What's New in the Sun TCP/IP HL7 Adapter

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Contents

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What's New in the Sun TCP/IP HL7 Adapter

The following sections provide instructions on the most significant TCP/IP HL7 release to date For more information, visit the Java CAPS web site at `http://goldstar.stc.com/support`.

This chapter covers the following topics:

This chapter covers the following tasks:

What's New in This Release

Note – Requires Java CAPS 6 Update 1

Please read this section for the latest updates and additions to the User's Guide available along the following location.

http://developers.sun.com/docs/javacaps/designing/jcapscommadapt.commadapt_tcpiphl7_c.html

The Sun TCP/IP HL7 Adapter includes the following new features:

1. **Schematron Support in HL7 Adapter**.
2. **Dynamic Connection Support**.
3. **HL7 External System Connection Status Monitoring**.
4. **Monitoring Alert Code Type**.
5. **Newly Added HL7 Version 2.6 OTD Library**.
6. **Method to Execute the MLLP V2.0 Database scripts from GUI**.

Schematron Support in HL7 Adapter

This topic helps users validate the Schematron configuration in HL7 adapter.

Schematron Overview

The Schematron uses the concept of finding tree patterns in the parsed document rather than the grammar. This approach allows representation of numerous structures that are inconvenient and difficult in grammar-based schema languages.

Example:

```
<?xml version="1.0" encoding="UTF-8"?>
<Person>
<Name>Eddie</Name>
<Gender>Male</Gender>
<Person>
```

The above example is an XML document. This xml document can be validated against the below schematron:

```
<?xml version="1.0" encoding="UTF-8"?>
<sch:schema xmlns:sch="http://www.ascc.net/xml/schematron">
<sch:pattern name="Check structure">
```

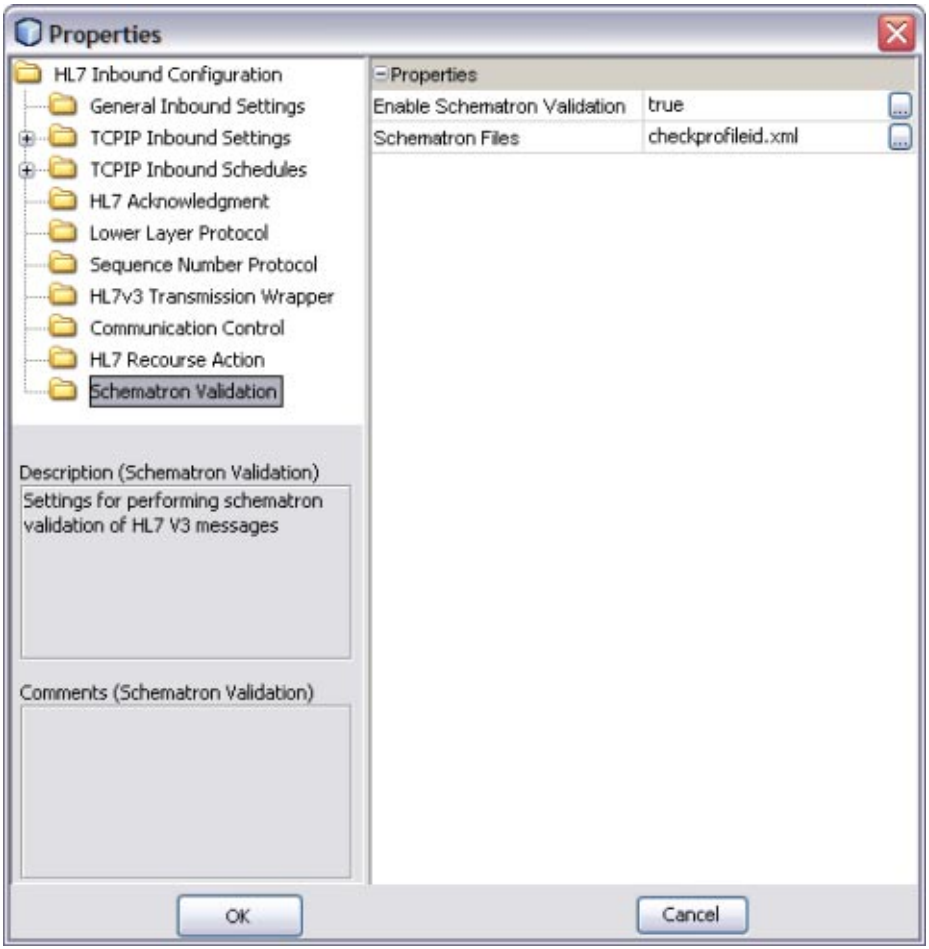
```
<sch:rule context="Person">
<sch:assert test="@Title">The element Person must have a Title attribute<sch:assert>
<sch:assert test="count(*) = 2 and count(Name) = 1 and count(Gender) = 1">he element
Person should have the child elements Name and Gender.<sch:assert>
<sch:assert test="*[1] = Name">The element Name must appear before element
Gender.</sch:assert>
</sch:rule>
</sch:pattern>
</sch:schema>
```

In HL7 adapter, this schematron is useful for validating a HL7 V3 document against predefined schematron schemas. Users can write these schematron schemas. These can be obtained from organizations like NHS, HL7 org. For example, NHS provides few schematrons for CDA documents.

Schematron Configuration in HL7 Adapter

The schematron validation is configured from the Connectivity Map Properties dialog box.

There are two properties listed for Schematron support:

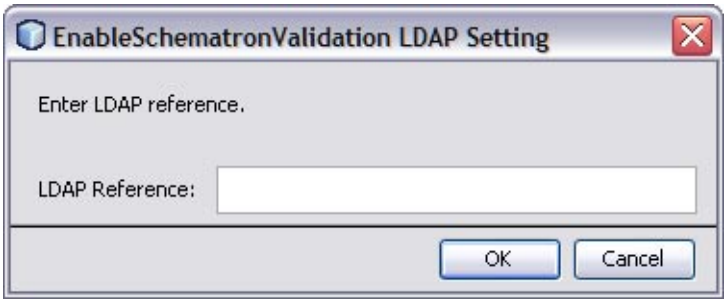


1. **Schematron Validation**: Enabled or Disabled.

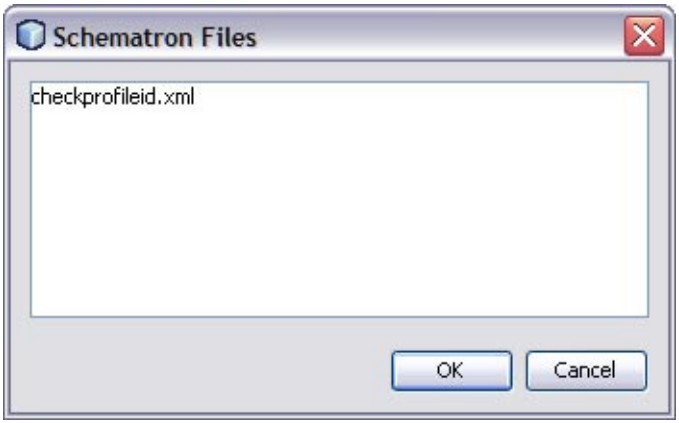
   This opens the Enable Schematron Validation LDAP Setting box. When Enabled the Schematron Configuration is performed.

   Provide the LDAP Reference value. Prefix ldap:// or ldaps:// when providing a LDAP reference.

Note – This is not case sensitive.



2. **Schematron Files**: Provide the list of schematron files. Use commas to separate multiple files.



Example, checkprofileid.xml

Change the extension to .xml.

Click OK.

3. Click **OK**.

▼ To Manage the Repository

Before You Begin The below steps explains about Schematron support using a sample project **prhHL7V3Inbound_WithSchematron.zip**.

Note – The sample project comes along with the **HL7eWay.sar**. This can be downloaded from the Downloads tab from the SAR uploader GUI.

1 **Upload the .sar files to the Repository and download sample project from the repository.**

Note – For detailed instructions, see "Installing the TCP/IP HL7 Adapter and Sample Projects" in *Sun Adapter for TCP/IP HL7 Tutorial*.

Ensure the required HL7 V3 SAR files are uploaded to the repository.

- HL7eWay.sar
- HL7OTDLibrary.sar
- HL7OTDLibraryGeneric.sar
- HL7V32006PatientAdmin.sar
- HL7V32006TransInfra.sar

2 **Click the Downloads tab on the Suite Uploader.**

Click on HL7 Adapter Inbound Collaboration Project for HL7V3 PRPA_IN403001UV01 With Schematron Validation Enabled and save **prjHL7V3Inbound_WithSchematron.zip** to a local directory.

API for Schematron Validation

There is a new API added in HL7 adapter for schematron validation. This API is a wrapper of the Open source XSLT based API available at `http://xml.ascc.net/schematron/1.5`. The API is an XSL file called metastylesheet (skeleton1-5.xsl) . Applying the metastylesheet to the schematron xml document generates another xsl file. This xsl file can be applied to the input xml document to validate, which produces the output xml document.

This metastylesheet can be extended and overridden so that you can customize the output xml document.

The output xml document contains details of all the validation failures. This document can be embedded inside the V3 acknowledgement and can be sent to the original sender.

Example,

A resultant xml document generated after invoking the api using the XML document and the schematron document mentioned in the overview section. The xml document will look as follows -

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<schematron-output phase="#ALL" schemaVersion="" title="" xmlns:
sch="http://www.ascc.net/xml/schematron">
```

