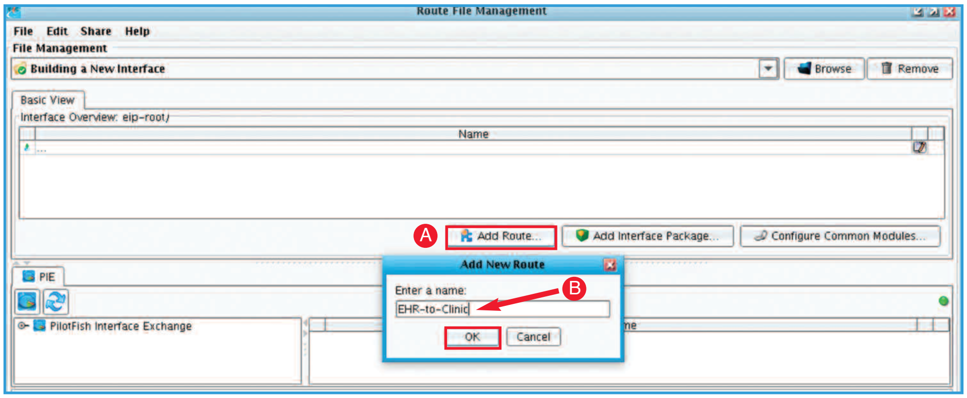
eiconsole for Healthcare

10 Easy Steps to Building an Interface

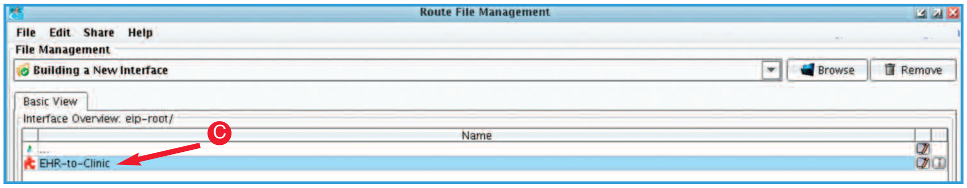
Featuring the Graphical Automated Interface Assembly Line – *Clone, Tweak, Test and Go!*

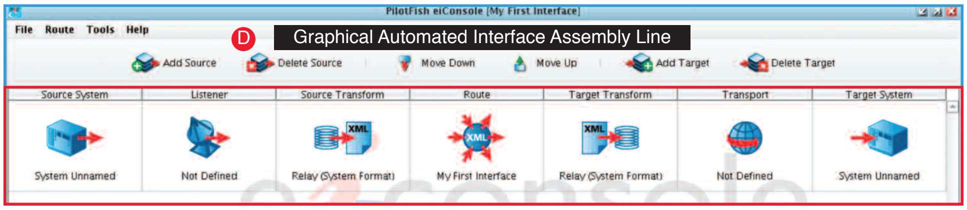


Step 1: Create a new Route/Interface

When you open the eiConsole, the first screen you see is the Route File Management screen. This is where the interface configuration files are managed. PilotFish configurations are divided into two levels. A single connection between a source and target is a route, and a collection of routes working together is referred to as an interface.

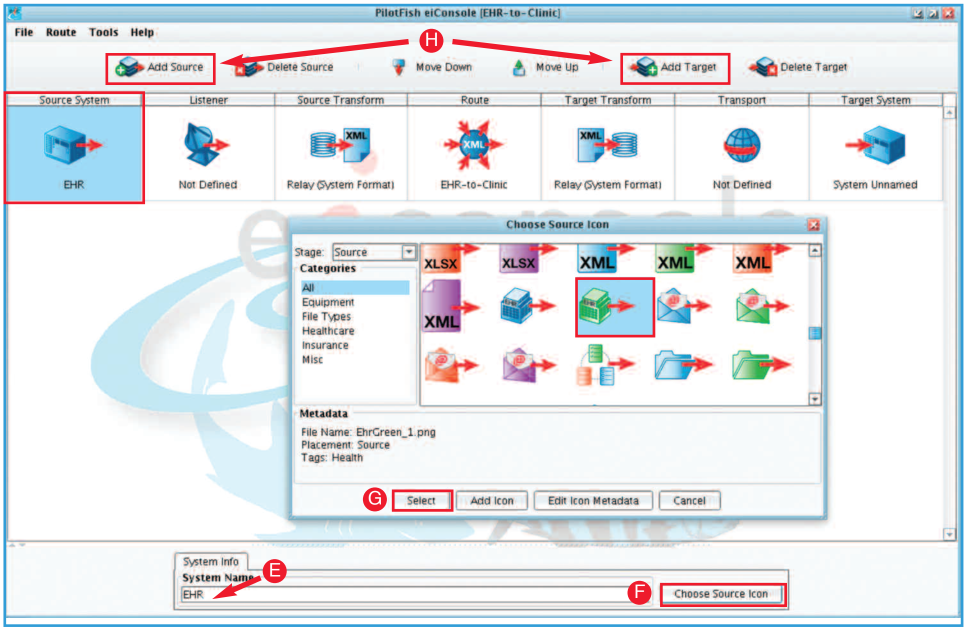
To create a new Route, click **Add Route** (A) and name it "EHR-to-Clinic"(B) and click **OK**.





