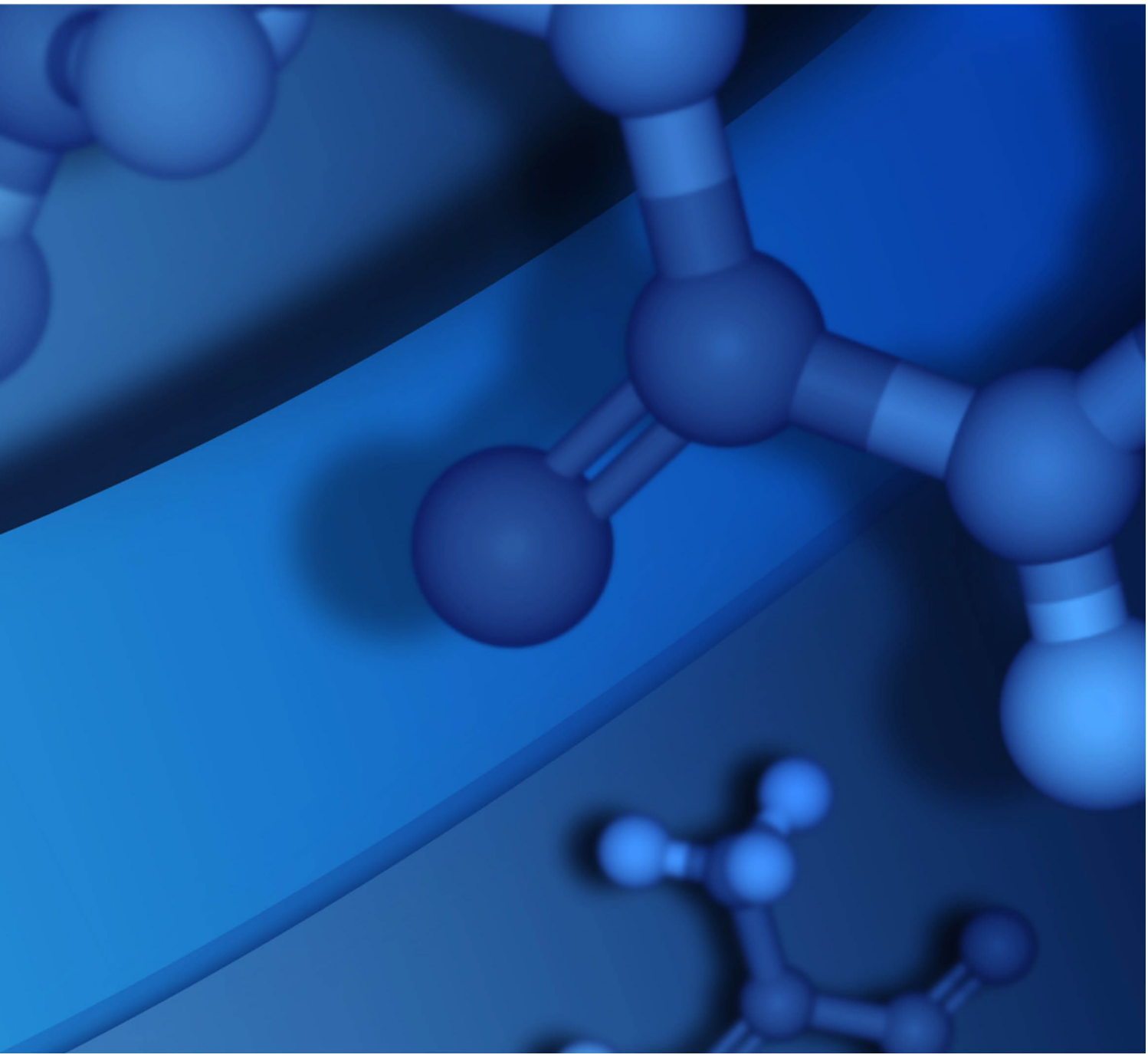
DASSAULT SYSTEMES

BIOVIA

SYSTEM ADMINISTRATION GUIDE

BIOVIA LABORATORY INFORMATION MANAGEMENT SYSTEM

4.2 SP3



Acknowledgments and References

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BIOVIA Support
5005 Wateridge Vista Drive, San Diego, CA 92121 USA

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Introduction

Intended Audience

This manual is intended for system administrators or other qualified personnel who are responsible for configuring the BIOVIA Laboratory Information Management System (LIMS).

Accelrys Becomes BIOVIA

Accelrys and Dassault Systèmes have joined forces with the purpose of "providing business and people with 3DEXPERIENCE universes to imagine sustainable innovation capable of harmonizing Product, Nature & Life." BIOVIA continues to support those products previously released by Accelrys, but some products names have been re-branded as described in the following table.

Note: This release references the new product names. However, some areas of the user interface may not be updated until a future release.

Previous Accelrys Product Name	Current BIOVIA Product Name	Abbreviation
Accelrys Laboratory Information Management System	BIOVIA Laboratory Information Management System	LIMS
Accelrys Inventory Management	BIOVIA Inventory	IM
Accelrys Environmental Monitoring	BIOVIA Environmental Monitoring	EM
Accelrys Lab Execution System	BIOVIA Lab Execution System	LES
Accelrys Electronic Batch Records	BIOVIA Electronic Batch Records	EBR

Introduction to BIOVIA LIMS Core Software

The BIOVIA LIMS core software provides the user authentication and administrative functions for the system including its web-based modules—BIOVIA BIOVIA Inventory (IM) and BIOVIA Environmental Monitoring (EM). These functions are listed below:

- System Settings
- Sites
- User Roles
- User Accounts
- User Groups
- Entity Types
- Entity Tabs
- Labels
- Export/Import
- Reports

Configuration Tasks For New Installations

The following table lists the tasks required to configure a new BIOVIA LIMS installation.

Table 1-1 Sequence of Configuration Tasks for New Installations

Step	Task	Description	Refer to:
1	**Configure System Settings**	• Increase the Session Timeout setting while you configure the system. • Modify the default system settings as needed.	Chapter 2, *Configuring System Settings*
2	**Create Sites**	Create new Sites for segregating physical locations or functional work areas within your environment.	Chapter 3, *Managing Segregated Sites*
3	**Create User Roles**	• Create new User Roles that are relevant to the various functional roles at your facility. • For each User Role, configure the appropriate level of user eligibilities and assign the appropriate users to each Role.	Chapter 4, *Managing User Roles and Eligibilities*
4	**Create User Accounts**	• Create new user accounts. • Assign each user access to the appropriate Sites and User Roles that you created in Steps 2 and 3.	Chapter 5, *Managing User Accounts*

Table 1-1 Sequence of Configuration Tasks for New Installations (continued)

Step	Task	Description	Refer to:
5	**Create User Groups**	• Create a new User Group for the various groups of users at your site.	Chapter 6, *Managing User Groups*
6	**Create Entity Types**	• Create a new Entity Type for each type of entity that you will use in your system (for example, Customers, Orders, Samples). • Set the appropriate access permissions to control which User Groups will be allowed access to each Entity Type during workflow execution.	Chapter 7, *Managing Entity Types*
7	**Configure Workflows for Entity Types**	Configure the workflow for each Entity Type you created in Step 6. The workflow defines the actions that a user can perform on an instance of that Entity Type during workflow execution.	Chapter 8, *Configuring Workflows for Entity Types*
8	**Create Custom Tabs for Entity Instances**	Create custom tabs for your various Entity Types as required. The tabs will appear in the main menu bar and will allows eligible users to easily access the instances of the Entity Types.	Chapter 9, *Creating Custom Tabs for Entity Instances*
9	**Create Labels for Entity Types**	Configure labels for your Entity Types as required. Users will be able to print a label for the corresponding entity instances during workflow execution.	Chapter 10, *Creating Labels*

Table 1-1 Sequence of Configuration Tasks for New Installations (continued)

10	**Export configured entities and import them into other systems**	Export your configured entities to an XML file so that they can be imported and deployed on other BIOVIA LIMS systems.	Chapter 11, *Exporting and Importing Configured Entities*
11	**Register the Orphaned Instances Report**	Register the Orphaned Instances Report that was installed with BIOVIA LIMS 4.2 SP2. This will allow you to view all of the "orphaned" Entity Instances in a selected Site or in the entire system.	*Registering the Orphaned Instances Report* on page 12-3.
12	**Configure Reports**	Configure report templates and register reports that will allow you to generate data on various entities in the system.	Chapter 12, *Registering and Running Reports*

Once you have completed the configuration tasks for BIOVIA LIMS, refer to the following user guides to configure the optional modules:

- BIOVIA BIOVIA Inventory System Administration Guide
- BIOVIA Environmental Monitoring System Administration Guide

Configuration Tasks for Upgrading Existing Installations

The following table lists the tasks required to upgrade an existing BIOVIA LIMS installation.

Table 1-2 Sequence of Configuration Tasks for New Installations

Step	Task	Description	Refer to:
1	**Register the Orphaned Instances Report**	Register the Orphaned Instances Report that was installed with BIOVIA LIMS 4.2 SP2. This will allow you to view all of the "orphaned" Entity Instances in a selected Site or in the entire system.	*Registering the Orphaned Instances Report* on page 12-3.

Client Requirements

Verify the following settings:

- **Compatibility View**—Make sure Internet Explorer's Compatibility View is turned off on every client machine. Refer to the *BIOVIA LIMS Application Server Installation Guide* for more information.
- **Allow Pop Ups**—If you plan on using Pipeline Pilot in conjunction with the BIOVIA LIMS application, configure your browser's Pop-up Blocker Settings to "Allow pop-ups" from the BIOVIA LIMS site address. This should be done on every client running the BIOVIA LIMS application. This is also necessary to test a workflow that contains an Execute Platform Protocol activity.

Launching the BIOVIA LIMS Application

To launch the BIOVIA LIMS application, open an Internet Explorer browser window and perform the appropriate step:

- From the BIOVIA LIMS server:

  Enter one of the following URLs in the address bar:

  localhost *or* **127.0.0.1**

- From a BIOVIA LIMS client machine:

  Enter the following URL in the address bar:

  http://<*computer name*>:<*port number*>

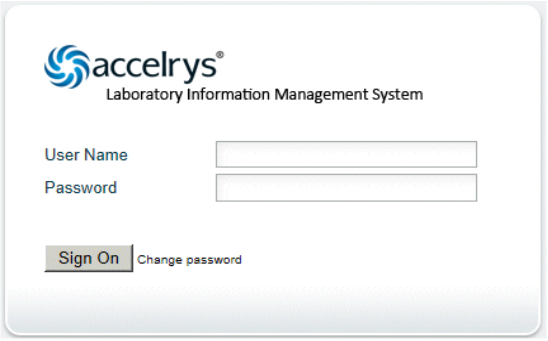
  where *computer_name* is the name of the server on which the application is installed and *port_number* is the port number specified during installation (typically port 80).

Signing On

Once you have launched the application, your browser will load one of the following pages, depending on what type of authentication method your system is using:

- **ePMC Authentication** (default)

  The browser loads the *Sign On* page. Enter your user name and password and click **Sign On**.



Signing On with ePMC Authentication

If you are signing in for the first time, you are required to change your password. Once you are successfully authenticated, you are directed to the BIOVIA LIMS *Home* page.

- **Windows Authentication**:

  If your system is using Windows Authentication, the "Secondary Sign On Allowed" system setting determines if the *Sign On* screen is displayed.

  - **If the "Secondary Sign On Allowed" option is enabled:**

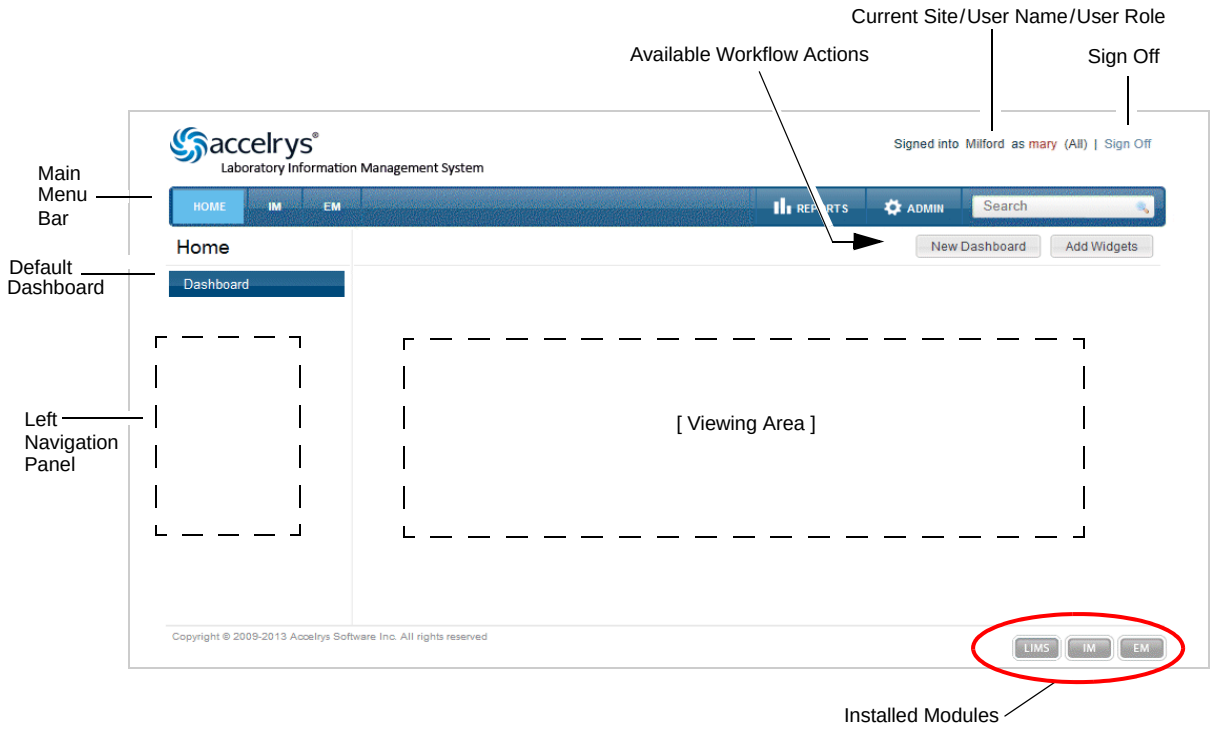
    The *Sign On* screen is displayed. Enter your Windows domain and your user name (in the format *domain**user_name*), enter your password, and click **Sign On**.

  - **If the "Secondary Sign On Allowed" options is disabled:**

    The *Sign On* screen is not displayed and you re immediately directed to the BIOVIA LIMS *Home* page.

The BIOVIA LIMS Home Page

The BIOVIA LIMS *Home* page is show below:



BIOVIA LIMS Home Page

The **Main Menu Bar** consists of individual tabs which provide access to the main functionality of the system. Users will only see the tabs for the functionality they are eligible to view.

- Each installed module adds its own tab to the main menu bar (for example, IM and EM).
- The **Reports** tab allows you to generate reports for various entities in the system. Refer to Chapter 12.
- The **ADMIN** tab allows you to configure and manage the BIOVIA LIMS administration functions. Refer to *Administration Functions* on page 1-9.
- The **Search** text box allows you to search for various entities in the system. Refer to *How the Search Function Works* on page 1-35.
- You can create your own custom tabs that will appear in the main menu bar. Refer to *Creating a New Custom Tab* on page 9-5.

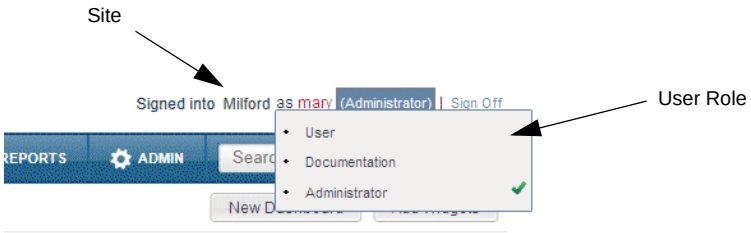
The **Default Dashboard** is an area in which you can view and manage widgets, small programs that monitor specific entities in selective modules. This area is initially blank.

The **Left Navigation Panel** lists various categories of functionality that corresponds to each tab in the main menu bar.

The **Viewing Area**—Displays the content of the selected tab as well as the functionality selected from the left navigation panel.

The **Available Actions** command buttons represent actions that you can perform on the entity displayed in the Viewing Area below.

The **Current Site/Username/User Role** area displays your user name and the site and role in which you are currently signed into. If you have access to different sites or belong to multiple User Roles, you can select a new site or role from the pull-down selection lists. It is recommended that you always navigate to the *Home* page before you change to a new site.



Selecting a Different Site or User Role

The **Sign Off** area allows you to sign off from any page in the system.

The small icons LIMS in the lower right corner of the page indicate which modules are currently installed on the system.

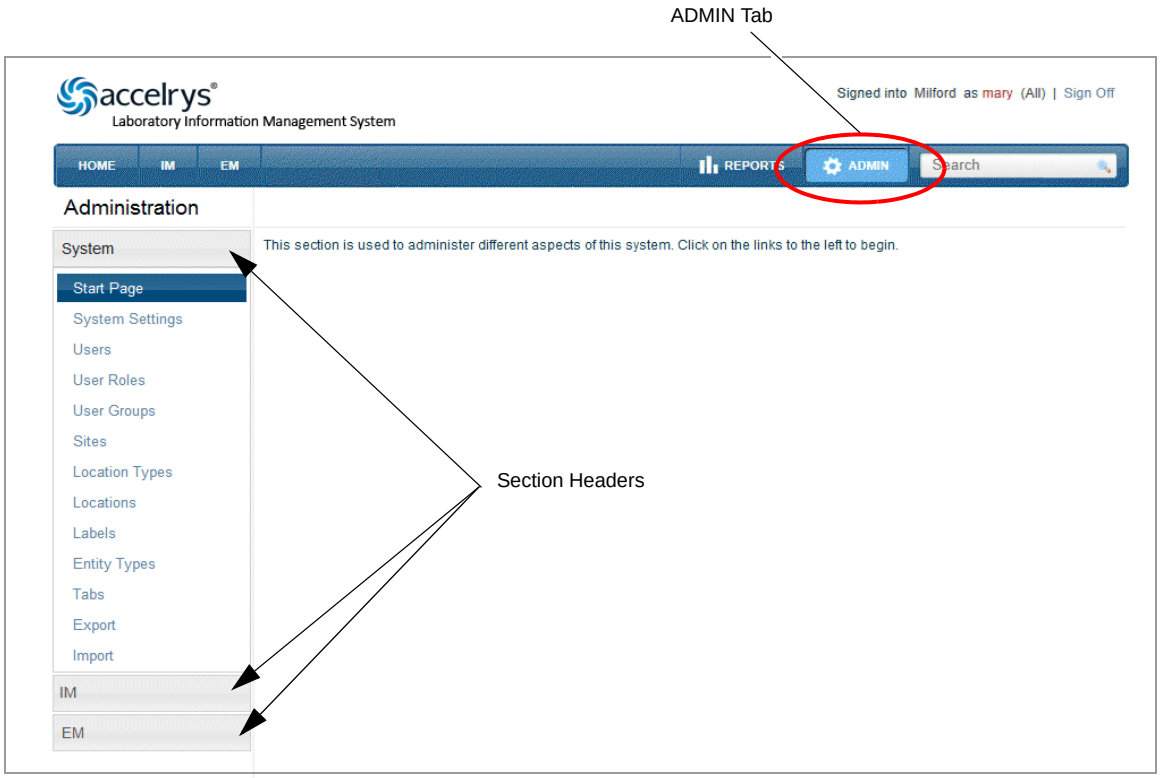
Administration Functions

The **ADMIN** tab provides the functions that are used to configure and manage different entities in the application and its associated modules (IM, EM):

- System Settings
- Sites
- User Roles
- User Accounts
- User Groups
- Entity Types
- Entity Tabs
- Labels
- Export/Import
- Reports
- Location Types (IM, EM)
- Locations (IM, EM)
- Consumable Types and their workflows (IM)
- Consumable Templates (IM)
- Measuring Scales (IM)
- Consumables in inventory (IM)
- Sampling Locations (EM)
- Sample Types and their workflows (EM)
- Sampling Plans (EM)
- Sample Groups (EM)
- Samples (EM)

The administration functions are organized by sections, and users can only access those sections if they belong to a User Role that has eligibility to view at least one of its menu choices.

The System section applies to the functionality that is used by all of the modules. A separate section heading is displayed for each of the installed modules, (for example, IM and EM). Expand the section headers to list the applicable entities within them, as shown in the following figure.



Administration Functions

The main functions of the “System” section are described below. Refer to the corresponding System Administration Guide for a description of each module’s entities.

System Settings

*System Setting*s are basic configuration settings that apply to the entire system. The system settings include the following:

- Authentication methods
- Secondary Sign On Enabled option
- Session Timeout settings
- Password settings
- Accelrys Enterprise Platform Server settings
- IDS URL for BIOVIA LIMS Query Service

Chapter 2 explains how to configure system settings.

Sites

A *Site* is a virtual segregation of the physical and/or functional sites in your environment. You can configure individual Sites to provide different "views" of the database for various purposes and audiences within your company (for example, Development, Production, or Training). Chapter 3 explains how to create and manage Sites.

User Roles and Eligibilities

A *User Role* is a role that is defined for users who perform specific functions at your facility (for example, an administrator, supervisor, or general user). When you create a new User Role, you will specify the appropriate user eligibilities for that role. User eligibilities determine which pages and functions the members of that role are allowed to access. Chapter 4 explains how to create and manage User Roles and eligibilities.

User Accounts

A *user account* is required to access to the system. When you create a new user account, you will assign that user to the appropriate User Roles and Sites. Chapter 5 explains how to create and manage user accounts.

User Groups

A *User Group* is a group of assigned users based on a specific function. User Groups are used to control the access to the various Entity Types during workflow execution. When you create an Entity Type, you can set up rules to give only specific User Groups permission to perform workflow actions. Chapter 6 explains how to create and manage User Groups.

Location Types and Locations

A *Location Type* represents one type of location in your environment (for example, a building, storage cabinet, or sampling location). A *Location* is one instance of a defined Location Type. A standalone BIOVIA LIMS application does not utilize Location Types and Locations—these are used by the IM and EM modules. Refer to the respective System Administration Guide for more information on Location Types and Locations.

Entity Types

An *Entity Type* defines one generic type of entity in your environment (for example, a Customer, an Order, a Specification, or a Test). Each Entity Type consists of properties that are common to all instances of that type. For example, all of the instances of a "Customer" Entity Type could have a property to define its customer name, a customer ID number, an address, and a contact person.

The Entity Type's workflow determines what actions users are allowed to perform on an instance of that Entity Type during workflow execution. A *workflow* defines the life cycle of an

entity instance (based on this type) from the time it is added into system (for example, when a instance of a “Test” Entity Type is created) to the time it is reaches the last step in its workflow (for example, when the test results are approved).

Chapter 7 and Chapter 8 explain how to create and manage Entity Types and their workflows.

Entity Tabs

The main menu bar of the user interface contains standard tabs for administration tasks and Reports and Search functions. You can also create custom tabs to organize the instances of the Entity Types that your users will access frequently (for example, Tests or Orders). Chapter 9 explains how to create and manage custom Entity Tabs.

Labels

You can create various label templates for the Entity Types in your system. This will allow users to print labels for the entity instances during workflow execution. Chapter 10 explains how to create label templates and labels for Entity Types.

Export and Import

The export and import functions allow you to deploy configured entities from a source system to other target systems in your environment. For example, you can develop one system as the standard platform in your global operations and then export all of its configured entities to an XML file. The XML file can then be distributed and used to import the configured entities into the target systems. Chapter 11 explains how to export and import configured entities.

Reports

As an administrator, you can configure various Crystal Report templates that will allow eligible users to create, edit, and run reports during workflow execution. The reports will generate data on various entities in the system. The report administration is accessed in the **Reports** tab on the main menu bar. Chapter 12 explains how to create and manage reports.

Integration with the BIOVIA Lab Execution System (LES)

This section explains how BIOVIA LIMS and BIOVIA Lab Execution System (LES) interact when both of these applications are installed on the same server.

- **Failed authentication attempts**
  Inactivation of user accounts are connected between BIOVIA LIMS and BIOVIA LES. If a user account is inactivated in BIOVIA LIMS, it is also inactivated in BIOVIA LES. Likewise, if a user account is inactivated in BIOVIA LES, it is also inactivated in BIOVIA LIMS. Failed authentication counters are not connected between the two systems.
- **System settings**
  BIOVIA LIMS and BIOVIA LES must use the same authentication method (ePMC Authentication or Windows Authentication) In order for users of both systems to be successfully authenticated,

  In order for the user passwords to be managed between the two systems, the BIOVIA LIMS and BIOVIA LES system options must be configured to use the identical password options (expiration interval, minimum length, number of unique passwords) This applies to ePMC Authentication only.
- **User accounts**
  When you install BIOVIA LIMS, the existing BIOVIA LES user accounts are automatically migrated to the default User Role (“User”) with no eligibilities.

  When new user accounts are created in BIOVIA LIMS, identical user accounts are also created in BIOVIA LES with no eligibilities.

  When new user accounts are created in BIOVIA LES, identical user accounts are also created in BIOVIA LIMS and are assigned to the default “User” Role with no eligibilities.

  When changes are made to user accounts, the changes are reflected in their respective BIOVIA LIMS or BIOVIA LES audit trails. The Reason Code is either "Synchronized from BIOVIA LES” or "Synchronized from Web Core” (BIOVIA LIMS).

  IMPORTANT! Do not change the name of the default “User” role, as it is necessary to maintain the synchronization between BIOVIA LIMS and BIOVIA LES.

- **Data capture in BIOVIA LES procedure sessions**
  An BIOVIA LES procedure session can electronically capture property values of entity instances in BIOVIA LIMS. This is configured in the workflow of the Entity Type using the Accelrys LES Procedure activity. Refer to *Accelrys LES Procedure activity* on page 8-22.

Notes Regarding User Input in the Interface

This section describes some specific information about various types of user input in the system.

Security restrictions for typing in text boxes

Both IIS and ASP have implemented security measures to prevent attacks on the web site caused through the use of bad input. These restrictions apply to any text box displayed throughout the entire BIOVIA LIMS system.

If you enter the offending text patterns listed below, the system displays the following exception message:

"A potentially dangerous Request.Form value was detected."

These patterns include the following combinations:

- **&#**

  You cannot enter the ampersand symbol(&) immediately followed by the pound symbol (#) in a text field. You must add a blank space between them.

  Unacceptable: text&#text

  Acceptable: text& #text

- ***<text***

  You cannot enter the "less than" symbol (<) immediately followed by some text. You must add a blank space between the symbol and the text string. Note that this restriction does not apply to numbers. For example, <12 (with no space) is acceptable.

  Unacceptable: text<text

  Acceptable: text< text

  Acceptable: <12

Entering or selecting dates

When you manually enter a date or select one from a calendar control, the date (in UTC) must be greater than January 1, 1900 and cannot exceed December 27, 9999.

Reserved keywords and characters

The following keywords and characters are reserved for use by the system. Therefore, it is recommended that you do not use them in any part of BIOVIA LIMS. For example, do not assign these keywords or characters to names of Location Types, Locations, Entity Types, Consumable Types, Consumable Templates, Sample Types, properties, or any property value.

Reserved Keywords:

- ACTIVATE
- ALL
- AND, and
- Barcode Group
- Barcode Label
- CAPTURE
- CONSUMABLE _TYPE
- DATE
- EIN
- END
- ENTITY_TYPE
- FORWARD
- FILE
- ID
- Image
- INT
- ITEMCOUNT
- LIMIT
- LISTONLY
- LOCATION
- MANUALENTRY
- NAME
- NODEFAULT
- NULL
- OR, or
- ORIGINAL_QUANTITY
- QUANTITY
- REPORT
- SAMPLE_TYPE
- SELECT
- SOONEST_EXPIRATION
- START
- SUBS
- SUBSAMPLE_PARENT_ID
- UDA
- UNIQUECOUNT
- UNITS
- XEIN

Reserved Characters:

,	Comma	/	Division operator
&	Ampersand	+	Addition operator
^	Exponentiation operator	-	Subtraction operator
( )	Parentheses	>	Greater than
ABS	Absolute value operator	<	Less than
D	Used in the DATE statement	>=	Greater than, or equal to
(N)	The current array index character	<=	Less than or equal to
’ "	Single and double quotes	=	Equal to
*	Multiplication operator		

How the System Records Date/Time Values

The system uses timestamps to record the date and time an event occurs. For example, timestamps are used to:

- Collect property values of various entities (for example, the date and time data was collected or a workflow action was performed on an entity instance, consumable, or sample)
- Generate audit trails
- Record password expiration dates

An example of a timestamp is shown below:

A timestamp is based on the following format:

dd-MMM-yyyy h:mm:ss tt time_zone <icon>

where:

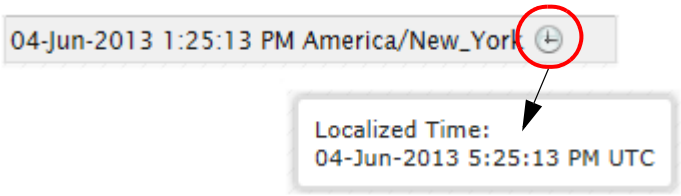
dd-MMM-yyyy — This format displays the date on which the value was collected. The date value is always displayed in the format dd-MMM-yyyy and ignores the client's Short Date format. The collected date is not localized, however the month is displayed in the client's local language.

IMPORTANT! For languages that do not support the MMM format, the following date format is used instead:

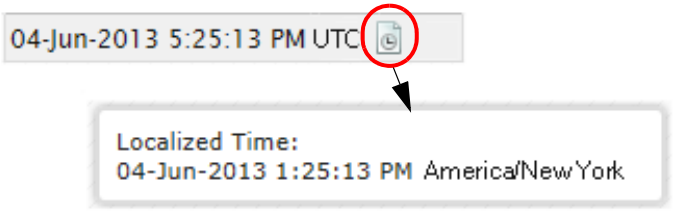
yyyy-mm-dd

F*or example:* June 1, 2013 is recorded as 2013-06-01

h:mm:ss tt — This format displays the time at which the value was collected. If the client's locale setting supports a 12-hour clock, "AM" and "PM" are displayed accordingly. The timestamp is not localized to the client's time.

time_zone	This information is displayed for those records with recorded time zone information. The time zone is displayed in the format *area/location* and is based on the Olson Time Zone Standard. The Olson standard provides a uniform naming convention for the world's time zones and is commonly used in computer programming. The time zone is always displayed in English and ignores the client's language preferences.
Icon - Time zone information 	This icon is displayed for a record that includes time zone information. When you mouse over the clock icon, the collected date and time is localized and is displayed in the time zone of the client. For example:  Note that the clock icon is not displayed if the client is in the same time zone as the collected value. The following entities use the expanded timestamp: Audit Trails (History table): • Entity Types • Entity instances • Consumable Types (IM) • Consumable Templates (IM) • Consumables (IM) • Sample Types (EM) • Sampling Plans (EM) • Samples (EM)

(*continued*)

Icon - Time zone information (*continued*)	Time zone information is also displayed in the following areas of the user interface for entity instances, consumables (IM), and samples (EM): • Grid view (entity instances, consumables (IM), samples (EM) • Properties • E-Signatures table on View page • Dialog box for workflow actions
Icon - No time zone information 	This icon is displayed for a record that does not include time zone information. This is used by various entities in the system as well as legacy records that were created prior to the BIOVIA LIMS v4.2 SP1 release. The timestamp is shown in Coordinated Universal Time (UTC). When you mouse over the clock icon, the collected date and time is localized and is displayed in the time zone of the client. For example:  ,

How date/time values are handled in legacy records

The data records generated prior to the BIOVIA LIMS 4.2 SP1 release did not support time zones. Therefore, this legacy data is considered “time zone-less” and behaves in the following manner:

- Web views and reports display the data and time in UTC.
- Web views displays the “time zone-less” icon  .
- During the upgrade to 4.2 SP2, report values are displayed in the language of the individual performing the upgrade.

How date/time values are recorded for Date properties

A date/time value is recorded for the following Date properties (applicable to Entity Types, Consumable Types, and Sample Types):

- Date and Time
- Date Interval

The date/time value is recorded using the following model:

1 The date/time value is obtained in one of these ways:

- **"Date and Time" property**
  Based on the "Use Current Date and Time" option:

  Is restricted to current date/time ("now")—The value is obtained from the server.

  Is not restricted to current date/time ("now")—The value is entered by the user during workflow execution.

- **"Date Interval" property**
  Based on the "Use Interval" option:

  Uses interval—The default value is calculated based on the current date and time (converted to UTC) plus the specified interval. This value is displayed to the user in the time zone of the server. The date and time value is obtained from the values entered by the user during workflow execution.

  Does not use interval—The value is entered by the user during workflow execution.

2 The value is converted to UTC and stored in the database.

3 The date and time value is displayed to the user in the time zone of the server.

How date/time values are recorded for workflow activities

The following sections explain how date/time values are displayed for workflow activities:

- Accelrys LES Procedure activity (page 8-22)
- Time Trigger activity (page 8-49)

How date/time values are recorded for audit trails

The timestamp for an audit trail is recorded using the following model:

1 The date/time is obtained from the Server Clock at the time the record is created.

2 The value is converted to UTC and stored in the database.

3 The timestamp is displayed to the user in the time zone of the server.

How date/time values are displayed in labels

If you add a date/time field to a label but do not specify its format, the system uses the standard format dd-MMM-yyyy and no time zone icons are displayed.

IMPORTANT! For languages that do not support the MMM format, the following date format is used instead:

yyyy-mm-dd

For example: June 1, 2013 is recorded as 2013-06-01

How date/time values are displayed in embedded reports

This section provides general notes on embedded reports:

- When you generate a Qualification Report or print the History table for anything other than entity instances, consumables, and samples, the generated report will display the date/time values in the local language and time zone in which the data was collected.
- When you print the History table for an entity instance, a consumable, or a sample, the generated report will display the date/time values in the corresponding column of the report:

  "Occurred On" column (consumables and samples)

  "Changed On" column (entity instances)

  Note that these columns will always display the date/time values in the English language in the following format:

  DD-MMM-YYYY HH:MM:SS
- For legacy data collected prior to the BIOVIA LIMS v4.2 SP1 release, the date/time values will be displayed in the language of the user performing the upgrade. There are no time zones associated with legacy data.

How date/time values are recorded for password expiration dates

When ePMC Authentication is in effect, password expiration dates are determined by the Password Expiration Interval that is specified in the system settings. The password expiration date is evaluated against the date of the server when the password is created.

How date/time values are recorded in the other BIOVIA LIMS modules

For information on how the BIOVIA LIMS modules record date and time values for their specific functionality, refer to the appropriate *System Administration Guide*, available on the BIOVIA Download Center.

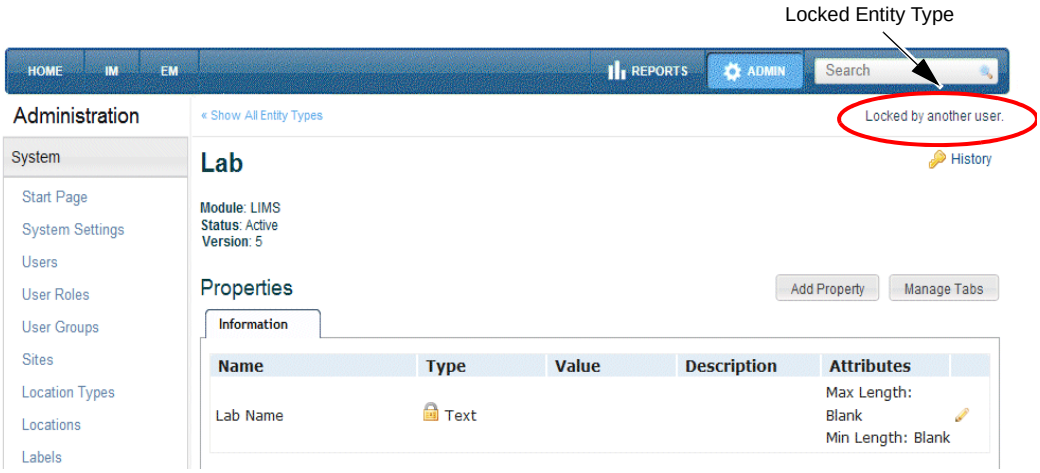
Preventing Concurrent Access to System Entities

You cannot sign into the BIOVIA LIMS application from two different systems at the same time. If you are signed into one system and attempt to sign in from a different system, you are automatically signed out of the first system without warning.

In addition, when the following entities are in use, the system "locks" them to prevent more than one user from accessing them at the same time:

- Sites
- User Accounts
- User Roles
- User Groups
- Location Types (IM, EM)
- Locations (IM, EM)
- Entity Types
- Entity Tabs
- Entity instances
- Labels
- Reports
- Import function
- Consumable Types (IM)
- Consumable Templates (IM)
- Measuring Scales (IM)
- Consumables (IM)
- Sample Types (EM)
- Samples (EM)

When you try to access an entity that is currently in use, a message is displayed in that entity's *View* page that indicates the entity is locked by another user.

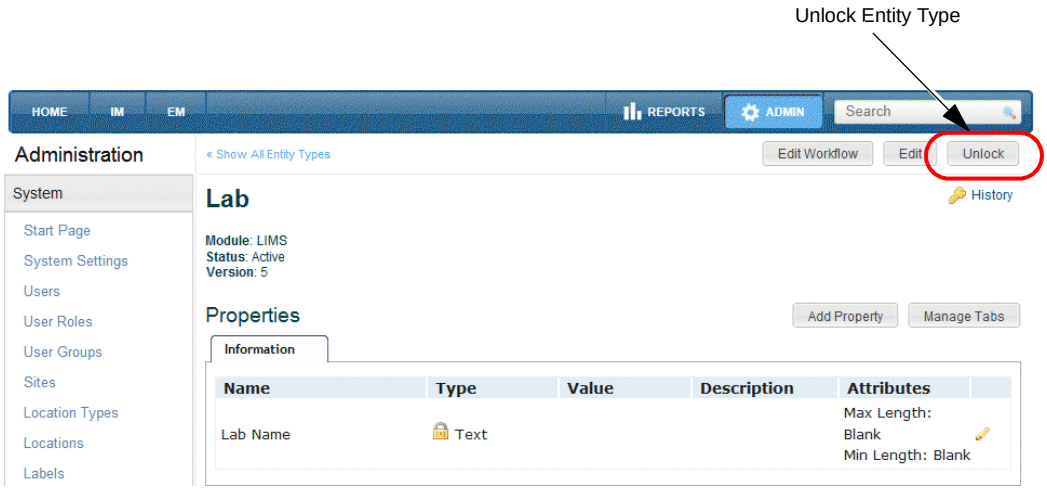


Locked Entity

Notes:

- If another user is currently editing the entity you are trying to access, you will only be able to access a Read-Only view of the entity. When the entity becomes available, your browser page will reload and display a message that the entity is no longer locked and that you should refresh the page to view the updated information.

- If your browser or system crashes while you are working on an entity, that entity is considered locked by you. In this case, an **Unlock** button is displayed in the entity's *View* page that allows you to unlock the entity.

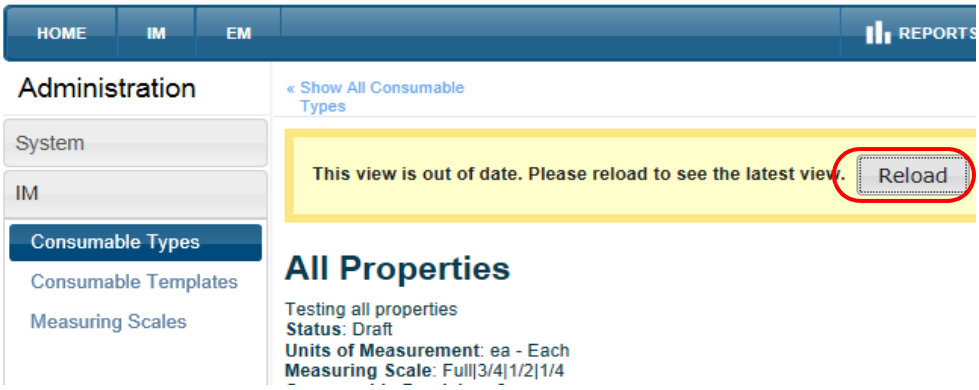


Unlocking a Locked Entity

- You cannot access an entity while it is being imported.
- You cannot import a locked entity. The locked entity will display the red failure indicator in the Post-Import summary report.

Viewing Out-of-Date Data

If an entity is updated by another user while you are viewing it, a yellow warning message will alert you that your current view is out-of-date. Click **Reload** to display the updated view.



Refreshing an Out-of-Date View

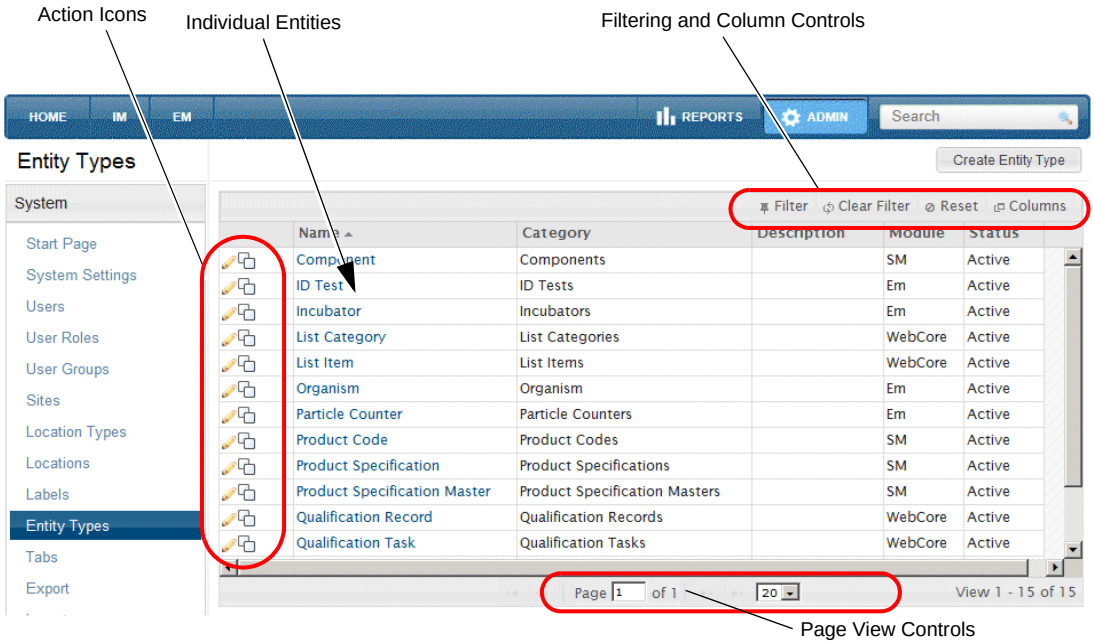
How the Grid Control Works

The grid control is used to display various entities in BIOVIA LIMS and its associated modules, including:

- Sites
- User Roles
- User Accounts
- User Groups
- Location Types (IM, EM)
- Entity Types
- Entity Tabs
- Entity Instances
- Reports
- Consumable Types (IM)
- Consumable Templates (IM)
- Measuring Scales (IM)
- Consumables (IM)
- Sample Types (EM)
- Sampling Plans (EM)
- Samples (EM)

You can customize the default view of the entities in the grid control through the filtering options and column controls. The changes you make to the default view of the entities are stored as your personal user preferences—when you leave and return to that page, the changes to the view will remain persistent until you change the grid back to its default view.

- Each row in the grid represents one item.
- The icons in the first column of a row represent actions that you can perform on that item. The available actions are displayed according to your assigned user eligibilities.



Viewing Entities in the Grid

Page view controls

The page view controls below the grid allows you to page through the entities in the current data set.

Page View Controls

The following table describes each of the paging controls.

Table 1-3 Paging Controls for Viewing the Grid

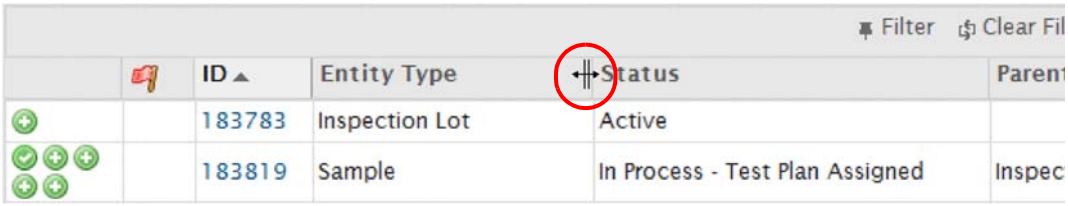
Grid Control	Description
Double left arrows 	Reloads the first page of items in the data set.
Single left arrow 	Reloads the previous page of items in the data set.
Current Page control 	Displays the number of the page that is currently loaded in the grid, as well as the total number of pages in the data set. To reload the grid with the selected page, enter a number and press the **Enter** key.
Single right arrow 	Loads the next page of items in the data set. (*continued*)

Table 1-3 Paging Controls for Viewing the Grid (continued)

Grid Control	Description
Double right arrows 	Reloads the last page of items in the data set.
Row Counter 	Displays the number of rows currently displayed in the grid. You can change the number of items displayed in each page (10, 20, 50, 100, 200, 500).
View Counter 	Displays the number of items currently displayed in the grid, as well as the total number of items in the data set.

Resizing columns

All of the columns in the grid can be resized except for the first column containing the action icons. To resize a column, place the cursor next to a column heading and drag it to the left or right.



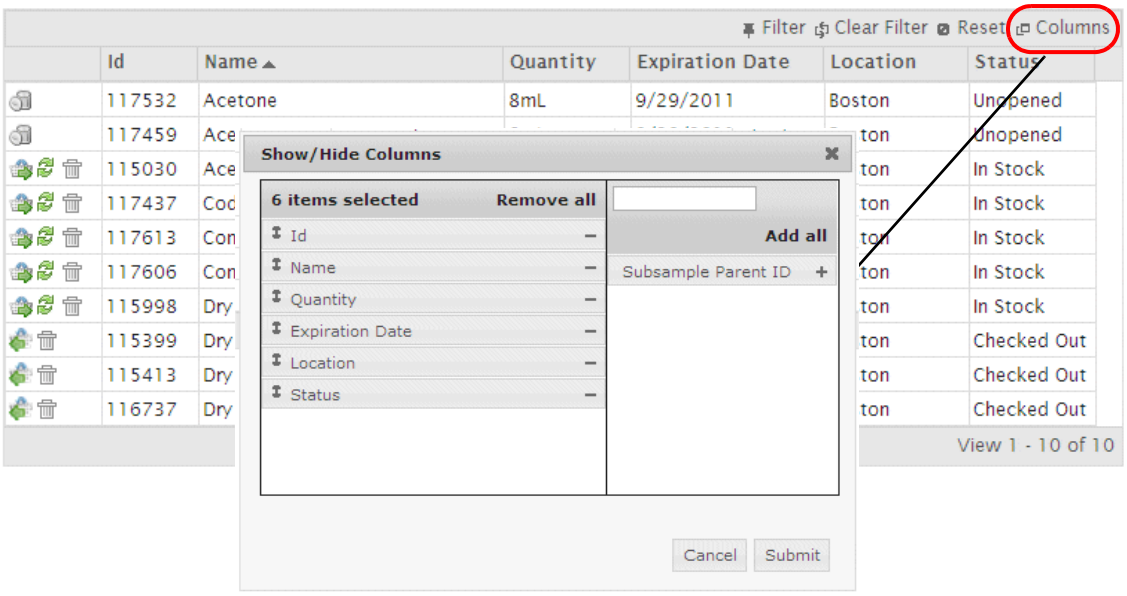
Resizing Columns in the Grid

Sorting columns

To sort the contents of a column, click its column heading. The contents are sorted in ascending/descending alphanumeric order.

Showing, hiding, and reordering columns

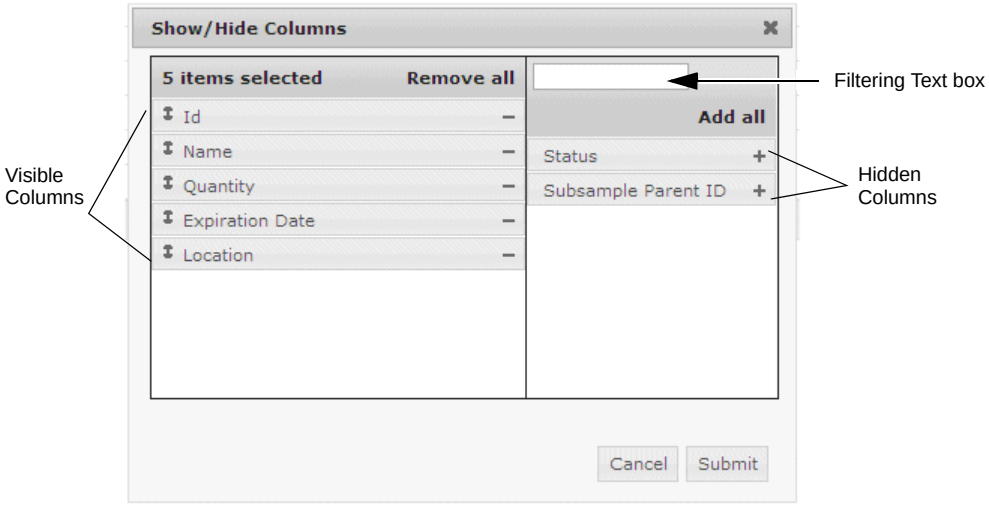
To hide selected columns or to reorder the columns, click the **Columns** button in the upper right corner of the grid control. The *Show/Hide Columns* dialog box is displayed.



"Show/Hide Columns" Dialog Box

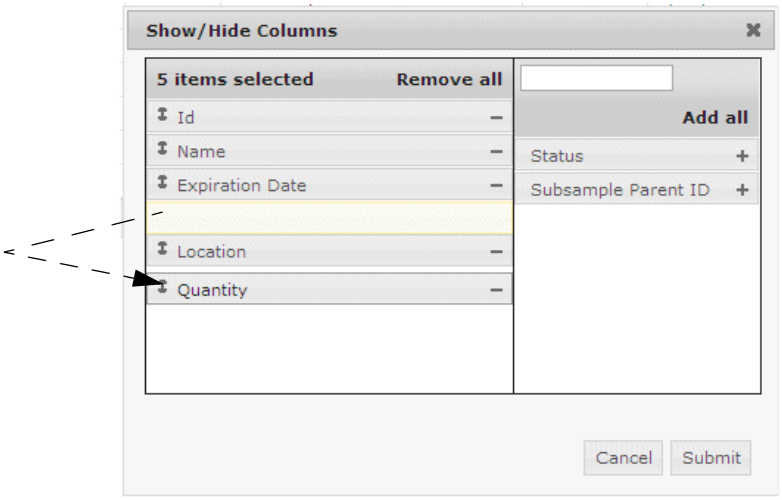
The left side of the *Show/Hide Columns* dialog box lists the names of the columns that are currently being displayed in the grid. The right side of the dialog box displays the names of the columns that are hidden.

- To hide a visible column, click its minus button − to move it to the right side of the dialog box.
- To display a hidden column, click its plus button + to move it left to the visible columns.
- To hide all of the columns, click **Remove All** to move them to the right.
- To display all hidden columns, click **Add All** to move them back to the left.
- To filter the list of columns, enter the name in the blank text box in the upper right corner of the dialog box. When you start typing, the list will only display those columns that contain the text string that you have entered.



Showing/Hiding Columns

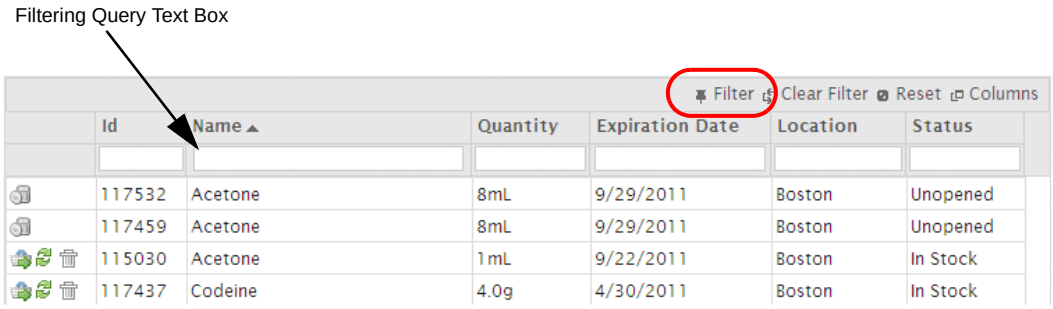
- You can change the order of any of the columns listed on the left side of the dialog box. To reorder the column positions, drag and drop the row to a new location in the list. The first (top) position in the list will be displayed as the first column in the grid. Similarly, the last (bottom) column in the list will be displayed on the far right side of the grid.



Reordering Column Positions

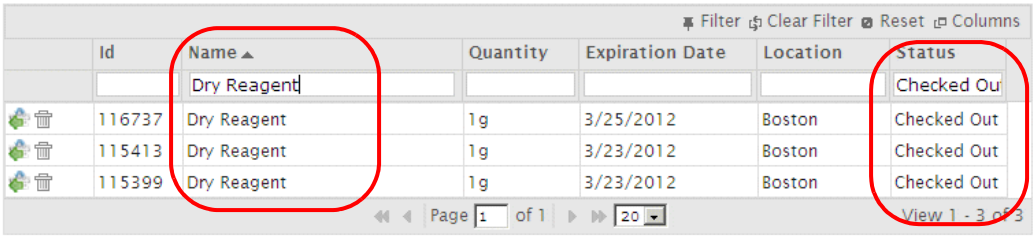
Applying filters

You can enter one or more filtering queries to filter the items in the grid. Click the **Filter** button in the upper right corner of the grid and enter your filtering criteria in the text boxes above each column and press **Enter** after each entry. The text boxes are displayed for any grid in which filtering has been applied.



Applying Filters to the Grid

For example, the following figure shows the grid in the IM module filtered by Dry Reagents whose status is “Checked Out.”



Filtering Result

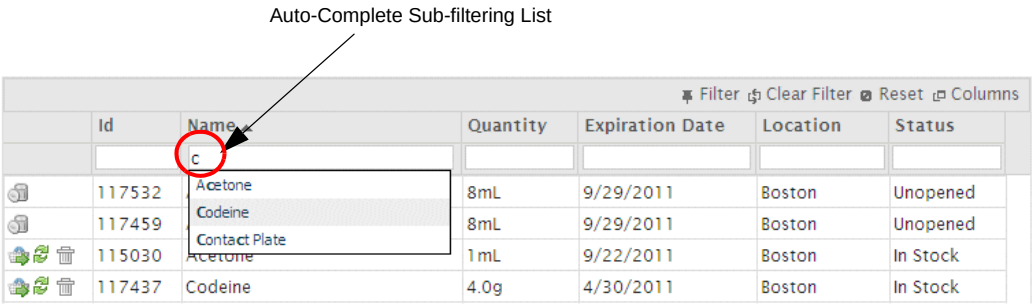
Note: You cannot filter on the “Description” field of Entity Types, Location Types, Consumable Types, Consumable Templates, Sample Types, and Sampling Plans.

The filtered results will encompass all of the relevant data in the data set. For example, if there are only three entities relevant to a particular query on one page, but additional relevant entities on different pages, the query will return as many entities as available that will fit within the number of items displayed on the current page.

"Auto-Complete" sub-filtering

The filtering text boxes support an auto-complete functionality. This allows you to select or enter a query on which to filter the grid. Click the **Filter** button above the column headings and put the cursor's focus in a text box (you can also tab into the field) and start typing your query.

The auto-complete list displays the entire data set for that particular grid, not just the current page. As you start typing in the text box, the list is further filtered to show only those entries that match your search query.



Auto-Complete Sub-filtering List

The auto-complete sub-filtering function works differently on the "Status" column in the ADMIN grids listed below. When you filter on "Active" entities, only the active items will be returned, as opposed to both active and inactive.

LIMS grids:

- Users
- User Roles
- User Groups
- Sites
- Location Types
- Entity Types

Inventory grids:

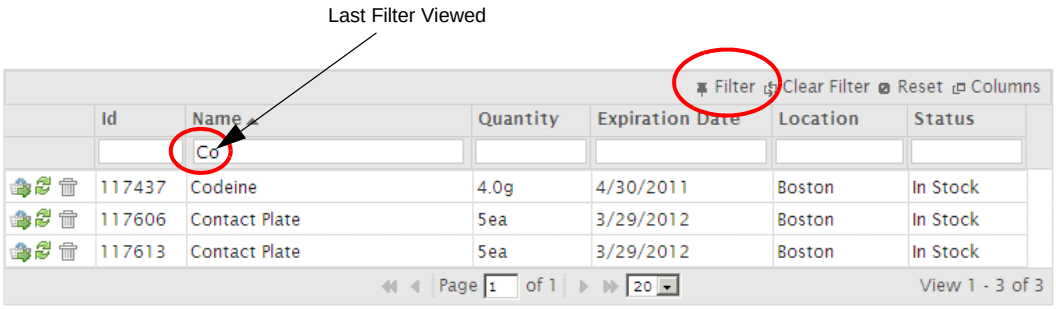
- Consumable Types
- Consumable Templates
- Measuring Scales

Environmental Monitoring grids:

- Sampling Plans
- Sample Types

Last filter viewed

The "Last Filter Viewed" function allows you to view the grid with the same filter parameters that were last used. Note that these filters are not immediately visible—you must select the **Filter** button above the column headings to view the text that was used to filter the grid.



"Last Filter Viewed" Function

"Group By" filter

The **Group By** filter allows you to find entities that share a common property or status. You can filter the current view of the grid according to the properties that are common to all entities within that module:

BIOVIA LIMS:

- Entity Type
- Entity Name
- Status
- ID
- Any property that exists for an entity instance

BIOVIA BIOVIA Inventory:

- Consumable Type
- Consumable Name
- Expiration Date
- Location
- Status
- Any property that exists for a consumable

BIOVIA Environmental Monitoring:

- Sample Type
- Sample Name
- Sample ID
- Location
- Status
- Sampled User
- Assigned User
- Any property that exists for a sample

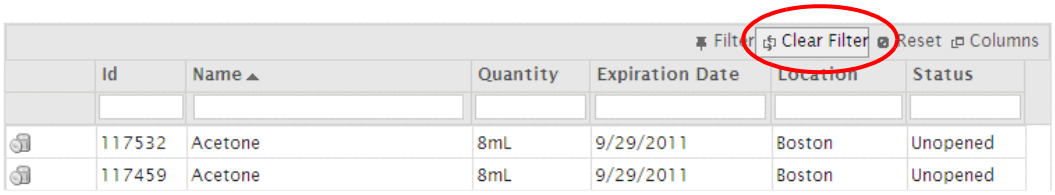
Note that when you group by Entity Types, the result will always display the most current Entity Type, Consumable Type, or Sample Type, even though its status may be “Upgrading.”

Refer to the following user guides for more information on the Group By filter:

- *BIOVIA LIMS User Guide*
- *BIOVIA BIOVIA Inventory User Guide*
- *BIOVIA Environmental Monitoring User Guide*

Clearing all filters

To clear the applied filtering, click the **Clear Filter** button above the column headings in the grid. The grid reloads and displays the original unfiltered list of entities.



Clearing the Applied Filtering

Saving user preferences in the grid

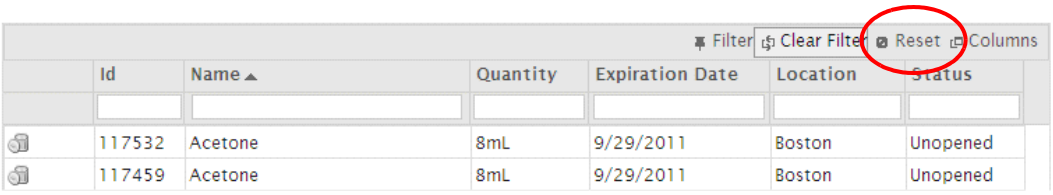
The changes you make to the default grid view are saved as part of your user preferences and remain in effect until the next time you return to that page. Your user preferences (listed below) are persistent until you reset the grid back to its default view.

- Number of items shown on the page
- Reordered columns
- Hidden columns
- Sorted columns
- Resized column widths
- The page in which the changes were made

For grids that have been filtered by groups, the grid is saved per value. For example, if a particular grouping is based on an Entity Type and there are two unique Entity Types A and B, when you click on A or B, the grid will render two different layouts based on your user preferences.