```
<active-pattern name="Check structure"/>
<fired-rule context="Person" id="" role=""/>
<failed-assert id="" role="" test="@Title" location="/@Person[1]">
<text>The element Person must have a Title attribute</text>
</failed-assert>
<schematron-output>
```

Using the Schematron API

Use the methods mentioned below ton invoke the schematron API from the JCD. The following are discussed.

- Obtaining the Factory Object
- Obtaining the Validator Object
- Performing the Validation

Obtaining the Factory Object

com.stc.connector.hl7.schematron.SchematronValidatorFactory factory = com.stc.connector.hl7.schematron.SchematronValidatorFactory. getSchematronValidatorFactory();

Obtaining the Validator Object

com.stc.connector.hl7.schematron.SchematronValidator validator = factory.getDefaultValidator(domSource);

domSource is the DOMSource object of the schematron XML.

Performing the Validation

com.stc.connector.hl7.schematron.ValidationOutput output = validator.validate(dataSrc);

dataSrc is a Source of the payload. The payload can be an entire V3 XML document or a CDA document.

The ValidationOutput object contains the resultant XML document as well as a method is **Valid()** which returns values when the validation has passed or failed.

Working With the Sample Project

This sample project receives a HL7 V3 message **PRPA_IN403001UV01** and sends a HL7 V3 ACK or NAK (**MCCI_IN000004UV01**). This project is same as prjHL7V3Inbound except that the schematron validation for the input xml.

▼ To Import the Sample Project

1. **Create CAPS Environment in the Services tab.**

   See "To Create a HL7 V3 External System" on page 23 for procedural description.

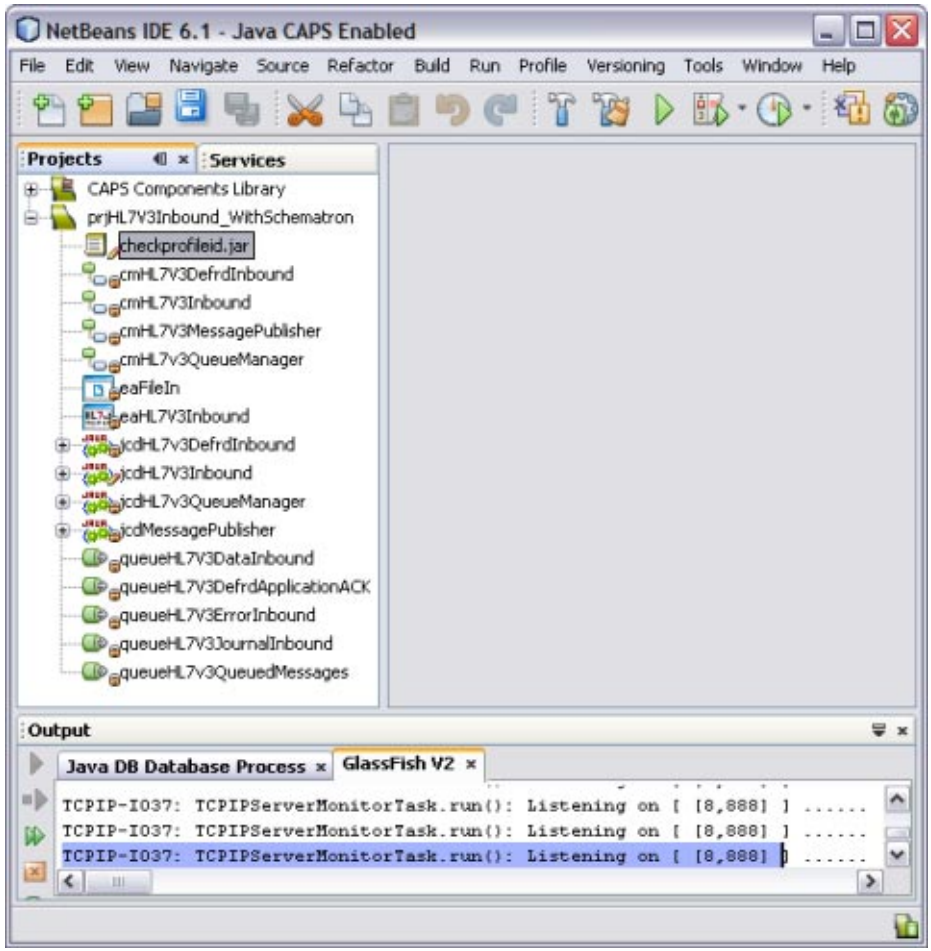
2. **Import the project file.**

   For steps to import the sample Project ZIP file, see "Importing the Sample TCP/IP HL7 Adapter Projects" in *Sun Adapter for TCP/IP HL7 Tutorial*.

   In the current example, **prjHL7V3Inbound_WithSchematron**.

3. **Expand the tree node.**

   The illustration is as shown.



Note – The JAR file is bundled in the project.

For example, checkprofileid.jar

In the current example, the JAR file (**checkprofileid.jar**) is bundled along with the sample project file imported from Java CAPS Repository, **prjHL7V3Inbound_WithSchematron**.

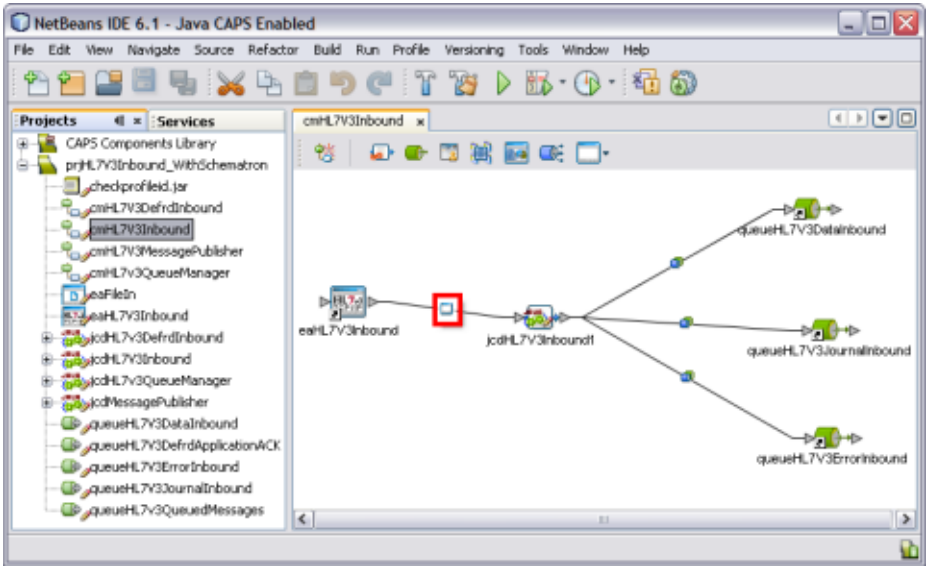
▼ To Check Out... the Project

1 **Select prjHL7V3Inbound_WithSchematron —> cmHl7V3Inbound.**

See"Checking Out the Imported Projects" in *Sun Adapter for TCP/IP HL7 Tutorial* for steps to check out project components.

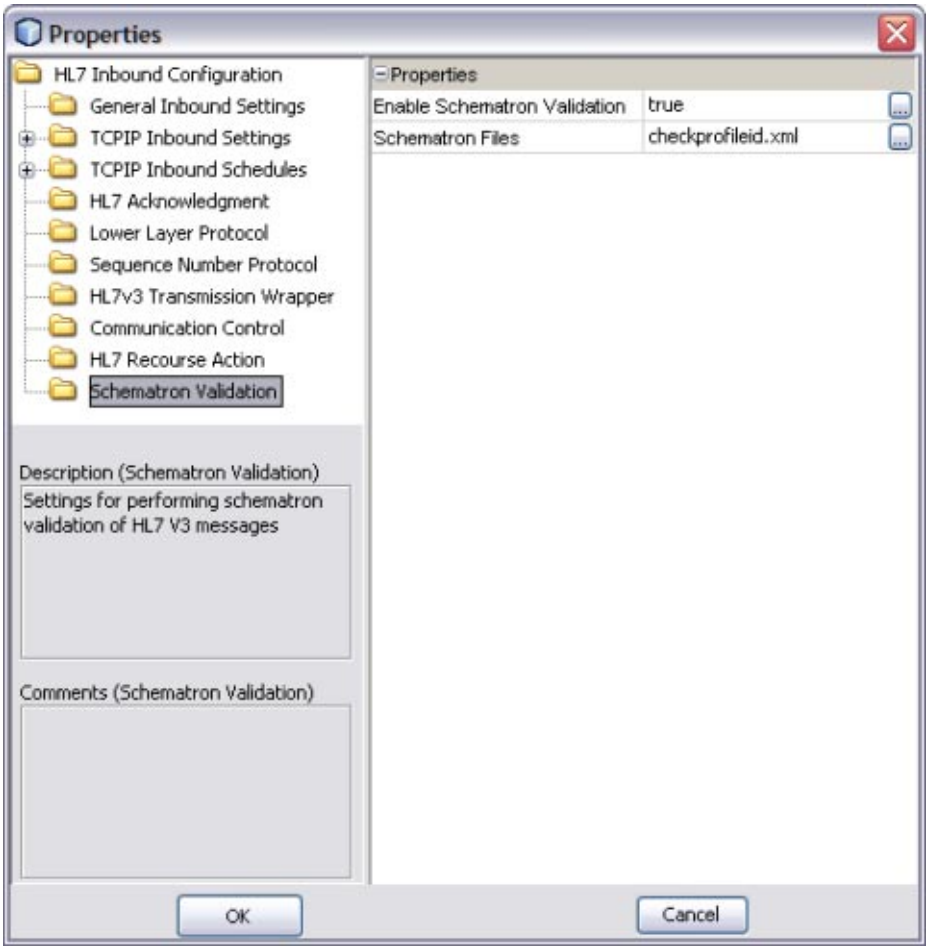
2 **Double-click cmHL7V3Inbound.**

The action displays the screen shown below.



3 **Double-click on the node found between eaHL7V3Inbound and jcdHL7V3Inbound1.**

This action opens the properties screen for the Schematron.



4 **Click the ellipses (...) to modify the Properties.**

   a. **Schematron Validation: Enable**

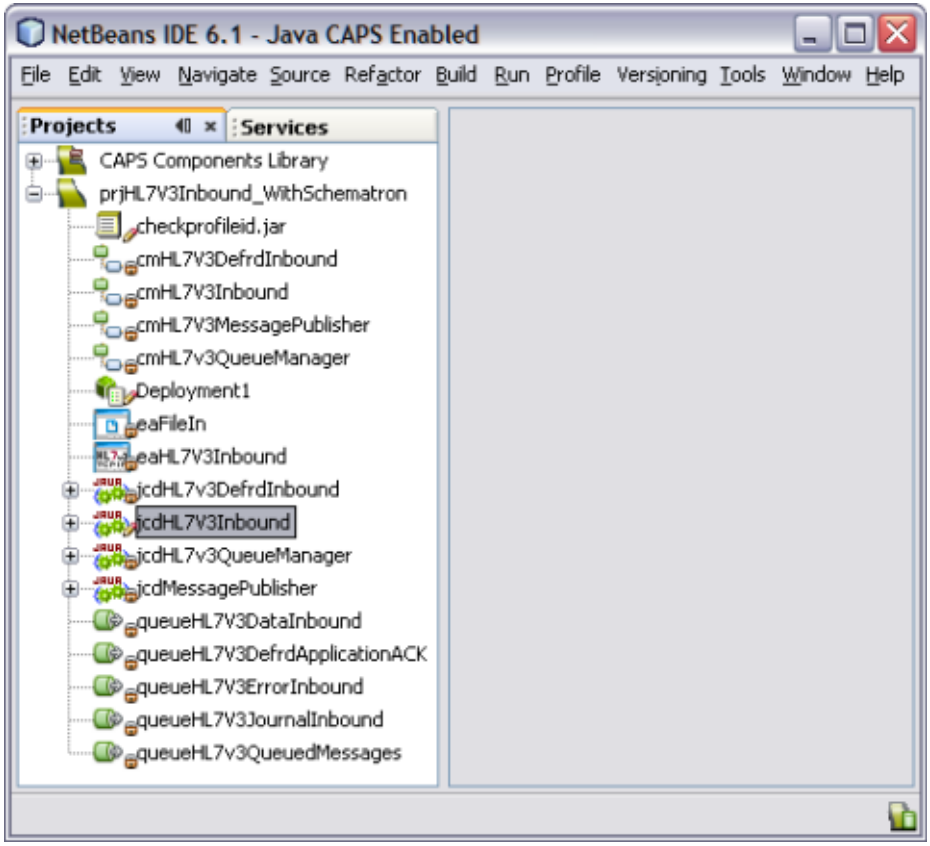
   b. **Schematron Files: Provide a list of Schematron files. Use comma to separate multiple files.**

Editing the JCD

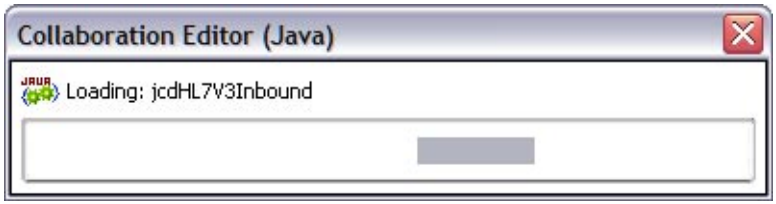
The JCD is edited as described in the steps below.

▼ To Invoke the Collaboration Editor

- **Select the node jcdHL7V3Inbound and double-click on it.**



This action invokes the Collaboration Editor and displays the Java source.



Schematron Validation Inside the JCD

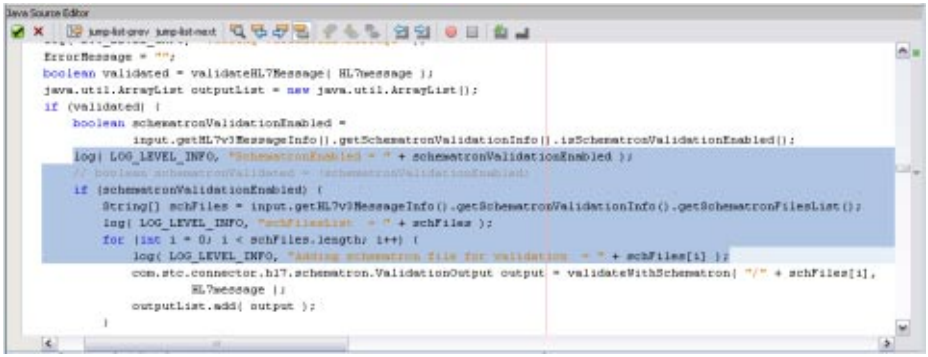
The schematron validation API is invoked from the JCD. This validation follows the normal HL7 V3 validation. It is invoked only when the Enable Schematron Validation property is true. This validation scans the **schematronfiles** list and invokes the method **validateWithSchematron()** depending on the value set forth for the property.

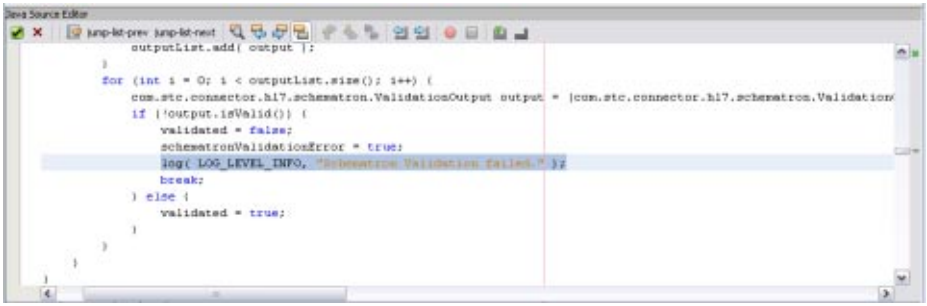
Validating the Code Snippet

```
boolean validated = validateHL7Message( HL7message );
java.util.ArrayList outputList = new java.util.ArrayList();
if (validated) {
boolean schematronValidationEnabled =
input.getHL7v3MessageInfo().getSchematronValidationInfo().
isSchematronValidationEnabled();
log( LOG_LEVEL_INFO, "SchematronEnabled = " + schematronValidationEnabled );
if (schematronValidationEnabled) {
String[] schFiles =
input.getHL7v3MessageInfo().getSchematronValidationInfo().getSchematronFilesList();
log( LOG_LEVEL_INFO, "schFilesList  = " + schFiles );
for (int i = 0; i < schFiles.length; i++) {
log( LOG_LEVEL_INFO, "Adding schematron file for validation  = " + schFiles[i] );
com.stc.connector.hl7.schematron.ValidationOutput output =
validateWithSchematron( "/" + schFiles[i], HL7message );
outputList.add( output );
}

for (int i = 0; i < outputList.size(); i++) {
com.stc.connector.hl7.schematron.ValidationOutput output =
(com.stc.connector.hl7.schematron.ValidationOutput) outputList.get( i );
if (!output.isValid()) {
validated = false;
schematronValidationError = true;
log( LOG_LEVEL_INFO, "Schematron Validation failed." );
break;
} else {
validated = true;
}
}
```

The illustrations are as shown.





Validating With Schematron Method

The Schematron method invokes the Schematron API. It reads the schematron files from classpath and constructs a DOM source. The DOM source passes it to obtain the SchematronValidator object. The object invokes the validate() method to pass the hl7payload.

validateWithSchematron() method

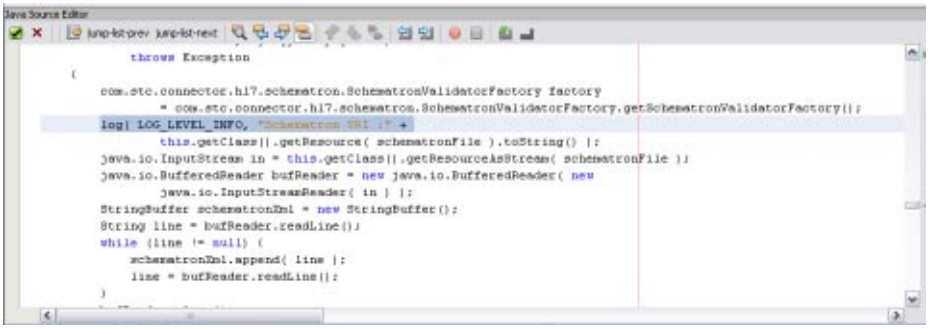
```
private com.stc.connector.hl7.schematron.
ValidationOutput validateWithSchematron( String
 schematronFile, byte[] hl7payload )
throws Exception
{
com.stc.connector.hl7.schematron.SchematronValidatorFactory
factory =
com.stc.connector.hl7.schematron.SchematronValidatorFactory.
getSchematronValidatorFactory();
log( LOG_LEVEL_INFO, "Schematron URI :" +
this.getClass().getResource( schematronFile ).toString() );
java.io.InputStream in = this.getClass().
getResourceAsStream( schematronFile );
java.io.BufferedReader bufReader = new java.io.
```

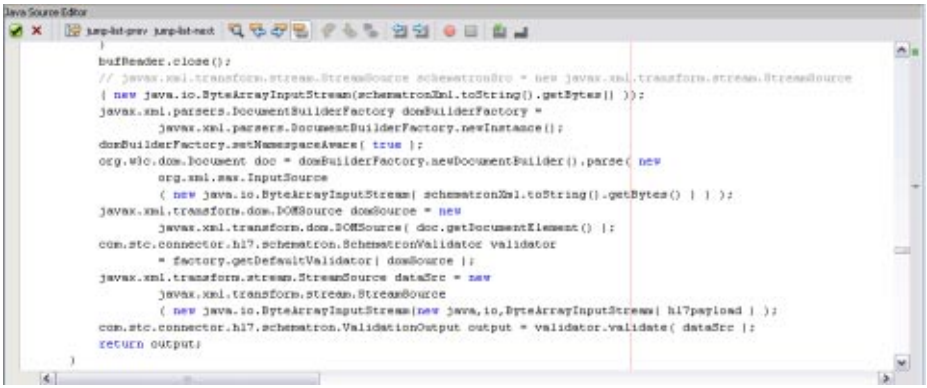
```
BufferedReader( new
java.io.InputStreamReader( in ) );
StringBuffer schematronXml = new StringBuffer();
String line = bufReader.readLine();
while (line != null) {
schematronXml.append( line );
line = bufReader.readLine();
}

bufReader.close();

javax.xml.parsers.DocumentBuilderFactory
domBuilderFactory =
javax.xml.parsers.DocumentBuilderFactory.
newInstance();
domBuilderFactory.setNamespaceAware( true );
org.w3c.dom.Document doc = domBuilderFactory.
newDocumentBuilder().parse( new
org.xml.sax.InputSource( new java.io.ByteArrayInputStream
( schematronXml.toString().getBytes() ) ) );
javax.xml.transform.dom.DOMSource domSource = new
javax.xml.transform.dom.DOMSource( doc.
getDocumentElement() );
com.stc.connector.hl7.schematron.SchematronValidator
validator =
factory.getDefaultValidator( domSource );
javax.xml.transform.stream.StreamSource dataSrc = new javax.xml.
transform.stream.StreamSource(
new java.io.ByteArrayInputStream( hl7payload ) );
com.stc.connector.hl7.schematron.ValidationOutput output =
validator.validate( dataSrc );
return output;
}
```

The illustrations are as shown.





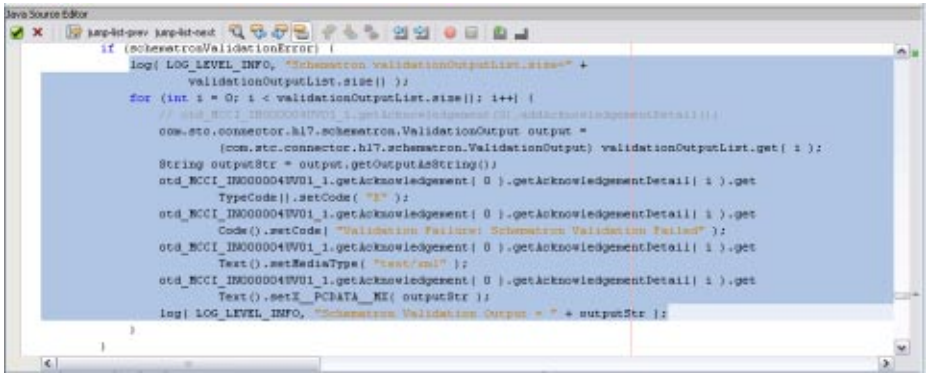
Retrieving the Resultant XML Document

The makeNAK() method retrieves the Resultant XML document generated from the Schematron validation. The XML document is embedded in the AcknowledgementDetail section of HL7V3 Acknowledgement XML.

makeNAK() method

```
if (schematronValidationError) {
log( LOG_LEVEL_INFO, "Schematron validationOutputList.size="
+ validationOutputList.size()
);
or (int i = 0; i < validationOutputList.size(); i++) {
// otd_MCCI_IN000004UV01_1.getAcknowledgement(0).
addAcknowledgementDetail();
com.stc.connector.hl7.schematron.ValidationOutput output =
(com.stc.connector.hl7.schematron.ValidationOutput)
validationOutputList.get( i );
String outputStr = output.getOutputAsString();
otd_MCCI_IN000004UV01_1.getAcknowledgement( 0 ).
```

```
getAcknowledgementDetail( i ).getTypeCode().setCode( "E" );
otd_MCCI_IN000004UV01_1.getAcknowledgement( 0 ).
getAcknowledgementDetail( i ).getCode().setCode
( "Validation Failure: Schematron Validation Failed" );
otd_MCCI_IN000004UV01_1.getAcknowledgement( 0 ).
getAcknowledgementDetail( i ).getText().setMediaType( "text/xml" );
otd_MCCI_IN000004UV01_1.getAcknowledgement( 0 ).
getAcknowledgementDetail( i ).getText().setX__PCDATA__MX( outputStr );
log( LOG_LEVEL_INFO, "Schematron Validation Output = "
+ outputStr );
}
}
```



Sample Schematron

