# SYSTEM ADMINISTRATION GUIDE

BIOVIA INVENTORY

1.2 SP3

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# 1

# Introduction to BIOVIA Inventory

## Intended Audience

This manual is intended for the system administrator or other qualified personnel that is responsible for configuring the BIOVIA Inventory application, a module of 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 Inventory

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

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

These core functions are documented in the *BIOVIA LIMS System Administration Guide*, available on the BIOVIA Download Center.

BIOVIA Inventory provides functionality to receive and manage consumables in inventory. The following entities are specific to the IM module:

- Location Types
- Locations
- Consumable Types and their workflows
- Consumable Templates
- Measuring Scales
- Consumables in inventory

These entities are explained in the following sections.

### Location Types

A *Location Type* represents one type of location that is used for a specific purpose in your environment. In BIOVIA LIMS, you can define Location Types for three different types of locations:

- **General Location**—Represents general locations in your environment (for example, a building, lab, or a room). This Location Type is applicable to the BIOVIA Inventory and Environmental Monitoring modules.
- **Storage Location**—Represents various storage locations for your consumables (for example, a cabinet, shelf, or bin). This Location Type is specific to the BIOVIA Inventory module.

- **Sampling Location—**Represents the various locations for which samples are taken for environmental monitoring purposes (for example, a location in a room or on a person). This Location Type is specific to the BIOVIA Environmental Monitoring module.

## Locations

A *Location* represents one instance of a defined Location Type. Locations are based on a hierarchy of the different types of locations in your environment. In the IM module, the top-level "root" location typically represents your main facility or building and its "child" locations represent the rooms or labs, and subsequently the actual storage locations within each.

## Consumable Types and their workflows

*Consumable Types* are the underlying concept of the IM module. A Consumable Type defines one generic type of consumable (such as a reagent) rather than a specific instance of that consumable (such as acetone). A Consumable Type consists of properties that are common to all consumables of that type.

For example, every consumable based on a "Solution" Consumable Type has the same types of properties—that is, all solutions are made from several components and have an expiration date, barcode, and possibly an NFPA label.

For laboratory personnel responsible for managing inventory, the actions they can perform on a consumable are dictated by the workflow of its parent Consumable Type. Each Consumable Type contains a workflow which defines the life cycle of the consumables based on that type from the time they are received into inventory to the time they are depleted or discarded. The workflow provides the appropriate actions that can be performed at any given state of the consumable—for example, Check Out, Check In, or Set Quantity.

## Measuring Scales

Each Consumable Type is based on a specified unit of measurement (for example, mcg, mg, g), as well as a *Measuring Scale* that defines how the quantity of the consumable is measured (for example, Full, Half Full, Empty). The system provides one default "Exact" Measuring Scale, but you can define your own custom scales that are relevant to the different types of consumables received into inventory.

## Consumable Templates

Once you create a Consumable Type, you will create a unique definition for each type of consumable in this category. This definition is referred to as a *Consumable Template* and it functions as a template for receiving consumables of this type into inventory.

If for example, you use two specific types of reagents (Acetone ACS Grade and Acetone HPLC Grade), you would open the parent Consumable Type “Reagent” and create a new template for each of these two types. A Consumable Template inherits all of the properties as well as the workflow of its parent Reagent Consumable Type (page 1-5).

When Acetone ACS Grade is received into inventory, it is entered into the system based on the properties defined in its Consumable Template. When you create a Consumable Template, you will define the “static” properties that are common for all of its consumable instances (for example, physical state or CAS number), while the “dynamic” properties that are unique to each consumable instance (for example, vendor or expiration date) are defined by the user when the consumable is received into inventory.

In addition, you can configure a template to allow the consumables based on this type to be subsampled into aliquot quantities. Refer to *Subsampling Options for Consumable Templates* on page 7-4.

## Consumables in inventory

A *consumable* is any item that is entered into the Inventory system. When a consumable is received into inventory, the actions that the user can perform on it are dictated by the workflow of its associated Consumable Type (for example, Check Out, Check In, Update Quantity, Approve, Waste). Refer to the *BIOVIA Inventory User Guide* for information on how to receive and manage consumables in inventory.

Creating Consumable Templates from a Consumable Type

## Getting Started - Configuration Tasks For New Installations

The following table lists the tasks required to configure a new BIOVIA LIMS v4.2 SP3 installation that includes BIOVIA Inventory v1.2 SP3.

Table 1-1 Sequence of Configuration Tasks for New Installations

| Step | Task | Description | Refer to: |
|---|---|---|---|
| 1 | **Configure BIOVIA LIMS core functionality** | Configure:<br>• System Settings<br>• Sites<br>• User Roles and assign users<br>• User Accounts<br>• User Groups<br>• Entity Types (optional for IM)<br>• Entity Tabs (optional for IM) | *BIOVIA LIMS System Administration Guide* |
| 2 | **Create Location Types** | Create a new Location Type for each type of physical and storage location in your environment (for example, a building, a room, or a storage location). | Chapter 2, *Managing Location Types* |
| 3 | **Create Locations** | Create new Location instances based on the Location Types that you created in Step 2 above. | Chapter 3, *Managing Locations* |
| 4 | **Create Measuring Scales** | Create new Measuring Scales for your Consumable Types. | Chapter 5, *Creating Measuring Scales* |
| 5 | **Create Consumable Types** | Create a Consumable Type for each type of consumable used in your environment. Assign the correct Measuring Scale that you created in Step 4 above. | Chapter 4, *Managing Consumable Types* |
| 6 | **Configure Workflows for Consumable Types** | Configure the workflow for each Consumable Type that you created in Step 5 above. The workflow defines the actions that can be performed on a consumable during its life cycle in the system. | Chapter 6, *Configuring Workflows for Consumable Types* |

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

| Step | Task | Description | Refer to: |
|---|---|---|---|
| 7 | **Create Consumable Templates** | Create a new Consumable Template for each type of consumable in your environment. These will be based on the Consumable Types you created in Step 5 above. | Chapter 7, *Managing Consumable Templates* |
| 8 | **Create Labels for Consumables** | Configure labels that can be printed for individual consumables or cases of consumables during workflow execution. | *BIOVIA LIMS System Administration Guide* |
| 9 | **Configure Reports** | Configure report templates and register reports that can generate data on various entities in the system. | |
| 10 | **Export configured entities and import them into other systems** | Export your configured entities to an XML file so you can import and deploy them on other systems. These include any of the BIOVIA LIMS entities as well as those specific to the IM module:<br>• User Accounts<br>• User Roles<br>• User Groups<br>• Location Types<br>• Locations<br>• Consumable Types<br>• Consumable Templates<br>• Measuring Scales<br>• Widget Categories<br>• Entity Types (optional for IM)<br>• Entity Tabs (optional for IM) | |

## Configuration Tasks For Upgrading from Existing Installations

There are no additional configuration tasks required for upgrading a current BIOVIA Inventory system.

## Client Requirements

Verify the following settings on every client machine:

- **Compatibility View**—Make sure Internet Explorer's Compatibility View is turned off. Refer to the *BIOVIA LIMS Application Server Installation Guide* for more information.
- **Allow Pop Ups**—If you plan on using BIOVIA Pipeline Pilot in conjunction with the BIOVIA Inventory 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 BIOVIA Inventory. 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 s*creen 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 s*creen is not displayed and you re immediately directed to the BIOVIA LIMS *Home* page.

## Inventory Components in the User Interface

When you install the IM module, the main menu bar includes an “IM” tab which displays the *Inventory* home page. This is where qualified laboratory personnel can view and manage their consumables in inventory.

In addition, the ADMIN tab contains the “IM” section in the left navigation panel where you can manage the administration functions of the IM module. A small “IM” icon is also displayed in the lower right corner of the page to indicate that the module is installed.

Inventory Elements in the User Interface

## Inventory User Eligibilities

The following table lists the user eligibilities specific to the IM module. To configure a User Role with these eligibilities, refer to the *BIOVIA LIMS System Administration Guide*.

Table 1-2 IM User Eligibilities

| Eligibility | Description |
|---|---|
| Can View Consumable Types | Allows users to view only those Consumable Types in the system whose status is “Active.” |
| Can Administer Consumable Types | Allows users to view and manage Consumable Types of every status. |
| Can View Consumable Templates | Allows users to view only those Consumable Templates in the system whose status is “Active.” |
| Can Administer Consumable Templates | Allows users to view and manage Consumable Templates of every status. |
| Can View Consumables | Allows users to view the consumables in inventory. |
| Can Make/Receive Consumables | Allows users to receive consumables into inventory as well as make a consumable before receiving it (for example, a solution). |
| Can Collect from Expired Consumables | Allows users to use an expired consumable in a BIOVIA LES procedure session. When the analyst scans the barcode of a consumable during the procedure session, the system determines if the consumable has expired, and if so, allows the analyst to use it. |
| Can Process Consumables | Allows users to perform actions on consumables in inventory as defined by their workflows (for example, Prepare, Check Out, Check In, Update Quantity, Print Labels, Waste). |
| Can View Measuring Scales | Allows users to view only those Measuring Scales in the system whose status is “Active.” |
| Can Administer Measuring Scales | Allows users to view and manage Measuring Scales of every status. |

## How Date/Time values are recorded in IM

The *BIOVIA LIMS System Administration Guide* provides a general description of how date/time values are recorded and displayed in the system. This section describes topics specific to date/time values in the BIOVIA Inventory module.

### Recording date/time for Expiration Date properties

The **Expiration Date** property is a special case since consumables expire at midnight of the time zone in which the expiration date was applied.

For a consumable's Expiration Date property, the date/time is recorded using the following model:

1. Date/time is obtained from the server clock at the time the expiration date is applied.
2. The hours, minutes, and seconds are extended to 11:59:59 to represent the last unexpired date/time. This value is converted to Coordinated Universal Time (UTC) and saved in the database.

# 2

# Managing Location Types

## What is a Location Type?

A *Location Type* represents one type of location in the system that is created for a specific purpose. BIOVIA LIMS supports three different Location Types, as described in the following table.

Table 2-1 Available Location Types

| Purpose | Available with... | Description |
|---|---|---|
| Other Location | BIOVIA LIMS core application | General or physical locations such as a country, a building, or a lab. |
| Storage Location | BIOVIA Inventory module | Storage locations for Inventory management (IM) consumables, such as a cabinet, a shelf, or a bin. |
| Sampling Location | BIOVIA Environmental Monitoring module | Sampling locations for environmental monitoring purposes, for example, a location in a room or on a person. |

In the IM module, you will create various Location Types to represent the buildings and rooms in your facility. These will be based on the “Other Location” option. You will also create a Location Type to represent each type of storage location in your environment. These will be based on the “Storage Location” option.

The following figure shows the relationship between Location Types and the child Locations on which they are based.

Relationship between Parent Location Types and Child Locations

A *Location* is one instance of a Location Type. A Location Type is defined by various properties that apply to all of the Locations based on that type. For example, storage locations based on a Location Type called “Cabinet” could include a “Name” text property and a “Shelf” numeric property to identify the name of a storage cabinet and its Shelf number. You will define the values of these properties when you create the actual Locations based on this Location Type (Chapter 3).

## Required Eligibility for Managing Location Types

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

- **Can View Location Types**—Allows users to view Location Types and their audit trails.
- **Can Administer Location Types**—Allows users to create and manage Location Types.

## Status Codes for Location Types

Status codes represent the current state of a Location Type in the system. A Location Type can reside in one of four states:

- **Draft**—When you create a new Location 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 Location Type is available for use in the system. You can create Locations, based on this Location Type. It can also be used by other dependencies in the system, such as properties and workflow activities.

- **Upgrading**—The Location Type is unavailable for use in the system. However, its associated Locations will use the last “Active” version of this Location Type.
- **Inactive**—The Location Type is unavailable for use. Its associated Locations cannot use any version of this Location Type.

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

Table 2-2 Allowed Actions for the States of a Location Type

| Action | Status | | | |
|---|---|---|---|---|
| | **“Draft”** | **“Active”** | **“Upgrading”** | **“Inactive”** |
| Can view Location Types in system | Administrator only [2] | All users [1] | Administrator only [2] | Administrator only [2] |
| Available to dependencies (for example, Locations, properties, workflow activities) | No | Yes | Last “Active” version | 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 edit definition of Location Type | Yes [2] | Yes [2] | Yes [2] | Yes [2] |
| Can delete Location Type | Yes [2] | No | No | No |
| Can change status to: | Active | Upgrading<br>Inactive | Active [5] | Active |
| Versioning enforced for changes | Yes | Yes | Yes | Yes |
| Reason Code applied to changes | By system | By user | By user | By user |
| Can export Location 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 are edited, status automatically changes to “Upgrading”

[5] When you change the status from “Upgrading” to “Active,” all Locations based on this Location Type must be upgraded for the status change to occur. If the upgrade is cancelled, the change of status is also cancelled. A change in status from “Upgrading” to “Active” is not allowed if a property type is changed that is used in an active Consumable Type’s workflow.

## Viewing Configured Location Types

To view the configured Location Types in the system:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the System section heading in the left navigation panel, click **Location Types**.

   The *Location Types* home page is displayed. The grid lists all of the Location Types that are registered in the system. Each Location Type is identified by its name, description, purpose, and current status.

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

   **Edit**—Allows eligible users to edit the corresponding Location Type.

   **Delete**—Allows eligible users to delete the Location Type. This is only available for Location Types whose status is “Draft.”