Step 2: Build the Route

Double click your **Route** (C) to open the eiConsole's main route grid window. PilotFish routes are built in an assembly line fashion. The **Graphical Automated Inerface Assembly Line** (D) consists of 7 stages which are laid out in the grid at the top of the screen. These stages handle processing the flow of data from the source to the target systems. Regardless of the type of integration being done, the process is always the same. There is also no limit to the number of source and target systems that can be linked in this way.

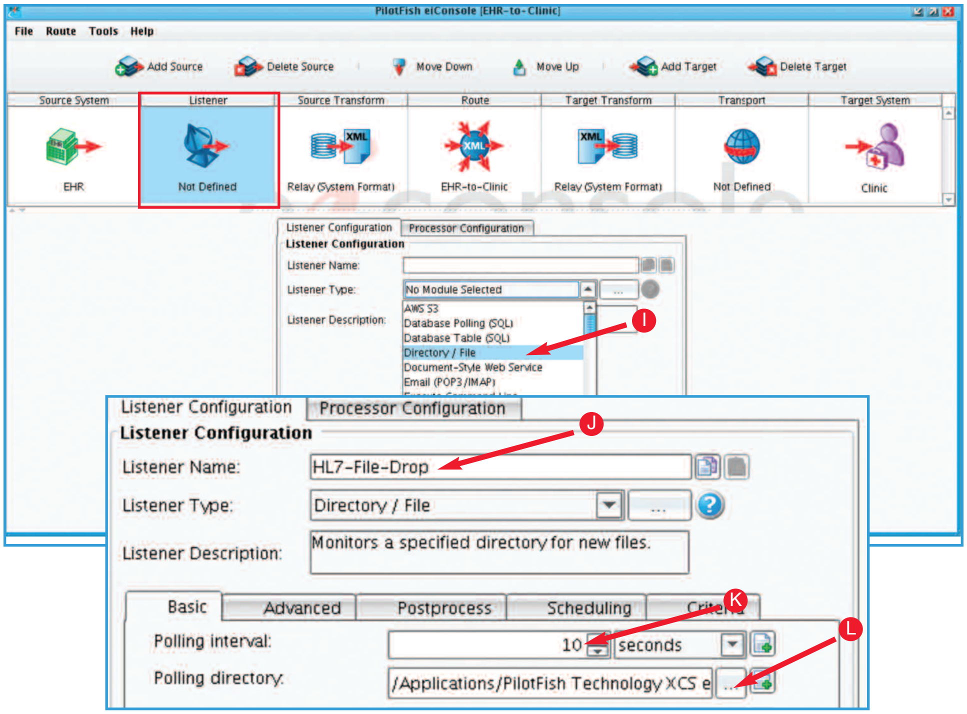


Step 3: Identify Your Source and Target System and Select Representative Icons

Select the **Source System** stage to name your source system. For reference, name your Source and Target Systems based on what they are supposed to represent. Next to the **System Name** field type in "EHR"(E) then click the **Choose Source Icon** (F) button.

When the **Choose Source Icon** pop-up opens, select a representative icon from a library of hundreds of icons. Then click **Select** (G) to make your choice. Select the Target Stage and follow the same process.

If you would like to add more Source or Target Systems, click the **Add Source** (H) or **Add Target** buttons above the grid. Follow the previous steps to name the systems and to select the appropriate icons.