```
<?xml version="1.0" encoding="UTF-8"?>
<sch:schema xmlns:sch="http://www.ascc.net/xml/schematron">
<sch:ns prefix="hl7v3" uri="urn:hl7-org:v3"/>
<sch:pattern name="Check structure">
<sch:rule context="hl7v3:PRPA_IN403001UV01">
<sch:assert test="count(hl7v3:profileId) = 1">The profileId should be present.
It is missing.</sch:assert>
</sch:rule>
</sch:pattern>
</sch:schema>
```

This schematron checks for the presence of the <profileId> tag under **PRPA_IN403001UV01** tag.

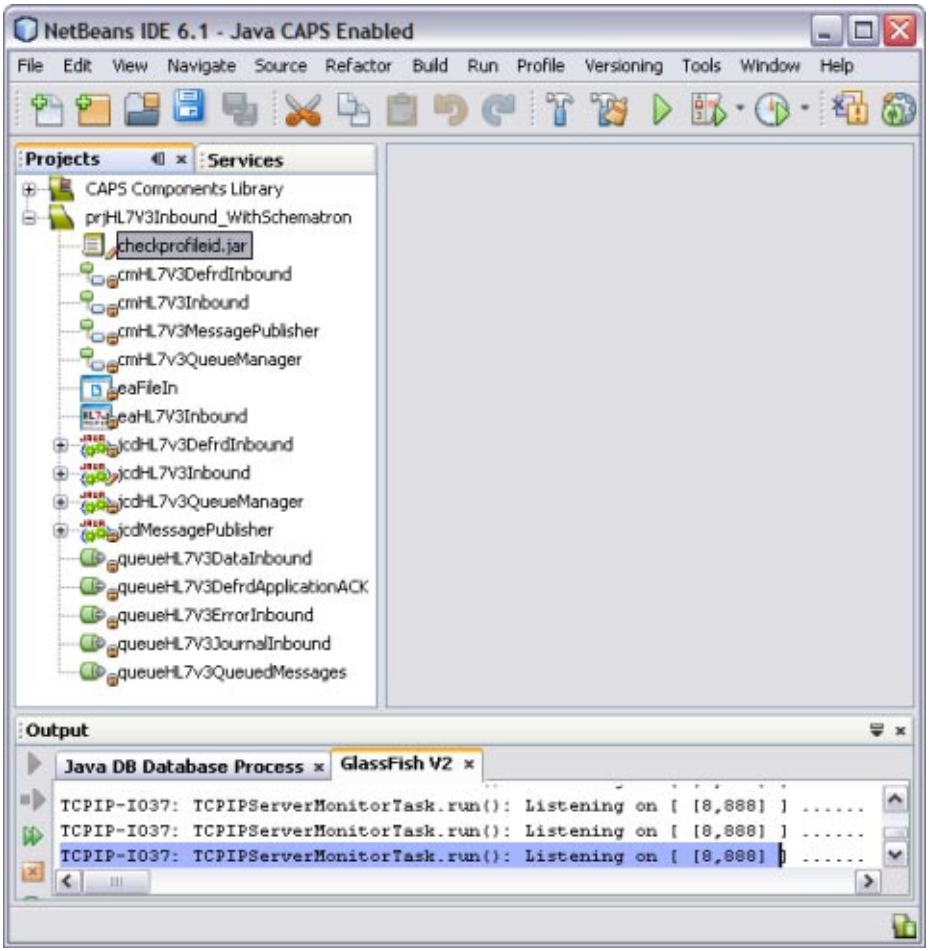
Sample Input Document

```
<PRPA_IN403001UV01 xmlns="urn:hl7-org:v3"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:hl7-org:v3 PRPA_IN403001UV01.xsd">
<id root="1.1.2.3.4.6" extension="5929" assigningAuthorityName="Litware Inc."/>
<creationTime value="20050303180027"/>
<versionCode code="V3PR1"/>
<interactionId root="1.1.6.7.8" extension="PRPA_IN403001UV01"
assigningAuthorityName="HL7"/>
<profileId root="1.1.1.1"/>
<processingCode code="D"/>
<processingModeCode code="T"/>
<acceptAckCode code="AL"/>
...
...
...
```

▼ To Import a Schematron XML and Using it Inside the JCD

This is for users who want to create the **checkprofileid.jar**.

1. **Create a JAR file containing the Schematron XML.**
2. **Import the ZIP file from File —> Import.**
3. **Open the JCD Editor and click Add JAR.**
   This will add the JAR file to the JCD.



▼ To Create a HL7 V3 External System

1 **Click the CAPS Environment from the Services tab.**

2 **Right-click and select New Environment.**

A new environment is created and is added to the CAPS Environment tree.

3 **Rename the new environment to envHL7V3Outbound or retain the default name.**

4. **Right-click envHL7V3Outbound or Environment1 and select New. Choose LogicalHost from the drop-down menu.**

   It takes few seconds to process the LogicalHost into the Environment.

   a. **Right-click LogicalHost1 and select New. Choose Sun Java System Application Server from the drop-down menu.**

      A new Application Server (**SunJavaSystemApplicationServer1**) is added to the Environment Explorer tree under **LogicalHost1**.

   b. **Right-click LogicalHost1 and select New. Choose Sun JMS IQ Manager from the drop-down menu.**

      A new JMS IQ Manager (**SunJmsIQMgr1**) is added to the Environment Explorer tree under **LogicalHost1**.

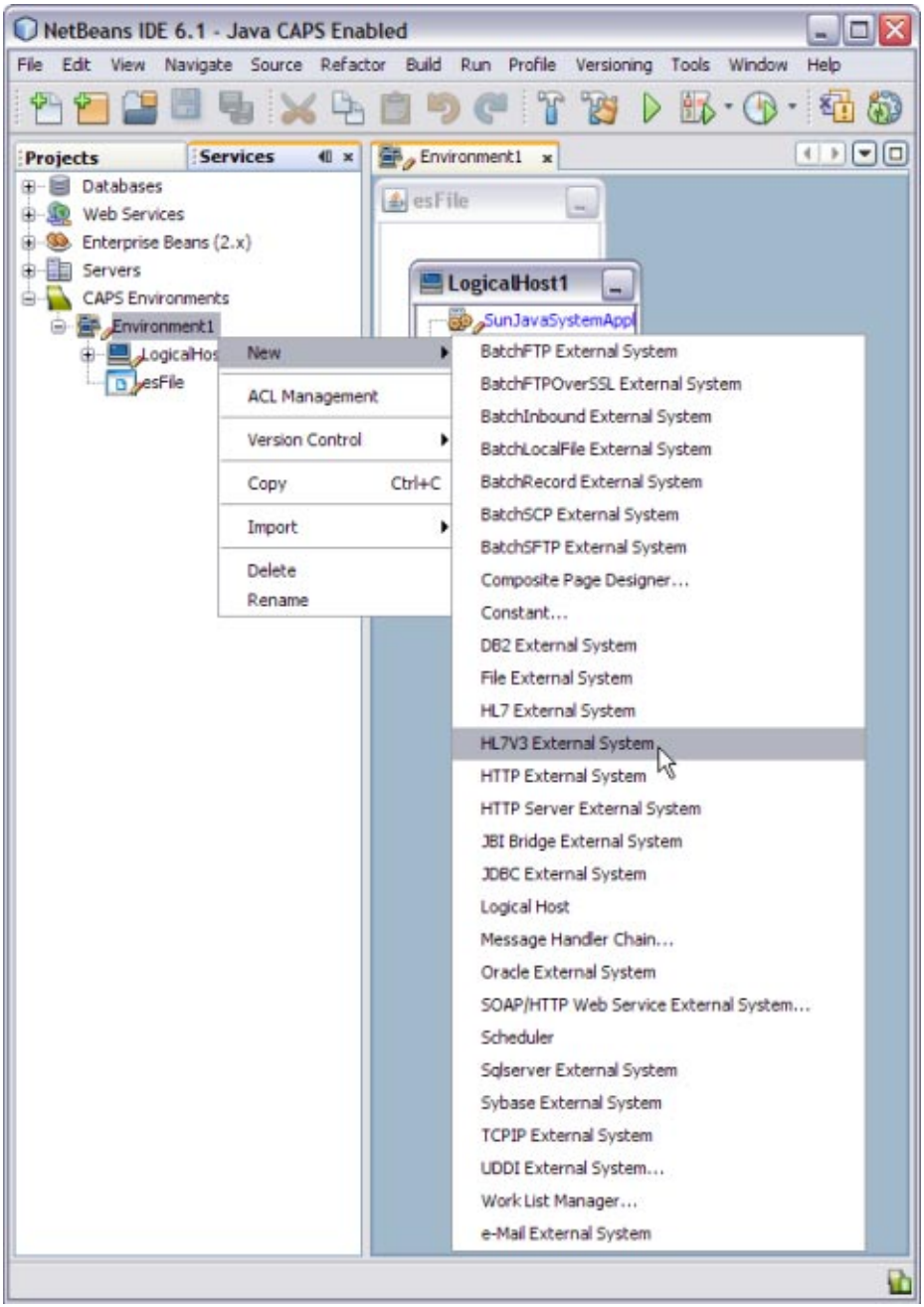
5. **Right-click envHL7V3Outbound or Environment1 and select New. Choose File External System.**

   a. **Enter the Name for the External System as esFile.**

   b. **Click OK.**

   A new node **esFile** is added to the Environment Editor.

6. **Right-click envHL7V3Outbound or Environment1 and select New. Choose HL7V3 External System.**



a. Enter the Name for the External System as esHL7V3.

b. Click OK.

A new node esHL7V3 is added to the Environment Editor.

7 Click envHL7V3Outbound or Environment1 on the right pane to view the complete structure of the new nodes.

8 Click on File menu and select Save All to save all the changes made to the environment.

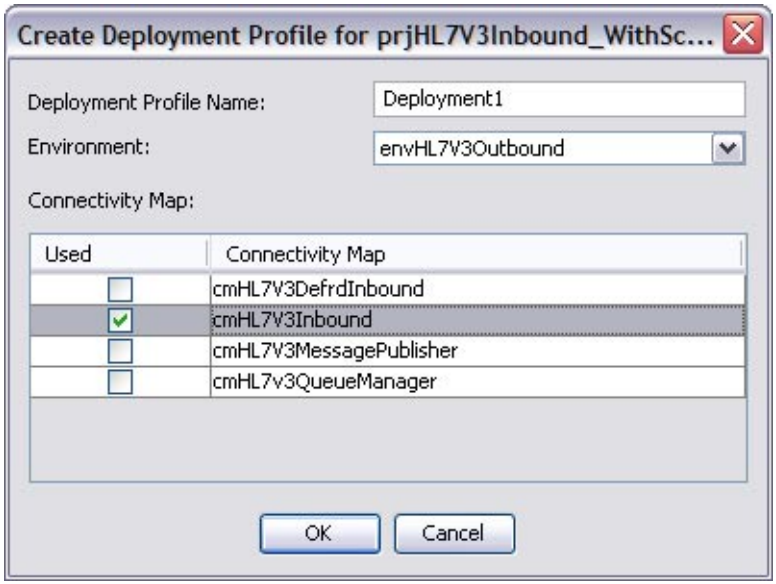
▼ To Import a Schematron XML Into the Project

1 Create a Deployment Profile.

See "Building and Deploying the Sample Project" in *Sun Adapter for TCP/IP HL7 Tutorial* for steps on creating a deployment profile.

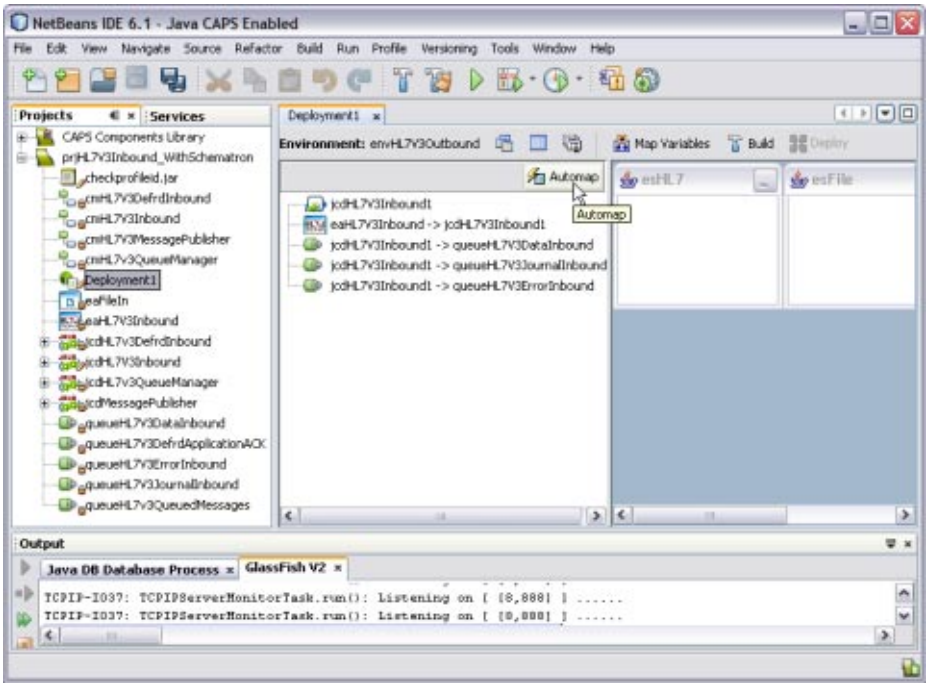
Note – Make sure that the selected Environment: is **envHL7V3Outbound** and the selected Connectivity Map: is **cmHL7V3Inbound**.

The illustration is as shown.

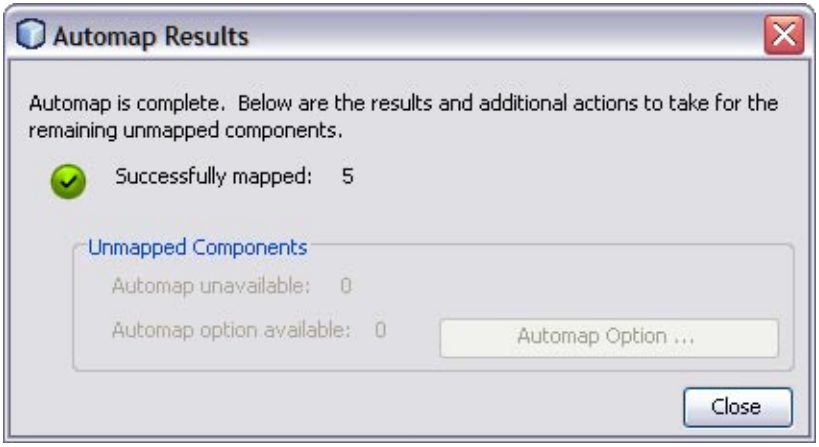


2 Click OK.

3 Click Automap.



This displays the Automap Results dialog box.



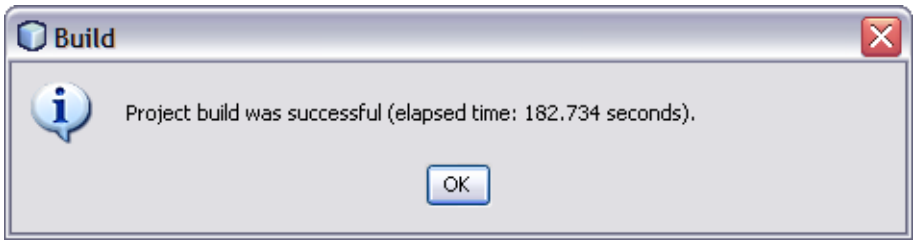
4 **Click Close.**

5 **Click Save All.**

6 **Click the Build button.**

See "Building and Deploying the Sample Project" in *Sun Adapter for TCP/IP HL7 Tutorial* for steps on building the project.

This action displays the Project build confirmation message.



7 **Click OK.**

8 **Click the Deploy button.**

Tip – Make sure the GlassFish server is started before deploying.

Executing a Sample Project

The steps describe the method to build and deploy the compressed (.zip) project files, `prjHL7V3Inbound_WithSchematron.zip` and `prjHL7V3Outbound.zip`.

▼ To Build and Deploy the Project ZIP Files

1 **Upload the latest HL7eWay.sar from the Java Composite Application Platform Suite Uploader.**

2 **Install the new NBMs into the NetBeans IDE from the CAPS Repository.**

3 **Import the project prjHL7V3Inbound_WithSchematron.zip and prjHL7V3Outbound.zip.**

Follow the steps described in "Schematron Validation Inside the JCD" on page 17.

4 **Create the Deployment Profiles.**

5 **Build and Deploy both the projects.**

6 Use the sample HL7V3 message to trigger the project. Use Copy and Paste. Copy the file into C:\temp. Name the file as PRPA_IN403001UV01.xml:

Note – Copy and Paste the content to Notepad File and name the file as **PRPA_IN403001UV01.xml**. Ensure to change the extension from TXT to XML.

Sample XML File

```
<?xml version="1.0" encoding="UTF-8"?>
<PRPA_IN403001UV01 xmlns="urn:hl7-org:v3"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:hl7-org:v3 PRPA_IN403001UV01.xsd">
<id root="1.1.2.3.4.6" extension="5929" assigningAuthorityName="Litware Inc."/>
<creationTime value="20050303180027"/>
<versionCode code="V3PR1"/>
<interactionId root="1.1.6.7.8" extension="PRPA_IN403001UV01"
assigningAuthorityName="HL7"/>
<!--profileId root="1.1.1.1"/-->
<processingCode code="D"/>
<processingModeCode code="T"/>
<acceptAckCode code="AL"/>
<receiver typeCode="RCV">
<device classCode="DEV" determinerCode="INSTANCE">
<id root="1.4.7.8.3"/>
</device>
</receiver>
<sender typeCode="SND">
<device classCode="DEV" determinerCode="INSTANCE">
<id root="1.45.6.7.98"/>
</device>
</sender>
<controlActProcess classCode="CACT" moodCode="EVN">
<subject typeCode="SUBJ" contextConductionInd="false">
<encounterEvent classCode="ENC" moodCode="EVN">
<id root="1.56.3.4.7.5" extension="122345" assigningAuthorityName="Maple
Hospital Emergency"/>
<code code="EMER" codeSystem="2.16.840.1.113883.5.4"/>
<statusCode code="active"/>
<subject contextControlCode="OP">
<patient classCode="PAT">
<id root="1.56.3.4.7.9" extension="55321" assigningAuthorityName="Maple
Hospital Patients"/>
<patientPerson classCode="PSN" determinerCode="INSTANCE">
<name>
<given>Rob</given>
```

```
<given>P</given>
<family>Young</family>
</name>
<administrativeGenderCode code="M" codeSystem="2.16.840.1.113883.5.1"/>
<birthTime value="19800309"/>
</patientPerson>
</patient>
</subject>
</encounterEvent>
</subject>
</controlActProcess>
</PRPA_IN403001UV01>
```

The logical processing is as follows:

a. Place the .xml file in C:\temp.

b. Open the server log file and check the results at the following location:

```
Drivename:\JavaCAPS6U1\appserver\domains\domian1\logs
```

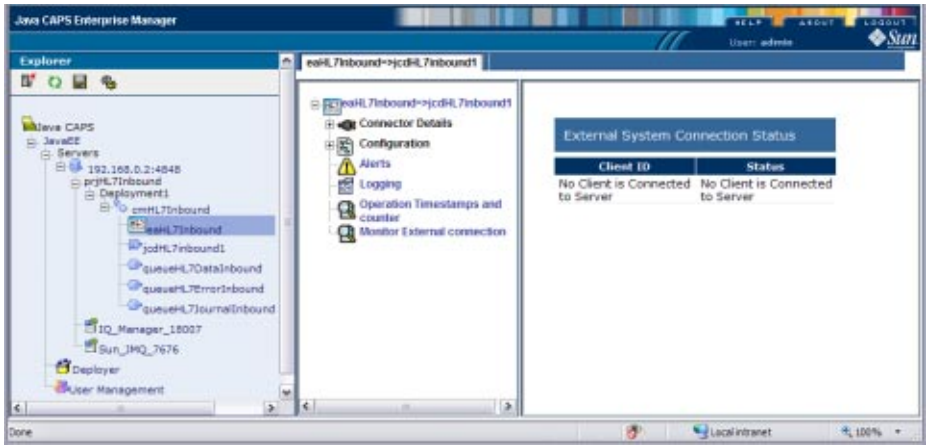
This action displays the following message.

