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Lab Guide

Workflow 101:

Workflow Editor Introduction

Frankie Thompson & Michelle Corona

Lab instance: https://**<<name>>**.lab.service-now.com

Login / Passwords:

K14.WFAdmin/k14101

Session Goals

- Define ServiceNow Workflow and its purpose
- Take a tour of the Workflow Editor
- Make a workflow! Complete Labs that introduce you to the Workflow UI features
- Learn the difference between a Workflow Version and Workflow Context

Slides
Workflow
101

ServiceNow Workflow 101 Slides

What is ServiceNow Workflow?

Part of the ServiceNow platform that automates multi-step processes

- A **Workflow** is defined as a series of Activities that follow execution paths
- An **Activity** is a set of instructions that can include script, logging, approvals, record processing, timers, and wait time
  - Activities can process inputs from other Activities
  - Activities can provide output for other Activities to process
  - Processing continues as the Activity determines which execution path to follow upon completing its work
- Workflows use conditions and their table associations to determine when to start, execute, continue and end

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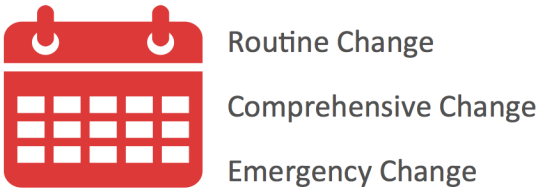
Benefits of Workflows

- Automation
  - Workflows are reusable
  - Workflows can call other workflows (called subflows)
- Expansion of Self-Service Offerings
- Standardization of Processes
- Feedback to Stakeholders in a timely fashion (Stages, Notifications)

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Where are Workflows Used?

Service Catalog Item Request



Routine Change

Comprehensive Change

Emergency Change

Contract Approval

SLAs

Procurement Processes

Grant Role to User

Delegate Roles to Group Members

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When to Use a Workflow and When Not to Use a Workflow

Use a Workflow

- Automate a defined multi-step process
- Automate a repeatable process
- When logic can be modularized
- When a standard response is needed for every table Glide Record transaction insert, update, delete, and create

Do Not Use a Workflow

- If a response to every cannot be standardized when set, workflows execute on every Glide Record transaction

  Example: If a workflow is defined for the Request [sc_request] table, the workflow runs on every insert, update, delete, and create
- If end conditions are not defined

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Lab Goal

- Introduce the Workflow Editor and the Workflow Engine.
- Define the role of Workflow in the Platform.
- Take a tour of the individual pieces of Workflow.

Lab 1
Workflow Overview

About ServiceNow Workflow

ServiceNow Workflow has two main components:

The **Workflow Editor** is the part of the ServiceNow UI that process owners and designers use to design workflows that automate business processes. The Workflow Editor always opens in an adjacent browser tab. The main work area is referred to as the canvas.

The **Workflow Engine** is part of the Glide Script Engine and is invoked with the insert, update, delete or cancel of a Glide record. Because of this, each workflow can be configured to run based on conditions. This is similar to how Business Rules determine when to run.

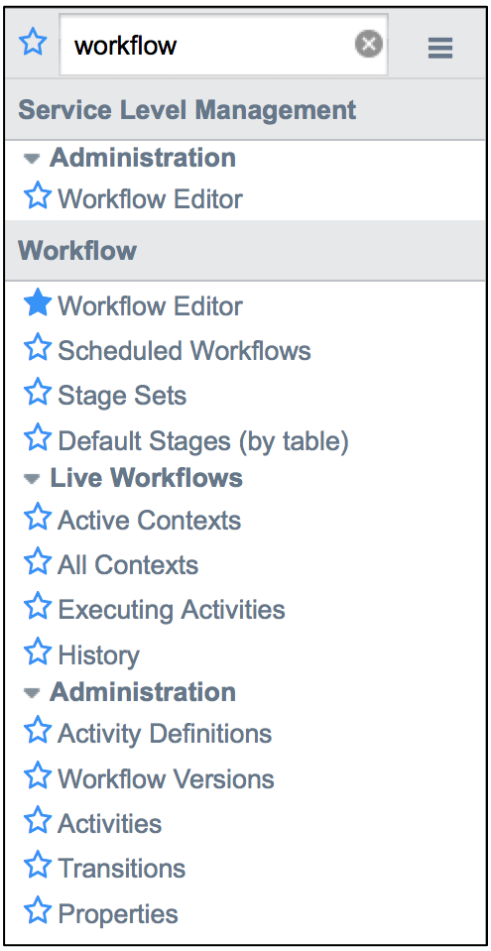
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Log on to Your Training Instance

1. Log on with **K14.WFAdmin**/k14101 credentials.

   NOTE: The Workflow Admin role is required to design and publish in the Workflow Editor.

2. In the Application Navigator Type filter text field, enter **workflow** to go to the **Workflow** Application.



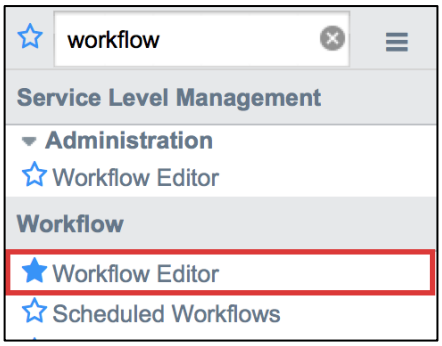
The Workflow application is divided into these functions:

- Accessing the Workflow Editor for creating and editing workflows
- Monitoring, running, and reviewing workflows
- Administering the Workflow Engine

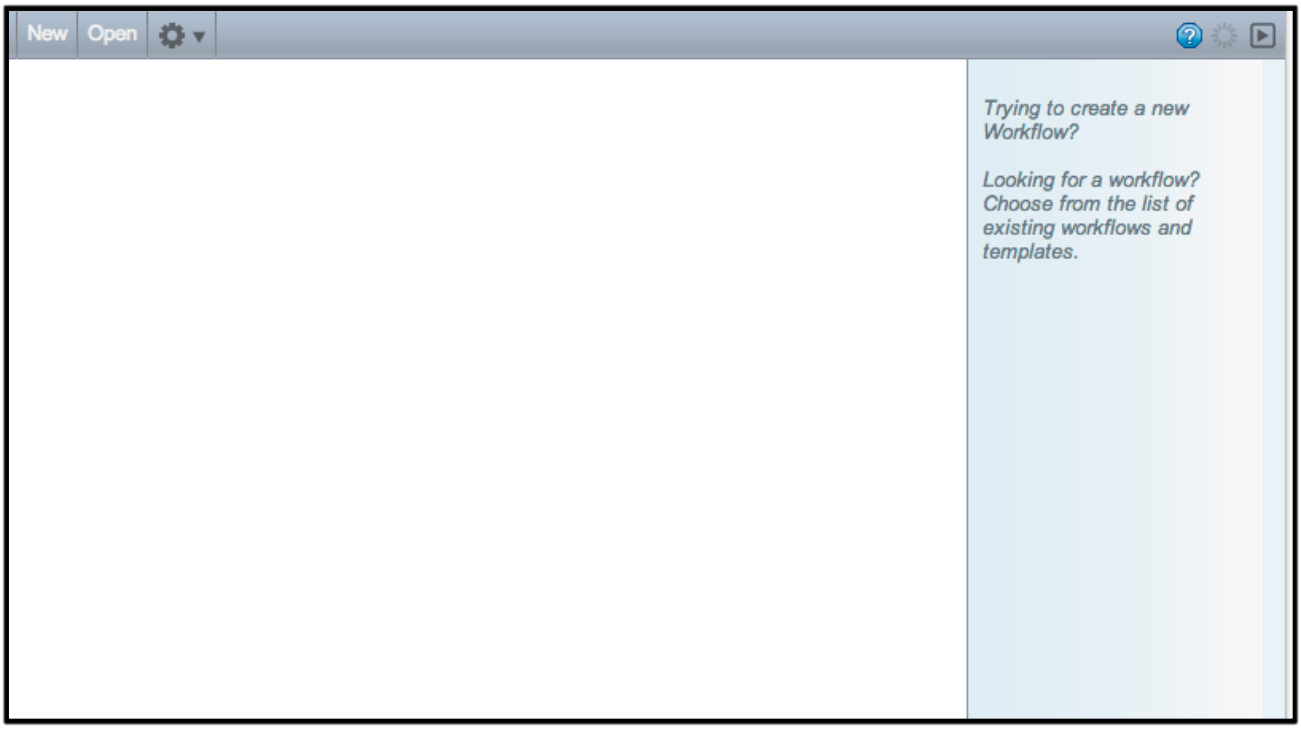
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3. Select the **Workflow Editor**.

NOTE: In subsequent labs, these navigation steps will be abbreviated to: **Workflow** > **Workflow Editor.**



Your browser loads the Workflow Editor in an adjacent browser. We also refer to the Workflow Editor as the canvas. Your screen should look like this:

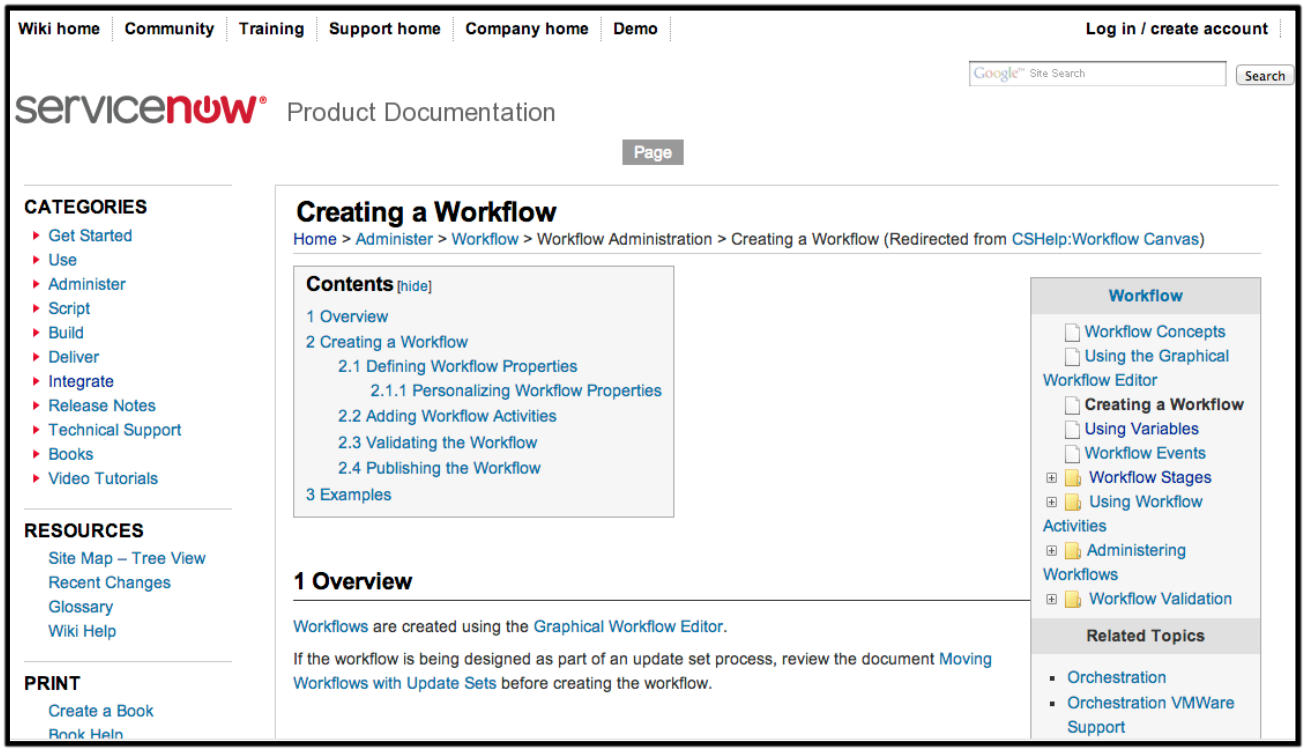


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4. Select the Blue Question Mark Icon.

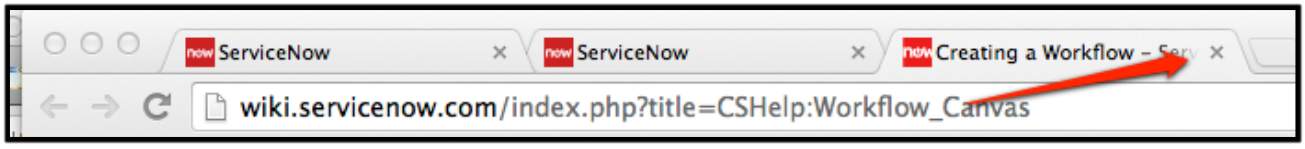


An adjacent tab opens to display the ServiceNow Wiki. Now there are 3 tabs open.



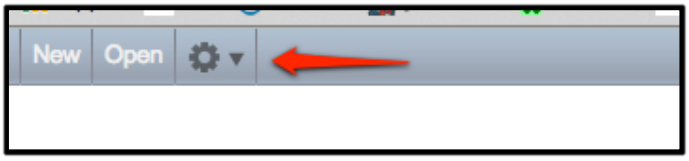
The ServiceNow wiki is a rich source of both educational and troubleshooting articles relevant to creating, editing, and invoking workflows. Wherever you see the blue question mark in the Workflow Editor, you will be taken to the Wiki page most relevant to the form you clicked from.

Close the Wiki tab and return to the workflow canvas.



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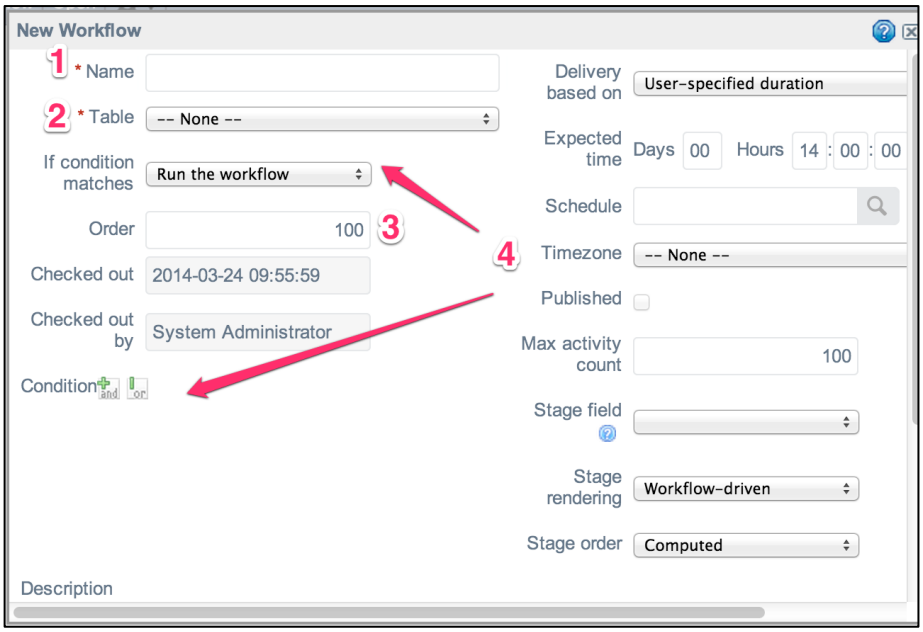
5. Select the **Gear Menu** icon. This is sometimes referred to as the **Workflow Actions** menu.



On a blank canvas, the Gear Menu allows you to create or open a Workflow. Once there is a workflow loaded on the canvas, the Gear Menu provides many more editing features.

6. Select **New Workflow**. The Workflow Properties form is used to set these values.

1. Name to identify a workflow.
2. Table association for the Workflow.
3. Order to determine processing order when there are multiple workflows for a table.
4. The conditions under which the Workflow will be invoked.



NOTE: The **Name** and **Table** fields are required fields.

The conditions are optional. If no conditions are specified, the workflow will run on every Glide insert into the table specified on the Workflow Properties.

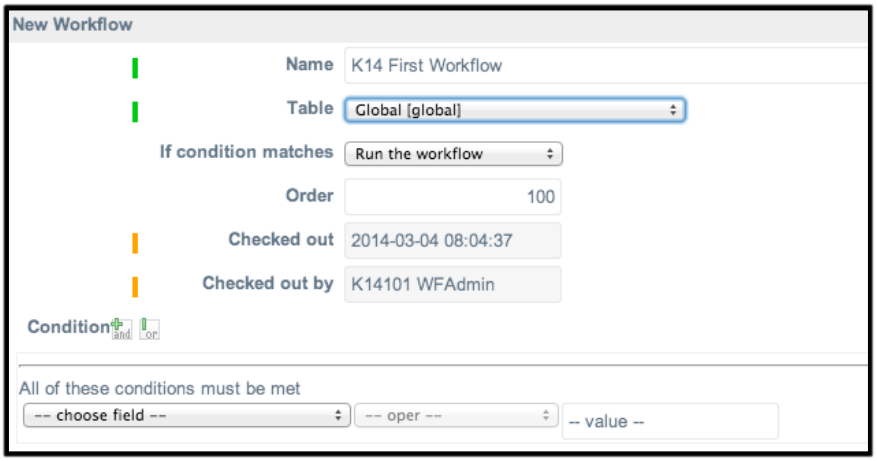
NOTE: In subsequent labs we will discuss workflow conditions in detail.

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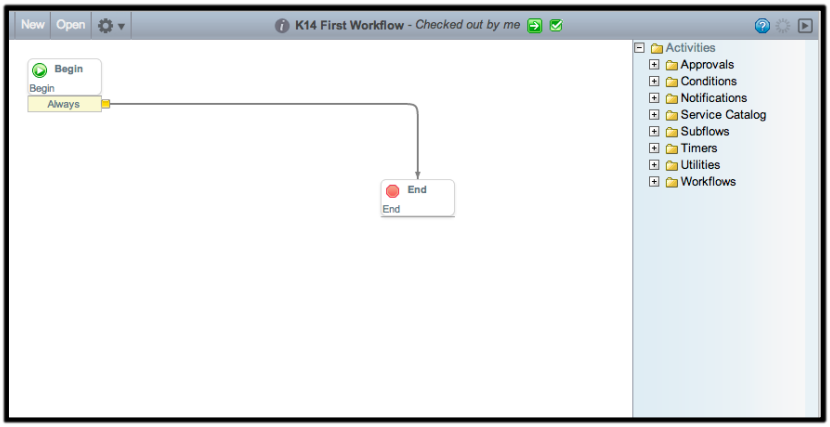
7. In the Name field type **K14 First Workflow.**

8. For the Table setting, select **Global [global]**. All tables are listed using the format Friendly name [system name].

   NOTE: Global is a generic setting and will not run on the insert or update of a Glide record.



9. Click the **Submit** button.



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Your First Workflow

Notice:

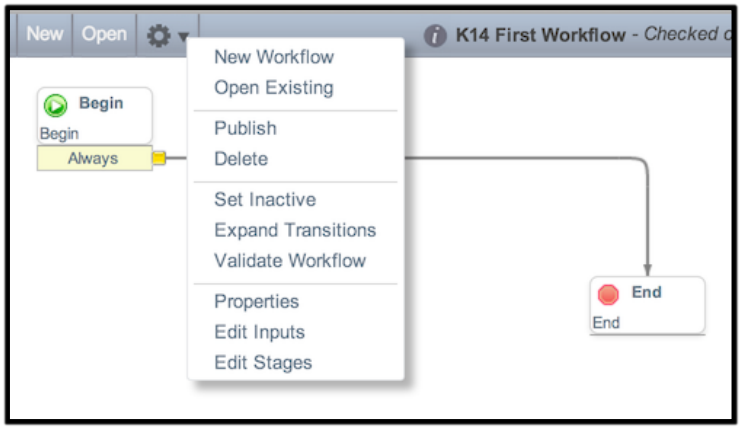
- There are two Activities in the workflow.

  An **Activity** is a set of instructions that can include script, logging, approvals, record processing, timers, and wait time

  - Activities can process inputs from other Activities
  - Activities can provide output for other Activities to process
  - Processing continues as the Activity determines which execution path to follow upon completing its work

- Every workflow has a **Begin** Activity and an **End** Activity. Know that these cannot be deleted and that processing cannot be started or ended when these Activities execute.
- The lines between the Begin and End determine the processing paths. If an Activity is not connected on a path, it will never execute.
- On the right side of the Workflow Editor a folder structure called the **Activity Tree** displays. This structure is also called the Application Menu. The Activity Tree is built based on the table setting. For the Global [global] table, the Activity Tree shows the base instance set of folders and Activities.

