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Business Processes in Motion™

PNMsoft Knowledge Base

Sequence User Guides

Sequence Debugger

Feb. 2013
Product Version 7.0 and above

PNMsoft UK 38 Clarendon Road Watford Hertfordshire WD17 1JJ

Tel: +44(0)192 381 3420 • Email: info@pnmsoft.com • Website: www.pnmsoft.com

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Introduction

This document provides an overview of Sequence Workflow Debugger. The Sequence Workflow Debugger is an extension of the App Studio. The debugger is a developers' tool, which enables Sequence developers to implement controlled workflow instances.

The debugger allows the developer to step through the execution of a workflow activity-by-activity, displaying the status (data and metadata) at every stage. The debugger is activated from the App Studio toolbar and enables users to start a new instance workflow, or to connect to an existing workflow instance.

Note: The Debugger obeys the Permissions module. Therefore, you have to have the appropriate permissions in order to view an activity and/or submit data through the debugger.

Accessing the Workflow Debugger

The workflow debugger provides you (as a developer) with a way to see activity behavior as it runs, thus eliminating much of the guess-work when things don't quite work as intended.

The debugger provides you with the two basic options:

- You can open a new instance.
- You can open an existing instance.

You will find the ability to open an existing instance and examine it extremely useful in cases of workflow execution errors as it allows you to view where the error occurred and why. This feature also allows you to stop your work at any point during execution and return to the debugger at a later date to continue debugging the workflow.

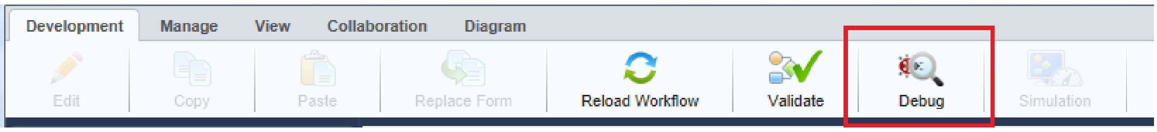
The debugger makes all workflow activities visible, e.g. both human-activities and server side activities, which do not appear in the regular runtime activity tree.

The workflow debugger runs on the regular runtime engine. Therefore, any instance generated by the debugger acts like a real instance, i.e. messages will be sent (unless you temporarily disable this feature), tasks assigned etc.

Note: Notify the relevant users when you run a debugger instance that include them, to prevent misunderstandings.

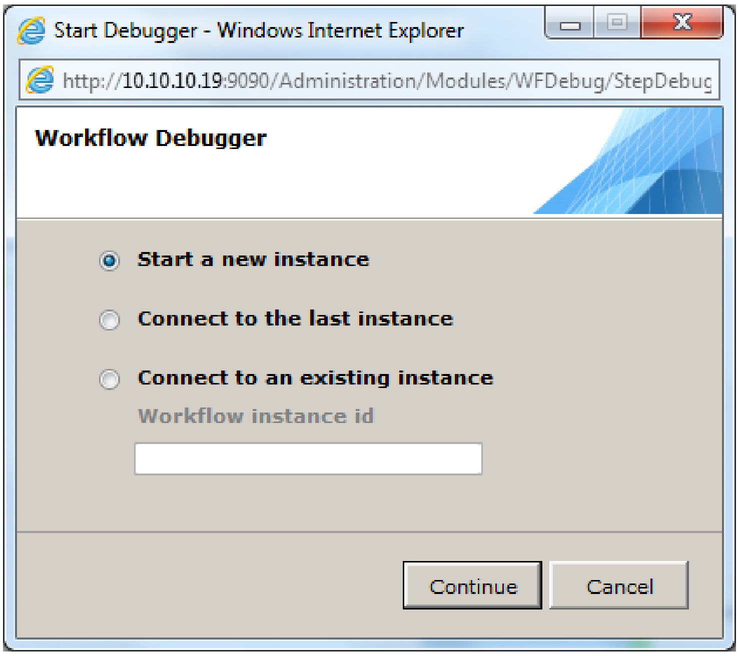
To access the Workflow Debugger:

1. Open the workflow you wish to debug in the Sequence App Studio.



Sequence App Studio Development Tab

2. Click **Debugger**. The *Workflow Debugger Dialogue* box appears.



Start Debugger - Windows Internet Explorer

http://10.10.10.19:9090/Administration/Modules/WFDebug/StepDebug

Workflow Debugger

● Start a new instance

○ Connect to the last instance

○ Connect to an existing instance

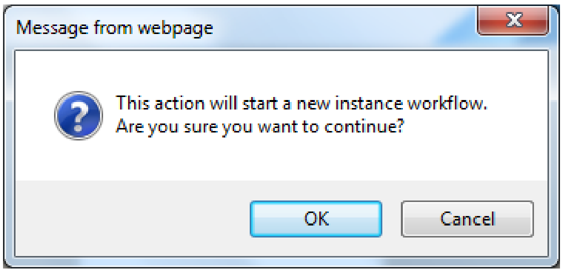
Workflow instance id

Workflow Debugger Dialogue Screen

3. In the *Workflow Debugger* dialogue box select the desired option:
   - **Start a new instance** - begins debugging a new workflow instance.
   - **Connect to the last instance** - debug the last workflow instance.
   - **Connect to an existing instance** - debug an existing workflow instance.

   Note: If you choose to connect to an existing instance, you have to provide an appropriate workflow instance id.

4. Click **Continue** to open the debugger with the selected workflow instance. A warning dialogue box opens.



Message from webpage

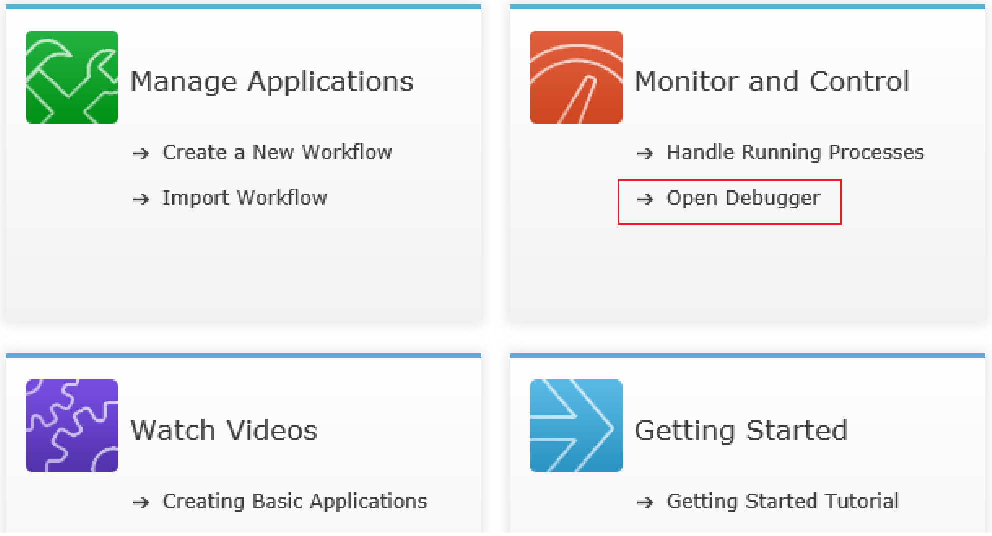
This action will start a new instance workflow.
Are you sure you want to continue?

Warning Dialogue Box

5. Click **OK** to open the debugger.

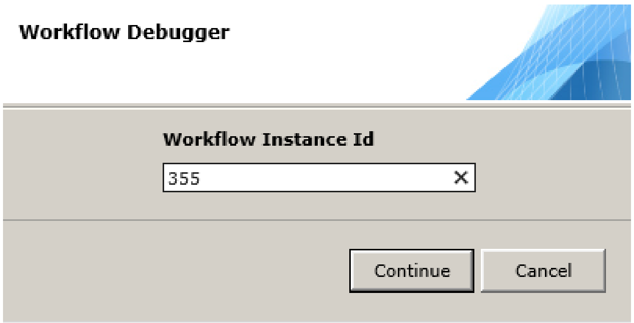
To open an existing workflow instance directly from the Administration homepage:

1. From the Administration homepage, in the Monitor and Control section, click **Open Debugger**.



Open Debugger

The following window appears:



Workflow Instance Id: 355

Workflow Instance Id

2. Enter the workflow instance ID and click **Continue**.

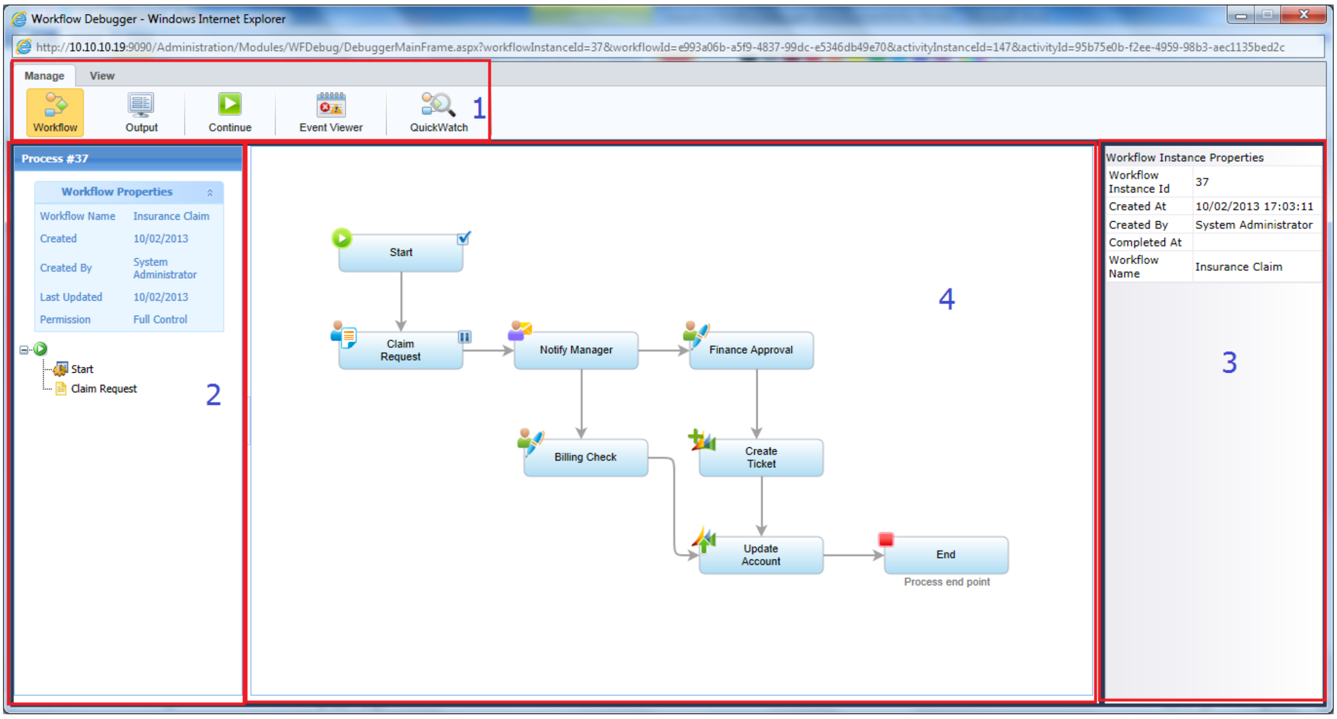
The Debugger opens, displaying the workflow instance you specified.