```
Schematron Validation Failed
```

Monitoring HL7 External System Connection Status : Inbound Mode

This feature describes monitoring the external system connection status from the Enterprise Manager GUI when the HL7 Adapter is deployed in an inbound mode.

- HL7 Adapter emr plugin is extended to provide the monitoring external system connection status
- Provision is included in the Enterprise Manager GUI for monitoring the HL7 external system connection status
- Click the Monitor HL7 External Connection link. The user will see all the external systems (HL7 clients) connected to the HL7 inbound adapter (HL7 Server)
- When the connection with the external system is lost, its status information will not appear in the status table shown in the Enterprise Manager GUI.



Managing the Repository

This section explains the method to manage the Repository.

To Download EMR Files from Java Composite Application Platform Suite

1. **Enter the Host Address http://localhost:portnumber**

   The default portnumber is **12000**.

2. **Enter the User Name and Password.**

   The default User Name is *Administrator* and Password is *STC*.

3. **Click Downloads tab and select the following from the list.**

   a. **eWays Base Enterprise Manager Plug-in**

   b. **HL7 eWay Enterprise Manager Plug-in**

4. **Save the emr files to the local directory.**

Note – User can also locate the emr files from the local directory, if these are installed during Java CAPS installation.

Follow the path to pick the already installed **HL7eWay.emr** from the local directory,

Drive:/JavaCAPSR6U1/repository/repository/data/files/InstallManager/HL7eWay/downloadables/com.stc.HL7eWay.emr

The emr file is installed during Java CAPS installation.

To Upload EMR Files to Enterprise Manager

1. **Start the eManager from the following location: Drivename:/JavaCAPSR6U'/eManager/startserver.bat**

   Double-click **startserver.bat**.

2. **Invoke any Web Browser and enter the URL to start the Java CAPS Enterprise Manager.**

   http://localhost:port number

   For example, the port number is **15000**

3. **Enter the User ID and Password.**

   The default User ID is *admin* and default Password is *adminadmin*.

4 **Install the HL7eWay.emr from the Java CAPS Repository to the Enterprise Manager.**

a. **Click Web Application Manager from Java CAPS Enterprise Manager —> Manage Applications.**

b. **Click Browse to select the com.stc.HL7eWay.emr from the local directory.**

This file is downloaded from the Java Composite Application Platform Suite.

c. **Click Deploy.**

d. **Click Web Application Manager.**

Enter all the required credentials like Host Name, User Name, and Password.

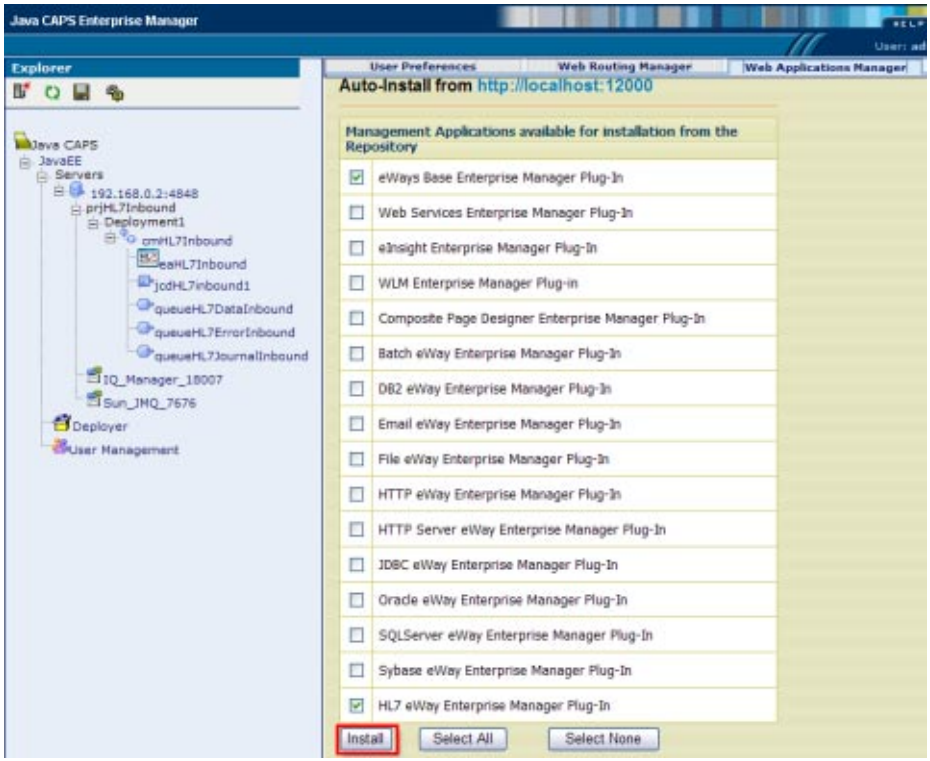
e. **Click Connect.**

The list of Management Applications available for installation from the Repository is displayed.

f. **Select eWays Base Enterprise Manager Plug-in and HL7 eWay Enterprise Manager Plug-in.**

Note – Ensure to select **eWay Base Enterprise Manager Plug-in**. If not installed the application generates an error message.

```
Select an appropriate eWay Monitor Plug-in and check the version of the .sar file.
```



g. Click Install.

See *Using Enterprise Manager Management Application in Java CAPS* for detailed procedures.

This installs the **eWay Base Enterprise Manager Plug-in** and **HL7eWay Enterprise Manager Plug-in** from Java CAPS Repository to the Enterprise Manager.

Executing a Sample Project : Inbound Mode

Create a sample project to use the uploaded HL7eWay.sar

▼ To Execute a Sample Project for the Inbound Mode

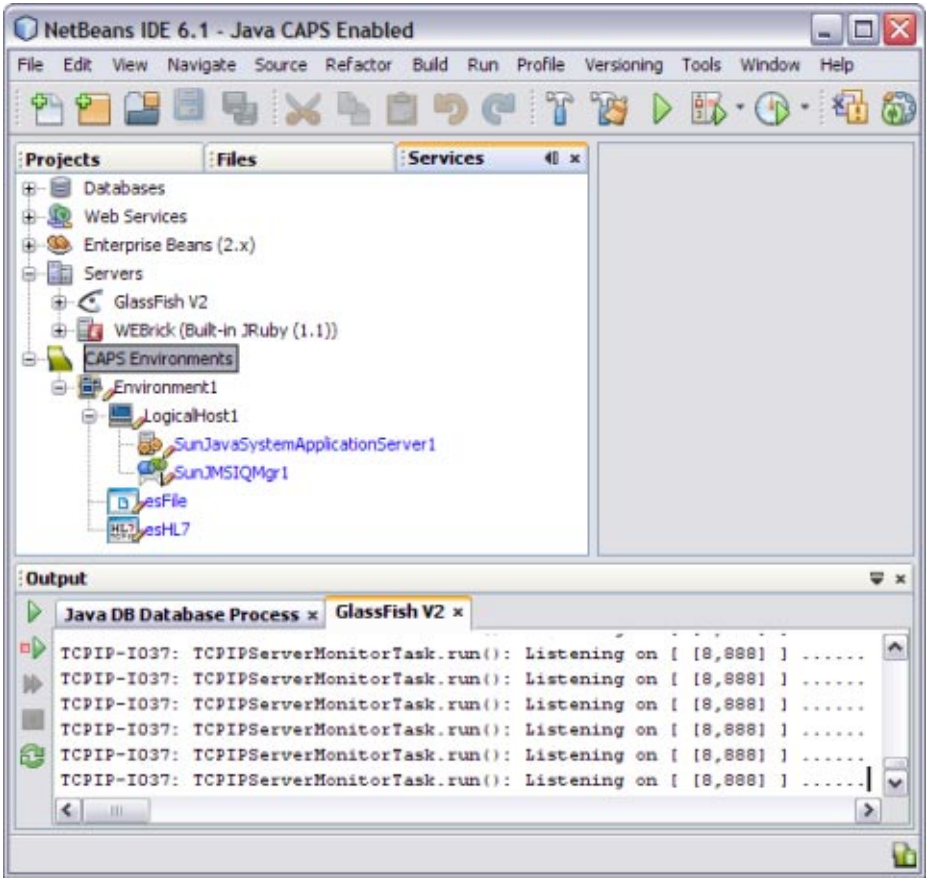
1 Install HL7eWay.sar file to the Sun Java CAPS Repository.

For steps, see "Installing the TCP/IP HL7 Adapter and Sample Projects" in *Sun Adapter for TCP/IP HL7 Tutorial*.

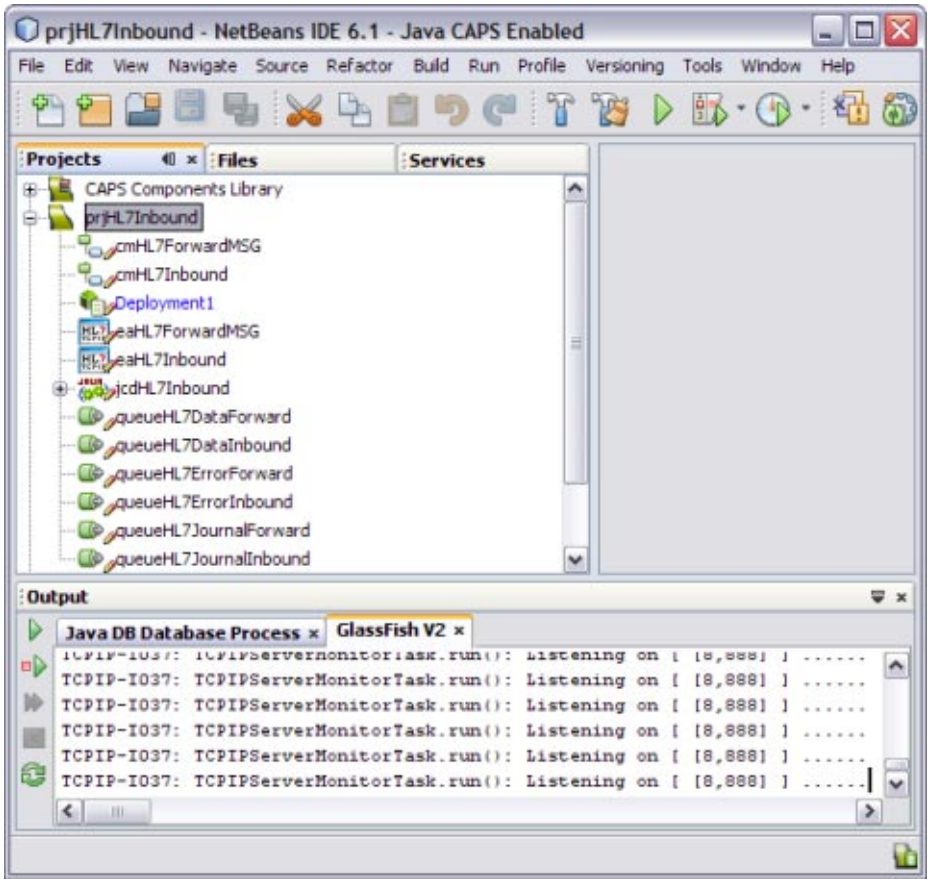
2 Start the NetBeans IDE and use the NetBeans Plugins Manager to install the HL7 adapter nbms to NetBeans IDE.

3 **Re-start the Netbeans IDE and establish connection to the Sun Java CAPS Repository.**

4 **Create a CAPS Environment for the prjHL7Inbound project.**



5 **Import the HL7 project prjHL7Inbound.zip that is bundled with HL7eWay.sar into NetBeans IDE**



6 **Create the Deployment Profile and select Check Out...**

The Check Out... option enables users to modify the created Deployment Profile for prjHL7Inbound.

a. **Enter the Deployment Profile Name and select the Environment from the drop-down menu.**

b. **Select the check box to choose the Used Connectivity Map cmHL7Inbound.**

c. **Click OK.**

7 **Click the Automap button to map the created environment files.**

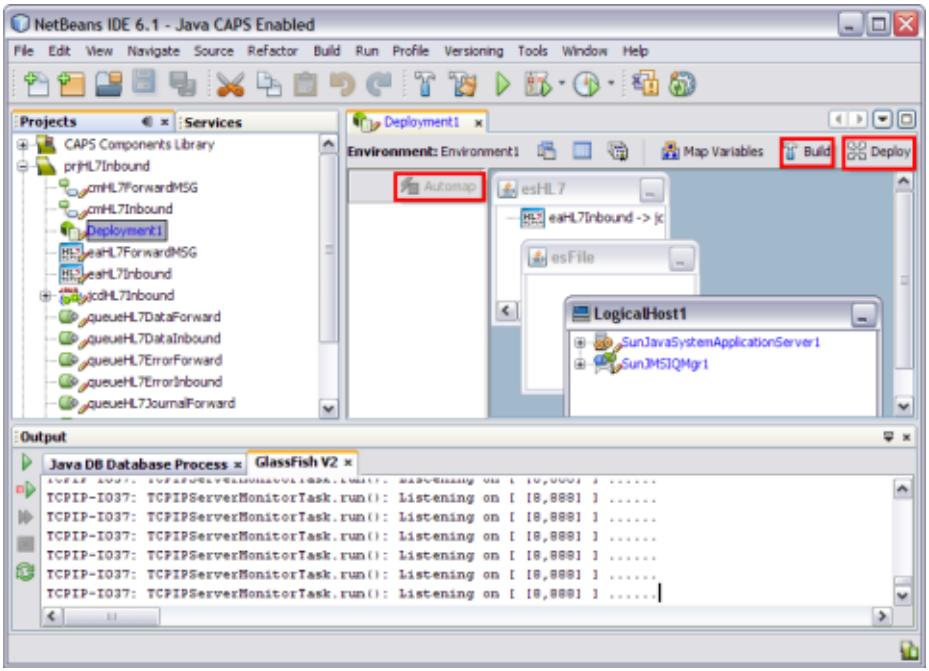
Note – Ensure to start the GlassFish V2 sever before deploying.

---

8 **Click Build to build the project.**

The following message is displayed after the build is successful.

```
Project buld was successful (elapsed time: 120.562 seconds).
```



9 **Click OK.**

10 **Click Deploy button to deploy the project onto GlassFish V2 Application Server from the NetBeans IDE.**

This action displays the following message.

