Java CAPS Quick Note 003 JBI-based JMS Publisher and Subscriber

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This Quick Note discusses a simple solution to the use case provided by Leonard Barkely. The question goes like this:

"I dont have any idea how to implement BPEL process but the BPEL deployed as a subscriber of a topic. usually I implement the BPEL process and deployed it as web service."

Let's produce a simple GlassFish ESB v2.1-based solution which reads a file, sends its content to a JMS Topic and another simple GlassFish ESB v2.1-based solution which subscribes to the same JMS Topic, receives the message and writes it to a file. Both solutions will use BPEL to implement the simple logic, though it is possible to implement both solutions without BPEL.

Solution schematic looks like this.



Let's create a project group, JMSTopicSampleProjGrp.



Create New Group	×
Name: JMSTopicSampleProjGrp	
C Free Course	
O Tree Group	
Contains any projects you like, Can be updated manually or automatically.	
🔽 Use Currentiy Open Projects	
☑ Automatically Save Project List	
C Project and All Required Projects	
Contains a master project and all projects it requires, recursively.	
Master Project:	Browse
• Folder of Projects	
Contains any projects found beneath a given folder on disk.	
Folder: G:\GlassFishESBv21Projects\JMSTopicSampleProjGrp	Browse
Create Group Cancel	Help

Let's create a "New Project ..."

🗊 NetBe	ans IDE	6.5.1						
<u>File</u> <u>E</u> di	t <u>V</u> iew	<u>N</u> avigate	Source	Ref <u>a</u> ctor	<u>R</u> un	<u>D</u> ebug	Profile	Vers
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Projec.	🕫	× Files] Servi	ices			
	Ne <u>w</u> F	Project	C	trl+Shift+N				
	New P	Project	ار د	trl+Shift+O	_			

Project type will be SOA -> BPEL Module

Steps	Choose Project	
1. Choose Project 2	Categories:	Projects:
	Description: Creates an empty BPEL Module	, which may contain multiple BPEL processes.

Project name will be JMSPublisher.

te <mark>ps</mark>	Name and Loca	tion	
Choose Project Name and Location	Project <u>N</u> ame:	IMSPublisher	
	Project Location:	G:\GlassFishESBv21Projects\JMSTopicSampleProjGrp	Browse
	Project Folder:	::\GlassFishESBv21Projects\JMSTopicSampleProjGrp\JMSPublisher	
	<u> </u>		

Right-click Process Files and choose "New" -> "WSDL Document ..."



We need to read a file so we need a concrete WSDL to define file name, location, polling interval, etc.. Name the WSDL JMSPublisher_FileIn, choose Concrete, choose FILE binding, choose Poll Type.

teps	Name and Location	
 Choose File Type Name and Location Request Configuration 	File Name: JMSPublisher_FileIn	
	Project: JMSPublisher	
	Folder: src	Browse
	Created File: sFishESBv21Projects\JMSTopicSamp	vleProjGrp\JMSPublisher\src\JMSPublisher_FileIn.w
	Target Namespace: http://j2ee.netbeans.org/wso	dl/JMSPublisher/JMSPublisher_FileIn
	Iarget Namespace: http://j2ee.netbeans.org/wso WSDL Type: C Abstract WSDL Document © Concrete WSDL Document	dl/JMSPublisher/JMSPublisher_FileIn
	Iarget Namespace: http://j2ee.netbeans.org/wso WSDL Type: C Abstract WSDL Document © Concrete WSDL Document Binding: FILE	dl/JMSPublisher/JMSPublisher_FileIn t
	Iarget Namespace: http://j2ee.netbeans.org/wso WSDL Type: C Abstract WSDL Document © Concrete WSDL Document Ending: Binding: FILE Type: Poll	dl/JMSPublisher/JMSPublisher_FileIn t

Change name of the file to input.txt and accept other defaults (if you are on Windows – if not, change directory to one of your own choosing).

eps	Request Configuration		
Choose File Type Name and Location	File Polling		
Request Configuration	File Name* (pattern):	input.txt	Is Regex
	Polling Directory*:	c:/temp	Browse
		2 Polling Directory Relative To: <a> Not Set>	3
	Polling Interval (ms):	1000	
	Enable Archive	Details	
	Record Processing		
	Multiple Record	Delimited By: LINE FEED	7
	🦵 Maximum (Bytes) Pe	r <u>R</u> ecord	
	Payload Processing		
	Megsage Type:	text	
	Character Encoding:	<default></default>	Add trailing EC
	Forward as <u>A</u> ttachm	ient	
	Remove trailing EOL		
	()===1		
	File Name		
. Iail	Defines the file name relative	to the specified directory to read from or write to	
XX			

This produces a pre-configure File BC which will poll for a file c: $\temp\input.txt$ every second.

