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Glossary
Section I

Introduction
The Workflow Management Coalition (WFMC) defines workflow as:

An automation of a business process, in whole or in part, during which documents, information, or tasks are passed from one participant to another for action, according to a set of procedural rules.

In a workflow situation, a participant performs a work-related activity. The results of that activity are passed automatically to the next participant, who responds and performs another activity, which in turn passes the results to another participant. Business rules provide routing logic, enabling you to model business processes and implement workflows. Because work moves automatically from participant to participant, work is performed consistently across your organization.

Banner Workflow

Banner Workflow is a product that enables SunGard Higher Education customers to create workflows. The workflows, in turn, use pieces of functionality from both SunGard Higher Education and third-party products.

Imagine that you need to order some desk supplies. How do you do it? You need to pick out what you want, fill out forms, get approval, submit the forms. Then the Purchasing office may need to verify the order information, fill out their forms, and send the order to a supplier. The supplier needs to fill the order and send it back. Eventually, the supplies are delivered to you.

Numerous rules can affect the process. For instance, the cost of the order may determine who, if anyone, needs to approve it. The type of supplies may determine where the order is sent. Anywhere throughout the process, mistakes can be made that require certain steps to be repeated or corrected.

A workflow system automates the process. All the rules about how a work activity needs to be performed would be entered into Banner Workflow. You select your supplies, then fill out an electronic form. The form can be automatically routed to the right person who can perform the next activity without you having to know what that activity is or who needs to do it. If an activity needs to be repeated, or information needs to be corrected, Banner Workflow will let you know so that you—or someone else, if necessary—can take care of it.

This makes the process proceed smoothly and quickly.
Banner Workflow Implementation Phases

When you implement Banner Workflow, you go through five major phases:

- Analyze
- Develop
- Implement
- Execute
- Monitor

Analyze

During the analyze phase, begin thinking about your organization and the work your organization does. Use a Business Process Analysis (BPA) methodology to assist you in this phase.

During this phase, you will answer these questions:

1. *What work is performed?* - Use this question to identify your business processes. At a detailed level, you should also identify the individual pieces of the SunGard Higher Education software that will support your business processes.

2. *When is the work performed?* - Use this question to determine whether a business process should be started by a business event or by a user.

3. *How is the work performed?, Who does it?, In what sequence is it done?* - Use these questions to determine the sequence and timing of work, and to determine the users and roles who should perform the work.

The Analyze section contains the following chapters:

- *Chapter 4-* “Organizations” on page 69
- *Chapter 5-* “Users, Roles, and Proxies” on page 73
- *Chapter 6-* “Business Component Catalog” on page 105

Develop

During this phase, you use Banner Workflow to create objects used to define and carry out a workflow. *Objects* include organizations, roles, users, components, business processes, and business events. Certain relationships among these objects must also be defined. You will use the objects and their relationships when you model workflows and set up workflows to be executed.
The following diagram depicts the activities that you must perform when you implement Banner Workflow. (You may also perform other optional activities.) Some activities occur simultaneously, these activities take place in parallel paths. Parallel paths appear at the same level in a diagram and flow into a single bar. You can complete parallel paths in any sequence, but you must complete all activities in the parallel paths before you can continue to the next activity (or parallel paths).

The following table shows the primary activities that the Business Analyst and System Administrator roles perform during the creation phase.

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<td></td>
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<td>• Manage components</td>
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<tr>
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<td>• View the catalog</td>
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The Develop section contains the following chapters:

- Chapter 7 - “Work Calendar” on page 143
- Chapter 8 - “Introduction to Modeling Workflows” on page 149
- Chapter 9 - “Create a Basic Workflow” on page 167
- Chapter 10 - “Adding Complexity to Your Workflows” on page 207
- Chapter 11 - “Custom Activity Designer” on page 233
- Chapter 12 - “Maintaining Workflow Models” on page 247

**Implement**

During the implement phase, your organization will set up the work that will run, at which organization it will run, when it will be executed, and how it will be processed. The sequence and the timing of work are essential parts of successful workflows.

The Implement section contains the following chapters:

- Chapter 13 - “Enterprise Management” on page 257
- Chapter 14 - “Business Events” on page 267
**Execute**

During the execution phase, your organization will use Banner Workflow to move work from one participant to the next. Individual workflows can be started by a business event or by an authorized user.

The Execute section contains the following chapters:

- *Chapter 15* - “Worklist” on page 289
- *Chapter 16* - “Workflow Status” on page 299
- *Chapter 17* - “My Processes” on page 321

**Monitor**

During the monitor phase, your organization will examine the performance of running workflows and potentially address process issues or bottlenecks that have developed. Monitoring and noting which workflow processes need improvement is an essential part of using Banner Workflow successfully.

The Monitor section contains the following chapters:

- *Chapter 18* - “In-Process Monitoring” on page 325
- *Chapter 19* - “Workflow Alerts” on page 329
- *Chapter 20* - “Online Users” on page 341
- *Chapter 21* - “Delete Workflows” on page 343
Relationships in Banner Workflow

What Determines the Work a User Can Perform?

Two relationships in Banner Workflow determine what work an individual user is authorized to perform: user-role-organization assignments and activity-role assignments.

![Diagram showing User-Role-Organization Assignment and Activity-Role Assignment]

The user-role-organization assignment determines the role (or roles) that each user can perform at an organization. The activity-role assignment determines the activities that a role is authorized to perform. Together, the user-role-organization assignment and the activity-role assignment determine what a specific user can do at an organization within Workflow.

After a user has a user account, you can assign roles to the user account at a specific organization. In a sense, the user-role-organization assignment says that John Doe can perform all work that a Purchasing Clerk can perform at a specific organization.

That just leaves the question of determining what work a Purchasing Clerk is allowed to perform. This is done by assigning roles to activities. The activity-role assignment says that a Purchasing Clerk is allowed to perform whatever function the business component assigned to that activity can perform. In this case, it would be entering purchase orders. At run-time, the workflow will execute at a specific organization. At this point, an end user with the Purchasing Clerk role at this organization will be able to perform the necessary work.

Work that Can be Done

Before you can perform work, you need to establish just what work can be done. Do this in the Business Component Catalog (BCC) by creating business components.
Business Components and Activities

Activities are steps in a workflow. Each activity equals one business component. The business component is what a user will actually perform when the workflow is run.

Business components can have parameters. Parameters enable you to specify what kind of information each business component needs to have in order for it to be used in a workflow.

Workflows also have parameters called context parameters. The context parameters represent data that is used in the workflow’s activities. To pass information from one workflow activity to another, you will need to map context parameters to component parameters.

Component parameters for each activity are mapped to context parameters.
This allows data that is entered in Activity 1 to be passed to the appropriate context parameters. The context parameters can pass data back to component parameters in Activity 2.

**Enterprise Business Processes**

The Enterprise is where you define what, how, when, and where work is performed at your enterprise.

- The What is represented by your business process
- The How is represented by your workflows
- The When is represented by your business events
- The Where is represented by the organization in which the workflow can run


2. Associate a workflow to the Business Process at an organization with an effective date range.

**Note**

A business process can have one active workflow for each organization.
3. Associate a Business Event to the Business Process when the workflow should be started automatically if something is done in an external application. (Optional)

4. Add a Guard Condition that will use a business rule to determine if the workflow should start at an organization. (Optional)

**Business Events and the Workflow Model**

To start a workflow automatically, you need to associate the workflow with a Business Event. Once you have the association, you must map the Business Event Parameters to the Context Parameters.

![Diagram of Business Event and Context Parameters](image)

Business events allow you to start a workflow automatically when a corresponding event occurs in an external application. When you use a business event to start a workflow, you specify how the data from the event is used in the workflow.
2 Navigating within Banner Workflow

In this chapter you will find key information that highlights basic end-user interaction and accessibility with the Banner Workflow application.

Banner Workflow Navigation Menu

On the left side of the Banner Workflow application is a list of navigable links. These links are divided into three categories and some links may not be available to all user roles.

**Home**

<table>
<thead>
<tr>
<th>Link</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worklist</td>
<td>The worklist organizes work items for the role(s) that the user is assigned to. Each work item represents a unit of work for a single workflow activity for a given workflow model.</td>
</tr>
<tr>
<td>Workflow Status Search</td>
<td>Search for a particular workflow instance using the Workflow Status Search page.</td>
</tr>
<tr>
<td>Banner Workflow Alerts</td>
<td>The Banner Workflow Alerts page allows process owners and administrators to view workflow processes that have entered an error state. From this page, the process owner/administrator can access workflow status and resolve the error.</td>
</tr>
</tbody>
</table>

**User Profile**

<table>
<thead>
<tr>
<th>Link</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>My Processes</td>
<td>On the My Processes page, any business processes you are able to launch is shown as a link. When you click this link, you will be able to start the process that the link represents.</td>
</tr>
<tr>
<td>User Information</td>
<td>The User Information page shows the details for the user that is currently logged into Banner Workflow.</td>
</tr>
<tr>
<td>Change Password</td>
<td>You can change your Banner Workflow password.</td>
</tr>
</tbody>
</table>
### Administration

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Component Catalog</td>
<td>The Business Component Catalog, or BCC, is a repository of reusable business components. The component repository is organized and grouped into categories. Business component definitions, including associated parameters, are stored within each categorical grouping.</td>
</tr>
<tr>
<td>Enterprise Management</td>
<td>Business processes, business events, workflow associations, and the relationships between them make up Enterprise Management. A Business Process is a placeholder for a specific workflow that can be launched. Authorized roles that can start the business process are also shown.</td>
</tr>
<tr>
<td>User Management</td>
<td>Each person who will use Banner Workflow must be identified as a user with a user account. A user account contains a user’s logon ID, name, email address, effective dates, password, user-role-organization assignments, proxy assignments, and who the user is a proxy for.</td>
</tr>
<tr>
<td>Role Management</td>
<td>Each person at an organization performs certain work. Different people perform different types of work. The different types of work that people perform determines their role(s) at their place of employment.</td>
</tr>
<tr>
<td>Business Events</td>
<td>An event is something that takes place, such as changing a student's address or making a purchase. Business events represent external activities in Banner Workflow. When an event occurs in an external system, such as Banner, information can be passed to Banner Workflow. The workflow system looks to business event definitions to determine what event has occurred and how to interpret the data that was passed.</td>
</tr>
<tr>
<td>Work Calendars</td>
<td>A work calendar allows you to establish a calendar that contains the daily work hours of an institution or office. Each workday can be comprised of different working hours to accommodate any work schedule.</td>
</tr>
<tr>
<td>In-process Monitoring</td>
<td>In-process monitoring allows a user to see the total number of running workflows for a specific version of a workflow. Additionally, the user can determine the number of instances that are ontime, lagging, and overdue, as well as the current activity of each in-process workflow.</td>
</tr>
</tbody>
</table>
Banner Workflow Modeler

The Banner Workflow Modeler is the canvas where you create and modify graphical representations of your processes.

Workflow System Administration

The Workflow System Administration page contains the following items:

- **Online Users** - View a list of users who are currently logged on to the Banner Workflow system. Each user's session ID and the creation date for that session are displayed.

- **Product Types** - Each component and business event has a product type. This type indicates the product that is associated with the component or business event.

- **Security Management** - To grant users access to various areas of the Banner Workflow application, you need to assign roles to the various security groups in Security Management. Each security group, authorizes a role to perform and manage functions within the Banner Workflow system. For more information refer to the Banner Workflow Installation and Administration Guide.

- **Technology Types** - Each component in the Business Component Catalog has a technology type. The technology type represents the underlying technology of the component, such as standard desktop applications, Java, Oracle Forms, Visual Basic, and so on.

- **Engine Manager** - View and manage engine nodes. For more information refer to the Banner Workflow Installation and Administration Guide.

- **Delete Workflows** - Delete Workflows provides a way to search for and delete workflows. Deleted workflows are permanently removed from the Banner Workflow system and cannot be recovered.

- **Analyze Banner Components** - Analyze a bootstrap to determine what components have changed since the previous version of Banner. For more information refer to the Banner Workflow Installation and Administration Guide.

- **Organizations** - Organizations allow Banner Workflow to support MIF, as well as provide an ability to divide tasks and responsibilities between a consortium of schools, an institution, a department or a sub-department.
**Worklist**

The worklist is the first page that is displayed in Banner Workflow. The worklist organizes work items for the role(s) at the organization(s) that the user is assigned to. Each work item represents a unit of work for a single workflow activity for a given workflow model. Work items are routed to workflow users based on role-organization assignments, directed activities, or modeled information. For more information on the Worklist, see “Worklist” on page 289.

**Worklist Display**

The Worklist displays the following four columns that can be sorted in ascending or descending order:

- Organization - The Organization column displays the organization name.
- Workflow - The Workflow column displays the workflow instance name.
- Activity - The Activity column displays the activity name.
- Priority - The Priority column displays the priority of the workflow instance.
- Created - The Created column displays the workflow creation date and time.

To sort on a specific column, simply click the column name. An arrow will appear next to the sorted column indicating whether the sort was performed in ascending or descending order.

**Show Reserved Items**

The worklist will display all work items for the role(s) at the organization(s) that the user is assigned to. To view all work items that you have reserved, click Show Reserved Items. At any time you can click Show All Items or refresh the worklist to view all work items.

**Refresh the Worklist**

To see updates and changes to items displayed on the worklist, simply click the refresh button on the toolbar of your browser.
Work Item Details

To view details for a work item, click to navigate to the Work Item Details page. The following options appear at the top of the Work Item Details page:

- **Start**: Start allows you to begin work on the selected work item.
- **Reserve**: Reserve allows you to reserve a work item to perform at a later time.
- **Complete**: Complete informs Banner Workflow that your work on the work item is finished.
- **Skip**: Skip will stop your work on a work item and advance to the next work item in the workflow.
- **Release**: Release will change the status of a workflow that you have reserved back to Ready, making it available to all users with the associated role.
- **Status**: Status allows you to view the progress of the workflow and to manage specific aspects of the workflow if you are the owner or administrator.
- **Stop Workflow Request**: Stop Workflow Request will stop the workflow instance that the work item belongs to.

The Work Item Details page contains the following information about the selected work item:

- Organization
- Workflow Name
- Activity Name
- Created Date
- Priority
- Status
**Workflow Attachments Tab**

Documents can be attached to a running workflow by any valid workflow participant. Workflow attachments can be used to easily share documents that are related to the workflow.

**Notes Tab**

Workflow and Work Item notes can be created by any participant in the workflow process. The notes allow workflow stakeholders to share information while a workflow is running and after the workflow has completed. The Notes section allows each participant to add notes that could then be viewed and be appended to by the user in any of the other activities in the workflow.

*Note*

Workflow and Work Item notes will contain the user’s ID and a time stamp to provide an audit trail of comments. Notes cannot be deleted or modified.

**Metrics Tab**

Metrics related information for both the workflow and the work item are displayed in this section. Metrics provide process participants with time oriented details about both processes and specific pieces of work. This tab contains the following metrics data for the workflow and work items:

- Expected Completion Date
- Estimated Time
- Elapsed Time
- Lagging Date
**Details Tab**

The Details tab contains additional information about the workflow and the selected work item. The following information is displayed:

- Organization
- Definition Name
- Definition Version
- Workflow Initiator
- Activity Description
- Role
- Type

**Proxy Tab**

The Proxy tab contains information about the users who have authority to access the selected work item. The following information is displayed:

- Directed to User
- Proxy Originators

**Banner Workflow Navigation Crumbs**

As you navigate through the Banner Workflow system, you will notice a crumb trail located at the top of each page. This crumb trail allows you to easily navigate to previous pages without having to click the Back button on your web browser’s toolbar.

For instance when a user drills down into the Banner Workflow system to modify Business Component parameters, a trail of navigation crumbs representing each previous step is displayed at the top of the page. For example:

**Business Component Catalog > Category: Category Name > Component: Component Name**
**Workflow Pagination**

All Banner Workflow pages that contain or return a list of items use a pagination system. This pagination system allows you to easily handle large lists of elements. Each page contains 10-15 list elements. Banner Workflow pagination is controlled by several options at the bottom of each list of items. These options include:

- **First**
  - Click First to return to the first page of the list.
  - **Note:** This option is disabled if you are on the first page of a list.

- **Previous**
  - Click Previous to return to the previous page of the list.
  - **Note:** This option is disabled if you are on the first page of a list.

- **Next**
  - Click Next to advance to the next page of the list.
  - **Note:** This option is disabled if you are on the last page of a list.

- **Last**
  - Click Last to advance to the last page of the list.
  - **Note:** This option is disabled if you are on the last page of a list.

- **Go to Page:**
  - Select a page number to advance to a specific page number.

**User Profile**

The User Profile links in the Banner Workflow Navigation Menu allow a user to access processes, view the roles at the organizations that their user account is mapped to, work with proxies, and change their Banner Workflow password.

**My Processes**

On the My Processes page, business processes per organization that you are authorized to initiate will be displayed. The business process name will be shown as a link. When you click this link, you will be able to start the process that the link represents at the selected organization.
User Information

The User Information page allows you to view and modify some properties of your user account. Users are able to modify their notification and launch preferences.

Modify User Information

To modify your preferences for activity notifications, deadline notifications, and work item launching:

1. Select User Information from User Profile.

2. Modify user details:

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity Notifications</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Deadline Notifications</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Launching</td>
<td>No restrictions.</td>
</tr>
</tbody>
</table>

3. Click **Save User Profile**.
Add a Proxy

To add a proxy:

1. Select User Information from User Profile.

2. In the My Roles section of the page, click Add Proxy for a specific role-organization assignment.

3. On the Proxy Details page, enter information for these fields:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>The logon ID of the user who is assigned as a proxy. When you assign a user as a proxy user, the proxy user will see activities in his or her worklist as a result of the proxy. Your logon ID will indicate to this user that you are the person who would normally receive this activity in your worklist.</td>
</tr>
<tr>
<td>Effective From</td>
<td>The date on which the proxy becomes effective. Enter a date which is on or after the current date. Note: All dates must be entered in the DD-MMM-YYYY hh:mm:ss AM/PM format. For example, 04-JUL-2003 12:00:00 PM. You can use the provided date widget or you can manually enter the date. Each user account and user-role-organization assignment has an effective date range. When you assign a user as a proxy, the effective date range for the proxy relationship must also fall within the effective date ranges of the user account and user-role-organization assignment of both the proxy and primary users. The start date for the user account’s effective date range should be earlier than the start date for all of that user’s role and proxy assignments.</td>
</tr>
</tbody>
</table>

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4. Click **Save**.

5. Repeat steps 2 through 4 for each proxy user you are adding.

### Edit a Proxy

To edit a proxy:

1. Select User Information from User Profile.

2. In the My Proxies section of the page, click the user name whose proxy information you would like to modify.

3. For the proxy user, you can modify the following:

   - **Effective To**
     
     The date on which the proxy ceases to be effective. Enter a date which is on or after the Effective From date.

     You can use the provided date widget or you can manually enter the date.

     **Note:** All dates must be entered in the DD-MMM-YYYY hh:mm:ss AM/PM format. For example, 04-JUL-2003 12:00:00 PM.

     Each user account and user-role-organization assignment has an effective date range. When you assign a user as a proxy, the effective date range for the proxy relationship must also fall within the effective date ranges of the user account and user-role-organization assignment of both the proxy and primary users.

     **Note:** The effective dates will only be validated at run time. No errors will be generated when adding proxies where the effective dates don’t match up.

   - **Confidential**
     
     *If this checkbox is selected,* the proxy user will receive and can respond to confidential work items.

   - **Non-Confidential**
     
     *If this checkbox is selected,* the proxy user will receive and can respond to non-confidential work items.

     Non-confidential activities may be directed to any proxy user if you select the **Non-Confidential** checkbox. Unlike confidential tasks, non-confidential tasks will appear in the worklists of all other users who have the appropriate user-role-organization assignment.
4. Click **Save**.

**Delete a Proxy**

To delete a proxy:

1. Select User Information from User Profile.

2. In the My Proxies section of the page, select the checkbox next to the proxy assignments you would like to remove.

3. Click **Delete Selected Proxies**.

4. When you are asked to confirm the deletion, click **OK**.

**Change Password**

To change your password:

1. Click **Change Password** under **User Profile** in the Banner Workflow Navigation Menu.

2. Enter your current password in the **Current Password** field.
3. Enter your new password in the **New Password** field.

4. Reenter your new password in the **Confirm New Password** field.

5. Click **Update Password**.

---

**Note**

If you are using External Authentication, this feature will be disabled.

---

## Search

Throughout Banner Workflow, you can make use of searches to help you find objects such as, components, processes, user accounts, roles, events, workflows, and so on.

1. From most areas in Administration, a search box displays at the bottom of the Banner Workflow Navigation Menu. Enter a term to search for and click **Search** to display the results of your query or click **Advanced Search Options** to perform a more detailed search.

2. For a Workflow Status search, click **Workflow Status Search** under Home in the Banner Workflow Navigation Menu.

<table>
<thead>
<tr>
<th>Module</th>
<th>Search Page</th>
<th>Search Criteria</th>
<th>Search Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workflow Status</td>
<td>Workflow Status Search</td>
<td>Organization, Workflow Specifics Name, Business Process Name, Workflow Start Date Range, Workflow End Date Range, and Status.</td>
<td>Organization, Workflow Specifics Name, Business Process Name, Status, Date and Time Created, Date and Time Completed.</td>
</tr>
<tr>
<td>Business Component</td>
<td>Component Search</td>
<td>Component Name, Description, Product Type, Category, Component Type, Technology Type, Source, and Status.</td>
<td>Name, Description, Category, Product Type, and Release ID.</td>
</tr>
<tr>
<td>Catalog</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role Management</td>
<td>Role Search</td>
<td>Name and Description.</td>
<td>Name and Description.</td>
</tr>
<tr>
<td>User Management</td>
<td>User Search</td>
<td>Logon ID, Last Name, First Name, Middle Name, Email Address, Effective From, Effective To, and Enabled.</td>
<td>Logon, Last Name, First Name, Email, Effective From, Effective To, and Enabled.</td>
</tr>
<tr>
<td>Module</td>
<td>Search Page</td>
<td>Search Criteria</td>
<td>Search Results</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Event Management</td>
<td>Event Search</td>
<td>Name, Description, and Product Type.</td>
<td>Name, Description, and Product Type.</td>
</tr>
<tr>
<td>Workflow Modeler</td>
<td>Workflow Definition</td>
<td>Name, Organization, Best Practice, Confidential, Status, Owner, Administrator, and Version.</td>
<td>Organization, Name, Version, and Status.</td>
</tr>
<tr>
<td>Workflow Modeler</td>
<td>Owner/Admin roles</td>
<td>Name and Description.</td>
<td>Name and Description.</td>
</tr>
<tr>
<td>Workflow Modeler</td>
<td>Activity - Role</td>
<td>Name and Description.</td>
<td>Name and Description.</td>
</tr>
<tr>
<td>Workflow Modeler</td>
<td>Activity - Performer Rule</td>
<td>Logon ID, Last Name, and First Name.</td>
<td>Logon ID, Last Name, and First Name.</td>
</tr>
<tr>
<td>Workflow Modeler</td>
<td>Activity - Business Component</td>
<td>Component Name, Product Type, Category, Component Type, Tech Type, and Source.</td>
<td>Component Name, Description, Product Type, Release ID, Status, Category, Component Type, Technology Type, and Source.</td>
</tr>
<tr>
<td>Workflow Modeler</td>
<td>Email Users for the From, To, CC &amp; BCC fields</td>
<td>Logon ID, Is Enabled?, Last Name, First Name, Start Date, End Date, and Email Address</td>
<td>Logon ID, Last Name, First Name, and Email Address. Note: Results limited to Users with Email.</td>
</tr>
</tbody>
</table>
This chapter will help an institution decide on an organizational structure that best fits their needs. It identifies the institutional needs that each structure meets and outlines the necessary implementation processes. This chapter is meant to be used in conjunction with the other chapters within this guide as well as the Banner Workflow Technical Integration Guide to optimize the implementation of Organizations. A basic understanding of the pieces of the Banner Workflow system and how they work together is assumed.

**Terminology**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchical Tree</td>
<td>A graphical representation of the hierarchical nature of a structure. In Banner Workflow, the tree may only consist of two levels.</td>
</tr>
<tr>
<td>Root organization</td>
<td>The single top level element of a hierarchical tree. In Banner Workflow there must be exactly one root organization in the hierarchical structure.</td>
</tr>
<tr>
<td>Sub-organization</td>
<td>An organization residing on the second level of the Banner Workflow hierarchical tree. All sub-organizations will belong to the single root organization.</td>
</tr>
<tr>
<td>Multi Institution</td>
<td>The Unified Digital Campus (UDC) term that describes architectural and process features that enable two or more entities to coexist in a single application architecture.</td>
</tr>
<tr>
<td>Functionality (MIF)</td>
<td></td>
</tr>
<tr>
<td>Instance</td>
<td>A single occurrence of a Workflow definition that has been started.</td>
</tr>
</tbody>
</table>
Overview

Banner Workflow organizations provide a mechanism by which the system can be partitioned. Each organization can pull from a common pool of users, roles, and components to build and execute their own private set of workflows. Organizations also provide a means to create global workflows for common processes. Global workflows can be run at each individual organization. This simplifies system administration by removing the need to create multiple, organization specific workflows.

Banner Workflow organizations use a hierarchical tree structure that can consist of up to two levels. The top level of this tree consists of a single organization that should be thought of as the governing institution. The second level can contain zero or more organizations. These sub-organizations can represent departments within the institution or, in the case of a consortium, can represent the individual institutions that comprise it.

Why Use Organizations?

Organizations provide a powerful tool by which clients can partition the data within their Banner Workflow system. Organizations can be used to support multiple departments within an institution or to support multiple institutions within a consortium.

Support for Multi-Institution Functionality (MIF)

Multi-Institution Functionality (MIF) is a Unified Digital Campus (UDC) concept in which a single software installation can be used to service multiple institutions. A common example of a client implementing a MIF installation would be a consortium of schools. To support a consortiums' MIF implementation, Banner Workflow would be configured such that the top level or root organization represented the consortium and each sub-organization represented one of the individual institutions that comprised it.
For example, the SunGard Community College System (SCCS) consortium of schools is comprised of three institutions; SunGard Institute of Technology, SunGard A & M, and SunGard State. In this case, the Banner Workflow organization structure would be as follows:

**Support for Multiple Departments**

Prior to the introduction of the organization structure, there was no easy way to support multiple departments. Since there was no way to create common workflows, each department needed to create and maintain their own department specific versions of workflows.

To support the department structure of an institution, Banner Workflow could be configured so that the top level or root organization represents the institution and each sub-organization represents an individual department.

For example, SunGard University has three departments Finance, Human Resources, and Student, that use the Banner Workflow system. SunGard University's organization structure would be as follows:
Are Organizations Required?

By default all Banner Workflow installations will be setup with one top level or root organization. Institutions that do not wish to partition their Banner Workflow system, do not need to create a second organizational level. By not creating a second level, there will only be one organization in the system at which all workflow definitions will be owned and executed. This simplifies the system and is a configuration that will be used by most institutions. If you choose not to implement a second level in the organizational structure reading the rest of this chapter, while recommended, is not necessary in understanding how to setup, maintain, and perform work in your Banner Workflow system.

Organizational Ownership

Organizations use a tree structure. In a tree structure, there may only be one top level entity known as the root entity. In the Banner Workflow organization tree structure this is the root organization. The root organization should be thought of as the institution that is implementing the Banner Workflow system.

Globally Owned Data

Globally owned data in the Banner Workflow system refers to information that is common or shared across all organizations. An example of global data is Banner Workflow users. With globally owned users, user accounts only need to be created once and then can be used by all organizations.

Looking back at the department example for SunGard University, there may be users of the Banner Workflow system that perform work for both the Finance and Human Resources departments. These users only need one user account with access granted to the Finance and Human Resources departments through user-role-organization assignments.

Globally owned data also allows for central administration of the Banner Workflow system. Since there is only one version of the data, instead of having copies at each organization, a single group can be made responsible for data administration. This group will need to have an understanding of the system as a whole and will be able to ensure that changes to the globally owned data do not adversely affect any other organizations that use it.

In the Banner Workflow system all global data is owned by the root organization.
**Locally Owned Data**

Locally owned data in the Banner Workflow system applies to information that is specific to a particular organization and not shared across multiple organizations. For example, an authorized initiator of a business process can only initiate the business process at the organization for which it has been defined. Since this information is organization specific, it is locally owned.

**Note**

A workflow definition is unique in that it may be globally or locally available depending on the organization that owns it. If the workflow definition is owned by the root organization, it is globally shared and available for use in business process and event associations across all organizations. If the workflow definition is owned by a sub-organization, the definition will only be available within that specific sub-organization.

For details on global and local ownership of Banner Workflow objects, see below:

<table>
<thead>
<tr>
<th>Banner Workflow Object</th>
<th>Globally Owned Data</th>
<th>Locally Owned Data</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizations</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security groups</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authorized roles</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Users &amp; Roles</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User-Role-Organization assignments</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Proxy Assignments</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Types</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology Types</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Components</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Calendars</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workflow Definitions</td>
<td>X</td>
<td>X</td>
<td>While workflow models are locally owned, they can be used globally.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Workflow models owned by the root organization can be initiated by</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>all sub-organizations.</td>
</tr>
<tr>
<td>Business Events</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This section describes the objects used to administer and configure the Banner Workflow system. These objects are typically maintained by the system administrators and business analysts.

Security Groups

System security is based on security groups, where each group authorizes access to a particular area of Banner Workflow functionality. Security groups are assigned authorized roles, allowing assigned users access to the parts of the system that are necessary to perform their work. Security groups and their associated authorized roles are globally owned, as the access they provide is common across all organizations.

Authorization to Functionality Verses Access to Data

Security groups provide authorization to specific area or functionality in the Banner Workflow system. Access to data comes from having the proper security group assigned to an organization via a user-role-organization assignment.

Access to Globally Owned Data

Since all global data is owned by the root organization, a user must have the proper security group assigned at the root organization. For example, assume the Business Analyst role at the SunGard Community College System (SCCS) has the security group to administer roles associated with it.

- For a user to perform this function they must be assigned business analyst role at the root organization, SCCS.
• If a user is assigned the Business Analyst role solely at a sub-organization, such as SunGard State, they will have access to the Role Management page, but the role data will not be visible and they will not be able to administer roles.

• Assignments at both the root and the sub-organization are necessary to leverage the full impact of the Business Analyst role.

**Access to Locally Owned Data**

Local data is owned by each individual organization. For a user to access locally owned data they must have the proper security group assigned at the organization that owns the data.

For example, assume that the Business Analyst role at SunGard University has the security group for creating workflow models associated with it. For a user to access or create workflow models at the Finance department, the user must have the Business Analyst role assigned at the Finance Department.

**Organizations**

Organizations provide the ability to partition a Banner Workflow system to support multiple departments within an institution or institutions within a consortium (MIF).

**Multi-Institution Functionality (MIF) Codes**

All organizations have a MIF attribute associated with them. This attribute should only be populated by clients who are using organizations to support a Banner environment running under MIF. Clients not using organizations to support MIF should not enter a value in this field as it can potentially interfere with Banner integration.

**Product Types**

The product type is used to indicate the product that is associated with a component or business event. Since products are common to all organizations, Product Types are globally owned data.

**Technology Types**

Technology types are used to inform the Banner Workflow system of how external applications should be launched. Since each organization will be using the same set of external applications, Technology Types are globally owned data.
**Business Components**

Business Components are representations of units of functionality in an external application, such as a Banner form. Since all organizations will be using the same common set of applications, a single set of business components will be used by all organizations. To provide for this, Business Components are globally owned data.

**Component Parameters in Launch Parameters**

There are four built-in macros referring to the current organization when launching a component based work item. These macros are useful for passing an attribute of the organization to the initiated application. The macros are dynamically expanded at launch time when inserted into a launch parameter value.

- **@BUILTIN_ORG_QUALIFIED_NAME**
  Substitutes the qualified name of the organization for the current workflow instance.

- **@BUILTIN_ORG_NAME**
  Substitutes the short name of the organization for the current workflow instance.

- **@BUILTIN_ORG_MIF_CODE**
  Substitutes the associated MIF code if defined of the organization for the current workflow instance

  **Note:** This parameter will only be used if the Banner Workflow system is supporting a Banner MIF installation.

- **@BUILTIN_ORG_ID**
  Substitutes the database primary key of the organization for the current workflow instance.
Let us look at the SunGard Community College System example and assume that the MIF code `sccsam` has been associated with the SunGard A & M campus. An example expansion of these macros would be:

```
@BUILTIN_ORGQUALIFIED_NAME   SCCS.SunGard A M
@BUILTIN_ORG_NAME            SunGard A M
@BUILTIN_ORGMIF_CODE         sccsam
@BUILTIN_ORGID               10801
```

As another example, you could also capture all of the organization attributes in an automated SQL query by expanding these macros against dual:

```
SELECT @BUILTIN_ORG_ID, @BUILTIN_ORG_MIF_CODE, @BUILTIN_ORG_NAME,
      @BUILTIN_ORG_QUALIFIED_NAME INTO @id, @mif_code, @name, @qualified_name
FROM DUAL
```

**Note**

If you needed to get the organization attributes to support, for example, an email activity, a better alternative is to use the workflow attribute mappings in the Modeler.

**Work Calendars**

The Work Calendars feature of Banner Workflow allows clients to establish calendars that contain their daily work hours. Because the set of Banner Workflow calendars can be used by all organizations, they are globally owned data.

**User Management**

Users, roles, and the organizations to which the users and roles belong, is discussed in this section.

**Users**

Each individual who will use the Banner Workflow system is identified with a user account. Users can be thought of as unique across a Banner Workflow installation. Since the pool of users is common across a Banner Workflow installation, user objects are globally owned.
Roles

Roles are titles given to a group of responsibilities. Roles can also be thought of as unique across a Banner Workflow installation, in that each organization will have the same roles, just with different assigned users. To support this, roles are globally owned.

User - Role - Organization Assignments

Each organization within the Banner Workflow system will need to designate the group of users that can perform the responsibilities of a particular role. To allow for this, user-role-organization assignments are locally owned, allowing each organization to define their own assignments.

Note

Administrative users having access to view or modify users or roles, will be able to see all user-role-organization assignments, but access to create and delete assignments will be restricted. A user will only be able to create or delete user-role-organization assignments at organizations where they have been assigned the corresponding privileges. Therefore, you may be able to modify user-role-organization assignments at Organization A, but not at Organization B.

Proxy Assignments

A proxy user is someone who can perform work items in the place of another user. When assigning a proxy, a user will need to proxy the work they do in a specific role at a specific organization. For a proxy user to be sent work for a user's role, the proxy user must have the role assigned at the same organization for which it is being proxied.

For example, Susan has the following role-organization assignments:

<table>
<thead>
<tr>
<th>Organization</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>SunGard University.Finance</td>
<td>Clerk</td>
</tr>
<tr>
<td>SunGard University.Student</td>
<td>Clerk</td>
</tr>
</tbody>
</table>

Susan can assign proxies to users who have the Clerk role at the Finance and Student sub-departments only. She cannot assign proxies to users who have the Clerk role at the Human Resources department.
Modeling Work

Workflow models are created using the Banner Workflow Modeler and are locally owned. To access or create a model, users need the corresponding security groups assigned at the organization that owns the workflow model.

For example, at SunGard University, the Business Analyst role is associated with the security group for creating workflow models. User Susan Smith has been given the user-role-organization assignments of:

- Business Analyst - Finance
- Business Analyst - Human Resources

In the Banner Workflow Modeler, when Susan selects an organization that will own a new model, she will be able to choose from these two departments. Additionally, when Susan searches for models, she will only be able to see models owned by the Human Resources and Finance departments. She will not be able to see, create or modify any of the models for the Student department, unless she is given the following user-role-organization assignment:

- Business Analyst - Student

Roles in Workflow Models

When creating a workflow model the user will assign globally owned roles to the activities, however, at the time of initiation, a workflow will run at a specific organization. Work will be delegated to worklists based upon role assignments at the organization for which the workflow is running. The same is true for role references in emails. If an email is configured to be sent to a Workflow role, only users with that role at the organization for which the workflow is running will receive the email.

Root Organization Owned Workflows

Workflows owned by the root organization, can be initiated by any organization. Please note that this only applies to workflow initiation and not administration. Root owned workflows can only be administered by users with modeler access at the root organization. This allows for central administration of workflows that represent processes common to all organizations.

For example, the SunGard Community College System (SCCS) has a common practice for new hires that all of its sub-organizations follow. If SCCS is defined to be the owner of this common workflow, only users with modeler access at SCCS can administer the flow, but any organization can initiate it.
Sub-Organization Owned Workflows

Workflows owned by a sub-organization, can only be administered by users who have modeler access for the sub-organization. Sub-organization owned workflow models are restricted in that they can only be initiated at that sub-organization.

For example, SunGard Institute of Technology, a sub-organization of SCCS, has a process that is unique to that institution. When modeling the workflow, the owning organization will be SunGard Institute of Technology and only users who have modeler access at this sub-organization will be able to administer the workflow model. Also, this model can only be initiated at SunGard Institute of Technology.

Initiating Work

There are several ways to initiate a workflow, all of which are organization specific. When a workflow has been initiated, it is called a workflow instance. Each instance can have a specific name to make it unique. A workflow can be initiated either manually or via an automated process.

More often than not, workflows will be automatically initiated to make them more efficient. An automatic initiation is when something outside of the workflow system starts a workflow. For example, an address change entered via a web page or a student withdrawal request entered electronically might automatically initiate the process.

Testing of workflows is performed in the Banner Workflow Modeler. There are cases, however, where a workflow needs to be started on demand rather than by some electronic action. An example of a manual initiation, generally accomplished via the My Processes page, might be a vacation request or a process that includes a hard copy document where there is no automation involved to initiate the process.

In either a manual or automatic initiation, each workflow instance will be run at one or more organizations. Below are rules that govern initiating a workflow from the various options.

Manual Initiation via the Banner Workflow Modeler

Workflows can be manually initiated from within the workflow modeler, mostly for testing purposes. Additionally:

- The user must have the privileges to create/update models to initiate the workflow.
- The user must have privileges for the organization defined in the workflow to see the model.
- The model must have a status of Test or Active.
When a workflow initiation is requested, the Start Workflow window is displayed. This window presents the user with a drop down list of organizations from which to run the workflow. The organization drop down will contain a list of all organizations for which the model can be run based on the organization associated with the model. Additionally:

- If the model organization is Root, the model can be initiated at root and/or any sub-organization.
- If the model organization is a sub-organization, the model can only be initiated at that sub-organization.

**Manual Initiation via the My Processes page**

Workflows can be manually initiated from the My Processes page. The My Processes page provides the user with a list of business processes/organizations associated with workflows that the user can initiate. A business process can be associated with one or more workflow definitions. The business processes are assigned to a combination of roles and organizations on the Business Process page in the Enterprise Management window.

If the user has the specified role at the specific organization, the user may initiate the workflow from the My Processes page.

**Automated Initiation via Business Events**

The most common way to initiate a workflow is via an automatic start. The automated initiation mechanism in workflow is a business event. A business event is an external stimuli which initiates a business process/workflow from outside the workflow system. Business Events are not organization specific. However, the workflow association to the Business Event is organization specific. Please consider the following information about automatic initiation via business events:

- The external stimuli can come from anywhere, and is not organization specific.
- Multiple organization/workflow associations can exist for a single event.
- The workflow for each organization/event association will be initiated if guard conditions do not exist or the guard condition equates to true.
- The work will be performed at the organization that owns the workflow instance.
Running Workflows

Once a workflow is initiated, it is called a workflow instance. Work must be performed to progress the workflow. All work that requires human interaction, is assigned to roles, and work will appear on worklists for users based on the user-role-organization assignments at the user level coupled with the organization that owns the workflow instance. However, work that is done by the system, such as programs and procedures, does not appear on user worklists. This section provides some insight into completing work as well as managing workflow instances.

Workflow Status

Every workflow that is initiated will have an entry in the workflow status page. Workflow status provides details for every workflow instance. Workflow status is an option available to all users. However, each user will be restricted to what they can see or do. Please consider the following information about Workflow Status:

- All users have access to Workflow Status.
- Only users with user-role-organization assignments will be able to see workflow instances on the workflow status page.
- Only users who have participating roles in a workflow instance will be able to open the status.
  - Each user will be able to view the details for the activities their role started/completed.
  - Details will not be available for any activity that has not yet been reached in the workflow.
- Owners/Administrators of a model will be able to open the workflow status and each activity.
  - Owners and administrators will be given an option to stop the workflow.
  - Owners will have the ability to view and correct alerts depending on the error.
- Users that have the ability to open an activity, will be presented with options for that activity depending on the current state, such as Stop, Start, and Release.