Listener Configuration

Listener Name:

Listener Type: No Module Selected

Listener Description:

AWS S3
Database Polling (SQL)
Database Table (SQL)
Directory / File
Document-Style Web Service
Email (POP3/IMAP)

Listener Configuration

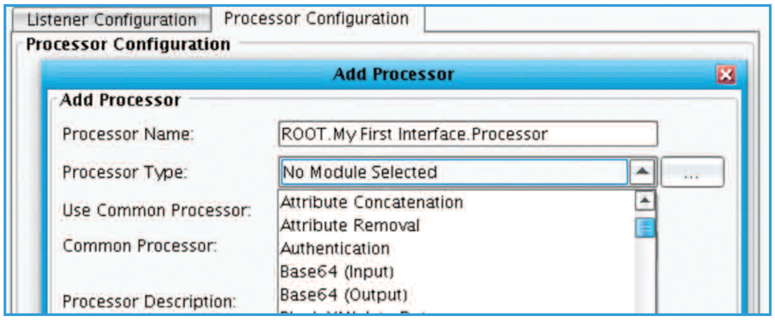
Listener Name: HL7-File-Drop

Listener Type: Directory / File

Listener Description: Monitors a specified directory for new files.

Polling interval: 10 seconds

Polling directory: /Applications/PilotFish Technology XCS e



Processor Configuration

Add Processor

Processor Name: ROOT.My First Interface.Processor

Processor Type: No Module Selected

Use Common Processor:

Common Processor:

Processor Description:

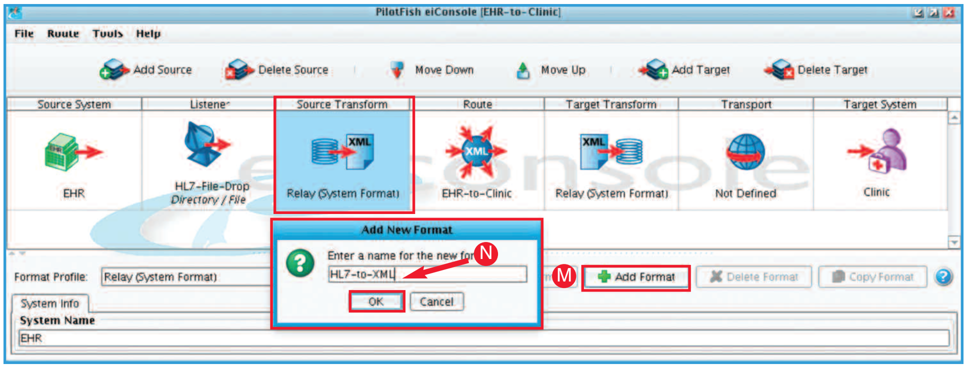
Attribute Concatenation
Attribute Removal
Authentication
Base64 (Input)
Base64 (Output)

Step 4: Choose the Listener and any Processors Required

Next, you need to establish connectivity with the Source System. PilotFish retrieves data from the Source System using a component called a Listener. This Listener communicates with the Source System at highly configurable intervals, retrieves the data and starts a PilotFish transaction. Select the **Listener** stage to open the Listener configuration panel. PilotFish comes pre-bundled with several dozen Listeners, capable of handling virtually any connectivity option that you might need and is easily extended using our Open API.

For this interface select the **Directory/File** (I) Listener. After the panel opens, change the default Listener name to "HL7 File Drop" (J) and set the polling at 10 seconds (K). Next, click the ellipsis button to select the polling directory. You'll need to paste in the path (L) to where the files you want to read in are located.

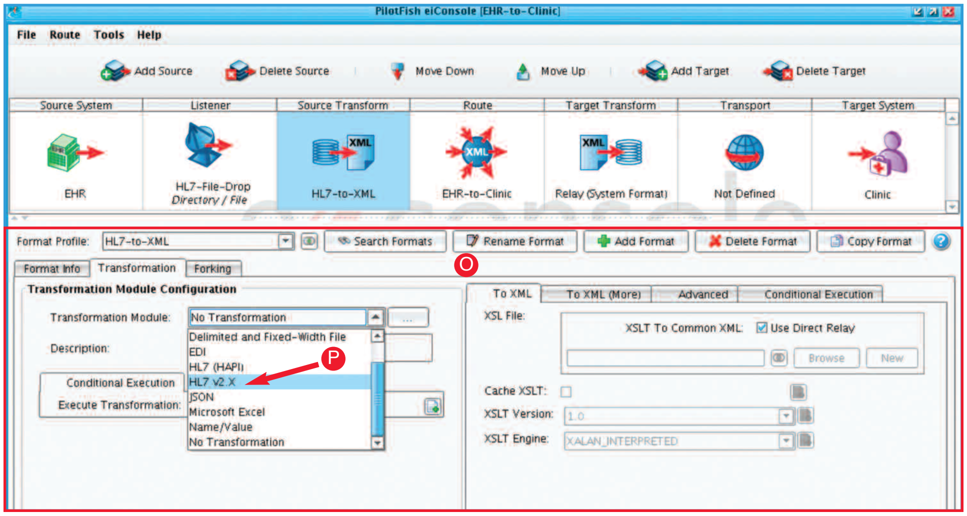
After adding a Listener, Processors can be queued up to perform data manipulation. Processors perform general work over the data stream, either directly after it is received or immediately before it is sent. You can use a Processor to add decryption, do authentication or Validation, choose from nearly 100 processors or add your own using our Open API. For this interface, no Processors are needed so move on to the next stage.