Resetting the grid filtering and layout to the default view

To reset the grid back to its original default view, click the **Reset** button in the upper right corner of the grid. This will remove all filtering and column reordering.



Resetting Grid to Original View

Saved Views—Creating Customized Views of the Grid

You can customize the grid view of the entity instances (BIOVIA LIMS), consumables (IM), and samples (EM). You can then save the view so that it is persistent each time you access that page.

You can configure a saved view to prompt you for specific values on which to filter the view. For example, you may want to filter the grid on a particular status. You can access any number of saved views to allow you to view only that data that is relevant to the task you are currently performing.

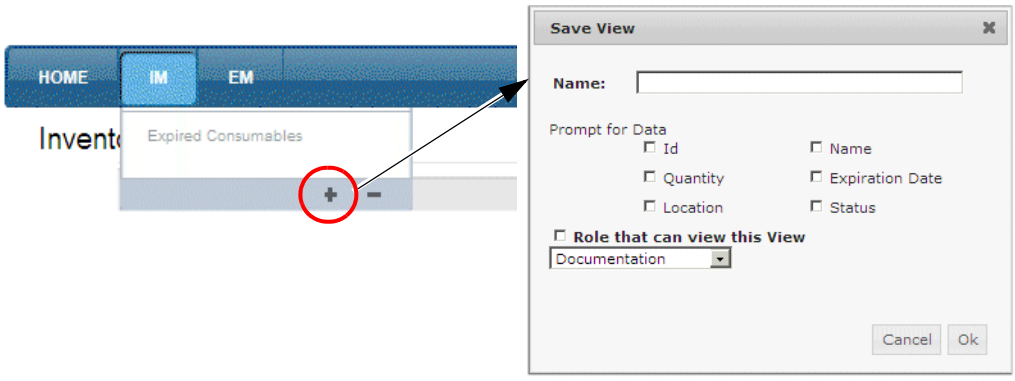
The system supports two types of saved views:

- **Role-based views**—These are views created by administrators and cannot be deleted by the general users. A role-based view is displayed to all members of that User Role. You must have “Can Administer Saved Views” eligibility in order to save a view for a User Role.
- **User-based views—**These are views created by general users and only they have access to them. Users can add and delete their own user-based views as necessary.

Creating a saved view for a specific User Role

To create a saved view for a specific User Role:

1. On the home page for the entities (BIOVIA LIMS entity instances, IM consumables, or EM samples), change the view of the grid based on the filtering, grouping, and column options.
2. Place your cursor on the appropriate tab in the main menu bar and click the “plus” + icon.



Creating a Saved View

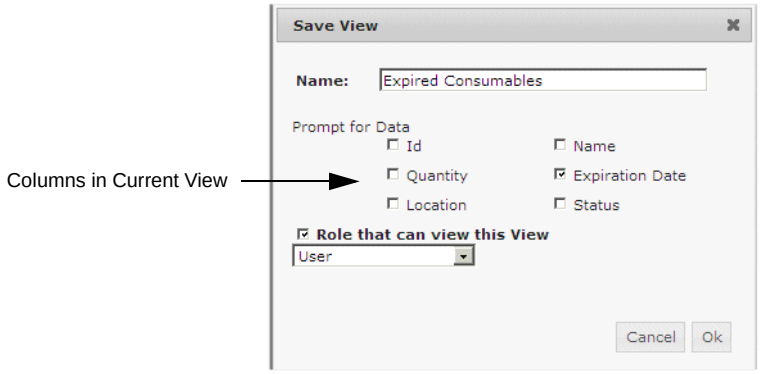
3 In the *Save View* dialog box, enter a name for this view. The name does not have to be unique.

4 In the "Prompt for Data" area, a check box is displayed with the name of each column in the current view of the grid. If you want to allow users to further filter the grid on specific values in the columns when they access this view, click the appropriate check boxes.

5 If you want to limit this view to members of a specific User Role, click the check box **Role that can view this View** and select the name of that Role.

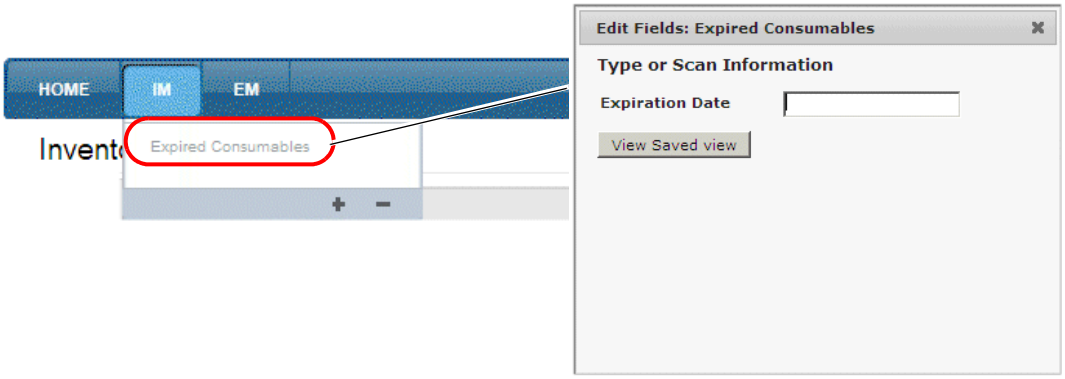
6 Click **OK** when you are done, then click **OK** in the confirmation dialog box. The new saved view is displayed in the Saved Views menu.

For example, the following figure shows a saved view that will display all of the expired IM consumables in the grid. Only the users who belong to the "Users" role will be able to access this view, and they will be able to further filter the view based on a specified expiration date.



Saving View for a Specific Role

The following figure shows the result of this configuration. The dialog box prompts the user to enter an expiration date.



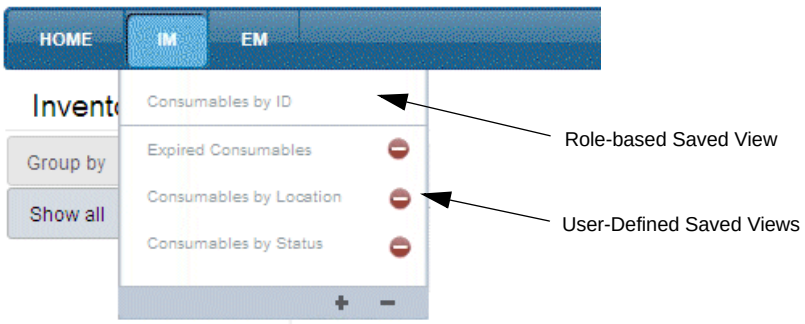
Accessing the Saved View based on a Specified Expiration Date

Editing a saved view

You cannot directly edit a saved view. Instead, make your changes and save as a new view. You can then delete the previous version.

Deleting a saved view

Click the “minus” (-) icon under the Saved Views menu, and then click the delete icon. Note that only administrators can delete a Role-based View.

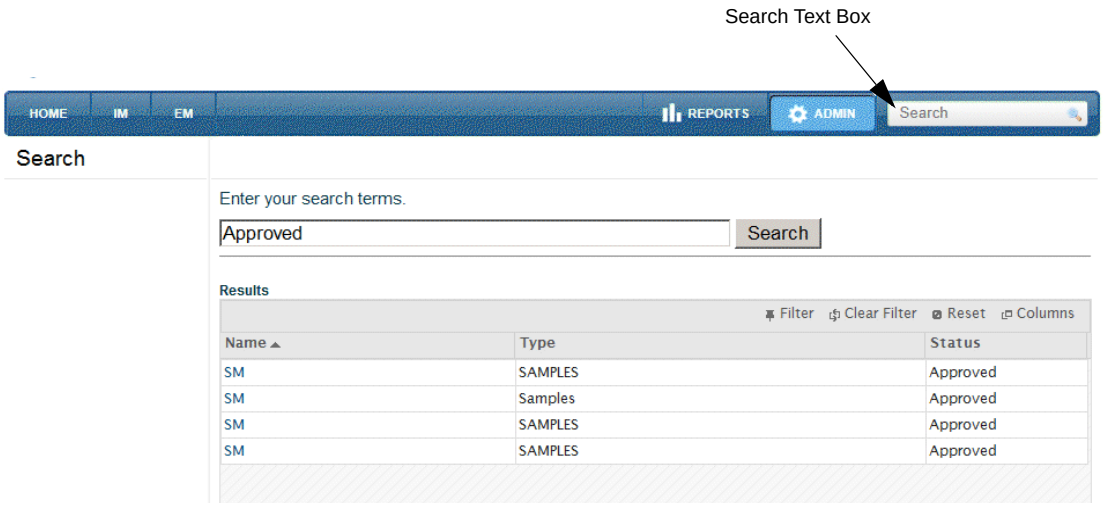


Deleting Saved Views

How the Search Function Works

The search function allows you to search for entity instances in BIOVIA LIMS, consumables in the IM module, and samples in the EM module. Your search criteria can be based on a specific ID or one or more properties.

The search results display only that data that you have eligibility to view. To perform a search, enter your search query in the Search text box and click **Enter**.



Searching for Specific Entity Instances

How the search function works:

- Searches are not case sensitive.
- Searches are Site-specific. You can only search within the Site that you are currently logged into.
- Searches are not module-specific. If you perform a search for a consumable in the IM module, the results will include entity instances in the BIOVIA LIMS module as well as samples in the EM module.
- The search query can consist of a whole word (for example, Approved) or a partial word if you add the wildcard characters (* or %) as the last character in the query (for example, App*).
- You cannot enter a wildcard character as the first character in the query.
- You cannot use a single wildcard character without at least one other character.

- A single character with a wildcard character does not work on the status column. The search criteria will only be applied to the other columns.
- If you use two words in one query, they must be enclosed in quotes, If you do not use the quotes, a separate search is performed on each word and the results are merged together. For example, “Inspection Lot” will return only those records that contain the words “Inspection Lot” whereas if you do not include the quotes, the search returns all records that contain the word “Inspection” and the records that contain the word “Lot.”
- Boolean expressions are supported for advance searching capability—for example, AND, OR, NOT. Note that the Boolean expressions must be entered in uppercase characters.
- You can search on a date based on any format that can be parsed in your native language (for example, 3/20/2013 or 3/20/13).

Generating Audit Trails for Changes Made to Data

An *audit trail* is a complete history of changes made to stored data in BIOVIA LIMS. Audit trails cannot be changed—they contain unquestionable ties to the live data and no “rollback” facilities are available. Audit trails are generated for the following entities in the system:

- System Settings
- User Accounts
- User Roles
- User Groups
- Sites
- Location Types (IM, EM)
- Locations (IM, EM)
- Labels
- Entity Types and workflows
- Entity Tabs
- Entity Instances
- Reports
- Import Function
- Consumable Types (IM)
- Consumable Templates (IM)
- Measuring Scales (IM)
- Consumables in Inventory (IM)
- Sample Types (EM)
- Sampling Plans (EM)
- Sample Groups (EM)
- Samples (EM)

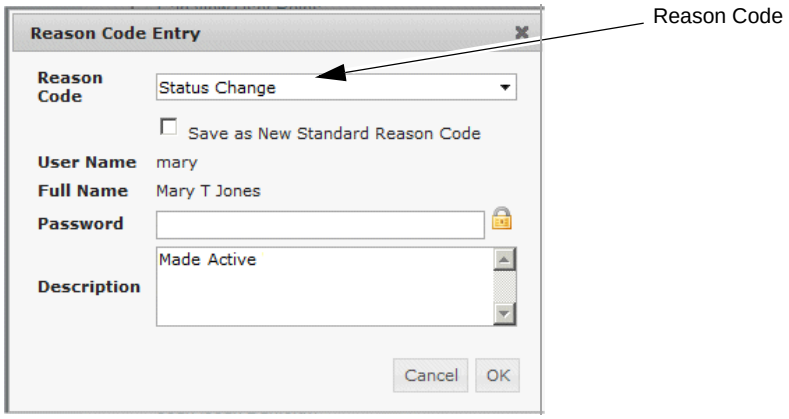
Electronic metadata is automatically generated for all user entries and activities. The metadata captures the following information:

- The user who performed the action (User ID and user’s full name)
- Date/time stamp when the change occurred

An electronic audit trail is automatically generated for selected user entries and activities (for example, collecting data or approving collected data). The audit trail captures the following information:

- Electronic signature consisting of all CFR Part 11 components—Reason Code, User Name, user's full name, and date/time stamp
- A link to the actual record that was modified

When a new entity is created in the system, its audit trail begins and its Reason Code defaults to "Initial Value." Each time that entity is edited, the *Reason Code Entry* dialog box is displayed and the user is required to specify a Reason Code to describe the reason for the change.



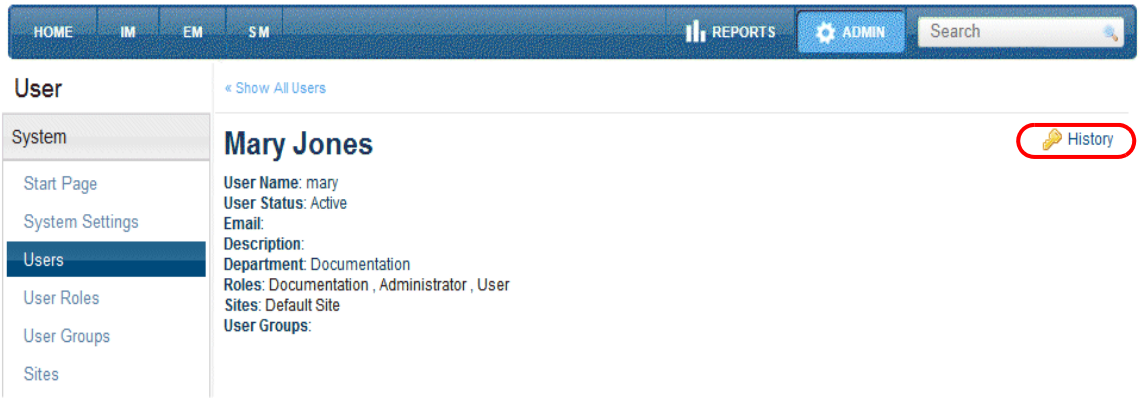
"Reason Code Entry" Dialog Box

Based on their eligibilities, users may also be allowed to enter a new Reason Code. They may also be eligible to save the new Reason Code as a new Standard Reason Code which adds it to the list of Reason Codes making it is available to all users of the system. If the user does not check the check box, the Reason Code is considered "non-standard" and is not available to other users.

The *Reason Code Entry* dialog box also collects the user's electronic signature and an optional description. The audit trail for this entity will include all of this information for this change.

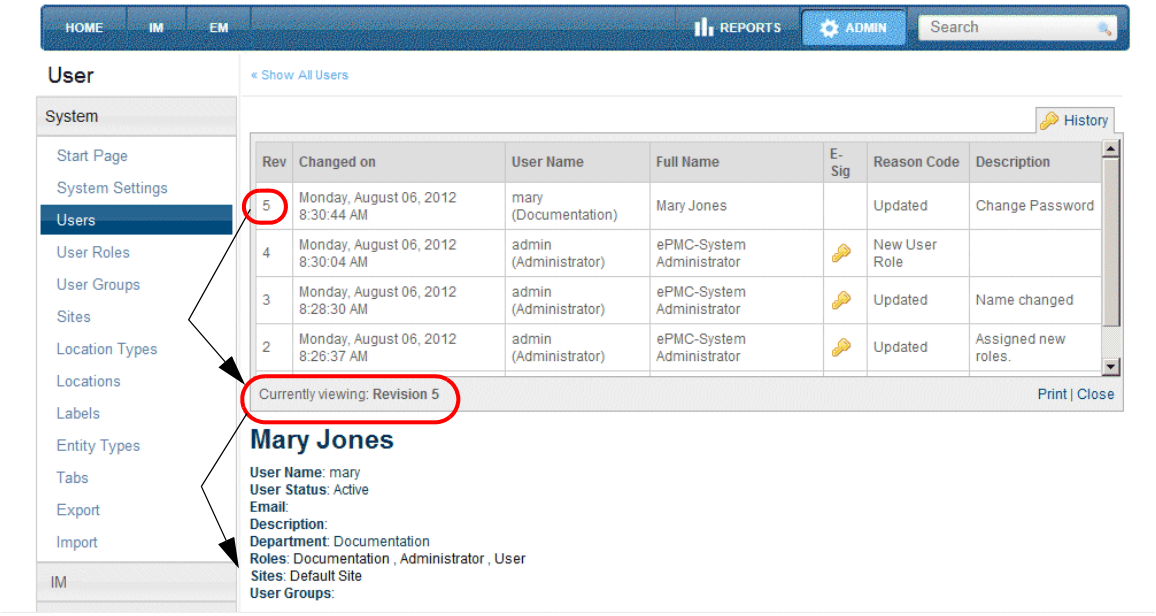
Note: You cannot use double quotes (" ") in the Description field.

- To view the audit trails for an entity, click the **History** link in the entity's *View* page. The key icon precedes the History link if there is one or more electronic signatures associated with the revisions.



Viewing Audit Trails in History Table

The History table displays the complete list of revisions made to that item. Each row represents one record which is identified by its revision number. The most recent revision is displayed in the first row of the table. When you click a row, the details at the time of that revision are displayed below.



Viewing Details of Revision

The columns in the History table are described below:

- **Rev—**Displays the number of each revision. Existing entities in the system are set to version “1” by default. New entities are set to version “1”when they are created (for example, Entity Types, Location Types, Locations). The Revision number of a Entity Type’s workflow is set to version “1” when the Entity Type is created.

  For every change you make to an entity, its revision number increases incrementally by “1” and a new row is added to the top of its History table.

- **Changed on—**Displays the recorded timestamp of the change. Refer to *How the System Records Date/Time Values* on page 1-16.

- **User Name—**Displays the user name of the person who made the change. The User Role to which that user belongs is shown in parenthesis—for example: Mary (Administrator).

- **Full Name—**Displays the full name of the person who made the change.

- **E-Sig—**May display one or two icons:

  Indicates an electronic signature has been applied directly by the user. This occurs anytime the user is prompted to enter his or her password anywhere in the system.

  Indicates that the Reason Code was applied automatically by the system. This applies only to specific signature types—Attest, Review, Approve, Annotation.

- **Reason Code—**Displays the reason the change was made.

- **Description—**Displays the description that was manually entered by the user who made the change (optional) or that was automatically entered by the system.

To generate a report of the History table, click **Print** in the lower right corner of the table. The report lists the complete history of changes made to the Entity Instance’s properties as well as to the instance itself. Note that the time values in the report may differ from the values stored in the database by one second. This is the result of the translation that is performed on the serial value stored in the database by the Crystal Report Template.

To close the History table, click **Close** in the lower right corner of the table.

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2

Configuring System Settings

What are System Settings?

*System setting*s are basic configuration settings that apply to the entire system. The system settings for BIOVIA LIMS include the following:

- Authentication methods
- Secondary Sign On option
- Session timeout settings
- Password settings
- Accelrys Enterprise Platform Server settings
- IDS URL setting for the BIOVIA LIMS Query Service

Authentication Methods

The BIOVIA LIMS application supports two types of user authentication methods:

- **ePMC Authentication** (*default*)
  When the system is using ePMC Authentication, the *Sign On* page is displayed when you launch the application. Once you have been successfully authenticated, you are directed to the *Home* page of BIOVIA LIMS (page 1-7). This method of authentication also provides settings to control user passwords.

  When ePMC Authentication is in effect, the system inactivates a user's account after three consecutive failed authentication attempts. A failed authentication can occur at login (that is, entering an invalid user name or password) or while being logged into the system (for example, entering an invalid password three times while applying an electronic signature to a change of data).

  Users whose accounts have been inactivated must contact their system administrator in order to be re-activated. In addition, users who are already logged on to the system are automatically logged off after the third failed attempt.

  If a user attempts to sign on from a different BIOVIA LIMS client, the login attempts are considered cumulative—that is, two failed login attempts on one client and one failed login on a different client will inactivate the user's account.

Note: If BIOVIA LIMS and BIOVIA LES are installed on the same server, the failed authentication counters are not connected between the two applications—three failed authentication attempts on one application will not inactivate that user account on the other.

- **Windows Authentication**
  When the system is using Windows Authentication, your User Name and password are validated by Microsoft® Windows® security. When using Windows Authentication with multiple domains, users have access to the BIOVIA LIMS application from any domain that is accessible to the domain of the server machine.

  On screens where a user other than the one currently logged on is providing an e-signature for approving, reviewing, or attesting collected data, the second user can specify which domain to use for authenticating their credentials in the format ***domain**username***.

Changing Windows Authentication in load balancing configurations

IMPORTANT! If you are using a load balancing configuration with multiple servers, changing to or from Windows Authentication when the Secondary Sign On option is *not* enabled will only take effect on the one server that processed the request, not all of the servers.

To change to or from Windows Authentication when the Secondary Sign On option is not enabled, perform the steps below on every web server in the farm:

1. Using Windows Explorer, browse to the current BIOVIA LIMS installation folder. The default location is:

   <*drive*>:\inetpub\wwwroot\ePMC

2. Delete **web.config.**
3. Perform the appropriate step:
   - If moving to Windows Authentication (without Secondary Sign On):
     a. Make a copy of **web.config.Windows**.
     b. Rename the copy to **web.config**.
   - If moving from Windows Authentication (without Secondary Sign On):
     a. Make a copy of **web.config.ePMC.**
     b. Rename the copy to **web.config**.

Note: When the Secondary Sign On option is enabled, both ePMC Authentication and Windows Authentication use web.config.ePMC.

4 To reinitialize the web service, click the **Start** menu and browse to:

Programs/Accelrys/SmartLab/Initialize Accelrys LIMS

5 Right-click on **Initialize Accelrys LIMS** and select **Run as administrator.** This is required in order to start and stop the service successfully. The World Wide Web Publishing Service will stop and restart and then launch a web browser to the site.

Secondary Sign-On Enabled

The Secondary Sign On Enabled option pertains to Windows Authentication only. This setting must be enabled in order to allow a Windows user to log into another user's BIOVIA LIMS terminal session for the purpose of applying their e-signature in a Review/Attest/Approve workflow action. It also determines how Windows users are allowed to access the system. When this option is checked, the following scenarios apply.

Table 2-1 Results of Secondary Sign On Setting

Scenario	Secondary Sign On	
	Enabled	**Disabled**
Site Access (Windows user is a BIOVIA LIMS user)	• Displays the *Sign On* screen • User enters *domain\user_name* and password • Login allowed if this is an active user	• Does not display the *Sign On* screen • Access granted • Browser displays *Home* page
Site Access (Windows user is a not an BIOVIA LIMS user)	• Displays the *Sign On* screen • User enters *domain\user_name* and password • Login denied if this is not an active user	Access denied
Log Out	Displays successful *Log Off* screen with link to sign back in.	Displays successful *Log Off* screen with link to sign back in.

Session Timeout (minutes)

The Session Timeout setting pertains to both ePMC Authentication and Windows Authentication methods. It refers to the number of minutes that a terminal session can be

idle—that is, there is no detected action with the mouse or keyboard in the web site—before the user is automatically logged out. The default Session Timeout setting is 10 minutes.

IMPORTANT! The session timeout occurs without any warning. While you are setting up the system or working on lengthy configuration tasks (for example, configuring workflows), increase the Session Timeout setting to a higher number to avoid losing any work (for example, 999).

Password Expiration Interval (days)

The Password Expiration Interval setting pertains only to ePMC Authentication. It refers to the number of days that a user's password is valid before they will be required to change it. The default is "0" days. There is no upper limit.

Minimum Password Length

The Minimum Password Length setting pertains only to ePMC Authentication. It refers to the minimum number of characters acceptable for password. The default is seven (7) characters.

Number of Unique Passwords

The Number of Unique Passwords setting pertains only to ePMC Authentication. It refers to the number of required unique passwords before a previous password can be reused. The default is zero (0) days. There is no upper limit.

Accelrys Platform Server Settings

The Accelrys Enterprise Platform Server settings allow you to run various BIOVIA protocols from within a BIOVIA LIMS terminal session. This functionality is accomplished through the "Execute Platform Protocol" workflow activity.

The values for the Platform Protocol Server settings were specified during installation. You can change these as necessary.

- **Accelrys Platform Server**—The http address of the Accelrys Enterprise Platform Server to which BIOVIA LIMS will communicate.
- **Accelrys Protocol Folder**—The name of the folder on the Accelrys Enterprise Platform server which contains all of the protocols that will be available during a BIOVIA LIMS terminal session. The default folder is "WebCore."
- **Accelrys Platform User—**A valid user name of an Accelrys Enterprise Platform server account which has eligibilities (permissions) to execute the protocols in the specified folder.

- **Accelrys Platform Password**—The password of the Accelrys Enterprise Platform server user.

IDS URL

The IDS URL points to the BIOVIA Query Service server that is installed with the BIOVIA LIMS application. The Query Service is a BIOVIA tool that performs the search function for the BIOVIA LIMS application.

Synchronizing System Settings in BIOVIA LES Integrated Sites

For sites using the BIOVIA Lab Execution System (LES), the BIOVIA LIMS and BIOVIA LES system options must use the identical authentication method (ePMC Authentication or Windows Authentication) in order for users to be successfully authenticated between the two systems.

When ePMC Authentication is in effect, the system options for BIOVIA LIMS and BIOVIA LES must also be configured to use the identical password options (expiration interval, minimum length, number of unique passwords) in order for the passwords to be synchronized between the two applications.

Required Eligibility for Managing System Settings

In order to manage System Settings, users must belong to a User Role that has the following two eligibilities:

- **Can View System Settings**—Allows users to view the system settings and their audit trails.
- **Can Administer System Settings**—Allows users to configure the system settings.

Modifying System Settings

To modify the system settings:

1. In the ADMIN tab under the System section, click **System Settings**. The Authentication tab displays the currently configured system settings.
2. Click **Edit Settings** in the upper right corner of the page.

System Settings Home Page

3. In the *System Settings* screen (page 2-7):
   a. Change the Authentication method, if necessary.
      - If you selected Windows Authentication, make sure the BIOVIA LIMS user accounts are configured with a valid Windows user name and password.
      - If you are changing to or from Windows Authentication when the Secondary Sign On setting is not enabled, follow the steps explained in *Changing Windows Authentication in load balancing configurations* on page 2-2.
   b. Change the Secondary Sign On Enabled setting, if required.
   c. Increase the Session Timeout setting to give yourself enough time to perform lengthy configuration tasks (such as workflows) without the system timing out.
   d. If you are using ePMC Authentication, edit the password expiration interval, the minimum password length, and the number of unique passwords as necessary. If BIOVIA LES is deployed at your site, these settings must match the corresponding BIOVIA LES system options.

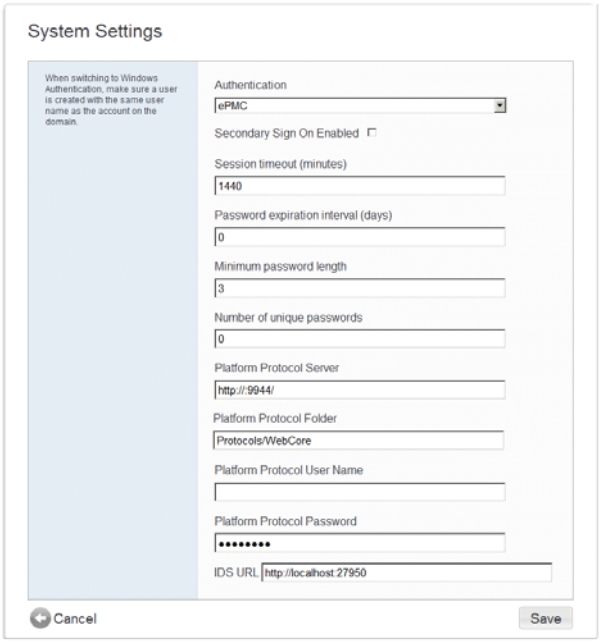
IMPORTANT! If you using multiple servers in a load balancing configuration, changing from ePMC Authentication to Windows Authentication will only take effect on the one server that processed the request, not all of the servers. In a load balancing environment, additional configuration is required to change authentication methods. Please contact BIOVIA Support for details.

e. Change any of the Accelrys Protocol Server settings as required:

- Accelrys Protocol Server address
- Accelrys Protocol Folder
- Accelrys Protocol Server User Name
- Accelrys Protocol User's Password

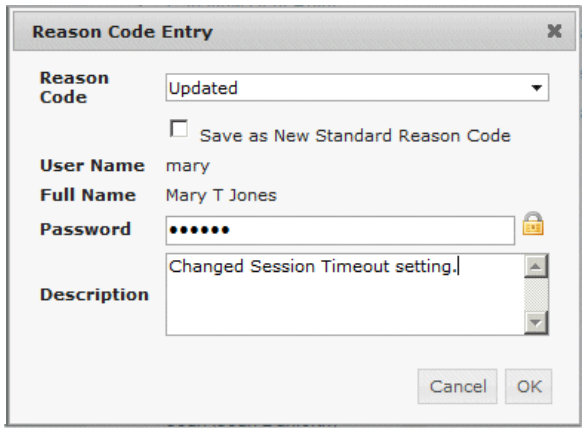
f. Change the URL of the BIOVIA Query Service if required. The default is "localhost."

g. Click **Save** to commit the changes.



Editing System Settings

4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.



Reason Code for Updated Value

Viewing Audit Trails for System Settings

Every change made to a system setting is recorded in its audit trail.

To view the audit trail for the System Settings:

1. In the ADMIN tab under the System section, click **System Settings.**
2. In the Authentication tab, click the **History** link to expand the table of revisions.
3. Select the row that corresponds to the revision you want to view. The selected version is displayed under the table.
4. Click the **Print** link to print the entire table of revisions.
5. Click the **Close** link to close the table and return to the System Settings Authentication tab.

Refer to *Generating Audit Trails for Changes Made to Data* on page 1-36 for details on the History table.

Managing Reason Codes

A *Reason Code* describes the reason a change was made to a certain "active" entity in the system. The Reason Code tab in the System Settings provides a pre-defined list of Reason Codes. You can add new Reason Codes to customize your system.

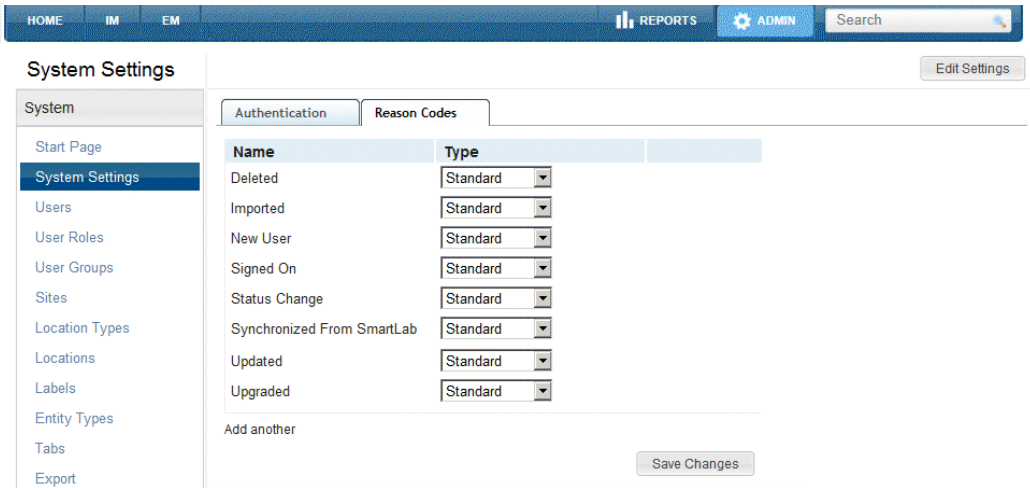
There are two types of Reason Codes used in the system:

- **Standard**—The default set of Standard Reason Codes are displayed in the Reason Code selection list and are available to all users in the system. These include:
    - Deleted
    - Imported
    - New User
    - Signed On
    - Status Change
    - Synchronized from BIOVIA LES
    - Updated
    - Upgraded
- **Non-Standard**—Non-Standard Reason Codes are hidden from the users. These apply to Reason Codes that are manually entered by eligible users but are not saved as New Standard Reason Codes. These also apply to the default set of Non-Standard Reason Codes that are used internally by the system (listed below):
    - Forced Password Change
    - Initial Value
    - Annotation
    - Attested
    - Reviewed
    - Approved
    - Updated Workflow

Creating a new Reason Code

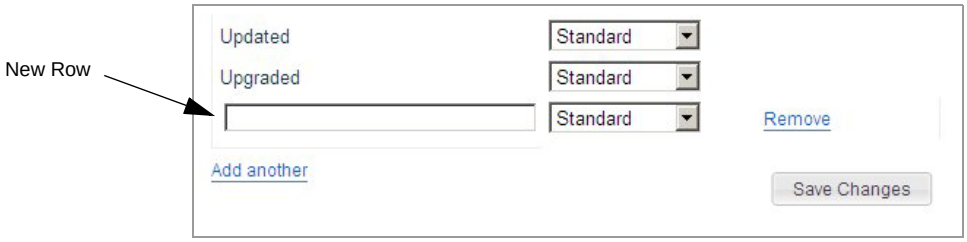
To add a new Reason Code for use in the system:

1. In the ADMIN tab under the System section, click **System Settings**.
2. Click the **Reason Codes** tab to view all of the Reason Codes that are currently configured.



System Settings—"Reason Codes" Tab

3 To add a new Reason Code, click the **Add Another** link under the list of Reason Codes. A new row is displayed below the list.



Adding a New Reason Code

4 Enter a new Reason Code and select its type—**Standard** or **Non-Standard**. The *Reason Code Entry* dialog box will only list the Standard Reason Codes.

IMPORTANT! Once you create a Reason Code, you cannot delete it. Click **Remove** if you want to delete this Reason Code before saving it.

5 To save the new Reason Code, click **Save Changes**.

Note: The system does not record audit trails for new Reason Codes.

Deleting a Reason Code

Since Reason Codes are permanently tied to audit trail records, you cannot delete them from the system once you save them.

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3

Managing Segregated Sites

What is a Site?

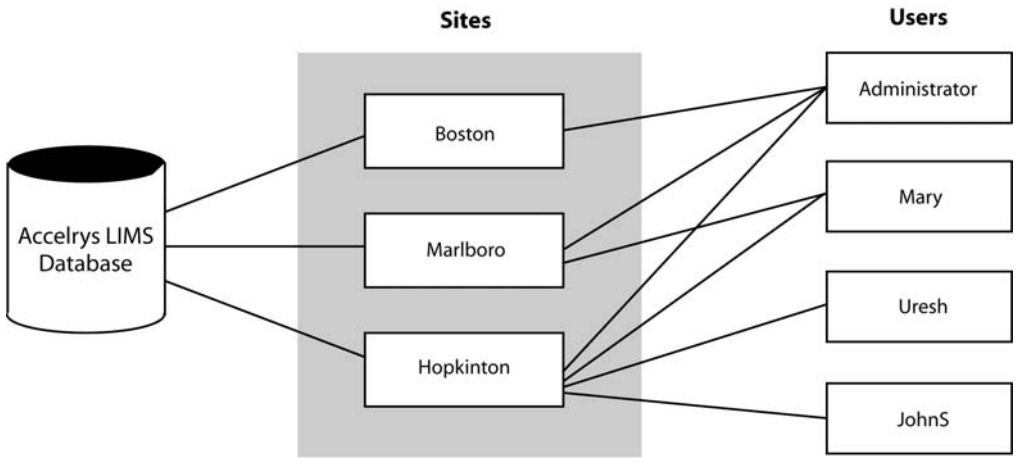
A *Site* is a virtual segregation of physical sites in your environment. You can configure individual Sites to provide different "views" of the BIOVIA LIMS database for various purposes and audiences within your company. Each Site can store selected entities located in the BIOVIA LIMS database. Sites do not require a separate database of their own.

Here are some common reasons for segregating Sites:

- A segregated "Development" Site would allow administrators and other personnel to gain experience with the application and to experiment with various workflows for entities, such as entities and samples. Once the Development Site is configured and the workflows have been approved, a new "Production" Site would be created with the imported entities from the Development Site. Individual users would be granted eligibility to access both Sites in order to administer the system.
- A segregated site could deploy the BIOVIA LIMS and web-based modules in a specific location (for example, Boston). Additional sites (such as Marlboro) can use the configuration and installed software at the Boston site to manage their entities (for example, entities and workflows). In this case, Boston employees would not be able to view the data configured and tracked by the Marlboro site, and vice versa. Individual users would be granted eligibility to access both sites in order to administer the system.

When you create a new Site, you will assign specific users access to that Site. A user must belong to at least one Site and can be assigned to more than one Site if required. Once the Site is created, you can then sign into that Site and directly configure its required entities.

The following figure shows the relationship between Sites and user accounts.



Relationship between Sites and User Accounts

During installation, a “Default Site” is created that contains all of the existing users in the BIOVIA LIMS database. These users are automatically granted eligibility to the default Site.

You can export selected users from a Site, as well as import those users into other Sites. However, you cannot export/import the configured Sites themselves.

Required Eligibility for Managing Sites

In order to manage Sites, users must belong to a User Role that has the following two eligibilities:

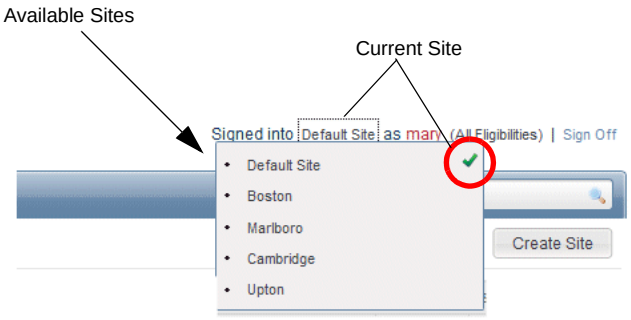
- **Can View Sites**—Allows users to view the registered Sites and their audit trails.
- **Can Administer Sites**—Allows users to create and edit Sites.

Rules for Signing On to Different Sites

The Sign On status section in the top right corner of the user interface displays the site to which you are currently signed into. When a user signs on to the system, the following rules apply:

- The system will try to authenticate the user against the last Site they successfully signed into.
- If the user is signing in for the first time, the system defaults to the first Site to which the user is eligible to access.
- If the user was removed from the Site they last signed into, the system defaults to the first Site to which the user is eligible to access.

Although you can change the Site that you are currently signed on to from any page in the system, it is recommended that you do this from the BIOVIA LIMS *Home* page. Click the name of the current Site above the main menu bar and select a different Site. The Site you are currently signed into is indicated by a check mark.



Signing On to a Different Site

Once you select a different Site, the system switches to that Site without prompting you to sign in again. You can then navigate to the page of your choice within that Site.

Status Codes for Sites

Status codes represent the current state of a Site in the system. A Site can reside in one of two states:

- **Active**—When you create a new Site, its status is set to “Active” by default and it is immediately available for use in the system. It can be associated with “Active” user accounts and used by other dependencies such as Entity Type properties and workflow activities.
- **Inactive**—The Site is unavailable to users and other dependencies.

Table 3-1 summarizes the actions that are allowed at each state.

Table 3-1 Allowed Actions for the States of a Site

Action	Status	
	"Active"	"Inactive"
Can view Sites in system	All users [1]	Administrator only [2]
Available to dependencies (for example, user accounts, Entity Type properties, workflow activities)	Yes	No
Can edit Sites	Yes [2]	Yes [2]
Can delete Sites	No	No
Can change status to:	Inactive	Active
Versioning enforced for changes	Yes	Yes
Reason Code applied to changes	By user	By user
Can export Sites to other systems	No	No

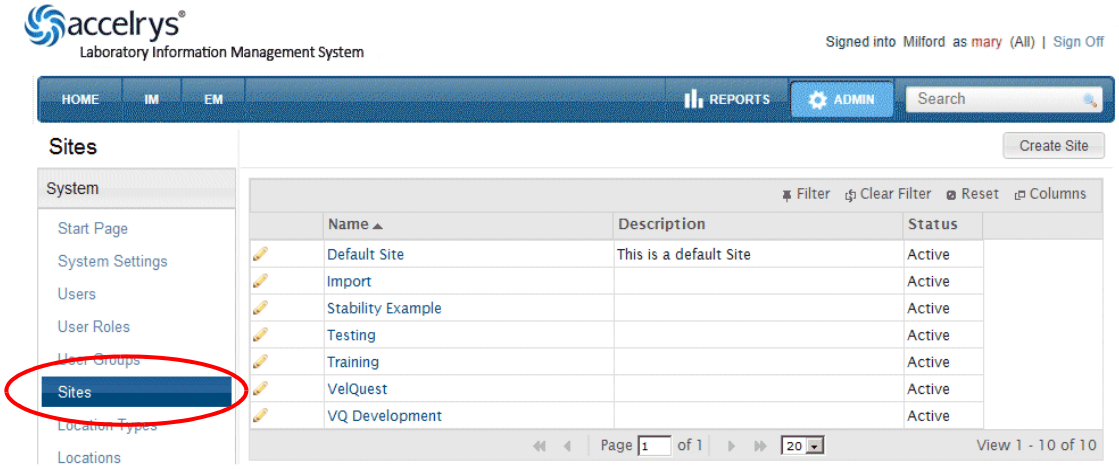
[1] Requires "Can View Sites" eligibility
[2] Requires both "Can View Sites" and "Can Administer Sites" eligibility

Viewing Registered Sites

To view the registered Sites in the system:

1 In the ADMIN tab under the System section, click **Sites**. The *Sites* home page is displayed.

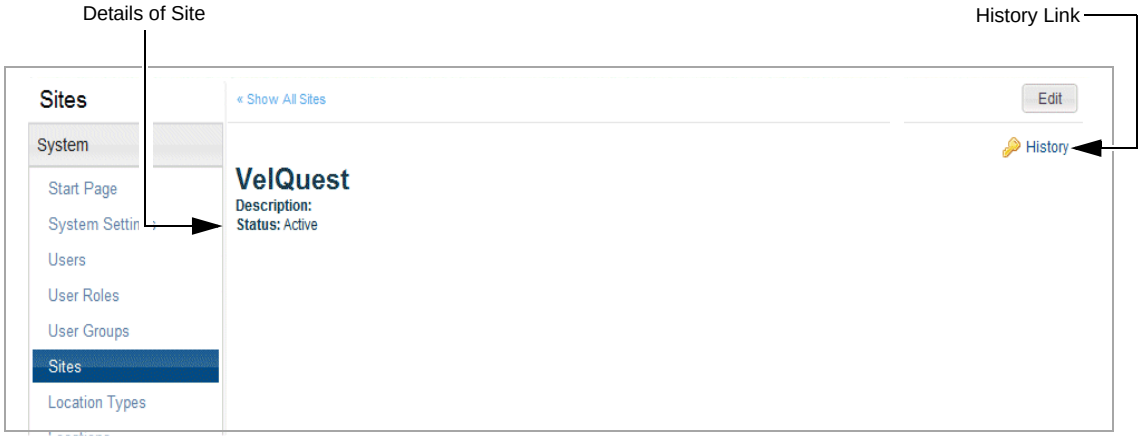
The grid identifies each registered Site by its name, description, and current status. You can filter the view of the grid as necessary. Refer to *How the Grid Control Works* on page 1-23.



"Sites" Home Page

2 To view the details of a Site, click the name of the Site. The Site's *View* page displays its name, description, and current status. Click the **History** link to view the audit trails for this Site.

Refer to *Generating Audit Trails for Changes Made to Data* on page 1-36 for details on the History table.



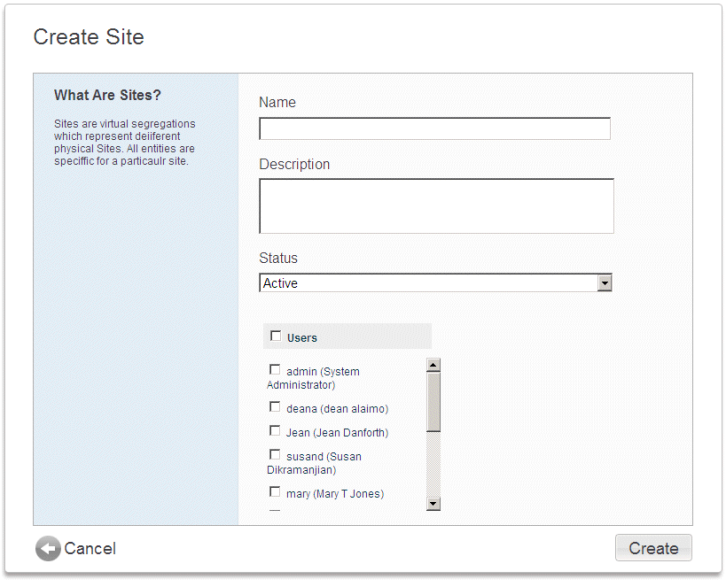
Viewing Details of a Site

3 To return to *Sites* home page, click **Show All Sites** above the details.

Creating a New Site

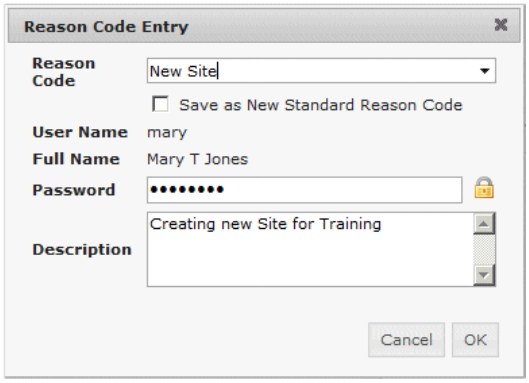
To create a new Site:

1. In the ADMIN tab under the System section, click **Sites.**
2. In the *Sites* home page, click **Create Site** above the grid.
3. In the *Create Site* page, configure the new Site:
   a. Enter a name for the Site. The name must be unique and cannot exceed 256 characters. Blank spaces at the beginning or end of the name are not allowed.
   b. Enter a description for this Site (optional). The description cannot exceed 1000 characters.
   c. Change the status to “Inactive” if you do not want to make this Site available for use at this time. Otherwise, leave the status set to “Active.”



Creating a New Site

   d. Select the users to assign them to this Site. The list displays the user names in alphanumeric order, and only those users whose status is “Active” are available.
   e. Click **Create.**
4. In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.



Reason Code for Creating New Site

If the status of the Site is “Active,” eligible users of this Site can now sign into it.

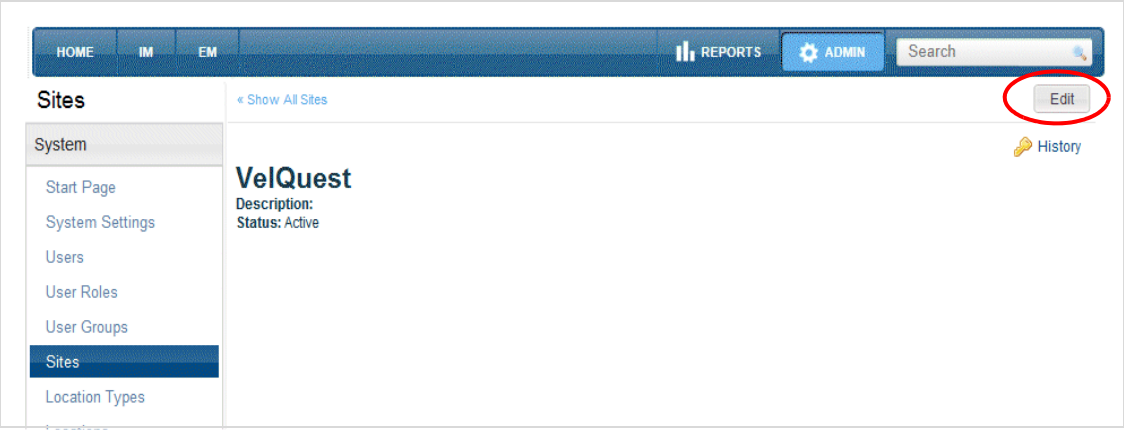
Editing a Registered Site

Every user in the system must belong to at least one Site. Before you update an existing Site, set its status to “Inactive” to make the Site temporarily unavailable while you edit it. If another eligible user attempts to edit the same Site, the Site’s *View* page will display a “Locked” message above the details of the Site.

While you are editing a Site, users will not be able to access that Site until you set its status back to “Active.” If users are already logged into that Site when you inactivate it, they will be immediately placed into another Site if they have access to one. If they do not have access to another Site, they will be logged out of the system when they navigate away from their current page.

To edit a Site:

1. In the ADMIN tab under the System section, click **Sites**.
2. In the *Site* home page, do one of the following:
   - Click **Edit** preceding the Site in the grid view
   - Click the name of the site to open its *View* page, then click **Edit**.



Site's "View" Page

3 In the *Edit Site* page:

a. Change the name of the Site, if required.

b. Enter or change the description.

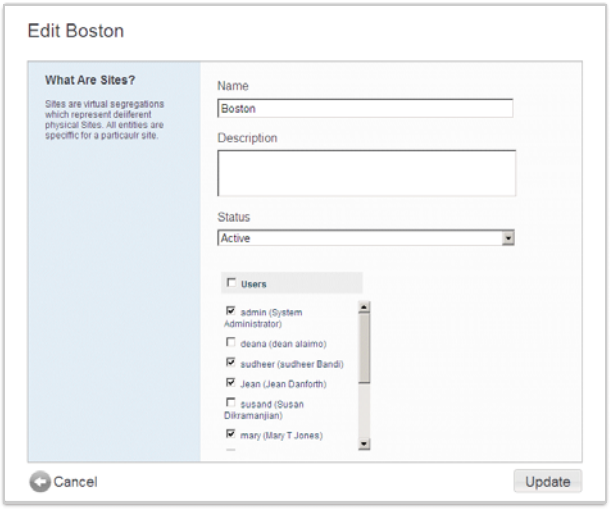
c. Change the status, if necessary.

d. Add or remove users from the Site, as required.

Note the following:

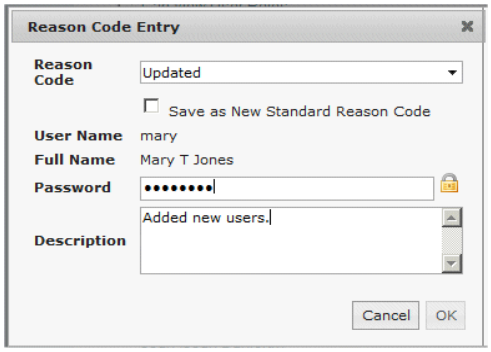
- If you add or remove users from this Site, their user account will be automatically updated with those changes.
- If you remove users who are currently accessing this Site, they will be automatically switched to another Site. If the user does not belong to another Site, you will not be allowed to remove that user, since a user must belong to at least one Site.

e. Click **Update**.



Editing a Site

4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.



"Reason Code Entry" Dialog Box

5 Set the status back to "Active" to allow user access to the Site.

Inactivating a Site

To make a Site unavailable for use, set its status to “Inactive.” Its dependencies in the system will not be able to access this Site. Refer to *Editing a Registered Site* on page 3-7.

Deleting a Site

You cannot delete a registered Site. To prevent users from signing on to a Site, change its status to “Inactive.”

Exporting Sites to Other Systems

The export function is not supported for Sites.

4

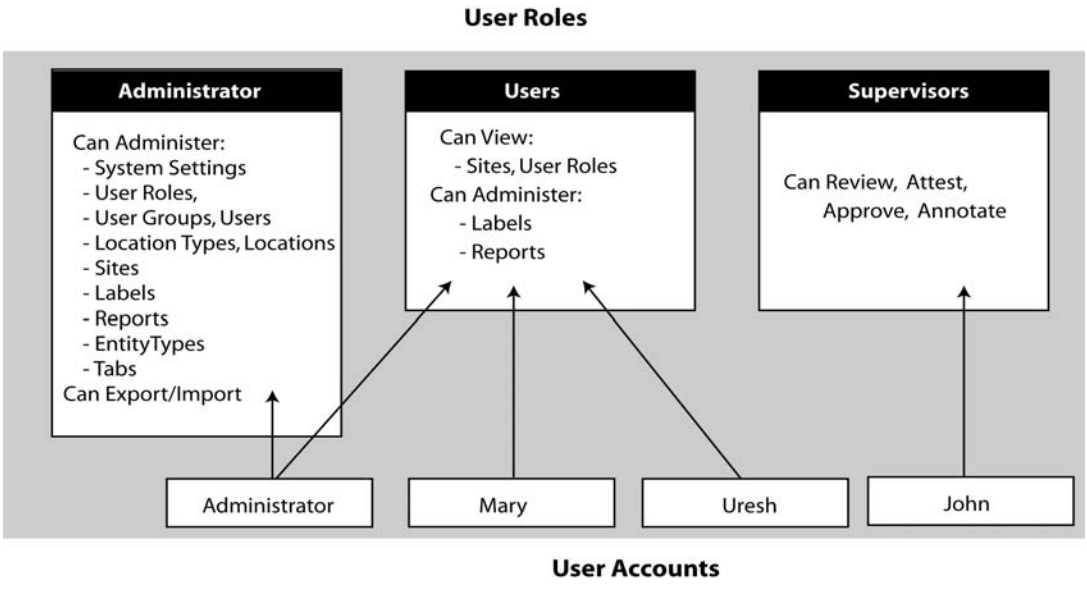
Managing User Roles and Eligibilities

What is a User Role?

A *User Role* is a role that is defined for users who perform a specific function at your facility, such as an administrator, supervisor, or general user. A User Role provides user eligibilities that determine what functions its members can perform in the system, as well as what areas of the system and pages they can view.

Some users may only belong to one User Role, so when they sign onto the system, the functions they are allowed to perform are limited to the eligibilities of that role. Other users may perform functions in different roles within their department. The system allows them to sign on and select the User Role that reflects the functions they are currently performing.

The following figure shows the relationship between User Roles and User accounts.



Relationship between User Roles and User Accounts

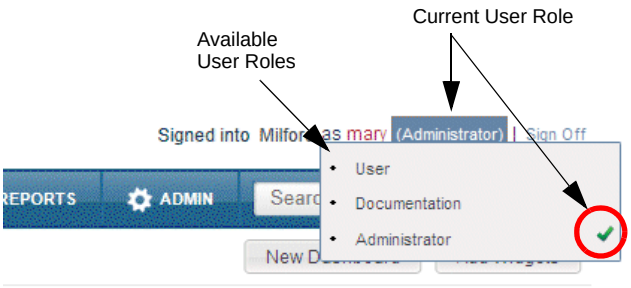
Upon installation, the system provides one default “Administrator” role. The Administrator role is intended for the default “admin” account and only has the eligibility to create Sites, User Roles, and user accounts. If you are configuring the initial system, it is recommended that you create a System Administrator role with full eligibility to the entire system.

Rules for Signing Into Different User Roles

The “sign on status” section in the top right corner of the user interface displays your current User Role in parenthesis to the right of your user name. When a user signs on to the system, the following rules apply:

- For a user who belongs to only one User Role, that role is their current role. If the current role is inactive, an error message is displayed indicating the role is inactive.
- For users who belong to more than one User Role, the last role that the user used will be their current role. If this is the first time the user is signing on, then the first available active role will be used. If the last used role is inactive, the next available active role will be used.

  Users who belong to multiple User Roles can select a different role from the list. The roles are displayed in alphanumerical order and the current role is indicated by a check mark:



Selecting a Different Role

  Once the user selects a new User Role, the user will be switched to that role. If the user is on a page that requires an eligibility which the role does not possess, an error message is displayed and the user is signed out of the system.

The saved view for the selected User Role will be available during a session. Refer to *Saved Views—Creating Customized Views of the Grid* on page 1-32 for more information.

Status Codes for User Roles

Status codes represent the current state of a User Role in the system. A User Role can reside in one of two states:

- **Active**—When you create a new User Role, its status is set to "Active" by default and it is immediately available for use in the system. It can be associated with user accounts and used by other dependencies in the system, such as Entity Type properties and workflow activities.
- **Inactive**—The User Role is unavailable to users and other dependencies.

The following table summarizes the actions that are allowed at each state.

Table 4-1 Allowed Actions for the States of a User Role

Action	Status	
	"Active"	"Inactive"
Can view User Roles in system	All users[1]	Administrator only[2]
Available to dependencies (for example, user accounts, Entity Type properties, and workflow activities)	Yes	No
Can edit User Roles	Yes[2]	Yes[2]
Can delete User Roles	No	No
Can change status to:	Inactive	Active
Versioning enforced for changes	Yes	Yes
Reason Code applied to changes	By user	By user
Can export User Roles to other systems	Yes[3]	No

[1] Requires "Can View" eligibility

[2] Requires both "Can View" and "Can Administer" eligibility

[3] Requires "Can Export" eligibility

What are User Eligibilities?

User eligibilities determine what functions users are allowed to perform in the system as well what views and pages they have permission to access. There are two levels of user eligibilities:

- **Can View**—Allows users to view the specified entity in the system. Users who do not have "Can View" eligibility cannot access those areas of the user interface.
- **Can Administer**—Allows users to administer the specified entity. Users must have both "Can View" and "Can Administer" eligibilities in order to administer those entities in the system.

In addition, there are user eligibilities defined for individual tasks throughout the system. Users cannot assign eligibilities to themselves. Only the most recently updated User Role will be relevant when determining user eligibilities.

BIOVIA LIMS eligibilities

The following table provides a description of the BIOVIA LIMS eligibilities.

Table 4-2 BIOVIA LIMS Eligibilities

Eligibility	Description
Can View Location Types	Allows users to view only those Location Types whose status is "Active."
Can Administer Location Types	Allows users to view and manage all of the Location Types in the system (all status codes).
Can View Locations	Allows users to view only those Locations in the system whose status is "Active."
Can Administer Locations	Allows users to view and manage all of the Locations in the system (all status codes).
Can View Labels	Allows users to view/print only those labels in the system whose status is "Active."
Can Administer Labels	Allows users to view and manage all of the labels in the system (all status codes).
Can View Reports	Allows users to view/run only those reports in the system whose status is "Active."
Can Administer Reports	Allows users to view and manage all of the reports in the system (all status codes).

Table 4-2 BIOVIA LIMS Eligibilities (continued)

Eligibility	Description
Can View System Settings	Allows users to view the system settings and Reason Codes used in the system.
Can Administer System Settings	Allows users to edit the system settings and add/edit Reason Codes.
Can Administer Saved Views	Allows users to save a view of the entities in the *Inventory* home page for a defined User Role.
Can Import	Allows users to import configured entities into their system from an XML export file.
Can Export	Allows users to export configured entities to an XML file for use in other systems.
Can View Entity Types	Allows users to view those Entity Types in the system whose status is “Active.”
Can Administer Entity Types	Allows users to view and manage all of the Entity Types in the system (all status codes).
Can View Tabs	Allows users to view those Entity Tabs in the system whose status is “Active.”
Can Administer Tabs	Allows users to view and manage all of the Entity Tabs in the system (all status codes).
Can View Entity Instances	Allows users to view the instances of your configured Entity Types in the system. Users can view the entity instances under a tab if the user has “View” eligibility for at least one Entity Type contained in the tab.
Can Process Entity Instances	Allows users to process the workflow actions for an entity instance. If no other permissions are defined at the workflow level of the corresponding Entity Type, the user will have access to all of the available actions.

User Management eligibilities

The following table provides a description of the User Management eligibilities.

Table 4-3 User Management Eligibilities

Eligibility	Description
Can View Users	Allows users to view only those user accounts in the system whose status is “Active.”
Can Administer Users	Allows users to view and manage all of the user accounts in the system (all status codes).
Can Review	Allows users to apply their electronic signature after they have reviewed an item at specific states of an entity’s workflow.
Can Attest	Allows users to apply their electronic signature in order to attest an item at specific states of an entity’s workflow.
Can Approve	Allows users to apply their electronic signature in order to approve an item at specific states of an entity’s workflow.
Can Annotate	Allows users to enter an annotation and apply their electronic signature at specific states of an entity’s workflow.
Can Add New Standard Reason Codes	Allows users to save their own Reason Code as a new Standard Reason Code so that it is available for use in the system.
Can Add Non-Standard Reason Codes	Allows users to define their own Reason Code in the *Reason Code Entry* dialog box.
Can View User Roles	Allows users to view only those User Roles in the system whose status is “Active.”
Can Administer User Roles	Allows users to view and manage all of the User Roles in the system (all status codes).
Can View User Groups	Allows users to view only those User Groups in the system whose status is “Active.”

