



Web Client cz

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Chapter 1

Introduction

Topics:

- [Overview](#)
- [Recommended Browser and Minimum Resolution](#)
- [User Roles](#)
- [Access Plant Applications Web Client](#)
- [Common Tasks](#)

Overview

Plant Applications Web Client acts as a container of the applications for managing work orders as described in the following table.

Application	Description
Unit Operations	Displays a list of operations associated with a work order. You can track the progress of completion of an operation, access reference documents, provide data for quality variables, specify consumption of BOM items, and create a defect.
Non Conformance	Displays a list of nonconformities raised as defects on serial numbers or material lots. The application includes details for each defect and enables you to select a disposition plan for each defect or access a record of the disposition plan taken on each defect.
Work Order Manager	Displays the status, progress, and priority of work orders. You can also modify a work order and its plan, access the work order, history, defects, and manage the planned dates of a work order, if required.
Route Editor	Displays the routes used to manufacture a product. You can create routes, add operations to the route, assign BOM items, equipment, documents, and properties to the operations, and release a route for use in a work order.
Work Queue	Displays a list of operations that are ready or in progress. You can add operations to the queue, track the progress of completion of an operation, access reference documents, provide data for quality variables, specify consumption of BOM items, and create a defect. You can clock on, complete, record completed quantity, and/or raise defects on multiple serials/lots at the same time.
Time Booking	Enables an operator or supervisor to view labor records (timesheet), add missing time records, and modify the applied time of a previously submitted record.
Property Definition	Displays a list of property definitions tailored to the requirements of your business. The application also displays the property groups and categories to which a property definition belongs.
Security	Displays a list of applications to which the logged-in user has access.
Configuration	Enables a system integrator to perform the following tasks in the Unit Operations and Work Queue applications: <ul style="list-style-type: none"> • Show or hide the tabs. • Add and configure custom tabs. • Integrate external applications and services.
Approval Cockpit	Enables an administrator to configure, execute, and track approval workflows for action events.
Downtime	Displays the list of KPIs and downtime events for the machines assigned to the operator.
OEE Dashboard	Displays an overview of the OEE, Quality, Performance, and Availability KPIs. Additional information about each KPI is displayed as Pareto and Waterfall charts.

Application	Description
Reports	Displays KPI reports and production status of the plant by department, line, and unit. It also provides information about Planned vs. Actuals for each KPI.
My Machines	Enables an operator to subscribe and monitor the required machines for downtime events.
Analysis	Plots historical and live charts to visualize time series data available in Plant Applications and Historian. Displays information for production batches in the form of a Gantt chart.
OEE Aggregation Store	Calculates and stores OEE data in a database so that it is quickly accessible. The OEE data can be calculated at the site level. The OEE data can be refreshed at a configured interval.
Activities	Displays the activities planned within the duration of a shift. You can add an activity for an event within the shift duration, and then any user can perform the activity within the shift duration.
Process Orders	Monitors the progress of the process orders. Active process orders track actual production and quantities against process orders, and display remaining quantities, planned quantities, planned start times, and planned end times.
Alarms	Triggers alarm notifications based on rules configured in Plant Applications Administrator.
Waste	Enables an operator or supervisor to create records for a waste event and associate it with a production event.

Recommended Browser and Minimum Resolution

Recommended Browser:

- Google Chrome v80.0 or later
- Safari v13.1 or later

Note: When you use an invalid or self-signed SSL certificate and access Plant Applications using https, the loading time is high because the static assets files are not cached in the Chrome browser. You should have a valid certificate so that the browser can cache the files and the loading time is reduced. This is a Chrome browser issue. For more information, refer <https://bugs.chromium.org/p/chromium/issues/detail?id=110649#c8> and <https://helpx.adobe.com/experience-manager/kb/cache-problems-on-chrome-with-SSL-certificate-errors.html>

Recommended Minimum Resolution:

- For Work Order Manager: 1360 x 768
- For Analysis: 1280 x 768
- For all the other applications: 1024 x 768

User Roles

The following table describes the user roles for each application in the Plant Applications Web Client.