1. Reselect the **Gear Menu** icon.



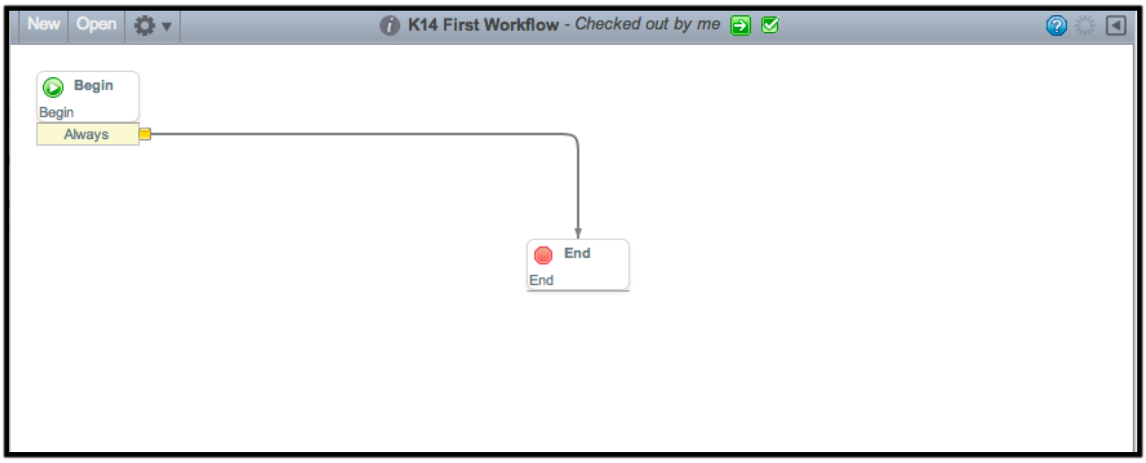
Notice how many more options are available in the gear menu, now that the workflow canvas is loaded. We will be referring to the gear menu throughout this lab.

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2. Click outside of the menu list to dismiss the list.

3. In the upper right hand corner of the canvas tool bar select the right arrow icon**. This control hides the Activity Tree so you have more canvas space.**

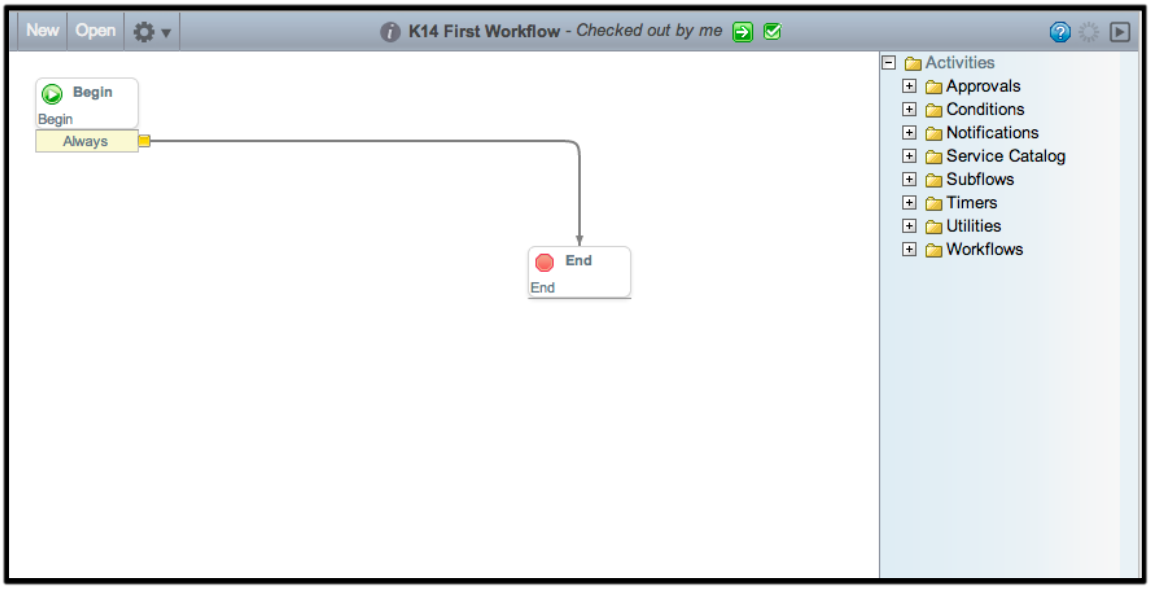




When building large workflows, this is a way to get more viewable workspace.

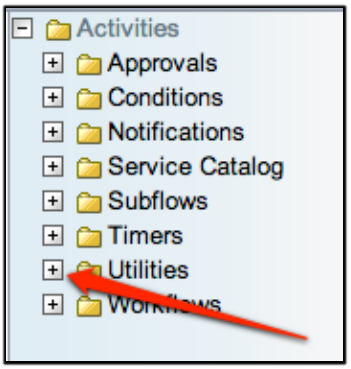
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4. In the upper right hand corner of the canvas tool bar select the **left arrow icon to display the Activity Tree again.**



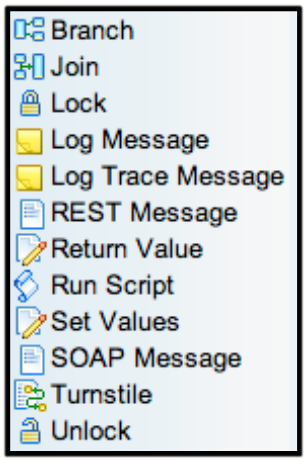
Work with the Activities Tree

1. In the Activities Tree in the right pane of the canvas, expand the **Utilities** folder.

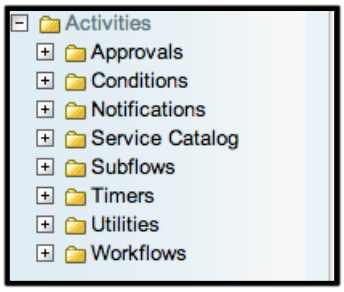


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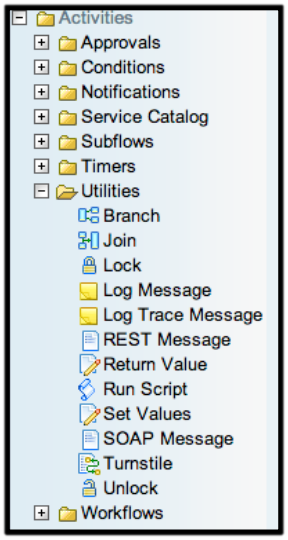
The Activities Tree lengthens and the Utilities folder expands to look like this:



Each folder in the Activities Tree is called a **Category**



Each item in a folder is called an **Activity**



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Categories and the Activities within Categories are defined by Activity Definitions. The **Activity Definition** is the Configuration of Script and Variables that are needed to perform an atomic piece of work.

Activity Definitions in the base instance perform work for ITIL processes. These Activity Definitions allow for seamless integration of a process specified within a workflow with the core applications such as Incident, Change Request and Service Catalog.

2. Collapse the **Utilities** folder.

About Connections, Transitions, and Lines

The purpose of a line in a workflow is to connect Activities to form processing paths. Lines are the **transition** to the next Activity. There is only one type of line in the Workflow Editor and when it is selected it turns blue in color. As you work designing a workflow you can move the Activities around to make room by placing the cursor on an Activity title and dragging it to another location on the canvas. The lines will automatically adjust so the Activities always stay connected.

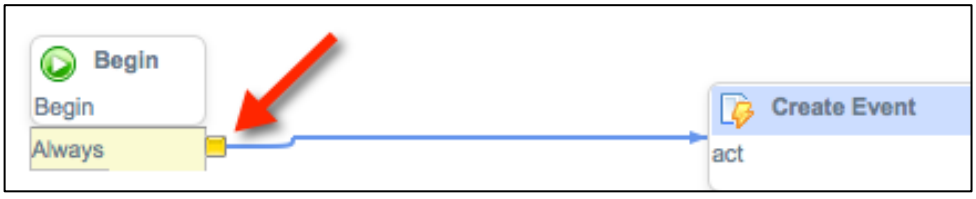
There can be more than one line leaving and entering an Activity. A line starts from one of the conditions that are set for an Activity. Examples of Activity conditions are Always, Error, and Skipped.

Common QUESTIONS

QUESTION: How do I connect Activities?

There are 3 methods:

- You can select the Activity node, hold the right mouse button and draw a line to the next Activity.



- When you drag an Activity onto the Workflow Canvas hover over the line between Activities until it turns blue. The nodes will automatically connect.

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- Right-click on the Activity condition that you want to connect. Select **Link to…** and a list of all the workflow Activities displays. Select the Activity you want to connect.

  NOTE: Many workflows fail because Activities have not been connected. One way to verify that all Activities are connected is to use the **Validate** feature to check for unconnected Activities.

QUESTION: My workflow is growing. Is there an easy way to redraw the lines?

Yes. Use the **Expand Activities** menu item in the Gear menu to spread the lines.

QUESTION: How do I delete a line?

Hover over the line until it is selected (changes to blue). Click the delete button.

QUESTION: How do I copy an Activity?

Hover on the Activity title and right-click to select **Copy Activity**. Note that the copy Activity is sometimes put directly on top of the original Activity.

QUESTION: How do I delete an Activity?

Use the X in the upper-right corona of the Activity.

QUESTION: Can I make a custom Activity?

Yes! An **Insert and stay** operation can copy an existing Activity that is close to what you need and then you can customize it. Remember to make sure the Category places the Activity in the correct folder.

Summary

A **Workflow** is defined as a series of Activities that follow execution paths.

The Workflow Editor presents an unstructured area (usually referred to as the workflow canvas) that is used to create and edit workflows.

Workflows are composed of Activities that are connected by lines. Each Activity represents a unit of work that is defined in an Activity Definition. Each line connects Activities to form processing paths. A line is also called a transition.

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Lab Goal

- Introduce Workflow Versioning.
- Experience Checkout and Publish.
- Understanding versions in Update Sets.

Lab 2
Workflow Versioning

Workflow Versioning

A workflow consists of three parts:

- The workflow, which is associated with a table.
- The Workflow Version, which is characterized by Condition, Published Status, and permissions.
- The Workflow Model, which is the workflow in its entirety as the set of Workflow Activities and their transitions (lines) within a given version.

Workflows are moved from one instance to another using Update Sets.

Workflow States

A Workflow can have three states:

- **Published**: The Workflow is available to all users and Glide records that meet the conditions of the workflow.
- **Unpublished**: The Workflow is no longer available for new Glide Records, but may be required for already running records.
- **Checked Out**: The Workflow is available to run only for the User who has it checked out.

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Create an Update Set

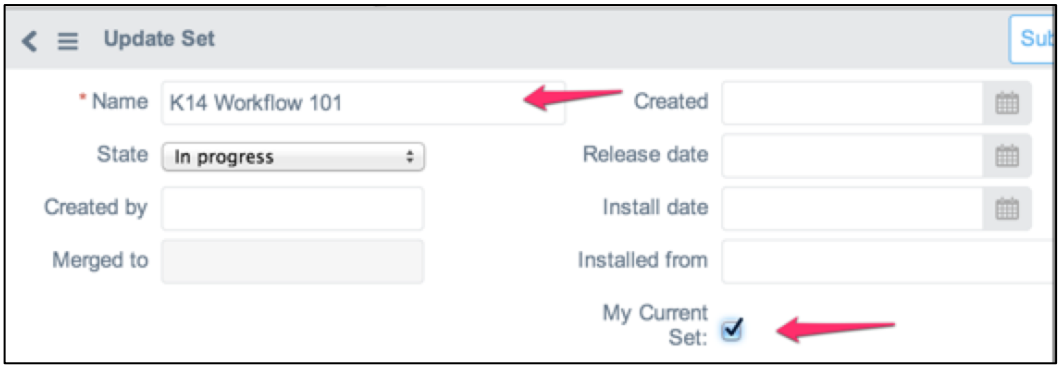
Workflows are moved from one instance to another using an Update Set. For the purposes of this lab we will create an Update Set called **K14 Workflow 101.** Throughout the lab we will see how a workflow becomes published in the Update Set. We will not be moving the Update Set to a new instance. To learn more about moving update sets from one instance to another see the lab: **Update Sets – Best Practices to Move Code Smoothly.**

1. In the Application Navigator Type filter text field, enter **Update Set.**

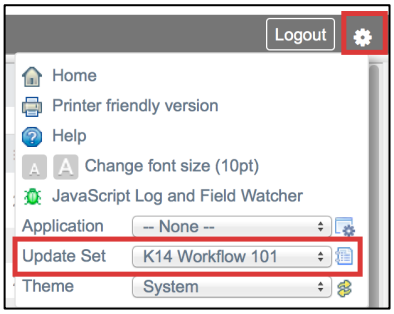
2. **System Update Sets > Local Update Sets**. The word local is used to describe Update Sets that are already present on the instance.

3. Click **New.**

4. Fill out the form as follows:
   Name: **K14 Workflow 101**
   My Current Set: **Check**



5. Click **Submit.** Check your work by clicking the Gear Menu on the right-side of the banner and check that the **K14 Workflow 101 Update Set** is the current set.

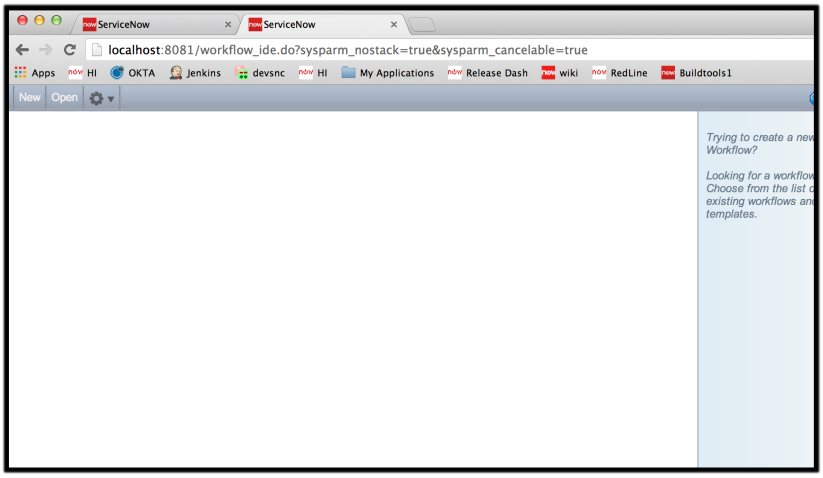


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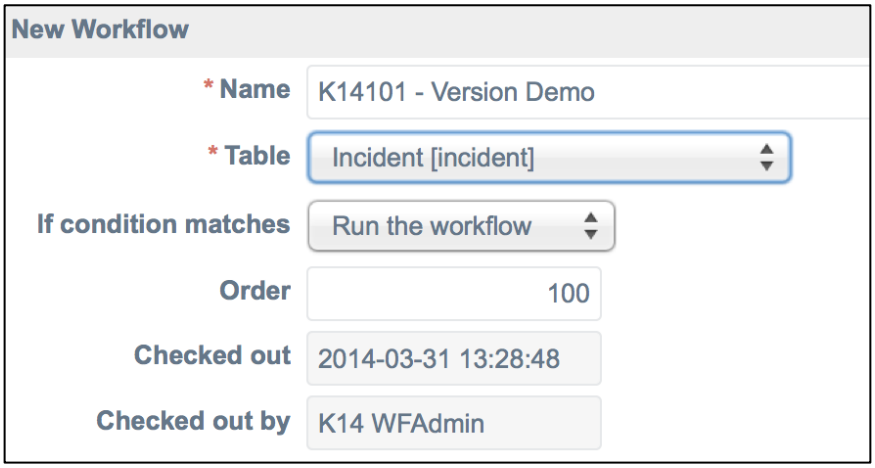
Create a Workflow Version

1. Close the Workflow Editor tab. It is a good practice to close the tab after completing your work. The Workflow Editor tabs will stay open until you close them.

2. Return to the Workflow Editor using **Workflow** > **Workflow Editor.**

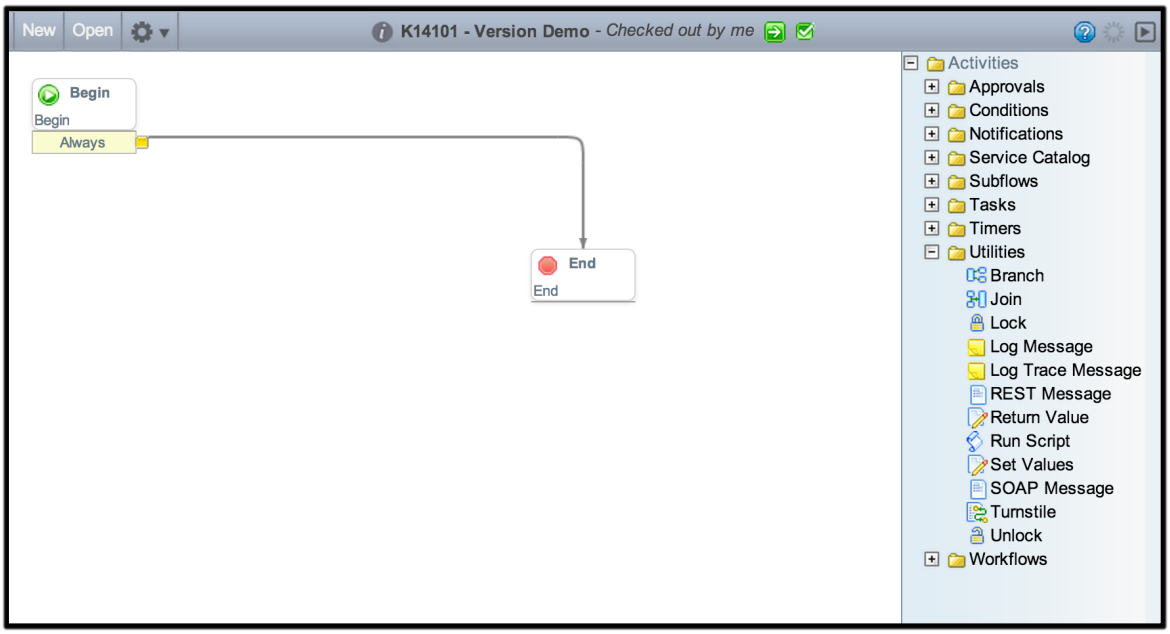


3. Create a new Workflow **Gear Menu** > **New Workflow** (note that you can also click **New**).
   Name: **K14101 – Version Demo**
   Table: **Incident**



4. Click the **Submit** button.

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In the Workflow Canvas header, notice the label on the Menu Bar. See the name of the workflow, just as it was entered into the Name field, and the ***Checked out by me*** text.

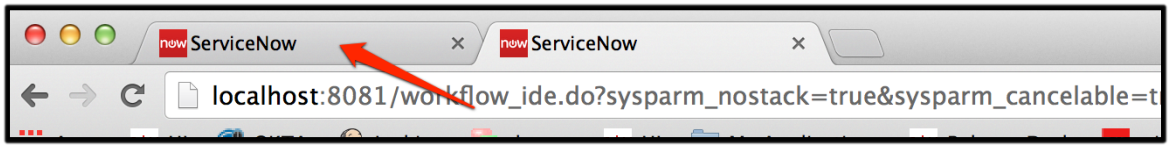
A workflow that indicates that it is checked out runs only for the user that has the workflow checked out.



Because this is a new workflow, there is only one version of the workflow, and that version will only run for the user who has the workflow *Checked out*.

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5. To see the relationship of a Workflow to its Workflow Versions, return to the main ServiceNow tab. Do not close the Workflow Editor.



6. **Workflow > Workflow Versions.**

This is the list of all the active workflow versions on this instance. Find your **K14101-Version Demo** workflow.

What you see is the Workflow record and a Related List of Workflow Versions. In this case, there is only one version.



Looking at the Workflow Version record we see the following:

1. **Published = false**

   This indicates that this workflow is not available for general consumption on this instance.

2. **Checked out by = K14101 WFAdmin**

   This indicates the current editor of the workflow version and the only person this version of the workflow will run for.

7. Return to the Workflow Editor by re-selecting the second ServiceNow tab.

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8. Using the **Gear Menu,** select **Publish**.

   NOTE: In subsequent labs, these steps will be abbreviated to **Gear Menu** > **Publish.**

   The header of your workflow should look like this:



9. Return to the main ServiceNow tab.

10. **Refresh List** in the Workflow Version list. You can do this by right-clicking the context-sensitive menu in the list header.

