HEXAGON

DOC4000

User Guide

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Contents

SECTION 1

DOC4000 Web Interface Overview

DOC4000 provides several ways to explore the assets within your organization and view details about those assets. You can search and sort to find exactly what you need, and then drill-down to the details and related information. The topics in this section provide an overview of the DOC4000 web interface. For more information about finding the exact information you need, see *Viewing and Searching Data* (page 20) and *Reporting and Queries* (page 79).

Getting Started with DOC4000

DOC4000 provides a web interface and the Admin Utility. To perform initial setup and configuration tasks, as well as ongoing maintenance and management tasks, you need to use the Admin Utility.

For more information about the Admin Utility, see the *Administration Guide*.

The web interface allows you to perform many tasks, from reviewing the collected data and identifying changes to organizing your work with workflow cases and punch lists.

Configuring Internet Explorer

The DOC4000 web interface uses a supported browser listed in the *Installation Guide*. If you are using Internet Explorer, before you open DOC4000 in your browser the first time modify several security settings to allow DOC4000 to run properly. These settings help DOC4000 cache data correctly so you can perform the following tasks:

- refresh the query definition
- create reports
- reserve spares
- acknowledge issues
- change summary items

In addition to the settings identified in this section, you should disable popup blockers in Internet Explorer and any browsers you use for the DOC4000 web interface. If popup blockers are enabled, they can interfere with various parts of the DOC4000 web interface and data may not be displayed correctly. If you do not have permissions to change your Internet Explorer settings, you can either hold down the Ctrl key when clicking on a link that gets blocked or right-click the link and then click **Open in a new window**.

To configure Internet Explorer to avoid caching issues:

1. Start Internet Explorer.
2. Click **Tools > Internet options**.
3. In the **Browsing history** section of the **General** tab, click **Settings**.

4. In the **Check for newer versions of stored pages** area, select **Every time I visit the webpage**.
5. Click **OK**.
6. On the **Internet Options** window, click **OK**.

Opening the DOC4000 Web Interface

Before you can connect to the DOC4000 server, it must be installed and configured. For more information about DOC4000 installation and the initial configuration, see the *Installation Guide*.

Login Authentication

The authentication process occurs each time you open the DOC4000 web interface or the Admin Utility. DOC4000 supports the following modes of authentication:

Application Authentication

When **Application Authentication** is selected, you must login with a user ID and password defined in DOC4000 to open the DOC4000 web interface or the Admin Utility. The administrator must create these user IDs in the Admin Utility.

Windows Authentication

If **Windows Authentication** is selected, DOC4000 uses the currently logged on user to connect to DOC4000 and open the DOC4000 web interface or the Admin Utility.

To open the DOC4000 web interface:

1. Start a supported browser.
2. In the URL address field, enter the URL for the DOC4000 web interface:

   `http://`*ServerName*`/`*VirtualDirectory*

   ServerName is the name of the web server where DOC4000 is hosted, and *VirtualDirectory* is the name of the Virtual Directory created in the Admin Utility, such as `http://ISSserver/Integrity`.

   NOTE You can open the Admin Utility, click on the **Virtual Directory** link, copy the URL listed in that window, and paste it into the browser URL address field.
3. If Application Authentication was selected during installation, type your user ID and password on the Login window.

   NOTE If you attempt to login with an incorrect password five times, you are locked out until an administrator removes the lock in the Admin Utility.

Changing Your Password

If DOC4000 is configured to use **Application Authentication**, you can change your password through the DOC4000 web interface.

To change your password:

1. In the DOC4000 web interface, click the **Settings** icon in the upper-right corner. The **Settings** window is displayed.
2. Click the **Change Password** tab.
3. In the **Old Password** text box, type your *existing* password.
4. In the **New Password** text box, type your *new* password.
5. In the **Confirm Password** text box, re-type your *new* password.
6. Click **OK**.

Defining Your System Settings

The **Settings** window allows you to specify various DOC4000 system settings, such as the first page displayed when you open the DOC4000 web interface, query, and print settings. These settings are divided into **Global** and **User** settings. **Global** settings require Administrator permissions to change.

To change your system settings:

1. In the DOC4000 web interface, click the **Settings** icon in the upper-right corner. The **Settings** window is displayed.
2. On each tab, review and change the settings you want, and then click **Save** *on that tab*. The Settings window provides several tabs:
   - **Application Settings** - Allows you to specify the start page and section when opening the DOC4000 web interface. For more information, see *Configuring Application Settings* (page 8).
   - **Change Password** - Allows you to change your password if DOC4000 is configured to use **Application Authentication**. For more information, see *Changing Your Password* (page 6).
   - **Email Settings** - Allows you to specify settings that DOC4000 uses to send email notifications. For more information, see *Configuring Email Settings* (page 8).
   - **Groups** - Allows you to configure groups with DOC4000 that work with impact factors. For more information, see *Configuring Group Settings* (page 8).
   - **Impact Factors** - Allows you to specify settings that DOC4000 uses to analyze risk in your environment. For more information, see *Configuring Impact Factor Settings* (page 9).
   - **Integrations** - Allows you to configure third-party application integrations with Cyber DOC4000. For more information, see *Configuring Integration Settings* (page 9).
   - **Normalization** - Allows you to create normalized values to group similar names that represent a single entity for items such as manufacturers, products, and engineering units. Normalized values apply to search results in Vulnerability Management, Inventory, and Sensor Data Integrity. For more information, see *Configuring Normalization Settings* (page 10).
   - **Print Configuration** - Allows you to specify the default paper size, page orientation, and headers for reports. This tab provides several other options for printing data displayed in the DOC4000 web interface. For more information, see *Configuring Printer Settings* (page 11).

- **Query Settings** - Allows you to specify the query-related settings, such as the maximum number of columns to display, the number of rows per page, and several other options. For more information, see *Configuring Query Settings* (page 12).

Configuring Application Settings

You can configure several settings that determine the page and section first displayed when you open the DOC4000 web interface. Set the values as you would like on the **Application Settings** tab in the **User** settings area, and then click **Save Settings**. The options on this tab are defined as follows:

Default Page

Specifies the page to display first each time you open the DOC4000 web interface.

Default Sub Page

Specifies the subsection to display first each time you open the DOC4000 web interface. For example, if you select **Reports** in the **Default Page** field, you can choose whether to display **Run Reports**, **Create/Edit Reports**, **View Reports**, or **Schedule Reports**.

Include Baseline in asset results

Specifies whether to display baseline assets in drop-down lists throughout the DOC4000 web interface. Clear this check box to hide baseline assets in drop-down lists.

If you want to clear your cache of user information, click **Refresh Cache**. For example, if an administrator changes your password or permissions, you should refresh your cache. When an administrator adds users or changes passwords, the administrator should use the Admin Utility to clear the cache for the whole DOC4000 web interface as well.

Configuring Email Settings

In the web interface, you can configure the email server settings for sending notifications from DOC4000.

To configure email settings:

1. Click the **Settings** icon in the top right navigation bar area. The Settings window is displayed.
2. Click the **Email Settings** tab in the **Global** settings area.
3. Specify the server and port settings to send notifications.
4. Select the security protocol to use.
5. Click **Save**.

Configuring Group Settings

The **Groups** tab of the **Settings** window allows you to manage groups of impact factors used in risk analysis calculations. You can use groups to override default impact factor scores to calculate risk for a specific scenario in your environment. For more information, see Understanding Impact Factors and Groups and Assigning Endpoints to Groups.

To configure groups of impact factors:

1. Click the **Settings** icon in the top right navigation bar area. The **Settings** window is displayed.
2. Click the **Groups** tab in the **Global** settings area.
3. Click **Add Group** and add a name and description.
4. Move impact factors from the left side to the right side of the window to include them in the group.
5. If you want to override the default score for any impact factors in this group, click the **Edit** button next to the impact factor on the right side of the window and select the new default score to assign.

   NOTE When you override a default impact factor score, the override applies only to that group.
6. Click **OK**.

After you create groups, you can assign endpoints to groups on the **Vulnerability Browse** and **Endpoint Risk Analysis** windows.

Configuring Impact Factor Settings

The **Impact Factors** tab of the **Settings** window allows you to manage built-in and custom impact factors used in risk analysis calculations. For more information, see Understanding Impact Factors and Groups.

To configure impact factors:

1. Click the **Settings** icon in the top right navigation bar area. The **Settings** window is displayed.
2. Click the **Impact Factors** tab in the **Global** settings area.
3. Use the left side of the window to manage built-in impact factors.

   NOTE The Vulnerabilities impact factor is always enabled and automatically calculated.
4. Use the right side of the window to manage custom impact factors.

When you change a default impact factor score, anything associated with that impact factor will have that default score assigned. After you change or add impact factors, you can see updated risk scores on the **Vulnerability Browse** and **Endpoint Risk Analysis** windows.

NOTE When you override a default score through a group or endpoint assignment, the override applies only to that group or endpoint where you assign the override.

Configuring Integration Settings

The **Integrations** tab of the **Settings** window allows you to specify third-party application integrations to access from within Cyber DOC4000. For example, you can integrate Darktrace threat response systems with Cyber DOC4000. For more information, see Using Third-Party Integrations.

To configure integrations:

1. Click the **Settings** icon in the top right navigation bar area. The **Settings** window is displayed.
2. Click the **Integrations** tab in the **Global** settings area.

3. On the row for the third-party application to integrate, complete the information required to connect to the application.
4. Click **Test** to verify a successful connection from DOC4000.
5. Move the slider bar to the right to enable polling the integration application.

   NOTE Darktrace requires a valid SSL certificate for polling to succeed.
6. If the service does not show a status of **Running**, start the service using the Windows Services application.
7. Click **Save**.

Configuring Normalization Settings

You can define a single, normalized, name or value when manufacturers, products, or engineering units are represented in different ways in your data. For example, some products in your environment could be represented by Microsoft or Microsoft, Inc. Also, you might have different versions of the same product that you want to see as a single unit.

Normalization rules allow you to identify these multiple variations and set a single, normalized value that represents all the variations. Normalized values apply to search results in Vulnerability Management, Inventory, and Sensor Data Integrity.

NOTE Ensure that the PASIntegrityScheduler service is running on the DOC4000 server that provides the DOC4000 web interface.

To configure normalization settings:

1. Click the **Settings** icon in the top right navigation bar area. The **Settings** window is displayed.
2. Click the **Normalization** tab in the **Global** settings area.
3. Click **Manufacturer/Product/Model** or **Engineering Units**, depending on what values you want to normalize.
4. Click **Add Rule**, and then enter a name for **Normalized manufacturer**. This name becomes the title for the rule.
5. In **Native search texts**, click **Add**, or **+**, and enter a string to replace with the normalized value.
6. Repeat Step 4 for each string to replace.
7. Assign a priority to specify an order for rule to be applied. Priority 1 rules will be applied first. You might want this if you have rules for Microsoft and Micro Trend and you don't want the normalized value for Microsoft to be applied to Micro Trend.
8. Click the **Products** tab or the **Models** tab to add normalized values for products, versions, or models of the manufacturer. The **Products** tab contains both normalized products and versions.
9. Add normalized names on the left and the corresponding text to be replaced on the right. You can enter multiple values in these fields. For example, you can create the normalized product value **Word** and assign multiple native search text strings to be replaced with that value, such as **MS Word** and **Microsoft Word**.
10. Click **OK** and then close the window. The list of normalized values updates when the DOC4000 server finishes applying the normalization rules.

You can export and import normalization rule sets to maintain consistency between sites with different DOC4000 servers. To accomplish this scenario, export the rule set to a `CFF` file using data forwarding steps, and then import the rule set from the `CFF` file using data receiving steps.

For more information, see the *Administration Guide*.

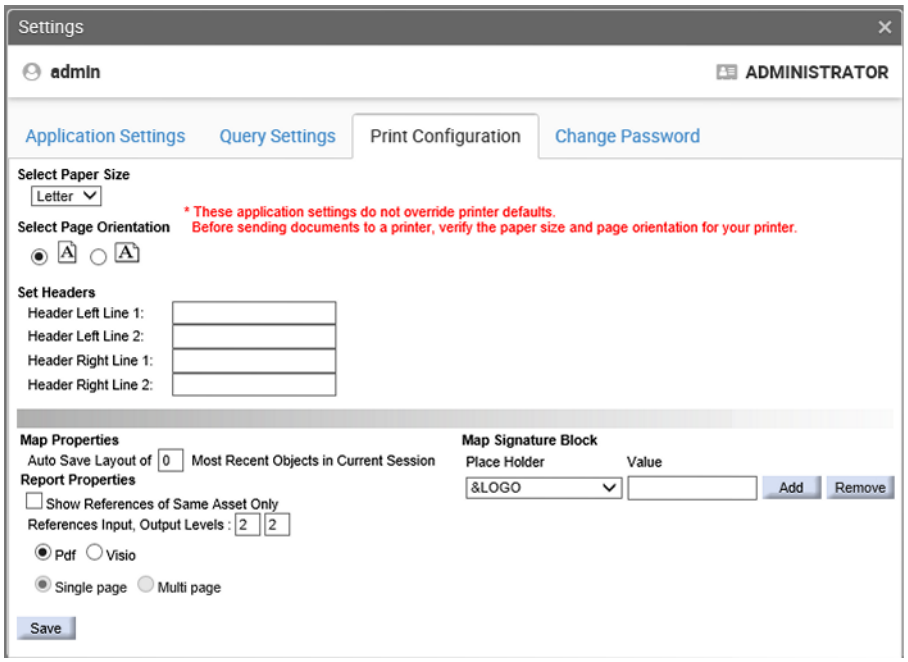
Configuring Printer Settings

The **Print Configuration** tab in the **User** settings area allows you to specify the default settings for how DOC4000 prints your reports. You can override these default settings when you send a report to a printer. For example, you can specify the default paper size and page orientation settings, and then override those settings for specific reports.

This tab also allows you to specify additional printer settings, such as whether to show various properties when printing control maps. You should review and configure these printer settings before printing information from any window in DOC4000.

To configure the printer settings:

1. Click the **Settings** icon in the top right navigation bar area. The **Settings** window is displayed.
2. Click the **Print Configuration** tab in the **User** settings area.



3. In **Select Paper Size**, choose the default paper size to use when displaying reports.
4. In **Select Page Orientation**, choose whether to display reports in portrait or landscape layout by default.
5. In **Set Headers**, type the information you want to include as header information on printed pages, including the reports.
6. In **Map Properties**, specify how to save the control map layout. In **Auto Save Layout of Most Recent Objects in Current Session**, specify a number greater than 0 to save the layouts of

that many most recently mapped objects in the current session. To display the saved layout on the Map tab for an object, click **Reload Layout**.

7. In **Report Properties**, specify how DOC4000 prints and saves control map reports by completing the following steps:
   a. If you want to exclude references to other assets in your control maps, check **Show References of Same Asset Only**.
   b. In **References Input, Output Levels**, specify the number of input and output reference levels to include in your control maps. The maximum value recommended for input and output reference levels is **3** and **3**.
   c. Specify whether to print maps as **PDF** or **Visio** files. Visio files apply only to **Logic Map**, **Device Control Map**, **MFC Logic Block Map**, **Control Map**, and **SFC** reports.
   d. Choose whether the control map is displayed on a single page or across multiple pages. In a PDF file, the control map is on a single page.
8. In **Map Signature Block**, assign a value to each placeholder in your signature block template by completing the following steps for each place holder you use in your signature block:
   a. In **Place Holder**, select the placeholder variable, such as **&LOGO**, for which you want to assign a value.
   b. In **Value**, specify the value for the selected placeholder variable.
   c. Click **Add**.

   These values apply only to the **Logic Map**, **Device Control Map**, **MFC Logic Block Map**, and **Control Map**.
9. Click **Save**.

Configuring Query Settings

You can configure the maximum number of columns to display in query results, as well as the number of rows per page. You can also adjust several other options to control how DOC4000 displays query results. Set the values as you would like on the **Query Settings** tab in the **User** settings area, and then click **Save**.

If an administrator has categorized changes using the built-in categories, such as **All**, **Operations**, **Maintenance**, and **Security**, you can make these categories available in your Query Builder and in the options on the **Changes** window.

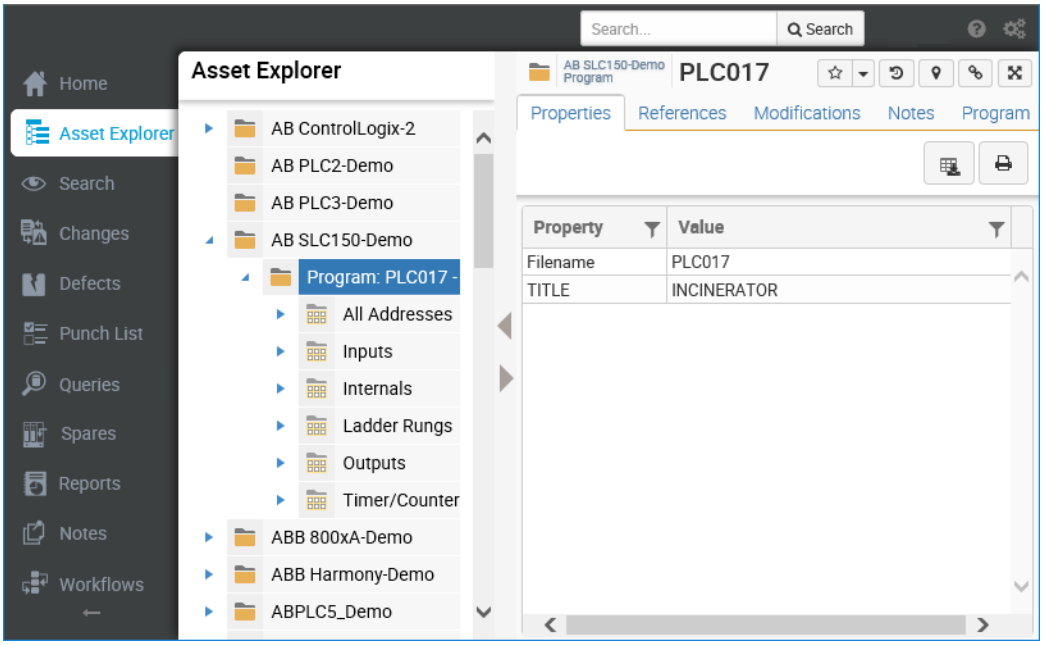
To enable change tracking category selection in Query Builder:

1. In the web interface, click the **Settings** icon in the upper-right corner. The Settings window is displayed.
2. Click the **Query Settings** tab in the **User** settings area.
3. Check the **Enable Modification Categories** check box.
4. Click **Save**.

Once saved, the change categories are available in the Query Builder. When you select this check box, these categories are also available in the options on the Changes page. The following figure shows the categories on the show changes section in Query Builder.

Understanding the DOC4000 Web Interface

The DOC4000 web interface provides navigation to all DOC4000 features. Each link in the navigation bar on the left provides access to a set of functions. Some areas may require additional licenses.



As you select items in the asset explorer tree, information about the selected item is displayed in the right pane. Each tab in the right pane provides a set of information about the selected item, such as properties or the associated notes.

Common Buttons

The buttons in the right pane of the DOC4000 web interface provide many usability features as described in the following table.

Button	Description
	Settings - Opens the Settings window, which allows you to configure how your DOC4000 web interface opens, how queries are structured, and how information is printed.

Button	Description
	Help - Opens the online help, which provides information about configuring, managing, and using DOC4000.
	Log Out - Signs out the currently logged in DOC4000 user. This option is available only when you are using Application Authentication.
	Favorite - Adds the current object to your list of favorites. You can click the down arrow next to this button to display your favorites, and then click a link to display that object.
	History - Displays a linked list of the previous objects you have viewed. You can use this list to view previously displayed information.
	Navigation Path - Displays the navigation path for the currently displayed object.
	Link - Opens a window with the URL for the object currently displayed. You can then copy the URL and share it as needed when directing someone to information.
	New Tab - Displays the right pane of information, with all the asset viewer tabs, in a new browser tab. The new tab does not include the navigation bar.
	Show All Columns - Displays all columns of information instead of the limited set of currently displayed columns. This button is on tabs with many columns of information.
	Export to Excel - Exports the currently displayed information to an Excel file. DOC4000 creates an XLSX file with the columns of information.
	Save - Saves the currently displayed file to your computer. Most browsers prompt you to specify where you want to save the file.
	Print - Opens the Print window, which allows you to print a printer-friendly version of the columns of information.

Column Icons

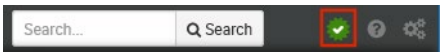
The columns in the right pane of the DOC4000 web interface provide several icons as described in the following table.

Button	Description
	Filter - Allows you to filter the displayed rows of data based on the value of that column. You can specify a multi-part filter with operators such as **Contains** or **Starts with**.
	Menu - Displays a drop-down menu with multiple options for that column, such as **Sort** and **Filter**. You can also select which columns to show and which to

Button	Description
	hide.

License Indicators

The top-right bar of the DOC4000 web interface provides an indicator for the state of your license as shown in the following figure.



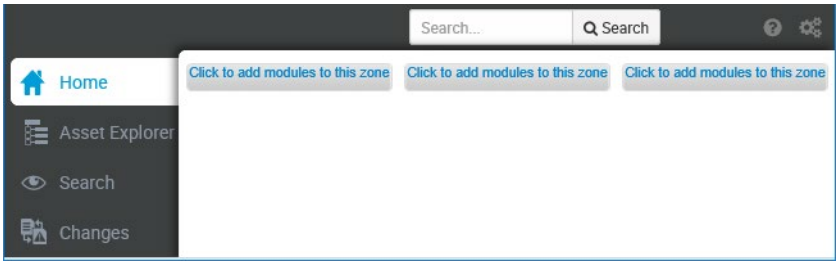
The following table provides a description of each license indicator icon.

Icon	Description
	Valid License - Your license is valid.
	Temporary License - Your currently-installed license is a temporary license.
	Expiring License - Your license is scheduled to expire in the near future.
	Expiring Maintenance - Your maintenance is scheduled to expire in the near future.
	Expired Maintenance - Your maintenance agreement has expired.

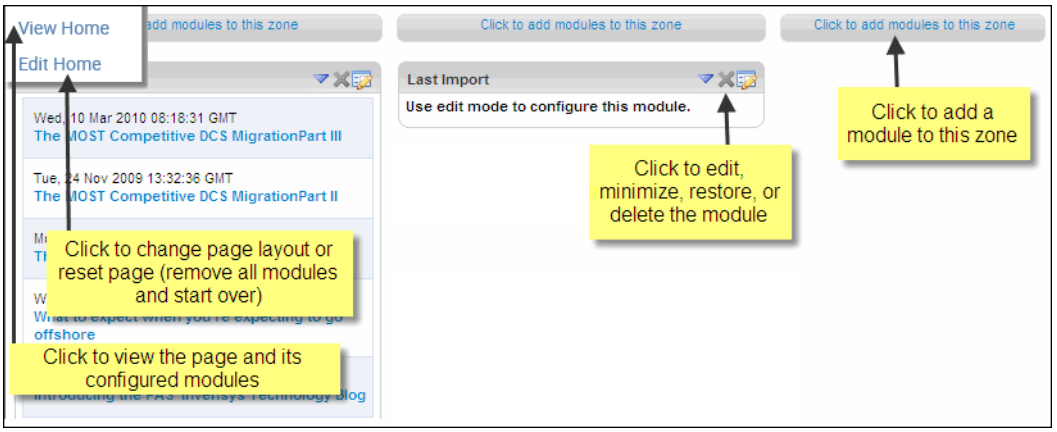
Customizing the DOC4000 Web Interface Home Page

You can customize the Home page of the DOC4000 web interface to display the information you need. You can select multiple modules to add to the Home page and you decide where to place each module. You can also choose the layout for the entire page, such as how many columns and the relative size of those columns.

When you first open the DOC4000 web interface, the Home page is similar to the following figure.



After you add a module to the page, you can configure the module properties. You can also choose to minimize one or more modules.



The following table lists the available modules.

Module	Displays
Defect Finder	defects for the selected asset.
Query	the results of a predefined query.
Change Tracker	a summary of changes for the selected asset.
Spares/Reservations	spares and/or reservations for the selected asset.
User Notes	notes entered for the selected asset.
Report Packages	any report packages created for the selected asset.
Key Performance Indicators	key performance indicators for the selected asset.
Custom Information	any text or link in the format of http://pas.com.
Last Import	the date and time of the last import for the selected asset.
Import Trend	Trend data for a specified date or time range on the imports.

To configure your Home page:

1. In the DOC4000 web interface, click **Home > Edit Home**.
2. Click the column layout you want to use.
3. Click **OK** on the confirmation message window.
4. Click **Home > View Home**.

