Oracle SOA Suite 11g R1 PS5

# **SOA Suite for healthcare integration Series**

# Routing and Transformation using XSL Solution

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## Introduction

In this article the router, developed in "SOA Suite for healthcare integration Series – HL7 v2 Inbound CMM to Outbound Pass-through Solution", to be found at <u>http://blogs.czapski.id.au/2012/12/soa-suite-for-healthcare-integration-series-hl7-v2-in</u> <u>bound-cmm-to-outbound-pass-through-solution</u>, will be extended to add a fan-out for distribution of one inbound message to two outbound receivers and a ADT A01/A03 to ADT A08 transformation using the eXtensible Style Language (XSL). SOA Suite for healthcare integration Dashboard functionality will also be explored.

This article assumes that the reader is sufficiently familiar with HL7 v2 and HL7 v2 messaging to require no elaboration on the message structures, message acknowledgement processing and the "equivalence" of HL7 v2 delimited and HL7 v2 XML message forms.

This article assumes that the reader has the SOA Suite for healthcare integration environment with all necessary components installed and ready to use. The Bill of Materials for such an environment and a discussion on where the components can be obtained is provided in the earlier article, "SOA Suite for healthcare integration Series - Overview of the Development Environment", to be found at

http://blogs.czapski.id.au/2012/08/soa-suite-for-healthcare-integration-series-overviewof-the-development-environment.

This article assumes that the reader completed the solution discussed in the earlier article, "SOA Suite for healthcare integration Series – HL7 v2 Inbound CMM to Outbound Pass-through Solution", to be found at <a href="http://blogs.czapski.id.au/2012/12/soa-suite-for-healthcare-integration-series-hl7-v2-in">http://blogs.czapski.id.au/2012/12/soa-suite-for-healthcare-integration-series-hl7-v2-in</a>

http://blogs.czapski.id.au/2012/12/soa-suite-for-healthcare-integration-series-hl7-v2-ir bound-cmm-to-outbound-pass-through-solution.

### **Solution Overview**

In this article the inbound HL7 v2 A01 and A03 messages will be received by the inbound endpoint and will be routed by two outbound endpoints to two separate receiver systems. One of the message streams will be passed on unchanged and the other will translate A01 and A03 messages into the equivalent A08 (Update Patient Information) messages.

The inbound SOA Suite for healthcare integration adapter will perform the casting activity while translating the message from HL7 v2 delimited to the "equivalent" XML format. The outbound SOA Suite for healthcare integration adapters will translate messages from HL7 v2 XML to the "equivalent" HL7 v2 delimited format before sending it out.



The runtime components and their relationships are presented in Figure 1.

Figure 1 Runtime Components of the Solution

To summarise:

External Sender is the component which stands for a HIS or PAS – the sender of HL7 messages

The Oracle Healthcare Integration infrastructure is the part of the SOA Suite which deals with HL7 messages, acknowledgements, message tracking, message persistence, message processing KPI collection and so on, and the Receive Endpoint is the listening endpoint which receives messages

Direct Integration is the behind-the-scenes mechanism which hands messages over to an appropriate SOA Suite-based logic component for further processing or hands over messages produced by SOA Suite components to the healthcare integration infrastructure for processing (translation, sending, tracking). ESB / SOA / Integration infrastructure hosts the SOA Composites and other logic components which process messages, whether HL7 v2 or not.

The solution components are depicted in Error! Reference source not found.



Figure 2 Solution Components

The diagram uses the convention which clearly separates the external systems, the SOA Suite for healthcare integration-specific components and generic SOA Suite components using the "swim-line" analogy.

A0x Sender is the CMDHL7 sender tool, or another tool capable of sending HL7 v2 Delimited messages over TCP/IP using the MLLP protocol. It will send A01 and A03 messages.

ADT Receiver is the SOA Suite for healthcare integration HL7 v2 listener.

Router is a SOA Composite which receives the message from the HL7 listener and "routes" it, as a fan out device, a copy to the HL7 sender ADT Broadcast Sender and a copy to the Transformer Mediator component.

Transformer is a SOA Composite which receives the message from the HL7 listener, transforms the ADT A01 or the A03 message into the ADT A08 message, and "routes" it to the HL7 sender ADT A08 Sender.

ADT A08 Sender is the SOA Suite for healthcare integration HL7 v2 sender.

ADT Broadcast Sender is the SOA Suite for healthcare integration HL7 v2 sender.

A08 Receiver A is the CMDHL7 listener tool, or another tool capable of receiving HL7 v2 Delimited messages over TCP/IP using the MLLP protocol and acknowledging them. It will receive A08 messages.

ADT Receiver B is the CMDHL7 listener tool, or another tool capable of receiving HL7 v2 Delimited messages over TCP/IP using the MLLP protocol and acknowledging them. It will receive A01 and A03 messages.

The solution will receive a HL7 v2 message, acknowledge it with an immediate acknowledgement and pass it onto the SOA Composite. The immediate acknowledgement will be sent as soon as the message is received and persisted, before it is processed in any way. The acknowledgement received from the HL7 listener will be discarded.

We need to add a couple of components to the earlier solution – an ADT A08 message definition and another outbound endpoint.

#### **Define the ADT A08 document**

In this section we will define the AFDT A08 document using the canonical message as the basis. The canonical message, developed in the article "SOA Suite for healthcare integration Series – Creating a Canonical HL7 v2 Message Model", at <a href="http://blogs.czapski.id.au/2012/09/soa-suite-for-healthcare-integration-series-creating-a-canonical-hl7-v2-message-model">http://blogs.czapski.id.au/2012/09/soa-suite-for-healthcare-integration-series-creating-a-canonical-hl7-v2-message-model</a>, already contains all the segments we need, see pages 5 and 6 for tables representing segments to be included and the discussion which follows them. We must merely remove repeating optional PID and PV1 segments and set the trigger event to A08.

The final message will have the following segments:

A	A <i>08</i>	
r	ИSH	
E	EVN	
F	PID	
F	PV1	
Z	201?	
		hent sea

Figure 3 ADT A08 Document segments

- □ Start the Oracle B2B Document Editor.
- □ Click Open Document
- □ Navigate to the location of the "CMM\_v1.0.ecs" file and double-click it to open it on the Oracle B2B Document Editor
- □ Select and delete the second PID segment

ľ	B CMM_v1.0.ecs - Oracle B2B - [HL7-2.3.1]						
	<u>File E</u> dit <u>V</u> iew <u>T</u> ools <u>W</u> i	indow <u>H</u> elp					
	6 台 🖬 🖻 🚳	X 🖻 🖻   🗸 🗙 🛅	B. M. D. Z % # D. 0 0 0 0 0 0 0 0 0 0 0				
	Image: Control of the state of the sta	Image: Second	Segment Properties         ID:       PID         Name:       PID - patient identification segment         Requirement:       Optional         User Option:       Used         Ites       Purpose         Prese       Image: Properties         Image: Pint Properties       Image: Pint Properties         ID:       Purpose         Purpose       Image: Purpose         Purpose	)			
		Copy Ctrl+0 Paste Ctrl+0 Paste As Child Delete Del					

- □ Repeat the process to delete the second PV1 segment
- □ Click on the "V2.3.1 ADT ADT message (event ) parent node then enter information into appropriate fields Event: "A08", Event Name: "ADT/ACK Update Patient Information", Purpose: "Custom A08 Update patient information".