The Workflow Status filter will display all workflow instances for all the organizations where the user has a role if nothing is entered. Additionally, a drop-down list of all organizations where the user has at least one role will be displayed.
**Event Auditing**

The External Event page found in the Business Events section of Workflow allows for administrative monitoring of all business event instances. If an event was submitted for evaluation, at least one entry should be in the External Event page. An event can start any number of workflows for any number of organizations. Auditing the external events page will allow you to identify:

- **Event Failure** - If an event has failed, the error along with detail data will be displayed. If an event fails, no workflows associated with it will be initiated.
- **Event Completion** - If an event completes successfully, the process evaluation section will show the workflow instances that have been initiated. Each event can initiate multiple workflows at multiple institutions. The external event page will provide detailed information on which workflows at which organizations did or did not get initiated.

**Performing Work**

Once a workflow has been initiated, work is sent to the users that have the appropriate organization-role assignments in the model and work will appear on the user’s worklist. The worklist will display all the work for that user for all organizations for which that user has a user-role-organization assignment. Please understand that:

- Each item on the worklist will be associated with an organization.
- The Worklist shows an aggregate view of work for all organizations on a single list.
- When work items are launched, the user will perform work at the organization that owns the workflow instance.

If you are working in a MIF environment and the work item launches Banner, Banner MIF and security will determine if the user can perform the assigned work in Banner.

**Managing Workflow Alerts**

If the progress of a workflow instance is interrupted due to a problem, a workflow alert is generated. The alert will appear on the Workflow Alerts page. A user will only be able to see workflow alerts if the user has the role of the workflow owner at the organization that owns the workflow instance.

The Workflow Alert page provides the workflow instance name and a detailed error message. The Workflow Alerts page also provides a link to the Workflow Status page. The Workflow Status page gives additional detail on the error and possible solutions to correct the problem to advance the workflow instance.
In-process Monitoring

The In-Process Monitoring page gives a status of the aggregate view of all instances for a given workflow and provides drill down capability to look at the running activities for each workflow instance. If the workflow model has metrics incorporated, the in-process monitoring page provides a count of workflows and activities that are lagging and/or overdue.

Metrics

Metrics is a way to determine if work is being done in a timely fashion. Using metrics provides a way to monitor workflows that are lagging behind or overdue. In order to take advantage of metrics, metrics must be built into each model. The model would need to include a Work Calendar, estimated time to complete and lagging percentage for each workflow and/or each workflow activity.

Users with a role that allows for in-process monitoring will be presented search options for organization and model name. Please understand that:

- The organization drop-down will list all organizations for which the user has privileges.
- The model name drop-down will list all models which may be run from that organization. Only one model/organization can be selected at a time.
  - If a model is associated with the Root organization at build time, it can be run at root or any of the sub-organizations. If the user has both root and sub-organizations, the user will be able to see all models at the sub-organization and at the root organization.
  - If the user selects root, only models associated to the root organization will appear in the search.
  - If the user selects a sub-organization, only models associated to the sub-organization will appear in the search.

The In-Process Monitoring page will display a count of running workflows at the various stages including those that are lagging and overdue if metrics are built into the model.
Deleting Workflow Instances

The Delete Workflow page is part of the Workflow System Administration section. It allows users to delete instances of workflows. If you have the proper privileges for deleting workflows, you will be able to see all workflows that were started for the organizations associated with your user-role-organization assignments. However, you will only be able to delete the running workflow if the following conditions are true:

• The user has access to the Workflow System Administration option.

• If the workflow model status is Test, any user with the access to the organization that owns the instance can delete the workflow instance.

• If the workflow model status is Active, only users who have the role of the workflow owner and/or the administrator at the organization that owns the instance can delete the workflow.

Workflow Organizations and MIF

MIF is a UDC architecture for partitioning data to allow a single application deployment to serve multiple target institutions, resulting in a cost savings in deploying and administering multiple systems.

The MIF architecture in Banner uses Oracle Virtual Private Database (VPD) technology to segregate data among institutions in a single database. This is done by addition of a column that holds a MIF code that is added to applicable Banner tables. Banner names this column VPDI_CODE. The MIF code refers to the institution that owns the record. The MIF/VPD architecture transparently adds the MIF code to queries against Banner tables that are using MIF. Therefore, only data associated with the institution at which the user is performing work will be returned.

Defining MIF codes with Organizations

Banner Workflow does not use VPD to partition data between institutions, but when a MIF code is passed, Banner Workflow is able to communicate with a Banner system that uses VPD to support MIF. To do this, a MIF code is set as an attribute on each organization in Banner Workflow. This value should match the MIF/VPDI code used to represent the corresponding institution in Banner. See “Organizations” on page 69 for more information on how to define or edit an organization in Banner Workflow.
Launching Banner Forms

Banner Workflow and the target Banner system must be kept synchronized. If the Banner system being accessed by a workflow is MIF enabled, then the Banner Workflow organization must have a MIF code assigned. If the workflow has a MIF code assigned, then the target Banner system must be MIF enabled. An error will occur if the MIF code is not consistent between Banner and Banner Workflow.

When launching a Banner form from the worklist, the Banner session created for that form will be locked to the MIF code associated with the organization for the workitem instance. That is, the VPD selector in Banner will be disabled and Banner context will be for the MIF code that the Workflow launcher passed in. Any subsequent launch against the same MIF code, will re-use the existing session. If a Banner work item for a different MIF code is launched, a new Banner session will be opened to service the launch request.

MIF-aware Automated SQL Activities

Banner Workflow provides two types of automated SQL activities for accessing a Banner MIF enabled database. The automated SQL activities are extensions of existing Workflow automated SQL types. The difference is that the MIF-aware types pass the MIF code to the Banner database before executing the SQL query or stored procedure. Setting up an automated activity to accesses MIF enabled Banner involves selecting the correct technology type- MIF aware or non-MIF aware.

The two new launchers as defined by their java classname in the client launch parameter are:

com.sct.workflow.services.autoactivity.banner.MifAwareAutomatedSQLQuery
com.sct.workflow.services.autoactivity.banner.MifAwareAutomatedSQLProcedure

Banner Workflow provides technology types that already have these launchers defined. In the Banner 7.0 Banner Workflow seed data set, the MifTypes.xml file should be imported. Importing this file into Banner Workflow will install two new types:

- MIF-aware SQL Query - for creating SQL Query automated activities.
- MIF-aware Stored Procedure- for creating Automated stored procedure activities.

When defining automated activities against a MIF enabled Banner system, make sure to select one of the appropriate MIF-aware Technology Types. All of the other attributes and parameters set up for the business component will be the same as standard automated activities.

At run time, ensure that the organization has the proper MIF code set. If a SQL activity is performed using one of the MIF-aware types and there is no MIF code defined on the organization, an error will occur and a Workflow alert will result.
Workflow Organizations Summary Points

This chapter provided details to set up an environment for sub-organizations. Here are some key points to summarize the information:

Organizational Ownership

- Root is the owner of all global, non-organization specific objects. Users must have role assignments at the root organization to view, create, update, and delete globally owned objects. Users must have role assignments at root to administer workflow tasks for globally owned data at any and all organizations.

- All organization specific objects require a user to have role assignments at that organization to view, create, update, and delete locally owned objects.

- Users will be restricted to access objects and assignments at the organizations for which they have at least one user-role-organization assignment. User-role-organization assignments will determine the privileges for the user at the organization.

- Each Workflow organization can be associated with a MIF code in Banner. Work launched from workflow at a specific organization will use the MIF code associated with the organization from which the workflow is initiated. All work will be conducted using the organization/MIF code that owns the instance.

- Separate Banner sessions will be launched for each sub-organization associated with a workitem that is performed.

User Management

- User-role-organization assignments at the user level establish what users can and cannot do in Banner Workflow. Security groups are associated with roles, and roles are associated with users at organizations.

- For a user to be associated with an organization, the user must have at least one role at an organization. If no user has authority to associate an organization, the wfroot user must assign the first organization assignment.

- Workflow administration minimally requires user-role-organization at the root organization for any global/non-organization specific tasks, User Management, Role Management, and the Banner Workflow Modeler for example. Additionally, a user-role-organization assignment must also exist at the sub-organization for the user to reference that sub-organization in any administrative tasks. Therefore, a user performing Workflow administration for the entire system needs to have roles associated at both root and the sub-organizations.
Banner Workflow Modeler

- Models at the root organization can be initiated at the root organization and at any sub-organization.
- Models built at a specific sub-organization may only be initiated at that organization.
Section II

Analyze
Organizations

Organizations allow Banner Workflow to support MIF, as well as provide an ability to divide tasks and responsibilities between a consortium of schools, an institution, a department or a sub-department.

In Banner Workflow, organizations have a tree-like hierarchy. The hierarchy structure is used to partition data among the organizations. Each Banner Workflow implementation must have exactly one root organization which has no parent, this is true whether you choose to implement the new organization framework or not. This root organization will be the parent of any number of child organizations.

Note
Banner Workflow is delivered with a parent organization named Root. Root can be renamed to the name of your institution.

Note
All child organizations belong to a single parent organization. Each child organization will automatically inherit the access privileges of the parent organization.

Organization Management

In Banner Workflow, organizations are managed in the Workflow System Administration section.

Add a Child Organization

To add a child organization:

1. Select Workflow System Administration from Administration.

2. Select Organizations from the Workflow System Administration page.

3. On the Organizations page, click Add Organization.

4. Click Search.
5. Enter user details:

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The organization name must be unique.</td>
</tr>
<tr>
<td>MIF Code</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Description</td>
<td>No restrictions. Middle Name is optional.</td>
</tr>
</tbody>
</table>

**Note:** All child organizations belong to a single parent organization. Each child organization must have a unique name.

6. Click **Save Organization**.

**Modify an Organization**

To modify an organization:

1. Select Workflow System Administration from Administration.

2. Select Organizations from the Workflow System Administration page.

3. Click an existing Organization in either the Root Organization or Child Organization section of the Organizations page.

4. Modify organization details:

5. Click **Save Organization**.
Delete an Organization

To delete an organization:

⚠️ **Warning**
Please use extreme caution when deleting organizations. Before deleting an organization, ensure that the implemented organization framework is considered.

1. Select Workflow System Administration from Administration.

2. Select Organizations from the Workflow System Administration page.

3. Click an existing Organization in the Child Organization section of the Organizations page.

📝 **Note**
Root Organizations can be modified but may not be deleted.

4. Click **Delete Organization**.

5. When you are asked to confirm the deletion, click **OK**.
5 Users, Roles, and Proxies

This chapter discusses the primary relationships that are necessary for work to be completed in the Banner Workflow system. The following accounts and assignments must exist in Banner Workflow:

- **User Accounts** - Each person who will use Banner Workflow must be identified as a user with a user account.

- **Role Assignments** - The different types of work that people perform determines their role at their place of employment. A role assignment must be made at an organization.

Additionally, though not required, proxy user accounts can add a great deal of benefit to an organization. A proxy user is someone who performs the work items in place of another user. The proxy relationship can be used when a primary user is on vacation or is ill and another user can step in and temporarily take the primary user’s place.

Together, users, roles, and proxies combine to form a vital part of your organization’s workflow usage.

**User Accounts**

Each person who will use Banner Workflow must be identified as a user with a *user account*. A user account contains a person’s logon ID, name, email address, effective dates, password, authentication method, notification and launch preferences, user-role-organization assignments, proxy assignments, and who the user is a proxy for. Upon creation, a user account is marked as enabled, however, it can be disabled if it is not ready to be used. User accounts also have an effective date range during which they are valid.

For a user to perform any work in Banner Workflow, that person’s user account must be assigned to at least one role at an organization. This relationship is established via a user-role-organization assignment.

User accounts are managed primarily by System Administrators, but Business Analysts are also authorized to manage user-role-organization assignments.
A user account can have a status of enabled or disabled.

- If the account is **enabled**, the user can logon to Banner Workflow. Once logged on, the user can participate in workflows.
- If the account is **disabled**, the user cannot log on.

Disabling a user account is an effective way to temporarily remove a user’s access to Banner Workflow.

You can also change a user’s access to Banner Workflow by using effective dates. When you create a user account, you must assign it a date range during which the account is valid. This is useful when you need to create a user account for a temporary employee. You can create open-ended date ranges by simply not entering an end date. You can change effective dates as needed.

User-role-organization assignments and proxy assignments also use effective date ranges. For information on these effective dates and how they interact with the effective dates for a user account, see “Effective Dates for User-Role-Organization Assignments and Proxy Users” on page 102.

### Create a User Account

To create a user account:

*Note*

Only users who have a role mapped to the ug_admin_users_fullAccess Security Group can manage user account information. In the default data delivered with Banner Workflow, only System Administrators have this mapping.

1. Select User Management from Administration.

2. Click New User Accounts.
3. Enter user details:

**Logon ID**
The user’s logon ID for Banner Workflow. The logon ID must be unique. If it is not unique, you will not be able to save the user account.

The logon ID and password should match the logon IDs of other SunGard Higher Education applications that will be launched from Banner Workflow, otherwise, you may need to log into the external application separately.

Once external applications are launched, their security protocols will be in effect.

**Last Name**
The user’s last name.

**First Name**
The user’s first name. This field is optional.

**Middle Name**
The user’s middle name or initial. This field is optional.

**Email**
The user’s e-mail address. This field is optional.

**Effective From**
The date and time on which the user account becomes effective. This date is required. To select a date, click the calendar icon.

*Note:* All dates must be entered in the DD-MMM-YYYY hh:mm:ss AM/PM format. For example, 04-JUL-2003 12:00:00 PM.

**Effective To**
The date and time the account will cease to be effective. This can be any date that occurs on or after the **Effective From** date, but cannot be earlier than the current date. To select a date, click the calendar icon.

To create an open-ended date range, leave this field blank.

*Note:* All dates must be entered in the DD-MMM-YYYY hh:mm:ss AM/PM format. For example, 04-JUL-2003 12:00:00 PM.

*Note:* A user account has an effective date range. Each role and proxy assignment that is made for a user account has its own separate effective date range.

*Note:* The start date for the user account’s effective date range should be earlier than the start date for all of that user’s role and proxy assignments.

**Password**
The user’s new password.
Confirm Password  
Re-enter the password. If you enter it incorrectly, you will receive a message indicating that the password you entered is not valid.

Once a password has been set, you cannot look it up.

Enabled  
Before a user can log on to Banner Workflow and participate in a workflow, that person’s user account must be enabled.

Yes.  The account is enabled. For a new user account, this is the default.

No.  The account is disabled.

Authentication  
There are two ways to authenticate with Banner Workflow:

- **Workflow Authentication** - Authenticate a user using the Workflow Authentication System.

- **External Authentication** - Authenticate a user using an External Authentication System.
Activity Notifications

Activity notifications inform workflow participants that activities are ready to be performed within a specific workflow. The email based notifications can be modeled to be both informational and interactive, allowing users to launch work items directly from the email messages.

Yes. Activity notifications are enabled for a user account. Banner Workflow is permitted to send activity notification emails to this user.

No. Activity notifications are disabled for a user account. Banner Workflow will not send any activity notification emails to this user.

Deadline Notifications

Deadline notifications allow an email to be sent by Banner Workflow to inform a user that a work related deadline is approaching.

Yes. Deadline notifications are enabled for a user account. Banner Workflow is permitted to send deadline notification emails to this user.

No. Activity notifications are disabled for a user account. Banner Workflow will not send any deadline notification emails to this user.

Launching

Select a launch preference:

- **Always prompt for client or web launch** - Instructs Banner Workflow to prompt you for your launch preference each time a launch occurs.

- **Launch web when available** - Instructs Banner Workflow to always launch using a web application when available.

- **Launch client when available** - Instructs Banner Workflow to always launch using a client application when available.

4. Click **Save User**.
Modify a User Account

To modify a user account:

Note

Only users that have a role mapped to the ug_admin_users_fullAccess Security Group can modify user account information. In the default data delivered with Banner Workflow, only System Administrators have this mapping.

1. Select User Management from Administration.
2. Click Existing User Accounts.
3. On the User Search page, enter search criteria and click Search to locate the user account you would like to modify.
4. Click an existing Logon ID from the User Search Results page.
5. Modify user details:

Warning

The logon ID and password used for Banner Workflow may be the same as those used for other SunGard Higher Education applications that are launched from Banner Workflow. Check your policies and procedures before changing logon ID or password information.

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logon ID</td>
<td>The logon ID must be unique.</td>
</tr>
<tr>
<td>Last Name</td>
<td>No restrictions. However, a last name is required.</td>
</tr>
<tr>
<td>First Name</td>
<td>No restrictions. First Name is optional.</td>
</tr>
<tr>
<td>Middle Name</td>
<td>No restrictions. Middle Name is optional.</td>
</tr>
<tr>
<td>Email</td>
<td>No restrictions. Email is optional.</td>
</tr>
<tr>
<td>Item</td>
<td>Any restrictions on modifying?</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Effective From</td>
<td>You must enter a valid date and time.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> All dates must be entered in the DD-MMM-YYYY hh:mm:ss AM/PM format. For example, 04-JUL-2003 12:00:00 PM.</td>
</tr>
<tr>
<td></td>
<td>You can use the provided date widget or you can manually enter the date.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> A user account has an effective date range. Each role and proxy assignment that is made for a user account has its own separate effective date range.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The start date for the user account’s effective date range should be earlier than the start date for all of that user’s role and proxy assignments.</td>
</tr>
<tr>
<td>Effective To</td>
<td>You must enter a valid date:</td>
</tr>
<tr>
<td></td>
<td>• The <strong>To</strong> date must be on or after both the current date and the <strong>From</strong> date.</td>
</tr>
<tr>
<td></td>
<td>• To create an open-ended date range, leave the <strong>To</strong> date blank.</td>
</tr>
<tr>
<td>Enabled</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Authentication</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Activity</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Notifications</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Deadline</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Notifications</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Launching</td>
<td>No restrictions.</td>
</tr>
</tbody>
</table>

6. Click **Save User**.
Copy a User Account

To copy a user account:

**Note**
Only users that have a role mapped to the ug_admin_users_fullAccess Security Group can copy a user account. In the default data delivered with Banner Workflow, only System Administrators have this mapping.

1. Select User Management from Administration.
2. Click Existing User Accounts.
3. On the User Search page, enter search criteria and click Search to locate the user account you would like to copy.
4. Click an existing Logon ID from the User Search Results page.
5. Click **Copy User**.
6. Modify user details as necessary.

**Note**
A copied user account is not automatically enabled. Before a copied user account can be used, you must set the Enabled field to Yes.

7. Click **Save User**.

**Note**
The default password for a copied user account is automatically set to “u_pick_it”.

Disable a User Account

If a user will not be using Banner Workflow for a given period of time, you may want to disable the account. By disabling the account, you do not need to worry about unauthorized access to Banner Workflow, yet you will be able to easily restore access for that user when it is needed.

If an individual’s employment is terminated and you are certain that the individual will not return, you may want to delete the user account. Otherwise, disable or change the effective date range of the account.

To disable a user account:

1. Select User Management from Administration.
2. Click Existing User Accounts.
3. On the User Search page, enter search criteria and click Search to locate the user account you would like to disable.

4. Click an existing Logon ID from the User Search Results page.

5. In the Enabled field, select No to disable the user account.

6. Click Save User.

Delete a User Account

When an individual’s employment is terminated and you are certain that the individual will not return, delete the user account. To temporarily disable a user’s account, such as when an employee takes a temporary leave of absence, see “Disable a User Account” on page 80.

Deleting a user account is a simple process, but once you have deleted a user account, you cannot restore it. Make sure you want to delete it before you do so. You cannot delete the user account you used to log on for this session of Banner Workflow.

Note

Only System Administrators can delete a user account.

1. Select User Management from Administration.

2. Click Existing User Accounts.

3. On the User Search page, enter search criteria and click Search to locate the user account you would like to delete.

4. Click an existing Logon ID from the User Search Results page.

5. Click Delete User.

6. When you are asked to confirm the deletion, click OK.

Restrictions on deleting a user account

Only a System Administrator can delete a user account. You cannot delete the user account you used to log on for this session of Banner Workflow.
Change a User Password

To change a user password:

**Note**

Only System Administrators can modify user account information.

**Note**

You cannot change a user’s password maintained by an external authentication application in Banner Workflow. The password must be changed within the external application.

1. Select User Management from Administration.

2. Click Existing User Accounts.

3. On the User Search page, enter search criteria and click Search to locate the user account whose password you would like to change.

4. Click an existing Logon ID from the User Search Results page.

5. Modify user details:

**Warning**

The logon ID and password used for Banner Workflow may be the same as those used for other SunGard Higher Education applications that are launched from Banner Workflow. Check your policies and procedures before changing logon ID or password information.

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Password</td>
<td>Enter the user’s new password.</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong>: The password must be different from the Logon ID.</td>
</tr>
<tr>
<td>Confirm New Password</td>
<td>Re-enter the password.</td>
</tr>
</tbody>
</table>

**Related information**

For information on modifying user-role-organization assignments and proxy relationships, see “Modify a User-Role-Organization Assignment via User Management” on page 89 and “Modify a Proxy User” on page 99.

For information on effective date ranges, see “Effective Dates for User-Role-Organization Assignments and Proxy Users” on page 102.
Roles

Each person at an organization performs certain work. Different people perform different types of work. In “real” life, the different types of work that different people perform determines their role at their place of employment.

Similarly, Banner Workflow has the concept of role: a role is a title given to a group of responsibilities; the title applies to one or more individuals who will perform a specific set of work. People who will perform the same work have the same role.

For a user to perform any work in Banner Workflow, that person’s user account must be related to a role at an organization. This relationship is established via a user-role-organization assignment. In Banner Workflow, each user should be assigned one or more roles.

Roles are also assigned to workflow activities. All users who are assigned the same role will see the same work items (activities) in their Worklists.

Standard Roles

Banner Workflow is delivered with two standard roles: Business Analyst and System Administrator.

System security is based on security groups. Security groups are assigned to roles to allow users to access the parts of the Banner Workflow system necessary to complete the work assigned to their role. For more information on security groups, see the Banner Workflow Technical Integration Guide.

Standard roles are delivered with Banner Workflow so that you may perform the set up that is necessary to use the product. While it is possible to replace the standard roles with roles of similar functionality, it is not recommended. Privileges referenced in this manual pertain to the roles and authorizations delivered with the base Banner Workflow system.

Business Analyst

The role of Business Analyst is responsible for managing the enterprise, roles, user-role-organization assignments, categories, business events, business processes, fixing and modeling workflows, and attaching workflows to business processes.

System Administrator

The role of System Administrator is responsible for managing the enterprise, user accounts, roles, passwords, business events, categories, product types, component types, technology types, modeling workflows, and performing workflow system administration.
Secured Roles

Users belonging to the `ug_admin_roles` security group are allowed to assign/unassign roles to users. In many cases, it is advantageous to allow Business Analysts to be able to assign roles to users as necessary for them to perform in workflows. However, please be aware that if a Business Analyst could assign any role to themselves, they could promote themselves to be System Administrators with full access to all Banner Workflow features.

To protect the System Administrator role, Secured Roles are available. To mark a role as secured, a user must be in the security group `ug_admin_securedRoles`. Only users in that group may mark a role as secured/unsecured and assign/unassign a secured role to any user.

If you are going to allow users other than System Administrators to assign roles, it is recommended that the System Administrator role be mapped to the `ug_admin_securedRoles` and be marked as secured. This will prevent users that have the right to assign roles but that are not themselves System Administrator from promoting themselves to be System Administrators.

**Note**

The default bootstrap data delivered with the workflow system does not declare the System Administrator role as secured. You must change the role yourself if you wish to use the secured roles features.

**Note**

Whether a role is secured or not does not affect proxy to that role. If you assign a proxy to a role that gives full access to the system, the proxy user has full access and will be able to assign themselves a secured role.

**Note**

To add a user assignment to a secured role, you must have a role that is mapped to the `ug_admin_securedRole` security group in Security Management.
**Create a Role**

To create a role:

*Note*  
Only Business Analysts and System Administrators can create a role.

1. Select Role Management from Administration.

2. Click **Add Role**.

3. Enter role details:

   - **Name**: The name that identifies the role. The role name must be unique.
   - **Description**: The description of the role. This is optional.
   - **Secured**: If this checkbox is selected, security will be enabled for this role.

   *Note*: To add a user assignment to a secured role, a user must have a role that is mapped to the a ug_admin_securedRole security group in Security Management.

4. Click **Save Workflow Role**.
**Modify a Role**

To modify a role:

**Note**

Only Business Analysts and System Administrators can modify a role.

1. Select Role Management from Administration.

2. Click the role you would like to modify.

3. Modify role details:

   - **Name**: The name that identifies the role. The role name must be unique.
   - **Description**: The description of the role. This is optional.
   - **Secured**: If this checkbox is selected, security will be enabled for this role.

   **Note**: To modify a user assignment to a secured role, a user must have a role that is mapped to the a ug_admin_securedRole security group in Security Management.

4. Click **Save Workflow Role**.

**Delete a Role**

To delete a role:

**Note**

Only Business Analysts and System Administrators can delete a role.

1. Select Role Management from Administration.

2. Select an existing Role from the Role Management page.

3. Click **Delete Selected Roles**.

4. When you are asked to confirm the deletion, click **OK**.

**Restrictions on deleting a role**

You cannot delete a role if the role is used in a workflow with any status.
User-Role-Organization Assignments

For you to perform work in Banner Workflow, your user account must be related to a role at an organization. This relationship is established via a user-role-organization assignment. Role assignments provide a way to categorize users who have similar skills and responsibilities.

A user-role-organization assignment establishes system privileges for a user and determines the organization at which users are notified of work that must be completed for a workflow to advance.

You can add or remove user-role-organization assignments from either the User Management or Role Management sections. The procedures are similar and the end result is the same, regardless of which method you use.

Primary User-Role-Organization Assignments

A primary user-role-organization assignment specifies the responsibilities and privileges that a user can carry out as a normal course of work. A user will be able to perform activities for this role at the organization at all times.

Proxy User-Role-Organization Assignments

A proxy role assignment specifies the responsibilities that a user can carry out on a temporary basis, such as when the person with the primary assignment is out of the office. The user will be able to perform activities for this role at the organization only when a primary user has assigned that user as a proxy for that role at that organization.
Role Assignments via User Management

When adding or removing more than one role to a user, use the User Management page.

Add a Role Assignment via User Management

To add a role assignment via User Management:

1. Select User Management from Administration.
2. Click Existing User Accounts.
3. On the User Search page, enter search criteria and click Search to locate the user account you would like to add role assignments to.
4. Click an existing Logon ID from the User Search Results page.
5. In the Role Assignments section of the page, click Add Role Assignment.

Note
To add a user assignment to a secured role, a user must have a role that is mapped to the a ug_admin_securedRole security group in Security Management.

6. Enter user-role-organization assignment details:

   Organization  Organization to which the user is assigned.

   Role name  Role that is being assigned to the user.

   Note: Users may only create role assignments at organizations in which they have been assigned System Administration or Business Analyst responsibilities.
To modify a user-role-organization assignment via User Management:

1. Select User Management from Administration.

2. Click Existing User Accounts.

3. On the User Search page, enter search criteria and click Search to locate the user account you would like to modify role assignments for.

4. Click an existing Logon ID from the User Search Results page.

7. Click Save.
5. In the Role Assignments section of the page, click the Role name you would like to modify.

**Note**

To modify a user assignment to a secured role, a user must have a role that is mapped to the ug_admin_securedRole security group in Security Management.

6. Modify user-role-organization assignment details:

   - **Organization**: Organization to which the user is assigned.
     
     **Note**: Users may only modify role assignments at organizations in which they have been assigned System Administration or Business Analyst responsibilities.

   - **Role name**: Role that is being assigned to the user.

   - **Effective From**: The date on which the user-role-organization assignment becomes effective.
     
     **Note**: All dates must be entered in the DD-MMM-YYYY hh:mm:ss AM/PM format. For example, 04-JUL-2003 12:00:00 PM.
     
     **Note**: The effective from date for the user-role-organization assignment should be no earlier than the effective from date for the user account.

   - **Effective To**: The date the user-role-organization assignment will cease to be effective. Enter any date that occurs on or after the date in the **Effective From** field. To create an open-ended date range, leave **Effective To** blank.
     
     **Note**: All dates must be entered in the DD-MMM-YYYY hh:mm:ss AM/PM format. For example, 04-JUL-2003 12:00:00 PM.
     
     **Note**: The effective to date for the user-role-organization assignment should be no later than the effective to date for the user account.

   - **Type**: Select **Primary** if you would like this user-role-organization assignment to be a primary assignment.

     Select **Proxy** if you would like this user-role-organization assignment to be a proxy assignment.

7. Click **Save**.
Remove a User-Role-Organization Assignment via User Management

To remove a user-role-organization assignment via User Management:

1. Select User Management from Administration.

2. Click Existing User Accounts.

3. On the User Search page, enter search criteria and click Search to locate the user account you would like to remove role assignments from.

4. Click an existing Logon ID from the User Search Results page.

5. In the Role Assignments section of the page, select the Role name you would like to remove.

   Note
   To remove a user assignment to a secured role, a user must have a role that is mapped to the a ug_admin_securedRole security group in Security Management.

   Note
   Users may only remove role assignments at organizations in which they have been assigned System Administration or Business Analyst responsibilities.

6. Click Delete Selected Role Assignments.

7. When you are asked to confirm the deletion, click OK.

   Note
   It is possible for a user-role-organization assignment to be deleted for a user with a directed or reserved activity on his worklist for the role being deleted. If this happens, when the activity is launched, the system displays a message indicating that the user does not have permission to perform the activity. To resolve this situation, the user should notify the workflow owner or administrator.
User Assignments via Role Management

When adding or removing more than one user to a role, use the Role Management page.

Add a User Assignment via Role Management

To add a user assignment via Role Management:

1. Select Role Management from Administration.

2. Click an existing Role name from the Role Management page.

3. In the User Assignments section of the page, click Add User Assignments.

Note

To add a user assignment to a secured role, a user must have a role that is mapped to the a ug_admin_securedRole security group in Security Management.

4. Enter user-role-organization assignment details:

   Organization   Organization to which the user is assigned.

   Note: Users may only create role assignments at organizations in which they have been assigned System Administration or Business Analyst responsibilities.

   User Login     User that is being assigned to the role.
Modify a User-Role-Organization Assignment via Role Management

To modify a user assignment via Role Management:

1. Select Role Management from Administration.

2. Click an existing Role name from the Role Management page.

5. Click Save.
3. In the User Assignments section of the page, click the User Login you would like to modify.

**Note**
To modify a user assignment to a secured role, *a user must have a role that is mapped to the a ug_admin_securedRole security group in Security Management.*

4. Modify user-role-organization assignment details:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>Organization to which the user is assigned.</td>
</tr>
<tr>
<td><strong>Note:</strong> Users may only modify role assignments at organizations in which they have been assigned System Administration or Business Analyst responsibilities.</td>
<td></td>
</tr>
<tr>
<td>User Login</td>
<td>User that is being assigned to the role.</td>
</tr>
<tr>
<td>Effective From</td>
<td>The date on which the user-role-organization assignment becomes effective.</td>
</tr>
<tr>
<td><strong>Note:</strong> All dates must be entered in the DD-MMM-YYYY hh:mm:ss AM/PM format. For example, 04-JUL-2003 12:00:00 PM.</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> The effective from date for the user-role-organization assignment should be no earlier than the effective from date for the user account.</td>
<td></td>
</tr>
<tr>
<td>Effective To</td>
<td>The date the user-role-organization assignment will cease to be effective.</td>
</tr>
<tr>
<td><strong>Note:</strong> All dates must be entered in the DD-MMM-YYYY hh:mm:ss AM/PM format. For example, 04-JUL-2003 12:00:00 PM.</td>
<td></td>
</tr>
<tr>
<td>Effective From</td>
<td>The date the user-role-organization assignment will cease to be effective.</td>
</tr>
<tr>
<td><strong>Note:</strong> The effective to date for the user-role-organization assignment should be no later than the effective to date for the user account.</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Select <strong>Primary</strong> if you would like this user-role-organization assignment to be a primary assignment. Select <strong>Proxy</strong> if you would like this user-role-organization assignment to be a proxy assignment.</td>
</tr>
</tbody>
</table>

5. Click **Save.**
Remove a User-Role-Organization Assignment via Role Management

To remove a user assignment via Role Management:

1. Select Role Management from Administration.

2. Click an existing Role name from the Role Management page.

3. In the User Assignments section of the page, select the User Login you would like to remove.

Note
To delete a user assignment to a secured role, a user must have a role that is mapped to the a ug_admin_securedRole security group in Security Management.

Note
Users may only remove role assignments at organizations in which they have been assigned System Administration or Business Analyst responsibilities.

4. Click Delete Selected User Assignments.

5. When you are asked to confirm the deletion, click OK.

Note
It is possible for a user-role-organization assignment to be deleted for a user with a direct activity on his worklist for the role being deleted. If this happens, when the activity is launched, the system displays a message indicating that the user does not have permission to perform the activity. To resolve this situation, the user should notify the workflow owner or administrator.
Proxy Users

A *proxy user* is someone who performs the work items in place of another user. The proxy relationship can be used when a primary user is on vacation or is ill and another user can step in and temporarily take the primary user’s place.

To be a proxy user, two relationships need to be created:

- The proxy user needs to have the appropriate primary or proxy user-role-organization assignment.
- The primary user needs to specify a user who has a primary or proxy user-role-organization assignment as a designated proxy user.

The following example scenario describes how proxy user-role-organization assignments can work at an institution:

**Example Scenario**

*Note*

In this example, assume that the system has been configured to only use one organization. Therefore, all user-role-organization associations will use the same organization.

You have three workers, Sophia, James, and Chad. Sophia has a primary user-role-organization assignments of *Clerk* and *Timesheet Entry*; James has a proxy user-role-organization assignment of *Clerk*, and Chad has a proxy user-role-organization assignment of *Timesheet entry*.

Sophia will be on vacation from May 1st through May 3rd. For those days, she has assigned James as her proxy user for the role of *Clerk* and Chad as her proxy user for the role of *Timesheet Entry*.

During that time frame:

- James will see in his worklist all of the *Clerk* work items that Sophia would normally see.
- Chad will see in his worklist all of the *Timesheet Entry* work items that Sophia would normally see.
- Sophia would see, if she came in and looked at her worklist, all of the *Clerk* and *Timesheet Entry* work items she would normally see.
When Sophia returns to work on May 4th:

- Sophia will see any uncompleted Clerk and Timesheet Entry work items from the previous week. She will not see any work items that have been started or reserved by James or Chad.
- James will still see any proxy Clerk work items that he has started or reserved.
- Chad will still see any proxy Timesheet Entry work items that he has started or reserved.

**Directed Activities with Proxy Users**

When a primary user who receives a directed activity has designated a proxy user, the proxy user will receive the directed activity only if the Non-Confidential checkbox was selected when the proxy user was set up.

**Confidential Activities with Proxy Users**

When a primary user who receives a confidential activity has designated a proxy user, the proxy user will receive the confidential activity only if the Confidential checkbox was selected when the proxy user was set up.

**Assign a Proxy User**

To assign a proxy user:

1. Select User Management from Administration.
2. Click Existing User Accounts.
3. On the User Search page, enter search criteria and click Search to locate the user account you would like to add a proxy user to.
4. Click an existing Logon ID from the User Search Results page.
5. In the Role Assignments section of the page, click Add Proxy.
6. Select a role-organization association to assign a proxy user relationship.
7. Click Add Proxy Details.
8. Enter information for these fields:

**User**

The logon ID of the user who is assigned as a proxy.

When you assign a user as a proxy user, the proxy user will see activities in his or her worklist as a result of the proxy. Your logon ID will indicate to this user that you are the person who would normally receive this activity in your worklist.

**Effective From**

The date on which the proxy becomes effective. Enter a date which is on or after the current date.

**Note:** All dates must be entered in the DD-MMM-YYYY hh:mm:ss AM/PM format. For example, 04-JUL-2003 12:00:00 PM.

You can use the provided date widget or you can manually enter the date.

A user account has an effective date range. Each role and proxy assignment that is made for a user account has its own separate effective date range.

The start date for the user account’s effective date range should be earlier than the start date for all of that user’s role and proxy assignments.
Repeat steps 3 through 7 for each proxy user you are adding.

**Modify a Proxy User**

To modify a proxy user:

1. Select User Management from Administration.

2. Click Existing User Accounts.

3. On the User Search page, enter search criteria and click Search to locate the user account you would like to modify a proxy user for.
4. Click an existing Logon ID from the User Search Results page.

5. In the Proxy Assignments section of the page, click the user name whose proxy information you would like to modify.

6. For the proxy user, you can modify the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective From</td>
<td>The date on which the proxy becomes effective. Enter a date which is before the <strong>Effective To</strong> date.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> All dates must be entered in the DD-MM-YYYY hh:mm:ss AM/PM format. For example, 04-JUL-2003 12:00:00 PM.</td>
</tr>
<tr>
<td></td>
<td>You can use the provided date widget or you can manually enter the date.</td>
</tr>
<tr>
<td>Effective To</td>
<td>The date on which the proxy ceases to be effective. Enter a date which is after the <strong>Effective From</strong> date.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> All dates must be entered in the DD-MM-YYYY hh:mm:ss AM/PM format. For example, 04-JUL-2003 12:00:00 PM.</td>
</tr>
<tr>
<td></td>
<td>You can use the provided date widget or you can manually enter the date.</td>
</tr>
<tr>
<td>Confidential</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Non-Confidential</td>
<td>No restrictions.</td>
</tr>
</tbody>
</table>

7. Click **Save**.

**Remove a Proxy User**

To remove a proxy user:

1. Select User Management from Administration.

2. Click Existing User Accounts.

3. On the User Search page, enter search criteria and click Search to locate the user account you would like to remove a proxy user from.

4. Click an existing Logon ID from the User Search Results page.
5. In the Proxy Assignments section of the page, select the proxy assignments you would like to remove.

6. Click **Delete Selected Proxies**.

7. When you are asked to confirm the deletion, click **OK**.
## Effective Dates for User-Role-Organization Assignments and Proxy Users

User accounts, user-role-organization assignments, and proxy users all have effective date ranges. In addition, the period during which a primary user requires a proxy user also has a date range. These date ranges have the following purposes and relationships:

<table>
<thead>
<tr>
<th>User account</th>
<th>User-role-organization assignment (primary and proxy)</th>
<th>Proxy user</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date range determines when: Enabled user account is valid.</td>
<td>User-role-organization assignment is valid.</td>
<td>Primary user’s work items will be sent to proxy user.</td>
</tr>
<tr>
<td>Date range must be: When the user account is created: The From date must be any date before the To date.</td>
<td>When the user-role-organization assignment is created: The From date must be any date before the To date.</td>
<td>When the proxy user is added: The From date must be any date before the To date.</td>
</tr>
<tr>
<td>The assignment is only effective when: The date is within the user account effective date range.</td>
<td>The assignment is only effective when: The date is within the primary user account effective date range.</td>
<td>The assignment is only effective when: The date is within the primary user-role-organization assignment effective date range. and The date is within the proxy user-role-organization assignment effective date range. and The date is within the proxy user-role-organization assignment effective date range.</td>
</tr>
<tr>
<td>User account</td>
<td>User-role-organization assignment (primary and proxy)</td>
<td>Proxy user</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Can the date range be modified?</td>
<td>Yes, after the user account is saved.</td>
<td>Yes.</td>
</tr>
<tr>
<td>Can the date range be open-ended?</td>
<td>Yes.</td>
<td>Yes.</td>
</tr>
<tr>
<td><strong>(Effective To date is left blank.)</strong></td>
<td></td>
<td>No.</td>
</tr>
</tbody>
</table>
The Business Component Catalog, or BCC, is a repository of categories with reusable components. Each category contains components and their associated parameters. When you create activities in a workflow, you use components from the BCC. A link to the BCC can be found in the Workspace under Administration.

Parts of the Business Component Catalog

This section identifies the different parts of the BCC and how they relate to each other.

Categories and Components

The BCC contains the following object types:

- Categories - Categories group and organize units of functionality called Business Components. For more information, see “Categories” on page 107.

- Components - Components represent units of functionality that are used within a workflow. For more information, see “Components” on page 108.

Parameters

Within the BCC, you can define component parameters. Component parameters represent values passed between an external software component and a workflow instance. Component parameters consist of a name, description, data type, and required and guaranteed indicators. You will work with parameters in both the Business Component Catalog and in workflow models. Component parameters are defined in the BCC. The way that data relates to the process and individual activities are defined in the Banner Workflow Modeler.
## Parameter Mapping

Components and business events use parameters to transfer data. The following information describes how parameter mappings are used to transfer data:

<table>
<thead>
<tr>
<th>Component</th>
<th>Workflow Context</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>This parameter can be mapped in this direction</td>
<td>to this parameter</td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>Workflow Context</td>
<td>To transfer data between workflow activities. Parameter values can be transferred either from a context parameter to a component parameter or from a component parameter to a context parameter.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Context parameter values are copied to a component when the work item is launched.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Component parameter values are copied to a workflow context parameter when the work item completes.</td>
</tr>
</tbody>
</table>

| Business Event | Workflow Context | Business event parameter data are fed into a workflow context parameter. Then, data is used in the workflow where the context parameter is mapped to a component parameter or used in a business rule. For more information on business event parameters, see “Business Event Parameter Types” on page 273. |
Categories

In the Business Component Catalog, a category is a means of grouping components.

