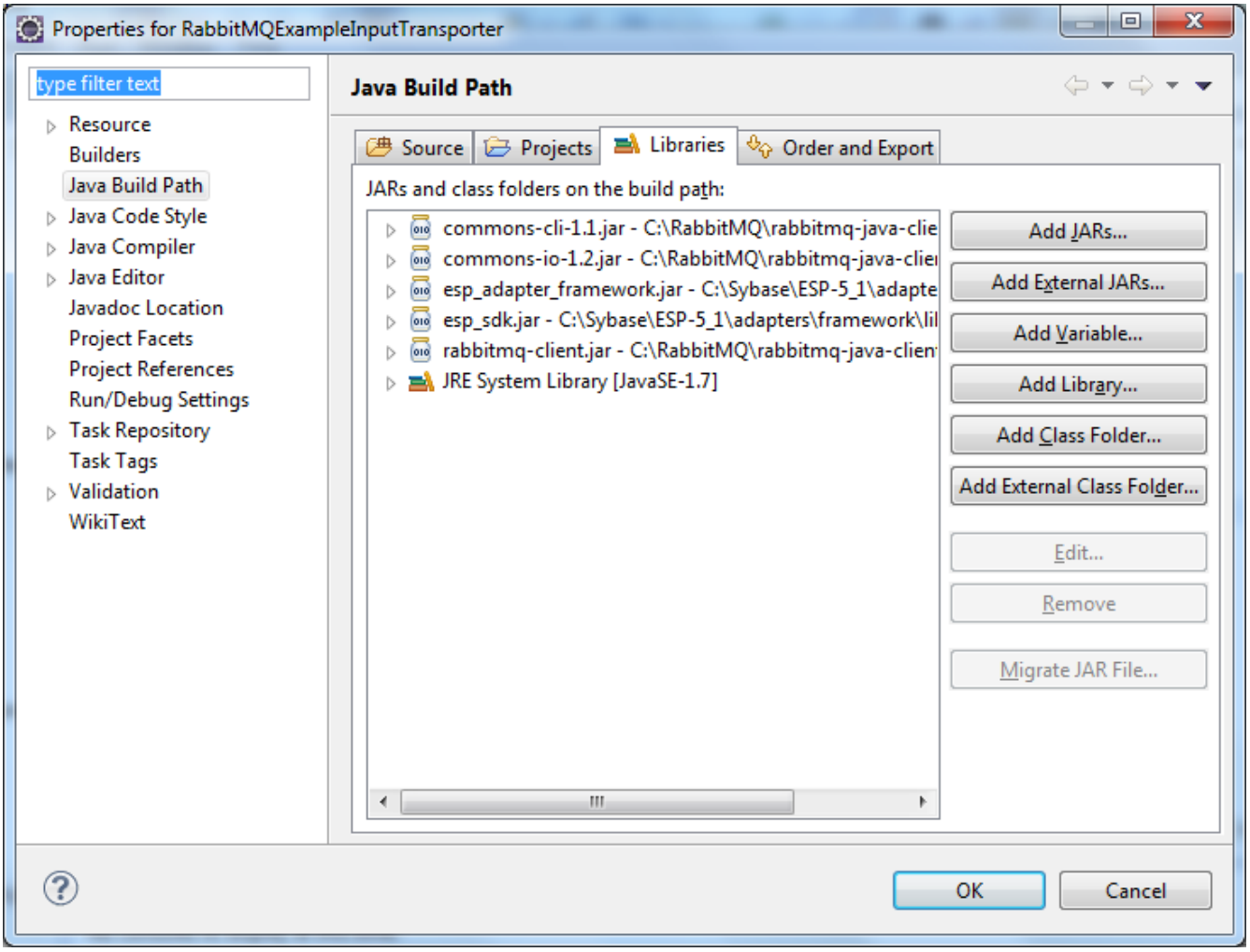
C:\Sybase\ESP-5_1\cluster\examples\projects\example_modules.rabbitmq.0\logs

Eclipse

Eclipse projects

`c:\Users\david\workspace\RabbitMQExampleInputTransporter`
`c:\Users\david\workspace\RabbitMQExampleInputFormatter`

Make sure the Java Build Path in both projects have all the libraries that they need.