CMM_v1.0.ecs - Oracle B2B - [HL7-2.3.1]		
Eile Edit View Tools Window Help		
D 😋 🖬   Q 🖨	B: # D 2 4 10 11 11 11 11 11 11 11 11 11 11 11 11	
Guideline 🔶 ✔ ♦ ♦ 🗈	Message Properties	
HL7 Guideline	🗆 General	
⊡	ID: ADT	
EVN 002 EVN - event type segment	Name: ADT message	
	Event: A08	
E S 201 010 201 - gender change segment	Event Name: ADT/ACK - Update Patient Information	
	Standard: HL7 Version: 2.3.1	
	Notes	
	Purpose     Image: Custome A08 Update patient Information       Image: Purpose     Image: Custome A08 Update patient Information	

- □ Pull down the "File" menu, choose "Save As" and save the ADT A08 as "A08\_v1.0.ecs"
- □ Pull down the "File" menu, choose "Export", choose "Oracle B2B" and export the XDS version of the document as "A08\_v1.0.xsd"
- □ Exit the Oracle B2B Document Editor.

We are done. The document definition is ready to be used. Let's "introduce" it to the SOA Suite for healthcare integration.

## Add A08\_v1.0 Document to Document Protocol Hierarchy

In this section we will introduce the ADT A08 document to the SOA Suite for healthcare integration document hierarch as HL7, v2.3.1, ADT\_A08 document.

- □ Start the Healthcare Integration Console application in your favorite web browser <u>http://localhost:7001/healthcare</u>.
- □ Log in with administrative credentials, for example weblogic/welcome1.
- □ Expand "Configuration"  $\rightarrow$  "Document Protocol"  $\rightarrow$  "HL7"  $\rightarrow$ "2.3.1", right-click "ADT" and choose "Create"

ORACLE' SOA Suite for healthcare integration			
Designer Dashboards Reports			
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View - + Construction			
Custom			
Refresh			
Create     Creat			

Enter "A08\_v1.0" into the Name field of the "Create Document " dialog box, click the "Browse" button alongside the "Definition" label, locate the XML Schema Definition file, A08\_v1.0.xsd, and select it

Create Document Definition		8
Document Definition : HL7-2.3.1-ADT-		<u>/</u>
*Name A08_v1.0	Definition	Browse
Description	Root XSD Name	
	Identification Type	Flat 💌
Transaction Apps XPath Correlation	Routing	
* Transaction Set ecs File		Browse

□ Click the "Browse" button alongside the "Transaction Set ecs File" label, locate the ECS file, A08\_v1.0.ecs, and select it

Create Document Defi	nition			$\mathbf{X}$
Document Def	nition : HL7-2.3.1-ADT-			
*Name	A08_v1.0	Definition	A08_v1.0.xsd Update	
Description		Root XSD Name		
		Identification Type	Flat 💌	
Transaction	Apps XPath Correlation	Routing		
	* Transaction Set ecs File		Browse	

□ Click "OK" to complete the dialogue

□ Use the "Close" "Button" to close the "ADT", "2.3.1" and "A08\_v1.0" Tabs – you will find the Healthcare Integration Console more responsive with fewer open tabs

A08_v1.0					
Document Definition	on : HL7-2.3.1-ADT-A08_v1.0				
* Name Description	A08_v1.0	Definition Root XSD Name	A08_v1.0.xsd Update	Identification Type	Flat 💌
Transaction A	pps XPath Routing	Correlation			
* Transaction	Set ecs File A08_v1.0.ecs Upd	ate			

Our document hierarchy should now look like that shown in the illustration.



Designer Dashboards Reports	
Configuration Administration	A08_v1.0
View - + > X	Document Definition : HL7-2.3.1-ADT-A08_v1.0
Gustom ∇ ∰ HL7 ∇ ₩ 2.3.1 ∇ ₩ ADT	* Name A08_v1.0 Definition Description Root XSD Name
CMM_v1.0 A08_v1.0 CMM_v1.0 A08_v1.0 ACK_2.3.1	Transaction     Apps     XPath     Routing     Correlation       * Transaction Set ecs File     A08_v1.0.ecs     Update     Image: Correlation

## Second HL7 v2 Outbound (Sender)

In this section we will configure the second sender endpoint, which will send HL7 v2 ADT A08 messages to the external receiver.

The sender endpoint will send messages of the A08\_v1.0 type to the external system.

The sender will be a TCP/IP sender supporting the MLLP 1.0 encapsulation protocol. Such a sender establishes a connection to a listener which listens on a specific TCP/IP port, sends messages to it, receives acknowledgements back over the same connection, and processes them until either party disconnects.

In the sending mode the endpoint is configured as a "client".

□ In the "Healthcare Integration Console" right-click the "Endpoint" node in the "Configuration" tab and choose "Create"

ORACLE' SOA Suite for healthcare	integration
Designer Dashboards Reports	
🖗 Configuration 🛛 🎉 Administration	A08_v1.0
View - + 🔁 💥	Document De
✓ Endpoin <sup>+</sup> Bcastí Refresh	*Na Descript
HosA 🕂 Create	

□ Enter the following in the "Configure Endpoint" dialogue box then click "OK"

- Name: HA08\_SystemA\_Out
- Transport Protocol: MLLP10
- $\circ$  Connection Mode: client
- Host Name: localhost (or the name of whatever host you are using)
- Port: 22100

Create Endpoint	
*Name	HA08_SystemA_Out
Transport Protocol	MLLP 10
* Connection Mode	Client 💌
* Host Name	localhost
* Port	22100
	OK Cancel
·	,ill

The endpoint is not quite configured as we want it. We will change the non-default values to suit our requirement in the following steps.

- □ Check the "Enabled" checkbox. When we "Apply" this configuration later the endpoint will be started.
- □ Click the "Transport Details" button

HA08_SystemA_Out	sabled)					
οΠο	*Nan	ne HA08_Syster	nA_Out			
Endpoint Properties ✓ Hide Endpoint Configuration Paramete Status Disabled Transport Protocol MLLP 10 Transport Callout Transport Callout	ters ansport Details	onnection Mode Host Name Port	Client localhost 22100		Acknowledgement Mode Retry Interval Reattempt Count	None ▼ 0 ♥ 0 ♥
Document To Send Document	Functional ACK Va	alidation Trans	lation	Retry Interval	Reattempt Count Document Ca	allout Mapset

□ Click the "Advanced" tab in the "Transport Protocol Parameters" dialogue box, set the

following properties, and click "OK":

• Discard ACK: AA

Transport Protocol Parameters			
Connection Block Characters	Advanced		
Immediate ACK	None 💌		
Custom Immediate ACK File		Browse	11
	Map ACK Control ID		
	Map Trigger Event		
Discard HL7 ACK	AA		
Sequencing Mode	OneToOne		
Polling Interval	10		
Timeout	300		
	Sequencing		

□ Click the "Add" "button" (a plus sign) in the "Documents to Send" section

Callout			Reattempt Cour	U
Document To Send				
Document	Functional ACK	Validation Trans	lation Retry Interval	Reattempt Count Doctiment
				Add
•				► I

- □ Right-click the "Document Protocol" node in the "Document" dialog box and choose "Expand All Below"
- □ Select the "A08\_v1.0" document in the HL7→2.3.1→ADT hierarch and click "OK"