   You can filter the view of the grid as necessary. Refer to the section *How the Grid Control Works* in the *BIOVIA LIMS System Administration Guide*.

Location Types Home Page

3 To view the details of a Location Type, click its name in the grid. The Location Type's *View* page displays its general information (name, description, current status) as well as its configured properties below.

Location Type 's "View" Page

***Location Types Properties:***

The Location Type's properties are displayed in the Information tab. Note that some Location Types may have properties grouped into multiple tabs.

- A **Lock** icon in the Type column indicates that the property is being used in a Consumable Type's workflow and 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 Location Types whose status is "Draft."
- Click **Add Property** to configure a new property.
- Click **Manage Tabs** to reorder properties or create new property tabs in order to group similar properties. Refer to *Organizing the Properties of a Location Type* on page 2-14.

4 To edit the definition of this Location Type, click **Edit** above the History link. Refer to *Editing a Location Type* on page 2-17.

5 To view the audit trails for this Location Type, click the **History** link. For more information on audit trails, refer to the *BIOVIA LIMS System Administration Guide*.

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

## Creating a New Location Type

For an IM installation, create the appropriate Location Types for these purposes:

- **Other Location**—General locations such as buildings, labs, or rooms.
- **Storage Location—**Locations for storing consumables, such as a cabinet, shelf, or bin.

To create a new Location Type:

1 Click the **ADMIN** tab in the main menu bar.

2 Under the System section heading in the left navigation panel, click **Location Types**.

3 In the *Location Types* home page, click **Create Location Type** above the grid.

4 In the *Create Location Type* page:

a. Enter a name for the Location Type. The name must be unique in the current Site and cannot exceed 100 characters. Note that you can use the same name in a different Site. The uniqueness is not case-sensitive. Blank spaces at the beginning or end of the name are not allowed.

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

c. In the Purpose field, select the appropriate type—**Other Location** for a building or room or **Storage Location** for a storage location.

d. Click **Create**.

Creating a New Location Type

The Location Type's *View* page displays the new Location Type with a status of "Draft."

Viewing a New Location Type

5 Configure the properties of this Location Type, as described in the following section *Configuring the Properties of a Location Type* on page 2-7.

6 When you are done configuring the Location Type, set its status to "Active" to make it available for use. Refer to *Editing a Location Type* on page 2-17.

## Configuring the Properties of a Location Type

Each Location Type is defined by one or more properties. The properties describe all of the information specific to that Location Type and apply to all of the Location instances based on that type. You can configure some properties with a default value while other properties will be defined when you create a specific Location.

This section explains how to add a new property for a Location Type and then describes each property type in more detail. To get started, determine what types of properties your Location Type will need.

- For the physical locations (buildings/rooms), these typically include properties such as country, city, address, and lab number.
- For storage locations, these typically include properties such as cabinet, shelf, and bin number.

### Adding a new property to a Location Type

To add a new property to a Location Type:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the System section heading in the left navigation panel, click **Location Types**.
3. In the *Location Types* home page, click the Location Type whose properties you want to configure.
4. In the Location Type's *View* page, click **Add Property**.

Adding Properties in Location Type's "View" Page

5. In the *Add Property* dialog box:
   a. Enter a name for the property. You can use duplicate names as long as they are based on a different property type. You cannot use an apostrophe in the property name.
   b. 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 for the selected property type as required. Refer to the following section *Description of Location Type properties* on page 2-10 for details of each property type.

Configuring Property for Location Types

d. Click **Save**.

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

Reason Code for New Property

Once the change has been committed, the new property is listed in the Location Type’s *View* page.

**Note:** If you added the property while the status of the Location Type is “Active,” the system will automatically set its status to “Upgrading.” Its dependencies in the system (that is, Locations) will use the last active version of this Location Type.

Creating a New Property

7 To create additional properties, repeat Steps 4-6.

## Description of Location Type properties

This section describe the available property types for Location Types:

- Boolean (True/False)
- Date
- File Upload
- Link
- List
- Numeric
- Text
- Text (Multiple lines)

### Boolean (True/False) property

The Boolean (True/False) property defines a property based on a boolean “True” or “False” value. When you create a Location instance, you can set the property to one of these values. For example, a Boolean property can be used to specify whether a building is owned (true) or leased (false).

“Boolean (True/False)” Property

### Date property

The Date property includes a text field with a date picker control. You can specify a default date or leave it blank. When you create a Location instance, you can keep the default date if it is specified or select a new one. For example, a Date property can be used to indicate the next inspection date of a lab.

"Date" Property

### File Upload property

The **File Upload** property associates an external file to a Location Type. The **File Upload** property includes 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 leave it blank. When you create a Location instance, you can keep the default file or browse to a new one. For example, a File Upload property can be used to include a floor plan of a laboratory.

'File Upload" Property

### Link property

The **Link** property allows you to include a link that will be rendered as a hyperlink to a specified URL. If you enter a default, it must include the “http” or “https” protocol and the “www” domain name.

“Link” Property

### List property

The **List** property allows you to select a property value from a predefined list when creating or editing a Location instance. To indicate the default list item, precede it with an asterisk (*). The **List Only** check box determines if new list items can be added to the list. If checked, you can only select a value from the list when you create a Location. If List Only is cleared, you can enter a new value.

“List” Property

### Numeric property

The **Numeric** property allows you to specify a numeric value for a Location's property. You can specify minimum/maximum values as well as a default value. For example, a Numeric property can be used to specify a bin number for a storage location.

"Numeric" Property

### Text property

The Text property allows you to enter a single line of text when creating a Location instance. You can specify minimum/maximum character lengths as well as a default value. For example, a Text property can be used to specify the name of the location (for example, Microbiology Lab).

"Text" Property

### Text (Multiple Lines) property

The Text (Multiple Lines) property allows you to enter multiple lines of text when creating a Location instance. You can specify minimum/maximum character lengths as well as a default value. For example, a Text (Multiple Lines) property can be used to specify the address of a location.

"Text (Multiple Lines)" Property

## Organizing the Properties of a Location Type

You can organize the properties of a Location Type in the following ways:

- Reorder the properties in a single tab. The order of the Location 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, a Location Type's *View* page displays the properties under the default "Information" tab. If your Location Type has a large number of properties, you can add additional tabs to separate the properties into logical groupings.
- Copy existing properties into a new tab.

To organize Location Type properties:

1. On the Location Type' *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 Location Type Properties

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

Adding a New Property Tab

- **Editing/Deleting Tabs**—To edit the tab name or delete the tab, click **Edit** or **Delete** . 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 only exist in one tab.

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 Location Types whose status is “Draft.”

## Editing a Location Type

You can edit the definition of a Location Type as well as its properties.

### Editing the definition of a Location Type

When you add additional properties or edit the properties of an “Active” Location Type, its status automatically changes to “Upgrading.” When you set the status back to “Active,” you can automatically upgrade its associated Locations in order to keep them synchronized with their parent Location Type.

To edit the definition of a Location Type:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the System section heading in the left navigation panel, click **Location Types.**
3. In the *Location Types* home page, do one of the following:
   - Click **Edit** in the first column preceding the Location Type’s name.
   - Click the name of the Location Type to open its *View* page and click **Edit**.
4. In the *Edit Location Type* page:
   a. Change the name and description fields, as necessary.

Editing the Definition of a Location Type

   b. When you change the status from “Upgrading” to “Active,” the number of existing child Locations is listed below the Status field:

- **Checked**—The child Locations will be automatically updated and their property values will be synchronized to the latest version of the parent Location Type.
- **Unchecked**—You must manually update the child Locations in the *Upgrading* page.

5 Click **Update**. If there are no Locations based on this type or if you checked the Automatic Upgrade check box, continue to Step 6.

If there are existing child Locations based on this type and you left the Automatic Upgrade check box blank, the *Upgrading Locations* dialog box is displayed. You must manually upgrade the Locations to keep them synchronized with their associated Location Type. If you added a new property to this Location Type, its default value is displayed or is blank.

For example in , an Address property was added to the parent Location Type that applies to all of its child Locations.

a. Change or reconfigure any of the existing property values, as necessary.

"Upgrading Locations" Page

b. Click OK to commit the upgrade. Note that if you cancel the upgrade, you cannot set the status of this Location Type to "Active" until you have upgraded all of its child Locations.

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

## Editing the properties of a Location Type

To edit a property of a Location Type:

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

2 In the Location Type’s *View* page, click **Edit** to the right of the property.

Editing Properties of Location Types

3 In the *Edit <Property>* dialog box, edit the property as necessary.

**Note:** A **Lock** icon preceding the Type list indicates that this property is currently being used in a workflow and its property type cannot be changed.

Editing a Location Type Property

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 Location Types whose status is “Draft.”

The updated properties will be displayed in the Location Type's *View* page.

**Note:** If the status of the Location Type is currently "Active," the system automatically changed its status to "Upgrading." Change its status to back to active to make it available for use in the system.

### Deleting the properties of a Location Type

You can only delete a property for a Location Type whose status is "Draft."

To delete a property for a Location Type:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the System section heading in the left navigation panel, click **Location Types**.
3. In the *Location Types* home page, click the name of the Location Type whose property you want to delete.
4. In the Location Type's *View* page, click **Delete** to the right of the property.
5. In the *Confirmation* dialog box, click OK to delete the property.

## Upgrading a Location Type

When you edit the properties of an "Active" Location Type, its status automatically changes to "Upgrading." You can also manually set the status to "Upgrading" prior to making your edits. Its child Location instances will use the last "Active" version of this Location Type. To change the status, refer to *Editing a Location Type* on page 2-17.

## Inactivating a Location Type

To make a Location Type unavailable for use in the system, set its status to "Inactive." Its child Location instances will not be able to use any version of this Location Type. To change the status, refer to *Editing a Location Type* on page 2-17.

## Deleting a Location Type

You can only delete a Location Type if its status is "Draft."

To delete a Location Type:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the System section heading in the left navigation panel, click **Location Types**.
3. In the *Location Type*s home page, do one of the following:

- Click **Delete** in the first column preceding the Location Type name.
- Click the name of the Location Type to open its *View* page and click **Delete**.

4 In the *Confirmation* dialog box, click OK to delete the Location Type.

## Exporting Configured Location Types to Other Systems

Once you have finished configuring your Location Types, you can export them to an XML file so you can import and deploy them on other systems. Refer to the *BIOVIA LIMS System Administration Guide*.

## What's Next?

Chapter 3 explains how to create Location instances based on the Location Types you configured in this chapter.

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# 3

# Managing Locations

## What is a Location?

A *Location* represents one instance of a Location Type. Locations are based on a hierarchy of different types of locations in your environment. The top-level Location typically represents your main facility or building. Child Locations often represent the rooms or labs in your building, and their nested child Locations represent the actual storage locations in each.

The following figure shows the relationship between Location Types and the child Locations.

Relationship between Parent Location Types and Child Locations

## Required Eligibility for Managing Locations

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

- **Can View Locations**—Allows users to view Locations and their audit trails.
- **Can Administer Locations**—Allows users to create and manage Locations.

## Status Codes for Locations

Status codes represent the current state of each Location in the system. A Location can reside in one of three states:

- **Draft**—When you create a new Location, 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 Location is available for use in the system. Note that you cannot set the status of a child Location to "Active" if any of its parent Locations are in "Draft" status. While you are editing an active Location, its dependencies will use its last "Active" version.
- **Inactive**—The Location is unavailable to users and other dependencies. The existing dependencies cannot use any version of the Location.

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

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

| Action | Status | | |
|---|---|---|---|
| | "Draft" | "Active" | "Inactive" |
| Can view Locations in system | Administrator only [2] | All users [1] | Administrator only [2] |
| Available to dependencies (for example, properties, workflow activities) | No | Last "Active" version | No |
| Can add new Locations | Yes [2] | Yes [2] | Yes [2] |
| Can edit Locations | Yes [2] | Yes [2] | Yes [2] |
| Can delete Locations | Yes [2] | No | No |
| Can change status to: | Active | Inactive | Active |

Table 3-1 Allowed Actions for the States of a Location (continued)

| Action | Status | | |
|---|---|---|---|
| | "Draft" | "Active" | "Inactive" |
| Versioning enforced for changes | Yes | Yes | Yes |
| Reason Code applied to changes | By system | By user | By user |
| Can export Locations to other systems | No | Yes[3] | No |

[1] Requires "Can View" eligibility

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

[3] Requires "Can Export" eligibility

## Viewing Configured Locations

In the *Locations* home page, the top-level root Locations in the system are displayed in a hierarchical tree structure that represents the configured locations in a logical manner. The root Locations are the highest node in the tree and typically represent the general or physical structures in your environment such as a country, a building, or a room. You can expand the root Locations to display the nested child Locations below them (for example, rooms within a building). Each child Location can also be expanded to display its own child Locations, such as storage locations within a room.

To view the Locations configured in the system:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the System section heading in the left navigation panel, click **Locations.**
3. In the *Locations* home page, expand each level to locate the location you want to view.

Locations Home Page

When you click the name of a Location, its description and properties are displayed in the blue panel to the right. The Location menu provides actions that you can perform on that Location.

Selecting a Location

4 Select **View Details** from the menu. The Location's *View* page is displayed.

Location's "View" Page

The name, current status, and Location Type on which this Location is based are listed in the upper left corner of the page. The properties and their current values are listed below.

The command buttons in the upper right corner of the page are displayed according to the current status of the Location. Eligible users will be able to:

- Delete the Location if its status is "Draft"
- Edit the definition and properties of the Location. Refer to *Editing a Location* on page 3-9.