Table 4-3 User Management Eligibilities (continued)

Eligibility	Description
Can Administer User Groups	Allows users to view and manage all of the User Groups in the system (all status codes).
Can View Sites	Allows users to view only those Sites in the system whose status is “Active.”
Can Administer Sites	Allows users to view and manage all of the Sites in the system (all status codes).

Required Eligibility for Managing User Roles

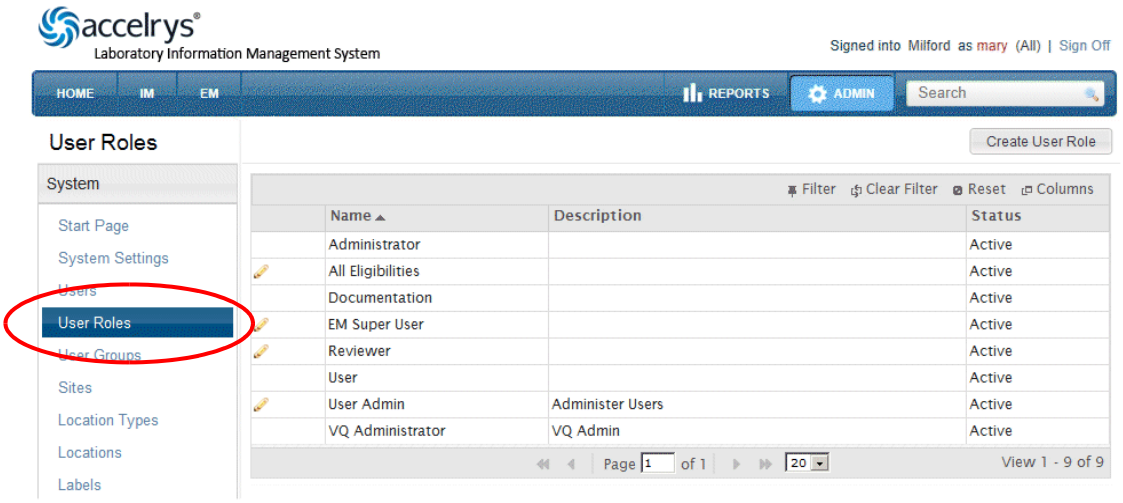
In order to manage Users Roles, users must belong to a User Role that has the following eligibilities:

- **Can View Users Roles**—Allows users to view the registered Users Roles and their audit trails.
- **Can Administer Users Roles**—Allows users to create and edit User Roles. Note that you cannot belong to a User Role that you have created, and you cannot edit a user Role to which you belong.

Viewing Registered User Roles

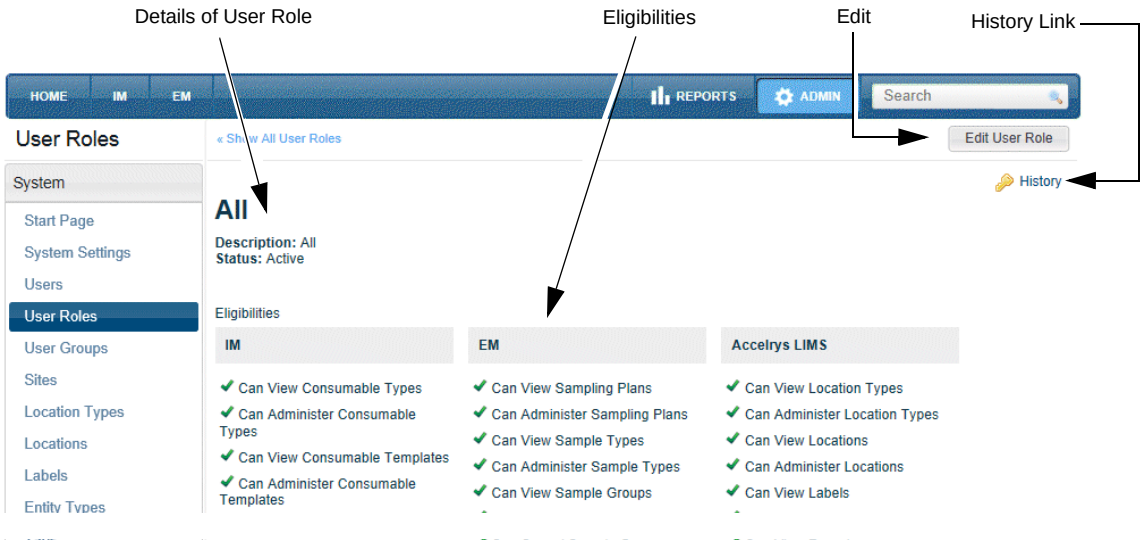
To view the registered User Roles in the system:

1. In the ADMIN tab under the System section, click **User Roles**.
2. In the *User Roles* home page, the grid identifies all of the registered User Roles by their name, description, and current status. You can filter the view of the grid as necessary. Refer to *How the Grid Control Works* on page 1-23.



"User Roles" Home Page

3 To view the details of a User Role, click the name of the role. The User Role's *View* page displays its name, description, and current status.



Viewing Details of a User Role

- The Eligibilities section displays the categories of available eligibilities—BIOVIA LIMS and User Management. Note that this page will also list the eligibilities of all of the installed modules.

  ✔ The green check mark indicates tasks that members of this role are eligible to perform.

  ✖ The blue "X" indicates tasks that members of this role are not eligible to perform.

- Click the **History** link to view the audit trails for the role. Refer to *Generating Audit Trails for Changes Made to Data* on page 1-36 for details on the History table.

4 To return to the *User Roles* home page, click **Show All User Roles** in the upper left section of the screen.

Creating a New User Role

To create a new User Role:

1 In the ADMIN tab under the System section, click **User Roles**.

2 In the *User Role* home page, click **Create User Role** above the grid.

3 In the *Create User Role* page (page 4-10):

a. Enter a name for the role. The name must be unique and cannot exceed 256 characters. Blank spaces at the beginning or end of the name are not allowed.

b. Enter a description for the role (optional). The description cannot exceed 1000 characters.

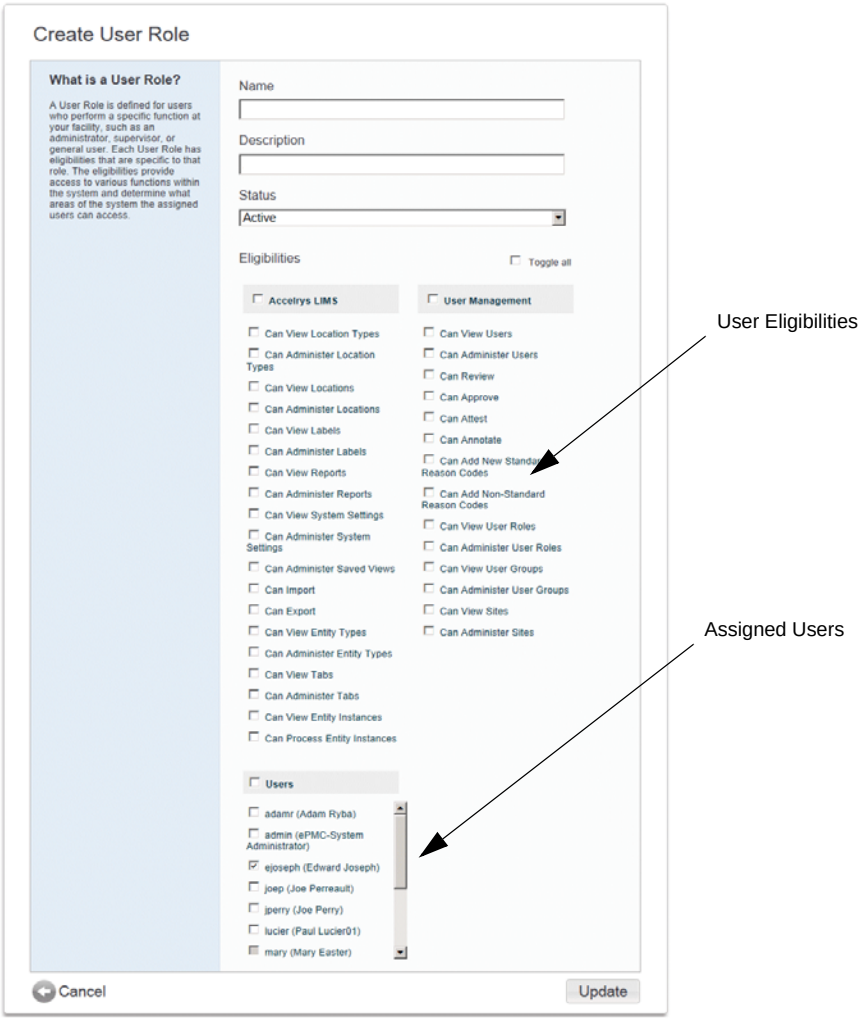
c. Change the status to "Inactive" if you do not want to make this role available for use at this time. Otherwise, leave the status set to "Active."

d. The Eligibilities section lists all of the eligibilities of the BIOVIA LIMS application and its installed modules. You can set the user eligibilities in several ways:

- To grant members of this role full access to the system, click the **Toggle all** check box above the categories to enable all of the eligibilities.
- To grant members of this role access to a specific module or category, click the check box in its respective category heading.
- To assign individual eligibilities within a module or category, click or clear the individual check boxes.

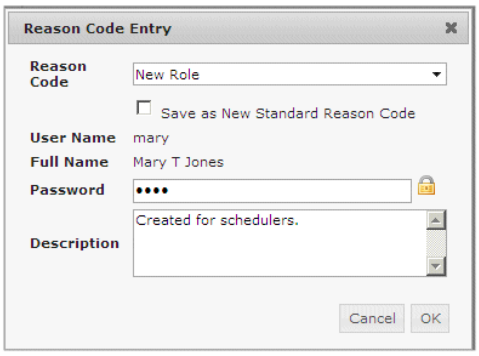
e. In the User's category, select the users that will belong to this role. Only those users whose account is "Active" are displayed in the list. The users are displayed in alphanumeric order. Note that you cannot assign yourself to this User Role.

f. Click **Create**.



Creating a New User Role

4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.



Reason Code for New Role

Editing a User Role

With proper eligibility, you can edit the configured eligibilities of a User Role as well as the users assigned to it. However, you cannot edit a role to which you belong.

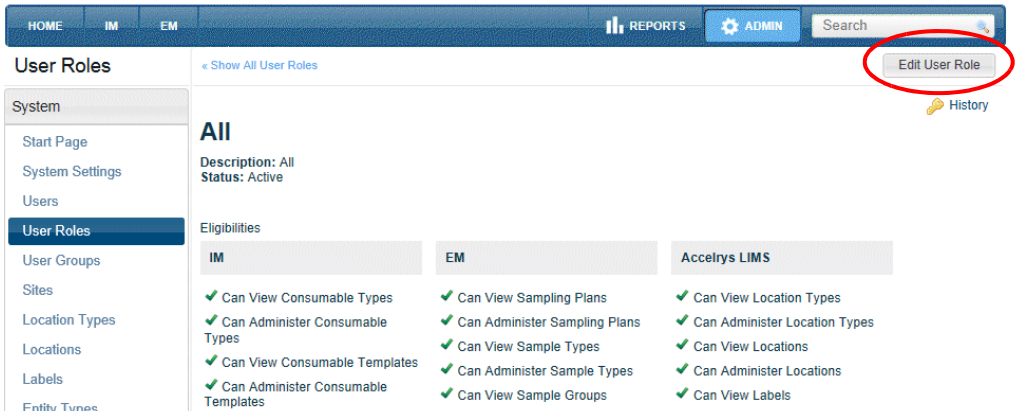
Before you edit an existing User Role, set its status to “Inactive” to make the role temporarily unavailable while you edit it. While you are editing a User Role, users will not be able to access that role until you set its status back to “Active.” If users are already logged into that role when you inactivate it, they will be immediately placed into another User Role if they have access to one. If they do not have access to another role, they will be logged out of the system when they navigate away from their current page.

If you edit the User Role while keeping the status “Active,” users signed into that role will be automatically updated with any new eligibilities.

Note: If another eligible user attempts to edit the same role, the role’s *View* page will display a “Locked” message above the details of the role.

To edit an existing User Role:

1. In the ADMIN tab under the System section, click **User Roles**.
2. In the *User Role* home page, do one of the following:
   - Click **Edit** preceding the User Role in the grid view.
   - Click the name of the role to open its *View* page, then click **Edit User Role**.



User Role's "View" Page

3 In the *Edit User Role* page, make the edits as necessary:

a. Change the name of the role, if required.

b. Enter or change the description.

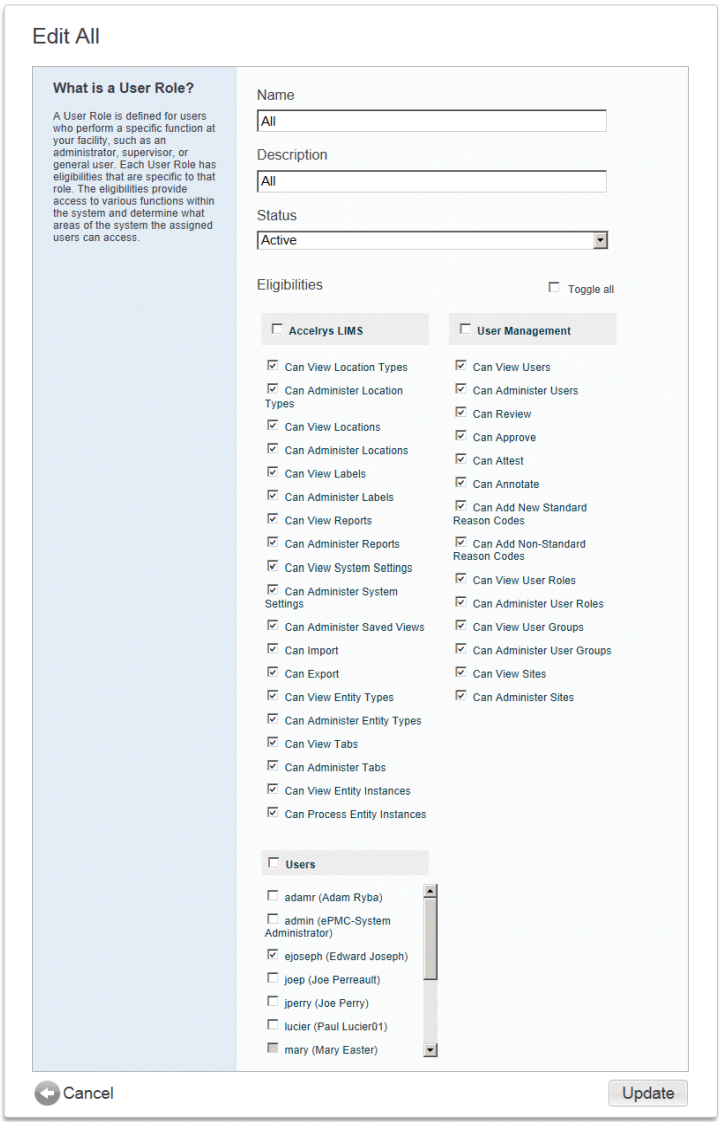
c. If the role is currently "Active," change the status to "Inactive" to prevent users from using this role until you have completed editing it. Click **Update**, enter your credentials in the *Reason Code Entry* dialog box, and then repeat Step 2.

d. Configure the user eligibilities as required. You can set the user eligibilities in several ways:

- To grant members full access to the system, click the **Toggle all** check box to enable all of the eligibilities.
- To grant members access to a specific module or category, click the check box in its respective category heading.
- To assign individual eligibilities within a module or category, click or clear the individual check boxes.

e. Add or remove users from the role, as required. You cannot add yourself to this role.

f. Click **Update**.



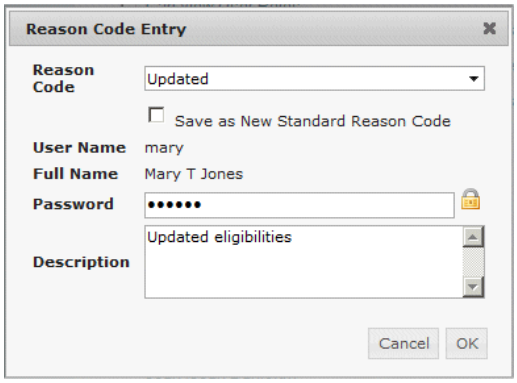
Editing a User Role

4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.

Note the following:

- If you added or removed a user from the role, their corresponding user account is automatically updated.

- If you removed any users who are currently logged into the role, they are automatically switched to another role. If no other role exists, you will get an error message that you cannot remove that user, as they must belong to at least one User Role.



Reason Code for Updated Value

The User Role's *View* page is re-displayed. The members of the role are automatically updated with the new eligibilities.

5 To return to the *User Roles* home page, click **View All User Roles** above the details.

Inactivating a User Role

To make a User Role indefinitely unavailable for use, set its status to "Inactive." Members of the role will not be able to sign into this role. Refer to *Editing a User Role* on page 4-11.

Deleting a User Role

You cannot delete a User Role from the system. To prevent users from signing into the role, change its status to "Inactive."

Exporting User Roles to Other Systems

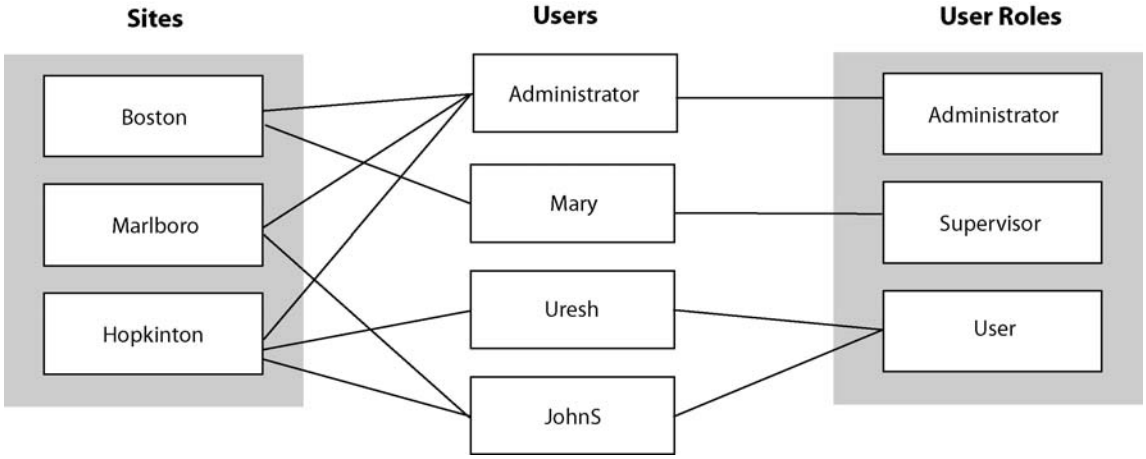
Once you have configured your User Roles, you can export them to an XML file so that you can import and deploy them on other systems. Refer to Chapter 11, *Exporting and Importing Configured Entities* for more information.

5

Managing User Accounts

What is a User Account?

A *user account* is required for every user in order to sign on to the system. When you create a user account, you will specify the user's credentials—full name, user name for signing in, email address, department, and default password. In addition, you will assign the user to your predefined User Roles and Sites. The following figure shows the relationship between Users, Sites, and User Roles.



Relationship between Users, Sites, and User Roles

Managing User Accounts between BIOVIA LIMS and BIOVIA LES

This section pertains to customers who are running both BIOVIA LIMS and the BIOVIA Lab Execution System (LES).

- When a new user account is created in BIOVIA LIMS, the same user account is created in BIOVIA LES with no assigned BIOVIA LES eligibilities. Note that the concept of User Roles is not supported in the BIOVIA LES system.
- Similarly, when a new user account is created in BIOVIA LES, the same user account is also created in BIOVIA LIMS and are assigned to the “Default” site and to the default “User” Role with no assigned eligibilities.
- When BIOVIA LIMS data is modified by the BIOVIA LES integration, the history records of the changes are assigned to an internal "System" role and are not displayed in the History table.

Required Eligibility for Managing User Accounts

In order to manage User accounts, users must belong to a User Role that has the following eligibilities:

- **Can View Users**—Allows users to view the registered user accounts and their audit trails.
- **Can Administer Users**—Allows users to create new user accounts, clone existing user accounts, and edit user accounts.

Status Codes for User Accounts

Status codes represent the current state of a user account in the system. A user account can reside in one of two states:

- **Active**—When you create a new user account, its status is set to “Active” by default and it is immediately available for use in the system. A user can be assigned to Sites, User Roles, and User Groups. The user account can also be referenced by other dependencies in the system, such as properties and workflow activities.
- **Inactive**—The user account is unavailable to users and other dependencies.

The following table summarizes the actions that you can perform at each state.

Table 5-1 Allowed Actions for the States of a User Account

Action	Status	
	"Active"	"Inactive"
Can view user accounts in system	All users [1]	Administrator only [2]
User can sign on to system	Yes	No
Available to dependencies (for example, properties, workflow activities)	Last "Active" version	No
Can clone user accounts	Yes [2]	Yes [2]
Can edit user accounts	Yes [2]	Yes [2]
Can assign user to active User Roles and Sites	Yes [2]	No
Can delete user accounts	No	No
Can change status to:	Inactive	Active
Versioning enforced for changes	Yes	Yes
Reason Code applied to changes	By user	By user
Can export user accounts to other systems	Yes [3]	No

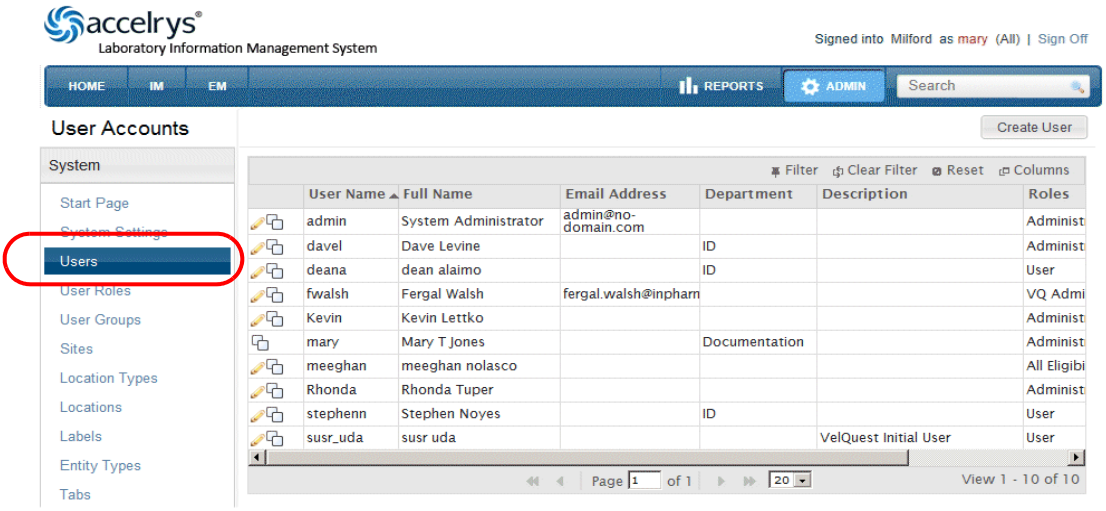
[1] Requires "Can View" eligibility
[2] Requires both "Can View" and "Can Administer" eligibility
[3] Requires "Can Export" eligibility

Viewing Registered User Accounts

The *User Accounts* home page displays a list of registered users in the system.

To view the registered users in the system:

1 In the ADMIN tab under the System section, click **Users.** The *User Accounts* home page is displayed.



"User Accounts" Home Page

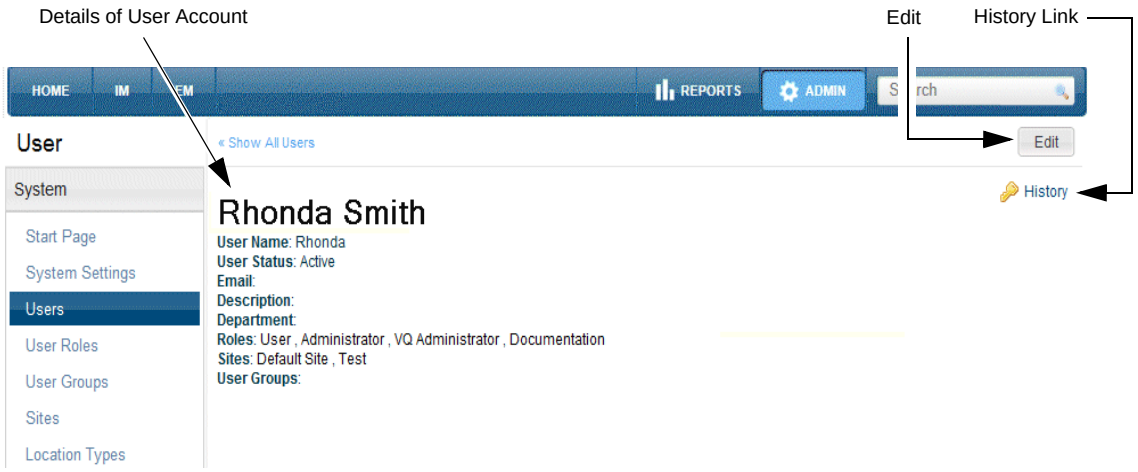
The grid lists all of the user accounts that are registered in the system. Each user account is identified by its User Name, full name, email address, department, description, current User Role(s), and current status.

The icons in the first column represent the following actions:

Edit—Allows eligible users to edit the corresponding user account. Note that you cannot edit your own account. Refer to *Editing a User Account* on page 5-8.

Clone—Allows eligible users to create a new user account based on the configuration of the source user. Refer to *Creating a New User Account by Cloning an Existing Account* on page 5-8.

2 To view the details of the user account, click the name of the user. The user account's *View* page displays its details.



Viewing Details of a User Account

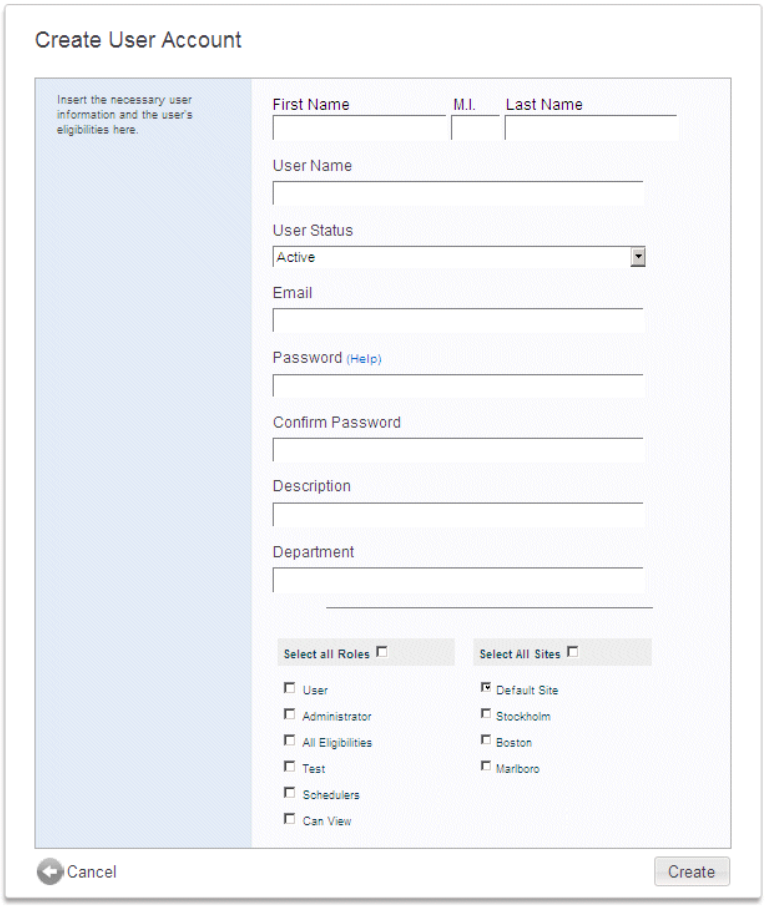
- The user's full name, User Name, current status, email address, description, department, user roles, and sites are displayed at the top of the screen. Each role and site is a link to its respective *View* page.
- Click the **History** link to view the audit trials for this user account. Refer to *Generating Audit Trails for Changes Made to Data* on page 1-36 for details on the History table.

3 To return to the *User Accounts* home page, click **Show All Users** above the details.

Creating a New User Account

To create a new user account:

1. In the ADMIN tab under the System section, click **Users.**
2. In the *User Account* home page, click **Create User.**
3. In the *Create User Account* page:
   a. Enter the first, middle initial (optional), and last name of the user.
   b. Enter a unique user name. This is the name the user will use to sign on. The user name is case-insensitive—for example, “JohnD” is considered the same user name as “johnd.” The user name cannot exceed 255 characters.



Creating a New User Account

Note: If your system is using Windows Authentication, the User Name must match the user name of the domain account in order for this user to successfully sign on.

c. Change the status if necessary. By default, a new user account is created with an "Active" status, which allows the user to sign on once this account is created. Select "Inactive" to prevent this user from signing on.

d. Enter the email address for this user (optional).

e. If your system is using ePMC Authentication, enter a default password for the user, then re-enter it to confirm. Users will be prompted to change their default passwords the first time they sign on. If your system is using Windows Authentication, these password fields are hidden.

f. Enter a description for this user (optional).

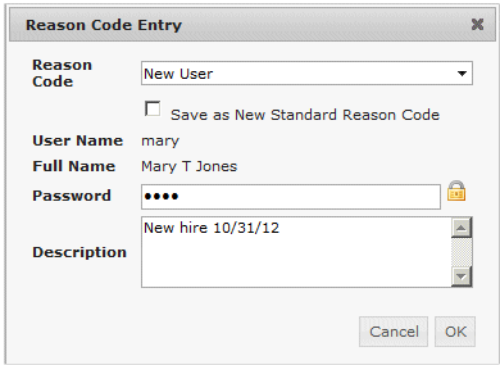
g. Enter the name of the department to which this user belongs (optional).

h. Select the User Role(s) to which this user will belong. The user must belong to at least one role.

i. Select the Site(s) to which this user will belong. The user must belong to at least one site.

j. Click **Create**.

4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.



"Reason Code Entry" Dialog Box

The details of the new user are displayed in the user account's *View* page (page 5-5).

Creating a New User Account by Cloning an Existing Account

You can create a new user account by cloning an existing one. The cloned user account will assume the department, description, User Roles, and Sites of the source user. This is a great time saver if you have a large number of user accounts to create.

To clone an existing user account:

1. In the ADMIN tab under the System section, click **Users.**
2. In the *User Accounts* home page, click **Clone** preceding the name of the user you want to clone.
3. In the *Create User* page, enter the information for the new user (page 5-6):
   - Full name (first and last name are required)
   - User Name
   - Email account
   - Password (required for ePMC Authentication only)
4. Change any of the following information for the cloned user, if necessary:
   - Department
   - Description
   - User Roles (must belong to at least one role)
   - Sites (must belong to at least one site)
5. Click **Create**.
6. In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.

The details of the new user is displayed in the user account's *View* page (page 5-5).

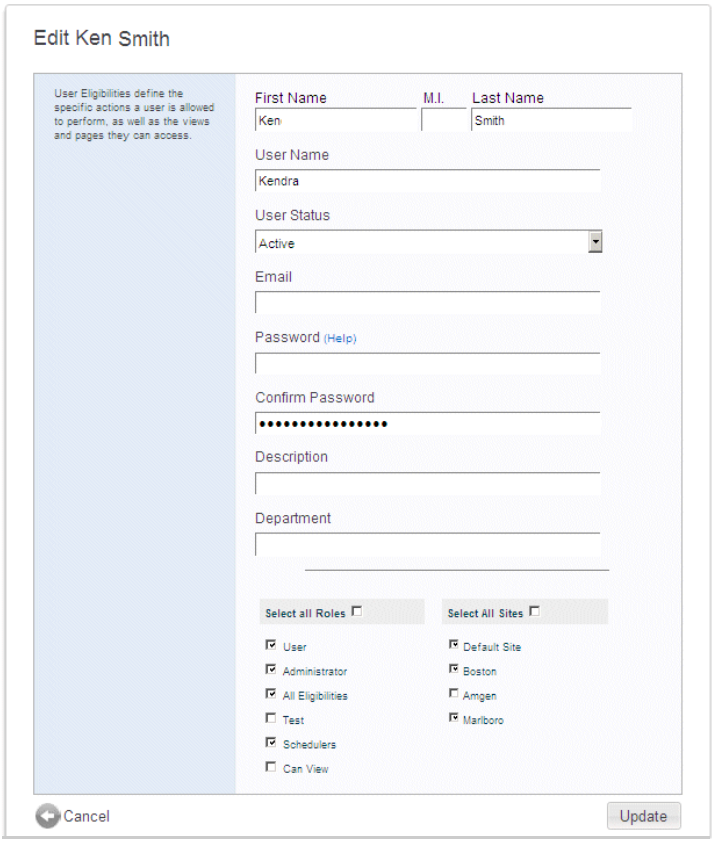
Editing a User Account

You can edit a user account to update the user's information, assigned role and sites, or status. You cannot edit your own account. For environments running BIOVIA LES, when you edit a user account in the BIOVIA LIMS application, only those fields relevant to their BIOVIA LES user account are updated. Likewise, when you edit a BIOVIA LES user account, only those fields relevant to the BIOVIA LIMS user account are updated.

To edit a user account:

1. In the ADMIN tab under the System section, click **Users**.
2. In the *User Accounts* home page, do one of the following:
   - Click **Edit** preceding the user name in the grid view.
   - Click the name of the user to open its *View* page, then click **Edit**.

3 In the *Edit User* page, update any of the fields as necessary and click **Update** (page 5-9).



Editing a User Account

4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. The updated details of the user are displayed in the user account's *View* page.

Inactivating a User Account

You can inactivate a user's account to deny them access to the system. Its dependencies cannot use any version of this user account. Refer to *Editing a User Account* on page 5-8.

When BIOVIA LES is installed on the BIOVIA LIMS server, the status changes are connected between the two applications. When you inactivate a user account in the BIOVIA LIMS application, the BIOVIA LES user account is also inactivated. Likewise, when you inactivate a user account in BIOVIA LES, the BIOVIA LIMS user account is also inactivated.

Deleting a User Account

Since user names are permanently tied to audit trail information in the BIOVIA LIMS server's database, you cannot delete user accounts from the system. However, you can inactivate a user account to prevent that user from signing onto the system.

Exporting User Accounts to Other Systems

Once you have finished configuring your user accounts, you can export them to an XML file so that you can import and deploy them on other systems in your environment. Refer to Chapter 11, *Exporting and Importing Configured Entities* for more information.

6

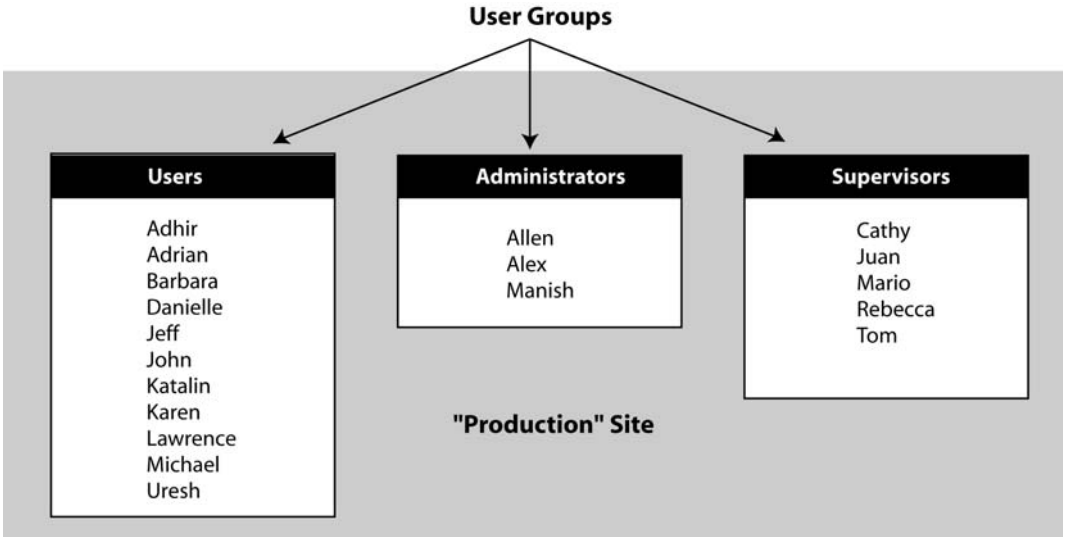
Managing User Groups

What is a User Group?

A *User Group* is a group of one or more active users organized according to a specific criteria. For example, you could create a User Group for users who share a common function (such as lab analysts or administrators) or for users who belong to a common work group (such as a manufacturing First Shift or Second Shift).

User Groups are only relevant to the Site in which they are created. When you create a User Group, the available list of users is filtered according to their access to the current Site. You cannot add yourself to or remove yourself from a User Group.

The following figure shows the relationship between a Site, User Groups, and User accounts.



Relationship between a Site, User Groups, and Users

User Groups are used to control the access to your entity instances. When you create or edit an Entity Type, you can configure permission groups that will allow one or more User Groups to either view or process the entity instances based on that type. Refer to *Controlling Access to Instances of Entity Types* on page 7-4 for more information.

Required Eligibility for Managing User Groups

In order to create and manage User Groups, users must belong to a User Role that has the following eligibilities:

- **Can View User Groups**—Allows users to view User Groups and their audit trails.
- **Can Administer User Groups**—Allows users to create and edit User Groups.

Status Codes for User Groups

Status codes represent the current state of a User Group in the system. A User Group can reside in one of two states:

- **Active**—When you create a new User Group, its status is set to "Active" by default and it is immediately available for use in the system. It can also be used by other dependencies in the system, such as Entity Type properties and workflow activities.
- **Inactive**—The User Group is unavailable to users and other dependencies.

The following table summarizes the actions that are allowed at each state.

Table 6-1 Allowed Actions for the States of a User Group

Action	Status	
	"Active"	**"Inactive"**
Can view User Groups in system	All users[1]	Administrator only[2]
Available to dependencies (for example, user accounts, properties, workflow activities)	Yes	No
Can edit User Groups	Yes[2]	Yes[2]
Can delete User Groups	No	No
Can change status to:	Inactive	Active

Table 6-1 Allowed Actions for the States of a User Group (continued)

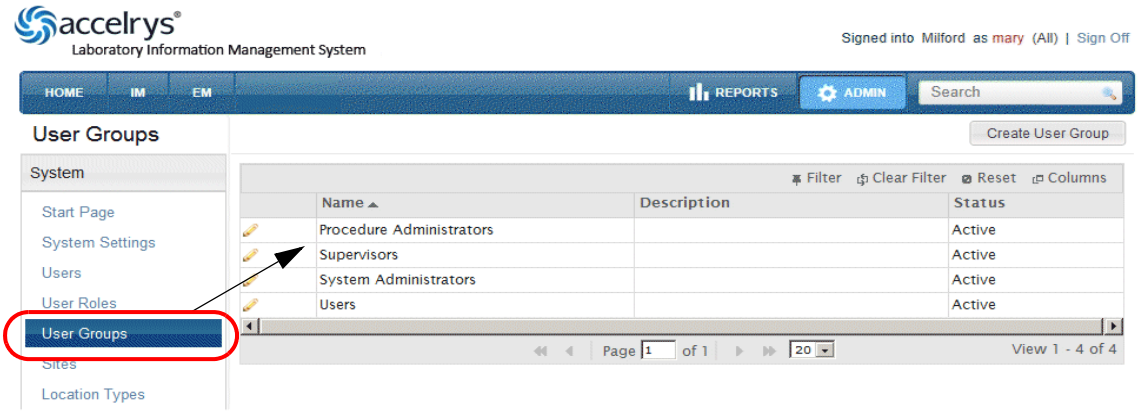
Action	Status	
	"Active"	"Inactive"
Versioning enforced for changes	Yes	Yes
Reason Code applied to changes	By user	By user
Can export User Groups to other systems	Yes[3]	No

[1] Requires "Can View" eligibility
[2] Requires both "Can View" and "Can Administer" eligibility
[3] Requires "Can Export" eligibility

Viewing Registered User Groups

To view the registered User Groups in the system:

1 In the ADMIN tab under the System section, click **User Groups**. The *User Groups* home page is displayed.



"User Groups" Home Page

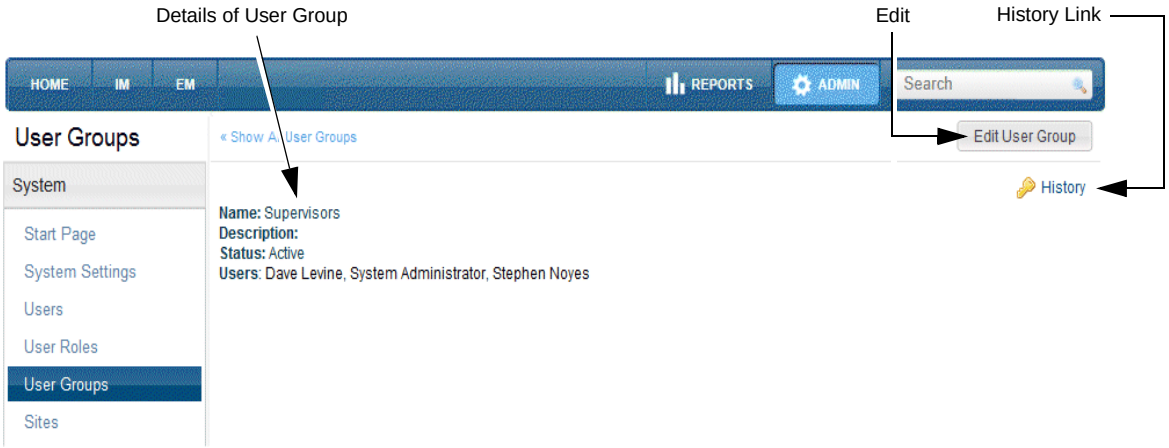
The grid lists all of the User Groups that are registered in the system. Each User Groups is identified by its name, description, and current status.

Click **Edit** in the first column to edit the corresponding Group.

You can filter the view of the grid as necessary. Refer to *How the Grid Control Works* on page 1-23.

2 To view the details of a User Group, click the name of the group. The User Group's *View* page displays its name, description, and current status.

- Click the **Edit User Group** button above the History link to edit the definition of this Group. Refer to *Editing a User Group* on page 6-6.
- Click the **History** link to view the audit trail and revisions made to the Group. Refer to *Generating Audit Trails for Changes Made to Data* on page 1-36 for details on the History table.



Viewing Details of a User Group

3 To return to *User Groups* home page, click **Show All User Groups** above the details.

Creating a New User Group

To create a new User Group:

1 In the ADMIN tab under the System section, click **User Groups**.

2 In the *User Group* home page, click **Create User Group** above the grid.

3 In the *Create User Group* page:

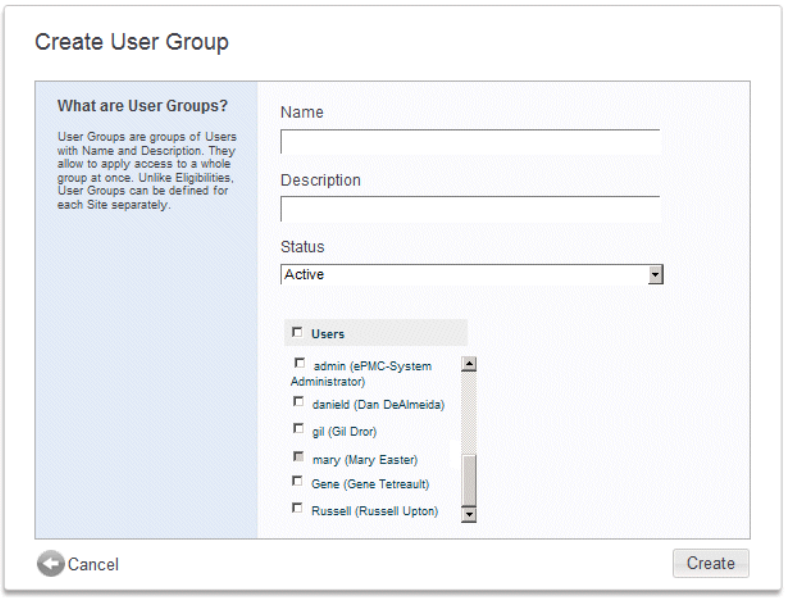
a. Enter a name for the Group. The name must be unique and cannot exceed 256 characters. Blank spaces at the beginning or end of the name are not allowed.

b. Enter a description for the Group (optional). The description cannot exceed 1000 characters.

c. Change the status to “Inactive” if you do not want to make this Group available for use at this time. Otherwise, leave the status set to “Active.”

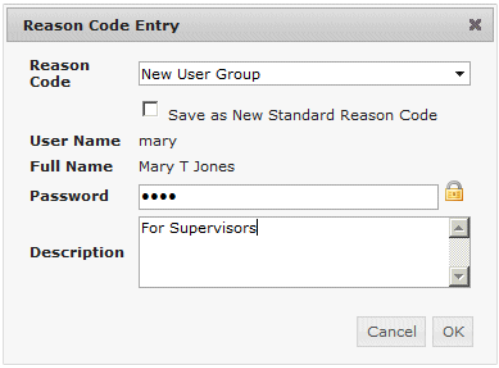
d. In the User’s category, select the users that will belong to this Group. You can click the check box to select all of the users. Only those users whose account status is “Active” are displayed in the list and the users are displayed in alphanumeric order.

e. Click **Create**.



Creating a New User Group

4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.



Reason Code for New Group

Note: If the status of the User Group is “Active,” members of this Group can now sign in.

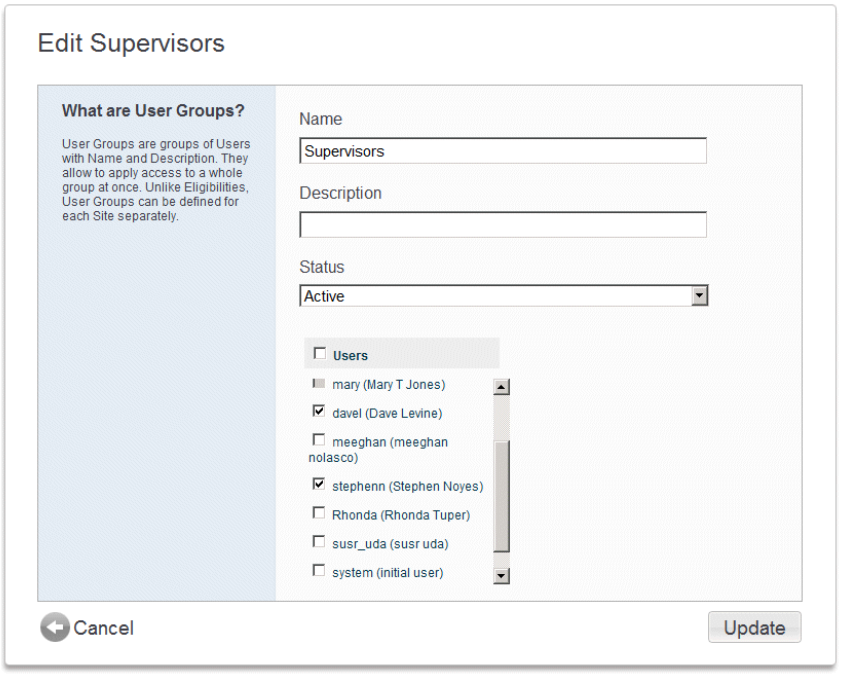
Editing a User Group

Before you update an existing User Group, you can set its status to “Inactive” to make the Group temporarily unavailable while you edit it. If members are already logged in when you inactivate this group, they are immediately placed into another User Group (if they belong to one), or are logged out of the system when they navigate away from their current page.

If you edit the Group while keeping the status “Active,” users signed into that Group are automatically updated with any new eligibilities.

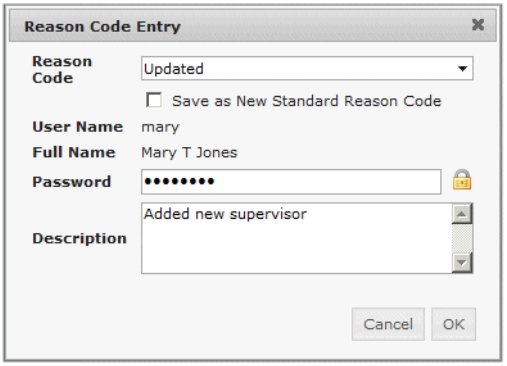
To edit an existing User Group:

1. In the ADMIN tab under the System section, click **User Groups**.
2. In the *User Group* home page, do one of the following:
   - Click **Edit** preceding the User Group in the grid view
   - Click the name of the group to open its *View* page, then click **Edit User Group**.
3. In the ***Edit User Group*** page, make the edits as necessary:
   a. Change the name of the Group, if required.
   b. Enter or change the description.
   c. If the Group is currently “Active,” change the status to “Inactive” if you want to prevent members from using this Group until you have completed editing it. Click **Update**, enter your credentials in the *Reason Code Entry* dialog box, and then repeat Step 2.
   d. Add or remove users from the Group, as required.
   e. Click **Update**.



Editing a User Group

4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.



Reason Code for Updated Value

5 The Group's *View* page is re-displayed. To return to the *User Groups* home page, click **View All User Groups** above the details.

Inactivating a User Group

To make a User Group permanently unavailable for use, set its status to “Inactive.” Members of this group will not be able to access this group. Refer to *Editing a User Group* on page 6-6.

Deleting a User Group

You cannot delete a User Group. To prevent users from signing into the Group, change its status to “Inactive.” Refer to *Editing a User Group* on page 6-6.

Exporting User Groups to Other Systems

Once you have configured your User Groups, you can export them to an XML file so that you can import and deploy them on other systems. Note that only the User Groups are exported, not the user accounts assigned to them. Refer to Chapter 11, *Exporting and Importing Configured Entities* for more information.

7

Managing Entity Types

What is an Entity Type?

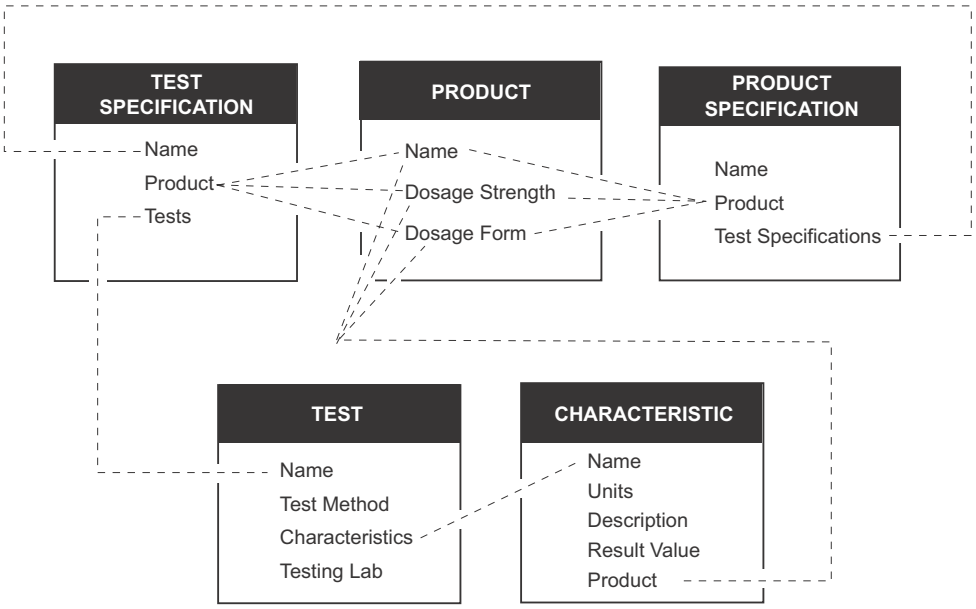
An *Entity Type* represents one type of entity applicable to the type of work done in your environment. For example, the following list includes several Entity Types applicable to a Sample Management application:

- Product
- Test Specification
- Product Specification
- Test
- Characteristic

Each Entity Type consists of various properties that will apply to all instances based on that type. For example, when users create instances of a “Test” Entity Type, each entity instance (that is, each test) will have the same type of properties (such as Name, Test Method, Characteristics, Testing Lab) but its property values will correspond specifically to that test instance.

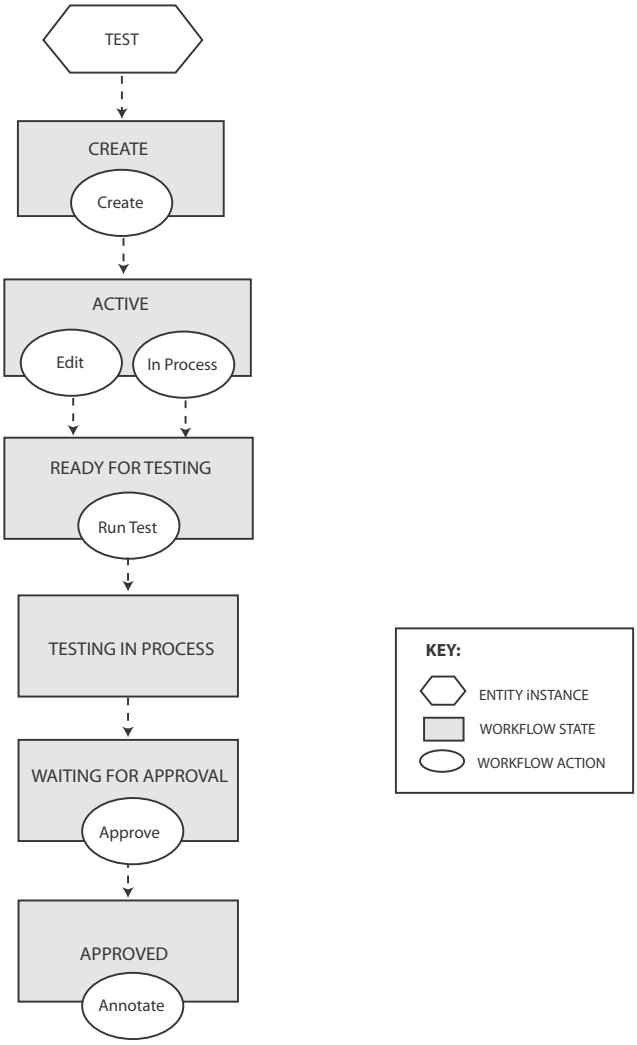
In addition, the property of an Entity Type can collect its value(s) from the property of a different but related Entity Type. For example, the Test Specification, Product Specification, and Characteristic Entity Types in the following diagram all obtain the values of their “Product” property from the specified properties of the “Product” Entity Type. These types of properties are referred to as “relationship” properties.

An Entity Type is also based on a defined *workflow* that determines the life cycle of the instances of this Entity Type during workflow execution. The workflow defines the different “states” in which an entity instance can reside, starting from the beginning of its life cycle (for example, when it is received, created, or activated) to the end of its life cycle (for example, when it is approved or archived).



Entity Types and their Related Properties

A workflow typically contains one or more actions that a user can perform in each state of the workflow. The following flowchart illustrates a workflow for an instance of a “Test” Entity Type.



Workflow for an Instance of a "Test" Entity Type

When you create a new Entity Type, it contains a default workflow with two states:

- **Create**—the state in which the entity enters the system (also known as the Zero State)
- **Active**—defines the initial actions that can be performed on that entity.

You can customize the default workflow as necessary for each new Entity Type you create. Chapter 8 explains the Zero State and how to configure workflows for your Entity Types.

Required Eligibility for Managing Entity Types

In order to manage Entity Types, users must belong to a User Role that has the following user eligibilities:

- **Can View Entity Types**—Allows users to view the registered Entity Types and their properties, workflows, and audit trails.
- **Can Administer Entity Types**—Allows users to create new Entity Types, configure their properties and workflows, edit and clone existing Entity Types, and delete an Entity Type whose status is “Draft.”

In addition, to test the workflows of an Entity Type, users must have the following eligibilities:

- **Can View Entity Instances**—Allows users to view the instances created from this Entity Type.
- **Can Process Entity Instances**—Allows users to create an instance of this Entity Type and process its workflow for testing purposes.

Controlling Access to Instances of Entity Types

You can control user access to entity instances in the following ways:

- **Controlling Access to Entity Instances**
  The global user eligibilities “Can View Entity Instances” and “Can Process Entity Instances” control the assigned users access to all Entity Types.
- **Controlling Access to Entity Types and their Instances**
  User Groups can be used to filter access to individual Entity Types and entity instances. When you create or edit an Entity Type, you can limit user access by configuring permission groups that will allow only the specified User Group(s) to "View" or "Process" the entity instances based on that type.
- **Controlling Access to Workflow Actions**
  User Groups can be used to filter access to workflow actions. The use of the Restrict Group Access activity provides the ability to limit user access to a workflow action by configuring a group access expression.

  If the Entity Type has a “Restrict Group Access” activity in the Zero State, the permissions defined in the activity will override the configured permissions of the Entity Type. For example:

  - Group A is granted “Can Process” in the Entity Type.
  - Group A is not referenced in the “Restrict Group Access” activity in the Zero State’s Create action
  - The activity’s permission will override the Entity Type’s permission—a user in Group A cannot create the entity instance.

The “Restrict Group Access” activity in any state other than the Zero State will override the Entity Type's permission groups for that particular workflow action. For example:

- Group A is granted “Can Process” in the Entity Type.
- Group A is not referenced in the “Restrict Group Access” activity in an action in any workflow state.
- The activity’s permission will override Entity Type’s permission—a user in Group A cannot execute the action.

If the Entity Type has both a “Restrict Group Access” and a “Create Entity” activity in a workflow action, the permissions defined in the “Restrict Group Access” activity will override the permissions of the entity instance that is being created. For example:

- Group A is not referenced in the access permissions of the Entity Type.
- Group A is included in the “Restrict Group Access “activity in the Zero State’s Create action.
- The activity’s permission will override the Entity Type permission—a user in Group A will not see the Create action buttons since they do not have permission, however they can create the entity instance from a different entity instance’s workflow (assuming the different entity has a Create Entity activity).

Status Codes for Entity Types

Status codes represent the current state of an Entity Type in the system. An Entity Type can reside in one of four states:

- **Draft**—When you create a new Entity Type, its status is set to “Draft” by default. It is not available for use in the system until you set its status to “Active.”
- **Active**—The Entity Type is available for use in the system. It can be used by other dependencies, such as properties and workflow activities.
- **Upgrading**—The Entity Type is unavailable for use in the system. However, existing dependencies will use the last “Active” version of this Entity Type.
- **Inactive**—The Entity Type is unavailable to users and other dependencies.