Create a Category

To create a category:

1. Select Business Component Catalog within Administration.

2. Click Add New Category.

3. Enter the following information:

<table>
<thead>
<tr>
<th>Category Name</th>
<th>Name of the category. Category names should be fairly short and to the point.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category Description</td>
<td>Description of the category. A category description is not required, however it is helpful to include one.</td>
</tr>
</tbody>
</table>

4. Click Save Category.

Modify a Category

To modify a category:

1. Select Business Component Catalog within Administration.

2. Click an existing Category Name from the Business Component Catalog page.

3. Modify the Category Name or Description as desired.

4. Click Save Category.
Delete a Category

To delete a category:

1. Select Business Component Catalog within Administration.
2. Click an existing Category Name from the Business Component Catalog page.
3. Click Delete Category.
4. When you are asked to confirm the deletion, click OK.

Restrictions on Deleting a Category

You cannot delete a category if it has any associated business components.

Components

Components are units of functionality that are used within a workflow. The term “units of functionality” means that a component can be an application (such as Microsoft® Word) or a functional portion of an application (such as a Banner form).

Components are created and maintained in the Business Component Catalog and are used by workflow activities. For more information on how components are used by workflow activities, see “Activity Properties” on page 181.

Note
Each component in the Business Component Catalog must have a unique name, product type, and release ID combination.

Component Structure

Components are created within Categories in the Business Component Catalog. Before you create a component, review the following sections, which provide detailed information on various aspects of a component.
**Component Type**

Each component in the BCC has a component type. Component types inform Banner Workflow of the type of program that the component represents and where the program will be executed. A component can be of one of four different types:

<table>
<thead>
<tr>
<th>Component Type</th>
<th>Type of Program</th>
<th>Where is it Executed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>AutomatedNonWorkflowAware</td>
<td>A program that requires no user interaction. The program does not know how to communicate with Banner Workflow.</td>
<td>Workflow Server</td>
</tr>
<tr>
<td>AutomatedWorkflowAware</td>
<td>A program that requires no user interaction. The program knows how to communicate with Banner Workflow.</td>
<td>Workflow Server</td>
</tr>
<tr>
<td>Interactive</td>
<td>A program or application that requires user interaction. The program may or may not know how to communicate with Banner Workflow.</td>
<td>A user’s local machine or on any server.</td>
</tr>
<tr>
<td>Internal</td>
<td>A program written by SunGard Higher Education that requires no user interaction.</td>
<td>Workflow Server</td>
</tr>
</tbody>
</table>

For more information on component types, see “Component Type” on page 116.

**Product Type**

Each component has a product type. The product type indicates the product that is associated with the component or business event. If the product uses a database, the product type identifies that database through the data source.

Banner Workflow is delivered with two defined product types:

- Miscellaneous Desktop Application
- Banner

For more information on product types, see “Product Type” on page 125.
Technology Type

Each component in the Business Component Catalog has a technology type. Technology types inform Banner Workflow how to launch a component. Technology types can also be used to share common launch parameters between similar components.

Banner Workflow is delivered with the following technology types:

- Desktop Application
- Banner
- Workflow Aware Desktop Application Component
- SQL Query
- Stored Procedure
- Web Application

For more information on technology types, see “Technology Type” on page 127.

Source ID

Each component in the Business Component Catalog has a source ID. This ID enables you to enter information about the provider of the software. The source ID is for background information only and is not used by a Banner process.

For more information on source IDs, see “Source” on page 131.

Launch Parameters

Each component in the Business Component Catalog has launch parameters. Launch parameters tell Banner Workflow what to launch and provides any extra information needed to start the component. For example:

The component SFAREGS not only includes a parameter telling Banner Workflow how to start Banner, but also contains a Form name parameter that instructs Banner to open the SFAREGS form.

For more information on launch parameters, see “Launch Parameters” on page 132.
Create a Component

1. Select Business Component Catalog within Administration.

2. Click the category name that the new component will belong to.

3. Click **Add Component in the** Business Components section of the page.

4. Enter the following information:

   | Component Name | Name of the component. This is required. Each component in a category must have a unique name, product type, and release ID combination. When using Banner, add the Banner form name to the name of the component to help with future searches. |
   | Description    | Description of the business component. The description is not required, but it is helpful in identifying the purpose of the component. |
   | Category       | Select the category associated with this component. The category defaults to the category that the component belongs to. |
Each component in the Business Component Catalog must have a component type. This type determines how a component can be used by a workflow activity. The four possible types are:

- **AutomatedNonWorkflowAware** - Allows a user to execute external programs that require no user interaction and do not know how to communicate with Banner Workflow. The contract established in this case specifies that Banner Workflow will complete the work item after the external process has finished running. The external program is allowed to interact with Banner Workflow, but must not alter the state of the work item.

- **AutomatedWorkflowAware** - Allows a user to execute external programs that require no user interaction and know how to communicate with Banner Workflow. With an AutomatedWorkflowAware component, it is the responsibility of the external program to mark the work item as complete. Banner Workflow will launch the external program and monitor it.

- **Interactive** - Allows a user to enter, modify, or review information before completing a task or workflow activity.

- **Internal** - Special case of the automated component type. Components with this type are designed to run within the Banner Workflow database only.

**Product Type**

Select the product type for the component. A component must have a product type.

The product type indicates the product that is associated with the component. If the product uses a database, the product type identifies that database through the data source.

**Technology Type**

Select the technology type for the component. A component must have a technology type.

The technology type represents the underlying technology of the component, such as standard desktop applications, Java, Oracle Forms, Visual Basic, and so on.

Each technology type has *launch parameters* that tell Banner Workflow how to launch an application.
Status  A status can be:

- Active - The current version of the component.
- Inactive - A version of the component that cannot not be used for workflows.
- Obsolete - A version of the component that cannot be edited or used for workflows.

Release ID  Release identification. This is required. The Release ID is a unique identifier for a business component.

Source  Select the source of the component. This is optional.

Each component in the Business Component Catalog has a source. This source allows you to enter information about the provider of the software. The source is additional information and is not used by Banner Workflow. The source field can be used to differentiate custom forms or components from those provided by Banner Workflow.

5. Click **Save Component**.

**Note**
The combination of Component Name, Product Type, and Release ID make a component unique.

### Modify a Component

To modify a component:

1. Select Business Component Catalog within Administration.

2. Click the category name that contains the component that you want to modify.

3. Click the component name that you want to modify.

**Note**
The Associated Workflow Definitions section of the Component page will display the Organization, Workflow Name, Version, and Status of any workflows that are associated with the selected component.
4. Modify information as necessary.

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component Name</td>
<td>The component name, product type, and release ID must be unique.</td>
</tr>
<tr>
<td>Description</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Category</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Component Type</td>
<td>The internal component type is for SunGard Higher Education use only.</td>
</tr>
<tr>
<td>Product Type</td>
<td>No restrictions. However, in order for the component to function correctly, the product type needs to be appropriate for the technology type and launch parameter.</td>
</tr>
<tr>
<td>Technology Type</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Status</td>
<td>A status can be:</td>
</tr>
<tr>
<td></td>
<td>• Active - The current version of the component.</td>
</tr>
<tr>
<td></td>
<td>• Inactive - A version of the component that cannot not be used for workflows.</td>
</tr>
<tr>
<td></td>
<td>• Obsolete - A version of the component that cannot be edited or used for workflows.</td>
</tr>
<tr>
<td>Release ID</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Source</td>
<td>No restrictions.</td>
</tr>
</tbody>
</table>

5. Click **Save Component**.
Copy a Component

To copy a component:

1. Select Business Component Catalog within Administration.
2. Click the category name that contains the component you want to copy.
3. Click the component name that you want to copy.
4. Click Copy Component.
5. Modify information as necessary.
6. Click Save Component.

Move a Component to a New Category

1. Select Business Component Catalog within Administration.
2. Click the category name that contains the component you want to move to a new category.
3. Select a new category in the Category field.
4. Click Save Component to save your changes.

Delete a Component

1. Select Business Component Catalog within Administration.
2. Click the category name that contains the component you want to move to delete.
3. In the Business Components section of the page, select the component names that you want to delete.
4. Click Delete Selected Components.
Restrictions on deleting a component

You cannot delete a component in the following situations:

- The component is used by an activity in a workflow model that has a status of Development, Test, Active, or Inactive.
- The component is used by an activity in a workflow model that has a currently running workflow instance (regardless of the status of the workflow model).

Component Type

The component’s type determines whether the process is run on the client computer or on the server.

A component can be of one of four different types:

- AutomatedNonWorkflowAware - AutomatedNonWorkflowAware components run on the server and execute external programs that require no user interaction and do not know how to communicate with Banner Workflow. These components function “behind the scenes”.
- AutomatedWorkflowAware - AutomatedWorkflowAware components run on the server and execute external programs that require no user interaction and know how to communicate with Banner Workflow. These components function “behind the scenes”.
- Interactive - An interactive component enables a user to access the application associated with the component. Interactive components run on the client machine, for example, Banner or MS Word. Users will start interactive components from their worklists.
- Internal - Internal components run on the server and can only be used to access the Banner Workflow database.

AutomatedNonWorkflowAware Components

AutomatedNonWorkflowAware components execute external programs that require no user interaction and do not know how to communicate with Banner Workflow. The contract established in this case specifies that Banner Workflow will complete the work item after the external process has finished running. The external program is allowed to interact with Banner Workflow, but must not alter the state of the work item. When the external program ends, the Banner Workflow server assumes it is complete.

Note

An automated component must be something (an application, a script, and so on) that can be started from a command line prompt on the workflow server. If not, the automated component will not function.
**AutomatedWorkflowAware Components**

Allows a user to execute external programs that require no user interaction and know how to communicate with Banner Workflow. With an AutomatedWorkflowAware component, it is the responsibility of the external program to mark the work item as complete. Banner Workflow will launch the external program and monitor it. The external program will inform Banner Workflow when it is complete.

**Note**

An automated component must be something (an application, a script, and so on) that can be started from a command line prompt on the workflow server. If not, the automated component will not function.

**Interactive Components**

Interactive components execute programs that require user interaction. For example, if the component were a Microsoft® Word document, Banner Workflow would start Word, the user would perform work in the appropriate document, then return to Banner Workflow. The external application will be used to determine the security privileges that a user has for that application.

**Internal Components**

Internal components execute programs within the Banner Workflow application. These programs were delivered with the Banner Workflow product. An internal component can only be used to access the Banner Workflow database. An example of an internal component is the code used to execute SQL queries and database stored procedures. For example:

An internal component can be used to update user profile information (logon ID, password, e-mail address, and so on) for a Banner user.
Create an Automated Component Using a Stored Procedure or SQL Query

To create an automated component for a stored procedure or SQL query, follow the directions in “Create a Component” on page 111, and use the following settings:

<table>
<thead>
<tr>
<th>Component Type</th>
<th>Select Internal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Type</td>
<td>Select the applicable product type. For these types of automated components, the product type’s data source is used to make the jdbc connection.</td>
</tr>
<tr>
<td>Technology Type</td>
<td>Select Stored Procedure or SQL Query.</td>
</tr>
</tbody>
</table>
You will need to define one of two client launch parameters:

**Procedure:**

For stored procedures, use procedure and set the value to a parameterized representation of the in and out parameters. For example:

```
procedure=GOKWFED.P_APPLYTRANS_STATUS(@TRANS_NO)
```

**Note:** In the above example, @TRANS_NO is a parameter that is mapped into the stored procedure. See “Component Parameters in Launch Parameters” on page 132 for more information.

For SQL queries, use sqlQuery and set the value to a parameterized representation of the query. For example:

```
sqlQuery=SELECT SPRIDEN_LAST_NAME INTO @LAST_NAME WHERE SPRIDEN_ID=@ID
```

To retrieve values from the query, use an **into** clause. Parameterized values in the **into** clause can be mapped to component parameters with the same name.

Parameterized names can also be used in the **where** clause and the **select** clause to pass input values from component parameters into the statement.

**Note:** In the above example, @ID is a parameter that is mapped in, and @LAST_NAME is a parameter that is mapped out.

**Component Parameters**

A component parameter must be defined for each parameterized name in either the sqlQuery or the launch parameter. Ensure that the component parameter is the same as the parameterized name in both case and spelling.

In the stored procedure example above, you would have to create a component parameter named “TRANS_NO” that could then be mapped in the modeler with context parameters. Similarly, the SQL Query example, would need two component parameters named “LAST_NAME” and “ID”.

Parameter values, regardless of their Oracle data types, are transferred to the Banner Workflow system as strings. Therefore, care must be taken when transferring values from Oracle to Workflow parameters. Use the following information to determine how to properly construct your SQL select statements:

<table>
<thead>
<tr>
<th>Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text</td>
<td>Since Oracle data, regardless of its type, is transferred to the Banner Workflow system as a string, any Oracle data type that can be returned by a SQL select statement in SQL Plus, can be mapped to a Workflow parameter of type Text.</td>
</tr>
<tr>
<td>Boolean</td>
<td>When workflow tries to cast a string to a Boolean value, the String 'true' is converted to true and all other string values are converted to false. Because Oracle 8i does not have a Boolean data type, Boolean values are most commonly stored as a VARCHAR2(1) or CHAR(1) with 'Y' denoting true and 'N' denoting false. To convert this data to a string value of 'true' or 'false' use a SQL decode statement. decode( &lt;column&gt;, 'Y', 'true', 'N', 'false' ) or decode( &lt;column&gt;, 'Y', 'true ', 'false' );</td>
</tr>
<tr>
<td>Numeric</td>
<td>Banner Workflow will cast any string representation of a valid number to the Numeric data type. Therefore, when mapping Oracle Number and Long data types to Workflow Numeric parameters, no conversion is required.</td>
</tr>
<tr>
<td>Date</td>
<td>For workflow to successfully cast a string to a Date parameter, the string must be in the following format: &lt;DD&gt;-&lt;MMM&gt;-&lt;YYYY&gt; &lt;HH&gt;:&lt;MM&gt;:&lt;SS&gt; For example: 03-MAR-2003 13:00:00 To convert an Oracle date into a string of this format use the to_char function. select to_char( &lt;column&gt;, 'DD-MON-YYYY HH:MM:SS' )</td>
</tr>
</tbody>
</table>
Create a Custom Automated Component

Custom components allow you to connect with external applications or create specific solutions for your workflow needs. If you have specific needs for passing data into or out of Banner Workflow, see *Workflow SOAP API in the Workflow Technical Integration Guide*.

To create a custom automated component, follow the directions in “Create a Component” on page 111, and use the following settings:

- **Component Type**: Select AutomatedWorkflowAware or AutomatedNonWorkflowAware.
- **Product Type**: Select the applicable product type. The data source information for the given product type will be available to you as parameterized built-in variables when choosing your launch parameters.
- **Technology Type**: For automated components, the technology type has little bearing as the client or web service is ignored for server-side component launching. However, the component will inherit any client launch parameters from the technology type. This is useful for sharing common launch parameters between components. If this is not a concern, you can set up a technology type with a name of your choosing (Example: Automated Non-Workflow Aware Custom Component) and leave launcher settings and launch parameters blank.
You will need a launch parameter named executable.

Executable is used to point to a direct location of an application to run automatically or to one located as part of the system PATH on the server. You may pass command line arguments to the executable by using launch parameters of arg0 through argn.

You can also use parameterized strings similarly to how they are used with stored procedures and SQL queries. Any values specified in the launcher with an @ symbol will be replaced with the values of component parameters named the same or with built-in parameters. For a list of built-in parameters available to launch parameters, see the Workflow Technical Integration Guide.

For example, to launch a Custom Automated Java Component, the following parameters could be used:

```java
executable="javaw"
arg0="-classpath"
arg1="d:/AutomatedJava/MyAutomatedJava.jar;D:/xerces/xerces.jar"
arg2="com.sct.AnAutomatedJavaProgram"
```

**Note:** It is important to avoid using spaces in launch parameter values.

The result would be an automated launch using java with the proper classpath to find the AnAutomatedJavaProgram.class file on the Banner Workflow Server.

Here is an example of launch parameters that could be used to launch a custom script:

```bash
executable="c:\scripts\myscript.cmd"
```

This would automatically run myscript.cmd from c:\scripts on the Banner Workflow server. Arg0 through argN could be added to pass arguments to the application if necessary.

Component parameters only need to be added if parameterized strings were used within the launch parameters. If parameterized strings were used, create case matching component parameter names that could then be mapped into with context parameters when you build your workflow.
Create a Desktop Application Component

To make a component that uses a desktop application, follow the directions in “Create a Component” on page 111, and use the following settings:

<table>
<thead>
<tr>
<th>Component Type</th>
<th>Select Interactive.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Type</td>
<td>Select Miscellaneous Desktop Application.</td>
</tr>
<tr>
<td>Technology Type</td>
<td>Select Desktop Application. For additional information, refer to “Technology Type” on page 127.</td>
</tr>
<tr>
<td>Client Launch Parameters</td>
<td>Create a client launch parameter named executable. The name of the executable you enter should be recognizable by a user when Banner Workflow prompts them for a file location. Additionally, we can use arg0 to argn to pass arguments to our application.</td>
</tr>
</tbody>
</table>

**Note:** The executable parameter value is a virtual name of the application to run. The actual application will be defined on the client machine.

Example Launch parameters for launching Excel:

```plaintext
executable="Excel"
arg0="myBudget.xls"
```

This will result in the Excel being launched with myBudget.xls.

| Component Parameters | Component parameters only need to be added if parameterized strings were used within the launch parameters. If parameterized strings were used, create case matching component parameter names that could then be mapped into with context parameters when you build your workflow. |

When the user first launches this item, Banner Workflow will write the fully-qualified path to the executable into the machine's Application Preferences. This allows each user to store their desktop applications in a separate location. For desktop applications, Banner Workflow will monitor the launched process. When the process ends, the worklist will prompt you for work item completion.
A complete Desktop Application example is available on the Banner Workflow server in the WORKFLOW_HOME\examples\SimpleClientLauncher directory.

### Create a Web Application Component

To make a component that uses a web application, follow the directions in “Create a Component” on page 111, and use the following settings:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component Type</td>
<td>Interactive</td>
</tr>
<tr>
<td>Product Type</td>
<td>Miscellaneous Desktop Application</td>
</tr>
<tr>
<td>Technology Type</td>
<td>Web Application</td>
</tr>
<tr>
<td>Web Launch Parameters</td>
<td>Create a web launch parameter named host.</td>
</tr>
<tr>
<td></td>
<td>This should equal the full url that Banner</td>
</tr>
<tr>
<td></td>
<td>Workflow should launch into another</td>
</tr>
<tr>
<td></td>
<td>browser. You can also optionally use port</td>
</tr>
<tr>
<td></td>
<td>if the web url should go to a port other</td>
</tr>
<tr>
<td></td>
<td>than 80. Additionally, any launch parameter</td>
</tr>
<tr>
<td></td>
<td>can be used in a Web Application. These</td>
</tr>
<tr>
<td></td>
<td>additional parameters not named host or</td>
</tr>
<tr>
<td></td>
<td>port will be posted to the url and can be</td>
</tr>
<tr>
<td></td>
<td>read using that web page's technology for</td>
</tr>
<tr>
<td></td>
<td>request parameters.</td>
</tr>
<tr>
<td>Example launch</td>
<td>parameters for launching</td>
</tr>
<tr>
<td>parameters for</td>
<td><a href="http://www.sungardhe.com">www.sungardhe.com</a>:</td>
</tr>
<tr>
<td></td>
<td>This will result in the work item launching</td>
</tr>
<tr>
<td></td>
<td>another browser window that opens to SunGard</td>
</tr>
<tr>
<td></td>
<td>Higher Education's website.</td>
</tr>
<tr>
<td>Component Parameters</td>
<td>Component parameters only need to be added</td>
</tr>
<tr>
<td></td>
<td>if parameterized strings were used within</td>
</tr>
<tr>
<td></td>
<td>the launch parameters. If parameterized</td>
</tr>
<tr>
<td></td>
<td>strings were used, create case matching</td>
</tr>
<tr>
<td></td>
<td>component parameter names that could then</td>
</tr>
<tr>
<td></td>
<td>be mapped into with context parameters</td>
</tr>
<tr>
<td></td>
<td>when you build your workflow.</td>
</tr>
</tbody>
</table>

For Web Applications, Banner Workflow cannot monitor the process completion. When work is completed for a Web Application launch, the work item must be manually completed on the worklist.
A complete Web Application example is available on the Banner Workflow server in
WORKFLOW_HOME\examples\SimpleWebLauncher directory.

### Product Type

Each component and business event has a product type. The product type indicates the
product that is associated with the component or business event. If the product uses a
database, the product type identifies that database through the data source.

A product type consists of basic information and the data source. The data source is the
most important aspect of the product type.

⚠️ **Note**

For more information on creating, modifying, or deleting data sources,
please refer to the Workflow Technical Integration Guide.

Banner Workflow is delivered with two defined product types:

- Miscellaneous Desktop Application
- Banner

### Add a Product Type

To add a product type:

1. Select Workflow System Administration from Administration.
2. Select Product Types from the Workflow System Administration page.
3. Click **Add Product Type**.
4. Enter the following information for the product type:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the product type. Components and business events must have a product type. The product type indicates the product that is associated with the component or event. If the product uses a database, the product type identifies that database through the data source.</td>
</tr>
<tr>
<td>Version</td>
<td>Version number, if any, of the product type. The product version is not required, but is helpful to include. This is true especially when different versions of a product have different functionality or different requirements.</td>
</tr>
<tr>
<td>Description</td>
<td>A description of the product type. The description is not required, but it will help to identify the purpose of the product type.</td>
</tr>
<tr>
<td>Data Source</td>
<td>Name of the database instance used by the product type. The name can have spaces. If a product type uses a database, it must identify which instance of that database to use. It does this through the data source. For example, you may need to identify a test instance, a production instance, or an upgrade instance.</td>
</tr>
</tbody>
</table>

5. Click Save Product Type.

Modify a Product Type

To modify a product type:

1. Select Workflow System Administration from Administration.

2. Select Product Types from the Workflow System Administration page.

3. Click the product type name to modify.

4. Modify product type details:

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Version</td>
<td>No restrictions.</td>
</tr>
</tbody>
</table>
5. Click **Save Product Type**.

### Delete a Product Type

To delete a product type:

1. Select **Workflow System Administration** from **Administration**.

2. Select **Product Types** from the **Workflow System Administration** page.

3. Select the product types that you want to delete.

4. Click **Delete Selected Product Types**.

5. When you are asked to confirm the deletion, click **OK**.

### Restrictions on removing a product type

You cannot remove a product type if it is associated with a component or business event.

---

### Technology Type

Each component in the Business Component Catalog has a technology type. Technology types inform the worklist how to launch a component. Technology types can also be used to share common launch parameters between similar components. Each technology type also has *launch parameters that* tell Banner Workflow how to launch an application. For more information on launch parameters, see "[Launch Parameters](#) on page 132."

When a workflow activity starts a component, Banner Workflow will launch the application associated with the component.

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Data Source</td>
<td>For more information on creating, modifying, or deleting data sources, please refer to the Workflow Technical Integration Guide.</td>
</tr>
</tbody>
</table>
Banner Workflow is delivered with the following technology types:

<table>
<thead>
<tr>
<th>Technology type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Application</td>
<td>A non workflow aware desktop application that can be started by workflows. After the component runs, Banner Workflow displays an activity status window for the user to register the status of the activity.</td>
</tr>
<tr>
<td>Banner</td>
<td>Specifically configured for a workflow-aware Banner Oracle Form. To use a component with this technology type, you must enter the path to the oracle\bin directory into the client machine’s PATH. After the component runs, the application will respond to Banner Workflow with the status of the activity. Banner Workflow will not display an activity status window for the user to register the status of the activity.</td>
</tr>
<tr>
<td>WorkflowAware Desktop Application Component</td>
<td>A Banner Workflow aware desktop application that can be started by workflows. After the component runs, the application will respond to Banner Workflow with the status of the activity. Banner Workflow will not display an activity status window for the user to register the status of the activity.</td>
</tr>
<tr>
<td>SQL Query</td>
<td>A SQL Query that can be started by workflows.</td>
</tr>
<tr>
<td>Stored Procedure</td>
<td>A Stored Procedure that can started by workflows.</td>
</tr>
<tr>
<td>Web Application</td>
<td>A non-workflow aware web application that can be started by workflows.</td>
</tr>
</tbody>
</table>

**Create a Technology Type**

To create a technology type:

1. Select Workflow System Administration from Administration.
2. Select Technology Types from the Workflow System Administration page.
3. Click **Add Technology Type**.
4. Enter the following technology type information:

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Description</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Client Launch Service Name</td>
<td>No restrictions. See Launch Services in the Workflow Technical Integration Guide for a list of the launch services that an interactive component can use.</td>
</tr>
<tr>
<td>Web Launch Service Name</td>
<td>The launch parameter must follow the conventions detailed in “Launch Parameters” on page 132.</td>
</tr>
</tbody>
</table>

Note: See Launch Services in the Workflow Technical Integration Guide for a list of the launch services that an interactive component can use.

5. Click Save Technology Type.

Modify a Technology Type

To modify a technology type:

1. Select Workflow System Administration from Administration.

2. Select Technology Types from the Workflow System Administration page.

3. Click the technology type name you would like to modify.

4. Modify technology type details:
5. Click **Save Technology Type**.

### Remove a Technology Type

To remove a technology type:

1. Select Workflow System Administration from Administration.

2. Select Technology Types from the Workflow System Administration page.

3. Select the technology types you would like to delete.

4. Click **Delete Technology Types**.

5. When you are asked to confirm the deletion, click **OK**.

### Restrictions on removing technology types

If a technology type is associated with any component, you cannot remove it.
Source

Each component in the Business Component Catalog has a source ID. This ID enables you to enter information about the provider of the software. The source ID is for background information only and is not used by Banner Workflow.

Add a Source

To add a source ID to a component:

1. Select Business Component Catalog within Administration.

2. Click the category name that contains the component that needs a source ID.

3. In the Source field, enter the source ID.

4. Click Save Component.

Modify a Source

1. Select Business Component Catalog within Administration.

2. Click the category name that contains the component with a source ID that needs to be modified.

3. In the Source field, edit the source ID.

4. Click Save Component.
Launch Parameters

Each component in the BCC and each technology type has launch parameters. Launch parameters tell Banner Workflow how to launch an application. The format of the launch parameter depends on the application being launched. For more information on technology types, see “Technology Type” on page 127.

Component Parameters in Launch Parameters

Macros or component parameters may be placed in launch parameter values. When the component is launched, the macro or component parameter’s value will be passed into the component.

<table>
<thead>
<tr>
<th>Macro</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>@BUILTIN_DB_URL</td>
<td>Data source URL.</td>
</tr>
<tr>
<td>@BUILTIN_DB_USERNAME</td>
<td>Data source user.</td>
</tr>
<tr>
<td>@BUILTIN_DB_PASSWORD</td>
<td>Data source password.</td>
</tr>
<tr>
<td>@BUILTIN_WORKITEM</td>
<td>Current workitem key.</td>
</tr>
<tr>
<td>@BUILTIN_ORG_QUALIFIED_NAME</td>
<td>The qualified organization name of the current workflow.</td>
</tr>
<tr>
<td>@BUILTIN_ORG_NAME</td>
<td>The short organization name of the current workflow.</td>
</tr>
<tr>
<td>@BUILTIN_ORG_MIF_CODE</td>
<td>The mif code, if it exists, for the organization of the current workflow.</td>
</tr>
<tr>
<td>@BUILTIN_ORG_ID</td>
<td>The database primary key of the organization of the current workflow.</td>
</tr>
</tbody>
</table>

Component Parameter

Component parameters can be inserted into launch parameters by adding an “@” prefix to the front of the parameter name. Automated stored procedures frequently use component parameters in this fashion. For example:

```
@employee_id
```

You can insert input component parameters into launch parameters.
Component Launch Parameters

Component launch parameters are text strings sent by the launch service to the operating system, or Java Runtime Environment, to launch a component. The format of a component launch parameter depends on the Java launch service class in the component’s technology type. For example:

<table>
<thead>
<tr>
<th>Delivered Technology Type</th>
<th>Client Launch Parameter Name</th>
<th>Client Launch Parameter Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Application</td>
<td>executable</td>
<td>wordpad</td>
</tr>
<tr>
<td></td>
<td>arg0 ... argN</td>
<td>&lt;optional parameters to be passed&gt;</td>
</tr>
<tr>
<td>Banner</td>
<td>execName</td>
<td>ifrun60</td>
</tr>
<tr>
<td></td>
<td>formName</td>
<td>SPAPERS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Delivered Technology Type</th>
<th>Web Launch Parameter Name</th>
<th>Web Launch Parameter Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Application</td>
<td>host</td>
<td><a href="http://localhost:8888/workflow/test_launch.jsp">http://localhost:8888/workflow/test_launch.jsp</a></td>
</tr>
<tr>
<td></td>
<td>parameter</td>
<td>parameter value</td>
</tr>
<tr>
<td>Banner</td>
<td>formName</td>
<td>SPAPERS</td>
</tr>
</tbody>
</table>

Create a Launch Parameter

To create a launch parameter:

1. Select Business Component Catalog within Administration.
2. Click the category name that contains the component that needs a launch parameter.
3. Click the business component name that needs a launch parameter.
4. Click the link to add either a client launch parameter or a web launch parameter.
5. Enter launch parameter details:

<table>
<thead>
<tr>
<th>Name</th>
<th>Name of the launch parameter.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>The format of a component launch parameter depends on the Java launch service class in the component’s technology type. For more information, see “Component Launch Parameters” on page 133.</td>
</tr>
</tbody>
</table>

6. Click **Save**.

**Modify a Launch Parameter**

To modify a launch parameter:

1. Select Business Component Catalog within Administration.

2. Click the category name that contains the component that needs a launch parameter.

3. Click the business component name that needs a launch parameter.

4. Click the link to modify either a client launch parameter or a web launch parameter.

5. Click the launch parameter name that you would like to modify.

6. Modify launch parameter details.

7. Click **Save Parameter**.

**Warning**

Do not modify the launch parameter of a component that uses the Oracle Form Component technology type.

**Remove a Launch Parameter**

To remove a launch parameter:

1. Select Business Component Catalog within Administration.

2. Click the category name that contains the component with the launch parameter to be deleted.

3. Click the business component name with the launch parameter to be deleted.

4. Click the link to delete either a client launch parameter or a web launch parameter.
5. Click the launch parameter name that you would like to delete.

6. Click **Delete**.

7. When you are asked to confirm the deletion, click **OK**.

**Restrictions on removing a launch parameter**

After you remove a launch parameter, that component will no longer function.

**Component Parameters**

In the Business Component Catalog, a component may have a set of parameters. These parameters represent data that is most likely to be required as input when the component is launched and guaranteed as output when the component is completed. These parameters represent the set of all data used by the component.

For each activity in a workflow, you must map all required component parameters to workflow context parameters. Parameter mapping defines how the activity will get data and how that data is passed or mapped to other activities in the workflow.

For detailed information about what changes can be made to parameters after a component has been used in a workflow, see “**Component Parameter Modifications**” on page 139.

Component parameters are used in workflows when they are mapped to workflow context parameters. Using context parameters, data can be brought into a workflow and then passed from one workflow activity to another.

**Workflow Context Parameters**

A workflow context parameter can receive data from a business event through a business event parameter.

When a workflow is running, data can be passed from a workflow context parameter to a component parameter and from a component parameter to a context parameter. This allows for data to be passed from one workflow activity to another as well as to and from the external application.
Create a Component Parameter

1. Select Business Component Catalog within Administration.

2. Select the category name that contains the component that you want to add the component parameter to.

3. Select the component that you would like to add the component parameter to.

4. Add the following information:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name for the component parameter. Parameters in Banner Workflow follow the standard Java naming convention. This naming convention applies to all parameters (business event, component, and workflow context), as follows:</td>
<td></td>
</tr>
<tr>
<td>In the first position: You can use letters, currency symbols (such as $), and an underscore (_).</td>
<td></td>
</tr>
<tr>
<td>In positions other than the first: You can use letters, numbers (0–9), currency symbols (such as $), and underscores (_).</td>
<td></td>
</tr>
<tr>
<td>For business event and component parameters only: You can also use dashes (-) and periods (.).</td>
<td></td>
</tr>
<tr>
<td>In all positions: You cannot use spaces. Use underscores or mixed case to separate “words”. For example you might name a component parameter like this:</td>
<td></td>
</tr>
<tr>
<td>trans_number or TransNumber</td>
<td></td>
</tr>
<tr>
<td>Description of the component parameter. The description is not required, but will help to identify the purpose of the parameter.</td>
<td></td>
</tr>
</tbody>
</table>
5. In the Business Components section of the page, click **Add Parameter**.

### Modify a Component Parameter

To modify a component parameter:

**Note**

For detailed information about what changes can be made to parameters after a component has been used in a workflow, see “Component Parameter Modifications” on page 139.

1. Select Business Component Catalog within Administration.

2. Select the category name that contains the component with the component parameter that you want to modify.

3. Select the component that contains the component parameter that you want to modify.

4. Select the parameter you wish to modify.
5. Modify parameter information:

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Each component parameter name must be unique within a component. If the component parameter is used in a workflow model, you cannot modify the name.</td>
</tr>
<tr>
<td>Description</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Type</td>
<td>The datatype must be appropriate for what the given software component or Banner form is expecting. Workflow context parameter mapping must be consistent with the component parameter type.</td>
</tr>
<tr>
<td>Required</td>
<td>No restrictions. If the component parameter is used in a workflow model, with a status of Test; Active; or Inactive, you cannot modify it.</td>
</tr>
<tr>
<td>Guaranteed</td>
<td>No restrictions. If the component parameter is used in a workflow model, with a status of Test; Active; or Inactive, you cannot modify it.</td>
</tr>
</tbody>
</table>

6. Click Save Component Parameter.

**Delete a Component Parameter**

To delete a component parameter:

1. Select Business Component Catalog within Administration.

2. Select the category name that contains the component with the component parameter that you want to delete.

3. Select the component that contains the component parameter that you want to delete.

4. Select the parameter that you wish to delete.

5. Click Delete.

**Restrictions on removing a component parameter**

If a component parameter is mapped to a workflow context parameter in a workflow model, you can not delete the component parameter.
## Component Parameter Modifications

The following changes can be made to component parameters in the Business Component Catalog when the component parameter is used in a workflow model. All possible statuses for the workflow are identified in the chart: Development, Test, Active, Inactive, and Obsolete. Changes that can be made to the component parameters may differ depending on the status of the workflow.

<table>
<thead>
<tr>
<th>Possible Actions</th>
<th>Development Status</th>
<th>Test Status</th>
<th>Active Status</th>
<th>Inactive Status</th>
<th>Obsolete Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Add a Parameter</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add a required parameter?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Add a non-required parameter?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Add a guaranteed parameter?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Add a non-guaranteed parameter?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Change a Mapped Parameter</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change the name for a mapped parameter?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Change the description for a mapped parameter?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Change the type for a mapped parameter?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Change the required indicator for a mapped parameter?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Change the guaranteed indicator for a mapped parameter?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Delete a Parameter</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delete a mapped parameter?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Delete a non-mapped parameter?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Section III

Develop
The Work Calendar allows you to establish a calendar that contains the daily work hours of an institution or office. Each workday can be comprised of different working hours to accommodate any work schedule. Additionally, time exceptions can be established for holidays or special occasions where an institution will be closed so that work will not be scheduled when employees are not working.

Work Calendars

Work calendars contain the daily work hours of an institution or office.

Add a Work Calendar

To add a work calendar:

1. Select Work Calendars from Administration.

2. Click Add Work Calendar.

3. Enter the following information:

   Name: Name of the work calendar. This field is required.

   Description: A description of the work calendar. A description is not required, but helps to identify the purpose of the calendar.

4. Click Save Work Calendar.
Modify a Work Calendar

To modify the name and description of an existing work calendar:

1. Select Work Calendars from Administration.
2. Click an existing work calendar from the Work Calendars page.
3. Modify the following information:
   - Name: Name of the work calendar. This field is required.
   - Description: A description of the work calendar. A description is not required, but helps to identify the purpose of the calendar.
4. Click Save Work Calendar.

Delete a Work Calendar

To delete a work calendar:

1. Select Work Calendars from Administration.
2. Select the work calendars you would like to delete.
3. Click Delete Selected Work Calendars.
4. When you are asked to confirm the deletion, click OK.
Work Days

A work week is made up of a collection of work days.

Add a Work Day to a Work Calendar

To add a work day to a work calendar:

1. Select Work Calendars from Administration.

2. Click a work calendar from the Work Calendars page.

3. In the Work Week section of the Work Calendar page, enter the following information for each work day of the week:

<table>
<thead>
<tr>
<th>Day of the Week</th>
<th>Work day. Select the day of the week that you would like to establish a work day time range for.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Time</td>
<td>Start time contains 3 drop-down lists. In the first drop-down, select the hour that your work day starts. In the second drop-down, select the minute of the hour that your work day starts. In the third drop-down list, select whether your work day starts in the AM or PM.</td>
</tr>
<tr>
<td>Finish Time</td>
<td>Finish time contains 3 drop-down lists. In the first drop-down, select the hour that your work day ends. In the second drop-down, select the minute of the hour that your work day ends. In the third drop-down list, select whether your work day finishes in the AM or PM.</td>
</tr>
</tbody>
</table>

4. Click Add.
**Modify a Work Day of a Work Calendar**

To modify a work day for a work calendar:

1. Select Work Calendars from Administration.

2. Click a work calendar from the Work Calendars page.

3. In the Work Week section of the Calendar page, click a time range of an existing work day.

4. Modify the following information for the selected work day:

   - **Start Time**: Start time contains 3 drop-down lists. In the first drop-down, select the hour that your work day starts. In the second drop-down, select the minute of the hour that your work day starts. In the third drop-down list, select whether your work day starts in the AM or PM.

   - **Finish Time**: Finish time contains 3 drop-down lists. In the first drop-down, select the hour that your work day ends. In the second drop-down, select the minute of the hour that your work day ends. In the third drop-down list, select whether your work day finishes in the AM or PM.

5. Click **Save**.

**Delete a Work Day from a Work Calendar**

To delete a work day from a work calendar:

1. Select Work Calendars from Administration.

2. Select a work calendar.

3. In the Work Week section of the Work Calendar page, click a time range of the existing work day that you would like to delete.

4. Click **Delete**.

5. When you are asked to confirm the deletion, click **OK**.
Time Exceptions

Time exceptions can be established for holidays or special occasions where an institution will be closed so that work will not be scheduled when employees are not working.

Add a Time Exception to a Work Calendar

To add a time exception to a work calendar:

1. Select Work Calendars from Administration.
2. Select a work calendar.
3. In the Time Exception section of the Work Calendar page, click Add.
4. On the Time Exception page, enter the following information for each time exception:

   Date
   Date of the time exception. Enter the date of the time exception or click the calendar icon to select a day from the calendar.
   Note: All dates must be entered in the DD-MMM-YYYY format. For example, 04-JUL-2003.

   Entire Day Off
   Select the Entire Day Off radio button if your office will be closed and no work will be completed on this date.

   Specify an interval for the day
   Select the Specify an interval for the day radio button if your office will be open for a portion of time on the date specified, but will not be open for regular working hours. Enter a start time and a finish time for your office on this date. For example, your office might be open for business from 8:00 AM to 12:00 PM on 24-DEC-2004.

   Start Time
   Start time contains 3 drop-down lists. In the first drop-down, select the hour that your work day starts. In the second drop-down, select the minute of the hour that your work day starts. In the third drop-down list, select whether your work day starts in the AM or PM.

   Finish Time
   Finish time contains 3 drop-down lists. In the first drop-down, select the hour that your work day ends. In the second drop-down, select the minute of the hour that your work day ends. In the third drop-down list, select whether your work day finishes in the AM or PM.

5. Click Add.
Delete a Time Exception from a Work Calendar

To delete a time exception from a work calendar:

1. Select Work Calendars from Administration.

2. Select a work calendar.

3. In the Time Exception section of the Calendar page, select the time exception you would like to delete.

4. Click Delete Selected Time Exceptions.

5. When you are asked to confirm the deletion, click OK.
8 Introduction to Modeling Workflows

The Banner Workflow Modeler is used by Business Analysts to model workflows that will be implemented at your institution. Information about the Banner Workflow Modeler is divided into the following chapters:

Chapter 8- Introduction to Modeling Workflows - Introduces the features of the Banner Workflow Modeler and provides an overview of important workflow modeling concepts.