```
Project deployment successful (elaspsed time: 49 seconds).
```

11 **Open a Web Browser and login to the Enterprise Manager at the following path:**

http://localhost:portnumber

The default portnumber is **15000**.

12 **Expand the tree from the Explorer frame of the eManager GUI and select the prjHL7Inbound/Deployment1/cmHL7Inbound/eaHL7Inbound external system.**

13 Select the Monitor external Connection action of the tree from the eaHL7Inbound => jcdHL7inbound1 frame.

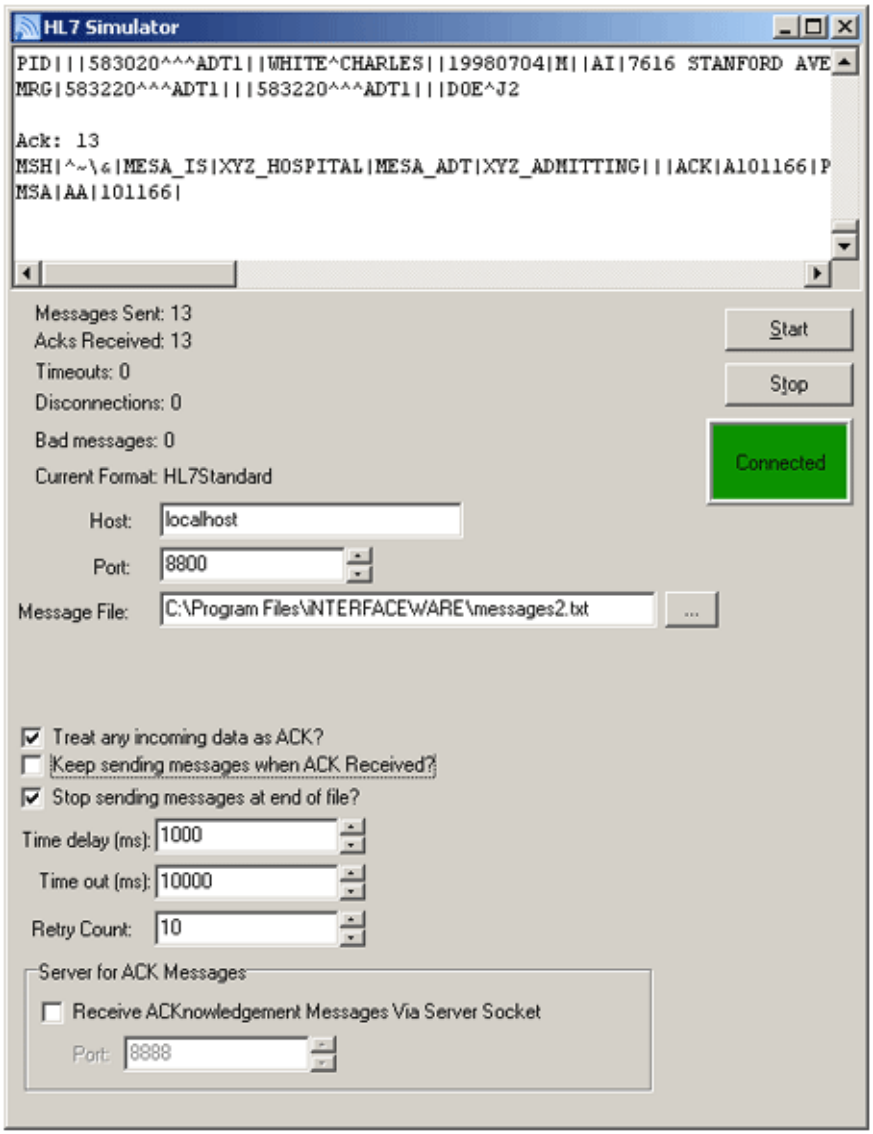
This action displays the screen as shown below.

14 Start multiple HL7 external system and continue to send requests to the HL7 inbound project. Follow the Monitor External Connection link to observe the status of the external systems connection.

15 Terminate one of the external systems and observe that the status information of the terminated system does not appear in the status table

16 Execute the sample project using HL7 Simulator.

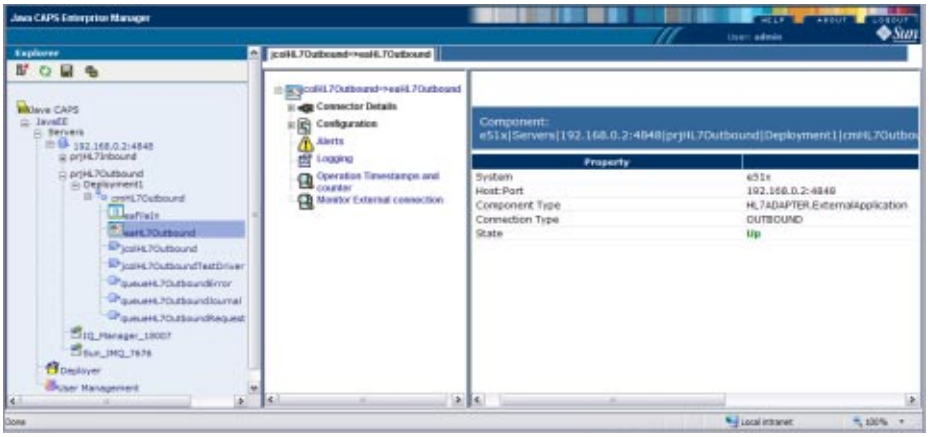
Here, is a sample illustration.



Monitoring HL7 External System Connection Status : Outbound Mode

This feature is meant to monitor the connectivity status of external systems from the Enterprise Manager GUI when the HL7 Adapter is deployed in the outbound mode.

- HL7 Adapter emr plugin has been extended to provide the monitoring external system connection status
- Provision is included in the Enterprise Manager GUI for monitoring the HL7 external system connection status
- Click on the monitoring HL7 external system connection link. A scheduler thread is invoked which executes periodic monitoring action. The default monitoring period retrieved from the HL7 adapter we bapplication's deployment descriptor web.xml
- In case they have to supply their own monitoring period, they have to stop the current monitoring thread.



Code in Web.xml

```
<web-app>
...
...
<!--  Default monitoring period used in monitoring the
external system connection  -->
<context-param>
<param-name>monitorperiod</param-name>
<param-value>2000</param-value>
</context-param>
...
</web-app>
```

Executing a Sample Project : Outbound Mode

Create a sample project to use the uploaded HL7eWay.sar

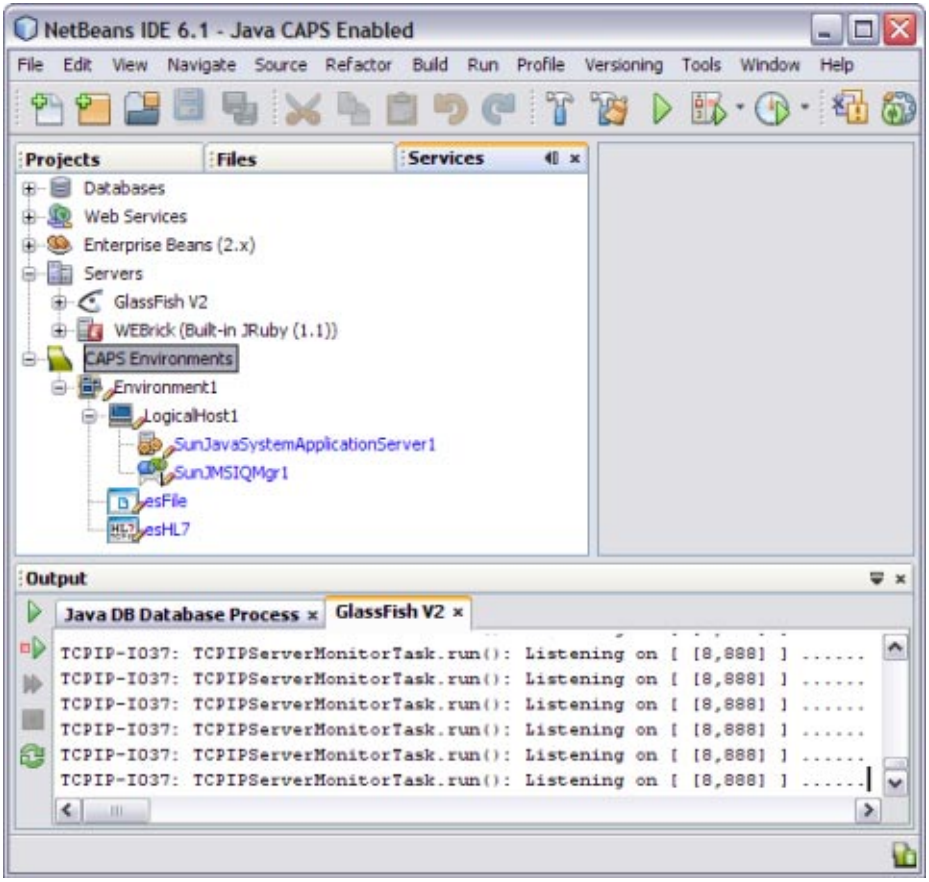
To Execute a Sample Project for the Outbound Mode

1 **Install HL7eWay.sar file to Sun Java CAPS Repository.**
For steps, see *Sun Adapter for TCP/IP HL7 Tutorial*.

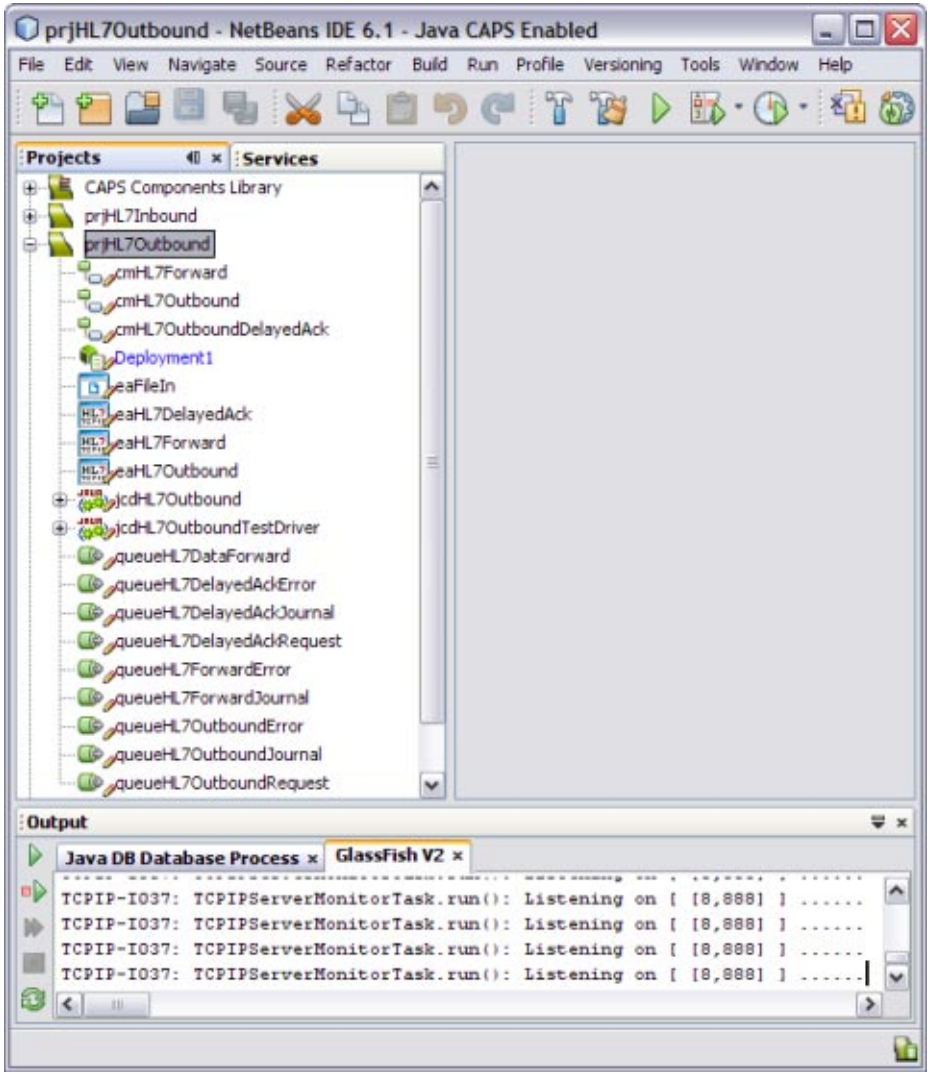
2 **Start the NetBeans IDE. Use the NetBeans PlugIns Manager to install the HL7 adapter nbms to NetBeans IDE.**

3 **Re-start the Netbeans IDE and establish connection to the Sun Java CAPS Repository.**

4 **Create a CAPS Environment for the prjHL7Outbound project.**



5 **Import the sample HL7 project prjHL7Outbound.zip that is bundled with HL7eWay.sar into NetBeans IDE**



6 Create Deployment Profile and select Check Out...

The Check Out... option enables the user to modify the created Deployment Profile for prjHL7Outbound.

a. Enter the Deployment Profile Name and select the Environment from the drop-down menu.

b. Choose the Used Connectivity Map cmHL7Outbound by selecting the check box.

c. **Click OK.**

7 **Click Automap button to map the created environment files.**

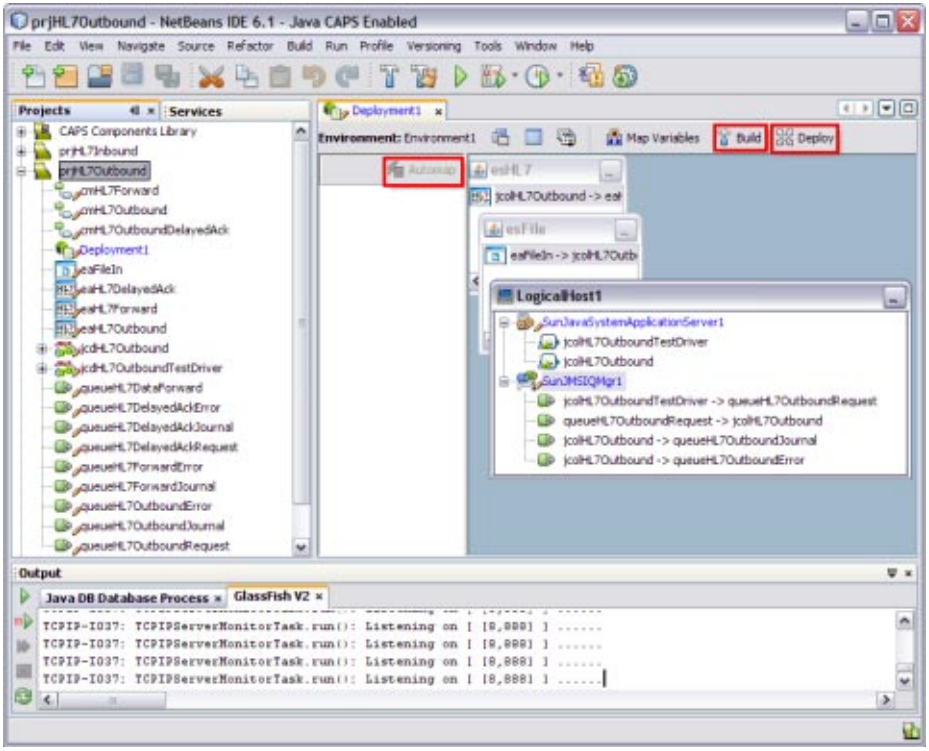
Note – Ensure to start the GlassFish V2 sever before deploying.

---

8 **Click Build to build the project.**

The following message indicates that the build was successful.

```
Project buld was successful (elapsed time: 13.687 seconds).
```



9 **Click OK.**

10 **Click Deploy button to deploy the project onto GlassFish V2 Application Server from NetBeans IDE.**

The action displays the following message.