□ Click the "Add" "button" (a plus sign) in the "Documents to Receive" section

Document To Receive					$\rightarrow$	<b>+</b> ≈
Document	Functional ACK	Validation	Translation	FA handled automatically	Internal Channel	bbA
				-		
•						•

- Right-click the "Document Protocol" node in the "Document" dialog box and choose "Expand All Below"
- □ Select the "ADT\_2.3.1" document in the HL7 $\rightarrow$ 2.3.1 $\rightarrow$ ACK hierarch and click "OK"



Review the configuration to make sure it is correct and click the "Apply" button, remembering that with the "Enabled" checkbox checked this action will cause the SOA Suite for healthcare integration to attempt to start the endpoint

HA08_SystemA_Out									
Endpoint: HA08_Syst	emA_Out	(Disabled)							Apply Rev
		*	Name HA	.08_SystemA_Out Enabled i					
dpoint Properties									
7 Hide Endpoint Configura Status	<b>ation Paraı</b> Disabled	meters	Connection	Mode Client		Acknowled	lgement None	•	
Transport Protocol	MLLP 10	Transport Details	Host	Name localhost			Mode		
Transport Callout	-			Port 22100		Retry	Interval	0 🚔	
						Reattemp	t Count	0 🌲	
Document To Send									4
Document		Functional ACK	Validation	Translation	Retry Interval	Reattempt Count Do	ument Callout	Mapset	
HL7-2.3.1-ADT-A08_v1.0				V	0 🚔	0	•		•
Document To Receive									4
Document		Functional ACK	Validation	Translation	FA handled automatically	Internal Channel	Document Ca	allout M	apset
		E		12	NONE				

## HL7 v2 Inbound (Receiver)

In this section we will confirm the existence and configuration of the HosA\_SystemA\_In endpoint.

- □ Expand "Designer" → "Configuration" → "Endpoints" hierarchy, making sure that the endpoint "HosA\_SystemA\_In" exists and is enabled
- □ Click the "Transport Details" button, click the "Advanced" Tab, choose "Default" for the "Immediate ACK" setting then click "OK" to complete the dialogue

Transport Protocol Parameters	
Connection Block Characters Advanced	
Immediate ACK Default	
Custom Immediate ACK File	Browse
Map ACK Control	ID
Map Trigger Even	nt
Discard HL7 ACK None	
Sequencing Mode OneToOneMapping	•
Polling Interval 10	
Timeout 300	
Sequencing	

□ Uncheck the "Translation" checkbox, uncheck the "Functional ACK" checkbox and change the "FA handled automatically" to NONE in "Document To Receive" part of the configuration panel and click "Apply" to apply changes

Document To Receive				
Document	Functional ACK	Validation	Translation	FA handled automatically
HL7-2.3.1-ADT-CMM_v1.0				NONE 💌
	7	7	2	

# **Original HL7 v2 Outbound (Sender)**

In this section we review the configuration of the original sender endpoint, which was configured in the previous blog article and used to pass through ATD messages to an external system.

- □ Open the BcastB\_SystemA\_Out configuration panel by clicking the name of the endpoint under the "Configuration" Tab  $\rightarrow$  "Endpoints" node. Verify that the following configuration is set
  - Transport Protocol: MLLP10
  - $\circ \quad \text{Connection Mode: client}$
  - Host Name: localhost (or the name of whatever host you are using)
  - o Port: 22200

Endpoint: BcastB_SystemA_Out (	(Enabled)							Apply Reve
	*N	lame Bcas	stB_SystemA_Out nabled i					
dpoint Properties 7 Hide Endpoint Configuration Param Status Enabled Transport Protocol MLLP10 Transport Callout	ieters Transport Details	Connection M Host Ni	lode Client ame localhost Port 22200		Acknow	wledgement Non Mode Nor	ne 🔽	
					Reatt	empt Count	0 🌲	
Document To Send					Reatt	empt Count	0 🚔	- <b>-</b>
Document To Send	Functional ACK	Validation	Translation	Retry Interval	Reattempt Count	empt Count Document Callout	0 🖨 Mapset	- <b>f</b> -
Document To Send Document HL7-2.3.1-ADT-CMM_v1.0	Functional ACK	Validation	Translation	Retry Interval	Reattempt Count	Document Callout	0 Mapset	- <b>+</b> - :
Document To Send Document HL7-2.3.1-ADT-CMM_v1.0 Document To Receive	Functional ACK	Validation	Translation	Retry Interval	Reattempt Count	Document Callout	0 🖢	*
Document To Send Document HL7-2.3.1-ADT-CMM_v1.0 Document To Receive Document	Functional ACK	Validation	Translation	Retry Interval	Reattempt Count	Document Callout	0 🚽	Mapset

□ Click the "Transport Details" button

BcastB_SystemA_Out	* Name BcastB_SystemA_Out
	🗹 Enabled 🚺
Endpoint Properties	
∀ Hide Endpoint Configuration Parameters	
Status Disabled	Connection Mode Client
Transport Protocol MLLP 10 Transport Details	Host Name localhost
Transport Callout	Port 22200 ransport Details
Document To Send	

- □ Click the "Advanced" tab in the "Transport Protocol Parameters" dialogue box, check the following properties, and click "OK":
  - Discard ACK: AA

Transport Protocol Parameters			×
Connection Block Characters	Advanced		
Immediate ACK	None 💌		
Custom Immediate ACK File		Browse	
	Map ACK Control ID Map Trigger Event		
Discard HL7 ACK	AA		
Sequencing Mode	OneToOne		
Polling Interval	10		
Timeout	300		
	Sequencing		
		OK Ca	ancel

- □ Verify that document "HL7-2.3.1-ADT-CMM\_v1.0" is configured in the "Document to Send" and that "Functional ACK" and "Validation" checkboxes are not checked, and that "Translation" checkbox is checked.
- Verify that document "HL7-2.3.1-ACK-ACK\_2.3.1" is configured in the "Document to Receive".

#### Start Receiving "External Systems"

We will use the CMDHL7Listener command line client to receive HL7 ADT messages look at the output in the output directory specified on the listener's command line – for me c:\hl7\received. The CMDHL7Listener will display trace of message exchange in the console window. The SOA Suite for healthcare integration will record message tracking information which we will look at a later stage.

Please note that in this solution the CMDHL7Listener returns an ACK as soon as it gets the message.

- □ Check that your configured output directory is empty
- □ To start the listener for the "BcastB\_SystemA\_Out" sender endpoint, in a command / terminal window execute the following command

java -jar c:\tools\CMDHL7\CMDHL7Listener\_v0.7.jar -c ID\_ -p 22200 -s c:\hl7\received

□ Inspect the CMDHL7Listener console output making sure the listener started and is listening on the appropriate port

```
08/12/2012 10:45:36 AM au.id.czapski.hl7.CMDHL7Listener main
INFO: Port: 22200
08/12/2012 10:45:36 AM au.id.czapski.hl7.CMDHL7Listener main
INFO: Store in: c:\hl7\received
08/12/2012 10:45:36 AM ca.uhn.log.HapiLogImpl info
INFO: au.id.czapski.hl7.SimpleACKApplication registered to handle *^*
messages
08/12/2012 10:45:36 AM ca.uhn.log.HapiLogImpl info
INFO: SimpleServer running on port 22200
```

To start the listener for the "HA08\_SystemA\_Out" sender endpoint, in a command / terminal window execute the following command

```
java -jar c:\tools\CMDHL7\CMDHL7Listener_v0.7.jar -c ID_ -p 22100 -s
c:\hl7\received
```

#### HL7 v2 Router and Transformer

In this segment of the article, the SOA Composite called the "Router" will "route" each message it receives to an external HL7 receiver via a HL7 Sender endpoint, without changing it, and will also pass copies to a "Transformer" component to be transformed into corresponding ADT A08 messages and sent to another external HL7 receiver.