Application	User Roles Description
Unit Operations	<p>Enables operators to clock on the operations, perform the operations, specify the consumption of BOM items, provide data for quality variables, and mark the operations complete. Operators can also create a defect if a part is defective, which appears in Non Conformance.</p> <p>Note: While the Unit Operations application provides a list of serial numbers on which you can perform an operation using a selected piece of equipment, the Work Queue module provides a list of operations that are available for you to work on (regardless of the piece of equipment required to perform the operation).</p>
Non Conformance	<p>Enables quality engineers to access the record of non-conformities raised as defects on serial numbers or material lots and decide the disposition plan for a defect.</p>
Work Order Manager	<p>Enables supervisors to monitor the status and progress of work orders and manage the priority of a work order if required.</p>
Route Editor	<p>Enables supervisors to create routes and define the product line, material, BOM formulation, operations, BOM items, equipment, documents, and properties used in each route.</p>
Work Queue	<p>Enables operators to view a list of operations in their work queue, add additional operations, clock on the operations, perform the operations, specify the consumption of BOM items, provide data for quality variables, and mark the operations complete. Operators can also create a defect if a part is defective, which appears in Non Conformance.</p> <p>Note: While the Unit Operations application provides a list of serials/lots on which you can perform an operation using a selected piece of equipment, the Work Queue module provides a list of operations that are available for you to work on (regardless of the piece of equipment required to perform the operation).</p>
Time Booking	<p>Enables an operator or supervisor to view labor records (timesheet), add missing time records, and modify the applied time of a previously submitted record.</p>
Property Definition	<p>Enables supervisors to create the property definitions, and then link these properties to a specific property group and property category.</p>
Security	<p>Enables Administrators to add groups to an application, provide access to an application for users to access the application, and remove access to a privilege sets.</p>
Approval Cockpit	<p>Enables an administrator to configure, execute, and track approval workflows for action events.</p>
Configuration	<p>Enables a system integrator to perform the following tasks in the Unit Operations and Work Queue applications:</p> <ul style="list-style-type: none"> • Show or hide the tabs. • Add and configure custom tabs. • Integrate external applications and services.
Downtime	<p>Enables operators to add, modify, copy, delete, split, and merge downtime events for the selected machines.</p>
OEE Dashboard and Reports	<p>Enables supervisors, process engineers, maintenance engineers, and operation leaders to enhance the capability of Plant Applications data to monitor quality, performance, availability, and overall equipment effectiveness of plant equipment.</p>

Application	User Roles Description
My Machines	Enables operators to select the required machines, from the assigned machines, for which they want to view the downtime events.
Analysis	Enables operators, supervisors, and process engineers to analyze time series data and live issues, and to quickly troubleshoot issues and make improvements. Process engineers can also analyze the production batches and golden batches information.
Activities	Enables operators and supervisors to perform, complete, release, and skip an activity associated with an event.
Process Orders	Enables operators and supervisors to monitor the progress of the process orders.
Alarms	Enables supervisors to receive alarm notifications based on rules configured in Plant Applications Administrator.
Waste	Enables an operator or supervisor to create records for a waste event and associate it with a production event.

Access Plant Applications Web Client


1. In a web browser, enter the URL in the following format: `https://<hostname>:<port>`; where `<hostname>` is the host name or IP address of the server on which you installed the Plant Applications Web Client, and `<port>` is the port number you used to install the server. The **Welcome** page appears.
2. Enter your user name and password, and then select **Sign in**.

The applications available within the Plant Applications Web Client appear.

Common Tasks

This topic provides a list of common tasks that you can perform using Plant Applications Web Client.



Add or Remove Columns

When you access an application, by default, a few columns appear. You can remove some of these columns or add new ones. To do so, select .

- To add a column, select the corresponding check box.
- To remove a column, clear the corresponding check box.

Filter Records

You can filter records based on a single search parameter or multiple search parameters.

- If you want to filter records based on a single search parameter, in the column that contains the parameter, select .
- If you want to filter records based on multiple search parameters, select .

Group Records

You can group records based on the values that appear in a column. To do so, drag the column heading to the page heading. For example, in Work Order Manager, if you want to group work orders based on the

material, drag the MATERIAL column heading to the page heading. A list of work orders for each material appears.

Add or Modify Autolog Variables Values in Offline Mode

In the Activities application, if you are in the process of adding or modifying the values of the autolog variables, and the system goes offline, you can continue to add or modify the value of the variables. However, the autolog sheet is updated only when the connectivity is restored.

Note: When the system is offline, you will not have access to the rest of the Plant Applications Web Client.

Chapter 2

Unit Operations

Topics:

- [Overview](#)
- [Accessing an Operation](#)
- [Clocking on an Operation](#)
- [Clocking off an Operation](#)
- [Adding a Comment](#)
- [Consuming a Lot](#)
- [Completing an Operation](#)
- [Creating a Non-Conformance](#)

Overview

About the Unit Operations Application

As an operator, you can use the Unit Operations application in the Plant Applications Web Client to access the operations associated with a work order. Each row in the **Unit Operations** page represents an operation to be performed or has been completed. By default, the Unit Operations application contains the operations of the **Machine** that you select.