Create the RabbitMQExampleInputTransporter.jar file

```
c:\Users\david\workspace\RabbitMQExampleInputTransporter\bin>
jar cf RabbitMQExampleInputTransporter.jar RabbitMQExampleInputTransporter.class
```

Copy it to libj

```
c:\Users\david\workspace\RabbitMQExampleInputTransporter\bin>
copy RabbitMQExampleInputTransporter.jar C:\Sybase\ESP-5_1\adapters\framework\libj
```

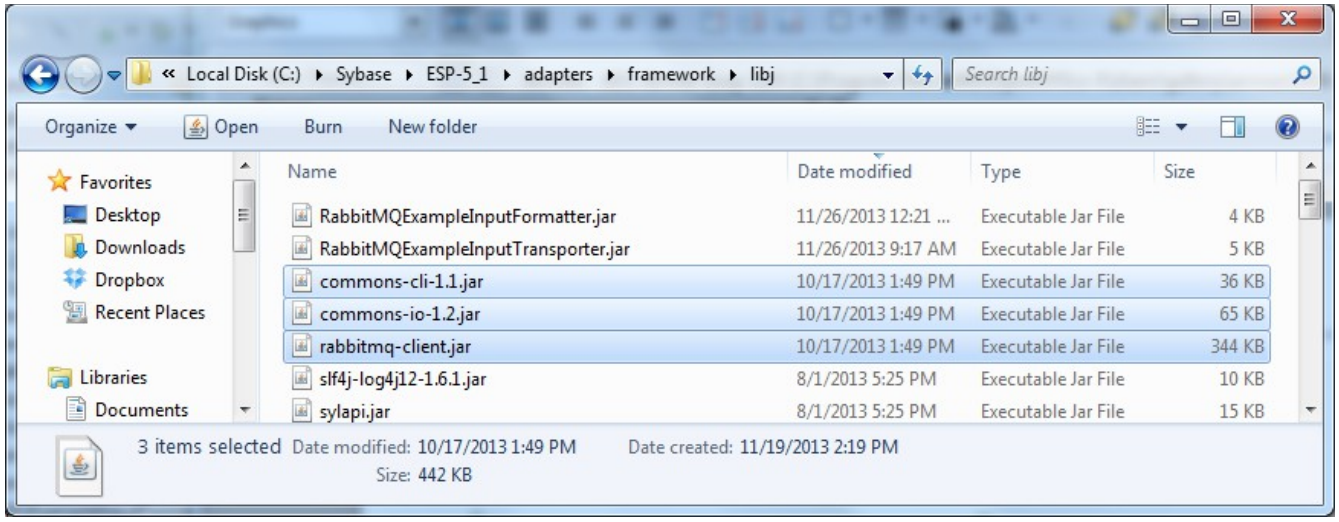
Create the RabbitMQExampleInputFormatter.jar file

```
c:\Users\david\workspace\RabbitMQExampleInputFormatter\bin>
jar cf RabbitMQExampleInputFormatter.jar RabbitMQExampleInputFormatter.class
```