5. Choose the zone where you would like to place a module and click the **Click to add modules to this zone** button for that zone.
6. On the Catalog window, check the check box for each of the modules you want to add to that zone, and then click **Add**.
7. For each added module, edit the module configuration by completing the following steps:
   a. Click the **Edit** icon in the title bar of the module you want to edit.

   b. In the **Configure Module** area, make changes as needed to specify the properties for the module. The properties vary based on the module you are editing.
   c. Click **OK**.
8. If you want to remove a module from your Home page, complete the following steps:
   a. On the Home page, click the **Delete** icon in the title bar of the module you want to delete.

   b. Click **OK** to confirm deletion.

Minimizing and Restoring Home Page Modules

You can minimize a module on your Home page of the DOC4000 web interface to hide the contents of that module. The down arrow then changes to an up arrow, which allows you to restore the module to show its contents.

To minimize or restore a module:

1. In the DOC4000 web interface, click **Home > View Home**.
2. If you want to minimize a module, click the down arrow in the title bar of a module next to the module name.

3. If you want to restore a minimized module, click the up arrow in the title bar of a module next to the module name.

Exploring Assets

The DOC4000 web interface provides several ways for you to view and explore assets and objects:

Asset Explorer

Asset Explorer provides a hierarchical list of assets. The objects under each asset are determined by the asset model for that asset type and can be customized by an administrator. To expand an asset or object and view the children objects, click the arrow next to the asset or object. To display information about an object, click the object name in the hierarchical list. The right pane displays the object information organized on one or more asset viewer tabs. For more information, see *Using the Asset Explorer* (page 18).

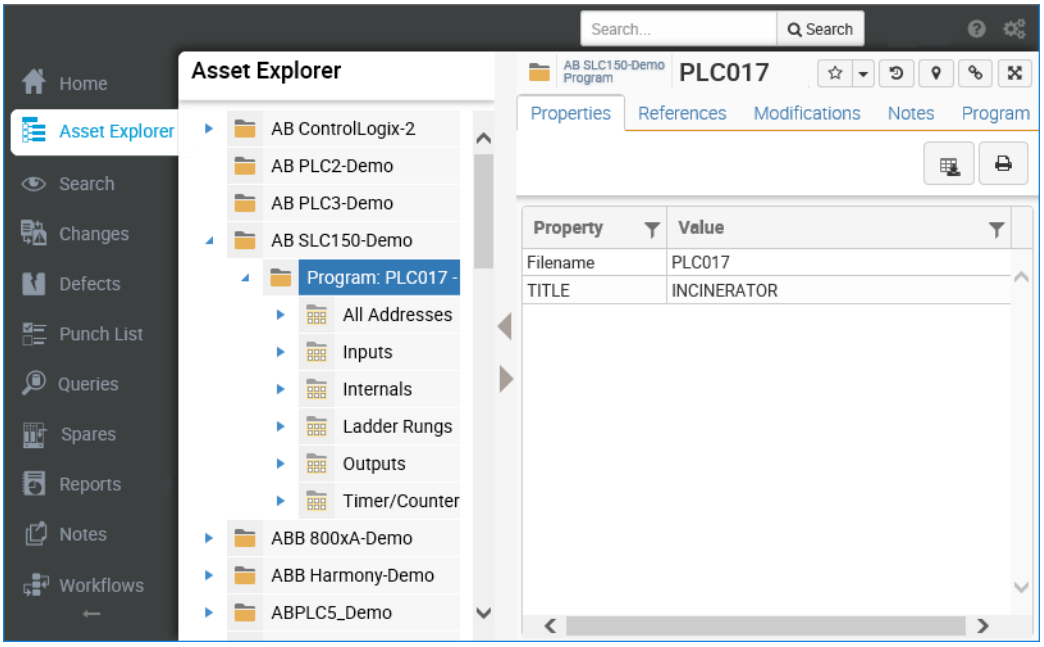
Hardware Overview

Hardware Overview displays the hardware components of an asset. Once you select an asset, you can then click on any component to view items under that component. For more information, see *Using the Hardware Overview* (page 19).

Using the Asset Explorer

Assets are arranged in the Asset Explorer in a hierarchical list based on the import structure and how the administrator organized the top-level assets (data owners).

NOTE To improve performance, DOC4000 caches items in the asset explorer and periodically updates this information. A newly added item may not be immediately included in the asset explorer. The update interval is short so the item should be available soon.



As you select a specific asset, details for the asset are displayed in the right pane in one or more asset viewer tabs. The type of asset selected determines which tabs are available. Click each tab to view information and details about the asset. For more information, see *Using Asset Viewers (Tabs)* (page 20).

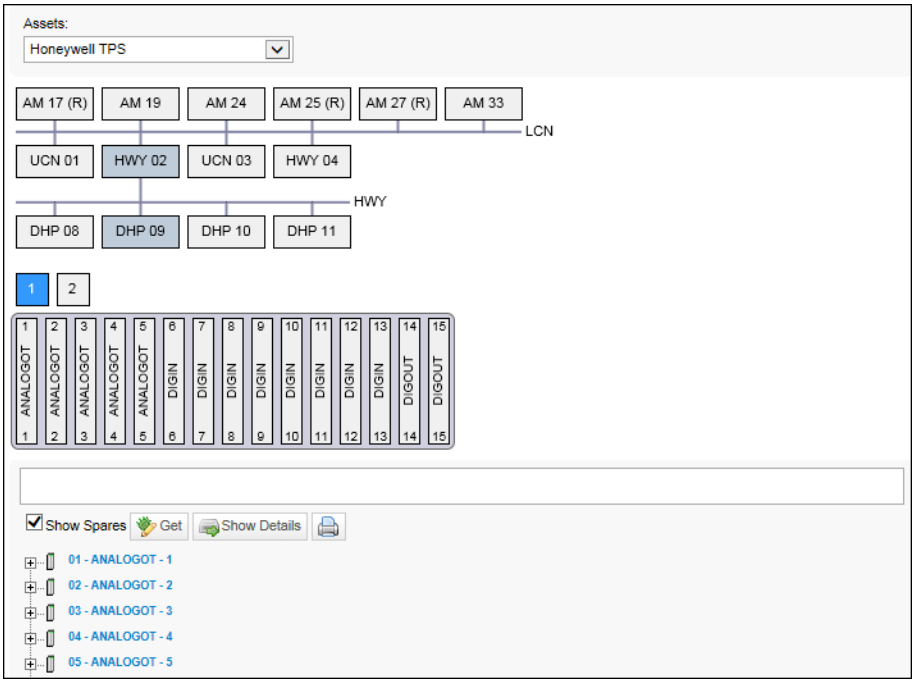
To view asset details:

1. From the DOC4000 web interface, click **Asset Explorer > Asset Explorer**.

2. Navigate through the hierarchical list by clicking the arrow next to an asset or object until you locate the asset for which you want to view details.
3. Click the name of the asset or object you want. The right pane displays one or more tabs of information about the selected asset or object.
4. Click the tabs to review those details in the desired asset viewers (tabs).
5. If you have configured an integrated third-party application, the item details include a property for the integrated application and a link to the application.
6. If you click a link to an integrated third-party application, the application launches in a browser with the focus set to the object you are viewing in DOC4000. The third-party application includes a link to the object in DOC4000.

Using the Hardware Overview

When you select an asset on the Hardware Overview page, DOC4000 displays its hardware components. Clicking on any component displays the items under it. A golden colored border of a hardware component indicates that the component has one or more notes.



To view hardware details:

1. From the DOC4000 web interface, click **Asset Explorer > Hardware Overview**.
2. In **Assets**, select the asset for which you want to view hardware details.
3. Click a component to view the items under that component.
4. Click an item in the list at the bottom to display the details about that item in the right pane.

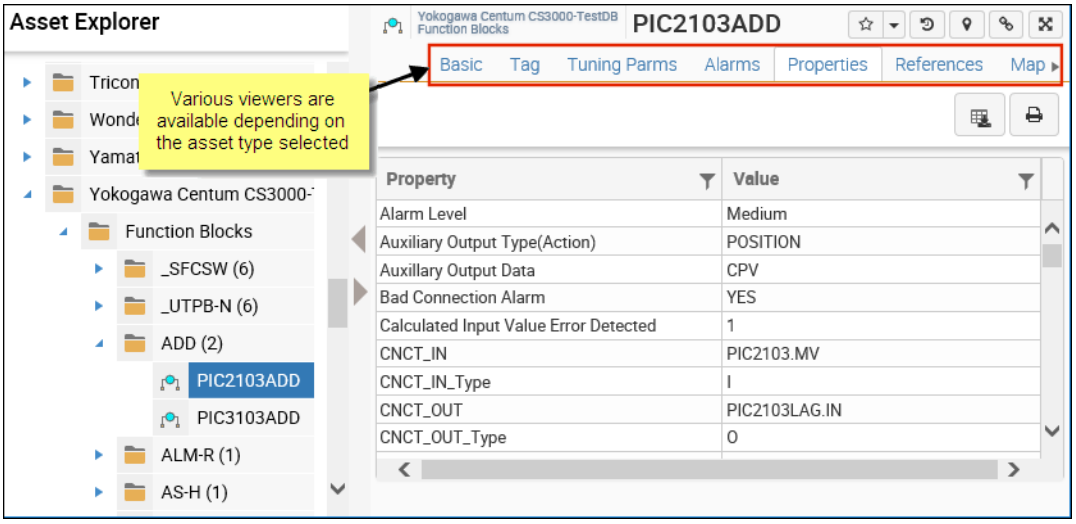
SECTION 2

Viewing and Searching Data

DOC4000 provides several ways to explore the assets within your organization and view details about those assets. You can search and sort to find exactly what you need, and then drill-down to the details and related information. The topics in this section provide an overview of how to find what you need, as well as how you can add notes to assets:

Using Asset Viewers (Tabs)

Asset viewers allow you to review the details of a specific asset. When you select an asset in the left pane, DOC4000 displays information about the asset in one or more viewers, each represented by a separate tab, in the right pane of the window.



Asset viewers are also available in other areas of the product to display the data you need. Each asset type can have unique types of data that require custom viewers to display the data. The asset model for each asset type provides these custom viewers. The following sections describe several of the available viewers to provide an example of the information available in DOC4000.

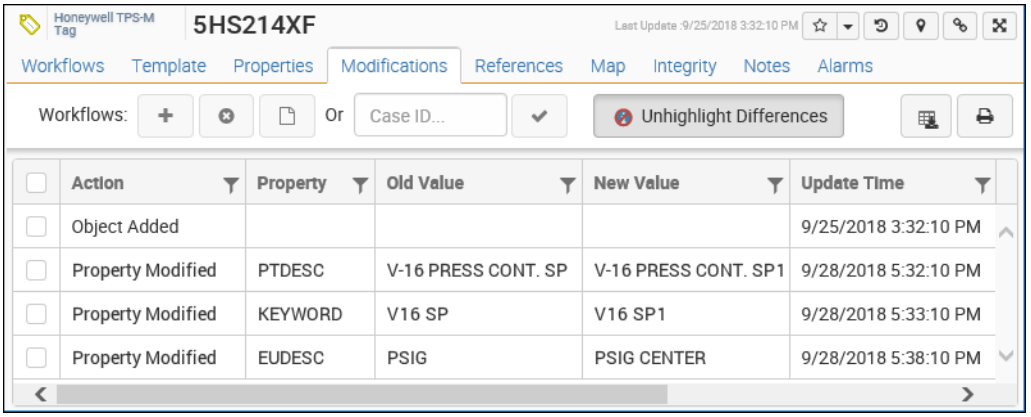
In addition to these viewer tabs, you can use reports and queries to get the information you need. For more information, see *Reporting and Queries* (page 79).

Alarms Viewer

DOC4000 provides an Alarms viewer for several types of objects. For example, the Alarms viewer allows you to view all the alarms for a tag.

Changes Viewer

DOC4000 tracks the changes to all objects and maintains an audit trail in its database. The Changes viewer displays the audit trail of the changes to the selected object. You can choose to **Highlight Differences** or **Unhighlight Differences** by clicking the toggle button.



If you have the PAS Workflows asset model installed, when you select a change by checking the check box in the left column, you can perform the following actions:

- Assign the change to an existing workflow case by clicking on the **+** button.
- Unassign the change from a case by clicking the **x** button.
- Create a new case for the change by clicking the document icon button.
- Assign the change to a case by typing the case ID and clicking the check mark.

If you do not have the PAS Workflows asset model installed, when you select a change by checking the check box in the left column, you can **Acknowledge** or **Unacknowledge** the change. Then, DOC4000 displays a pop-up window that allows you to type comments in the **Comments** field, and then click **Submit**.

Controller Viewer

You can use the Controller viewer to display information about controllers. This viewer tab is available only when you select a controller.

CL File Viewer

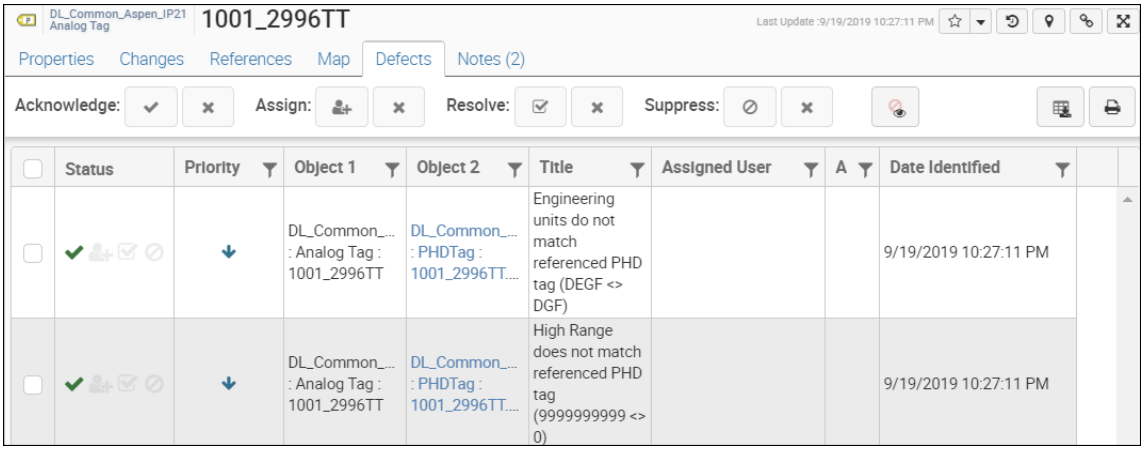
You can use the CL File viewer to display information about CL programs. This viewer allows you to search for and skip to the next or previous occurrence of a search term.

When you search for a term, DOC4000 highlights all occurrences of the specified term in the CL file in yellow. DOC4000 highlights the currently selected occurrence in green. To highlight the next appropriate occurrence in green and scroll the viewable area so that it is visible, click **Next** (**>**) or **Previous** (**<**). This viewer tab is available only when you select a CL program object.

To enable or disable the highlighting for code syntax, click **Highlight**. If you want to ignore comments in your search, click the **Ignore** icon.

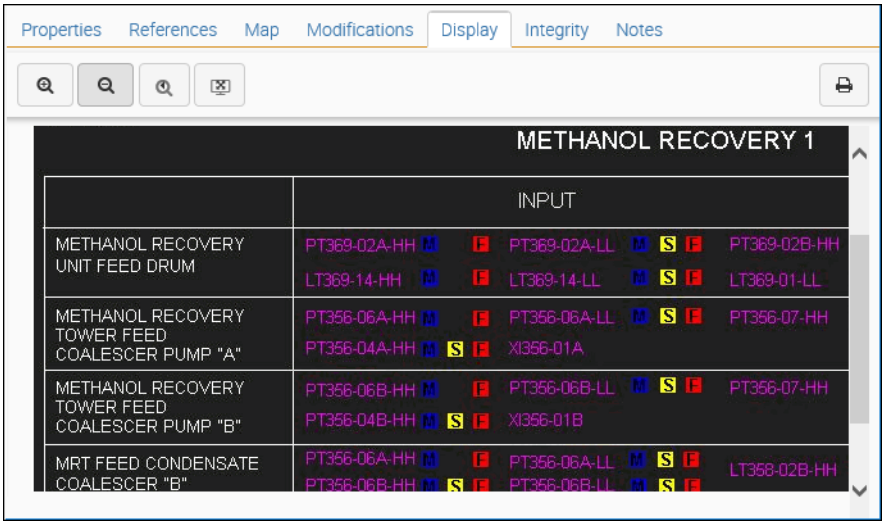
Defect Viewer

The Defect viewer allows you to view data defects for an object. The asset model identifies these defects when the data is imported into DOC4000.



Display Viewer

The Display viewer allows you to view an image file. This viewer can display image files in BMP, GIF, and TIF format. This viewer tab is available only when you select an object that contains a display image as a property.



Email Viewer

The Email viewer displays the contents of imported emails.

File Compare Viewer

The File Compare viewer allows you to view differences between two versions of an ASCII file. This viewer tab is available only when you select an ASCII file object, such as an EB, EL, CL, or TXT file. This viewer displays a list of versions of the file that include differences, if applicable.

To compare two versions, select the check boxes next to the two versions of the file, and then click the **Compare** button in the upper-right corner. The contents of the file are displayed with the differences highlighted. Deleted lines are highlighted in blue, changed lines are highlighted in red, and inserted lines are highlighted in green.

The **Deleted**, **Changed**, and **Inserted** buttons allow you to find and highlight the next difference of that type in the displayed file version. The **Clear** button allows you to clear the highlighting.

Flowchart Viewer

The Flowchart viewer provides a graphical presentation of sequence programs. Shapes represent the logic and statements. The viewer indicates the sequence in which the programs are run with connecting arrows.

IP Addresses Viewer

The IP Addresses viewer displays ping information for a given range of computers in a plant area.

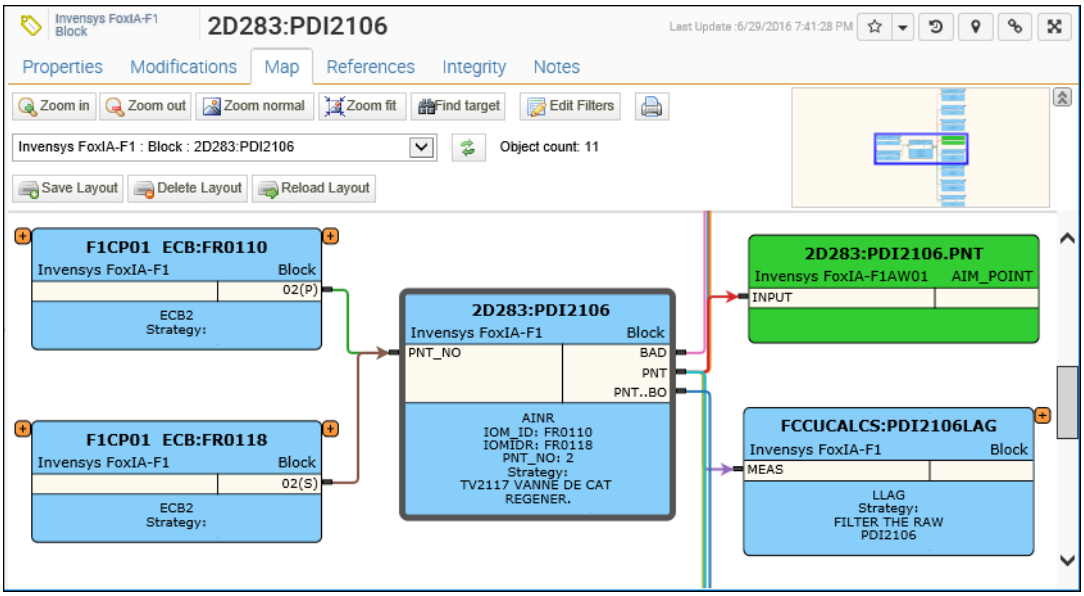
Logic Viewer

The Logic viewer displays logic from logic tags, device control tags, and multifunction controller blocks. The Logic viewer for Foxboro I/A assets graphically displays the logic from CALC blocks, CALCA blocks, Logic blocks, and Math blocks.

The MFC Logic viewer is similar to the Logic viewer. This viewer tab is available only when you select an object type that has a logic block. To print the map to a Visio file, click the **Print** icon.

Map Viewer

The Map viewer generates a control map for the selected object, if applicable. To improve map generation performance and to avoid time-out issues, the maximum number of objects in a control map is set to 100. When the maximum number is reached, you need to collapse previously expanded objects so that you can expand other objects. The map provides expand and collapse buttons so you can also view objects inside container objects and other objects connected to an object. To view the properties of an object, right-click on the object, and then click **Properties**.



To view the control block of an object in a separate browser tab, right-click on the object, and then click **View in new tab**. The full set of object viewers opens in a new tab in your browser.

The objects inside a container object can be small and their labels may be difficult to read. To quickly identify an object when its label is illegible, mouse-over the object to display a tool tip that shows the name of the object. You can also zoom in to read the labels. All objects are printed as displayed.

At the top of the Map tab, the map navigator panel provides options to adjust how the control map is displayed. For example, you can use the map navigator options to select other objects connected to the currently selected object and to manipulate the view. The map navigator panel also indicates the number of objects in the map and allows you to save and reload the layout. The image in the top right allows you to identify which part of the expanded control map you are currently viewing. If objects are outside of the viewable area, click the map and drag it to view other parts of the map.

You can use filters to restrict the amount of information in the map. The map filters, available through the **Edit Filters** button, are defined as follows:

Inputs

Reduces the input connections displayed for the selected object. This filter does not apply to the container object.

Outputs

Reduces the outputs displayed for the selected object. This filter does not apply to the container object.

Type

Displays only the objects of the selected types.

Property

Filters the map to include only the objects that have the same property and value equal to that of the target object.

Same asset only

Displays only the objects from the same asset in the control map.

NOTES

- Maps saved using the **Save Layout** button have the **Saved Layout** indicator text next to the **Reload Layout** button.
- Visio must be available on the DOC4000 server to generate reports from control maps. If you save a map as a Visio file and include it as a section of a report, the Visio Viewer is required to view the control map from client machines.
- You can add a logo to maps printed to Visio. The logo can be up to 160 pixels wide. If the logo is smaller than 160 pixels wide, DOC4000 scales the logo to be 160 pixels. If the logo is larger than 160 pixels wide, DOC4000 crops the logo.
- A Reports folder is automatically created to store control map reports. The folder is on the DOC4000 server in the same location as the DOC4000 installation folder.

Notes Viewer

The Notes viewer displays additional information from stored notes for the selected object. To open the Notes viewer for the selected object, click the Notes tab.

To open the Notes Summary page for all objects, click the **Notes** navigation item. You can then select an asset and click an object name to display the Notes viewer for that object. For more information about notes, see *Using Notes* (page 32).

Program Viewer

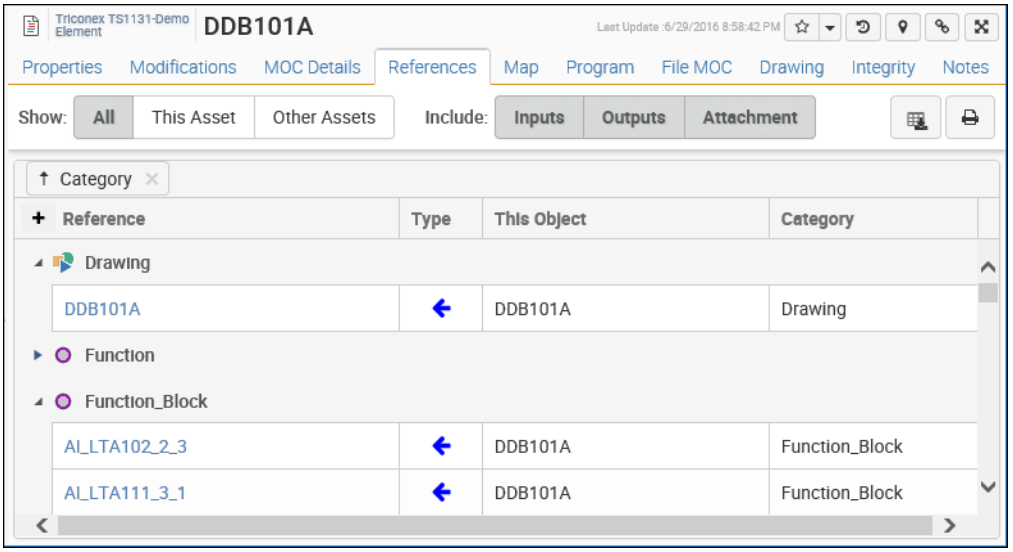
The Program viewer allows you to view a text file, such as a program source file. You can search for text in the viewer and use the next and previous buttons to cycle through the results.

Properties Viewer

The Properties viewer allows you to view the properties and values for the selected object.

References Viewer

The References viewer allows you to review the references for the selected object from other objects. DOC4000 displays the referenced objects under the respective headings as links. By default, DOC4000 displays all references for the selected object. To filter the results, clear the **Inputs**, **Outputs**, or **Attachment** options. To display references for other assets, select the **Other Assets** option.