View its audit trails through the History link. For more information on audit trails, refer to the *BIOVIA LIMS System Administration Guide*.

To return to the *Locations* home page, click the **Show All Locations** link above the name.

## Creating a Root Location

You can add one or more root Locations for the top level entities in your location hierarchy. There is no limit to the number of the root Locations you can create in the system.

To add one or more root Locations:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the System section heading in the left navigation panel, click **Locations.**

3 In the *Locations* home page, click **Add Root Location** in the upper right corner of the page and select the appropriate type of location. The list is populated with all of the active Location Types in the system. The menu displays all of the active Location Types in the system.

Adding a Root Location

4 In the *Add Locations* dialog box, enter the name of the new root Location.

**Note:** You cannot use a right angle bracket ( **>** ) in a name because the system would interpret this as an additional location level.

Adding a “General” Root Location

5 To add or remove additional root Locations:

- Click the **Add another** link below name.
- To delete a row, click **[X]** to the right of the row.

Adding Multiple Root Locations

6 When you are done, click **Add**.

The new root Locations are created with a status of “Draft” and are displayed at the top level of the *Locations* home page.

New Root Locations in “Locations” Home Page

The next section explains how to add child Locations to each root Location. Once you are done, set the status of the root Locations to “Active” to make them (and all of their child Locations) available for use in the system. Refer to *Editing a Location* on page 3-9.

## Creating a Child Location

You can create one or more child Locations for a root Location or any child Locations. When you create a batch of Locations for a specific parent Location, they are all based on the same Location Type. There is no limit to the number or levels of child Locations you can add within a parent Location.

To create one or more child Locations:

1 Click the **ADMIN** tab in the main menu bar.

2 Under the System section heading in the left navigation panel, click **Locations**.

3 In the *Locations* home page, click the name of the parent Location, select **Add Child Locations** from the menu, and then select the Location Type on which they will be based.

4 In the *Adding Locations* dialog box, enter the name of the new child Location and configure its properties as necessary. The available properties in each column are based on the Location Type associated with this Location.

**Note:** You cannot use a right angle bracket ( > ) in a name because the system would interpret this as an additional location level.

Adding a Single Child Location

5 Add/remove additional Locations as necessary:

- Click the **Add another** link below the row(s). The new Location will be configured with the same values as the previous Location. Change these values as necessary.
- To delete a row, click **[X]** to the right of the row.

Adding Multiple Child Locations

6 When you are done, click **Add**. The new child Locations are created with a status of "Draft" and are displayed directly under their parent Location in the *Locations* home page.

7 Set the status of the Locations to "Active" to make them available for use in the system. Refer to the following section *Editing a Location*.

## Editing a Location

The system allows you to edit one or more Locations at the same time. When editing a Location, note the following:

- You cannot change the Location's associated Location Type.
- You cannot change the name of a Location if there is an existing Location with the same name at the same level in its parent Location.
- When you change the status of a parent Location, you have the option to apply the status change to all of its child Locations.
- You cannot change the status of a Location if any of its parent Locations have a status of "Draft."
- If a Location (based on a "Storage" Location Type) is renamed, the corresponding consumables will not update their locations automatically. Instead, you need to check the consumables out and then check them back in. When you start the check in process, the default location will be populated with the previous location. Select he new location and complete the check in.

### Editing a single Location

To edit a root Location or a single child Location:

1 Click the **ADMIN** tab in the main menu bar.

2 Under the System section heading in the left navigation panel, click **Locations**.

3 In the *Locations* home page, click the name of the root or child Location and select **Edit** from the menu.

Editing a Single Location

4 In the *Edit Location* dialog box, change any of the configured properties of the Location as necessary.

**Note:** You cannot use a right angle bracket **>** in a name because the system would interpret this as an additional location level.

5 The check box **Apply status changes to child locations** pertains to parent Locations that contains child Locations, thus it is not applicable to storage locations. Enable the check box if you want the child Locations to inherit the status change of the parent Location you are editing. The following table describes the effect of applying the status changes to the child locations.

| If status of parent Location is... | and you change its status to... | Effect on Child Locations |
|---|---|---|
| Draft | Active | “Draft” and “Inactive” child Locations are set to “Active” and can be used in the system. |
| Active | Inactive | “Draft” child Locations do not change.<br>“Active” child Locations are set to ‘Inactive” and cannot be used in the system. |
| Inactive | Active | “Draft” and “Inactive” child Locations are set to “Active” and can be used in the system. |

6 When you are done, click **Update**.

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

Reason Code for Status Change

## Editing multiple child Locations

To edit a batch of child Locations:

1 Click the **ADMIN** tab in the main menu bar.

1 Under the System section heading in the left navigation panel, click **Locations**.

2 In the *Locations* home page, click the name of the parent Location and select **Edit Child Locations** from the menu.

3 In the *Edit Locations* dialog box, change any of the configured properties for the Locations as necessary. Note the following:

- You cannot change the status of a child Location to “Active” if the parent Location has a status of “Draft.”
- You cannot use a right angle bracket **>** in a name because the system would interpret this as an additional location level.

Editing a Batch of Locations

4 When you are done, 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 Locations whose status is “Draft.”

## Inactivating a Location

To make a Location permanently unavailable for use in the system, set its status to “Inactive.” Its dependencies in the system will not be able to use this Location. Refer to *Editing a Location* on page 3-9.

## Deleting a Location

You can only delete a Location if its status is “Draft.” When you delete a Location, all of its child Locations are also deleted.

To delete a Location:

1 Click the **ADMIN** tab in the main menu bar.

2 Under the System section heading in the left navigation panel, click **Locations.**

3 In the *Locations* home page, click the Location you wish to delete and select **Delete** from the menu.

4 In the *Confirmation* dialog box, click OK to delete the Location.

## Exporting Configured Locations to Other Systems

Once you have configured the Locations in your environment, you can export them to an XML file so you can import and deploy them on other systems. Refer to the *BIOVIA LIMS System Administration Guide* for more information on exporting entities.

## What's Next?

Chapter 4 explains how to create Consumable Types for the different types of consumables used in your environment.

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# 4

# Managing Consumable Types

## What is a Consumable Type?

A *Consumable Type* represents one type of consumable—for example, a reagent, solution, contact plate, or controlled substance. You need to create one Consumable Type for each type of consumable used in your environment. Each Consumable Type is based on a specific unit of measurement (for example, mcg, mg, g, mL, L) as well as a *Measuring Scale*, which defines how the quantity of a consumable based on this type is measured (for example, exact, full, half full, or empty).

A Consumable Type consists of properties that apply to all consumables based on that type. For example, the consumables based on a Consumable Type "Solution" have the same *types* of properties—all solutions are made from several components and have an expiration date, a barcode, and possibly an NFPA label.  provides an example of Consumable Types and their properties.

Consumable Types and their Properties

In addition to its properties, a Consumable Type has a defined *workflow* that determines the life cycle of the consumables based on this type. The workflow defines the different states in which a consumable can reside—from the beginning of its life cycle when it is received into inventory to the end of its life cycle when it is discarded or depleted.

When you create a new Consumable Type, it contains a default workflow with three states—In Stock, Checked Out, and Wasted. You can customize the default workflow as necessary for each Consumable Type you create. Chapter 6 explains how to configure workflows for Consumable Types.

## Required Eligibility for Managing Consumable Types

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

- **Can View Consumable Types**—Allows users to view the registered Consumable Types and their properties, workflow, and audit trails.
- **Can Administer Consumable Types**—Allows users to create and manage Consumable Types.

## Status Codes for Consumable Types

Status codes represent the current state of a Consumable Type in the system. A Consumable Type can reside in one of four states:

- **Draft**—When you create a new Consumable 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 Consumable Type is available for use in the system. It can be associated with a Consumable Template and can be used by its other dependencies in the system (for example, templates, consumables, properties, and workflow activities).
- **Upgrading**—The Consumable Type is temporarily unavailable for use in the system while it is being edited. However, its dependencies will use the last active version of the Consumable Type.
- **Inactive**—The Consumable Type is unavailable to its dependencies.

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

Table 4-1 Allowed Actions for the States of a Consumable Type

| Action | Status | | | |
|---|---|---|---|---|
| | **"Draft"** | **"Active"** | **"Upgrading"** | **"Inactive"** |
| Can view Consumable Types in system | Administrator only [2] | All users[1] | Administrator only [2] | Administrator only [2] |
| Available to dependencies (for example, Consumable Templates, Labels, properties, workflow activities, consumables) | No | Yes | No | No |
| Can add properties | Yes[2] | Yes[2] | Yes[2] | Yes[2] |
| Can edit properties | Yes[2] | Yes[2] | Yes[2] | Yes[2] |
| Can delete properties | Yes[2] | No | No | No |
| Can clone Consumable Types | Yes[2] | Yes[2] | Yes[2] | Yes[2] |
| Can edit definition of Consumable Types | Yes[2] | Yes[2] | Yes[2] | Yes[2] |
| Can delete Consumable Types | Yes[2] | No | No | No |
| Can change status to: | Active | Upgrading<br>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 Consumable 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

## Viewing Configured Consumable Types

To view the Consumable Types registered in the system:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Types**. The *Consumable Types* home page is displayed.

Consumable Types Home Page

The grid lists all of the Consumable Types that are registered in the system. Each Consumable Type is identified by its name, category, description, and current status.

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

**Edit**—Allows eligible users to edit the corresponding Consumable Type.

**Clone—**Allows eligible users to create a new Consumable Type based on the configuration of the source Consumable Type.

**Delete**—Allows eligible users to delete the Consumable Type. This is only available for Consumable Types whose status is “Draft.”

You can filter the view of the grid as necessary. Refer to *BIOVIA LIMS System Administration Guide*.

3 To view the details of a Consumable Type, click its name in the grid. The Consumable Type’s *View* page displays its general information (status, units of measurement, Measuring Scale, consumable precision, and version) as well as it configured properties.

Consumable Type’s “View” Page

The Consumable 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 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 Consumable Types whose status is “Draft.”
- Click **Add Property** to configure a new property for the Consumable Type.
- Click **Manage Tab** to reorder properties or create new property tabs in order to group similar properties.

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

- Click **Create Template** to create a template for an instance of this Consumable Type. This is only available for Consumable Types whose status is “Active.” Refer to Chapter 7, *Managing Consumable Templates*.
- Click **Upgrade Template** to perform a batch upgrade of all of its associated templates. This button Is displayed for an active Consumable Type that has been updated to a newer version. Refer to *Upgrading the Associated Templates of a Consumable Type* on page 4-37.
- Click **Delete** to delete a Consumable Type whose status is “Draft.”
- Click **Edit Workflow** to edit the Consumable Type’s workflow. Refer to Chapter 6, *Configuring Workflows for Consumable Types*.
- Click **Edit** to edit the definition of this Consumable Type. Refer to *Editing a Consumable Type* on page 4-34.

The **Qualification Report** link generates a report so that you can qualify the workflow. Refer to *Generating a Workflow Qualification Report for a Consumable Type* on page 4-42.

The **History** link allows you to view the revisions made to the consumable Type. For more information on audit trails, refer to the *BIOVIA LIMS System Administration Guide*.

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

## Creating a New Consumable Type

To create a new Consumable Type:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Types**.
3. In the *Consumable Types* home page, click **Create Consumable Type** above the grid. The *Create Consumable Type* page is displayed.
4. Enter a name for the Consumable 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.

5 Enter a category to which this Consumable Type will belong—typically it is the plural of the Consumable Type name (for example, a “Reagent” Consumable Type would belong to the “Reagents” category). The category name must be unique in the current Site. The uniqueness is not case-sensitive.

6 Select the unit of measurement applicable to this Consumable Type.

7 Select the Measuring Scale applicable to this Consumable Type. The default option is “Exact.” To create a new Measuring Scale, refer to Chapter 5.

Creating a New Consumable Type

8 In the Consumable Precision field, specify the number of decimal places that will apply to the quantity of the consumable. The precision value must be a whole number. For example, a precision value of “4” will display the quantity with four decimal places (4.2384 grams).

**Note:** When a Solution Component is used in a workflow, the resultant solution made from the components will have its own precision and will not inherit the precision of its associated Consumable Type.

9 Enter a description for the Consumable Type (optional). The description cannot exceed 1000 characters.

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

Consumable Type's "View" Page

11 Create the properties of the Consumable Type, as described in the following section *Configuring the Properties of a Consumable Type*.

12 What's next?

- When the properties are complete, configure the workflow for this Consumable Type as described in Chapter 6, *Configuring Workflows for Consumable Types*.
- When the workflow is complete, set the status of this Consumable Type to "Active" to make it available for use in the system. Refer to *Editing a Consumable Type* on page 4-34.

## Configuring the Properties of a Consumable Type

A Consumable Type is defined by one or more properties specific to its type. This collection of properties describes all of the information specific to that Consumable Type and applies to all of the consumables received into inventory based on that type and its associated Consumable Template. This section explains how to add a new property for a Consumable Type and then describes each property type in more detail.

### Adding a new property to a Consumable Type

To add a new property to a Consumable Type:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Types**.
3. In the Consumable Types home page, click the name of the Consumable Type whose properties you want to configure.
4. In the Consumable Type's *View* page, click **Add Properties.**

Adding Properties in Consumable Type's "View" Page

5. 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.