You can perform the following tasks in the Unit Operations application:

- [Access an operation.](#)
- [Clock on an operation.](#)
- [Clock off an operation.](#)
- [Provide data for a quality variable.](#)
- [Access a list of BOM parts associated with a serial or lot.](#)
- [Specify the consumption of BOM parts during production.](#)
- [Create a lot.](#)
- [Create a non-conformance.](#)

About Work Orders and Operations

A work order is a request to manufacture a certain quantity of products in a given time. It contains information on the model, route, and quantity of a product that must be manufactured. Work orders are either created in Route Editor or imported into Plant Applications using the Enterprise Resource Planning (ERP) scheduler and import services.

Work orders are grouped by product and are assigned to a specific production line for manufacturing.

A work order comprises the job details and operations. To manufacture each type of product, a sequence of tasks must be performed. Each task or a set of tasks is called an operation. An operation in a work order is an executable job performed on a Production Unit of a Production Line. Operations can be defined either in the route using the Route Editor module or in the work order that you import from an ERP system.

When all the operations are completed, the status of the work order changes to Completed in the Work Order Manager application.








Note: If BOM parts are configured for an operation and marked as mandatory, the operation is marked complete only if the BOM parts are consumed. Similarly, if quality variables are configured for an operation, the operation is marked complete only if values for the quality variables are provided.

Operation Status Indicators

The status of an operation indicates the progress of work for the operation.

In the Unit Operations module, the status of an operation is automatically determined and displayed with a color-coded indicator. The following table provides a list of status indicators defined for an operation.

Status	Status Indicator	Description
Ready		Indicates that the serial/lot is available for you to perform the operation.

Status	Status Indicator	Description
Clocked on by you		Indicates that the serial/lot is currently clocked on only by you for the operation.
Clocked on by another user		Indicates that the serial/lot is currently clocked on by another user for the operation, but is not clocked on by you.
Clocked on by other users		Indicates that the serial/lot is currently clocked on by multiple users for the operation, but is not clocked on by you.
Clocked on by you and other users		Indicates that the serial/lot is currently clocked on by you and other users for the operation.
Clocked on by other users in the past		Indicates that work for the serial/lot has begun, but the serial/lot is currently not clocked on for the operation.
On hold		Indicates that the operation is in the On Hold status. This status indicator appears when a defect has been created for the serial/lot for the operation. After the defect is closed, the status of the operation is modified to the original status and the operation appears in the Open page.
Complete		Indicates that the operation is in the Complete status. This status indicator appears when an operation, the quality variables associated with the operation, and the mandatory BOM items associated with the operation are completed for the serial/lot. Note: Defining quality variables and BOM items for an operation are optional. However, if they are defined, they must be completed for all the serials/lots in the operation.

Accessing an Operation

Access an Operation

As an operator, you can access the operations in the Released (that is, Ready or In Progress), on Hold, and Completed statuses associated with a machine in the Non Conformance application.






1. In the **Unit Operations** page, in the **Machines** box, select the machine on which the operation is performed.

Tip: If the machine that you want to select appears in the workspace heading, you can select that button instead of using the **Machines** box.

The **Open** workspace appears, displaying a list of open operations in a table with an ascending sort applied in the **PRIORITY** and **MODIFIED ON** columns (the field values of the operations with highest priority and the latest modified date appear first in the table). The machines that you have selected appear in the workspace heading. The number of operations that appear in a page depends on the resolution of your computer screen. The following table provides information on each column in the table.

Column	Description
STATUS	The status of the serial/lot at the operation.
SERIAL/LOT	The unique identifier of the serial/lot associated with the work order.
WORK ORDER	The unique identifier of the work order.
PRI	The priority assigned to the work order.
MATERIAL	The material number of the serials/lots in the work order.
MATERIAL DESC	The description of the material of the serials/lots in the work order.
MATERIAL FAMILY	The material family of the serials/lots in the work order.
OPERATION	The name of the operation.
OPERATION DESC	The description of the operation.
MODIFIED ON	The date and time when a serial/lot is clocked on first for the operation.
USER(S)	The name of the user who is currently clocked on to the serials/lots in the operation. If multiple users are clocked on currently, the number of users appears in this column for that operation. Select <i><number_of_users></i> to access the list of names of the users who are working on the operation.
ON/OFF	Contains buttons to click on or click off the serial/lot for the operation. These buttons are disabled for an operation that does not require clocking on.