```
Porject deployment successful (elaspsed time: 45 seconds).
```

11 **Repeat steps 11 through 17 of prjHL7Inbound. See "Executing a Sample Project : Inbound Mode" on page 34.**

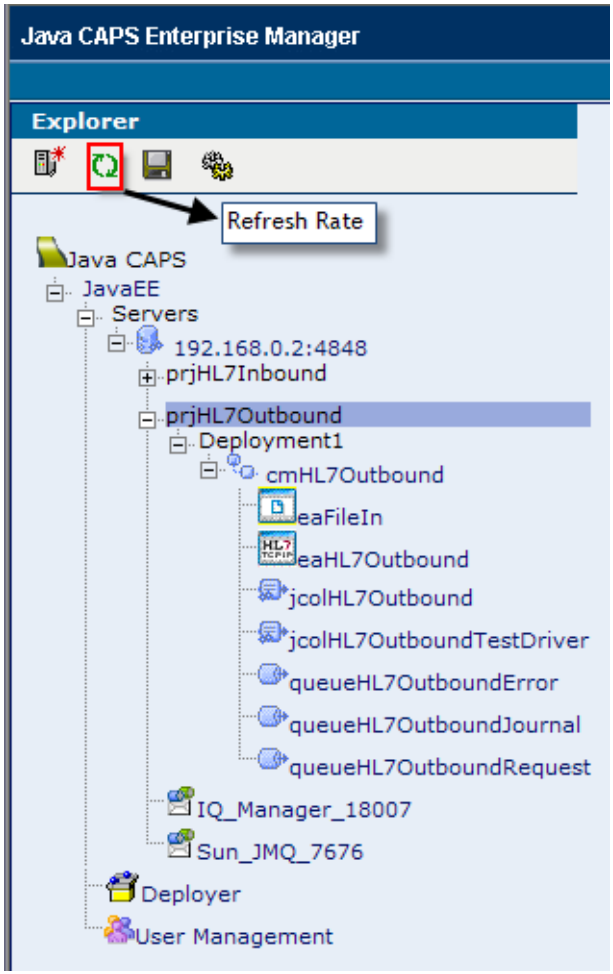
12 **Open a Web Browser and login to the Enterprise Manager at the following path:**

http://localhost:portnumber

The default portnumber is **15000**.

13 **Click Refresh Rate**

The illustration is as shown.

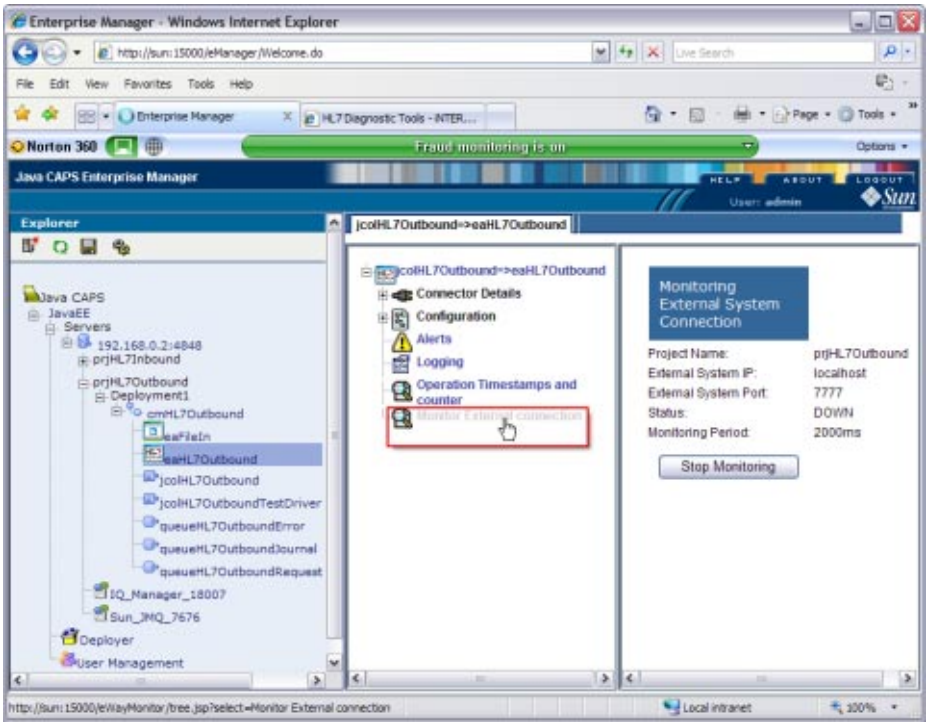


14 Expand the tree from the Explorer frame of the eManager GUI. Select the prjHL7Outbound/Deployment1/cmHL7Outbound/eaHL7Outbound external system.

15 Select the Monitor external Connection action of the tree from the jcdHL7Outbound —> eaHL7Outbound frame.

This triggers an executor thread that monitors the external system connection. The user observes the latest status in the GUI.

The screen is displayed as shown.

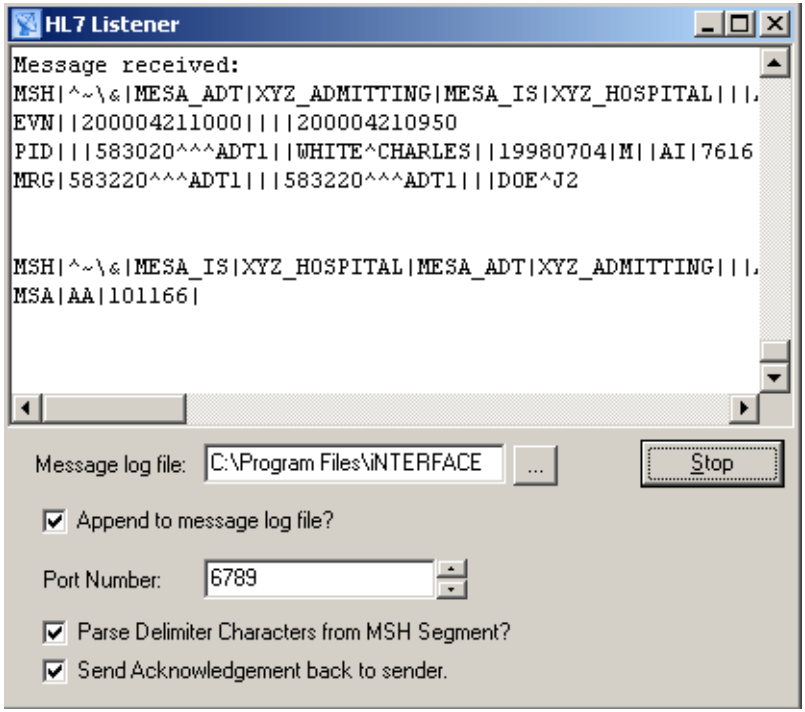


16 Click Stop Monitoring to exit the listening of TCPIP Server Monitor Task.

The Monitoring Period is displayed in milliseconds.

17 Execute the sample project using HL7 Listener.

Here, is a sample illustration.



Dynamic Connection Support

The Dynamic Connection Support feature is added to both TCPIP and HL7 Adapters.

Dynamic Connection support features the following.

1. Users can provide the host and port details and dynamically connect to the external system.
2. The following new methods are added.
   a. setHost(String ipaddress or hostname)
   b. setPort(int number)
   c. connect()
   d. connect(String host, int port)
   e. Close()
3. An environment configuration property called Connection Mode is added.

   The value can be **Automatic** or **Manual**.
4. The Dynamic Connection Support is available only if Connection Mode is **Automatic**.

   Default Value is **Automatic**
5. An exception is generated if the methods setHost, setPort,connect() are invoked when the ConnectionMode is **Automatic**.

6. If the connect() method is invoked without invoking setHost() and setPort(). The adapter uses the environment properties to connect to the host and port.

Code in JCD