Table 7-1 summarizes the actions that eligible users can performed at each state

Table 7-1 Allowed Actions for the States of an Entity Type

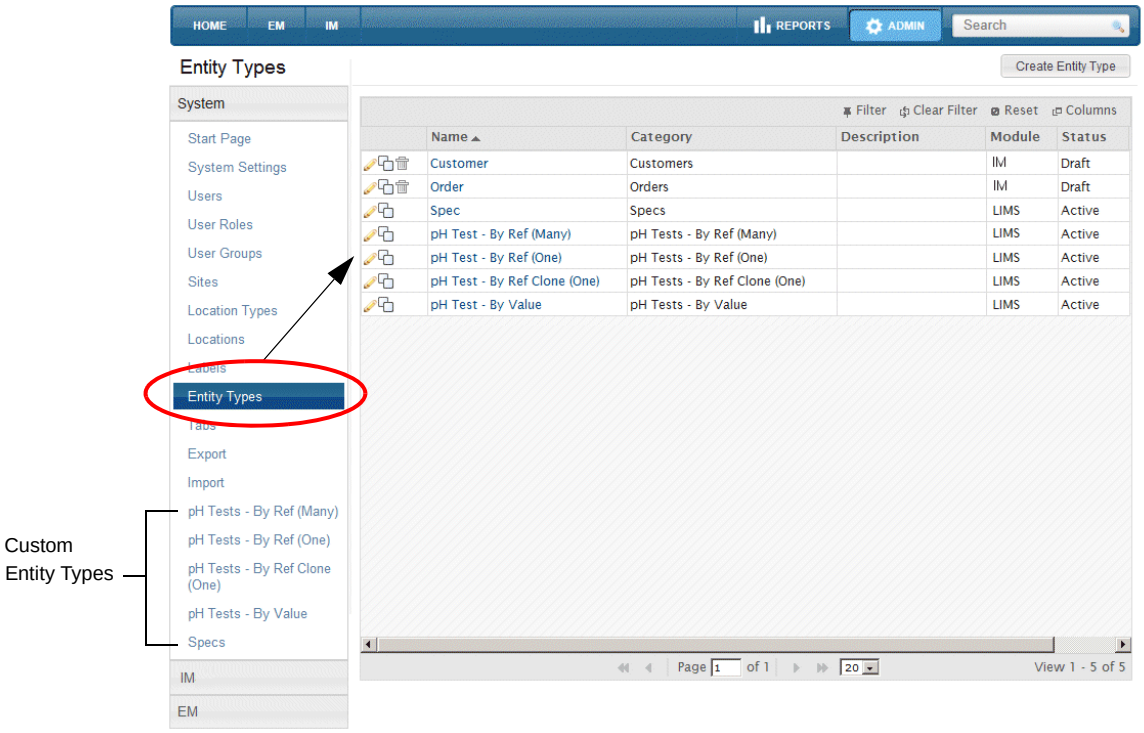
Action	Status			
	"Draft"	**"Active"**	**"Upgrading"**	**"Inactive"**
Can view Entity Types in the system	Administrators only	All users	Administrators only	Administrators only
Available to dependencies (for example, Labels, properties, workflow activities, instances of this Entity Type)	No	Yes	No	No
Can add properties	Yes [2]	Yes [2]	Yes [2]	Yes [2]
Can edit properties	Yes [2]	Yes [2, 4]	Yes [2]	Yes [2]
Can delete properties	Yes [2]	No	No	No
Can add property group tabs	Yes [2]	Yes [2, 4]	Yes [2]	Yes [2]
Can edit property group tabs	Yes [2]	Yes [2]	Yes [2]	Yes [2]
Can delete property group tabs	Yes [5]	No	No	No
Can clone Entity Types	Yes [2]	Yes [2]	Yes [2]	Yes [2]
Can edit definition of Entity Types	Yes [2]	Yes [2]	Yes [2]	Yes [2]
Can delete Entity Types	Yes [2]	No	No	No
Can change status to:	Active	Upgrading Inactive	Active	Active
Versioning enforced for changes	Yes	Yes	Yes	Yes
Reason Code applied to changes	By system	By user	By user	By user
Can export Entity Types to other systems	No	Yes [3]	No	No

[1] Requires “Can View” eligibility
[2] Requires “Can View” and “Can Administer” eligibility
[3] Requires “Can Export” eligibility
[4] When properties or property tabs are edited, the status automatically changes to “Upgrading”
[5] Property tab can only be deleted if there are no properties in the tab and it is not the only property tab

Viewing Configured Entity Types

To view the Entity Types registered in the system:

1 In the ADMIN tab under the System section, click **Entity Types**. The *Entity Types* home page is displayed.



“Entity Types” Home Page

The grid lists all of the Entity Types that are registered in the system. Each Entity Type is identified by its name, category, description, associated module, and current status. The custom Entity Types that belong to the BIOVIA LIMS module are listed under the System section heading below the “Import” link. The custom Entity Types assigned to the other modules appear under their respective section headings.

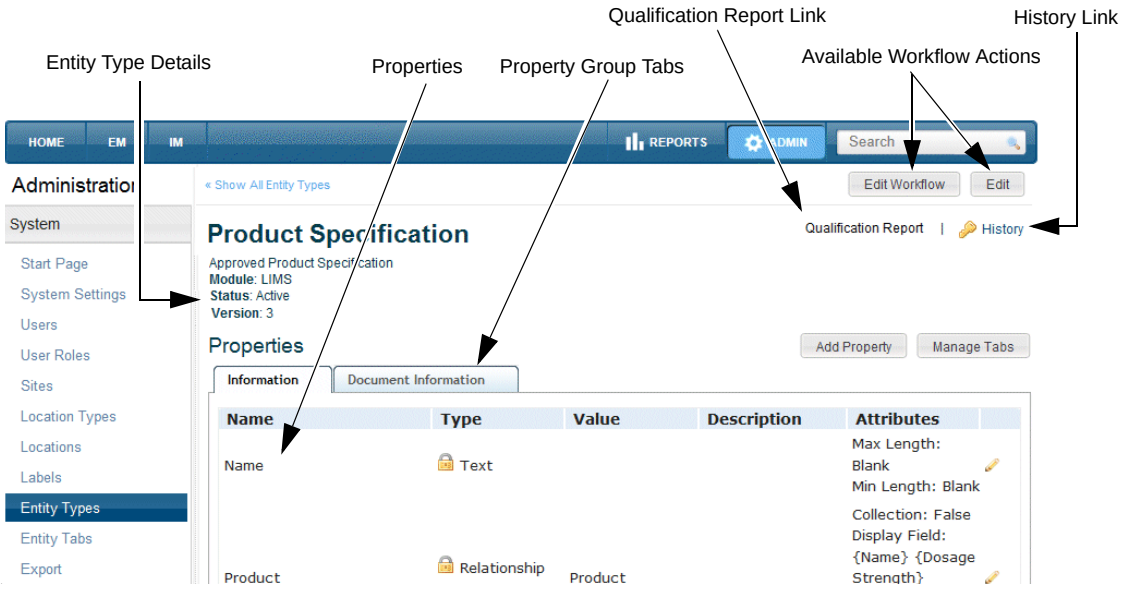
The icons in the first column of the grid represent actions that you can perform on the Entity Type. These are determined by your user eligibilities as well as the current status of the Entity Type.

Note: If the icons are not displayed, click the **Reset** button above the columns to reset the grid view. This may be required after an upgrade to BIOVIA LIMS 4.2 SP2.

- **Edit**—Allows eligible users to edit the corresponding Entity Type.
- **Clone—**Allows eligible users to create a new Entity Type based on the configuration of that Entity Type.
- **Delete—**Allows eligible users to delete the Entity Type. This is only available for Entity Types whose status is “Draft.”

You can filter the view of the grid as necessary. Refer to *How the Grid Control Works* on page 1-23.

2 To view the details of an Entity Type, click its name in the grid. The Entity Type’s *View* page displays its general information (name, description, associated module, current status, and version) as well as its configured properties.



Entity Type's "View" Page

The Entity Type's properties are displayed below its general information. These may be grouped into different categories through the use of tabs.

- A **Lock** icon in the Type column indicates that the property is being used in a calculation or a workflow activity, thus its property type cannot be changed.
- Click **Edit** to edit the corresponding property.
- Click **Delete** to delete the corresponding property. This is only available for Entity Types whose status is "Draft."
- Click **Add Property** configure a new property.
- Click **Manage Tab** to create new property tabs in order to group similar properties. You can also change the order of the listed properties or move them to a different tab. Refer to *Editing the properties of an Entity Type* on page 7-43.

The actions that you can perform on this Entity Type are represented by various command buttons below the main menu bar:

- Click **Delete** to delete an Entity Type whose status is "Draft."
- Click **Edit Workflow** button to view and edit the Entity Type's workflow. Refer to Chapter 8, *Configuring Workflows for Entity Types*.
- Click **Edit** to edit the definition of this Entity Type. Refer to *Editing an Entity Type* on page 7-41.

The **Qualification Report** link generates a report so that you can qualify the workflow. Refer to *Generating a Qualification Report for an Entity Type* on page 7-46.

The **History** link allows you to view the revisions made to the Entity Type. Refer to *Generating Audit Trails for Changes Made to Data* on page 1-36 for details on the History table.

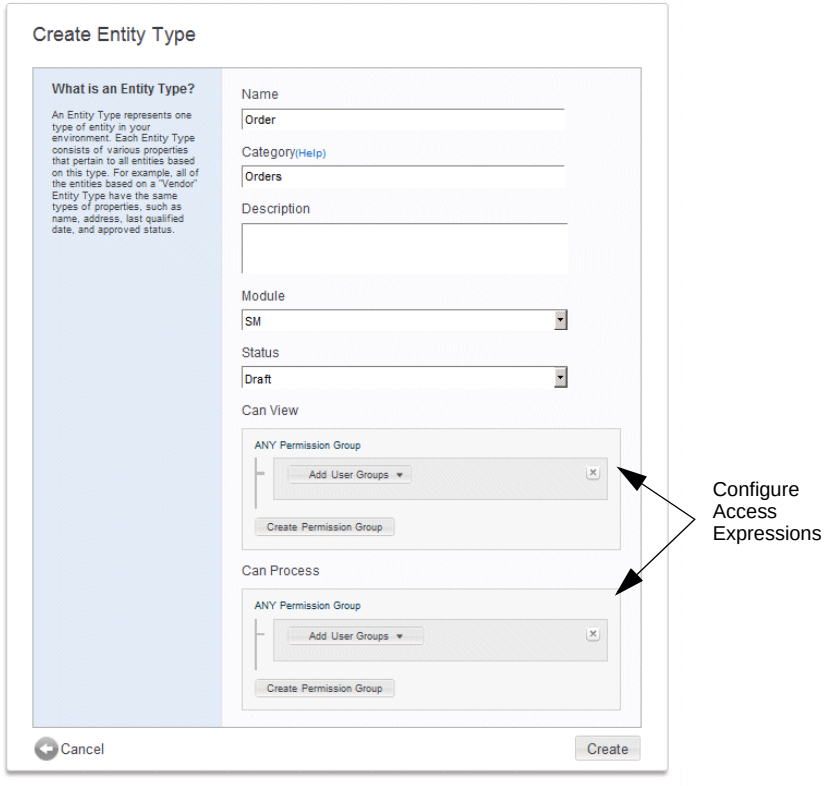
3 To return to *Entity Types* home page, click **Show All Entity Types** above the name of the Entity Type.

Creating a New Entity Type

To create a new Entity Type:

1 In the ADMIN tab under the System section, click **Entity Types**.

2 In the *Entity Types* home page, click **Create Entity Type** above the grid. The *Create Entity Type* page is displayed.



Creating a New Entity Type

3 Enter a name for the Entity Type. Note the following:

- The name must be unique in the current Site and cannot exceed 100 characters.
- Blank spaces at the beginning or end of the name are not allowed.
- You cannot use double quotes in the name (“ ”).
- You can use the same name in a different Site. The uniqueness is not case-sensitive.

4 Enter the category to which this Entity Type will belong—typically this is the plural of the Entity Type name (for example, an “Order “will belong to the category “Orders”). The category name must be unique in the current Site. The uniqueness is not case-sensitive.

5 Enter a description for the Entity Type (optional). The description cannot exceed 1000 characters.

6 Select the module that is associated with this Entity Type. The list is populated with all of the installed modules in your system.

7 To restrict who can view and process instances of this Entity Type, configure one or more *access expressions* in the “Can View” and “Can Process” sections. Each expression, identified by a gray panel, controls which User Groups have permission to the corresponding functionality. If you do not specify any permission groups, anyone with the global eligibility can view and process the entity instances.

Note the following:

- The **Can View** area allows users to view the tabs created for these entity instances, the entity instances in the grid, and the entity instance *View* pages, including their related links. They cannot perform any workflow actions.
- The **Can Process** area allows users to view and create entity instances and process their workflow, assuming that no other restrictions are enforced through a “Restrict Group Access” activity in the workflow.
- You must have at least one active User Group in the system in order to create an access expression.
- Each access expression must contain at least one User Group and can contain multiple groups.
- Users must belong to all of the User Groups in any one expression in order to view or process entity instances, thus the selected User Groups act as a logical “AND” function.
- Each expression is evaluated independently, thus the expression acts as a logical “OR” function.

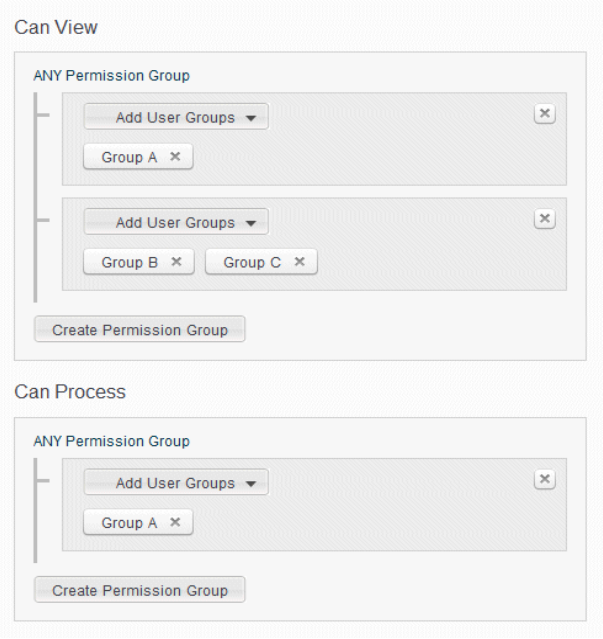
- If any of the selected User Groups become inactive, the expression evaluates the remaining User Groups. If there are no other groups in the expression, this action becomes available for anyone to execute.
- Within an expression, if one group is inactive but other groups are active, then the expression does not allow access to the other active groups. For example, if two user groups are added (Boston and Developers) and Boston is inactivated, Developers are not granted access.

8 To configure an access expression:

a. Click **Create Permission Group** in the "Can View" or "Can Process" area.

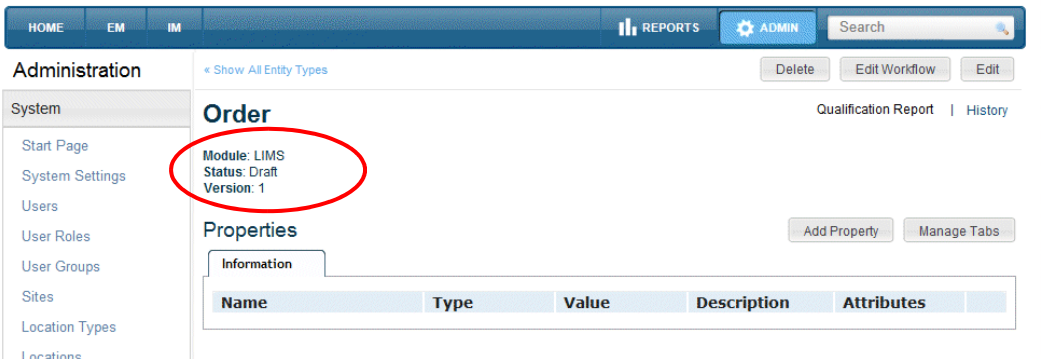
b. Click **Add User Groups** and select one or more groups. Only the active User Groups in your system are displayed.

c. To create another expression, click **Create Permission Group** and repeat Step 8b.



Creating Permission Groups for Accessing Entity Instances

9 Click **Create**. The new Entity Type's *View* page is displayed with a status of "Draft."



New Entity Type's "View" Page

10 Create the properties of the Entity Type, as described in the following section *Configuring the Properties of an Entity Type*.

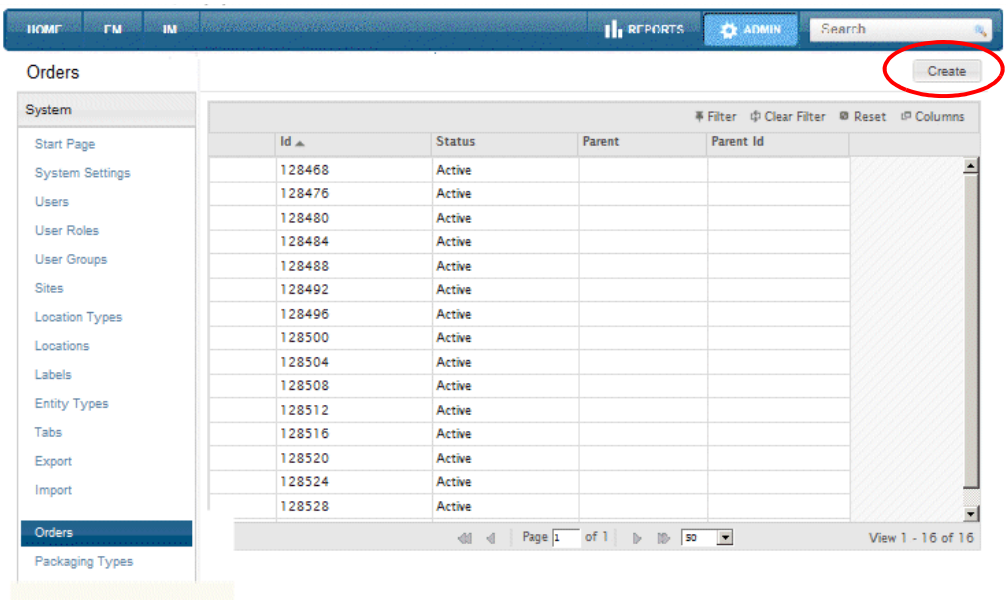
11 What's next?

- When the properties are complete, configure the workflow for this Entity Type as described in Chapter 8, *Configuring Workflows for Entity Types*.
- When the workflow is complete, set the status of this Entity Type to "Active" to make it available for use in the system. Refer to *Editing an Entity Type* on page 7-41.

Once the Entity Type is active, it is displayed in the left panel:

- The categories of new BIOVIA LIMS Entity Types are listed in the System menu directly under the Import link.
- The categories of new Entity Types for the other modules are listed under their appropriate section (for example, IM or EM).

When you click the name of the Entity Type in the left menu, the instances of that Entity Type are displayed in the home page for that Entity Type. The available action buttons above the grid are based on the Entity Type's Zero State, the initial state of its workflow.



Instances of Entity Type “Order”

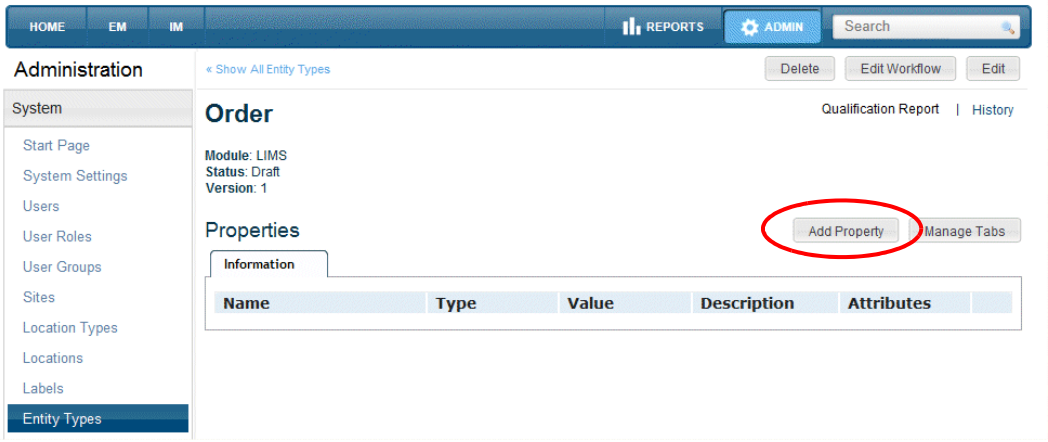
Configuring the Properties of an Entity Type

An Entity Type is defined by one or more properties specific to its type. This collection of properties describes all of the information specific to that Entity Type and applies to all of the entity instances based on this type. This section explains how to add a new property for an Entity Type and then describes each property type in more detail.

Adding a new property to an Entity Type

To add a new property to an Entity Type:

1. In the ADMIN tab under the System section, click **Entity Types**.
2. In the Entity Types home page, click the name of the Entity Type whose properties you want to configure.
3. In the Entity Type’s *View* page, click **Add Properties.**



Adding Properties in Entity Type's "View" Page

4 In the *Add Property* dialog box, perform these steps:

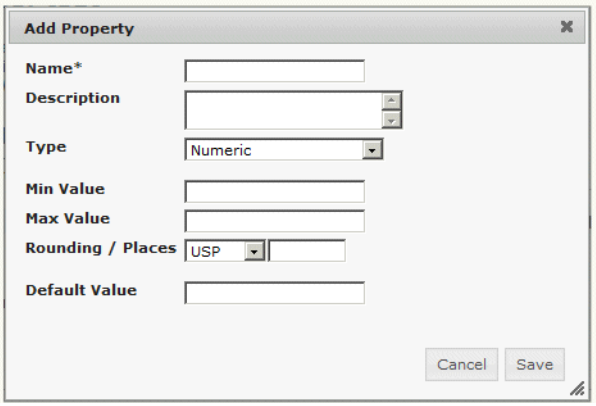
a. Enter a name for this property in the Name field. You can use duplicate names as long as they are of a different property type. You cannot use an apostrophe in the property name (for example, "Tester's Name" is an invalid name).

IMPORTANT! The following names are reserved for system use and should not be used for property names.

- NAME
- ENTITY_TYPE
- Barcode Group
- Barcode Label
- Image

b. In the Description field, enter a description (optional). The description cannot exceed 1000 characters.

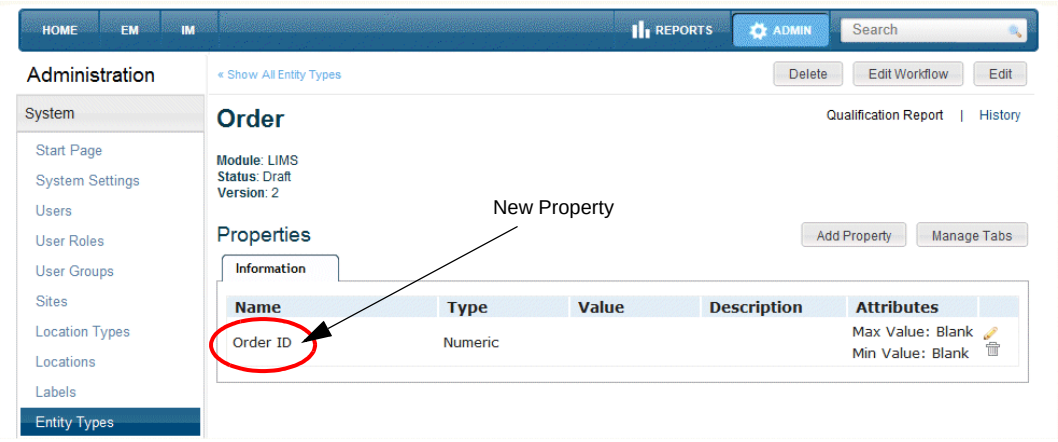
c. In the Type field, select the type of property from the selection list and set any additional parameters. Note that the selection list contains a combined list of property types used throughout the installed modules. Refer to *Description of Entity Type properties* on page 7-17 for details of the property types applicable to Entity Types.



Adding a New Property to an Entity Type

d. Click **Save**.

5 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Entity Types whose status is "Draft." The new property appears in the Entity Type's *View* page.



Configured Property of an Entity Type

6 To create additional properties, repeat Steps 2-5.

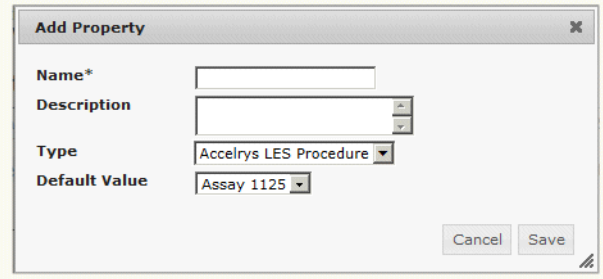
Description of Entity Type properties

This section explains the relevant property types for an Entity Type. These include:

- Accelrys LES Procedure
- Barcode
- Boolean (True/False)
- Calculate Duration
- Calculate Numeric
- Calculate Point in Time
- Date
- Date and Time
- Date Interval
- Duration
- File Upload
- Limit Specification
- Link
- List
- Numeric
- Relationship
- Text
- Text (Multiple Lines)
- User

Accelrys LES Procedure property

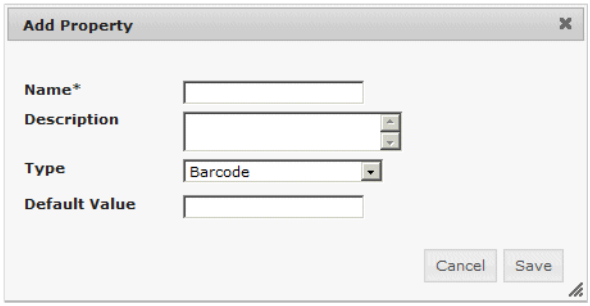
The **Accelrys LES Procedure** property is utilized in the Accelrys LES Procedure workflow activity and is used for an entity that has to be tested by executing an procedure session in the BIOVIA Lab Execution System (LES). The Default Value selection list contains all of the BIOVIA LES procedures whose status is “Current.”



“BIOVIA LES Procedure” Property

Barcode property

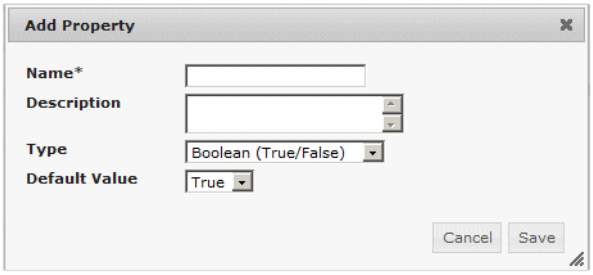
The **Barcode** property allows the user to scan a barcode (or manually enter its numbers) during workflow execution. Note that if you manually enter a value as the default value, the entry is case-sensitive.



"Barcode" Property"

Boolean (True/False) property

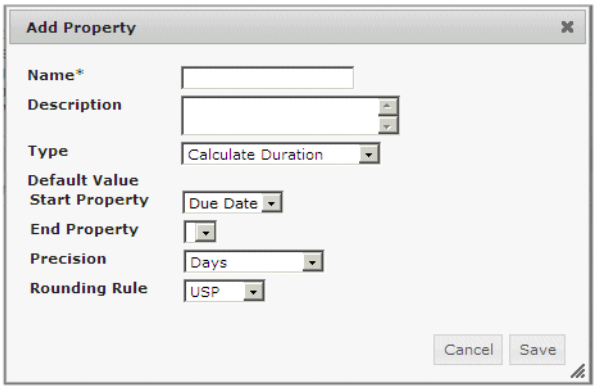
The **Boolean (True/False)** property defines a property based on a boolean value. The Boolean property includes a selection list that contains two values—"True" and "False."



"Boolean (True/False)" Property

Calculate Duration property

The **Calculate Duration** property 1) calculates the difference between two pre-configured Date and Time properties, or 2) calculates the sum of two pre-configured Duration properties.



"Calculate Duration" Property

The Calculate Duration property is calculated automatically when all required property values are collected during workflow execution. The Calculate Duration property is automatically updated if any of the required property values are recollected during workflow execution. Properties entered in any workflow state are available for use in a Calculate Duration Property. The calculated result is available for use in a subsequent calculation.

The Calculate Duration property supports the following math scenarios:

Date and Time property - **Date and Time** property

Duration property + **Duration** property

The system provides the following formats:

Years: Months: Days: Hours: Minutes: Seconds

Note: Since a Calculate Duration property can calculate durations with different units, and the unit designation is not known until the values are collected in the workflow, the system requires unambiguous definitions of all units. Therefore, Month is always defined as "30 days" and Year is always defined as "365 days."

Example:

Calculate Duration = 1 Month + 5 Days, Precision = Days

Result = 35

The configuration parameters for the Calculate Duration property are described below:

- **Start Property / End Property**—The selection lists display all of the properties based on the following types:
  - Date and Time
  - Duration
  - Calculate Point in Time
  - Calculate Duration property

  Note: If the value is selected for the End Property first, the Start Property list will only display compatible property types.

- **Precision**—Selection list displays the following options:
  - Seconds
  - Minutes
  - Hours
  - Days
  - 30 day months
  - 365 day years

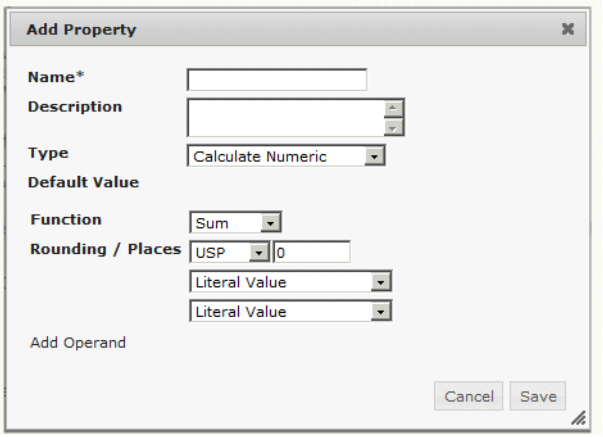
- **Rounding Rule**—The system supports the following rounding rules:
  - USP
  - Ceiling (round up)
  - Floor (round down)
  - IEEE

An audit trail is provided by the system for a change to a Calculate Duration property. The Reason Code "Updated" is entered by the system and the description lists the workflow state and the name of the property that was calculated.

When a Calculate Duration property is automatically updated due to a change in a Date and Time, Calculate Point in Time, or Duration value, the description lists the workflow action in which the value was changed, as well as the name of the property (or properties) that was recalculated.

Calculate Numeric property

The **Calculate Numeric** property defines a simple calculation that will be automatically executed once the required values are collected during workflow execution.



"Calculate Numeric" Property

A Calculation Numeric property allows any number of pre-configured properties or literal values to be used in the calculation. The calculated result is considered to be a numeric value and can be used in subsequent calculations. The calculated property is automatically updated if any of the required property values are recollected during workflow execution. The calculated result is also available for reporting.

The configuration parameters for the Calculation Numeric property are described below:

- **Function**—Selection list displays the following functions:
  - Sum
  - Product
  - Average
  - Max
  - Min
  - Median
  - Mode
  - Divide
- **Rounding/Places**—The system supports the following rounding rules:
  - USP
  - Ceiling (round up)
  - Floor (round down)
  - IEEE

Enter a numeric value to indicate the maximum number of decimal places. The precision of the calculated value is determined by the minimum precision of the operands OR the maximum number of decimal places, whichever is smaller. For example, given the operands [1.2, 3.45, 6.00] with USP rounding to [2] decimal places, the calculation result would be [10.7] because the least precise operand has one decimal place.

- **Operands**—You must have at least two operands on which to perform the calculation. The selection list displays all of the properties that are based on a numeric value, including a resolved Calculate Numeric property. The **Add Operand** link adds an additional row. You can also enter a literal value.

Note: If you enter "0" (zero) for a Divide function, the system treats the operand as a blank field and will not execute the calculation.

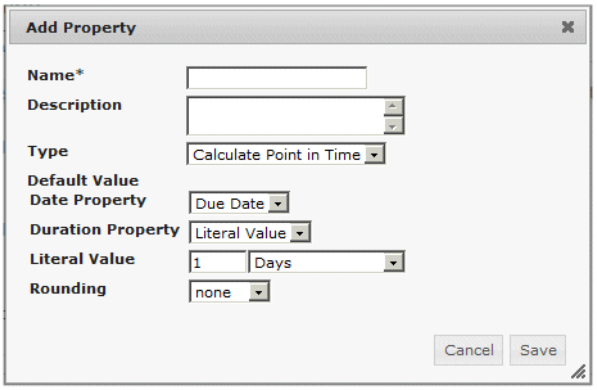
An audit trail is provided by the system for a change to a Calculate Numeric property. The Reason Code "Updated" is entered by the system and the description lists the workflow state and the name of the property that was calculated.

When a Calculate Numeric property is automatically updated due to a change in property value, the description lists the workflow action in which the value was changed, as well as the name of the property (or properties) that was recalculated.

Calculate Point in Time property

The **Calculate Point in Time** property calculates a point in time. The calculation is based on a pre-configured Date and Time property and a pre-configured Duration property. The Calculate Point in Time property supports the following mathematical operation:

Date and Time property + **Duration** property



"Calculate Point in Time" Property

The configuration parameters for the Calculate Point in Time property are described below:

- **Date Property**—The selection lists display all of the configured properties based on the following property types:
  - Date and Time
  - Calculate Point in Time
  - Calculate Duration
- **Duration Property**—The selection lists display all of the configured properties based on the following property types:
  -Duration
  -Calculate Point in Time
  -Calculate Duration
- **Literal Value**—Enter a literal value. The selection list displays the following options:
  - Seconds
  - Minutes
  - Hours
  - Days
  - Calendar months
  - 30 day months
  - Calendar years
  - 365 day years
- **Rounding Rule**—The selection list displays the following options:
  -None
  -Ceiling (round up)
  -Floor (round down)

  A rounded result (Ceiling/Floor) will be displayed as follows:

  Rounded to Years: January 1st Day, Year, (12 or 24) Hour, 0 Minutes, 0 Seconds
  Rounded to Months: Month 1st Day, Year, (12 or 24) Hour, 0 Minutes, 0 Seconds
  Rounded to Days: Month, Day, Year, (12 or 24) Hour, 0 Minutes, 0 Seconds
  Rounded to Hours: Month, Day, Year, Hour, 0 Minutes, 0 Seconds
  Rounded to Minutes: Month, Day, Year, Hour, Minute, 0 Seconds

The Calculate Point in Time property is automatically executed when all of the required property values have been collected during workflow execution. If any of the properties defined in the calculation are recollected, the system automatically re-calculates the result. The calculated result is available for use in subsequent calculations.

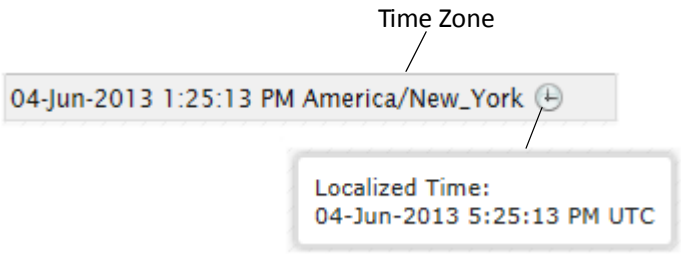
The result of the calculated duration is displayed in hours, minutes, and seconds. For example, the Date and Time property “now” plus four days will result in a value four days from the

current time (now) at the same time of day (hours, minutes, seconds). The system rounds the result to the precision specified in the Duration property.

The result of the calculation also displays the date, time, and time zone in which the calculation was performed. When the value is calculated for the first time, the result inherits the time zone of its Date and Time property. If the time zone is unavailable (for example, when a Date property is used in the calculation), the time zone of the current client is used.

In most instances, when the value is re-calculated, the result displays the date, time, and time zone of the client that most recently updated the field. If only the Duration is changed (from any time zone), upon recalculation, the time zone of the date field is retained. If a time zone is unavailable, the time zone of the current client is used.

The clock icon is displayed if you are in a different time zone other than the one shown. You can mouse over the icon to convert the value to the localized time.



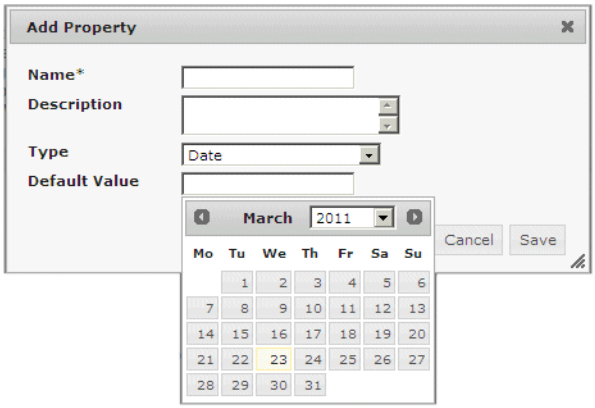
For more information on the date and time format, refer to *How the System Records Date/Time Values* on page 1-16.

The system generates an audit trail for each change to a Calculate Point in Time property. In addition to the date and time stamp, the audit trail includes the following information:

- The Reason Code "Updated" is automatically entered by the system.
- The description lists the workflow action in which the value was calculated (or re-calculated) and the name of the property that was calculated (or re-calculated).

Date property

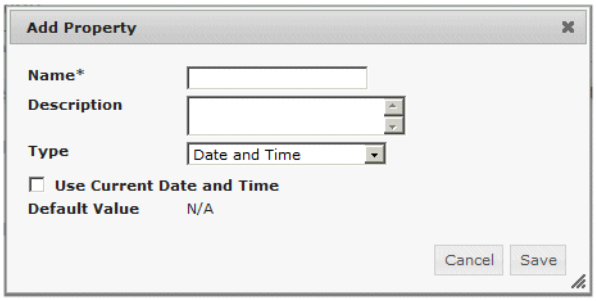
The **Date** property allows the user to select a date during workflow execution. The Date property includes a text field with a date picker control. You can either specify a default date or leave it blank.



'Date' Property

Date and Time property

The **Date and Time** property records the date and time of a specific event during workflow execution. You can also use the Date and Time property in conjunction with the Calculate Duration property in order to calculate a specific value.



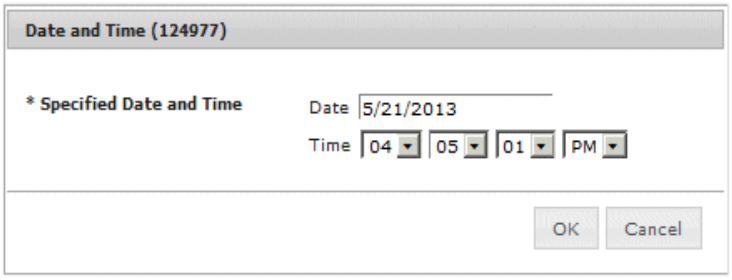
“Date and Time” Property

The format for the Date and Time property is based upon the locale settings of the client. In the Windows operating systems, a locale is a set of user preference information related to the user's language, environment and/or cultural conventions. The locale settings include the formats used for numbers, dates, currencies and time, and includes hours, minutes and seconds. If the locale is based on a 12-hour clock, an AM/PM selector is also included. The system displays the value as a concatenation of the date and time. The value is formatted according to the defined Short Date and Short Time formats.

You can configure the Date and Time property to restrict the property value to the current date and time (that is, “now”) or you can allow the user to specify a date and time when an instance of this Entity Type is created.

The options for the **Use Current Date and Time** check box are described below:

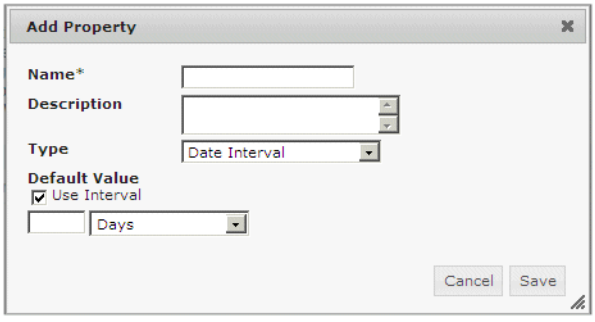
- **Checked**—Assigns the current date and time to the Date and Time property during workflow execution.
- **Unchecked**—Allows the user to select a date during workflow execution, as shown below. The date and time values default to the current date and time. The format of the date and the clock scale (12 or 24 hour) defaults to the locale settings of the client.



Defining a Date and Time Property During Workflow Execution

Date Interval property

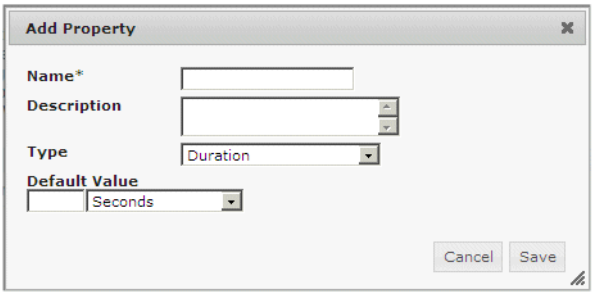
The **Date Interval** property records a specific date for an event that happens during workflow execution. To configure an interval, click the **Use Interval** check box and enter a whole number and interval type (days, weeks, calendar months, calendar years). When the check box is not selected, the Date Interval is treated as a Date property.



“Date Interval” Property

Duration property

The **Duration** property records the duration of an event that happens during workflow execution. This property can be used with the Calculate Point in Time property to calculate a target point in time. The Duration property can also be used with the Calculate Duration property.



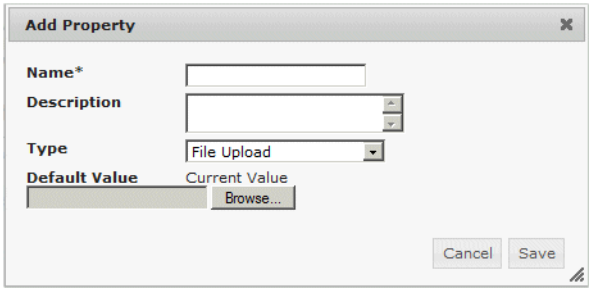
"Duration" Property

The Duration is defined by a value and units. The units include the following options:

- Calendar years (defined as one calendar year)
- 365 day years (adds 365 days)
- Calendar months (for example, adding one month to January 31 yields February 28)
- 30-day months (adds 30 days)
- Days
- Hours
- Minutes
- Seconds

File Upload property

The **File Upload** property associates an external file to an entity instance. The File Upload property includes a text field with a Browse button that allows you to browse to the network and upload a file of your choice. You can specify a default file or you can leave it blank so the user can select a file during workflow execution.

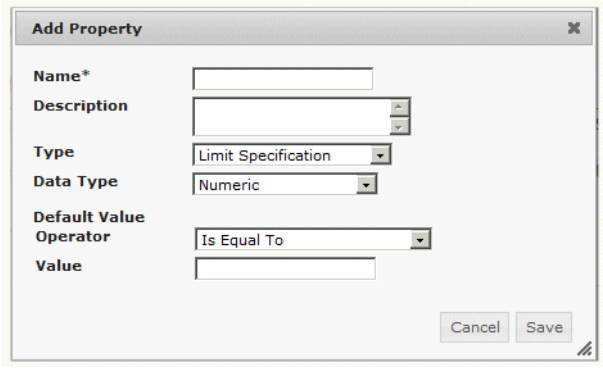


"File Upload" Property

Limit Specification property

The **Limit Specification** property applies a limit for a collected property value. It is typically used to set upper and lower numerical limits for test results, but you can also define text value limits as well.

The Limit Specification property works in conjunction with the **Apply Property Limit** workflow activity which evaluates the collected property value against the limit configured for that property. All out-of-limit results are marked with a red flag icon in the user interface so they can be easily identified.



"Limit Specification" Property

You can apply a limit to "compatible" properties. For example, you can evaluate the result of a Calculation property against a Numeric limit since the two are compatible. You can also evaluate a Text property against a Text (Multi-line) limit, but you could not evaluate a Text against a Numeric limit. In the unlikely event that the limit is changed, the property value will be re-evaluated against the updated limit.

During group workflow actions, the strictest limit is applied to all of the entity instances in the group.

The configuration parameters for the Limit Specification property are described below:

- **Data Type**—Contains the following selections:
  - Numeric
  - Text (Multiple-line)
  - Boolean (True/False)
- **Operator**—Lists the following options, based on the selected Data Type:

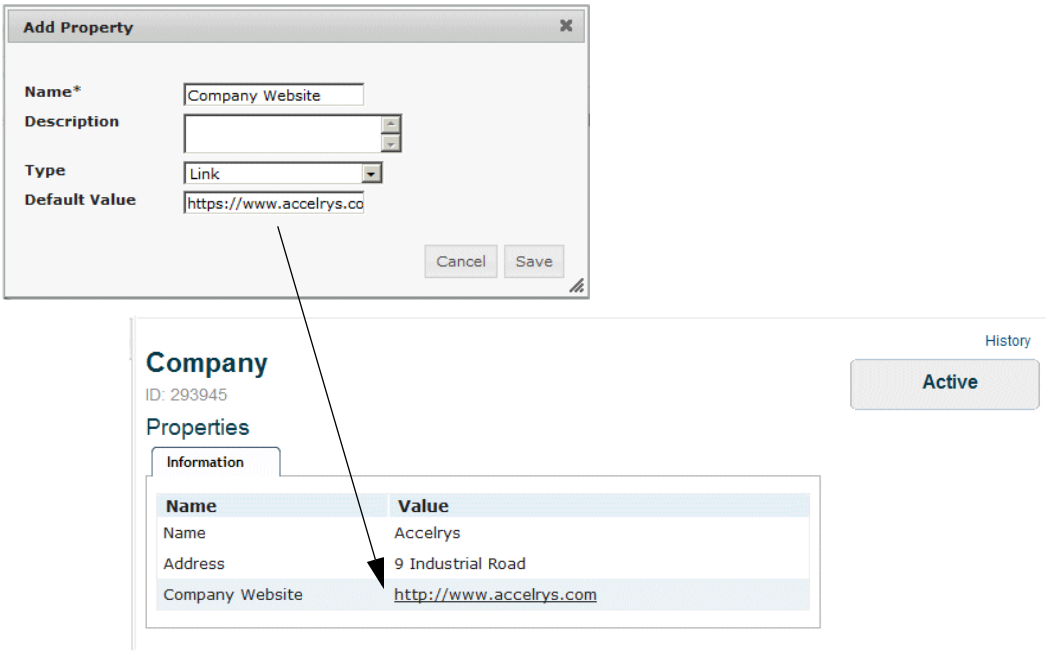
  Numeric:
  - Is Equal To
  - Is Not Equal To
  - Is Less Than
  - Is Less Than or Equal To
  - Is Greater Than
  - Is Greater Than or Equal To

  Text (Multiple-line):
  - Is Equal To
  - Is Not Equal To
  - Contains

  Boolean (True/False):
  - Is Equal To
  - Is Not Equal To
- **Value**—Enter a value for the limit. If you use a decimal, the property value is evaluated according to the number of decimal places in your limit.

Link property

The **Link** property allows you to include a hyperlink in the properties displayed in the entity instance's *View* page. You must include the "http" or "https" URL format and the "www" domain name in the link.



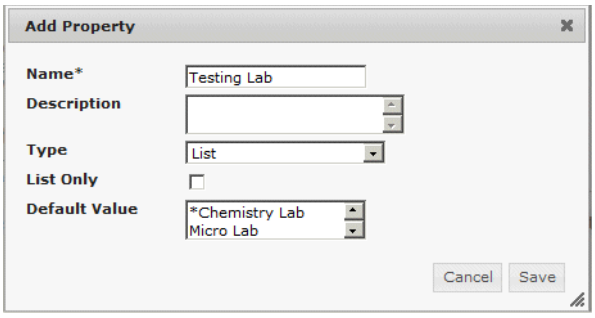
"Link" Property

List property

The **List** property allows the user to select a property value from a predefined list during workflow execution. You can configure the List property to force the user to select a value from the list or allow the user to override the list items and enter an alternate value.

The configuration parameters are described below:

- **List Only**—When checked, the user will have to select one item in the list. When unchecked, the user can enter a new list item.
- **Default Value**—To configure the list, type each list item and press **Enter.** A list item cannot exceed 1024 characters. To specify the default item in the list, precede it with an asterisk (*). If more than one value is specified as the default, only the first value is considered the default.



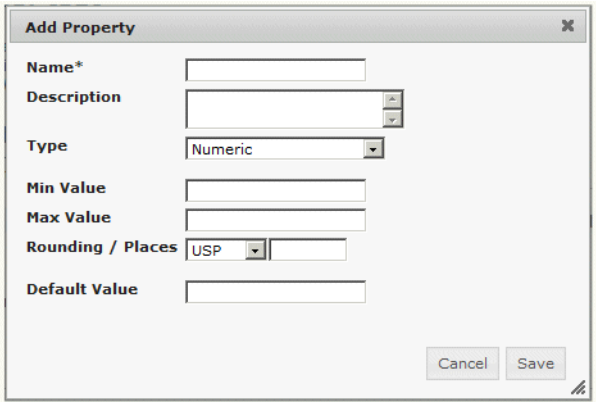
"List" Property

Numeric property

The **Numeric** property defines a property based on a numeric value. You can configure the property to require a minimum and/or maximum value, as well as specify a default value. The system supports the following rounding rules. The decimal places field requires a whole number.

- USP
- Ceiling (round up)
- Floor (round down)
- IEEE

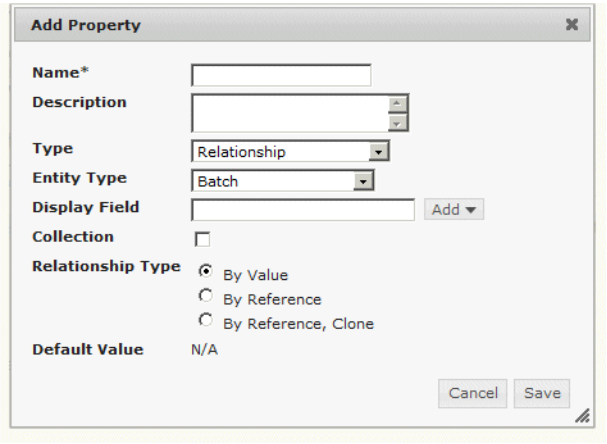
In addition, you can configure the precision format. This will force the user to enter a numeric value that meets the defined precision. When numerical data is received from another system during workflow execution, the value is rounded by the predefined precision.



"Numeric" Property

Relationship property

The **Relationship** property is used to establish a “link” between a property in your current Entity Type to any of the properties of another active Entity Type. Once you configure a Relationship property, you can use it in your current workflow to develop various “touch points” between the two Entity Types. Note that you can configure more than one relationship property for an Entity Type.



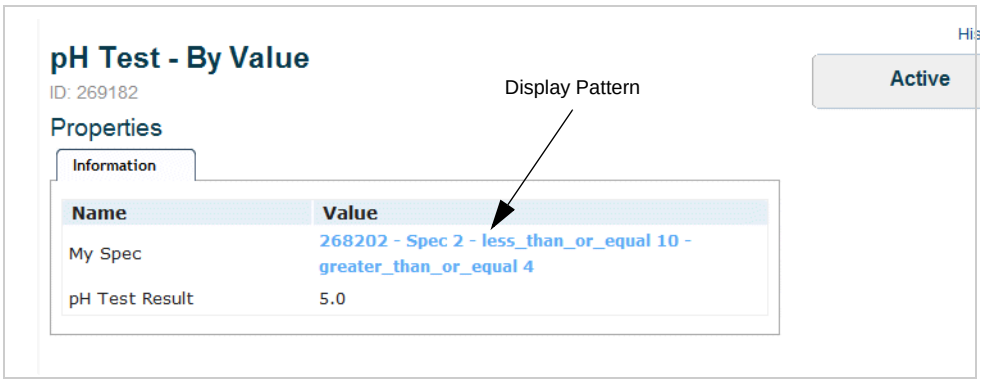
“Relationship” Property

The configuration parameters for the Relationship property are described below:

- **Entity Type**—The list is pre-populated with all of the Entity Types whose status is “Active.” Select the Entity Type to which you want to establish a relationship property.
- **Display Field**—Lists the ID as well as the names of the properties of the selected Entity Type, each enclosed by curly braces (for example, {Id}). Select one or more properties to create a display pattern. The display pattern should be specific and unique enough for your needs. For example, if the Display Field is the “Manufacturer” property and there are many “Manufacturer” entities with the same name, you may not be able to distinguish one entity from another. In this case, you could append additional information to the display pattern.

  IMPORTANT! Make sure the property referenced in the display Field is “Required” on the entity that is being referenced. This will prevent the possibility of a user not being able to select a related entity because there is no value in its display property.

  The order determines how they are presented to the user during workflow execution. For example, the display pattern **{Id} - {Spec Name} - {pH Upper Limit} - {pH Lower Limit}** is shown below.



How a Display Pattern is Rendered during Workflow Execution

- **Collection**—Determines if this is a “one-to-one” or “one-to many” relationship. A one-to-one relationship links the property of your current Entity Type to the related property of one entity instance. A one-to-many relationship links the property of your current Entity Type to the related properties in a group or collection of entity instances. A collection is typically used for a “Test” or “Sample” Entity Type from which you will create many entity instances of tests or samples.
- **Relationship Type**—Provides these options:
  - By Value
  - By Reference
  - By Reference, Clone

  - **By Value**:
    Used for a one-to-one relationship and links the property to a literal value of the related property. Not applicable to collections. The data returned by the linked instance will be stored and permanently maintained. If the source linked property is updated, the value collected at the time the entity instance is created does not get updated, thus it is considered a “static” link. This link is appropriate for a specification defined at the time of the link.
  - **By Reference**:
    Links the Entity Type’s property to the current value of the linked property. The data returned by the linked instance will be stored as a reference. Any change in the linked value will be reflected in the current entity instance. Thus, if the source linked property is updated, the value of the entity instance is also is updated, thus it is considered a “dynamic” link. This link is appropriate for contact information such as phone numbers and addresses.

- **By Reference, Clone**:
  The link will create new instances of the linked instance. For example, an “Order” Entity Type will define the tests that need to be run on samples of a specified product. An instance of the Order will clone instances of the product and all of the required tests.

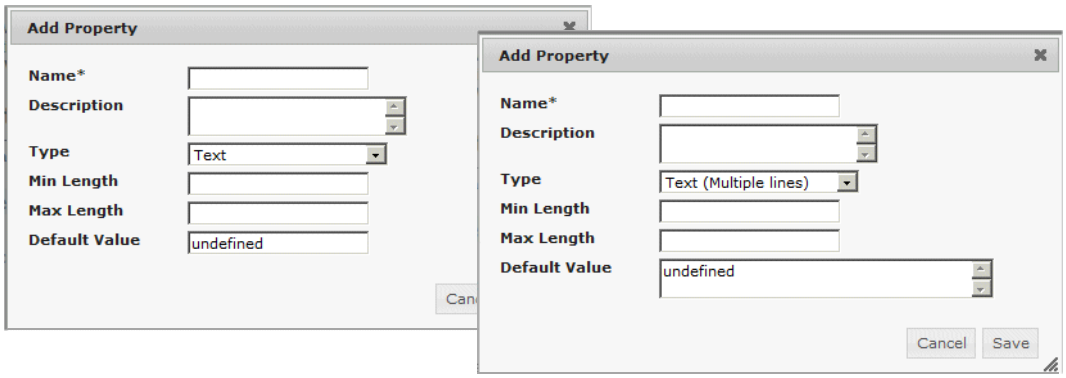
  The following table explains how a Relationship property in a cloned instance obtains its value.

Table 7-2 Behavior of a “Relationship” Property in a Cloned Instance

Relationship Type		
“By Value”	**“By Reference”**	**“By Reference, Clone”**
The cloned instance has the same value as the source property value.	The cloned instance inherits the same value as the property value in the latest version of the source instance.	The cloned instance inherits the same value as the property value in the latest version of the source instance.
If the source property value is updated, the new value will be available in the cloned instance. You can then select the new value of leave the original value.	If the source property value is updated, the clone’s property value is automatically updated.	If the source property value is updated, the clone’s property value is not automatically updated.

Text and Text (Multiple Lines) property

The **Text** and **Text (Multiple Lines)** properties allow the user to define a property with a single line or multiple lines of text when creating or editing an entity instance. You can require a minimum and/or maximum number of characters and specify a default value. The text cannot exceed 1024 characters.



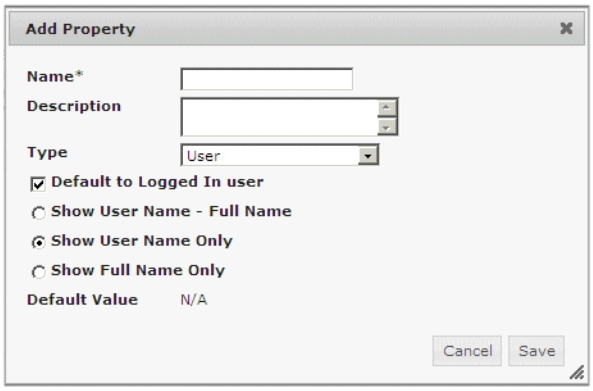
"Text" and "Text (Multiple Lines)" Properties

User property

The **User** property allows a user's name to be associated with an entity instance. The User property provides a selection list containing all of the active users in the system who have access to the current Site. If you do not default to the logged in user, the user will be able to select a user name during workflow execution. You can configure the User property so that the list defaults to the user who is currently logged on or to the first user (listed alphanumerically).

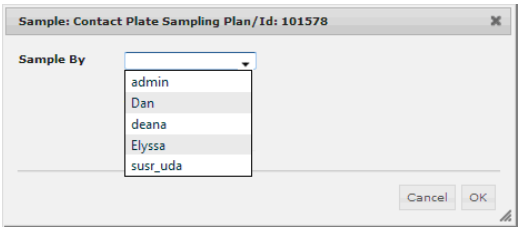
You can also can specify how the user names are displayed in the selection list. The configuration parameters are described below:

- **Default to Logged In User**—When checked, the selection list defaults to the name of the user who is currently logged in. When unchecked, displays the list of users in alphanumeric order.
- **Show User Name - Full Name**—Displays the names in the list by the User Name and the user's full name. The BIOVIA LIMS application does not verify a user's full name is unique in the system, therefore this is the recommended setting if you have registered users with the same full name (first name, last name). In this case, the User Name will be the unique identifier.
- **Show User Name Only**—Displays the names in the list by User Name only.
- **Show Full Name Only**—Displays the names in the list by the user's full name.



"User" Property

When a Set Property activity is configured for the User property in a workflow, only the users with access to the current Site will appear in the selection list.



Workflow Action Dialog Box with User Property

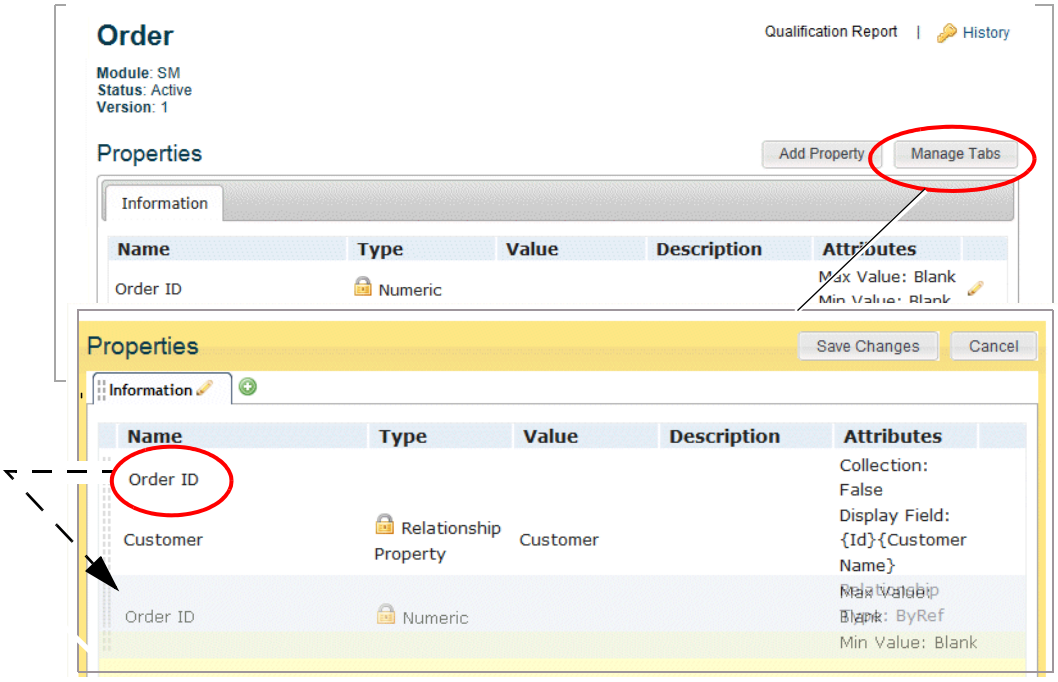
Organizing Properties of an Entity Type

You can organize the properties of an Entity Type in the following ways:

- Reorder the properties in a single tab. The order of the Entity Type properties determines the order in which they are displayed to the user during workflow execution.
- Create new tabs in order to group properties into meaningful categories. By default, an Entity Type's *View* page displays the properties under the default "Information" tab. If your Entity Type has a large number of properties, you can add additional tabs to move the properties into logical groupings.
- Copy existing properties into a new tab.