    The Related List of your workflow versions should look like this:



Looking at the Workflow Version record we see the following

1. **Published = true** (1)
   - Indicating that this workflow is now available for use on this instance.
2. **Checked out by = blank** (2)

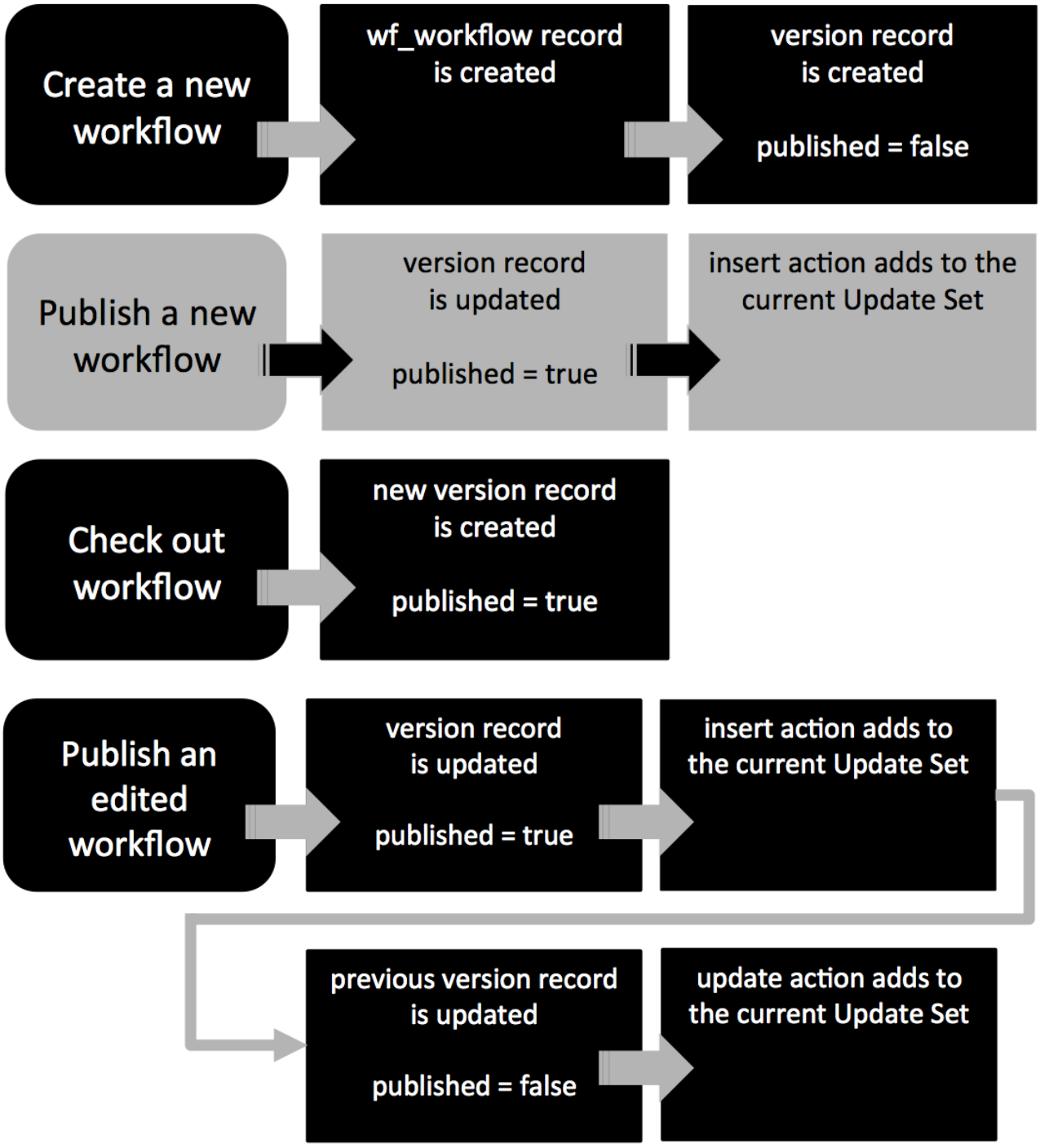
Workflow Version Life Cycle

A workflow goes through the Develop -> QA -> Deploy life cycle on the same instance using the Checked Out -> Published states.

In ServiceNow Best Practices, a workflow Develop -> QA -> Deploy process is managed across at least 2 instances (Dev. -> Production), sometimes 3 (Dev. -> QA -> Production). A workflow is moved from one instance to another using an Update Set. A workflow is added to an Update Set on Publish. Checked Out workflows will not be entered into an Update Set, making them very safe for development and test.

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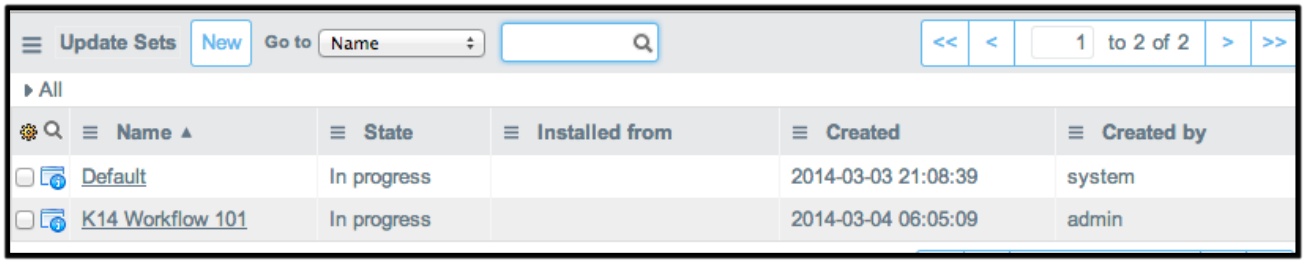
Workflow Version Life Cycle



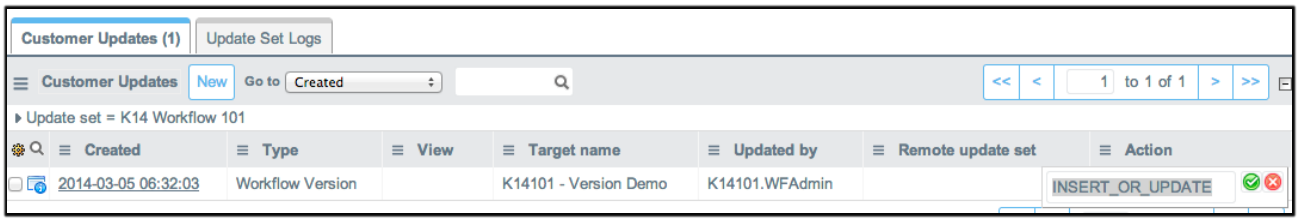
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1. Return to the main ServiceNow tab.
2. In the Application Navigator Type filter text field, enter **Update Set.**
3. Select **Local Update Sets**.

Your Update Sets list should at the minimum list these Update Sets:

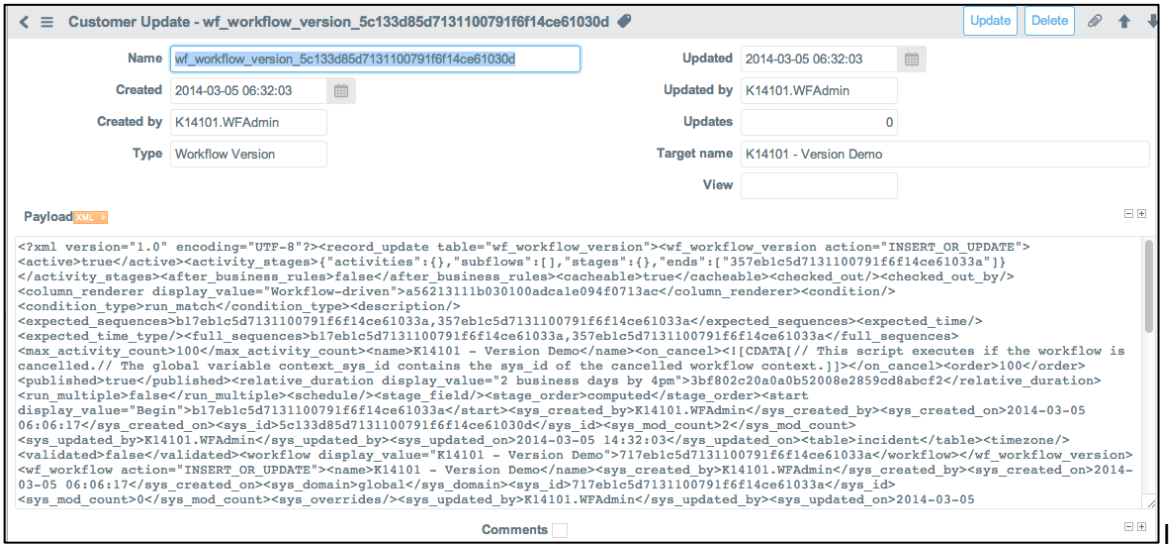


4. Select the **K14 Workflow 101** Update Set.
5. Scroll down to the **Customer Update** related list.



6. Select the update record.

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Notice the Payload field. The content of the Payload field is the XML mapping of all the database entries required to move the Workflow and its dependencies.

Edit then Publish a Workflow

1. Return to the Workflow Editor tab.
2. Select **Gear Menu > Checkout**.

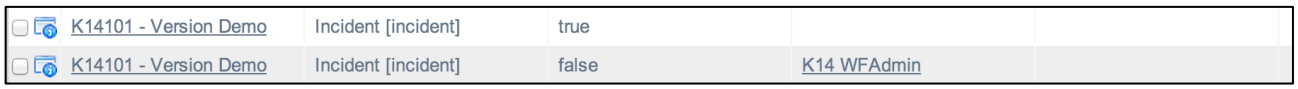
Your workflow header bar will again reflect the checked out status like this:



3. Return to the **ServiceNow** main tab.
4. **Workflow > Workflow Versions.**

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5. Find the **K14101 – Version Demo** in the list.



The workflow version that was published earlier and is in the **K14 Workflow 101** Update Set is at this time unchanged. There is also now another version associated with this workflow.

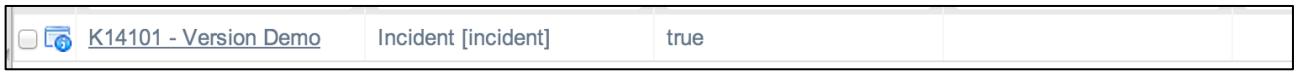
This is the Checked Out version that was just created in the Workflow Editor. This version of the workflow, will run, as we learned earlier, only for the **K14WF Admin** user, while the existing, Published version will run for all other users on the instance who meet the conditions of the workflow.

6. Return to the Workflow Editor tab.

7. Select **Gear Menu > Publish**.

8. Return to the main **ServiceNow** tab.

9. Refresh the Workflow Version list.



Notice that there is now only one version of the K14101 – Version.

- All processes already running against that original workflow will continue to run against that version.
- The edited version is now the published version.
- All new Glide Records that meet the conditions of the Workflow will run against the new version.

It is not possible to apply a newly published workflow to existing records. The Workflow Engine evaluates the conditions when the record is inserted and identifies the ID of the appropriate workflow version. From that point on, the Workflow Engine needs only reference the ID of the version and not the conditions.

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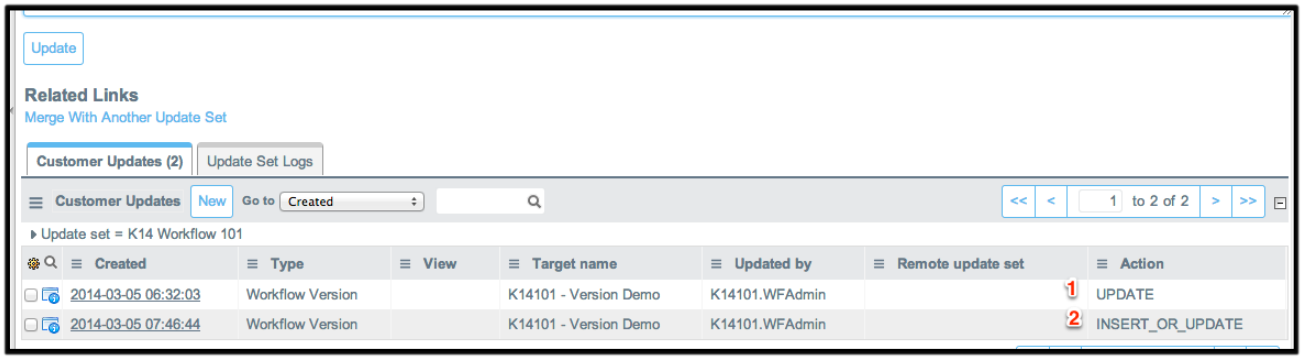
To see how that publish event effected the update set:

10. In the text filter type **Update Set**.

11. Select **Local Update Sets**.

12. Select the **K14 Workflow 101** Update Set.

13. Scroll down to the **Customer Update** related list.



Notice that:

- The original workflow now has an UPDATE action.
  - This update is to change the Published state from true to false.
- The newly published version INSERT_OR_UPDATE.
  - This is a new insert into the update set of the newly published workflow.

When the Update Set is moved to the new instance, the commit process ensures that the published version of the Workflow in the committed Update Set will be the published version on the instance for all users and Glide Records that meet the conditions of the Workflow.

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Summary

Workflow in ServiceNow offers versioning as a way to deploy an automated process that ensures safe editing of existing workflows. Versions are managed within the Check Out and Publish cycle.

There are three parts of this process: The Workflow, its list of versions, and the workflow model that is editable only when it is checked out.

Workflows may only have one Published version at a time. The Published version is the version that runs for all Glide Records that meet the conditions of the workflow.

Workflows may only have one Checked Out version at a time. The Checked Out version is the version that will run for all Glide Records that meet the conditions of the workflow only for the user who has the workflow Checked Out. This Check Out process provides safety in modifying and updating processes.

Workflows move from instance to instance through Update Sets. Only published workflows are pushed to update sets. The commit process of an Update Set ensures that the published version of a workflow in the Update Set becomes the published version on the target instance by setting all other versions of the committed workflow to Published = false.

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Lab Goal

- Running a Workflow.
- Visualizing the Workflow Context.
- Debugging simple workflows.

Lab 3
Workflow Context

ServiceNow Workflow Context

A Workflow Context is a workflow that is executing in the Workflow Engine.

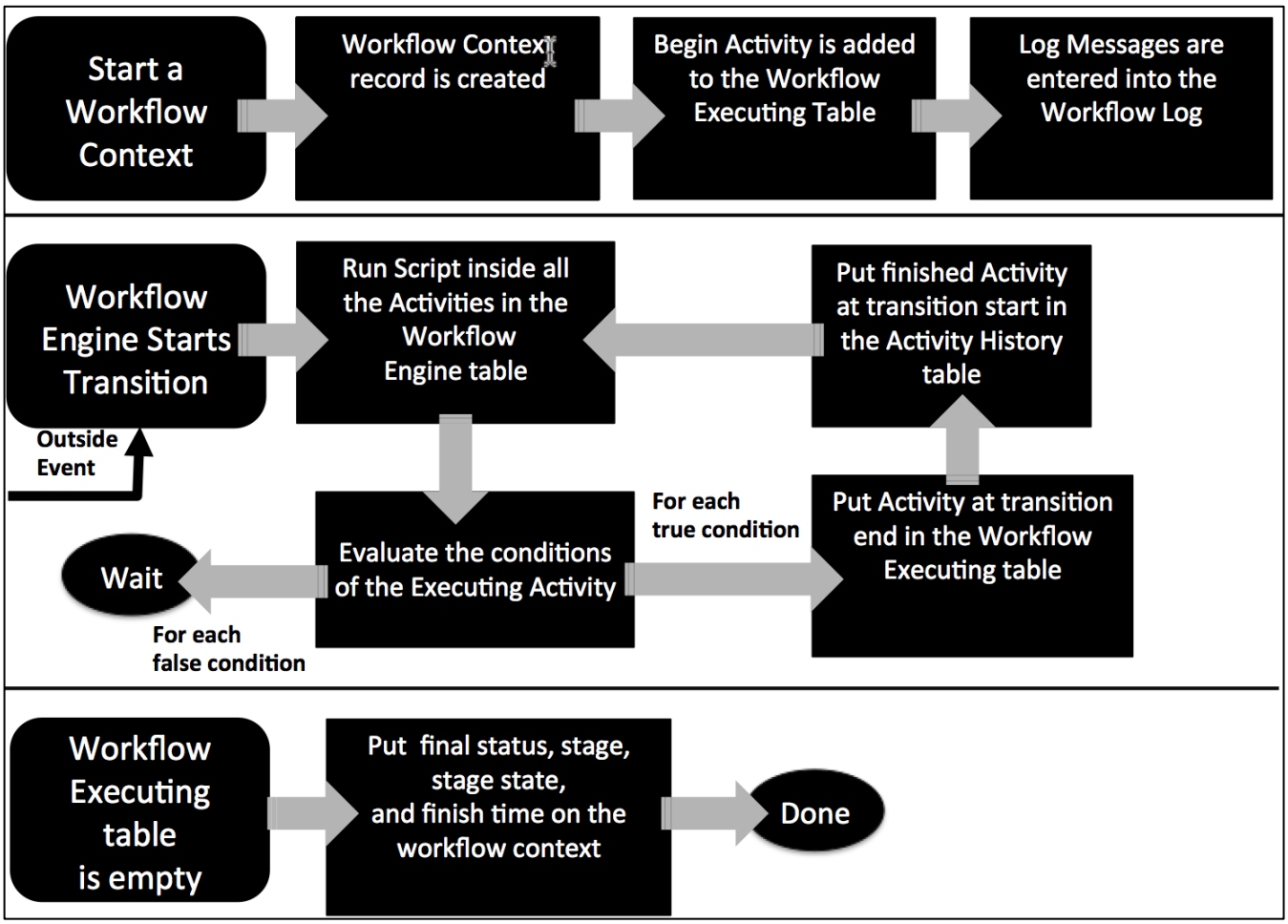
A workflow can be started in one of four ways:

- From within the Workflow Canvas using the Green Arrow.
- As part of a Glide transaction.
- As a subflow called from inside a main flow.
- From within a script using the Workflow Script Include.

A record in the Workflow Context maintains the state of the overall process. The Related Lists maintains the state of the Activities throughout the life cycle of the running workflow.

Once started, a Workflow Context will “run to wait.” That is, the Workflow Engine examines all the Activities currently executing. If an Activity is finished, the Workflow Engine evaluates an Activity’s conditions. For all true conditions, the engine looks to the end of the transition arrow for what to do next. If an activity is not finished, it is assumed to be waiting for an outside Event (Approval, Task Complete, Probe Complete etc.).

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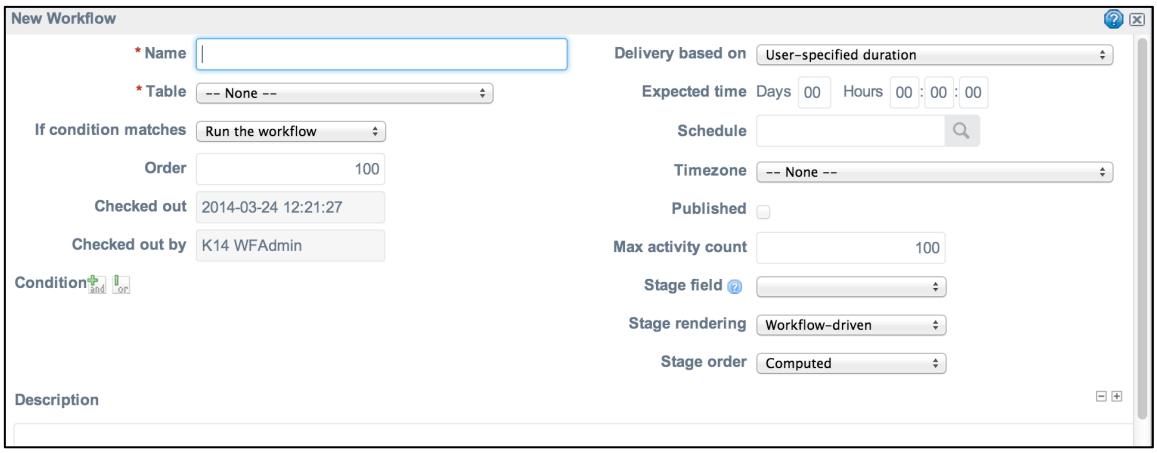


NOTE: If there are any Workflow Editor tabs open at this time, close them now.

1. **Workflow > Workflow Editor**.

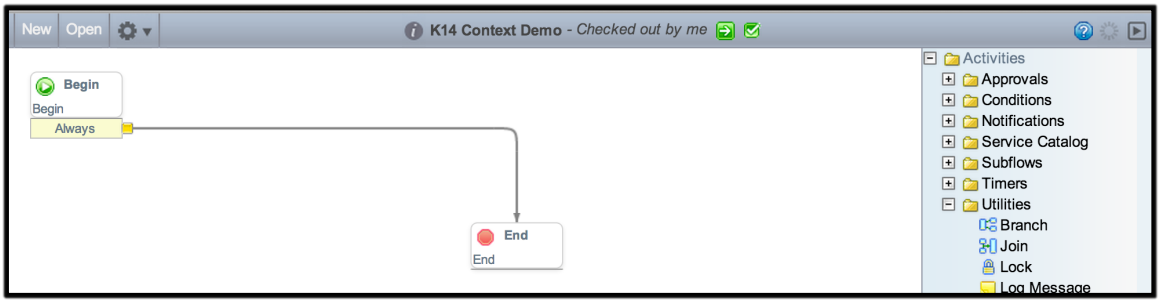
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2. In the Workflow Editor, **Gear Menu > New.**



3. Fill out the form as shown:
   Name: **K14 Context Demo**
   Table: **Global [global]**

4. Click **Submit.**



The Workflow Version has a model that at this time contains **Begin** and **End** Activities. This is a complete workflow and enough to create a context. In the header of the Workflow Canvas find the green arrow icon. This is the play button. When a workflow designer selects the play button the Workflow Version in the editor will execute.

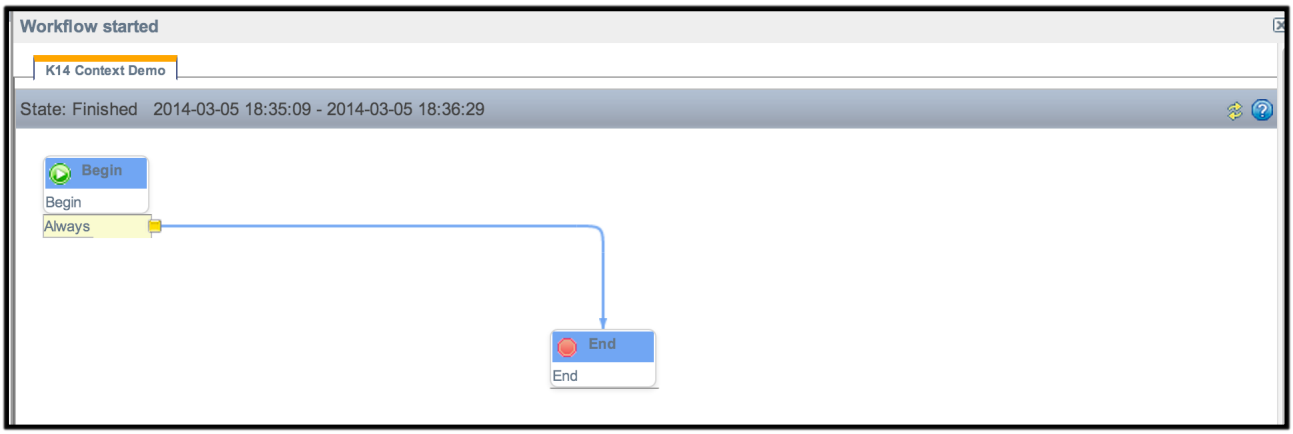
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5. Select the Green play button.