Chapter 9- Create a Basic Workflow - Provides step by step instructions on how to create a basic workflow. For more information on creating a basic workflow, see “Create a Basic Workflow” on page 167.

Chapter 10- Add Complexity to Your Workflows - Provides instructions on how to model your more advanced and intricate business processes. For more information on adding complexity to your workflows, see “Adding Complexity to Your Workflows” on page 207.

Chapter 11 - Custom Activity Designer - Explains how to use the Custom Activity Designer to create custom workflow activities and forms. For more information on the Custom Activity Designer, see “Custom Activity Designer” on page 233.

Chapter 12 - Maintaining Workflow Models - Discusses the features of the Banner Workflow Modeler that help you maintain your workflow models from the time they are developed until they are made obsolete and need to be replaced with new workflow models that improve the business process. For more information on maintaining your workflow models, see “Maintaining Workflow Models” on page 247.

Banner Workflow Modeler Features

The workflow modeler contains several important features to assist you in creating and modifying your workflow models.
## Banner Workflow Modeler Menus

The Banner Workflow Modeler contains the following drop-down menus:

### File Menu

<table>
<thead>
<tr>
<th>Menu Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>Create a new workflow model.</td>
</tr>
<tr>
<td>New Version</td>
<td>Create a new version of an existing workflow model. Each workflow model has a version number. When you need to update an existing workflow model, such as for a new fiscal year, you can create a new version of the workflow rather than having to create a new workflow from scratch.</td>
</tr>
<tr>
<td>Copy Workflow</td>
<td>Create a copy of a workflow model. This creates a new workflow, which has all the information of the original workflow except for the workflow name. Make a copy of a workflow when you want to create a new workflow that is similar to an existing workflow.</td>
</tr>
<tr>
<td>Find</td>
<td>Search for and open a saved workflow model. You can find workflow models of any status.</td>
</tr>
<tr>
<td>Save</td>
<td>Save the workflow model.</td>
</tr>
<tr>
<td>Print</td>
<td>Print the workflow model to a printer or save the model as a PDF file.</td>
</tr>
<tr>
<td>Delete Workflow</td>
<td>Delete the workflow model. A deleted workflow model will no longer be available in Banner Workflow.</td>
</tr>
<tr>
<td>Revert</td>
<td>Revert to the last saved version of the workflow model. Any changes to the model since the last time it was saved will be lost.</td>
</tr>
<tr>
<td>Exit</td>
<td>Exit the Banner Workflow Modeler.</td>
</tr>
</tbody>
</table>
### Edit Menu

<table>
<thead>
<tr>
<th>Menu Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Cut Icon]</td>
<td>Cut the selected canvas objects to the clipboard for later use.</td>
</tr>
<tr>
<td>![Copy Icon]</td>
<td>Copy the selected canvas objects to the clipboard for later use.</td>
</tr>
<tr>
<td>![Paste Icon]</td>
<td>Paste canvas objects from the clipboard onto the Banner Workflow Modeler Canvas.</td>
</tr>
<tr>
<td>![Clear Icon]</td>
<td>Clear the selected objects from the Banner Workflow Modeler Canvas. Objects removed using Clear will not be stored on the clipboard.</td>
</tr>
</tbody>
</table>

### View Menu

<table>
<thead>
<tr>
<th>Menu Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Context Parameters Icon]</td>
<td>Open the Context Parameters window. Workflow context parameters are a set of parameters that apply throughout a workflow. They establish the context within which the workflow will run.</td>
</tr>
<tr>
<td>![View/Hide Messages Icon]</td>
<td>Display or hide the message window at the bottom of the Banner Workflow Modeler Canvas. Any errors that are encountered when validating a workflow will appear in the message window.</td>
</tr>
<tr>
<td>![Global Attachments Icon]</td>
<td>Open the Global Attachments window. Global file attachments can be used to send supporting information about a workflow to workflow users via an email activity.</td>
</tr>
<tr>
<td>![Activity Icons Icon]</td>
<td>The activity icon catalog contains icons that can be associated with an activity in a workflow. Banner Workflow modeler users can add, remove, or modify the properties of an activity icon using the Activity Icons menu selection.</td>
</tr>
</tbody>
</table>
**Workflow Menu**

<table>
<thead>
<tr>
<th>Menu Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validate</td>
<td>When you validate a workflow, Banner Workflow checks that the syntax of the workflow is correct. It makes sure that you have transitions in the correct places, that you have appropriately placed stops, that all the parallels have the proper transitions, and that properties are correctly defined for all activities, transitions, and parallels.</td>
</tr>
<tr>
<td>Set Status</td>
<td>Set the status of the workflow model to one of the following:</td>
</tr>
<tr>
<td></td>
<td>• Development</td>
</tr>
<tr>
<td></td>
<td>• Test</td>
</tr>
<tr>
<td></td>
<td>• Activate</td>
</tr>
<tr>
<td></td>
<td>• Deactivate</td>
</tr>
<tr>
<td></td>
<td>• Obsolete</td>
</tr>
<tr>
<td>Start Workflow</td>
<td>Create a running instance of a workflow model with a status of Test or Active. Work items are routed to workflow users based on role assignments, directed activities, or modeled information.</td>
</tr>
</tbody>
</table>

**Help Menu**

<table>
<thead>
<tr>
<th>Menu Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents</td>
<td>Open the Banner Workflow Help Center. This online help system provides assistance for each page, window, and field in the Banner Workflow system.</td>
</tr>
<tr>
<td>About Banner Workflow</td>
<td>Display the version number of the Banner Workflow release that you are running.</td>
</tr>
</tbody>
</table>
## Banner Workflow Modeler Toolbar

The Banner Workflow Modeler Toolbar contains the following tools that are used to manipulate workflows:

<table>
<thead>
<tr>
<th>Use this tool...</th>
<th>to do this...</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="New" /> New</td>
<td>Create a new workflow model.</td>
</tr>
<tr>
<td><img src="image" alt="Find" /> Find</td>
<td>Search for and open a saved workflow model. You can find workflow models of any status.</td>
</tr>
<tr>
<td><img src="image" alt="Save" /> Save</td>
<td>Save the workflow model.</td>
</tr>
<tr>
<td><img src="image" alt="Print" /> Print</td>
<td>Print the workflow model to a printer or save the model as a PDF file.</td>
</tr>
<tr>
<td><img src="image" alt="Validate" /> Validate</td>
<td>When you validate a workflow, Banner Workflow checks that the syntax of the workflow is correct. It makes sure that you have transitions in the correct places, that you have appropriately placed stops, that all the parallels have the proper transitions, and that properties are correctly defined for all activities, transitions, and parallels.</td>
</tr>
<tr>
<td><img src="image" alt="View/Hide" /> View/Hide Messages</td>
<td>Display or hide the message window at the bottom of the Banner Workflow Modeler Canvas. Any errors that are encountered when validating a workflow will appear in the message window.</td>
</tr>
<tr>
<td><img src="image" alt="New Version" /> New Version</td>
<td>Create a new version of an existing workflow model. Each workflow model has a version number. When you need to update an existing workflow model, such as for a new fiscal year, you can create a new version of the workflow rather than having to create a new workflow from scratch.</td>
</tr>
<tr>
<td><img src="image" alt="Copy Workflow" /> Copy Workflow</td>
<td>Create a copy of a workflow model. This creates a new workflow, which has all the information of the original workflow except for the workflow name. Make a copy of a workflow when you want to create a new workflow that is similar to an existing workflow.</td>
</tr>
<tr>
<td>Use this tool...</td>
<td>to do this...</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------</td>
</tr>
<tr>
<td><img src="image" alt="Delete Workflow" /></td>
<td>Delete the workflow model. A deleted workflow model will no longer be available in Banner Workflow.</td>
</tr>
<tr>
<td><img src="image" alt="Revert" /></td>
<td>Revert to the last saved version of the workflow model. Any changes to the model since the last time it was saved will be lost.</td>
</tr>
<tr>
<td><img src="image" alt="Development" /></td>
<td>Change the workflow model status from Test to Development. Changing the status to Development will remove any running workflow instances. This is the default value for a new workflow, for new versions of an existing workflow, and for copies of a workflow.</td>
</tr>
<tr>
<td><img src="image" alt="Test" /></td>
<td>Change the workflow model status from Development to Test. A workflow model with a status of Test can be started from the modeler or it can be assigned to a business process and started.</td>
</tr>
<tr>
<td><img src="image" alt="Activate" /></td>
<td>Change the workflow model status from Development or Test to Active. An active workflow’s development is complete, the workflow has been validated, and it can be assigned to a business process and started.</td>
</tr>
<tr>
<td><img src="image" alt="Deactivate" /></td>
<td>Change the workflow model status from Active to Inactive. A deactivated workflow model is no longer in use and cannot be assigned to a business process.</td>
</tr>
<tr>
<td><img src="image" alt="Obsolete" /></td>
<td>Change the workflow model status from Active or Inactive to Obsolete. An obsolete workflow model is no longer valid and cannot be assigned to a business process.</td>
</tr>
<tr>
<td><img src="image" alt="Zoom" /></td>
<td>Shrink or expand the view of the workflow model.</td>
</tr>
</tbody>
</table>
### Banner Workflow Modeler Canvas Toolbar

The Banner Workflow Modeler Canvas Toolbar contains the following objects that are used to develop workflow models:

<table>
<thead>
<tr>
<th>Use this tool...</th>
<th>to do this...</th>
</tr>
</thead>
<tbody>
<tr>
<td>🌐 Context Parameters</td>
<td>Open the Context Parameters window. Workflow context parameters are a set of parameters that apply throughout a workflow. They establish the context within which the workflow will run.</td>
</tr>
<tr>
<td>🎁 Start Workflow</td>
<td>Create a running instance of a workflow model with a status of Test or Active. Work items are routed to workflow users based on role assignments, directed activities, or modeled information.</td>
</tr>
</tbody>
</table>

### Use this tool... to do this...

<table>
<thead>
<tr>
<th>Use this tool...</th>
<th>to do this...</th>
</tr>
</thead>
<tbody>
<tr>
<td>🔍 Selector</td>
<td>Select objects in the drawing area.</td>
</tr>
<tr>
<td>🟠 Activity</td>
<td>Place component based activities in the drawing area. An activity is a step in a workflow. Each activity has specific properties, which define what work is to be performed and who will perform the work.</td>
</tr>
<tr>
<td>⚡ Manual Activity</td>
<td>Place manual activities in the drawing area. Manual activities notify a user about manual work that needs to be performed. Manual work can consist of making a phone call, meeting with a co-worker, contacting a specific person, etc.</td>
</tr>
<tr>
<td>✅ Approval Activity</td>
<td>Place approval activities in the drawing area. Approval activities are used to allow users to approve a previously completed activity or context data.</td>
</tr>
<tr>
<td>💌 Email Activity</td>
<td>Place email activities in the drawing area. Email activities are started, performed, and completed automatically by Banner Workflow when they are reached in a workflow instance. They allow you to create email messages with text, context parameters, and document attachments.</td>
</tr>
</tbody>
</table>
### Using the Banner Workflow Modeler Canvas Toolbar

To place objects on the canvas:

1. Click the appropriate icon on the Banner Workflow Modeler Canvas Toolbar to select the object.
2. Place the object on the Banner Workflow Modeler Canvas by clicking on the desired location on the canvas.
3. Once the object has been placed on the canvas, the modeler will revert to the Selector tool.

<table>
<thead>
<tr>
<th>Use this tool...</th>
<th>to do this...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Custom Activity</td>
<td>Place custom activities in the drawing area. Custom activities allow Business Analysts to incorporate custom-built HTML forms into workflow businesses processes. For more information on custom activities, see “Custom Activity Designer” on page 233.</td>
</tr>
<tr>
<td>Decision</td>
<td>Place decision boxes in the drawing area. Decisions are used to show when a decision is being made.</td>
</tr>
<tr>
<td>Parallel</td>
<td>Place parallels, which are used to create parallel paths, between activities. If it doesn’t matter which activity or which string of activities is performed first, as long as they are all performed before some other activity or before the end of the workflow, a parallel path can be used.</td>
</tr>
<tr>
<td>Transition</td>
<td>Place transitions in the drawing area. A transition is a line that connects activities, decisions, parallels, and start and stop objects. Transitions show the flow of work.</td>
</tr>
<tr>
<td>Self Connector</td>
<td>Place a self connector in the drawing area. When you select this tool and click on an activity you have already placed on the canvas, a self connector will be added to that activity. Use self connectors to indicate an activity that should be repeated.</td>
</tr>
<tr>
<td>Stop</td>
<td>Place stop objects in the drawing area. Each workflow must have at least one stop.</td>
</tr>
<tr>
<td>Note</td>
<td>Add comments about an object for other workflow participants to see.</td>
</tr>
</tbody>
</table>
To place multiple objects of the same type on the canvas:

1. Double-click the appropriate icon on the Banner Workflow Modeler Canvas Toolbar to select the object.

2. Place an object on the Banner Workflow Modeler Canvas by clicking on the desired location on the canvas.

3. Place additional objects of the same type on the Banner Workflow Modeler Canvas by clicking on the desired location on the canvas.

4. When finished, click on the Selector tool to allow you to modify object properties.

**Workflow Property Sheet**

The Workflow Property Sheet stores information about the workflow as a whole and the individual objects that make up the workflow model. The property sheet will display the properties of the selected modeler object. If no object is selected, the property sheet will display the properties of the workflow model.

Properties in the Workflow Property Sheet can be displayed either by category or alphabetically.

**Categorized Properties**

By default, with the Categorized tab selected, the Workflow Property Sheet will display properties that are organized into specific categories, allowing related properties to be displayed together.

**Alphabetized Properties**

The Alphabetized tab will display all properties in alphabetical order regardless of the category that the individual property belongs to.

**Common Properties**

If multiple workflow objects are selected, the Workflow Property Sheet will display the individual properties that the selected objects have in common. This feature allows a user to quickly update the properties of multiple objects.

**General Features**

The following features exist in the Banner Workflow Modeler to allow you to view the status of a workflow model, manipulate your view of the workflow model, manipulate individual modeler objects:
**Status**

The status of a workflow model is displayed in the bottom right corner of the Banner Workflow Modeler Window. A workflow model can have one of the following statuses:

- **Active** - An active workflow’s development is complete, the workflow has been validated, and it can be assigned to a business process and started.

- **Development** - A workflow model with the status of Development does not have any running workflow instances. This is the default value for a new workflow, for new versions of an existing workflow, and for copies of a workflow.

- **Inactive** - An inactive workflow model is no longer in use and cannot be assigned to a business process.

- **Obsolete** - An obsolete workflow model is no longer valid and cannot be assigned to a business process.

- **Test** - A workflow model with a status of Test can be started from the modeler or it can be assigned to a business process and started.

**Zoom**

The modeler zoom function allows a user to:

- view an entire workflow model that is wider and taller than the standard modeler canvas by zooming out for a wider view of the model.
- view a piece of a congested workflow model by zooming in on a specific location.
- shrink or expand the entire workflow model to fit into the viewable canvas.

To use the modeler zoom feature, select a zoom percentage from the Zoom dropdown list on the modeler toolbar or enter a zoom percentage in the Zoom field and press Enter.

To fit the entire model in the viewable canvas, select Fit from the Zoom dropdown list and press Enter.

**Right-Click Menus**

Right-click on any object on the modeler canvas to display a menu of properties and functions that can be set for the object.

**Copy, Cut, and Paste**

There are several ways to select existing objects on the modeler canvas for copying and cutting purposes.
Copy

1. Click the Selector tool .

2. Click a blank area of the modeler canvas, hold the mouse button down, and select the objects on the canvas that you wish to copy.
   or
   Hold down the Shift key and click each canvas object you would like to copy.

   **Note**
   Transitions will not be automatically selected when copying or cutting canvas objects. To copy transitions, hold down the Shift key and click each transition you would like to copy or cut.

3. To copy the selected canvas objects, select Edit>Copy or press CTRL-C.

4. The canvas objects you copy will be stored on the clipboard.

   **Note**
   The canvas objects you copied or cut will remain on the clipboard until another copy or cut is performed.

Cut

1. Click the Selector tool .

2. Click a blank area of the modeler canvas, hold the mouse button down, and select the canvas objects that you wish to cut.
   or
   Hold down the Shift key and click each canvas object you would like to cut.

   **Note**
   Transitions will not be automatically selected when copying or cutting canvas objects. To copy transitions, hold down the Shift key and click each transition you would like to copy or cut.

3. To copy the selected canvas objects, select Edit>Cut or press CTRL-X.

4. The canvas objects you cut will be stored on the clipboard.

   **Note**
   The canvas objects you copied or cut will remain on the clipboard until another copy or cut is performed.
**Paste**

You may paste canvas objects from the clipboard onto the same workflow model or a different workflow model.

To paste from the clipboard onto the modeler canvas, select **Edit>Paste** or press **CTRL-V**.

**Note**

Pasting objects on top of other canvas objects will not result in an error, however, it is recommended that all workflow models be designed so they are easy to read and understand. For more information, see “Step 2: Create the Workflow Diagram” on page 175.

---

**Basic Workflow Modeling Concepts**

Before you start to create a workflow, read the following sections. Then proceed to the directions in “Create a Basic Workflow” on page 167.

**Activities**

An activity is a step in a workflow. To model a workflow, you draw a diagram, or model, of the flow of work. Each activity has specific properties, that define what work is to be performed and who will perform the work.

**Component Based Activity**

Component based activities are designed to use a business component to interact with Banner pages or 3rd party applications such as Microsoft® Excel.
## Types of Components

<table>
<thead>
<tr>
<th>Component Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AutomatedNonWorkflowAware</strong></td>
<td>Components execute external programs that require no user interaction and do not know how to communicate with Banner Workflow. The contract established in this case specifies that Banner Workflow will complete the work item after the external process has finished running. The external program is allowed to interact with Banner Workflow, but must not alter the state of the work item. When the external program ends, the Banner Workflow server assumes it is complete.</td>
</tr>
<tr>
<td><strong>AutomatedWorkflowAware</strong></td>
<td>Allows a user to execute external programs that require no user interaction and know how to communicate with Banner Workflow. With an AutomatedWorkflowAware component, it is the responsibility of the external program to mark the work item as complete. Banner Workflow will launch the external program and monitor it. The external program will inform Banner Workflow when it is complete.</td>
</tr>
<tr>
<td><strong>Interactive</strong></td>
<td>Interactive components execute programs that require user interaction. For example, if the component were a Microsoft® Word document, Banner Workflow would start Word, the user would perform work in the appropriate document, then return to Banner Workflow. The external application will be used to determine the security privileges that a user has for that application.</td>
</tr>
<tr>
<td><strong>Internal</strong></td>
<td>Internal components execute programs within the Banner Workflow application. These programs were delivered with the Banner Workflow product. An internal component can only be used to access the Banner Workflow database. An example of an internal component is the code used to execute SQL queries and database stored procedures. For example: An internal component can be used to update user profile information (logon ID, password, e-mail address, and so on) for a Banner user.</td>
</tr>
</tbody>
</table>
Automated Activity

When an activity is something that does not need user interaction, use an automated activity. The only difference between creating an automated activity and an interactive or manual activity in the modeler is that the automated activity is not assigned a role.

Manual Activity

Manual activities notify a user about manual work that needs to be performed. Manual work can consist of making a phone call, meeting with a co-worker, or contacting a specific person. When a manual activity is reached in a workflow, the appropriate user sees a message stating what needs to be done. After the user finishes the task and marks the activity as complete, the workflow will advance to the next activity.

Approval Activity

Approval activities are used to review a previous activity or context data. When an approval activity is reached in a workflow, the appropriate user will see a message stating what needs to be approved. The user can then review the activity and choose to approve, reject, or return it for rework.

Email Activity

Email activities are started, performed, and completed automatically by Banner Workflow when they are reached in a workflow instance. They allow you to create email messages with text, context parameters, and document attachments.

Custom Activity

Custom Activities allow Business Analysts to incorporate custom-built HTML forms into workflow businesses processes. When a custom activity is reached in a workflow, the appropriate user is presented with the custom form. The user enters data into the form and clicks complete to progress the workflow to the next activity.

Transitions

Transitions are used to connect different objects on the canvas to form a workflow. Two types of transitions are available.

Transition

A transition is a line that connects activities, decisions, parallels, and start and stop objects. Transitions show the flow of work.
**Self Connector**

Self connectors indicate that an activity should be repeated. A self connector can be used with a guard condition to ensure that certain conditions are met before the activity can be completed. For more information on Guard Conditions see “Guard Conditions” on page 207.

**Parameters**

There are two kinds of parameters in a workflow: context parameters and component parameters.

**Context Parameters**

Workflow context parameters are parameters that apply throughout a workflow. They establish the context data that can be used throughout all activities in the workflow.

For example, in a basic workflow that has the purpose of entering information into a database about a person or organization, three items are needed by the workflow activities: name, address, and telephone number. These three items represent the workflow context parameters.

**Required Input**

A workflow context parameter can be required. This means that when the context parameter is used in a workflow, a value must be provided for the parameter when the workflow is started. If the workflow is started manually, this value will be supplied by the user. If the workflow is started by an event, the event must provide this value through a context mapping.

Mappings are used to transfer data between a workflow’s context and the events and activities that it interacts with. When you map a parameter, you define which of the parameters defined for the component will be used in the workflow as context parameters and how they will be used. Mappings can move information in a single direction or in both directions.

**Component Parameters**

Component parameters represent data that will be required as input when the component is launched or guaranteed as output when the component is completed. These parameters represent the set of all data used by the component.

Component parameters are used in workflows when they are mapped to workflow context parameters. Using parameter mapping, data can be passed from a component parameter into a workflow context parameter or from a workflow context parameter into a component parameter.
Advanced Workflow Modeling Concepts

To create a workflow that reflects the complexity of your more intricate business processes, Banner Workflow allows you to use the following advanced features:

- Activity Notification
- Attachments
- Parallel Paths for Simultaneous Activities
- Decisions and Multiple Paths in a Workflow
- Guard Conditions
- Metrics Tracking

For more information on each of these features, see “Adding Complexity to Your Workflows” on page 207.

Activity Notification

Activity notification is useful for casual users of Banner Workflow who do not have their worklist running at all times. Notifications can be added to all role-based activities. If an activity has a notification associated with it, an email will be generated when the work item becomes available in a running workflow. The content and recipients of the email are defined at model time and can include static and/or dynamic content and a URL that will automatically launch the running activity. The URL directs the user to the Banner Workflow logon page. Once the user successfully logs on to Banner Workflow, the work item is automatically launched and the user can perform their work.

Attachments

Global Attachments are static documents that have been uploaded into the workflow system. These attachments can be incorporated into modeled Email Activities to “push” additional or supporting information to a workflow constituent. At model time the Business Analyst may include one or many Global Attachments within an email based communication. When the Email Activity runs, the associated Global Attachment will be included in the distributed email message. As Global Attachments cannot be modified by a user, once uploaded into the workflow system, they are typically used to specify instructions or to provide further details about a workflow or a workflow activity. An example of when you might wish to include a Global Attachment would be to email an Undergraduate Application to an Institutional Prospect.
Document tags can also be used to enhance a workflow. A document tag represents the expected name and description of an attachment that will be associated at runtime. At model time, workflow attachments are defined by the Business Analyst through the creation of document tags for the process. The document tag contains the expected name and description of an attachment and acts a placeholder. At runtime, a user would then attach a document to fulfill the association. An example of when you might wish to utilize workflow attachments would be to associate an invoice or expense report with a workflow to easily pass information along to other process constituents.

**Parallel Paths for Simultaneous Activities**

Parallel paths can be used in situations where it doesn’t matter which activity or which string of activities is performed first, as long as they are all performed before another activity or before the end of the workflow.

**Decisions and Multiple Paths in a Workflow**

Decisions and multiple paths can be when the path a workflow needs to take depends upon the outcome of a previous activity.

**Guard Conditions**

A transition guard condition is a rule that is evaluated when an activity is completed. It is composed of any valid combination of constants and context parameters.

**Metrics Tracking**

Metrics tracking provides enhanced visibility to both work items and workflow processes within Banner Workflow. The metrics section provides a work calendar, notification for overdue and lagging work items and workflow processes, and aggregate in-process monitoring.
Create a Basic Workflow

This chapter provides step by step instructions on how to create a basic workflow. There are seven steps to create a basic workflow:

“Step 1: Enter Workflow Information” on page 167
“Step 2: Create the Workflow Diagram” on page 175
“Step 3: Define Activity Properties” on page 180
“Step 4: Map Parameters” on page 200
“Step 5: Validate the Workflow” on page 201
“Step 6: Test the Workflow” on page 203
“Step 7: Activate the Workflow” on page 205

Step 1: Enter Workflow Information

The preliminary information you enter about a workflow model includes the organization, name, and description, the roles that will serve as workflow owner and workflow administrator, metrics information, the version and status of the model, whether all the activities in the workflow are confidential, the work calendar associated with the workflow, if this model represents a best practice for a particular business process, and any context parameters and document tags associated with the workflow.

To enter workflow information:

1. Select the Workflow Modeler from Administration.

2. Enter the following information in the Workflow Properties Sheet:
<table>
<thead>
<tr>
<th><strong>Organization</strong></th>
<th>Organization to which the workflow is assigned.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Note:</strong></td>
<td>Once a workflow model has been saved, it is no longer possible to change the organization to which the workflow is assigned. To change the organization, you will need to create a copy of the workflow. For more information, see “Copy a Workflow” on page 249.</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td>The name of the workflow. This is required and can include spaces. The organization and workflow name, in conjunction with the version number, is used to uniquely identify the workflow within the Workflow application.</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Description of the workflow. This is not required, but will help to identify the purpose of the workflow. Users can see the workflow description when they check status on the Workflow Status page.</td>
</tr>
<tr>
<td><strong>Version</strong></td>
<td>Version number for the workflow. This value can not be modified and is automatically incremented by Workflow when a new version is created.</td>
</tr>
<tr>
<td></td>
<td>A workflow can have more than one version. Each version of a workflow definition shares a common name. The new version of a workflow will have an initial state of Development when it is created.</td>
</tr>
<tr>
<td></td>
<td>More than one version of a workflow may be active and used at any given time. However, if two versions of a workflow are attached to the same business process, their effective date ranges cannot overlap.</td>
</tr>
<tr>
<td><strong>Administrator</strong></td>
<td>Role that is the administrator for this workflow. The role assigned as the workflow administrator can serve as a point of contact for any questions about the workflow as well as:</td>
</tr>
<tr>
<td></td>
<td>• start or stop the workflow, even if that role is not a participant in the workflow.</td>
</tr>
<tr>
<td></td>
<td>• resolve problems with the workflow.</td>
</tr>
<tr>
<td></td>
<td>• reserve a work item for a specific user (who has the appropriate user-role-organization assignment) to perform.</td>
</tr>
<tr>
<td><strong>Owner</strong></td>
<td>Role that is the owner for this workflow. A user who is assigned the role that is the designated workflow owner can perform all the functions that the Administrator can as well as review alerts when there is a problem with the workflow.</td>
</tr>
</tbody>
</table>
Context Parameters

Workflow context parameters are a set of parameters that apply throughout a workflow. Workflow context parameters allow information to be shared between different steps in the workflow.

For example, in a basic workflow that has the purpose of entering information into a database about a person or organization, three items are needed by the workflow activities: name, address, and telephone number. These three items represent the workflow context parameters.

To add workflow context parameters, see “Create Workflow Context Parameters” on page 172.

Document Tags

Expected name and description of a document attachment that will be attached at runtime. Since no document attachments will exist at the start of the workflow, a list of expected documents can help a user prepare a document attachment.

Confidential

Indicates if all activities in the workflow are confidential.

- Yes - All activities in this workflow are confidential. A confidential activity is not posted to the worklist of all users with a specified role, instead, it appears in the worklist of the specific user to whom it is directed. For an activity to be directed to a specific user, that user must have the appropriate user-role-organization assignment. You can also direct non-confidential activities to a specific user.

- No - All activities in this workflow are not confidential. To make an individual activity confidential, select that activity, then select Yes in the Confidential field of Activity Properties.
Status

A workflow model can have one of five possible statuses:

- **Development** - The workflow is being developed. This is the default value for a new workflow, for new versions of an existing workflow, and for copies of a workflow. A workflow in development cannot be attached to a business process and there can be no active workflow instances for a version of the workflow in a development state.

- **Test** - The model is validated and ready to be tested. If the model doesn’t work as intended, you can change the status back to Development, make any necessary changes, and then change the status back to Test.

  **Note:** Changing a model’s status from Test to Development will cause any running instances of the workflow to be deleted.

- **Active** - Development is complete, the workflow has been validated and can be attached to a business process and started. Once you set the status to Active, you can no longer modify the workflow. To make any changes, you would need to create a new version of this workflow.

- **Inactive** - The workflow model is no longer in use and cannot be attached to a business process. If it already attached to a business process, the process cannot be started. An inactive workflow model can be reactivated.

- **Obsolete** - The workflow model is no longer valid and cannot be attached to a business process. A workflow that has an existing business process association cannot be made obsolete. An obsolete workflow cannot be reactivated.

**Best Practice**

You can record best practice information for a workflow. This is optional.

- **Yes** - The workflow model represents a best practice.

- **No** - The workflow model does not represent a best practice.
3. Click Save.

4. Click Yes to confirm your selected organization.

**Note**

Once you bind the workflow to the organization by saving the model, you will not be able to change the organization without making a new copy.
Create Workflow Context Parameters

To add workflow context parameters:

1. Select the Context Parameters field.

2. Click on the right side of the Context Parameters field to open the Context Parameters window.

3. Enter parameter information:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the workflow context parameter. Parameters in Banner Workflow follow the standard Java naming convention. This naming convention applies to all parameters (business event, component, and workflow context), as follows:</td>
</tr>
</tbody>
</table>

   - In the first position: You can use letters, currency symbols (such as $), and an underscore (_).

   - In positions other than the first: You can use letters, numbers (0–9), currency symbols (such as $), and underscores (_).

   - In all positions: You cannot use spaces. Use underscores or mixed case to separate “words”. For example you might name a component parameter like this:

     trans_number or TransNumber

<p>| Description      | Description of the workflow context parameter. The description is not required, but will help to identify the purpose of the parameter. |</p>
<table>
<thead>
<tr>
<th>Type</th>
<th>The data type required by the workflow context parameter. Valid types are Boolean, Date, Numeric, or Text. You can map a workflow context parameter to a component parameter that has the same data type.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required</td>
<td>If a workflow context parameter is required, that means a value for the parameter must be provided.</td>
</tr>
<tr>
<td></td>
<td>• Yes - Select the Required checkbox to signify that the value for this context parameter must be provided. When a workflow is started manually, required context parameters appear in the Start Process window; the user who starts the workflow must enter a value for each required context parameter. If the workflow is started by a business event, the value must be provided by the event.</td>
</tr>
<tr>
<td></td>
<td>• No - Deselect the Required checkbox to signify that the value for this context parameter may be provided, but is not required. When a workflow is started manually, optional context parameters do not appear in the Start Process window.</td>
</tr>
<tr>
<td>Initial Value</td>
<td>If an initial value is specified for a context parameter, when starting the workflow in the Start Process window, a value for the context parameter will not need to be entered.</td>
</tr>
<tr>
<td></td>
<td>• None - No initial value for the context parameter</td>
</tr>
<tr>
<td></td>
<td>• Default Value - Specify a default value for a context parameter.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The default value can be replaced with data mapped from an event parameter or a value set when starting the workflow in the Start Process window.</td>
</tr>
</tbody>
</table>

4. Click **Add**. This enters a new row in the table.

5. Repeat steps 3 and 4 for each workflow context parameter to be added.

6. When you have entered all workflow context parameters, click **OK**.

7. Click **Save**.
Create Document Tags

A document tag represents the expected name and description of an attachment that will be attached at runtime. Since no document attachments will exist at the start of the workflow, a list of expected documents can help a user prepare a document attachment.

To create a document tag:

1. Select the Document Tags field.
2. Click on the right side of the Document Tags field to open the Document Tags window.
3. Click Add. This enters a new row in the table.
4. Enter document tag information:
   - Name: Name of the document that will be attached at runtime.
   - Description: Description of the document that will be attached at runtime.
5. Repeat steps 3 and 4 for each document tag to be added.
6. When you have entered all document tags, click OK.
7. Click Save.

Create Attribute Mappings

To add attribute mappings:

1. Select the Attribute Mappings field.
2. Click on the right side of the Attribute Mappings field to open the Attribute Mappings window.
3. Click Add to create a new attribute mapping.
4. Click in the Attribute column and select a workflow attribute to map to a context parameter.
5. Click in the Context Parameter column and select a context parameter to map to the workflow attribute you selected.

Note
The parameter type for the selected attribute and context parameter must match.

6. Click OK.

7. Click Save.

**Step 2: Create the Workflow Diagram**

Creating a workflow model diagram is very simple. Using the drawing palette, you select and create objects on a canvas and then connect them.

When you arrange your activity objects, think about how much space will be required for each one. An activity object will expand to fit the activity name; therefore, long activity names mean larger activity objects.

**Enter Activities on the Modeler Canvas**

For each new workflow, a start is automatically entered into the top left corner of the Modeler Canvas.

To enter activities on the Modeler Canvas:

1. Select the Activity tool, then click on the canvas. This inserts an activity into the workflow diagram where you clicked.

2. Repeat this step to enter additional activities in the drawing canvas.
   - You can place activities anywhere you wish.
   - You can create objects in any sequence. For example, you can create the Stop object first, then create all your activity objects.
   - If you need to delete an object, right-click it and select Delete.

3. When you have entered all the activities you need, select the Stop tool, then click on the canvas. This inserts a stop.

Note
Email, Manual, Approval, and Custom Activities are also added in the same way.
Connect Objects

To connect objects using the Transition tool:

1. Select the Transition tool →.

2. Click an activity and drag to the center of the next activity. This draws a transition between the two activities. The transition will point towards the second activity. The direction the transition points indicates the flow of work.

3. Connect the rest of the activities and the stop •.

4. Click Save .

Drawing Hints

<table>
<thead>
<tr>
<th>Object</th>
<th>Comments</th>
</tr>
</thead>
</table>
| • Start | • You can have only one start in a diagram.  
• You cannot delete a start.  
• You can have only one transition come out of a start.  
• You cannot have a transition flow into a start. |
Move and Change the Shape of a Transition

Once you enter a transition, you cannot change the direction it points in or the objects that it is connected to. If you need to make these changes, you will have to delete the transition and create a new one.

Note

If you have entered a guard condition rule for the transition, it will also be deleted. In this situation, you may want to copy the guard condition rule before you delete the transition.

You can change the shape of the transition.

For instance, if you have entered a transition that is a straight line, like this:

But you need it to look like this:

Transitions can be straight, on an angle, or have as many bends in them as you need.
**Change the Shape of a Transition**

To change the shape of a transition:

1. Using the selector tool, single-click the transition where you like to insert a bend.
2. Drag the transition until it is the shape you want it to be.
3. To add additional bends, repeat the process. You can add as many bends to a transition as you need.

**Delete a Bend Point in a Transition**

To delete a bend in a transition:

1. Using the selector tool, right-click the point that you would like to delete and select *Delete Point*.
2. To add delete additional bend points, repeat the process.

**Colors**

You can assign different colors to transitions. If you have an intricate workflow diagram, colors may help you to visually distinguish the various paths or decisions in your diagram.

1. Right-click the transition and select *Foreground Color*.
2. You have three options for selecting a background color for an activity. Click one of the following tabs to select a foreground color for a transition:
   - Swatches - select an existing color from the grid of color swatches.
   - HSB - enter a value from (0 to 359) for Hue, (0 to 100) for Saturation, and (0 to 100) for Brightness. Hue refers to color, Saturation refers to the intensity of the color, and Brightness determines how bright or dull a color is displayed.
   - RGB - enter a value from (0 to 255) for Red, (0 to 255) for Green, and (0 to 255) for Blue. By combining the three primary colors, you can create a specific color shade for an activity.
3. Click *OK*. 
Multiple Stops

If a workflow has more than one path, either through guard conditions or multiple outbound transitions, each path might have its own stopping point.

For example, look at the two examples below. Both are correct, but the one that you find easier to follow is a matter of personal preference. Keep in mind that the more complex your diagrams are, especially if they incorporate several decisions or iterations, it may be difficult to have all possible paths flow into a single stop object. For this reason, you may want to get in the habit of ending each path with its own stop.

Note

A stop cannot occur within a parallel path.

This example shows all paths flowing into a single stop object:
This example shows each path flowing into a different stop object:

Delete Objects

When you delete an object, all transitions that go into or out of the object are also deleted. If transitions have guard conditions, the guard conditions are also deleted. For more information on Guard Conditions, see “Guard Conditions” on page 207.

Step 3: Define Activity Properties

Now that you have entered activity objects, you can enter activity properties. Activity properties contain detailed information about the activity. You need to enter properties for each activity in your workflow. Activity properties are different for each type of workflow activity. The following workflow activity properties are discussed below:

- “Activity Properties” on page 181.
- “Email Activity Properties” on page 190.
- “Custom Activity Properties” on page 196.
Activity Properties

To enter activity properties:

1. Click the Selector tool \(\text{Select}^\text{\textregistered}\).
2. Click an activity on the canvas.
3. Enter activity information in the property fields:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Background Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the activity. The activity name is required and cannot include spaces. Activities are identified throughout Banner Workflow by their activity name.</td>
<td>Click on the right side of the Background Color field to open the Choose Color window. You have three options for selecting a background color for an activity. Click one of the following tabs to select a background color for an activity:</td>
</tr>
<tr>
<td>Description</td>
<td>Description of the activity. The description is optional and can include spaces.</td>
<td>- Swatches - select an existing color from the grid of color swatches.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- HSB - enter a value from (0 to 359) for Hue, (0 to 100) for Saturation, and (0 to 100) for Brightness. Hue refers to color, Saturation refers to the intensity of the color, and Brightness determines how bright or dull a color is displayed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- RGB - enter a value from (0 to 255) for Red, (0 to 255) for Green, and (0 to 255) for Blue. By combining the three primary colors, you can create a specific color shade for an activity.</td>
</tr>
</tbody>
</table>

Background Colors are not required for activities.
Foreground Color

Click on the right side of the Foreground Color field to open the Choose Color window. You have three options for selecting a foreground color for an activity. Click one of the following tabs to select a foreground color for an activity:

- Swatches - select an existing color from the grid of color swatches.
- HSB - enter a value from (0 to 359) for Hue, (0 to 100) for Saturation, and (0 to 100) for Brightness. Hue refers to color, Saturation refers to the intensity of the color, and Brightness determines how bright or dull a color is displayed.
- RGB - enter a value from (0 to 255) for Red, (0 to 255) for Green, and (0 to 255) for Blue. By combining the three primary colors, you can create a specific color shade for an activity.

Foreground Colors are not required for activities.

Image Name

Click on the right side of the Image Name field to open the Choose Image window. Images are not required.

Business Component

Name of the component that is associated with this activity. Select the Business Component by either typing in a portion of the name and pressing enter or click on the right side of the Business Component field to open the Find Business Component window and search for a component.

Component Type

Displays the component type of the selected Business Component. This is a display only field.

Product Type

Displays the product type of the selected Business Component. This is a display only field.

Release ID

Displays the release ID of the selected Business Component. This is a display only field.

Status

Displays the status of the selected Business Component. This is a display only field.

Parameter Mapping

Map the parameters for each activity with a component. For more information see "Step 4: Map Parameters" on page 200.
| Role | The role that will perform this activity in the workflow. You can enter the role name or click  on the right side of the Role field to open the Find Role window. Search for the role using wildcards ("**" or "%@") then select the role and click OK. |
| Performer Rule | This is an optional field used to direct the activity to a specific user. Click  on the right side of the Performer Rule field to open the Performer Role window and select Context Parameter or User Logon. Select the context parameter and click OK or search for a User logon, select the value, and click OK. |
| Confidential | Indicates if the activity is confidential. |
| • Yes - The activity is confidential. When the workflow is run, this activity will be directed to the worklists of specific users who have the appropriate role, and not to the worklists of all users who have the appropriate role. Confidential activities can also be directed to users who have an appropriate proxy role assignment. If a workflow is confidential then all activities in the workflow are confidential and you cannot change the confidentiality of an individual activity. |
| Note: The specific user who will see this activity in a worklist is defined by a performer rule. |
| • No - The activity is not confidential. When the workflow is run, any user with the appropriate user-role-organization assignment will see this activity in their worklist. |
Notification

If an activity has a notification associated with it, an email will be generated when the work item becomes available in a running workflow. The content and recipients of the email are defined at model time and can include static and/or dynamic content and a URL that will automatically launch the running activity. The URL directs the user to the Banner Workflow logon page. Once the user successfully logs on to Banner Workflow, the work item is automatically launched and the user can perform their work.

**Note**: For a user to receive a notification email from Banner Workflow, activity notifications must be enabled in that user’s profile. For more information, see “Create a User Account” on page 74.

Mandatory

Indicates if the activity is mandatory.