   - ID
   - QUANTITY

- ORIGINAL_QUANTITY
- SOONEST_EXPIRATION
- UNITS
- LOCATION
- NAME
- CONSUMABLE_TYPE

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

c. Click the “Is Required” check box to require the user to enter a value when the consumable is received into inventory.

d. In the Type field, select the type of property from the selection list and set any additional parameters as required. Note that the selection list contains a combined list of property types used throughout all of the installed modules. Refer to the following section *Description of Consumable Type Properties* on page 4-11 for details of the property types applicable to Consumables Types.

Adding a New Property to a Consumable Type

e. Click **Save**.

**6** In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Consumable Types whose status is “Draft.” The new property is listed in the Consumable Type’s *View* page.

Configured Property of a Consumable Type

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

## Description of Consumable Type Properties

This section explains the available property types for a Consumable 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
- Expiration Date
- File Upload
- Limit Specification
- Link
- List
- NFPA Label
- Numeric
- Relationship
- Solution Components
- Text
- Text Multi-Line
- User

### Accelrys LES Procedure property

The **Accelrys LES Procedure** property is utilized in the Accelrys LES Procedure workflow activity and is used for an consumable that has to be prepared by executing an BIOVIA LES procedure

session. The Default Value selection list contains all of the BIOVIA LES procedures whose status is “Current.”

“Accelrys LES Procedure” Property

To view how this field is rendered in an associated Consumable Template, refer to page 7-11.

### 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 the value of the barcode, the entry is case-sensitive.

“Barcode” Property

To view how this field is rendered in an associated Consumable Template, refer to page 7-12.

### 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

To view how this field is rendered in an associated Consumable Template, refer to page 7-12.

### 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.

To view how this field is rendered in an associated Consumable Template, refer to page 7-13.

### Calculate Numeric property

The **Calculate Numeric** property defines a simple calculation that will be automatically executed once the required values have been 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.

To view how this field is rendered in an associated Consumable Template, refer to page 7-13.

### 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 system supports the following:
  -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. 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 the *BIOVIA LIMS System Administration Guide*.

Viewing Time Zone Information

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).

To view how this field is rendered in an associated Consumable Template, refer to page 7-13.

### 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

To view how this field is rendered in an associated Consumable Template, refer to page 7-14.

### 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 value to the current date/time (that is "now") or allow the manual entry of the date and time. The recorded value is displayed in the bias of the client.

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

To view how this field is rendered in an associated Consumable Template, refer to page 7-15.

### 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

To view how this field is rendered in an associated Consumable Template, refer to page 7-16.

### 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.

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

"Duration" Property

To view how this field is rendered in an associated Consumable Template, refer to page 7-17.

### Expiration Date property

The **Expiration Date** property is used for consumables that have an "open" expiration date. The Expiration Date property calculates the new expiration date of a consumable once it has been opened and displays it in a date/time format. Once a consumable reaches its expiration, its date is displayed in red, and it is marked with a red flag icon in the *Inventory* home page.

To configure an interval, click the **Use Interval** check box and enter a whole number and interval type (days, weeks, calendar months, calendar years). The Expiration Date property must be configured in the Consumable Type in order to use an "Expiration Date" activity in its associated workflow.

"Expiration Date" Property

To view how this field is rendered in an associated Consumable Template, refer to page 7-18.

### File Upload property

The **File Upload** property associates an external file to a consumable. 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

To view how this field is rendered in an associated Consumable Template, refer to page 7-19.

### 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 (Multiple 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 consumables 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.

To view how this field is rendered in an associated Consumable Template, refer to page 7-20.

### Link property

The **Link** property allows you to include a hyperlink in the properties displayed in the consumable's *View* page. You can enter a default value now or specify one in the Consumable Template. You must include the "http" or "https" URL format and the "www" domain name in the link.

"Link" Property

To view how this field is rendered in an associated Consumable Template, refer to page 7-21.

### 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

To view how this field is rendered in an associated Consumable Template, refer to page 7-22.

### NFPA Label property

The **NFPA Label** property allows you to configure a NFPA Diamond label for the four types of hazard levels.

"NFPA Label" Property

To view how this field is rendered in an associated Consumable Template, refer to page 7-23.

### 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 provided from another system during workflow execution, the value is rounded by the predefined precision.

"Numeric" Property

To view how this field is rendered in an associated Consumable Template, refer to page 7-24.

### Relationship property

The **Relationship** property is used to establish a "link" between a property in your current Consumable Type to one or more properties of an active Entity Type. Entity Types are described in the *BIOVIA LIMS System Administration Guide*.

Once you configure a Relationship property, you can use it in your current workflow to develop various "touch points" between the consumables associated with this Consumable Type and instances of the related Entity Type. Note that you can configure more than one relationship property for a Consumable 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 {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 Consumable Type to the related property of one Entity Instance. A one-to-many relationship links the property of your current Consumable Type to the related properties in a group or collection of Entity Instances.
- **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 consumable was received 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.

    **Note:** In the IM module, if you change a “By Value” type to a “By Reference” type, the Consumable Template will be marked as needing an upgrade.

  - **By Reference**:
    Links the Consumable Types’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 consumable. Thus, if the source linked property is updated, the value of the consumable 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 4-2 How a “Relationship” Property in a Cloned Instance Obtains its Value

| 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. |

To view how this field is rendered in an associated Consumable Template, refer to page 7-25.

### Solution Components property

The **Solution Components** property is used for a solution or other type of consumable that has to be made, and will display the components that are needed to make this consumable when that consumable is received.

"Solution Components" Property

To view how this field is rendered in an associated Consumable Template, refer to page 7-25.

### Text and Text (Multiple Lines) properties

The **Text** and **Text (Multiple Lines)** properties allow the user to define a property with a single line or multiple lines of text during workflow execution. 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)" Property

To view how these fields are rendered in an associated Consumable Template, refer to page 7-26.

### User property

The **User** property allows a user's name to be associated with a consumable. 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

To view how this field is rendered in an associated Consumable Template, refer to page 7-27.

## Organizing the Properties of a Consumable Type

You can organize the properties of a Consumable Type in the same ways as you can with Location Types (for example, reordering the properties and creating new tab for grouping similar properties). Refer to *Organizing the Properties of a Location Type* on page 2-14.

## Cloning a Consumable Type

You can clone an existing Consumable Type to create a new Consumable Type. The cloned Consumable Type requires a new name, but it will have the same definition, properties, and workflow as the source Consumable Type. This can be a great time saver if you need to create similar Consumable Types. Note that when you clone a Consumable Type, all of its “Print Consumable Label” activities are removed from its workflow.

To clone a Consumable Type:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Types**.
3. In the *Consumable Types* home page, click **Clone** preceding the name of the source Consumable Type.
4. In the *Clone Consumable Type* page:
   a. Enter a new Consumable Type name. The name must be unique and cannot exceed 100 characters. Blank spaces at the beginning or end of the name are not allowed.
   b. Change any of the remaining information as necessary.
   c. Click **Create**.

Cloning a Consumable Type

The details of the cloned Consumable Type are displayed in its *View* page with a status of “Draft.”

5 To edit any of the properties of the cloned Consumable Type, refer to *Editing the properties of a Consumable Type* on page 4-35.

## Editing a Consumable Type

This section explains how to edit the definition and properties of a Consumable Type. When you receive new consumables based on this type, they will not reflect the updated Consumable Type until you update the associated templates on which the consumables are based. Refer to *Upgrading the Associated Templates of a Consumable Type* on page 4-37.

### Editing the definition of a Consumable Type

If the Consumable Type is currently active, set its status to “Upgrading” to prevent its use while you are editing it.

To edit the definition of a Consumable Type:

1 Click the **ADMIN** tab in the main menu bar.

2 Under the IM section heading in the left navigation panel, click **Consumable Types**.

3 In the *Consumable Types* home page, do one of the following:

- Click **Edit** preceding the Consumable Type's name.
- Click the name of the Consumable Type to open its *View* page and click **Edit**.

4 In the Consumable Type's Edit page, edit the appropriate fields as necessary.

Editing a Consumable 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 Consumable Types whose status is "Draft."

If the Consumable Type has associated templates, the *View* page displays an **Upgrade Template** button from which you can upgrade all of the templates. Refer to *Upgrading the Associated Templates of a Consumable Type* on page 4-37.

7 To edit the properties of the Consumable Type, continue to the next section.

## Editing the properties of a Consumable Type

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

To edit a property of a Consumable Type:

1 Click the **ADMIN** tab in the main menu bar.

2 Under the IM section heading in the left navigation panel, click **Consumable Types**.

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

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

5 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, refer to *Description of Consumable Type Properties* on page 4-11.

Editing a Property of a Consumable Type

6 Click **Update**.

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

The updated property is displayed in the Consumable Type's *View* page. If there are templates based on this type, an **Upgrade Template** button is displayed. Refer to *Upgrading the Associated Templates of a Consumable Type* on page 4-37.

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

### Deleting the properties of a Consumable Type

You can only delete properties if the status of the Consumable Type is “Draft.”

To delete a property of a Consumable Type:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Types**.
3. In the *Consumable Types* home page, click the name of the Consumable Type whose property you want to delete.
4. In the Consumable Type’s *View* page, click **Delete** to the right of the property.
5. In the *Confirmation* dialog box, click OK to delete the property.

## Upgrading the Associated Templates of a Consumable Type

When you edit a Consumable Type and subsequently update it to a higher version, you have the option to upgrade its associated Consumable Templates so they inherit the new changes. When templates are available for an upgrade, an **Upgrade Templates** button is displayed in the Consumable Types’s *View* page from which you can perform a batch upgrade of all of the templates.

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**Note:** You can also select and upgrade individual templates from the Consumable Templates home page. Refer to *Upgrading Consumable Templates to their Most Current Versions* on page 7-30.

---

Note the following:

- When you update a Consumable Type, any future templates will use the new version.
- Consumables received before a template upgrade will retain their original definitions.
- Consumables received after a template upgrade will get the new definition.
- If you do not upgrade the templates, the existing templates are not changed.
- Existing inventory maintains the format of the template from which they were created.

To upgrade all of the templates for a single Consumable Type:

1. In the ADMIN tab under the IM section, click **Consumable Types**.
2. In the *Consumable Types* home page, click the name of the Consumable Type whose templates you want to upgrade.
3. In the Consumable Type’s *View* page, click **Upgrade Templates.**

Upgrading All Templates from the Consumable Type's "View" Page

The *Upgrade Batch Templates* page displays the name of the parent Consumable Type and the number of its associated templates. The upgrade will automatically update the existing templates with any changes made to the definition and/or workflow of the Consumable Type.

The new and/or updated properties are also listed on the page and the templates will inherit the default values and receive options that you configure for them. Note the following:

- Existing values or receive options that are already configured in the templates will not be overwritten.
- For properties that have the "Required" option enabled but have existing templates with no default value and do not allow the user to edit the value, the value you enter will replace the empty values in the templates.
- For a Solution Components property, you must select the components individually for each Consumable Template. In the Consumable Templates home page, the templates requiring configuration of their solution components are marked with a flask icon.

"Upgrade Batch Templates" Page

4 Click **Next** to start the upgrade process. The system validates the new configuration values and if they do not meet the acceptable property limits configured in the Consumable Type, an error message is displayed above the properties.

Flagging Invalid Data Values

5 In the *Upgrade Batch Review* page, click **Upgrade** to start the process.

"Upgrade Batch Review" Page

6 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. If the status of all of the templates is "Draft," this dialog box is not displayed. If the status of the templates are mixed, the Reason Code is applied to all of the templates including those in "Draft."

7 After the upgrade is complete, the *Batch Upgrade Summary* page displays the total number of errors at the top of the page.

- indicates the template has been successfully upgraded.
- indicates the upgrade failed. The note is a debugging message extracted from the system log file.

8 Click OK to close the screen and return to the Consumable Type's *View* page.

"Batch Upgrade Summary" Page

## Creating an Associated Label for a Consumable Type

To create a label for a Consumable Type, perform these steps:

1. Create the Consumable Type.
2. Edit the Consumable Type and set its status to "Active."
3. Create the label and link it to this Consumable Type. Refer to the *BIOVIA LIMS System Administration Guide* for more information on creating labels.
4. Edit the label and set its status to "Active."
5. Edit the Consumable Type and set its status to "Upgrading."
6. Update the Consumable Type to include the label in its workflow.
7. Edit the Consumable Type and set its status to "Active."

## Generating a Workflow Qualification Report for a Consumable 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 a Consumable 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 Consumable Type (name, version, current status, workflow version).
- The following fields are reported for each property in the Consumable 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

**Note:** The time values in the Qualification 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.

To run a Qualification Report for a Consumable Type:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Types**.
3. In the *Consumable Type* home page, click the name of the Consumable Type whose workflow you want to qualify.
4. In the Consumable Type's *View* page, click **Qualification Report**.

Running a Qualification Report for a Consumable 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 Analyzing Consumable Type's Workflow

## Inactivating a Consumable Type

To make an active Consumable Type permanently unavailable for use in the system, set its status to "Inactive." The dependencies will not be able to use any version of this Consumable Type. Refer to *Editing a Consumable Type* on page 4-34.

## Deleting a Consumable Type

You can only delete a Consumable Type if its status is "Draft."

To delete a Consumable Type:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Types**.
3. In the *Consumable Types* home page, do one of the following:
   - Click **Delete** preceding the Consumable Type name.
   - Click the name of the Consumable Type to open its *View* page, then click **Delete**.
4. In the *Confirmation* dialog box, click OK to delete the Consumable Type.

## Exporting Configured Consumable Types to Other Systems

Once you have finished configuring your Consumable Types, you can export them to an XML file so that you can import and deploy them on other systems in your environment. Refer to the *BIOVIA LIMS System Administration Guide* for more information on exporting entities.