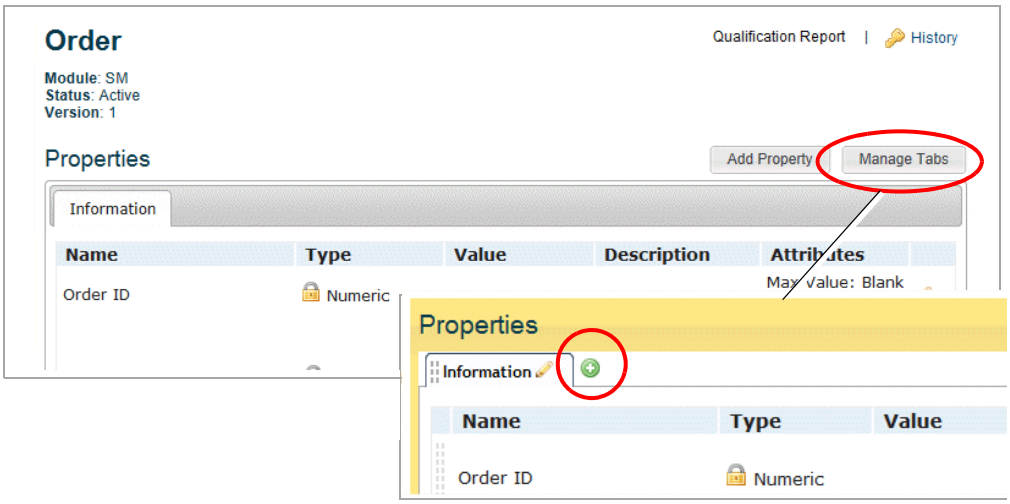
To manage the properties:

1. On the Entity Types' *View* page, click **Manage Tabs** above the list of properties.
2. Perform one of the following functions:
   - **Reordering Properties**—To reorder properties on a single tab, drag and drop the selected property to a new location in the list.



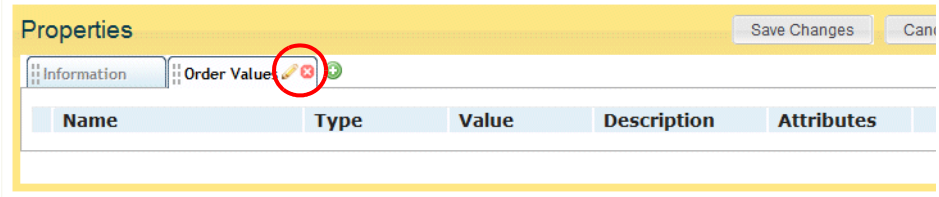
Reordering Properties

- **Creating New Tabs**—To create a new property tab:
  a. Click **Add** to the right of the Information tab.
  b. Enter a name for the tab. The name must be unique and cannot exceed 24 characters.



Adding a New Property Tab

- **Editing/Deleting Tabs**—To edit the tab name or delete the tab, click **Edit** on the new tab, or click **Delete** to delete the tab. Note that you cannot delete a tab if it contains any properties.



Editing/Deleting a Property Tab

- To change the order of the tabs, drag and drop the selected tab to the new position.
- To copy properties into a different group, drag and drop the selected property into a different tab. A property can exists in one group only.

3 When you are done, click **Save Changes.**

4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Entity Types whose status is “Draft.”

Cloning an Existing Entity Type

You can clone an existing Entity Type in order to create a new Entity Type. The cloned Entity Type requires a new name and unique category, but can have the same permission groups, properties, tabs, and workflow of the source Entity Type. This can be a great time saver if you need to create similar Entity Types. Note that when you clone an Entity Type, any “Print Label” activities are removed from its workflow.

To clone an Entity Type:

1 In the ADMIN tab under the System section, click **Entity Types**.

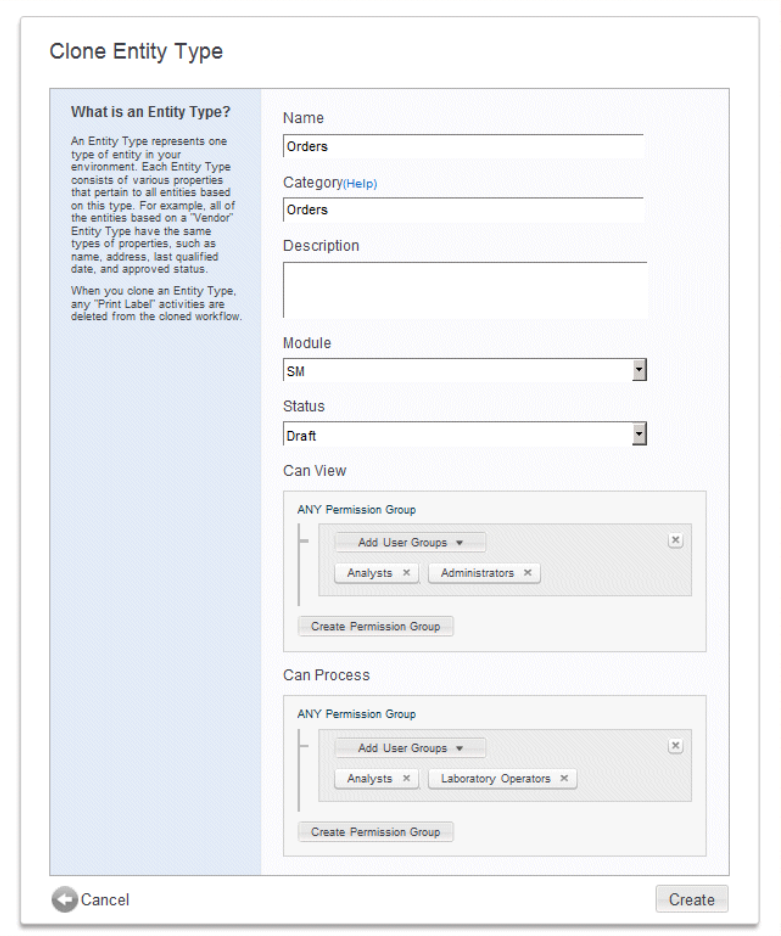
2 In the *Entity Types* home page, click **Clone** preceding the name of the Entity Type you want to clone. The *Clone Entity Type* page is displayed.

3 In the *Clone Entity Type* page, the fields are pre-populated with the Entity Type you are cloning. Enter a new name for the Entity Type. The name must be unique in the current Site and cannot exceed 100 characters. Blank spaces at the beginning or end of the name are not allowed. Note that you can use the same name in a different Site. The uniqueness is not case-sensitive.

4 Enter the category to which the cloned Entity Type will belong—typically this is the plural of the Entity Type name (for example, an Order will belong to the category Orders). The category name must be unique in the current Site. The uniqueness is not case-sensitive.

5 Enter a new description for the Entity Type if required. The description cannot exceed 1000 characters.

6 Change the module in which this Entity Type will appear if required. The list is populated with all of the installed modules in your system.



Cloning an Entity Type

7 To control access to this Entity Type, reconfigure the permission groups, as required. Refer to *Creating a New Entity Type* on page 7-10.

8 Click **Create**.

9 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.

10 The new Entity Type's *View* page is displayed with a status of "Draft." To edit any of the properties of the cloned Entity Type, refer to *Editing the properties of an Entity Type* on page 7-43.

11 To edit its workflow, refer to *Editing a Configured Workflow* on page 8-52.

Creating a Label for an Entity Type

The sequence of steps to create an Entity Type with a label is as follows:

1. Create the new Entity Type or clone an existing one.
2. Edit the Entity Type and set its status to "Active."
3. Create the label and link it to this Entity Type. Refer to *Overview—How Do I Create a Label?* on page 10-1.
4. Edit the label and set its status to "Active."
5. Edit the Entity Type and set its status to "Upgrading."
6. Update the Entity Type to include the label in its workflow.
7. Edit the Entity Type and set its status to back to "Active" to make it available for use in the system.

Refer to Chapter 10, *Creating Labels* for more information.

Editing an Entity Type

You can edit the definition of an Entity Type as well as any of its properties, as explained in the following sections.

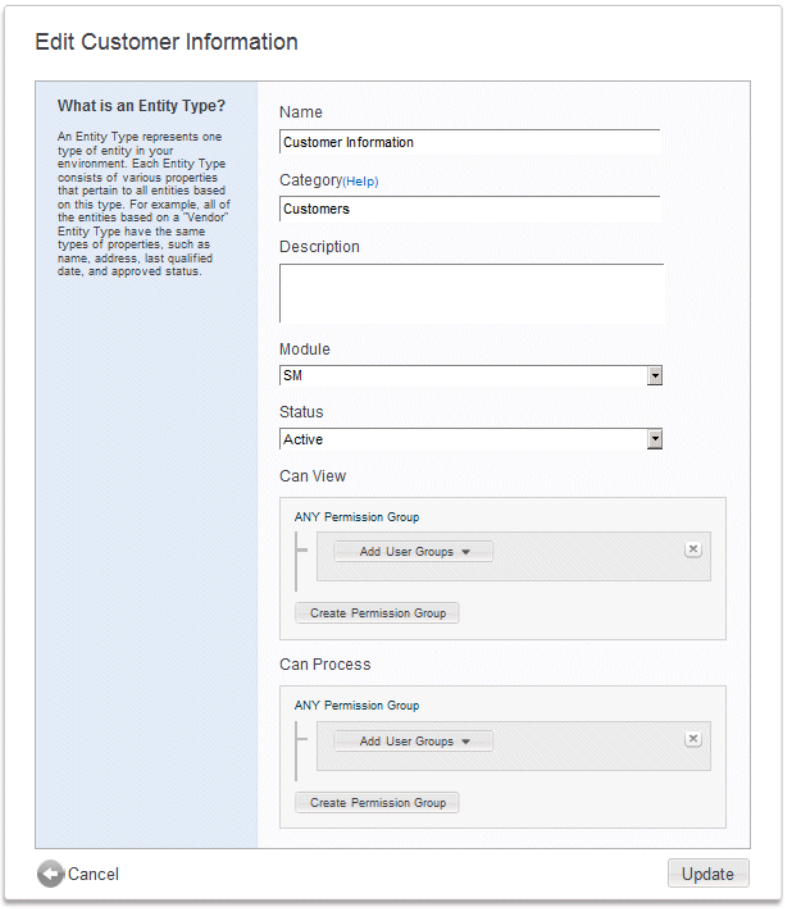
Note: To edit the Entity Type's workflow, refer to *Editing a Configured Workflow* on page 8-52.

Editing the definition of an Entity Type

If the Entity Type is currently active, set its status to "Upgrading" to prevent its use in the system while you are editing it. Any dependencies will use the last active version of the Entity Type.

To edit the definition of an Entity Type:

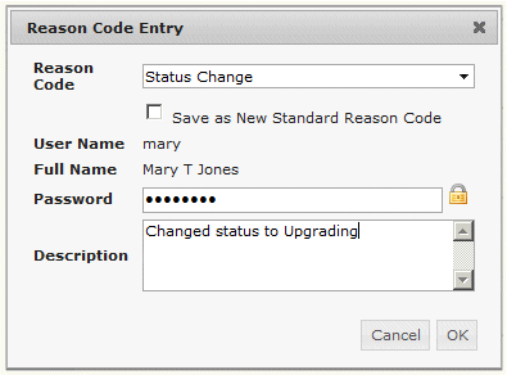
1. In the ADMIN tab under the System section, click **Entity Types**.
2. In the *Entity Type*s home page, do one of the following:
   - Click **Edit** preceding the Entity Type's name.
   - Click the name of the Entity Type to open its *View* page and click **Edit**.
3. Change the status of the Entity Type to **Upgrading** and save. This ensures that users will not be able create instances of this Entity Type while you are editing it.
4. Edit the appropriate fields and permission groups as necessary (page 7-42).



Editing an Entity Type

5 Click **Update**.

6 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Entity Types whose status is "Draft."



"Reason Code Entry" Dialog Box

7 Do one of the following:

- If you are done with your edits, change the status of the Entity Type back to "Active" to make it available for use.
- To edit the properties of the Entity Type, continue to the next section.

Editing the properties of an Entity Type

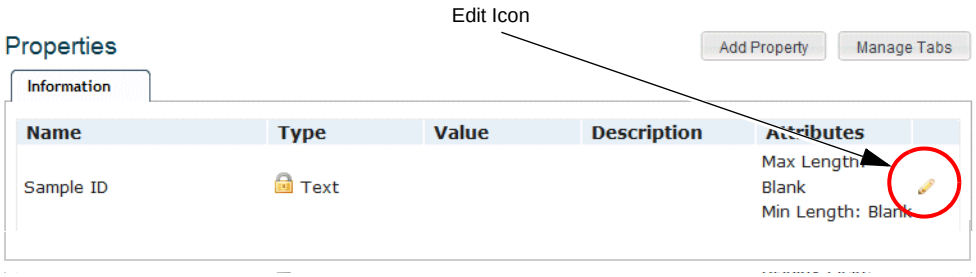
This section assumes that you have changed the status of the Entity Type to "Upgrading" in order to make it unavailable for use while you edit it.

To edit a property of an Entity Type:

1 In the ADMIN tab under the System section, click **Entity Types**.

2 In the *Entity Types* home page, click the name of the Entity Type whose properties you want to edit.

3 In the Entity Type *View* page, click **Edit** to the right of the property you want to edit.



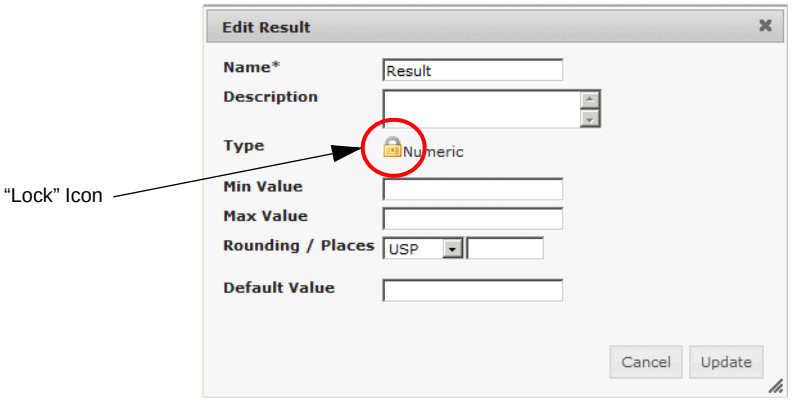
Editing a Property

4 In the *Edit Property* dialog box, edit the property as necessary.

Special Notes on the Type" field:

- It is recommended that you do not change the Type field of an Entity Type that has been previously active in the system.
- A **Lock** icon in the Type field indicates that the property is being used in a calculation or workflow activity, so its property type cannot be changed. This applies to the following property types— Numeric, Duration, Date and Time, and Relationship. If you need to change the property type, you must remove it from the calculation or workflow.

For a description of the properties relevant to an Entity Type, refer to *Description of Entity Type properties* on page 7-17.



Editing a Property of an Entity Type

5 Click **Update**.

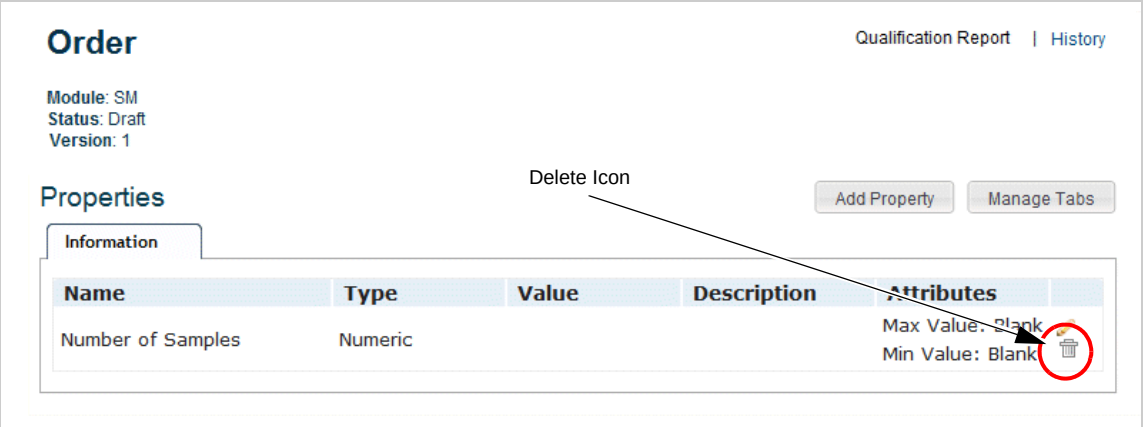
6 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Entity Types whose status is "Draft."

The updated property will be reflected in the Entity Type's *View* page.

7 When you are done, edit the Entity Type again and change its status to "Active" to make it available for use in the system.

Deleting properties of an Entity Type

To delete a property, click **Delete** to the right of the property's attributes in the Entity Type's *View* page. You can only delete a property if the Entity Type's status is "Draft."



Deleting a Property

Upgrading an Entity Type

It is recommended to change the status of an active Entity Type to "Upgrading" when you are editing it. The Entity Type's dependencies will use the last active version of this Entity Type. To change the status, refer to *Editing an Entity Type* on page 7-41.

Inactivating an Entity Type

To make an active Entity Type unavailable for use in the system, set its status to "Inactive." Its dependencies will not be able to use this Entity Type. To change the status, refer to *Editing an Entity Type* on page 7-41.

Deleting an Entity Type

You can only delete Entity Types whose status is "Draft."

To delete a draft Entity Type:

1. Click the ADMIN tab and select **Entity Types.**
2. In the *Entity Type*s home page, do one of the following:
   - Click **Delete** preceding the Entity Type name.
   - Click the name of the Entity Type to open its *View* page, then click **Delete**.
3. In the *Confirmation* dialog box, click OK to delete the Entity Type.

Exporting Entity Types to Other Systems

Once you have finished configuring your Entity Types, you can export them to an XML file in order to import and deploy them on other systems in your environment. When importing an Entity Type, if the target system has any other Entity Type with a Relationship property to the imported Entity Type, the import file must contain the 'other" Entity Type and the "other" Entity Type must be able to be imported (that is, "Active" status). Refer to Chapter 11, *Exporting and Importing Configured Entities* for more information.

Generating a Qualification Report for an Entity Type

IMPORTANT! If you are generating qualification reports in a non-Western European language, you must have the "Arial Unicode MS" font installed on your server(s) in order for the reports to display correctly.

BIOVIA LIMS provides an integrated reporting function that allows you to run a Qualification Report in order to view and qualify the workflow of an Entity Type. The report is based on a predefined report template that is supplied with the system.

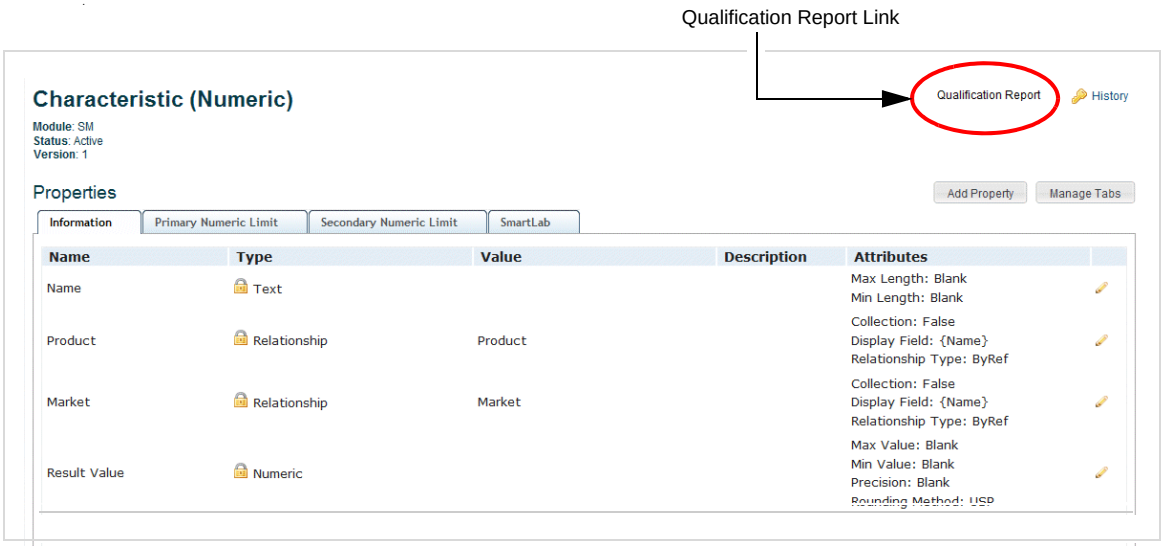
- The header of the report lists the details of the Entity Type (name, version, current status, workflow version).
- The following fields are reported for each property in the Entity Type:
  - Property Name
  - Property Type
  - Property Value
  - Property Description
  - Property Attributes
- When the property does not contain a value, the text "Not Predefined" is displayed.
- The following fields are reported for each workflow state:
  - Actions
  - Activities
  - Parameter Name
  - Parameter Value
  - Metadata Name
  - Metadata Value
- When the action or activity does not contain a value, the text "Not Applicable" is displayed.

- The last page of the report contains two rows for signatures, each containing the following fields:

  - Purpose
  - Name
  - Signature
  - Date

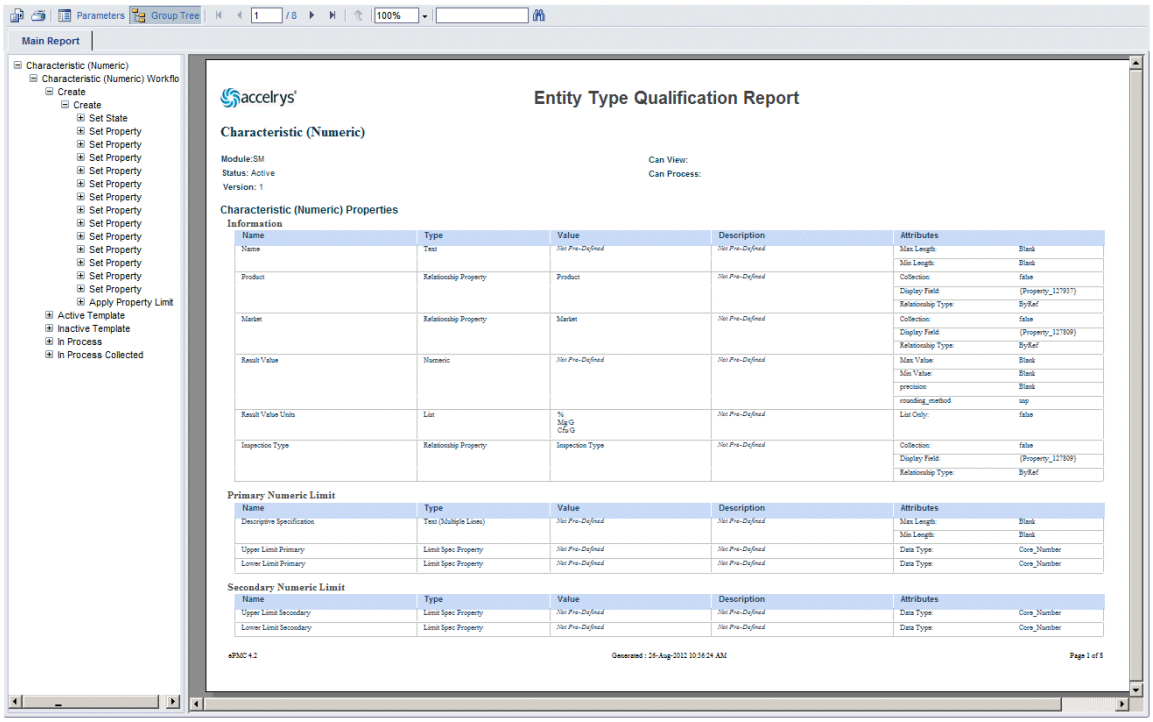
To run a Qualification Report for a Entity Type:

1. In the ADMIN tab under the System section, click **Entity Types**.
2. In the *Entity Type* home page, click the name of the Entity Type whose workflow you want to qualify.
3. In the Entity Type's *View* page, click **Qualification Report**.



Running a Qualification Report for a Entity Type

The report is generated and is displayed in the Report Viewer. You can expand the nodes in the Group Tree on the left to view the workflow's structure. You can also export or print the report as required.



Qualification Report for Workflow Analysis

8

Configuring Workflows for Entity Types

Introduction

This chapter explains how to configure workflows for Entity Types. To configure workflows for the BIOVIA Inventory and Environmental Monitoring modules, refer to their respective System Administration Guides, available on the BIOVIA Download Center.

What is a Workflow?

The life cycle of an entity instance in BIOVIA LIMS is based on a series of "states" that describe the different stages in which that entity instance can exist. The life cycle of an entity instance starts when it is created and enters the system and ends when it has reached its final state. For example, an instance of a "Test" Entity Type is created in the system, tested, and finally approved. These sequential steps in the life cycle of an entity instance are referred to as its *workflow*.

A workflow is comprised of the following three items:

- **Workflow States**
  A workflow *state* corresponds to the current state of the entity instance. For example, when the user creates an instance of an Entity Type during workflow execution, the entity instance is ready for use and resides in the "Active" state. Note that an entity instance can only be in one workflow state at a time and some states can be repeated. For example, when the user edits an entity instance in the "Approved" state during workflow execution, it moves back to the "Requires Approval" state.
- **Workflow Actions**
  A workflow *action* represents something the user can do to an entity instance in its current state. You will typically use a verb such as Create, Approve, or Receive Samples when naming your workflow actions. For example, an entity instance in the "Requires Approval" state could contain two workflow actions—Edit and Approve.
- **Workflow Activities**

A workflow action is comprised of one or more activities. A workflow *activity* describes the things users can do when they perform that action on an entity instance. For example, a workflow action “Approve” will typically have an “E-Signature” activity that collects the electronic signature of the person who approved the action.

Some workflow activities collect the value of the entity instance’s property. For example, you can configure a “Set Property” activity to collect the value of the “Product ID” property for that entity instance. You can also use a “Time Trigger” activity to trigger an event, such as initiating a BIOVIA LES procedure session to execute a test method.

Example of a Configured Workflow

The figure on page 8-3 provides an example of a workflow for an Entity Type. The workflow states are depicted as gray boxes. The workflow actions that can be performed in each state are listed in the white ovals.

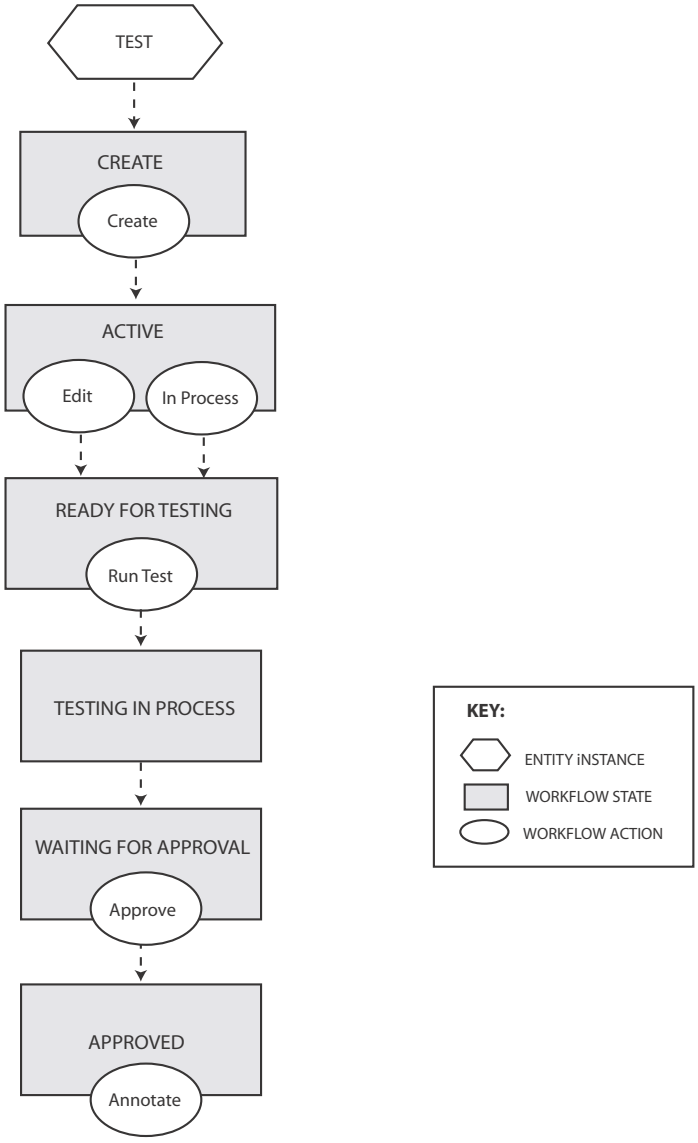
Required Eligibilities for Configuring Workflows

In order to configure workflows for Entity Types, you must belong to a User Role that has the following eligibilities:

- Can View Entity Types
- Can Administer Entity Types

In addition, to test the workflows of Entity Types, you must have the following eligibilities:

- Can View Entity Instances—Allows users to view the entity instances in the system.
- Can Process Entity Instances—Allows users to process the workflows of the entity instances.



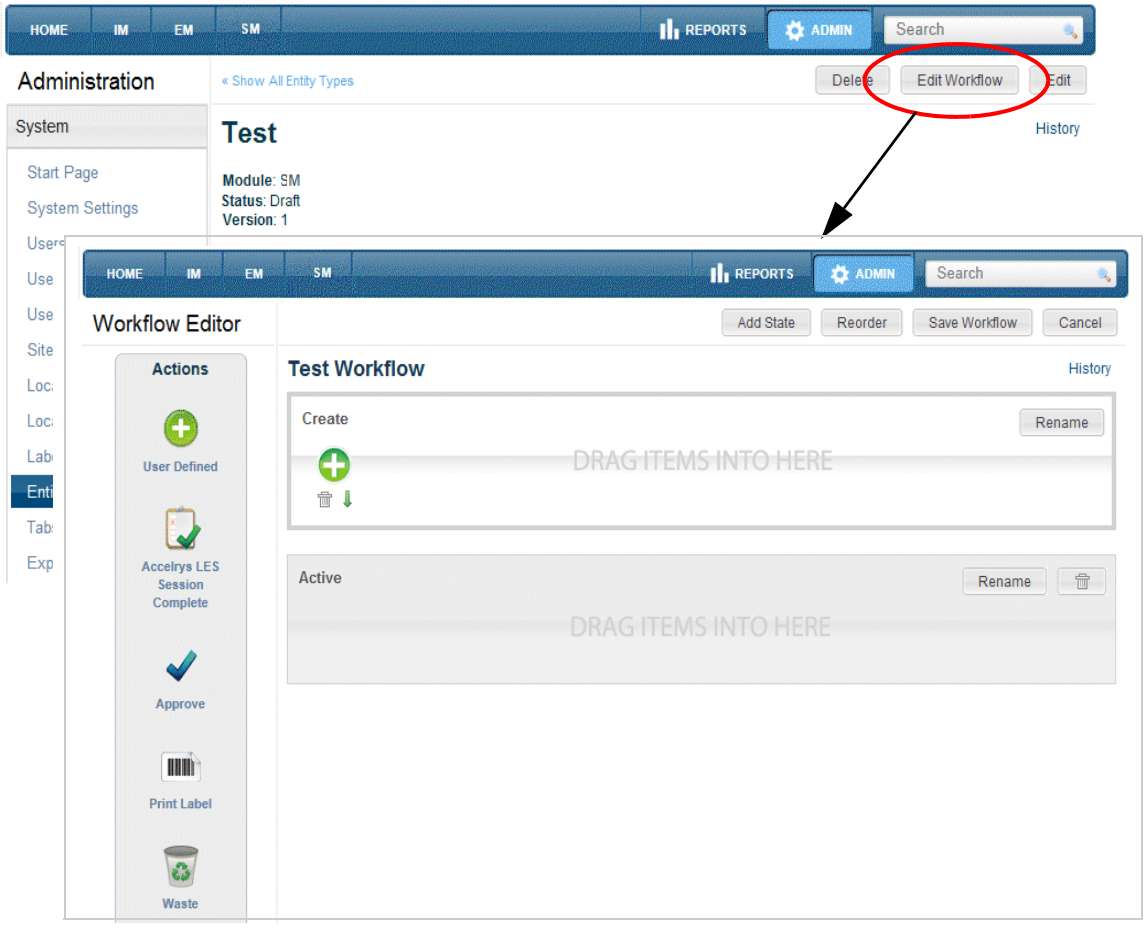
Workflow of An Entity Type

Launching the Workflow Editor

The Workflow Editor provides a graphical user interface that allows you to easily configure the actions and activities that define the various states of the Entity Type's workflow.

To open the Workflow Editor:

1. In the ADMIN tab under the System section, click **Entity Types**.
2. In the *Entity Types* home page, click the name of the Entity Type whose workflow you want to view.
3. In the Entity Type's *View* page, click **Edit Workflow** in the upper right corner of the page to launch the Workflow Editor. The default workflow is displayed.



Launching the Workflow Editor

The Default Workflow for Entity Types

Every Entity Type defined in the system has an underlying workflow associated with it. Each workflow state in the Workflow Editor is represented by a horizontal panel that is essentially a container for the actions and activities which will define that state. When you create a new BIOVIA LIMS Entity Type, its workflow contains two default workflow states that provide a starting point for configuring its unique workflow:

- Zero State - “Create”
- First State - “Active”

For the default workflow of the IM or EM module, refer to the corresponding System Administrator Guide.

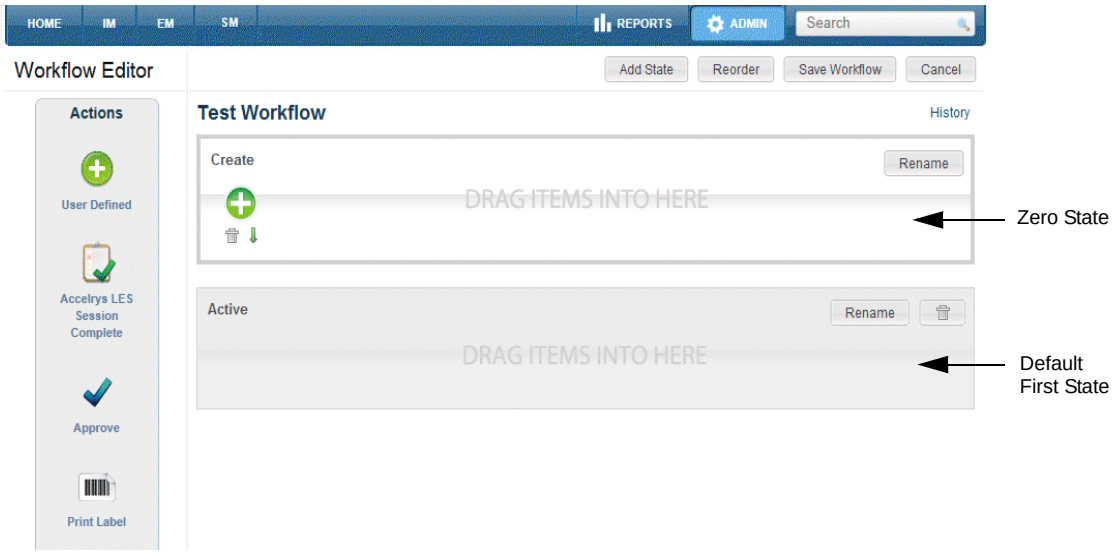
Default Zero State —“Create”

In the IM and EM modules, instances of Consumable Types and Sample Types are entered into the system when you receive a consumable or when a sample is released. However, for BIOVIA LIMS Entity Types, the instance requires a state in which it is created and entered into the system. For this reason, the first state of a BIOVIA LIMS Entity Type’s workflow contains a “Create” state that is the state from which the instances of this Entity Type will be defined. This state is referred to as the *“Zero State*. “

For example, if you are configuring a workflow for a “Customer” Entity Type, the Zero State will specify what types of properties will be recorded for a customer when it is created during workflow execution (for example, a name, address, phone, contact person).

The default Zero State “Create” contains one “User-Defined” workflow action called “Create” which contains one required “Set State” activity. The Set State activity moves to the next state (that is, “Active”) once the entity instance is created. To customize the Zero State, you can rename it and add other workflow activities. You will only need to customize the default Zero State with defined properties and optional instruction text to complete the Zero State for your Entity Type. The Zero State must contain at least one action, but can contain as many actions as needed for your Entity Type.

In the Workflow Editor, the Zero State is displayed as a white panel to differentiate it from the gray panels of the other workflow states in your workflow. Only one Zero State can exist for an Entity Type. Every BIOVIA LIMS Entity Type requires a Zero State, therefore you cannot delete it.



Default Workflow States for Entity Types

Default First State—“Active “

The default first state “Active” does not contain any actions, so it is ready for you to configure the relevant actions and activities that will be available to the user once the entity instance enters the system. As you add additional states, the actual first state in the workflow is determined by the “Set State” activity in the Zero State.

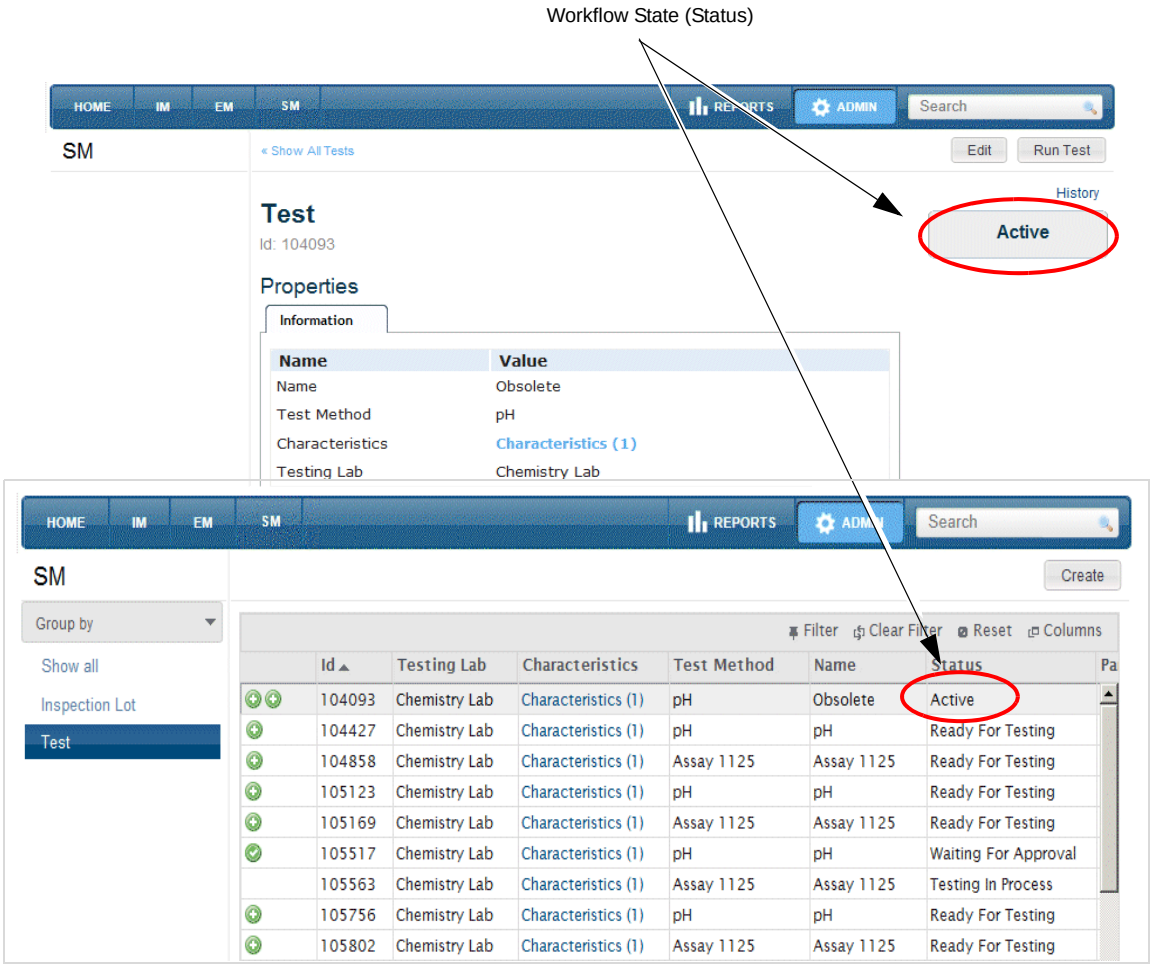
Configuring Workflow States

You can create new states or modify the default states as necessary. You can also reorder the workflow states to change the order in which the workflow is executed.

How workflow states are represented in the user interface

During execution of the workflow, the current workflow state corresponds to the current status of the entity instance. The status changes each time the entity instance enters a new workflow state. The status is displayed in the following areas of the user interface:

- Entity instance’s *View* page
- Entity instance’s home page

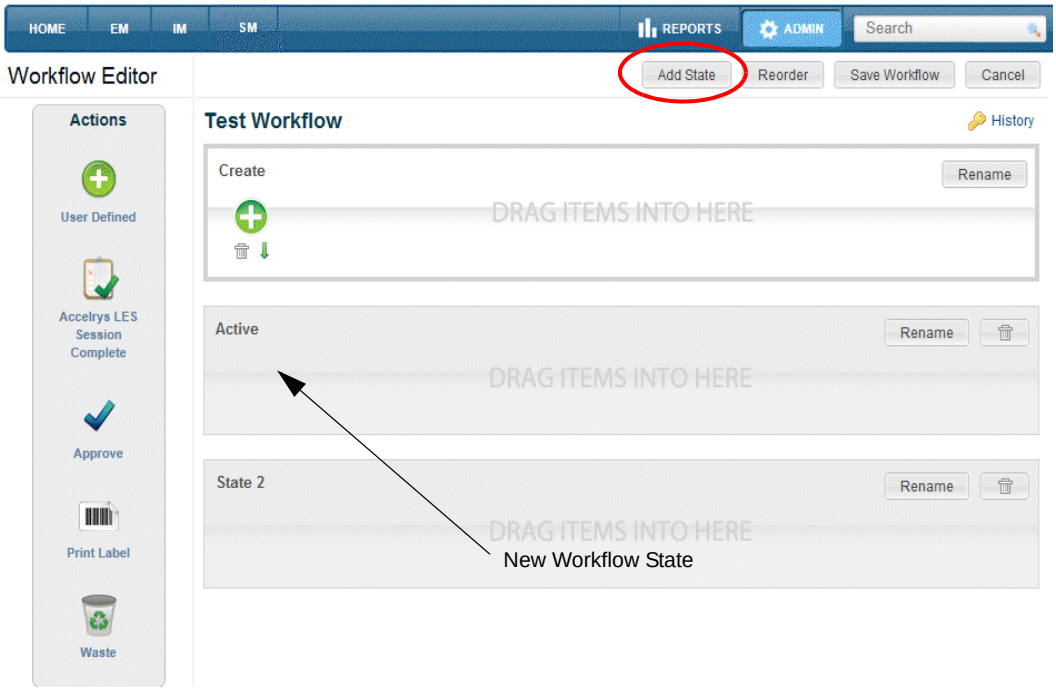


Workflow States as Represented During Workflow Execution

Adding states to a workflow

To add a new state to the workflow:

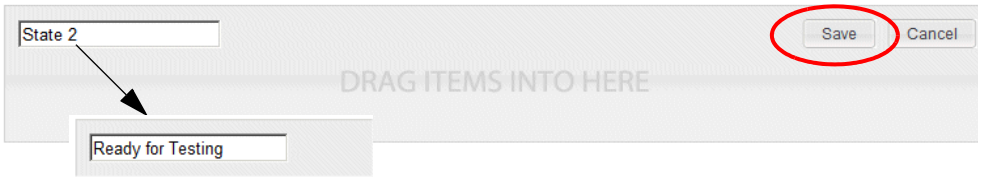
1 Click **Add State** at the top of the Workflow Editor. A new empty state is placed in the last (lowest) position in the workflow. The new state is named “State *N*” by default, where *N* is numbered sequentially (for example, State 2, State 3, etc.).



Adding a Workflow State

2 Click **Rename** in the right corner of the selected state's gray panel. A text box opens and displays the current name.

3 Type a new name. The names of workflow states must be unique.



Renaming a Workflow State

4 Click **Save** to save the new name.

5 Click **Save Workflow** at the top of the page to commit the changes.

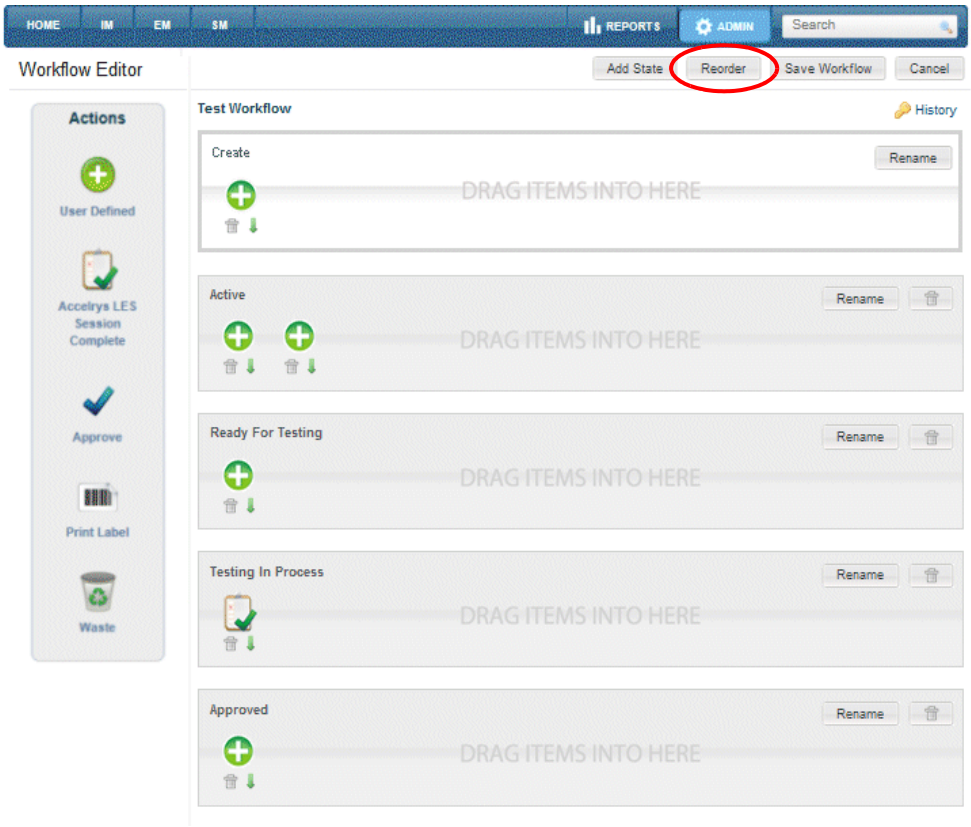
6 To configure the workflow, select the relevant actions in the toolbar and drag them into the state. The actions are described in *Configuring Workflow Actions* on page 8-11.

Reordering the sequence of workflow states

For BIOVIA LIMS Entity Types, the order of the states is for organizational purposes only. In the IM and EM modules, the order determines the sequence in which the workflow is executed—the top (first) state is the "start" state for received consumables or released samples. You can reorder any state except the Zero State in BIOVIA LIMS entities.

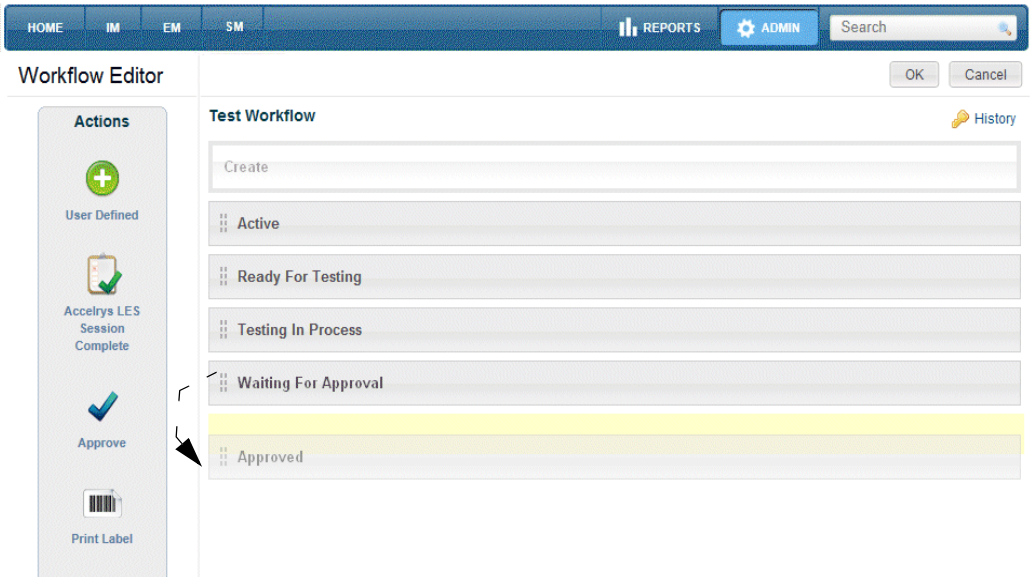
To reorder the position of the workflow states:

1 Click the **Reorder** button above the workflow editor.



Reordering Workflow States

2 In the collapsed view of the states, drag and drop the selected state to its new location.



Reordering Workflow States

3 Do one of the following:

- If the order is correct:
  a. Click OK to expand the workflow editor with the re-ordered states.
  b. Click **Save Workflow** at the top of the page to commit the changes.
  c. In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.
- If the order is not correct, click **Cancel** to revert back to the original order.

Deleting states from a workflow

To delete a workflow state:

1 Click **Delete** in the right corner of the state's gray panel.

2 At the prompt, click OK to confirm the deletion or **Cancel** to cancel the deletion.

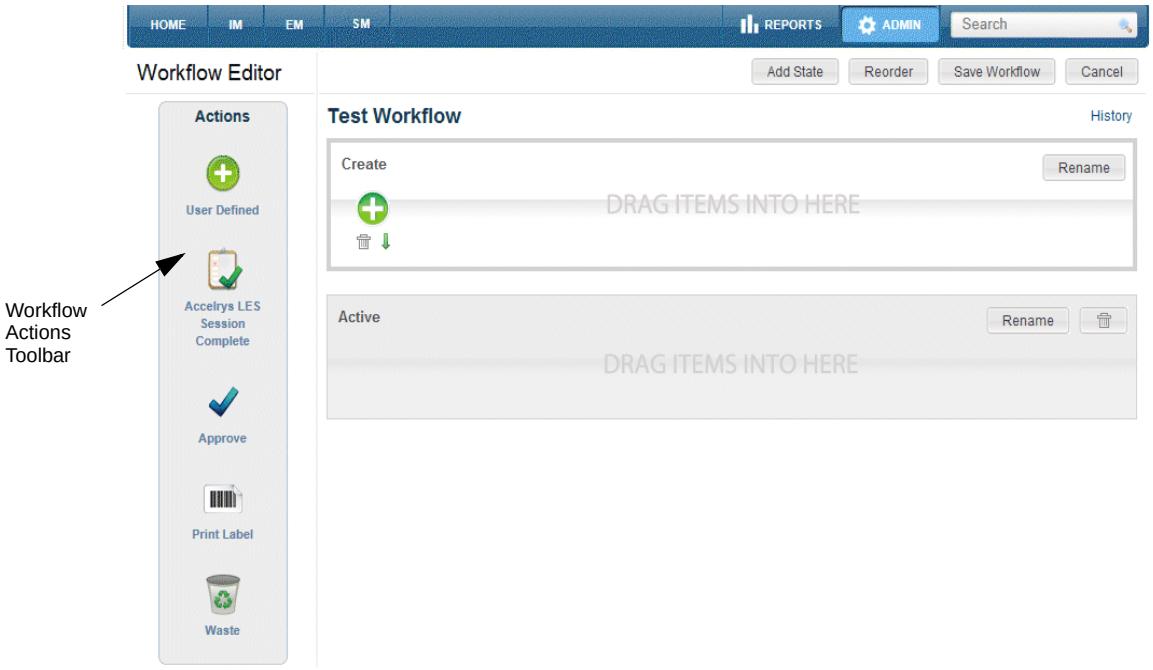
Deleting a Workflow State

3 To commit the changes, click the **Save Workflow** button at the top of the page.

4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.

Configuring Workflow Actions

Workflow actions determine what types of actions the user can perform on an entity instance at each stage of its workflow. The Actions toolbar contains the available actions available for configuring the workflow. To add an action to the workflow state, simply drag its icon into the state. Refer to *Adding an action to a workflow state* on page 8-15.



Workflow “Actions” Toolbar

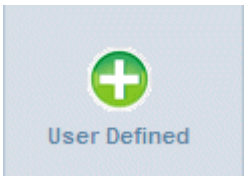
Description of workflow actions

For a standalone BIOVIA LIMS application, the following workflow actions are available in the Action toolbar. These are explained in the following sections.

- User Defined
- Accelrys LES Session Complete
- Approve
- Print Label
- Waste

For workflow actions specific to the IM or EM modules, refer to the respective System Administration Guide.

User Defined action

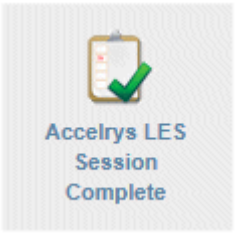


A **User Defined** action allows you to define a custom workflow action. You can add multiple User Defined actions to the same state and configure them with any type of workflow activity.

When the entity instance enters the state that contains a User Defined action:

- The entity instance displays a **User Defined** icon in the grid view of the entity instances home page.
- A command button named for this action is displayed in the entity instance's *View* page and above the grid in the entity instances home page when group workflow actions are available.

Accelrys LES Session Complete action



The **Accelrys LES Session Complete** action pertains to testing a sample (or other test item) by running a test method in a BIOVIA Lab Execution System (LES) procedure session. The Accelrys LES Session Complete action should only contain the Set State activity which will trigger the state change specified in an Accelrys LES Procedure activity in a previous state.

For example, in a "Ready to Test" state, a User-Defined action called "Run Test" contains the Accelrys LES Procedure activity which specifies the test method as well as the procedure session's "complete" status that will trigger the Set State activity to move to the next state "Testing in Progress." The "Testing in Progress" state contains an Accelrys LES Session Complete action with a Set State activity to "Waiting for Approval."

Note: The Accelrys LES Session Complete action must be in the current state of the entity instance (for example, a "Testing in Process" state).

Approve action

An **Approve** action is used in a workflow state that requires an approval. You should include an **E-Signature** activity set to "Approve" and a **Set State** activity to change the workflow state upon approval. You can only add one Approve action per state.

When the entity instance enters the state that contains an Approve action:

- The entity instance displays an **Approve** icon in the grid view of the entity instances home page.
- An "Approve" command button is displayed in the entity instance's *View* page and above the grid in the entity instances home page when group workflow actions are available.

Print Label action

The **Print Label** action allows the user to print a predefined label for an Entity Type. The Print Label action should include a Print Label workflow activity (page 8-37).

When the entity instance enters the state that contains a Print Label action:

- The entity instance displays a **Print i**con in the grid view of the entity instances home page.
- A "Print Label" command button is displayed in the entity instance's *View* page.

Waste action

The **Waste** action marks the end of the entity instance's life cycle in the system. The Waste action should include a Set State activity which will change the state of the entity instance from its current state to the final state in its workflow (typically an "Abandoned" or "Obsolete" state). It may also contain an E-Signature activity for the purpose of approving the action.

When the entity instance enters the state that contains a Waste action:

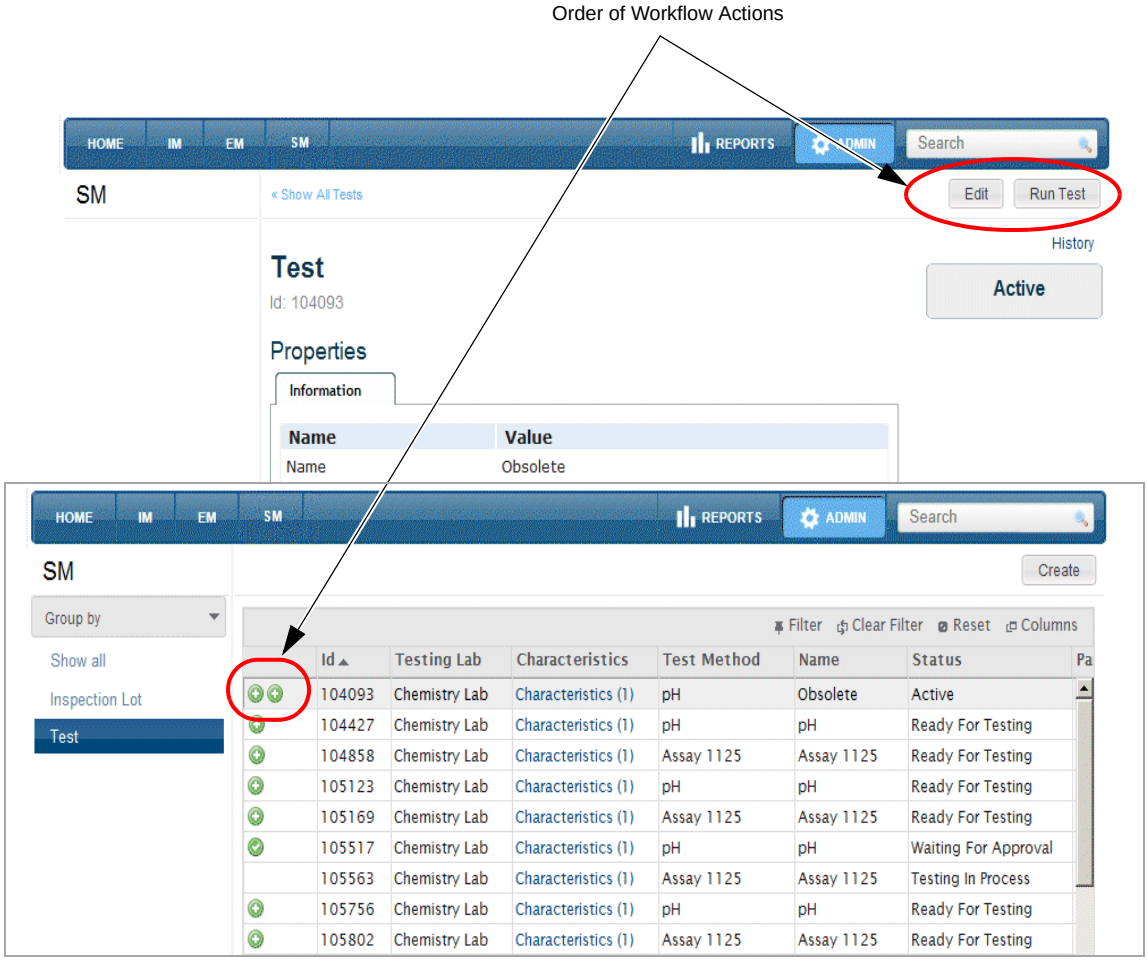
- The entity instance displays a **Waste** icon in the grid view of the entity instances home page.
- A "Waste" command button is displayed in the entity instance's *View* page.

How workflow actions are represented in the user interface

During execution of the workflow, the actions correspond to the command buttons that appear in the following pages of the user interface.

- Entity instance's *View* page
- Entity instances home page

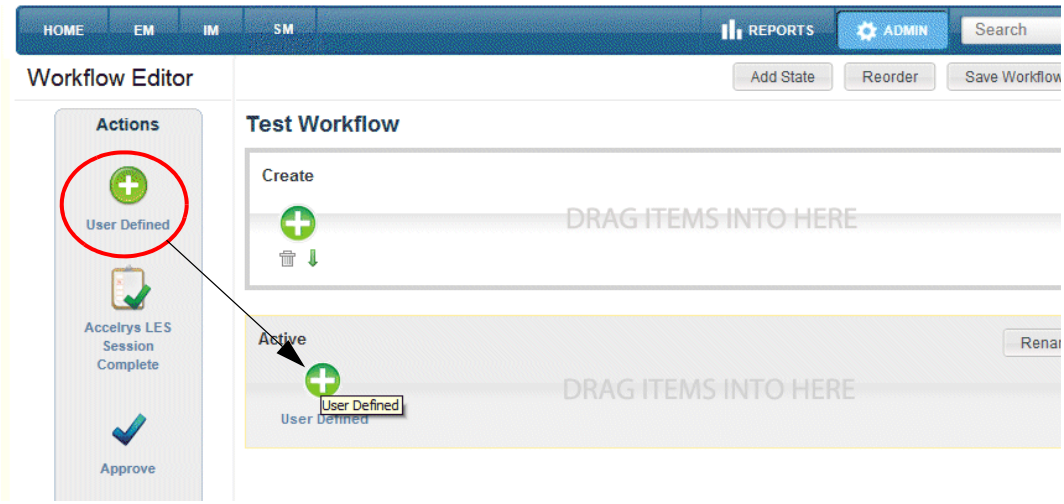
The command buttons change each time the entity instance enters a new workflow state. In addition, workflow actions also correspond to the first column of "action" icons in the entity instances home page. The order in which they appear is determined by the order of the actions within the workflow state.