Reserve Viewer

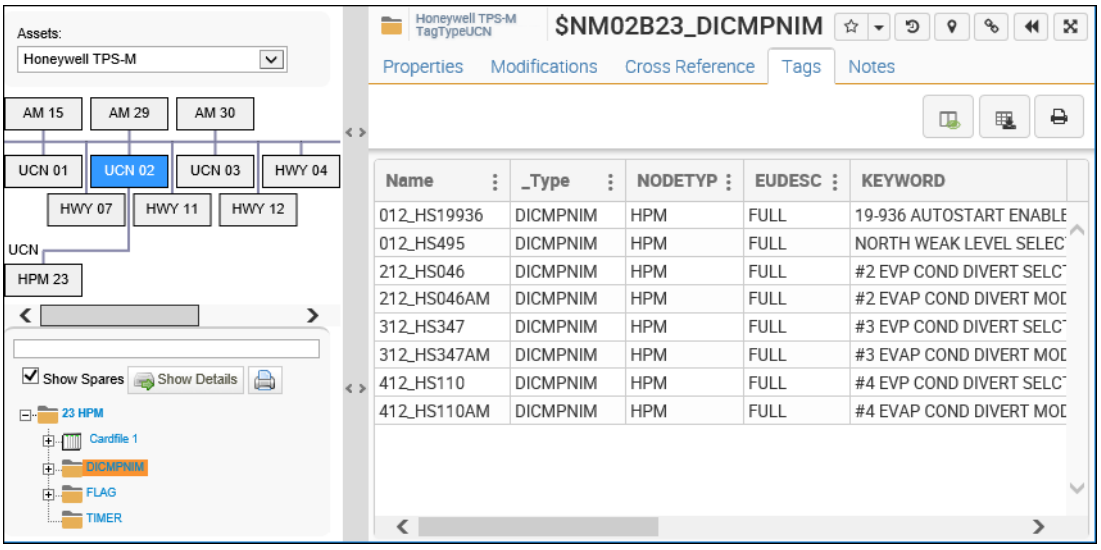
The Reserve viewer allows you to reserve a single spare object in DOC4000. You can select the project for which you are reserving this asset. Other fields allow you to specify a description, comments, and more.

SFC Viewer (Delta V or Foxboro I/A)

The SFC viewer allows you to view the steps and transitions from the DeltaV control modules or Foxboro I/A DEP, EXC, and IND blocks.

Tags Viewer

The Tags viewer allows you to review and export many columns of information about the tags for the selected tag type.



User-Defined Viewer

The User-Defined viewer allows you to add unique custom properties and values to any object. To add a property, click **Add**, and type the property name and a value for the property. Then, click **Save Changes**.

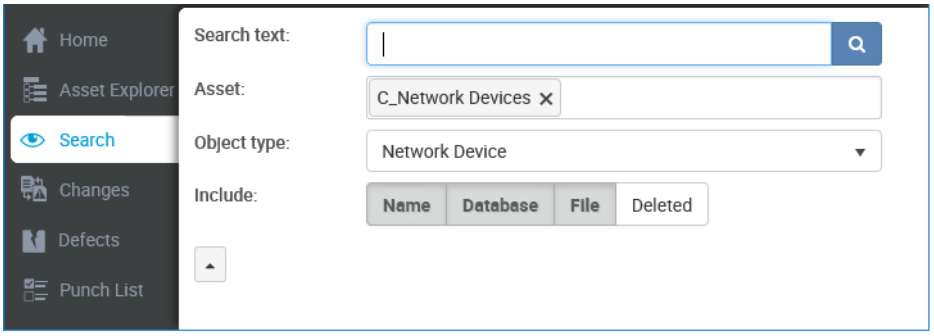
NOTE Administrators can add common, user-defined properties, which apply to all objects of that type (per asset).

Searching the Database

The Search page allows you to search the DOC4000 database or attached files. Searches can include:

- text from any file, such as a program file, attached to an object.
- text contained in an object property in the database.
- an object name in the database.
- deleted objects within the database.

You can choose to perform the search across all assets and all object types or across a selected asset. If you select an asset, you can choose to search all object types within the asset or a single object type.



On the Search page, the **Asset** and **Object Type** fields allow you to type directly into the field, or you can select an item from the list. When you type in the field, the list scrolls automatically to a matching value. For example, if you type `TA` and then click the **Object Type** list, the list automatically scrolls to **TAG** object type. Click or press **Enter** to select.

NOTE You can select an object type if you select one asset. If you select more than one asset, or if you want to search all assets, the **Object type** field is disabled.

To perform a search:

1. From the DOC4000 web interface, click **Search**.
2. In the **Search text** field, type the text string for which you want to search. For more Information, see *Search Hints* (page 29) and *Search Operators and Wildcard Characters* (page 29).
3. In **Asset**, select one or more assets to search by completing the following steps:
   a. Click in the **Asset** field. The list of assets is displayed.
   b. Select the assets you want to search. Scroll to the asset or type to jump to the appropriate location in the list.
   c. If you want to search all assets, remove all the assets listed in the **Asset** list. **All assets** displays when you click somewhere other than in the **Asset** list. If you search all assets, the **Object Type** field is set to **-----All Object Types-----**.
   d. Click **Close**.
4. If you selected a single asset, select either a single object type to search, or select **-----All Object Types-----**.
5. Click each item you want to search, such as **Object Name**, **Database**, **File**, and **Deleted Objects**.
6. Click the **Search** button next to the **Search** text box.
7. Click on any result to display its details in the appropriate viewer.

Search Hints

When searching the database, consider the following hints for search strings, operators, and wildcard characters to help you find exactly what you want:

- Search strings are not case sensitive.
- Several operators and wildcard characters are supported in searches. This support can vary based on the type of search, such as object name or text searches.
- Database and file searches use the SQL Server full-text search engine, which dictates the rules regarding operator and wildcard character use.
- You can use wildcard characters as a prefix or suffix in full-text searches, such as `*FC` or `FC*`.
- Do not use operators in object name searches.
- The search results can contain zero, one, or many items.
- Each item listed in the search results provides a link to view the item.

For more information, see *Search Operators and Wildcard Characters* (page 29).

Search Operators and Wildcard Characters

The following table shows the supported operators in full-text searches.

Operator Example	Description
`raise OR lower`	OR Operators - The use of the `OR` operator is supported in a search string. The search string `raise OR lower` searches the database for entries that include forms of the words `raise` or `lower`.
`raise AND lower`	AND Operators - The use of the `AND` operator is supported in a search string. The search string `raise AND lower` searches the database for entries that include forms of both words `raise` and `lower`. The `AND` operator is not necessary in this case since the search string `raise lower` would return the same results.
`"test method"`	"Phrases" - The use of quotations marks in a search string is supported to search for a phrase. The search string `"test method"` searches the database for entries that include the exact phrase `test method`.
`<drum level>`	Word Proximity - The use of < and > signs around a group of words in a search string searches for words in close proximity to each other. The search string `<drum level>` searches the database for an entry that contains the word `drum` in close proximity to the word `level`.

Operator Example	Description
+test	Exact Word - The use of the + plus sign before a word indicates that the search should not include inflectional forms of the word. The search string `+test` searches the database for the word `test` exactly without including the inflectional forms, such as `testing` and `tested`.
`testing -method`	Word Exclusion - The use of the – minus sign before a word indicates that the search should *not* include a word and all inflectional forms of that word. The search string `testing -method` searches the database for entries containing inflectional forms of the word `test` without the word `method`.
`sub*`	Prefix or Suffix Searches - The use of the * asterisk symbol before or after a word searches the database for words that begin or end with the word specified. The search string `sub*` searches for words that *begin* with `sub`. The search string `*meter` searches for words that *end* with `meter`.
`~assessment`	Thesaurus - The use of the ~ tilde symbol before a word indicates that the search should return results of synonyms for the word.

The following table shows the supported wildcard characters in object name searches.

Wildcard Character	Description
*	An asterisk * represents zero or more characters. The search string `*.eb` searches for any object names ending in `.eb`.
?	A question mark ? represents a single variable character in a search string. The search string `1?1` searches for 3-character object names beginning with `1` and ending with `1`, such as `121` or `1h1`. The search string `1?1` does not match longer object names, such as `1341` or `12221`.

Concurrent Users and Object Locking

DOC4000 supports user concurrency, which allows multiple users to access information and perform tasks at the same time. To provide this support, DOC4000 needs to manage when two or more users attempt to edit the same item. In this case, DOC4000 displays an indication that another user is trying to edit an item. DOC4000 also identifies the most up-to-date item to be edited, so information is not overwritten. This feature is enabled for punch lists, workflow cases, baseline deviations, and custom properties.

The DOC4000 web interface provides several indicators related to concurrent users:

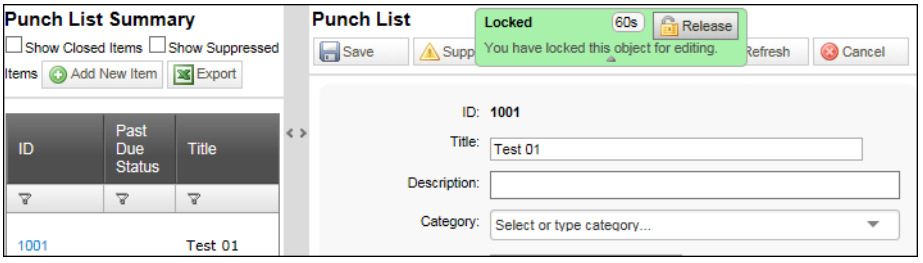
- *Locked by You* (page 31)

- *Conflict* (page 31)
- *Locked by Another User* (page 32)

NOTE If a concurrency state is active, you can save only when you have a lock. If someone else saves an object while you are viewing that object, you need to refresh the object before you can get a lock.

Locked by You

If you are the only user visiting and editing an item, DOC4000 provides no indication of concurrent users because only one user is editing the item. If a second user attempts to edit the same item, DOC4000 notifies the first user that they have locked the record.



If you are inactive for 60 seconds, the item is automatically unlocked for another user to edit. If you decide to discard your changes, you can click **Release** to unlock the item for editing by another user.

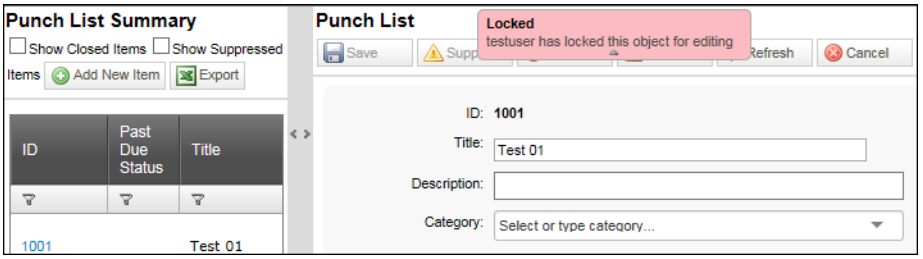
Conflict

If you access an item that another user is viewing, DOC4000 displays the option to **Lock** the item so that your changes are not overwritten by the other user.

Both users see the conflict message until one of the users locks the item or leaves the page and the conflict times out.

Locked by Another User

When another user is editing an item, DOC4000 displays a red **Locked** message. You need to wait for the lock to time out, or until the other user saves the item, before you can lock it for editing yourself.



Using Notes

The Notes page displays a list of notes stored for one or more assets. When you add a note, you can specify whether the note is public or private. Using the Admin Utility, the administrator sets permissions for which users can view, add, edit, or delete notes as shown in the following table.

	Public Notes		Private Notes	
Role and Permissions	**View**	**Edit & Delete**	**View**	**Edit & Delete**
User	Yes	No	No	No
Power User	Yes	Yes	No	No
Administrator	Yes	Yes	Yes	Yes

Viewing, Editing, or Deleting Notes for One or More Assets

To open the Notes viewer for the selected object, click the Notes tab in the right pane. You can also use the Notes Summary page to select an asset and then display the notes for that asset. Public notes can be viewed by all users, and private notes are visible only for the creator of the note and the administrator.

To view notes:

1. In the DOC4000 web interface, click **Notes**. The Notes Summary page is displayed.
2. In **Asset**, select an asset or choose **-----All Assets-----** to display a list of objects with notes.

   When you select all assets, DOC4000 displays any assets that have notes. When you select a specific asset, DOC4000 lists only the notes for that asset.

3. Click an object name in the list to view the **Notes** tab and other details for that object in the right pane. The **Notes** tab also shows the number of notes stored for the object.
4. If you want to edit a note, hover your mouse over the note title, and then click **Edit**.

   NOTE You can edit only one note at a time. If you do not see the **Edit** button, check to see if another note is being edited, and either cancel or save the open note.
5. Make the changes you want, and then click **Save Note**.
6. If you want to delete a note, hover your mouse over the note title, and then click **Delete**, and confirm the deletion.
7. If you want to display the content of a note, click the one line of text for that note to expand that section and display the contents. You can also click the **Expand All** button to expand all the displayed notes.
8. If you want to view a note attachment, click **Download** next to the attached file name.

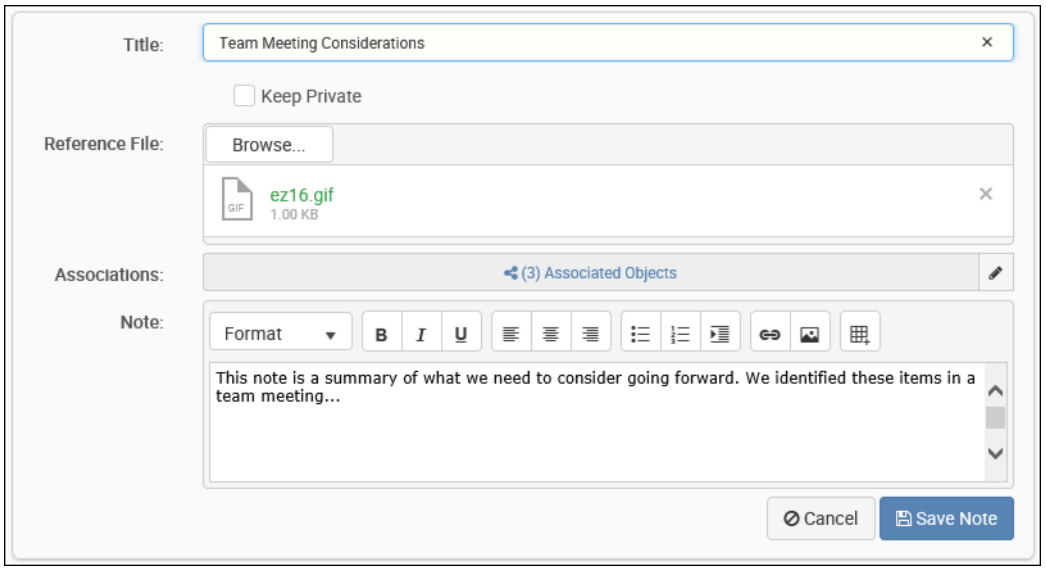
Adding a Note for an Asset

To open the Notes viewer for a selected object, click the Notes tab in the right pane. You can also use the Notes Summary page to select an asset that already has notes. This task allows you to add a note for an asset even if it does not already have a note. For more information about notes and permissions, see *Using Notes* (page 32).

To add a note for an asset:

1. In the DOC4000 web interface, use Asset Explorer or the Asset Hierarchy to navigate to the asset for which you want to add a note.
2. In the right pane, click the Notes tab for that asset. The Notes viewer tab is displayed.
3. Click **Add Note**. The note editor is displayed.
4. In **Title**, type the name of the note you want to display in lists.

5. In **Note**, type the text you want in the note. You can use formatting and other options to provide the information you need.



6. If you want the note to be available only to you and administrators, check **Keep Private**.
7. If you want to attach a file to the note, either drag-and-drop a file on the **Reference File** section of the note, or click **Browse** to select the file to attach.
8. If you want to associate other objects with this note, click **Associated Objects**, select the object you want to associate with the note, and then click **Done**.
9. Click **Save Note**.

SECTION 3

Change Tracking and Defects

Identifying changes across your organization and their potential impact is vital. DOC4000 collects and stores information about systems. As updated information is collected and stored, DOC4000 identifies configuration changes, additions, and deletions. You can view the list of changes and then create workflow cases to record the review and evaluation process for those changes.

Defect checks allow you to identify potential configuration issues and then investigate and resolve them. Each asset model provides defect checks, also referred to as DOC4000 checks. As updated information is collected and stored, DOC4000 uses these defect checks to identify inconsistencies in the collected information. These inconsistencies can indicate a potential configuration issue. You can then assign a defect to someone to investigate and resolve the issue.

Understanding Change Tracking

DOC4000 collects information about systems and stores that information in the database as objects. The asset model for each system type defines how the information is collected and which aspects are checked for changes. With each import of updated information, DOC4000 allows you to view changes to the systems, including additions, deletions, and modifications. For example, you can see property value changes and the values before and after each change.

You can then create a workflow case for a set of related changes and assign that workflow case to someone. The case records the review and evaluation of the identified changes. With this change tracking process, you can quickly identify changes, evaluate their potential impact, and revert changes that could cause issues.

You can also manage changes *without* using workflow cases. When workflow definitions are not configured, DOC4000 provides an **Acknowledge** button so you can identify the changes you have finished reviewing.

DOC4000 offers the Maintenance asset model, which allows an administrator to turn off change tracking for some objects. For more information about this asset model, contact Technical Support.

Understanding the Changes Window

The Changes window allows you to view and manage identified changes, such as objects that have been added, deleted, or modified. For more information about the change tracking and management process, see *Working with Change Tracking* (page 37).

The columns of the Changes window are defined as follows:

Ack

Indicates whether an identified change has been acknowledged. This column is available when workflow definitions have not been configured. When you select a change and click the **Acknowledge** button, a green check mark icon is displayed in the **Ack** column for that change.

Update Time

Displays the date and time of the change.

Action

Identifies the type of change detected, such as **Object Added**, **Object Modified**, or **Object Deleted**.

Object Name

Displays the name of the object with a change.

Object Type

Displays the type of object with a change.

Property

Displays the name of the property that was modified on the object identified in the **Object Name** column. If the change is an added or deleted object, this column is blank.

Old Value

Displays the original value of the property identified in the **Property Name** column. If the change is an added or deleted object, this column is blank.

New Value

Displays the new value of the property identified in the **Property Name** column. If the change is an added or deleted object, this column is blank.

Case ID

Displays a linked case ID number of the workflow case for this change. If the changed object has not been assigned to a workflow case this column is blank.

User

Displays the name of the user who last modified the object within DOC4000. If the change was just identified and has not be acknowledged or assigned to a workflow case, this column can identify the DOC4000 service account used to process the system configuration data.

Understanding the Changes Tab

You can display the changes for a specific object. Those changes are listed on the Changes tab for that object. Select the object in the Asset Hierarchy or Asset Explorer, and then select the Changes tab. This tab provides the same columns of information as the Changes window. For more information about the columns on this tab, see *Understanding the Changes Window* (page 35).

On the Changes tab, you can perform many of the same tasks you can perform on the Changes window. For more information, see *Working with Change Tracking* (page 37).

Working with Change Tracking

The Changes window allows you to view and manage identified changes. For example, you can view changes for any objects that have been added, deleted, or modified. For more information about the Changes window, see *Understanding the Changes Window* (page 35). When you select an object in the Asset Hierarchy or Asset Explorer, the Changes tab lists the identified changes for the selected object.

You can filter the list of changes to see only specific types of changes (added, deleted, modified). The process you use to manage identified changes depends on whether your administrator configured a workflow definition to use cases with change tracking.

Without workflow cases, you can view a change in the list. When you consider it resolved or reviewed, you can acknowledge that change. Then, in addition to the change type filter options, you can filter the list of changes to see only the changes that either have or have not been acknowledged.

With workflow cases, you can view a change in the list and assign one or more changes to a case. The case can then record the review and evaluation process for the changes associated with the case. You can assign changes to new or existing workflow cases. You can also use the workflow case windows to track those cases and related activities.

For more information about tracking changes, see the following topics:

- *Viewing and Filtering the List of Identified Changes* (page 37)
- *Labeling Imports for Easier Identification and Selection* (page 38)
- *Viewing the Changes for a Specific Object* (page 39)
- *Acknowledging or Unacknowledging a Change* (page 39)
- *Assigning Changed Objects to a Workflow Case* (page 40)
- *Viewing the Changed Objects Assigned to Cases* (page 40)
- *Printing and Exporting the List of Changes* (page 41)

Viewing and Filtering the List of Identified Changes

When you display the list of changes on the Changes window, you can select the type of query to use and other sort and filter options to reduce the list and allow you to focus on the changes that are important to you. When you select the query type, some options change so you can adjust details specific to the type of query you chose.

To view and filter the list of changes:

1. In the DOC4000 web interface, click **Changes**.
2. In **Asset**, select an asset for which you want to view the list of changes.
3. In **Query by**, select the type of query, and then fill in or select additional details to refine your query.
4. If multiple import events are listed, click the import event with the changes you want to review.

5. If you want the import list to include all imports, click the **All imports including ones without changes** icon above the list. Including all imports in the list can help you identify and select the imports you want.

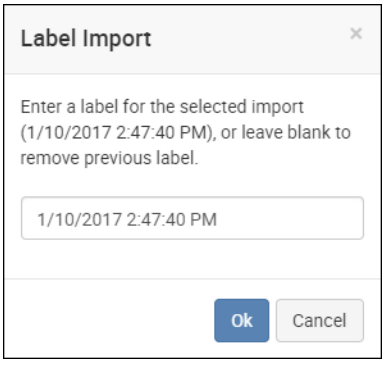
   NOTES Inventory items imports with no changes do not show in the list of imports because inventory items are imported as a part of other imports, such as Recon.

   To help you more easily identify an import, you can label that import. For more information, see *Labeling Imports for Easier Identification and Selection* (page 38).

6. Click **Load Types**. The available object types are displayed in a table under **Filters**.
7. Select the object type to display the changes for that type, and then click **Go**.
8. If you want to filter the list of changes, select additional filter options for the object type, change type, and change state, and then click **Go**.
9. If you want to filter the list based on the value of one or more columns, complete the following steps:
   a. Click the **Filter** icon next to the column name to display the filter criteria.
   b. In **Contains**, select an operator, such as **Starts with** or **Is equal to**, and then type the criteria value in the text box below. For example, select **Starts with**, and then type **Eng** to search for all defects where the value for that column starts with **Eng**. DOC4000 provides the operators **And** and **Or** to specify up to two text values where you can specify text to compare with the column text value.
   c. Click **Filter**.
   d. To remove column filters, click the **Filter** icon next to the filtered column name, and then click **Clear**.
10. If you want to sort the results by a column, click the column name.

Labeling Imports for Easier Identification and Selection

Each import is identified by the date and time DOC4000 processed the data. To help you more easily identify an import, users with the Administrator role can label the import with a descriptive name. The labels are displayed in the **Import Events** list at the top of the Changes window.



NOTES You cannot label an import for inventory item processing.

To label an import:

1. In the DOC4000 web interface, click **Changes**.

2. In **Asset**, select an asset for the import you want to label.
3. In **Query by**, select **Import Event**.
4. Click the pencil icon to the right of the import to label.
5. Type a new label for the import or delete the text to remove the label, and then click **Ok**.

Viewing the Changes for a Specific Object

When you select an object in the asset hierarchy or asset explorer, the Changes tab in the right pane displays the changes for that object. This tab allows you to perform many of the same tasks you can perform on the Changes window, such as acknowledging a change and assigning a change to a workflow case. For more information about the columns on this tab, see *Understanding the Changes Window* (page 35).

Acknowledging or Unacknowledging a Change

If you are not using workflow cases to manage change tracking, DOC4000 provides the **Acknowledge** button so you can indicate you have reviewed and evaluated a listed change. When you view acknowledged changes, the **Ack** column includes a green check mark icon, and the **Comment** column displays the comments typed when the change was acknowledged. You can then unacknowledge the change, if needed. You can also filter the list of changes to exclude acknowledged changes.

To acknowledge or unacknowledge a change:

1. In the DOC4000 web interface, click **Changes**.
2. Use the options to view the list of changes you want. For more information, see *Viewing and Filtering the List of Identified Changes* (page 37).
3. If you want to acknowledge changes:
   a. Check the box in the left column for the listed change you want to acknowledge.
   b. Click the **Acknowledge** button.
   c. Type a comment to describe what you learned about the change. This comment can help when you view the list of acknowledged changes. This comment overwrites any previously saved comment for this change.
   d. Click **Save**.
4. If you want to unacknowledge changes:
   a. Check the box in the left column for the listed change you want to unacknowledge.
   b. Click the **Unacknowledge** button.
   c. Type a comment to describe what you learned about the change. This comment overwrites any previously saved comment for this change.
   d. Click **Save**.