Copy it to libj

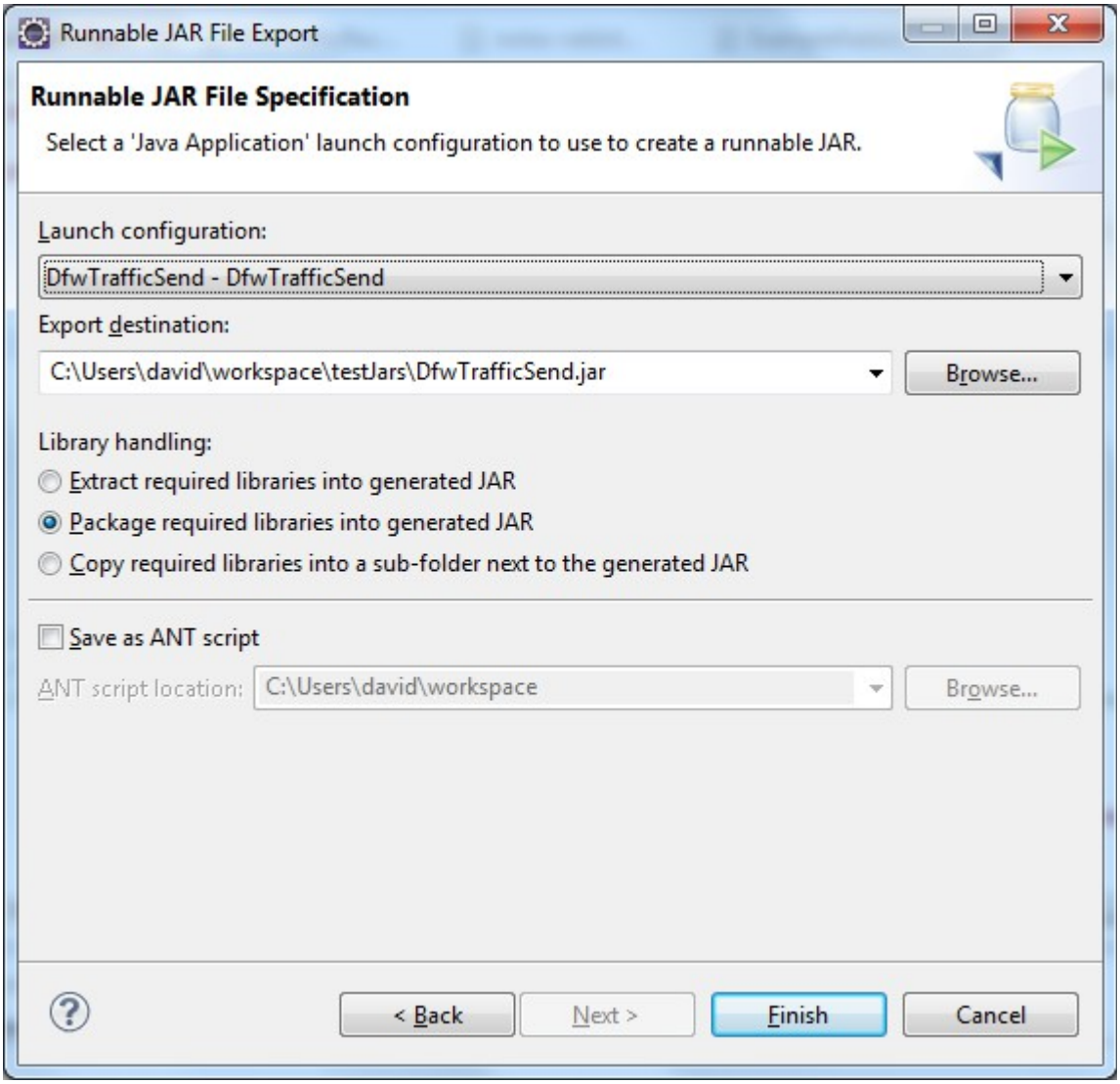
```
c:\Users\david\workspace\RabbitMQExampleInputFormatter\bin>
copy RabbitMQExampleInputFormatter.jar c:\Sybase\ESP-5_1\adapters\framework\libj
```

Ensure that the RabbitMQ jar files are there too.



Build and create the DfwTrafficSend.jar

The Eclipse project can be used to create the DfwTrafficSend.jar file.