Format Profile: Relay (System Format)

Enter a name for the new for HL7-to-XML

System Name: EHR



Format Profile: HL7-to-XML

Transformation Module Configuration

Transformation Module: No Transformation

Description:

Delimited and Fixed-Width File
EDI
HL7 (HAPI)
HL7 v2.X
JSON
Microsoft Excel
Name/Value
No Transformation

XSL File:

XSLT To Common XML: ☑ Use Direct Relay

Cache XSLT: □

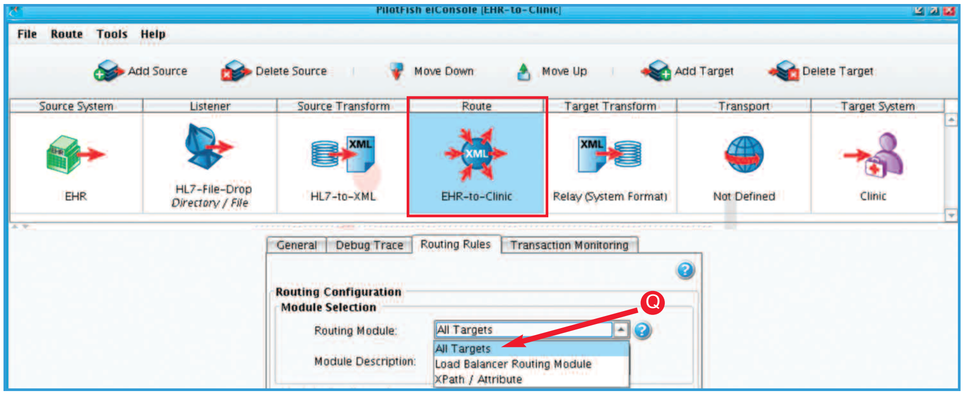
XSLT Version: 1.0

XSLT Engine: XALAN_INTERPRETED

Step 5: Transform the Source Data to a Common Standard

For data transformation, PilotFish works primarily with XML as it represents an easy-to-transform, common standard for working with data. Once data is received by the application, it goes through this conversion process in two steps. First, it goes through an automated Transformer to convert the raw content to XML, if required. The eiConsole includes pre-built modules that can be set up through a simple graphical configuration. They take a wide range of common data types and generate an XML representation of them.

First, you'll need to convert the HL7 data to XML. Select the **Source Transform** stage and click the **Add Format** (M) button in the bottom panel. In the pop up panel, name your format "HL7-to-XML" (N) and click **OK**. The **Transformation Module** and **XSLT Configuration** panel (O) open. Transformation Modules are used to parse data from non-XML formats into an XML representation. Whereas XSLT and the eiConsole's Data Mapper are used for the logical mapping of that format onto another. Select PilotFish's custom Lenient HL7 2.x (P) Transformer which reads in even non-standards compliant HL7. Other modules convert Fixed Width / Delimited Files (ANSI X.12), CSV, XLS / XLSX, and Database and more.