Assigning Changed Objects to a Workflow Case

After an administrator has installed and configured the PAS Workflows asset model, you can use workflow cases to manage change tracking. In this configuration, DOC4000 replaces the **Acknowledge** and **Unacknowledge** buttons with buttons to support workflow cases.

You can associate object changes to a new or existing workflow case. Then, you can use the workflow case to manage the change tracking process and to reconcile the changes of associated objects to cases. For more information, see *Reconciling Changes Associated to a Case* (page 69).

To assign changed objects to a case:

1. In the DOC4000 web interface, click **Changes**.
2. Use the options to view the list of changes you want. For more information, see *Viewing and Filtering the List of Identified Changes* (page 37).
3. Check the box in the left column for each listed change you want to assign to a case. DOC4000 assigns all the selected changes to the same case.
4. If you want to assign the changes to a case with a number you know, complete the following steps:
    a. In **Case ID**, type the ID number of the case to which you want to assign the selected changes.
    b. Click the green check mark to the right to quick assign the changes. The linked case number is added in the **Case ID** column.
5. If you want to assign the changes to a case without knowing the case number, complete the following steps:
    a. Click the plus sign button next to **Workflows** to assign to an existing case. A list of existing workflow cases is displayed.
    b. Select the case to which you want to assign the changes, and then click **OK**. The Changes window refreshes with the linked case number added in the **Case ID** column for each selected change.
6. If you want to assign the changes to a new case, complete the following steps:
    a. Click the document button next to **Workflows** to create a new case. The Start a New Case window is displayed.
    b. Specify the requested information, and then click **OK**. The Changes window is displayed again with the linked case number added in the **Case ID** column for each selected change.

Viewing the Changed Objects Assigned to Cases

After an administrator has installed and configured the PAS Workflows asset model, you can use workflow cases to manage change tracking. In this configuration, you can associate object changes to a new or existing workflow case. Then, you may want to view which changed objects are associated with cases and which changes were reconciled.

To view changed objects assigned to cases:

1. In the DOC4000 web interface, click **Changes**.
2. Use the options to view the list of changes you want. For more information, see *Viewing and Filtering the List of Identified Changes* (page 37).
3. Click the link button next to **Highlight Differences** to see the Changes Associated with Cases window.
4. Click a link to expand the details for that item.
5. Click **Export** to save and download a file with the listed changes.

You can click on a column header to sort the list by that column. You can also export and print the list of changes.

Printing and Exporting the List of Changes

After you display the list of changes you want, you can export the results to a Microsoft Excel file or to a PDF file for printing.

To print or export the list of changes:

1. In the DOC4000 web interface, click **Changes**.
2. Use the options to view only the changes you want to print or export. For more information, see *Viewing and Filtering the List of Identified Changes* (page 37).
3. If you want to print the displayed list of changes, complete the following steps:
   a. Click the **Print** icon. DOC4000 creates and displays a PDF file that you can print or save.
   b. If you want to print the displayed PDF file, select a printer and then click the **Print** icon.
   c. If you want to save the displayed PDF file, click the **Save** icon. Specify where to save the PDF file, and then click **Save**.
4. If you want to export the displayed list of changes as a Microsoft Excel file, complete the following steps:
   a. Click the **Export to Excel** icon.
   b. Click **OK** on the confirmation message.
   c. Click **Save** to save the Excel file in the default download folder for your browser.

Understanding Defects

Many asset models provide defect checks, also referred to as DOC4000 checks. As updated information is collected and processed, DOC4000 uses these defect checks to identify inconsistencies in the collected information. These inconsistencies can indicate a potential configuration issue. You can then assign a defect to someone to investigate and resolve the issue.

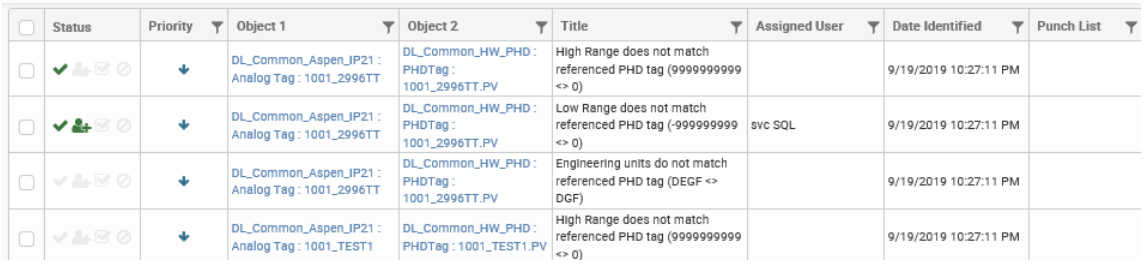
For example, you may be cleaning up CL programs that are no longer needed. However, you may miss a tag that references a removed CL program. DOC4000 can identify this reference for you. DOC4000 can also detect data collection that provides incomplete or inconsistent data.

An asset model can identify a set of defects, such as disabled programs or disabled I/O ports. The *Implementation Guide* for each asset model provides details about that asset model, including the

defect checks it provides. For more information about an asset model, see the *Implementation Guide* for that asset model.

Understanding the Defects Window and Columns

The Defects window allows you to view the results of a variety of checks performed on selected systems after importing their configuration data. Once DOC4000 identifies a defect, you can view and manage the defect from the Defects window and associate the defect with a punch list.



Status	Priority	Object 1	Object 2	Title	Assigned User	Date Identified	Punch List
		DL_Common_Aspen_IP21 : Analog Tag : 1001_2996TT	DL_Common_HW_PHD : PHDTag : 1001_2996TT.PV	High Range does not match referenced PHD tag (9999999999 <> 0)		9/19/2019 10:27:11 PM	
		DL_Common_Aspen_IP21 : Analog Tag : 1001_2996TT	DL_Common_HW_PHD : PHDTag : 1001_2996TT.PV	Low Range does not match referenced PHD tag (-999999999 <> 0)	svc SQL	9/19/2019 10:27:11 PM	
		DL_Common_Aspen_IP21 : Analog Tag : 1001_2996TT	DL_Common_HW_PHD : PHDTag : 1001_2996TT.PV	Engineering units do not match referenced PHD tag (DEGF <> DGF)		9/19/2019 10:27:11 PM	
		DL_Common_Aspen_IP21 : Analog Tag : 1001_TEST1	DL_Common_HW_PHD : PHDTag : 1001_TEST1.PV	High Range does not match referenced PHD tag (9999999999 <> 0)		9/19/2019 10:27:11 PM	

When you display the list of defects, DOC4000 provides several columns of information about each defect. The columns are defined as follows:

Status

Indicates the current status of the defect. The buttons at the top of the Defects window allow you to change the status of the selected defects to manage the defect review process. Each state, which includes Acknowledged, Assigned, Resolved, and Suppressed, is indicated by an icon in the **Status** column that matches the icon for the associated state. For example, a green check mark indicates a defect is Acknowledged.

Priority

Indicates whether the defect is considered low, normal, or high priority.

Object 1

Displays the name of the object to which the defect is related. The object name is a link that allows you to open the object in the defect viewer.

Object 2

Displays the name of a secondary object if the defect is related to missing references between the objects identified in the **Object 1** and **Object 2** columns. If the defect is not related to missing references, this column is blank.

Assigned User

Displays the name of the user the defect is assigned to. If the defect has not been assigned, this column is blank.

Title

Displays the description of the defect as defined by the defect check.

Date Identified

Displays the timestamp for when the import ran that identified the defect.

Punch List

Displays the number of the punch list the defect is associated with. If the defect has not been associated with a punch list, this column is blank.

Understanding the Defects Tab

You can display the defects for a specific object. Those defects are listed on the Defects tab for that object. Select the object in the asset hierarchy or asset explorer, and then select the Defects tab. This tab provides many of the same columns of information as the Defects window. For more information about the columns on this tab, see *Understanding the Defects Window and Columns* (page 42).

On the Defects tab, you can perform many of the same tasks you can perform on the Defects window. For more information, see *Working with Defects* (page 43).

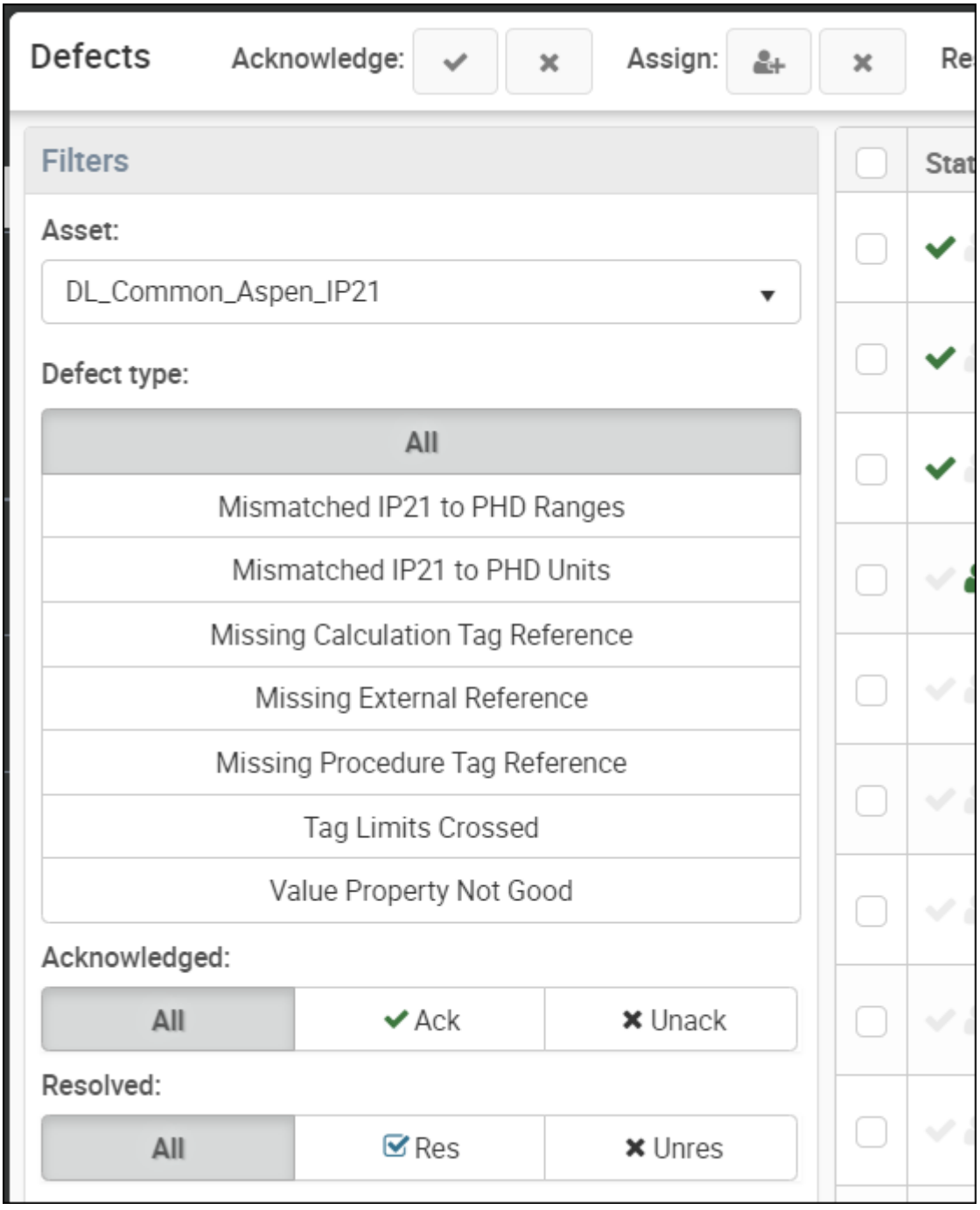
Working with Defects

The Defects window allows you to view the results of a variety of checks performed on selected systems after importing their configuration. Once DOC4000 identifies a defect, you can acknowledge it, assign it to a user for action, suppress it, and mark it as resolved. You can also associate a defect with a punch list. For more information, see the following topics:

- *Viewing and Filtering the Defects* (page 44)
- *Viewing the Defects for a Specific Object* (page 45)
- *Acknowledging a Defect* (page 46)
- *Printing and Exporting the List of Defects* (page 45)
- *Associating a Defect with a Punch List Item* (page 47)
- *Assigning a Defect* (page 47)
- *Suppressing a Defect* (page 48)
- *Resolving a Defect* (page 49)

Viewing and Filtering the Defects

When you display the Defects window, you select the asset and defect type to determine which defects to include in the list. You can then use the filter options to reduce the list and allow you to focus on the defects that are important to you.



To view and filter the list of defects:

1. In the DOC4000 web interface, click **Defects**.
2. In **Asset**, select the asset for which you want to view the list of defects.
3. In **Defect type**, select the type of defects you want to view.
4. In **Acknowledged** and **Resolved**, select the defect states you want to view.
5. Use the **Show Suppressed** or **Hide Suppressed** toggle to control display of suppressed defects.
6. If you want to filter the list based on the value of one or more columns, complete the following steps:
   a. Click the **Filter** icon next to the column name to display the filter criteria.
   b. In **Contains**, select an operator, such as **Starts with** or **Is equal to**, and then type the criteria value in the text box below. For example, select **Starts with**, and then type **Eng** to search for all defects where the value for that column starts with **Eng**. DOC4000 provides the operators **And** and **Or** to specify up to two text values where you can specify text to compare with the column text value.
   c. Click **Filter**.
7. If you want to sort the results by a column, click the column name.

Viewing the Defects for a Specific Object

When you click the link for an object in the defects list, the defect viewer displays for that object. Each defect for that object is listed in the defect viewer, and you can perform the same tasks from this drilled down view of the object defects. When you hover over the **Status** column in this view, the latest comment displays for that defect.

When you select an object in the asset hierarchy or asset explorer, the Defects tab in the right pane displays the defects for that object. This tab allows you to perform many of the same tasks you can perform on the Defects window, such as acknowledging a defect and associating a defect with a punch list item. For more information about the columns on this tab, see *Understanding the Defects Window and Columns* (page 42).

Printing and Exporting the List of Defects

After you display the list of defects you want, you can export the results to a Microsoft Excel file or to a PDF file for printing.

To print or export the list of defects:

1. In the DOC4000 web interface, click **Defects**.
2. Use the options to view only the defects you want to print or export. For more information, see *Viewing and Filtering the Defects* (page 44).
3. If you want to print the displayed list of defects, complete the following steps:
   a. Click the **Print** icon. DOC4000 creates and displays a PDF file that you can print or save.
   b. If you want to print the displayed PDF file, set the destination printer, and then click **Print**.
   c. If you want to save the displayed PDF file, set the destination to a saved file format, and then click **Save**. Specify where to save the PDF file, and then click **Save**.

4. If you want to export the displayed list of defects as a Microsoft Excel file, complete the following steps:
   a. Click the **Export to Excel** icon.
   b. Click **OK** on the confirmation message.
   c. Click **Save** to save the Excel file in the default download folder for your browser.

Acknowledging a Defect

You can acknowledge a defect to indicate that you are aware of that defect. Then, you can use the other buttons to assign or resolve the defect. When you display the list of defects, you can use the filter criteria to include or exclude acknowledged defects.

NOTE When you acknowledge a defect, the **Status** column includes a green check mark icon that matches the icon on the **Acknowledge** button and indicates the defect is acknowledged.

To acknowledge a defect:

1. In the DOC4000 web interface, click **Defects**.
2. Use the options to view the list of defects you want. For more information, see *Viewing and Filtering the Defects* (page 44).
3. Click the check box in the left column for the listed defects you want to acknowledge.
4. Click the **Acknowledge** button.
5. Type a comment to describe what you learned about the defects. This comment overwrites any previously saved comments for each defect.
6. Click **Submit**.
7. Click **Yes** on the confirmation message, if displayed.

Unacknowledging a Defect

You can acknowledge a defect to indicate that you are aware of that defect. You can then unacknowledge the defect, if needed.

To remove acknowledgment of a defect:

1. In the DOC4000 web interface, click **Defects**.
2. Use the options to view the list of defects you want. For more information, see *Viewing and Filtering the Defects* (page 44).
3. Click the check box in the left column for the listed defects from which you want to remove the acknowledged status.
4. Click the **Unacknowledge** button.
5. Type a comment to describe what you know about the defects. This comment overwrites any previously saved comments for each defect.
6. Click **Submit**.
7. Click **Yes** on the confirmation message, if displayed.

Associating a Defect with a Punch List Item

You can use the punch list to manage and track the resolution of defects. You can associate a defect with a new or existing punch list item. Then, you can use the punch list to manage the defect resolution process. You can also associate the punch list item with a workflow case to provide additional process management capabilities.

To associate a defect with a punch list item:

1. In the DOC4000 web interface, click **Defects**.
2. Use the options to view the list of defects you want. For more information, see *Viewing and Filtering the Defects* (page 44).
3. Click the check box in the left column for each listed defect you want to associate with the punch list item. DOC4000 associates all the selected defects with the same item.
4. Click the **Punch List** button. A list of existing punch list items is displayed.
5. If you want to associate the defect with an existing punch list item, select the punch list item from the list.
6. If you want to associate the defect with a new punch list item, leave the **Punch List Item ID** field blank.
7. Click **Associate**. The punch list item is displayed with the defect.
8. Specify the information, as needed, in the punch list item fields, and then click **Save**.

Assigning a Defect

You can assign a defect to a user for further investigation. The user can then use the other buttons to acknowledge and resolve the defect. When you display the list of defects, you can use the filter criteria to include or exclude assigned defects.

NOTE When you assign a defect, the **Status** column includes a green user with plus sign icon that matches the icon next to **Assign** and indicates the defect is assigned.

To assign a defect to a user:

1. In the DOC4000 web interface, click **Defects**.
2. Use the options to view the list of defects you want. For more information, see *Viewing and Filtering the Defects* (page 44).
3. Click the check box in the left column for the listed defects you want to assign to a user.
4. Click the **Assign** button.
5. Select the user or group to assign the defect to.
6. Type a comment to describe what you know about the defects. This comment overwrites any previously saved comments for each defect.
7. Click **Submit**.
8. Click **Yes** on the confirmation message, if displayed.

Unassigning a Defect

You can assign a defect to a user for further investigation. You can then unassign the defect, if needed.

To unassign a defect:

1. In the DOC4000 web interface, click **Defects**.
2. Use the options to view the list of defects you want. For more information, see *Viewing and Filtering the Defects* (page 44).
3. Click the check box in the left column for the listed defects you want to unassign.
4. Click the **Unassign** button.
5. Type a comment to describe what you know about the defects. This comment overwrites any previously saved comments for each defect.
6. Click **Submit**.
7. Click **Yes** on the confirmation message, if displayed.

Suppressing a Defect

After reviewing a defect, you can choose to suppress the defect to hide it from the list of defects unless you choose to include it in the list. This option allows you to hide lower-priority defects while you focus on more important issues You can click the **Show/Hide Suppressed Defects** toggle to include or exclude suppressed defects in the list.

NOTE When you suppress a defect and choose to include suppressed defects in the list, the **Status** column includes a red circle with slash icon that matches the icon on the **Suppress** button and indicates the defect is suppressed.

To suppress a defect:

1. In the DOC4000 web interface, click **Defects**.
2. Use the options to view the list of defects you want. For more information, see *Viewing and Filtering the Defects* (page 44).
3. Click the check box in the left column for the listed defect you want to suppress.
4. Click the **Suppress** button.
5. Type a comment to describe what you know about the defect. This comment overwrites any previously saved comments for this defect.
6. Click **Submit**.
7. Click **Yes** on the confirmation message, if displayed.

Unsuppressing a Defect

You can choose to suppress a defect to hide it from the list of defects unless you choose to include them in the list. You can then unsuppress the defect, if needed.

To unsuppress a defect:

1. In the DOC4000 web interface, click **Defects**.
2. Use the options to view the list of defects you want. For more information, see *Viewing and Filtering the Defects* (page 44).
3. Click the check box in the left column for the listed defect from which you want to remove the suppressed status.
4. Click the **Unsuppress** button.
5. Type a comment to describe what you know about the defects. This comment overwrites any previously saved comments for each defect.
6. Click **Submit**.
7. Click **Yes** on the confirmation message, if displayed.

Resolving a Defect

You can resolve a defect to indicate that you evaluated the defect and resolved the issue. You can also add a comment to indicate how you corrected the defect. When you display the list of defects, you can use the filter criteria to include or exclude resolved defects.

NOTE When you resolve a defect, the **Status** column includes a blue check mark in a box icon that matches the icon on the **Resolve** button and indicates the defect is resolved.

To mark an issue as resolved:

1. In the DOC4000 web interface, click **Defects**.
2. Use the options to view the list of defects you want. For more information, see *Viewing and Filtering the Defects* (page 44).
3. Click the check box in the left column for the listed defects you want to mark as resolved.
4. Click the **Resolve** button.
5. Type a comment to describe what you know about the defects and what you did to correct the issue. This comment overwrites any previously saved comments for each defect.
6. Click **Submit**.
7. Click **Yes** on the confirmation message, if displayed.

Unresolving a Defect

You can resolve a defect to indicate that you evaluated the defect and resolved the issue. You can then unresolve the defect, if needed.

To mark an issue as unresolved:

1. In the DOC4000 web interface, click **Defects**.
2. Use the options to view the list of defects you want. For more information, see *Viewing and Filtering the Defects* (page 44).

3. Click the check box in the left column for the listed defects from which you want to remove the resolved status.
4. Click the **Unresolve** button.
5. Type a comment to describe what you know about the defects. This comment overwrites any previously saved comments for each defect.
6. Click **Submit**.
7. Click **Yes** on the confirmation message, if displayed.

SECTION 4

Organizing Work Items

To help you organize and manage your work, DOC4000 provides both a punch list and workflow cases. The punch list allows you to identify a list of work items to help you proactively manage a project. Workflow cases allow you to define standard work processes, including checklists and groups of assignees or approvers, and then create a case that follows one of those defined processes. For more information, see the following topics:

Understanding the Punch List

The Punch list in DOC4000 allows you to proactively define and execute the validation of your systems and their configuration. By using the punch list, you can ensure systems are regularly validated during the project lifecycle to reduce the risk of discrepancies. This capability supports proactive management, which increases quality and on-time delivery.

You can directly create a punch list item, or you can create one from a workflow case or defect. When you create a punch list item from a workflow case, the punch list item is associated with the case for coordination, follow-up, and resolution. The Punch List Summary allows you to view the list of existing punch list items. Each item has a unique ID number, title, and description. The DOC4000 administrator defines who can modify or delete punch list items.

The following topics provide additional information about punch list concepts:

How Punch List Items Work with Cases, Objects, and Defects

The following list highlights several key aspects of punch lists:

- You can associate a punch list item with up to one case.
- You can associate a case with many punch list items.
- You can associate a punch list item with 0 or more objects and defects.
- You can associate an object with 0 or more punch list items.
- You can associate a defect with 0 or more punch list items.
- DOC4000 records all changes to a punch list item in the change tracking log.
- An DOC4000 administrator assigns permissions for displaying, using, editing, and deleting punch list items.

Understanding the Punch List Fields

Each punch list item has a number of fields that describe and define that punch list item. The Punch List Summary page provides many of these fields so you can search and sort the list of items. When you open an individual punch list item, you can view all the fields for that punch list item. The following list summarizes and defines the punch list fields:

ID

Provides a unique number assigned to the punch list item.

Past Due Status

Displays icons that identify whether the punch list item is Past Due, High Priority, Completed, Assigned, or Suppressed. You can hover over each icon to display a tooltip that identifies the meaning of the icon.

Title

Provides a unique name for the punch list item. The punch list does not allow two items to have the same title.

Description

Provides a description of the punch list item, such as how to complete the task.

Category

Provides a classification for the punch list item of up to 50 characters. This field allows you to identify and group punch list items as needed.

Status

Displays the current state of the punch list item, such as **Open**, **Assigned**, **Suppressed**, or **Closed**.

Owner

Displays the user who created the punch list item. This field is set by DOC4000 and cannot be changed.

Assigned To

Displays the user who is responsible for the next step for this punch list item.

Date Entered

Displays the date and time this punch list item was created. This field is set by DOC4000 and cannot be changed.

Date Assigned

Displays the date and time this punch list item was last assigned to a user. This field is set and updated by DOC4000.

Date Modified

Displays the date and time this punch list item was last modified and saved. This field is set and updated by DOC4000.

Date Due

Specifies the date and time when the punch list item should be complete.

Date Closed

Displays the date and time this punch list item was closed. This field is set by DOC4000 and cannot be changed.

Cost

Specifies the cost for this punch list item, up to 50 characters. If the punch list item is associated with a defect, DOC4000 populates this field based on the accumulated cost of all associated defects.