Workflow Debugger Desktop

The workflow debugger desktop consists of several components which enable the workflow developer to run a process in a step-by-step manner, and trace both the user data and the workflow meta-data concurrently.

The Debugger Desktop Consists of the following components, numbered accordingly in the screen below

1. Workflow Debugger Toolbar
2. Process Pane
3. Properties Pane
4. Workflow display area tab



http://10.10.10.19:9090/Administration/Modules/WFDebug/DebuggerMainFrame.aspx?workflowInstanceId=37&workflowId=e993a06b-a5f9-4837-99dc-e5346db49e70&activityInstanceId=147&activityId=95b75e0b-f2ee-4959-98b3-aec1135bed2c

Workflow Properties

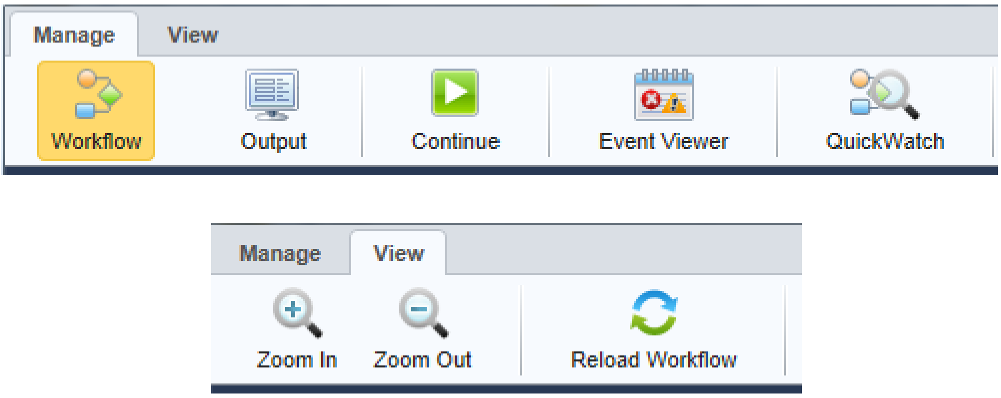
Workflow Name	Insurance Claim
Created	10/02/2013
Created By	System Administrator
Last Updated	10/02/2013
Permission	Full Control

Workflow Instance Properties

Workflow Instance Id	37
Created At	10/02/2013 17:03:11
Created By	System Administrator
Completed At	
Workflow Name	Insurance Claim

Workflow Debugger Desktop

Workflow Debugger Toolbar

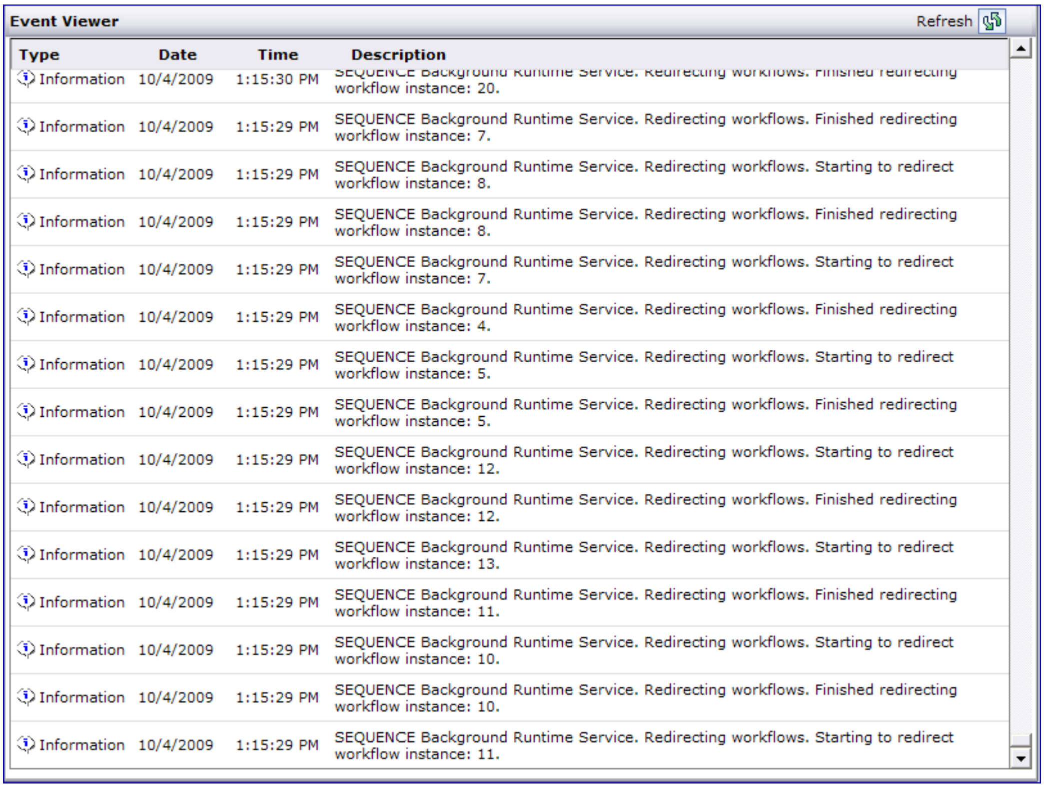


Workflow Debugger Toolbar

The Sequence *Workflow Debugger* top ribbon includes the following options:

- **Workflow** – View the workflow in the debugger window (default).
- **Output** – View the workflow output (e.g. user forms, messages).
- **Continue** - Continue workflow operation after a breakpoint halt.
- **Event Viewer** – Review Sequence event log.
- **QuickWatch** – Monitor and evaluate specific workflow elements during execution/debugging.
- **Zoom In** - Enlarge the diagram display.
- **Zoom Out** - Reduce the diagram display.
- **Reload Workflow** – Reload the workflow and refresh the display.

Note: The Event Viewer shows the Sequence server log, which includes every event logged, and not just your local events.



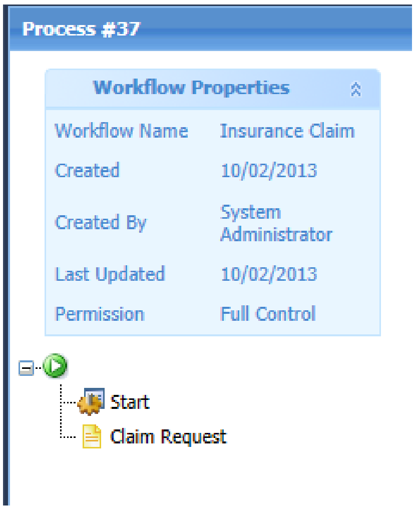
Type	Date	Time	Description
Information	10/4/2009	1:15:30 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Finished redirecting workflow instance: 20.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Finished redirecting workflow instance: 7.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Starting to redirect workflow instance: 8.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Finished redirecting workflow instance: 8.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Starting to redirect workflow instance: 7.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Finished redirecting workflow instance: 4.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Starting to redirect workflow instance: 5.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Finished redirecting workflow instance: 5.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Starting to redirect workflow instance: 12.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Finished redirecting workflow instance: 12.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Starting to redirect workflow instance: 13.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Finished redirecting workflow instance: 11.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Starting to redirect workflow instance: 10.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Finished redirecting workflow instance: 10.
Information	10/4/2009	1:15:29 PM	SEQUENCE Background Runtime Service. Redirecting workflows. Starting to redirect workflow instance: 11.

Sequence Event Log

Process Pane

The process pane provides the following process related information:

- Activity Properties box
- Workflow Properties box
- Activities Tree



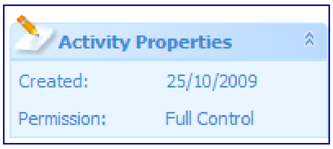
Workflow Name	Insurance Claim
Created	10/02/2013
Created By	System Administrator
Last Updated	10/02/2013
Permission	Full Control

Process Pane

Activity Properties box

The *Activity Properties* box is located above the workflow's *Tree View*. It provides specific activity data:

- **Created**: When the activity instance was created.
- **Permission**: Your current permissions with regard to this activity.



Activity Properties

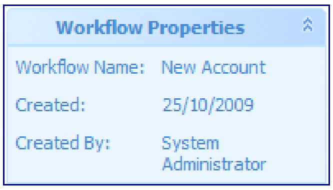
Created: 25/10/2009

Permission: Full Control

Activity Properties Box

Workflow Properties box

The *Workflow Properties* box is located above the workflow's *Tree View*. It provides overall workflow data such as Workflow name and Workflow instance.