We will extend the basic "Router" composite, which was developed I the previous article, to provide additional functionality.

Tying together adapters in SOA Suite requires a composite application which implements business logic - BPEL, Mediator, Business Rules, ... . The role of this application is to receive a message from the inbound adapter and pass it to one or more outbound adapters,

potentially transforming it in the process. We already have this application from the previous work.

Before proceeding with configuration make sure that WebLogic Server is running. JDeveloper will connect to the backend repository to obtain information about configured documents and endpoints.

- □ Start the JDeveloper Studio IDE
- □ Pull down the "Application" menu and choose "Open..."
- Locate the file "RouterApp.jws", select it and click "Open" to open it in the JDeveloer Studio
- □ Expand the "Projects" --? "RouterPrj"  $\rightarrow$  "SOA Content" hierarch and double-click the "composite.xml" object to open the composite application designer



□ Drag the "healthcare adapter" Service Adapter to the canvas in the "External References" swim line to provide a sender for the new receiver



- $\hfill\square$  Configure the endpoint as follows:
  - Service Name: HCI\_HA08\_SystemA\_Out
  - Operation: Send

- Document Definition: HL7  $\rightarrow$  2.3.1  $\rightarrow$  ADT  $\rightarrow$  A08\_v1.0
- Drag the Mediator Service Component to the canvas and drip it into the "Components" swim line



- □ Name this component "TransformerMediator" and click "OK"
- □ Right-click on the new "TransformerMediator" component and choose "Edit"
- □ Start the "Define Service" wizard by clicking on the "Define Service" icon, the plus sign

composite.xml ×	📽 Transformer Mediator.mplan 🗴
۲ ۲	
🍕 Mediator	
Name:	TransformerMediator
WSDL URL:	
Port Type:	Define Service
Callback Port Type:	
Resequence Level:	operations 💌
🖃 🏘 Routing Ru	les
😽 Event Subscrip	tions 📫

□ Click the "Find existing WSDLs." Button

📥 Define Service		
	× 1	
<u>W</u> SDL URL:	E	
Port Type:	Find existi	ng WSDLs.
<u>C</u> allback Port Type:	<b></b>	

□ Choose "HCI\_In.wsdl" and click "OK" then "OK" again

📥 SOA Reso	urce Browser		<u>ز</u>	×
📸 File Syst	em		•	)
Location:	🗀 RouterPrj		- 🛍 🏠 🎬 🗄	-
🗀 classe	s	🗀 xsd	HCI_Out.wsdl	
🗀 deploy	/	🗀 xsl		
🗀 SCA-II	NF	📄 HCI_HA08_SystemA	A_Out.wsdl	
🗀 testsu	ites	🖹 HCI_In.wsdl		
<		ð	>	
File <u>N</u> ame:	HCI_In.wsdl			
File <u>T</u> ype:	WSDL Files (*.wsdl)		-	
Help			OK 💦 Cancel	

□ Click "Save All" then "Close" on the "TransformerMedisator.mplan"

💩 Oracle JDeveloper 11g Release 1 - RouterApp.jws : RouterPrj.jpr : C:\JDeveloper\mywork\RouterApp\RouterPrj\TransformerMediator.mplan					
<u>File Edit Yiew Application Refactor</u>	<u>S</u> earch <u>N</u> avigate <u>B</u> uild <u>R</u> un Versi <u>o</u> ning <u>T</u> ools <u>W</u> indow <u>H</u> elp				
🔮 🗁 🗒 🗊 🕫 🖓 🔍 🗮 🛍 I 🔾	• 🔘 •   🚵 •   📥 🕍 🚢 🛳 •   🕨 • 🌞 •   🛕				
Application 📐 📑 Application S × 💷	📲 composite,xml 🗴 🐗 Transformer Mediator.mplan 🗶				
🔁 RouterApp 🛛 👻 🖻 👻					
🗢 Projects 🛛 💽 🗞 🏹 🖛 👘					
RouterPrj	🐗 Mediator				
🔁 SOA Content 🔹	Name: TransformerMediator				
😟 🛁 classes 🦳					
🗄 📲 testsuites	WSDL URL: HCI_In.wsdl 🔂				
🕀 📲 xsd					
🕂 🕂 🗸 🗸	Port Type: receive_ptt				
< >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	Resequence Level: operations				
Application Resources					

□ Connect "RouterMediator" to "TransformerMediator" by dragging from the one to the other connecting the output triangle to the input triangle



 Connect output of the "TransformerMediator" to the input on the "HCI\_HA08\_SystemA\_Out" adapter – the canvas will be redrawn with a better layout



We need to pass certain properties, to which the "Router'Mediator" has access and which it can use in its message processing, on to the "TransformerMediator" so it too can use the values of these properties if needed. There are several properties which the inbound healthcare adapter makes available. We will only use a few. The method will hold for all the properties.

- □ Double-click on the "RouterMediator" to edit its properties
- □ Click the "Assign Values" button in the

"TransformerMediator/TransformerMediator::receive" route to add properties which need to be forwarded to the "TransformerMediator" for it to use in routing to its endpoint

Static Routing					
I < <filter expression="">&gt;</filter>	۵	ACI_Out::send		٢	Sequential 🕶
	Validate Semantic		•	8	
	Transform Using	body : < <transformation map="">&gt;</transformation>	•	Ж	
	Assign Values	\$out.body := \$in.body	•	89	
Image: Second secon	9 🛯	rransformerMediator/TransformerMediator::receive		٢	Sequential 🕶
	Validate Semantic		•	8	
	Transform Using	body : < <transformation map="">&gt;</transformation>	•	Ж	
	Assign Values		-	9	-
				N	

□ Add three value assignments, assigning the following properties:

📥 Assign Values		×
		• - / ×
From	То	2m
property : hc.fromEndpoint	property : hc.fromEndpoint	Add a new value assignment.

◦ hc.fromEndpoint → hc.fromEndpoint

From		То	
Type: property	-	Type: property	•
Property:		Property:	
hc.fromEndpoint		hc.fromEndpoint	
hc.documentProtocolName	~	hc.documentProtocolName	
hc.documentProtocolVersion		hc.documentProtocolVersion	
hc.documentTypeName		hc.documentTypeName	0
hc.fromEndpoint		hc.fromEndpoint	
hc.messageId		hc.messageId	
hc.messageType		hc.messageType	
hc.replyToMessageId		hc.replyToMessageId	
hc.toEndpoint		hc.toEndpoint	
javax.xml.ws.security.auth.username		javax.xml.ws.security.auth.username	
jca.apps.HeaderDocument	~	jca.apps.HeaderDocument	

- hc.messageType  $\rightarrow$  hc.messageType
- o hc.documentTypeName → hc.documentTypeName
- □ Add a value assignment, assigning the following expression:
  - \$in.body → \$out.body

Assign Values	
	+ / %
From	То
property : hc.fromEndpoint	property : hc.fromEndpoint
property : hc.messageType	property : hc.messageType
property : hc.documentTypeName	property : hc.documentTypeName
expression : \$in.body	expression : \$out.body