Priority

Specifies the priority for the punch list item, such as **High**, **Medium**, or **Low**. The default value is **Low**.

Percent Complete

Specifies the percentage of work finished, from 0 to 100%, for this punch list item. If the punch list item is associated with a single defect, DOC4000 displays the value of the associated defect in this field.

Workflow Case

Displays a link to the workflow case associated with this punch list item, if any.

Workflow Case Status

Displays the status of the workflow case associated with this punch list item, such as **Open**, **Assigned**, **Suppressed**, or **Closed**. This field is set and updated by DOC4000.

Comments

Provides an optional description of the progress of work for this punch list item.

Resolution

Provides an optional description of what was accomplished to complete and close this punch list item.

User Defined Fields (UDF*x*)

Provides three additional optional fields that allow you to record more information related to the punch list item. You can define the information that is important to you for the work tracked by these punch list items.

Associated Defects

Displays all the defects associated with this punch list item. Each defect in the list provides a linked ID, title, and status for that defect, and each defect is listed on a separate line.

Associated Objects

Displays all the objects associated with this punch list item. Each object in the list provides a linked ID for that object, and each object is listed on a separate line.

Working with the Punch List

The punch list provides a list of defined work items to accomplish for a project. When you create a punch list item, DOC4000 sets the status to **Open**. As you perform the work defined by the punch list item, you may need to modify the punch list to note your progress, assign it to someone else, or even suppress it if the work cannot be completed. When you finish the work defined by the punch list item, you can close it.

Punch list items can often be associated with a set of objects or defects that are affected by the described work. You can also associate a punch list item with a workflow case to track related work using a defined workflow. DOC4000 also allows you to export the punch list to a Microsoft Excel file. The following sections provide more information about using the punch list.

Viewing or Exporting the Punch List

The punch list provides the list of punch list items. You can choose whether to include closed or suppressed items in the list. You can also export the list to a Microsoft Excel file.

To view or export the punch list:

1. In the DOC4000 web interface, click **Punch List**. The Punch List Summary page is displayed.
2. If you want to include closed punch list items in the list, check **Show Closed Items**.
3. If you want to include suppressed punch list items in the list, check **Show Suppressed Items**.
4. If you want to export the list of punch list items to a Microsoft Excel file, complete the following steps:
   a. Click the **Export** button.
   b. Follow your browser instructions to save the Excel file.

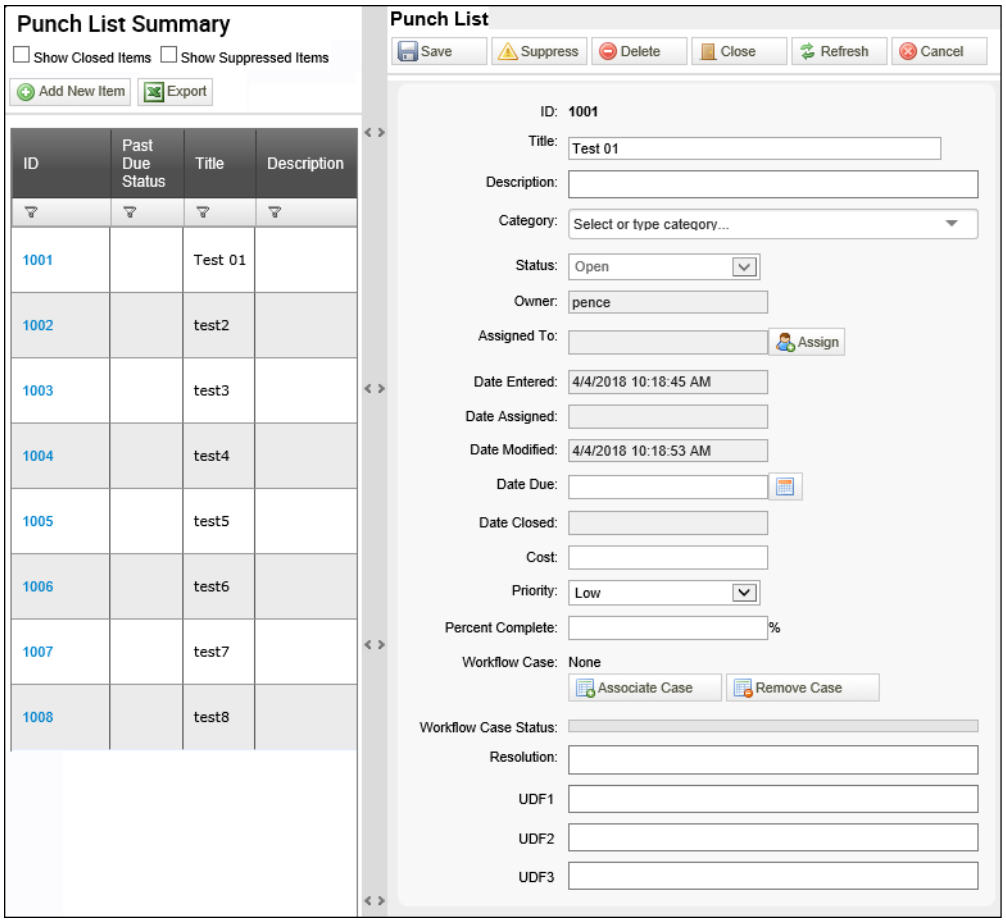
Creating a Punch List Item

You can create a punch list item for each defined unit of work. You can assign a punch list item to someone and you can track its progress through to completion. DOC4000 provides a flexible design so you can record the information that is important to you in each punch list item, including up to three user-defined fields.

Most of the fields allow you to type the text you need, or you can copy and paste text as needed. Several fields have preset selections from which to choose.

To create a new item in the punch list:

1. In the DOC4000 web interface, click **Punch List**.
2. Click the **Add New Item** button.
3. Specify information in the fields to define the work for this punch list item. For more information, see *Understanding the Punch List Fields* (page 52).



4. Click **Save**.

Reviewing and Modifying a Punch List Item

You may need to modify a punch list item for many reasons, such as assigning it to someone, setting the due date, or adding a comment. To work with a punch list item, you need to open the Punch List Summary page, and then select the punch list item you want to review and modify.

To review and modify a punch list item:

1. In the DOC4000 web interface, click **Punch List**.
2. Click the **ID** for the punch list item you want to review or modify. The punch list item is displayed to the right pane.
3. Change the fields you want for this punch list item. For more information, see *Understanding the Punch List Fields* (page 52).

4. Click **Save**. DOC4000 saves the changes to the punch list item and records all changes to the punch list item in the change tracking log.

Associating a Punch List Item with a Case

You can associate a punch list item with a case by using the **Associate Case** button when you are viewing a punch list item. Remember to click **Save** after you change a punch list item.

To associate a punch list item with a case:

1. In the DOC4000 web interface, click **Punch List**.
2. Click the **ID** for the item you want to associate with a workflow case. The item is displayed in the right pane.
3. In the right pane, click **Associate Case**. The Workflow Cases window is displayed.
4. Click the **ID** for the case you want to associate with the punch list item.
5. Click **Punch List** at the top of the Case tab on the right. The Associate with Punch List Item window is displayed with the ID of the previously selected punch list item.
6. Click **Associate**. The Punch List window is displayed for the selected punch list item. You can see the associated case in the **Workflow Case** field.
7. Click **Save** to store the changes to the punch list item.

Associating a Punch List Item with a Defect or Object

In a similar way as cases, you can use the **Associate Defects** or **Associate Objects** button to associate a punch list item with one or more defects and objects. Remember to click **Save** after you change a punch list item.

To associate a punch list item with a defect or object:

1. In the DOC4000 web interface, click **Punch List**.
2. Click the **ID** for the item you want to associate with one or more defects or objects. The item is displayed in the right pane.
3. If you want to associate the punch list item with one or more defects, complete the following steps:
    a. Click **Associate Defects**. The Defects window is displayed.
    b. Select the options you want, and then click **Go** to display the list of defects.
    c. Check the check box to the left of each defect you want to associate with the punch list.
    d. Click **Punch List** at the top of the list. The Associate with Punch List Item window is displayed with the ID of the previously selected punch list item.
    e. Click **Associate**. The Punch List window is displayed for the selected punch list item. You can view the associated defects in the **Associated Defects** field.
4. If you want to associate the punch list item with one or more objects, complete the following steps for each object you want to associate with the punch list item:
    a. Click **Associate Objects**. The Add Objects window is displayed.

b. Navigate to and select the object you want to associate with the punch list.

c. Click **Save**. The Punch List window is displayed for the selected punch list item. You can view the associated objects in the **Associated Objects** field.

5. Click **Save** to store the changes to the Punch List item.

Removing an Associated Case, Defect, or Object from a Punch List Item

If you have a case, defect, or object associated with a punch list item, you may want to remove that association. Remember to click **Save** after you change a punch list item.

To remove an associated case, defect, or object from a punch list item:

1. In the DOC4000 web interface, click **Punch List**.
2. Click the **ID** for the item you want to change. The item is displayed in the right pane.
3. If you want to remove the associated case, in the right pane, click **Remove Case**. You can see the associated case is no longer in the **Workflow Case** field.
4. If you want to remove one or more associated defects, complete the following steps:
   a. Click **Remove Defects**. The Remove Defects window is displayed.
   b. For each associated defect you want to remove, select the defect in the list, and then click **Remove**.
   c. Click **Save**. The Punch List window is displayed. You can view the remaining associated defects in the **Associated Defects** field.
5. If you want to remove one or more associated objects, complete the following steps:
   a. Click **Remove Objects**. The Remove Objects window is displayed.
   b. For each associated object you want to remove, select the object in the list, and then click **Remove**.
   c. Click **Save**. The Punch List window is displayed. You can view the remaining associated objects in the **Associated Objects** field.
6. Click **Save** to store the changes to the Punch List item.

Suppressing a Punch List Item

If work cannot be completed for a punch list item, you may want to suppress that punch list item. Then, you can review the suppressed punch list items in the future and assign them to someone when the work can be completed. You may also choose to suppress a punch list item if you decide you no longer need to perform that work item. Suppressing a punch list item allows you to maintain the information in that item, but you can hide it from the list of open and assigned punch list items.

DOC4000 records all changes to the punch list items in the change tracking log. When you click **Save**, DOC4000 saves the changes to the punch list item and displays a confirmation message about the change.

To suppress a punch list item:

1. In the DOC4000 web interface, click **Punch List**.
2. Click the **ID** for the item you want to suppress. The item is displayed in the right pane.
3. Click **Suppress**. The status of the punch list item is set to **Suppressed**. You cannot change the punch list item until you unsuppress it by assigning it to someone.

Unsuppressing a Suppressed Punch List Item

You can unsuppress a punch list item by assigning it to someone.

To unsuppress a punch list item:

1. In the DOC4000 web interface, click **Punch List**.
2. Check **Show Suppressed Items** to include suppressed punch list items in the list.
3. Click the **ID** for the item you want to unsuppress. The item is displayed in the right pane.
4. Click **Assign**.
5. Select the user to whom you want to assign the punch list item.
6. Click **Save** on the Assign To window.
7. Click **Save** in the right pane. The status of the punch list item is set to **Assigned**.

Closing a Punch List Item

Once you close a punch list item, you cannot modify or delete that item. Closing a punch list item indicates that the item is finished and complete.

To close a punch list item:

1. In the DOC4000 web interface, click **Punch List**.
2. Click the **ID** for the item you want to close. The item is displayed in the right pane.
3. Click **Close**. The status of the punch list item is set to **Closed**.

Deleting a Punch List Item

You can delete a punch list item that is open or assigned. Once a punch list item is closed, you cannot modify or delete that item. If a punch list item is suppressed, you need to assign it to someone before you can modify or delete the punch list item.

To delete a punch list item:

1. In the DOC4000 web interface, click **Punch List**.
2. Click the **ID** for the item you want to delete. The item is displayed in the right pane.
3. Click **Delete**.
4. Click **Yes** on the confirmation message.

Understanding Workflows and Cases

You can use workflow definitions and cases to support your management of change (MOC) processes. You can define your standard work processes, and then create cases for units of work that follow the defined processes. The cases document the work as it progresses and can help you comply with regulations, such as those in OSHA 1910.119(l).

A workflow definition, much like a process flow diagram, identifies each step (state) in a work process and the transition from one state to the next. The workflow definition also determines whether a state includes a checklist. An administrator creates and configures as many workflow definitions as you need.

Each workflow definition consists of a beginning state and an ending state with a *normal* path that includes defined transitions between each state. An administrator can also create alternate paths. For example, the *normal* path might be that an issue is assigned, work is performed, work is reviewed, and then it is approved before completion. An alternate path might be that the work is rejected, additional work must be done, and then resubmitted for review and approval.

Once configured, you can create a case based on a workflow definition. Cases allow you to document your specific procedures for managing changes with customized checklists, procedural states and transitions, and authorization sign-offs. A case provides the set of fields that describe the work to be completed and allow you to add information about the work. The case uses the states, checklists, and transitions defined by the associated workflow definition to follow the work process.

DOC4000 provides several sample workflow definitions. Your administrator creates and configures the workflow definitions that meet your specific needs. Then, the Workflow Cases window in the DOC4000 web interface allows you to create and work with cases. You can click on a row in this window to display the details of that case.

The Workflow Cases window is available only if the PAS Workflows asset model is licensed and configured.

For more information, see the *Administration Guide*.

Understanding How Workflow Cases Are Created

When you click the **Start New Case** button to create a case, you select a workflow definition for the case. Then, the case is updated as each state of the workflow definition is achieved. An administrator can define which fields and workflow definitions you can select when starting a new case.

For more information about configuring the case type selection properties, see the *Administration Guide*.

DOC4000 also provides automation that integrates workflow cases with common functions, such as change tracking, vulnerability and patch management, and baselines. When you click a configured button or a condition is detected, DOC4000 creates a case using the appropriate workflow definition.

For more information about configuring this automation, see the *Administration Guide*.

Understanding Workflow Case Fields

Each workflow case has a number of fields that describe and define that case. Some of the fields are provided by DOC4000 and others are added by an administrator during the workflow configuration process. In addition, some of these fields support automation within DOC4000 to identify the case and allow DOC4000 to integrate workflow cases with several functional areas.

The Workflow Cases page displays many of these fields as columns so you can search and sort the list of cases. When you open an individual case, you can view and modify the fields for that case. The following list defines the default DOC4000 case fields:

Case ID

Provides a unique number assigned to the case.

Location

Provides a location defined by an administrator. This field allows you to group cases, such as by plant or area within a plant. This field is often used to identify the workflow definition to use. When you start a new case and select a location, the **Category** and **Selected Definition** fields are populated.

Category

Provides a classification for the case. This field lists the defined categories for the location selected in the **Location** field. DOC4000 uses this value to identify the workflow definitions to list in the **Selected Definition** field.

Selected Definition or Type

Specifies the workflow definition used by the case. When you create a case, this field is labeled **Selected Definition** and it provides the workflow definitions available for the **Location** and **Category** field values you selected. The case uses the workflow definition you select to determine the states, transitions, checklists, and notifications for the case. You cannot change this value for an existing case.

Description

Provides a description of the workflow case, such as the overall goal and how to complete the task. DOC4000 displays the description in many cases like a title that identifies the workflow case.

Case Prefix

Provides the value to use with the **Case ID** value to identify the case. This field allows you to quickly group related cases, such as by type of work item or whatever prefixes your administrator defined.

Date Started

Displays the date and time this workflow case was created. This field is set by DOC4000 and cannot be changed.

Date Modified

Displays the date and time this workflow case was last modified and saved. This field is set and updated by DOC4000.

Date Completed

Displays the date and time this workflow case was finished. This field is set by DOC4000 and cannot be changed.

Current State

Displays the current state of this workflow case as defined by the workflow definition, such as **Begin**.

Owner

Displays the user who is responsible for the next step for this workflow case. This field is set and maintained by DOC4000. When you reassign a case, DOC4000 sets this field to the newly selected user. In some cases, DOC4000 can automatically set this value based on configured automation.

Associated Deviations

Displays all the deviations associated with this workflow case. Each deviation in the list provides a linked ID for that deviation, and each deviation is listed on a separate line. DOC4000 provides this field instead of the **Associated Objects** field for cases using a baseline deviations workflow definition.

Associated Objects

Displays all the objects associated with this workflow case. Each object in the list provides a linked ID for that object, and each object is listed on a separate line.

Associated Vulnerability Matches

Displays all the vulnerability matches associated with this workflow case. Each vulnerability match in the list provides a linked ID for that vulnerability match, and each vulnerability match is listed on a separate line. DOC4000 provides this field instead of the **Associated Objects** field for cases using a vulnerability management workflow definition.

Awaiting Approval

Lists the users who can approve the workflow case in its current state so it can transition to the next state in the workflow definition. When one of these users approves the workflow case, DOC4000 sets the **Approved By** field to that user and clears the **Awaiting Approval** field.

Approved By

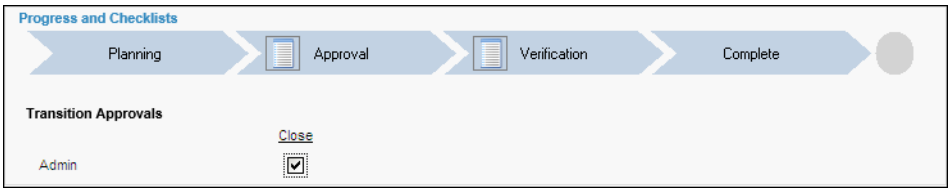
Specifies the user who approved the workflow case in its previous state so it transitioned to its current state in the workflow definition. When a user approves a workflow case, DOC4000 sets the **Approved By** field to that user and clears the **Awaiting Approval** field.

Checklist Assignment

Specifies the user who is assigned to the checklist that is associated the current state of the workflow case.

Progress and Checklists

Displays the states in the workflow definition for this workflow case and identifies the current state of this case. Each state with a checklist displays an icon that allows you to access that checklist.



Transition Approvals

Provides the check boxes and comment field for a user to approve the workflow case so it can transition to the next state in the workflow definition. When a user approves and saves the workflow case, DOC4000 transitions the case to the next state and records the change, approval, and transition in the history of the case.

History

Provides the list of actions and related changes made to the workflow case. Each action shows the date and time of the action and the user who performed the action.

Working with Workflow Cases

You can perform many tasks for workflow cases from the Workflow Cases window in the DOC4000 web interface. This window is displayed when you click the Workflows tab. This window lists all open workflow cases and allows you to filter and sort the list, as well as create new cases and modify existing cases. The next several sections provide more information about these tasks.

If an object supports workflow cases, you can select the workflow case link associated with the object in the DOC4000 web interface and then work with workflow cases for that object on the MOC Case tab. The MOC Case tab lists case details you can view and act on.

Viewing the Workflow Cases

By default, the Workflow Cases window lists all open cases. This window provides options that allow you to filter which cases are displayed. For example, you can choose whether to include closed or deleted cases in the list. You can also limit the cases displayed based on the currently logged in user.

This window also allows you to search for specific case identifiers. When combined with other options on the window, you can limit which cases are searched. For example, you can specify dates in the **Date Started** and **Date Completed** fields to limit the timespan searched.

To view workflow cases:

1. In the DOC4000 web interface, click **Workflows**. The Workflow Cases window is displayed.

2. If you want to search by case content, type the content in the search box and click **Search**. To display all cases again, clear the search content, and then click **Search**.
3. Click **Options**.
4. If you want to limit the displayed cases by the date the case was created or finished, complete the following steps:
   a. Click **Date Started** or **Date Completed**.
   b. Specify the begin and end dates and times to specify the date-time range for the date started or completed. You can type each date and time value or use the calendar to select the date and time values you want.
5. If you want to limit the list of cases, select the appropriate **View** option:
   - **Include closed cases**
   - **Include deleted cases**
   - **Only cases awaiting my approval** - Displays cases that require your approval for the current state of the case so it can transition to the next state.
   - **Only cases owned by me** - Displays cases where you are the current owner.
   - **Only cases awaiting my checklist completion** - Displays cases where you are associated with the checklist for the current state of the case.
1. If you want to display one or more optional information columns, toggle the button for the columns you want to display, such as **Checklist Assignment**, in the **Optional Columns** field.
2. Click **Go** to apply the options you selected.

You can adjust and filter the columns on the Workflows tab. Then, you can save the layout for future use. In **Grid,** the **Save State** button saves the current column sorting or grouping within the grid and the **Clear State** button clears the grid state.

DOC4000 provides additional ways to view sets of workflow cases based on characteristics of those cases. For more information, see the following topics:

- *Viewing Case Summaries* (page 63)
- *Viewing Cases with Associated Objects* (page 65)
- *Viewing Files Attached to Checklists in a Case* (page 66)
- *Exporting the List of Workflow Cases* (page 66)
- *Searching the Cases* (page 66)

Viewing Case Summaries

DOC4000 provides several types of workflow case summaries that include charts and statistics about the existing cases. You can choose from the following summaries:

Number of open cases

Provides a bar or trend chart showing the number of cases that are in a state other than completed or closed during a specified time period.

Number of completed cases

Provides a bar or trend chart showing the number of cases, including closed cases, that have been completed during a specified time period.

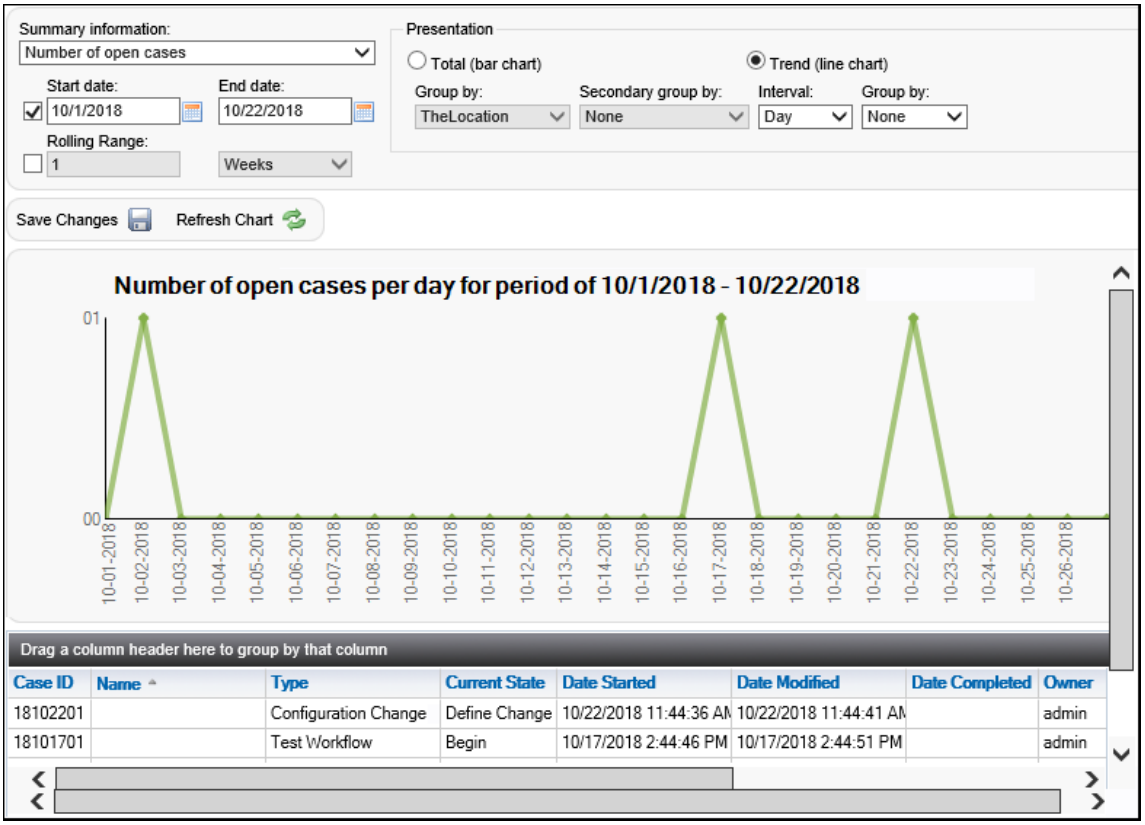
Number of completed but not closed cases

Provides a bar or trend chart showing the number of cases that were completed but not closed during a specified time period.

Duration of cases

Provides a trend chart showing the average number of days that a case is open. Only the cases that were active during the specified time period are included in this summary.

DOC4000 provides options so you can group the cases in the chart by the field you choose, such as the **Location** field. DOC4000 lists the cases that meet the selected summary criteria and options below the chart.



To view a summary:

1. In the DOC4000 web interface, click **Workflows**.
2. On the Workflow Cases page, click **Summary**.
3. In **Summary Information** on the Summary window, select the type of summary you want.