Workflow Properties

Workflow Name: New Account

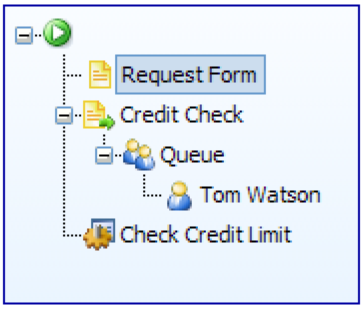
Created: 25/10/2009

Created By: System Administrator

Workflow Properties Box

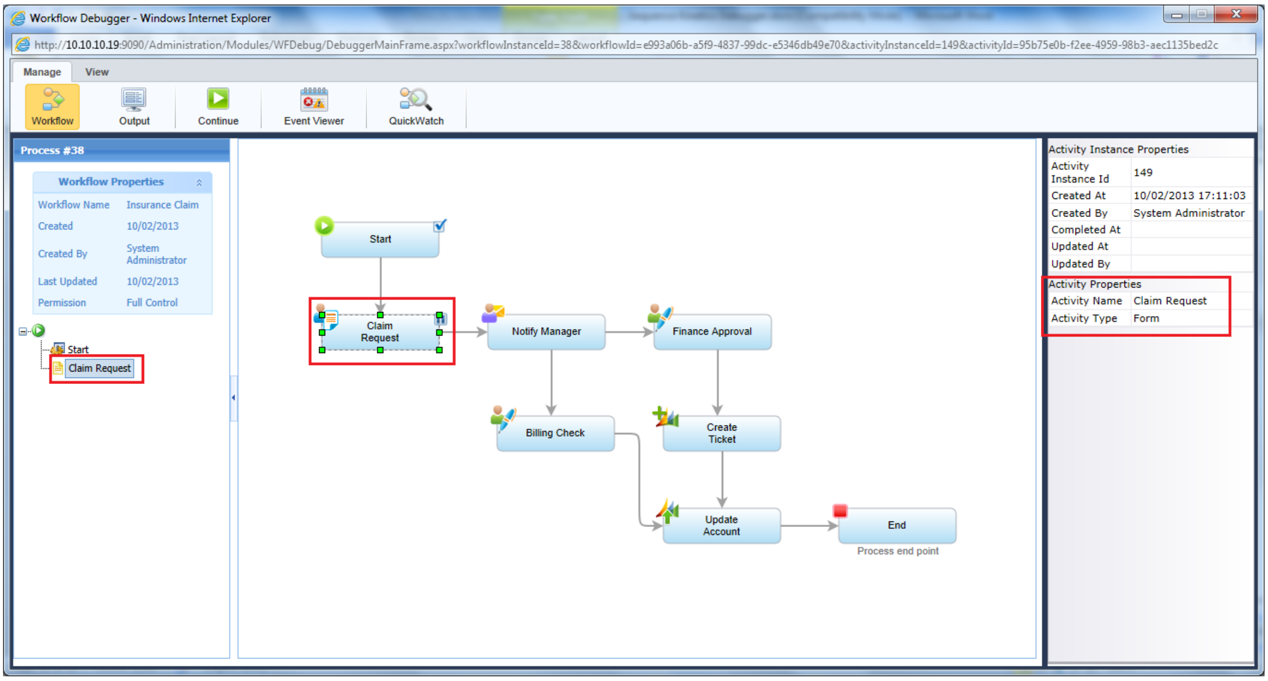
Activities Tree View

The *Tree View* provides a presentation of the activities which already took place in the process which is similar to the tree view presented in the runtime environment. The difference is that in the debugger environment, you can view server side activities (stored procedures, web service activities, etc.) as well as human activities.



Workflow Debugger Tree View

Selecting an activity in the tree view will present its properties in the activity properties pane, and mark it in the workflow display tab in case it is visible.



http://10.10.10.19:9090/Administration/Modules/WFDebug/DebuggerMainFrame.aspx?workflowInstanceId=38&workflowId=e993a06b-a5f9-4837-99dc-e5346db49e70&activityInstanceId=149&activityId=95b75e0b-f2ee-4959-98b3-aec1135bed2c

Process #38

Workflow Properties

Workflow Name	Insurance Claim
Created	10/02/2013
Created By	System Administrator
Last Updated	10/02/2013
Permission	Full Control

Start
Claim Request

Activity Instance Properties

Activity Instance Id	149
Created At	10/02/2013 17:11:03
Created By	System Administrator
Completed At	
Updated At	
Updated By	

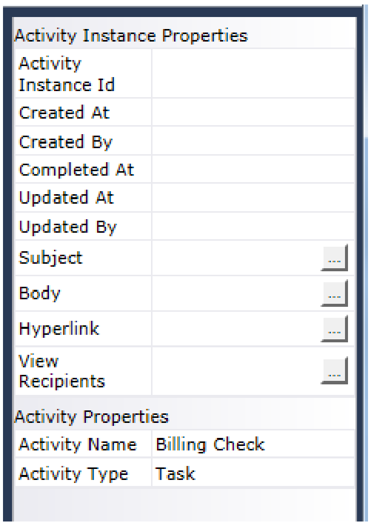
Activity Properties

Activity Name	Claim Request
Activity Type	Form

Workflow Debugger Desktop

Properties Pane

The *Properties* pane displays the properties of either a workflow or a selected object (activity or connection).



Activity Instance Properties

Activity Instance Id	
Created At	
Created By	
Completed At	
Updated At	
Updated By	
Subject	...
Body	...
Hyperlink	...
View Recipients	...

Activity Properties

Activity Name	Billing Check
Activity Type	Task

Workflow Debugger Properties Pane

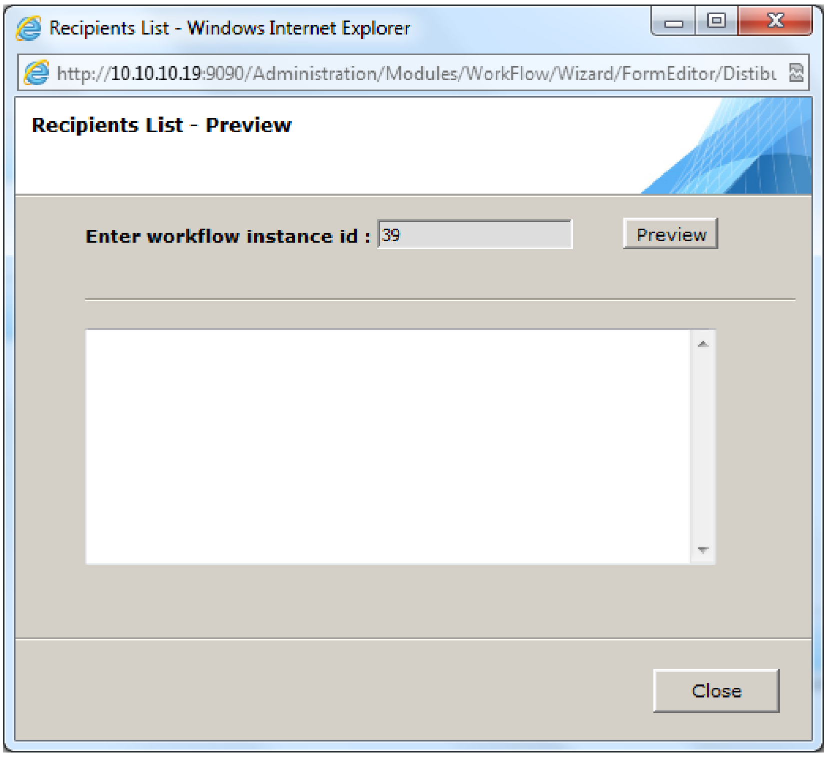
In addition, the *Properties* pane provides quick access to previewing activities and connections data, including messages and recipients' preview, business rules evaluation, and web service XML data. It also provides, in a similar manner, the ability to test an activity (where relevant).

This feature provides you with insight into the workflow's execution processes, aiding you in discovering the source of the execution problems.

Note: Preview is available only for properties that have a* ... *button.

To preview an activity's properties (or test):

1. Click ... next to the property of interest in the Properties' pane. The *<Property> Preview* page opens.



Recipients List - Windows Internet Explorer

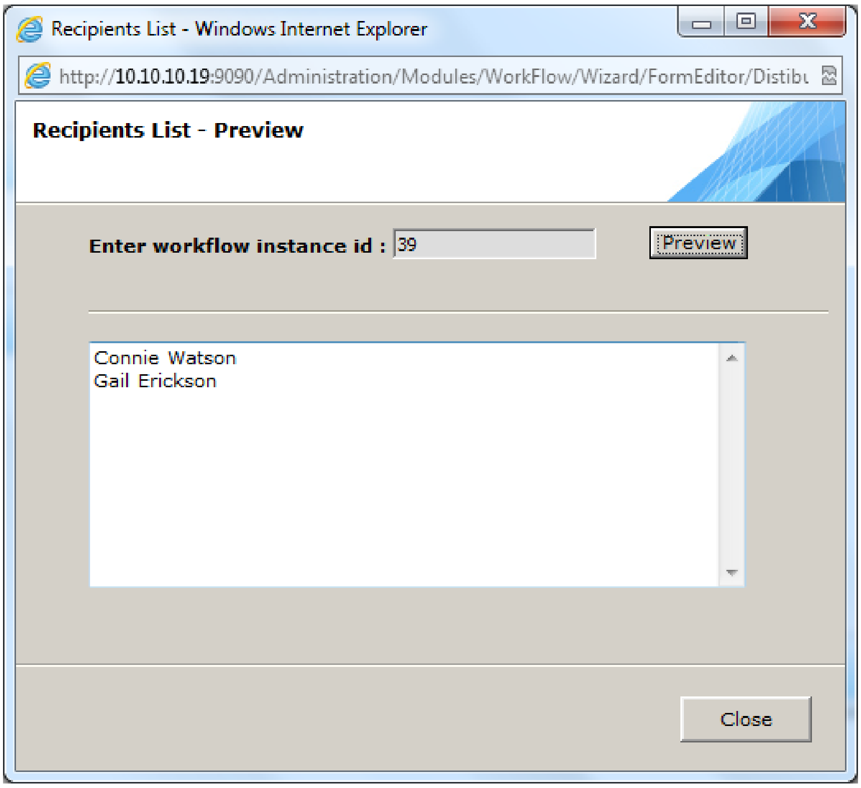
http://10.10.10.19:9090/Administration/Modules/WorkFlow/Wizard/FormEditor/Distibu

Recipients List - Preview

Enter workflow instance id : 39

<Property> - Preview Screen

2. Click **Preview**. The relevant content appears in the screen's box.



Recipients List - Windows Internet Explorer
http://10.10.10.19:9090/Administration/Modules/WorkFlow/Wizard/FormEditor/Distibu

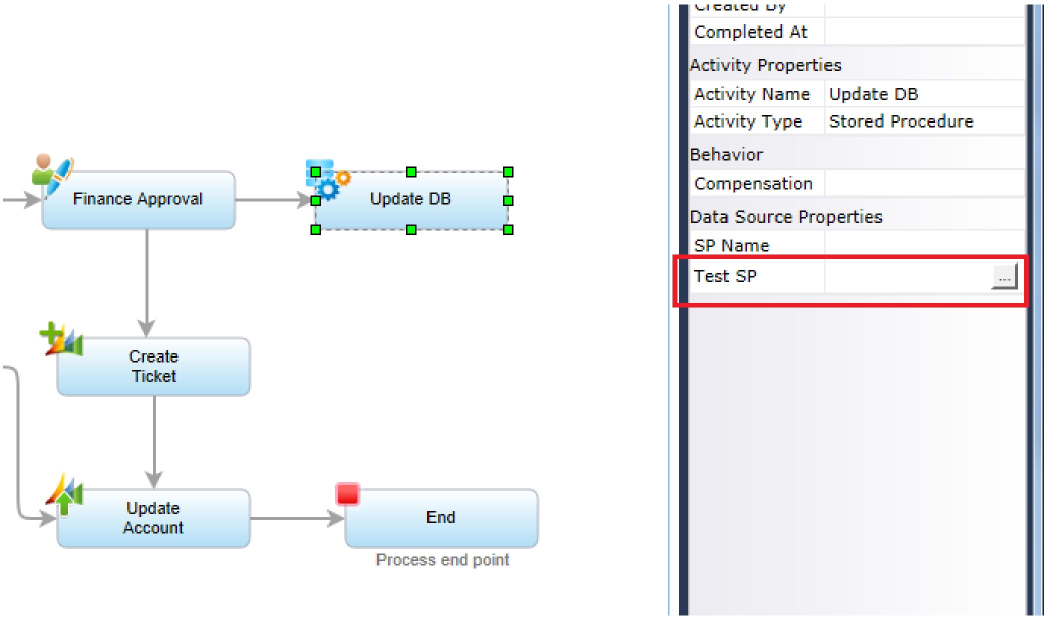
Recipients List - Preview

Enter workflow instance id : 39

Connie Watson
Gail Erickson

Property Preview

Note: If the property name is "Test <xxx>" – then the Preview will actually run a relevant test.