## What's Next?

Chapter 5 explains how to create custom Measuring Scales that will be used when defining a Consumable Type.

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# 5

# Creating Measuring Scales

## What is a Measuring Scale?

A *Measuring Scale* is a method used to specify the quantity of a consumable. A Consumable Type is defined with a Measuring Scale that is relevant to the consumables based on that type.

The system provides a default Measuring Scale "Exact" which requires the user to enter the exact quantity of the consumable when checking the consumable into inventory or updating the quantity while in inventory. You can also create additional Measuring Scales based on an estimated quantity (for example, Full/Half Full/Empty) or on a ratio (for example, 100%, 50%, 0%).

## Required Eligibility for Managing Measuring Scales

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

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

## Status Codes for Measuring Scales

Status codes represent the current state of a Measuring Scale in the system. A Measuring Scale can reside in one of four states:

- **Draft**—When you create a new Measuring Scale, 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**—Measuring Scale is available for use in the system.
- **Upgrading**—The Measuring Scale is temporarily unavailable for use in the system while it is being edited. Dependencies cannot use any version of the Measuring Scale.

- **Inactive**—The Measuring Scale is not available for creating Consumable Types. Workflow activities will use last "Active" version.

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

Table 5-1 Allowed Actions for States of a Measuring Scale

| Action | Status | | | |
|---|---|---|---|---|
| | **“Draft”** | **“Active”** | **“Upgrading”** | **“Inactive”** |
| Can view Measuring Scales in system | Administrator only[2] | All users[1] | Administrator only[2] | Administrator only[2] |
| Available to dependencies (Consumable Types, properties, workflow activities, etc.).<br>Note: A Consumable in inventory will always use the version of the Measuring Scale that existed when it was received. | No | Yes | No | Not available for creating Consumable Types. Workflow activities will use last "Active" version. |
| Can edit Measuring Scales | Yes[2] | Yes[2] | Yes[2] | Yes[2] |
| Can delete Measuring Scales | Yes[2] | No | No | No |
| Can change status to: | Active | Upgrading<br>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 Measuring Scales 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 Configured Measuring Scales

To view the Measuring Scales in the system:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Measuring Scales**. The *Measuring Scales* home page is displayed.

Measuring Scales Home Page

The grid lists all of the Measuring Scales that are registered in the system. Each Measuring Scale is identified by its name, scale, and current status. The icons in the first column represent actions that you can perform on the Measuring Scale. These are determined by your user eligibilities as well as the current status of the Measuring Scale.

**Edit**—Allows eligible users to edit the corresponding Measuring Scale.

**Delete**—Allows eligible users to delete the Measuring Scale. This is only available for Measuring Scales whose status is “Draft.”

3. To view the details of a Measuring Scale, click the name of the Measuring Scale. The Measuring Scale’s *View* page is displayed.
   - The name and status of the Measuring Scale are listed at the top of the page.
   - The defined scales and ratios are displayed below.
4. Click **Edit** to edit the Measuring Scale. Refer to *Editing a Measuring Scale* on page 5-5.
5. Click the **History** link to view the audit trail and revisions made to the Measuring Scale. For more information on audit trails, refer to the *BIOVIA LIMS System Administration Guide*.

Measuring Scale's "View" Page

6 To return to *Measuring Scales* home page, click the **Show All Measuring Scales** link above the name of the scale.

## Creating a New Measuring Scale

To create a new Measuring Scale:

1 Click the **ADMIN** tab in the main menu bar.

2 Under the IM section heading in the left navigation panel, click **Measuring Scales**.

3 In the *Measuring Scales* home page, click **Create Measuring Scale** above the grid.

4 In the *Create Measuring Scale page,* enter a name for the new Measuring Scale.

5 Under the Ratios field, enter a name for the new scale, then use the slider control to set the corresponding percentage. Measuring Scales are based on a percentage, where 100% is full and 0% is empty. For example:

| | | | |
|---|---|---|---|
| **Scale**: 100% | **Ratio**: 100 | **Scale**: Full | **Ratio**: 100 |
| **Scale**: 75% | **Ratio**: 75 | **Scale**: Half Full | **Ratio**: 50 |
| **Scale**: 50% | **Ratio**: 50 | **Scale**: Empty | **Ratio**: 0 |
| **Scale**: 25% | **Ratio**: 25 | | |
| **Scale**: 0% | **Ratio**: 0 | | |

6 To add another scale, click **Add another**.

7 When you are done, click **Create**. The Measuring Scale *View* page displays the new Measuring Scale with a status of “Draft.” This Measuring Scale cannot be used in the system until you edit it and set its status to “Active.”

Creating a New Measuring Scale

## Editing a Measuring Scale

To edit the definition of a Measuring Scale:

1 Click the **ADMIN** tab in the main menu bar.

2 Under the IM section heading in the left navigation panel, click **Measuring Scales**.

3 In the *Measuring Scales* home page, do one of the following:

- Click **Edit** preceding the Measuring Scale name.
- Click the name of the Measuring Scale to open its *View* page and click **Edit**.

4 In the *Edit Measuring Scale* page, change any of the fields as necessary.

5 Click **Update**.

6 In the *Reason Code Entry* dialog box, specify a Reason Code and type your password. This dialog box is not displayed for Measuring Scale whose status is “Draft.”

Editing the Definition of a Measuring Scale

## Upgrading a Measuring Scale

You can set the status of a Measuring Scale to “Upgrading” in order to be able to group or filter the grid in the *Measuring Scale* home page based on this status. The Measuring Scale’s dependencies will not be able to use this Measuring Scale. To change the status, refer to *Editing a Measuring Scale* on page 5-5.

## Inactivating a Measuring Scale

To make an active Measuring Scale permanently unavailable for use in the system, set its status to “Inactive.” The dependencies will not be able to use this Measuring Scale. Refer to *Editing a Measuring Scale* on page 5-5.

## Deleting a Measuring Scale

You can only delete a Measuring Scale if its status is “Draft.”

To delete a Measuring Scale:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Measuring Scales**.
3. In the *Measuring Scales* home page, do one of the following:
   - Click **Delete** preceding the name of the Measuring Scale.

- Click the name of the Measuring Scale to open its *View* page, then click **Delete**.

4 In the *Confirmation* dialog box, click OK to delete the Measuring Scale.

## Exporting Configured Measuring Scales to Other Systems

Once you have finished configuring your Measuring Scales, you can export them to an XML file so you can import and deploy them on other systems in your environment. Refer to the *BIOVIA LIMS System Administration Guide* for more information.

## What's Next?

Chapter 6 explains how to configure workflows for your Consumable Types.

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# 6

# Configuring Workflows for Consumable Types

## What is a Workflow?

The life cycle of a consumable in the BIOVIA Inventory module is based on a series of “states” that describe the different stages in which that consumable can exist. The life cycle of a consumable starts when it is received into inventory and typically ends when the consumable has expired or is depleted. The sequential steps in the life cycle of a consumable 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 consumable. For example, the “In Stock” state applies to a consumable that is currently in inventory. Note that the consumable can only be in one state at a time, and some states can be repeated (for example, Checked Out, In Stock).

- **Workflow Actions**

  A workflow *action* represents something you can do to a consumable in its current state. A workflow action is identified by a verb, such as “check in,” “check out,” or “approve.” For example, a consumable in the “In Stock” state typically contains three workflow actions—Check Out, Update Quantity, and Waste.

- **Workflow Activities**

  A workflow action is comprised of one or more activities. A workflow *activity* describes the things you can do when that action is performed on a consumable. For example, a workflow action “Approve” typically has an “E-Signature” activity that collects the electronic signature of the person who approved.

  Some workflow activities collect the value of a consumable’s property. For example a “Set Property” activity can be configured to collect the value of the “Expiration Date” property for that consumable. Other activities can be used to trigger an event, such as initiating BIOVIA LES procedure session to prepare a solution.

Each Consumable Type has an underlying workflow associated with it. When you create a new Consumable Type, its default workflow contains three states (In Stock, Checked Out, and Wasted). You can keep the default states and add your own actions and activities, or add additional states to customize the workflow for your specific Consumable Type.

## Example of a Configured Workflow for a Consumable Type

The following figure is an example of a configured workflow for a Consumable 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. Once the consumable enters the “Wasted” state, its life cycle has ended and it cannot return to a previous state.

Example - Workflow of a Consumable Type

The following sections describe the configuration parameters for each state in this workflow.

## “In Stock” state

The “In Stock” state marks the beginning of the consumable’s life cycle and is the first state that the consumable enters after it has been received into inventory. It indicates that the consumable is currently in stock and is available for use.

The following table lists the workflow actions and configured activities for the “In Stock” state.

Table 6-1 ““In Stock” Workflow State

| Workflow Action/Type | Description | Workflow Activities | Configuration Settings |
|---|---|---|---|
| **Check Out** | Checks the consumable out of inventory.<br>When this action is executed, the workflow state changes to “Checked Out.” | Set State | Target State = Checked Out |
| **Update Quantity** | Updates the quantity of the consumable.<br>When this action is executed, the quantity of the consumable is updated. | Set Quantity | None |
| **Print Label** | Prints a label for this consumable.<br>The label must be configured in the system and its status set to “Active.”<br>When this action is executed, the *Print* dialog box is displayed. | Print Consumable Label | Label= <*name of active label*> |
| **Wasted** | The consumable is depleted or expired and cannot be used.<br>When this action is executed, the workflow state changes to “Wasted.” | Set State | Target State = Wasted |

## “Checked Out” state

The “Checked Out” state indicates that the consumable has been checked out and is currently being used. The following table lists the workflow actions and configured activities for the “Checked Out” state.

Table 6-2 ““Checked Out” Workflow State

| Workflow Action/Type | Description | Workflow Activities | Configuration Settings |
|---|---|---|---|
| **Check In** | Checks the consumable back into inventory.<br>User enters the new quantity of the consumable after it has been used.<br>User enters a new location if checking into a different location.<br>When this action is executed, the workflow state changes to “In Stock.” | Set State | Target State = In Stock |
| | | Set Quantity | None |
| | | Set Location | None |
| **Wasted** | The consumable is depleted or expired and cannot be used.<br>When this action is executed, the workflow state changes to “Wasted.” | Set State | Target State = Wasted |

## “Wasted” state

The “Wasted” state indicates that the consumable can no longer be used.There are no further actions that can be performed on this consumable. This marks the end of the consumable’s life cycle in the system.

Table 6-3 “Wasted” Workflow State

| Workflow Action/Type | Description | Workflow Activities | Configuration Settings |
|---|---|---|---|
| **None** | --- | None | None |

## Required Eligibilities for Configuring Workflows

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

- **Can View Consumable Types**—Allows users to view the registered Consumable Types and their properties, workflows, and audit trails.
- **Can Administer Consumable Types**—Allows users to create new Consumable Types, configure their properties and workflows.

In addition, to test the workflows of Consumable Types, users must have the following eligibilities:

- **Can View Consumables**—Allows users to view the consumables in inventory.
- **Can Make/Receive Consumables**—Allows users to receive consumables into inventory and process their workflows for testing purposes.

## 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 a consumable's workflow.

To open the Workflow Editor:

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

Launching the Workflow Editor

The following sections explain the default workflow and the states, actions, and activities configured in a workflow.

## The Default Workflow for Consumable Types

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

- In Stock
- Checked Out
- Wasted

Default Workflow States for a Consumable Type

The workflow states are executed from top to bottom. The first state “In Stock” is the default state of the consumable when it is received into the system. The last state “Wasted” marks the end of the consumable’s life cycle in the system.

## 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 various workflow states correspond to the current status of the consumable. The status changes each time the consumable enters a new state. The current status of a consumable is displayed in the following areas of the user interface:

- Consumable's *View* page
- *Inventory* Home page

Workflow States as Represented During Workflow Execution

## Adding states to a workflow

To add a new state to the workflow:

1. Click the **Add State** button 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 (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 6-12.

## Reordering the sequence of workflow states

The order of the states determines the sequence in which the workflow is executed. The top (first) state is the “start” state of the consumable when it is received into inventory.

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 reordered workflow 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.

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 a consumable in each state of its workflow. The Actions toolbar provides the actions available for configuring the workflow. To add an action to a workflow state, simply drag its icon into the state. Refer to *Adding an action to a workflow state* on page 6-19.

"Actions" Toolbar

## Description of workflow actions

The following actions are available in the Actions toolbar In the IM module:

- User Defined
- Accelrys LES Session Complete
- Approve
- Check In
- Check Out
- Open
- Prepare
- Print Label
- Qualify
- Update Quantity
- Waste

### 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 consumable enters the state that contains a User Defined action:

- A **User Defined** icon is displayed in the first column of the grid in the *Inventory* home page.
- A command button (named for this action) is displayed in the consumable's *View* page and above the grid in the *Inventory* home page when group workflow actions are available for a group of consumables.

### Accelrys LES Session Complete action

An **Accelrys LES Session Complete** action is used in conjunction with the Prepare action and refers to preparing a consumable in a BIOVIA Lab Execution System (LES) procedure session. The Accelrys LES Session Complete action should only contain the Set State activity to change the state of the consumable from "Being Prepared" to "In Stock."

The Accelrys LES Procedure activity in the Prepare action triggers the state change when the procedure session status matches the selected "Complete" status.

**Note:** The Accelrys LES Session Complete action must be in the current state of the consumable, typically the "Being Prepared" state.