Let's now create a WSDL to configure the JMS BC.

Right-click Process files, choose New -> WSDL Document. Name the WSDL JMSPublisher_JMSOut, choose Concrete WSDL, choose JMS Binding, choose Send Type.

teps	Name and Location	
Choose File Type Name and Location Request Connection Configuration Request Publisher Configuration	File Name: JMSPublisher_JMSOut Project: JMSPublisher Folder: src	Browse
Advanced configuration	Created File: ishESBv21Projects\JMSTopicSampleProjG	rp\JMSPublisher\src\JMSPublisher_JMSOut.v
	Iarget Namespace: http://j2ee.netbeans.org/wsdl/JMS WSDL Type: C Abstract WSDL Document	SPublisher/JMSPublisher_JMSOut
	Iarget Namespace: http://j2ee.netbeans.org/wsdl/JMS WSDL Type: Abstract WSDL Document © Concrete WSDL Document Binding: JMS JMS Type: Send	SPublisher_JMSOut

Set the username and password – by default these will be admin and admin.

1. Choose File Type 2. Name and Location 3. Request Connection Configuration 4. Request Publisher Configuration 5. Advanced Configuration 4. Request Publisher Configuration 5. Advanced Configuration 5. Advanced Configuration 6. Request Publisher Configuration 5. Advanced Configuration 6. Request Publisher Configuration 5. Advanced Configuration 6. Request Publisher Configuration 5. Advanced Configuration 6. Request Publisher Configuration 5. Advanced Configuration 6. Request Publisher Configuration 6. Request Publisher Configuration 7. Request Publisher 7. Req			Request Computation	ps
		jms/tx/default	JHS Connection Connection URL: Deser Name: Payload Processing Message Type: XSD Element/Type:	Choose File Type Name and Location Request Connection Configuration Request Publisher Configuration Advanced Configuration
Message Type Defines what data the payload is. 'text' = payload is treated as text data.	*	ta.	Message Type Defines what data the par 'text' = payload is treated	

Name the topic tJMSTopic and make sure the Topic radio button is selected.

📦 New WSDL Document		×
Steps	Request Configuration	
 Choose File Type Name and Location Request Connection Configuration Request Publisher Configuration Advanced Configuration 	Destination Properties Destination : LIMSTopic Destination Type: Queue Iopic Image: Market and the second secon	
	Destination Defines the destination where messages are sent or received	
	< Back Next > Einish Cance He	эр

Finish.

Switch to your BPEL process and drag the JMSPublisher_FileIn WSDL onto the target marker in the left-had swim line.

Projec 40 × Files	Services	dl	JMSPublish	er_JMSOut.	wsdl 🗙 😭	JMSPublisher.bpel	×
JMSPublisher Process Files JMSPublisher_FileIn JMSPublisher_FileIn JMSPublisher_JMSO Referenced Resources	.wsdl ut.wsdl	Sou	rce Design	Mapper		P ** JMSPublisher	
			t t			Process Start	6

Rename the partner link to FileIn



Drag the JMSPublisher_JMSOut WSDL onto the target marker in the righ-hand swim line.



Rename partner link to JMSOut



Drag Receive, Assign and Invoke activities onto the target markers inside the JMSPublisher process scope.



Connect Receive to FileIn partner link.