Created By	
Completed At	
Activity Properties	
Activity Name	Update DB
Activity Type	Stored Procedure
Behavior	
Compensation	
Data Source Properties	
SP Name	
Test SP	...

Test Preview

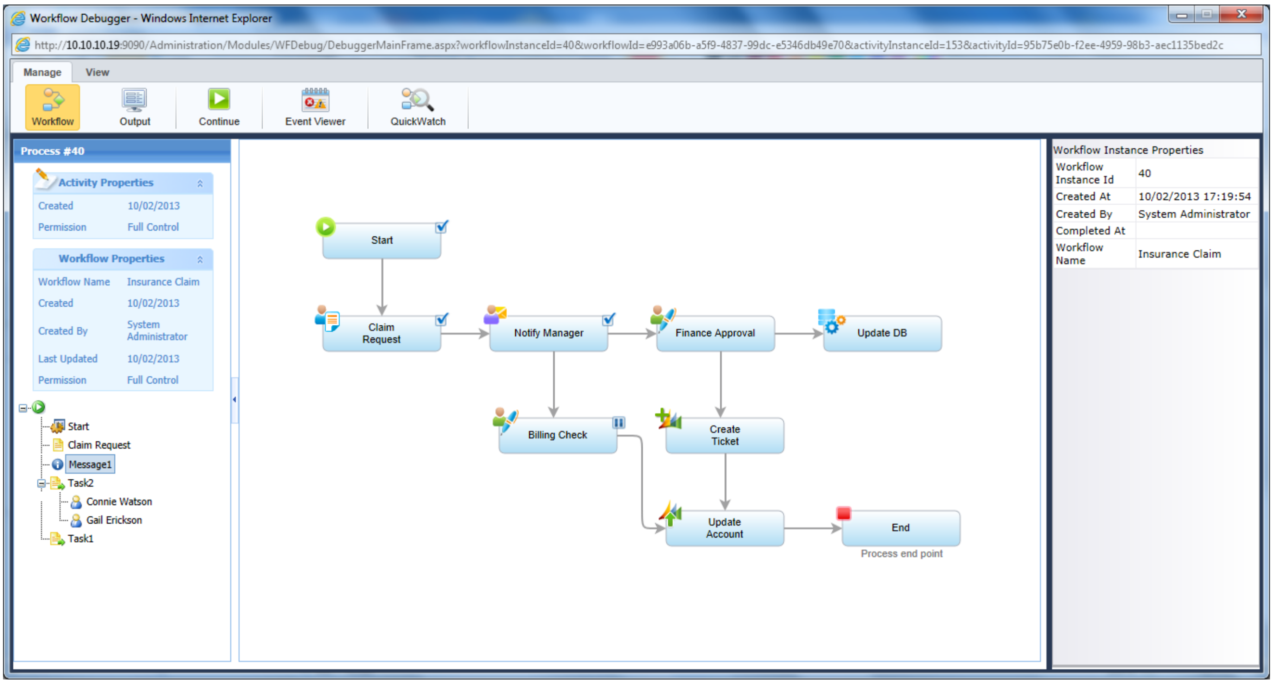
3. Click **Close** to return to the Debugger desktop.

Note: In some activities you will find the button Test instead of Preview. The procedure is similar – only this time you will be testing the execution.

Workflow View

The **Workflow** view opens the display area and provides a graphical view of the workflow instance progress, as well as the ability to select an activity in order to review its properties through the activity *Properties* pane.

> ***Note: An activity which has been instanced includes Checkmark symbol. An activity which is currently executing includes a Pause symbol (and appears flashing, from v8.0 and above).***



Workflow Debugger - Windows Internet Explorer

http://10.10.10.19:9090/Administration/Modules/WFDebug/DebuggerMainFrame.aspx?workflowInstanceId=40&workflowId=e993a06b-a5f9-4837-99dc-e5346db49e70&activityInstanceId=153&activityId=95b75e0b-f2ee-4959-98b3-aec1135bed2c

Process #40

Activity Properties

Created	10/02/2013
Permission	Full Control

Workflow Properties

Workflow Name	Insurance Claim
Created	10/02/2013
Created By	System Administrator
Last Updated	10/02/2013
Permission	Full Control

Workflow Instance Properties

Workflow Instance Id	40
Created At	10/02/2013 17:19:54
Created By	System Administrator
Completed At	
Workflow Name	Insurance Claim

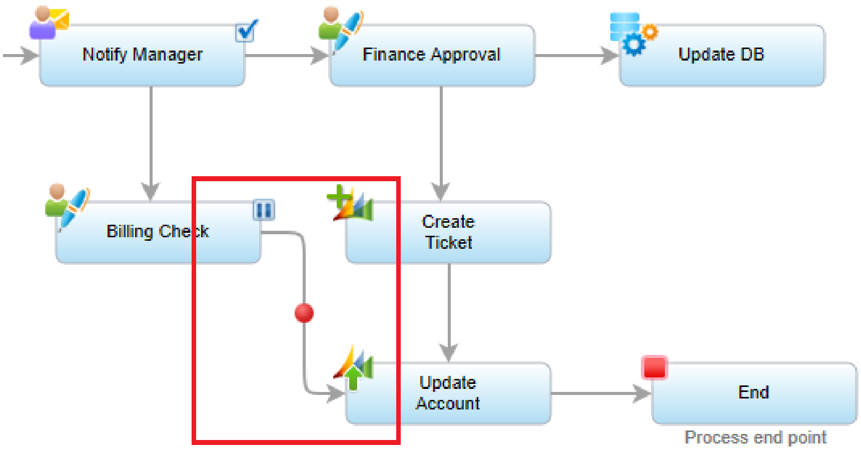
The Workflow Debugger Display Area Tab

Introducing Breakpoints

Breakpoints provide control and flexibility when debugging a workflow. The debugger enables developers to add breakpoints in the workflow, in the *Workflow* display area. Breakpoints are added at the connection between a pair of activities. During debugging, the debugger halts workflow execution at the breakpoints in your workflow.

A *Breakpoint* is displayed as a colored circle placed over the arrow connecting an activity either to a connection or to a following activity:

- Yellow breakpoints denote an active breakpoint – the process was stopped at a connection between an active instance and an activity that has not yet been executed.
- Red breakpoints denote an idle breakpoint – the thread has not yet reached the linked activities, or already passed it

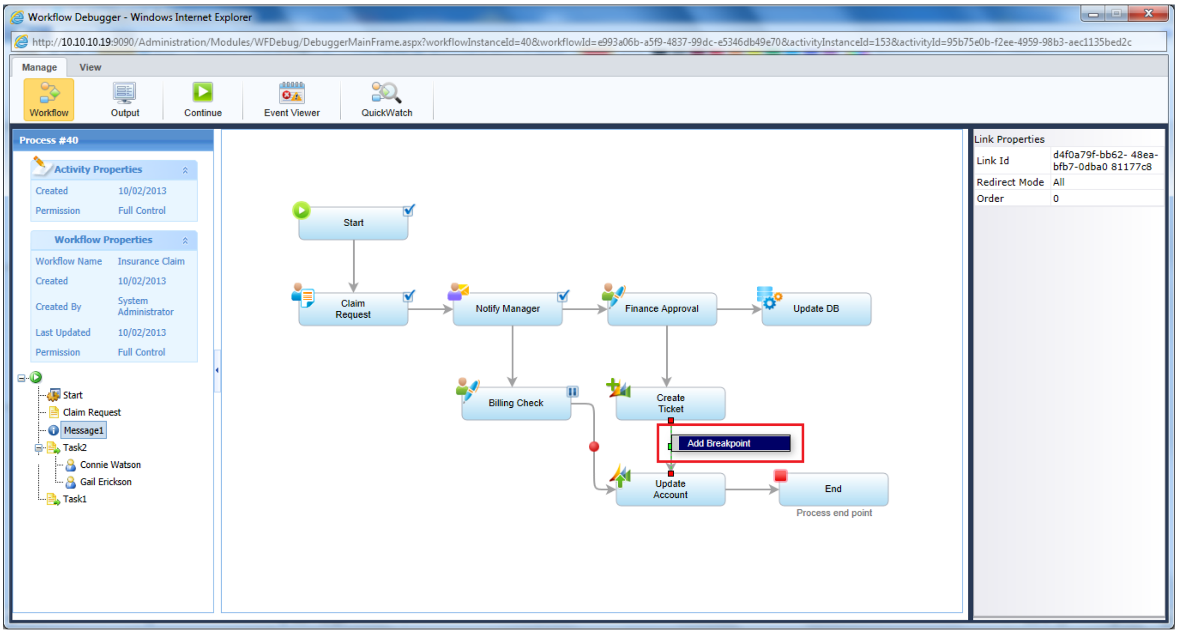


Breakpoints

Note: When adding a breakpoint during a specific workflow production, the breakpoint is not unique to the current debugging instance. It will carry over to all future debugging instances of the specific workflow until it is manually removed. The new breakpoints will not influence an instance that has already started the debugging runtime.

To add a breakpoint:

1. In Sequence Workflow Debugger, click **Workflow**.
2. Select the connection you wish to workflow to halt at.
3. Right-click the connection object and then click **Add Breakpoint**. A colored circle appears on the connection arrow.