6. Select the **Submit** button. This executes the K14 Context Demo workflow.

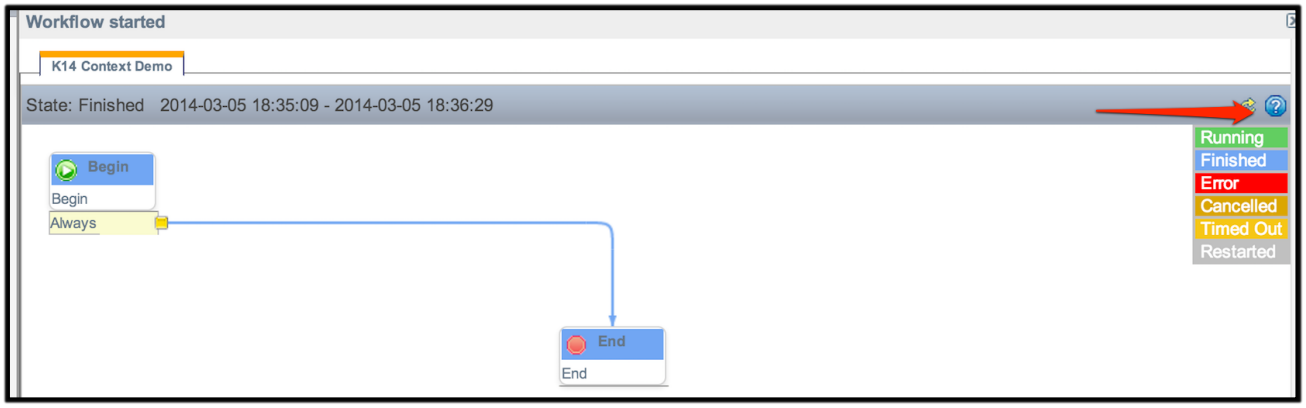


This is the **Context View**. When a workflow has run or is running, the state of the workflow can be visualized in the Context View.

The Workflow Editor uses colors to communicate different states of a workflow and its Activities. In the upper right hand corner of the Context View, find the blue question mark icon.

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7. Hover over blue question mark icon.

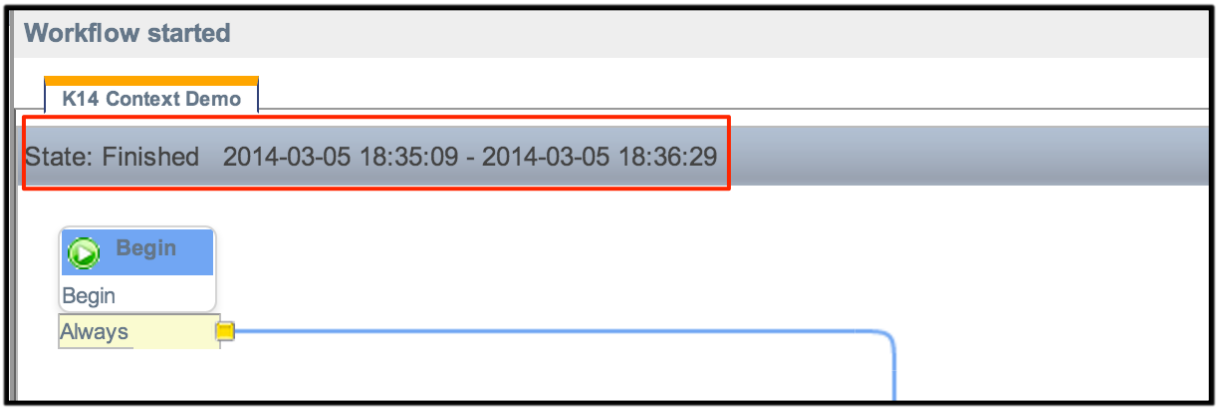


Each color in the key indicates the state of an Activity executing in the workflow. In the key, blue indicates Finished. Looking at the activities on the Context Canvas, we can see that both Activities, Begin and End, are finished.

Running (Green)	The activity is currently running. Some activities run too fast for the color change to be relevant. Most activities that are green on the Workflow Context are waiting for an event. For example waiting for an Approval to be Approved or Rejected.
Finished (Blue)	The activity is finished performing all its work and has transitioned to either the end or to the next activity in the workflow.
Error (Red)	The activity was unable to finish its work. Causes for an error that would cause a Workflow Activity to turn Red are JavaScript Error, a missing subflow or an error caused by a Business Rule or Script Include engaged in the same Glide Transaction as the Workflow.
Cancelled (Yellow)	The activity was cancelled. An activity can be cancelled one out of two ways. A user can cancel the Workflow Context using the UI Action on the Workflow Context or an activity will naturally cancel if there is more than one way to transition to the End of a workflow. Once the End is reach, all Running activities will automatically cancel.
Timed Out (Orange)	Not Currently Implemented
Restarted (Gray)	The activity has been restarted through a Rollback Transaction.

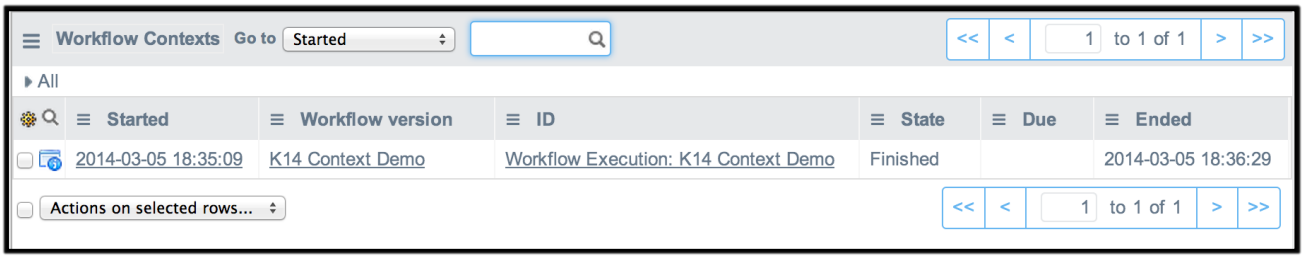
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The coloring of activities in the Workflow Context reflects the state of each individual Activity. The header of the Workflow Context canvas reflects the state of the overall workflow.



The Canvas View of the Workflow Context is a convenient summary view. There is also a way to see the details of the Workflow Context.

8. **Workflow > All Contexts.**

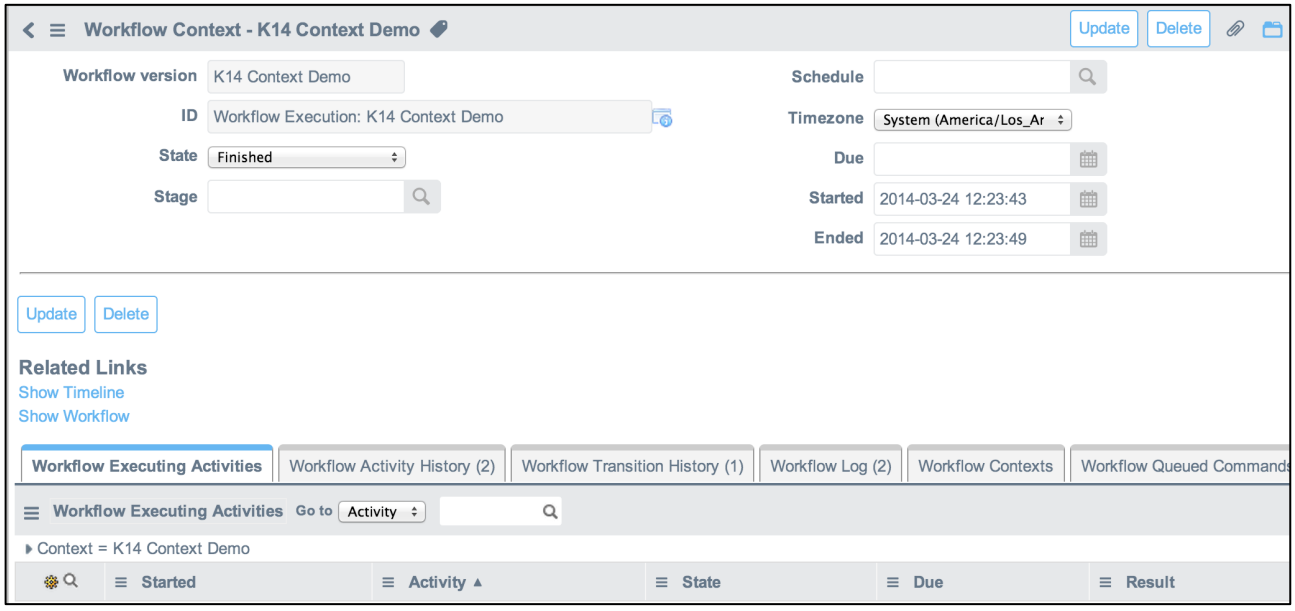


The list shows all Workflow Contexts that have finished or are currently executing.

9. Select **K14 Context Demo** Workflow Context from the list.

NOTE: Switch to the tab view for easier navigation.

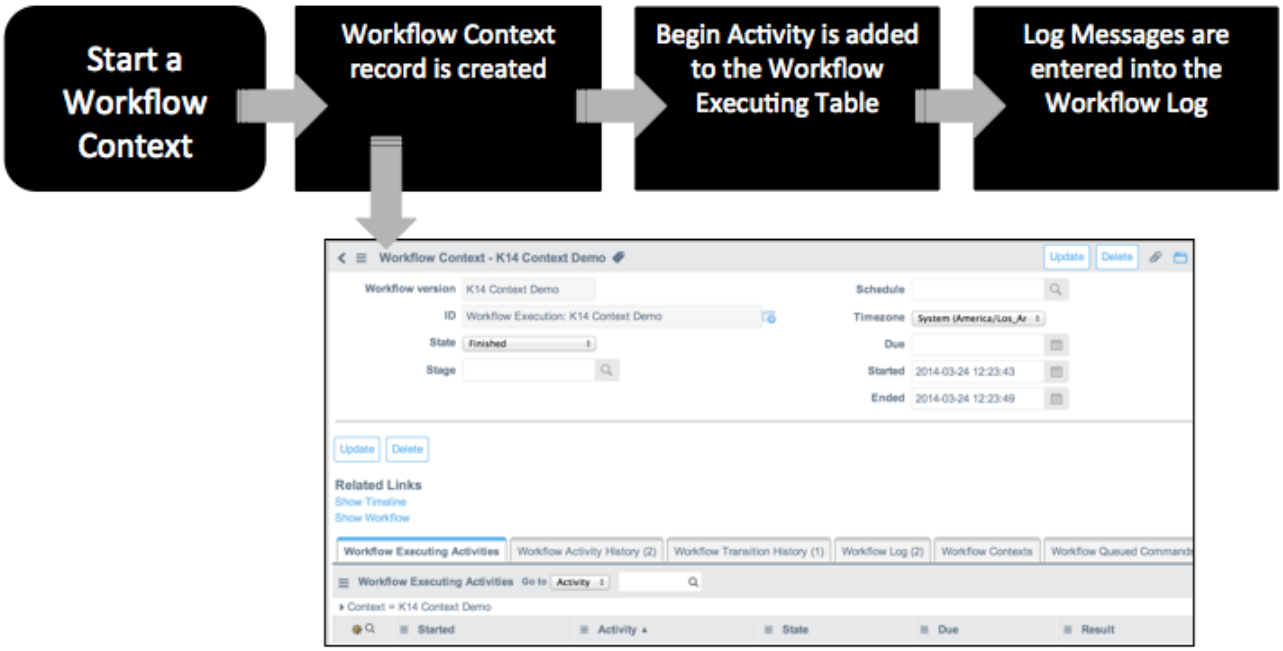
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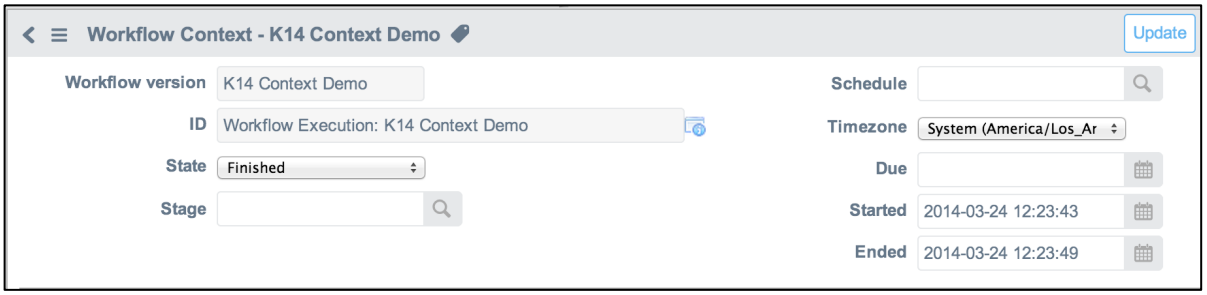
To correlate the execution of the Workflow Context to the artifacts of the Workflow Context see the diagrams.

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Establish the Workflow Context



Looking at the values in the Workflow Context form, we can see that even without doing any work, a Workflow Context has significant status to report.

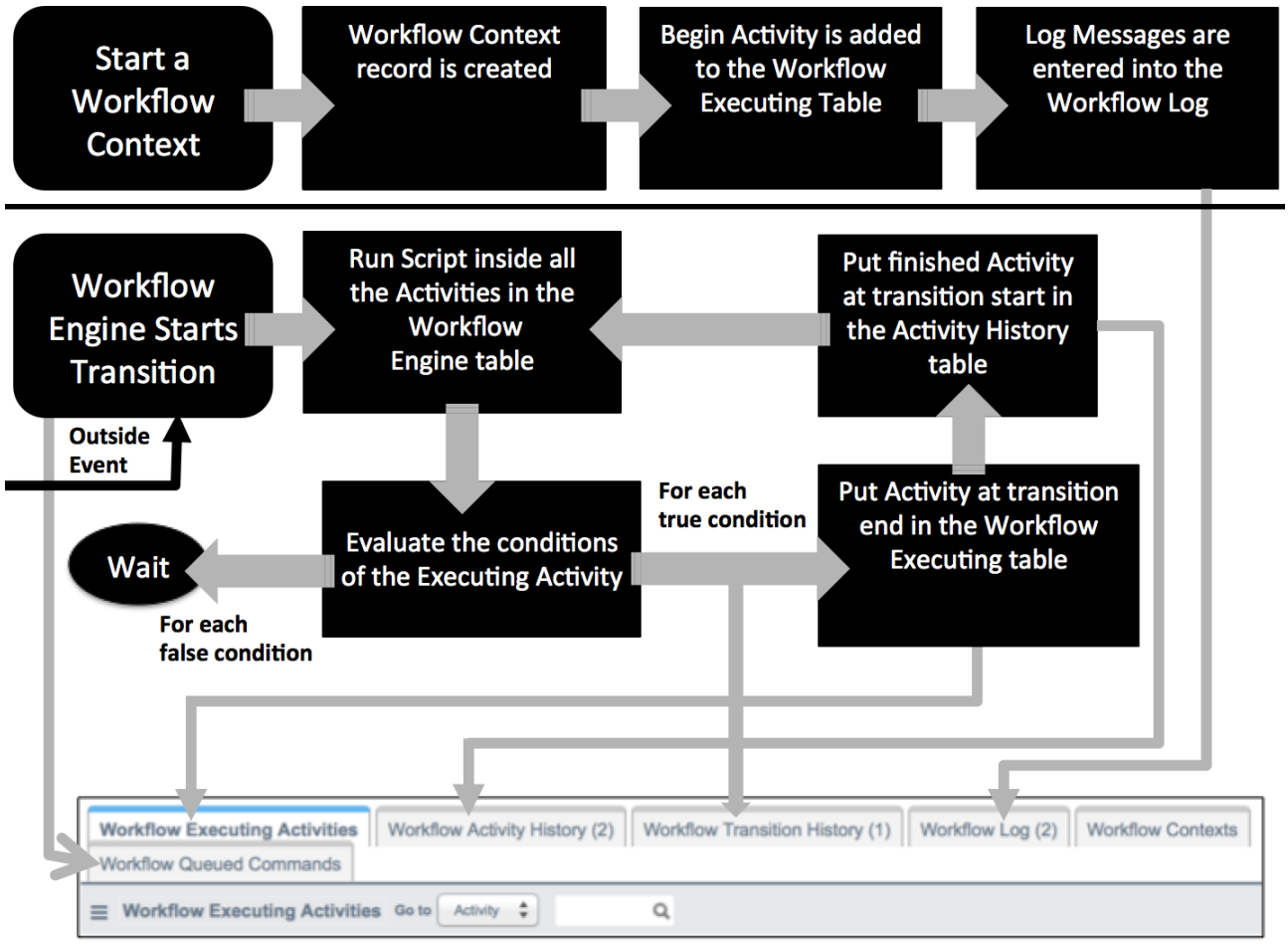


- The Workflow Version that ran this Workflow Context.
- The Result (if any) of the Workflow.
- The ID of the document that associated with the Workflow Context.

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When a Workflow runs from the green play button of the Workflow Context the ID will always be **Workflow Execution: << the name of the version running >>.** When a Workflow is run against a Glide Record, this ID is the document id. For example, a Routine Change workflow will run against a Change Request Workflow. The ID of that Workflow Context will be **Change Request: CHG0030002.**

Run Transitions



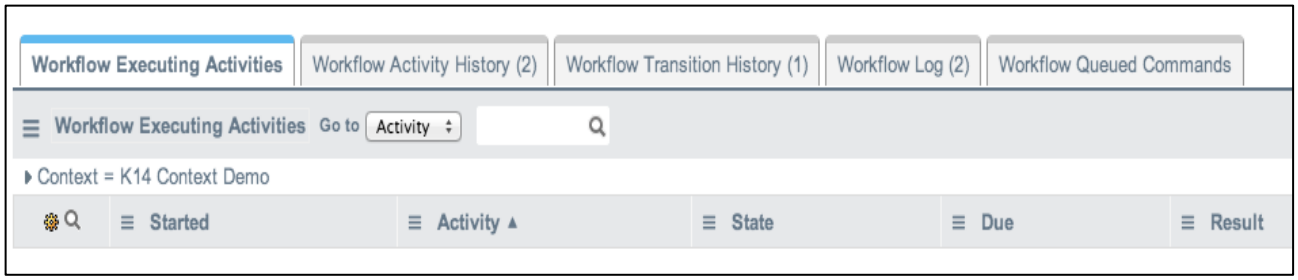
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State of the Context

The final state of a Workflow is one of the following values:

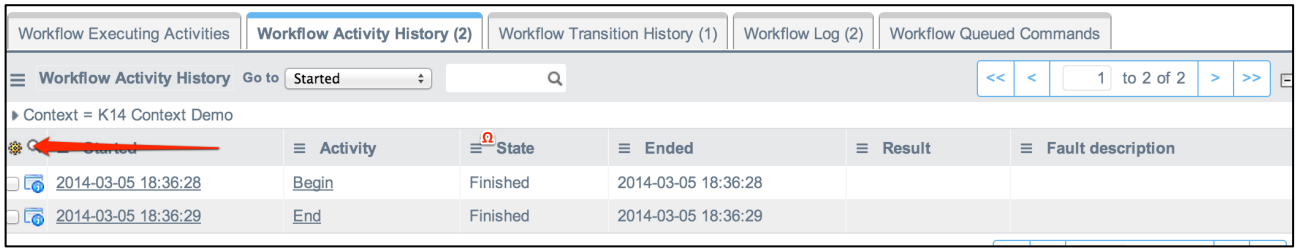
- Finished
- Cancelled
- Executing

1. Scroll to the bottom of the Workflow Context form.
2. Select the **Workflow Executing Activities** Related List.



Because the workflow is already finished, there are no entries into this system.

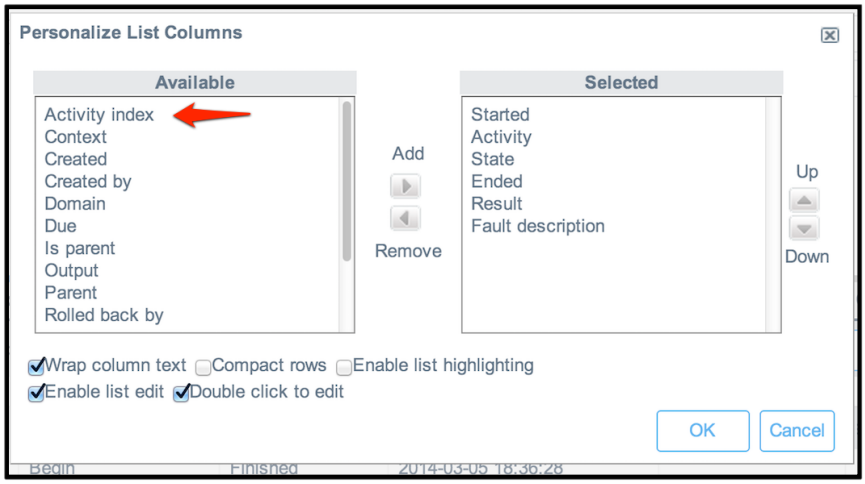
3. Select the **Workflow Activity History** Related List.