- □ Click the "Save All" button and close the "RouterMediator.mplan"
- Double-click the "TransformerMediator" in the composite editor to open its mplan, then click the "Assign Values" button to assign an expression and a constant which the "TransformerMediator" needs to pass to the healthcare adapter to allow it to find the correct route for sending messages and to make the identifier of the copy of the message unique
- Assign expression "generate-guid()" to property hc.messageId, and the constant "HA08\_SystemA\_Out" to the property hc.toEndpoint

🔷 Assign Values	×
	🔁 🕂 🖉 🗶
From	То
expression : oraext:generate-guid()	property : hc.messageId
constant : HA08_SystemA_Out	property : hc.toEndpoint

We need to transform the ADT A01 or ADT A03 to ADT A08. Since our A01, A03 and A08 have the same structure in terms of segments, fields, components and subcomponents we can simply copy entire segments and modify specific fields and components which are different. The fields and components which differ are: MSH.9.MSG.2 (which needs to have a literal value A08), MSH.10 (which needs to have a new, unique message id value) and EVN.1 (which needs to have a literal A08 as well). All other content will be the same as the

original message from which it came. While there are at least 4 different ways in which this kind of mapping can be implemented in SOA Suite we will use the XSL transformation for the purpose of this exercise. I may or may not provide worked through examples of other mapping technologies in subsequent articles.

□ Still in the "TransformerMediator.mplan" click the "Mapper" button to create a new mapper file

Static Routing	HCI_HA08_SystemA_Out::send	@	Sequential -	
Validate Semantic		- &		
Transform Using	body : << <transformation map="">&gt;</transformation>	- 18		
Assign Values	hc.messageId := oraext:generate-guid()	- 6	S Select an existing map	oper file or create a new one.

□ Select the "Create New Mapper File" radio button and click "OK", accepting the name which JDeveloper generated

Request Transformation	n Мар	×
Transformation from request r	nessage B2BMsg to message B2BMsg.	
Transformation to part:	body	
<u>Use Existing Mapper File:</u>		Q /
Oreate New Mapper File:	ADT_To_ADT_A08.xsl	
Help	OK	Cancel

Drag from the node "ns1:ADT" in the left hand side element tree to the node "ns1:ADT\_A08" in the right hand side node tree

📲 composite.xml 🗴 🦂 TransformerMediator.mplan 🗴	ADT_To_ADT_A08.xsl ×		V
Source: HCI_In.wsdl	1	[	XSLT File: HCI_HA08_SystemA_Out.wsdl
B 🕵 <sources> B 😵 ns1:ADT</sources>			<target></target>
XXO Type			
			Standard 🚥
CreatedBy			CreatedBy XX
CreatedDate			
Name			Name 🔤
			ns1:Internal-Properties 🚳 …⊕ ns1:MSH 《≫…⊕
ns1:EVN			ns1:EVN 🚸 🕀
			ns1:PID 🍫 🕀
₩			ns1:201 🐼 🕀
⊕ (∞) ns1:PV1_1 ⊕ (∞) ns1:201			

- □ Make sure the following checkboxes and radio buttons are checked then click "OK" to begin auto mapping process
  - o Confirm Auto Map Results
  - Prompt for Preferences before Auto Map

- Match Elements with Exact Names
- Match Elements with Exact Types
- o Match Elements Considering their Ancestor Names
- o Never
- Enable Auto Map

े Auto Map Preferences 🔀					
Confirm Auto Map Results  Prompt for Preferences before Auto Map					
Mode: Basic 💌					
During Auto Map:					
<ul> <li>Match Elements with Similar Names</li> <li>Match Elements with Exact Names</li> </ul>					
<ul> <li>Match Elements with Exact Types</li> <li>Match Elements Considering their Ancestor Names</li> </ul>					
Insert xsl:if statements: <ul> <li>Never</li> <li>For optional nodes with reguired children</li> <li>For all optional nodes</li> </ul>					
Show Dictionaries >>					
Enable Auto Map					
Help OK Cancel					

- $\Box$  Dismiss the dialogue box about element recursion by clicking "OK"
- □ Scroll through the list of nodes being auto mapped, uncheck the following nodes and their sub-nodes, if any, and click "OK" to accept the results
  - o MSH.9.MSG.2
  - o MSH.10
  - $\circ$  EVN.1

×		Мар	hauto I
			Source:
		T	_ /ns1:AD
			r Target:
		T A08	/ns1:AD
		-	·
		Candidates:	<u>M</u> apping
	Target	Source	Select
^	ns1:MSH/ns1:MSH.9/@ApplicationInfo	ns1:MSH/ns1:MSH.9/@ApplicationInfo	✓
	ns1:MSH/ns1:MSH.9/ns1:MSG.1	ns1:MSH/ns1:MSH.9/ns1:MSG.1	<b>~</b>
	ns1:MSH/ns1:MSH.9/ns1:MSG.1/@Item	ns1:MSH/ns1:MSH.9/ns1:MSG.1/@Item	<b>&gt;</b>
	ns1:MSH/ns1:MSH.9/ns1:MSG.1/@Type	ns1:MSH/ns1:MSH.9/ns1:MSG.1/@Type	<b>~</b>
	ns1:MSH/ns1:MSH.9/ns1:MSG.1/@LongName	ns1:MSH/ns1:MSH.9/ns1:MSG.1/@LongName	<b>&gt;</b>
nfo	ns1:MSH/ns1:MSH.9/ns1:MSG.1/@ApplicationInfo	ns1:MSH/ns1:MSH.9/ns1:MSG.1/@ApplicationInfo	<b>v</b>
	ns1:M5H/ns1:M5H.9/ns1:M5G.1/@xsi:nil	ns1:M5H/ns1:M5H.9/ns1:M5G.1/@xsi:nil	
	ns1:MSH/ns1:MSH.9/ns1:MSG.2	ns1:MSH/ns1:MSH.9/ns1:MSG.2	
	ns1:MSH/ns1:MSH.9/ns1:MSG.2/@Item	ns1:MSH/ns1:MSH.9/ns1:MSG.2/@Item	
	ns1:MSH/ns1:MSH.9/ns1:MSG.2/@Type	ns1:MSH/ns1:MSH.9/ns1:MSG.2/@Type	
	ns1:MSH/ns1:MSH.9/ns1:MSG.2/@LongName	ns1:MSH/ns1:MSH.9/ns1:MSG.2/@LongName	
nfo	ns1:MSH/ns1:MSH.9/ns1:MSG.2/@ApplicationInfo	ns1:MSH/ns1:MSH.9/ns1:MSG.2/@ApplicationInfo	
	ns1:MSH/ns1:MSH.9/ns1:MSG.2/@xsi:nil	ns1:MSH/ns1:MSH.9/ns1:MSG.2/@xsi:nil	
$ \rightarrow $	ns1:MSH/ns1:MSH.9/ns1:MSG.3	ns1:MSH/ns1:MSH.9/ns1:MSG.3	
	ns1:MSH/ns1:MSH.9/ns1:MSG.3/@Item	ns1:MSH/ns1:MSH.9/ns1:MSG.3/@Item	<b>~</b>
	ns1:MSH/ns1:MSH.9/ns1:MSG.3/@Type	ns1:MSH/ns1:MSH.9/ns1:MSG.3/@Type	<b>v</b>
	ns1:MSH/ns1:MSH.9/ns1:MSG.3/@LongName	ns1:MSH/ns1:MSH.9/ns1:MSG.3/@LongName	<b>~</b>
nfo 🚩	oct-MSH/oct-MSH 9/oct-MSG 3/@0oolicationTofo	oc1+MSH/oc1+MSH_9/oc1+MSG_3/@0oolicationInfo	
selected	3,393 of 3,399 sele	ct All Deselect All	S <u>e</u> le
cel	OK Cancel	alp	He
Cani	ОК		<u>H</u> e