Workflow Debugger - Windows Internet Explorer

http://10.10.10.19:9090/Administration/Modules/WFDebug/DebuggerMainFrame.aspx?workflowInstanceId=40&workflowId=e993a06b-a5f9-4837-99dc-e5346db49e70&activityInstanceId=153&activityId=95b75e0b-f2ee-4959-98b3-aec1135bed2c

Process #40

Activity Properties

Created	10/02/2013
Permission	Full Control

Workflow Properties

Workflow Name	Insurance Claim
Created	10/02/2013
Created By	System Administrator
Last Updated	10/02/2013
Permission	Full Control

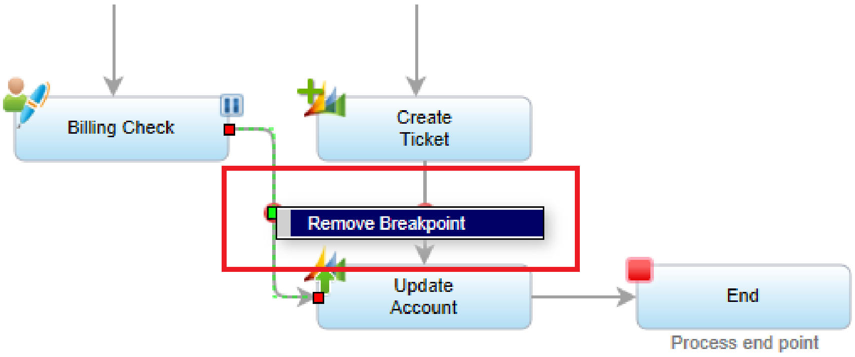
Link Properties

Link Id	d4f0a79f-bb62- 48ea-bfb7-0dba0 81177c8
Redirect Mode	All
Order	0

Add Breakpoint

To remove a breakpoint

1. In the Sequence Workflow Debugger, switch to the workflow display area tab by clicking on it.
2. Select the breakpoint you wish to remove from the workflow.
3. Right-click the breakpoint object
4. Select **Remove Breakpoint** from the popup menu. The colored circle representing the break point will disappear from the connection arrow.



Remove Breakpoint

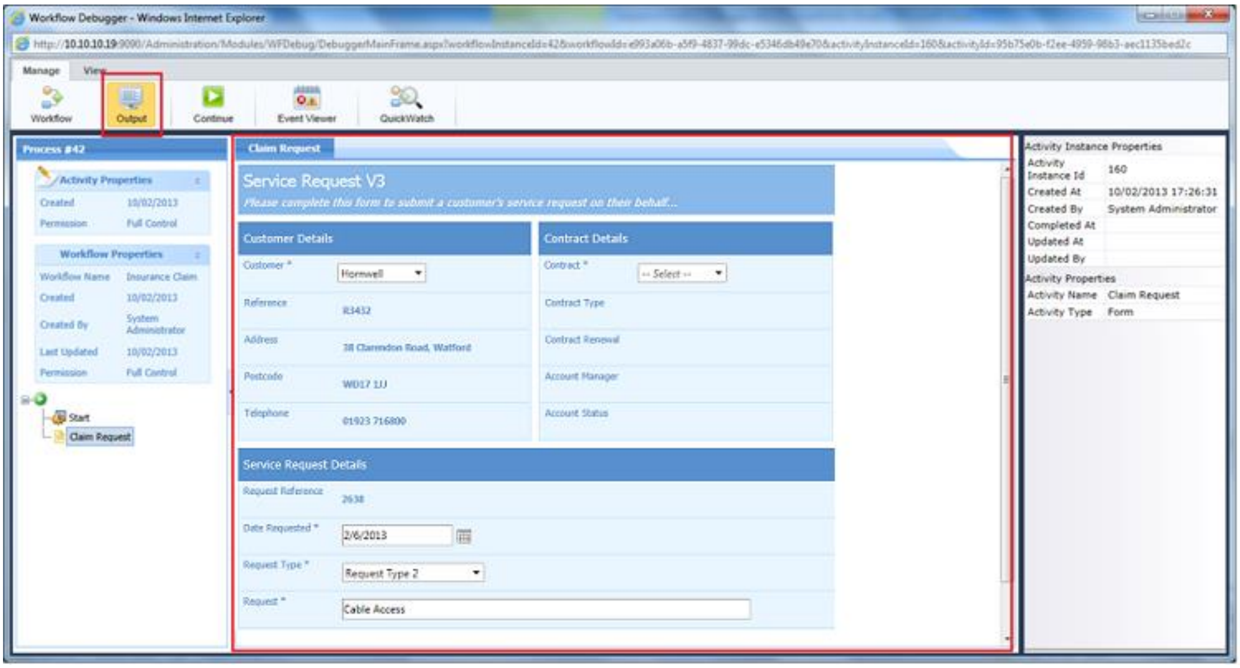
Workflow Debugger Output View

The **Output** view is relevant only with regard to human activities. The **Output** view provides a way to review a human activity output, whether it is a form or a notification message.

> ***Note: The Debugger obeys the Permissions module. Therefore, you have to have the appropriate permissions in order to view an activity and/or submit data through the debugger.***

This view is also used to insert user data to workflow forms in order to simulate a live process. You may take the place of any other user who is expected, for example, to fill out a form – and fill out the form yourself, thus pushing the execution forward along the workflow's thread, and allowing you to observe the workflow's execution process.

> ***Note: You must select an activity (either through the workflow view or through the activities tree view) prior to switching to the output view.***


Workflow Debugger - Windows Internet Explorer
http://10.10.10.19:9090/Administration/Modules/WFDebug/DebuggerMainFrame.aspx?workflowInstanceId=42&workflowId=e993a06b-a5f9-4837-99dc-e5346db49e70&activityInstanceId=160&activityId=95b75e0b-f2ee-4959-98b3-aec1135bed2c
Manage
View
Workflow
Output
Continue
Event Viewer
QuickWatch
Process #42
Start
Claim Request
Claim Request

Activity Properties	
Created	10/02/2013
Permission	Full Control

Workflow Properties	
Workflow Name	Insurance Claim
Created	10/02/2013
Created By	System Administrator
Last Updated	10/02/2013
Permission	Full Control

Service Request V3

Please complete this form to submit a customer's service request on their behalf...

Customer Details	
Customer *	Hornwell
Reference	R3432
Address	38 Clarendon Road, Watford
Postcode	WD17 1JJ
Telephone	01923 716800

Contract Details	
Contract *	-- Select --
Contract Type	
Contract Renewal	
Account Manager	
Account Status	

Service Request Details	
Request Reference	2638
Date Requested *	2/6/2013
Request Type *	Request Type 2
Request *	Cable Access

Activity Instance Properties	
Activity Instance Id	160
Created At	10/02/2013 17:26:31
Created By	System Administrator
Completed At	
Updated At	
Updated By	
Activity Properties	
Activity Name	Claim Request
Activity Type	Form

The Workflow Debugger Activity Output View

To view/fill-out a form or view a notification

1. In Sequence Workflow Debugger, select an action.
2. Click **Output**. The selected activity's output can be viewed.
3. If the output is a notification: You can read the message and then click **Workflow** to return to the Workflow debugger desktop.

   OR:

   If the output is a form: You can fill out the form and then click **Workflow** to return to the Workflow debugger desktop.

QuickWatch

It’s not always easy to achieve visibility on workflow data. QuickWatch is a kind of workflow “ultrasound” that enables you to zoom in and analyze workflow metadata, data, variables or expressions. This enables you to troubleshoot and monitor the workflow, helping you answer questions such as “Why did the workflow take a specific path?” “Why did we receive this answer from an integration activity?” and “What went wrong with this expression?” You can use QuickWatch to monitor the value of any item or expression which you can generate in Sequence’ Expression Wizard.

The evaluation result is displayed in a hierarchical view, enabling you to drill down into the result structure and examine the instance metadata and data, such as: UACT tables data, integration activities request/response, etc. In addition, there is a set of object visualizers that provide an alternative and user-friendly view of the elements in the result hierarchy.

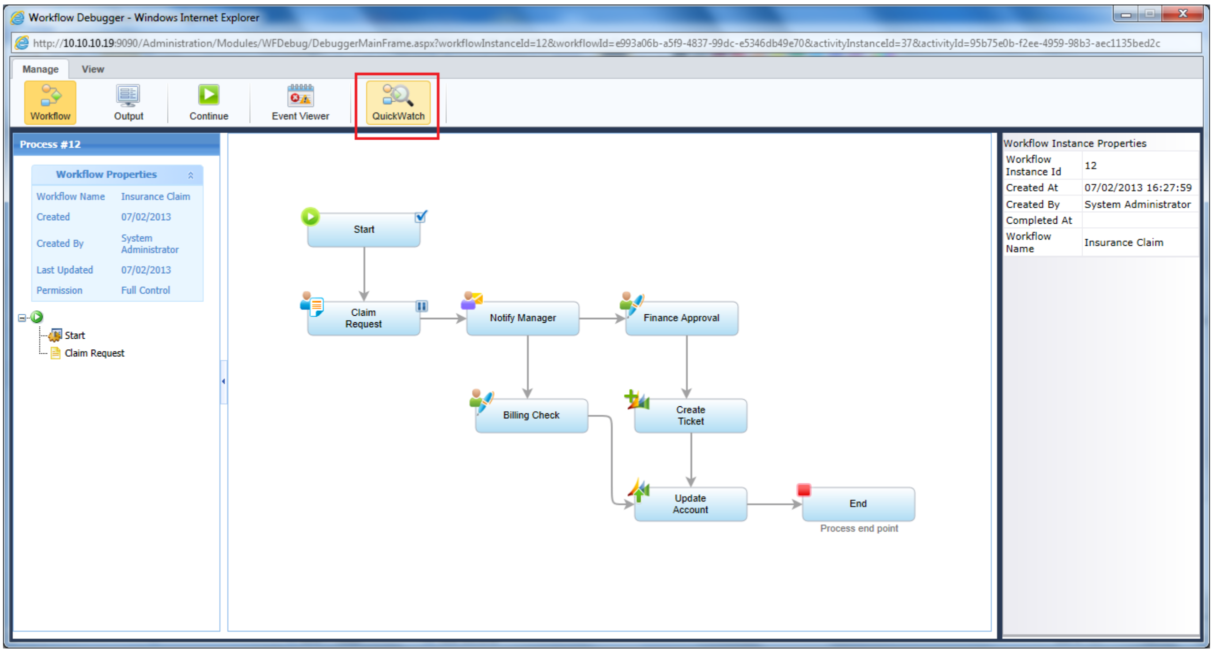
For example, you have defined a variable, such the status of an insurance claim, which is based on an expression comprised of process fields. As the process executes, the value of this variable changes. QuickWatch enables you to monitor this change over time.

QuickWatch may be used to debug processes that are in development or in production. You can use QuickWatch for troubleshooting, as you can view the value of items for processes instances that are in progress or have already completed. Since QuickWatch provides the object structure, it can also be used to help you create useful expressions.

Note: To use QuickWatch, you need at least Read Only permission for the workflow.