Connect Invoke to JSMOut partner link



Edit Receive



Create a variable vFaileIN

				Create Instanc
				Documentation
	0		THEOU	Bartner Link
	Receive1	🗊 New Input Va	riable	×
1		Name: VFileIN	5	
	Assign1		Jun Waasaaa	P.
Receive1	[Receive] - Property	Type: Just-outri	pumessage	
Main Correla	tions	Scope: JMSPublis	sher	*
<u>N</u> ame:	Receive 1			
Partner Link:	FileIn	5		k Cancel e
Operation:	poll			*
Input Variable	e: 🚺		Create	Browse
Create In	stance			

Edit Invoke, create a variable vJMSOut

]Invoke1 [In	voke] - Property Edi	Ivpe: tns:JMSInputMessage	
Name:	Invoke1	Scope: JMSPublisher	
Partner Link:	JMSOut	Ok Ok	Cancel
Operation:	JMSOutOperation		
Input Variable:		Create Browse	
Output Variable		Create Browge	

Double-click Assign to switch to Mapper view



Expand variable trees and map vFileIN->part1 to vJMSOut->part1

dl 🛛 🔛 JMSPublisher_JMSOut	t.wsdl 🗙 🖳 JMSPu	iblisher.bpel *	× • • • •
Source Design Mapper	Logging		
😵 Operator 📑 Boolean 🔏	🖢 String 🛛 🗖 🖁 Node	🔛 Number	🛅 Date & Time 🛛 🔂 BPEL
transformer HTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT			Input All 🕂 🛪
E Variables			Variables 🖶 – 🖓
			vJMSOut 🌯 🕂
			Properties 🛅 🛨
Partner Links			vFileIN 🏪 – 🕂
± FileIn			Partner Links 🖶 🕂
	4		

Switch back to Design view. Right-click project name and choose build.



Create a New Project ..., SOA -> Composite Application.

New Project		
Steps	Choose Project	
 Choose Project 	Qategories: Java Java Web Java EE Java ME Groovy NetBeans Modules SOA ⊡	Projects: Composite Application BPEL Module XSLT Module Data Mashup Module Web Service Testing Project Intelligent Event Processing Module
	Description: Creates an empty Composite App other types of Java Business Int Note: For more infomation, press Composite Application Prote	plication project, which may include multiple BPEL Modules and egration (JBI) modules.
		Back Next > Einish Cancel Help

Name the project JMSPublisher_CA.

Name and Location	
Project Name: IMSPublisher_CA Project Location: G:\GlassFishESBv21Projects\JMSTopicSampleProjGrp	Br <u>o</u> wse
Project Folder: ssFishESBv21Projects\JMSTopicSampleProjGrp\JMSPublisher_CA	
I Set as Main Project	
	Name and Location Project Name: IMSPublisher_CA Project Location: G:\GlassFishESBv21Projects\JMSTopicSampleProjGrp Project Folger: issFishESBv21Projects\JMSTopicSampleProjGrp\JMSPublisher_CA Image: Set as Main Project Set as Main Project

Drag the project JMSPublisher onto the CASA canvas.

🗊 JMSPublisher - NetBeans IDE 6.5.1		
Eile Edit View Navigate Source Refactor	Run Debug Profile Versioning Too	is <u>Wi</u> ndow <u>H</u> elp
1 2 2 5 0 0 0	🖸 🖌 🖸	• 🚯 • 🕦 •
P. 41 × Files Services	.dl 👫 JMSPublisher_JMSOut.wsd × Source, Design 📴 🔓	S JMSPublisher.bpel × 및 JMSPublisher_CA.casa >
JMSPublisher_bpel JMSPublisher_FileIn.wsdl JMSPublisher_JMSOut.wsdl Referenced Resources JMSPublisher_CA Service Assembly Process Files JBI Modules Test	WSDL Ports	JBI Modules 문음 JMSPublisher

Click Build

SPublis	ner_JMS	Out.w	sdl ×	ST JN	SPublisher.bpel × 🛃 JMSPublisher_CA.casa *
esign	00	F	6	\mathbf{a}	
Port	s	-76	Build P	Project	JBI Modules
				l	(BPEL) JMSPublisher

Click Deploy

WSDL Ports	Deploy Project	JBI Modules	
SML			
JMSPublisher_JMSOut_C)utPort	(BPEL) JMSPublisher	
	8	JMSPublisher	
IMSPublisher FileIn Inho	undPort	JMSOut > - @	8

If all went well (you see BUILD SUCCESSFUL) the JMS Publisher project is ready to roll. In the absence of tools to watch messages in a JMS Topic, which would take several pages to describe how to get, install and use, we must wait for the JMS Subscriber project to be developed and deployed before we can test the solution just developed.