□ To set the literal "A08" as the value of the node MSH.9.MSG.2 expand the right-hand node tree through MSH $\rightarrow$ MSH.9 $\rightarrow$ MSH.9.MSG.2

	······································	Item XX
⊞ (SI:MOH.9		- 100
🗄 🐨 🚳 ns1:MSH.6		Type 📷
H lest MSH 7	and the second s	LongName 🖾 🎖
		ApplicationInfo
		a use a [1] -
🕀 🚸 ns1:MSH.9		ns1:MSG.1 🔊 😗
⊕		ns1:MSG,2 🚷 🕀
		ns1:MSG 💦 🚷 🕀
A moti MSH 12	/ns1:ADT_A08/ns1:M	5H/ns1:MSH.9/ns1:MSG.2 5H.10 🚸 🕀
		pc1:MSH 11 ()
🕀 🚯 ns1:MSH.13		131.000.11 🌾 🖽
🕀 🙆 ns1:MSH.14		ns1:MSH.12 🔇 🕀 🕀
		ns1:MSH.13 🐼 🕁

□ Right-click ns1:MSG.2 and choose "Set Text"  $\rightarrow$  "Enter Text..."



□ Type literal "A08" and click "OK"

Set Text	×
◯ <u>E</u> mpty Text	
• <u>I</u> ext: A08	
Disable Escape	
Help	OK Cancel

 $\hfill\square$  Ensure the value is set as shown

🔊 🖓 🔤 🔤 🔤 🖓 🔤 🔤	ال مسلم المراجع المسلم المراجع المسلم ال	
🖮 🐼 ns1:MSH.4	and the second	ns1:MSH.9 《》
E a ns1 MSH 5		Item XX
		Type 🔤
ш. 🦚 ust:мэн.е	The second secon	
🕀 🐨 🐼 ns1:MSH.7 ————————————————————————————————————		Longivame
🗄 🔯 ns1:MSH.8		ApplicationInfo
🕀 🛞 ns1:MSH.9	· · · · · · · · · · · · · · · · · · ·	ns1:MSG.1 🐼 🕀 🔪
		ns1:MSG.2 = A08 🔳 🕼 🕀
	· · · · · · · · · · · · · · · · · · ·	ns1:MSG.3 🐼 🕀
₩ •• • • • • • • • • • • • • • • • • •		
🗄 🚸 ns1:MSH.12		nsi:MbH.10 🎲 🖽
⊕ 💿 ns1:MSH.13		ns1:MSH.11 🚸 🕀
	The second	

- $\hfill\square$  To assign the unique message Id expand the right-hand MSH node tree until the ns1:MSH.10 field is visible
- □ In the "Component Palette" dropdown choose "Advanced" then expand "Advanced Functions" node



Drag the "generate-guid" function to the central swim line opposite the ns1:MSH.10 node



Drag from the tiny square at the right of the function to the ns1:MSH.10 node to connect the two



 $\hfill\square$  Confirm that the function value is being assigned to the correct node



□ Set the literal value "A08" in the field EVN.1



- □ Click the "Save All" button to save all work then close the XSL designer and the mplan designer
- □ Right-click "RouterPrj" node in the project tree, choose "Deploy" and deploy the project



□ Verify that the project deployed successfully



The application is deployed and ready to accept and write messages.

At this point you can close the JDeveloper Studio IDE. We don't need it for the moment.

### Send ADT messages

As before, we will use the CMDHL7Sender command line client to read files containing a single HL7 ADT message and submit them to the ADT Receiver endpoint. We will then look at the console output produced by the CMDHL7Listener which we started earlier, then look at the output in our configured output directory – for me c:\hl7\received, and finally review message tracking information in the Healthcare Integration Console.

Please note that in this solution the receiver endpoint returns immediate ACK as soon as it gets the message. There may be a delay, most noticeable the first time one executes the processing flow after application server restart, between the receipt of the ACK and the time the message is written to a file in the file system.

- □ Check that your configured output directory is empty
- Locate the input file containing a single HL7 message for me this will be C:\hl7\adt\sources\ADT\_A01\_output\_1.hl7

The content of my file, where each segment starting with the 3 character segment ID in bold text is a single line up to the next 3 character segment ID, looks like this:

 $\hfill\square$  In a command / terminal window execute the following command

java -jar c:\tools\CMDHL7\CMDHL7Sender\_v0.7.jar -a SystemA -b HosA -c ID\_ -n 1 -d \r\r\n -p 22222 -h localhost -t 30000 -f c:\hl7\adt\sources\ADT A01 output 1.hl7

□ Locate the output files in the received directory and inspect them to confirm that a) A01 or A03 and A08 have been written and b) that A01/A03 has the same content as the input file and the A08 has the same content as the input file except for the tree changes we made in the "TransformerMediator" component.

The content of the A01 output file, where each segment starting with the 3 character segment ID in bold text is a single line up to the next 3 character segment ID, looks like this:

The content of the file named "ID\_\_0000000\_ADT\_A01\_1356512788894.hl7" is the same as the message which was sent. The only difference is the message control id, which the send command explicitly changed with the -c switch to a serial number prefixed by "ID\_\_".

The content of the A08 output file looks like this:

The content of the file named

"38313332333630313831353734383532\_ADT\_A08\_1356512791863.hl7" is the same as the message which was sent except for the fields and components which we explicitly modified and which are marked as bold italic text.

□ Submit the ADT A03 file, ADT\_A03\_output\_1.hl7, and inspect the output.

Our solution works to the extent of receiving HL7 v2.3.1 messages, and acknowledging them, transforming ADT messages to A08 for one stream of processing and writing them to files in the file system.

# **Explore Message Tracking**

Explore message tracking.

- □ Start the Healthcare Integration Console <u>http://localhost:7001/healthcare</u>
- □ Log in with your credentials mine are weblogic/welcome1
- □ Click the "Reports" Tab



 $\hfill\square$  Note two set of three messages for ADT A01 and A03.