Tip: You can perform the following tasks:


- Access the operations that are on hold or complete by selecting **On Hold** or **Complete**, respectively. When you select **Complete**, by default, the list of operations completed in the past seven days appears. You can, however, specify a different date range.
 - Manually refresh the list of operations by selecting .
 - Add or remove columns from the table by selecting .
 - Filter the list of operations by selecting  in a column heading.
 - Search for an operation in the queue using the **Search** box.
 - To access an operation using a barcode, select  for an option and scan for the barcode specific to the option. The application supports the barcodes of standards Code 39 and Code 128 only.
 - In iPad, you can use  only in the Safari browser.
2. If you want to access the details of an operation, select the operation. The workspace for the operation appears. The left pane contains a list of serial/lots available at the machine on which you are performing the operation (or a list of search results if you have searched for a serial/lot). The following table provides information on each section in the workspace.



Section	Description
Documents	Contains the documents associated with the operation. These documents can be instruction manuals or technical publications associated with the operation. They have been added to the corresponding route using Route Editor or the ERP system.
BOM	Contains a list of BOM items to be consumed for each lot during the operation. For information, refer to About BOM Items on page 20.
Quality	Contains a list of quality variables for which you can enter values while performing the operation. For information, refer to Access the Quality Variables of an Operation on page 108.


Section	Description
NCR	Contains a list of defects created for the serial/lot at the operation. For information, refer to About Creating a Non-Conformance on page 124.
Properties	<p>Contains a list of properties associated with the route, operation, or material. A property is an additional attribute that is assigned to a route, an operation, or a material to produce a product. Properties are assigned values in the following ways:</p> <ul style="list-style-type: none"> • Properties for routes and operations are assigned values in Route Editor. • Properties for materials are assigned values in an ERP system. These materials are imported to Plant Applications using import services. <p>In Unit Operations, you can view values of properties assigned to the following types of records:</p> <ul style="list-style-type: none"> • Route: Properties assigned to a route are applicable to all the operations in the route (for example, ERP project number). • Operation: Properties assigned to an operation are applicable only to that operation (for example, process capability index of the operation). • Material: Properties assigned to a material are applicable to all the routes that are associated with the material (for example, material grade).

Note: Documents, BOM, Quality, NCR, Properties, and History are standard tabs. You can show or hide them using the Configuration Management application. You can also rearrange the order of the tab display.

Search for an Operation

1. In the main navigation bar, select . A window containing a list of search options appears.
2. Provide values in any of the available boxes as described in the following table.

Box	Description
SERIAL/LOT	<p>Enter a serial/lot number to access the associated operations.</p> <p>Tip: To search for an operation using a barcode, select , and then scan for the barcode of the serial number or lot number associated with the operation. The Unit Operations application supports the barcodes of standards Code 39 and Code 128 only.</p>
WORK ORDER	<p>Enter a work order number to access the associated operations.</p> <p>Tip: To search for an operation using a barcode, select , and then scan for the barcode of the work order associated with the operation. The Unit Operations application supports the barcodes of standards Code 39 and Code 128 only.</p>
MATERIAL FAMILY	Select the material family of the serial/lot.
MATERIAL	Select the material of the serial/lot. The options in this box are filtered based on the value in the MATERIAL FAMILY box.
EQUIPMENT	Select the machine that is used to perform the operation.
STATUS	Select the status of the operation.
Clocked On	Select the check box to access the operations that are clocked on by you.

3. Select  for a field to filter the operations.

The operations based on the specified search criteria appear.

Tip: To clear the results and perform new search, select **Clear Results**.

Access BOM Items

An operation contains a list of BOM items necessary to perform the operation. As an operator, you can access the **BOM** section to specify the consumption of the BOM items for a product.

1. Select the operation whose BOM items you want to access.
2. Select **BOM**.

The **BOM** section appears, displaying the BOM items associated with the selected operation.

The number of the BOM tab indicates the total number of mandatory BOM items that are yet to be consumed to complete the operation on the serial/lot.

In Unit Operations, the number of the **BOM** tab indicates the total number of mandatory BOM items that are yet to be consumed to complete the operation on the serial/lot. In Work Queue, the number on the **BOM** tab indicates the total number of mandatory BOM items that are yet to be consumed to complete the operation on all the serials/lots that you have clocked on for the operation. The following table provides information on each column in the table.

Column	Description
ORDER	The recommended order of consumption of the BOM item in an operation.
PART#	The product code of the BOM item.
DESCRIPTION	The description of the BOM item.
REQ QTY	The planned quantity of the BOM items required for the completion of the serial/lot for the operation.
CONSUMED QTY	The actual quantity of the BOM items consumed during the production.
UOM	The unit of measure (UOM) of the BOM item.
SERIAL/LOT#	The serial/lot of the raw material that was consumed.