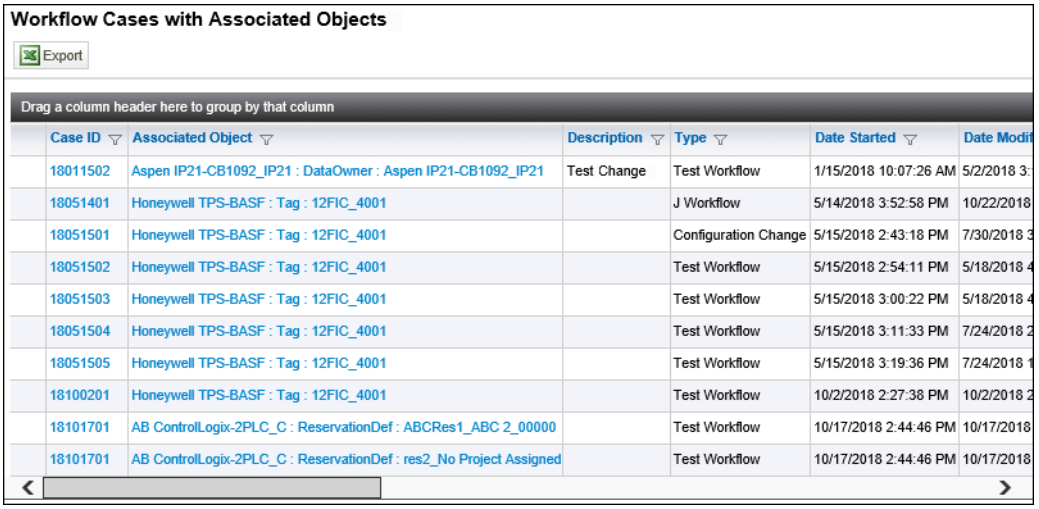
4. If you want to use beginning and end dates to define the date range for cases to include in the summary, specify the begin and end dates in the **Start Date** and **End Date** fields and check the box next to these fields. You can type each date value or use the calendar to select the date you want.
5. If you prefer to use a rolling date range from today to define the date range for cases to include in the summary, check the **Rolling Range** check box, and then specify the number of days, weeks, or years of cases to include.
6. Click **Refresh Chart**.
7. Use the **Presentation** area options to select the chart type you want and to adjust how the chart is displayed. After you change the options, click **Refresh Chart** to display the new chart:

- **Total (bar chart)** - allows you to select the primary and secondary fields by which to group the cases.
- **Trend (line chart)** - allows you to select the interval time period for the trend and a primary field by which to group the cases.

1. If you want to save the currently selected summary and options as the default when the Summary window is displayed, click **Save Changes**.

Viewing Cases with Associated Objects

DOC4000 provides a summary list of only the cases that have objects associated with them. You can sort the list by any column to quickly find the cases you want. You can also filter each column by value and drag one or more column headings into the top bar to group the list by those column values.



Case ID	Associated Object	Description	Type	Date Started	Date Modif
18011502	Aspen IP21-CB1092_IP21 : DataOwner : Aspen IP21-CB1092_IP21	Test Change	Test Workflow	1/15/2018 10:07:26 AM	5/2/2018 3:
18051401	Honeywell TPS-BASF : Tag : 12FIC_4001		J Workflow	5/14/2018 3:52:58 PM	10/22/2018
18051501	Honeywell TPS-BASF : Tag : 12FIC_4001		Configuration Change	5/15/2018 2:43:18 PM	7/30/2018 3
18051502	Honeywell TPS-BASF : Tag : 12FIC_4001		Test Workflow	5/15/2018 2:54:11 PM	5/18/2018 4
18051503	Honeywell TPS-BASF : Tag : 12FIC_4001		Test Workflow	5/15/2018 3:00:22 PM	5/18/2018 4
18051504	Honeywell TPS-BASF : Tag : 12FIC_4001		Test Workflow	5/15/2018 3:11:33 PM	7/24/2018 2
18051505	Honeywell TPS-BASF : Tag : 12FIC_4001		Test Workflow	5/15/2018 3:19:36 PM	7/24/2018 1
18100201	Honeywell TPS-BASF : Tag : 12FIC_4001		Test Workflow	10/2/2018 2:27:38 PM	10/2/2018 2
18101701	AB ControlLogix-2PLC_C : ReservationDef : ABCRes1_ABC 2_00000		Test Workflow	10/17/2018 2:44:46 PM	10/17/2018
18101701	AB ControlLogix-2PLC_C : ReservationDef : res2_No Project Assigned		Test Workflow	10/17/2018 2:44:46 PM	10/17/2018

To display the list of cases with associated objects:

1. In the DOC4000 web interface, click **Workflows**.
2. On the Workflow Cases page, click **Cases with Associated Objects**.
3. If you want to export the results to a Microsoft Excel file, click **Export**, and then follow your browser instructions to save the Excel file.

Viewing Files Attached to Checklists in a Case

Some checklists allow you to attach one or more files to the checklist. You may need to review these files without knowing to which checklist each file is connected. DOC4000 simplifies this task by allowing you to view a list of files attached to any of the checklists in a case.

To view the files attached to the checklists in a case:

1. In the DOC4000 web interface, click **Workflows**.
2. On the Workflow Cases page, click the row of the case you want to open and view its attached files.
3. Click the Attachments tab in the right pane. This tab lists the files attached to the checklists in the case.

Exporting the List of Workflow Cases

You can export the list of workflow cases from the Workflows tab. The **Export** button allows you to export the displayed grid to a Microsoft Excel file. DOC4000 exports the information as it is displayed, so you can group the list and size the columns as needed before you export the displayed grid.

To export the list of workflow cases:

1. In the DOC4000 web interface, click **Workflows**.
2. Adjust the displayed information in the grid as you want it.
3. Click **Export**.
4. Follow your browser instructions to save the Excel file.

Searching the Cases

The text box to the left of the **Search** button allows you to find all cases that match the text you specify. DOC4000 finds all cases with a field that matches the text you specify. You can also use the display options to limit which cases are included in the search results. The **Clear Search** button, an **x** to the right of the search text, clears the search text. Click the **Search** button with no search text to refresh the displayed list.

To search for cases with a field that contains a text string:

1. In the DOC4000 web interface, click **Workflows**.
2. If you want to limit which cases are included in the search, complete the following steps:
   a. Click **Show Options**.
   b. Specify the options you want. For more information about using these options, see *Viewing the Workflow Cases* (page 62).
   c. Click **Go**.

3. Type a value, such as a case number, in the text box to the left of the **Search** button. For example, type 17 to find all cases with a field value that contains 17.
4. Click **Search**.
5. If you want to export the search results to a Microsoft Excel file, click the **Excel** button, and then follow your browser instructions to save the Excel file.
6. If you want to open a case, click the row of the case you want to open.

Starting a Workflow Case (Creating a Case)

You can create a case to document your specific actions for managing a change. When you click the **New Case** button to start a case, DOC4000 displays a set of initial fields to determine which workflow definition to use for the case. These case-type fields include the **Selected definition** field, which lists the names of the available workflow definitions.

A workflow definition identifies the states and transitions to use for the case, much like a process flow diagram. An administrator must create and configure the workflow definitions before you can create a case. For more information, see *Understanding Workflows and Cases* (page 59).

DOC4000 also provides automation that integrates workflow cases with common functions. For more information, see *Understanding How Workflow Cases Are Created* (page 59).

To start a new case based on a workflow definition:

1. In the DOC4000 web interface, click **Workflow**.
2. Click **New Case**.
3. Specify the common information required by a case, such as the **Location**, **Category**, and **Selected definition** fields, and then click **OK**. For more information, see *Understanding Workflow Case Fields* (page 60).
4. In **Description**, type the description to identify the work required for this case.
5. Specify values for additional required fields identified with a red asterisk (*****).
6. Click **Save**.

Starting a Case with Associated Objects

DOC4000 allows you to add associated objects to a workflow case. You can also create a workflow case while viewing an object. In this case, DOC4000 associates that object with the case. You can then select additional objects and associate those objects with the case. The following figure illustrates the Cases tab for the selected object.

This functionality is available for specific object types, based on their asset model.

For more information about enabling the **Case** tab for specific object types, see the *Administration Guide*.

To start a case from an object:

1. Select an object from the Asset Explorer.
2. Click the **Case** tab in the right pane.

3. Click **Start New Case**.
4. Specify the common information required by a case, such as the **Location**, **Category**, and **Selected definition** fields, and then click **OK**. For more information, see *Understanding Workflow Case Fields* (page 60).
5. In the **Open Workflow Cases** list, click the **Case ID** link for the case you just created.
6. In **Description**, type the description to identify the work required for this case.
7. Specify values for additional required fields identified with a red asterisk (*).
8. Click **Save**.

Then, you can close the window opened for the new case.

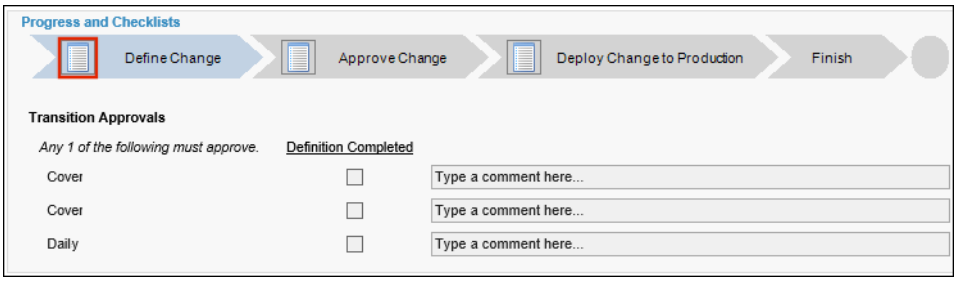
Updating a Case

When you create a case, you select the workflow definition that designates the steps to follow to document the case. As you work on the case, you need to update it as it transitions from state-to-state in the workflow. Each state can have a checklist of items that you complete before the workflow can transition to the next state. The assigned user or the administrator can update the checklist. Only the assigned user can sign the checklist.

An administrator assigns checklists to states in a workflow definition. A checklist can include required items, such as the date and time when a piece of equipment was serviced. To transition the case to the next state, DOC4000 requires an approval from one of the authorized approvers. When all states are complete, DOC4000 requires an approval to close the case. The **History** section of the case records the date and time of each change and approval for the case.

To update a case:

1. In the DOC4000 web interface, click **Workflows**.
2. On the Workflow Cases page, click the row of the case you want to open and edit.
3. If a checklist exists for the current state, complete the following steps to work on the checklist:
   a. In the **Progress and Checklists** area of the case, click the checklist icon in the current state. For example, the following image illustrates the Define Change state is the current state as it is highlighted in blue.



   b. On the Check List window, complete each section. A red asterisk (*) is displayed next to the label for each required field. The checklist can include many types of fields, such as check boxes, radio buttons, text boxes, and drop-down lists. The following types of fields provide key features:

- **Signature** - Click the check box to indicate a signature. Then, click **OK** on the confirmation message box.

- **Proposed Changes** - In each column of the data grid, type or select the value and add comments concerning the changes.
- **Reconciled Changes** - Type comments concerning the changes.

a. When you are done with the checklist, click **Save Your Changes**.

4. If the current state is complete, in the **Transition Approvals** area, click the check box to approve completion of the state. If the workflow has been configured to require specific signatures for approval, these users must complete this step.
5. If you want to add a comment to the case, type a comment in the **History** field. You can include a URL in your comment. DOC4000 presents URLs that start with `http://` or `https://` as links to the specified URL.
6. Click **Save**.

Printing a Case

You can print a case or save it as a PDF file.

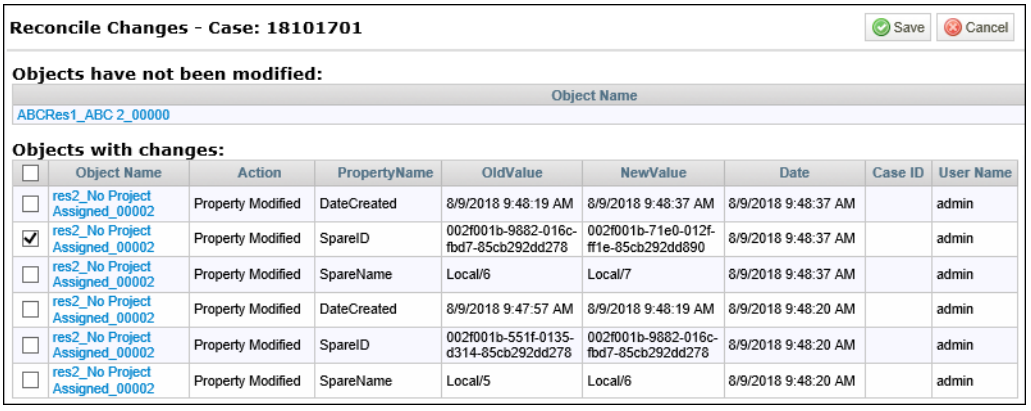
To print a case:

1. In the DOC4000 web interface, click the **Workflows** tab.
2. On the Workflow Cases page, click the row of the case you want to open and print.
3. Click **Print**. The report is displayed in a new window in PDF format.
4. If you want to print the displayed case, click the **Print** icon in the PDF window.
5. If you want to save the case as a PDF file, click the **Save** icon in the PDF window.

Reconciling Changes Associated to a Case

In many situations, you have a workflow case for work related to a set of objects. For example, you may be reviewing changes made to several system resources. Those objects are associated with the case. DOC4000 simplifies the process for reconciling changes to objects associated with a case.

The Reconcile Changes window provides a list of the associated objects that have no changes and a summary of all the identified changes. The list of changes indicates which changes have been reconciled for the selected case.



Reconcile Changes - Case: 18101701 Save Cancel

Objects have not been modified:

Object Name
ABCRes1_ABC 2_00000

Objects with changes:

	Object Name	Action	PropertyName	OldValue	NewValue	Date	Case ID	User Name
☐	res2_No Project Assigned_00002	Property Modified	DateCreated	8/9/2018 9:48:19 AM	8/9/2018 9:48:37 AM	8/9/2018 9:48:37 AM		admin
☑	res2_No Project Assigned_00002	Property Modified	SpareID	002f001b-9882-016c-fbd7-85cb292dd278	002f001b-71e0-012f-ff1e-85cb292dd890	8/9/2018 9:48:37 AM		admin
☐	res2_No Project Assigned_00002	Property Modified	SpareName	Local/6	Local/7	8/9/2018 9:48:37 AM		admin
☐	res2_No Project Assigned_00002	Property Modified	DateCreated	8/9/2018 9:47:57 AM	8/9/2018 9:48:19 AM	8/9/2018 9:48:20 AM		admin
☐	res2_No Project Assigned_00002	Property Modified	SpareID	002f001b-551f-0135-d314-85cb292dd278	002f001b-9882-016c-fbd7-85cb292dd278	8/9/2018 9:48:20 AM		admin
☐	res2_No Project Assigned_00002	Property Modified	SpareName	Local/5	Local/6	8/9/2018 9:48:20 AM		admin

To reconcile changes associated with a workflow case:

1. In the DOC4000 web interface, click **Workflows**.
2. On the Workflow Cases page, click the row of the case you want to open.
3. Click **Reconcile Changes** on the Case tab.
4. Check the check boxes on the left of each change you want to reconcile.
5. Click **Save**.

Restarting a Case

Administrators can restart a case that has at least one approved transition. When you restart a case, the approval signatures are removed, and the changes are recorded in the History section of the case. The **Restart** button on the Case tab is available only for administrators and only if the case is in a state that can be restarted.

To restart a case:

1. In the DOC4000 web interface, click **Workflows**.
2. On the Workflow Cases page, click the row of the case you want to open and restart.
3. Click **Restart** on the Case tab.
4. Click **OK** on the confirmation message window.

Reassigning a Case

You can change the owner of a case by reassigning it. You can also use the **Reassign Approver(s)** button on the Case tab to change the selected approvers.

To reassign a case:

1. In the DOC4000 web interface, click **Workflows**.
2. On the Workflow Cases page, click the row of the case you want to open and reassign.
3. Click **Reassign Owner** on the Case tab.
4. On the Change Owner window, select the new owner, and then click **OK**.
5. Click **OK** to confirm the reassignment.

DOC4000 changes the **Owner** field of the selected case to the name of the new owner.

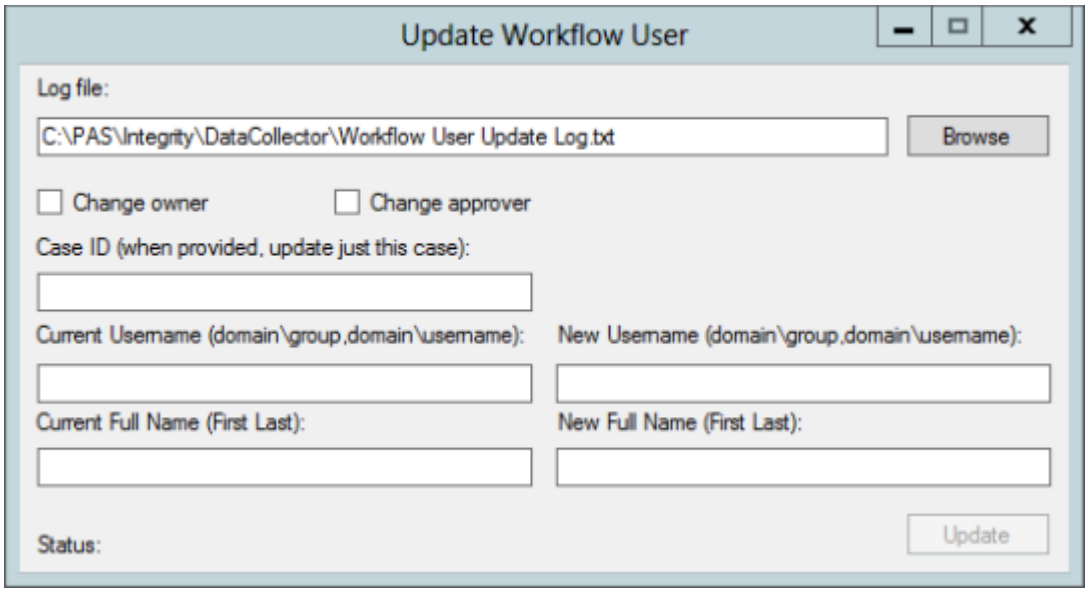
Updating Workflow Cases for Removed Active Directory Users

The `WorkflowUserUpdate.exe` utility allows you to change one user account to another in workflow cases. In some cases, if you remove a user from the Active Directory, workflow cases assigned only to that user can become locked. When a user who is a case owner or approver is removed from the Active Directory, use the `WorkflowUserUpdate.exe` utility to change that user to another user who will take over those cases.

In some rare cases, you may have a few workflow cases with a blank approver field. This utility also allows you to assign an approver if the field is blank. You can check **Change approver** and leave the **Current Username** and **Current Full Name** fields blank.

To change one user account to another in workflow cases:

1. In the *InstallPath*`\DataCollector` folder, run the `WorkflowUserUpdate.exe` utility.



2. In **Log file**, specify the text file where you want the changes logged. The utility overwrites this file each time it runs.
3. If you want to change the owner of one or more cases, check **Change owner**.
4. If you want to change the approver of one or more cases, check **Change approver**.
5. If you want changes limited to only one case, specify the case number in **Case ID**.
6. Specify the current and new account names in the remaining fields.
7. Click **Update**. Status information is displayed as changes are made. More complete information is provided in the log file. When all changes are made, a confirmation message is displayed.
8. Read the confirmation message, and then click **OK**.

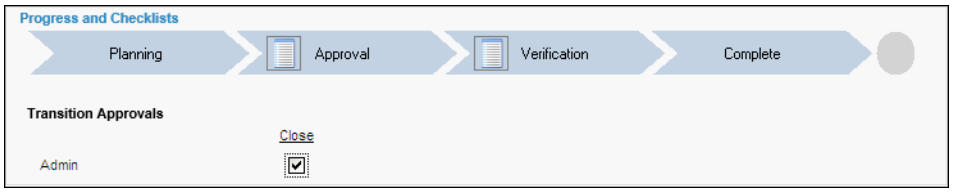
Closing a Case

Once a case has transitioned to the end state, the case is considered *Completed*. The case can then be closed either automatically or manually. Although closed cases cannot be updated, the data and history for the case can be viewed, and the summary information can be displayed in the summary charts.

NOTE To manually close a case, you must be the case owner.

To manually close a case:

1. In the DOC4000 web interface, click **Workflows**.
2. On the Workflow Cases page, click the row of the case you want to open.
3. In the **Transition Approvals** area of the Case viewer, click the **Close** check box, and then click **Save**.



Deleting a Case

You can delete cases as needed. The deleted cases remain in the database and are viewable when you select the **Include Deleted Cases** check box.

To delete a case:

1. In the DOC4000 web interface, click **Workflows**.
2. On the Workflow Cases page, click the row of the case you want to open and delete.
3. Click **Delete**.
4. Click **OK** to confirm deletion.

SECTION 5

Managing Spares

The Spares page helps you identify and manage available slots for each asset you have created. Spares include I/O cards, I/O channels, tags, and displays. Spares are displayed in DOC4000 after the initial import based on open slots. Prior to installing a new device, you need to create a project and reserve a spare. If you install a new device, you should run a full import to show the filled spare. DOC4000 detects the new device after the next successful import.

Understanding Spares

The Spares viewer in DOC4000 allows you to view spares based on asset, object type, and spare type. You can view the status of the spare, create a project for reserving a spare, and view the properties of the spare. When reserving a spare, you need to associate the spare with a project. If no project is specified, DOC4000 will list the reservation as having No Project Assigned.

Working with Projects

Projects are entities that you create to identify blocks of reserved objects. When reserving a spare, you specify the project to which the reservation belongs. You can reserve multiple spares for each project. Deleting a project releases all reservations associated with the project.

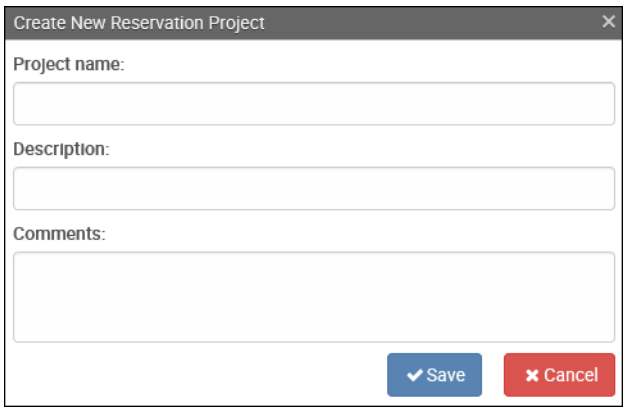
Creating a Project

A project identifies blocks of reserved objects. To reserve objects, you need a project to associate the reservation with. If you do not create a project or assign a reservation to an existing project, DOC4000 defaults the reservation to **No Project Assigned**.

To create a new project:

1. In the DOC4000 web interface, click **Spares > Browse Projects**.
2. Select an asset in the **Asset** field.

3. Click **Add New**.



4. In the **Project name** field, type a name for the project.
5. In the **Description** field, type a description to identify the project.
6. In the **Comments** field, type any additional information about the project.
7. Click **Save**.