### Approve action

An **Approve** action is added to 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 consumable enters the state that contains an Approve action:

- An **Approve** icon is displayed in the first column of the grid in the *Inventory* home page.
- An “Approve” command button is displayed in the consumable’s *View* page and above the grid in the *Inventory* home page when group workflow actions are available for a group of consumables.

### Check In action

A **Check In** action is typically added to a “Checked Out” state and refers to checking the consumable back into inventory. The **Update Quantity** activity should be included to allow the user to set the new quantity of the consumable after it has been used or added to. It also should include a **Set State** activity, which will typically change the state of the consumable from “Checked Out” to “In Stock.” The **Set Location** activity can also be added to allow the consumable to be checked in to a different location.

When the consumable enters the state that contains a Check In action:

- A **Check In** icon is displayed in the first column of the grid in the *Inventory* page.
- A “Check In” command button is displayed in the consumable’s *View* page.

### Check Out action

A **Check Out** action is typically added to an “In Stock” state and refers to checking a consumable out of inventory. The Check Out action should include the **Set State** activity to change the state of the consumable from “In Stock” to “Checked Out.”

When the consumable enters the state that contains a Check Out action:

- A **Check Out** icon is displayed in the first column of the grid in the *Inventory* page.
- A “Check Out” command button is displayed in the consumable’s *View* page.

### Open action

An **Open** action is typically added to an “Unopened” state and refers to resetting the expiration date of a consumable once it has been opened. The Open action should include the **Set Expiration** activity as well as the **Set State** activity to change the state of the consumable from “Unopened” to “Opened.”

### Prepare action

A **Prepare** action is typically added to a "Pending" or "Need to Prepare" state and refers to a consumable that has to be made. If the consumable is made outside of a BIOVIA LES procedure session, it should contain a **Set State** activity to change the state of the consumable from “Pending” to “Prepared” or “In Stock.”

If the consumable is made in a BIOVIA LES procedure session, the Prepare action should be used in conjunction with the **Accelrys LES Session Complete** action. The Prepare action should include an **Accelrys LES Procedure** activity that will specify the work instruction required to run the BIOVIA LES procedure session. In this case, the Set State activity does not need to be included in the Prepare action, as the state change is handled by the Accelrys LES Session Complete action.

When the consumable enters the state that contains a Prepare action:

- A **Prepare** icon is displayed in the first column of the grid in the *Inventory* page.
- A “Prepare” command button is displayed in the consumable’s *View* page.

### Print Label action

A **Print Label** action is typically added to in an “In Stock” state and refers to the printing of a consumable label. The Print Label action should include a **Print Consumable Label** activity (page 6-41).

When the consumable enters the state that contains a Print Label action:

- A **Print** icon is displayed in the first column of the grid in the *Inventory* page.
- A “Print Label” command button is displayed in the consumable’s *View* page.

### Qualify action

A **Qualify** action is typically added to a “Not Qualified” state and refers to qualifying the consumable before it enters its “In Stock” state. It should include the **Set State** activity, which will typically change the state of the consumable from "Unqualified" to "Qualified."

When the consumable enters the state that contains a Qualify action:

- A **Qualify** icon is displayed in the first column of the grid in the *Inventory* page.
- A “Qualify” command button is displayed in the consumable’s *View* page.

### Update Quantity action

An **Update Quantity** action is typically added to an “In Stock” or a “Check In” state and refers to updating the quantity of a consumable in inventory. The Update Quantity action should include the Set Quantity activity. It typically does not require a Set State activity.

When the consumable enters the state that contains a Update Quantity action:

- An **Update Quantity** icon is displayed in the first column of the *Inventory* page.
- An “Update Quantity” command button is displayed in the consumable’s *View* page.

### Waste action

The **Waste** action is typically added to a “Wasted” state and marks the end of the consumable's life cycle in inventory. The Waste action should include a **Set State** activity, which will typically change the state of the consumable from “In Stock” to a “Wasted.” It may also contain an **E-Signature** activity for the purpose of approving the action

When the consumable enters the state that contains a Waste action:

- A **Waste** icon is displayed in the first column of the grid in the *Inventory* page.
- A “Waste” command button is displayed in the *Consumable 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.

- Consumable's *View* page
- *Inventory* home page (for group workflow actions)

The command buttons change each time the consumable enters a new workflow state. In addition, workflow actions also correspond to the first column of "action" icons in the Inventory 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

- You can only drag one Approve, Accelrys LES Session Complete, and Waste action into the same state. If you attempt to drag an action that 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 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 consumable's *View* page as well as the action icons in the grid of the *Inventory* home page (page 6-18).

- 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 Consumable 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, you will drag and drop the required activities into the activity panel. Some activities contain additional configuration parameters. These are displayed in the activity configuration panel below.

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.

Example of an Action Dialog Box During Workflow Execution

The "action" dialog box is named for the appropriate action (for example, "Check In"). 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 workflow action appears first or at the top of the list, followed by the other configured activities (from left to right).

## About group workflow activities

When a group of consumables is selected during workflow execution, the values collected by some activities can only be applied to each individual consumables in the group (for example, a Print Label activity with a unique barcode will be executed for each consumables in the group). Other activities will apply the collected value to all of the consumables 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 consumables within the group and the group activities are applied to all of the consumables in the group.

To apply the value to the entire group of consumables, each consumable must be based on the same Consumable Type that is at the same version of its workflow, and 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 consumable 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 consumable in the group.

  The following workflow activities are considered “single” activities:

  - Print Label
  - Create Entity
  - Set Quantity
  - Set Location
  - Set Expiration
  - Print Consumable Label

- **“Group” activities**

  For workflow actions consisting of “group” activities, the system provides a single action dialog box for all of the consumables in the group. The user enters the appropriate information, then the system executes the activity and assigns the collected value to all of the consumables 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

The activities available in the Activities toolbar include:

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

These workflow activities are described below.

### Accelrys LES Procedure activity

The **Accelrys LES Procedure** activity is used for a consumable that will be prepared by running a work instruction in a BIOVIA LES procedure session and is typically added to a “Prepare” action.

The Accelrys LES Procedure activity allows you to send the property value of a consumable to a specified data field in a BIOVIA LES procedure session. It also allows you to receive data collected in a BIOVIA LES procedure session and apply its value to the property of a consumable in the IM module.

The Accelrys LES Procedure activity is used in conjunction with the Accelrys LES Procedure property of a Consumable Type.

To send data to BIOVIA LES, map the property of the Consumable 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 Consumable 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 an action that contains a Set Expiration activity.
- When executing group workflow activities, the Accelrys LES Procedure applies to all consumables 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 consumable.
- For Relationship properties set to “Collection,” the submenu for the consumable only contains the pseudo-property 'Count.' During workflow execution, the value sent to BIOVIA LES will be the total number of consumables 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 Consumable 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 Consumable 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 Consumable 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 consumables 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 Consumable 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 Consumable 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 Consumable Type. The selected property is evaluated against a Limit Specification property of the Consumable 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 6-24.

Note the following:

- The state in which you set your Relationship property is where you should apply the limit.
- You can only evaluate one property in each Apply Property Limit activity.
- The Property Limit field displays all of the properties of the current Consumable 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 a consumable. For example, a test (that is, an instance of a “Test” Entity Type) could be automatically created when a consumable is being prepared.

The Create Entity activity is defined by a target Entity Type and a 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.
- 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 6-24.

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.**

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 consumable) or to the entire group. Refer to *About group workflow activities* on page 6-24.

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 Consumable Type.

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

- Leave the box unchecked to display the individual values for each consumable during group workflow actions. A separate *Action* dialog box will be applied to each consumable 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 consumables 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 and action, or provide an annotation—for example, to explain why a consumable has been cancelled.

When performing group workflow actions, the E-Signature activity applies to all consumables in the group. Refer to *About group workflow activities* on page 6-24.

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 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 Location, Set Quantity, Set Expiration, 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 administration'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. This pertains to Entity Types. Refer to the *BIOVIA LIMS System Administration Guide*.
- 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.

Configuring Protocol Parameters

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.

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 the 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 Consumable Label activity**

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

In order to save a Print Consumable 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.
- A Print Consumable Label activity cannot be added 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 example, when a "Set Quantity" and "Print Consumable Label" activity is in the same action, the label will be printed first, then the quantity will be updated.
- For a cloned Consumable Type, all Print Consumable Label activities are removed from the cloned workflow.
- When performing group workflow actions, the Print Label activity applies to each individual consumable in the group. Refer to *About group workflow activities* on page 6-24.

To configure the Print Consumable Label activity:

1. Select the appropriate label from the list. The Label selection list displays all of the labels whose status is “Active” and whose category matches that of the Consumable Type you are currently editing.

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

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.

Configuring the “Print Consumable Label” Activity

### 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 Consumable 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 consumables within the group.

The Restrict Group Access activity is shown below.

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 Expiration activity

The **Set Expiration** activity is used to calculate the new expiration date of a consumable after it has been opened. The Set Expiration date is typically added to an “Open” action. You can add multiple Set Expiration activities to a workflow action. In order to save a Set Expiration activity in a workflow, the corresponding Consumable Type must be configured with a property type of “Expiration Date.”

**Note**: You cannot add a Set Expiration activity to an action that contains an Accelrys LES Procedure, Time Trigger, or E-Signature (Approve/Attest/Review) activity.

This is how an “opened” Expiration Date is calculated:

- The Consumable Type will contain two Expiration Date properties, one for the unopened state of the consumable, and the other for the opened state of the consumable.
- The Consumable Template for that type specifies the information for the two date properties, including the Interval field and enabled Can Edit setting.
- When a consumable (based on this template) is received, the expiration dates are specified.

- When the consumable is opened, the open date is set to today's date. The opened expiration date (for example, 1 year) is added to today's date, and the system sets the new expiration date based on which of the opened or unopened dates is closest to today's date.
- The governing expiration date is the one which occurs first.

To configure the Set Expiration activity:

1. Select an expiration property from the Expiration Property list. The list is populated with the names of all of the Expiration Date type properties configured in this Consumable Type.

Configuring the “Set Expiration” 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.

### 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 consumables in the group. Refer to *About group workflow activities* on page 6-24.

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

During workflow execution, the Set Instruction Text activity is always shown at the top of the dialog box that opens when the user clicks a command button. Any other activities that are present in that workflow action are displayed below.

"Set Instruction Text" Activity during Workflow Execution

### Set Location activity

The **Set Location** activity is typically added to a "Check In" action and allows a consumable to be checked into a different location from where it was checked out. The Set Location activity adds a "Location" selection list to the dialog box presented for the user input which displays all of the active locations in the system.

The Apply to Group check box allows you to check in or move a group of consumables to the same location.

Note the following:

- There are no further configuration settings.
- You can only add one Set Location activity to a workflow action.
- You cannot add a Set Location activity to an action that contains another Set Location, E-Signature (Approve/Attest/Review), or Time Trigger activity.

### Set Property activity

The **Set Property** activity allows the user to manually enter or select the value of a property for a consumable during workflow execution. You can create a Set Property activity for any of the "configurable" properties of an active Consumable 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 when the consumable is received into inventory. The required properties are indicated with an asterisk (*) in the *Receive Consumable* page or performs the workflow actions in the *Action* 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 consumable) or to the entire group. Refer to *About group workflow activities* on page 6-24.

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.

Set Property” Activity

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.

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 consumable during group workflow actions. A separate Action dialog box will be applied to each consumable 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 consumables 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.

Activity Configuration Panel for Relationship Property

To set one or more conditions:

1. Configure the activity as previously described on page 6-49.
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 Quantity activity

The **Set Quantity** activity is typically added to the “Update Quantity” and “Check In” actions. The Set Quantity activity allows you to specify how much of a consumable is left after use or how much you added to the consumable. This activity provides a slider control if the Measuring Scale is set to an estimated scale or a text box if the measuring scale is “Exact.”

The Set Quantity activity adds a **Set Quantity** button to the consumable’s *View* page when the consumable is in the state in which this activity resides. There are no additional configuration settings for this activity.

**Note**: A Set Quantity activity cannot be added to an action that contains another Set Quantity, E-Signature (Approve/Attest/Review), or Time Trigger activity.

### 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 consumable in the group. Refer to *About group workflow activities* on page 6-24.

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 Implicit Set State Activity:**

To configure an implicit 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.

**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.

Implicit “Set State” Activity

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 the 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 consumable 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:

- 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 an activity that requires user input (for example, 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 consumable's properties based on the following types:
    - Date
    - Date and Time
    - Date Interval
    - Expiration Date
    - Calculate Point in Time
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.

"Time Trigger" Activity

## Adding an activity to a workflow action

To add an activity to a workflow action:

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 the activity can only be added once 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. Configure the settings and click **Save Settings**. The activities are described in the section *Configuring Workflow Activities* on page 6-22.
5. Click the red up arrow to close the configuration panel.
6. Click **Save Settings** to close the activity panel.
7. Click the **Save Workflow** button 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 Consumable Type is “Active, the reordering requires an audit trail.
- Reordering activities does not apply to existing consumables.
- 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. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Types**.
3. In the *Consumable Types* home page, click the name of the Consumable Type whose workflow you want to edit.
4. Edit the workflow as explained in the previous sections of this chapter.
5. When you are done, do one of the following:
   - To cancel all of the edits, click **Cancel**.
   - To save the workflow, click **Save Workflow** 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 **Save Workflow** in the upper right corner of the page after each edit to commit your changes.

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

   The Consumable Type’s View page is re-displayed showing the **Update Templates** button.