The Workflow Activity History reflects the start, state and end time of all the activities that executed in this Workflow Context.

4. To the left of the list select the **Personalize List** icon.

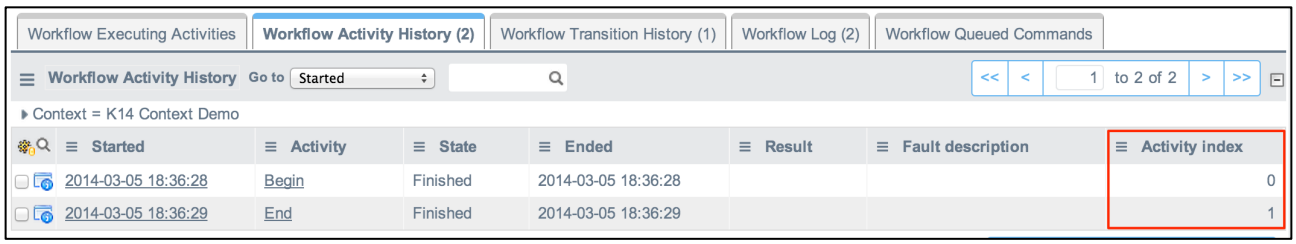
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5. Select the **Activity index** property in Available and move it to Selected using the Add arrow.

6. Click **OK**.

Your Activity History list should look like this:

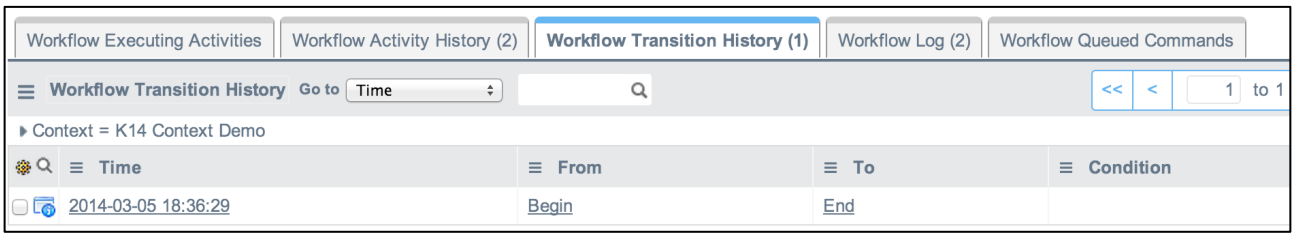


The Activity index is a number assigned to an activity when it is created. This value is the only reliable method of knowing the exact execution order of the Activities. The timestamps assigned to the Activities are precise to a second. Several activities can execute within a second, making Started ordering an inconsistent means of determining precise order of execution.

On the diagram, activities will appear to be executing concurrently based on how they are drawn and how the context colorizes their state. However, the order of appearance of transitions at the same transition level on the diagram does not necessarily reflect the order of execution. The **Activity index** will definitely provide the precise order of execution. In debugging large workflows or workflows that have multiple transitions from a single condition, this value is enormously helpful.

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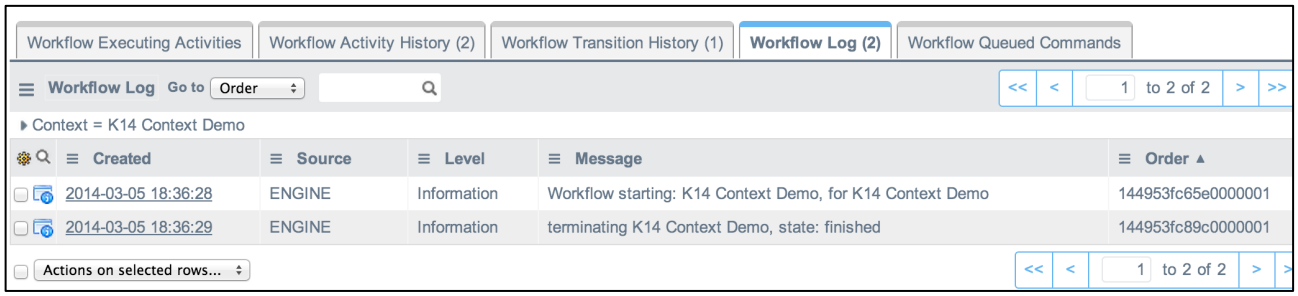
7. Click the **Workflow Transition History** tab.



The Workflow that we ran had one very simple transition in it, Begin -> End. All transitions that execute are written to this list.

8. Select the **Workflow Log** list.

Your Workflow Log list should look like this:

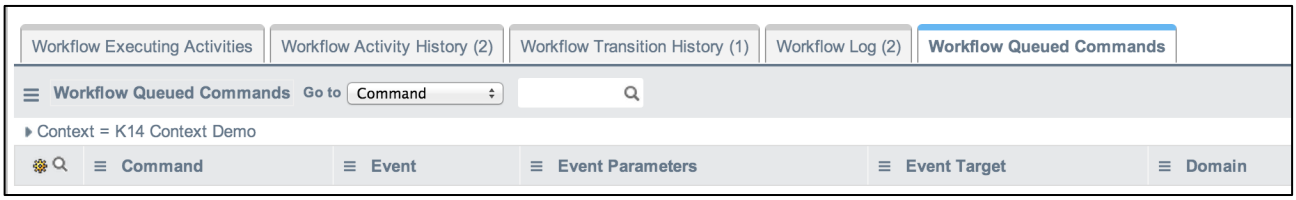


In a subsequent lab we will address the details of workflow logging. For now, take note of where the Workflow Log list is, and what entries are written to the Log by default.

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9. Select the Workflow Queued Commands list.

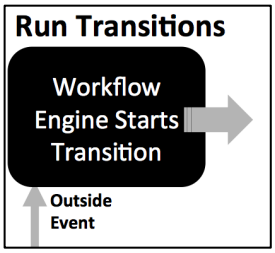
Your Workflow Queued Commands list should look like this:



The entries in the Workflow Queued Commands list are transient, and should not be there by the time a workflow is finished.

Outside Events

Recall that part of the stimulus in the process of Running Transitions in a workflow is receiving outside events.



If an **Outside Event** comes into the Workflow Engine while the Engine is currently running active transitions in its 'run to rest' process, the **Outside Event** will be temporarily cached in the Workflow Queued Commands table. When the 'run to rest' process completes it's active transitions, it will retrieve incoming events from this the **Workflow Queued Commands** list. The commands are deleted as they are read from the table.

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Summary

Workflow in ServiceNow names a running workflow a Workflow Context.

The Workflow Context maintains the state of the overall process in the Workflow Context record.

The Workflow Context maintains the state of the individual activities as they execute in a series of related lists. These lists maintain the state of currently executing activities, the result of finished activities, and the execution path the workflow took through the process model.

The Workflow Context canvas provides a visual representation of the execution path the workflow took through the process model. The state of each activity (finished, executing, cancelled, error) is represented using the color palette. The executed paths are represented in the color blue; the non-executed paths are represented in grey.

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Lab Goal

- Introduction to Workflow Logging
- Logging from the Engine
- Logging from the Activity
- Writing customized Log messages in Script

Lab 4
Workflow Logging

Logging in ServiceNow Workflow

ServiceNow Workflow provides logging in a log exclusive to workflows. It is separate from the System log that is specific to a currently executing Workflow Context.

Logging is useful for debugging and to trace progress through a workflow.

ServiceNow Workflow is part of the Glide Script Engine and is invoked with the insert, update, delete or cancel of a Glide record. Log entries in the Workflow Log indicate whether they were entered from the Engine or from the Activity.

The level of logging present in the Workflow Context is configurable by properties. The Log Message

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Add a Log Message Activity

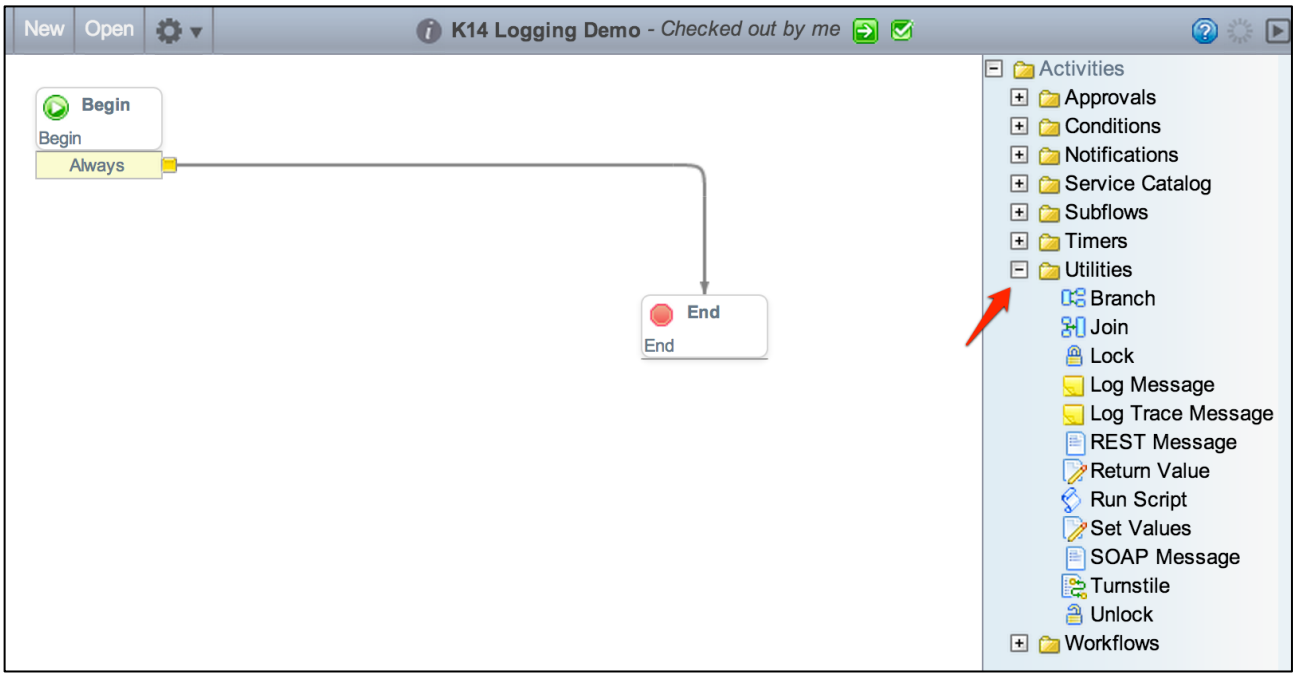
The first exercise will demonstrate the default logging behavior in the workflow.

1. Return to the Workflow Editor by re-selecting the ServiceNow tab.

2. Click **New** on the workflow canvas header.

3. Fill out the form as follows.
   Name: **K14 Logging Demo**.
   Table: **Global**.

4. Click the **Submit** button.



5. Expand the **Utilities** folder of the Activities Tree.

6. Find the **Log Message** Activity in the **Utilities** folder.

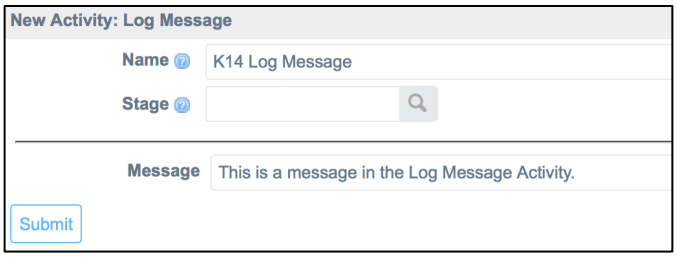
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7. Hold the mouse down and drag the Activity onto the canvas.

8. Hover the Activity over the transition line until the line turns blue.

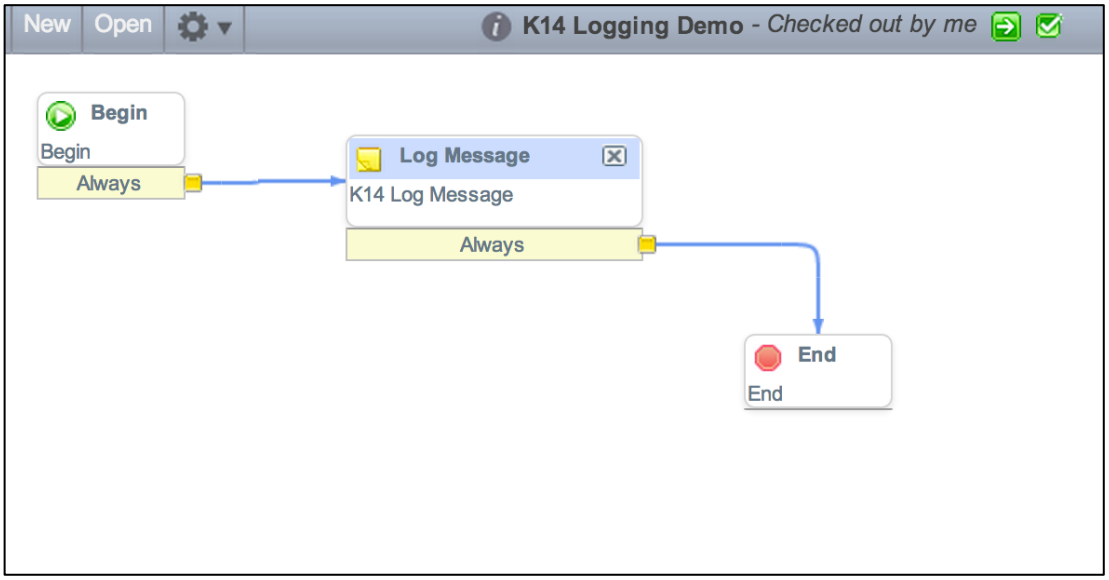
9. Release the mouse. The **New Activity** form displays.

10. Fill out the form as follows.
    Name: **K14 Log Message**
    Message: **This is a message in the Log Message Activity**.



11. Click the **Submit** button.

    Your workflow should look like this:



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12. Find the **Log Trace Message** Activity in the **Utilities** folder.

13. Hold the mouse down and drag the Activity onto the canvas.

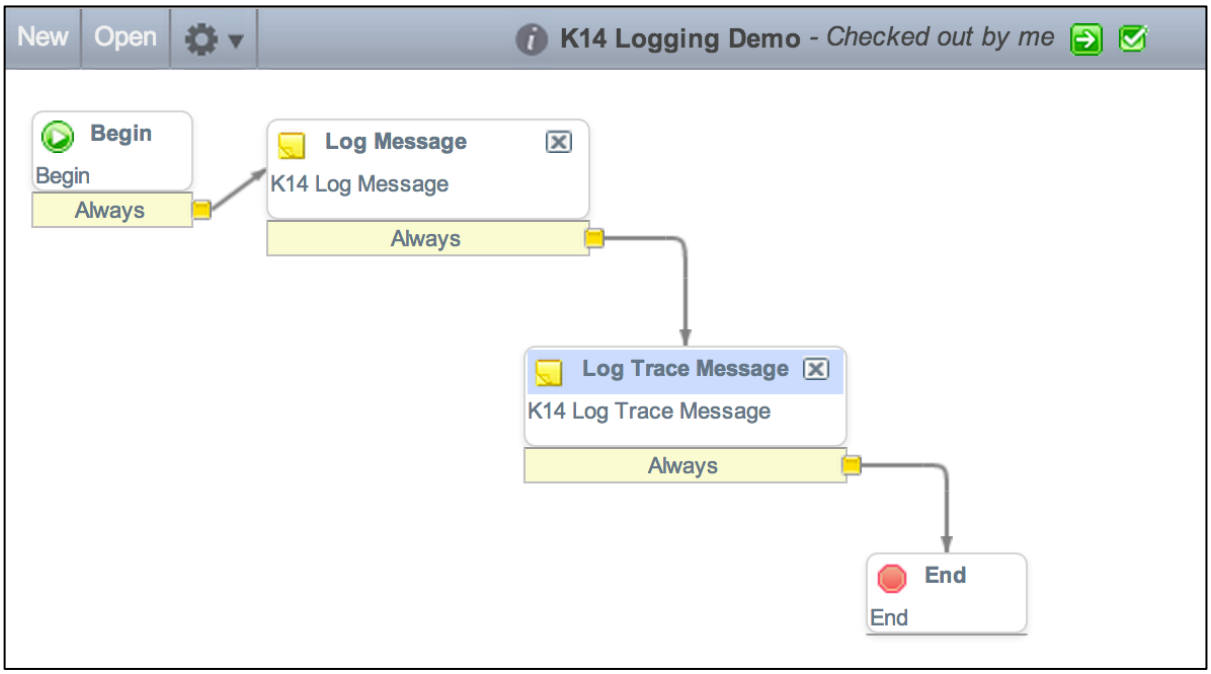
14. Hover the activity over the transition line between **Log Message** and **End** until the line turns blue.

15. Release the mouse.

16. Fill out the form as follows
    Name: **K14 Log Trace Message**.

17. Click **Submit**.

    Your workflow should like this:



18. Find the **Run Script** Activity in the **Utilities** folder.

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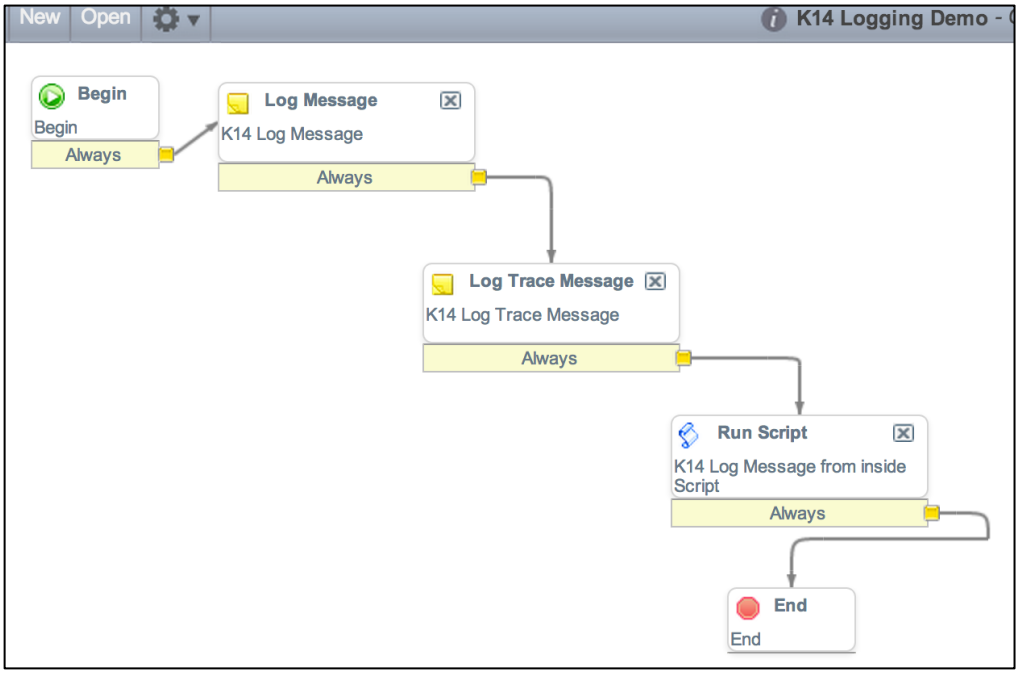
19. Hold the mouse down and drag the Activity onto the canvas.

20. Hover the activity over the transition line between the **Log Trace Message** and **End** Activities until the line turns blue.

21. Release the mouse.
    Fill out the form as follows.
    Name: **K14 Log Message from inside Run Script**
    Script:
    workflow.debug('Logging DEBUG from inside a script');
    workflow.info('Logging INFO from inside a script');

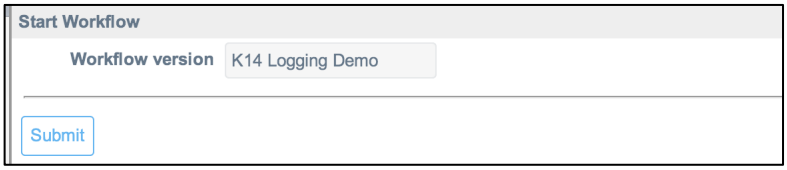
22. Click the **Submit** button.