Routing Configuration

Module Selection

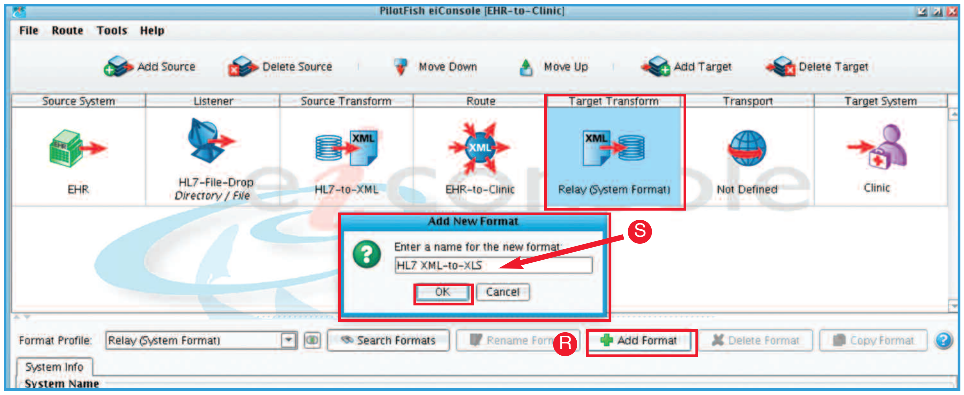
Routing Module: All Targets

Module Description:

All Targets

Load Balancer Routing Module

XPath / Attribute



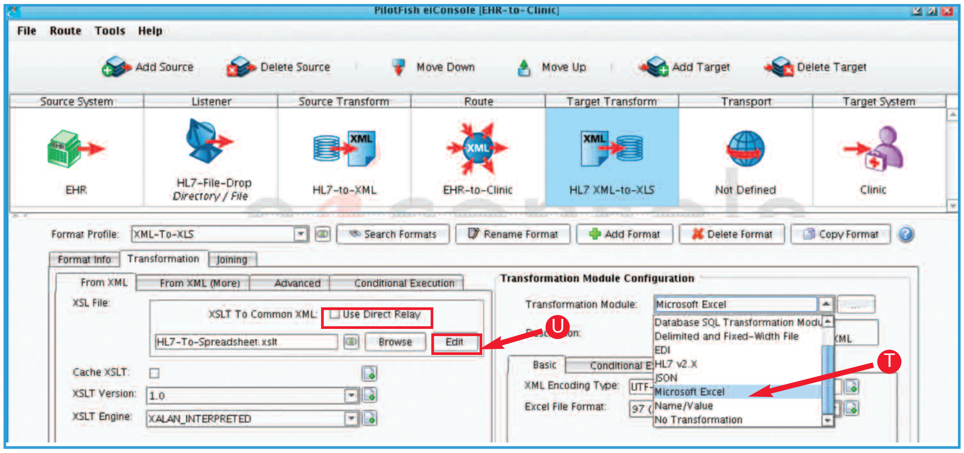
Add New Format

Enter a name for the new format

HL7 XML-to-XLS

Format Profile: Relay (System Format)

System Name



Format Profile: XML-To-XLS

XSL File:

XSLT To Common XML: ☐ Use Direct Relay

HL7-To-Spreadsheet.xslt

Cache XSLT: ☐

XSLT Version: 1.0

XSLT Engine: XALAN_INTERPRETED

Transformation Module Configuration

Transformation Module: Microsoft Excel

Database SQL Transformation Module

Delimited and Fixed-Width File

EDI

HL7 v2.X

JSON

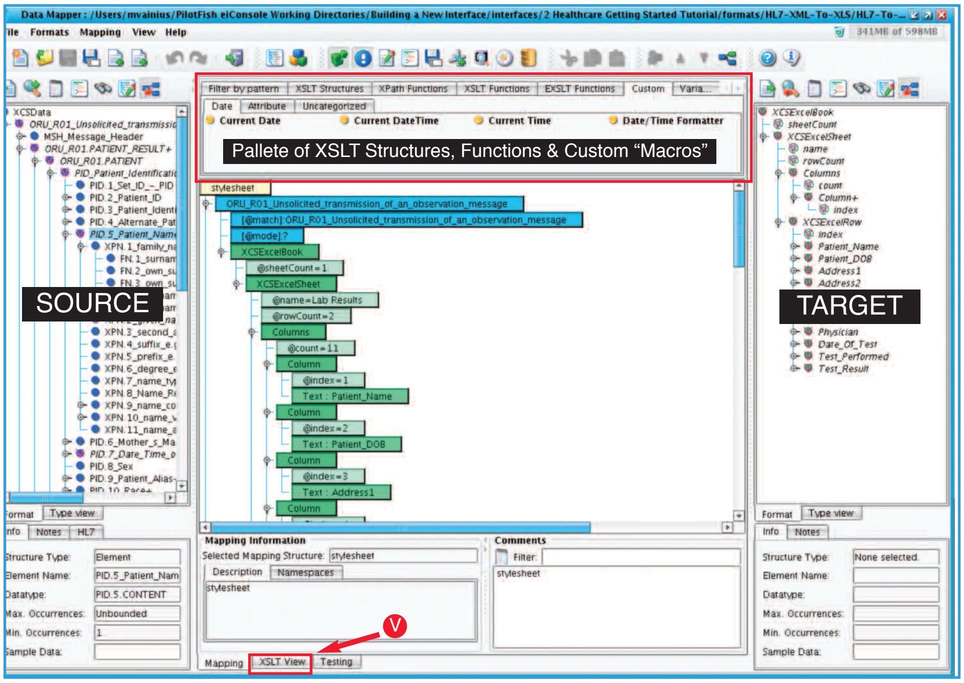
Microsoft Excel

Name/Value

No Transformation

XML Encoding Type: UTF-

Excel File Format: 97 (



Structure Type: Element

Element Name: PID.5_Patient_Nam

Datatype: PID.5.CONTENT

Max. Occurrences: Unbounded

Min. Occurrences: 1

Sample Data:

Mapping Information

Selected Mapping Structure: stylesheet

Description | Namespaces

stylesheet

Comments

Filter:

stylesheet

Structure Type: None selected.

Element Name:

Datatype:

Max. Occurrences:

Min. Occurrences:

Sample Data:

Step 6: Configure the Routing Module

Select the **Route** stage. This is where you can maintain general metadata describing the Route, specify routing rules and configure Transaction Monitoring. When the panel appears, select the **Routing Rules** tab. This enables you to route messages to the appropriate target or targets based on the content of the message. From the drop down, select **All Targets** (Q).

Note: the **Transaction Monitoring** tab lets you customize the error notification system used by the interface when in production. This pro-active alerting supplements the traditional, passive logging and audit trail supported and configured in the eiPlatform runtime.

Step 7: Transform the Data for the Target

Next, select the **Target Transform** stage. This is where you will convert your new XML representation of HL7 into an Excel spreadsheet. You'll use the same two-step process you used for the Source Transform stage, only in reverse. First, click the **Add Format** (R) button and then enter “HL7-XML-to-XLS”(S) in the dialog and click **OK**. This opens the transformation panel down below.

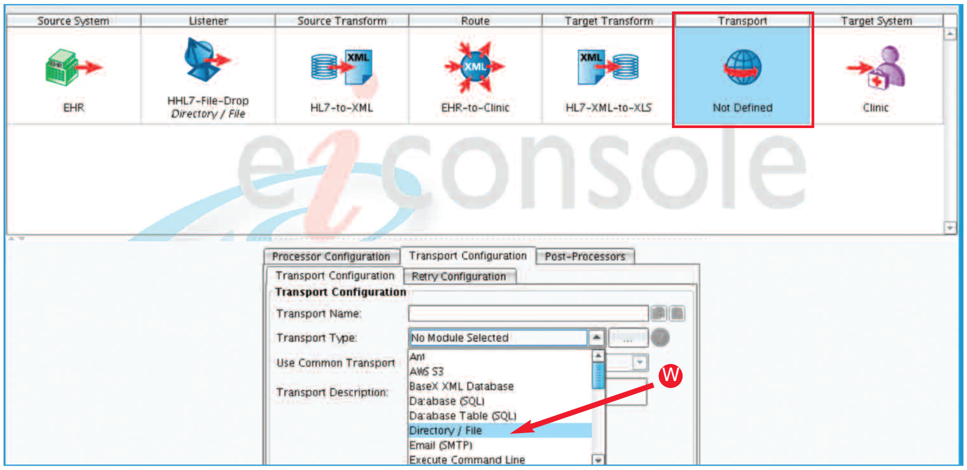
In the Transformation Module Configuration panel, select the **Microsoft Excel** (T) Transformation Module from the dropdown. This automatically converts an XML representation of Excel into a proper Excel spreadsheet. To create that new XML, go over to the left hand side, to the XSLT Configuration panel and uncheck the **Use Direct Relay checkbox**. This enables the XSLT Transformation, which you can configure by clicking the **Edit** (U) button, to open the Data Mapper.