- Yes - The activity is mandatory. When the workflow is run, it must be completed before the next workflow activity will appear in a worklist.
- No - The activity is not mandatory. When the workflow is run, a user who sees this activity in a worklist may skip it. If an activity is skipped, the workflow moves to the next activity.

Attribute Mappings

Activity attribute mappings can be used to map activity specific data to a context parameter that can be used throughout the workflow.

For example, this data can be used in an email message or with a performer rule condition to direct work to a specific performer at a later point in the workflow.

**Note**: Activity attribute values are assigned immediately after an activity completes.

**Note**: If a workflow is started manually, existing attributes will overwrite any manual workflow starting values.

To add an attribute mapping to an activity, see “Create Attribute Mappings” on page 174.
4. Click Save.

**Manual Activity Properties**

To enter manual activity properties:

1. Click the Selector tool.

2. Select a manual activity on the canvas.
3. Enter manual activity information in the property fields:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the manual activity. The activity name is required and cannot include spaces. Activities are identified throughout Banner Workflow by their activity name.</td>
</tr>
<tr>
<td>Description</td>
<td>Description of the manual activity. The description is optional and can include spaces.</td>
</tr>
<tr>
<td>Background Color</td>
<td>Click on the right side of the Background Color field to open the Choose Color window. You have three options for selecting a background color for a manual activity. Click one of the following tabs to select a background color for an activity:</td>
</tr>
<tr>
<td></td>
<td>• Swatches - select an existing color from the grid of color swatches.</td>
</tr>
<tr>
<td></td>
<td>• HSB - enter a value from (0 to 359) for Hue, (0 to 100) for Saturation, and (0 to 100) for Brightness. Hue refers to color, Saturation refers to the intensity of the color, and Brightness determines how bright or dull a color is displayed.</td>
</tr>
<tr>
<td></td>
<td>• RGB - enter a value from (0 to 255) for Red, (0 to 255) for Green, and (0 to 255) for Blue. By combining the three primary colors, you can create a specific color shade for an activity.</td>
</tr>
</tbody>
</table>

Background Colors are not required for activities.
Foreground Color

Click on the right side of the Foreground Color field to open the Choose Color window. You have three options for selecting a foreground color for a manual activity. Click one of the following tabs to select a foreground color for an activity:

- **Swatches** - select an existing color from the grid of color swatches.
- **HSB** - enter a value from (0 to 359) for Hue, (0 to 100) for Saturation, and (0 to 100) for Brightness. Hue refers to color, Saturation refers to the intensity of the color, and Brightness determines how bright or dull a color is displayed.
- **RGB** - enter a value from (0 to 255) for Red, (0 to 255) for Green, and (0 to 255) for Blue. By combining the three primary colors, you can create a specific color shade for an activity.

Foreground Colors are not required for activities.

Image Name

Click on the right side of the Image Name field to open the Choose Image window. Images are not required.

*Note:* A default manual activity image is used within Banner Workflow to differentiate manual activities from other activity types within a workflow model.

Message

Click on the right side of the Message field to open the Manual Instructions window and enter instructions for the performer.

- You can enter instructions in plain text.
- You can also embed workflow context parameters within the instructions. If you enter a workflow context parameter, the user will see the actual value for that parameter in the instructions. For more information, see “Workflow Context Parameters in Instructions” on page 190.

Role

The role that will perform this manual activity in the workflow. You can enter the role name or click on the right side of the Role field to open the Find Role window. Search for the role using wildcards (“*” or “%”) then select the role and click OK.
Performer Rule

This is an optional field used to direct the manual activity to a specific user. Click on the right side of the Performer Rule field to open the Performer Role window and select Context Parameter or User Logon. Select the context parameter and click OK or search for a User logon, select the value, and click OK.

Confidential

Indicates if the manual activity is confidential.

- Yes - The activity is confidential. When the workflow is run, this activity will be directed to the worklists of specific users who have the appropriate role, and not to the worklists of all users who have the appropriate role. Confidential activities can also be directed to users who have an appropriate proxy role assignment.

If a workflow is confidential then all activities in the workflow are confidential and you cannot change the confidentiality of an individual activity.

Note: The specific user who will see this activity in a worklist is defined by a performer rule.

- No - The activity is not confidential. When the workflow is run, any user with the appropriate user-role-organization assignment will see this activity in their worklist.

Notification

If an activity has a notification associated with it, an email will be generated when the work item becomes available in a running workflow. The content and recipients of the email are defined at model time and can include static and/or dynamic content and a URL that will automatically launch the running activity. The URL directs the user to the Banner Workflow logon page. Once the user successfully logs on to Banner Workflow, the work item is automatically launched and the user can perform their work.

Note: For a user to receive a notification email from Banner Workflow, activity notifications must be enabled in that user’s profile. For more information, see “Create a User Account” on page 74.
<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Indicates if the manual activity is mandatory.</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Yes - The activity is mandatory. When the workflow is run, it must be completed before the next workflow activity will appear in a worklist.</td>
<td></td>
</tr>
<tr>
<td>- No - The activity is not mandatory. When the workflow is run, a user who sees this activity in a worklist may skip it. If an activity is skipped, the workflow moves to the next activity.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attribute Mappings</th>
<th>Activity attribute mappings can be used to map activity specific data to a context parameter that can be used throughout the workflow.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For example, this data can be used in an email message or with a performer rule condition to direct work to a specific performer at a later point in the workflow.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Activity attribute values are assigned immediately after an activity completes.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If a workflow is started manually, existing attributes will overwrite any manual workflow starting values.</td>
</tr>
<tr>
<td></td>
<td>To add an attribute mapping to an activity, see “Create Attribute Mappings” on page 174.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metrics Tracking</th>
<th>Enable metrics tracking for this manual activity.</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Yes - Metrics will be tracked for this activity.</td>
<td></td>
</tr>
<tr>
<td>- No - Metrics will not be tracked for this activity.</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> Metrics tracking must be enabled for each specific activity in the workflow that you would like to track metrics for. Enabling metrics at a workflow level will only track metrics for the workflow as a whole.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimated Time</th>
<th>Estimated time required to complete the manual activity. The Hours field contains the estimated hours and the Minutes field contains the estimated minutes. Both fields are initially set to zero.</th>
</tr>
</thead>
</table>

| Lagging Percentage | The percentage of the estimated time required to complete the manual activity, which when elapsed the activity will be considered to be lagging. |

4. Click Save. 


**Workflow Context Parameters in Instructions**

To enter a workflow context parameter into a set of instructions:

1. On the Manual Instructions page, enter instructions for the performer.
2. Place the cursor where you want the context parameter to be inserted.
3. Select **Insert>>Context Parameters**.
4. Click the context parameter you would like to insert into the manual instructions. The context parameter is entered into the instructions where your cursor is located, immediately following the “@” symbol. For example, to substitute an identification number, you would see “@ID” in the body of the instructions.

When the workflow runs, the performer will see the actual value for the workflow context parameter in the instructions.

**Email Activity Properties**

To enter email activity properties:

1. Click the Selector tool ![Selector Icon](SelectorIcon.png).
2. Select an email activity on the canvas.
3. Enter email activity information in the property fields:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the email activity. The activity name is required and cannot include spaces. Activities are identified throughout Banner Workflow by their activity name.</td>
</tr>
<tr>
<td>Description</td>
<td>Description of the email activity. The description is optional and can include spaces.</td>
</tr>
<tr>
<td>Background Color</td>
<td>Click on the right side of the Background Color field to open the Choose Color window. You have three options for selecting a background color for an email activity. Click one of the following tabs to select a background color for an activity:</td>
</tr>
<tr>
<td></td>
<td>- Swatches - select an existing color from the grid of color swatches.</td>
</tr>
<tr>
<td></td>
<td>- HSB - enter a value from (0 to 359) for Hue, (0 to 100) for Saturation, and (0 to 100) for Brightness. Hue refers to color, Saturation refers to the intensity of the color, and Brightness determines how bright or dull a color is displayed.</td>
</tr>
<tr>
<td></td>
<td>- RGB - enter a value from (0 to 255) for Red, (0 to 255) for Green, and (0 to 255) for Blue. By combining the three primary colors, you can create a specific color shade for an activity.</td>
</tr>
</tbody>
</table>

Background Colors are not required for activities.
Foreground Color Click on the right side of the Foreground Color field to open the Choose Color window. You have three options for selecting a foreground color for an email activity. Click one of the following tabs to select a foreground color for an activity:

- Swatches - select an existing color from the grid of color swatches.
- HSB - enter a value from (0 to 359) for Hue, (0 to 100) for Saturation, and (0 to 100) for Brightness. Hue refers to color, Saturation refers to the intensity of the color, and Brightness determines how bright or dull a color is displayed.
- RGB - enter a value from (0 to 255) for Red, (0 to 255) for Green, and (0 to 255) for Blue. By combining the three primary colors, you can create a specific color shade for an activity.

Foreground Colors are not required for activities.

Image Name Click on the right side of the Image Name field to open the Choose Image window. Images are not required.

Note: A default email activity image is used within Banner Workflow to differentiate email activities from other activity types within a workflow model.

From Sender’s email address. This is required.

To Recipient's email address. To send an email to more than one recipient, you can add additional email addresses separated by commas.

CC Carbon copy. Any email address listed in the CC field will receive a copy of that message when you send it.

BCC Blind Carbon Copy. Any email address listed in the BCC field will receive a copy of that message when you send it, however BCC email recipients will not be visible to other recipients of the message.

Subject Enter the subject of your message. You can include hard-coded values and/or context parameters in these sections. For more information on adding context parameters, see “Workflow Context Parameters in Emails” on page 195.
Body
Enter the message that you would like to send to the email recipient. You can include hard-coded values and/or context parameters in these sections. For more information on adding context parameters, see “Workflow Context Parameters in Emails” on page 195.

Attachments
Displays the number of files that are attached to this email activity. Click to open the Email Properties window and then click where you can set up global attachments for this email activity. For more information on email attachments, see “Email Attachments” on page 195.

Sending Failure
Banner Workflow considers an Email activity to be successfully completed if each recipient in the To, CC, and BCC fields can be resolved to a valid email address, and the email server accepts the email message for delivery to each resolved address. There are three options for dealing with an email activity that does not successfully send a message:

- Ignore - Banner Workflow will complete the email activity regardless of the success of the activity.
- Warn - Banner Workflow will complete the email activity regardless of the success of the activity, however, an alert will be raised for each error that prevents one or more of the intended recipients from receiving the email message.
- Stop - Any error that prevents one or more of the intended recipients from receiving the email message will stall the workflow and raise an alert. The Workflow Owner or an Administrator will need to deal with the error using the Workflow Alerts page.

Note: An email activity that Banner Workflow considers to be successfully completed, does not guarantee that all recipients actually receive the email; it only guarantees that all intended addresses resolved to valid email addresses that were accepted by the email server, and that the server accepted the message. Delivery failures on other servers can occur at a later point that is outside of Banner Workflow’s control or knowledge.
1. Configure the workflow in a manner that facilitates the necessary actions.

2. Click the Save button to save the workflow.

3. Click the Publish button to publish the workflow.

4. Click Save.

**Email Properties Window**

Within the Email Properties window, the From, To, CC, and BCC fields can be populated using one of the following methods:

- Click the From, To, CC, or BCC button to open the Addresses window to open the Addresses window. Select either the Users or Roles tab. On the selected tab, you can perform a query to find a specific user or role. Emails must come from a specific user, therefore the Roles tab is disabled for the From field.

- Right-click in From, To, CC, or BCC fields and select **Addresses** to open the Addresses window to open the Addresses window. Select either the Users or Roles tab. On the selected tab, you can perform a query to find a specific user or role. Emails must come from a specific user, therefore the Roles tab is disabled for the From field.

- Select **Insert>>Addresses** to open the Addresses window to open the Addresses window. Select either the Users or Roles tab. On the selected tab, you can perform a query to find a specific user or role. Emails must come from a specific user, therefore the Roles tab is disabled for the From field.

- Manually enter the user logon ID followed by /WF. For example “jsmith/WF”. The user’s email address must be specified in Banner Workflow.

- Manually enter the role followed by /ROLE. For example “admin/ROLE” would send an email to every user with a role of “admin”. The email will only be sent to those individuals with specified email addresses in Banner Workflow.

- Manually enter a fully qualified e-mail address.

**Attribute Mappings**

Activity attribute mappings can be used to map activity specific data to a context parameter that can be used throughout the workflow.

For example, this data can be used in an email message or with a performer rule condition to direct work to a specific performer at a later point in the workflow.

**Note:** Activity attribute values are assigned immediately after an activity completes.

**Note:** If a workflow is started manually, existing attributes will overwrite any manual workflow starting values.

To add an attribute mapping to an activity, see “Create Attribute Mappings” on page 174.
Workflow Context Parameters in Emails

A workflow context parameter can be used in the From, To, CC, BCC, Subject, and Body sections of an email message. To insert a workflow context parameter in an email message:

1. Place the cursor in the field and location where you want the context parameter to be inserted.
2. Select Insert >> Context Parameters or right-click in the field and location where you want the context parameter to be inserted and select Context Parameters.
3. Click the context parameter you would like to insert into the manual instructions. The context parameter is entered into the email where your cursor is located.
4. When the workflow runs, the actual value will be substituted for the workflow context parameter.

Email Attachments

To attach a document to an email activity:

1. In the Email Properties window, click Attach.
2. In the Email Attachments window, select a file in the Global Attachments section or a tag in the Document Tags section to attach to the email message.
3. Click Attach. All attached files will appear in the Attachments section of the Email Attachments window.
4. Click OK. All files that will be attached to this email are displayed in Name field in the Email Properties window.
5. Click OK to close the Email Properties window.

To remove a global attachment from an email activity:

1. In the Email Properties window, click Attach.
2. In the Email Attachments window, select a file in the Attachments section to remove from the email message.
3. Click \texttt{<<Remove>>}. All removed files will no longer appear in the Attachments section of the Email Attachments window.

4. Click \texttt{OK}. All files that will be attached to this email are displayed in Name field in the Email Properties window.

5. Click \texttt{OK} to close the Email Properties window.

\section*{Custom Activity Properties}

To enter custom activity properties:

1. Click the Selector tool \texttt{ }. 

2. Select a custom activity on the canvas.

3. Enter custom activity information in the property fields:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the custom activity. The activity name is required and cannot include spaces. Activities are identified throughout Banner Workflow by their activity name.</td>
</tr>
<tr>
<td>Description</td>
<td>Description of the custom activity. The description is optional and can include spaces.</td>
</tr>
<tr>
<td>Background Color</td>
<td>Click \texttt{ } on the right side of the Background Color field to open the Choose Color window. You have three options for selecting a background color for a custom activity. Click one of the following tabs to select a background color for an activity:</td>
</tr>
<tr>
<td></td>
<td>• Swatches - select an existing color from the grid of color swatches.</td>
</tr>
<tr>
<td></td>
<td>• HSB - enter a value from (0 to 359) for Hue, (0 to 100) for Saturation, and (0 to 100) for Brightness. Hue refers to color, Saturation refers to the intensity of the color, and Brightness determines how bright or dull a color is displayed.</td>
</tr>
<tr>
<td></td>
<td>• RGB - enter a value from (0 to 255) for Red, (0 to 255) for Green, and (0 to 255) for Blue. By combining the three primary colors, you can create a specific color shade for an activity.</td>
</tr>
</tbody>
</table>

Background Colors are not required for activities.
Click on the right side of the Foreground Color field to open the Choose Color window. You have three options for selecting a foreground color for a custom activity. Click one of the following tabs to select a foreground color for an activity:

- **Swatches** - select an existing color from the grid of color swatches.
- **HSB** - enter a value from (0 to 359) for Hue, (0 to 100) for Saturation, and (0 to 100) for Brightness. Hue refers to color, Saturation refers to the intensity of the color, and Brightness determines how bright or dull a color is displayed.
- **RGB** - enter a value from (0 to 255) for Red, (0 to 255) for Green, and (0 to 255) for Blue. By combining the three primary colors, you can create a specific color shade for an activity.

Foreground Colors are not required for activities.

Click on the right side of the Image Name field to open the Choose Image window. Images are not required.

**Note:** A default custom activity image is used within Banner Workflow to differentiate custom activities from other activity types within a workflow model.

Click on the right side of the Custom Activity Designer field to open the Custom Activity Designer. The Custom Activity Designer allows you to create custom-built HTML forms. For more information on designing custom activities, see “Custom Activity Designer” on page 233.

Map the parameters for each activity with a component. For more information see “Step 4: Map Parameters” on page 200.

The role that will perform this custom activity in the workflow. You can enter the role name or click on the right side of the Role field to open the Find Role window. Search for the role using wildcards (“*” or “%”) then select the role and click OK.
Performers Rule

This is an optional field used to direct the custom activity to a specific user. Click ... on the right side of the Performer Rule field to open the Performer Role window and select Context Parameter or User Logon. Select the context parameter and click OK or search for a User logon, select the value, and click OK.

Confidential

Indicates if the custom activity is confidential.

- Yes - The activity is confidential. When the workflow is run, this activity will be directed to the worklists of specific users who have the appropriate role, and not to the worklists of all users who have the appropriate role. Confidential activities can also be directed to users who have an appropriate proxy role assignment.

If a workflow is confidential then all activities in the workflow are confidential and you cannot change the confidentiality of an individual activity.

**Note:** The specific user who will see this activity in a worklist is defined by a performer rule.

- No - The activity is not confidential. When the workflow is run, any user with the appropriate user-role-organization assignment will see this activity in their worklist.

Notification

If an activity has a notification associated with it, an email will be generated when the work item becomes available in a running workflow. The content and recipients of the email are defined at model time and can include static and/or dynamic content and a URL that will automatically launch the running activity. The URL directs the user to the Banner Workflow logon page. Once the user successfully logs on to Banner Workflow, the work item is automatically launched and the user can perform their work.

**Note:** For a user to receive a notification email from Banner Workflow, activity notifications must be enabled in that user’s profile. For more information, see “Create a User Account” on page 74.
4. Click Save.
Step 4: Map Parameters

Creating workflow context parameters was initially discussed in Step 2, “Create Workflow Context Parameters” on page 172. When you selected a component in “Step 3: Define Activity Properties” on page 180, the required parameters for the component were automatically entered into the Mapped Parameters table.

Now you need to associate context and component parameters by mapping them. When you map a parameter, you define which of the parameters defined for the component will be used in the workflow as context parameters and how they will be used.

If you need to create a new context parameter while you are mapping parameters, see “Create a Workflow Context Parameter while Mapping Parameters” on page 201.

Map a Parameter

1. Click the Selector tool .

2. Select an activity on the canvas.

3. Click on the right side of the Parameter Mappings field to open the Parameter Mappings window.

4. Click to create a new parameter mapping.

5. Click in the Component Parameter column and select a component parameter to map to a context parameter.

6. Click in the Context Parameter column and select a context parameter to map to the component parameter you selected.

Note

The parameter type for the selected component parameter and context parameter must match.
7. In the column between the context parameter and the component parameter, select a mapping direction based on the following information:

The arrow indicates the direction in which information flows between mapped component and workflow context parameters:

- The workflow context parameter value is used as input into the component parameter. If input is required, this arrow must be chosen.
- The component parameter value is treated as output and may be used as input into a workflow context parameter.
- Values can be used as both the required input from the workflow context parameter to the component parameter and the optional output from the component parameter into the workflow context parameter.

8. Click **OK**.

9. Click **Save**.

**Create a Workflow Context Parameter while Mapping Parameters**

To create a workflow context parameter while mapping parameters:

1. Click **Context Parameters...** to open the Context Parameter window.

2. Follow the directions under “Create Workflow Context Parameters” on page 172.

**Step 5: Validate the Workflow**

When you validate a workflow, Banner Workflow checks that the syntax of the workflow is set up correctly. It makes sure that you have transitions in the correct places, that you have appropriately placed stops, that all the parallels have the proper transitions, and that properties are correctly defined for all activities, transitions, and parallels.

If any information is missing or is incorrectly located when you validate a workflow, you will see error messages. If you receive error messages, you will need to correct the workflow before it can be validated.
Validation Confirmation Message

If the validation is successful, and no errors are found in the structure of the workflow model, you will see this confirmation message in the area just below the drawing canvas:

Validation: Successful, with no errors.

Error Messages

If the validation is not successful and errors are found in the structure of the workflow model, the Build tab will open below the drawing canvas. A message for each error found in the model is displayed in the tab.

Note

Double-click on the error message to highlight the specific activity or transition that contains the error.

Validate a Workflow

To validate a workflow:

1. Click Validate.

2. You will see either a confirmation message or error messages in the Build tab.
   - If the workflow has no errors, you will see the following message just below the canvas:
     Validation: Successful, with no errors.
   - If the workflow has errors, you will see them listed in the Build tab. You must correct these errors, then validate the workflow again before you can activate and use the workflow.

3. Click Save.
Step 6: Test the Workflow

To test a workflow after you validate it, you must set the model’s status to Test. Selecting this status prevents you from changing the workflow, but you will still be able to assign the workflow to a process and run it.

Note

The version number will not change when setting a model’s status to Test.

Test a Workflow

To test a workflow:

Note

Be sure to save your model changes while the status is development, prior to setting the model to Test. This will register your changes and trigger required Workflow validation.

1. From the Workflow menu, choose Set Status, then select Test.

2. You can now start the workflow from the modeler or assign the workflow to a business process and start the process.

Start a Workflow from the Modeler

To start a workflow from the modeler:

1. Click Start Workflow.

2. Provide the following Start Workflow information to begin the process:
   - Organization
   - Workflow Specifics Name
   - Priority
   - Workflow Note
   - Required Parameters (if necessary)

3. You may attach a file to this workflow instance. For more information on attaching a file to a workflow instance see “Attach a File to a Workflow Instance” on page 204.

4. Click OK.
Attach a File to a Workflow Instance

To attach a file to a workflow instance:

1. Select the Attachments tab on the Start Workflow window.

2. Click **Attach**.

3. In the Attach window, navigate through the directory structure and select the file you would like to attach to the running workflow instance.

4. Click **Open**.

Analyze Test Results

When your test is complete, perform one of the following actions:

- Make additional changes. You may need to unassign the workflow from the process by changing the status back to Development in the modeler.

- Finalize your changes by updating the workflow status to Active.

**Note**

To make additional changes to the model, you may need to unassign the workflow from the process in enterprise management.

**Note**

Changing the status from Test to Development will automatically delete all instances of that workflow run in test status. These workflows will no longer appear in the Workflow Status list.

**Note**

Changing the status from Test back to Development is not designed for usage with production workflows. Completed production workflows should be purged using the Delete Workflows functionality. For more information on deleting workflows, see “Delete Workflows” on page 343.
Step 7: Activate the Workflow

While you are creating a workflow, it will have a status of Development or Test. When you activate a workflow, its status changes to Active.

**Note**

Remember that once a workflow is active, you cannot modify it. To modify an active workflow, you must first make a new version of it with a status of Development. For information, see “Workflow Versions and Copies” on page 248.

Activate a Workflow

To activate a workflow:

1. Click Activate.

2. This will change the workflow status to active. Once you have activated a workflow, you cannot modify it.

3. Click Save.
When you follow the steps in the previous section, you create a basic workflow. To create a workflow that reflects the complexity of your more intricate business processes, you may want to use one or more of the following:

- “Guard Conditions” on page 207.
- “Multiple Paths in a Workflow” on page 212.
- “Repeated Activities” on page 215.
- “Performer Selection Rules” on page 217.
- “Simultaneous Activities” on page 218.
- “Approval Activities” on page 223.
- “Activity Notification” on page 226.
- “Document Attachments” on page 229.
- “Activity Icons” on page 231.

Guard Conditions

A guard condition is a business rule that is evaluated at runtime to make a process level decision. Examples of conditional rules include:

- Should an activity be routed to a specific user?
- Which process path should be followed?
- Should a new process be started?
**Business Rules**

A business rule is an evaluation statement that can be resolved to a single value. Banner Workflow uses business rules for the following purposes:

- Event process association guard condition - This guard condition rule is entered in the Enterprise when a business event is associated with a business process. It evaluates to either true or false, and is used to determine if a specific business process should be started.

- Transition guard condition - A guard condition is a rule that is evaluated when an activity is completed. It evaluates to either true or false, and is composed of any valid combination of constants and context parameters. This guard condition rule is entered in the Banner Workflow Modeler window for a transition. It is used to evaluate which path should be followed in a workflow.

- Directed activities - This rule, which is also called a performer selection rule, may be defined in the Banner Workflow Modeler on an Activity Property sheet. A performer rule evaluates to a single workflow user.

**Event Process Association Guard Condition**

Event process association guard conditions must evaluate to *true* or *false*. You may use the following elements when you write an event process association guard condition:

- Constants
- Operators
- Business event parameters

**Transition Guard Condition**

Transition guard conditions must evaluate to *true* or *false*. You can use the following elements when you write a transition guard condition:

- Constants
- Operators
- Workflow context parameters

For example, the result must resolve to a boolean value:

```plaintext
true
gpa < 2.0
not( gpa < 2.0 and semester = “3” )
((year/4 == 0) && ((year/100 != 0) || (year/400 == 0)))
```
**Directed Activity**

A directed activity or performer selection rule, may be defined in the Banner Workflow Modeler on an Activity Property sheet to determine if an activity should be performed by a specific user, rather than by any user who has the appropriate user-role-organization assignment. For more information on performer selection rules, see “Performer Selection Rules” on page 217.

**Multiple Decisions Between Activities**

From any activity or decision, only one transition guard condition can evaluate to true at a time. If more than one condition can evaluate to true, the attribute evaluation will fail at runtime.

This means that if you have multiple outbound transitions with guard conditions that evaluate a complex situation, SunGard Higher Education recommends that you use multiple decisions. For instance, divide a single complex expression into several simple expressions that are sequenced through more than one decision.

**Transition Guard Conditions**

To create a transition guard condition:

1. Select the transition that you want to enter a guard condition for.

2. Right-click the transition and select Guard Condition or click on the right side of the Guard Condition field to open the Transition Properties window.

3. Enter the following information:

   - **Description**: Optional guard condition description. The guard condition description can be displayed on the workflow model to make the model easier to understand.

   - **Rule**: Guard condition rule. You can enter workflow context parameters, constants, and operators manually, or use the lists in the columns below the Rule field to enter workflow context parameters, constants, and operators. Valid workflow context parameters, constants, and operators will appear in the lists.

   **Note**: The rule must follow SQL coding standards.

4. Click OK.
Workflow Context Parameters in Guard Conditions

To use workflow context parameters in guard conditions:

1. Select the Parameters folder.
2. Double-click a parameter.
3. The parameter name will appear in the Rule field.

Constants in Guard Conditions

To use constants in guard conditions:

1. Select the Constants folder.
2. In the middle column, select Boolean to use “True” or “False” values or select ApprovalChoice to use “Approve”, “Reject”, or “Return for Rework”.
3. In the third column, double-click the value.
4. The constant will appear in the Rule field.

Operators in Guard Conditions

To use operators in guard conditions:

1. Click an operator button or select the Operators folder.
2. In the middle column, select either Comparison or Logical.
3. In the third column, double-click the constant. It will appear in the Rule field.

For more information on using operators in guard conditions, see “Operators” on page 1.

Guard Condition Labels

Labels identify the nature of a transition that uses a guard condition. This helps identify the rule that is being evaluated. You may not always want the rule identified, for example, when the rule involves confidential information, such as a salary. In this case, hide the label or do not enter one. If you opt to show a label, but do not enter one, the guard condition rule is displayed. The label is not automatically displayed in the workflow model.
To display the guard condition label:

1. Right-click the transition.
2. Select **Show Guard**.
3. Drag the label until it is positioned where you want it.

**Note**

To display the guard condition rule instead of a label, leave the Description field empty and select Show Guard.

To hide the guard condition label:

1. Right-click the transition.
2. Select **Hide Guard**.

To rotate the guard condition label:

1. Right-click the transition
2. Select **Display Guard Horizontally** or **Display Guard Vertically**.
3. Drag the label until it is positioned where you want it.

## Approval Activities

An approval activity is necessary when you need to have someone other than the user of the prior activity to Approve, Reject, or Return for Rework. For example:

### Context Parameters

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Type</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>Item to be bought</td>
<td>Text</td>
<td>Yes</td>
</tr>
<tr>
<td>Cost</td>
<td>Cost of item</td>
<td>Numeric</td>
<td>Yes</td>
</tr>
<tr>
<td>Approval</td>
<td>Approve</td>
<td>Text</td>
<td>No</td>
</tr>
</tbody>
</table>
Activity one would fill in the values for Item and cost. The rule-based guard condition would then populate the selection on the Approval Activity and determine which transition to follow. These standard rule-based guard conditions are set up as follows:

Approval="Approve"
Approval="Reject"
Approval="Return for Rework"

For more information on Approval Activities, see “Approval Activities” on page 223.

Multiple Paths in a Workflow

Quite often, which activity should be the next activity in a workflow depends upon the outcome of a previous activity. When this happens, you will use:

- Guard condition rules to determine which activity will be next.
- Multiple outbound transitions from the first activity, a decision object, or a combination of multiple outbound transitions and decisions.
- Labels for the transitions.

Decisions and Multiple Outbound Transitions

When deciding between using decisions or multiple outbound transitions, the choice is a matter of personal preference. You will want to consider the size and layout of your overall model, how much space you have for each object in the model, and any drawing guidelines you may have established.

There are a few situations where the use of a decision node is suggested:

- When the workflow starts with multiple activities. From a start object, you can only create one outbound transition. Therefore, if your workflow begins with more than one possible activity, you must use a decision object.
• When the outcome of one set of conditions generates another set of conditions. For instance, if the first activity can flow into one activity under one set of conditions, and then to one out of a possible two (or more) activities under another set of conditions, you must use a decision object.

**Decision and Multiple Outbound Transition Examples**

The drawings below show a few of the many different ways that you can draw a workflow that uses decisions or multiple outbound transitions.

If you use a decision, your model might look like this:

This activity is connected to a decision.

This decision has two outbound connectors, going to two separate activities.
If you use multiple outbound transitions from the first activity, your model might look like this:

![Diagram](image)

If you have decision connected to decision and use labels, your model might look like this:

![Diagram](image)

Each path has its own stop object. Sometimes it is easier to draw this workflow functionally, you can use a single stop object for all the paths in the workflow. You can use multiple stop objects, on each path.

< $500, does not need VP approval

$500, needs VP approval

< $100

>= $500

Labels on the connectors identify the decision that will be made. (For a confidential decision, such as one that involves salary information, you can hide the label.)
Repeated Activities

If one or more activities needs to be performed until a certain condition is met, you can repeat them by using iteration. Transition guard conditions will determine if the condition is met and whether to repeat an activity or move to the next activity in the workflow.

Repeat a Single Activity

To repeat a single activity:

1. Create the activity that will be repeated. You will need to completely define this activity by entering all the necessary properties and parameter mappings.

2. Add a self-transition to the activity by using the Self-transition tool \(\text{Self-transition tool}\). In the example below, Activity2 is the activity to be repeated:

3. Enter a guard condition on the outbound transition from the repeated activity to the next activity and on the self-transition. The results of the guard conditions must be mutually exclusive.

\[ \text{Note} \]

Self connections cannot be used on e-mail activities or decisions.

4. If you wish, you may enter guard condition labels to identify the conditions on the transitions.
Repeat More than One Activity

To repeat more than one activity:

1. Create the activities that will be repeated. You will need to completely define these activities by entering all the necessary properties and parameter mappings.

2. Connect the activities using the Transition tool. Reshape the transition so that the second transition will not overlay the first.

3. Add a transition from the last activity that will be repeated back to the first activity that will be repeated. In the example below, Activity2 is the first activity to be repeated and Activity3 is the last activity to be repeated. Reshape the transition as needed.

4. Enter a guard condition on both of the outbound transitions from the last repeated activity. The results of the guard conditions must be mutually exclusive.

5. If you wish, you may enter guard condition labels to identify the conditions on the transitions.

For information on creating guard conditions, see “Guard Conditions” on page 207.
Perform Selection Rules

When an activity needs to be performed by a specific user, use a performer selection rule. Two situations will cause you to use a performer selection rule that will direct an activity to a specific user:

- When an activity is confidential.
- When an activity, though not confidential, must be performed by a specific user.

In both cases, the user to whom you direct the activity must have the appropriate user-role-organization assignment.

A performer identifier must evaluate to a string. You can select the following elements for a performer selection rule:

- User Logon ID
- Workflow context parameters

For example, the result of the rule must resolve to a Banner user logon ID:

student_id - workflow context parameter student_id

“tjerry” - string literal for Workflow user with logon ID tjerry

Directed Activities

If an activity is confidential, you must direct it to a specific user. To direct an activity, you need to enter a performer selection rule. To direct a confidential or non-confidential activity to a specific user:

1. Select the activity on the drawing canvas.
2. If the activity should be confidential, select Yes from the Confidential field drop-down list.
3. If a performer role is not already selected for the activity, select the Role the user must have in order to perform the activity.
4. Click on the right side of the Performer Rule field to open the Performer Rule window.
5. Select either the Context Parameter or User Logon radio button.
   - Valid workflow context parameters will appear in the lists. The context parameter you select should contain the Logon ID as it’s value.
   - You can also tie the activity to one fixed user.
Workflow Context Parameter

To use a workflow context parameter:

1. Select the Context Parameter radio button.
2. Select a parameter.
3. Click OK.

Single Fixed User

To use a single fixed user:

1. Select the User Logon radio button.
2. Select a User ID.
3. Click OK.

Simultaneous Activities

You will often encounter situations where it doesn’t matter which activity or which string of activities is performed first, as long as they are all performed before some other activity or before the end of the workflow. When this happens, you can use parallel paths.

When you use parallel paths, you need to follow a few guidelines:

Every set of parallel paths needs to begin and end with a parallel path bar
**Correct Usage**

The model below displays a correct use of parallel path bars. Notice that one activity is connected to an opening parallel path bar. The bar is connected to activities in two separate paths. The activity in each of those paths is connected to the closing parallel path bar, which leads into a stop.

![Diagram of correct usage of parallel path bars](image1)

**Decisions within parallel paths**

**Correct Usage**

If you use a decision (or multiple outbound transitions from an activity) within a parallel path, all the possible outcomes of that decision must rejoin into a single path and end at a closing parallel path bar.

The model below displays a correct use of decisions within parallel paths. Note how the activities that come out of the decision are rejoined into a single path which is then connected to the closing parallel path bar.

![Diagram of decisions within parallel paths](image2)
**Incorrect Usage**

The model below displays an incorrect use of decisions within parallel paths. Note how the activities that come out of the decision are not rejoined into a single path before they are connected to the closing parallel path bar. This drawing cannot be validated.

![Incorrect Usage Diagram](image)

**Incorrect Usage**

The model below displays an incorrect use of decisions within parallel paths. Note how the activities that come out of the decision are not all connected to the closing parallel path bar. This drawing cannot be validated.

![Incorrect Usage Diagram](image)
An activity in one parallel path cannot be connected to an activity in a different parallel path

**Correct Usage**

The model below displays a correct use of a parallel path. Notice how the activities in each path stay within a single path.

![Correct Usage Diagram]

**Incorrect Usage**

The model below displays an incorrect use of parallel paths. Note how the activity from one path is connected to an activity in another path. This drawing cannot be validated.

![Incorrect Usage Diagram]
**If a path uses iteration, all repeated activities must occur within the path**

You cannot have an activity return to an activity that occurred before the opening parallel path bar.

**Correct Usage**

The model below displays a correct use of iteration within parallel paths. Note how the iteration returns to an activity that is within the parallel path.

---

**Incorrect Usage**

The model below displays an incorrect use of iteration within parallel paths. Note how the iteration returns to an activity that occurs before the opening parallel path bar and not to an activity within the parallel path. This drawing cannot be validated.
Parallel Paths

To create a parallel path:

1. Select the Parallel path tool  

2. Click the drawing canvas where you want to begin the parallel paths.
   - To make the parallel path bar larger or smaller: select it, then drag an end until it is the size you want.
   - To rotate the bar 90 degrees: right-click it, then select Rotate.

3. Enter activities between the appropriate parallel paths.

4. Connect the activities:
   - Connect the object that precedes the start of the parallel paths to the opening parallel path bar. This can be a start, a decision, or another activity.
   - Connect the parallel bar to the first activity in each path.
   - Connect all activities within each path as necessary.

5. To end the parallel paths, enter another parallel path bar after the last activities in the parallel paths.

6. Connect the last activity in each parallel path to the closing parallel path bar.

7. Connect the closing parallel path bar to the next object in the workflow. This can be a decision, an activity, or a stop.

Approval Activities

An approval activity should be used in a workflow model when someone needs to make a decision on a previous activity or on context data. The decision can be Approve, Reject, or Return for Rework. These three options are presented to a user in the approval activity. The user must select one of the options to advance the workflow.

Approval activities function as follows:

1. The approval activity appears on the performer's worklist.

2. The performer launches the activity.
3. The performer is given the option to review the activity and return to the approval activity. The user then selects the appropriate radio button - Approve, Reject, Return for Rework and clicks **Complete**. At this time the selection as it appears on the Approval Activity page is passed to the workflow context parameter. Optionally, the Approval Activity may also be designed to provide the user with key process information and context data to assist in making the appropriate approval selection.

4. The workflow will progress based on the user decision and existing transition rules.

5. The business rules on the approval activity are evaluated and a workflow path is determined using the value of the context parameter populated in step 3.

If you use an Approval Component on an activity, your model might look like this:

In addition to any context parameter you have for the first activity, you must have a context parameter for the Guard Condition to fill in. ("Approval" in this case)

---

**Approval Activity**

To create an approval activity:

1. Select the Workflow Modeler from Administration.

2. Click Approval Activity and place it on the drawing canvas.

3. Create an activity path for each of the three approval options:
   - Approve
   - Reject
   - Return for Rework.

4. Select the Role that should perform the activity.

5. Add a Performer Rule if the activity is to be directed to a specific user.
6. Click on the right side of the Parameter Mapping field to open the Parameter Mappings window.

7. Map the approval Context Parameter to the Approval Choice component parameter.

8. Select the previous activity to be reviewed from the Approved Activity drop down list.

9. Enter approval instructions in plain text or combined with context parameters.

10. Click OK.

Guard Conditions for Approval Activities

To create guard conditions for approval activities:

1. Right click on the transition and select Guard Condition.

2. Click the Parameter folder to select the Approve parameter. For more information on creating a parameter see “Create Workflow Context Parameters” on page 172.

3. Select the equal sign in the Operator folder or the Operator quick access tab.

4. Select the Constants folder and the Approval Choice option.

5. Select the appropriate constant “Approve”, “Reject” or “Return for Rework” from the list.
   - Approve on the approved path.
   - Reject on the rejected path.
   - Return for Rework on the path that returns to the prior activity being approved.

6. Click OK.

For information on adding labels to the approval paths see “Guard Condition Labels” on page 210.
Activity Notification

Activity notification is available for standard activities, manual activities, approval activities, and custom activities. Activity notifications are used to inform users, via email, that they have work to be completed. Within the Activity Notification you may include context data and a hyperlink to directly launch the work item from the email message.

To notify a user with an activity notification:

1. Click the Selector tool.

2. Right-click a standard activity, a manual activity, an approval activity, or a custom activity and select Notification to open the Notification window.

3. Enter the following information:
   - **From**: Sender's email address. This is required.
   - **To**: Recipient's email address. To send an email to more than one recipient, you can add additional email addresses separated by commas.
   - **CC**: Carbon copy. Any email address listed in the CC field will receive a copy of that message when you send it.
   - **BCC**: Blind Carbon Copy. Any email address listed in the BCC field will receive a copy of that message when you send it, however BCC email recipients will not be visible to other recipients of the message.
   - **Subject**: Enter the subject of your message. You can include hard-coded values and/or context parameters in these sections. For more information on adding context parameters, see “Workflow Context Parameters in Notifications” on page 228.
   - **Body**: Enter the message that you would like to send to the email recipient. You can include hard-coded values and/or context parameters in these sections. For more information on adding context parameters, see “Workflow Context Parameters in Notifications” on page 228.

4. Right-click on the Body of the Notification and select Quick Launch Link to open the Quick Launch Link window.

5. In the Quick Launch Link window enter the following information:
6. Click OK. HTML code will be inserted into the notification message to enable the embedded link.

7. Click OK.

**Notification Window**

Within the Notification window, the From, To, CC, and BCC fields can be populated using one of the following methods:

- Click the From, To, CC, or BCC button to open the Addresses window to open the Addresses window. Select either the Users or Roles tab. On the selected tab, you can perform a query to find a specific user or role. Notifications must come from a specific user, therefore the Roles tab is disabled for the From field.

- Right-click in From, To, CC, or BCC fields and select Addresses to open the Addresses window. Select either the Users or Roles tab. On the selected tab, you can perform a query to find a specific user or role. Notifications must come from a specific user, therefore the Roles tab is disabled for the From field.