    Your workflow should look like this:

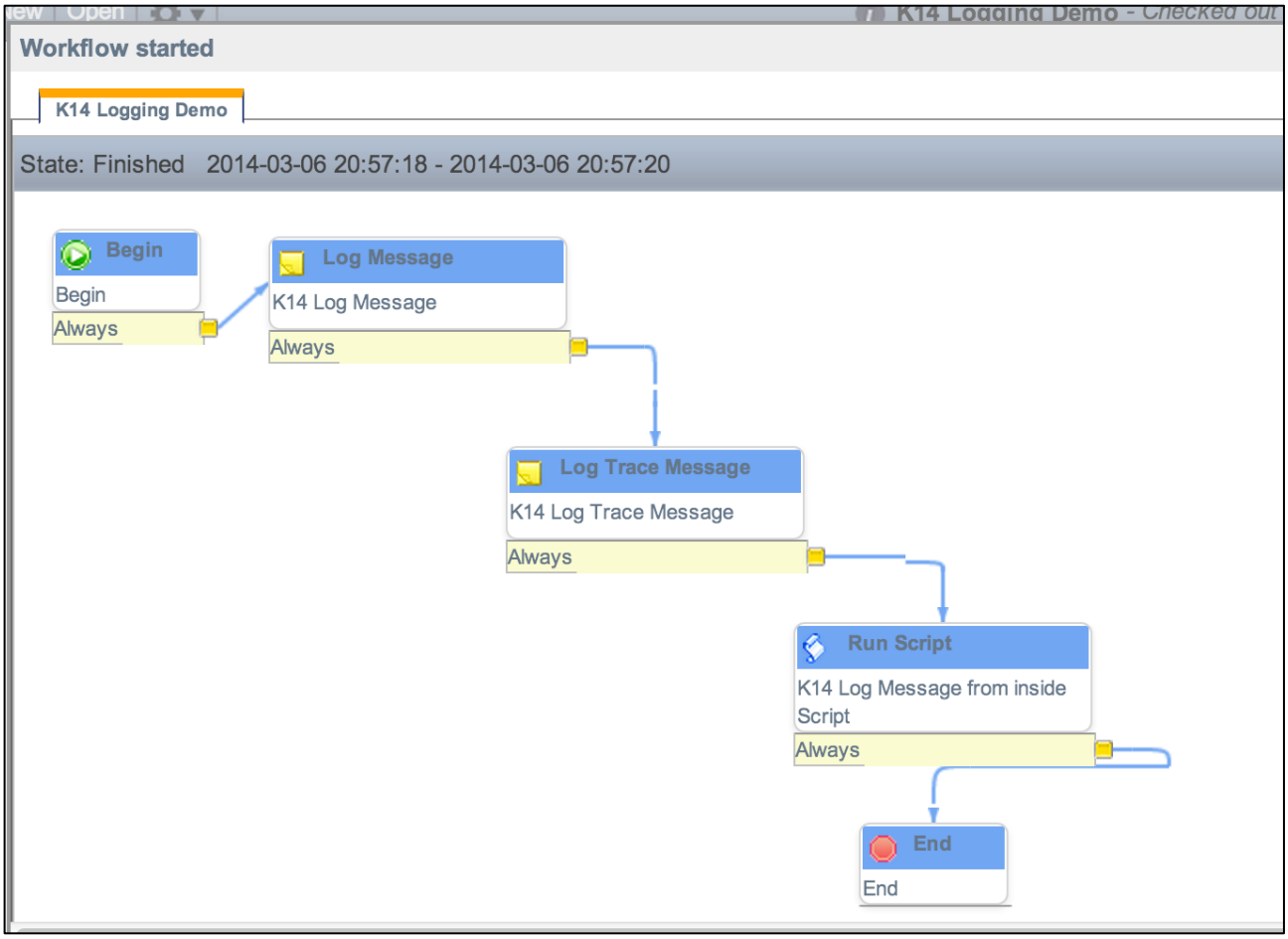


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23. Click the green **Play** button in the header of the canvas.



24. Click the **Submit** button.



QUESTION: What does the blue coloring of the activities tell us

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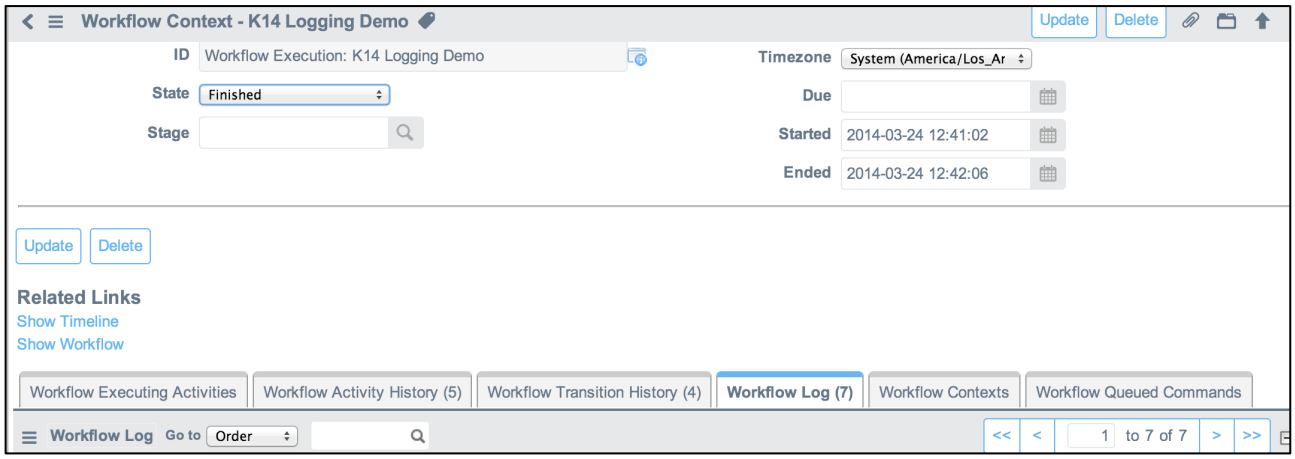
Review Logging Output

1. Return to the main ServiceNow tab.

2. In the Applications Select the **All Contexts** module in the Workflow.



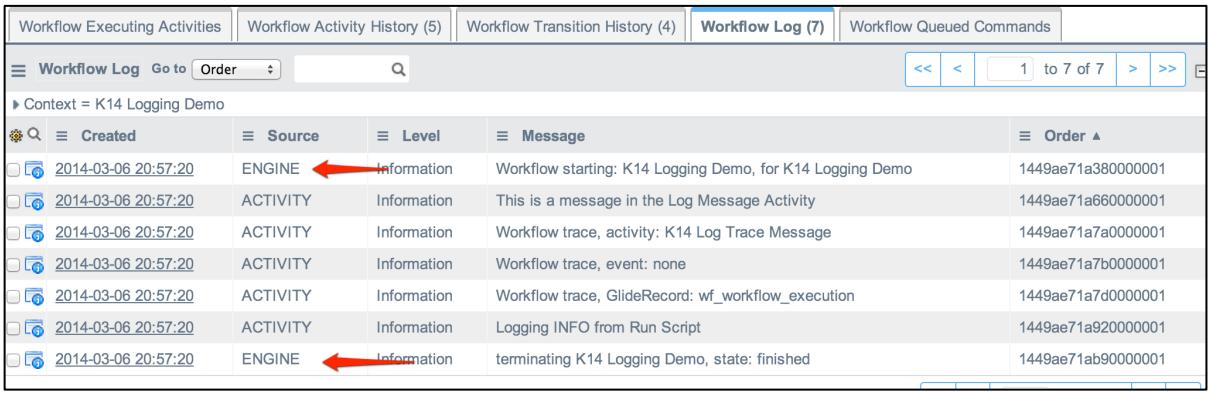
3. Select the Workflow Execution: **K14 Logging Demo** context.



4. Select the **Workflow Log** tab.

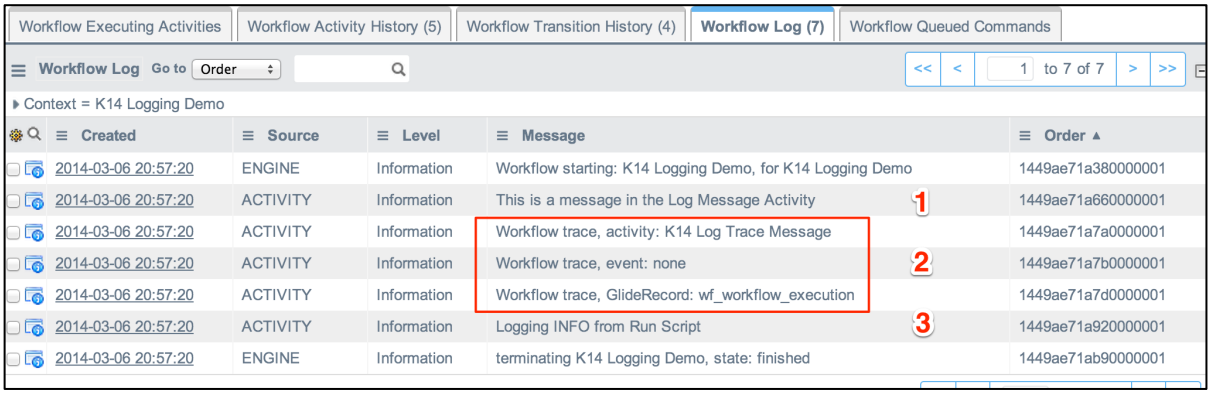
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Notice the Source column.



- ENGINE is a message that is coming from within the Workflow Engine.
- ACTIVITY is a message that is coming from the JavaScript within a Workflow Activity.

Notice the Messages.



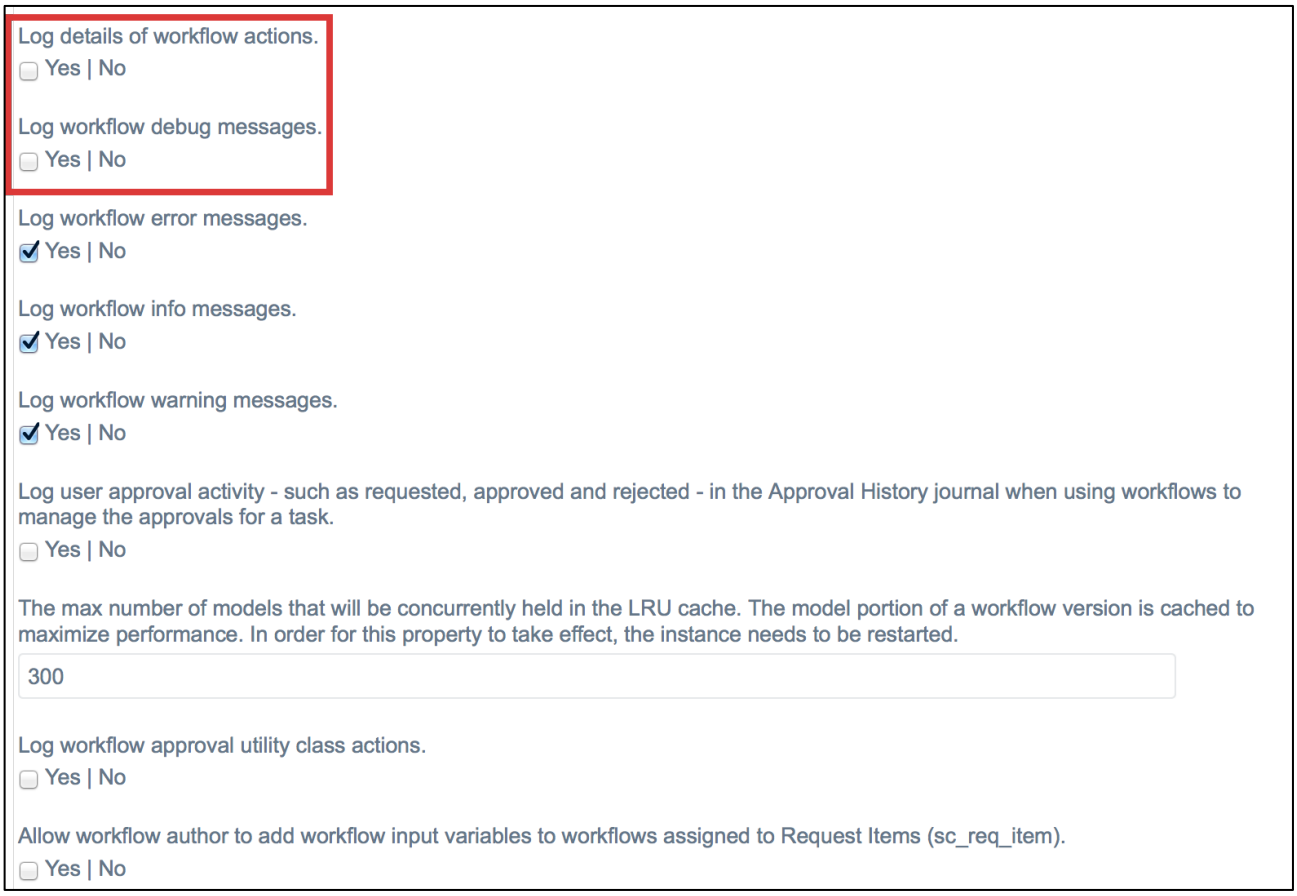
1. The first ACTIVITY message is the output of the Log Message Activity.
2. The next three messages are the output of the Trace Message Activity.
The Trace Message Activity logs the name assigned to the Activity, the event that the workflow is transitioning on, and the ID of the Workflow Context.
3. The third message is the INFO message written in the Script field of the Run Script activity.

QUESTION: What message is missing from this Log?

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The level of verbosity in the Workflow Log is configurable by properties.

5. **Workflow > Properties**.



6. Check the property **Log details of workflow actions.** This property sets the level of log messaging.

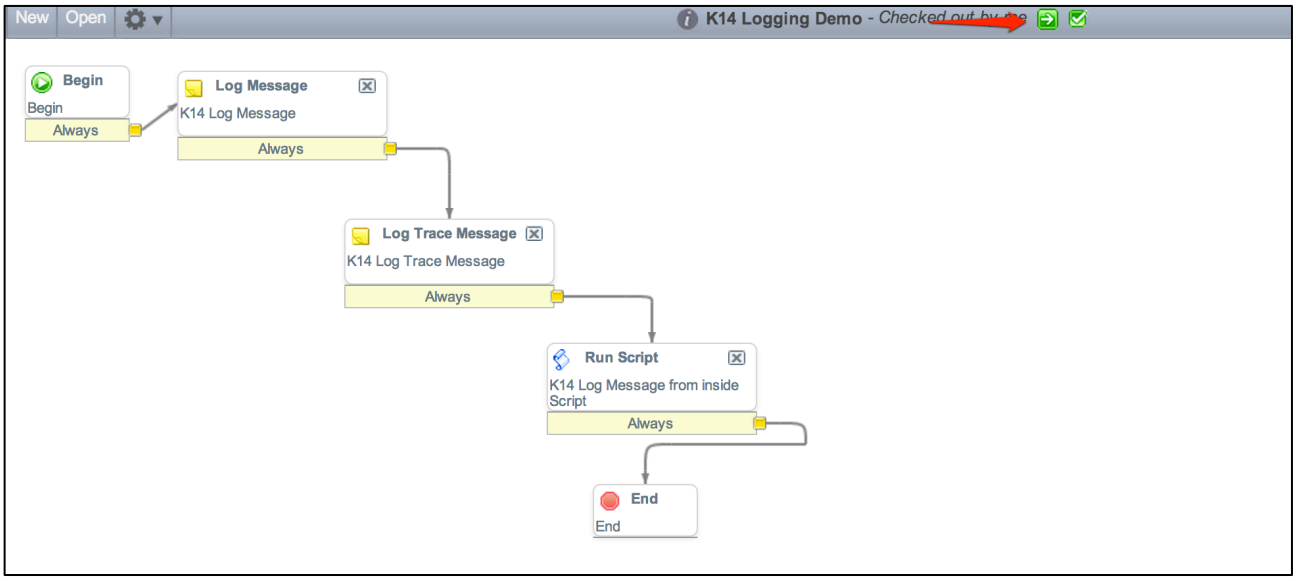
7. Check **Log workflow debug messages.** It sets the level of log messaging while debugging is activated.

8. Return to the Workflow Editor and close the tab.

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9. **Open** the K14 Logging Demo workflow. Note that the workflow is Checked out.

10. Re-execute the workflow using the green **Play** arrow.



11. Return to the main ServiceNow tab.

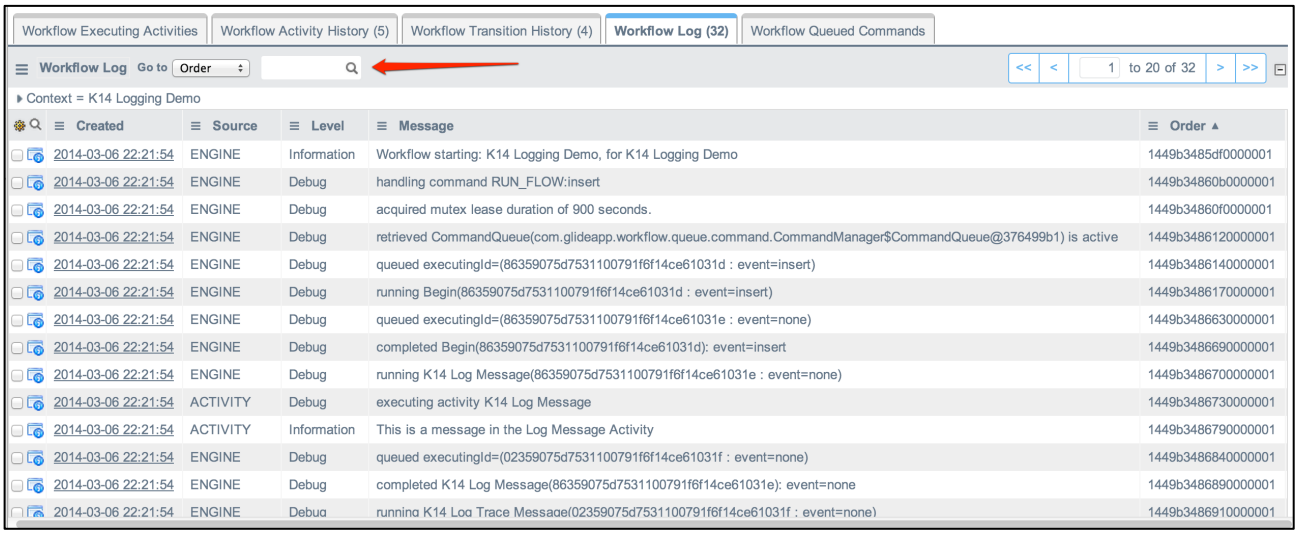
12. **Workflow > All Contexts**.

13. Find and select the most recently run **K14 Logging Demo** workflow.

14. Select the **Workflow Log** tab.

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Your list should look like this:



NOTE: The Actual number of Workflow Log messages will vary.

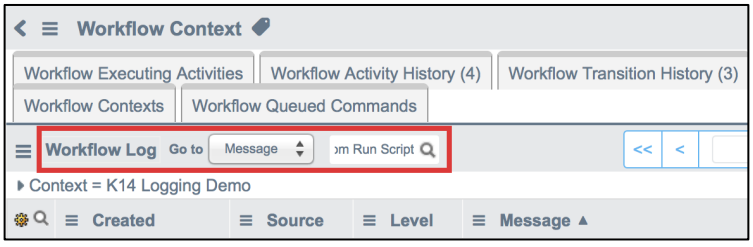
Notice

- The dramatic increase in Workflow Log entries.
- The mix of Debug and Information messages.
- How much information is coming from the ENGINE!

Search the List for Run Script Logging

Do these next steps using the List filter.

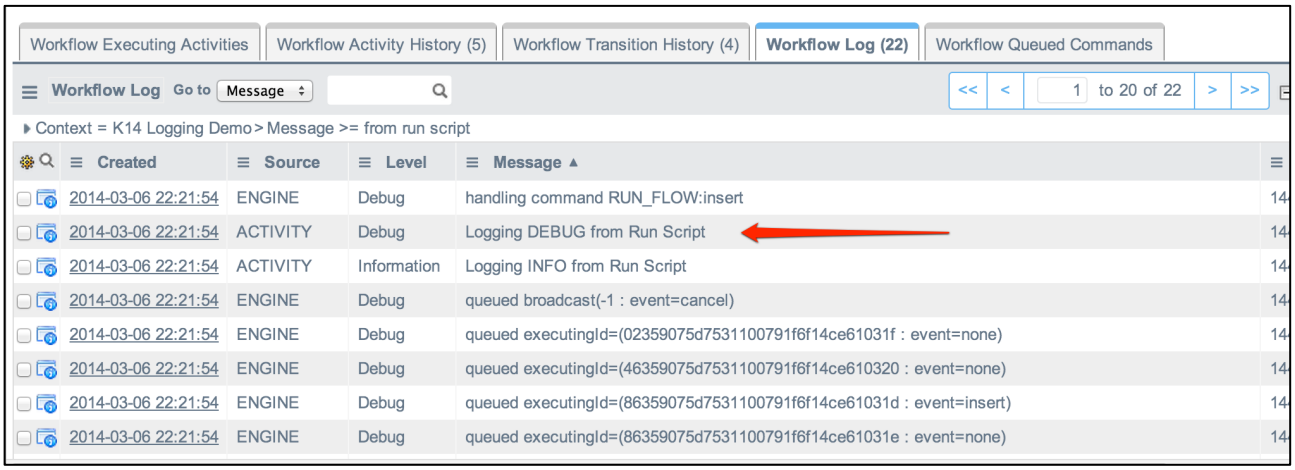
1. Select: Go to **Message**.
2. Type: **from Run Script.**



3. Click the **Search** icon (magnifying glass).

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Your list should look like this:



Notice the previously missing Debug message from the Run Script Activity is now in the Workflow Log.

NOTE: The Workflow Logging Properties apply to all running Contexts. Use them only when needed for debugging or testing to optimize performance on your instance.

Summary

The Workflow Engine provides configurable logging options using the Workflow Properties.

Log messages indicate their source of the message. A Message log entry comes from either the ENGINE or from within an ACTIVITY.