Let's develop the JMS Subscriber project.

Create "New Project ...", SOA -> BPEL Module.

🗊 New Project	X
Steps	Choose Project
1. Choose Project 2	Categories: Brojects: Groovy BPEL Module NetBeans Modules XSLT Module SOA Data Mashup Module Data Mashup Module Web Service Testing Project
	Description: Creates an empty BPEL Module, which may contain multiple BPEL processes.
	< Back Next > Finish Cancel Help

Name the project JMSSubscriber

iteps	Name and Locat	lion	
. Choose Project . Name and Location	Project <u>N</u> ame:	JMSSubscriber	
	Project Location:	G:\GlassFishESBv21Projects\JMSTopicSampleProjGrp	Browse
	Project Fol <u>d</u> er:	\GlassFishESBv21Projects\JMSTopicSampleProjGrp\JMSSubscriber	
and and	☑ Set as <u>M</u> ain Pr	oject	
XXX			

Right-click Project Files folder and choose New -> WSDL Document. Name this document JMSSubscriber_JMSIn, concrete WSDL, JMS Binding of type Send.



teps	Name and Location	
Choose File Type Name and Location Request Connection	File Name: JMSSubscriber_JMSIn	
Configuration Request Publisher	Project: JMSSubscriber	
Configuration Advanced Configuration	Folder: src	Browse,.
	Target Namespace: http://j2ee.netbeans.org/wsdl/JMSSubscriber/JMS	SSubscriber_JMSIn
	© Concrete WSDL Document	
	Binding: JMS	
	Øinding: JMS Type: Send	<u>-</u> 5

Enter admin and admin for username and password.

🔋 New WSDL	Document			×
Steps		Request Configuration		
 Choose I Name an Request Configur Request Configur Advance 	File Type Id Location tration Publisher ation Id Configuration	JMS Connection Connection URL: User Name: Payload Processing Message Type: XSD Element/Type:	lookup://jms/tx/default admin ***** text encoded type:	
~	in and	Message Type Defines what data the pa 'text' = payload is treated	yload is. I as text data.	-
			<back next=""> Einish Cancel</back>	

Type the name of the topic to which the JMSPublisher is publishing, tJMSTopic, and make sure the Topic radio button is selected. Click Finish to complete the wizard.

Steps	Request Configuration
 Choose File Type Name and Location Request Connection Configuration Request Publisher Configuration Advanced Configuration 	Destination Properties Destination Type: Dueue Destination Type: Queue T XA Transaction JMS Publisher Properties Delivery Mode: Persistence Time To Live: O (ms) Prjority: 4 (ms)
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Destination Type Defines the type (domain) of the destination where message are sent or received

Right-click Project Files, choose New -> WSDL Document ... Name the WSDL JMSSubscriber_FileOut, concrete WSDL, FILE binding, type Write.

teps	Name and Location		
<ul> <li>Choose File Type</li> <li>Name and Location</li> <li>Request Configuration</li> </ul>	File Name: JMSSubscriber_	FileOut	
	Project: JMSSubscribe	er	
	Folder: src		Browse
	a contractor		
			piepi ibbabbenbei _i neoden
	Target Namespace: http://	/j2ee.netbeans.org/wsdl/JMSSubscriber/JM	ISSubscriber_FileOut
	Iarget Namespace: http:// WSDL Type: C Ab	/j2ee.netbeans.org/wsdl/JMSSubscriber/JM stract WSDL Document ncrete WSDL Document	ISSubscriber_FileOut
	Iarget Namespace:     http://       WSDL Type:     C Ab       © Co     Binding:	fj2ee.netbeans.org/wsdl/JMSSubscriber/JM stract WSDL Document ncrete WSDL Document	ISSubscriber_FileOut
	Iarget Namespace:       http://         WSDL Type:       C         Ø       C         Binding:       File         Type:       Write	/j2ee.netbeans.org/wsdl/JMSSubscriber/JM stract WSDL Document ncrete WSDL Document	ISSubscriber_FileOut

Name the file output_%d.txt and accept all other defaults.

eps	Request Configuration		
Choose File Type Name and Location	File Write		
. Request Configuration	File Name* (pattern):	output_%d.txt	
	Path*:	c:/temp	Bro <u>w</u> se
		Is Relative To: <pre></pre> <p< td=""><td></td></p<>	
	File Exists:	C Rename Existing File	
		Overwrite Existing File	
		C Append to Existing File, Delimited By: LINE FE	ED 💌
	Payload Processing		
	Message Type:	text	
	Character Encoding:	<default></default>	Add trailing EO
	File Name		
XX	Defines the file name relation	ve to the specified directory to read from or write to.	