```
TCPIPClient_1.connect( "localhost", 9999 );
// send handshake string
TCPIPClient_1.sendEnvelopedMsg( "Sun",getBytes() );
//receive handshake string
byte[] back = TCPIPClient_1.receiveEnvelopedMesg();
...
...
...
TCPIPClient_1.close();
TCPIPClient_1.connect( "129.158.239.67", 9999 );
// send handshake string
TCPIPClient_1.sendEnvelopedMesg( "Sun",getBytes() );
// receive handshake string
back = TCPIPClient_1.receiveEnvelopedMesg();
...
...
....
TCPIPClient_1.client();
```

Alert Type TCPIPBASE_SERVER_IDLE_TIMEOUT_EXPIRED

The HL7 adapter is enhanced to generate an alert when no messages are received from the HL7 client with in the configured idle time-out period (threshold).

- A new alert type TCPIPBASE_SERVER_IDLE_TIMEOUT_EXPIRED has been added
- This alert is generated on expiry of the time-out period specified in Connectivity Map property: HL7 Inbound Configuration --> TCPIP Inbound Settings --> Inbound Connection Management --> idle timeout
- User must connect to the GlassFish Application Server to where the HL7 server application is deployed. View the alert from the eManage GUI.

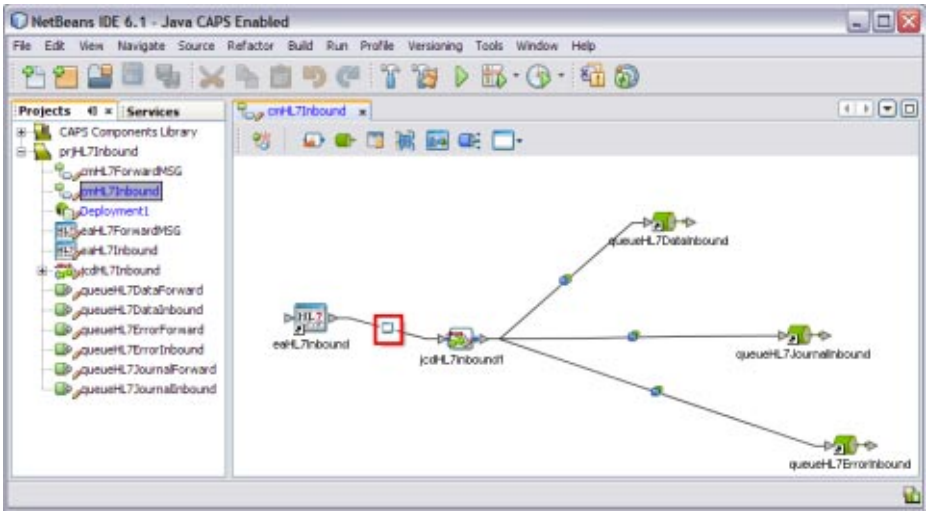
▼ To Execute a Sample Project for the Alert Code

1 Install HL7eWay.sar file to Sun Java CAPS Repository.

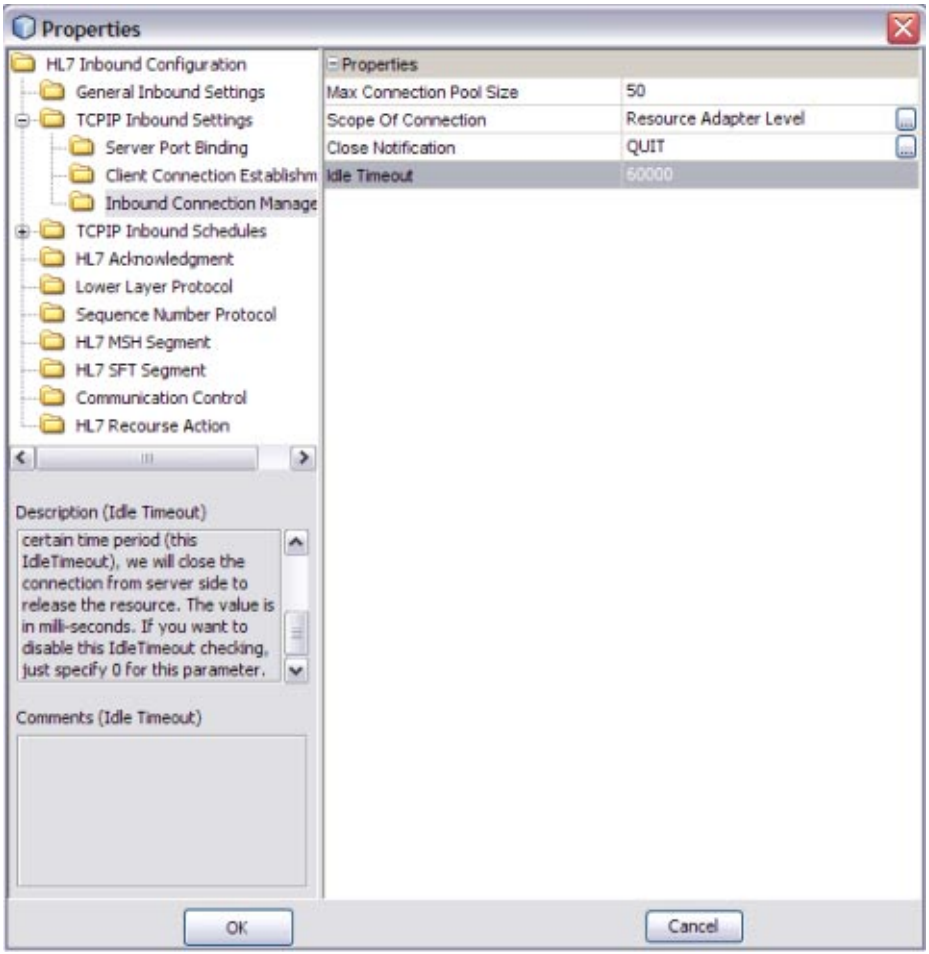
2 Start the NetBeans IDE and install the HL7 adapter nbms to NetBeans IDE.

3 Re-start the NetBeans IDE and establish connection to the Sun Java CAPS Repository.

4 **Import the sample HL7 project prjHL7Inbound.zip that is bundled with HL7eWay.sar into NetBeans IDE.**



5 **Double-click on the node to invoke the Configuration Properties.**



6 **Click OK.**

7 **Click prjHL7Inbound to build and deploy the project to the GlassFish Application Server.**

8 **Send messages to HL7 inbound project continuously from HL7 External System.**

9 **Start Java CAPS Enterprise Manager and install the HL7eWay emr from Java CAPS Repository to Enterprise Manager.**

10 **Connect to GlassFish Application Server where the project is deployed from Enterprise Manager.**

11 Stop sending the message from HL7 External System.

Since there were no messages received from the HL7 External System within the configured idletimeout period, HL7 adapter will generate an alert.

12 Select the prjHL7Inbound/Deployment1/cmHL7Inbound/eaHL7Inbound external system from the explorer frame of the eManager GUI.

13 Select the Alerts link from the tree. An alert of type TCPIPBASE_SERVER_IDLE_TIMEOUT_EXPIRED is displayed in alerts table from the eaHL7Inbound=>jcdHL7inbound1 frame.

See Also **Message Code**: TCPIPBASE-SERVER-IDLE-TIMEOUT-EXPIRED000008

Description: No message received from the peer within in the specified idle timeout value <60000>. So the connection with the peer is being terminated.

HL7 Version 2.6 OTD Library

This topic provides a complete list of HL7 v2.6 OTD Library.

TABLE 1–1 HL7 Version 2.6 OTD Library

HL7 2.6 OTD	HL7 Description
HL7_26_ADT_A03	ADT/ACK - Discharge/end visit
HL7_26_SIU_S13	SIU/ACK - Notification of appointment rescheduling
HL7_26_QBP_Z81	Dispense History
HL7_26_OMN_O07	OMN - Non-stock requisition order
HL7_26_RRE_O26	RRE - Pharmacy/Treatment Refill Authorization Acknowledgement
HL7_26_ADT_A01	ADT/ACK - Admit/visit notification
HL7_26_QSX_J02	QSX/ACK - Cancel subscription/acknowledge message
HL7_26_SRM_S05	SRM/SRR - Request appointment discontinuation
HL7_26_EHC_E21	Cancel Authorization Request
HL7_26_RSP_K25	RSP - Personnel Information by Segment Response
HL7_26_DFT_P03	DFT/ACK - Post detail financial transaction
HL7_26_PEX_P07	PEX - Unsolicited initial individual product experience report

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_MDM_T03	MDM/ACK - Document status change notification
HL7_26_RQA_I09	RQA/RPA - Request for modification to an authorization
HL7_26_SRR_S08	SRM/SRR - Request modification of service/resource on appointment
HL7_26_ADT_A37	ADT/ACK - Unlink patient information
HL7_26_ADT_A52	ADT/ACK - Cancel leave of absence for a patient
HL7_26_ADT_A22	ADT/ACK - Patient returns from a "leave of absence"
HL7_26_SIU_S24	SIU/ACK - Notification of opened ("unblocked") schedule time slot(s)
HL7_26_MFK_M14	MFN/MFK - Master file notification - site defined
HL7_26_ADT_A12	ADT/ACK - Cancel transfer
HL7_26_RRD_O14	RRD - Pharmacy/treatment dispense acknowledgment
HL7_26_PMU_B02	PMU/ACK - Update personnel record
HL7_26_RSP_E03	HealthCare Services Invoice Status
HL7_26_QBP_E03	HealthCare Services Invoice Status
HL7_26_MFK_M05	MFN/MFK - Patient location master file
HL7_26_ADT_A42	ADT/ACK - Merge visit - visit number
HL7_26_RSP_Z82	Dispense History (Response)
HL7_26_RCL_I06	RQC/RCL - Request/receipt of clinical data listing
HL7_26_PEX_P08	PEX - Unsolicited update individual product experience report
HL7_26_ADT_A39	ADT/ACK - Merge person - patient ID (for backward compatibility only)
HL7_26_ADT_A55	ADT/ACK - Cancel change attending doctor
HL7_26_ADT_A38	ADT/ACK - Cancel pre-admit
HL7_26_OPU_R25	OPU - Unsolicited Population/Location-Based Laboratory Observation Message
HL7_26_SRM_S06	SRM/SRR - Request appointment deletion
HL7_26_ADT_A54	ADT/ACK - Change attending doctor
HL7_26_EAN_U09	EAN/ACK - Automated equipment notification
HL7_26_ADT_A06	ADT/ACK - Change an outpatient to an inpatient
HL7_26_SIU_S17	SIU/ACK - Notification of appointment deletion

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_ADT_A35	ADT/ACK - Merge patient information - account number only (for backward compatibility
HL7_26_ACK	Version 2.6 HL7 Acknowledgment
HL7_26_PMU_B08	PMU/ACK - Revoke Certificate/Permission
HL7_26_MFN_M11	MFN/MFK - Test/calculated observations master file
HL7_26_RDY_Z80	Dispense Information (Response)
HL7_26_QBP_Q15	QBP - Query by parameter requesting an RDY display response
HL7_26_SRR_S03	SRM/SRR - Request appointment modification
HL7_26_QRY_Q26	ROR - Pharmacy/treatment order response
HL7_26_QBP_Q24	QBP - Allocate identifiers
HL7_26_MFK_M10	MFN/MFK - Test /observation batteries master file
HL7_26_ADT_A46	ADT/ACK - Change patient ID (for backward compatibility only)
HL7_26_ADT_A45	ADT/ACK - Move visit information - visit number
HL7_26_OUL_R23	OUL - Unsolicited Specimen Container Oriented Observation Message
HL7_26_SRR_S10	SRM/SRR - Request discontinuation of service/resource on appointment
HL7_26_MFN_M01	MFN/MFK - Master file not otherwise specified (for backward compatibility only)
HL7_26_RQA_I10	RQA/RPA - Request for re-submission of an authorization
HL7_26_SCN_S37	SCN/ACK - Notification of anti-microbial device cycle data
HL7_26_QBP_E22	Authorization Request Status
HL7_26_MFK_M07	MFN/MFK - Clinical study without phases but with schedules master file
HL7_26_RTB_Z94	Tabular Dispense History (Response)
HL7_26_ADT_A48	ADT/ACK - Change alternate patient ID (for backward compatibility only)
HL7_26_MDM_T06	MDM/ACK - Document addendum notification and content
HL7_26_MDM_T10	MDM/ACK - Document replacement notification and content
HL7_26_NMQ_N01	NMQ/NMR - Application management query message
HL7_26_INR_U06	INR/ACK - Automated equipment inventory request
HL7_26_RSP_K22	RSP - Find candidates response

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_MDM_T09	MDM/ACK - Document replacement notification
HL7_26_RSP_K24	RSP - Allocate identifiers response
HL7_26_SRM_S04	SRM/SRR - Request appointment cancellation
HL7_26_PMU_B03	PMU/ACK - Delete personnel re cord
HL7_26_ADT_A23	ADT/ACK - Delete a patient record
HL7_26_MFN_M05	MFN/MFK - Patient location master file
HL7_26_RTB_Z92	Who Am I (Response)
HL7_26_ADT_A30	ADT/ACK - Merge person information (for backward compatibility only)
HL7_26_CSU_C11	CSU - Patient completes a phase of the clinical trial
HL7_26_TCR_U11	TCR/ACK - Automated equipment test code settings request
HL7_26_ADT_A04	ADT/ACK - Register a patient
HL7_26_ADT_A26	ADT/ACK - Cancel pending transfer
HL7_26_ACK_var	null
HL7_26_ORU_R01	ORU/ACK - Unsolicited transmission of an observation message
HL7_26_OMI_O23	OMI - Imaging order
HL7_26_MFK_M17	DRG Master File Message
HL7_26_OML_O33	OML - Laboratory order for multiple orders related to a single specimen
HL7_26_PMU_B04	PMU/ACK - Active practicing person
HL7_26_CRM_C02	CRM - Cancel a patient registration on clinical trial (for clerical mistakes only)
HL7_26_RGR_RGR	Pharmacy/Treatment Dose Information
HL7_26_OMB_O27	OMB - Blood product order
HL7_26_RQP_I04	RQD/RPI - Request for patient demographic data
HL7_26_ADT_A15	ADT/ACK - Pending transfer
HL7_26_BAR_P01	BAR/ACK - Add patient accounts
HL7_26_CRM_C03	CRM - Correct/update registration information
HL7_26_ORL_O34	ORL - Laboratory order response message to a multiple order related to single specification

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_DFT_P11	DFT/ACK - Post Detail Financial Transactions - New
HL7_26_INU_U05	INU/ACK - Automated equipment inventory update
HL7_26_QBP_Z93	Tabular Dispense History
HL7_26_PPT_PCL	PPT - PC/ pathway (goal-oriented) query response
HL7_26_RSP_K31	RSP - Dispense History Response
HL7_26_RPL_I02	RQI/RPL - Request/receipt of patient selection display list
HL7_26_RSP_E22	Authorization Request Status
HL7_26_MFN_M02	MFN/MFK - Master file - staff practitioner
HL7_26_VXR_V03	VXR - Vaccination record response
HL7_26_RSP_Z86	Pharmacy Information Comprehensive (Response)
HL7_26_RTB_Z76	Tabular Patient List (Response)
HL7_26_RPA_I09	RQA/RPA - Request for modification to an authorization
HL7_26_ADT_A05	ADT/ACK - Pre-admit a patient
HL7_26_ADT_A53	ADT/ACK - Cancel patient returns from a leave of absence
HL7_26_SIU_S22	SIU/ACK - Notification of deletion of service/resource on appointment
HL7_26_RSP_Z88	Dispense Information (Response)
HL7_26_RTB_K13	RTB - Tabular response in response to QBP^Q13
HL7_26_MDM_T08	MDM/ACK - Document edit notification and content
HL7_26_BPS_O29	BPS - Blood product dispense status
HL7_26_MFK_M12	MFN/MFK - Master file notification message
HL7_26_ROR_ROR	ROR - Pharmacy prescription order query response
HL7_26_RDS_O13	RDS - Pharmacy/treatment dispense
HL7_26_EHC_E20	Submit Authorization Request
HL7_26_PIN_I07	PIN/ACK - Unsolicited insurance information
HL7_26_SIU_S18	SIU/ACK - Notification of addition of service/resource on appointment
HL7_26_ADT_A43	ADT/ACK - Move patient information - patient identifier list
HL7_26_ADT_A41	ADT/ACK - Merge account - patient account number
HL7_26_QBP_Q21	QBP - Get person demographics

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_ADT_A60	ADT/ACK - Update allergy information
HL7_26_MFK_M15	MFN/MFK - Inventory item master file notification
HL7_26_RAR_RAR	Pharmacy/Treatment Administration Information
HL7_26_OUL_R24	OUL - Unsolicited Order Oriented Observation Message
HL7_26_RPI_I04	RQD/RPI - Request for patient demographic data
HL7_26_ADT_A08	ADT/ACK - Update patient information
HL7_26_RSP_K21	RSP - Get person demographics response
HL7_26_MDM_T04	MDM/ACK - Document status change notification and content
HL7_26_EHC_E15	Payment/Remittance Advice
HL7_26_CRM_C05	CRM - Patient enters phase of clinical trial
HL7_26_EHC_E13	Additional Information Response
HL7_26_SRR_S07	SRM/SRR - Request addition of service/resource on appointment
HL7_26_RDE_O11	RDE - Pharmacy/treatment encoded order
HL7_26_MFK_M13	MFN/MFK - Master file notification - general
HL7_26_ORN_O08	ORN - Non-stock requisition acknowledgment
HL7_26_SSR_U04	SSR/ACK - specimen status request
HL7_26_ADT_A16	ADT/ACK - Pending discharge
HL7_26_OML_O21	OML - Laboratory order
HL7_26_MFN_M14	MFN/MFK - Master file notification - site defined
HL7_26_QBP_Q13	QBP - Query by parameter requesting an RTB - tabular response
HL7_26_OPR_O38	OPR - Population/Location-Based Laboratory Order Acknowledgment Message
HL7_26_MFN_M06	MFN/MFK - Clinical study with phases and schedules master file
HL7_26_ORI_O24	ORI - Imaging order response message to any OMI
HL7_26_ORU_R32	ORU - Unsolicited Pre-Ordered Point-Of-Care Observation
HL7_26_ADT_A34	ADT/ACK - Merge patient information - patient ID only (for backward compatibility)
HL7_26_VXU_V04	VXU - Unsolicited vaccination record update

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_RRA_O18	RRA - Pharmacy/treatment administration acknowledgment
HL7_26_BAR_P10	BAR/ACK - Transmit Ambulatory Payment Classification (APC)
HL7_26_EAC_U07	EAC/ACK - Automated equipment command
HL7_26_RRE_O12	RRE - Pharmacy/treatment encoded order acknowledgment
HL7_26_BRT_O32	BRT - Blood product transfusion/disposition acknowledgment
HL7_26_PMU_B07	PMU/ACK - Grant Certificate/Permission
HL7_26_SRR_S05	SRM/SRR - Request appointment discontinuation
HL7_26_RQA_I11	RQA/RPA - Request for cancellation of an authorization
HL7_26_QRY_Q29	RER - Pharmacy/treatment encoded order information
HL7_26_PRR_PC5	PRR - PC/ problem response
HL7_26_ADT_A50	ADT/ACK - Change visit number
HL7_26_RPR_I03	RQI/RPR - Request/receipt of patient selection list
HL7_26_EAR_U08	EAR/ACK - Automated equipment response
HL7_26_PPR_PC2	PPR - PC/ problem update
HL7_26_PMU_B05	PMU/ACK - Deactivate practicing person
HL7_26_RGV_O15	RGV - Pharmacy/treatment given
HL7_26_CSU_C12	CSU - Update/correction of patient order/result information
HL7_26_ORL_O36	ORL - Laboratory order response message to a single container of a specimen OML
HL7_26_CRM_C08	CRM - Patient has gone off phase of clinical trial
HL7_26_MFN_M13	MFN/MFK - Master file notification - general
HL7_26_ADT_A24	ADT/ACK - Link patient information
HL7_26_SLN_S35	SLN/ACK - Notification of sterilization lot deletion
HL7_26_ESR_U02	ESR/ACK - Automated equipment status request
HL7_26_MFK_M04	MFN/MFK - Master files charge description
HL7_26_RDE_O25	RDE - Pharmacy/treatment refill authorization request
HL7_26_RPA_I11	RQA/RPA - Request for cancellation of an authorization
HL7_26_RTB_Z78	Tabular Patient List (Response)

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_MFK_M08	MFN/MFK - Test/observation (numeric) master file