- Select Insert>>Addresses to open the Addresses window to open the Addresses window. Select either the Users or Roles tab. On the selected tab, you can perform a query to find a specific user or role. Notifications must come from a specific user, therefore the Roles tab is disabled for the From field.

- Manually enter the user logon ID followed by /WF. For example “j smith /WF”. The user’s email address must be specified in Banner Workflow.

- Manually enter the role followed by /ROLE. For example “admin/ROLE” would send an email to every user with a role of “admin”. The email will only be sent to those individuals with specified email addresses in Banner Workflow.

- Manually enter a fully qualified e-mail address.

You may also use workflow context parameters in the From, To, CC, and BCC fields. For more information on adding context parameters, see “Workflow Context Parameters in Notifications” on page 228.
Workflow Context Parameters in Notifications

A workflow context parameter can be used in the From, To, CC, BCC, Subject, and Body sections of a notification message. To insert a workflow context parameter in a notification message:

1. Place the cursor in the field and location where you want the context parameter to be inserted.
2. Select Insert>>Context Parameters or right-click in the field and location where you want the context parameter to be inserted and select Context Parameters.
3. Click the context parameter you would like to insert into the manual instructions. The context parameter is entered into the notification where your cursor is located.
4. When the workflow runs, the actual value will be substituted for the workflow context parameter.

Notification Attachments

To add document attachments to a notification:

1. In the Notification window, click Attach.
2. In the Email Attachments window, select a file in the Global Attachments section or select a tag in the Document Tags section to attach to the notification.

Note: All files must be uploaded to the database prior to attaching the file to a notification. For more information, see “Upload a Global Attachment” on page 229.

3. Click Attach. All attached files will appear in the Attachments section of the Email Attachments window.
4. Click OK. All files that will be attached to this email are displayed in Name field in the Notification window.
5. Click OK to close the Notification window.

To remove a document attachment from a notification:

1. In the Notification window, click Attach.
2. In the Email Attachments window, select a file in the Attachments section to remove from the notification.
3. Click **< Remove**. All removed files will no longer appear in the Attachments section of the Email Attachments window.

4. Click **OK**. All files that will be attached to this email are displayed in Name field in the Notification window.

5. Click **OK** to close the Notification window.

### Document Attachments

Document attachments can be used to send supporting information about a workflow to workflow users via an email activity. Document attachments included in the email may be one of two types:

- Global Attachments are static documents that have been uploaded to the system and may be distributed at runtime via an email.
- Document Tags are placeholders for documents that may be attached to the process at runtime.

### Upload a Global Attachment

To upload a file to be attached to an email activity:

1. From the **View** menu, choose **Global Attachments**.

2. In the Global Attachments window click **Upload**.

3. In the Attach window, navigate through the directory structure and select the file you would like to attach to the email activity.

4. Click **Open**.

5. Close the Global Attachments window.
Download a Global Attachment

To download a global attachment:

1. From the View menu, choose Global Attachments.
2. Select the global attachment that you would like to download.
3. Click Download.
4. In the Detach window, navigate through the directory structure and select the location where you would like to save the attachment.
5. Click Save.

Attachment Properties

To edit or view the properties of a global attachment:

1. From the View menu, choose Global Attachments.
2. Select the global attachment that you would like to edit or view the properties of.
3. Click Properties.
4. When finished editing or viewing the properties of the attachment, click OK.
5. Close the Global Attachments window.

Remove a Global Attachment

To remove a global attachment:

1. From the View menu, choose Global Attachments.
2. Select the global attachment that you would like to remove.
3. Click Remove.
4. When you are asked to confirm the deletion, click YES.
5. Close the Global Attachments window.
Activity Icons

The activity icon catalog contains icons that can be associated with an activity in a workflow. Banner Workflow modeler users can add, remove, or modify the properties of an activity icon using the Activity Icons menu selection.

Add an Activity Icon

To add an activity icon to the activity icon catalog:

1. From the View menu, choose Activity Icons.

2. In the Activity Icons window clickUpload.

3. In the Attach window, navigate through the directory structure and select the file you would like to attach to the email activity.

Note

Activity icons must be either .JPG or .GIF files.

4. Click Open.

5. Close the Activity Icons window.

Activity Icon Properties

To edit or view the properties of an activity icon:

1. From the View menu, choose Activity Icons.

2. Select the activity icon that you would like to edit or view the properties of.

3. ClickProperties.

4. When finished editing or viewing the properties of the attachment, click OK.

5. Close the Activity Icons window.
Remove an Activity Icon

To remove an activity icon:

1. From the View menu, choose Activity Icons.

2. Select the activity icon that you would like to remove.

3. Click Remove.

4. When you are asked to confirm the deletion, click YES.

5. Close the Activity Icons window.
The Custom Activity Designer allows you to create custom workflow activities/forms. Using the Custom Activity Designer interface, you can easily create approval or data entry forms which can be used in workflow models. Custom activities give you an easy way to solicit data from a process participant. Like all types of workflow activities, custom designed activities can be either routed to workflow users based on roles or directed to a specific user. For example, a custom activity can be used within a troubleshooting process to gather information captured in a help ticket. By using the designer, you are able to construct a form that collects data from a workflow participant and places it in workflow context. For example:

```
Instructions: To submit a help ticket, please complete the following fields:

* Name:  
* Position:  
* Phone Number:  

Problem Type
- [ ] Hardware
- [ ] Software

* Problem Description: 

Complete  Save & Close  Cancel
```


**Custom Activity Designer Menus**

The Custom Activity Designer contains the following drop-down menus:

**Custom Activity Menu**

<table>
<thead>
<tr>
<th>Menu Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply</td>
<td>Apply changes to the custom activity.</td>
</tr>
<tr>
<td>Revert</td>
<td>Revert to the last time custom activity changes were applied. Any changes to the activity since the last time changes were applied will be lost.</td>
</tr>
<tr>
<td>Print</td>
<td>Print the custom activity to a printer or save the activity as a PDF file.</td>
</tr>
<tr>
<td>Exit</td>
<td>Exit the Custom Activity Designer.</td>
</tr>
</tbody>
</table>

**Help Menu**

<table>
<thead>
<tr>
<th>Menu Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents</td>
<td>Opens the Banner Workflow Online Help System.</td>
</tr>
<tr>
<td>About Banner</td>
<td>Display the version number of the Banner Workflow release that you are running.</td>
</tr>
</tbody>
</table>

**Create a Custom Activity**

To create a custom activity:

1. Select the Banner Workflow Modeler from Administration.

2. In the modeler toolbar, click the custom activity icon. Click on the drawing canvas to place the custom activity in the model.

3. Right-click on the custom activity and select Custom Activity Designer or click on the right side of the Custom Activity Designer field to open the Custom Activity Designer.
The Custom Activity Designer allows you to define the following attributes:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Enter a title for the custom activity.</td>
</tr>
<tr>
<td>Parameters</td>
<td>Displays the local parameters for the custom activity. Each custom activity field is mapped to a local parameter using the Parameter Name field.</td>
</tr>
<tr>
<td>Show Attachments</td>
<td>Document attachments can be displayed at the bottom of any custom activity.</td>
</tr>
<tr>
<td>Yes - Workflow attachments will be displayed at the bottom of Custom Activity page.</td>
<td></td>
</tr>
<tr>
<td>No - Workflow attachments will not be displayed on the Custom Activity page.</td>
<td></td>
</tr>
</tbody>
</table>

### Custom Activity Designer Toolbar

The following icons are on the Custom Activity Designer toolbar:

<table>
<thead>
<tr>
<th>Custom Activity Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Field</td>
<td>Adding a data field element to a form will allow the end user to enter Boolean, Text, Numeric, or Date values into the field at run-time.</td>
</tr>
<tr>
<td>Text Area</td>
<td>Adding a text area element to a form will allow the end user to enter free form text into the text area at run-time.</td>
</tr>
<tr>
<td>Radio Button Group</td>
<td>Adding a Radio Button Group to a form will allow the end user to make a selection from a Radio Button Group. This would be used to make a run-time selection based upon a set of choices.</td>
</tr>
<tr>
<td>List</td>
<td>Adding a List element to a form will allow the end user to make a selection from a List. This would be used to make a run-time selection based upon a list of choices.</td>
</tr>
<tr>
<td>Drop Down List</td>
<td>Adding a Drop Down List element to a form will allow the end user to make a selection from a Drop Down List. This would be used to make a run-time selection based upon a list of choices.</td>
</tr>
</tbody>
</table>
Custom Activity Elements | Description
--- | ---
Display Area | Adding a Display Area element to a form will allow the end user to view read-only information that could include instructions for completing the custom activity.

Custom Activity Layout | Description
--- | ---
Top | Moves the selected element to the top of the form.
Up | Moves the selected element one position higher on the form.
Down | Moves the selected element one position lower on the form.
Bottom | Moves the selected element to the bottom of the form.

Data Field

Use the data field to allow the end user to enter Boolean, Text, Numeric, or Date values on a custom activity.

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the local parameter that this element maps to. Each local parameter can be mapped to a context parameter outside of the custom activity.</td>
</tr>
<tr>
<td>Description</td>
<td>Enter a description for the element. This field is optional.</td>
</tr>
<tr>
<td>Type</td>
<td>Select one of the following types for the data field:</td>
</tr>
</tbody>
</table>

- **Boolean** - The data field will contain a boolean value. The field will contain a Yes/No drop-down list.
- **Text** - The data field will display free form text.
- **Numeric** - The data field will display numeric characters.
- **Date** - The data field will display a date. To select a date, click the calendar icon. The default format for the date is: dd-MMM-yyyy hh:mm:ss a
### Required
Determines whether a value for the field must be provided at run-time. Field values are provided via mapped context parameters.

- **Yes** - If the field is marked required, a value for the field must be provided when the activity is started at run-time.

- **No** - If the field is not marked required, a runtime value for this field is not required.

### Guaranteed
Determines whether a value for the field must be present upon completion. Guaranteed values are defined as output using mapped context parameters.

- **Yes** - The component guarantees an output value for this parameter.

- **No** - The component does not guarantee an output value for this parameter.
Read-only If a field is read-only, it will appear as a display only field when rendered in Banner Workflow. A read-only field can display the value of a parameter.

- Yes - The field is display only.
- No - A value can be entered into this field or modified by an end user.

Label Enter a label for the data field. The label will display next to the data field to identify the purpose to the end user.

Width Set the width of the data field.

**Text Area**

Use the text area to allow the end user to enter free form text on a custom activity.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Name of the local parameter that this element maps to. Each local parameter can be mapped to a context parameter outside of the custom activity.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Enter a description for the element. This field is optional.</td>
</tr>
<tr>
<td>Required</td>
<td>Determines whether a value for the field must be provided at run-time. Field values are provided via mapped context parameters.</td>
</tr>
<tr>
<td></td>
<td>- Yes - If the field is marked required, a value for the field must be provided when the activity is started at run-time.</td>
</tr>
<tr>
<td></td>
<td>- No - <em>If the field is not marked</em> required, a runtime value for this field is not required.</td>
</tr>
<tr>
<td>Guaranteed</td>
<td>Determines whether a value for the field must be present upon completion. Guaranteed values are defined as output using mapped context parameters.</td>
</tr>
<tr>
<td></td>
<td>- Yes - The component guarantees an output value for this parameter.</td>
</tr>
<tr>
<td></td>
<td>- No - The component does not guarantee an output value for this parameter.</td>
</tr>
</tbody>
</table>
Radio Button Group

Use the Radio Button Group tool to allow the end user to make a selection from a Radio Button Group. The Group will display all available choices. Therefore, a Radio Button Group should only be used with a limited set of choices.

Parameter Name
Name of the local parameter that this element maps to. Each local parameter can be mapped to a context parameter outside of the custom activity.

Description
Enter a description for the element. This field is optional.

Type
Select one of the following types for the radio button:

- Boolean - The select field will contain a boolean value. The field will contain a Yes/No drop-down list.
- Text - The select field will display free form text.
- Numeric - The select field will display numeric characters.
- Date - The select field will display a date. To select a date, click the calendar icon.

The default format for the date is: dd-MMM-yyyy hh:mm:ss a
Required Determines whether a value for the field must be provided at run-time. Field values are provided via mapped context parameters.

- Yes - If the field is marked required, a value for the field must be provided when the activity is started at run-time.
- No - *If the field is not marked* required, a run-time value for this field is not required.

Guaranteed Determines whether a value for the field must be present upon completion. Guaranteed values are defined as output using mapped context parameters.

- Yes - The component guarantees an output value for this parameter.
- No - The component does not guarantee an output value for this parameter.

Label Enter a label for the radio button group. The label will display within the radio button group’s frame to identify the purpose to the end user.

Choices Provides the value and optional label for the radio button elements. If the optional label is used for an element, the optional label will display for that radio button element in place of the element’s value. For more information on choices see, “Choices Window” on page 241.

Height Set the height of the radio button.
**Choices Window**

To add items to a list of choices:

1. Click on the right side of the Choices field to open the Choices window.

2. Click to open the Add New Item window.

3. Enter the following information:

   - **Value**
     - Enter a Value for the choice.

   - **(Optional) Label**
     - Enter a label for the choice. The label will display next to the choice to identify the purpose to the end user. This field is optional.

4. Click OK.

5. Click OK to return to the Custom Activity Designer.

To edit an existing choice:

1. Click on the right side of the Choices field to open the Choices window.

2. Select the choice you would like to edit.

3. Click to open the Edit Item window.

4. Modify the following information:

   - **Value**
     - No restrictions.

   - **(Optional) Label**
     - No restrictions.

5. Click OK.

6. Click OK to return to the Custom Activity Designer.
To delete an existing choice:

1. Click on the right side of the Choices field to open the Choices window.

2. Select the choice you would like to delete.

3. Click to delete the selected choice.

4. Click OK.

5. Click OK to return to the Custom Activity Designer.

**List**

Use the List tool to allow the end user to make a selection from a list of elements. A List contains scroll bars that allow a larger set of choices to be displayed.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Name of the local parameter that this element maps to. Each local parameter can be mapped to a context parameter outside of the custom activity.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Enter a description for the element. This field is optional.</td>
</tr>
<tr>
<td>Type</td>
<td>Choose one of the following types for the list:</td>
</tr>
<tr>
<td></td>
<td>• Boolean - The select field will contain a boolean value. The field will contain a Yes/No drop-down list.</td>
</tr>
<tr>
<td></td>
<td>• Text - The select field will display free form text.</td>
</tr>
<tr>
<td></td>
<td>• Numeric - The select field will display numeric characters.</td>
</tr>
<tr>
<td></td>
<td>• Date - The select field will display a date. To select a date, click the calendar icon.</td>
</tr>
</tbody>
</table>

The default format for the date is: dd-MMM-yyyy hh:mm:ss a
<table>
<thead>
<tr>
<th>Required</th>
<th>Determines whether a value for the field must be provided at run-time. Field values are provided via mapped context parameters.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Yes - If the field is marked required, a value for the field must be provided when the activity is started at run-time.</td>
</tr>
<tr>
<td></td>
<td>• No - <em>If the field is not marked</em> required, a run-time value for this field is not required.</td>
</tr>
<tr>
<td>Guaranteed</td>
<td>Determines whether a value for the field must be present upon completion. Guaranteed values are defined as output using mapped context parameters.</td>
</tr>
<tr>
<td></td>
<td>• Yes - The component guarantees an output value for this parameter.</td>
</tr>
<tr>
<td></td>
<td>• No - The component does not guarantee an output value for this parameter.</td>
</tr>
<tr>
<td>Label</td>
<td>Enter a label for the list. The label will display next to the list to identify the purpose to the end user.</td>
</tr>
<tr>
<td>Choices</td>
<td>Provides the value and optional label for the list elements. If the optional label is used for an element, the optional label will display for that list element in place of the element’s value. For more information on choices see, &quot;Choices Window&quot; on page 241.</td>
</tr>
<tr>
<td>Height</td>
<td>Set the height of the list.</td>
</tr>
</tbody>
</table>
**Drop Down List**

Use the Drop Down List tool to allow the end user to make a selection from a Drop Down List on a custom activity. A Drop Down List is the best way to allow the user to make a selection from a large data set.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter Name</td>
<td>Name of the local parameter that this element maps to. Each local parameter can be mapped to a context parameter outside of the custom activity.</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Enter a description for the element. This field is optional.</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Choose one of the following types for the drop down list:</td>
<td></td>
</tr>
</tbody>
</table>

- **Boolean** - The select field will contain a boolean value. The field will contain a Yes/No drop-down list.
- **Text** - The select field will display free form text.
- **Numeric** - The select field will display numeric characters.
- **Date** - The select field will display a date. To select a date, click the calendar icon. The default format for the date is: dd-MMM-yyyy hh:mm:ss a

<table>
<thead>
<tr>
<th>Required</th>
<th>Determines whether a value for the field must be provided at run-time. Field values are provided via mapped context parameters.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>If the field is marked required, a value for the field must be provided when the activity is started at run-time.</td>
</tr>
<tr>
<td>No</td>
<td><em>If the field is not marked</em> required, a run-time value for this field is not required.</td>
</tr>
<tr>
<td>Guaranteed</td>
<td>Determines whether a value for the field must be present upon completion. Guaranteed values are defined as output using mapped context parameters.</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>• Yes - The component guarantees an output value for this parameter.</td>
</tr>
<tr>
<td></td>
<td>• No - The component does not guarantee an output value for this parameter.</td>
</tr>
<tr>
<td>Label</td>
<td>Enter a label for the drop down list. The label will display next to the drop down list to identify the purpose to the end user.</td>
</tr>
<tr>
<td>Choices</td>
<td>Provides the value and optional label for the Drop Down List elements. If the optional label is used for an element, the optional label will display for that drop down list element in place of the element’s value. For more information on choices see, “Choices Window” on page 241.</td>
</tr>
</tbody>
</table>

**Display Area**

Use a display area to allow the end user to view read-only information that could include instructions for completing the custom activity.

<table>
<thead>
<tr>
<th>Label</th>
<th>Enter a label for the display area. The label will display next to the Display Area to identify the purpose to the end user. This field is optional and may be null.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text</td>
<td>Enter the text that will appear in the Display Area.</td>
</tr>
</tbody>
</table>
Occasionally a workflow model will require additional maintenance to continue to be effective at your institution.

Modify the Status of a Workflow Model

A workflow model can have one of five possible statuses:

- **Development** - The workflow is being developed. This is the default value for a new workflow, for new versions of an existing workflow, and for copies of a workflow. A workflow in development cannot be attached to a business process and there can be no active workflow instances for a version of the workflow in a development state.

- **Test** - The model is validated and ready to be tested. If the model doesn’t work as intended, you can change the status back to Development, make any necessary changes, and then change the status back to Test.

- **Active** - Development is complete, the workflow has been validated and can be attached to a business process and started. Once you set the status to Active, you can no longer modify the workflow.

- **Inactive** - The workflow model is no longer in use and cannot be attached to a business process. An inactive workflow model can be reactivated.

- **Obsolete** - The workflow model is no longer valid and cannot be attached to a business process. A workflow that has an existing business process association cannot be made obsolete.

To modify the status of a workflow model:

1. Select the Workflow Modeler from Administration.

2. Use Find to select the workflow.
3. From the **Workflow** menu, choose *Set Status*, then choose one of the following:

- **Development**: Changes the workflow model status from Test to Development and removes any running workflows.
- **Test**: Changes the workflow model status from Development to Test.
- **Activate**: Changes the workflow model status from Development, Test, or Inactive to Active.
- **Deactivate**: Changes the workflow model status from Active to Inactive.
- **Obsolete**: Changes the workflow model status from Active or Inactive to Obsolete.

**Note**: If there are running workflow instances for a model, you will be asked to confirm that you want to delete all running instances when you make the model Obsolete.

4. Click Save ✓.

---

**Workflow Versions and Copies**

Creating a new version or copying a workflow allows you to modify existing workflow models without having to recreate them from scratch.

**Make a new version when...**

Make a new version when you need to update an existing active workflow, perhaps to reflect a new fiscal year, a new regulatory requirement, or some process changes, but you want to retain the existing workflow assignments or you want to track the progression of changes.

A new version retains all the information from the original workflow, including the name and organization. When a new version is created, the version number of the new workflow is incremented by 1. The status of a new version is set to Development.

If a previous version of a workflow is assigned to a business process, you can update the assignment to use the new version.

**Make a copy when...**

Make a copy when you want to create a new workflow that is similar to an existing workflow.
A copy retains all the information from the original workflow, except the name and organization. The version number of the copy is set to zero and the status of a copy is Development. Using copies enables you to reuse information without having to reenter it.

**Create a New Version of a Workflow**

To create a new version of a workflow:

1. Select the Workflow Modeler from Administration.
2. Use Find to locate the workflow for which you want to create a new version.
3. From the File menu, select New Version. The Version and Status fields will automatically be updated. The version number will increase by 1 and the status will change to Development.
4. Modify the copied workflow as necessary.
5. Click Save.

**Copy a Workflow**

To copy a workflow:

1. Select the Workflow Modeler from Administration.
2. Use Find to select the workflow you want to copy.
3. From the File menu, choose Copy Workflow. This creates a new workflow, which has all the information from the original except the workflow name and organization.
4. Enter a name for the new workflow.

**Note**

The workflow name, version, and organization combination must be unique.

5. Modify the copied workflow as necessary.
6. Click Save.
Modify a Workflow

To modify a workflow:

1. Select the Workflow Modeler from Administration.

2. Use Find to locate the workflow you want to modify.
   - If the workflow has a status of Active, you need to make a new version or make a copy of the workflow that has a status of Development.
   - If the workflow has a status of Test, change the status to Development.
   - If the workflow has a status of Development, you can modify it.

3. Modify the workflow as necessary.

4. Click Save .

Delete a Workflow

To delete a workflow:

1. Select the Workflow Modeler from Administration.

2. Use Find to locate the workflow you want to delete.

3. From the File menu, choose Delete Workflow.

4. You will be asked to confirm that you want to delete the workflow. If you click Yes and the model is assigned to a process or has running instances, the Deletion of Definition Failed window will open. In this window, you will see the following:
   - If the workflow is assigned to a business process in Enterprise Management, you will see the name of the process and the description.
   - If the workflow is assigned to a business event you will see the name and description of the event.

Restrictions on Deleting a Workflow Model

If there are any active workflow instances, you cannot delete the model. These running instances must be completed or stopped before you can delete the model.

If the workflow is assigned to a business process, you must go to the Business Process and remove the assignment before you can delete the model.
If the workflow is assigned to a business event, you must go to Event Management and remove the assignment before you can delete the model.

**Print a Workflow Model**

There are two options for printing a workflow model:

- Send output to a printer.
- Save output to a PDF file.

**Print a Workflow Model**

To print a workflow model:

1. Open the Workflow Modeler window.
2. Use Find to locate the workflow model you want to save to a file.
3. From the File menu, select **Print**.
4. In the Target field, select **Printer**.
5. Select from the following print options:

<table>
<thead>
<tr>
<th>Workflow Definition Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>Normal size</td>
</tr>
<tr>
<td>Fit to</td>
</tr>
<tr>
<td>Rotate Image For Best Fit</td>
</tr>
</tbody>
</table>
To save a workflow model as a PDF:

1. Open the Workflow Modeler window.
2. Use Find to locate the workflow model you want to save to a file.
3. From the File menu, select Print.
4. In the Target field, select File (PDF).
5. Select from the following print options:

### Custom Activity Options

<table>
<thead>
<tr>
<th>Select</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Select <strong>Form</strong> to print the custom activity form.</td>
</tr>
<tr>
<td><strong>Fit to Page</strong></td>
<td>Select <strong>Fit to Page</strong> to resize a large custom activity form so that it fits on a single page.</td>
</tr>
<tr>
<td><strong>Rotate Image For Best Fit</strong></td>
<td>Select <strong>Rotate Image For Best Fit</strong> to change the orientation of a large custom activity form.</td>
</tr>
<tr>
<td><strong>Workflow Report</strong></td>
<td>Select <strong>Workflow Report</strong> to generate a report that contains Parameters and Custom Form Detail information.</td>
</tr>
</tbody>
</table>

6. Click OK.

### Workflow Definition Options

<table>
<thead>
<tr>
<th>Select</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>Select <strong>Model</strong> to print the workflow model.</td>
</tr>
<tr>
<td>Normal size</td>
<td>Select Normal size to print the workflow model with no size constraints.</td>
</tr>
<tr>
<td><strong>Fit to</strong></td>
<td>Select <strong>Fit to</strong> and enter the desired height and width, in pages, to resize a large workflow model so that it fits on a specified number of pages.</td>
</tr>
</tbody>
</table>

**Note:** The maximum height and width of a printed model is 5 pages.
6. Click **OK**.

7. Specify the directory location where you would like to save the file.

8. Specify the File Name. The default value for the File Type is Adobe Acrobat (.pdf).

9. Click Save.

The Process Definition Report is saved within the specified directory with the specified file name. The Process Definition Report can be viewed and printed using Adobe Acrobat Reader.
Section IV

Implement
Organizations, business processes, business events, workflows, and the relationships between them make up Enterprise Management. The relationships between them relate the “what”, “how”, and the “when” of your work.

A Business Process is a placeholder for a specific workflow that can be launched.

- Workflows represent how work is done. For more information on the Banner Workflow Modeler, see “Introduction to Modeling Workflows” on page 149.

- Business events represent when work is completed, and enable you to start a workflow when an event occurs in an external application. For more information on business events, see “Business Events” on page 267.

## Business Processes

Business processes can be either active or inactive. If a business process is inactive, you cannot start it. To be able to start the process, you need to make the process active.

### Create a Business Process

To create a business process:

1. Select Enterprise Management within Administration.

2. Click **Add Business Process**.

3. Enter the following information:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The business process name. The process name must be unique. If it is not unique, you will not be able to save it.</td>
</tr>
<tr>
<td>Description</td>
<td>The description of the business process. This is optional.</td>
</tr>
<tr>
<td>Status</td>
<td>Select a business process status:</td>
</tr>
<tr>
<td></td>
<td>- Active - To start a business process, the process must be active.</td>
</tr>
<tr>
<td></td>
<td>- Inactive - If a business process is inactive, you will not be able to start it.</td>
</tr>
</tbody>
</table>
4. Click Save Process.

**Modify a Business Process**

To modify a business process:

1. Select Enterprise Management within Administration.

2. Click the existing business process name that you would like to modify.

3. Modify business process details:

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>No restrictions. However, the process name must be unique. If it is not unique, you will not be able to save it.</td>
</tr>
<tr>
<td>Description</td>
<td>No restrictions</td>
</tr>
<tr>
<td>Status</td>
<td>No restrictions.</td>
</tr>
</tbody>
</table>

4. Click Save Process.

**Copy a Business Process**

To copy a business process:

1. Select Enterprise Management within Administration.

2. Click the existing business process name that you would like to copy.

3. Click Copy Process.

4. You will see a new process named Copy of xxxx where xxxx is the name of the process that you copied.

5. Modify details as necessary.

6. Click Save Process.

**Note**

All Associated Events and Associated Workflows will be copied along with the Business Process.
Delete a Business Process

1. Select Enterprise Management within Administration.

2. Select the business process names that you would like to delete.

3. Click **Delete Selected Business Processes**.

4. When you are asked to confirm the deletion, click **OK**.

Restrictions on deleting a business process

There are no restrictions on deleting a business process.

Associate Workflows to Business Processes

Before a business process can be started, a workflow must be associated with the process. This is done through a workflow association.

**Note**

If you attach more than one workflow to a business process, each workflow must have a separate effective date range that does not overlap the effective date range of another workflow attached to the same process.

**Note**

You can only attach a workflow that has a status of Active or Test. You can check the status of the workflow model in the Banner Workflow Modeler window or you can search for active workflows.

Associate a Workflow with a Business Process

To associate a workflow with a business process:

1. Select Enterprise Management within Administration.

2. Click the existing business process name that you would like to associate with a workflow.

3. In the Associated Workflows section of the page, click **Add Workflow Association**.

4. Enter details:
5. Click **Save Association**.

### Modify a Business Process Association

To modify a business process association:

1. Select Enterprise Management within Administration.

2. Click the existing business process name with the association that you would like to modify.

3. In the Associated Workflows section of the page, click the associated workflow name that you would like to modify.

4. Modify details:

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Workflow</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Effective From</td>
<td>The effective date range cannot overlap the effective date range of another workflow attached to the same process.</td>
</tr>
<tr>
<td>Effective To</td>
<td>The effective date range cannot overlap the effective date range of another workflow attached to the same process.</td>
</tr>
</tbody>
</table>

5. Click **Save Association**.
Delete a Workflow Association

To delete a workflow association:

1. Select Enterprise Management within Administration.
2. Click a Business Process name to remove a workflow from that business process.
3. In the Associated Workflows section of the page, select the workflow names that you would like to remove the workflow association for.
4. Click **Delete Selected Workflow Associations**.
5. When you are asked to confirm the deletion, click **OK**.

Workflow Versions and Updating Workflow Associations

Each workflow model is assigned a version number. To revise an active workflow for a new fiscal year, you would create a new version of a workflow model, modify, validate, and activate it. If the previous version of the workflow was associated with a business process, you will need to modify the business process to use the new workflow version.

Associate Business Events to Business Processes

To use a business event to start a workflow, you need to associate the event to a workflow and associate the event to the business process.

⚠️ **Note**
If you only want that event to start a workflow under certain conditions, you also need to create a guard condition for the event. For detailed information on using business events, see “Business Events” on page 267.

Associate a Business Event with a Business Process

To associate a business event with a business process:

1. Select Enterprise Management within Administration.
2. Click the existing business process name that you would like to associate with an event.
3. In the Associated Events section of the page, click **Add Event Association**.

4. Select an Organization.

5. Select an Event.

6. Click **Save Association**.

### Delete a Business Event Association

To delete a business event association:

1. Select Enterprise Management within Administration.

2. Click the existing business process name that you would like to delete an event association for.

3. In the Associated Events section of the page, select the Event Names that you would like to delete.

4. Click **Delete Selected Event Associations**.

5. When you are asked to confirm the deletion, click **OK**.

### Associate Authorized Initiators to Business Processes

Any user who has create, update, or delete rights to a workflow definition in the Banner Workflow Modeler, can establish authorized initiators for that workflow. Once an organization/role association is created, the business process will be available to be started from the My Processes page. For more information, see “My Processes” on page 321.

### Add an Authorized Initiator to a Business Process

To add an authorized initiator to a business process:

1. Select Enterprise Management within Administration.

2. Click the existing business process name that you would like to associate with an authorized initiator.

3. In the Authorized Initiators section of the page, click **Add Authorized Initiator**.

4. Select an Organization for the business process.
5. Select a Role for the business process.

6. Click Save Authorized Initiator.

Delete Authorized Initiators

To delete a business event association:

1. Select Enterprise Management within Administration.

2. Click the existing business process name that you would like to delete an event association for.

3. In the Authorized Initiators section of the page, select the initiator associations that you would like to delete.

4. Click Delete Selected Authorized Initiators.

5. When you are asked to confirm the deletion, click OK.

Event Process Association Guard Conditions

By default, when you associate a business event to a business process, the process and its associated workflow will always start when the external business event is communicated to Banner Workflow. If that process starts only under certain conditions, you must enter a guard condition to identify those conditions.

An event process association guard condition is a rule that is evaluated when a business event is received. It is composed of any valid combination of constants and business event parameters. The guard condition is associated with the event when the event is associated with a workflow.

Note

Event process association guard conditions are not required for an event to start a workflow. The lack of a guard condition is equivalent to having a guard condition which always evaluates to true.

Note

Event process association guard conditions are created using business process assignments instead of in business events to provide flexibility. Using one event in multiple business processes allows you to have different restrictions on how each business process may be started.
When an event occurs in an external application and is read by the Event Dispatcher, Banner Workflow uses the guard condition to determine if the process should be started.

1. If the guard condition evaluates to true, Banner Workflow searches for the active process that the event is associated with.

2. If a workflow is found that meets the following conditions, it will be started:
   - A business event is associated with the workflow.
   - The event parameters are mapped to the workflow context parameters.
   - The associated workflow is effective.

3. If the guard condition evaluates to false or if the conditions in step 2 are not met, the event is ignored and no workflow will be started.

For example:

A guard condition for the event named NEWGIFT is associated with the business process named New Gift. The guard condition uses the event parameter GIFT_AMT to only start if the value is greater than $500.00. If the guard condition evaluates to true, the active workflow associated with the New Gift process (if any) will be started.

**Add an Event Process Association Guard Condition**

You can add a guard condition to a business event that is already associated with a business process or you can add the guard condition at the same time that you assign the event to a business process. For information on associating an event, see "Associate a Workflow to a Business Event" on page 278.

To add an event process association guard condition:

1. Select Enterprise Management from Administration.

2. Click a Business Process name that is associated with the business event.

3. Click the Event Name that you would like to add a guard condition to.

4. Enter the guard condition rule:

   Guard Condition Rule
   
   You can enter event parameters, constants, and operators manually, or double click on an operator, constant, or event parameter to append it to the guard condition. Valid event parameters, constants, and operators will appear in the lists below the Guard Condition Rule field.

5. Click Save Association.
Related Information

For reference information on using operators, boolean operations, numeric arithmetic operations, and literals in your guard condition, see “Business Rules” on page 208.

Modify an Event Process Association Guard Condition

To modify an event process association guard condition:

1. Select Enterprise Management from Administration.
2. Click a Business Process name to modify the associated events.
3. Click the Event Name of the guard condition you would like to modify.
4. Modify the following information:

Remove an Event Process Association Guard Condition

1. Select Enterprise Management from Administration.

2. Click a Business Process name to modify the associated events.

3. Click the Event Name of the guard condition you would like to remove.

4. Click Clear All.

5. Click Save Association.

Guard Condition Rule

You can enter event parameters, constants, and operators manually, or double click on an operator, constant, or event parameter to append it to the guard condition. Valid event parameters, constants, and operators will appear in the lists below the Guard Condition Rule field.

5. Click Save Association.
Business Events

Business events represent external actions and treat these actions as stimuli for invoking processes within Banner Workflow. When an event occurs in an external system, such as Banner, information can be passed to Banner Workflow. The Banner Workflow system examines business event definitions to determine what event has occurred and how to interpret the data that was passed.

An example of a business event is the completion of a purchase requisition. The document completion could signal the start of a business process to approve the requestor. In this example, the requisition is the process stimulus. A database trigger would be placed on the requisition table within Banner and would fire every time a new requisition was created. The trigger would insert event specific data into the Banner event tables. The Workflow Dispatcher regularly polls these tables looking for new events. When a new event is found, the dispatcher reads the data into the Banner Workflow system, maps it to a business event definition, and starts the appropriate workflows.

Business events allow workflows to start “silently”. A user enters information into an external application and Banner Workflow automatically reacts, by starting the appropriate workflows.

After the external system is setup to send event information to Banner Workflow, and Banner Workflow is configured to receive and react to the information, no one needs to remember to start a workflow when the event occurs, since the workflow system does it automatically. Using business events streamlines internal processing and improves productivity.

Note
For business events to start workflows, a business event to workflow definition association, known in the Banner Workflow system as a business process, must first be created. See “Create a Business Process” on page 257 for more information.

An event in an external application starts a workflow using the following process:

1. An event occurs in an external application, such as data being entered, updated, or removed. The event data is written to the Event Dispatcher.

2. The Workflow event dispatcher polls the event tables and reads the event data into the Banner Workflow system.
3. Banner Workflow evaluates the data and determines which business event it corresponds with.

4. If business processes have been defined to associate the business event with one or more workflow definitions, the workflows are started.

**Business Event Process Overview**

To use a business event, you must perform the following tasks:

1. Create the business event. For more information, see “Create a Business Event” on page 268.

2. Define the workflows that the business event can start and how data will be passed between them. For more information, see “Associate a Workflow to a Business Event” on page 278.

3. Associate the workflow with a business process. For more information, see “Associate a Workflow with a Business Process” on page 259.

4. Assign the business event to the business process. For more information, see “Associate a Workflow with a Business Process” on page 259.

5. Add a guard condition to the business event if there are cases when the workflow should not be started. For more information, see “Add an Event Process Association Guard Condition” on page 264.

6. Configure the external application to pass data to Banner Workflow when the event occurs.

**Create a Business Event**

To create a business event:

1. Select Business Events from Administration.

2. Select Business Event Definitions from the Business Event page.

3. Click Add Business Event Definition.

4. Enter the following information:
Name

Name of the business event. This is required. The event name in Banner Workflow must match the event name in the external application.

For example, when a database trigger on a Banner table is fired, it may cause event data to be written to the Banner event tables. For the event dispatcher to associate the event data with a business event, the passed event name must match a business event name in Banner Workflow.

Description

Description of the business event. A description is not required, but helps to identify the purpose of the event.

Product type

Name of the product type for the business event. An event must have a product type. The product type identifies the external system in which the event occurs.

5. Click **Save**.

**Note**

Each business event must have a unique name and product type combination. While it is possible to create multiple events with the same name but different product types, it is not a recommended practice, since it may cause confusion when associating events with business processes.
Create a Business Event with the Banner Event Wizard

The Banner Event Wizard allows you to easily create a business event by selecting the desired event components. To create a business event with the Banner Event Wizard:

1. Select Business Events from Administration.
2. Select Business Event Definitions from the Business Event page.
3. Click Banner Event Wizard.
4. Click Next on the Banner Event Wizard - Introduction page.
5. In the Target field, select the appropriate external application and click Next. In most cases, this external application will be WORKFLOW.
6. In the Events field, select the name of the event you would like to create and click Next.
7. Select any business event parameters you would like to include in this business event.
8. For each selected business event parameter, select the type, indicate whether or not the parameter is guaranteed, and click Next when finished.
9. On the summary page, you can change the name of the business event that will be created.
10. Select a product type for the business event.
11. Click Create Event.

Modify a Business Event

To modify a business event:

1. Select Business Events from Administration.
2. Select Business Event Definitions from the Business Event page.
3. Click the existing Business Event name that you would like to modify.
4. Modify event details:
To copy a business event:

1. Select Business Events from Administration.
2. Select Business Event Definitions from the Business Event page.
3. Click the Business Event name that you would like to copy.
4. Click Copy.
5. Modify details as necessary.
6. Click Save.

To delete a business event:

1. Select Business Events from Administration.
2. Select Business Event Definitions from the Business Event page.
3. Select the Business Event names that you would like to delete.
4. Click Delete Selected Business Events.

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The event name in Banner Workflow must match the event name in the external application. If the event is already attached to a business process, the event name will be updated at the attachment. The event name and product type combination must be unique. Although it is possible to use the same name on multiple events, it will be difficult to identify events if you do so.</td>
</tr>
<tr>
<td>Description</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Product type</td>
<td>No restrictions.</td>
</tr>
</tbody>
</table>
5. When you are asked to confirm the deletion, click **OK**.

**Note**

If the event you want to delete is associated with one or more business processes, it will inform you which business processes it is associated with and ask you to confirm that you want to delete it.

### Simulate an Event

To simulate an event:

1. Select Business Events from Administration.
2. Select Business Event Definitions from the Business Event page.
3. Select the Business Event that you would like to test.
4. Click **Simulate Event**.
5. Enter the following information:

   - **Workflow Specifics**
     - **Name**

6. Click **Post Event**.

### Business Event Parameters

Each business event can have one or more parameters. Business event parameters specify which values will be passed from an external application to Banner Workflow when the event occurs.

Business event parameters will be guaranteed or non-guaranteed. If a parameter is defined as guaranteed, Banner Workflow will always expect to receive a value for this parameter when the event occurs.

**Note**

If an external system does not pass values for all guaranteed parameters when an event occurs, the evaluation of the external event will fail. For more information, see "External Events" on page 280.
Business Event Parameter Types

Business event parameters can be defined to be of the following data types:

- Text
- Boolean
- Numeric
- Date

Data types are important when creating mappings between business event parameters and workflow context parameters, since only parameters of the same data type can be mapped to each other. For more information mapping business event parameters to workflow context parameters, see “Associate a Workflow to a Business Event” on page 278.

Note

Prior to Workflow 4.2, all parameter values passed to Workflow by external applications were received as Text. Starting with 4.2, the external events interface supports passing of typed values (Text, Boolean, Numeric, or Date). However, for backward compatibility, Banner Workflow will still accept specific Text representations of all four types. Banner Workflow will automatically attempt to convert text representations of non-text parameters to their actual type when the event is evaluated.