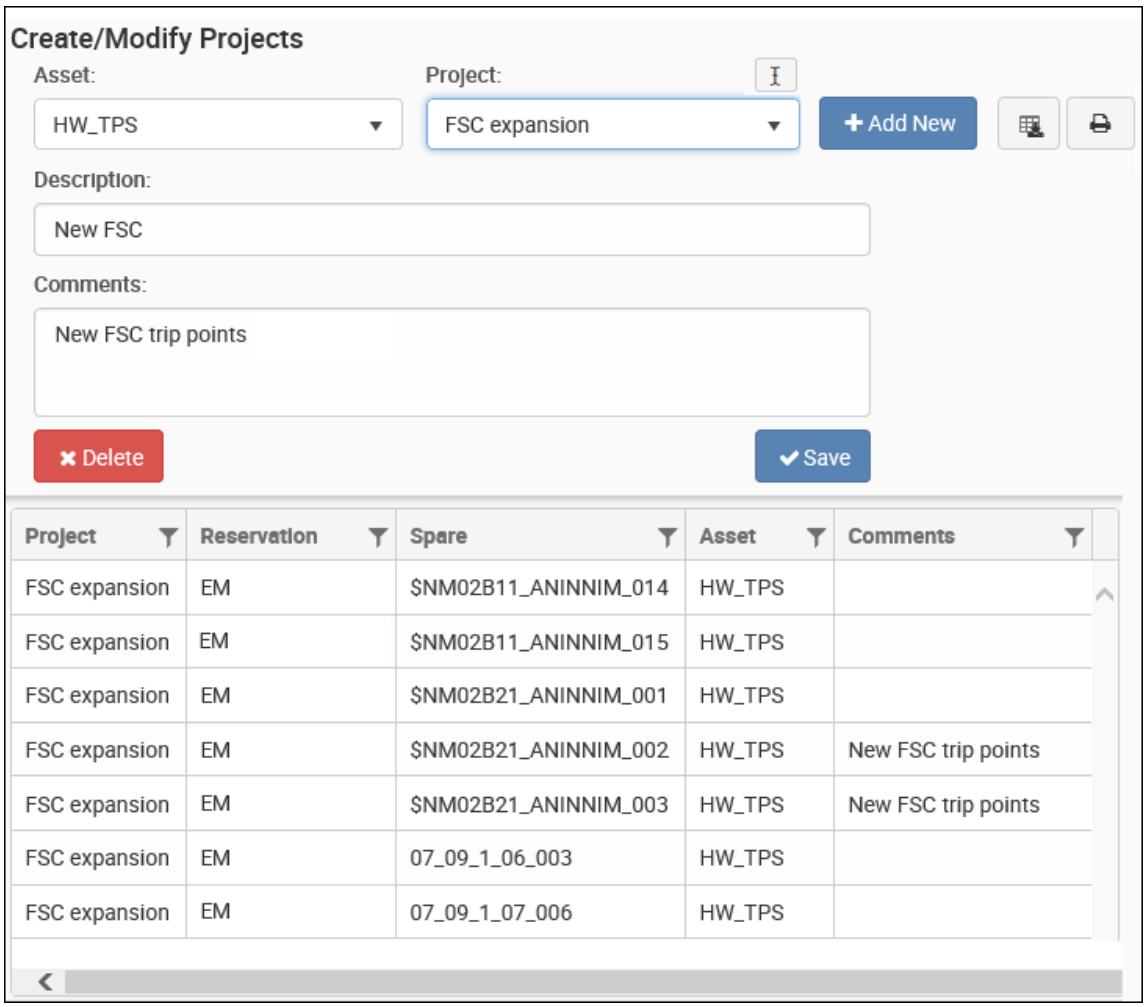
Modifying a Project

You can rename a project, modify the description, and modify the comments for an existing project as well as view the current reservations for a project.

To modify an existing project:

1. In the DOC4000 web interface, click **Spares > Browse Projects**.
2. Select an asset in the **Asset** field.

3. Select a project in the **Project** field.



4. If you want to rename the project, click the **Rename Selected Project** button above the project name, enter the new name, and then click **Ok**.
5. Make changes as needed in the **Description** and **Comments** fields.
6. Click **Save**.

Deleting a Project

DOC4000 allows you to delete an existing project and its associated reservations. Deleting a project releases all reservations associated with the project. A released spare becomes available to reserve for another project.

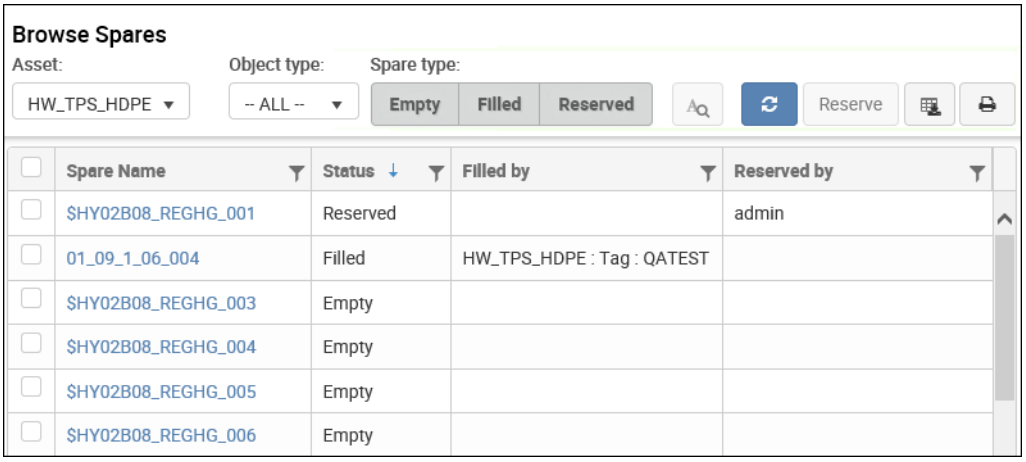
To delete an existing project:

1. In the DOC4000 web interface, click **Spares > Browse Projects**.
2. Select an asset in the **Asset** field.
3. Select a project in the **Project** field.

4. Click **Delete**.
5. Click **Yes** to confirm you want to delete the project and its associated reservations.

Searching for Spares

DOC4000 uses spare objects to reserve objects within the asset. This functionality allows you to create an asset structure with components that will be used in the future. You can search for spares in the Spares viewer or navigate to the location in Hardware Overview. You can view empty spares, reserved spares, and filled spares. Filled spares show the project, object type, and name in the Filled by column. Reserved spares show which user in the DOC4000 web interface reserved the spare.



To search for spare objects:

1. In the DOC4000 web interface, click **Spares > Browse Spares**.
2. Select an asset from the **Assets** field.
3. Select the object type to include in the list in the **Object Type** field.
4. If you want to restrict the listed spares to specific types, click each type of spare you want to include in the list:
   - **Empty** - available spares you can reserve.
   - **Filled** - spares that are now permanent objects.
   - **Reserved** - spares that have been reserved.

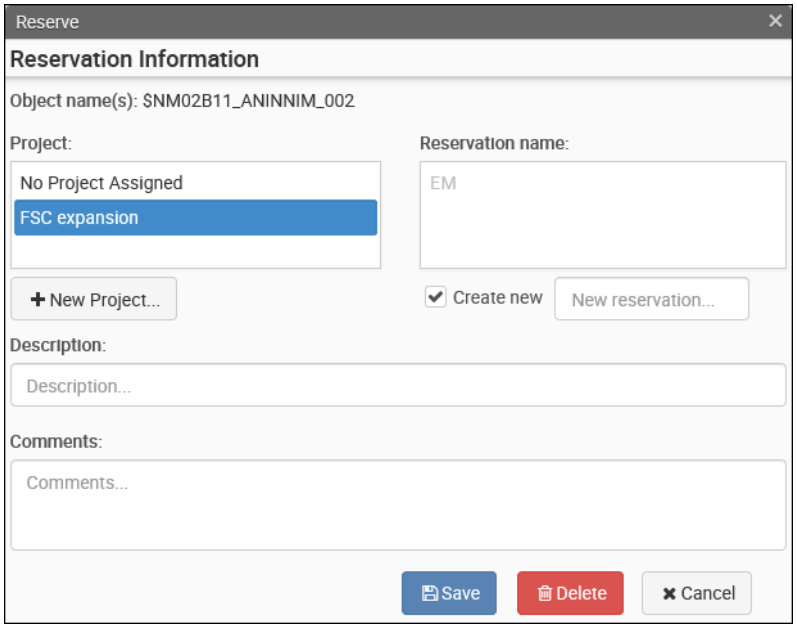
   NOTE If you do not select any of the **Spare type** boxes, DOC4000 includes all types of spares in the list.
5. Click on a **Spare Name** to view the properties of the spare.

Reserving a Spare

After locating spares, you can use the **Reservation Information** pane to reserve one or more spares under the same project. You can select multiple spares across multiple pages for reservation. DOC4000 maintains the selected spares from page to page.

To reserve spares:

1. In the DOC4000 web interface, click **Spares**, and then click **Browse Spares**.
2. Search for the spare you want to reserve. For more information, see *Searching for Spares* (page 76).
3. Select one or more spares from the results grid by selecting their check boxes.
4. Click **Reserve**. The **Reservation Information** window is displayed.



5. Select the project you want to assign the reservation to, or click **New Project** to create a new project. For more about creating a new project, see *Creating a Project* (page 73).
6. In the **Reservation name** field, select an existing reservation name, or select **Create New,** and then type a new name.
7. In the **Description** field, type a description for the spare.
8. In the **Comment** field, type any additional information.
9. Click **Save**.

Searching for Reservations

When a spare object has been reserved, the object is associated with a project and a comment concerning the reason the reservation was made.

To search for spare reservations:

1. In the DOC4000 web interface, click **Spares**, and then click **Browse Reservations**.
2. In the **Asset** field, select the asset for that project.
3. In the **Project** field, select the project for the reservation.
4. If you want to further refine the search results, select the name of a reservation in the **Reservation** field.
5. Click the **Reservation** name to view additional details in the **Properties**, **Reserve**, and **Notes** tabs.

Deleting a Reservation

You can delete reservations if you no longer plan to fill a spare. Deleting a reservation releases the spare, allowing you to use the spare in a future project. Use the Browse Reservations window to delete a reservation.

To delete a reservation:

1. In the DOC4000 web interface, click **Spares**, and then click **Browse Spares**.
2. On the **Browse Spares** window, search for reserved spares. For more information, see *Searching for Reservations* (page 77).
3. Select a reserved spare from the results grid by clicking on its **Spare Name**.
4. Click the **Reserve** tab. The **Reservation Information** pane is displayed and the **Project** and **Reservation** name are selected.
5. Click **Delete**.
6. Click **Yes** on the confirmation message window.

You can verify the reservation as deleted in the DOC4000 web interface by clicking **Spares > Browse Spares**.

SECTION 6

Reporting and Queries

DOC4000 provides an extensive query builder that allows you to retrieve exactly the information you need. You can save queries and then use them as the basis for reports. DOC4000 also allows you to save both public and private queries, so you can share valuable queries across your team and allow individuals to create the custom views they need. DOC4000 can also use queries to identify complex data sets and use them as the basis for baselines.

In addition to queries, DOC4000 provides a flexible reporting framework with built-in reports and powerful custom reports that can be based on saved queries or defined using independent search criteria and configuration options. You can create report packages of one or more reports. Each report identifies a set of configuration options, which can include the asset for which to run the report, whether to save the report as a PDF or Excel file, and which query to use for the report.

After you have created the report packages you need, you can run the reports in a package individually or as a set. Then, you can view the run reports. DOC4000 also allows you to schedule a report package and email the resulting reports. For example, you can automatically run a report package weekly or when new data is imported and processed. These powerful query and reporting features allow you to work with the data in any way you need.

Understanding Queries

DOC4000 provides the query builder to help you query the DOC4000 database for the information you need. You can use a built-in query, or you can build and save custom queries to search references, change logs, and more. You can also build queries using SQL statements and compound queries based on the results of other queries.

When you save a query, you can make it private or public. Private queries are accessible only by the creator. Public queries are accessible by anyone. You can also choose to save a query with the asset model, which makes the query available for all assets of that type.

For example, you may initially create several private queries for the specific assets you manage. You can customize those queries to meet your specific needs. Over time, other users may want to use your queries for the assets they manage. You can save the private query as public and check **Save with Asset Model** so other users can use it with their assets of the same type.

After you have the saved queries you need, you can run them when needed, or you can base reports on the saved queries and schedule them to run hourly, weekly, monthly, or when new data is imported and processed.

Understanding the Types of Queries

When you create a query, you can choose to create one of the following query types:

Property Data

Searches for the property values of specific object types. These queries allow you to find objects with one or more properties whose values match the defined criteria. You can identify the properties to include and the sorting to apply.

Change History

Searches for added objects, deleted objects, and objects with modified properties. You can specify the time period during which to identify the types of changes you want to see. You can also identify the properties to include, old or new values, and the sorting to apply.

Reference Data

Searches for references/connections between two object types. You can identify the types of references to include or exclude. You can also provide additional criteria about the output and input objects.

SQL (Advanced)

Searches for a variety of objects and property data by using SQL. You can build an advanced SQL query with the selection options, and you can adjust the SQL as needed to return the specific data you need.

Working with Queries

When you create a query, you decide what asset or asset type it applies to, who should have access to the query, and what type of query you want to create. You define the criteria and related options for the query and save it. Then, you can run the query and use it as the basis for a report.

Before you view the results of a query, you should review and define your query settings. These settings define the maximum number of rows and columns displayed, as well as other options. Each user defines his or her own query settings. For more information, see *Configuring Query Settings* (page 12).

For more information about working with queries, see the following topics:

- *Creating a Query* (page 80)
  - *Creating a Property Data Query* (page 81)
  - *Creating a Change History Query* (page 84)
  - *Creating a Reference Data Query* (page 86)
  - *Creating a SQL Query* (page 88)
- *Running a Query* (page 90)
- *Printing and Exporting Query Results* (page 90)
- *Modifying a Query* (page 91)
- *Deleting a Query* (page 92)

Creating a Query

When you create a new query, DOC4000 prompts you to select the asset for the query and the type of query. The asset you select defines the asset or the asset type for the query. If you save the query with the asset model, the query is available for all assets of the type selected in the **Asset** field. The purposes and parameters for each query type vary. For more information about the supported query types, see *Understanding the Types of Queries* (page 79).

You can create the following types of queries:

- **Property Data** - Find objects with one or more properties whose values match your criteria. For more information, see *Creating a Property Data Query* (page 81).
- **Change History** - Find added or removed objects, as well as objects with modified properties based on your criteria. For more information, see *Creating a Change History Query* (page 84).
- **Reference Data** - Find references between two object types based on your criteria. For more information, see *Creating a Reference Data Query* (page 86).
- **SQL (Advanced)** - Define the exact SQL statement you want to run. For more information, see *Creating a SQL Query* (page 88).

Creating a Property Data Query

You can use a property data query to search for objects and their property values. You can specify the criteria to define object types, properties and their values, and more.

To create and save a property data query:

1. Click **Queries > Create/Edit Queries** in the left navigation bar.
2. In **Asset**, select an asset for which you want to create the query. If you are creating a query for more than one asset of a specific type, select one asset of that type. The query will be listed for the asset you select.
3. Click **Create Query**. The new query settings and criteria options are displayed in the right pane.
4. In **Query Type** in the right pane, select **Properties**.
5. In **For Objects of Type** in the right pane, select the type of objects you want to include in the query.
6. If the object type includes subtypes, click the **Subtypes** link to select which subtypes to include. If the **Subtypes** link is available and you do not select any subtypes, DOC4000 includes *all* subtypes in the query.
7. If you want to run this query against a list of assets in addition to the asset you selected, complete the following steps:
   a. Click **From Asset(s)**. The Assets window is displayed.
   b. In **Available Assets**, select the assets you want to include in the query, and then click **>**. The selected assets are listed in **Included Assets**.
   c. Close the Assets window.
8. If you want to select the properties to include in the query results, complete the following steps. If you do *not* select any properties, DOC4000 includes *all* common properties as columns in the results and sorts the results by object name. If the object type has no common properties, DOC4000 includes *all* properties in the results.

   If you selected multiple assets in **From Asset(s)**, the **Property Names** list displays only the properties common to the object type for all selected assets. If the object type for any selected asset is missing a property, that property is *not* listed.

   a. Click **Property Names**. The Property Names window is displayed.
   b. In **Property names**, select each property you want to include in the results, and then click on the right arrow (**>**) to add the property to the **Included in results** list.

NOTE You can use the **Show Properties** list at the bottom of the Property Names window to change which properties are listed. You can also select a property and click the **Add item to common properties** or **Remove item from common properties** links to change which properties are common for the selected object type. Common properties apply to all objects of that type for the selected asset.

c. In **Included in results**, use the up and down arrow buttons below the list to set the order of the columns in the query results.

d. If you want to modify the sort order, click each property in **Included in results** you want to use to sort the results, and then click the right arrow (**>**) to add the property to the **Sort By** list. By default, DOC4000 sorts the results by object name.

e. In **Sort By**, use the up and down arrow buttons below the list to set the sort order for the query results.

f. Close the Property Names window.

9. If you want to send the results of the query to a subquery, complete the following steps:

a. Click the plus sign (**+**) button in the bottom right of the right pane options area.

b. Click the type of subquery to add.

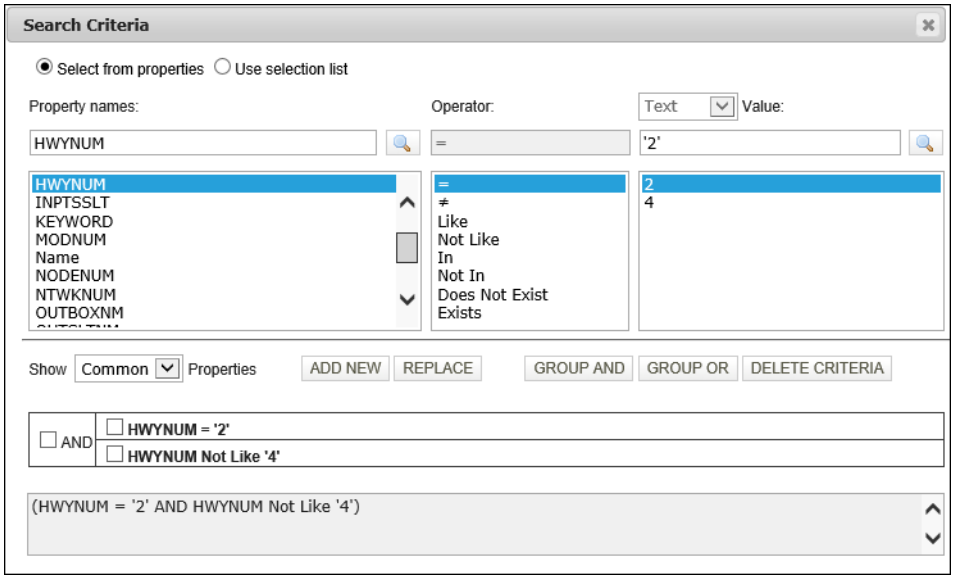
c. Specify the settings and options for the selected subquery.

10. If you want to add more filters based on properties, complete the following steps:

NOTE You can add filters based on properties and a selection list that defines a list of objects.

a. Click **Search Criteria**.

b. Click **Select from properties**.



c. In the **Property names** list, select a property. You can use the **Show Properties** field to change which properties are listed.

d. In the **Operator** list, select an operator to use to compare the property value with the text you specify in the **Value** field. You can also choose to compare whether a property exists.

e. In **Value**, type a value or choose one of the values displayed in the list.

f. Click **ADD NEW**.

g. If you want to add more filter criteria expressions, repeat steps c-f as many times as needed. By default, DOC4000 uses AND to combine and evaluate all the criteria expressions. You can select expressions and then click **GROUP AND** or **GROUP OR** to change how expressions are evaluated together.

h. When you are done specifying the parameter-based filter criteria you want, close the Search Criteria window.

11. If you want to add more filters based on a list of objects, complete the following steps:

    a. Click **Search Criteria**.

    b. Click **Use selection list**. The **Available objects** list includes all the objects you can select.

    c. If you want to create a saved list of objects that you can reuse, in **Select list name**, click **Add New**, and then type the new selection list name. In **Available objects**, select the objects you want, and click the right arrow (**>**) to add them to **List details**. Then, click **Save List**.

    d. If you want to use an existing saved list of objects, in **Select list name**, click the name of the selection list you want.

    e. If you want to modify an existing saved list of objects, in **Select list name**, click the name of the selection list you want. Modify the list as needed, and then click **Save List** to overwrite the saved list.

    f. If you want to add a typed list of objects to the List details field, copy a list of object names you want separated by spaces, commas, semicolons, or the pipe (`|`) character to the Windows clipboard, then click the clipboard icon at the top right of the **List details** field.

    g. If you want to search for the objects you want, type a search string using wildcard characters, such as `*24*`, in the **Available objects** field, and then click the magnifying glass icon to display a list of matching objects.

    h. If your search does not provide the results you want, delete the text in the **Available objects** field or type a new value and click the magnifying glass icon again.

    i. Select one or more objects from the **Available objects** list, and then click the right arrow (**>**) to move the selected objects to the **List details** field.

    j. Click **Add Criteria** to add the list of objects to the search criteria. If a list was previously added the criteria, or if you make additional changes, click **Update Criteria**.

    k. When you are done specifying the selection list-based filter criteria you want, close the Search Criteria window.

12. Click **Run**, and then review the results to make sure the query provides the results you want.
13. Click **Save As**. The Save Query pane is displayed.
14. In **Enter a query name**, type the name of the new query.
15. Select whether to make the query **Public** or **Private**.
16. If you want the query to be available for all assets of this type, check **Save with Asset Model**.
17. Click **OK**.
18. Click **OK** on the confirmation message.

Now you can run the query or use it as a basis for a report. For more information, see *Running a Query* (page 90).

Creating a Change History Query

You can use a change history query to search for objects that were added or removed. You can also search for objects with modified property values. The query criteria allow you to define object types, properties, the time period to check, and more.

To create and save a change history query:

1. Click **Queries > Create/Edit Queries** in the left navigation bar.
2. In **Asset**, select an asset for which you want to create the query. If you are creating a query for more than one asset of a specific type, select one asset of that type. The query will be listed for the asset you select.
3. Click **Create Query**. The new query settings and criteria options are displayed in the right pane.
4. In **Query Type** in the right pane, select **Changes**.
5. In **For Objects of Type** in the right pane, select the type of objects you want to include in the query.
6. In **Change Type**, check the check box for each type of change you want to include in the query. If you do *not* check at least one change type (**Added**, **Modified**, or **Deleted**), DOC4000 includes *all* change types in the query.
7. If you want to run this query against a list of assets in addition to the asset you selected, complete the following steps:
   a. Click **From Asset(s)**. The Assets window is displayed.
   b. In **Available Assets**, select the assets you want to include in the query, and then click **>**. The selected assets are listed in **Included Assets**.
   c. Close the Assets window.
8. If you want to select the properties to include in the query results, complete the following steps. If you do *not* select any properties, DOC4000 includes *all* properties as columns in the results and sorts the results by object name.
   a. Click **Property Names**. The Property Names window is displayed.
   b. In **Property names**, select each property you want to include in the results, and then click on the right arrow (**>**) to add the property to the **Included in results** list.
   c. In **Included in results**, use the up and down arrow buttons below the list to set the order of the columns in the query results.
   d. If you want to modify the sort order, click each property in **Included in results** you want to use to sort the results, and then click the right arrow (**>**) to add the property to the **Sort By** list. By default, DOC4000 sorts the results by object name.
   e. In **Sort By**, use the up and down arrow buttons below the list to set the sort order for the query results.
   f. Close the Property Names window.
9. Complete the following steps to filter the query results by time period or selected imports:

a. Click **Import Summary**. The Import Summary window is displayed.

b. If you want query data between two dates, in **Query by**, select **Date Range**. Then, specify the start and end dates and times to define the range of time you want to include in the results and click **Update**.

c. If you want query data during a period of time up until now, in **Query by**, select **Rolling Range**. Then, specify the number of days from the current data to define the range of time you want to include in the results and click **Update**.

d. If you want query data during a specific data import, in **Query by**, select **Import Summary**. Then, select the imports you want in **Available imports** and click the right arrow (**>**) to identify the imports you want to include in the results. Those imports are listed in **Chosen imports**.

e. Close the Import Summary window.

10. If you want to add more filters based on properties, complete the following steps:

NOTE You can add filters based on properties and a selection list that defines a list of objects.

a. Click **Search Criteria**.

b. Click **Select from properties**.

c. Add a filter criteria expression by typing a value in one or more of the **Object Name**, **Property Name**, **Old Value**, **New Value**, **Ack** , and **Comment** fields, and then click **Add New**. For example, to include only objects with a name similar to TPS25 and unacknowledged changes, type `TPS25` in the **Object Name** field and select **False** in the **Ack** field.

d. If you want to add more filter criteria expressions, repeat the previous step as many times as needed. By default, DOC4000 uses AND to combine and evaluate all the criteria expressions. You can select expressions and then click **GROUP AND** or **GROUP OR** to change how expressions are evaluated together.

e. When you are done specifying the property-based filter criteria you want, close the Search Criteria window.

11. If you want to add more filters based on a list of objects, complete the following steps:

a. Click **Search Criteria**.

b. Click **Use selection list**. The **Available objects** list includes all the objects you can select.

c. If you want to create a saved list of objects that you can reuse, in **Select list name**, click **Add New**, and then type the new selection list name. In **Available objects**, select the objects you want, and click the right arrow (**>**) to add them to **List details**. Then, click **Save List**.

d. If you want to use an existing saved list of objects, in **Select list name**, click the name of the selection list you want.

e. If you want to modify an existing saved list of objects, in **Select list name**, click the name of the selection list you want. Modify the list as needed, and then click **Save List** to overwrite the saved list.

f. If you want to add a typed list of objects to the List details field, copy a list of object names you want separated by spaces, commas, semicolons, or the pipe (`|`) character to the Windows clipboard, then click the clipboard icon at the top right of the **List details** field.

g. If you want to search for the objects you want, type a search string using wildcard characters, such as `*24*`, in the **Available objects** field, and then click the magnifying glass icon to display a list of matching objects.

h. If your search does not provide the results you want, delete the text in the **Available objects** field or type a new value and click the magnifying glass icon again.

i. Select one or more objects from the **Available objects** list, and then click the right arrow (**>**) to move the selected objects to the **List details** field.

j. Click **Add Criteria** to add the list of objects to the search criteria. If a list was previously added the criteria, or if you make additional changes, click **Update Criteria**.

k. When you are done specifying the selection list-based filter criteria you want, close the Search Criteria window.