The Data Mapper is a graphical editor, within the eiConsole, used to generate the XSLT transformations that transform any data format to any other. The pane on the left represents the **Source** format, the pane on the right the **Target** format and the pane in the middle the relationship between the Source and the Target. Choose a Format Reader to load in Source and Target data. Relating Source formats to Target formats is accomplished by simply dragging the corresponding fields from the Source and the Target to the map in the middle. A "computationally complete" **Palette of XSLT Structures, Functions and Custom “Macros”** can be used to speed the development of high quality transformations. Selecting the **XSLT View** (V) tab lets users work in XSLT. While it's possible to build an entire mapping from scratch, it's often faster to drag & drop source values onto a sample target message or transaction. Users can also automatically create a skeleton for a transformation with sample source and target files and import vendor-specific transaction samples (HL7, EDI and others) to allow easier Data Mapping with non-standard formats.

Step 8: Configure the Transport

Click the Transport Stage. In the Transport Configuration panel, select the **"Directory/File"** (W) Transport from the drop-down list. When the configuration panel opens, change the default Transport Name to "EHR-to-Clinic.Directory Transport"(X). In the Basic tab, click the elipsis (Y) button and paste in the link to your new "out" folder. Then fill in the Target file name to "Spreadsheet"(Z) and the Target file ext. to "xls"(aa).

Note: there are several dozen Transports built into the eiConsole. These can easily be extended with our Open API as in the Listener stage, Processors can also be configured at this stage. Processors perform operations that affect all of the outgoing data and may be layered in any order.



Transport Configuration

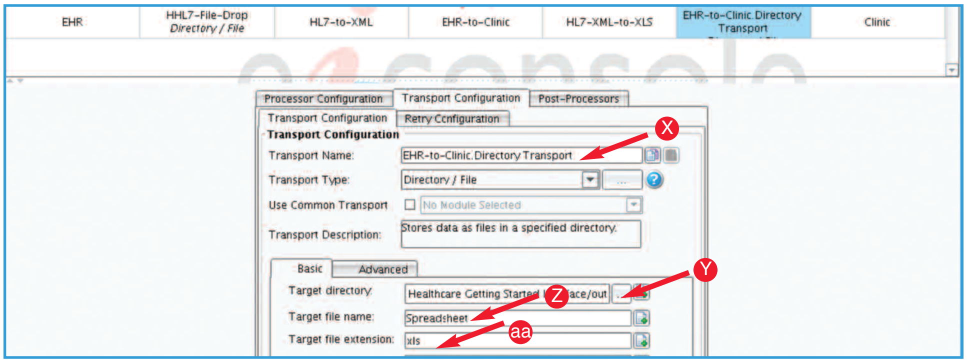
Transport Name:

Transport Type: No Module Selected

Use Common Transport

Transport Description:

Ant
AWS S3
BaseX XML Database
Database (SQL)
Database Table (SQL)
Directory / File
Email (SMTP)
Execute Command Line



Transport Configuration

Transport Name: EHR-to-Clinic.Directory Transport

Transport Type: Directory / File

Use Common Transport ☐ No Module Selected

Transport Description: Stores data as files in a specified directory.

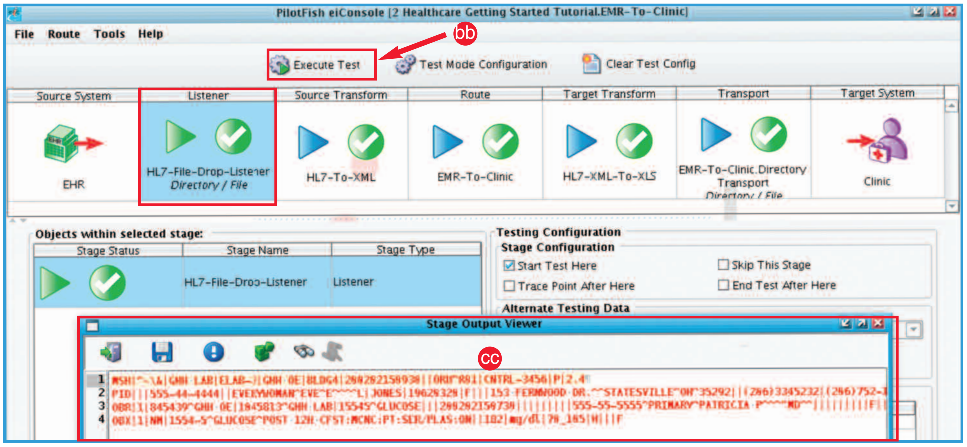
Target directory: Healthcare Getting Started Interface/out