<table>
<thead>
<tr>
<th>Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text</td>
<td>No special formatting is required.</td>
</tr>
<tr>
<td>Boolean</td>
<td>When workflow tries to cast a received Text value to the Boolean data type, the Text value 'true' is converted to true and all other Text values are converted to false.</td>
</tr>
<tr>
<td>Type</td>
<td>Details</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Numeric</td>
<td>Banner Workflow will cast any Text value of a valid numeric format to the Numeric data type. No special formatting is required.</td>
</tr>
<tr>
<td>Date</td>
<td>For workflow to successfully cast a received Text value to the Date data type, the Text must be of format: &lt;DD&gt;-&lt;MMM&gt;-&lt;YYYY&gt;&lt;HH&gt;:&lt;MM&gt;:&lt;SS&gt; For example: 03-MAR-2003 13:00:00 Alternatively, the date can be represented as an integer value representing the number of milliseconds since the standard base time known as the epoch, namely January 1, 1970, 00:00:00 GMT. For example: 1231231231</td>
</tr>
</tbody>
</table>
Parameter Mapping

Components and business events use parameters to transfer data. The following information describes how parameter mappings are used to transfer data:

<table>
<thead>
<tr>
<th>This parameter</th>
<th>can be mapped in this direction</th>
<th>to this parameter</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
<td></td>
<td>Workflow Context</td>
<td>To transfer data between workflow activities. Parameter values can be transferred either from a context parameter to a component parameter or from a component parameter to a context parameter.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Context parameter values are copied to a component when the work item is launched.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Component parameter values are copied to a workflow context parameter when the work item completes.</td>
</tr>
<tr>
<td>Business Event</td>
<td></td>
<td>Workflow Context</td>
<td>Business event parameter data are fed into a workflow context parameter. Then, data is used in the workflow where the context parameter is mapped to a component parameter or used in a business rule. For more information on business event parameters, see “Business Event Parameter Types” on page 273.</td>
</tr>
</tbody>
</table>

Create a Business Event Parameter

To create a business event parameter:

1. Select Business Events from Administration.
2. Select Business Event Definitions from the Business Event page.
3. Click the existing Business Event name that you would like to create a parameter for.
4. In the Parameters section of the page, click Add Event Parameter.
5. Enter the following information:
Name | Name for the business event parameter. Parameters in Banner Workflow follow the standard Java naming convention. This naming convention applies to all parameters (business event, component, and workflow context), as follows:

- **In the first position**: You can use letters, currency symbols (such as $), and an underscore (_).

- **In positions other than the first**: You can use letters, numbers (0–9), currency symbols (such as $), dashes (-), periods (.), and underscores (_).

- **In all positions**: You cannot use spaces. Use underscores or mixed case to separate “words”. For example you might name a business event parameter like this:

  *trans_number* or *TransNumber*

Description | Description of the business event parameter. The description is not required, but will help to further identify the purpose of the parameter.

Type | Select the data type required by the business event parameter. Valid types are *Boolean*, *Date*, *Numeric*, or *Text*.

You can map this event parameter to workflow context parameters that have the same data type.

Guaranteed | If a parameter is guaranteed, that means the parameter must have an output value. The output value may or may not be used.

- **Yes** - The event guarantees an output value for this parameter.

- **No** - The event does not guarantee an output value for this parameter.

6. Click *Save*. 
Modify a Business Event Parameter

To modify a business event parameter:

⚠️ Note
If the parameter is used in a guard condition rule, you should not modify it.

1. Select Business Events from Administration.

2. Select Business Event Definitions from the Business Event page.

3. Click the existing Business Event name with the parameter that you would like to modify.

4. Click the Parameter name that you would like to modify.

5. Modify parameter information:

<table>
<thead>
<tr>
<th>Item</th>
<th>Any restrictions on modifying?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Each event parameter name must be unique and must match the corresponding event parameter name in the external application. If the parameter is used in a guard condition rule, you should not modify the name.</td>
</tr>
<tr>
<td>Description</td>
<td>No restrictions.</td>
</tr>
<tr>
<td>Type</td>
<td>The data type for this parameter must match the data type of any workflow context parameter that it is mapped to.</td>
</tr>
<tr>
<td>Guaranteed</td>
<td>No restrictions. However, changing this value could affect how this event parameter is used in existing workflows.</td>
</tr>
</tbody>
</table>

6. Click Save.
Delete a Business Event Parameter

To delete a business event parameter:

1. Select Business Events from Administration.
2. Select Business Event Definitions from the Business Event page.
3. Click the existing Business Event name for which you would like to delete a parameter.
4. In the Parameters section of the page, select the event parameters that you would like to delete.
5. Click Delete Selected Parameters.
6. When you are asked to confirm the deletion, click OK.

Restrictions on removing a business event parameter

You cannot remove a business event parameter if the parameter is mapped to a workflow context parameter in a business event–workflow assignment.

Associate Workflows to Business Events

When you associate a workflow to a business event, you define the workflows that the business event can start and how data will be passed between them.

Associate a Workflow to a Business Event

To associate a workflow to a business event and map parameters:

1. Select Business Events from Administration.
2. Select Business Event Definitions from the Business Event page.
3. Click the Business Event name that you would like to add a workflow association to.
4. In the Associated Workflows section of the page, click Add Workflow Association.
5. Select the workflow and version combination to associate with the business event.
6. Click Save.
7. In the Parameter Mapping section of the Workflow Association page, select Event Parameters to map to an existing Context Parameters.

**Note**

All required context parameters must be mapped before the workflow association can be saved.

8. Click **Save Parameter Mappings**.

### Modify a Workflow-Business Event Association

To modify an existing association between a workflow and a business event:

1. Select Business Events from Administration.

2. Select Business Event Definitions from the Business Event page.

3. Click the Business Event name with the workflow association that you would like to modify.

4. In the Associated Workflows section of the page, click the Associated Workflow Name that you would like to modify.

5. In the Parameter Mapping section of the Workflow Association page, modify the desired Event Parameter mapping.

**Note**

All required context parameters must be mapped before the workflow association can be saved.

6. Click **Save Parameter Mappings**.

### Delete a Workflow–Business Event Association

To delete an association between a workflow and a business event:

1. Select Business Events from Administration.

2. Select Business Event Definitions from the Business Event page.

3. Click the Business Event name with the workflow association that you would like to delete.

4. In the Associated Workflows section of the page, select the Associated Workflow Name that you would like to delete.
5. Click **Delete Selected Workflows**.

6. When you are asked to confirm the deletion, click **OK**.

**Error Logging**

The following conditions cause Banner Workflow to write an error to cause the external event evaluation to fail. For more information, see “External Events” on page 280.

- The event data is missing any of the following:
  - a name
  - a product type
  - a workflow instance name
- No business event with the specified name and product type can be found in the Business Event folder.
- A required event parameter is missing a value.
- An event parameter value does not have the correct type, for example, a parameter that is assigned a data type of *Number* cannot have a value of “*abc*”.

**External Events**

An external event is an instance of an event that originates outside of Banner Workflow that can be mapped to a Business Event for execution. Upon execution of a Business Event, business processes in Banner Workflow can be invoked to initiate running Workflows. For more information on Business Events please see “Business Events” on page 267.

Processing of external events by a workflow system is divided into 2 distinct phases, with certain responsibilities involved in each phase.

**Posting**

In the first phase, an event provider “posts” the external event to the workflow system. During the post, workflow will persistently store a copy of the external event, and schedule it for evaluation. Delivered with Banner Workflow is the Banner Event Provider which will monitor the Banner Event Tables for new events and post those events to Banner Workflow.
Once the event posting succeeds, the event provider can consider the external event to have been “handled”, and is no longer responsible for the external event in any way.

Note

The event provider has no knowledge of whether the external event evaluates successfully or not - the event provider’s only responsibility is to notify workflow of the existence of the external event and the data contained within it.

A successful post only means that workflow is guaranteed to evaluate the event at some future point, but makes no guarantee as to when that will happen, or the exact order in which it will occur.

To simplify the development of custom code that posts external events to Banner Workflow, Banner Workflow itself takes responsibility for detecting and rejecting duplicate events. This allows multiple event providers to be run for the same external event source without the providers themselves having to provide a mechanism to screen out duplicate events.

Evaluation

The second phase is the evaluation phase. During the evaluation phase, a workflow engine node evaluates the posted event, and starts zero or more workflows on its behalf, or, if errors are encountered, raises the appropriate alerts to the administrator of the workflow system. Any errors encountered during event evaluation must be dealt with from within the Banner Workflow system. The event cannot simply be reposted from the external system, since workflow will recognize it as a duplicate and reject it. Banner Workflow contains various pages to monitor the state of external events that have been posted, as well as to replay ones that have encountered errors. Banner Workflow also maintains a log of event evaluation details for successful evaluations that can be accessed via the UIs.

The evaluation is either successful, and all workflows that are supposed to start do so, or all work is rolled back, and an alert condition is raised for the event. At this point, a workflow administrator or analyst can correct the problem and request the event to be evaluated again, without any fear of starting duplicate workflows.

View External Event Test Results

To view the results of an External Event test:

1. Select Business Events from Administration.

2. Select External Events from the Business Event page.
3. On the External Event Search page, enter search criteria and click **Search** to locate the external event test results you would like to view.

4. Click an external event from the External Events Search Results page.

**Event Evaluation Failure**

Three options are available for dealing with a failed event:

**Replay External Events**

If you make a change to an event that you are testing, you have the ability to replay an event test to see what the impact of your changes will be. To replay a failed external event test:

1. Select Business Events from Administration.

2. Select External Events from the Business Event page.

3. On the External Event Search page, enter search criteria and click **Search** to locate the external event test results you would like to view.

4. Click an external event from the External Events Search Results page.

5. Click **Replay Event** to submit the External Event for another test.

**Hide External Events**

An external event can be hidden from view. Hiding an external event will lock the event’s External ID and prevent the event from being replayed. To hide the results of a failed External Event test:

1. Select Business Events from Administration.

2. Select External Events from the Business Event page.

3. On the External Event Search page, enter search criteria and click **Search** to locate the external event test results you would like to view.

4. Click an external event from the External Events Search Results page.

5. Click **Hide Event** to lock the event’s External ID and prevent the event from being replayed.

6. When you are asked to confirm your decision to hide the event, click **OK**.
Delete External Events

To delete a failed External Event test:

1. Select Business Events from Administration.

2. Select External Events from the Business Event page.

3. On the External Event Search page, enter search criteria and click Search to locate the external event test results you would like to view.

4. Click an external event from the External Events Search Results page.

5. Click Delete Event.

6. When you are asked to confirm the deletion, click OK.

External Event Status

All external event tests can be grouped into the following statuses:

- Failed - The external event did not complete. For more information on external event errors see “External Event Errors” on page 283.
- Completed - The external event completed successfully.
- Hidden - The external event was hidden by another user.
- Pending - The external event is awaiting processing.
- Initial - The external event has not started.

External Event Errors

The following external event error results can occur:

The business event failed evaluation. The external event failed to provide a value for the guaranteed event parameter in the event.

This error occurs when no value is entered for a guaranteed event parameter.

To resolve this error, ensure that all guaranteed parameter values are entered before the external event is executed.
The business event failed evaluation. The map between the event and the workflow definition did not provide a required workflow context parameter.

This error occurs when an event parameter is mapped to workflow definition that has a required context parameter and no value is entered for that event parameter.

To resolve this error, ensure that a value is set for the event parameter that is mapped to the required context parameters. To review the parameter mappings between an event and a workflow definition, click the event name link in the error message to go to the business event and select the workflow definition.

The business event failed evaluation. The specified process does not have an associated workflow definition at the organization that is effective for the posted event date.

This error occurs when the workflow definition at the organization that is associated with the business process is not effective for the posted event date.

To resolve this error, ensure that the workflow definition at the organization that is associated with the specified business process is effective for the posted event date. To verify the effective dates for the associated workflow definition click the event name link in the error message to go to the specified business process.

The business event failed evaluation. The value provided for an event parameter in this posted external event is not compatible with that parameter’s data type.

This error occurs when the value entered for an event parameter does not match that parameter’s data type.

To resolve this error, ensure that the value provided for an event parameter is compatible with that parameter’s data type. To view the event parameters and the associated data types, click the event name link in the error message to go to the business event.

The external event failed evaluation. The event name is not mapped to the workflow definition.

This error occurs when an event name is not associated with the workflow definition.

To resolve this error, ensure that the specified workflow definition is associated with the event name. Click the event name link in the error message to go to the business event and make the workflow association.
The external event failed evaluation. The event name and product type name posted in the external event do not identify an Event in the workflow system.

This error occurs when an external event name is not recognized by the workflow system.

To resolve this error, click this link to go the Business Event Definitions page to add a business event named with the product type name and replay the external event.

A general system error occurred.

A system error occurred. Please notify the System Administrator of the stack trace that is shown in the error message and ask the System Administrator to review the logs.
Section V

Execute
The worklist is the first page that is displayed in Banner Workflow. The worklist organizes work items for the role(s) that the user is assigned to. Each work item represents a unit of work for a single workflow activity for a given Workflow Model. Work items are routed to workflow users based on role assignments, directed activities, or modeled information.

**Worklist Display**

The Worklist columns can be sorted in ascending or descending order:

- Organization - The Organization column displays the organization name.
- Workflow - The Workflow column displays the workflow specifics name.
- Activity - The Activity column displays the activity name.
- Priority - The Priority column displays the priority of the workflow instance.
- Created - The Created column displays the workflow creation date and time.

To sort on a specific column, simply click the column name. An arrow will appear next to the sorted column indicating whether the sort was performed in ascending or descending order.

**Show Reserved Items**

The worklist will display all work items for the role(s) that the user is assigned to. To view only the work items that the user has reserved, click Show Reserved Items. At any time you can click Show All Items or refresh the worklist to view all work items.

**Refresh the Worklist**

To see updates and changes to items displayed on the worklist, simply click the refresh button on the toolbar of your browser.

**Worklist Indicators**

The Worklist will display an indicator next to a workitem when the workitem falls into one of the following categories:
Launch a Work Item

To launch a work item from your worklist, simply click the link that appears in the Workflow column of the Worklist. When a work item is completed, the workflow will automatically advance to the next activity in the process. This activity will appear on the worklist of a user with the appropriate role to perform the work.
Work Item Details

The Work Item Details page contains detailed information about the selected work item. To view details for a work item, click to navigate to the Work Item Details page. The following options appear at the top of the Work Item Details page:

- **Start**: Start allows you to begin work on the selected work item.
- **Reserve**: Reserve allows you to reserve a work item to perform at a later time.
- **Complete**: Complete informs Banner Workflow that your work on the work item is finished.
- **Skip**: Skip will stop your work on a work item and advance to the next activity in the workflow.
- **Release**: Release will reset all work that you have performed on a work item and return it to its original state.
- **Status**: Status allows you to view the Workflow Status page where you can view a graphical representation of the workflow status. You can also modify the status of a workflow or activity.
- **Stop Workflow Request**: Stop Workflow Request will stop the workflow instance that the work item belongs to.

The following fields are displayed on the Work Item Details page:

- **Organization**: Organization to which the workflow is assigned.
- **Workflow Name**: The name of the workflow. This is a display only field.
- **Activity Name**: The name of the activity. This is a display only field.
The following tabs are available to view and update detailed information about workflow and work item:

- “Workflow Attachments Tab” on page 292.
- “Notes Tab” on page 295.
- “Metrics Tab” on page 296.
- “Details Tab” on page 297.
- “Proxy Tab” on page 298.

**Workflow Attachments Tab**

Documents can be attached to a running workflow by any valid workflow participant. Workflow attachments can be used to easily share documents that are related to the workflow and each workflow participant has the ability to attach, detach, modify, or delete any document that is attached to a workflow.

**Attach a Document to a Workflow**

To attach a document to a workflow:

1. Click to navigate to the Work Item Details page for a specific work item.
2. Select the Workflow Attachments tab.
3. Click Attach File.
4. On the Attach File page, click **Browse...** to select the document you would like to attach to this workflow and click Open.

**Note**
For information on using document tags, see “Associate an Attachment with a Document Tag” on page 294.

5. Optionally you can enter a Name and Comments about the attachment.

6. Click **Attach**. The document you selected is now attached to the workflow and can be downloaded by any participant in this workflow.

**Detach a Document from a Workflow**

To detach a document from a workflow and save it on your computer for future use:

1. Click 🔄 to navigate to the Work Item Details page for a specific work item.

2. Select the Workflow Attachments tab.

3. Click the icon next to the attachment name that you would like to download.

4. In the File Download window click **Save**.

5. In the Save As window, select the location where you would like to save the selected document and click **Save**.

6. The document you selected has now been saved and can be viewed at any time outside of Banner Workflow.

**Note**
Detaching a document from a workflow will not delete the file attachment. To delete a workflow attachment, see “Delete a Document from a Workflow” on page 294.

**Modify the Properties of a Document Attached to a Workflow**

To modify the properties of a document that is attached to a workflow:

1. Click 🔄 to navigate to the Work Item Details page for a specific work item.

2. Select the Workflow Attachments tab.

3. Click the Update link that is found below the attachment icon.
4. You may change the name of the attachment and add comments about the attachment. If this workflow uses Document Tags, you can select a document tag from the Name drop-down list.

Note

Changing the name of an attachment that is associated with a document tag, will remove the association between the attachment and the document tag.

5. Click Save to save your changes.

Delete a Document from a Workflow

To delete an attachment from a workflow:

1. Click to navigate to the Work Item Details page for a specific work item.

2. Select the Workflow Attachments tab.

3. Click the Remove link that is found below the attachment icon.

4. When you are asked to confirm the deletion, click OK.

Associate an Attachment with a Document Tag

If a workflow was created with document tags, each document tag will be displayed when attaching a new document or updating the properties of an existing document. For more information on creating document tags, see “Create Document Tags” on page 174.

To map an attached file to a document tag:

1. Click to navigate to the Work Item Details page for a specific work item.

2. Select the Workflow Attachments tab.

3. Click Attach File.

4. On the Attach File page, click Browse... to select the document you would like to attach to this workflow and click Open.

5. Select a document tag from the Name radio button list.

6. Optionally you can enter Comments about the attachment.
7. Click **Attach**. The document you selected is now attached to the workflow and can be downloaded by any participant in this workflow. The attachment is now associated with a document tag. A checkmark is displayed next to any document tag that is associated with an attachment.

钹 Note

Changing the name of an attachment that is associated with a Document Tag, will remove the association between the attachment and the document tag.

**Change or Disassociate an Attachment from a Document Tag**

To change an attachment’s association with a document tag or remove it’s association with a document tag:

1. Click **to navigate to the Work Item Details page for a specific work item.**

2. Select the Workflow Attachments tab.

3. Click the Update link that is found below the attachment icon.

4. Change the name of the attachment or select a different document tag from the Name drop-down list. Changing the name of an attachment that is associated with a Document Tag, will remove the association between the attachment and the document tag.

5. Click **Save** to save your changes.

**Notes Tab**

Workflow and Work Item notes can be created by any participant in the workflow process. The notes allow workflow stakeholders to share information while a workflow is running and after the workflow has completed.

钹 Note

Workflow and Work Item notes will contain the user’s ID and a time stamp to provide an audit trail of comments. Notes cannot be deleted or modified.
**Create a Workflow Note**

To create and attach a workflow note to a workflow:

1. Click ✂️ to navigate to the Work Item Details page for a specific work item.

2. Select the Notes tab.

3. Select the Workflow radio button and enter a note in the text field below the radio buttons.

4. Click **Add Note**.

**Create a Work Item Note**

1. Click ✂️ to navigate to the Work Item Details page for a specific work item.

2. Select the Notes tab.

3. Select the Work Item radio button and enter a note in the text field below the radio buttons.

4. Click **Add Note**.

**Metrics Tab**

Metrics related information for both the workflow and the work item are displayed in this tab. Metrics provide process participants with time oriented details about both processes and specific pieces of work. This tab contains the following metrics data for the workflow and work items:

- **Expected Completion Date**
  
The Expected Completion Date for both the Workflow and Work Item is displayed. This date is computed based on the Estimated Time allocated for the Workflow and Work Item and the Work Calendar that the Workflow and Work Item uses.
Details Tab

The Details tab contains additional information about the workflow and the selected work item. The following information is displayed:

- **Organization**: The organization to which the workflow is assigned.
- **Definition Name**: The name of the workflow process definition.
- **Definition Version**: The version of the workflow process definition.
- **Workflow Initiator**: The name of the user or business event that started the workflow.
- **Activity Description**: The description of the current activity.
- **Role**: The role that can perform the current activity.
- **Type**: The activity type. The activity type can either be mandatory or optional.
Proxy Tab

The Proxy tab contains information about the users who have authority to access the selected work item. The following information is displayed:

<table>
<thead>
<tr>
<th>Directed to User</th>
<th>If an activity is confidential, it is directed to a specific user. The user that it is directed to is displayed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proxy Originators</td>
<td>The role that was originally assigned to perform the current activity.</td>
</tr>
</tbody>
</table>
16  Workflow Status

The Workflow Status page allows you to view a graphical representation and detailed information about a workflow or an activity. You may modify the status of a workflow using the Stop Workflow or Refresh buttons that are above the graphical representation of the workflow. You may modify the status of an activity by selecting that activity and then selecting one of the available buttons.

**Note**
A button may be active or disabled, depending on the status of the item that is selected and the role of the user.

Available buttons include:

- **Refresh**
  Refresh will display the current graphical representation of the selected workflow.
  
  **Note:** Clicking the refresh button on your browser will not refresh Workflow Status.

- **Stop Workflow**
  Stop Workflow will stop the workflow instance that the work item belongs to.

- **Start**
  Start allows you to begin work on the selected work item.

- **Skip**
  Skip will stop your work on a work item and advance to the next activity in the workflow.

- **Reserve**
  Reserve allows you to reserve a work item to perform at a later time.

- **Release**
  Release will release the work item from the personal worklist it is on and return it to the shared or directed worklist.

- **Stop Workflow Request**
  Stop Workflow Request will send a stop request to the Workflow Alerts page of the Administrator of the workflow.

- **Complete**
  Complete informs Banner Workflow that your work on the work item is finished.

- **Force Transition**
  Force Transition will advance the workflow to the next activity on the path you have selected.
The Workflow Status page contains the following information:

- **Organization**  The organization to which the workflow is assigned.
- **Workflow Name**  The name of the running workflow instance.

### Alert Messages

A poorly constructed workflow can enter a stalled or error state if it is not able to start an activity or follow a transition. When a workflow is stalled, a workflow alert is created. For more information on dealing with workflow alerts, see “Workflow Alerts” on page 329.

### Workflow Status Tab

The Workflow Status tab displays a graphical representation of the selected workflow. The workflow can either be in-process or completed. All completed activities will have a green check mark and the current activity will have a running activity icon. You may set the zoom level of the image to shrink or expand the view of the workflow model.

### Activity Popup Menu

If you click an activity, a popup menu will display with the following fields:

- **Description**  The description of the activity.
- **Role**  The role for the activity.
- **Status**  The status of the activity’s work item.

You may modify the status of an activity by selecting that activity and then selecting one of the available buttons.

**Note**

A button may be active or disabled, depending on the status of the item that is selected and the role of the user.

Available buttons include:
Transition Popup Menu

If you click a transition, a popup menu will display with the following fields:

- **Source**: The starting activity of the transition.
- **Target**: The destination activity of the transition.
- **Label**: The label of the transition.
- **Rule**: The guard condition rule that will be evaluated.

Available buttons include:

- **Force Transition**: Force Transition will advance the workflow to the next activity on the path you have selected.

Reserve a Work Item

To reserve a work item for completion:

1. Select Workflow Status Search from Administration.
2. Enter as much information as you can about the workflow you are searching for.
3. Click Search.

4. Click the Workflow Specifics Name of the workflow you would like to reserve. This will open the Workflow Status page.

5. Select the activity you would like to reserve.

6. On the pop-up menu that is displayed, click Reserve to open the Work Item Reservation page.

7. Click Reserve for Self to reserve the work item and add it to your worklist. If you are the owner of the workflow, you may also select a user name from the Candidate Performers list and click OK.

Stop a Workflow

To stop a workflow:

1. Select Workflow Status Search from Administration.

2. Enter as much information as you can about the workflow you are searching for.

3. Click Search.

4. Click the Workflow Specifics Name of the workflow you would like to stop. This will open the Workflow Status page.

5. Click Stop Workflow.

6. When you are asked to confirm that you would like to Stop the Workflow, click OK.
Workflow Details Tab

The workflow details tab contains information about the running workflow in the following sections:

- Details
- Notes
- Definition Details
- Attachments
- Context Parameters

Details

The details section contains the following information:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>The organization to which the workflow instance is assigned.</td>
</tr>
<tr>
<td>Workflow Specifics</td>
<td>The name of the running workflow instance.</td>
</tr>
<tr>
<td>Description</td>
<td>The description of the running workflow.</td>
</tr>
<tr>
<td>State</td>
<td>The current state of the workflow.</td>
</tr>
<tr>
<td>Workflow Initiator</td>
<td>The name of the user or business event that started the workflow.</td>
</tr>
<tr>
<td>Workflow ID</td>
<td>The internal Workflow ID for the workflow.</td>
</tr>
<tr>
<td>Priority</td>
<td>The priority of the work item. The priority may be one of the following:</td>
</tr>
<tr>
<td></td>
<td>- Urgent</td>
</tr>
<tr>
<td></td>
<td>- High</td>
</tr>
<tr>
<td></td>
<td>- Normal</td>
</tr>
<tr>
<td></td>
<td>- Low</td>
</tr>
<tr>
<td></td>
<td>- None</td>
</tr>
<tr>
<td>Created</td>
<td>The date that the workflow was created.</td>
</tr>
<tr>
<td>Completed</td>
<td>The date that the workflow was completed.</td>
</tr>
<tr>
<td>Estimated Time</td>
<td>The estimated time in which the workflow instance should be completed.</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Elapsed Time</td>
<td>The elapsed time is the amount of time that has passed since the workflow was started.</td>
</tr>
<tr>
<td>Lagging Date</td>
<td>The lagging date is the date on which the workflow will be considered to be lagging. This date is based on the estimated time and lagging percentage values entered in the Banner Workflow Modeler and the work calendar that this workflow uses.</td>
</tr>
<tr>
<td>Expected Completion Date</td>
<td>The estimated completion date for the workflow is displayed. This date is computed based on the estimated time allocated for the workflow and the work calendar that the workflow uses.</td>
</tr>
</tbody>
</table>

**Notes**

Any existing workflow notes are displayed in this section. Workflow and Work Item notes can be created by any participant in the workflow process. The notes allow workflow stakeholders to share information while a workflow is running and after the workflow has completed. The Notes section allows each participant to add notes that could then be viewed and be appended to by the user in any of the other activities in the workflow.

To add a workflow note:

1. Select Workflow Status Search from Administration.
2. Enter as much information as you can about the workflow you are searching for.
3. Click **Search**.
4. Click the Workflow Specifics Name of the workflow you would like to add a note to. This will open the Workflow Status page.
5. Select the Workflow Details tab.
6. Enter the text you would like to appear as a workflow note in the Notes section of the Workflow Details tab.
7. Click **Add Note**.
**Definition Details**

The definition details section contains the following information about the workflow process definition:

- **Organization**: The organization to which the workflow process definition is assigned.
- **Name**: The name of the workflow process definition.
- **Version**: The version of the workflow process definition.
- **Description**: The description of the workflow process definition.
- **Status**: The status of the workflow process definition.
- **Owner**: The owner of the workflow process definition.
- **Administrator**: The administrator of the workflow process definition.
- **Estimated Time**: The estimated time in which the workflow process definition should be completed.
- **Metrics Tracking**: Displays if metrics tracking is enabled for the workflow process definition.
- **Lagging Percentage**: If metrics tracking is enabled, lagging percentage will display the lagging percentage for the workflow process definition.
- **Work Calendar**: Name of the work calendar associated with the workflow process definition.

**View the Workflow Definition of the Selected Workflow Instance**

On the Workflow Status page, you can launch the Workflow Modeler to view the workflow definition of the running workflow instance. To view the workflow definition, click the workflow process definition name link.

**Attachments**

File attachments can be used to supply supplemental information about a workflow instance to a workflow participant.
**Attach a File**

To attach a file to be associated with a workflow instance:

1. Select Workflow Status Search from Administration.

2. Enter as much information as you can about the workflow you are searching for.

3. Click **Search**.

4. Click the Workflow Specifics Name of the workflow you would like to add an attachment to. This will open the Workflow Status page.

5. Select the Workflow Details tab.

6. Click **Attach File** in the Attachments section of the Workflow Details tab.

7. On the Attach File page, click **Browse**.

8. In the Choose file window, navigate through the directory structure and select the file you would like to attach to the activity.

9. Click **Open**.

10. On the Attach File page, you may optionally enter a Name and Comments for the attachment.

11. Click **Attach**.

**Download a File**

To download an attachment:

1. Select Workflow Status Search from Administration.

2. Enter as much information as you can about the workflow you are searching for.

3. Click **Search**.

4. Click the Workflow Specifics Name of the workflow you would like to download an attachment from. This will open the Workflow Status page.

5. Select the Workflow Details tab.

6. Click the icon next to the file you would like to download in the Attachments section of the Workflow Details tab.
7. In the File Download window, click **Open** to open the attachment or click **Save** to save the attachment to your computer.

**Update Attachment Properties**

To update the properties of an attachment:

1. Select Workflow Status Search from Administration.
2. Enter as much information as you can about the workflow you are searching for.
3. Click **Search**.
4. Click the Workflow Specifics Name of the workflow with an attachment that you would like to modify the properties of. This will open the Workflow Status page.
5. Select the Workflow Details tab.
6. Click **Update** below the attachment you would like to update.
7. On the Attach File page, edit the Name and Comments for the attachment.
8. Click **Save**.

**Delete an Attachment**

To delete an attachment:

1. Select Workflow Status Search from Administration.
2. Enter as much information as you can about the workflow you are searching for.
3. Click **Search**.
4. Click the Workflow Specifics Name of the workflow with an attachment that you would like to delete. This will open the Workflow Status page.
5. Select the Workflow Details tab.
6. Click **Remove** below the attachment you would like to delete.
7. When you are asked to confirm the deletion, click **OK**.
**Context Parameters**

The Context Parameters section allows you to modify the value of a workflow context parameter. To modify the value of a context parameter:

*Note*

Workflow context parameters can only be modified by the workflow owner or administrator. Only workflow context parameters with a defined value may be modified.

1. Select Workflow Status Search from Administration.
2. Enter as much information as you can about the workflow you are searching for.
3. Click **Search**.
4. Click the Workflow Specifics Name of the workflow you would like to modify a context parameter for. This will open the Workflow Status page.
5. Select the Workflow Details tab.
6. In the Context Parameters section, modify the value of the context parameter you would like to modify.
7. Click **Apply**.

**Activity Details Tab**

If an activity is selected, the Activity tab will display. The Activity tab contains information about the selected work item that is displayed. This information displayed differs based on the type of activity that is selected.

*Note*

The Activity Details tab will be available for the owner or administrator, as well as a user with the role specified by the selected activity.
Component Activity

If the selected work item uses a component-based activity, the Component Activity tab includes the following sections:

• Details
• Business Component
• Component Parameters
• Notification

Details

The Details section contains the following information:

Name The name of the activity.
Description The description of the activity.
Type The activity type. The activity type can either be mandatory or optional.
Role The role assigned to perform the activity.
Performer The performer of the activity.
Confidential Displays the confidentiality of the activity.
Mandatory Displays whether the work item is mandatory or optional.
Metrics Tracking Displays if metrics tracking is enabled for this activity.
Lagging If metrics tracking is enabled, lagging percentage will display the lagging percentage of the activity.
Estimated Time The estimated time in which the activity should be completed.
**Business Component**

The Business Component section contains the following information:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the business component.</td>
</tr>
<tr>
<td>Description</td>
<td>The description of the business component.</td>
</tr>
<tr>
<td>Product Type</td>
<td>The product type of the business component.</td>
</tr>
<tr>
<td>Status</td>
<td>The status of the business component.</td>
</tr>
<tr>
<td>Category</td>
<td>The category that contains the business component.</td>
</tr>
<tr>
<td>Component Type</td>
<td>The component type of the business component.</td>
</tr>
<tr>
<td>Technology Type</td>
<td>The technology type of the business component.</td>
</tr>
<tr>
<td>Source</td>
<td>The source ID of the business component.</td>
</tr>
</tbody>
</table>

**Component Parameters**

The Component Parameters section contains the following information:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of any component parameters.</td>
</tr>
<tr>
<td>Description</td>
<td>The description of any component parameters.</td>
</tr>
<tr>
<td>Type</td>
<td>The data type required by the component parameter. Valid types are Boolean, Date, Numeric, or Text.</td>
</tr>
<tr>
<td>Required</td>
<td>If a parameter is required, that means the parameter must have an input value.</td>
</tr>
<tr>
<td></td>
<td>• Yes - The component requires an input value for this parameter.</td>
</tr>
<tr>
<td></td>
<td>• No - The component does not require an input value for this parameter.</td>
</tr>
</tbody>
</table>
**Notification**

The Notification section contains the following information:

- **From** The sender’s email address.
- **To** The recipient’s email address.
- **CC** Carbon copy. Any email address listed in the CC field will receive a copy of the notification when you send it.
- **BCC** Blind Carbon Copy. Any email address listed in the BCC field will receive a copy of the notification when you send it, however BCC email recipients will not be visible to other recipients of the message.
- **Subject** The subject of the notification.
- **Attachments** Displays the files that are attached to this notification.
- **Notification Message** The notification message that will be sent to the email recipient.

**Manual Activity**

If the selected work item is based on a manual activity, the Manual Activity tab includes the following sections:

- **Details**
- **Manual Instructions**
- **Notification**

**Details**

The Details section contains the following information:

- **Name** The name of the activity.
- **Description** The description of the activity.
- **Type** The activity type. The activity type can either be mandatory or optional.
- **Role** The role assigned to perform the activity.
- **Performer** The performer of the activity.
Manual Instructions

The Manual Instructions section displays the manual instructions defined for this activity.

Notification

The Notification section contains the following information:

- **From**
  - The sender's email address.
- **To**
  - The recipient's email address.
- **CC**
  - Carbon copy. Any email address listed in the CC field will receive a copy of the notification when you send it.
- **BCC**
  - Blind Carbon Copy. Any email address listed in the BCC field will receive a copy of the notification when you send it, however BCC email recipients will not be visible to other recipients of the message.
- **Subject**
  - The subject of the notification.
- **Attachments**
  - Displays the files that are attached to this notification.
- **Notification Message**
  - The notification message that will be sent to the email recipient.

Email Activity

If the selected work item is based on an email activity, the Email Activity tab includes the following sections:

- **Details**
- **Email Fields**
Details

The Details section contains the following information:

- **Name**: The name of the activity.
- **Description**: The description of the activity.
- **Type**: The activity type. The activity type can either be mandatory or optional.
- **Role**: The role assigned to perform the activity.
- **Performer**: The performer of the activity.
- **Confidential**: Displays the confidentiality of the activity.
- **Mandatory**: Displays whether the work item is mandatory or optional.
- **Metrics Tracking**: Displays if metrics tracking is enabled for this activity.
- **Lagging Percentage**: If metrics tracking is enabled, lagging percentage will display the lagging percentage for the activity.
- **Estimated Time**: The estimated time in which the activity should be completed.

Email Fields

The Email Fields section contains the following information:

- **From**: The sender's email address.
- **To**: The recipient's email address.
- **CC**: Carbon copy. Any email address listed in the CC field will receive a copy of that message when you send it.
- **BCC**: Blind Carbon Copy. Any email address listed in the BCC field will receive a copy of that message when you send it, however BCC email recipients will not be visible to other recipients of the message.
- **Subject**: The subject of the email message.
- **Attachments**: Displays the files that are attached to this email activity.
- **Email Message**: The message that will be sent to the email recipient.
Approval Activity

If the selected work item is based on an approval activity, the Approval Activity tab includes the following sections:

- Details
- Approval Instructions
- Notification

Details

The Details section contains the following information:

- Name
- Description
- Type
- Role
- Performer
- Confidential
- Mandatory
- Metrics Tracking
- Lagging Percentage
- Estimated Time

Approval Instructions

The Approval Instructions section contains the following information:

- Approved Activity
- Approval Instructions
**Notification**

The Notification section contains the following information:

- **From**: The sender’s email address.
- **To**: The recipient's email address.
- **CC**: Carbon copy. Any email address listed in the CC field will receive a copy of the notification when you send it.
- **BCC**: Blind Carbon Copy. Any email address listed in the BCC field will receive a copy of the notification when you send it, however BCC email recipients will not be visible to other recipients of the message.
- **Subject**: The subject of the notification.
- **Attachments**: Displays the files that are attached to this notification.
- **Notification Message**: The notification message that will be sent to the email recipient.

**Custom Activity**

If the selected work item is based on a custom activity, the Custom Activity tab includes the following sections:

- **Details**
- **Custom Component**
- **Local Parameters**
- **Notification**
Details

The Details section contains the following information:

- **Name**: The name of the activity.
- **Description**: The description of the activity.
- **Type**: The activity type. The activity type can either be mandatory or optional.
- **Role**: The role assigned to perform the activity.
- **Performer**: The performer of the activity.
- **Confidential**: Displays the confidentiality of the activity.
- **Mandatory**: Displays whether the work item is mandatory or optional.
- **Metrics Tracking**: Displays if metrics tracking is enabled for this activity.
- **Lagging Percentage**: If metrics tracking is enabled, lagging percentage will display the lagging percentage for the activity.
- **Estimated Time**: The estimated time in which the activity should be completed.

Custom Component

The Custom Component section contains the following information:

- **Title**: The title of the custom component.
- **Show Attachments**: Document attachments can be displayed at the bottom of any custom activity.
  - **Yes**: Workflow attachments are displayed at the bottom of Custom Activity page.
  - **No**: Workflow attachments are not displayed on the Custom Activity page.
**Local Parameters**

The Local Parameters section contains the following information:

<table>
<thead>
<tr>
<th>Name</th>
<th>The name of any local parameters.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>The description of any local parameters.</td>
</tr>
<tr>
<td>Type</td>
<td>The data type required by the local parameter. Valid types are Boolean, Date, Numeric, or Text.</td>
</tr>
<tr>
<td>Required</td>
<td>If a parameter is required, that means the parameter must have an input value.</td>
</tr>
<tr>
<td></td>
<td>• Yes - The component requires an input value for this parameter.</td>
</tr>
<tr>
<td></td>
<td>• No - The component does not require an input value for this parameter.</td>
</tr>
</tbody>
</table>

**Notification**

The Notification section contains the following information:

<table>
<thead>
<tr>
<th>From</th>
<th>The sender’s email address.</th>
</tr>
</thead>
<tbody>
<tr>
<td>To</td>
<td>The recipient's email address.</td>
</tr>
<tr>
<td>CC</td>
<td>Carbon copy. Any email address listed in the CC field will receive a copy of the notification when you send it.</td>
</tr>
<tr>
<td>BCC</td>
<td>Blind Carbon Copy. Any email address listed in the BCC field will receive a copy of the notification when you send it, however BCC email recipients will not be visible to other recipients of the message.</td>
</tr>
<tr>
<td>Subject</td>
<td>The subject of the notification.</td>
</tr>
</tbody>
</table>
Work Item Details Tab

The Work Item Details tab allows you to view more information about the selected work item in the following sections:

- Details
- Notes
- Work Item Context Parameters

Note

The Work Item Details tab will be available for the owner or administrator, as well as a user with the role specified by the selected activity.

Details

The details section contains the following information:

- **Organization**
  The organization to which the workflow is assigned.

- **Activity Name**
  The name of the work item.

- **Type**
  The activity type of the work item. The activity type can either be mandatory or optional.

- **Description**
  The description of the work item.

- **Ownership**
  Displays whether or not a work item has been reserved.

- **Role**
  The role assigned to perform the work item.

- **Activity Status**
  The status of the work item.

- **Performer**
  The performer of the work item.

- **Directed User**
  The user that the work item was directed to if the work item was confidential.

- **Activity ID**
  The activity ID of the work item.
Notes

Any existing work item notes are displayed in this section. Workflow and Work Item notes can be created by any participant in the workflow process. The notes allow workflow stakeholders to share information while a workflow is running and after the workflow has completed. The Notes section allows each participant to add notes that could then be viewed and be appended to by the user in any of the other activities in the workflow.

To append a work item note:

1. Select Workflow Status Search from Administration.
2. Enter as much information as you can about the workflow you are searching for.
3. Click Search.
4. Click the Workflow Specifics Name of the workflow you would like to add an attachment to. This will open the Workflow Status page.
5. Select the Work Item Details tab.
6. Enter the text you would like to appear as a work item note in the Notes section of the Work Item Details tab.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Created</td>
<td>The date that the work item was created.</td>
</tr>
<tr>
<td>Completed</td>
<td>The date that the work item was completed.</td>
</tr>
<tr>
<td>Estimated Time</td>
<td>The estimated time in which the work item should be completed.</td>
</tr>
<tr>
<td>Actual Time</td>
<td>The actual time is the amount of time that it took to complete the work item.</td>
</tr>
<tr>
<td>Elapsed Time</td>
<td>The elapsed time is the amount of time that has passed since the workflow was started.</td>
</tr>
<tr>
<td>Lagging Date</td>
<td>The lagging date is the date on which the work item will be considered to be lagging. This date is based on the estimated time and lagging percentage values entered in the Banner Workflow Modeler and the work calendar that this work item uses.</td>
</tr>
<tr>
<td>Expected Completion Date</td>
<td>The expected completion date for the work item is displayed. This date is computed based on the estimated time allocated for the work item and the work calendar that the workflow uses.</td>
</tr>
</tbody>
</table>
7. Click **Add Note**.