Workflow Actions as Represented During Workflow Execution

Adding an action to a workflow state

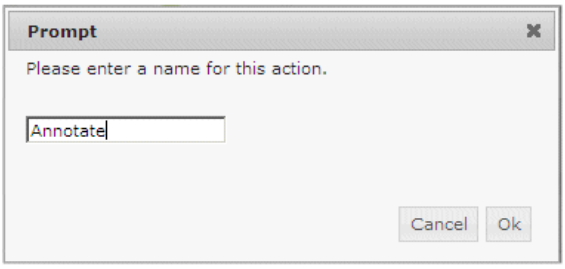
To add an action to a workflow state, drag the action icon from the toolbar into the state.



Adding an Action to a Workflow State

Note the following:

- When you add a User Defined action, a dialog box prompts you to enter a name. You can use as many User Defined actions in a single state as long as their names are unique.



Adding a “User Defined” Action

- If there are other actions present in the workflow state, the new action is automatically appended to the right of the other icons.
- You can only drag one Approve action, one Accelrys LES Session Complete action, and one Waste action into the same state. If you attempt to drag an action into a state where it already exists, it snaps back to the toolbar.
- When you mouse over an action icon, the name of the action is displayed.

Identifying Workflow Actions within a State

Reordering actions within a workflow state

You can drag and drop the action icons to reorder them. Their positions in the state will reflect the order of the command buttons in the entity instance's *View* page as well as the action icons in the grid of the entity instances home page (page 8-14).

- You cannot reorder an action if the Activities sub-menu is open below it.
- You must click the **Save Workflow** button above the workflow editor to commit the changes.
- The new order of actions does not affect the existing entities.

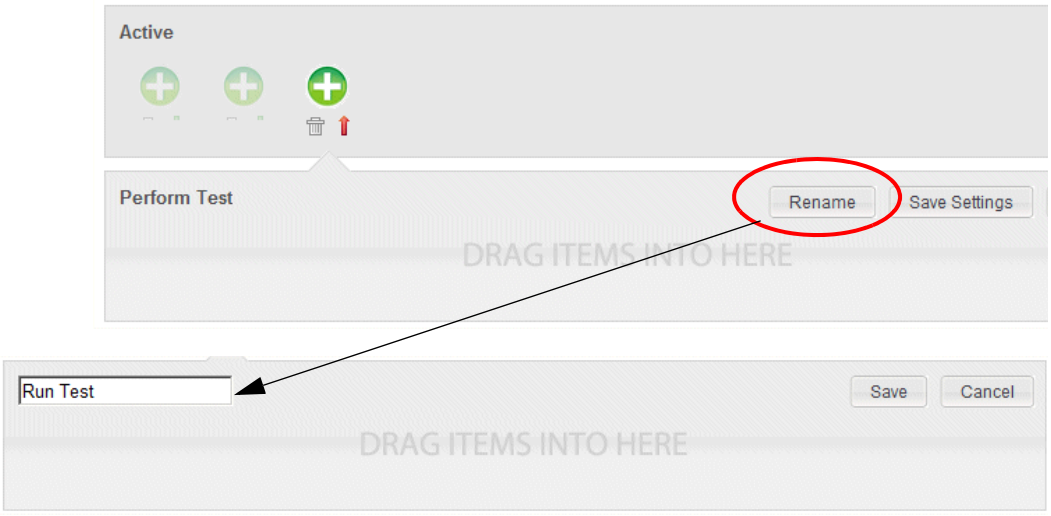
When you click **Cancel**, the reordered actions will revert to their original positions.

Renaming a "User-Defined" action

To rename a User-Defined action:

1. Click the action's green down arrow icon to open the Activities panel.
2. Click **Rename** and enter a new name for the action.
3. Click **Save** to commit the changes to the workflow state.
4. Click **Save Workflow** above the Workflow Editor to save the workflow.
5. In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Entity Types whose status is "Draft."

Note: When you rename a User-Defined action, the change does not apply to existing entities.



Renaming a User-Defined Action

Copying an action to a different workflow state

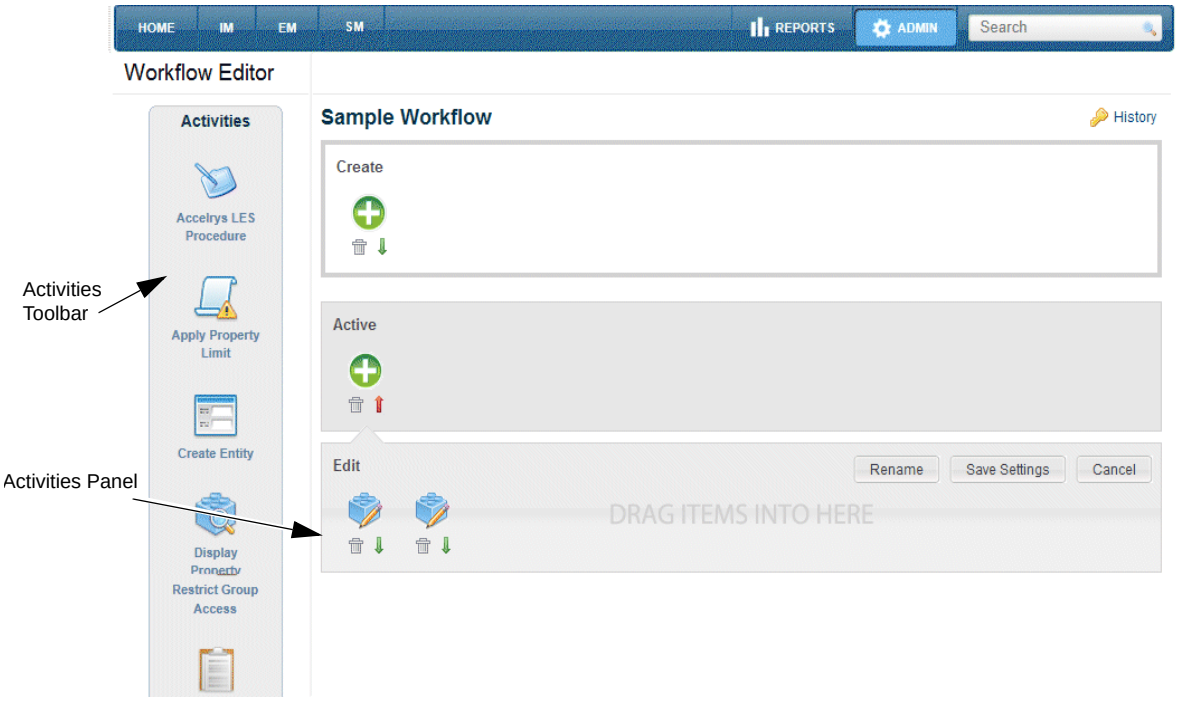
When you drag a workflow action from one state to another, its activities and configured parameters are also copied to the new state. You will be prompted to confirm the copy action.

Deleting a workflow action

To delete an action from a state, click **Delete** below the action's icon. You will be prompted to confirm the deletion.

Configuring Workflow Activities

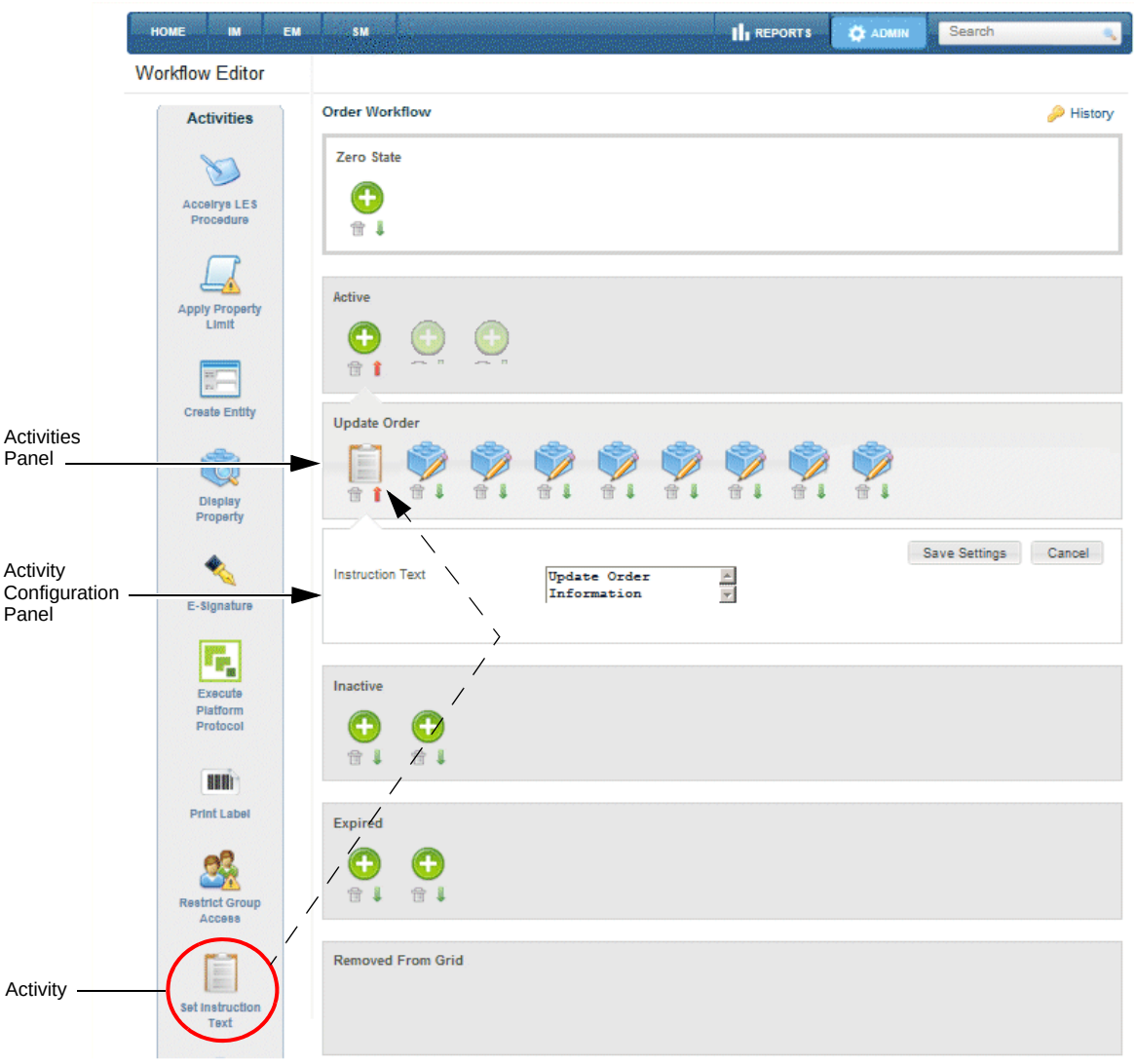
When you click the green down arrow ⇓ under the action's icon, an Activities panel opens below and the Action toolbar is replaced by the Activities toolbar.



Workflow Activities

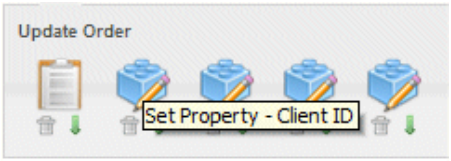
To configure an action, drag and drop the required activities into the Activity panel. The activities that contain additional configuration parameters will display the Activity Configuration panel below.

- The Zero State must have at least one configured action, and each action in the Zero State must have at least one Set State activity. The following activities can be used in a Zero State action:
    - Display Property
    - Set Instruction Text
    - Set Property
    - Set State
    - Apply Property Limit
    - Execute Platform Protocol
    - Restrict Group Access



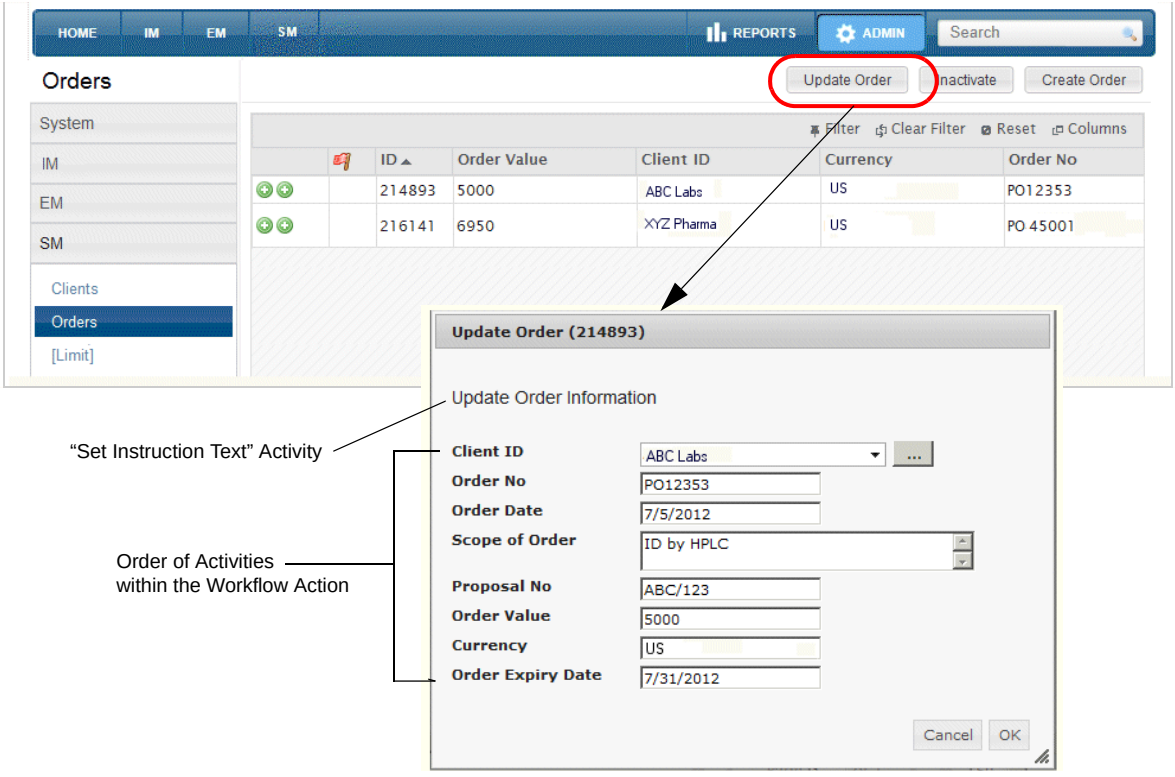
Adding Workflow Activities to an Action

- When you mouse over an activity icon, its configured value is displayed.



Identifying Configured Activities within an Action

- You can change the order of the icons. The position of the activities within the action determines the sequence in which they appear to the user in the action's dialog box during workflow execution. For example, if the user clicks an **Update Order** button, the action's dialog box displays the activities in the order that they appear in the workflow action.



"Action" Dialog Box During Workflow Execution

The "action" dialog box is named for the appropriate action (for example, "Update Order"). Note that the **Set Instruction Text** activity is always displayed at the top of the dialog box

regardless of where it is positioned in the action. The remainder of the activities are listed below. The activity that is in the farthest left position of the action appears at the top of the list, whereas the activity in the farthest right position appears at the bottom of the dialog box.

About group workflow activities

When a group of entity instances is selected during workflow execution, the values collected by some activities can only be applied to each individual entity instance in the group (for example, a Print Label activity with a unique barcode will be executed for each entity in the group). Other activities will apply the collected value to all of the entity instances in the group (for example, an E-Signature activity for approval purposes). For workflow actions consisting of both "single" and "group" activities, the single activities are applied to each individual entity instance within the group and the group activities are applied to all of the entity instances in the group.

To apply the value to the entire group of entity instances, each entity instance must be based on the same Entity Type that is at the same version of its workflow, and it must reside in the same workflow state (that is, have the same status). In addition, several activities can be configured for either single or group data collection.

- **"Single" activities**
  For workflow actions consisting of "single" activities, the system presents a separate dialog box for each entity instance in the group. This "action" dialog box is named for the appropriate action (for example, Print Label) and the user enters the appropriate information in each dialog box. The system then executes the activity and assigns the collected value(s) to the appropriate entity instance in the group.

  The following workflow activities are considered "single" activities:
  - Print Label
  - Create Entity

- "**Group" activities**
  For workflow actions consisting of "group" activities, the system provides a single action dialog box for all of the entity instances in the group. The user enters the appropriate information, then the system executes the activity and assigns the collected value to all of the entity instances in the group in a single step.

  The following workflow activities are considered "group" activities:
  - Accelrys LES Procedure
  - E-Signature
  - Set Instruction Text
  - Apply Property Limit
  - Restrict Group Access
  - Execute Platform Protocol

- **Either “group” or “single” activities**
  The following workflow activities can be configured for either “single” or “group” workflow activities:
  - Display Property
  - Set Property
  - Set State—When at least one activity in the action is set to “group.”

Description of workflow activities

For a standalone BIOVIA LIMS system, the available activities in the Activities toolbar include:

- Accelrys LES Procedure
- Apply Property Limit
- Create Entity
- Display Property
- E-Signature
- Execute Platform Protocol
- Print Label
- Restrict Group Access
- Set Instruction Text
- Set Property
- Set State
- Time Trigger

Accelrys LES Procedure activity

The **Accelrys LES Procedure** activity allows you to send the property value of an entity instance to a specified data field in a BIOVIA LES procedure session. It also allows you to receive data collected in an Accelrys LES procedure session and apply its value to the property of an entity instance in the BIOVIA LIMS application.

The Accelrys LES Procedure activity is used in conjunction with the Accelrys LES Procedure property of an Entity Type.

To send data to BIOVIA LES, map the property of the Entity Type to the target data collection field in the specified BIOVIA LES procedure session. To receive data from BIOVIA LES, map the data collection field in the specified procedure session to the specified property of the Entity Type. Also, specify at which BIOVIA LES status to trigger the Accelrys LES Session Complete action.

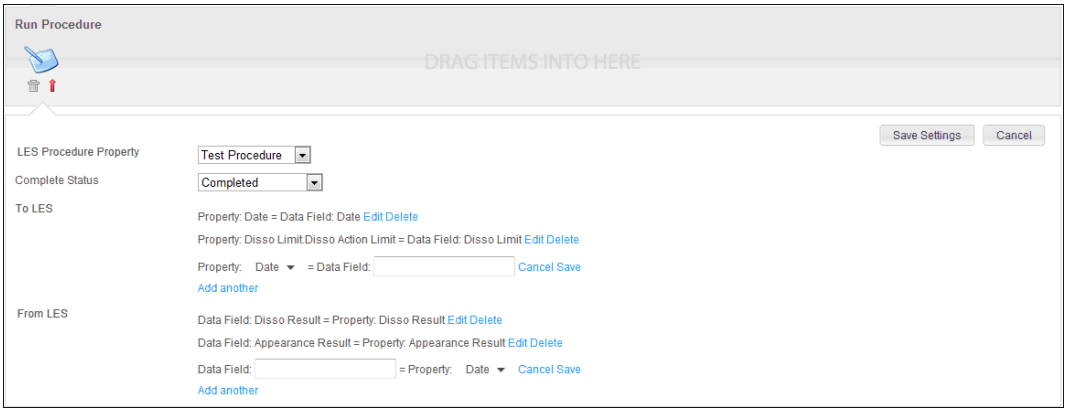
Note the following:

- You can add more than one Accelrys LES Procedure activity per action.
- You cannot add an Accelrys LES Procedure activity to a Zero State action or another workflow state that contains a Create Entity or Time Trigger activity.
- When executing group workflow activities, the Accelrys LES Procedure applies to all entity instances in the group.

- When combining the Accelrys LES Procedure activity with any other activity in the same action, the Accelrys LES Procedure activity will always be executed last.
- The following properties cannot accept data from BIOVIA LES:
  - Accelrys LES Procedure
  - Relationship
  - Calculate Numeric
  - Calculate Duration
  - Calculate Point in Time
- For Relationship properties, you can select a property from the related Entity Type.
- For Relationship properties set to "Collection," the submenu for the entity only contains the pseudo-property "Count." During workflow execution, the value sent to BIOVIA LES will be the total number of entity instances selected for that property.
- If the property that you are sending to BIOVIA LES includes the time zone in which its value was collected, the activity localizes the value of the corresponding serial date in BIOVIA LES to the collected time zone, regardless of the time zone in which the work is currently being executed.
- If the property that you are sending to BIOVIA LES does not include a time zone (for example, it is legacy data), the activity localizes its value to the time zone of the current BIOVIA LIMS client before it is sent to BIOVIA LES.
- Since BIOVIA LES does not capture time zone data, the activity standardizes the date and time value using the time zone of the current BIOVIA LES client.
- These dates and times will look and behave like data captured without time zone data.

To configure the Accelrys LES Procedure activity:

1. In the "LES Procedure Property" field, select the Accelrys LES Procedure property. The list contains all of the properties of the type "Accelrys LES Procedure" defined for this Entity Type.
2. In the "Complete Status" field, select the status that will trigger the Accelrys LES Session Complete action in the workflow. The selection list contains the following procedure session status codes:
   - Abandoned
   - Approved
   - Completed (default)
   - In Process
   - Reviewed
   - Reviewed + Locked



Configuring the "Accelrys LES Procedure" Activity

3 In the "To LES" field:

a. Select the Entity Type property whose value will be sent to BIOVIA LES. The selection list contains the names of all of the property types defined in the Entity Type (except Accelrys LES Procedure) and its pseudo-properties "ID" and "Status."

- If a Relationship property is set to "Collection," the submenu contains the pseudo-property "Count." During workflow execution, the total number of entity instances selected for that property will be sent to BIOVIA LES.
- If a Relationship property is not set to "Collection," a submenu lists the properties of the related Entity Type (excluding Accelrys LES Procedure) and its pseudo-properties "ID" and "Status."

b. Enter the name of the target data collection field in the BIOVIA LES procedure session. The field you select must be of the same type as the field you are mapping to it. For example, a "Date" property must be mapped to a "Date" field in BIOVIA LES. Note that if you are pre-defining a new field name to be included in the work instruction, there is a 50-character limit.

Note: *Mapping Array Elements*

To map BIOVIA LIMS properties to BIOVIA LES array elements, use the following naming convention. The example below maps the BIOVIA LIMS properties "First Name" and "Last Name" to the first and third elements in an array of three names in BIOVIA LES:

First Name = Name(1)
Last Name = Name(3)

c. Click **Save** to save the edits you made in that row.

d. Click **Add another** to add another row below. Repeat Steps 3a-c.

4 In the "From LES" field:

a. Enter the name of the data collection field in the BIOVIA LES procedure session whose value will be sent back to BIOVIA LIMS.

Note: *Mapping Array Elements*

To map BIOVIA LES array elements to BIOVIA LIMS properties, use the following convention. The example below maps the first and third elements in an array of three names in BIOVIA LES to the BIOVIA LIMS properties "First Name" and "Last Name":

Name(1) = First Name
Name(3) = Last Name

b. Select the target property of this Entity Type which will receive the data from BIOVIA LES. The property you select must be of the same type as the field you are mapping to it. For example, a "Date" field in BIOVIA LES must be mapped to a "Date" property in BIOVIA LIMS.

c. Click **Save** to save the edits you made in that row.

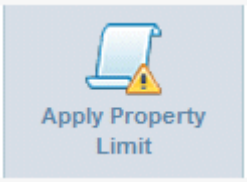
d. Click **Add another** to add another row below. Repeat Steps 4a-c.

5 Click **Save Settings** to save the configured activity.

6 Click **Save Settings** to save the configured action.

7 Click **Save Workflow** to commit the changes to the workflow.

Apply Property Limit activity



The **Apply Property Limit** activity allows you to apply one or more limits to a specified property of the current Entity Type. The selected property is evaluated against a Limit Specification property of the Entity Type.

Typically you will have several configured Limit Specification properties (for example, an upper limit and a lower limit) and you can evaluate the selected property against more than one.

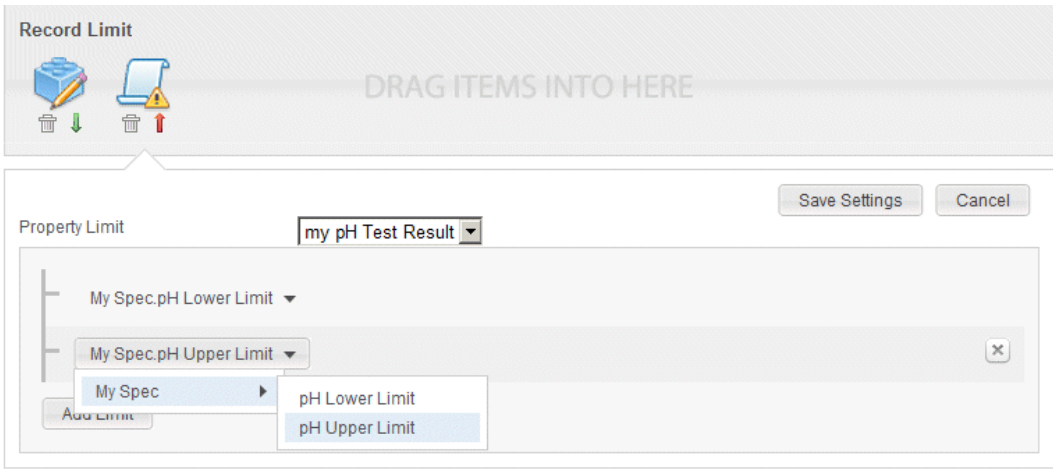
During workflow execution, an out-of-limit value is marked with a red flag icon so the user can easily identify that a limit has been exceeded when manually entering property values or obtaining test results.

When performing group workflow actions, the Apply Property Limit activity applies to all entities in the group. Refer to *About group workflow activities* on page 8-21.

Note the following:

- The state in which you set your Relationship property is where you should apply the limit. It is recommended to set the limit in the Zero State.
- You can only evaluate one property in each Apply Property Limit activity.
- The Property Limit field displays all of the properties of the current Entity Type as well as the Relationship properties of the related Entity Types.
- The limit fields are filtered according to the selected property type. For example, numeric limits will not be displayed if you are evaluating a text limit.
- For a numeric limit, the precision of the Limit Specification and the property it is evaluating must be the same.
- If you specify more than one limit, the evaluated property must meet all of the limits. This represents a logical “AND” function.
- If you have two or more Apply Property Limit activities for the same property, the system will apply the most conservative limit. For example, if you had two limits **<4 and > 10** and **<3 and >8**, the system would apply the limit **<4 and >8**.
- During workflow execution, if the limit being applied to the property is set up in the workflow as a “By Value” relationship, the property is evaluated against the version of the Limit Specification at the time the Apply Limit Activity was executed.
- During workflow execution, if the limit being applied to the property is set up in the workflow as a “By Reference” or “By Reference, Clone” relationship, the property is evaluated against the most current version of the Limit Specification.
- During workflow execution, if the limit being applied is specified through a Relationship property and the relationship is changed, the properties being evaluated by the Apply Limit Activity will need to be re-evaluated. This does not happen automatically, therefore the workflow must include an Apply Limit Activity each time there is a Set Property on the limit relationship.

The Apply Property Limit configuration panel is shown below.

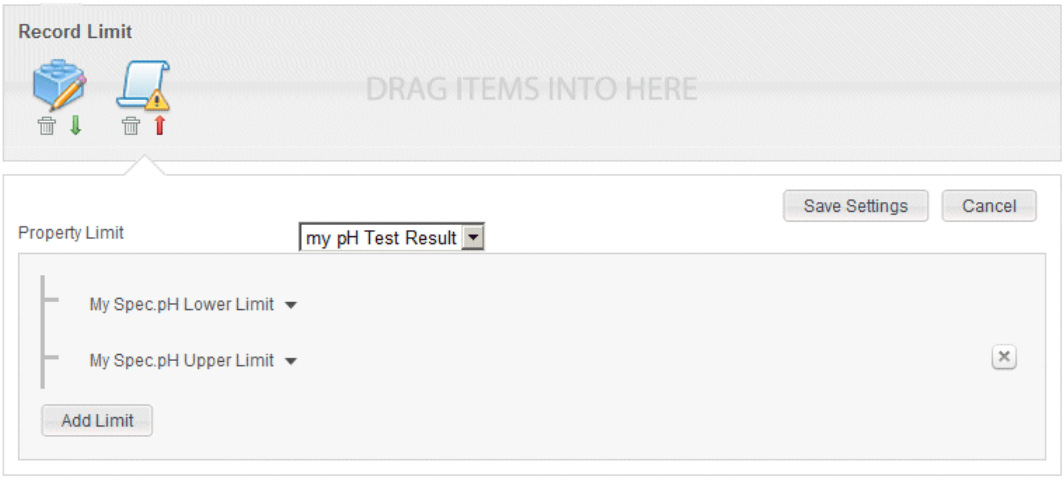


Configuring the “Apply Property Limit” Activity

To configure the Apply Property Limit activity:

1. In the Property Limit field, select the property to which you want to apply a limit. Note that “By Ref, Clone” Relationship properties do not appear in the list. For Relationship properties, the menus are nested as shown above.
2. In the selection list, choose the Limit Specification property that you want to evaluate against the selected property.
3. If necessary, click **Add Limit** to specify an additional limit.
4. Repeat Steps 2-3 as required.
5. When you are done, click **Save Settings** to save the configured activity.
6. Click **Save Settings** to save the configured action.
7. Click **Save Workflow** above the Workflow Editor to commit the changes.

The configured Apply Property Limit is shown below.



Configuring the “Apply Property Limit” Activity

Create Entity activity

The **Create Entity** activity allows the user to create an instance of a specified Entity Type from the workflow of another Entity Instance. For example, a user could create an instance of a “Test” Entity Type while executing the workflow of an “Order” Entity Type.

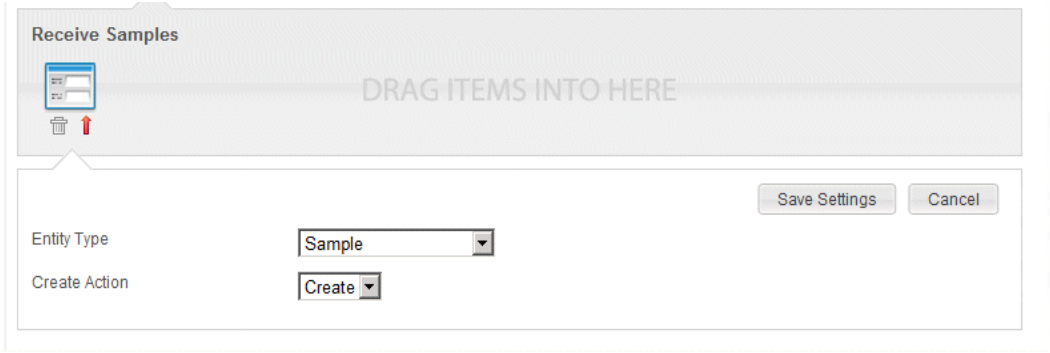
The Create Entity activity is defined by a target Entity Type and its Zero State action in which it is created (that is, the default “Create” action). When a new entity instance is created during workflow execution, the ID of its parent Entity Type is displayed in the grid of entity instances.

Note the following:

- You can only add one Create Entity activity to a workflow action.
- You cannot add a Create Entity activity to a Zero State action.
- The Create Entity activity cannot be combined with other activities that require user input, such as an Accelrys LES Procedure, Set Property, or E-Signature activity.
- When performing group workflow actions, the Create Entity activity applies to each individual entity instance in the group. Refer to *About group workflow activities* on page 8-21.

To configure the Create Entity activity:

1 In the Entity Type field, select the Entity Type on which the new entity instance will be based. The list contains all of the active Entity Types in the system.



Configuring the “Create Entity” Activity

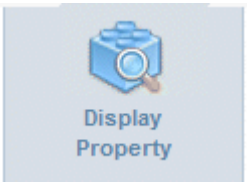
2 In the Create Action field, select **Create** or the current name of the Zero State. This is the action that will be executed to create the entity instance.

3 Click **Save Settings** to save the configured activity.

4 Click **Save Settings** to save the configured action.

5 Click **Save Workflow** above the Workflow Editor to commit the changes.

Display Property activity



The **Display Property** activity allows you to display a property value without allowing it to be edited. The Display Property is closely related to the Set Property activity in that Set Property collects the value and allows the user to edit it, whereas the Display Property simply displays the collected value and it cannot be edited.

When performing group workflow actions, the “Apply to Entire Group” option allows you to apply the Display Property activity to either individual actions (that is, per entity instance) or to the entire group. Refer to *About group workflow activities* on page 8-21.

To configure the Display Property activity:

1 In the Property Name field, select the property that you want to display on the action form. The list contains the names of the properties that can be configured for this Entity Type.

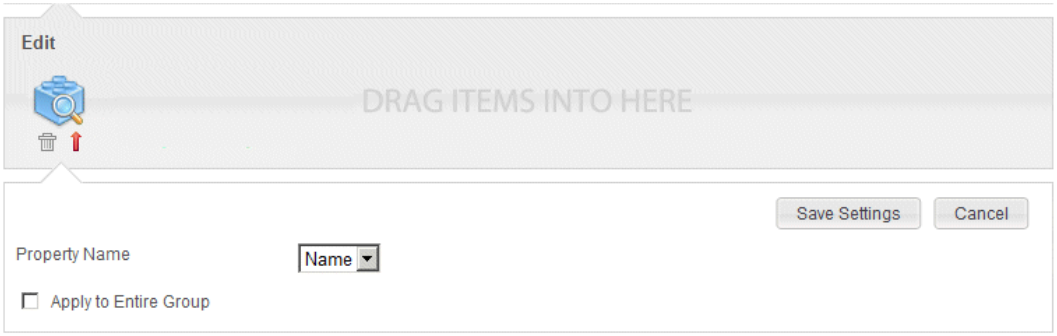
2 In the **Apply to Entire Group** field:

- Leave the box unchecked to display the individual values for each entity instance during group workflow actions. A separate *Action* dialog box will be applied to each entity instance in the group.
- Check the box to apply the entered values to all of the entities during group workflow actions. A single *Action* dialog box will be applied to all entity instances in the group.

3 Click **Save Settings** to save the configured activity.

4 Click **Save Settings** to save the configured action.

5 Click **Save Workflow** above the Workflow Editor to commit the changes.



Configuring the “Display Property” Activity

When the action containing the Display Property is executed in the workflow, the value of the property is displayed and cannot be edited.

Result of a “Display Property” Activity

E-Signature activity

The **E-Signature** activity is used to collect an electronic signature during workflow execution. The purpose of the signature can be to review, attest, approve an action or to provide an annotation—for example, to explain why an entity instance such as a test has been cancelled.

When performing group workflow actions, the E-Signature activity applies to all entities in the group. Refer to *About group workflow activities* on page 8-21.

The E-Signature activity provides the following types of signatures:

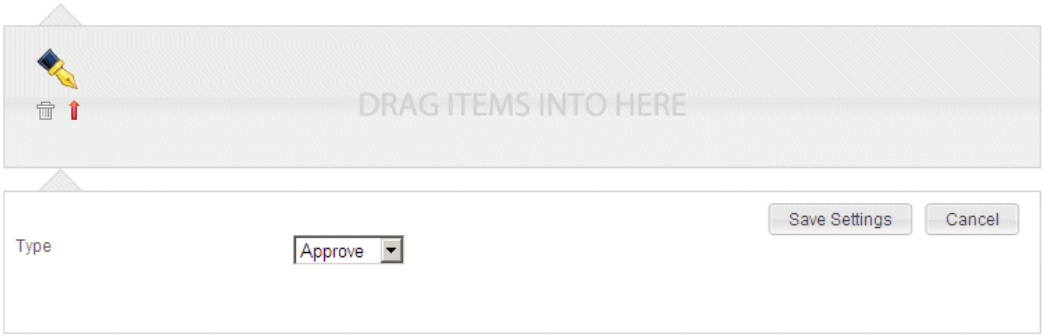
- **Annotate**—Collects the user's e-signature for an annotation. The Reason Code "Annotation" is pre-defined by the system.
- **Approve**—Collects the user's e-signature for an approval. The Reason Code "Approved" is pre-defined by the system.
- **Attest**—Collects the user's e-signature for an attestation. The Reason Code "Attested" is pre-defined by the system.
- **Review**—Collects the user's e-signature for a review. The Reason Code "Reviewed" is pre-defined by the system.
- **Signature—**Collects the user's e-signature for any reason. The Reason Code that is recorded for this activity is entered by the user.

Note the following:

- You cannot add a Create Entity activity to a Zero State action.
- You can only add one E-Signature activity per workflow action.
- You cannot add an E-Signature (Approve/Attest/Review) activity to an action that contains another E-Signature (Approve/Attest/Review), Set Property, Create Entity, or Time Trigger activity.
- To allow the user to add an annotation in a workflow action that also contains an E-Signature (Approve/Attest/Review) activity, create a User Defined action called "Annotation" and include the e-Signature activity set to "Annotation."

To configure the E-Signature activity:

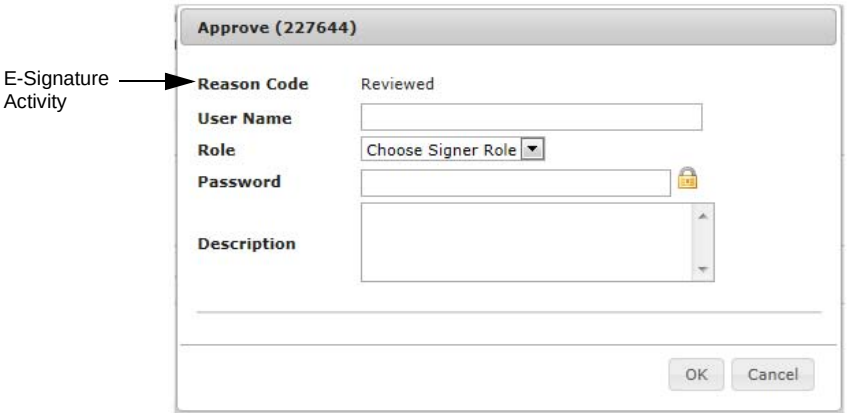
1. Select the type of signature required for the action.



"E-Signature" Activity

2. Click **Save Settings** to save the configured activity.
3. Click **Save Settings** to save the configured action.
4. Click **Save Workflow** above the Workflow Editor to commit the changes.

During workflow execution, the configured E-Signature activity presents a dialog box for the user's e-signature.



"E-Signature" Activity during Workflow Execution

Execute Platform Protocol activity

The **Execute Platform Protocol** activity allows users to execute a protocol on a configured platform protocol server (such as the Accelrys Enterprise Platform server) during workflow execution. The Execute Platform Protocol activity passes specified parameters to the specified protocol, which then returns the requested data. The Accelrys Platform Server is configured in the ADMIN tab's System Settings.

The Execute Platform Protocol activity supports both synchronous and asynchronous communication between the protocol server and the BIOVIA LIMS application.

- Synchronous transmissions return the requested data immediately—for example when the specified protocol is to run a report, the workflow waits for the report to be returned.
- For an asynchronous transmission, the workflow will not wait for a response—for example, when the protocol initiates an email to another system.

Note the following:

- You cannot add an Execute Platform Protocol activity to a Zero State action.
- You can add more than one Execute Platform Protocol activity to a workflow action.
- If other activities are included in the action that contains the Execute Platform Protocol activity, all of the activities are executed.
- If the protocol returns an HTML file, the user is redirected to the loaded page in a new browser window.
- If the user leaves a required parameter blank, the activity cannot be saved.
- When performing group workflow actions, if the Execute Platform Protocol activity is in the same action as another activity that requires user input (for example, Set Property), the other property must be configured to "Apply to Group," in order for the protocol activity to be executed.
- When performing group workflow actions, if the Execute Platform Protocol activity is in the same action as a "Create Entity" activity, the protocol will be executed once the instances are created. However, if this protocol generates any files (for example, reports), the files are not displayed in a new window because the browser is redirected to the filtered view of the children entities once they are created.
- In order to successfully process a protocol during workflow execution, your browser's Pop-up Blocker Settings must be configured to "Allow pop-ups" from the BIOVIA LIMS site address.

- You can automatically execute a protocol with a time trigger or LES Session Complete trigger. Refer to the following section.

Executing Platform Protocols Activities from Triggered Actions

You can execute a Platform Protocol activity automatically from an action that contains a Time Trigger activity as well as from an LES Session Complete action.

- The protocol that is selected to be executed from a time trigger must require no user input.
- Any output that is displayed by the protocol, such as a new page, will not function as expected, as there is no terminal associated with triggered actions.
- For protocols that are executed from a time trigger, it is recommended to leave the “Asynchronous Execution” box unchecked. If this box is checked, it is possible to overwhelm the LIMS API with requests when many protocols are triggered at once.

When the trigger executes, the protocol is executed under the following conditions:

- The protocol will have a 30-minute window of time in which to access LIMS API functions. After 30 minutes, the API will reject the requests. If the protocol does not use the LIMS API, the time restriction does not apply.
- Which user is assigned to the protocol’s LIMS Terminal Session?

  For Time Triggers:

  - LIMS will assign the session to the most recent user who set the status to the state which contains the time triggered action.
  - If a user did not perform the most recent state change, such as in the case of a time triggered state change, the system will identify the most recent user to cause a state change.
  - In the Environmental Monitoring module, it is possible to configure a workflow in which no user initiates a state transition—for example, when samples are created by the system at their scheduled date and all subsequent actions are executed through time triggers. In this case, the “System” user is selected. Since the “System” user has no eligibilities, protocols that are triggered by the system user will be restricted from using the LIMS API. Protocols that do not use the API, such as a protocol that sends an email notification, are unaffected and can be run in this scenario.

  For LES Session Complete triggers:

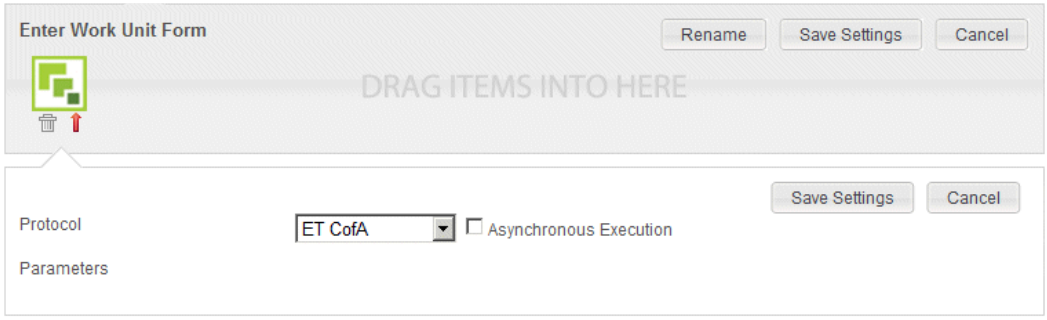
  - LIMS will assign the session to the LES user who completed the procedure session.

- Note that the matching LIMS user must have eligibilities to access or modify entity instances and/or consumables in order for protocols that leverage the LIMS API to be successful.

- When protocols use the LIMS API to modify Entities or Consumables, the resulting Audit Trail Item(s) will record the following:
  - The user as chosen by the method described above.
  - The date and time recorded as UTC.
  - The notes will include the phrase, “Created or modified via automation.”

Configuring the Execute Platform Protocol Activity:

The Execute Platform Protocol activity is shown below.

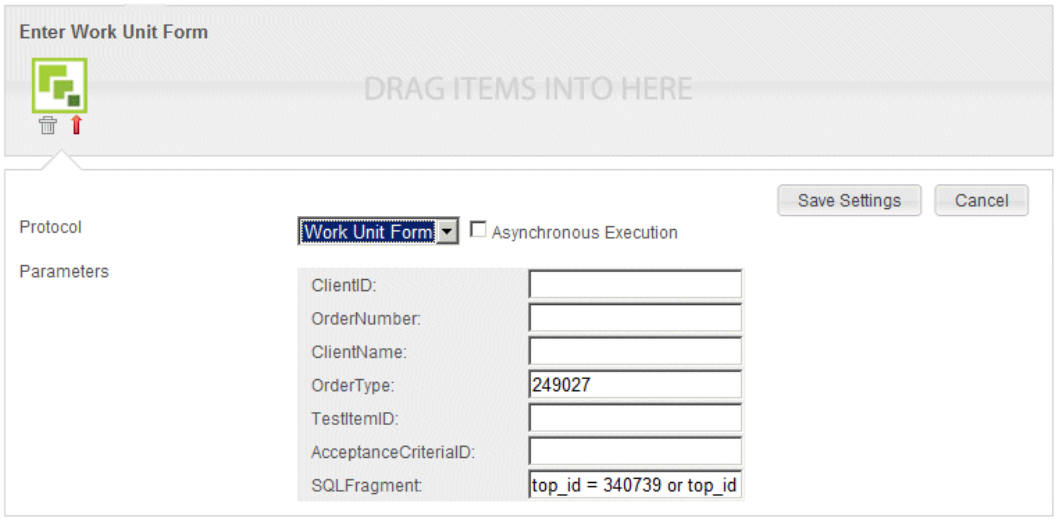


Configuring the “Execute Platform Protocol” Activity

The Protocol selection list displays all of the available protocols that exist in the specified folder on the platform protocol server. For the Accelrys Enterprise Platform server, the default folder is Protocols/WebCore. Once a protocol is selected, the available parameters for that protocol are displayed.

Each parameter displays an input control appropriate for the data type that it accepts. The following parameter data types are displayed with the appropriate controls.

- BooleanType parameter is represented by a check box.
- PasswordType is represented by a password text box (characters are not displayed).
- StringTypes which are configured to have a limited number of "Legal Values" are represented by a selection list where the only options available are the "Legal Values" of the parameter.
- All other data types are represented by a standard text box control.



Configuring Protocol Parameters

The following exceptions are made and are not displayed to the user:

- Parameters of type “StylesheetType”
- Parameter named “Entity ID”
- Parameter named “Entity Type”
- Parameter named “Terminal GUID”

Parameters which are marked as "required" in the protocol have an asterisk to the right of their label name.

The user is allowed to enter in values for the available parameters. These values are literal values and cannot be mapped to property values.

To configure the Execute Platform Protocol activity:

1. In the Protocol field, select the appropriate protocol.
2. To configure an asynchronous request, click the **Asynchronous Execution** check box.
3. In the Parameters fields below, configure the required information for the selected protocol.
4. Click **Save Settings** to save the configured activity.
5. Click **Save Settings** to save the configured action.
6. Click **Save Workflow** above the Workflow Editor to commit the changes.

Print Label activity

The **Print Label** activity is typically added to a "Print Label" action and is used to print a label for an entity instance at the specified state of its workflow.

In order to save a Print Label activity in a workflow, the corresponding label must be registered in the system and have an "Active" status.

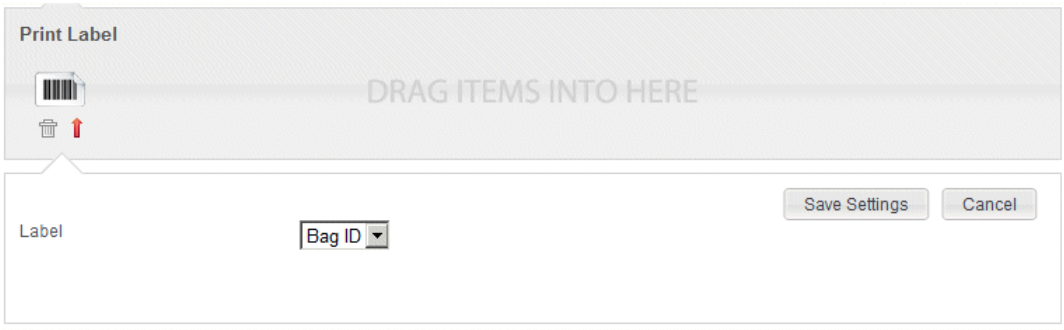
Note the following:

- You can add more than one Print Label activity to an action.
- You cannot add a Print Label activity to a Zero State action or to an action that contains a Time Trigger activity.
- When combining the printing of a label with any other activity, the label will be printed before any data is modified.
- For a cloned Entity Type, all Print Label activities are removed from the cloned workflow.
- When performing group workflow actions, the Print Label activity applies to each individual entity instance in the group. Refer to *About group workflow activities* on page 8-21.

To configure the Print Label activity:

1 Select the appropriate label from the list. The Label selection list displays all of the labels whose status is “Active” within the same category as the Entity Type you are currently editing.

Note: If there are no labels configured in the system, an error message is displayed.



Configuring the “Print Label” Activity

2 Click **Save Settings** to save the configured activity.

3 Click **Save Settings** to save the configured action.

4 Click **Save Workflow** to commit the changes to the workflow.

Restrict Group Access activity

The **Restrict Group Access** activity allows you to control which groups of users can perform certain workflow actions. This allows you to control the workflow execution and ensures that only the appropriate groups of people can perform specific workflow actions.

To configure the Restrict Group Access activity, you will define one or more “Permission Groups” which are essentially rules for determining which User Groups can execute specific workflow actions.

Each Permission Group must contain at least one User Group and can contain many. Users must belong to all of the User Groups in any one Permission Group in order to execute the action, thus specifying multiple User Group operates as a logical “AND” function. Each Permission Group is evaluated independently and thus operates as a logical “OR” function. If an action does not have any configured Permission Groups, any user can execute this action.

Note the following:

- You can only add one Restrict Group Access activity to a workflow action.
- You can add the same User Group to different Permission Groups.
- If all of the groups in the Permissions Group become inactive, any user can execute this action.
- When an active Entity Type whose workflow contains a configured Permission Group is exported, the User Group that is used in its workflow is also exported.
- If there are no User Groups currently configured in your system, the Activity Configuration panel is hidden and an error message is displayed.
- When performing group workflow actions, the Restrict Group Access activity applies to all of the entity instances within the group.

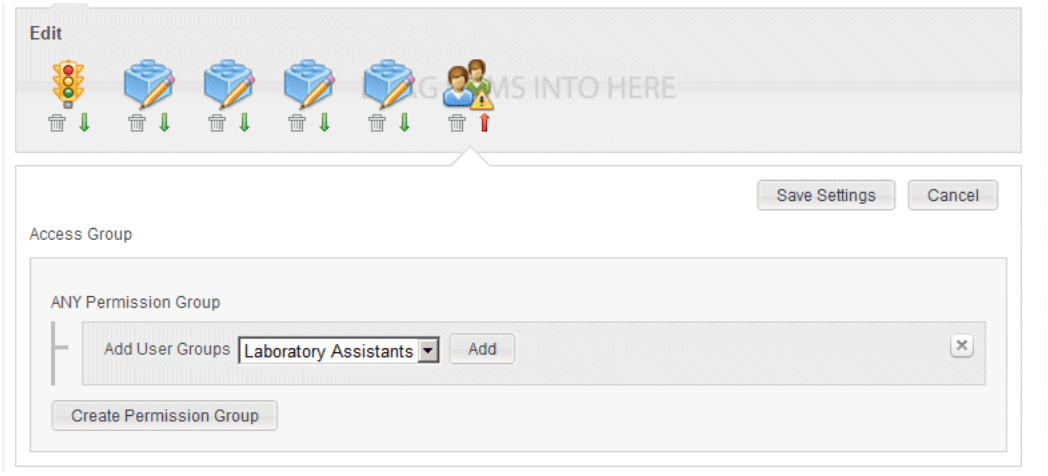
The Restrict Group Access activity is shown on page 8-39.

To configure the Restrict Group Access activity:

1 By default, one empty Permission Group is displayed. If you want to allow anyone to execute this action, do not add any User Groups.

2 To restrict this action to a specific group of users, select the group from the list and click **Add**. The list contains all of the active User Groups in the system.

3 To further restrict this action, add additional groups as necessary. You can only add one instance of a group to a Permission Group. Only users who belong to all of the added groups will be able to execute this action.



Configuring the “Restrict Group Access” Activity

4 To remove an added group, click ✕ to the right of its name.

5 To add another Permission Group, click **Create Permission Group** and add the appropriate Groups.

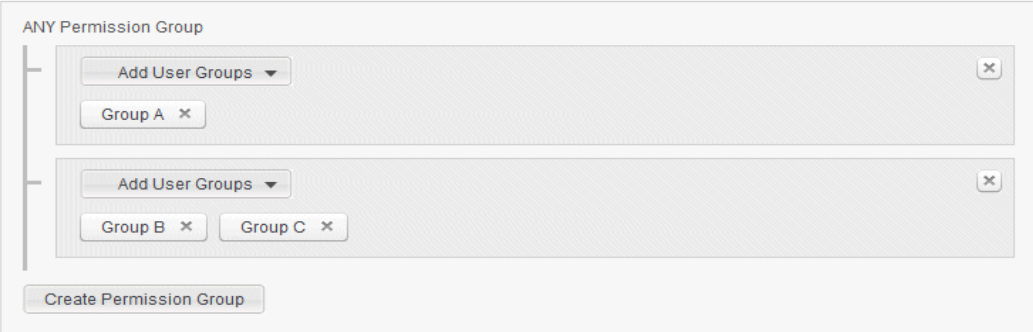
6 To remove an added Permission Group, click ✕ on the right side of its gray panel.

7 Click **Save Settings** to save the configured activity. There must be at least one Permission Group per action and at least one User Group per Permission Group in order to save the changes.

8 Click **Save Settings** to save the configured action.

9 Click **Save Workflow** above the Workflow Editor to commit the changes.

In the example below, user can perform this action if they belong to either Group A or to both Groups B and C.



Example of Configured Permission Groups

Set Instruction Text activity

The **Set Instruction Text** activity is used to display some instructions to the user during workflow execution. A Set Instruction Text activity can be used in any workflow action, but you can only add one per action. The instructions apply to all of the activities in the action.

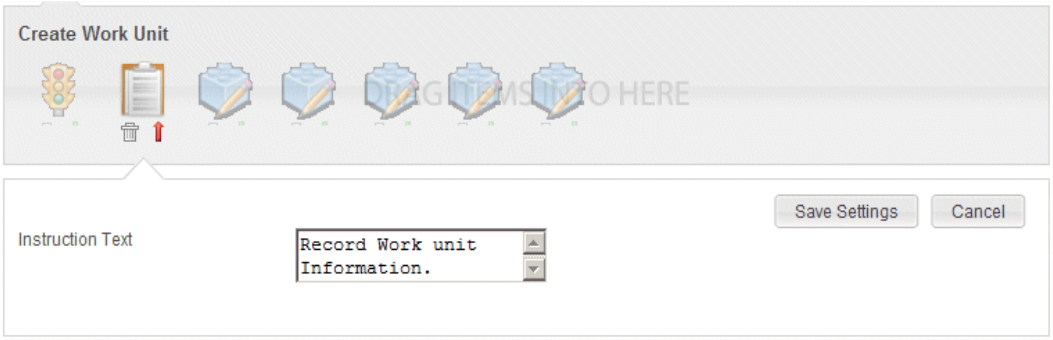
When performing group workflow actions, the Set Instruction Text activity applies to all of the entities in the group. Refer to *About group workflow activities* on page 8-21.

Note the following:

- You can only add one Set Instruction Text activity to a workflow action.
- You cannot add a Set Instruction Text activity to an action that contains a Time Trigger.

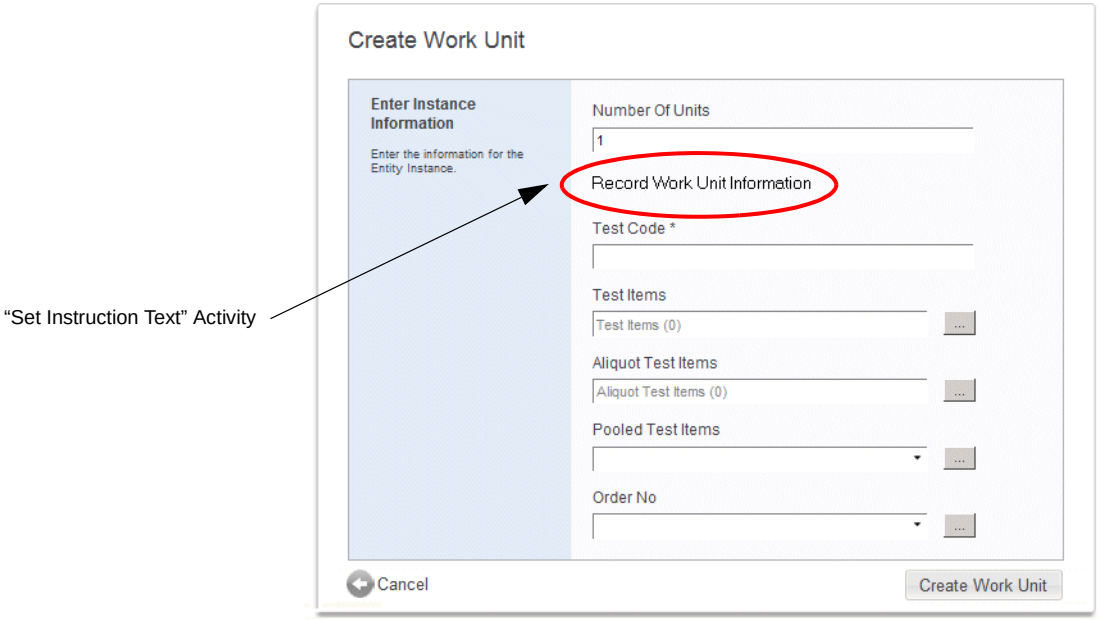
To configure the Set Instruction Text activity:

1. Enter the instructions in the text box. The instructions cannot exceed 256 characters.
2. Click **Save Settings** to save the configured activity.
3. Click **Save Settings** to save the configured action.
4. Click **Save Workflow** above the Workflow Editor to commit the changes.



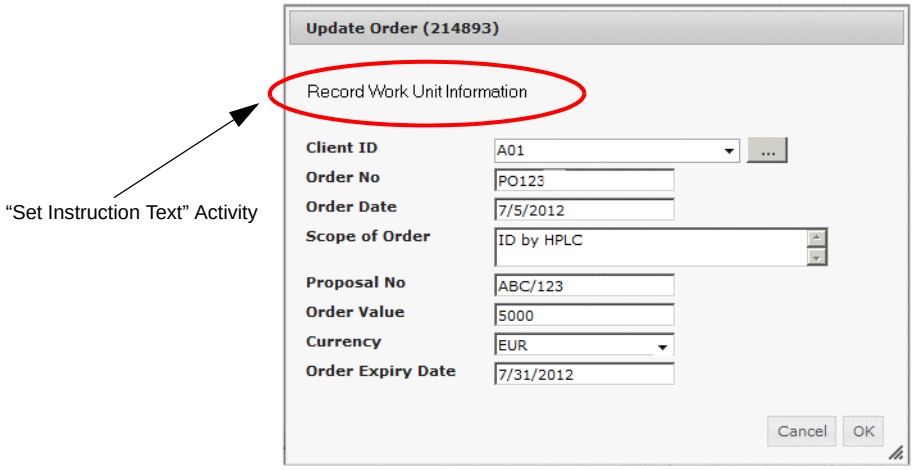
"Set Instruction Text" Activity

The following screen is an example of a Set Instruction Text activity as shown in a "Create" Zero State action during workflow execution.



"Set Instruction Text" Activity in Zero State Create Action

During workflow execution, the Set Instruction Text activity is always shown at the top of the Action dialog box that opens when the user clicks a command button. Any other activities that are present in that workflow action are displayed below it.



"Set Instruction Text" Activity in Action Dialog Box

Set Property activity

The **Set Property** activity allows the user to manually enter or select the value of a property for an entity instance during workflow execution. You can create a Set Property activity for any of the "configurable" properties of an active Entity Type. You can also control at which workflow state the property value is required.

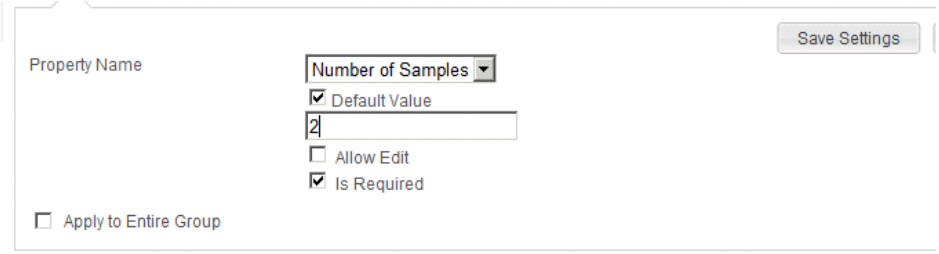
The "Required" option is selected by default and requires that the user enter a value for that property. The required properties are indicated with an asterisk (*) when the user creates the entity instance in the ***Create*** *<entity instance>* page or performs the workflow actions in the action's dialog box.

When you deselect the "Required" option, the field is displayed to the user but a value is not required. You can use the same Set Property activity in two different states of the workflow—one that requires a value and the other that does not.