To monitor a workflow element using QuickWatch:

1. In the Debugger top ribbon, click **QuickWatch**.



Workflow Debugger - Windows Internet Explorer

http://10.10.10.19:9090/Administration/Modules/WFDebug/DebuggerMainFrame.aspx?workflowInstanceId=12&workflowId=e993a06b-a5f9-4837-99dc-e5346db49e70&activityInstanceId=37&activityId=95b75e0b-f2ee-4959-98b3-aec1135bed2c

Process #12

Workflow Properties

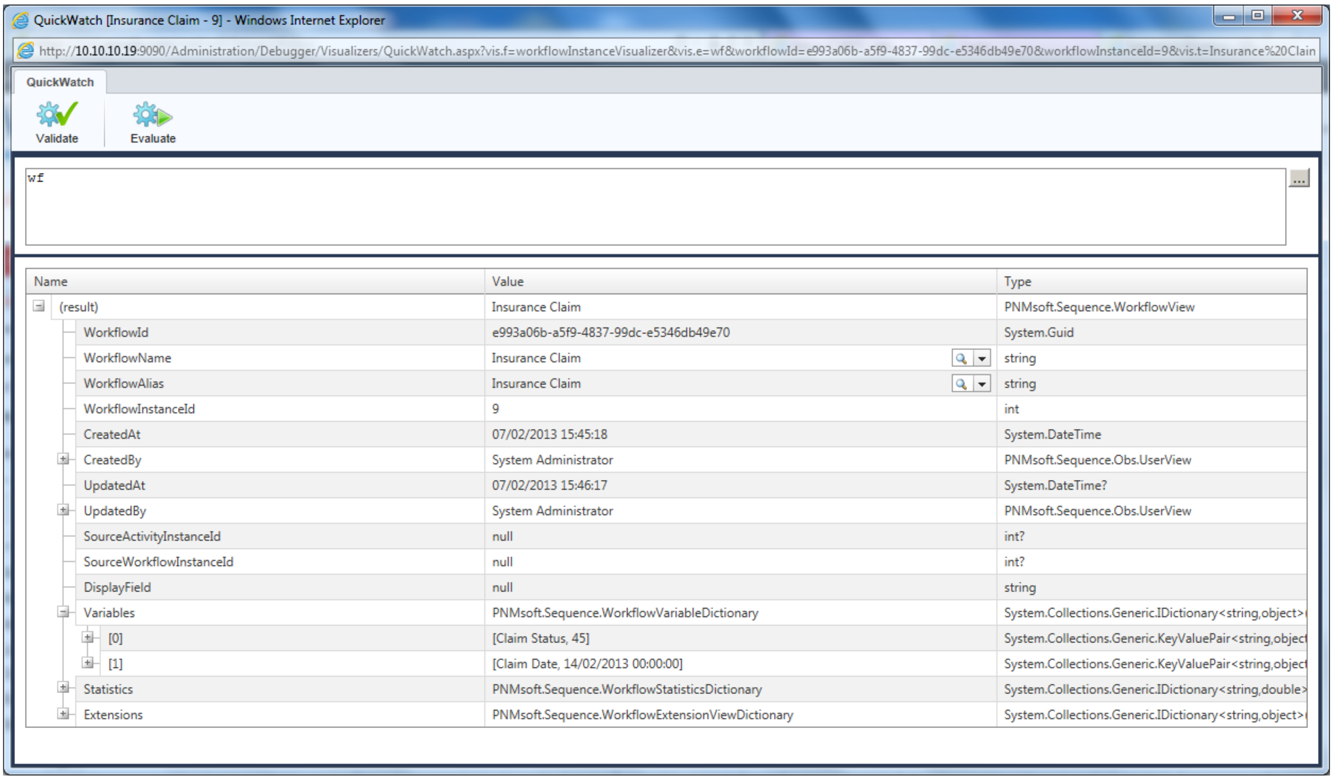
Workflow Name	Insurance Claim
Created	07/02/2013
Created By	System Administrator
Last Updated	07/02/2013
Permission	Full Control

Workflow Instance Properties

Workflow Instance Id	12
Created At	07/02/2013 16:27:59
Created By	System Administrator
Completed At	
Workflow Name	Insurance Claim

QuickWatch in the Debugger

The *QuickWatch* window appears. Click the **+** beside ‘(result)’ to expand the workflow tree:


QuickWatch [Insurance Claim - 9] - Windows Internet Explorer
QuickWatch
Validate
Evaluate
...

http://10.10.10.19:9090/Administration/Debugger/Visualizers/QuickWatch.aspx?vis.f=workflowInstanceVisualizer&vis.e=wf&workflowId=e993a06b-a5f9-4837-99dc-e5346db49e70&workflowInstanceId=9&vis.t=Insurance%20Clain

```
wf
```

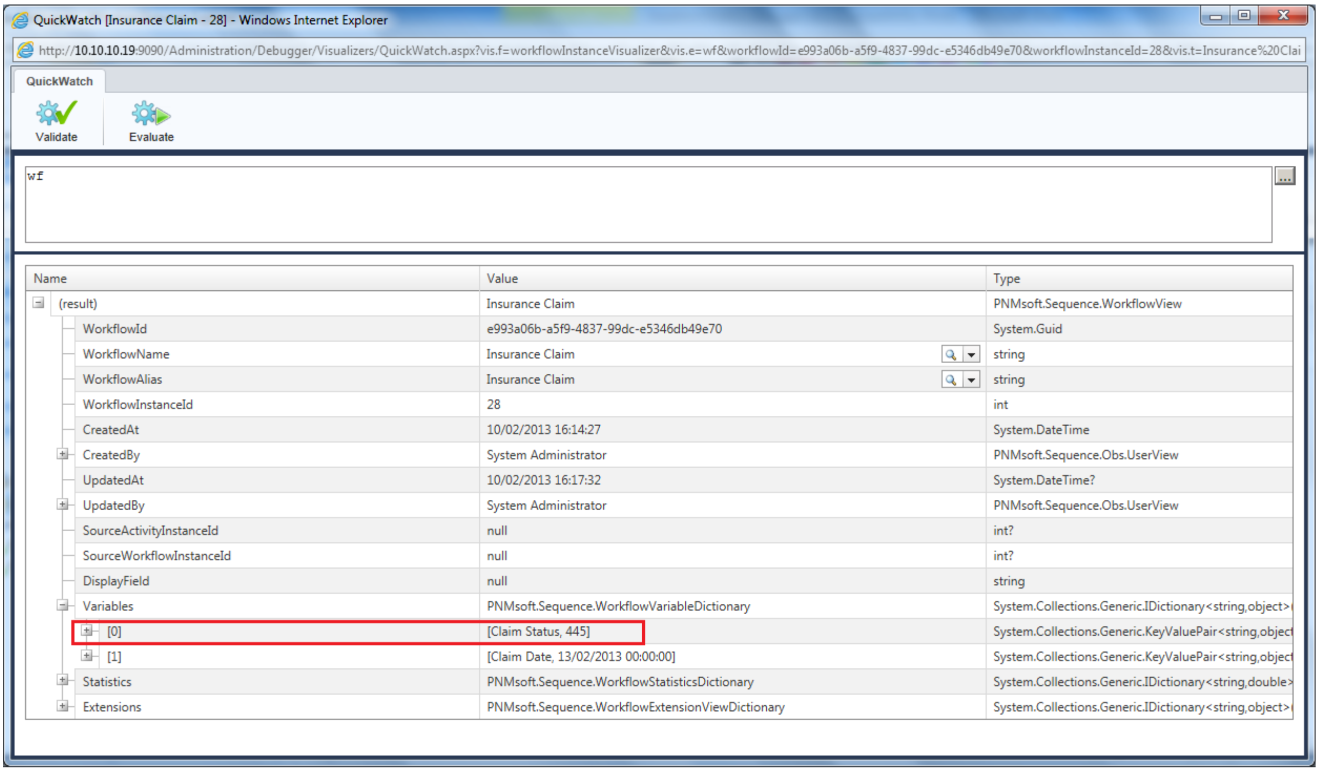
Name	Value	Type
(result)	Insurance Claim	PNMsoft.Sequence.WorkflowView
WorkflowId	e993a06b-a5f9-4837-99dc-e5346db49e70	System.Guid
WorkflowName	Insurance Claim	string
WorkflowAlias	Insurance Claim	string
WorkflowInstanceId	9	int
CreatedAt	07/02/2013 15:45:18	System.DateTime
CreatedBy	System Administrator	PNMsoft.Sequence.Obs.UserView
UpdatedAt	07/02/2013 15:46:17	System.DateTime?
UpdatedBy	System Administrator	PNMsoft.Sequence.Obs.UserView
SourceActivityInstanceId	null	int?
SourceWorkflowInstanceId	null	int?
DisplayField	null	string
Variables	PNMsoft.Sequence.WorkflowVariableDictionary	System.Collections.Generic.IDictionary<string,object>
[0]	[Claim Status, 45]	System.Collections.Generic.KeyValuePair<string,object
[1]	[Claim Date, 14/02/2013 00:00:00]	System.Collections.Generic.KeyValuePair<string,object
Statistics	PNMsoft.Sequence.WorkflowStatisticsDictionary	System.Collections.Generic.IDictionary<string,double>
Extensions	PNMsoft.Sequence.WorkflowExtensionViewDictionary	System.Collections.Generic.IDictionary<string,object>

QuickWatch Window

By default, the *QuickWatch* window displays all of the metadata the workflow. This information is displayed in the following columns:

- **Name:** the name of the workflow element.
- **Value:** the current value of the element.
- **Type:** the type of element (e.g. int).

Now you can monitor the value of a specific element, e.g. one of the workflow variables:


QuickWatch [Insurance Claim - 28] - Windows Internet Explorer
http://10.10.10.19:9090/Administration/Debugger/Visualizers/QuickWatch.aspx?vis.f=workflowInstanceVisualizer&vis.e=wf&workflowId=e993a06b-a5f9-4837-99dc-e5346db49e70&workflowInstanceId=28&vis.t=Insurance%20Clai
QuickWatch
Validate
Evaluate
...