Log entries can be made into the Context Workflow Log using the Log Message Activity, the Log Trace Activity and directly through JavaScript.

As the Workflow logging gets more verbose, the list filter is quick way to locate messages.

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Lab Goal

- Understand how to specify the conditions under which a workflow will run.
- Understand how to run a workflow from a Glide Record.
- Learn how to copy a Workflow.

Lab 5
Workflows in Applications

Workflows and ServiceNow Applications

The Workflow Engine is part of the Glide Script Engine. Because of this, a workflow can be configured to run as part of a Glide transaction. Glide transactions in the **ServiceNow** Platform are associated with database tables. The Workflow Engine evaluates workflows that are associated with the table of a Glide transaction. If a Glide Record meets the conditions of a workflow and the user has the correct permissions, the workflow will run.

The Workflow Engine on the insert of a Glide Record typically evaluates workflows and if conditions are met, a **Workflow Context** is created. The workflow will "run to rest" or "run to finish". If the workflow does rest, it is waiting for an event to come, typically from the Glide Record. The most common event on a Glide Record is an update from the form.

Here are some event examples:

- A change of state from In Progress to Close
- The addition of Comments or Work Notes
- Reassignment of a user

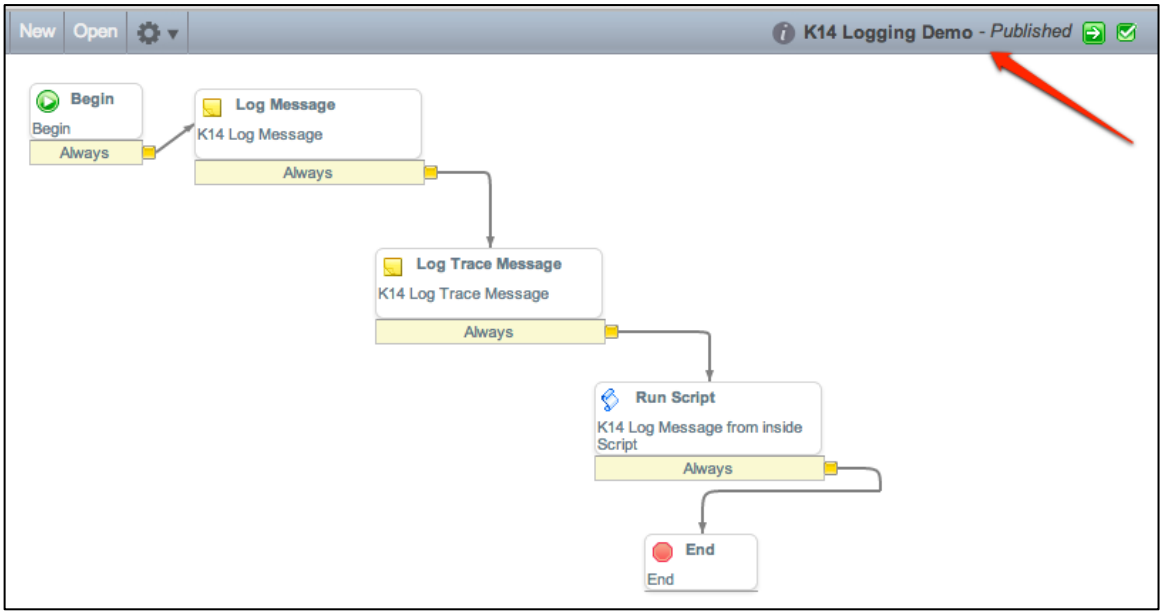
Once the event is fired, the Workflow Engine evaluates the currently waiting Activities to see if the incoming update event is one that is relevant to the work of the Activity.

QUESTION: Where is the atomic work of a Workflow Activity in a Workflow defined?

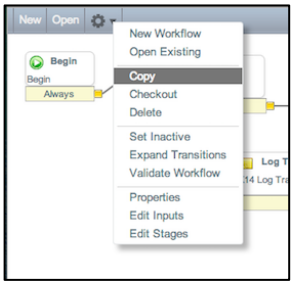
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1. Navigate to the **Workflow Editor**.
2. If the **Workflow Context** pane is still open, close it.
3. Select the **Gear Menu > Publish** icon.

   Your workflow should look like this:



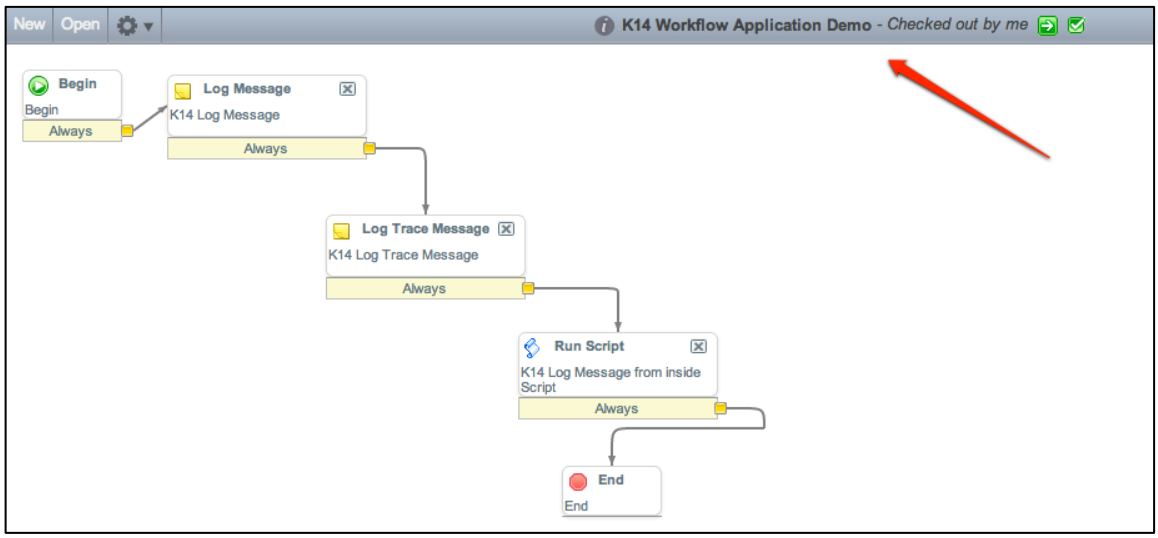
4. **Gear Menu > Copy**.



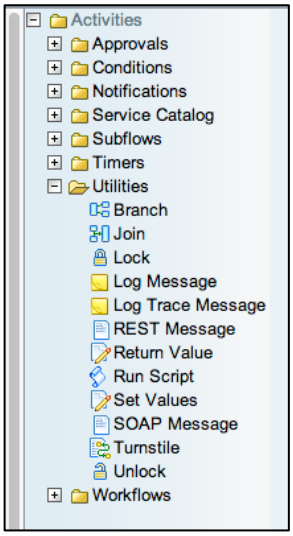
5. Fill out the form as follows:
   Workflow Name: **K14 Workflow Application Demo.**

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6. Click **OK**.

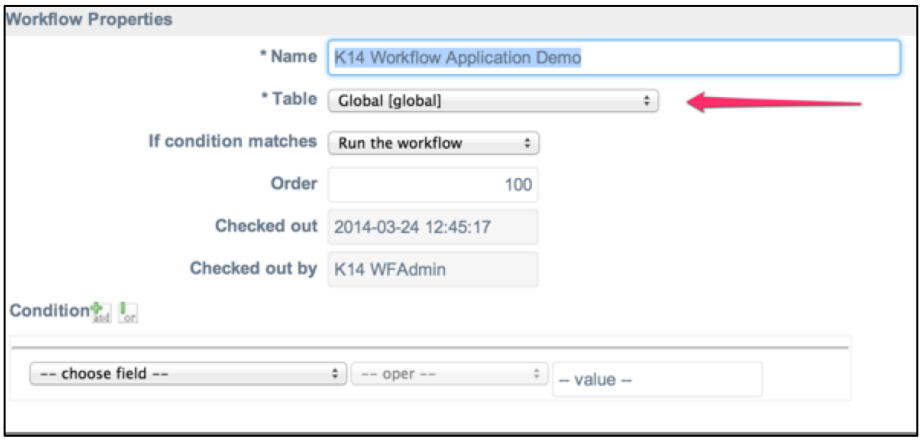


Notice the contents of the Activity Tree in the Workflow Editor.



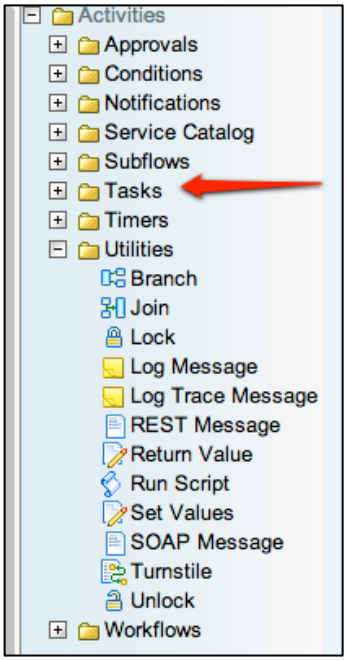
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7. **Gear Menu > Properties**.
   Change the Table to **Change Request [change_request].**



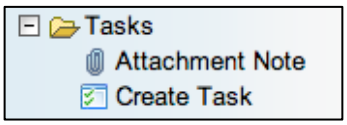
8. Click **Update**.

Your Activities Tree should include a new Category folder:



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9. Expand the **Tasks Category** folder.

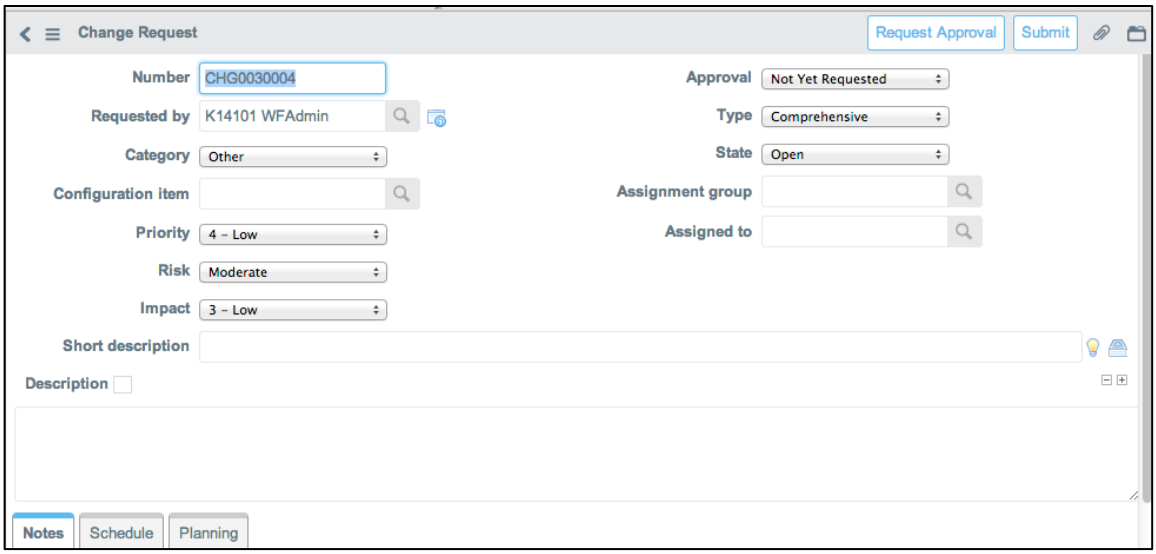


The Workflow Activities that are in the Task Category folder require at the minimum the Task table to complete their work.

QUESTION: What are two ways to make the Workflow K14 Application Demo run right now?

Create Change Record to Create Workflow Context

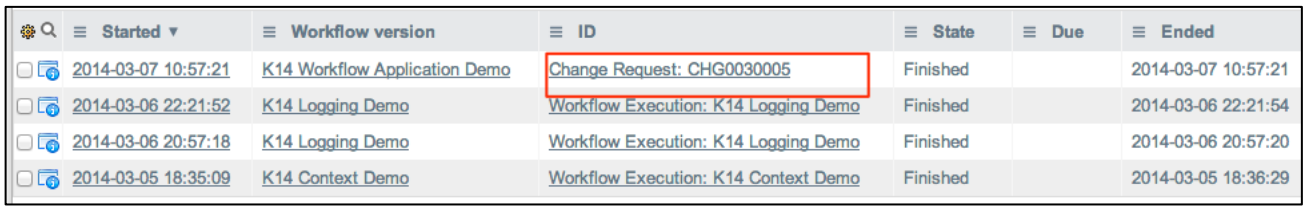
1. Select the main tab of your ServiceNow Instance.
2. **Change > Create New.**



3. Click the **Submit** button.

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4. **Workflow > Active Contexts.**

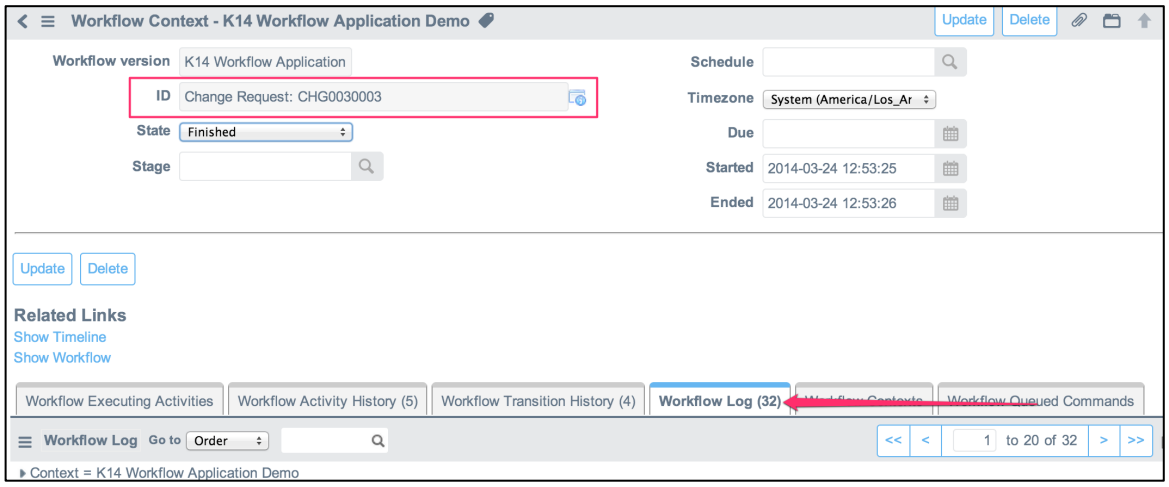


Started	Workflow version	ID	State	Due	Ended
2014-03-07 10:57:21	K14 Workflow Application Demo	Change Request: CHG0030005	Finished		2014-03-07 10:57:21
2014-03-06 22:21:52	K14 Logging Demo	Workflow Execution: K14 Logging Demo	Finished		2014-03-06 22:21:54
2014-03-06 20:57:18	K14 Logging Demo	Workflow Execution: K14 Logging Demo	Finished		2014-03-06 20:57:20
2014-03-05 18:35:09	K14 Context Demo	Workflow Execution: K14 Context Demo	Finished		2014-03-05 18:36:29

Notice that, with the workflow being associated with a Glide Record, that ID of the workflow now reflects the Change Request association in the context list.

5. In the **Started** column, select the context's date and timestamp value of our test workflow.

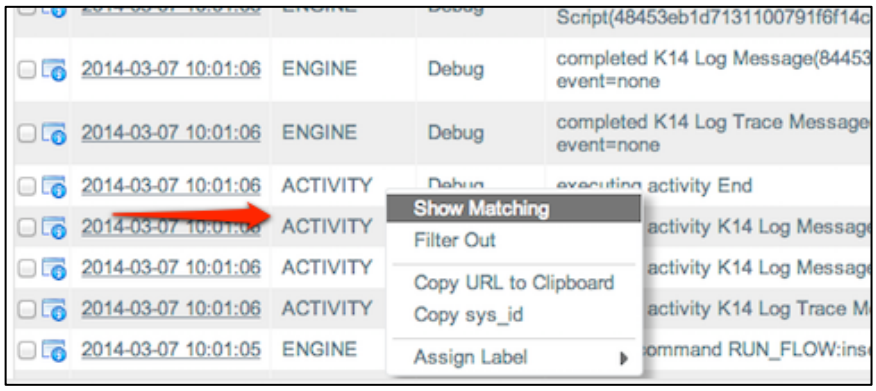
NOTE: In ServiceNow, to select a record in a list, always click on the value in the first column.



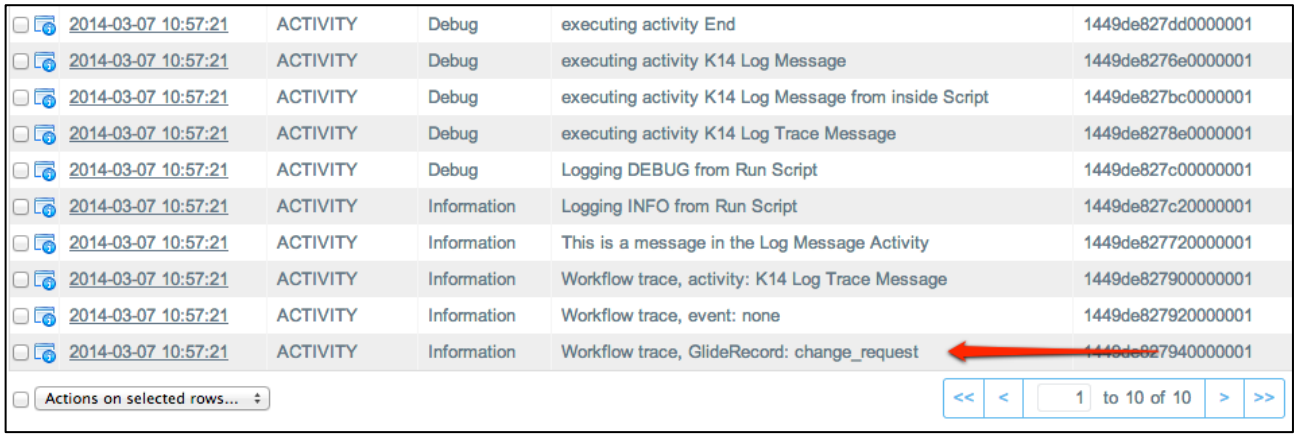
The workflow association with the Glide Record also is shown in the ID of the workflow. You can see this association in the form.

6. Select the **Workflow Log** Related List**.**

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7. Right click on an **ACTIVITY** source and select **Show Matching**.



The output from the **Log Trace Message** activity identifies the table the Glide Record is associated with.

QUESTION: How do your control the of the Workflow Log output?

8. Return to the **Workflow Editor**.

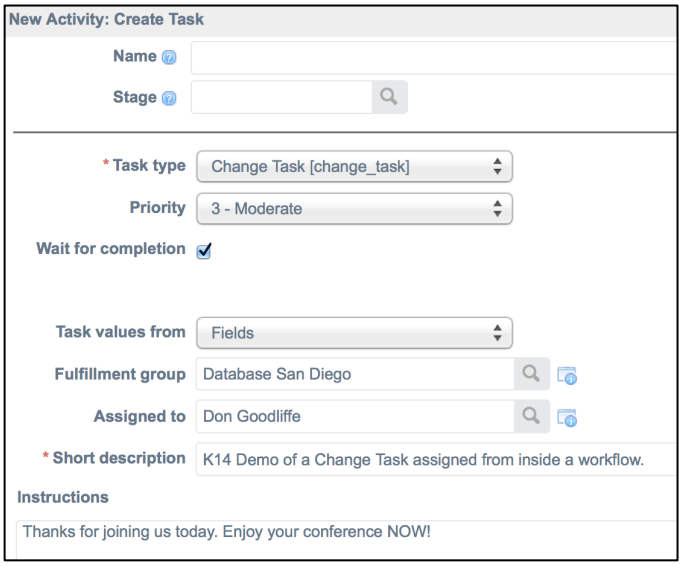
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Add Create Task Activity

1. Find the **Create Task Activity** in the Tasks Category folder.

2. Drag the **Create Task Activity** onto the canvas hovering between **Log Trace Message** and **Run Script** until the line turns blue.