**Work Item Context Parameters**

The Work Item Context Parameters section contains the following information:

> **Note**
> Only workflow context parameters with a defined value may be modified.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the work item context parameter.</td>
</tr>
<tr>
<td>Type</td>
<td>The data type of the work item context parameter. Valid types are Boolean, Date, Numeric, or Text.</td>
</tr>
<tr>
<td>Value</td>
<td>The current value of the work item context parameter.</td>
</tr>
<tr>
<td>Description</td>
<td>The description of the work item context parameter.</td>
</tr>
</tbody>
</table>
On the My Processes page, any business processes you are able to launch is shown as a link. When you click this link, you will be able to start the process that the link represents.

**Note**

Each business process link is arranged under the organization that contains the business process. Business process links will not appear for organizations to which your role does not have access.

**Launch a Business Process**

To launch a business process from the My Processes page:

1. Select My Processes within User Profile.

2. Click the business process link under the organization you would like to operate in.

3. Provide the following Start Workflow information to begin the process:
   - Workflow Specifics Name
   - Priority
   - Workflow Note
   - Required Parameters (if necessary)

4. Click **Attach File** to attach a file to a workflow when the workflow is started.

5. Click **Start Workflow**.
Section VI

Monitor
In-process monitoring of running workflows allows an administrator to see the total number of in-process instances for a specific version of a workflow. Additionally, the administrator can determine the number of instances that are ontime, lagging, and overdue, as well as the current activity of each in-process workflow. You may also generate a Microsoft Excel spreadsheet that displays all in-process workflow information. The generated spreadsheet allows you to view workflow data outside of the Banner Workflow product.

For metrics to be monitored, a workflow definition must be associated with a work calendar and metrics tracking must be enabled for the workflow and/or individual activities in the workflow. The workflow definition also needs to be activated as workflow definitions in test status are not tracked. For more information on setting up metrics tracking, see “Work Calendar” on page 143 and “Step 1: Enter Workflow Information” on page 167.

**Note**

Metrics for a workflow and for individual activities are separate computations. It is possible for an activity to be lagging or overdue and the workflow to be ontime. It is also possible for a workflow to be lagging or overdue and an individual activity to be ontime.

**Note**

When a workflow is started, the selected work calendar is cached and the lagging and overdue points for the workflow and/or each activity are computed. Once a workflow with metrics tracking enabled is started, any changes to a work calendar will not be reflected until the workflow is stopped and restarted.

Workflows and activities will always be in one of the following states:
**Ontime**

A workflow or activity will be considered ontime from the time the workflow or activity is started until the lagging percentage of the workflow or activity’s estimated time has elapsed. For example:

- If Workflow A has an estimated time of 10 hours and the lagging percentage is set to 80, the workflow will be considered ontime from the time the workflow starts until 8 hours has elapsed on the selected work calendar. After 8 hours has elapsed on the work calendar, the workflow will be considered to be lagging.

- If Activity B has an estimated time of 1 hour and the lagging percentage is set to 50, the activity will be considered ontime from the time the activity starts until 30 minutes has elapsed on the selected work calendar. After 30 minutes has elapsed on the work calendar, the activity will be considered to be lagging.

**Lagging**

A workflow or activity will be considered lagging from the time the lagging percentage of the workflow or activity’s estimated time has been reached until the total estimated time for the workflow or activity has elapsed. For example:

- If Workflow A has an estimated time of 10 hours and the lagging percentage is set to 80, the workflow will be considered lagging from the time 8 hours has elapsed on the selected work calendar until the estimated time of 10 hours has passed. After 10 hours has elapsed on the work calendar, the workflow will be considered to be overdue.

- If Activity B has an estimated time of 1 hour and the lagging percentage is set to 50, the activity will be considered lagging from the time 30 minutes has elapsed on the selected work calendar until the estimated time of 1 hour has passed. After 1 hour has elapsed on the work calendar, the activity will be considered to be overdue.

**Overdue**

A workflow or activity will be considered overdue once the workflow or activity has been running for more than the estimated time for the workflow or activity. For example:

- If Workflow A has an estimated time of 10 hours, the workflow will be considered overdue once 10 hours has elapsed on the selected work calendar.

- If Activity B has an estimated time of 1 hour, the activity will be considered overdue once 1 hour has elapsed on the selected work calendar.

**Note**

If a work calendar consists of only time exceptions, any workflow and/or activity using that work calendar, with metrics tracking enabled, will be overdue when the last time exception on the calendar has expired.
Monitor an In-Process Workflow

To monitor an in-process workflow:

1. Select In-process Monitoring from Administration.

2. Select an Organization and Workflow-Version combination.

3. Click Search.

    The Organization, Workflow Name, and Version is displayed at the top of the page along with links that allow you to view a listing of the number of workflows that are currently running along with those workflows that are ontime, lagging, and overdue.

    In the Running Activities within Workflow section of the page, each running activity with metrics tracking enabled is displayed. Links that allow you to view a listing of the number of each activity instance that is currently running along with those instances that are ontime, lagging, and overdue can be found under the appropriate column.

4. Click the appropriate link to view additional information about the workflow or activity state you are interested in.

5. On the additional information page, click the Workflow Instance name to view that instance on the Workflow Status page.

Generate a Spreadsheet in Microsoft Excel

To generate a spreadsheet in Microsoft Excel to view all in-process workflow information outside of the Banner Workflow system:

1. Select In-process Monitoring from Administration.

2. Select an Organization and Workflow - Version combination.

3. Click Search.

4. Click Generate Spreadsheet.

5. Click Save.
6. Specify a directory location to save the file to. You may accept the default file name or rename the file.

7. Click Save.

⚠️ **Note**

On Mac OS 10.4 (Tiger), when you click Generate Spreadsheet, the document will download immediately to your current download directory.
When a workflow is properly designed, the results of an activity are passed automatically to the next participant, who responds and performs the activity, which in turn is passed to another participant. Business rules provide the routing logic that controls this process.

A poorly constructed workflow can enter a stalled or error state if it is not able to start an activity or follow a transition. When a workflow is stalled, a workflow alert is created.

**Alerts**

When an error has been encountered, a workflow alert will appear on the Workflow Alerts page of all users who are assigned the role that is designated as the workflow owner for the stalled workflow.

The following issues will result in the creation of a workflow alert:

- The workflow stalled because none of the guard conditions on the outgoing transitions were satisfied or multiple guard conditions were satisfied.
- An activity, directed to a specific user, failed to locate that user.
- An automatic activity encountered an error.
- A stop was requested for the workflow.
- The Sending Failure field on an email activity is set to Warn or Stop, and an error that prevents one or more of the intended recipients from receiving the email message occurs.

To view additional information about a workflow alert, click the Workflow Specifics Name on the Workflow Alerts page to open the Workflow Status page.

Alerts can be broadly classed into "informational" and "error" types. Informational alerts indicate that an error was encountered, but the system was able to continue executing the workflow anyway. Informational alerts can be manually dismissed once you have read them. The alert raised when an activity could not be directed to a specified user is an example of an informational type alert. Error type alerts indicate a problem that must be resolved before the workflow can continue executing. Once the problem is resolved, the alert will automatically be removed.
Stalled Workflows

The following conditions can result in a stalled workflow:

When an activity is completed but the workflow is stalled

A workflow may stall after an activity has been completed. When a workflow stalls after completing an activity, you will see a green check mark ✓ in the activity object, but the next activity will not have started.

This occurs when there are multiple transitions from an activity, and Banner Workflow cannot determine which path to take because either no guard condition evaluated to true, or more than one condition evaluated to true. When this happens, the workflow does not know which transition to use. Use the information shown on the Workflow Status page, in other Banner Workflow pages, or in an associated application to help you determine which transition should be followed. When you make that determination, the owner can force the workflow to follow the chosen transition. The workflow owner is also authorized to modify values for component parameters and workflow context parameters.

You may also determine that the error is unrecoverable and the workflow must be stopped.

When an automated activity cannot be completed successfully

Automated activities are executed on the Application Server hosting Banner Workflow independent of user interaction. Automated activities can fail in 2 general ways: the activity can fail and return an error to the Banner Workflow system, or the thread executing the activity can be killed ungracefully (for example, a power failure or someone shuts down the server without cleanly stopping workflow first). In either case, Banner Workflow will stall the workflow at the automated activity and raise an alert for the error.

Note

In Workflow versions prior to 4.1, if the Application Server was stopped before giving Workflow time to complete in-progress automated activities, Workflow would automatically restart the activities when restarted. In Workflow 4.2 and higher, Banner Workflow will stall the workflow at the activity, giving the workflow owner a chance to determine whether it is safe to replay the activity or not.

Use the information shown in the Workflow Status page, in other Banner Workflow pages, or in an associated application to help you determine why the activity did not complete. You can release the automated activity, in which case Banner Workflow will attempt to execute it again, you can determine that the work for the item did complete successfully, and manually complete the item causing the workflow to advance, or you can determine that the error is unrecoverable and the workflow must be stopped.
When incorrect data has been entered in a component application

A user may make a data entry error in a component application. As a result, the user may not be able to complete the work item in the component application. If the incorrect data does not cause the workflow to stall, but the user cannot complete the activity in the external application, then the user will likely send a stop request to the workflow owner, who will then receive a Stop Request alert on the Workflow Alerts page. The item from which the stop was requested will enter a suspended state (and be removed from all worklists) until the workflow owner either stops the workflow, or denies the stop request. If the request is denied, the item will be restarted and re-routed to either a shared or specified worklist.

When an email activity does not successfully send a message

Banner Workflow considers an Email activity to be successfully completed if the email server accepts the email message for each recipient in the To, CC, and BCC fields. If the Sending Failure field on the email activity is set to Stop, any error that prevents one or more of the intended recipients from receiving the email message will stall the workflow and raise an alert.

Note

If the Sending Failure field on the email activity is set to Warn, Banner Workflow will complete the email activity regardless of the success of the activity, however, an alert will be raised for each error that prevents one or more of the intended recipients from receiving the email message.

Workflow Status

The Workflow Status page allows you to view a graphical representation and detailed information about a workflow or an activity. You may modify the status of a workflow using the Stop Workflow or Refresh buttons that are above the graphical representation of the workflow. You may modify the status of an activity by selecting that activity and then selecting one of the available buttons.

Note

A button may be active or disabled, depending on the item that is selected and the role of the user.
Available buttons include:

- **Refresh**
  
  Refresh will display the current graphical representation of the selected workflow.

- **Stop Workflow**
  
  Stop Workflow will stop the workflow instance that the work item belongs to.

- **Start**
  
  Start allows you to begin work on the selected work item.

- **Skip**
  
  Skip will stop your work on a work item and advance to the next activity in the workflow.

- **Reserve**
  
  Reserve allows you to reserve a work item to perform at a later time.

- **Release**
  
  Release will release the work item from the personal worklist it is on and return it to the shared or directed worklist.

- **Stop Workflow Request**
  
  Stop Workflow Request will send a stop request to the Workflow Alerts page of the Administrator of the workflow.

- **Complete**
  
  Complete informs Banner Workflow that your work on the work item is finished.

- **Force Transition**
  
  Force Transition will advance the workflow to the next activity on the path you have selected.

---

**Perform Workflow Maintenance**

This is what you typically need to do when you encounter an alert on the Workflow Alerts page:

1. Select the appropriate alert on the Workflow Alerts page.

2. Review information about the workflow.

3. Determine how to progress the stalled workflow.

For detailed information, read the instructions in the steps below:
Step 1  Select an Alert

To select an alert on the Workflow Alerts page:

1. Select Workflow Alerts from Administration.
2. Click a Workflow Specifics Name on the Workflow Alerts page.
3. The Workflow Status page will open and display a graphical representation of the workflow model.

Step 2  Review Workflow Information

When a workflow owner selects a workflow alert, the Workflow Status page opens and information about the workflow is available.

Determine which course you should follow. You can:

- Force a transition to the next activity.
- Return the activity to a user’s worklist so that it may be performed again.
- Stop the workflow.

Additionally, you may also need to modify component parameter or workflow context parameter values.

Maintenance Error Message Window

For more information about the workflow alert, click the activity name in the alerts box on the Workflow Status page. An Error Message popup will appear displaying a detailed error message and the stalled activity will be selected.

Note

For alert messages on Automated Activities, click View Full Error on the Error Message popup to display a stack trace of the error that occurred.

Step 3  Handling Common Workflow Errors

To determine what to do next, the workflow owner needs to be knowledgeable about the purpose of the activity and its properties.
<table>
<thead>
<tr>
<th><strong>Situation</strong></th>
<th><strong>Remedy</strong></th>
</tr>
</thead>
</table>
| The error is unrecoverable. | Stop the workflow.  
For more information on stopping a workflow, see “Stop a Workflow” on page 338. |
| An activity was successfully completed, but Banner Workflow was unable to determine which outbound transition to follow, and the workflow was unable to progress to the next activity. | If Banner Workflow cannot evaluate all the outbound transitions of an activity, or zero or more than one guard conditions evaluate to true, Banner Workflow will not know which transition to follow. To remedy this situation:  
1. Evaluate the transition guard conditions.  
2. Determine which transition should be followed.  
3. Force the transition. The workflow will progress to the next activity.  
To prevent the same error on subsequent instances of this workflow, correct the guard condition errors in the workflow model.  
For more information on forcing a transition, see “Force a Transition” on page 336. |
An automated activity failed.

The workflow owner should review all errors reported in the alert. The owner may also need to study the Banner Workflow logs on the server in order to determine the cause and discover how to prevent it from occurring. Common problems that may occur with automated activities are:

- Is the automated activity a SQL activity? Did an error occur in the application's database that can be corrected in the database? For example, there may have been a network problem or Banner Workflow may not have had the necessary permissions to a table. If so, correct the errors in the application's database and release the item.

- Do values for workflow context parameters need to be modified? If so, follow the directions in “Modify Component Parameter or Workflow Context Parameter Values” on page 339, then release the item. You should also modify the Banner Workflow Model if necessary to prevent future workflows from encountering the same data errors.

- Is the automated activity referencing an executable with an invalid path, or a path that is not accessible from the Application Server? If so, modify the Technology Type, Product Type, and Component as necessary to correct the problem, then release the work item.

  For more information on releasing an activity, see “Release an Automated Activity” on page 337.

An interactive or manual activity needs to be repeated by:

- any user with the appropriate user-role-organization assignment.
- a specific user with the appropriate user-role-organization assignment.
- the workflow owner.

Either:

- Resume the activity.
- First resume, then reserve the activity for that user.
- Resume then reserve the activity for yourself.

For more information on reserving an activity, see “Reserve an Activity” on page 338.
Analyst/Administrator Handbook

Workflow Alerts

To force a transition and progress the workflow to the next activity:

1. Select Workflow Alerts from Administration.

2. Click a Workflow Specifics Name on the Workflow Alerts page.

3. The Workflow Status page will open and display a graphical representation of the workflow model.

4. Click the activity name in the alerts box on the Workflow Status page. An Error Message popup will appear displaying a detailed error message and the stalled activity will be selected.

5. Review the available information in the Workflow Status tabs, and determine if you need to force a transition to another activity. If not, you may need to mark the activity as complete, stop the workflow, or modify workflow context parameter values.

6. Determine which path the workflow should follow.

7. Select the transition that joins the stalled activity to the next activity in the workflow.

**Situation**

An interactive or manual activity needs to be completed.

Completing the activity will cause it to be reevaluated. The actual workflow activity does not need to be performed again.

An activity is directed to a specific user and Banner Workflow does not find the specified logon ID.

**Remedy**

Complete the activity.

For more information on completing an activity, see “Complete an Activity” on page 337.

The activity will be redirected to the worklists of users who are assigned the workflow owner role for that workflow.

The workflow owner can review the activity and perform it, or reserve it for a specific user who has the appropriate user-role-organization assignment. To reserve the activity for a specific user, see “Reserve an Activity” on page 338.

If the user for whom the activity was reserved subsequently releases it, the original performer selection rule will be reevaluated. If it fails again, the activity will be redirected to a workflow owner.

To avoid a repeated cycle, the workflow owner should append a note instructing the user to perform the activity and not to release it, or fix the problem so that subsequent evaluations of the rule will resolve to the desired user.

**Force a Transition**

To force a transition and progress the workflow to the next activity:

1. Select Workflow Alerts from Administration.

2. Click a Workflow Specifics Name on the Workflow Alerts page.

3. The Workflow Status page will open and display a graphical representation of the workflow model.

4. Click the activity name in the alerts box on the Workflow Status page. An Error Message popup will appear displaying a detailed error message and the stalled activity will be selected.

5. Review the available information in the Workflow Status tabs, and determine if you need to force a transition to another activity. If not, you may need to mark the activity as complete, stop the workflow, or modify workflow context parameter values.

6. Determine which path the workflow should follow.

7. Select the transition that joins the stalled activity to the next activity in the workflow.
8. Click **Force Transition** to advance the workflow to the next activity on the path you have selected.

The diagram will indicate that the next activity is now active.

**Complete an Activity**

To complete a stalled activity:

1. Select Workflow Alerts from Administration.

2. Click a Workflow Specifics Name on the Workflow Alerts page.

3. The Workflow Status page will open and display a graphical representation of the workflow model.

4. Click the activity name in the alerts box on the Workflow Status page. An Error Message popup will appear displaying a detailed error message and the stalled activity will be selected.

5. Review the available information in the Workflow Status tabs.

6. Review the information in the Activity Summary section of the page and click **Advanced Details** if you would like more information about the selected activity.

7. Click **Complete**.

8. When you are asked to confirm the deletion, click **OK**.

**Release an Automated Activity**

To release an automated activity:

1. Select Workflow Alerts from Administration.

2. Click a Workflow Specifics Name on the Workflow Alerts page.

3. The Workflow Status page will open and display a graphical representation of the workflow model.

4. Click the activity name in the alerts box on the Workflow Status page. An Error Message popup will appear displaying a detailed error message and the stalled activity will be selected.
5. Review the available information in the Workflow Status tabs.

6. Click **Release**.

**Reserve an Activity**

To reserve an activity for a specific user or the workflow owner:

1. Select Workflow Alerts from Administration.
2. Click a Workflow Specifics Name on the Workflow Alerts page.
3. The Workflow Status page will open and display a graphical representation of the workflow model.
4. Select the activity you would like to reserve.
5. On the pop-up menu that is displayed, click **Reserve** to open the Work Item Reservation page.
6. Click **Reserve for Self** to reserve the work item and add it to your worklist, or select a user name from the Candidate Performers list and click **OK**.
7. Click **OK**.
8. The work item will appear in the worklist of the user you selected.

**Stop a Workflow**

When a user who has an active work item in their worklist elects to stop that work item, a stop request alert appears on the Workflow Alerts page of the owner of that workflow. This often occurs when a user has made a mistake in the process of completing an activity and is unable to correct it.

1. Select Workflow Alerts from Administration.
2. Click a Workflow Specifics Name on the Workflow Alerts page.
3. The Workflow Status page will open and display a graphical representation of the workflow model.
4. Click the activity name in the alerts box on the Workflow Status page. An Error Message popup will appear displaying a detailed error message and the stalled activity will be selected.
5. Review the available information in the Workflow Status tabs.

6. Click the link in the error message to stop the workflow.

**Modify Component Parameter or Workflow Context Parameter Values**

Component parameter and workflow context parameter values can be modified in Workflow Status. This change will apply to the current activity and all subsequent activities in the workflow. To modify component parameter or workflow context parameter values:

1. Select Workflow Alerts from Administration.

2. Click a Workflow Specifics Name on the Workflow Alerts page.

3. The Workflow Status page will open and display a graphical representation of the workflow model.

4. Click the activity name in the alerts box on the Workflow Status page. An Error Message popup will appear displaying a detailed error message and the stalled activity will be selected.

5. Review the available information in the Workflow Status tabs.
   - For workflow context parameters, click the Workflow Details tab and then examine Context Parameters section.
   - For component parameters, click the Work Item Details tab and then examine the Component Parameters section.

6. Modify the appropriate parameter value or values.

7. To make the modifications, click **Apply**.

**Note**

You can modify values for parameters that currently have a value. You cannot enter a value for a parameter that currently does not have a value. Any parameter changes made will effect subsequent activities in the workflow, the newly-entered values will not impact the completed activities.
Dismissing an alert will acknowledge the specified alert and clear it from the system. Not all alerts can be dismissed. Alerts that indicate a “stalled” workflow can only be cleared by correcting the problem the alert is reporting, after which the alert will automatically be removed.

1. Select Workflow Alerts from Administration.
2. Click a Workflow Specifics Name on the Workflow Alerts page.
3. The Workflow Status page will open and display a graphical representation of the workflow model.
4. Click the activity name in the alerts box on the Workflow Status page. An Error Message popup will appear displaying a detailed error message and the stalled activity will be selected.
5. Follow the instructions in the Resolution(s) section of the pop-up.

Reject a Stop Request

If a stop workflow request has been made by a user who is not the workflow owner, the workflow owner can reject the stop request. When a stop request alert is deleted, the workitem that originated it will resume.

1. Select Workflow Alerts from Administration.
2. Click a Workflow Specifics Name on the Workflow Alerts page.
3. The Workflow Status page will open and display a graphical representation of the workflow model.
4. Click the activity name in the alerts box on the Workflow Status page. An Error Message popup will display a detailed error message and the suspended activity will be selected.
5. Follow the instructions in the Resolution(s) section of the pop-up.
An Administrator can view a list of users who are currently logged on to the Banner Workflow system. Each user's logon, session ID, and the creation date for that session is displayed.

**View Online Users**

To view a list of online users:

1. Select Workflow System Administration from Administration.
2. Select Online Users from the Workflow System Administration page.
3. A list of online users is displayed.
4. If you would like to modify a user account that is currently online, click the Logon of the user account you would like to modify. For more information on modifying a user account, see “Modify a User Account” on page 78.
An administrator can search for and delete workflows from the Banner Workflow system.

Note
Deleting a workflow will permanently remove it from the system. A deleted workflow is unrecoverable. Please use caution when selecting workflows to be deleted.

Delete a Workflow

To delete a workflow:

1. Select Workflow System Administration from Administration.

2. Select Delete Workflows from the Workflow System Administration page.

3. On the Delete Workflows - Filter page, enter as much information as possible about the workflow you are searching for.

4. Click Search.

5. Select the Workflow Specifics Name of each workflow you would like to delete.

6. Click Delete Selected Workflows.

7. When you are asked to confirm the deletion, click OK.

8. When the workflow is deleted, the Delete Workflows Results page will display the following message:

   Process has completed.
Operators and literals are used in conjunction with parameters to create guard conditions. This appendix outlines the various operators and literals available in Workflow and has been designed to serve as a quick reference.

## Operators

Detailed information about using the following operators are available:


**Note**

Operators are case sensitive.

### Boolean Operators

<table>
<thead>
<tr>
<th>Operator</th>
<th>Use</th>
<th>Returns true if</th>
</tr>
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<tbody>
<tr>
<td><code>and</code></td>
<td><code>op1 and op2</code></td>
<td>op1 and op2 are both true</td>
</tr>
<tr>
<td><code>&amp;</code></td>
<td><code>op1 &amp; op2</code></td>
<td>op1 and op2 are both true</td>
</tr>
<tr>
<td><code>&amp;&amp;</code></td>
<td><code>op1 &amp;&amp; op2</code></td>
<td>op1 and op2 are both true</td>
</tr>
<tr>
<td><code>or</code></td>
<td><code>op1 or op2</code></td>
<td>either op1 or op2 is true</td>
</tr>
<tr>
<td>`</td>
<td>`</td>
<td>`op1</td>
</tr>
<tr>
<td>`</td>
<td></td>
<td>`</td>
</tr>
<tr>
<td><code>!=</code></td>
<td><code>op1 != op2</code></td>
<td>op1 and op2 are not equal</td>
</tr>
<tr>
<td><code>/=</code></td>
<td><code>op1 /= op2</code></td>
<td>op1 and op2 are not equal</td>
</tr>
<tr>
<td><code>&lt;&gt;</code></td>
<td><code>op1 &lt;&gt; op2</code></td>
<td>op1 and op2 are not equal</td>
</tr>
<tr>
<td><code>=</code></td>
<td><code>op1 = op2</code></td>
<td>op1 and op2 are equal</td>
</tr>
</tbody>
</table>
Numeric Arithmetic Operators

<table>
<thead>
<tr>
<th>Operator</th>
<th>Use</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>==</td>
<td>op1 == op2</td>
<td>op1 and op2 are equal</td>
</tr>
<tr>
<td>&gt;</td>
<td>op1 &gt; op2</td>
<td>op1 is greater than op2</td>
</tr>
<tr>
<td>&gt;=</td>
<td>op1 &gt;= op2</td>
<td>op1 is greater than or equal to op2</td>
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<tr>
<td>&lt;</td>
<td>op1 &lt; op2</td>
<td>op1 is less than op2</td>
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<tr>
<td>&lt;=</td>
<td>op1 &lt;= op2</td>
<td>op1 is less than or equal to op2</td>
</tr>
<tr>
<td>not</td>
<td>not op</td>
<td>op is false</td>
</tr>
<tr>
<td>!</td>
<td>! op</td>
<td>op is false</td>
</tr>
</tbody>
</table>

Parentheses “(“ “)”

Parentheses can be used to guarantee the order of evaluation.

Literals

Detailed information about using the following operators are available:

- “Booleans” on page A-3.
- “Strings” on page A-3.
- “Floating Point Numbers” on page A-3.
- “Integer Numbers” on page A-3.
Booleans

Boolean literals consist of true or false. Boolean literals are case insensitive.

Example

True
false

Strings

A string literal consists of zero or more characters enclosed in double quotes.

Example

“tjerry@sungardhe.com”
“Friday - January 7, 1972”
“University of Malvern”

Floating Point Numbers

Floating point numbers are a sequence of digits with a decimal point within. A floating point literal can be expressed in scientific notation by adding an e (or E) followed by the power of 10 (positive or negative).

Example

10.0
4.23432
2.3e10
2.2343e-18

Integer Numbers

Integer numbers are simply a sequence of digits. They can be prefaced with a positive or negative sign (+ or -).

Example

34
-22
+36
activity

An activity is a step in a workflow. To model a workflow, you draw a diagram, or model, of the flow of work. Each activity has specific properties, which determine what work is to be performed and who will perform the work. Activities in a workflow use components from the Business Component Catalog (BCC).

activity definition

Every workflow activity has a set of base information called the activity definition. Information in the activity definition applies to each instance of the activity.

automated activity

An automated activity is one that is started, performed, and completed automatically by Banner Workflow when it is reached in a workflow instance.

Automated activities are not assigned a performer role, and no end users are involved in performing them.

business analyst

The role of Business Analyst is responsible for the following tasks:

- managing roles, users, user-role-organization assignments, and business processes.
- assigning workflows to business processes.
- fixing and modeling workflows.

business component catalog (BCC)

The Business Component Catalog, or BCC, is a repository of reusable components. When you create activities in a workflow, you use components from the BCC.

business event

Business events allow external stimuli to start a workflow.

For example, when a database trigger on a database table external to Banner Workflow is fired, it may cause an event to be sent to Banner Workflow. In the Administration section, Banner Workflow maintains a definition of a business event. Other information about the business event is maintained throughout Banner Workflow. For the business event to be used, it must be associated with both a business process and a workflow.
Any number of business events can be associated with a single workflow. This means that any number of business events can start a given workflow.

A business event can be associated with any number of workflows. This means that a single event can start one or many different workflows.

Business event guard conditions determine exactly when an event starts a workflow.

**business event parameter**

Each business event has one or more parameters. The event parameters specify which values should be passed from an application to a workflow in Banner Workflow.

**business process**

A business process is a placeholder for a specific workflow that can be launched. In the enterprise, business processes describe what work can be done at your organization.

**business event–workflow association**

To use a business event to launch a workflow:

- the business event must be associated with a business process. At this association, guard conditions may be specified. Guard conditions determine if a workflow should be started by a business event at that specific business process association.

- the workflow that is assigned to the business process assignment must be assigned to the business event. At this assignment, event parameters are mapped to workflow context parameters.

**business rule**

A business rule is an evaluation statement that can be resolved to a single value. Banner Workflow uses business rules for the following purposes:

- **Event process association guard condition.** This guard condition rule is entered in the Enterprise when a business event is associated with a business process. It is used to evaluate if a workflow should be started at that specific business process.

- **Transition guard condition.** This guard condition rule is entered in the Banner Workflow Modeler window for a transition. It is used to evaluate which path should be followed in a workflow.

- **Directed activities.** This rule, which is also called a performer selection rule, may be entered in the Banner Workflow Modeler window for an activity’s properties. It is used to determine if an activity should be performed by a specific user, rather than by any user who has the appropriate user-role-organization assignment.
category

In the BCC Business Component Catalog (BCC), a category is a means of grouping components.

component

A component represents a unit of functionality. It can be an application, such as Microsoft® Word, or a functional portion of an application, such as a Banner form.

For example, if the component was for a Banner form, when starting an activity with that component, the system will log on to Banner and open that form.

In a workflow, components are used by the workflow activities.

component status

A status can be:

Active. The current version of the component.

Inactive. An old or future version of the component that cannot be used for workflows.

Obsolete. An old version of the component that cannot be edited or used for workflows. Only obsolete components may be deleted.

component type

Each component in the Business Component Catalog (BCC) has one of four component types: Interactive, AutomatedWorkflowAware, AutomatedNonWorkflowAware, or Internal.

• An interactive component enables a user to enter, modify, or review information before completing the workflow activity.

• An automated workflow aware component is launched by a workflow activity “behind the scenes”: no workflow user sees or participates in the processing carried out by this component.

• A automatednonworkflowaware component, allows a user to execute external programs that do not know how to communicate with Banner Workflow. The contract established in this case specifies that Banner Workflow will complete the work item after the external process has finished running. The external program is allowed to interact with Banner Workflow, but must not alter the state of the work item.

• An internal component is used internally by Banner Workflow.
confidential activity

A confidential activity is one which only certain users may perform. To make a workflow activity confidential:

- The Confidential check box needs to be selected in the activity properties Details tab.
- The activity must be directed to a specific user. To direct the activity to a specific user, a context parameter or user logon ID must be entered in the activity properties Performer field. This rule selects users who can respond to the activity. If the selected user is not available but has set up a proxy user, the proxy user may only see the activity if the Confidential check box is selected on the My proxies section of the User Account Management window.

When a confidential activity appears in a user’s worklist, the user sees ☑ in the Confidential field. Confidential activities may be performed by a proxy user only if Yes is entered in the Confidential field for the proxy assignment.

custom activity

Custom activities allow Business Analysts to incorporate custom-built HTML forms into workflow businesses processes. Custom activities give you an easy way to solicit data from a process participant. Like all types of workflow activities, custom designed activities can be either routed to workflow users based on roles or directed to a specific user. For example, a custom activity can be used within a troubleshooting process to gather information captured in a help ticket.

data source

Each component and business event has an associated product type. If a product type uses a database, it identifies the database by means of the data source.

enterprise management

Business processes, workflows, business events, and the relationships between them make up Enterprise Management. The relationships between them relate the what, the how, and the when of your work.

global attachment

Global Attachments are static documents that have been uploaded to the system and may be distributed at runtime via an email.

guaranteed parameter

When a parameter is guaranteed, it will produce an output value. The output value may or may not be used by subsequent workflow activities or business rules.
guard condition

Banner Workflow has two uses of guard conditions, those for transitions in workflow diagrams and those for business events.

Transitions. A guard condition on a transition evaluates information that was processed in a previous activity and determines which activity should be launched next.

Business events. A guard condition on a business event is used to determine if a workflow should be started for a particular business process assignment. This is accomplished through the business event–business process assignment.

The event process association guard condition is a rule composed of any valid combination of constants and event parameters. The rule that defines the guard condition is part of the Event Assignment Details for an event–business process assignment.

iteration

In a workflow, iteration forces the workflow to repeat activities until a specified condition is met.

Iteration can be created by using a transition that returns to a previous activity or by using a self-transition \( \Rightarrow \), that repeats the same activity. In either case, a guard condition on the transition or self-connector determines if activities should be repeated.

manual activity

Manual activities notify a user about manual work that needs to be performed. Manual work can consist of making a phone call, meeting with a co-worker, contacting a specific person, and so on. When a manual activity is reached in a workflow, appropriate users will see a message stating what needs to be done; Banner Workflow does not start any component for the user. When the user marks the manual activity as complete, the workflow will continue to the next activity.

Manual activities are entered, using the manual activity icon, in a workflow like other activities.

metrics

In Banner Workflow, it is possible to see the following metrics information for activities and workflows:

- Estimated and actual time required to complete an activity.
- Actual elapsed time since an activity became available for users to perform.
- Estimated and actual elapsed time required to complete all activities in a workflow.
• Date and time a workflow was started.
• Date and time an activity was made available to users in their worklist.
• Date and time an activity was completed.
• Date and time the last activity in a workflow was completed.

**multi-institution functionality (MIF)**

The deployment of Banner related components across a consortium of higher education institutions. This usually involves the integration with the Banner implementation of virtual private database (VPD) on the Oracle backend.

**organization**

Organizations allow Banner Workflow to support MIF, as well as provide an ability to divide tasks and responsibilities between a consortium of schools, an institution, a department or a sub-department.

In Banner Workflow, organizations have a tree-like hierarchy. The hierarchy structure is used to partition data among the organizations. Each Banner Workflow implementation must have exactly one root organization which has no parent, this is true whether you choose to implement the new organization framework or not. This root organization will be the parent of any number of child organizations.

**parallel path**

In a workflow, activities can occur sequentially or they can occur simultaneously. When activities occur simultaneously, they are said to be parallel. Parallel activities take place on **parallel paths**; sequential activities take place on a **serial path**. Parallel paths are used to split and join multiple threads of execution. Each parallel path begins and ends with a parallel path bar.

**parameterized**

A textual representation prefixed with an @ symbol of where parameters should be mapped by Banner Workflow into larger strings of text. This is used in Banner Workflow when mapping context parameters into Approval, Manual, and Email activities and within the Business Component Catalog when mapping context parameters and Built-in variables to launch parameters.

**primary user**

A primary user is the user who performs work items for a role on a regular basis. To be a primary user, the user needs to have the appropriate primary user-role-organization assignment.

See also proxy user.
**primary user–role assignment**

A *primary user-role-organization assignment* specifies the responsibilities and privileges that a user can carry out as a normal course of work.

See also proxy user–role assignment.

**product type**

Each component and business event has a *product type*. This type indicates the product that is associated with the component or business event. If the product uses a database, the product type identifies that database through the data source.

**proxy user**

A *proxy user* is someone who performs the work items in place of another user. The proxy relationship can be used when a primary user is on vacation or is ill and another user can step in and temporarily take the primary user’s place.

To be a proxy user, two relationships need to be created:

- The proxy user needs to have the appropriate primary or proxy user-role-organization assignment.
- The primary user needs to specify a user who has a primary or proxy user-role-organization assignment as a designated proxy user.

See also primary user.

**proxy user–role assignment**

A *proxy role assignment* specifies the responsibilities that a user can carry out on a temporary basis, such as when the person with the primary assignment is on vacation. Before a user can perform work items as a proxy user, a primary user for the role needs to assign that person as a proxy user.

See also primary user–role assignment.

**release ID**

Release ID of the product type for the component. This field is part of the unique key for a business component, along with the component name and product type.

**required parameter**

When a parameter is required, an input value must be provided for it. This value can then be used by a workflow activity, a mapped parameter, or a business rule.
role

Each person at an organization performs certain work. Different people perform different types of work. In “real” life, the different types of work that different people perform determines their role at their place of employment.

Similarly, Banner Workflow has the concept of role: a role is a title given to a group of responsibilities; the title applies to one or more individuals who will perform a specific set of work. People who will perform the same work have the same role.

self–connector

A self-connector is a special type of transition. In a workflow diagram, transitions are the lines that connect objects. An activity that uses a self-connector will be repeated until a specified condition is met.

To insert a self-connector into a workflow diagram, use this tool on the drawing tool palette, then click on an existing activity object that will be repeated.

serial path

In a workflow, activities can occur sequentially or they can occur simultaneously. When activities occur sequentially, they take place on a serial path.

source ID

Each component in the Business Component Catalog (BCC) has a source ID. This ID enables you to enter information about the provider of the software. The source ID is for information only and is not used by Banner Workflow.

system administrator

The role of SysAdmin is responsible for managing the enterprise, business events, categories, components, user accounts, and for modeling workflows.

technology type

Each component in the Business Component Catalog (BCC) has a technology type. The technology type represents the underlying technology of the component, such as standard desktop applications, Java, Oracle Forms, Visual Basic, and so on.

transition

In a workflow diagram, transitions are the lines with arrowheads that connect objects; they represent transitions from one object to another. Transitions are placed between any of the following objects: activities, decisions, parallels, stops, and the start object. The direction in which the transitions points represents the flow of work.
To insert a *transitions* into a workflow diagram, use this tool → on the drawing tool palette.

**user**

Anyone who uses Banner Workflow is a *user*. A user may also be a performer or a participant. Every user has a user account and, in order to perform work in a workflow, must be assigned at least one role.

**user account**

Each person who will use Banner Workflow must be identified as a *user* via a *user account*. A user account contains a person’s name, logon ID, password, user-role-organization assignments, proxy assignments, and who the user is a proxy for. When a user account is created, it is enabled; it can be disabled if it is not ready to be used. User accounts also have an effective date range during which they are valid.

For a user to perform any work in Banner Workflow that person’s user account must be assigned to at least one role. This relationship is established via a user-role-organization assignment.

**user–role assignment**

For a user to perform any work in Banner Workflow, that person’s user account must be related to a role at an organization. This relationship is established via a *user-role-organization assignment*. Role assignments provide a way to categorize users who have similar skills and responsibilities.

A user-role-organization assignment establishes system privileges for an end user and determines the organization at which users are notified of work that must be done for a workflow.

**worklist**

You can see a list of your available work items (workflow activities) in your *worklist*. As activities are assigned to a role, all users who are assigned a role will see the work items for that role in their worklists.

**workflow**

The Workflow Management Coalition (WfMC) defines a *workflow* as an automation of a business process, in whole or in part, during which documents, information, or tasks are passed from one participant to another for action, according to a set of procedural rules.

In Banner Workflow, activities are arranged in *workflows*. In an instance of a workflow, an activity is sent to a group of users who are assigned a specific role. (A role is associated with an activity in the workflow.) One user from that group will select and perform that activity. When the activity is completed, users who have the
role assignment for the next activity will be notified, and so on, until each activity in
the workflow has been completed.

**workflow attachment**

Workflow attachments are attached to a running workflow by any valid workflow
participant. Workflow attachments can be used to easily share documents that are
related to the workflow and each workflow participant has the ability to attach, detach,
modify, or delete any document that is attached to a workflow.

**workflow context parameter**

Workflow context parameters are a set of parameters that apply throughout a
workflow. They establish the context data that can be used throughout all activities in
the workflow. Each workflow context parameter is mapped to at least one component
or business event parameter.

**workflow instance**

A workflow instance is a workflow in progress.

When you check the status of an activity, some information comes from the workflow.
Other information, such as how long it has taken to complete a workflow instance or
the actual input and output parameter values, will apply only to the workflow instance.

**workflow model**

The workflow model is the entire set of information that defines a workflow: the base
information, the diagram, the activity, transition, and decision properties, performer
selection rules, and transition guard conditions.

**workflow status**

A workflow can have one of five possible statuses:

*Development.* The workflow is being developed. This is the default value for a new
workflow, for new versions of an existing workflow, and for copies of a workflow.
The workflow cannot yet be assigned to a business process and there can be no active
workflow instances for this version of the workflow.

*Test.* The workflow is ready to test; the workflow can be started from the modeler, or
it can be assigned to a business process and started. To start an event fired workflow,
you must first assign the event and the workflow to a business process. You cannot
change the workflow when the status is set to *Test*.

*Active.* Development is complete, the workflow has been validated and can be
assigned to a business process and started. After you set the status to *Active*, you can
no longer modify the workflow.
Inactive. The workflow is no longer in use and cannot be assigned to a business process. You can reactivate an inactive workflow.

Obsolete. The workflow is no longer valid and cannot be assigned to a business process. When a workflow is obsolete, you cannot reactivate it.

**workflow version**

A workflow can have more than one *version*. Each version is assigned a number. Each subsequent version of a workflow retains all the information from the previous version, including the name. Banner Workflow adds 1 to the value of the previous version number.

**workflow–business process association**

Before a business process can be started, a workflow must be assigned to the business process. This is done through a *workflow association*.

**work item**

When a workflow activity appears in a user’s worklist, it is referred to as a *work item*. 