Saving Workflow Edits

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 Consumable Type's *View* page.

"Confirm Navigation" Dialog Box

## Deleting a Workflow

Every Consumable Type requires a workflow. For that reason, workflows cannot be deleted.

## Exporting Configured Workflows to Other Systems

Since the workflow is inherently tied to its Consumable Type, the configured workflows will be included when you export the Consumable Type. Refer to the *BIOVIA LIMS System Administration Guide.*

## Viewing Audit Trails for Workflows

Every change made to a Consumable Type's workflow is recorded in its audit trail. Open the Workflow Editor and click the **History** link to expand the table of revisions. Refer to the *BIOVIA LIMS System Administration Guide* for details on the History table.

## What's Next?

Chapter 7 explains how to create Consumable Templates based on your existing Consumable Types.

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# 7

# Managing Consumable Templates

## What is a Consumable Template?

A *Consumable Template* is one instance of a Consumable Type—for example, Acetone (Consumable Template) is one type of Reagent (Consumable Type). The template inherits all of the properties and workflow of its parent Consumable Type. When a consumable is received into inventory, it is entered into the system based on the properties defined in its Consumable Template.

When you create a Consumable Template, you may define the static properties that are common for all consumables of that type (for example, physical state, formula, CAS number), while the dynamic properties may be defined by the user at the time they are received (for example, vendor, UPC, minimum purity).

The following figure shows the relationship between Consumable Types and Consumable Templates.

Relationship between Consumable Types and Consumable Templates

## Status Codes for Consumable Templates

Status codes represent the current state of a Consumable Templates in the system. A Consumable Template can reside in one of four states:

- **Draft**—When you create a new Consumable Template, 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 Consumable Template is available for use in the system. Consumables based on this template can be received into inventory.

- **Upgrading**—The Consumable Template is temporarily unavailable for use in the system while it is being edited.
- **Inactive**—The Consumable Template is unavailable to users and other dependencies.

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

Table 7-1 Consumable Template Status Codes and Allowed Actions

| Action | Status | | | |
|---|---|---|---|---|
| | **"Draft"** | **"Active"** | **"Upgrading"** | **"Inactive"** |
| Can view Consumable Templates in system | Administrator only [2] | All users[1] | Administrator only [2] | Administrator only [2] |
| Available to dependencies (consumables, properties, workflow activities, etc.). | No | Yes | No | No |
| Can edit Consumable Templates | Yes[2] | Yes[2] | Yes[2] | Yes[2] |
| Can delete Consumable Templates | Yes[2] | No | No | No |
| Can change status to: | Active | Upgrading<br>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 Consumable Templates 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

## Subsampling Options for Consumable Templates

A Consumable Template can be configured to subsample consumables into aliquot quantities that are based on this template. A *subsample* is defined as a smaller quantity of a parent consumable. Subsampling is typically required for managing controlled substances in inventory. Once a controlled substance is received, it may be immediately subsampled into defined quantities for subsequent tests, or it may be subsampled only when requested by various departments.

When a consumable is subsampled, the “child” consumables will assume all of the properties of their parent consumable as well as its workflow. You can also associate a different template to the subsamples in order to assign a different workflow to them.

As each new subsample is obtained, the system reconciles the quantity of the parent consumable. The new subsamples are entered into inventory as individual consumables and follow their assigned workflow. The link between the original parent consumable and its subsampled children is always maintained in the system and readily viewable.

When you create a Consumable Template, there are two subsampling options in the *Create Consumable Template* page:

- **Can Have Subsamples**—When this check box is blank, the consumables based on this template cannot be subsampled. When this check box is enabled, the consumables based on this template can be subsampled.
- **Set subsampling template**—This option is displayed when “Can Have Subsamples” is checked. Instead of following the workflow of the parent consumable, you can assign a different workflow to the subsamples by selecting a different template.

  The selection list is populated with all of the Consumable Templates that are based on a compatible unit of measurement and whose status is “Active.” For example, if the parent consumables are based on a Consumable Type whose unit of measurement is set to kilograms, the selection list would display all of the active templates that are based on kilograms, grams, milligrams, and micrograms. If you do not specify a template, you will choose a template when you create the subsamples.

Subsampling Options for Consumable Templates

In addition to the subsampling options, you can set the subsampling behavior for each individual property of the template. These are explained on page 7-10.

## Viewing Configured Consumable Templates

To view the configured Consumable Templates in the system:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Templates**. The *Consumable Templates* home page is displayed.

Consumable Templates Home Page

The grid lists all of the Consumable Templates that are registered in the system. Each Consumable Template is identified by its name, type (category), description, and current status.

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

**Solutions Component—**Indicates the template has been upgraded but the Solution Components property has not yet been configured. Click the icon to open the *Edit Template* page.

**Edit**—Allows eligible users to edit the corresponding Consumable Template. This function is not available if a property of the parent Consumable Type has been changed.

**Upgrade**—Indicates the Consumable Type on which this template is based has been updated and the template is due for an upgrade to the newer version. Refer to *Upgrading Consumable Templates to their Most Current Versions* on page 7-30.

**Delete—**Allows eligible users to delete the Consumable Template. This is only available for Consumable Templates whose status is "Draft."

The check boxes in the second column are displayed for any template whose parent Consumable Type was updated to a newer version. To upgrade the templates, refer to *Upgrading Consumable Templates to their Most Current Versions* on page 7-30.

The **Subsample** icon in the third column **i**ndicates the corresponding template is configured for subsampling.

To view specific details of a Consumable Template, click the name of the template you want to view. The Consumable Template's *View* page opens and displays the details of the selected Consumable Template.

- The details of the template (name, description, current status, and the workflow version of the Consumable Type on which this template is based) are displayed at the top of the page.
- Its properties are displayed in the Information panel. For a calculation property (that is, that is Calculate Duration, Calculate Numeric, Calculate Point in Time), you can mouse over a link to view the calculation criteria.
- The available actions that can be performed on this Consumable Template are represented by the command buttons (for example, Upgrade, Edit) above the History link.
- A **History** link allows you to view the complete history of revisions to the Consumable Template. For more information on audit trails, refer to the *BIOVIA LIMS System Administration Guide*.

Consumable Template “View” Page

## Creating a New Consumable Template

To create a new Consumable Template:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Templates**.
3. There are two ways to create a new template:
   - In the *Consumable Types* home page, click the name of the Consumable Type for which you want to create the template. In the Consumable Type's *View* page, **Create Template**.

   *or*

   - In the *Consumable Templates* home page, click **Create Template** above the grid and select the Consumable Type on which this template will be based.
4. In *Create Template* page:
   a. Enter a name for the Consumable Template. 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 Consumable Type (optional). The description cannot exceed 1000 characters.
   c. Configure the subsampling options, as described in *Subsampling Options for Consumable Templates* on page 7-4.
   d. Configure the rest of the properties, as described in *Configuring the Properties of a Consumable Template* on page 7-9. The fields are based on the properties of the parent Consumable Type.
5. When you are done, click **Create**. The new Consumable Template's *View* page is displayed with a status of "Draft."
6. Edit the Consumable Template and set its status to "Active" to make it available for use in the system. Refer to *Editing a Consumable Template* on page 7-28.

Creating a New Consumable Template

The following section explains how to configure the properties of the Consumable Template.

## Configuring the Properties of a Consumable Template

The properties of a Consumable Template correspond to the available properties in its parent Consumable Type. When you create a Consumable Template, you must configure its properties relevant to the specific *type* of consumable that template is defining. This section provides an example of each type of property as it is rendered in the *Create/Edit/ Upgrade Consumable Template* pages.

## Help link

A **Help** link is displayed next to the property name if the Consumable Types' property contains a configured Description. The link displays a balloon help control with the actual text of the description. If the Description field in the parent Consumable Type's property is blank, the Help link is not displayed.

"Help" Link

## Options link

The **Options** link that is displayed below each property contains two options.

"Options" Link

**Receive Behavior**—The selections describe how the property should function when the consumable is received. These are documented individually for each property type described in this section.

**Subsample Behavior—**Provides two options on how the property should function when the consumable is created by subsampling:

- **Default from Parent**—Properties with equal names and property types will take their value from the parent consumable upon subsampling.
- **Default from Template**—Properties will take their value from the subsample's template when the consumable is created, even if a property with the same name and type exists in the parent consumable.

The remainder of this section describes each property type.

## Accelrys LES Procedure property

An **Accelrys LES Procedure** property is used for a consumable that is prepared in a BIOVIA LES procedure session (for example, a solution). The selection list is populated with all of the BIOVIA LES Procedure IDs whose status is "Current." Select the procedure document that will be used to create the consumable of this type.

**Note**: If you do not have BIOVIA LES at your site or if there are no valid procedures, the field is blank.

"Accelrys LES Procedure" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Display**—Displays the default Procedure ID. The user cannot edit the Procedure ID when receiving the consumable.
- **Hide**—Does not display this property when receiving the consumable, but records the default Procedure ID.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

Note that the **Default from Template** option is not supported.

## Barcode property

A **Barcode** property allows you to specify a default barcode that will apply to all consumables based on this template. You can scan a barcode or enter the alphanumerical value of the barcode (numbers or strings) in the text box. When the consumable is received, the system checks the barcode that is scanned or entered by the user and validates it against the one configured in the template. If there is no default value, leave the field blank.

"Barcode" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Edit**—Allows the user to scan a consumable's barcode or manually enter its value. If this property is marked "Is Required" in the Consumable Type and you do *not* specify a default value for this property, you must select this option to enable the user to collect a value for this property.
- **Display**—Displays the default barcode value. The user cannot edit the value when receiving the consumable.
- **Hide**—Does not display this property when receiving the consumable., but records the default value if configured.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## Boolean property

A **Boolean** property allows you to set a default value—**True** or **False**.

"Boolean" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Edit**—Allows the user to edit the default value when the consumable is received.
- **Display**—Displays the default value. The user cannot edit the value when receiving the consumable.
- **Hide**—Does not display this property when receiving the consumable, but records the default value.

***Subsample Behavior:***
Refer to *Options link* on page 7-10.

## Calculate Duration property

A **Calculate Duration** property performs a calculation on two preconfigured “Date and Time” properties or two pre-configured “Duration” properties. There are no options to configure.

“Calculation Duration” Property

## Calculate Numeric property

A **Calculate Numeric** property performs a simple calculation. There are no options to configure.

“Calculate Numeric” Property

## Calculate Point in Time property

A **Calculate Point in Time** property calculates a point in time. There are no options to configure.

“Calculate Point in Time” Property

## Date property

A **Date** property provides a date picker control from which you can select a default date from the calendar. If there is no default date, leave the field blank.

"Date" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Edit**—Allows the user to select a date from the calendar. If this property is marked "Is Required" in the Consumable Type and you do *not* specify a default date, you must select this option to enable the user to select a date when receiving the consumable.
- **Display**—Displays the default date. The user cannot edit the date when receiving the consumable.
- **Hide**—Does not display this property when receiving the consumable, but records the default date if configured.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## Date and Time property

A **Date and Time** property collects the date and time of a specific event.

"Date and Time" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Edit**—Allows the user to edit the collected date/ time when receiving the consumable. This option is not displayed if "Restrict to Now" is selected in the Consumable Type's property.
- **Display**—Displays the collected date/time. The user cannot edit the value when receiving the consumable.
- **Hide**—Does not display this property when receiving the consumable, but records the collected date/time.
- **Hide, Do Not Record**—Does not display this property when receiving the consumable, and does not record the collected date/time. If this property is marked "Is Required" in the Consumable Type, this option is not available.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## Date Interval property

The **Date Interval** property records a target date. To set a default interval, enter a whole number and select an interval (Days, Weeks, Calendar Months, Calendar Years). If there is no default interval, leave the fields blank.Note that if you do not use an interval, the Date Interval property is interpreted as a regular Date property.

"Date Interval" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Edit, Calculate**—Allows the user to edit the default interval and re-calculate the target date.
- **Display, Calculate**—Displays the calculated target date. The user cannot edit the interval or re-calculate the target date when receiving the consumable.
- **Hide, Do Not Calculate**—Does not display this property when receiving the consumable, and does not calculate the target date.
- **Hide, Calculate**—Does not display this property when receiving the consumable, but calculates and records the target date.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## Duration property

The **Duration** property records the duration of an event. To set a default duration, enter a whole number and select a duration (Seconds, Minutes, Hours, Days, Calendar Months, 30 Day Months, Calendar Years, 365 Day Years). If there is no default duration, leave the fields blank.

"Duration" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Edit**—Allows the user to specify a duration or edit the existing duration. If this property is marked "Is Required" in the Consumable Type and you do *not* specify a default value for this property, you must select this option to enable the user to collect a value for this property.
- **Display**—Displays the default duration. The user cannot edit the duration when receiving the consumable.
- **Hide**—Does not display this property when receiving the consumable, but records the default duration if configured.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## Expiration Date property

An **Expiration Date** property is used for a consumable that has an “open expiration” date. This property calculates the new expiration date for a consumable once it has been opened. Once a consumable reaches its expiration date, its date is displayed in red text and it is marked with a red flag icon in the *Inventory* home page.

To specify a default interval, enter a whole number and select an interval (Days, Weeks, Calendar Months, Calendar Years). If there is no default interval, leave the fields blank.