When performing group workflow actions, the "Apply to Entire Group" option allows you to apply the Set Property activity to either individual actions (that is, per entity instance) or to the entire group. Refer to *About group workflow activities* on page 8-21.

Note the following:

- You can add multiple Set Property activities per action.
- You cannot add a Set Property activity to an action that contains an E-Signature (Approve/Attest/Review) activity or a Create Entity activity.
- When you configure the Set Property activity for a “Numeric” property, you can specify a default value and optionally allow the user to edit it during workflow execution. Both the specified default value and the entered value must meet the minimum and maximum values that have been configured for the property, if any. If **Allow Edit** is unchecked, only the Default Value can be accepted.

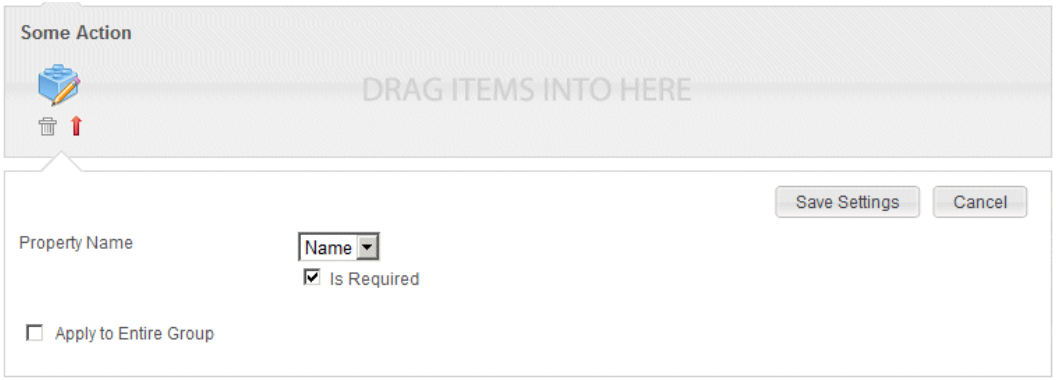


“Set Property” Activity with Numeric Property

- When you configure the Set Property activity for a “User” property, only the active users with access to the current Site appear in the selection list.
- For upgrades from an existing BIOVIA LIMS v4.1 system, all of the existing Set Property activities are set to “Required” upon importing.

To configure the Set Property activity:

1. In the Property Name field, select the name of the property whose value you want to collect. The list is populated with the names of the “configurable” properties of this Entity Type.
2. In the **Is Required** field:
   - Leave the box checked to require the user to enter or select a value for this property during workflow execution.
   - Clear the check box if the value is optional.



Set Property" Activity

3 To configure the options for a Relationship property, refer to the following section.

4 In the **Apply to Entire Group** field:

- Leave the box unchecked to require the user to enter individual values for each entity instance during group workflow actions. A separate *Action* dialog box will be applied to each entity instance in the group.
- Check the box to apply the entered values to all of the entities during group workflow actions. A single *Action* dialog box will be applied to all entity instances in the group.

5 Click **Save Settings** to save the configured activity.

6 Click **Save Settings** to save the configured action.

7 Click **Save Workflow** above the Workflow Editor to commit the changes.

Configuring the "Set Property" activity for a Relationship property

When you select a Relationship property in the Property Name field, you can optionally set one or more conditions on which to evaluate the property. You can build a condition to:

- Compare one property to another property
- Compare a property to a fixed value
- Compare a property to numeric values or dates (<, <=, >, >=, =, and <>)
- Compare a property to a boolean value (true/false)
- Compare two string values (i.e., Equal To, Not Equal To, Contains)

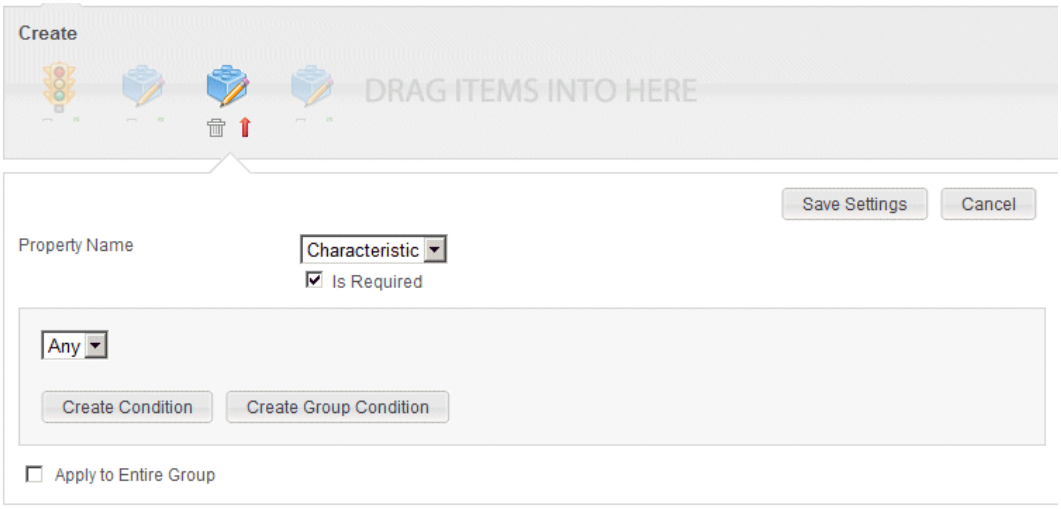
Individual conditions can be grouped into complex conditions by adding one or more group conditions which behave like parenthesis precedence operators. The conditions allow for the following evaluations:

- **Any**—If any of the statements are true (an "OR" evaluation)
- **All**—If all of the statements are true (an "AND" evaluation)

You can set the filters for each condition based on the properties of the Entity Type referenced in the selected Relationship property. If a property of the referenced Entity Type is also a Relationship property, a sub-menu will display the properties of that related Entity Type as well. You can further define the list of filtered values based on the workflow state (status) of the Entity Type defined in the Relationship Property.

The system provides a locking mechanism once the property is referenced in the workflow of a different entity instance to prevent the Property Type from being modified.

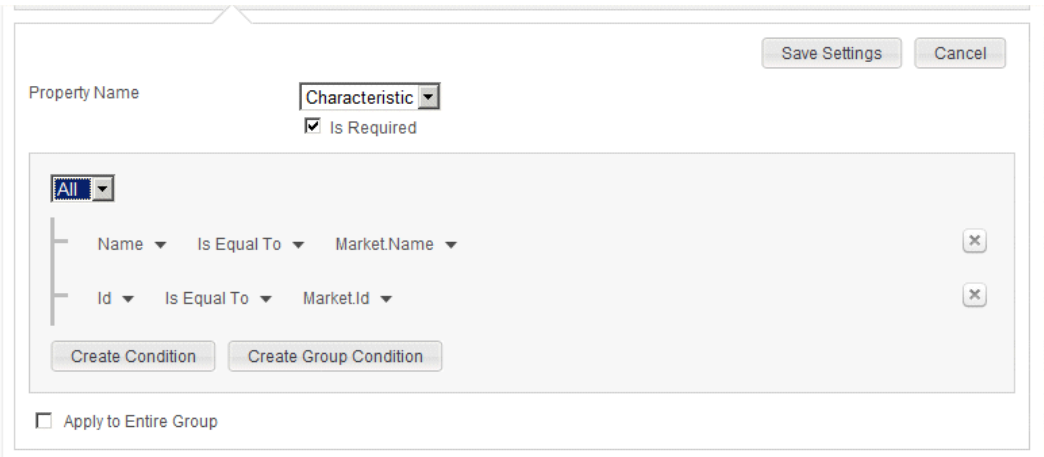
The following figure shows the Activity Configuration Panel for a Relationship property.



Activity Configuration Panel for Relationship Property

To set one or more conditions:

1. Configure the activity as previously described on page 8-44.
2. Click **Create Condition**.
3. Build the condition as required:
   a. On the left side, select a property from the drop-down list on the left. The list is populated with the properties of the related Entity Type as well as its ID and status.
   b. Select an operator in the middle list. The operators are based on the property you previously selected in Step 3a.
   c. Select the appropriate property or literal value in the right selection list. The list only contains properties that can be compared to the selected property on the left. If not in the Zero State, the list also displays the properties of a parent Entity Type. A “Parent” option is a link to the entity that is setting the relationship.
   d. To delete a condition, click ✕ to the right of that condition.
   e. To add a sub-condition, click the **Create Group Condition**.
4. In the condition selection box above the conditions:
   - If any of the configured conditions must be true for the property, select **Any**.
   - If all of the configured conditions must be true for the property, select **All.**



Configuring a Condition

Set State activity

The **Set State** activity is used to set an entity to a specified state. The Set State is triggered by an action; it is not evaluated automatically when an entity enters its first workflow state.

You can set either an explicit target state or a conditional state based on a variety of conditional comparisons. For example, if the value of a property is greater than the Action Limit, set the state to "Requires Attention." During workflow execution, the state will automatically change when the action occurs. The action can be user-initiated or based on a system event (for example, waiting for a completed Accelrys LES Procedure activity in an Accelrys LES Session Complete action).

When performing group workflow actions, the Set State activity applies to each individual entity instance in the group. Refer to *About group workflow activities* on page 8-21.

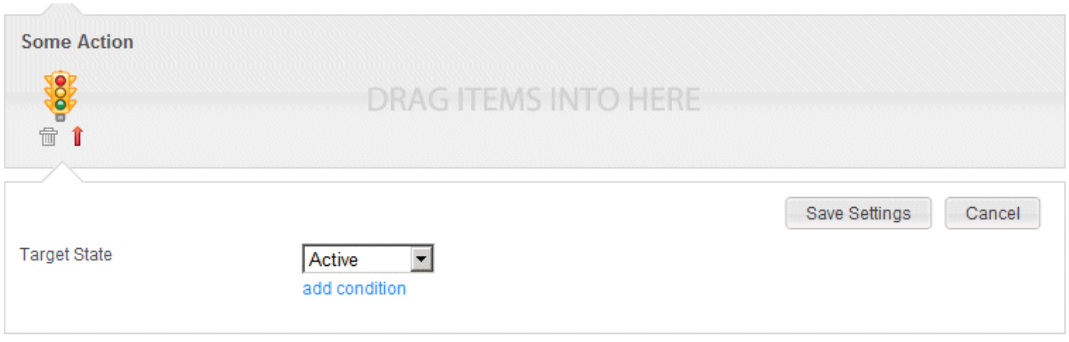
Note the following:

- You can add a Set State activity to an action that contains any other activities.
- If multiple Set State Activities are assigned to a single workflow action, the order of the Set States determines the order in which the conditions are evaluated.

Configuring an explicit Set State activity:

To configure an explicit Set State activity:

1. Select a target state from the list of states in your workflow.
2. Click **Save Settings** to save the configured activity.
3. Click **Save Settings** to save the configured action.
4. Click **Save Workflow** above the Workflow Editor to commit the changes to the workflow.



Explicit “Set State” Activity

Configuring a conditional Set State activity:

The Set State activity allows you to:

- Compare a property to an associated entity, such as Location property
- Compare one property to a second property
- Compare a property to a fixed or literal value
- Compare numeric values and dates supporting <, <=, >, >=, =, <>
- Compare boolean values supporting True/False
- Compare string values supporting Equal to, Not Equal to, Contains
- Compare multiple conditions based on whether *any* or *all* of the conditions are true.

You can add more than one conditional Set State activity to a workflow action. For example, you can configure one Set State activity for a "Below Alert" condition, a second for an "Above Alert" condition, and a third for an "Above Action" condition. This is essentially an "If Then" evaluation.

The position of the conditional Set State activities within the action determines the sequence in which they are executed—the activities are executed from left to right. This allows you to evaluate an "Above Action" first, an "Above Alert" second, and a "Below Alert" third. This prevents the below/above alert conditions to be executed for a result of "Above Action."

The system uses cGMP Rounding Rules to ensure that the comparison evaluation is performed on numeric values with the same precision.

USP 7.20. Rounding Rules excerpt:
When rounding is required, consider only one digit in the decimal place to the right of the last place in the limit expression. If this digit is smaller than 5, it is eliminated and the preceding digit is unchanged. If the digit is greater than 5, it is eliminated and the preceding digit is increased by 1.

To configure a conditional Set State activity:

1. Select a target state from the list of states in your workflow.
2. Click the **add condition** link.
3. Select the property you want to compare in the first selection list.
4. Select a comparison expression in the second selection list.
5. Select the entity to which you want to compare the property in the third selection list.

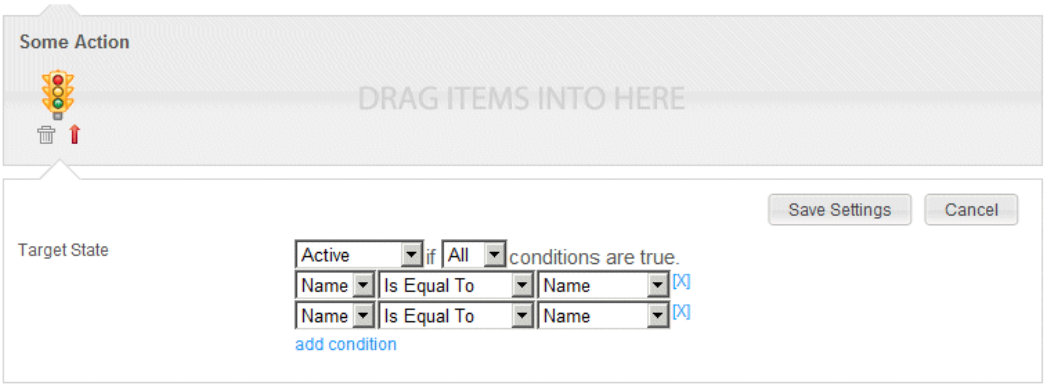
6 To add multiple conditions:

   a. Click the **add condition** link and configure additional comparisons as necessary.

   b. In the first row, select **Any** or **All** to specify how to compare the conditions below.

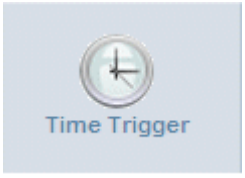
7 When you are done, click **Save Settings**.

8 Click **Save Workflow** above the Workflow Editor to commit the changes to the workflow.



Conditional “Set State” Activity

Time Trigger activity



The **Time Trigger** activity is used to automatically trigger another type of activity when a certain point in time has been reached. For example, when an incubation target date is reached, the Time Trigger activity sets the workflow state to “Waiting to Read.”

The other activities in the same action will be triggered when the current time meets or exceeds the value of the Trigger Property *and* the entity instance is in the workflow state containing the trigger.

If a workflow action contains both a Set State and Set Property, the Set Property must be configured to trigger before the Set State property. This can be accomplished by using two Time Trigger properties, the earlier trigger for the Set Property property and the later trigger for the Set State property.

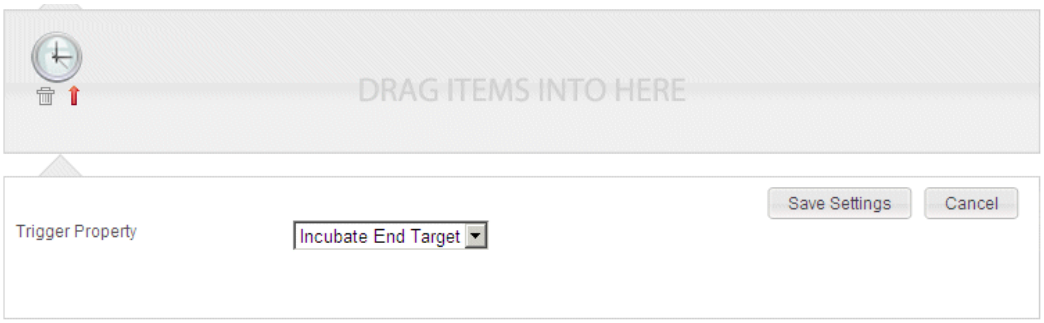
Note the following:

- You cannot add a Time Trigger activity to a Zero State action.

- A workflow action can have any number of Time Trigger activities or none at all. For an action without a Time Trigger, the command buttons are displayed normally for the action in the given state during workflow execution. For an action with one or more triggers, the command buttons are omitted as that action will be triggered by any of the triggers contained in the action.
- A Time Trigger activity cannot be added to an action that contains a Print Label, Accelrys LES Procedure, E-Signature, or Set Instruction Text activity.
- When a time trigger is executed, the recorded date and time displays the time zone of the client that collected the property value which triggers the time trigger, *not* the time zone of the client that processed the action.
- When the trigger is executed on a large number of records, a delay may occur since a periodic review of each record is required. Most workflows using a Time Trigger do not require precision greater than a few minutes.

To configure a Time Trigger activity:

1. In the Trigger Property field, select a property from the list. The list displays all of the Entity Type's properties based on the following types:
    - Date
    - Date and Time
    - Date Interval
    - Calculate Point in Time



"Time Trigger" Activity

2. Click **Save Settings** to save the configured activity.
3. Click **Save Settings** to save the configured action.
4. Click **Save Workflow** above the Workflow Editor to commit the changes to the workflow.

Adding an activity to a workflow action

To create an action and configure its activities:

1. Drag an action from the Action toolbar into the workflow state.
2. Click the action's green down arrow icon to display the activities panel below.
3. Drag an activity from the Activities toolbar into the activity panel.

   If only one activity is allowed and the target panel already contains one, the Workflow Editor snaps it back to the toolbar and displays an error message.

4. If the activity has additional parameters, the configuration panel opens below. Configure the settings and click **Save Settings**. The activities are described in the section *Configuring Workflow Activities* on page 8-18.
5. Click the red up arrow to close the configuration panel.
6. Click **Save Settings** to close the activity panel.
7. Click **Save Workflow** above the editor to commit the changes.

Reordering the activities within a workflow action

You can reorder the activities within a workflow action by simply dragging them to a new location. Note the following:

- You must save the settings in order for the new order to take affect.
- Reordering the activities affects the order in which they are displayed in the action dialog box presented to the user during group workflow actions.
- If the status of the Entity Type is "Active, the reordering requires an audit trail.
- Reordering activities does not apply to existing entity instances.
- Reordering activities controls the order in which the conditional "Set State" expressions are evaluated.

Deleting a workflow activity

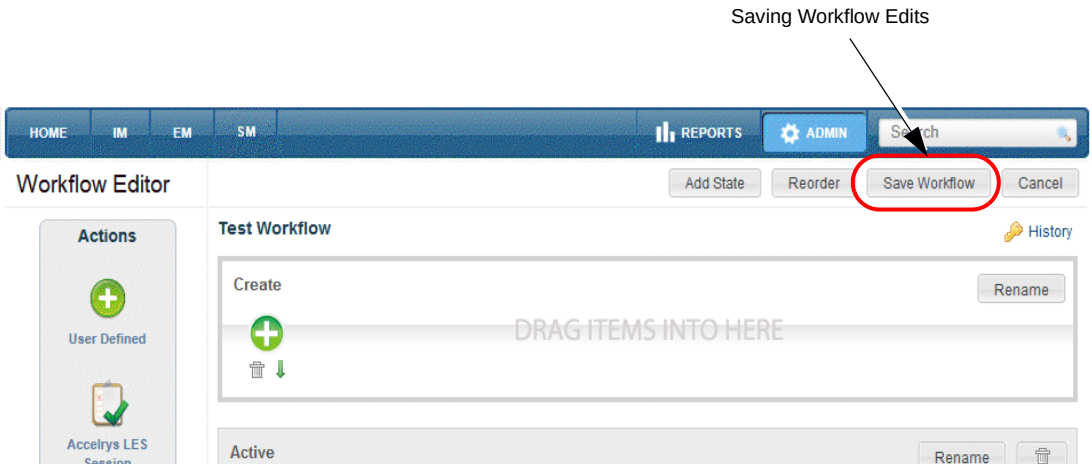
To delete an activity from an action, click **Delete** under the activity's icon. You will be prompted to confirm the deletion. Click OK to delete the workflow action.

Editing a Configured Workflow

To edit a configured workflow:

1. In the ADMIN tab, click the **Entity Types** link.
2. In the *Entity Types* home page, click the name of the Entity Type whose workflow you want to edit.
3. Edit the workflow as explained in the previous sections of this chapter.
4. When you are done, do one of the following:
   - To cancel all of the edits, click **Cancel**.
   - To save the workflow, click the **Save Workflow** button in the Workflow Editor.

IMPORTANT! If you make edits to any part of a workflow and then immediately close your browser, you will lose all of your changes. You must click the **Save Workflow** button in the upper right corner of the page after each edit to commit your changes.



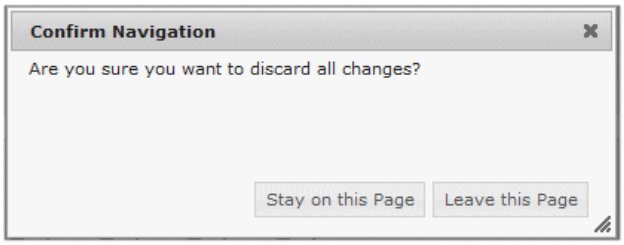
Saving Workflow Edits

5. In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Entity Types whose status is “Draft.”

To cancel the edits you have made to the workflow:

1. Click **Cancel** above the Workflow Editor.
2. In the *Confirm Navigation* dialog box:
   - Click **Stay on this Page** to cancel the edits and stay on the current page.

- Click **Leave this Page** to cancel the changes and return to the Entity Type's *View* page.



"Confirm Navigation" Dialog Box

Deleting a Workflow

Every Entity Type requires a workflow. For that reason, workflows cannot be deleted.

Exporting Workflows

Since the workflow is inherently tied to its Entity Type, the configured workflows will be included when you export the Entity Type. Refer to Chapter 11, *Exporting and Importing Configured Entities* for more information.

Viewing Audit Trails for Workflows

Every change made to an Entity Type's workflow is recorded in its audit trail.

To view the audit trails for changes made to the workflow:

1. In the ADMIN tab under the System section, click **Entity Types**.
2. In the ***Entity Types*** home page, click the name of the Entity Type whose workflow history you want to view.
3. Click the **Edit Workflow** button to open the *Workflow Editor* page.
4. Click the **History** link to expand the table of revisions.
5. Select the row that corresponds to the revision you want to view. The selected version is displayed under the table.
6. Click **Print** to print the entire table of revisions.
7. Click **Close** to close the table.

Refer to *Generating Audit Trails for Changes Made to Data* on page 1-36 for details on the History table.

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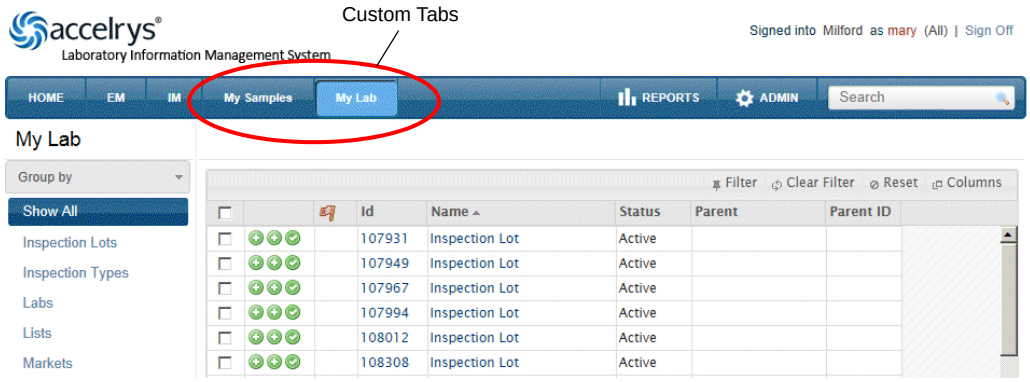
9

Creating Custom Tabs for Entity Instances

What is a Custom Tab?

Typically the entity instances that are not used or updated frequently are accessed under their appropriate category in the ADMIN tab. For example, the instance of a “Customer” Entity Type will typically not change unless there is an update to its contact name or number. But for Entity Types that have a large number of child instances, you can create a custom tab that will appear in the main menu bar. These custom tabs will allow users to manage and easily access those entity instances during workflow execution.

A custom tab uses the grid control to display all of the entity instances based on its corresponding Entity Type(s). For example, if you configured a tab called “Tests,” the grid will display all of the instances (tests) of the “Test” Entity Type. New tabs are displayed between the Home page tab (or the installed IM/EM modules) and the Reports tab, and you can change the order of the tabs as necessary. The following figure shows two custom tabs “Orders” and “Tests” in the main menu bar.



Custom Tabs in Main Menu Bar

Eligible users can execute the workflow for the entity instances from the grid of the corresponding tab. The standard grouping and filtering functions are also available in the grid.

A custom tab will not be displayed in the main menu bar unless it has at least one active Entity Type associated with it. The custom tabs are specific to your current Site and can be exported to other systems.

Required Eligibility for Managing Custom Tabs

In order to manage custom tabs, users must belong to a User Role that has the following eligibilities:

- **Can View Tabs**—Allows users to view the "Active" custom tabs in the system.
- **Can Administer Tabs**—Allows users to create/edit custom tabs and delete tabs whose status is "Draft" and "Inactive."
- **Can View Entity Instances**—Allows users to view the entity instances in the custom tabs.
- **Can Process Entity Instances**—Allows users to process the entity instances for testing purposes.

Status Codes for Custom Tabs

Status codes represent the current state of a custom tab in the system. A tab can reside in one of three states:

- **Draft**—When you create a new tab, its status is set to "Draft" by default. It will be displayed in the main menu bar for any user who has both "Can View Tabs" and "Can Administer Tabs" eligibility.
- **Active**—The tab is displayed in the main menu bar to users who have "Can View Tabs" eligibility but only if the tab has at least one active Entity Type associated with it.
- **Inactive**—The tab is unavailable to dependencies and users with only "Can View Tabs" eligibility.

The following table summarizes the actions that you can performed at each state.

Table 9-1 Allowed Actions for the States of a Custom Tabs

Action	Status		
	"Draft"	"Active"	"Inactive"
Can view custom tabs in system	Administrator only[2]	All users[1]	Administrator only[2]
Can edit custom tabs	Yes[2]	Yes[2]	Yes[2]
Can delete custom tabs	Yes	No	Yes

Table 9-1 Allowed Actions for the States of a Custom Tabs

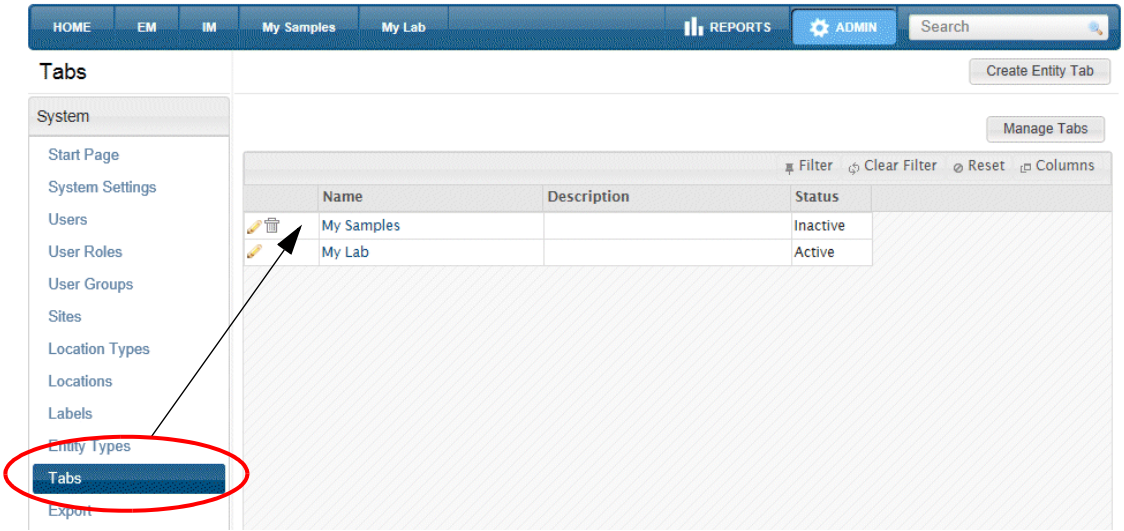
Action	Status		
	"Draft"	"Active"	"Inactive"
Can change status to:	Active	Inactive	Active
Versioning enforced for changes	No	Yes	Yes
Reason Code applied to changes	By system	By user	By user
Can export custom tabs to other systems	No	Yes[3]	No

[1] Requires "Can View" eligibility
[2] Requires both "Can View" and "Can Administer" eligibility
[3] Requires "Can Export" eligibility

Viewing Custom Tabs in the System

To view the custom tabs in the system:

1 In the ADMIN tab under the System section, click **Tabs.** The *Tabs* home page is displayed.



"Tabs" Home Page

The grid lists all of the custom tabs that are registered in the system. Each tab is identified by its name, description, and current status.

The icons in the first column of the grid represent the following actions:

Edit—Allows **Edit** eligible users to edit the corresponding tab.

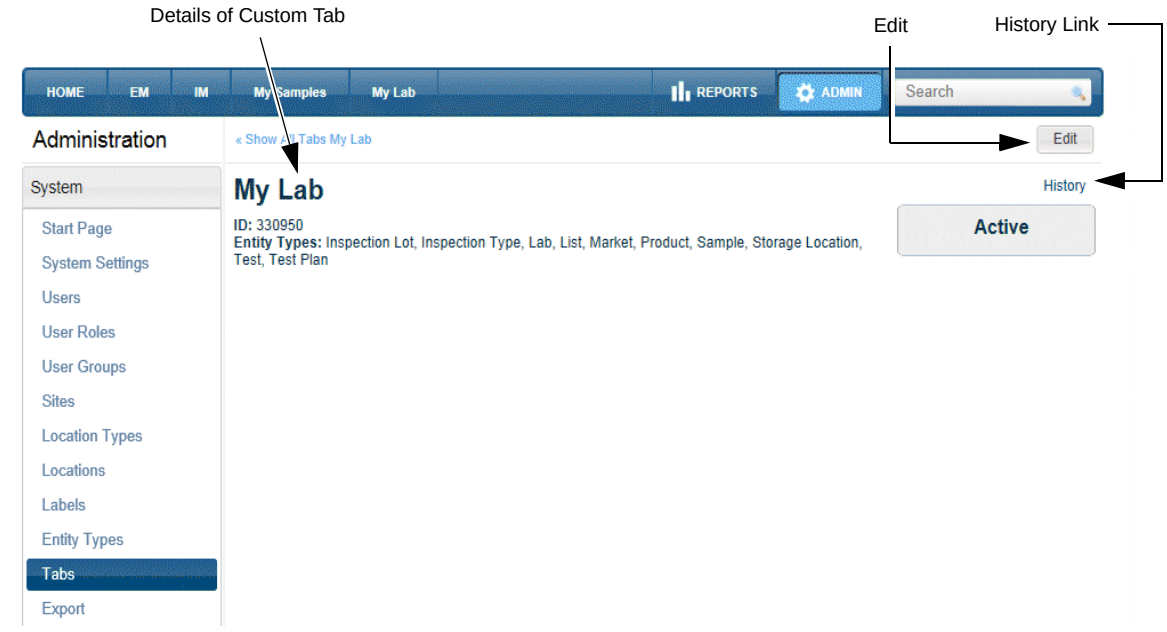
Delete—Allows eligible users to delete the custom tab. This is only available for tabs of "Draft" and "Inactive" status.

The **Manage Tab** button allows you to change the order of the tabs in the menu bar. When you drag and drop a row to a new position, the menu bar will reflect the new order.

Note: The grid settings on each tab function independently from one another.

2 To view the details of a custom tab, click the name of the tab. The tab's *View* page displays its name, description, and current status.

- Click **Edit** above the History link to edit the definition of this tab. Refer to *Editing a Custom Tab* on page 9-6.
- Click the **History** link to view the audit trail and revisions made to the tab. Refer to *Generating Audit Trails for Changes Made to Data* on page 1-36 for details on the History table.



Viewing Details of a Custom Tab

3 To return to *Tabs* home page, click **Show All Tabs** above the tab name.

Creating a New Custom Tab

To create a new custom tab:

1 In the ADMIN tab under the System section, click **Tabs**.

2 In the *Tabs* home page, click the **Create Entity Tab** button above the grid. The *Create Tab* page is displayed.

Creating a New Custom Tab

3 Configure the new custom tab:

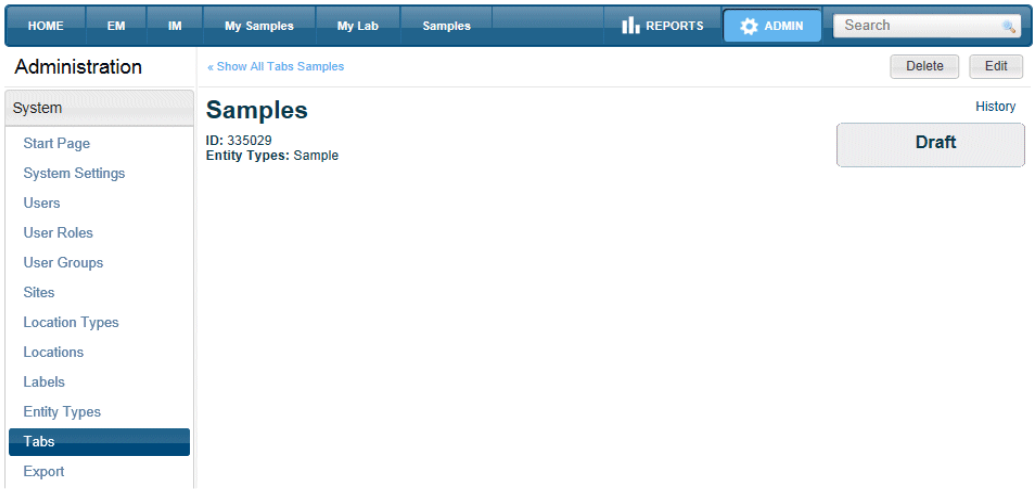
a. Enter a name for the tab. The name must be unique and cannot exceed 100 characters. Blank spaces at the beginning or end of the name are not allowed.

b. Enter a description for the tab (optional). The description cannot exceed 1000 characters.

c. The status is set to “Draft” by default and cannot be changed.

d. Select the Entity Type(s) whose instances will be displayed in this tab. Only those Entity Types whose status is “Active” are displayed in the list.

e. Click **Create.** The details of the new tab are shown in its *View* page.



"Samples" Tab View Page

4 Edit the tab and set its status to "Active" to make it available for use.

Note: When you create a large number of custom tabs, they are displayed in multiple rows in the main menu bar.

Editing a Custom Tab

Before you update an existing custom tab, you can set its status to "Inactive" to make the tab temporarily unavailable while you edit it.

To edit an existing custom tab:

1 In the ADMIN tab under the System section, click **Tabs**.

2 In the *Tabs* home page, do one of the following:

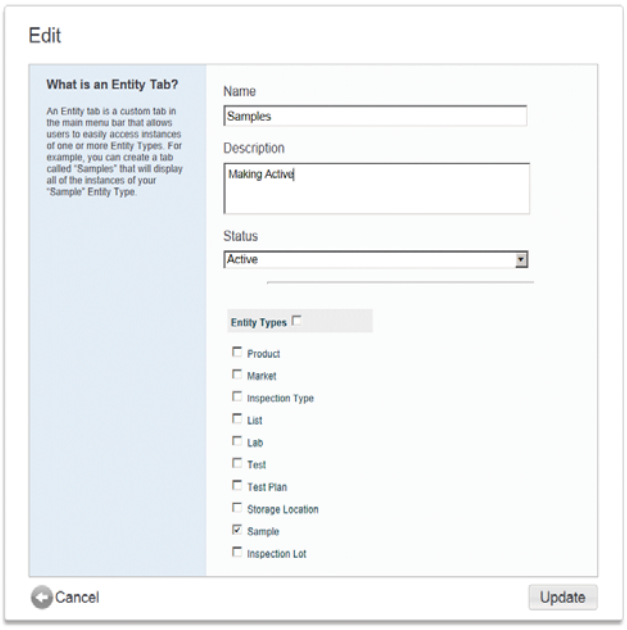
- Click **Edit** preceding the Tab in the grid view.
- Click the name of the Tab to open its *View* page, then click **Edit**.

3 In the *Edit* page:

a. If the tab is currently "Active," change the status to "Inactive" if you want to prevent users from accessing this tab until you have completed editing it. Click **Update**, enter your credentials in the *Reason Code Entry* dialog box, and then repeat Step 2.

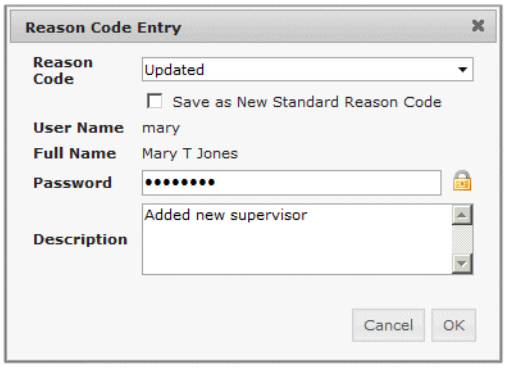
b. Make the necessary changes.

c. Click **Update**.



Editing a Custom Tab

4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Tabs whose status is “Draft.”



Reason Code for Updated Value

5 Set the status back to “Active” to make the tab available in the main menu bar.

6 To return to the *Tabs* home page, click **View All Tabs** above the details.

Inactivating a Tab

To make a custom tab unavailable for use, set its status to “Inactive.” The tab will still appear in the main menu bar, but users will not have access to the entity instances. Refer to *Editing a Custom Tab* on page 9-6.

Deleting a Tab

You can only delete a custom tab whose status is “Draft” or “Inactive.” In the tabs home page, click the **Delete** icon that precedes the name of the tab.

Exporting Tabs to Other Systems

Once you have configured your custom tabs, you can export them to an XML file so you can import and deploy them on other systems. Note that only the custom tabs are exported, not their entity instances. Refer to Chapter 11, *Exporting and Importing Configured Entities* for more information.

10

Creating Labels

Overview—How Do I Create a Label?

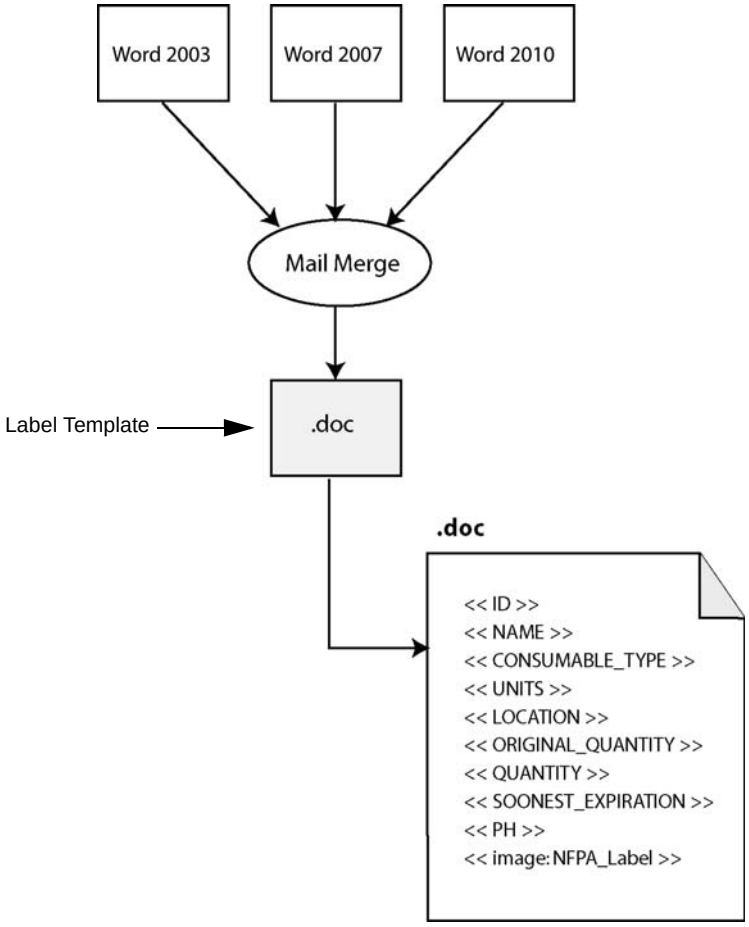
BIOVIA LIMS allows you to create and manage labels that can be printed for various entities in the system. The system supports any label template that is based on the Microsoft Word .doc or .docx format and any label printer that uses Microsoft Windows drivers.

Microsoft Word and its Mail Merge utility are used to create the .doc or .docx file which serves as the label template. Once the merge fields have been completed in Mail Merge, the label template (.doc) displays the names of the properties that will be included in the label (as configured in the corresponding entity for which you are creating the label (that is, Entity Types in BIOVIA LIMS, Consumable Types in the IM module). These are placeholders for the actual values of the entity for which the label is being printed. Note that if there are blank spaces in the property name, the system replaces them with underscores when they are inserted (for example, <<image:My_Label>>).

The figure on page 10-2 shows the function of the label template.

When the entity (Entity Type or Consumable Type) is set to "Active" status, the system creates an internal Label Category which is attached to a Label View. The Label View contains information about the entity, including all of its properties. The properties below are built into every Label View by default and are used by the appropriate module.

- ID
- NAME
- ENTITY_TYPE (BIOVIA LIMS) *or* CONSUMABLE_TYPE (IM)
- UNITS
- LOCATION
- ORIGINAL_QUANTITY
- QUANTITY
- SOONEST_EXPIRATION
- SUBSAMPLE_PARENT_ID



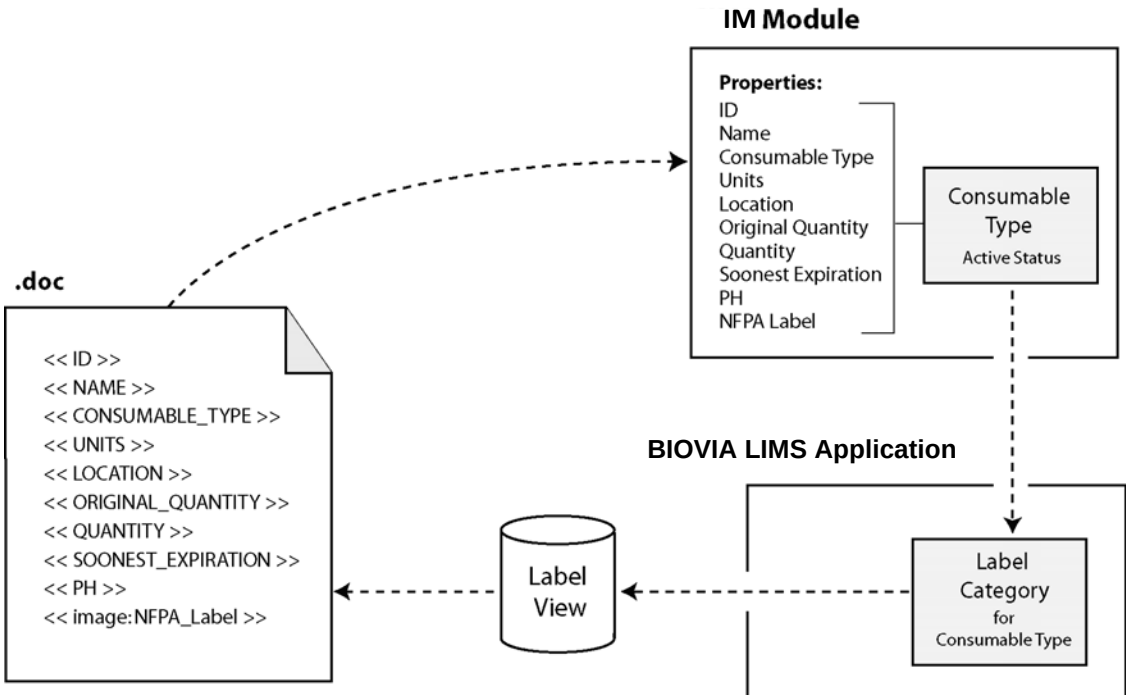
Producing the Label Template (.doc)

In addition, the Label View contains any user-defined properties for that category of entity (for example, PH, NFPA Label).

The figure on page 10-3 shows the relationship between the entity (in this example, a Consumable Type in the IM module), Label category, Label View, and Label Template.

As an alternative to using the mail Merge ODBC connection, the easiest way to configure the label template is to insert a merge field (refer to the Microsoft Word documentation or online help for instructions). Once inserted, it will be enclosed in the double angle brackets, as shown below. Note that the property name must be identical to that in the Label View.

<< property name >>



Label Category and View

For an NFPA label in the IM module, enter the name of the NFPA label property using the following format:

<< **image:** ***property_name*** >>

where *property_name* is the name of the NFPA label property.

Note: The layout of the label must match the dimensions of the printer.

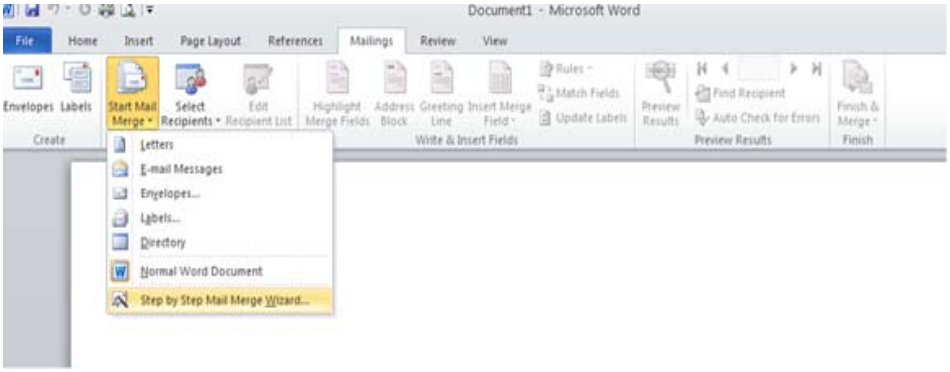
Step 1—Create the label template

Since various versions of Microsoft Word display the Mail Merge utility differently, these instructions provide the basic concept of configuring a barcode label template. For more information on your version of Mail Merge, refer to the online help supplied by Microsoft Corporation.

IMPORTANT! If you do not have access to the database and are manually creating the label template, enter the property names in uppercase characters and use underscores for blank spaces (for example, “Storage Bin Number” should be entered as STORAGE_BIN_NUMBER).

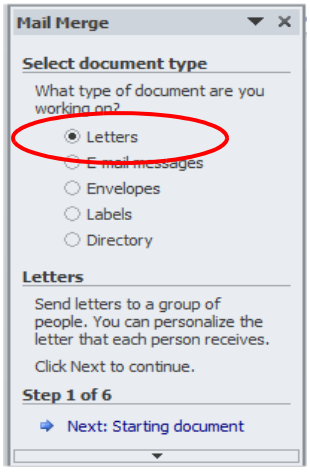
To configure the label document (using Microsoft Word 2010 as an example):

1. Open the blank Microsoft Word template that you created in the previous section and click **Mailings** in the toolbar ribbon.
2. Click **Start Mail Merge** and select **Step by Step Mail Merge Wizard**.



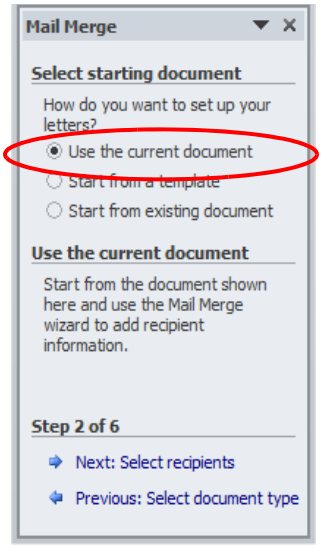
Starting Mail Merge

3. In Step 1 of the wizard, select **Letters**. Click Next.



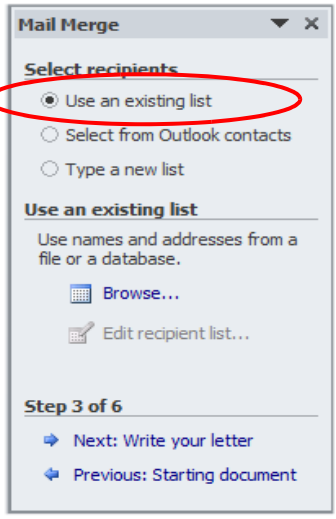
Step 1 of Mail Merge Wizard

4 In Step 2 of the wizard, select **Use the current document** and click Next.



Step 2 of Mail Merge Wizard

5 In Step 3 of the wizard, select **Use an existing list** and click Next.

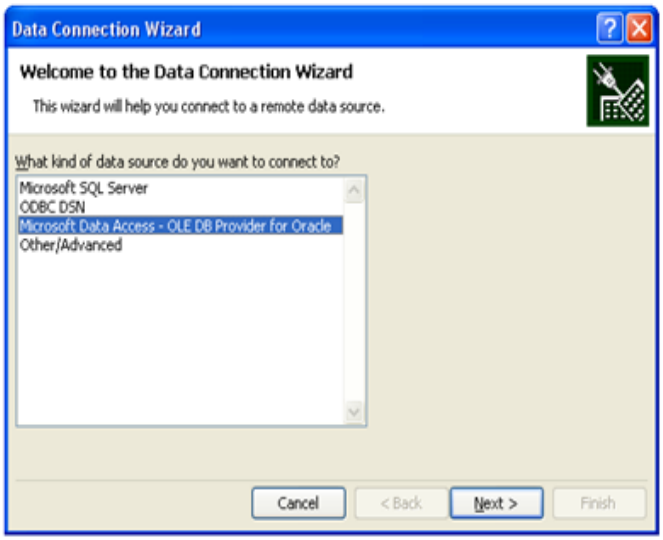


Step 3 of Mail Merge Wizard

6 In the *Select Data Source* screen, click **+Connect to New Data Source.odc** and click **Open**.

"Select Data Source" Screen

7 In the *Data Connection Wizard Welcome* screen, select **Microsoft Data Access - OLE DB Provider for Oracle** and click Next.

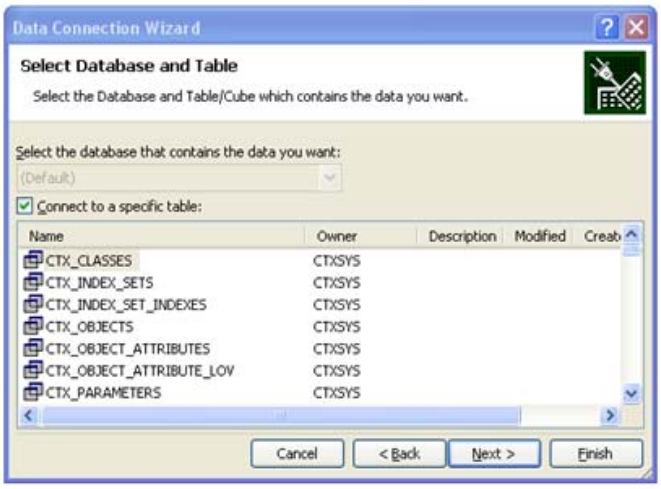


Data Connection Wizard - "Welcome" Screen

8 In the *Connect to Database Server* screen, enter your Database Server name and your logon credentials. Click Next.

"Connect to Database Server" Screen

9 In the *Select Database and Table* screen, select the appropriate database table and click Next.



"Select Database and Table" Screen

10 When prompted, enter your password.

11 On the Mail Merge toolbar, click the **Insert Merge Fields** icon.

12 In the *Insert Merge Field* window, select the fields you want in your label and click **Insert** after each selection.

13 To format a field, highlight the field name, click between the angel brackets (>> <<), and press **Enter**.

Note: You must have Code 39 installed to print barcodes correctly.

In order to change the format of a date, press **ALT+F9** to switch to Field View. After your merged field, add the required formatting by using \@ "format" syntax.

For example:

Exp Date: {MERGEFIELD "SOONEST_EXPIRATION" \@ "dd-MMM-yyyy"}

Press **ALT+F9** to review to normal view. For more information refer to:

http://support.microsoft.com/kb/304387/en-us

Step 2—Create the label

Prerequisites: In order to create a label, you must have Microsoft Word 2003 or higher installed. In order to view the video on how to create a label (accessed in the *Create Label* page), you must have a Flash Plug-in installed.

To create a new label:

1 In the ADMIN tab under the System section, click **Labels**.

2 In the *Labels* home page, click **Create Label** (page 10-13).

3 In the *Create Label* page, enter a name for the label (page 10-9).

4 In the Template field, browse to the location of the label template and select it.

5 In the Category field, select the entity to which this label is applicable (that is, Entity Type or Consumable Type). The Category selection list is populated with all of the entities whose status is "Active."

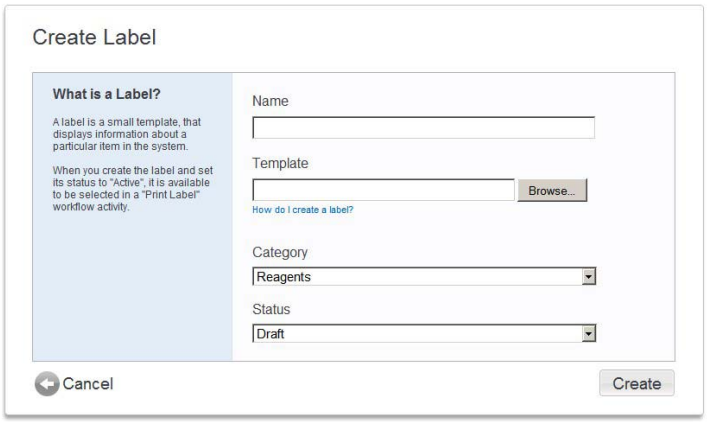
If the entity does not appear in the list, review the sequence of steps required for creating entities with labels:

- For BIOVIA LIMS Entity Types, refer to *Creating a Label for an Entity Type* on page 7-41.

- For Consumable Types in the IM module, refer to the chapter on Consumable Types in the *BIOVIA Inventory System Administration Guide*.

6 Click **Create**.

7 Edit the label and change its status “Active.” Continue to the following section to configure this label in the entity’s workflow.



Creating a New Label

Step 3—Configure the “Print Label” workflow activity

Configure the “Print Label” workflow action and activity for the appropriate entity:

- For BIOVIA LIMS Entity Types, refer to the ‘Print Label” activity on page 8-37 of this guide.
- For Consumables Types in the IM module, refer to the “Print Consumable Label” activity in the workflow chapter of the *BIOVIA Inventory System Administration Guide*.

Step 4—Print a test label

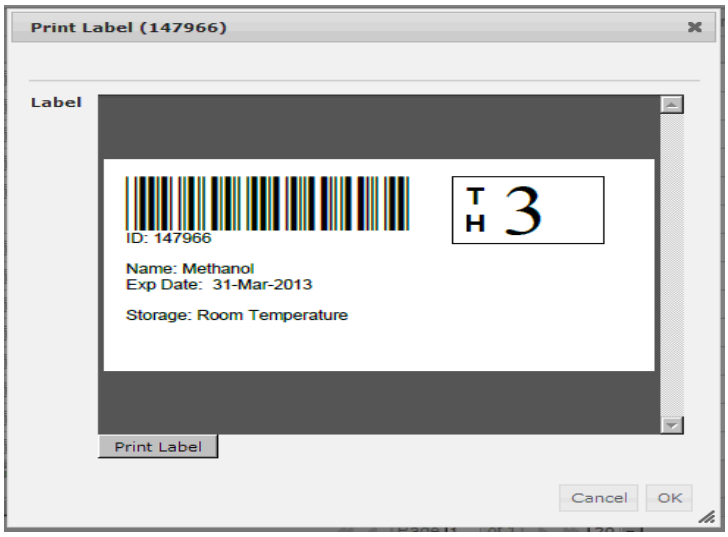
To print a test label:

1 Perform one of the following steps:

- In BIOVIA LIMS, click the appropriate custom tab in the main menu bar that corresponds to the entity instance for which you want to test the label.
- In the IM module, click the **IM** tab in the main menu bar to open the *Inventory* home page.

2 Click **Print Label** preceding the entity instance or consumable that is configured for printing labels.

3 In the *Print Label* dialog box, click the **Print Label** button under the image.



Printing a Test Label

4 In the Internet Explorer *Print* dialog box, click **Print**.

5 When the *Print* dialog box closes, click the OK button to close the *Print Label* dialog box. This will cause the print activity to be recorded in the History table. If you close out of the dialog box without clicking OK, there is no history for this action.

Required Eligibility for Managing Labels

In order to manage labels, users must belong to a User Role that has the following eligibilities:

- **Can View Labels**—Allows users to view configured labels, label templates, and audit trails for labels.
- **Can Administer Labels**—Allows users to create new labels, edit existing labels, and delete labels whose status is “Draft.”

Status Codes for Labels

Status codes represent the current state of a label in the system. A label can reside in one of four states:

- **Draft**—When you create a new label, its status is set to “Draft” by default. It is not available for use in the system until you set its status to “Active.”
- **Active**—The label is available for use in the system. It can be used by other dependencies, such as properties and workflow activities.
- **Upgrading**—The label is unavailable for use in the system. It is not available in a “Print Label” workflow activity. However, existing dependencies will use the last “Active” version of this label.
- **Inactive**—The label is unavailable to users and other dependencies. The existing dependencies cannot use any version of the label.

The following table summarizes the actions that you can performed at each state.

Table 10-1 Allowed Actions for the States of a Label

Action	Current Status			
	“Draft”	“Active”	“Upgrading”	“Inactive”
Can view Labels in system (ADMIN tab/Labels link)	Administrator only [2]	All users [1]	Administrator only [2]	Administrator only [2]
Can print Labels	Administrator only [2]	Yes [2]	Administrator only [2]	No
Available to dependencies (for example, properties, workflow activities)	No	Yes	No	No
Can edit Labels	Yes [2]	Yes [2]	Yes [2]	Yes [2]
Can delete Labels	Yes [2]	No	No	No
Can change status to:	Active	Upgrading Inactive	Active	Active

Table 10-1 Allowed Actions for the States of a Label (continued)

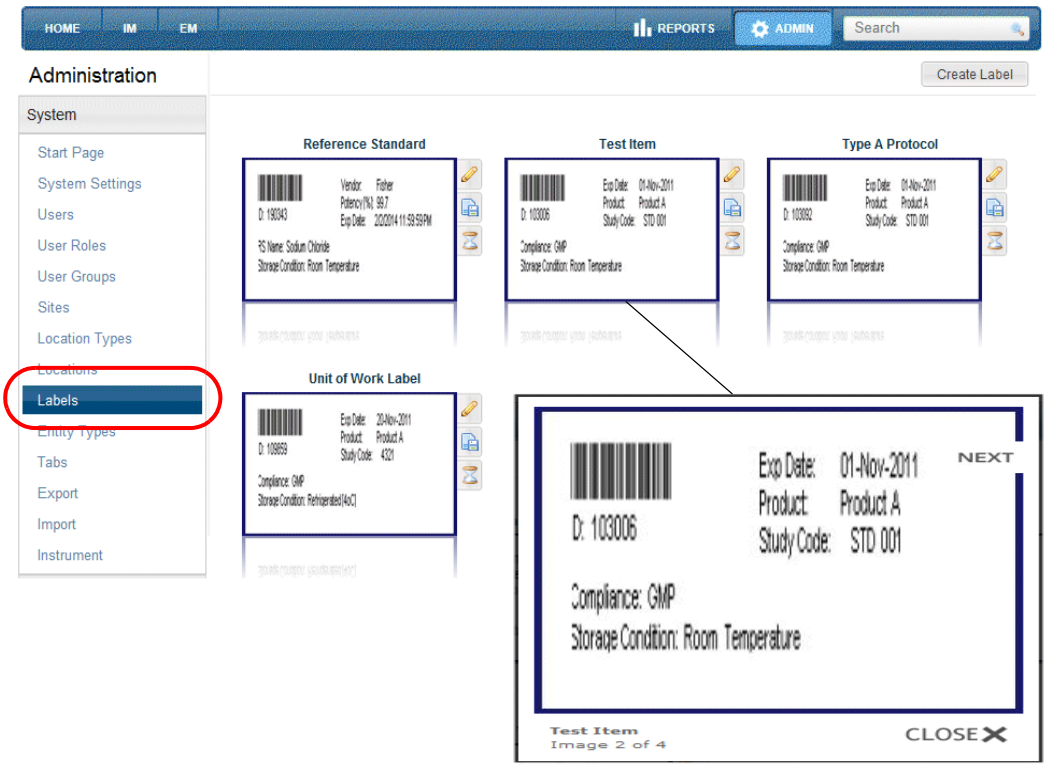
Action	Current Status			
	"Draft"	"Active"	"Upgrading"	"Inactive"
Versioning enforced for changes	Yes	Yes	Yes	Yes
Reason Code required for changes	By system	By user	By user	By user
Can export Labels to other systems	No	Yes[3]	No	No

[1] Requires "Can View" eligibility
[2] Requires "Can View" and "Can Administer" eligibility
[3] Requires "Can Export" eligibility

Viewing Registered Labels

To view the labels registered in the system:

1. In the ADMIN tab under the System section, click **Labels**. The *Labels* home page opens and displays all of the configured labels in the system.
2. To view a larger thumbnail view of the label, click the label's graphic. These links allow you to scroll directly through the thumbnail views of all of the labels in the system.
    - If you hover your cursor over the top right corner of the thumbnail, **Next** allows you to view the next label.
    - If you hover your cursor over the top left corner of the thumbnail, **Previous** allows you to view the previous label.
3. To close the thumbnail view, click **Close**.