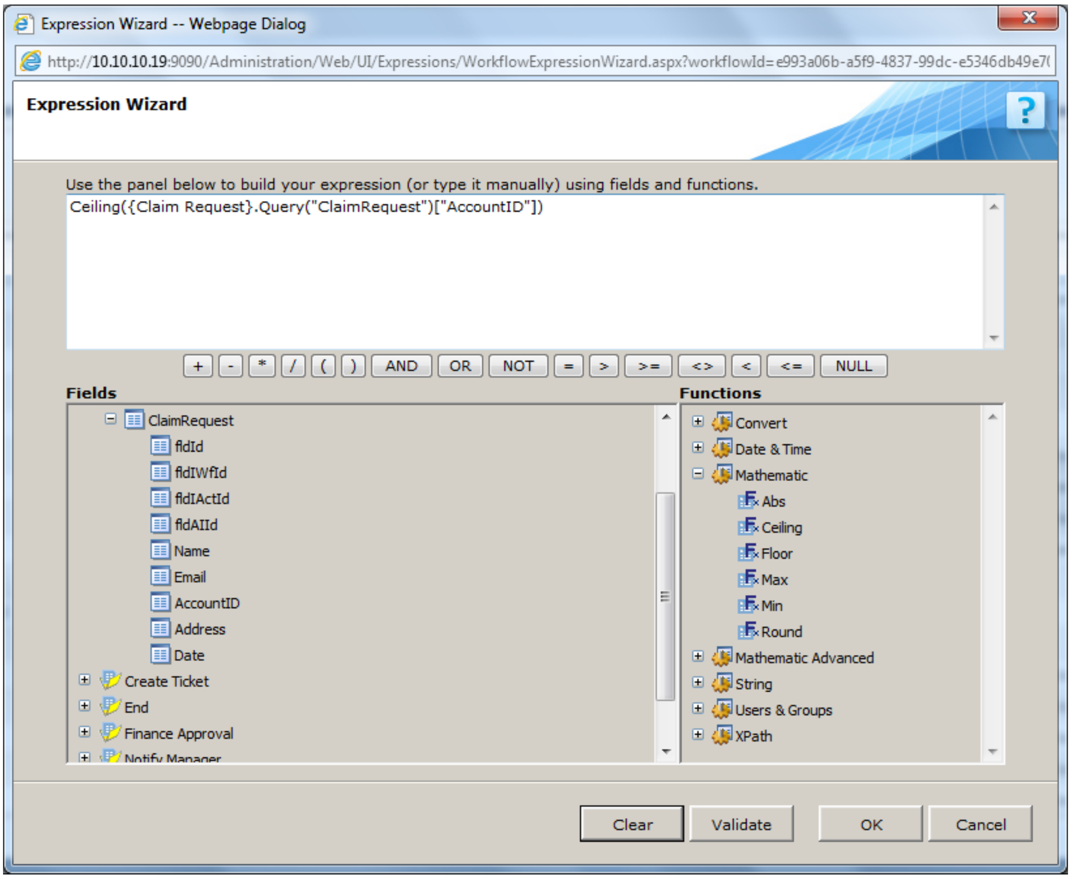
```
wf
```

Name	Value	Type
(result)	Insurance Claim	PNMsoft.Sequence.WorkflowView
WorkflowId	e993a06b-a5f9-4837-99dc-e5346db49e70	System.Guid
WorkflowName	Insurance Claim	string
WorkflowAlias	Insurance Claim	string
WorkflowInstanceId	28	int
CreatedAt	10/02/2013 16:14:27	System.DateTime
CreatedBy	System Administrator	PNMsoft.Sequence.Obs.UserView
UpdatedAt	10/02/2013 16:17:32	System.DateTime?
UpdatedBy	System Administrator	PNMsoft.Sequence.Obs.UserView
SourceActivityInstanceId	null	int?
SourceWorkflowInstanceId	null	int?
DisplayField	null	string
Variables	PNMsoft.Sequence.WorkflowVariableDictionary	System.Collections.Generic.IDictionary<string,object>
[0]	[Claim Status, 445]	System.Collections.Generic.KeyValuePair<string,object
[1]	[Claim Date, 13/02/2013 00:00:00]	System.Collections.Generic.KeyValuePair<string,object
Statistics	PNMsoft.Sequence.WorkflowStatisticsDictionary	System.Collections.Generic.IDictionary<string,double>
Extensions	PNMsoft.Sequence.WorkflowExtensionViewDictionary	System.Collections.Generic.IDictionary<string,object>

Monitoring a Variable Using QuickWatch

To monitor a value of an expression using QuickWatch:

1. Click [...] on the upper-right side of the *QuickWatch* window. The *Expression Wizard* appears:



Expression Wizard -- Webpage Dialog

http://10.10.10.19:9090/Administration/Web/UI/Expressions/WorkflowExpressionWizard.aspx?workflowId=e993a06b-a5f9-4837-99dc-e5346db49e7(

Expression Wizard

Use the panel below to build your expression (or type it manually) using fields and functions.

```
Ceiling({Claim Request}.Query("ClaimRequest")["AccountID"])
```

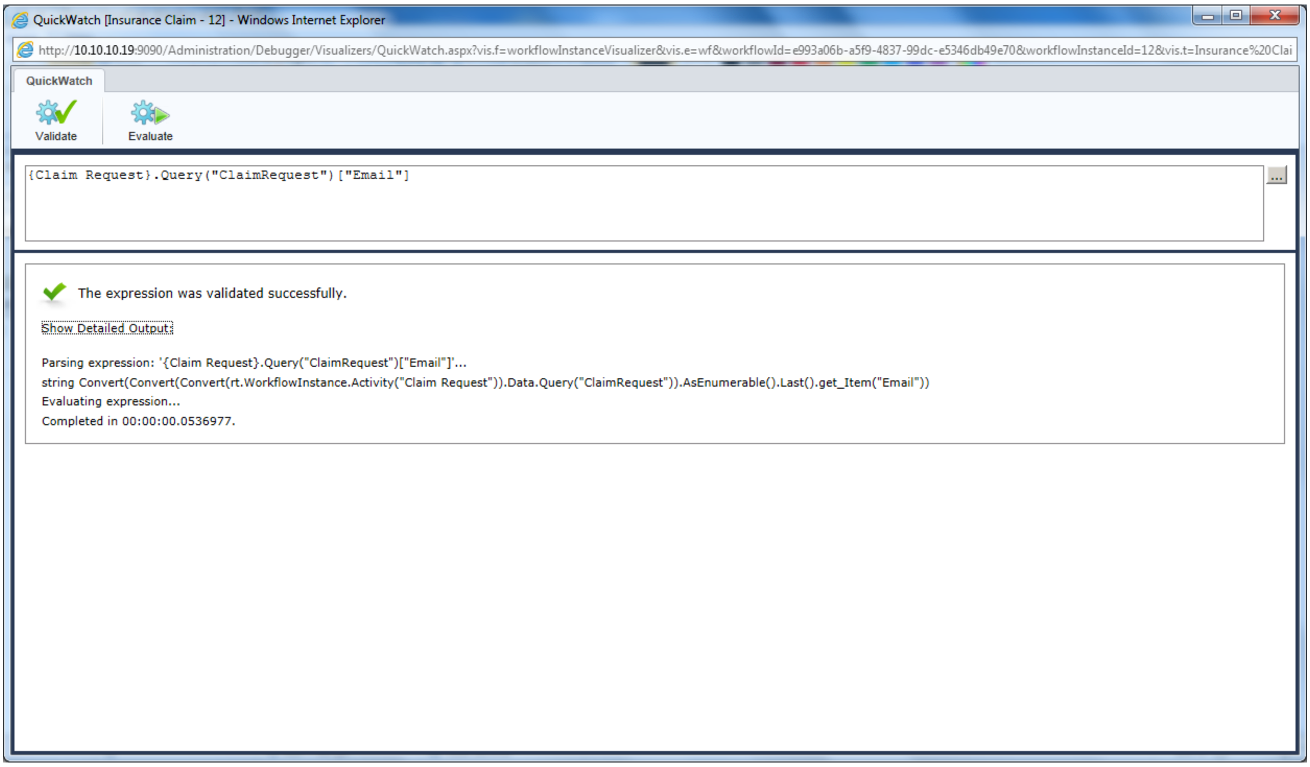
Expression Wizard

2. Create an expression whose value you wish to monitor using the Expression Wizard tools, and click **OK**.

3. In the *QuickWatch* window, click **Validate** to validate the expression.

   Warning: If you validate an sqlt expression, it will execute the SQL statement.

   (Optional) You can click **Detailed Output** to view a detailed result of the validation (including the parsed expression):


QuickWatch [Insurance Claim - 12] - Windows Internet Explorer
http://10.10.10.19:9090/Administration/Debugger/Visualizers/QuickWatch.aspx?vis.f=workflowInstanceVisualizer&vis.e=wf&workflowId=e993a06b-a5f9-4837-99dc-e5346db49e70&workflowInstanceId=12&vis.t=Insurance%20Clai
QuickWatch
Validate
Evaluate
...
Show Detailed Output

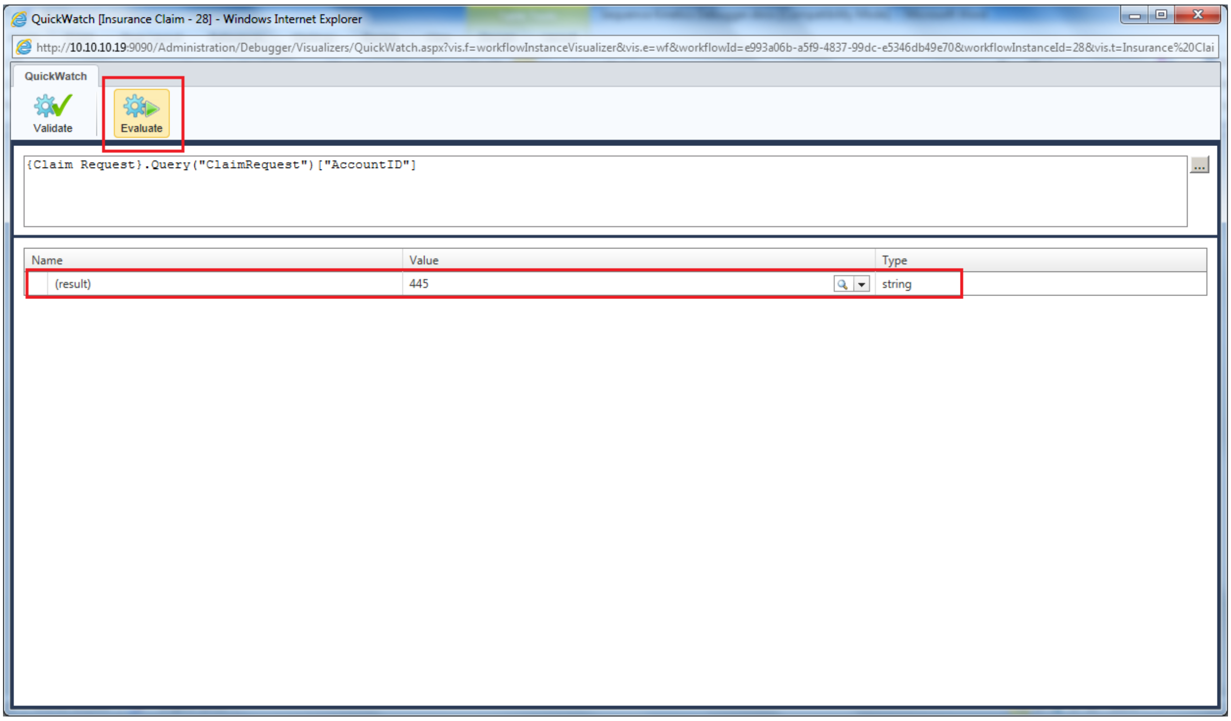
```
{Claim Request}.Query("ClaimRequest")["Email"]
```