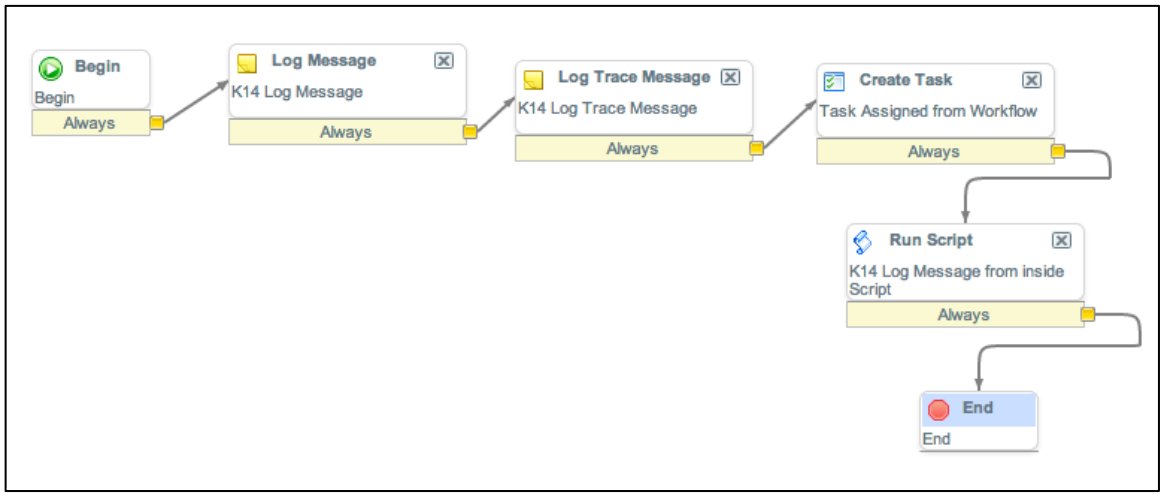
3. Name: **Task Assigned from Workflow**
   Task Type: **Change Task**
   Priority: **3 – Moderate**
   Fulfillment group: **Database San Diego**
   Assigned to: Don Goodliffe
   Short Description: **K14 Demo of a Change Task assigned from inside a workflow.**
   Instructions: **Thanks for joining us today. Enjoy your conference NOW!**



4. Click the **Submit** button.

QUESTION: The Workflow Engine will “run to rest” which means it will follow the transitions until it either ends or until a Workflow Activity causes it to wait. So far, all our demonstration workflows have run until they were finished. Looking at this Workflow Activity, will the Workflow “run to rest”?

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NOTE: You may need to adjust the layout of your Workflow Activities.

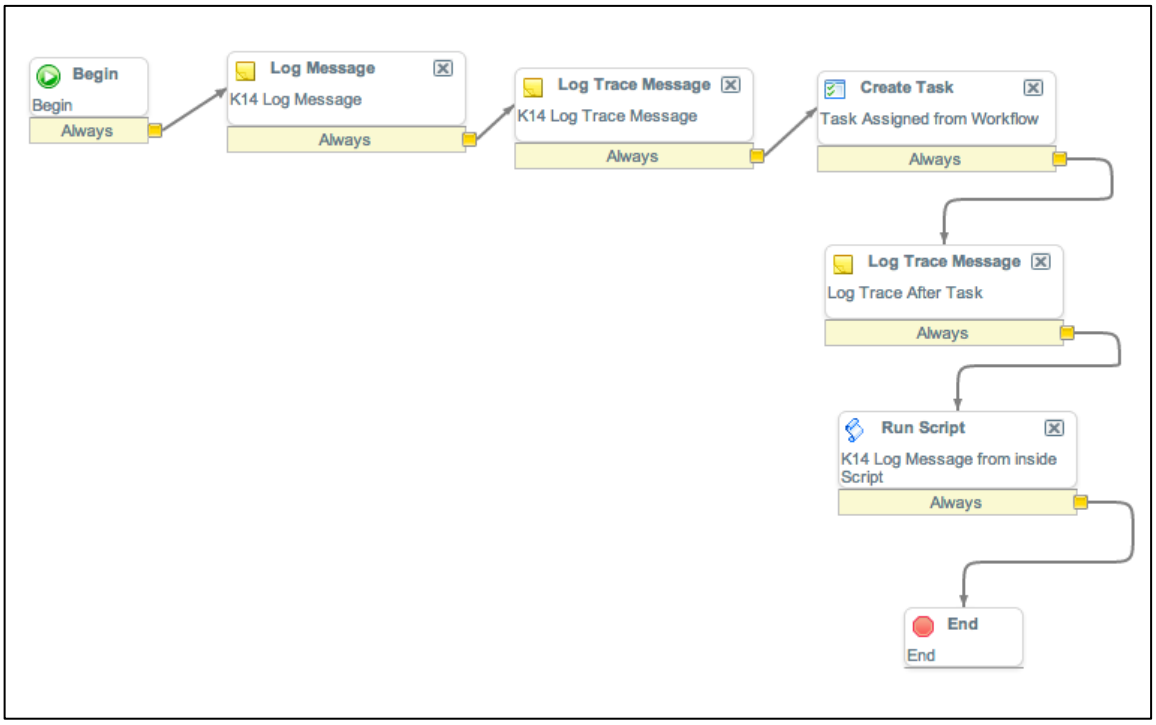
Add Log Trace Activity

1. Find the **Log Trace Message** Activity in the Tasks Category folder.
2. Drag the **Log Trace Message** Activity onto the canvas hovering between **Create Task** and **Run Script** until the line turns blue.

   NOTE: You may need to adjust the layout of your Workflow Activities.
3. Fill in the form as follows:
   Name: **Log Trace After Task**.
4. Click the **Submit** button.

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Your workflow should look like this:



5. Return to the main ServiceNow tab.

6. **Change > Create New.**

7. Click the **Submit** button. A new Change record is created. Note the Change record number.

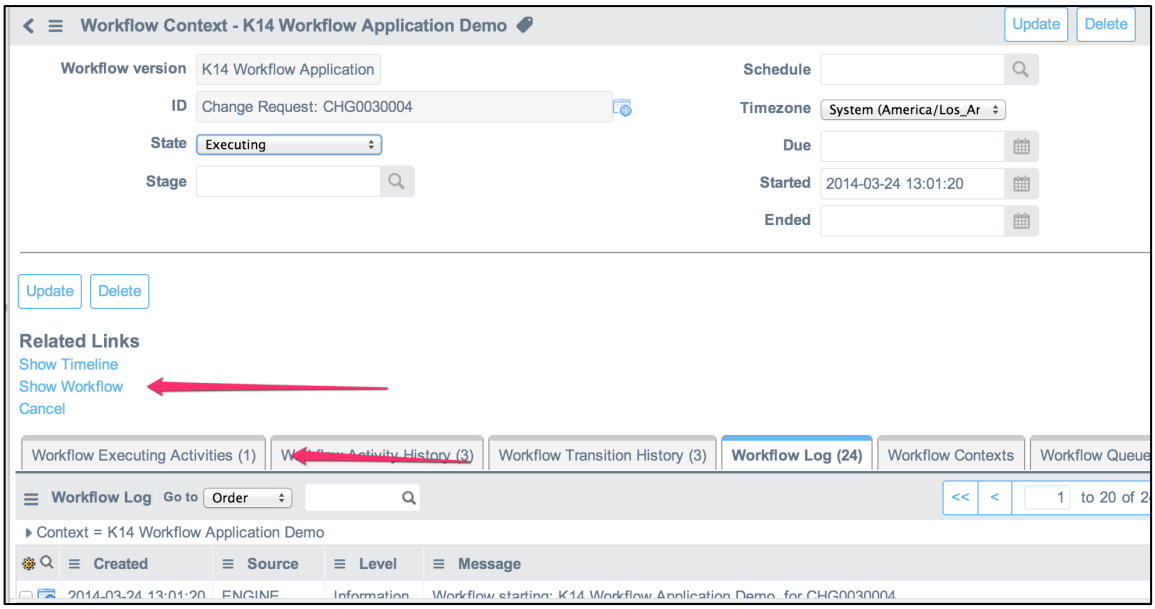
8. **Workflow > Active Contexts.**

Started ▼	Workflow version	ID	State	Due	Ended
2014-03-07 13:02:24	K14 Workflow Application Demo	Change Request: CHG0030006	Executing		
2014-03-07 10:57:21	K14 Workflow Application Demo	Change Request: CHG0030005	Finished		2014-03-07 10:57:21
2014-03-06 22:21:52	K14 Logging Demo	Workflow Execution: K14 Logging Demo	Finished		2014-03-06 22:21:54
2014-03-06 20:57:18	K14 Logging Demo	Workflow Execution: K14 Logging Demo	Finished		2014-03-06 20:57:20
2014-03-05 18:35:09	K14 Context Demo	Workflow Execution: K14 Context Demo	Finished		2014-03-05 18:36:29

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Notice the State column of the new record is **Executing**. This is a Workflow that has "run to rest". Running workflows that are waiting for an event to nudge them on to be in a state of **Executing**.

9. Select the K14 Workflow Application Demo that is **Executing**.



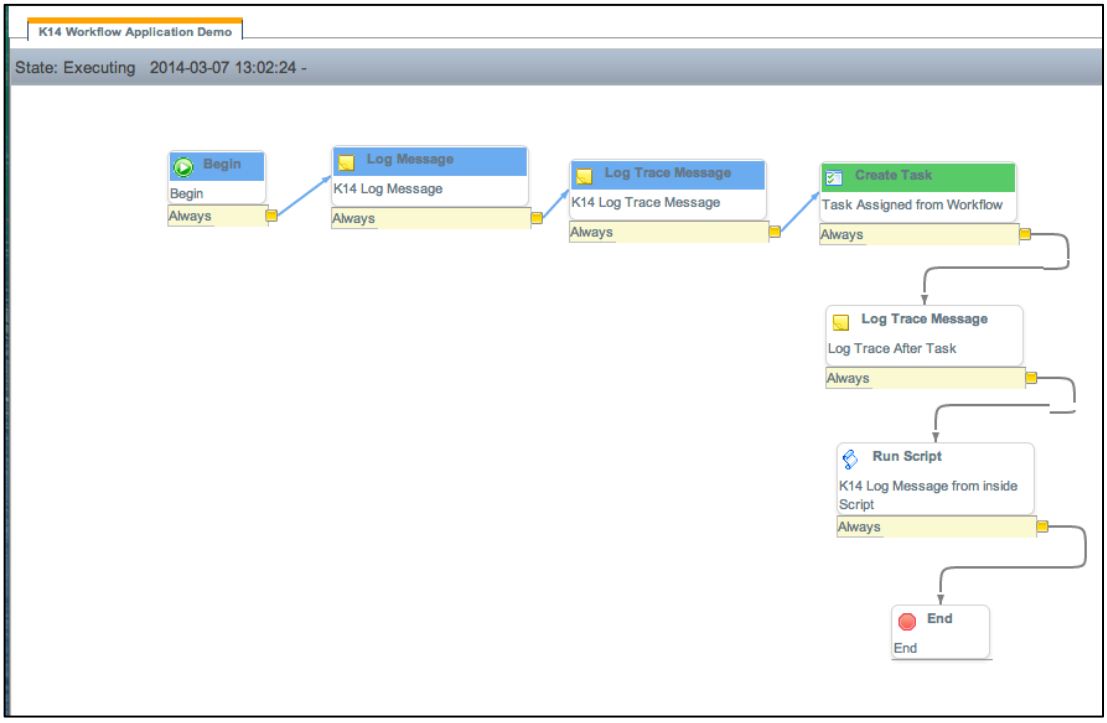
10. Select the **Workflow Executing Activities** Referenced List.

Notice that there is an activity with the state of **Running** in the list**.** Activities with this state are waiting for an event to nudge them to transition to the next Activity.

11. In the **Related Links**, select the **Show Workflow**.

The Workflow Context Window will open in a separate tab.

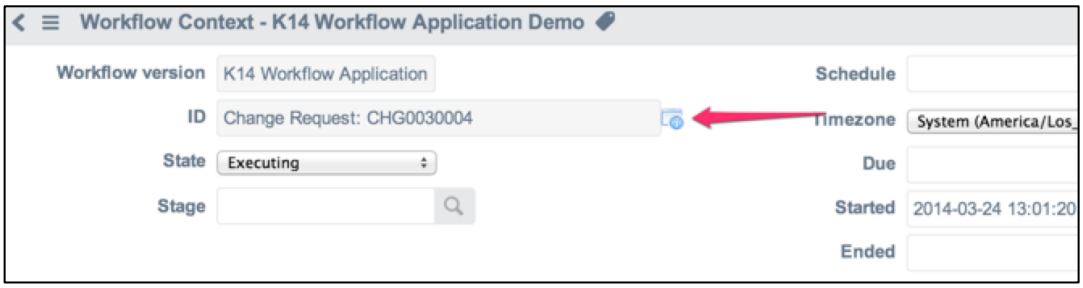
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QUESTION: What are two Workflow Activity States that are represented by the colors on the in the workflow context?

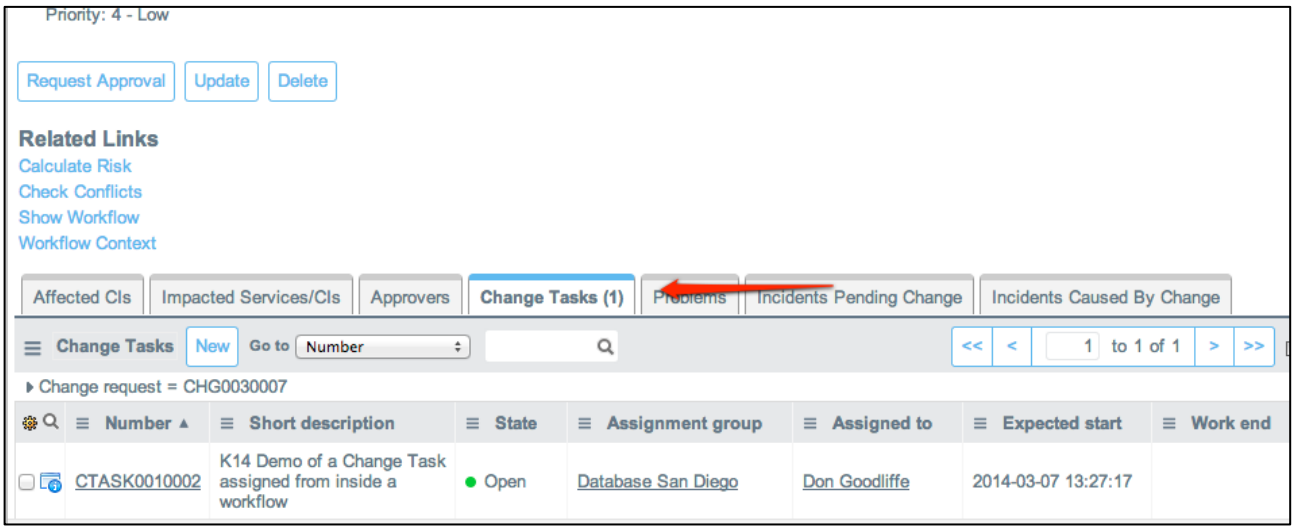
12. Close the Workflow Context tab and return to the ServiceNow tab. The Workflow Context form should still be displaying.

13. Using the **form icon** next to the ID, open the Change Request item.

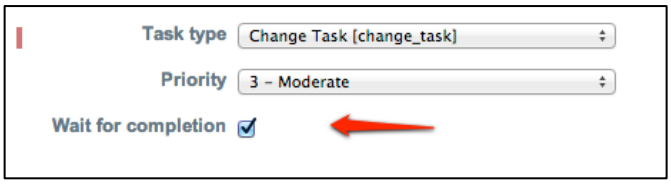


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14. Scroll to the Related Lists and select **Change Tasks**.



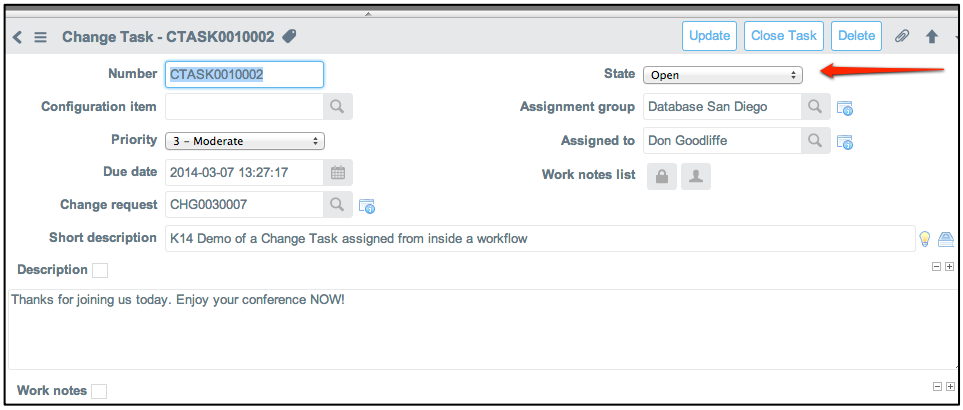
Notice the values that are on the task. Look familiar? The task that is in this list is the task that was inserted by the **Create Task** of the workflow. Recall that check box on the **Create Task** Workflow Activity?



The completion of this task is what the workflow is waiting for.

15. In the **Change Tasks** list, open the CTASK record.

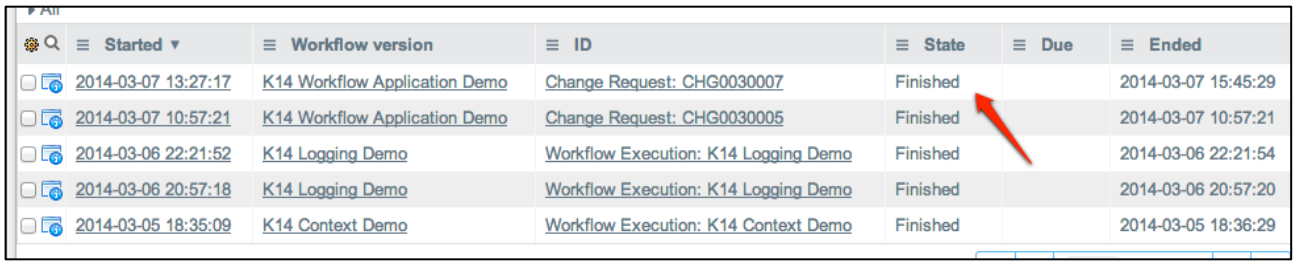
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16. Change the State to **Closed Complete**.

17. Click the **Update** button.

18. **Workflow > All Contexts**.

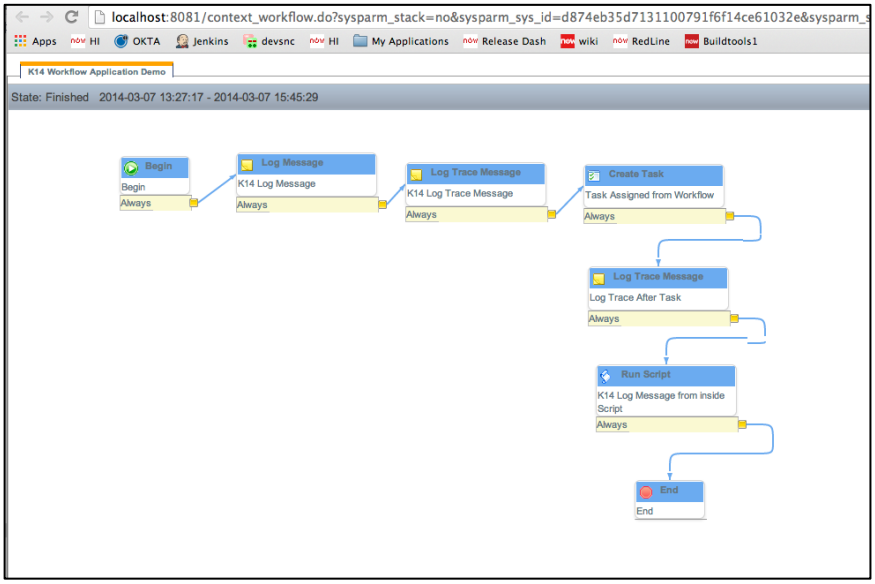


Notice that the workflow is now finished.

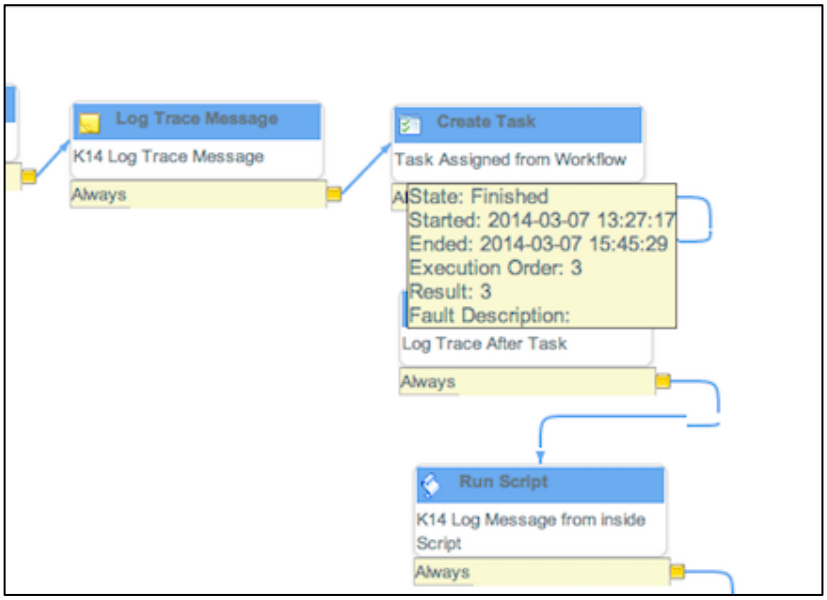
19. Select the Workflow Context for the finished Change Request.

20. Select the **Show Workflow** Related Link.

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21. Hover your mouse over the **Create Task.**



Notice that the same status that was available in the Activity History records is also available on the screen with the hover behavior.

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Summary

The Workflow Engine is part of the Glide Engine. Because of that, workflows will be invoked on the insert, update, delete or cancel database event. The Workflow Engine examines the table associated with the record and seeks all workflows that are associated with that table. The Workflow Engine will create a context for each workflow that is configured to execute for the given Glide Record.

The Workflow Engine can automate Task creation and wait for the task to be complete before continuing on.

If there is a Glide Record associated with a Workflow Context, the ID of the document is visible in the Workflow Context and is included in some Workflow Log messages.

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