RabbitMQ

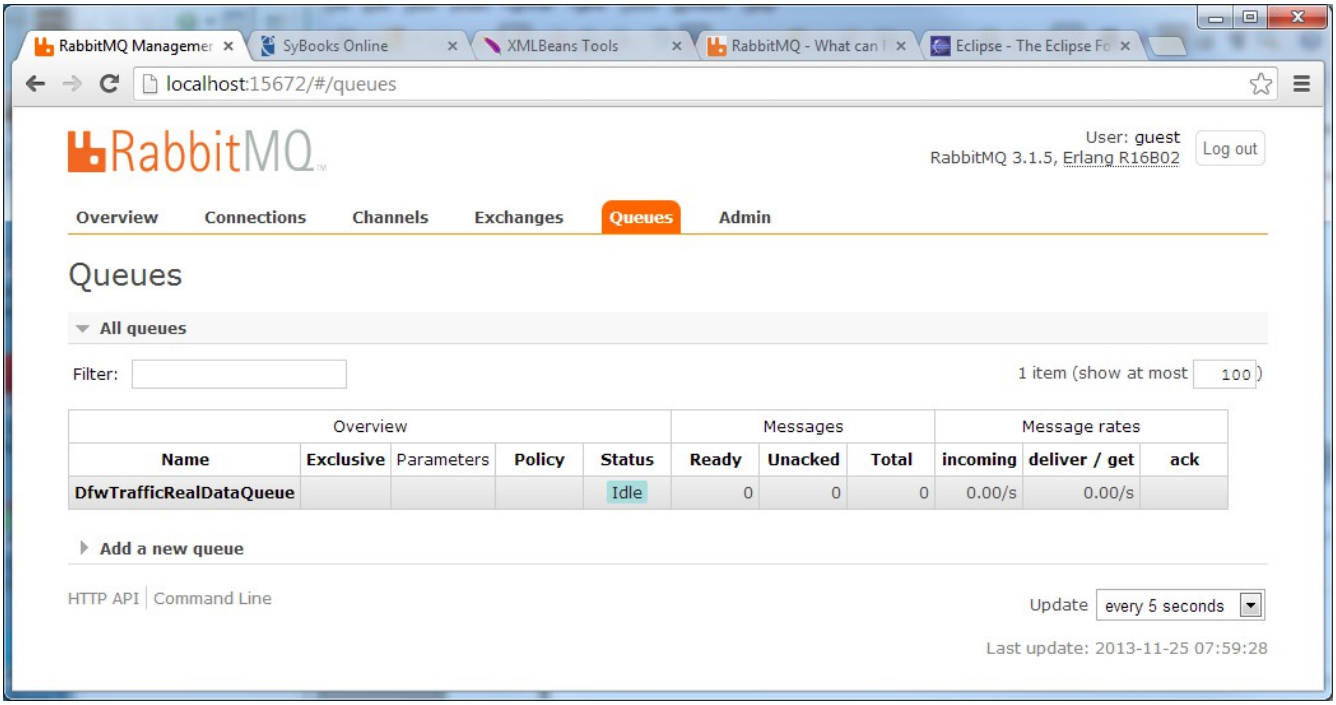
Install RabbitMQ from http://www.rabbitmq.com/download.html

Documentation at http://www.rabbitmq.com/documentation.html

Tutorials at http://www.rabbitmq.com/getstarted.html

Use the RabbitMQ Management link at http://localhost:15672/#/queues

When running the example you can check the DfwTrafficRealDataQueue queue.



The Overview tab on this page will show the Message Rates over time.

Future Enhancements

1. Configuration parameters for the RabbitMQ queue name and queue setup
2. A connection to HANA

Useful Links

RabbitMQ - http://www.rabbitmq.com/documentation.html
Eclipse - http://www.eclipse.org/
ESP - http://scn.sap.com/community/developer-center/sybase-esp
ESP Help - http://help.sap.com/esp