ORACLE' SOA Suite for healthcare	ntegration		Accessibility	Help Logout Logged in as v	veblogic since 26/
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Last 24 Hours					
Last 24 Hours Found 6 results.	K & 1-	6 of 6 📎 📎	Page Size 40 Value 26/12/2012	ted: 8:58:33 PM GMT+11:00	Purge 😼
Message ID	Created Date and Time	Direction	Endpoint	State	Document Type
1 > 🖂 2d383235373931353335393637323538	26/12/2012 8:57:13 PM GMT+11:00	OUTBOUND	HA08_SystemA_Out	MSG_COMPLETE	HL7-2.3.1-ADT
2 > 🖂 2d373639383030323130343931363131	26/12/2012 8:57:10 PM GMT+11:00	OUTBOUND	BcastB_SystemA_Out	MSG_COMPLETE	HL7-2.3.1-ADT
3 > 🖂 COA8DE8113BD6A4DDFF000004693B554-1	26/12/2012 8:57:05 PM GMT+11:00	INBOUND	HosA_SystemA_In	MSG_COMPLETE	HL7-2.3.1-ADT
4 > 🖂 33343230343337323832373533343636	26/12/2012 8:56:31 PM GMT+11:00	OUTBOUND	HA08_SystemA_Out	MSG_COMPLETE	HL7-2.3.1-ADT
5 > 🖂 31343735343138353131343937393539	26/12/2012 8:56:29 PM GMT+11:00	OUTBOUND	BcastB_SystemA_Out	MSG_COMPLETE	HL7-2.3.1-ADT
6 > 🖂 C0A8DE8113BD6A43471000004693B52D-1	26/12/2012 8:56:21 PM GMT+11:00	INBOUND	HosA_SystemA_In	MSG_COMPLETE	HL7-2.3.1-ADT

□ Select the first OUTBOUND message in the list (it ought to be the outbound ADT A08 message)

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Last 24 Hours Found 6 results.	I% % [	1-6 of 6 📎 📎	Page Size 40 🐳 Last U 26/12/2	Jpdated: 2012 8:58:33 PM GMT+11:00	-   <b>K</b>
Message ID	Created Date and Time	Direction	Endpoint	State	Docu
1 > 🖂 2d383235373931353335393637323538	26/12/2012 8:57:13 PM GMT+11:00	OUTBOUND	HA08_SystemA_Out	MSG_COMPLETE	HL7-
2 > 🖂 2d373639383030323130343931363131	26/12/2012 8:57:10 PM GMT+11:00	OUTBOUND	BcastB_SystemA_Out	MSG_COMPLETE	HL7-
3 > 🖂 C0A8DE8113BD6A4DDFF000004693B554-1	26/12/2012 8:57:05 PM GMT+11:00	INBOUND	HosA_SystemA_In	MSG_COMPLETE	HL7-
4 🗁 🖂 33343230343337323832373533343636	26/12/2012 8:56:31 PM GMT+11:00	OUTBOUND	HA08_SystemA_Out	MSG_COMPLETE	HL7-
5 > 🖂 31343735343138353131343937393539	26/12/2012 8:56:29 PM GMT+11:00	OUTBOUND	BcastB_SystemA_Out	MSG_COMPLETE	HL7-
6 🗁 🖂 C0A8DE8113BD6A43471000004693B52D-1	26/12/2012 8:56:21 PM GMT+11:00	INBOUND	HosA_SystemA_In	MSG_COMPLETE	HL7-
HA08_Syst	temA_Out Wire Messag	e Busine	ess Message Applica	tion Message Con	Iposite
Business Message Details					
🕑 🗐 Identification					
Endpoint HA08_SystemA_Out		Message ID	2d3832353739313533353936	37323538	
State MSG_COMPLETE		Label	soa_b2b Wed Dec 26 16:25:	56 EST 2012 - 1	
Direction OUTBOUND	Intercha	nge Control Number			
Message Type REQ	Gr	oup Control Number			
ID C0A8DE8113BD6A4F92900000	4693B56B Transaction	Set Control Number	2d3536383135313532323931	36313338	
Communication and Protocol					
Document Protocol HI 7	Sent Date	06/10/0010 8-57-1	5 PM CMT+11-00		

- □ Note the details
- Review the State, Endpoint and other attributes, and review "Identification" and "Communication and Protocol" attribute sections – you should recall most of these from the endpoint configuration steps – note the "Native Message Size" and "Translated Message Size" information

ORACLE' SOA Suite for healthcare	integration	Accessibility Help Logout Logged in as weble
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Message ID	Created Date and Time	Endpoint State Doc
1 > 24383235373931353335393637323538	26/12/2012 8:57:13 PM GMT+11:00 OUTBOUND H	HA08 SystemA Out MSG COMPLETE HL7
2 ▷ 🖬 2d373639383030323130343931363131	26/12/2012 8:57:10 PM GMT+11:00 OUTBOUND B	3castB_SystemA_Out MSG_COMPLETE HL7
3 > 🖂 C0A8DE8113BD6A4DDFF000004693B554-1	26/12/2012 8:57:05 PM GMT+11:00 INBOUND H	-losA_SystemA_In MSG_COMPLETE HL7
Business Message Details	Business I	Message Application results Composite
Identification     Endpoint HA08_SystemA_Out     State MSG_COMPLETE     Direction OUTBOUND     Message Type REQ     ID C0A8DE8113BD6A4F9290000	Message ID 2d3 Label soa Interchange Control Number Group Control Number 2d6938568 Transaction Set Control Number 2d3	183235373931353335393637323538 b2b Wed Dec 26 16:25:56 EST 2012 - 1 353638313531353232393136313338
Communication and Protocol		
Document Protocol HL7 Protocol Version 2.3.1 Document Type ADT Document Definition A08 Document Retry Interval 0 Document Remaining Retry 0	Sent Date 26/12/2012 8:57:15 PM Received Date 26/12/2012 8:57:13 PM Acknowledgement Mode NONE r1.0 Response Mode NONE Transport Protocol Name MLLP Transport Protocol Version 1.0	4 GMT+11:00 4 GMT+11:00
Content Native Message Size 781 Translated Message Payload Key Fields	Size 52278	

□ Click the "Composite" link, log into the Enterprise Manager Console with your credential (my credentials are weblogic/welcome1) and review the message processing "Trace", noting component hierarchy, component names, types, state and so on

Trace			
Show Instance IDs			
Instance	Туре	Usage	State
🖃 🚰 HCI_In 📑	Healthcare Binding	🐯 Service	<ul> <li>Completed</li> </ul>
🖃 🔩 RouterMediator	Mediator Component		<ul> <li>Completed</li> </ul>
🚰 HCI_Out 📷	Healthcare Binding	🖏 Reference	<ul> <li>Completed</li> </ul>
🖃 🧏 TransformerMediator	Mediator Component		<ul> <li>Completed</li> </ul>
🎁 HCI_HA08_SystemA_Out 📑	Healthcare Binding	💐 Reference	<ul> <li>Completed</li> </ul>

- □ Click the "RouterMediator" link and inspect the instance details, expanding nodes as you go along to see what can be seen this display shows the SOA Composite and the message and message properties as they are at different stages of processing
- □ Click the "TransformerMediator" link and inspect the instance details, expanding nodes as you go along to see what can be seen this display shows the SOA Composite and the message and message properties as they are at different stages of processing

Flow Trace > Instance of TransformerMediator	
Instance Details of TransformerMediator	
This page shows Mediator component instance details. ②	
Expand the payload nodes to view the details of the instance audit trail.	
🖃 🦇 onMessage	
□ 26/12/2012 8:57:08 PM Input payload received	
E 🍕 26/12/2012 8:57:08 PM onCase "HCI_HA08_SystemA_Out.send"	
26/12/2012 8:57:08 PM Evaluation of xpath condition "No Filter" resulted true	
C <payload></payload>	
□ 26/12/2012 8:57:09 PM Transformed message part "body" using "xsl/ADT_To_ADT_A08.xsl"	
Assigned oraext:generate-guid() to sout.property.nc.messagetd	
<	
T Zoyloads	
□ spanood □ 26/12/2012 8:57:09 PM Invoked 1-way operation "send" on target service "HCL HA08 SystemA Out"	
E <pre>pavload&gt;</pre>	
+	

## **Explore Dashboards**

The SOA Suite for healthcare integration Console includes a capability which allows an operator to define and use dashboards for quick access to operational sate of the system, message counts and gauges, and other kinds of information artifacts which are useful for monitoring the system.