Target file name: Spreadsheet

Target file extension: xls

Step 9: Test Your Interface End-to-End

Next you'll want to test your interface. From the Route menu, select Testing Mode. You can start and stop your test at any stage. Select the **Listener** stage to begin the testing and provide sample input data. Click the **Execute Test** (bb) icon and the blue question marks turn to green check marks. If a stage failed, a red X would replace the question mark. You can click any of the stages and in the **Stage Output Viewer** (cc) view the output of each stage as the data undergoes the transformation and delivery process. For example, you can see the data in a flat file format transformed to generic XML, then to a health standard format and then to a proprietary format of the Target. Failed stages provide detailed error messages so that these can be quickly corrected and retested.



Objects within selected stage:

Stage Status	Stage Name	Stage Type
✓	HL7-File-Droo-Listener	Listener

Testing Configuration

Stage Configuration

☑ Start Test Here ☐ Skip This Stage

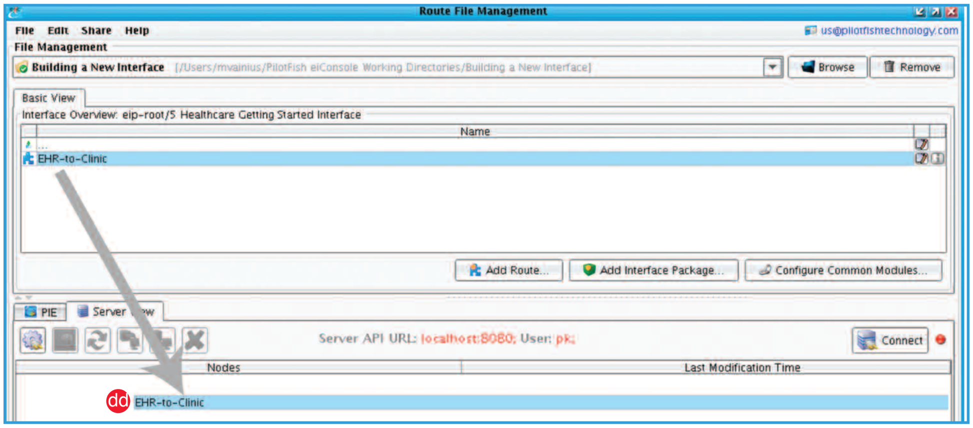
☐ Trace Point After Here ☐ End Test After Here

Alternate Testing Data

```
1 MSH|^~\&|GHH LAB|ELAB-3|GHH OE|BLDG4|200202150930||ORU^R01|CNTRL-3456|P|2.4
2 PID|||555-44-4444||EVERYWOMAN^EVE^E^^^^L|JONES|19620320|F|||153 FERNWOOD DR.^^STATESVILLE^OH^35292||(206)3345232|(206)752-1
3 OBR|1|845439^GHH OE|1045813^GHH LAB|15545^GLUCOSE|||200202150730||||||||555-55-5555^PRIMARY^PATRICIA P^^^^MD^^|||||||||F|
4 OBX|1|NM|1554-5^GLUCOSE^POST 12H CFST:MCNC:PT:SER/PLAS:QN||182|mg/dl|70_105|H|||F
```

Step 10: Deploy Your Interface

Once an interface has been tested from end-to-end, the final step is deployment to an eiPlatform runtime environment. The completed interface is saved as a set of discrete, easily shared, easily managed configuration files. Promotion of an interface can be achieved by simply copying the configuration files to your source control management system or through drag & drop from your Route File Management panel into the Server view panel (dd).



File Management

Building a New Interface [/Users/mvainius/PilotFish eiConsole Working Directories/Building a New Interface]

Interface Overview: eip-root/5 Healthcare Getting Started Interface

Name
...
EHR-to-Clinic

Server API URL: localhost:8080; User: pk;

Nodes	Last Modification Time
EHR-to-Clinic	

That's it. In 10 easy steps we've illustrated how using the PilotFish graphical automated interface assembly line you can quickly configure, test and deploy a healthcare interface.

No matter what the integration requirements, data formats or connectivity required and without any coding or scripting – PilotFish can make your systems interoperable, now. It's architected for reuse, too. Customers who leverage PilotFish for reuse have reported they can tweak an interface and implement a new customer in under 30 minutes. Amazing, right? Call us today to learn more.

860.632.9900 | www.healthcare.pilotfishtechnology.com

APPLIED
PilotFish
Healthcare Integration™