✓ The expression was validated successfully.

```
Parsing expression: '{Claim Request}.Query("ClaimRequest")["Email"]'...
string Convert(Convert(Convert(rt.WorkflowInstance.Activity("Claim Request")).Data.Query("ClaimRequest")).AsEnumerable().Last().get_Item("Email"))
Evaluating expression...
Completed in 00:00:00.0536977.
```

Validating an Expression in QuickWatch

4. Click **Evaluate**. The area below shows the expression you created and its current value:



QuickWatch [Insurance Claim - 28] - Windows Internet Explorer
QuickWatch
Validate
Evaluate
...

http://10.10.10.19:9090/Administration/Debugger/Visualizers/QuickWatch.aspx?vis.f=workflowInstanceVisualizer&vis.e=wf&workflowId=e993a06b-a5f9-4837-99dc-e5346db49e70&workflowInstanceId=28&vis.t=Insurance%20Clai

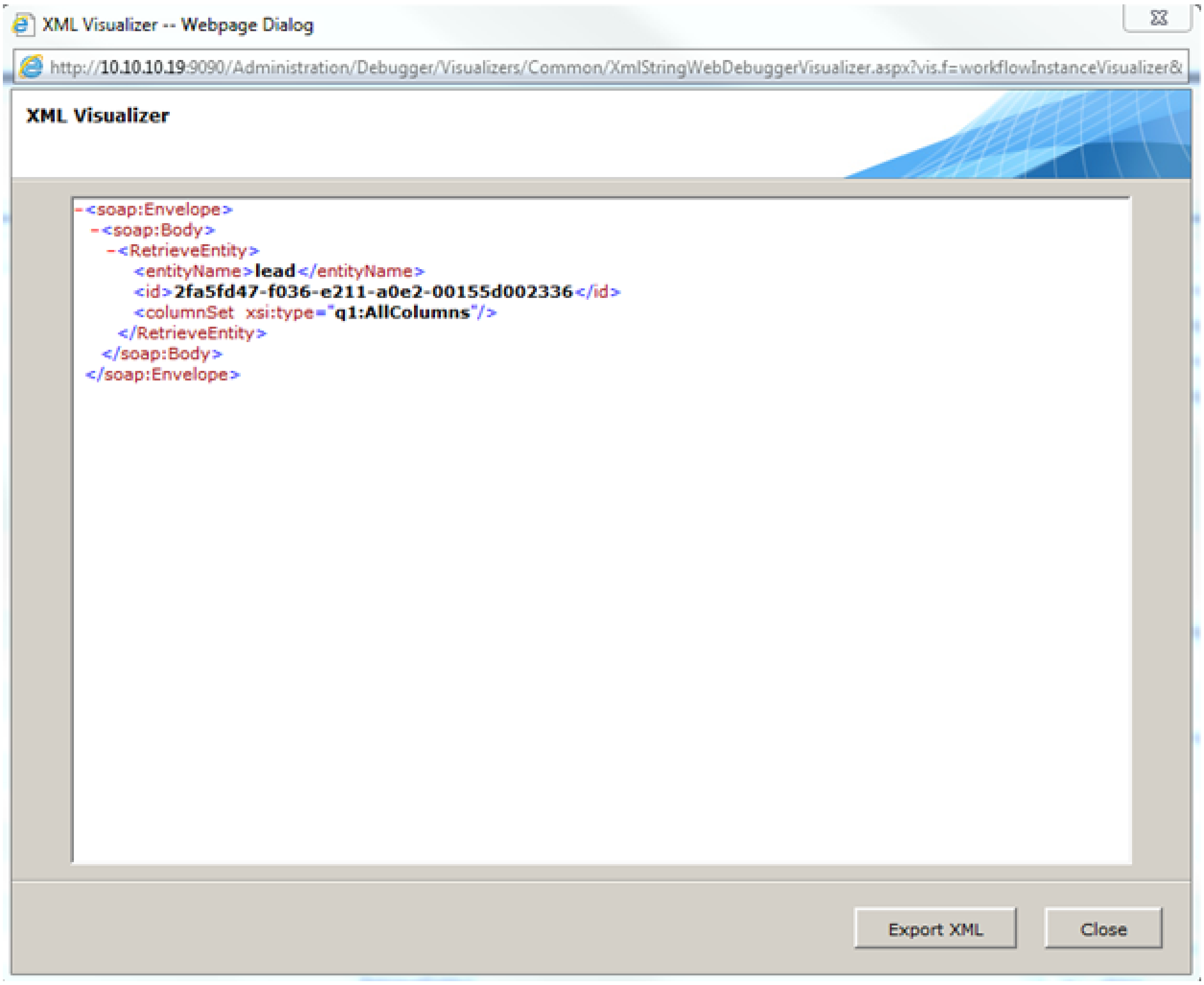
```
{Claim Request}.Query("ClaimRequest")["AccountID"]
```

Name	Value	Type
(result)	445	string

Evaluating an Expression using QuickWatch

Values of specific types can be viewed in several ways accordingly to visualizers that are defined for those types. Developers can modify existing visualizers or add new types of visualizers.

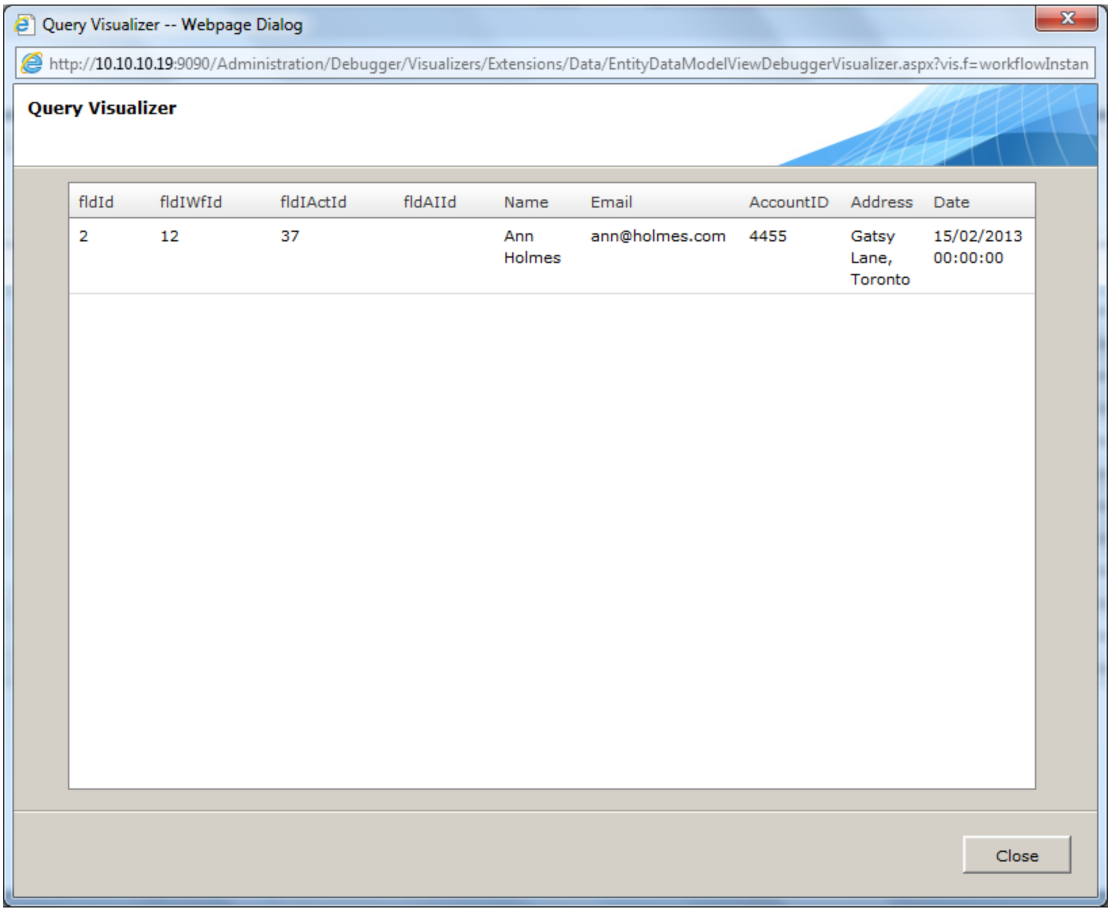
5. (Optional) In the Value column, you can click the 🔍 ▾ icon to view a visualization of specific elements as text, xml, Data Model element or Query (for queries only). This opens a separate window with the visualization you selected:


XML Visualizer -- Webpage Dialog
http://10.10.10.19:9090/Administration/Debugger/Visualizers/Common/XmlStringWebDebuggerVisualizer.aspx?vis.f=workflowInstanceVisualizer&
XML Visualizer
Export XML
Close

```
- <soap:Envelope>
  - <soap:Body>
    - <RetrieveEntity>
        <entityName>lead</entityName>
        <id>2fa5fd47-f036-e211-a0e2-00155d002336</id>
        <columnSet xsi:type="q1:AllColumns"/>
      </RetrieveEntity>
    </soap:Body>
  </soap:Envelope>
```

XML Visualizer

Note: Click Export XML to export the XML from the Visualizer.



Query Visualizer -- Webpage Dialog

http://10.10.10.19:9090/Administration/Debugger/Visualizers/Extensions/Data/EntityDataModelViewDebuggerVisualizer.aspx?vis.f=workflowInstan

Query Visualizer

fldId	fldIWfId	fldIActId	fldAIId	Name	Email	AccountID	Address	Date
2	12	37		Ann Holmes	ann@holmes.com	4455	Gatsy Lane, Toronto	15/02/2013 00:00:00

Query Visualizer

> ***Note: You can configure additional visualizers by editing the Web.config file in the following directory: <Administration site root directory>/Debugger/Visualizers***

To return to the workflow tree, reenter “`wf`” in the QuickWatch expression area and click **Evaluate**.

> ***Note: You can evaluate SQL expressions using QuickWatch. Do to so, you must be a Global Administrator.***