Switch to the BPEL process. Drag the JMSSubscriber_JMSIn WSDL onto the target marker in the left-hand swim line.



Rename the partner link to JMSIn



Drag the JMSSubscriber_FileOut WSDL onto the target market in the right-hand swim line.



Rename the partner link to FileOut



Drag the Receive, Assign and Invoke activities onto the target markers inside the process scope.



Connect receive and invoke to their respective partners



Edit Receive activity and create a variable vJMSIn

Pro	ocess Start				Property Editor Name Create Instance		
	Receive1	leceive] -	● New <u>N</u> ame: <u>I</u> ype: <u>S</u> cope:	Input Variable vJMSIn tns: JMSInputMe JMSSubscriber	ssage		×
E	<u>N</u> ame: Partner <u>L</u> ink: Operation:	Receive 1 JMSIn -	ration	-	<u>→</u> []{	жс	ancel
	Input Variable: I⊽ Create Inst	ance				reate E	ro <u>w</u> se
					Ok	Cancel	Help

Edit the Invoke activity. Create a variable vFileOut.

Invokel [Inv	roke] - Prop	Name: V Type: t Scope:	/FileOut	e Message		
<u>N</u> ame: Partner <u>L</u> ink: Operation:	Invoke 1 FileOut		-	->	Ok	Cancel
Input Variable: Output Variable:		3	-		Create	Browse

Double-click the Assign activity to which to the Mapper panel.

Expand vJMSIn on the left and vFileOut on the right. Connect vJMSIn->part1 to vFileOut->part1.



Switch to Design view and build the project.



If all is well you should see BUILD SUCCESSFUL in the Output panel.



Create a New Project ... -> SOA -> Composite Application. Name it JMSSubscriber_CA.

teps	Name and Locat	ion	
Choose Project     Name and Location	Project <u>N</u> ame:	JMSSubscriber_CA	
	Project Location:	G:\GlassFishESBv21Projects\JMSTopicSampleProjGrp	Browse
	Project Folder:	sFishESBv21Projects\JMSTopicSampleProjGrp\JMSSubscriber_CA	
0 1 0 5	<u> </u>		
~~~			

Drag the JMSSubscriber project onto the CASA canvas



Build.

el 📳	JMSSubsc	riber_JMS	In.wsdl ×	MSSubscr	iber_FileOut.wsdl 🗙 🔡 JMSSub
Source	Design		T B	\triangleleft	
WSDL	Ports		Build Pro	iject	JBI Modules
			E] 🕐 (BPEL)	JMSSubscriber

Deploy.

WSDL Ports	Deploy Project	JBI Modules	
SML ML	008		
MSSubscriber_JMSIn_	OutPort	(BPEL) JMSSubscriber	
		JMSSubscriber	
щD		- 🌽 JMSIn FileOut 💭 -	Q08
E <<-			

Create a text file in c:\temp (or whatever directory you specified as the one containing a file called input.txt for the File BC in the JMSPublisher project. Name this file input.txt.tmp. Edit it and add the some text, for example "Hello World".

Once ready, rename the file to input.txt. Observe that the file disappears within a second or so and that a file output_0.txt appears in the same directory (assuming you

specified the same directory for the File BC in the JMSPublisher and the JMSSubscriber.



Open output_0.txt to see the content, which should be the same as the content of the input file.



This is it.

We create a solution that read a file in a file system and deposited its content in a JMS Topic. We created a solution that received a message from the JMS Topic, as soon as it was deposited there, and write it to a file system as a file. We demonstrated how to develop a simple JMS publisher and a simple JSM subscriber using JBI-based technologies.