“Expiration Date” Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Edit, Calculate**—Allows the user to edit the default interval and re-calculate the expiration date.
- **Display, Calculate**—Displays the calculated expiration date. The user cannot edit the interval or re-calculate the expiration date when receiving the consumable.
- **Hide, Do Not Calculate**—Does not display this property when receiving the consumable, and does not calculate the expiration date.
- **Hide, Calculate**—Does not display this property when receiving the consumable, but calculates and records the expiration date.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## File Upload property

A **File Upload** property provides a browser button that allows you to upload a default file from the network. If there is no default file, leave the field blank.

"File Upload" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Upload of File**—Allows the user to upload a file and overwrite the default file if specified. If this property is marked "Is Required" in the Consumable Type and you do *not* specify a default value for this property, you must select this option to enable the user to upload a file.
- **Show Default File**—Displays the name of the default file. The user cannot select a different file when receiving the consumable.
- **Hide**—Does not display this property when receiving the consumable, but records the default file if configured.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## Limit Specification property

A **Limit Specification** property provides a browser button that allows you to set a limit for the value of the property based on a configured condition. If there is no default file, leave the field blank.

"Limit Specification" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Edit**—Allows the user to specify a limit or edit the existing limit. If this property is marked "Is Required" in the Consumable Type and you do *not* specify a default value for this property, you must select this option to enable the user to collect a value for this property.
- **Display**—Displays the default limit. The user cannot edit the limit when receiving the consumable.
- **Hide**—Does not display this property when receiving the consumable, but records the default limit if configured.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## Link property

The **Link** property allows you to specify a Uniform Resource Locator (URL) which is displayed as a link to a web page when a consumable is received. If you enter a default value, you must include the “http” or “https” URI protocol and the “www” domain name in the link.

“Link” Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Edit**—Allows the user to edit the default URL when the consumable is received.
- **Display**—Displays the default URL. The user cannot edit the value when receiving the consumable.
- **Hide**—Does not display this property when receiving the consumable, but records the default value.

***Subsample Behavior:***

Provides two options on how the property should function when the consumable is created by subsampling:

- **Default from Parent**—Properties with equal names and property types will take their value from the parent consumable upon subsampling.
- **Default from Template**—Properties will take their value from the subsample’s template when the consumable is created, even if a property with the same name and type exists in the parent consumable.

## List property

The List property allows you to configure a list of items. To specify a default list item, precede the item with an asterisk ( * ).

"List" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Edit**—Allows the user to enter an additional item when receiving the consumable. If this property is marked "Is Required" in the Consumable Type and you do *not* specify any list items for this property, you must select this option to enable the user to enter a value.
- **Display**—Displays the selection list. The user cannot add an additional value to the list when receiving the consumable.
- **Hide**—Does not display the selection list when receiving the consumable, but records the default list item.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## NFPA Label property

A **NFPA Label** property allows you to configure an NFPA label that will appear in the Consumable Template and consumables' *View* pages. It contains four selection lists for each of the hazard levels. Note that in the last Specific Hazard field, you must select **None** if the consumable is not hazardous.

"NFPA Label" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Display**—Displays the number of the default hazard selections and the NFPA diamond graphic. The user cannot edit the settings when receiving the consumable.

NFPA Label

- **Hide**—Does not display this property when receiving the consumable, but records the default hazard settings and renders the NFPA diamond graphic in the appropriate *View* pages.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## Numeric property

A **Numeric** property allows you to enter a default numeric value. Whole numbers, negative numbers, and decimals are all acceptable. The value must meet the minimum and maximum value requirements that were configured in the parent Consumable Type. If there is no default value, leave the field blank.

"Numeric" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Edit**—Allows the user to enter a new value. If this property is marked "Is Required" in the Consumable Type and you do *not* specify a default value for this property, you must select this option to enable the user to enter a value for this property.
- **Display**—Displays the default value that you entered for this property. The user cannot edit the value when receiving the consumable.
- **Hide**—Does not display this property when receiving the consumable, but records the default value if configured.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## Relationship property

The Relationship property creates a link to a specified property of an active Entity Type. It has no options to configure.

"Relationship" Property

## Solution Components property

A **Solution Components** property is used for a consumable that has to be made from several components, typically a solution. The fields which require a numeric value must not be blank and cannot be zero. The value must be numeric. The number of decimal places entered determines the precision maintained in the system. Note that the resultant solution made from the components will have its own precision, rather than inheriting the precision of its associated Consumable Type. The finished quantity must be a numeric value. Decimals are allowed. Numeric field cannot be a negative number.

To configure the property:

1. In the first row, specify the quantity that needs to be made. Enter a number and select the appropriate unit of measurement.
2. In the second row, specify the components required to make that amount:
   a. Enter a number and the appropriate unit of measurement.
   b. Select the required component. The selection list is populated with all of the Consumable Templates in the system with a status of "Active."
3. Click **Add another** to add another row for an additional component or **Remove** to delete a row.

"Solutions Components" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Display**—Displays the default components. The user cannot edit these when receiving the consumable.
- **Hide**—Does not display this property when receiving the consumable, but records the default components if configured.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## Text and Text (Multiple Lines) properties

The **Text** and **Text (Multiple Lines)** properties allows you to enter a default value on a single line or multiple lines of text respectively. The text must meet the minimum and maximum character length requirements configured in the Consumable Template (if any), and there is a 1000 character limit. If there is no default text, leave the field blank.

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

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

- **Allow Edit**—Allows the user to enter a text string. If this property is marked "Is Required" in the Consumable Type and you do *not* specify a default value for this property, you must select this option to enable the user to enter a value for this property.

- **Display**—Displays the default text. The user cannot edit the text when receiving the consumable.
- **Hide**—Does not display this property when receiving the consumable, but records the default text if configured.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## User property

The **User** property displays a selection list of all of the active users in the system when this consumable is received. There are no options to configure.

"User" Property

***Receive Behavior:***

The following selections determine how this property behaves when a consumable is received:

☑ **Default to Logged In User**

When "Default to Logged In User" in the Consumable Type's property is *checked*:

- **Allow Edit**—Displays the logged in user name and allows the user to select a different user from the list.
- **Display**—Displays the name of the logged in user and cannot be changed.
- **Hide**—Does not display this property when receiving the consumable, but records the logged in user.
- **Hide, Do Not Record**—Does not display this property when receiving the consumable, and does not record the logged in user. If this property is marked "Is Required" in the Consumable Type, this option is not available.

☐ **Default to Logged In User**

When "Default to Logged In User" in the Consumable Type's property is *unchecked*:

- **Allow Edit**—Allows the user to select any user when receiving the consumable.
- **Hide, Do Not Record**—Does not display this property when receiving the consumable, and does not record the logged in user. If this property is marked "Is Required" in the Consumable Type, this option is not available.

***Subsample Behavior:***

Refer to *Options link* on page 7-10.

## Editing a Consumable Template

This section explains how to edit Consumable Templates. Note that if the property type of the associated Consumable Type was changed, you must upgrade the template in order to edit it. Refer to *Upgrading Consumable Templates to their Most Current Versions* on page 7-30.

If the Consumable Template is currently active, you can set the status to "Upgrading" to prevent its use while you are editing it.

To edit the definition of a Consumable Template:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Templates**.
3. In the *Consumable Templates* home page, do one of the following:
   - Click **Edit** that precedes the name of the Consumable Template.
   - Click the name of the Consumable Template to open its *View* page, then click **Edit**.
4. In the *Edit Consumable Template* page, make the necessary edits and then click **Update**.

Editing a Consumable Template

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

6 Set the status back to “Active” to make the template available for use.

## Upgrading Consumable Templates to their Most Current Versions

When you edit a Consumable Type and subsequently update it to a higher version, you have the option to upgrade its associated Consumable Templates so they inherit the new changes. Templates that can be upgraded are preceded by an **Upgrade** icon in the Consumable Templates home page.

Note the following:

- Consumables received before a template upgrade will retain their original definitions.
- Consumables received after a template upgrade will get the new definition.
- If you do not upgrade the templates, the existing templates are not changed.
- Existing inventory maintains the format of the template from which they were created.

You can upgrade a single template or perform a batch upgrade on a group of templates. These methods are explained in the following sections.

### Upgrading a single Consumable Template

To upgrade a single template:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Templates**.
3. In the *Consumable Templates* home page, click the **Upgrade** icon that precedes the name of the template you want to upgrade.

Upgrading a Single Template

4 The *Upgrade* page displays the details of the template and all of its properties, including any new ones that were added to the parent Consumable Type. Add or edit the default property values and configure their “receive” options as necessary.

Upgrading a Single Consumable Template

5 Click **Update** to start the upgrade process. The system validates the new configuration values and if they do not meet the acceptable property limits configured in the Consumable Type, an error message is displayed above the properties.

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

Once the template is upgraded, the **Upgrade** icon is no longer shown in the grid in the Consumable Template’s home page.

## Upgrading a batch of Consumable Templates

To upgrade multiple templates at the same time:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click **Consumable Templates**.
3. In the *Consumable Templates* home page:
   - To select multiple templates, click the individual check boxes that precede the name of the templates you want to upgrade.
   - To select all of the templates, click the check box above the column of check boxes. Note that only the templates displayed on the current page will be upgraded.
4. Click **Upgrade Selected** to start the process.

Upgrading a Batch of Templates

The *Upgrade Batch Templates* page displays the name of the parent Consumable Type and the number of its associated templates. When upgrading a batch of templates based on various Consumable Types, a separate *Upgrade Batch Templates* page is displayed for each type.

The upgrade will automatically update the existing templates with any changes made to the definition and/or workflow of the Consumable Type.

The new and/or updated properties are also listed on the page and the templates will inherit the default values and receive options that you configure for them. Note the following:

- Existing values or receive options that are already configured in the templates will not be overwritten.
- For properties that have the “Required” option enabled but have existing templates with no default value and do not allow the user to edit the value, the value you enter will replace the empty values in the templates.
- For a Solution Components property, you must select the components individually for each Consumable Template. In the Consumable Templates home page, the templates requiring configuration of their solution components are marked with a flask icon.

“Upgrade Batch Templates” Page

5 Click **Next**. The system validates the new configuration values and if they do not meet the acceptable property limits configured in the Consumable Type, an error message is displayed above the properties.

Flagging Invalid Data Values

6 When you are done configuring the properties for all of the Consumable Types, the *Upgrade Batch Review* page lists the number of templates that will be upgraded for each type. Review the information and click **Upgrade** to start the process.

"Upgrade Batch Review" Page

7 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. Note that this dialog box is not displayed if all of the templates are in "Draft" status. If the templates are in various states, the Reason Code is applied to all of the templates, including those in "Draft."

8 After the upgrade is complete, the *Batch Upgrade Summary* page displays the total number of errors at the top of the page.

indicates the template has been successfully upgraded.

indicates the upgrade failed. The note is a debugging message extracted from the system log file.

Click OK to close the screen and return to the Consumable Type's *View* page.

"Batch Upgrade Summary" Page

## How the System Records Version Numbers

The figure on page 7-36 illustrates how the system records version numbers for Consumable Types, Consumable Templates, and consumables. For a consumable in inventory, its version is based on the life cycle of its workflow.

1 A new Consumable Template **Acetone (v1)** was created from the Consumable Type **Reagent (v5)**. The template was made active at Version 3, and a consumable was received into inventory based on that version of the template.

2 In the meantime, both the Consumable Type **Reagent (v5)** and Consumable Template **Acetone (v3)** were edited several times. The current active version of the Consumable Type is now at **Reagent (v10)**, and the current active version of the template is now **Acetone (v 6)**, which is still based on **Reagent (v5)**.

3 When the Acetone (v6) template is upgraded to the latest version of its Consumable Type, the IM module indicates the template **Acetone (v6)** is now based on the **Reagent (v10)** Consumable Type. Now when a consumable is received, it is based on the template **Acetone (v6)**.

How Versioning Works for Consumable Type, Templates, & Consumables

## Generating a Template Qualification Report

**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 for a Consumable Template. 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 Consumable Template (name, current status, parent Consumable Type/version).
- The following fields are reported for each property in the Consumable Template:
  - Property Name
  - Property Value
  - Receive Behavior
  - Subsample Behavior
- When the property does not contain a value, the text “Not Predefined” is displayed.
- The last page of the report contains two rows for signatures, each containing the following field—Purpose, Name, Signature, Date

To run a Qualification Report for a Consumable Template:

1. In the ADMIN tab under the IM section, click **Consumable Templates**.
2. In the *Consumable Templates* home page, click the name of the Consumable Template for which you want to generate the report.
3. In the Consumable Template’s *View* page, click **Qualification Report**.

Running a Qualification Report for a Consumable Template

The report is generated and is displayed in the Report Viewer. You can export or print the report as required.

Qualification Report for Consumable Template

## Inactivating a Consumable Template

To make an active Consumable Template permanently unavailable for use in the system, set its status to “Inactive.” Dependencies will not be able to use this Consumable Template. To change the status, refer to *Editing a Consumable Template* on page 7-28.

## Deleting a Consumable Template

You can only delete a Consumable Template if its status is “Draft.”

To delete a Consumable Template:

1. Click the **ADMIN** tab in the main menu bar.
2. Under the IM section heading in the left navigation panel, click Consumable Templates.
3. In the *Consumable Templates* home page, do one of the following:
   - Click **Delete** preceding the name of the Consumable Template.
   - Click the name of the Consumable Template to open its *View* page, then click **Delete**.
4. In the *Confirmation* dialog box, click OK to delete the Consumable Template.

## Exporting Configured Consumable Templates to Other Systems

Once you have finished configuring the Consumable Templates, you can export them to other systems in your environment. Refer to the *BIOVIA LIMS System Administration Guide*.

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