HL7_26_ORU_R30	ORU - Unsolicited Point-Of-Care Observation Message Without Existing Order - Placed
HL7_26_SRR_S04	SRM/SRR - Request appointment cancellation
HL7_26_SSU_U03	SSU/ACK - Specimen status update
HL7_26_SIU_S14	SIU/ACK - Notification of appointment modification
HL7_26_PGL_PC8	PGL - PC/ goal delete
HL7_26_VXX_V02	VXX - Response to vaccination query returning multiple PID matches
HL7_26_MFN_M04	MFN/MFK - Master files charge description
HL7_26_RSP_Znn	null
HL7_26_SIU_S15	SIU/ACK - Notification of appointment cancellation
HL7_26_PPP_PCB	PPP - PC/ pathway (problem-oriented) add
HL7_26_QBP_Z91	Who Am I
HL7_26_MDM_T11	MDM/ACK - Document cancel notification
HL7_26_OMS_O05	OMS - Stock requisition order
HL7_26_MFN_M10	MFN/MFK - Test /observation batteries master file
HL7_26_PPG_PCH	PPG - PC/ pathway (goal-oriented) update
HL7_26_QBP_Z97	Dispense History
HL7_26_NMD_N02	NMD/ACK - Application management data message (unsolicited)
HL7_26_SIU_S16	SIU/ACK - Notification of appointment discontinuation
HL7_26_QBP_Q25	QBP - Personnel Information by Segment Query
HL7_26_QBP_Z95	Tabular Dispense History
HL7_26_SRR_S11	SRM/SRR - Request deletion of service/resource on appointment
HL7_26_MFN_M08	MFN/MFK - Test/observation (numeric) master file
HL7_26_QRY_Q27	RAR - Pharmacy/treatment administration information
HL7_26_QBP_Znn	null
HL7_26_ADT_A14	ADT/ACK - Pending admit
HL7_26_MFK_M02	MFN/MFK - Master file - staff practitioner

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_MFN_M17	DRG Master File Message
HL7_26_MFK_M09	MFN/MFK - Test/observation (categorical) master file
HL7_26_LSU_U12	LSU/ACK - Automated equipment log/service update
HL7_26_QRY_Q28	RDR - Pharmacy/treatment dispense information
HL7_26_RSP_Z90	Lab Results History (Response)
HL7_26_CSU_C09	CSU - Automated time intervals for reporting, like monthly
HL7_26_BTS_O31	BTS - Blood product transfusion/disposition
HL7_26_RQI_I01	RQI/RPI - Request for insurance information
HL7_26_VXQ_V01	VXQ - Query for vaccination record
HL7_26_ADT_A40	ADT/ACK - Merge patient - patient identifier list
HL7_26_DOC_T12	QRY/DOC - Document query
HL7_26_BAR_P06	BAR/ACK - End account
HL7_26_EHC_E02	Cancel HealthCare Services Invoice
HL7_26_RQI_I03	RQI/RPR - Request/receipt of patient selection list
HL7_26_ADT_A13	ADT/ACK - Cancel discharge/end visit
HL7_26_STI_S30	STI/STS - Request item
HL7_26_OML_O35	OML - Laboratory order for multiple orders related to a single container
HL7_26_PGL_PC7	PGL - PC/ goal update
HL7_26_ESU_U01	ESU/ACK - Automated equipment status update
HL7_26_PPR_PC3	PPR - PC/ problem delete
HL7_26_RPA_I08	RQA/RPA - Request for treatment authorization information
HL7_26_QCN_J01	QCN/ACK - Cancel query/acknowledge message
HL7_26_SQR_S25	SQM/SQR - Schedule query message and response
HL7_26_SIU_S21	SIU/ACK - Notification of discontinuation of service/resource on appointment
HL7_26_ADT_A62	ADT/ACK - Cancel change consulting doctor
HL7_26_OUL_R22	OUL - Unsolicited Specimen Oriented Observation Message
HL7_26_SLR_S28	SLR/SLS - Request new sterilization lot

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_ADT_A18	ADT/ACK - Merge patient information (for backward compatibility only)
HL7_26_QBP_Z87	Dispense Information
HL7_26_ORU_R31	ORU - Unsolicited New Point-Of-Care Observation Message - Search For An Order
HL7_26_QBP_Z85	Pharmacy Information Comprehensive
HL7_26_SRM_S01	SRM/SRR - Request new appointment booking
HL7_26_SRM_S08	SRM/SRR - Request modification of service/resource on appointment
HL7_26_RTB_Z96	Tabular Dispense History (Response)
HL7_26_QRY_PCK	QRY - PC/ pathway (goal-oriented) query
HL7_26_SLR_S29	SLR/SLS - Request Sterilization lot deletion
HL7_26_RQA_I08	RQA/RPA - Request for treatment authorization information
HL7_26_OMP_O09	OMP - Pharmacy/treatment order
HL7_26_ORL_O22	ORL - General laboratory order response message to any OML
HL7_26_MFN_M15	MFN/MFK - Inventory item master file notification
HL7_26_SRM_S10	SRM/SRR - Request discontinuation of service/resource on appointment
HL7_26_PPP_PCC	PPP - PC/ pathway (problem-oriented) update
HL7_26_EHC_E01	Submit HealthCare Services Invoice
HL7_26_RQI_I02	RQI/RPL - Request/receipt of patient selection display list
HL7_26_CSU_C10	CSU - Patient completes the clinical trial
HL7_26_QBP_Z99	Who Am I
HL7_26_TCU_U10	TCU/ACK - Automated equipment test code settings update
HL7_26_RPA_I10	RQA/RPA - Request for re-submission of an authorization
HL7_26_PMU_B01	PMU/ACK - Add personnel record
HL7_26_RQC_I06	RQC/RCL - Request/receipt of clinical data listing
HL7_26_SRR_S09	SRM/SRR - Request cancellation of service/resource on appointment
HL7_26_QRY_T12	QRY/DOC - Document query
HL7_26_SDR_S31	SDR/SDS - Request anti-microbial device data
HL7_26_MFK_M06	MFN/MFK - Clinical study with phases and schedules master file

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_SRM_S02	SRM/SRR - Request appointment rescheduling
HL7_26_SQM_S25	SQM/SQR - Schedule query message and response
HL7_26_PPV_PCA	PPV - PC/ goal response
HL7_26_ADT_A27	ADT/ACK - Cancel pending admit
HL7_26_RRI_I12	REF/RRI - Patient referral
HL7_26_RDY_K15	RDY - Display response in response to QBP^Q15
HL7_26_ADT_A33	ADT/ACK - Cancel patient departing - tracking
HL7_26_RQC_I05	RQC/RCI - Request for patient clinical information
HL7_26_ADT_A51	ADT/ACK - Change alternate visit ID
HL7_26_STC_S33	STC/ACK - Notification of sterilization configuration
HL7_26_MDM_T01	MDM/ACK - Original document notification
HL7_26_QSB_Q16	QSB - Create subscription
HL7_26_BRP_O30	BRP - Blood product dispense status acknowledgment
HL7_26_LSR_U13	LSR/ACK - Automated equipment log/service request
HL7_26_CRM_C04	CRM - Patient has gone off a clinical trial
HL7_26_RDY_Z98	Dispense History (Response)
HL7_26_OMG_O19	OMG - General clinical order
HL7_26_ADT_A29	ADT/ACK - Delete person information
HL7_26_ADT_A32	ADT/ACK - Cancel patient arriving - tracking
HL7_26_QBP_Z73	Information about Phone Calls
HL7_26_PMU_B06	PMU/ACK - Terminate practicing person
HL7_26_MFN_M03	MFN/MFK - Master file - test/observation (for backward compatibility only)
HL7_26_ORM_O01	ORM - Order message (also RDE, RDS, RGV, RAS)
HL7_26_RTB_Z74	Information about Phone Calls (Response)
HL7_26_QRY_Q30	RGR - Pharmacy/treatment dose information
HL7_26_PGL_PC6	PGL - PC/ goal add
HL7_26_OMD_O03	OMD - Diet order

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_ADT_A17	ADT/ACK - Swap patients
HL7_26_BAR_P02	BAR/ACK - Purge patient accounts
HL7_26_MFK_M16	MFN/MFK - Master File Notification Inventory Item Enhanced
HL7_26_ADT_A28	ADT/ACK - Add person information
HL7_26_ADT_A02	ADT/ACK - Transfer a patient
HL7_26_MDM_T07	MDM/ACK - Document edit notification
HL7_26_ADT_A47	ADT/ACK - Change patient identifier list
HL7_26_QBP_Z75	Tabular Patient List
HL7_26_NMR_N01	NMQ/NMR - Application management query message
HL7_26_SRM_S11	SRM/SRR - Request deletion of service/resource on appointment
HL7_26_QBP_Z77	Tabular Patient List
HL7_26_SIU_S26	SIU/ACK Notification that patient did not show up for schedule appointment
HL7_26_MFK_M01	MFN/MFK - Master file not otherwise specified (for backward compatibility only)
HL7_26_ADT_A10	ADT/ACK - Patient arriving - tracking
HL7_26_PPG_PCG	PPG - PC/ pathway (goal-oriented) add
HL7_26_ADT_A44	ADT/ACK - Move account information - patient account number
HL7_26_QRY_PC4	QRY - PC/ problem query
HL7_26_SMD_S32	SMD/SMS - Request anti-microbial device cycle data
HL7_26_ADT_A11	ADT/ACK - Cancel admit/visit notification
HL7_26_ADT_A20	ADT/ACK - Bed status update
HL7_26_CRM_C06	CRM - Cancel patient entering a phase (clerical mistake)
HL7_26_SRR_S01	SRM/SRR - Request new appointment booking
HL7_26_ORP_O10	ORP - Pharmacy/treatment order acknowledgment
HL7_26_ORF_R04	ORF - Response to query; transmission of requested observation
HL7_26_QSB_Z83	ORU Subscription
HL7_26_RPI_I01	RQI/RPI - Request for insurance information

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_SIU_S19	SIU/ACK - Notification of modification of service/resource on appointment
HL7_26_ORS_O06	ORS - Stock requisition acknowledgment
HL7_26_QBP_Z79	Dispense Information
HL7_26_ADT_A25	ADT/ACK - Cancel pending discharge
HL7_26_MDM_T02	MDM/ACK - Original document notification and content
HL7_26_QVR_Q17	QVR - Query for previous events
HL7_26_RSP_K11	RSP - Segment pattern response in response to QBP^Q11
HL7_26_OPL_O37	OPL - Population/Location-Based Laboratory Order Message
HL7_26_QBP_Q31	QBP Query Dispense history
HL7_26_SIU_S20	SIU/ACK - Notification of cancellation of service/resource on appointment
HL7_26_MFK_M03	MFN/MFK - Master file - test/observation (for backward compatibility only)
HL7_26_QRY_PC9	QRY - PC/ goal query
HL7_26_SIU_S23	SIU/ACK - Notification of blocked schedule time slot(s)
HL7_26_PPP_PCD	PPP - PC/ pathway (problem-oriented) delete
HL7_26_PPR_PC1	PPR - PC/ problem add
HL7_26_QBP_Q23	QBP - Get corresponding identifiers
HL7_26_RRG_O16	RRG - Pharmacy/treatment give acknowledgment
HL7_26_RCI_I05	RQC/RCI - Request for patient clinical information
HL7_26_EHC_E04	Re-Assess HealthCare Services Invoice Request
HL7_26_ADR_A19	QRY/ADR - Patient query
HL7_26_SUR_P09	SUR - Summary product experience report
HL7_26_QBP_Q22	QBP - Find candidates
HL7_26_SRM_S03	SRM/SRR - Request appointment modification
HL7_26_CRM_C01	CRM - Register a patient on a clinical trial
HL7_26_MFK_M11	MFN/MFK - Test/calculated observations master file
HL7_26_SRR_S06	SRM/SRR - Request appointment deletion

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_ADT_A31	ADT/ACK - Update person information
HL7_26_QBP_Q11	QBP - Query by parameter requesting an RSP segment pattern response
HL7_26_CRM_C07	CRM - Correct/update phase information
HL7_26_ORB_O28	ORB - Blood product order acknowledgment
HL7_26_SRR_S02	SRM/SRR - Request appointment rescheduling
HL7_26_PPG_PCJ	PPG - PC/ pathway (goal-oriented) delete
HL7_26_ADT_A61	ADT/ACK - Change consulting doctor
HL7_26_SLN_S34	SLN/ACK - Notification of sterilization lot
HL7_26_OSR_Q06	OSQ/OSR - Query for order status
HL7_26_MFN_M09	MFN/MFK - Test/observation (categorical) master file
HL7_26_MDM_T05	MDM/ACK - Document addendum notification
HL7_26_OSQ_Q06	OSQ/OSR - Query for order status
HL7_26_ADT_A36	ADT/ACK - Merge patient information - patient ID and account number (for backwards)
HL7_26_MFN_M12	MFN/MFK - Master file notification message
HL7_26_RER_RER	Pharmacy/Treatment Encoded Order Information
HL7_26_SDN_S36	SDN/ACK - Notification of anti-microbial device data
HL7_26_PTR_PCF	PTR - PC/ pathway (problem-oriented) query response
HL7_26_QRY_R02	QRY - Query for results of observation
HL7_26_ORD_O04	ORD - Diet order acknowledgment
HL7_26_ORG_O20	ORG/ORL - General clinical order response
HL7_26_MFN_M07	MFN/MFK - Clinical study without phases but with schedules master file
HL7_26_RSP_K23	RSP - Get corresponding identifiers response
HL7_26_ADT_A09	ADT/ACK - Patient departing - tracking
HL7_26_EHC_E10	Edit/Adjudication Results
HL7_26_RAS_O17	RAS - Pharmacy/treatment administration
HL7_26_ADT_A49	ADT/ACK - Change patient account number
HL7_26_EHC_E24	Authorization Response

TABLE 1–1 HL7 Version 2.6 OTD Library *(Continued)*

HL7 2.6 OTD	HL7 Description
HL7_26_RSP_Z84	Who Am I (Response)
HL7_26_ADT_A07	ADT/ACK - Change an inpatient to an outpatient
HL7_26_OUL_R21	OUL - Unsolicited laboratory observation
HL7_26_QRY_PCE	QRY - PC/ pathway (problem-oriented) query
HL7_26_REF_I12	REF/RRI - Patient referral
HL7_26_SRM_S09	SRM/SRR - Request cancellation of service/resource on appointment
HL7_26_EHC_E12	Request Additional Information
HL7_26_SRM_S07	SRM/SRR - Request addition of service/resource on appointment
HL7_26_BAR_P05	BAR/ACK - Update account
HL7_26_SIU_S12	SIU/ACK - Notification of new appointment booking
HL7_26_BAR_P12	BAR/ACK - Update Diagnosis/Procedure
HL7_26_MFN_M16	MFN/MFK - Master File Notification Inventory Item Enhanced
HL7_26_QBP_Z89	Lab Results History
HL7_26_QRY_A19	QRY/ADR - Patient query
HL7_26_ORR_O02	ORR - Order response (also RRE, RRD, RRG, RRA)
HL7_26_ADT_A21	ADT/ACK - Patient goes on a "leave of absence"

Method to Execute the MLLP V2.0 Database Scripts From GUI

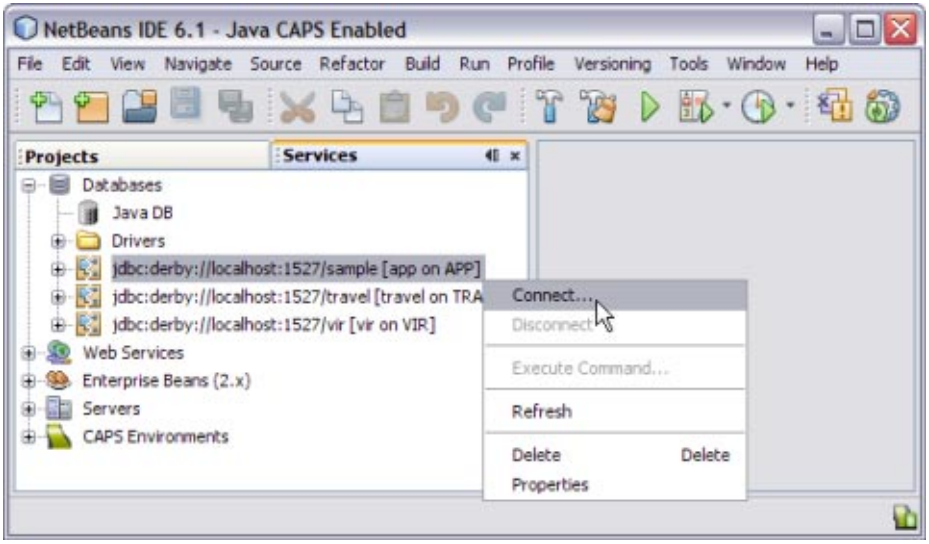
This topic describes the steps to execute the MLLP V2.0 Database Scripts from GUI. The Database is used when a user wants to use HL7eWay.sar with MLLP V2.0 transport scenarios.

Working With the Java DB (Derby) Database in NetBeans IDE

This topic demonstrates the method to set up a connection to Sun's Java Database (which is based on the Apache Derby database) in NetBeans IDE. Once a connection is established, the user begins to work with the database in the IDE.

▼ To Connect to the Database

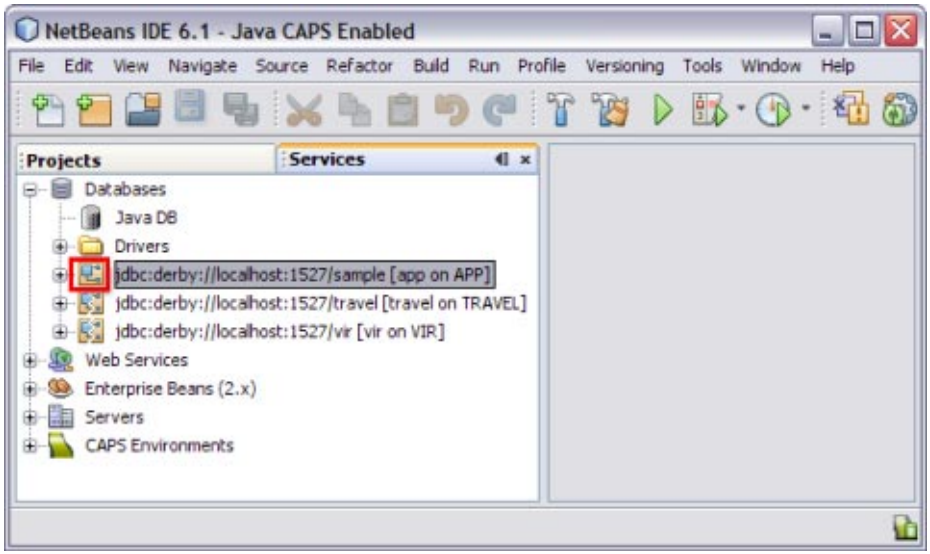
1 **Click the Services tab and expand the Databases node to connect to the Derby Database.**



Note – A broken icon represents that the database is not connected.

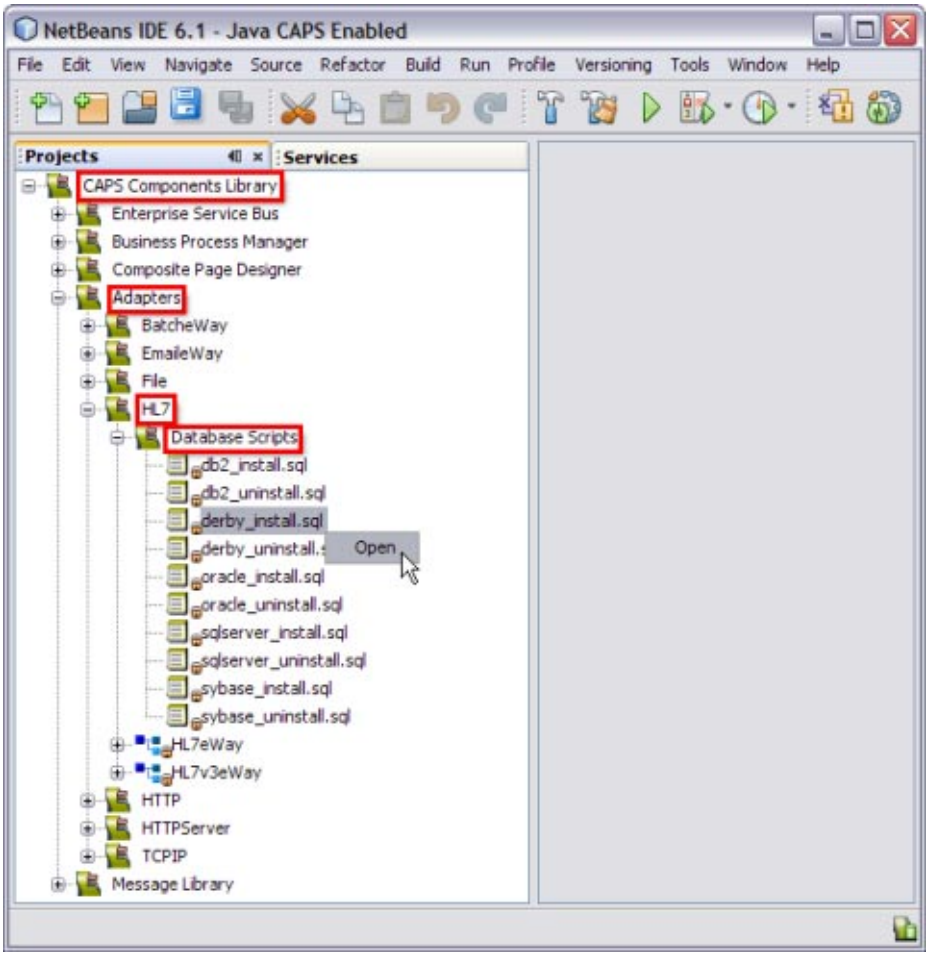
2 **Right-click the database connection node (jdbc:derby://localhost:1527/sample [app on APP) and choose Connect.**

The connection is established successfully and is as shown in the figure.



▼ To Execute the MLLP V2.0 DB Scripts From GUI

1. **Click the Projects tab.**
2. **Expand and click CAPS Components Library.**
3. **Select and expand Adapters.**
4. **Select and expand HL7.**
5. **Select and right-click derby_install.sql. from Database Scripts.**
6. **Click Open.**

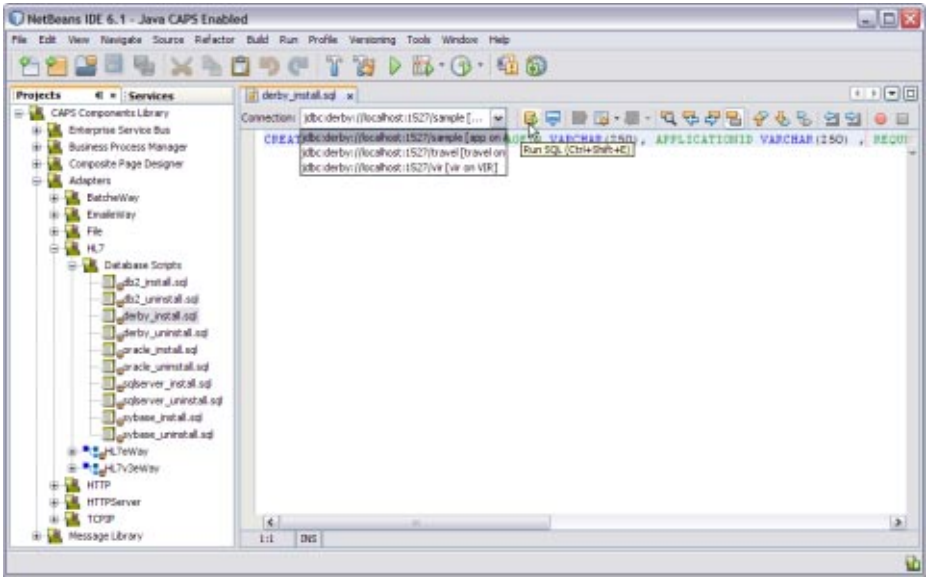


This opens the derby_install.sql editor window along with the SQL Statement.

```
CREATE TABLE HL7MESSAGELOG (MESSAGEID VARCHAR(250), APPLICATIONID VARCHAR(250) ,
REQUESTMESSAGE CLOB, RESPONSEMESSAGE CLOB, STATUS SMALLINT, CREATEDTIME TIMESTAMP,
LASTUPDATEDTIME TIMESTAMP)
```

7 **Choose the Database Connection from the drop-down list.**

8 **Click the Run button.**



The following message is displayed.

```
SQL statement(s) executed successfully.
```