12. Click **Run**, and then review the results to make sure the query provides the results you want.
13. Click **Save As**. The Save Query pane is displayed.
14. In **Enter a query name**, type the name of the new query.
15. Select whether to make the query **Public** or **Private**.
16. If you want the query to be available for all assets of this type, check **Save with Asset Model**.
17. Click **OK**.
18. Click **OK** on the confirmation message.

Now you can run the query or use it as a basis for a report. For more information, see *Running a Query* (page 90).

Creating a Reference Data Query

You can use a reference data query to search for references or connections between two object types. You can specify the criteria to define object types, reference types, and more.

To create and save a reference data query:

1. Click **Queries > Create/Edit Queries** in the left navigation bar.
2. In **Asset**, select an asset for which you want to create the query. If you are creating a query for more than one asset of a specific type, select one asset of that type. The query will be listed for the asset you select.
3. Click **Create Query**. The new query settings and criteria options are displayed in the right pane.
4. In **Query Type** in the right pane, select **References**.
5. In **For Objects of Type** in the right pane, select the type of objects you want to include in the query.
6. If you want to run this query against a list of assets in addition to the asset you selected, complete the following steps:

   a. Click **From Asset(s)**. The Assets window is displayed.

   b. In **Available Assets**, select the assets you want to include in the query, and then click **>**. The selected assets are listed in **Included Assets**.

c. Close the Assets window.

7. Complete the following steps to filter the query results by type of references:
   a. Click the **Reference Types** link. The Reference Types window is displayed.
   b. In **Available Reference Types**, select each reference type you want to include in the list to include or exclude, and then click on the right arrow (**>**) to add the reference type to the **Included Reference Types** list.

      If you selected multiple assets for the query, **Available Reference Types** lists only the reference types that all the selected assets have in common. If one asset does not have a particular reference type, that type is not in the list.
   c. If you want to include objects with the selected reference types in the query, click **Show objects with references of selected types**.
   d. If you want to include objects that do not have the selected reference types in the query, click **Show objects without references of selected types**.
8. If you want to send the results of the query to a subquery, complete the following steps:
   a. Click the plus sign (**+**) button in the bottom right of the right pane options area.
   b. Click the type of subquery to add.
   c. Specify the settings and options for the selected subquery.
9. If you want to add more filters based on properties, complete the following steps:

   NOTE You can add filters based on properties and a selection list that defines a list of objects.
   a. Click **Search Criteria**.
   b. Click **Select from properties**.
   c. Add a filter criteria expression by typing a value in one or more of the **Output** and **Input** fields, and then click **Add New**.
   d. If you want to add more filter criteria expressions, repeat the previous step as many times as needed. By default, DOC4000 uses AND to combine and evaluate all the criteria expressions. You can select expressions and then click **GROUP AND** or **GROUP OR** to change how expressions are evaluated together.
   e. When you are done specifying the property-based filter criteria you want, close the Search Criteria window.
10. If you want to add more filters based on a list of objects, complete the following steps:
    a. Click **Search Criteria**.
    b. Click **Use selection list**. The **Available objects** list includes all the objects you can select.
    c. If you want to create a saved list of objects that you can reuse, in **Select list name**, click **Add New**, and then type the new selection list name. In **Available objects**, select the objects you want, and click the right arrow (**>**) to add them to **List details**. Then, click **Save List**.
    d. If you want to use an existing saved list of objects, in **Select list name**, click the name of the selection list you want.

e. If you want to modify an existing saved list of objects, in **Select list name**, click the name of the selection list you want. Modify the list as needed, and then click **Save List** to overwrite the saved list.

f. If you want to add a typed list of objects to the List details field, copy a list of object names you want separated by spaces, commas, semicolons, or the pipe (`|`) character to the Windows clipboard, then click the clipboard icon at the top right of the **List details** field.

g. If you want to search for the objects you want, type a search string using wildcard characters, such as `*24*`, in the **Available objects** field, and then click the magnifying glass icon to display a list of matching objects.

h. If your search does not provide the results you want, delete the text in the **Available objects** field or type a new value and click the magnifying glass icon again.

i. Select one or more objects from the **Available objects** list, and then click the right arrow (**>**) to move the selected objects to the **List details** field.

j. Click **Add Criteria** to add the list of objects to the search criteria. If a list was previously added the criteria, or if you make additional changes, click **Update Criteria**.

k. When you are done specifying the selection list-based filter criteria you want, close the Search Criteria window.

11. Click **Run**, and then review the results to make sure the query provides the results you want.
12. Click **Save As**. The Save Query pane is displayed.
13. In **Enter a query name**, type the name of the new query.
14. Select whether to make the query **Public** or **Private**.
15. If you want the query to be available for all assets of this type, check **Save with Asset Model**.
16. Click **OK**.
17. Click **OK** on the confirmation message.

Now you can run the query or use it as a basis for a report. For more information, see *Running a Query* (page 90).

Creating a SQL Query

You can use a SQL advanced query to search for a variety of objects and property data. These queries are the most flexible and allow you to combine results from multiple object types, other queries, or external data sources, and customize the formatting of the output columns. To create a SQL query, you need to understand SQL and how the object types in the asset model relate to one another.

To create and save a SQL advanced query:

1. Click **Queries > Create/Edit Queries** in the left navigation bar.
2. In **Asset**, select an asset for which you want to create the query. If you are creating a query for more than one asset of a specific type, select one asset of that type. The query will be listed for the asset you select.
3. Click **Create Query**. The new query settings and criteria options are displayed in the right pane.

4. In **Query Type** in the right pane, select **SQL (Advanced)**.
5. If you want to run this query against a list of assets in addition to the asset you selected, complete the following steps:
   a. Click **From Asset(s)**. The Assets window is displayed.
   b. In **Available Assets**, select the assets you want to include in the query, and then click **>**. The selected assets are listed in **Included Assets**.
   c. Close the Assets window.
6. Click **SQL Query**. The Advanced SQL Query window is displayed. This window allows you to build the SQL query statement. You can type the query you want, or use the data item selection options to help you build the SQL query statement.
7. If you want to include data from objects for the selected asset, complete the following steps:
   a. In **Select datasource**, select **Object Type**.
   b. In the **Available data items** list, check the check box to the left of each table of data you want to include in the SQL Query.
   c. If you want the query to search cached data instead of the database, check **Use Cache** for each table you chose to include. DOC4000 returns data items from the first time the query was run.
   d. Click **Add Data Items** to add the selected tables to the query. The tables are added to the **Selected data items** list.
8. If you want to include data from an existing query for the selected asset, complete the following steps:
   a. In **Select datasource**, select **Query**.
   b. Select whether you want to list **Public**, **Private**, or **Built-in** queries for this asset.
   c. In the **Available data items** list, check the check box to the left of each table of data you want to include in the SQL Query.
   d. If you want the query to search cached data instead of the database, check **Use Cache** for each table you chose to include. DOC4000 returns data items from the first time the query was run.
   e. Click **Add Data Items** to add the selected tables to the query. The tables are added to the **Selected data items** list.
9. If you want to include data from an external data connection for the selected asset, complete the following steps:
   a. In **Select datasource**, select **External data source**.
   b. Select a defined connection for the selected asset. For example, you can select the tag server connection or the LCN Main connection, if one exists for the selected asset.
   c. In the **Available data items** list, check the check box to the left of each table of data you want to include in the SQL Query.
   d. If you want the query to search cached data instead of the database, check **Use Cache** for each table you chose to include. DOC4000 returns data items from the first time the query was run.
   e. Click **Add Data Items** to add the selected tables to the query. The tables are added to the **Selected data items** list.

10. Click **Create SQL** to generate SQL from the selected data sources and populate the **SQL*** field with that SQL.
11. In **SQL***, edit the displayed SQL query statement as needed. For example, you can edit the JOIN clause to indicate the primary keys used to join the values of the selected tables.
12. Click **Update** to transfer the text in the SQL* field to the SQL query you are creating.
13. Close the Advanced SQL Query window.
14. Click **Run**, and then review the results to make sure the query provides the results you want.
15. Click **Save As**. The Save Query pane is displayed.
16. In **Enter a query name**, type the name of the new query.
17. Select whether to make the query **Public** or **Private**.
18. If you want the query to be available for all assets of this type, check **Save with Asset Model**.
19. Click **OK**.
20. Click **OK** on the confirmation message.

Now you can run the query or use it as a basis for a report. For more information, see *Running a Query* (page 90).

Running a Query

You can run a previously defined and saved query. To provide faster access, query results are cached on the DOC4000 web server for 24 hours.

To run an existing query:

1. Click **Queries > Run Queries** in the left navigation bar.
2. In **Asset**, select the asset for which you want to run the query. If the query was not saved with the asset model, you must select the asset for which the query was created.
3. In **Access**, select **All**. If you want to filter the list of queries based on their access setting, select that access type, such as **Public** or **Private**.
4. In **Type**, select the type for the query you want to run. The list of queries in the **Query** column is limited to the type you select.
5. In **Query**, select the name of the query you want to run.
6. Click **Go**. DOC4000 displays the data returned by the query.
7. If you want to view the details about a row of the results, click the information icon on the left of the row to open the right pane with tabs for the object found.
8. If you want to hide the right pane, click the right side (**>**) of the gray vertical bar between the left and right panes. The left pane fills the window and displays the query results.

Printing and Exporting Query Results

After you run a query, you can export the results of the query to a Microsoft Excel file or to a PDF file for printing.

To print or export the query results:

1. Click **Queries > Run Queries** in the left navigation bar.
2. Run the query for the results you want to print or export. For more information, see *Running a Query* (page 90).
3. If you want to print the displayed results, complete the following steps:
   a. Click the **Print** icon. DOC4000 creates and displays a PDF file that you can print or save.
   b. If you want to print the displayed PDF file, click the **Print** icon.
   c. If you want to save the displayed PDF file, click the **Save** icon. Specify where to save the PDF file, and then click **Save**.
4. If you want to export the displayed results as a Microsoft Excel file, Click the **Export to Excel** icon. DOC4000 saves the Excel file in the default download folder for your browser.

Modifying a Query

After you create a query, you can edit the query to change whether it is public or private, as well as many other aspects of the query. You cannot change the name of the saved query, but you can save it as a new query and then delete the original query.

To modify a query:

1. Click **Queries > Create/Edit Queries** in the left navigation bar.
2. In **Asset**, select the asset for which the query you want to modify was created. If the query was saved with the asset model so it is available for all assets of a specific type, select one asset of that type.
3. In **Access**, select **All**. If you want to filter the list of queries based on their access setting, select that access type, such as **Public** or **Private**.
4. In **Type**, select the type for the query you want to modify. The list of queries in the **Query Name** column is limited to the type you select.
5. In **Query Name**, click the name of the query you want to edit.
6. Modify the query parameters in the right pane. For more information about these parameters, see *Creating a Query* (page 80) and the topics for each type of query.
7. If you want to overwrite the existing query, complete the following steps:
   a. Click **Save**.
   b. Select whether to make the query **Public** or **Private**.
   c. If you want the query to be available for all assets of this type, check **Save with Asset Model**.
   d. Click **OK**.
   e. Click **OK** on the confirmation message.
8. If you want to save the modified query with a new name, complete the following steps:
   a. Click **Save As**.
   b. In **Enter a query name**, type the name of the new query.

c. Select whether to make the query **Public** or **Private**.

d. If you want the query to be available for all assets of this type, check **Save with Asset Model**.

e. Click **OK**.

f. Click **OK** on the confirmation message.

Deleting a Query

If you no longer need a query, you can delete it. Be sure no reports are based on the query before you delete the query.

To delete a query:

1. Click **Queries > Create/Edit Queries** in the left navigation bar.
2. In **Asset**, select the asset for which the query you want to delete was created. If the query was saved with the asset model so it is available for all assets of a specific type, select one asset of that type.
3. In **Access**, select **All**. If you want to filter the list of queries based on their access setting, select that access type, such as **Public** or **Private**.
4. In **Type**, select the type for the query you want to delete. The list of queries in the **Query Name** column is limited to the type you select.
5. Click **Delete** (trash can icon).
6. Click **Yes** to confirm the deletion.

Understanding Reporting

In addition to queries, DOC4000 provides a flexible reporting framework. You can use the built-in reports, and you can create custom reports to meet your specific needs. Each report can be based on a saved query, or you can specify independent search criteria and configuration options.

To run and view reports, you create report packages of one or more reports. Each report identifies a set of configuration options, which can include the asset for which to run the report, whether to save the report as a PDF or Excel file, and which query to use for the report. After you create the report packages you need, you can run the reports in a package individually or as a set.

After you run a report, you can view that report. DOC4000 also allows you to schedule a report package and email the resulting reports. For example, you can automatically run a report package weekly or when new data is imported and processed. These powerful reporting features allow you to view and distribute the data as needed.

Working with Reports

DOC4000 provides built-in reports and allows you to create the custom reports and queries you need. A custom report can be based on a saved query, or you can specify independent search criteria and configuration options. To view a report, you first need to run the report.

DOC4000 allows you to create report packages of one or more reports. When you run a report package, you can combine multiple reports, include divider (separator) pages, and add a table of contents and cover sheet. The following list outlines how to prepare and use reports.

1. Before you print a report, you need to define your printer settings. For more information, see *Configuring Printer Settings* (page 11).
2. Define the queries you want to use for reports. For more information, see *Understanding Queries* (page 79) and *Creating a Query* (page 80).
3. Create the report packages you need. You can create one or more report packages with one or more reports in each report package. For more information, see *Creating a Report Package* (page 93).
4. Run the report packages so the reports are available. For more information, see *Running and Printing a Report Package* (page 95).
5. View the reports. For more information, see *Viewing Previously Run Reports* (page 96).
6. Schedule the reports as needed to distribute the reports on a regular basis or when new data is processed. For more information, see *Scheduling a Report Package* (page 97).

The following topics provide additional information about working with reports:

- *Editing a Report Package* (page 94)
- *Deleting a Report Package* (page 96)
- *Modifying a Report Schedule* (page 98)
- *Deleting a Report Schedule* (page 98)

Creating a Report Package

A report package can include one or more reports. When you create a report package, you first select the asset to define the type of assets to include in the reports. To run a report package, you need to know the asset selected when you created the package.

You can configure the report package to create a separate file for each report or to combine all the reports into a single file. You can also add a cover sheet and table of contents to the report package and define whether the reports are available for everyone or only for you.

To create a report package:

1. Click **Reports > Edit/Run Reports** in the left navigation bar.
2. In **Asset**, select the asset for which you want to create the report package.
3. Click **Create Package**. The Create New Package pane is displayed on the right.
4. In **Report Package Name**, type the name for the new report package. Since DOC4000 creates a folder with this name to store the reports, the name cannot contain some special characters, such as a backslash (\) or a hyphen (-).
5. Select whether to make the report **Public** (available for all users) or **Private** (available only for the current user).
6. Check any of the following options:
   - **Combine Reports into a Single File**
   - **Generate Cover Sheet**

- **Generate Table of Contents**

7. Click **Save Package**. The Available Reports pane replaces the Create New Package pane. The Available Reports pane allows you to select which reports to include in the report package.
8. In **Available Reports**, select a report you want to include in the package, and then click the right arrow (**>**) to add the report to the **Included Reports** list. Repeat the step for each report you want to include in the report package. Use the up and down arrow buttons below the **Included Reports** list to order the reports in the package.
9. Configure each report you included in the package by completing the following steps for each report in the **Included Reports** list:
    a. In **Included Reports**, select the report you want to configure. The report name in the list indicates if it is not yet configured.
    b. Click **Configure** below the **Included Reports** list. The Report Configuration pane is displayed at the bottom of the window.
    c. In **Report title**, type the title you want to use for the report.
    d. If you want to include a divider (separator) page before the report, check **Include divider page**. This blank page is helpful to separate reports when you combine reports in a package into a single file. You do not need to check this check box for the first report in the report package.
    e. In **Export type**, select whether you want to save the report in **PDF** or **Excel** format.
    f. If you want to include data for a specific time period, set the beginning and ending dates in **Time Period**.
    g. If you want to run this report for a different asset than you selected for the report package, select the asset for the report in the **Asset** field. You should select an asset of the *same type* as the asset you selected for the package. For example, if you selected a Honeywell EPKS asset when you started to create the report package, select a Honeywell EPKS asset in the **Asset** field.
    h. Specify other report configuration options as needed for the report you selected. For example, if you are configuring a Change Tracker, Properties, Query Results, or References report, you can choose whether to base the report on an existing saved query, or you can define the specific criteria for the data to include in the report.
    i. Click **Save Config**. The **Included Reports** list shows the report is configured.

After you create a report package and configure each report in the package, you can run that package to view, print, or save one or more of the reports in that package.

Editing a Report Package

After you create a report package, you can edit the package to change the reports to include in the package and configure those reports to meet your specific needs. You can add and remove reports in each package as needed. If you add a report to a report package, you need to configure that report in that package.

To configure and change included reports in a report package:

1. Click **Reports > Edit/Run Reports** in the left navigation bar.

2. In **Asset**, select the asset for the report package you want to change.
3. In **Package**, click **Edit package** (the pencil icon) next to the report package name. The package details are displayed on the right.
4. In **Available Reports**, select a report you want to add to the package, and then click the right arrow (**>**) to add the report to the **Included Reports** list. Repeat the step for each report you want to add to the report package. Use the up and down arrow buttons below the **Included Reports** list to order the reports in the package.
5. If you want to remove a report from the package, in **Included Reports**, select a report you want to remove from the package, and then click the left arrow (**<**).
6. Configure each report you added to the package by completing the following steps for each report you added in the **Included Reports** list:
    a. In **Included Reports**, select the report you want to configure. The report name in the list indicates if it is not yet configured.
    b. Click **Configure** below the **Included Reports** list. The Report Configuration pane is displayed at the bottom of the window.
    c. In **Report title**, type the title you want to use for the report.
    d. If you want to include a divider (separator) page before the report, check **Include divider page**. This blank page is helpful to separate reports when you combine reports in a package into a single file. You do not need to check this check box for the first report in the report package.
    e. In **Export type**, select whether you want to save the report in **PDF** or **Excel** format.
    f. If you want to include data for a specific time period, set the beginning and ending dates in **Time Period**.
    g. If you want to run this report for a different asset than you selected for the report package, select the asset for the report in the **Asset** field. You should select an asset of the *same type* as the asset you selected for the package. For example, if you selected a Honeywell EPKS asset when you started to create the report package, select a Honeywell EPKS asset in the **Asset** field.
    h. Specify other report configuration options as needed for the report you selected. For example, if you are configuring a Change Tracker, Properties, Query Results, or References report, you can choose whether to base the report on an existing saved query, or you can define the specific criteria for the data to include in the report.
    i. Click **Save Config**. The **Included Reports** list shows the report is configured.
7. Click **Save As**, change any details for this package, and then click **Save Package**.

Running and Printing a Report Package

When you run a report package, you can choose whether to run and preview all the reports in the package or only the selected reports. You can also choose whether to include divider (separator) pages, a cover page, and a table of contents. You need to run a report before anyone can view the report. When you view a report, you can choose to print it or save it.

To run and preview a report package:

1. Click **Reports > Edit/Run Reports** in the left navigation bar.

2. In **Package**, click the report package you want to run.
3. By default, the **Include dividers**, **Include table of contents**, and **Include cover sheet** options are selected for all report packages. Clear any of these check boxes to exclude those items when you run the report package:
   - **Include dividers** - Generates a divider page containing the name of the next report inserted between each report section.
   - **Include table of contents** - Generates a contents page at the beginning of the report that lists all the reports in the report package with their page numbers.
   - **Include cover sheet** - Generates a cover page at the beginning of the report.
4. If you want to run all the reports in the package, click **Preview All**.
5. If you want to run a subset of the reports in the package, select one or more reports you want to run in the **Configured Reports** list, and then click **Preview Selection**. To select multiple reports, press and hold the Ctrl key while selecting the reports.

   The right pane displays the status of the report processing, which is refreshed every five seconds while the package is generated. When finished, the right pane lists all the generated report sections.
6. In the **Name** column, click the link for the report section you want to view to download the file.
7. Open the report using a program appropriate for the report format.
8. If you want to print the displayed report, click the **Print** icon in the report viewer and then follow the prompts to send the report to a printer.
9. If you want to save the displayed report, click the **Save** icon in the report viewer to save the report to the location you specify.

Viewing Previously Run Reports

After you run a report package, you can view the generated reports from that package. Each report package can create several PDF or Excel files based on the settings defined in the package.

To open a previously run report:

1. Click **Reports > View Reports** in the left navigation bar. The View Reports window is displayed. This window lists all previously run report packages that have *not* been deleted.
2. In the left column, click the report package you want to view. The View Reports window now lists all the files generated when that report package was run in the right column.
3. In the **Name** column, click a link to view the contents of that file.

Deleting a Report Package

If you no longer need a report package, you can delete that package.

To remove a report package:

1. Click **Reports > Edit/Run Reports** in the left navigation bar.

2. In **Asset**, select the asset for the report package you want to delete.
3. In **Package**, click **Delete Package** (the trash can icon) next to the report package.
4. Click **Yes** on the confirmation message window.

Scheduling a Report Package

You can schedule a report package to run and the generated report files to then be emailed to a distribution list. DOC4000 provides flexible scheduling options that allow you to run and email a report package after an import of data, or on an hourly, daily, or weekly schedule.

When you schedule a report, remember that the time you specify is the time on the DOC4000 server providing the DOC4000 web interface. For example, your DOC4000 server is in Houston, Texas (US Central Time) and you are in New York, New York (US Eastern Time), if you want to run a report weekly at 9:00am on Monday, you need to schedule the report for 8:00am, which is the time of the DOC4000 server when it is 9:00am in your time zone. If you want to schedule the report for several recipients in different time zones, you may need to schedule the report individually based on the time zone of each recipient.

To schedule a report package:

1. Click **Reports > Schedule Reports** in the left navigation bar.
2. In **Asset**, select the asset for the report package you want to schedule.
3. Click **New**. All fields on the New Schedule window are required.
4. If you want to create a schedule that you do not want to start running, change the **Enabled** toggle to **no**.
5. In **Schedule Name**, type a name for the schedule.
6. In **Recipient(s)**, type the email addresses for the people you want to receive the generated report files each time the report package schedule occurs. If you specify multiple email addresses, separate each email address with a comma. DOC4000 sends an email with the report package files to all the recipients you specify.
7. In **Message**, type the text you want to include as the subject of the email.
8. If you want to run the report package when data is imported for the associated asset, in **Run On**, click **Import**. If you also want to run the report package on a scheduled basis, you need to create another report schedule.
9. If you want to run the report package on a regular schedule, complete the following steps:
   a. In **Run On**, click **Schedule**.
   b. In **Time**, select the time (DOC4000 server time) to run and send the report package.
   c. In **Interval**, select how often you want to run and send the report package.
   - **Hourly** - Select an integer from 1 to 23. For example, if you select **1**, DOC4000 emails the report package on an hourly basis.
   - **Daily** - Select an integer from 1 to 100. For example, if you select **2**, DOC4000 emails the report package every other day.
   - **Weekly** - Select an integer from 1 to 100, and then select the days of the week on which to email the report package. For example, if you select **4** and **Monday**, DOC4000 emails the report package on Monday every four weeks.

10. In **Report Package**, select the report package to run and email.
11. At the top of the right pane, click **Save**.
12. If you want to create another report schedule based on this schedule, click **Save Copy**, type a new schedule name, and then click **OK**.

Modifying a Report Schedule

After you schedule a report package, you may need to modify that schedule. For more information about the individual report package schedule settings, see *Scheduling a Report Package* (page 97).

To modify a report schedule:

1. Click **Reports > Schedule Reports** in the left navigation bar.
2. In **Asset**, select the asset for the report package schedule you want to modify.
3. In the **Schedule Name** column, click the name of the schedule you want to modify.
4. If you want to rename the report schedule, complete the following steps:
   a. Click **Save Copy**.
   b. In **Schedule Name**, type a name for the schedule, and then click **OK**.
5. Change the email, schedule, and criteria settings as needed.
6. Click **Save**.

Deleting a Report Schedule

If you no longer need to run a report package using a defined schedule, you can delete that schedule.

To delete a report schedule:

1. Click **Reports > Schedule Reports** in the left navigation bar.
2. In **Asset**, select the asset for the report package schedule you want to delete.
3. Click **Delete Schedule** (the trash can icon) to the right of the report package that you want to delete.
4. Click **Yes** on the confirmation message window.

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