- □ In Healthcare Integration Console click on the Dashboards tab
- □ Pull down the "+" menu in the top right hand corner and chose "New Dashboard..."

<b>ORACLE</b> : SOA Suite for healthcare integration	Accessibility Hel	o Logout	Logged in as weblogic since 26/12/2012 8:17:10 PM GMT+1:
Designer Dashboards Reports			
Welcome to Dashboards. Here are some pose	sible next ste	ps:	New Dashboard
Set Up Default Dashboard to Show Whenever Tab Is Selected			Apply
Selected Dashboard None 💌			
Open or Edit Existing Dashboards     Click on green plus sign 👫 near upper right corner and select desired Dashboard	to open.		
Cick on green plus sign the near upper right corner and select New Dashboard.	, or just click <b>here</b>		
Delete Existing Dashboards     Click on green plus sign      The near upper right corner and select Delete Dashboards	rds, or just click here	•	

□ Name the new dashboard "OpsDashboards", select all endpoints, click the "move all" button and click the "Create" button

Create Dashboard				×
Endpoint Dashboard Customiz	er			
Name	OpsDashboard			
Description				
	Available Endpoints	Dashboard E	indpoints	
	BcastB_SystemA_Out HA08_SystemA_Out HosA_SystemA_In	>		
Select Endpoints for Dashboard				

□ Inspect the display, noting message counts, last message received/sent timestamps, time period slider and other features

ORACLE: SOA Su	ite for healthcare integration		Accessibility Help Logout Log	gged in as <b>weblogic</b> since 26/12/2	012 8:17:10 PM GMT+11:00
Designer Dashboards	Reports				
OpsDashboard					🕂 👻
OpsDashboard		Show All	Columns 3 🗬 Las	t Updated: 2/2012 9:21:14 PM GMT+11:00	▼ Show Customizer
	BcastB_SystemA_Out (i) 🖉 🖬	HA08_SystemA_Out	🕕 🖉 🖬 🛛 HosA_S	ystemA_In	() 🖉 🖬
Time Range	✓ Running	✓ Running	🕒 Idl	2	
ú a P	Messages During Last 24 Hours:	Messages During Last 24 Hours:	Messa	ges During Last 24 Hours:	
Month -	Sent 2 Received 0 Error 0	Sent 2 Received 0	Error O Se	nt 0 Received 2	Error O
2 Weeks –	Last Sent 26/12/2012 8:57:12 PM GMT+11:00	Last Sent 26/12/201	8:57:15 PM GMT+11:00	Last Sent	
10 Days	Last Received	Last Received		Last Received 26/12/2012	8:57:05 PM GMT+11:00
Week –	Last Error	Last Error		Last Error	
5 Days -					
2 Days -					
24 Hours   <del>24 Hours</del>					
12 Hours -					
6 Hours –					

□ Click the "i" in circle button to see the endpoint configuraiotn details then close the dialog

Running Messages During Last 24 Hour	s: E	ndpoint Properties - BcastB_	SystemA_Out	
Sent 2 Received	O Error O	Key	Value	
		Transport Protocol	MLLP	
Last Sent 26/12/2012 8:57:12 PM GMT		Connection Mode	Client	
		Host Name	localhost	
Last Error		Port	22200	
		Permanent Connection	true	
		Polling Interval	10	
		Timeout	300	
		Sequencing	true	

□ Click the "Maximize" button on the "BCastB\_SystemA\_Out" control

V Running		
Messages Durir	ig Last 24 Hours:	
Sent 2	Received <b>()</b>	Error <b>O</b>
Las	Last Sent 26/12/2012 t Received Last Error	8:57:12 PM GMT+11:00

 $\hfill\square$  Inspect the display and explore various controls

DRACLE SOA	Suite for h	ealthcar	e integra	tion						Accessibility Help Logout Logged	n as weblogic since 26,	/12/2012 8:17:10 PM GMT+11:00
Designer Dashbo	ards Repo	orts										
OpsDashboard												<b>4</b> • (
Endpoint Details - Bca	astB_SystemA_(	Dut										i & 🚺
🖋 Running											Last 26/12	Updated: /2012 9:26:15 PM GMT+11:00
										Message Processing Overview for	ast 24 Hours	
	-				-					Sen	Receiver	đ
	6 Hours	12 Hours	24 Hours	2 Days	5 Days	Week	10 Days	2 Weeks	Month	Message & Error 2 &	0 68	
										Error 0 &	0 63	
€ 63	HL7-2.3.1-AD msg/sec 0.41 Total: 2 e Message Size:	32 <sup>-</sup> 40 0.4048 KB										
2.4												
2.0												
1.6												
12												Sent Received
												Error
0.0												
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□ Click the tiny eye glasses in the "Message Processing Overview" table in the "Sent" column of the "Message & Error" row

			Shaff: W
		Last Updated 26/12/2012 9:26	: :15 PM GMT+11:00 🔞
ssage Processing Ove	rview for Last 24	Hours	
	Sent	Received	
Message & Error	2 68	0 69	
Error	0 68	0 6მ	
		-	
Colur	nns 1	Display 💿 Gau	uges O Table

□ Note the two outbound messages that this endpoint sent in the period covered by the display, explore the messages, then click the "Close" button to close the panel and return to the "OpsDashboard"

ORACLE: SOA Suite for healthcare	integration		Accessibility	Help Logout Logged in a	s weblogic since 26/12/2012 8:17:10 PM GMT+11:00
Designer Dashboards Reports OpsDashboard Endpoint BcastB_SystemA_Our	t Report[1]				4 × X
Endpoint BcastB_SystemA_Out Report[1] Found 2 results.	14 4	1 - 2 of 2 📎 🖇	Page Size 40 🚽 Last Up 26/12/20	dated: 2 9:28:29 PM GMT+11:00	🛛 🕞 Purge 🛛 🥦 Resubmit 🗸 🗍 🍞 Show Filters
Message ID	Created Date and Time	Direction	Endpoint	State	Document Type
1 > 🖂 2d373639383030323130343931363131	26/12/2012 8:57:10 PM GMT+11:00	OUTBOUND	BcastB_SystemA_Out	MSG_COMPLETE	HL7-2.3.1-ADT
2 > 🖾 31343735343138353131343937393539	26/12/2012 8:56:29 PM GMT+11:00	OUTBOUND	BcastB_SystemA_Out	MSG_COMPLETE	HL7-2.3.1-ADT

□ Click the downward pointing triangle at the far right next to the "Refresh" icon, then configure auto refresh for a 30 second interval

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		i	<i>&amp;</i> ::
Last Upo 26/12/201	dated: 12 9:33:17 PM	1 GMT+11:00	30
Auto-Refre	esh Every	60 韋	secs
Received			
0 69			
0 68			<u>۱</u>

- Submit a file of message containing at least 10 messages and watch the gauge on the display
- □ Explore other Dashboard features and facilities

### **Summary**

In this article the router developed in the previous article in the series, the "SOA Suite for healthcare integration Series – HL7 v2 Inbound CMM to Outbound Pass-through Solution", was extended to add a fan-out for distribution of one inbound message to two outbound receivers and a ADT A01/A03 to ADT A08 transformation using the eXtensible Style Language (XSL). Additionally, SOA Suite for healthcare integration Dashboard functionality was explored.