Labels Home Page

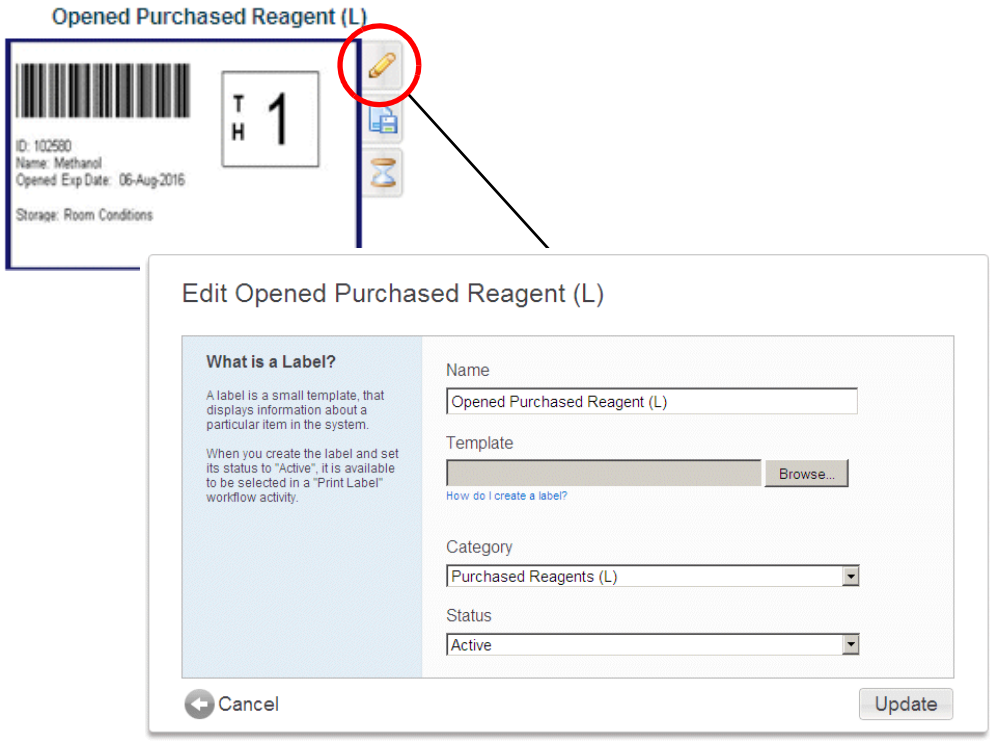
Editing a Label

A change to a label is reflected in all of the entity instances based on the Entity Type whose workflow is configured with the Print entity Label activity. This is true for both existing entities in inventory and for new entities that are received into inventory.

To edit a label:

1 In the ADMIN tab under the System section, click **Labels**.

2 In the *Labels* home page, click **Edit** to the right of the label. The *Edit Label* page is displayed.



Editing a Label

3 Make the changes, as necessary.

4 Click **Update**.

5 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Labels whose status is “Draft.”

Viewing and Editing a Label Template

The label templates are created outside of the BIOVIA LIMS application, but once they have been uploaded and associated with a label, they can be viewed and edited by eligible users.

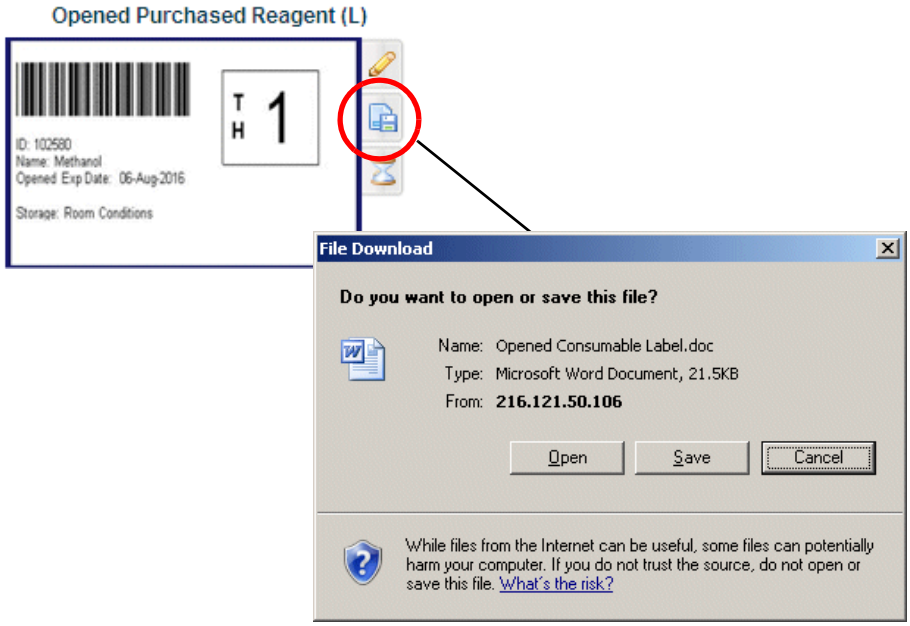
To view or edit a label template:

1 In the ADMIN tab under the System section, click **Labels**.

2 In the *Labels* home page, click **Download** to the right of the label.

3 In the *File Download* dialog box:

- Click **Open** to view a read-only version of the label template.
- Click **Save** to download the template to your system, make your edits, and save the file.



Downloading a Label Template

4 If you edited the label template, you need to upload it. Click **Edit** to the right of the label to open the *Edit Label* page.

5 In the Template field, browse to the location of the edited label template and select it.

6 Click **Update** to upload the new template. The view of the label in the *Labels* home page will reflect the updated changes.

Printing a Label

In order to print a label, the label must have an "Active' status and must be configured in the "Print Label" workflow activity. Refer to *Step 3—Configure the "Print Label" workflow activity* on page 10-9.

Upgrading a Label

To make a label temporarily unavailable while you edit it, set its status to “Upgrading.” The last active version of the label will be available for the “Print Label” (BIOVIA LIMS) and “Print Consumable Label” (IM) workflow activity. Refer to *Editing a Label* on page 10-13.

Inactivating a Label

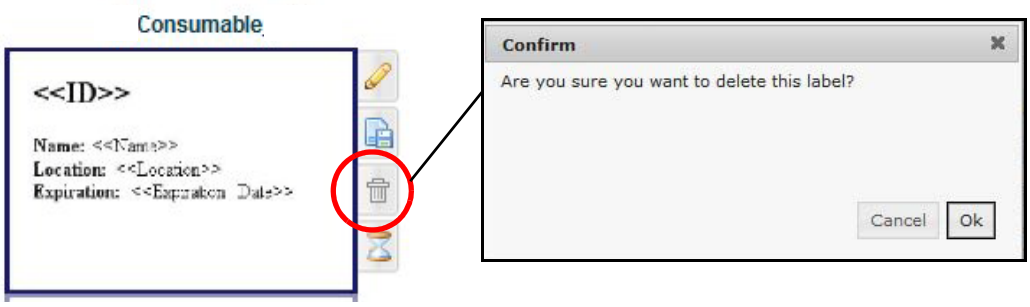
To make a label permanently unavailable, set its status to “Inactive.” Refer to *Editing a Label* on page 10-13.

Deleting a Label

Only labels with a status of “Draft” can be deleted.

To delete a label:

1. In the ADMIN tab under the System section, click **Labels**.
2. In the *Labels* home page, click **Delete** to the right of the label.
3. In the *Confirm* dialog box, click OK to delete the label.



Deleting a Label

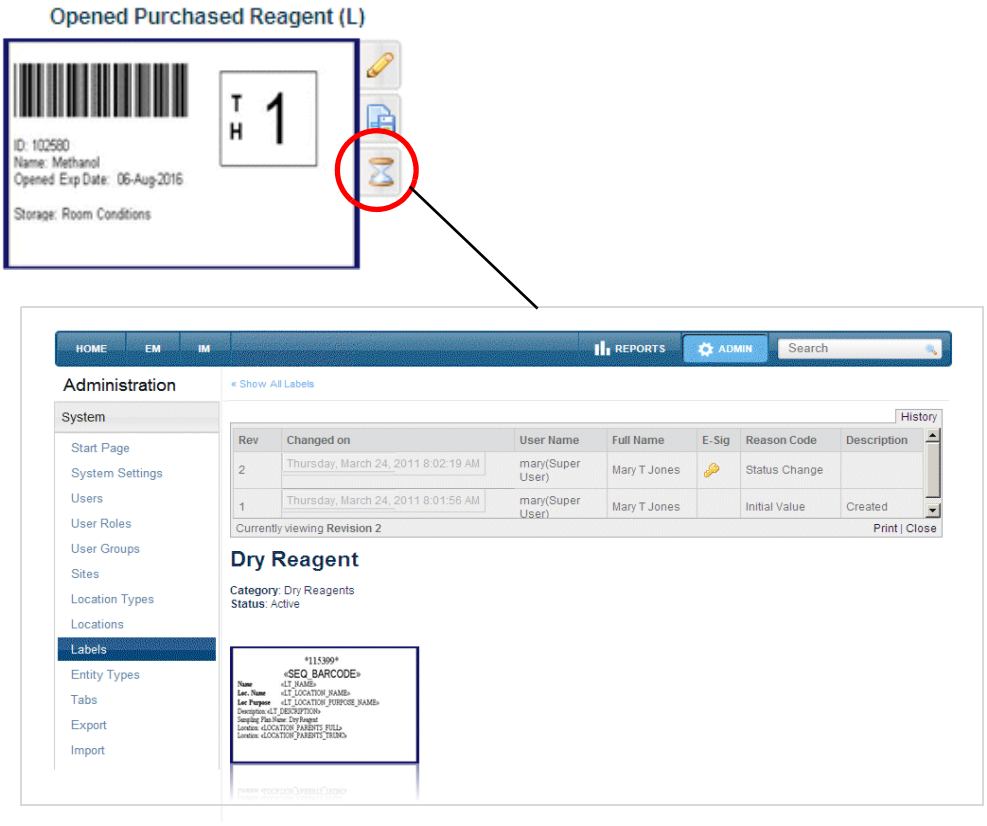
Exporting Labels to Other Systems

Once you have configured the labels in your environment, you can export them so you can deploy them on other systems. To export the labels, refer to Chapter 11, *Exporting and Importing Configured Entities*.

Viewing Audit Trails for Labels

Every change made to a label is recorded in its audit trail. To view the revisions and audit trail for changes made to a label:

1. In the ADMIN tab under the System section, click **Labels**.
2. In the *Labels* home page, click **View History** to the right of the label.



Viewing History of a Label

3. Click **History** in the upper right corner of the page to expand the History table.
4. Select the row that corresponds to the revision you want to view. The selected version is displayed under the table. Refer to *Generating Audit Trails for Changes Made to Data* on page 1-36 for details on the History table.
5. Click **Print** to print the entire table of revisions.
6. Click **Close** to close the table.

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11

Exporting and Importing Configured Entities

Introduction

BIOVIA LIMS provides export and import functions so that you can easily deploy configured entities from a source system such as a “Development” server to other target systems in your environment, such as a “Production” server.

For example, you can develop one system as the standard platform for your global operations and export all of its configured entities though the use of a generated XML file, which you can then distribute and import into individual systems in your environment. You may also select and export individual entities within a development environment and subsequently import them into your test or production environments.

How the Export Function Works

The export function is controlled by the “Can Export” user eligibility which allows users to export any of the supported entities within the BIOVIA LIMS application and its associated modules (for example, IM or EM).

The following entities can be exported:

- User Roles
- User Groups
- User Accounts
- Locations (IM, EM)
- Location Types (IM, EM)
- Labels
- Entity Types
- Custom Tabs
- Consumable Types (IM)
- Consumable Templates (IM)
- Measuring Scales (IM)
- Widget categories and widgets (IM)
- Sample Types (EM)
- Sampling Plans (EM)

You can export all of the items contained in one or more of the top-level entities (for example, all User Roles or Locations) or export individual items within each entity. Each selected item contains two fields that uniquely identifies it at a certain state—a Unique ID in the form of a

GUID (Globally Unique Identifier) and a date/time stamp field which is initially populated when that item is created in the system. The date/time stamp is updated each time the item is modified. All date/times are saved in UTC time format.

You can only export “top-level” items, which are defined as items that can exist on their own. For example, a Entity Type is considered a top-level item, whereas a property of that Entity Type is not, since it cannot exist outside the scope of its Entity Type.

The export function generates an XML file which you can save the file in a location of your choice.

What is exported?

The export function exports the following BIOVIA LIMS items:

- Only *valid* data with a status of “Active” can be exported. For example, a valid Location is one that references an active Location Type.
- Any dependencies associated with an entity are automatically exported (Table 11-1). The dependencies must also be valid and have a status of “Active” in order to be exported.

Table 11-1 Dependencies for Exported Entities

Item being Exported	Associated Dependencies
User Roles	User Accounts
User Groups	None. User accounts of members who belong to the group are not exported.
User Accounts	User Roles, Eligibilities
Location Types	No dependencies
Locations	Location Types, parent and child Locations
Labels	Label Templates, Label categories and any entity that is associated with a label (for example, an Entity Type or Consumable Type)
Entity Types	Workflows, custom Entity Tabs, Label, Label Categories, related Entity Types specified in a Relationship property and any workflow activity (for example, Create Entity activity), User Groups specified in permission groups.

Table 11-1 Dependencies for Exported Entities (continued)

Item being Exported	Associated Dependencies
Custom Tabs	Entity Type and their associated dependencies
Consumable Types	Workflows, Measuring Scales, Label, Label Categories, related Entity Types specified in a Relationship property and workflow activities (for example, Create Entity activity), related custom tabs, User Groups specified in workflow activities.
Consumable Templates	Consumable Types and their associated dependencies
Measuring Scales	No dependencies
Widget Categories	No dependencies
Sample Types	Workflows, Location Types
Sampling Plans	Locations, Location Types

What is not exported?

The system does not export the following items:

- Entities with a status of “Draft,” “Upgrading,” and “Inactive”
- Specific entities that are active but require upgrading (for example, Consumable Templates in the IM module)
- Default system entities (for example, the two default User Roles)

The XML file structure

The XML file that is generated as a result of the export function is encrypted by default. Encryption prevents manipulation of the file outside of BIOVIA LIMS and is implemented to satisfy the GMP requirement that a file has to be controlled at all times.

Encryption also prevents users from viewing data for which they do not have eligibility to view. For example, if a user exports a Location but does not have eligibility to view its corresponding Location Type, the Location Type is exported regardless.

Sequence for exporting entities

The order in which the configured entities are exported is important. The BIOVIA LIMS core entities must be exported prior to those in the other installed modules since specific areas of the other modules are dependent on the BIOVIA LIMS core functionality. In addition, there are intra-module dependencies as well. For example, a Measuring Scales in the IM module must be exported before Consumable Types, since a Consumable Type is dependent on a Measuring Scale. Thus when the Consumable Types are imported into another system, Measuring Scales are guaranteed to be present in the target system before the Consumable Types are imported.

If you choose to export the another modules' entities without exporting any BIOVIA LIMS entities, the BIOVIA LIMS dependencies are exported even though you did not choose them. For example, if you only export one Consumable Type, its workflow resides in the BIOVIA LIMS application—thus the BIOVIA LIMS module is created in the target system because the workflow also needs to be exported.

Required Eligibility for Exporting/Importing Entities

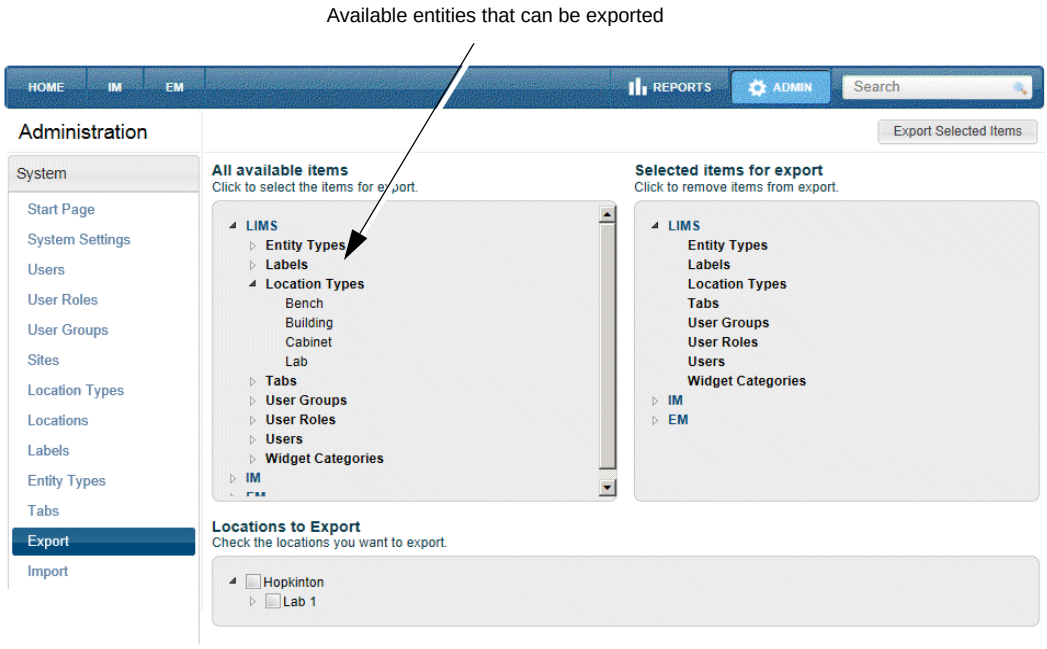
In order to perform the export/import functions, users must belong to a User Role that has the following user eligibilities:

- **Can Export**—Allows users to export selected entities within the BIOVIA LIMS and its installed modules to an XML file.
- **Can Import**—Allows users to import the contents of the generated XML file to other systems.

Exporting Configured Entities

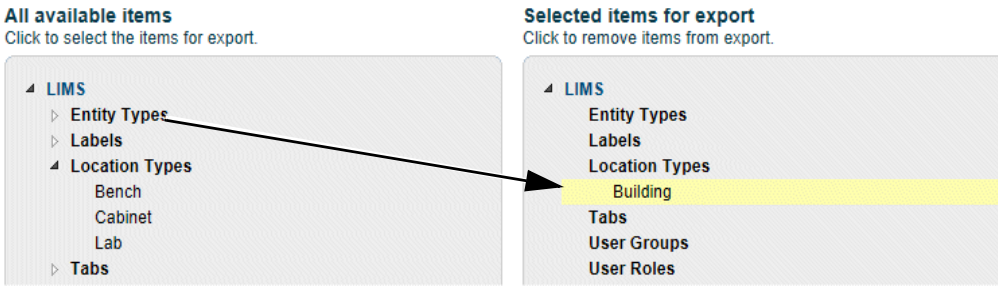
To export the configured entities from your source system:

1. In the ADMIN tab under the System section, click **Export**.
2. In the *Export* home page, the "Active" entities that can be exported are listed in the left panel.



"Export" Home Page

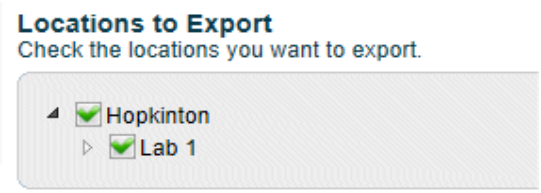
3 In the left panel, click the items that you want to export. This will move them over to the right panel. You can either click the top-level category name to export the entire contents of that category or you can select individual items within each category.



Selecting Export Items

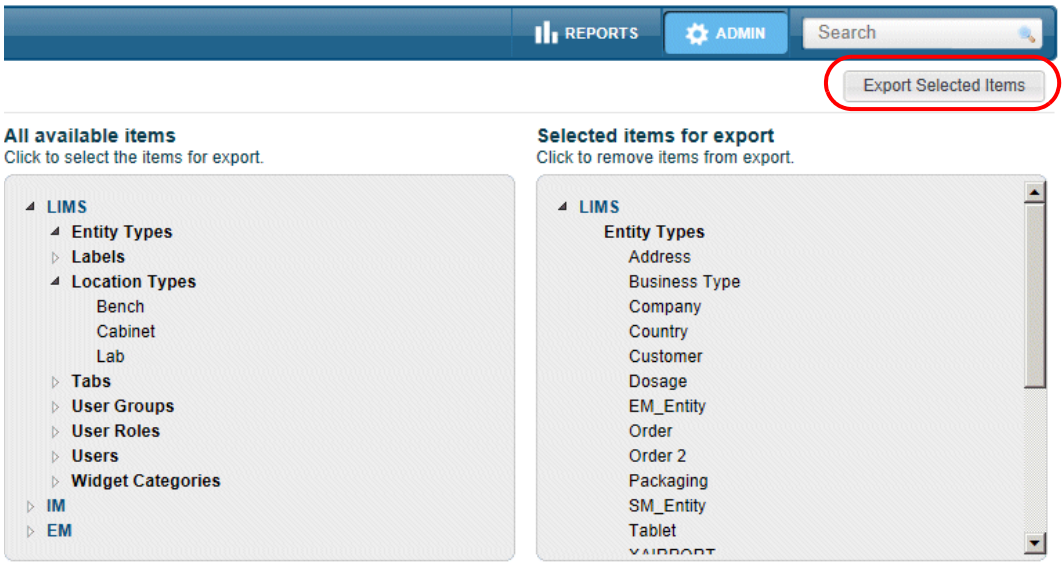
Note: If there are any invalid entities within the main category, you will have to select the items individually. An invalid entity is marked with a red alert icon. If you hover your cursor over the icon, a message is displayed explaining why that item cannot be exported.

4 The Locations that can be exported are listed below the top two panels. Select the locations that you want to export. If you select a parent Location, all of its nested child Locations will also be selected.



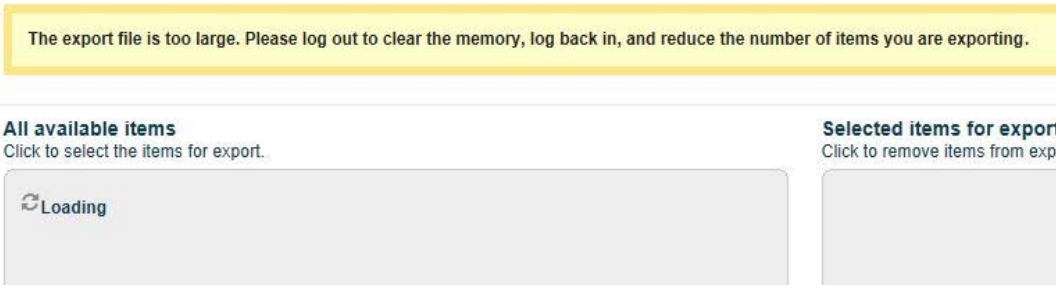
Exporting Locations

5 Once you have moved all of your selections to the right panel, click **Export Selected Items** in the upper right corner of the page.



Exporting Selected Items

IMPORTANT! The system will alert you if the selected items exceed the export limit. In this case, you must log out of the application, then log back in and try to export again with fewer items.



Export File Too Large

6 When the export process has successfully completed, rename and save the file in the appropriate location. The XML file is now ready to be distributed and imported into other systems.

How the Import Function Works

The import function relies on the XML file that was generated as a result of exporting selected entities from a source system. The import function imports *all* of the items in the XML file—you cannot select individual items. The import function is controlled by the "Can Import" user eligibility which allows the user to import any of the supported entities in the BIOVIA LIMS application and its associated modules (for example, IM or EM).

These include:

- User Roles
- User Groups
- User Accounts
- Locations (IM, EM)
- Location Types (IM, EM)
- Labels
- Entity Types
- Custom Tabs
- Consumable Types (IM)
- Consumable Templates (IM)
- Measuring Scales (IM)
- Widget categories and widgets (IM)
- Sample Types (EM)
- Sampling Plans (EM)

In addition, the dependencies of these entities are also imported (Table 11-2).

Table 11-2 Dependencies for Imported Entities

Item being Imported	Associated Dependencies
User Roles	User Accounts. Note that when importing User Roles, any eligibilities that are associated with a module that is not currently installed in the target system are not imported. For example, if the IM module is not installed, none of the IM eligibilities are imported.
User Groups	No dependencies. User accounts of members who belong to the group are not exported.
User Accounts	User Roles, Eligibilities
Location Types	No dependencies
Locations	Location Types, parent and child Locations
Labels	Label Templates, Label categories and any entity that is associated with a label (for example, an Entity Type or Consumable Type)
Entity Types	Custom Entity Tabs, Labels, its workflow, related Entity Types specified in a Relationship property and any workflow activity (for example, Create Entity activity), User Groups specified in permission groups and workflow activities. When importing an Entity Type, if the target system has any other Entity Types with a Relation Property for the imported Entity Type, then the following conditions must be true: • The import file must contain the "Other Type." • The "Other Type" must be able to be imported.
Custom Tabs	Entity Types and their associated dependencies
Consumable Types	Workflows, Measuring Scales, Label, Label Categories, related Entity Types specified in a Relationship property and workflow activities (for example, Create Entity activity), related custom tabs, User Groups specified in workflow activities.
Measuring Scales	No dependencies
Sample Types	Workflows, Location Types
Sampling Plans	Locations, Location Types

Before the actual import is executed, the system analyzes the XML file and generates an *Import Preview* report that lists all of the changes that will take place in the target system. For example, an item may override an existing item. The report also lists those items that cannot be imported and indicates why. Once you perform the import function, the system generates an *Import Results* report that summarizes the results of the action.

Rules for Importing

You can import the entities in the XML file into a new system that has no data, into an existing system that contains data, or into the same system located in a different site. An audit trail is recorded for each item that is imported.

The following rules apply to importing items from the source XML file:

- **Importing Items into New Systems**

  When importing items into new systems that have no data, all of the items in the XML file are imported.

- **Importing into Systems with Existing Data**

  When importing into systems with existing data, the following rules apply:

  1. If an item does not exist in the target system, the item is imported.
  2. If the item already exists in the target system, the system compares the GUID and date/time stamp of the source item to the existing item.

     - If the GUIDs are identical, the source item already exists in the target system. If their date/time stamps are the same, the item is flagged with a red alert  icon in the *Import Preview* report to indicate that the source item will not be imported. When you place your cursor over that item, a message indicates that this item already exists in the system.
     - If the GUIDs are identical but the date/time stamps are different, the system analyzes whether the existing item can be overwritten, and if so, flags it with a yellow warning  icon. This indicates that the existing item will be superseded and its version will be incremented.

       The rules that determine whether an item can be superseded are applied on an individual basis throughout the system. For example, if the user account that is being imported is the same user that is currently signed on, that user account will not be imported.
     - An item will not be imported for this scenario:

       1. An item is created on a source system and imported into a target system.
       2. That item on the source system is modified.

3. The item on the target system is also modified.
4. The item on the source system is exported and the target system requests the import. The source item is newer than the last imported version, however the destination entity has been modified.

- **Importing Locked Entities**

  When an item is locked because it is being used at the time of the import, the item is flagged with the red alert  icon in the *Import Preview* report. When you place your cursor over that item, a message indicates that it could not be imported because it is locked by another user. In this case, the red alert icon is also displayed for its associated entities (for example, a label category or workflow).

If any of these validation requirements fail, the item is not imported and a message is displayed.

Preventing Concurrent Access to the Import Function

BIOVIA LIMS supports only one import process per server (or per all servers within a load balancing configuration). Thus the system does not allow two import requests to be processed on the same server at the same time, even though they may be importing entities into different Sites.

If you start an import while an existing import request is being processed, an error message is displayed and the import function remains temporarily unavailable until the existing process has completed. The system actually checks for multiple requests at the “analyze” step of the import procedure, so the error message will appear as soon as the system detects a second request to analyze an import file.

The error message may appear in two different places:

- If you encounter the error message at the *Import* home page, wait a few minutes and refresh the page until the **Import** button reappears and then try again.
- If you encounter the error message on the *Import Items* page prior to analyzing the XML file, cancel the operation to return to the *Import* home page, then refresh the page until the **Import** button reappears and try again.

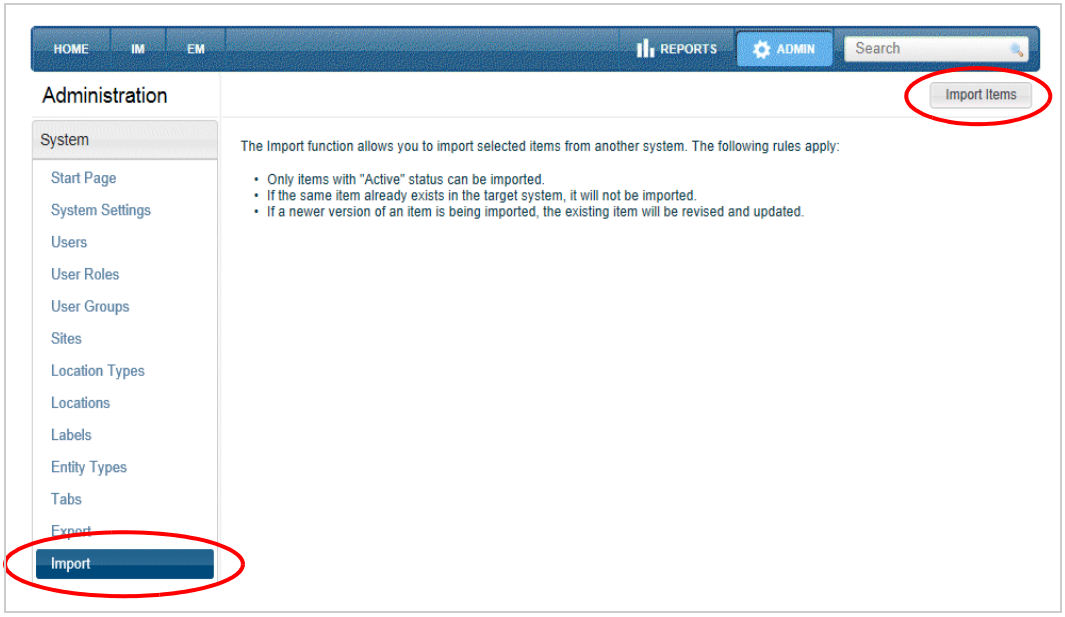
The **Import** button will become available when there are no longer any import requests in process.

Importing Configured Entities

To import the configured entities:

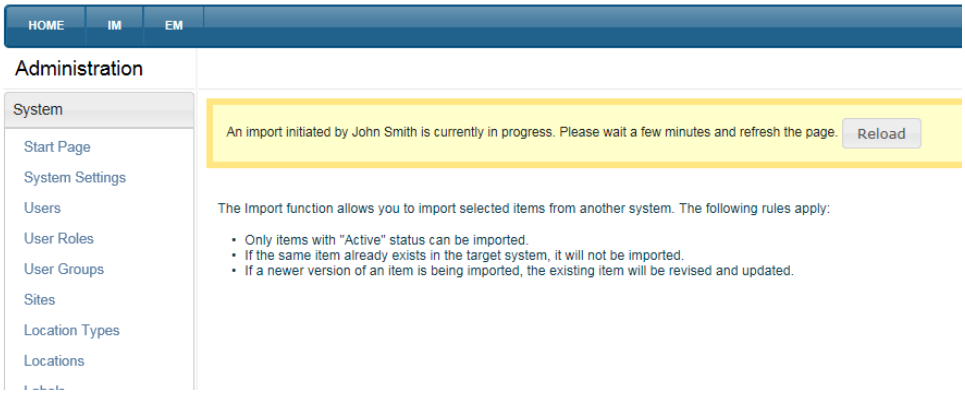
1 In the ADMIN tab under the System section, click **Import**.

2 In the *Import* home page, click **Import Items** in the upper right corner of the page.

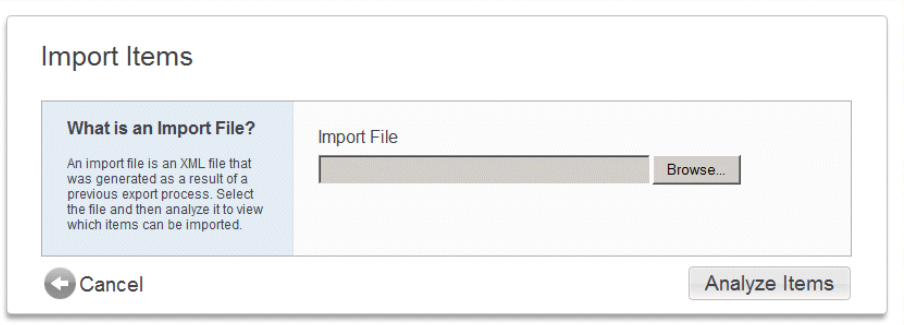


"Import" Home Page

Note: An error message will indicate if there is another import process currently underway. In this case, wait a few minutes, then refresh the page until the **Import** button reappears and try again.



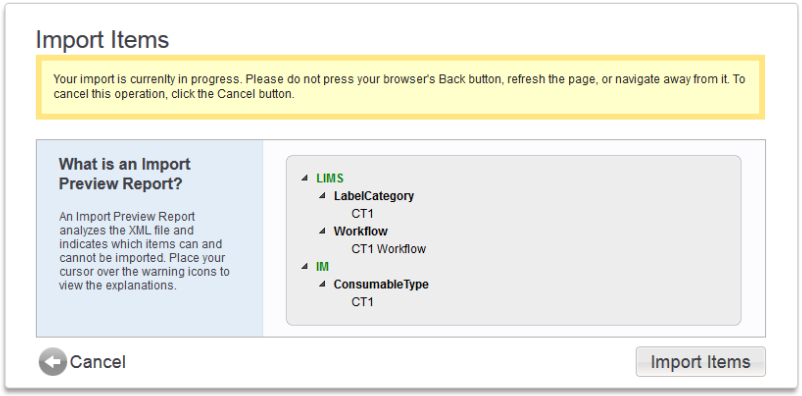
3 In the *Import Items* page, browse to the XML file from which you are importing the data and click **Analyze Items**.



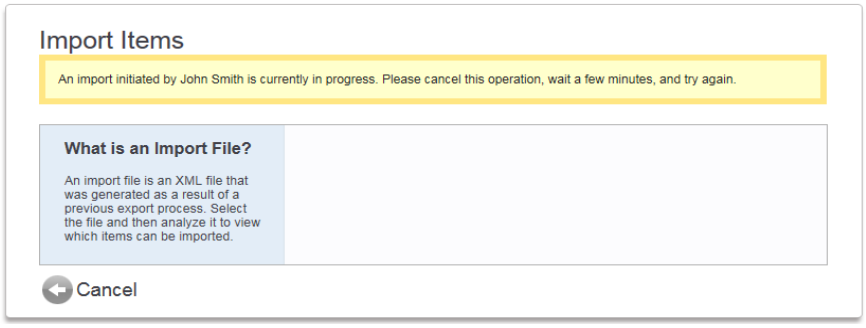
Importing from Selected XML File

A message will be displayed at the top of the screen that corresponds to one of these scenarios:

- If your request is in progress, do not click your browser's Back button, refresh the page, or browse away from this page.



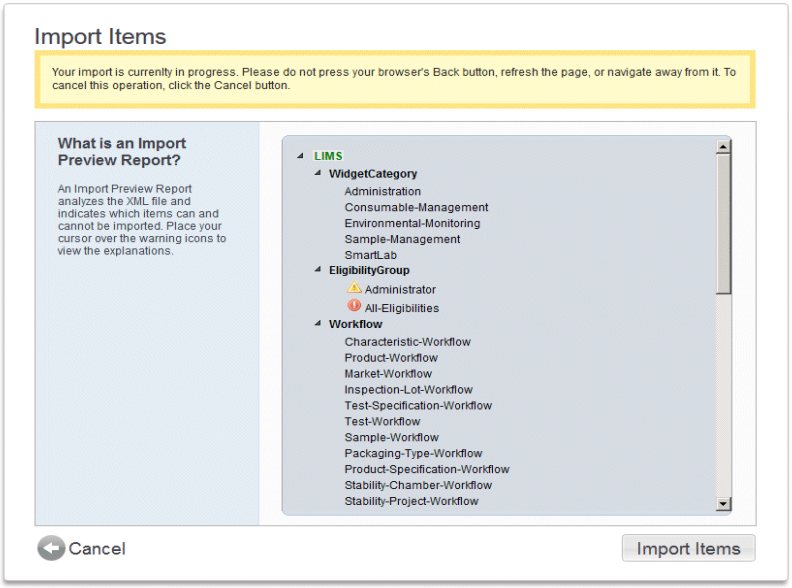
- If there is another import process currently underway for another user, click **Cancel** to return to the I*mport* home page, wait a few minutes, then refresh the page until the Import button reappears and try again.



4 Once the file has been analyzed, the *Import Preview Report* lists all of the items that will be imported and indicates which items will not. If an icon precedes an item, place your cursor over the icon to view a description of the item's condition:

The red alert icon indicates this item will not be imported. Mouse over the icon to view the reason.

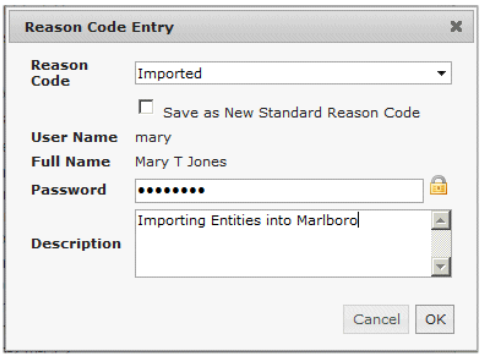
The yellow warning icon indicates that item already exists in your system and it will be superseded by the imported version.



Import Preview Report

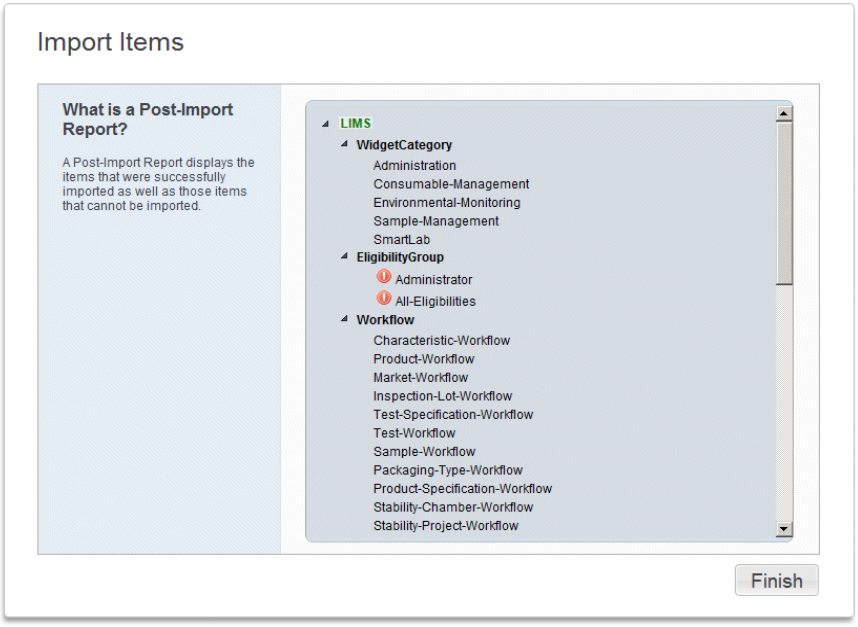
5 Click **Import Items**.

6 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. Click OK to begin the importing process.



Reason Code for Importing

When the process has completed, an Import results report displays all of the items that were imported. The items that were not imported are preceded by the red alert icon.



Import Results Report

7 Click **Finish** to complete the importing process and return to the *Import* home page.

12

Registering and Running Reports

Introduction

Eligible users can create, edit, and run reports to generate data on various entities in the system. Once a report is run, you can also print it. You must associate a Crystal Report template with a registered report in order to perform these functions.

Required Eligibility for Managing Reports

In order to manage reports, users must belong to a User Role that has the following eligibilities:

- **Can View Reports**—Allows users to view registered reports and run only those reports in the system whose status is "Active."
- **Can Administer Reports**—Allows users to view and manage all of the reports in the system (all status codes).

Status Codes for Reports

Status codes represent the current state of a report in the system. A report can reside in one of four states:

- **Draft**—When you create a new report, its status is set to "Draft" by default. It is not available for use in the system until you set its status to "Active."
- **Active**—The report is available for use in the system.
- **Upgrading**—The report is unavailable for use in the system. However, existing dependencies will use the last "Active" version of this report.
- **Inactive**—The report is unavailable to users and other dependencies. Existing dependencies cannot use any version of the report.

Table 12-1 summarizes the actions that are allowed at each state.

Table 12-1 Allowed Actions for the States of a Report

Action	Status			
	"Draft"	"Active"	"Upgrading"	"Inactive"
Can view reports in system (Reports tab)	Administrator only [2]	All users[1]	Administrator only [2]	Administrator only [2]
Can run reports	Administrator only [2]	Yes [1, 2]	Administrator only [2]	No
Can edit reports	Yes [2]	Yes [2]	Administrator only [2]	Yes [2]
Can delete reports	Yes [2]	No	No	No
Can change status to:	Active	Upgrading Inactive	Active	Active
Versioning enforced for changes	Yes	Yes	Yes	Yes
Reason Code required for changes	By system	By user	By user	By user
Can export reports to other systems	No	No	No	No

[1] Requires "Can View" eligibility

[2] Requires "Can View" and "Can Administer" eligibility

Registering the Orphaned Instances Report

This step is required for all 4.2 SP2 installations (new and upgraded systems).

A new Crystal report was installed with the LIMS 4.2 SP2 release that allows you to view all of the “orphaned” Entity Instances in your current Site. An orphaned instance is created as a result of a “By Ref, Clone” Relationship property in its related source instance, but when the original property is recollected with a different value, the link between the source and the cloned instance is severed. An Entity Instance is considered orphaned only if it is not related to any other instances in the system.

Since orphaned instances are not displayed in the grid of instances, the Orphaned Instances Report provides the only way to view them.

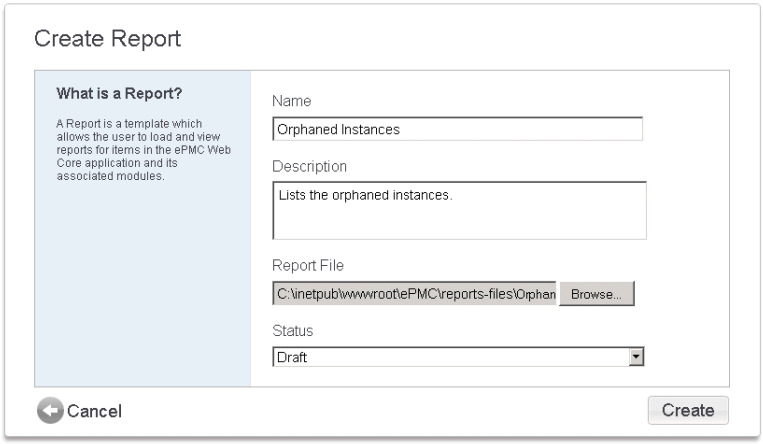
Registering the “Orphaned Instances” Report

Note: You must register this report on each Site in your environment.

To register the Orphaned Instances Report:

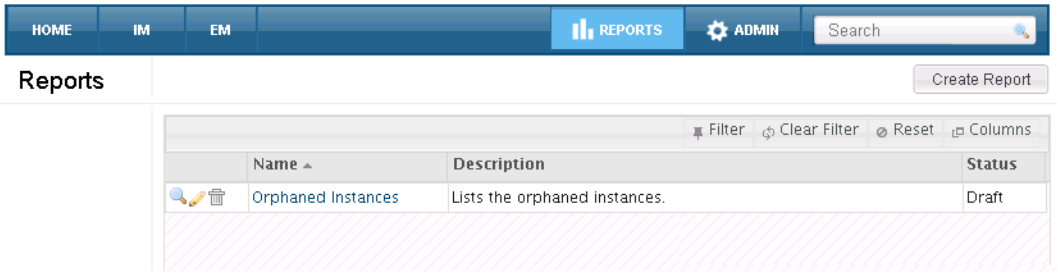
1. Click the **REPORTS** tab in the main menu bar.
2. In the *Reports* home page, click **Create Report** to open the *Create Report* page.
3. In the Name field, enter **Orphaned Instances**.
4. Enter a description (optional).
5. In the Report File field, browse to the following file:

   inetpub/wwwroot/ePMC/reports-files/Orphaned EntityInstances Report/OrphanedInstances.rpt



Registering the Orphaned Instances Report

6 Click **Create** to submit the form. The new report is displayed in the *Reports* home page with a status of "Draft."



Registered Orphaned Instances Report

7 To make the report available to general users, click **Edit** preceding the report's name and change its status to Active. Otherwise, leave the status unchanged so only users with administrative eligibilities will be able to view the report.

To run the report, refer to the following section.

Running the Orphaned Instances Report

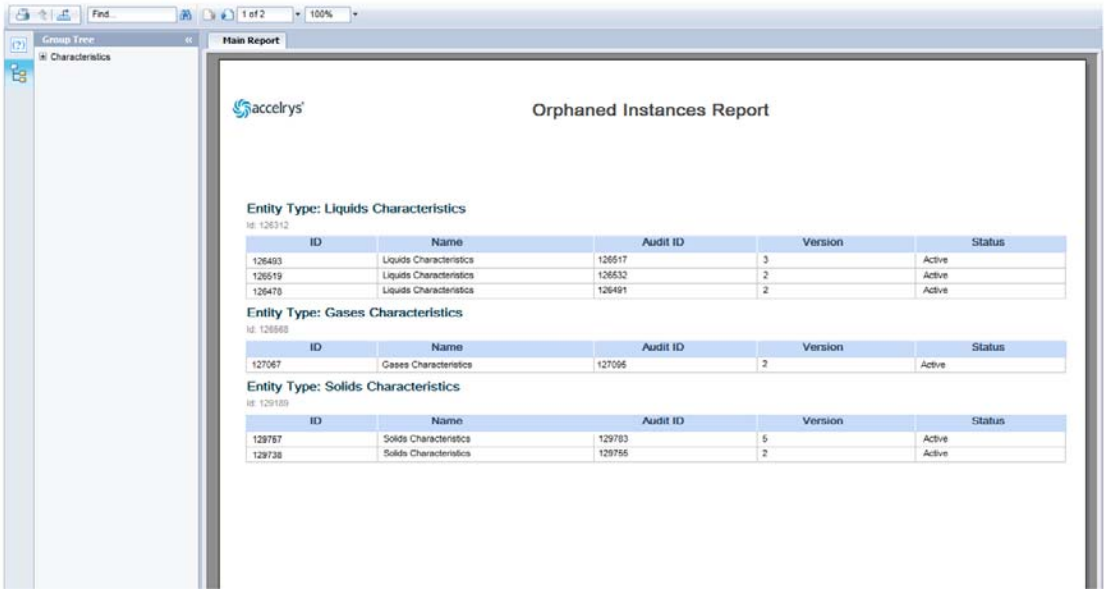
To run the Orphaned Instances Report:

1. Click the **REPORTS** tab in the main menu bar.
2. In the *Reports* home page, do one of the following:
   - Click the **View** icon preceding the report.
   - Click the name of the report, and in the report's *View* page, click **View Report**.

The Crystal Report Viewer displays all of the orphaned instances in your current Site.

Note the following:

- The Orphaned Instances Report only displays those orphans that were created after LIMS 4.2 SP2 was installed.
- The report displays the ID, name, version, and status of the orphaned instance. It also includes an Audit ID which is the ID of the corresponding audit record in the database.



Orphaned Instances Report

- The Orphaned Instances Report does not list the entire set of properties for the instances. However, it is possible to view all of the properties and History of an orphaned instance by searching on its ID in the main menu bar.

Searching for an Orphaned Entity Instance

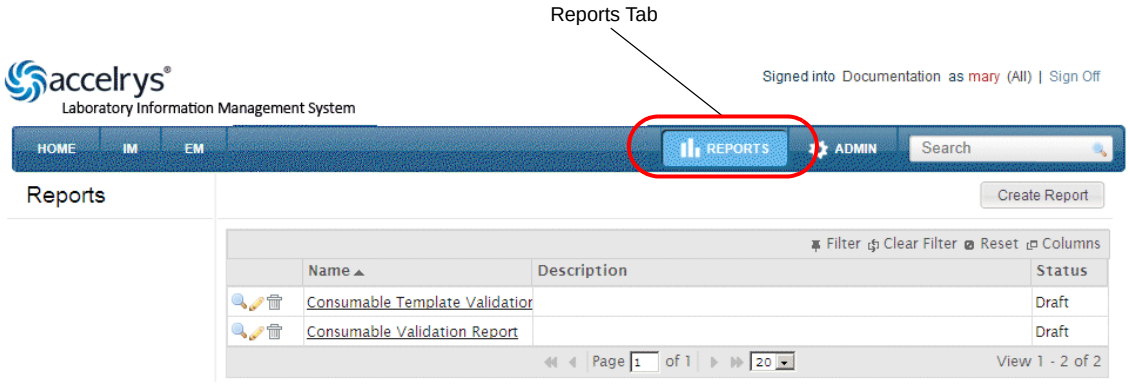
Although an orphaned instance is no longer displayed in the grid view of instances, its record is still intact in the database. Thus when you select the orphaned instance from the search results, its *View* page is displayed, as shown below.

Orphaned Entity Instance's "View" Page

Viewing Configured Reports

To view the configured reports in the system:

1 Click the **REPORTS** tab in the main menu bar. The *Reports* home page is displayed.



"Reports" Home Page

The grid lists all of the reports that are registered in the system. Each report is identified by its name, description, and current status.

The icons in the first column represent actions that you can perform on the report. These are determined by your user eligibilities as well as the current status of the report.

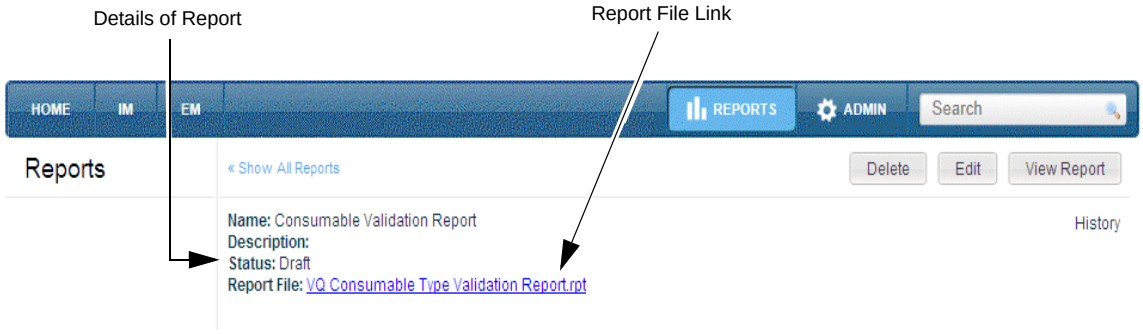
Run—Allows eligible users to run the corresponding report.

Edit—Allows eligible users to edit the corresponding report.

Delete—Allows eligible users to delete a report. This icon is only displayed for reports whose status is "Draft."

You can filter the view of the grid as necessary. Refer to *How the Grid Control Works* on page 1-23.

2 To view the details of a report, click the name of a report to open its *View* page.



Viewing Details of a Report

The report's *View* page displays the name, description, and the current status of the report.

- Click the report file link to open and download the Crystal Report file on which this report is based.
- Click the **Delete** button to delete the report. This option is only available for reports whose status is "Draft."
- Click **Edit** to edit the definition of the report. Refer to *Running a Report* on page 12-9.
- Click **View Report** to run the report. Refer to *Running a Report* on page 12-9.

- Click the **History** link to view the audit trails for this report. Refer to *Generating Audit Trails for Changes Made to Data* on page 1-36 for details on the History table.

3 To return to *Reports* home page, click **Show All Reports** above the name.

Creating a New Report

To create a new report:

1 Click the **REPORTS** tab in the main menu bar.

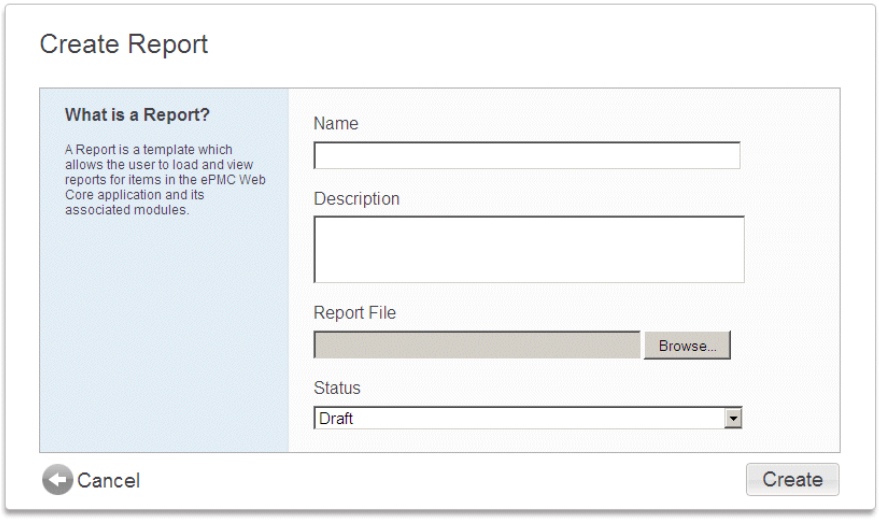
2 In the *Reports* home page, click **Create Report**.

3 In the *Create Report* page:

a. Enter a name for the new report.

b. Enter a description (optional).

c. Click the **Browse** button and select the associated Crystal Report file.



Creating a New Report

d. Click **Create**.

The new report is displayed in the *Reports* home page with a status of “Draft.” When this report is ready to be used in the system, edit the report and set its status to “Active.” Refer to *Running a Report* on page 12-9.

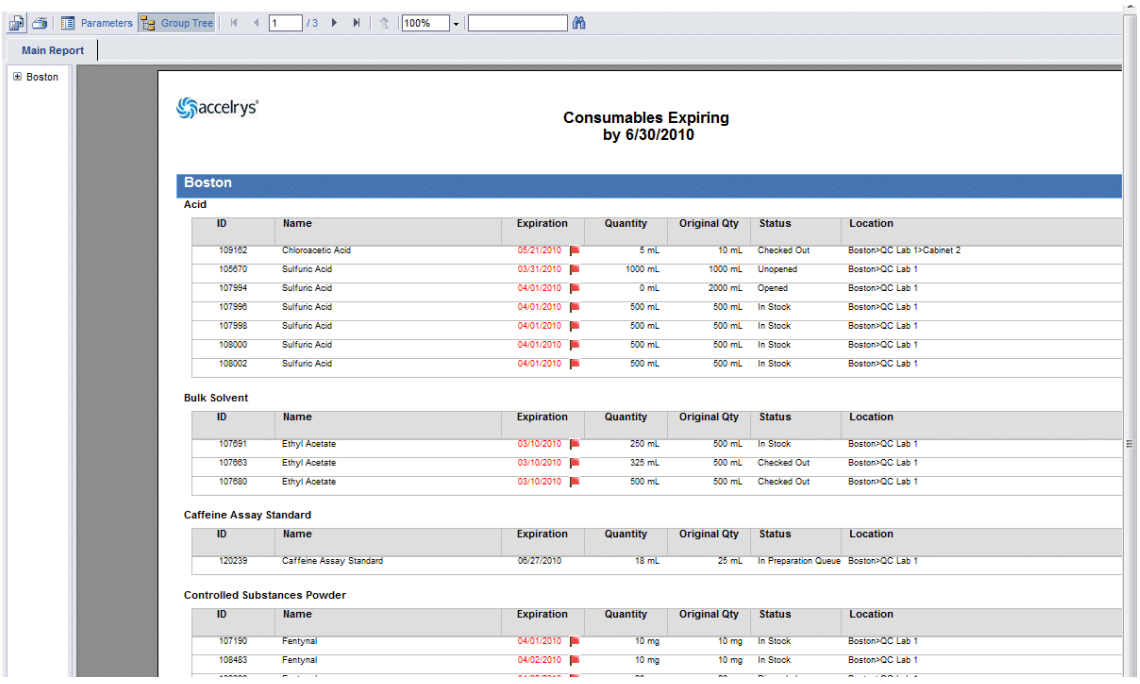
Running a Report

To run a report:

1. Click the **REPORTS** tab in the main menu bar.
2. In the *Reports* home page, do one of the following:
   - Click the **View** icon preceding the report.
   - Click the name of the report, and in the report's *View* page, click **View Report**.
3. Configure the parameters for the report.
4. Click OK to run the report. The Crystal Report Viewer displays the results of the report.

Note: The time values in registered reports may differ from the values stored in the database by one second. This is caused by the translation that is performed by the Crystal Report Template on the serial value stored in the database.

Use the functions in the Crystal Report Viewer toolbar to export, print, or search for specific criteria in the report.

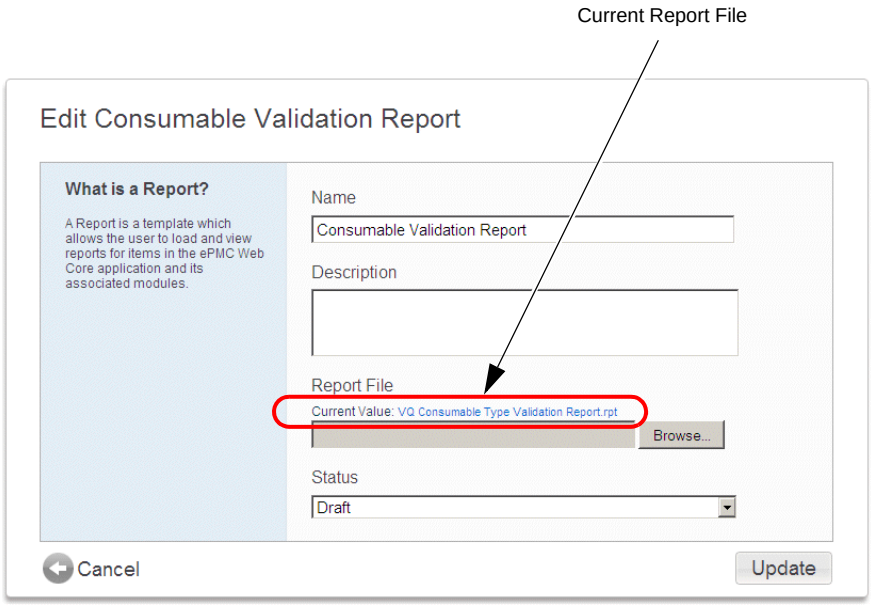


Viewing a Report in the Crystal Report Viewer

Editing a Report

To edit a report:

1. Click the **REPORTS** tab in the main menu bar.
2. In the *Reports* home page, do one of the following:
   - Click the **Edit** icon preceding the report.
   - Click the name of the report to open the report's *View* page, then click **Edit**.
3. In the *Edit Report* page, edit the configured fields as necessary. The current report file is displayed above the Report File field. You can browse to a different report, if necessary.



Editing a Report

4. Click **Update**.
5. In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for reports whose status is "Draft."

Upgrading a Report

To make a report temporarily unavailable while you edit it, set its status to “Upgrading.” Its dependencies will use the last active version of the report. Refer to *Running a Report* on page 12-9.

Inactivating a Report

To make a report permanently unavailable, set its status to “Inactive.” Its dependencies in the system will not be able to use this report. Refer to *Running a Report* on page 12-9.

Exporting a Report

The export function is not supported for reports.

Deleting a Report

You can only delete reports whose status is “Draft.”

To delete a report:

1. Click the **REPORTS** tab in the main menu bar.
2. In the *Reports* home page, do one of the following:
   - Click the **Delete** icon preceding the report.
   - Click the name of the report, and in the *Report View* page, click **Delete**.
3. In the confirmation dialog box, click OK to delete the report.