3. In the **BOM** section, select an item.
The page containing the item details and consumption history appears.

Access Documents

You can access the documents that are related to a route. The documents can be instruction manuals or technical publications, which may be required to perform the operation. They have been added to the operation or the associated route using the Route Editor application or the ERP system.

1. Access the operation whose documents you want to access.
2. Select **Documents**.
A list of documents associated with the operation or the associated route appear.
3. Select the document that you want to access.
The document appears in the workspace.

Tip: You can rotate the document.

Access the Quality Variables of an Operation

Quality variables include details about the data that are collected while performing an operation. These variables are defined in Plant Applications Administrator. The values that you provide for these variables

help verify that the parameters that are critical to the quality and manufacturing processes are within the acceptable limits. You can use this data to review the performance of a production line and production unit and compare the quality of the products produced in each unit with projections for an operation.



For example, suppose you have been assigned the testing operation in a motor manufacturing unit. Quality variables can include the torque and rpm of the motor shaft. When you test each motor, you must enter the torque and rpm values for the corresponding serial number. A quality supervisor can then verify that the torque and rpm fall within the acceptable range.

1. Access the operation whose quality variables you want to access.
2. Select **Quality**.

The **Quality** section appears, displaying a list of quality variables defined for the operation, and values for these variables for the serial/lot selected in the left pane. These variables are grouped based on the quality variable group. In Unit Operations, the number on the **Quality** tab indicates the total number of mandatory quality variables for the serial/lot that still require a value. In Work Queue, the number on the **Quality** tab indicates the total number of mandatory quality variables for all the serials/lots that you have clocked on for the operation and that still require a value. The following table provides information on the columns in the table.

Column	Description
VARIABLE NAME	The name of the variable.
SPEC	The value of the variable. You can enter a value only if you have clocked on the serial/lot. If an acceptable range has been defined for the variable, after you enter a value, the box in this column displays a color, indicating whether the value is within the acceptable range.
CHART	Contains a chart that plots the lower and upper limits for the variable and the value that you have entered in the SPEC column. The CHART column appears only in the Box Whisker view.



Tip:

- By default, all the quality variables appear. If you want to access only mandatory variables, select **Mandatory Variables** in the drop-down list box.
 - If you want to view the lowest, highest, lower quartile, upper quartile, and median values for each variable, select . If you want to view the same values plotted on a chart, select .
3. In the left pane, select the serial/lot whose variable values you want to access. The **Quality** section displays the quality variables for the selected serial/lot.

Access a Non-Conformance

1. Access the operation performed on the serial/lot whose non-conformance you want to access.
2. Select **NCR**.
The **NCR** section appears, displaying a list of non-conformances for the serial/lot selected in the left pane.
3. In the left pane, select the serial/lot whose non-conformance you want to access.
A list of non-conformances for the serial/lot that occurred at the operation appears. The following table provides information on the columns in the table.

Column	Description
STATUS	The status of the non-conformance.
SERIAL/LOT	The unique identifier of the serial/lot.

Column	Description
OP	The operation during which the non-conformance has been created.
DISP	The disposition method chosen for the serial/lot.
MATERIAL	The material of the serial/lot.
MATERIAL FAMILY	The material family of the serial/lot.
MATERIAL DESC	The material description of the serial/lot.
CTP/REWORK OP	<ul style="list-style-type: none"> For a Rework disposition method, this field contains the operation during which rework must be performed on the serial/lot. For a Continue-to-Process (CTP) disposition method, this field contains the operation until which you can continue to work with the serial/lot. For a disposition method other than CTP or Rework, this column is blank.
ACTIONS	<p>Contains the following buttons:</p> <ul style="list-style-type: none"> : Select this button to access the non-conformance details. : Select this button to access the defect history.

Access the Properties of an Operation

A property is an additional attribute that is assigned to a route, an operation, or a material to produce a product. Properties are created in Property Definition and assigned values in the following ways:

- Properties for routes and operations are assigned values in Route Editor.
- Properties for materials are assigned values in an ERP system. These materials are imported to Plant Applications using import services.

1. Access the operation for which you want to access the properties.
2. Select **Properties**.

The properties assigned to the operation, route, or material appear. The following table provides information on the columns in the table.

Column	Description
LEVEL	<p>The level at which the property has been defined - operation, route, or material.</p> <ul style="list-style-type: none"> If a property has been defined at the route or material level, the value in this column is All Operations. If a property has been defined at the operation level, the value in this column is Operation.
CATEGORY	The category to which the property group belongs.
GROUP	The group to which the property belongs.
NAME	The name of the property.
VALUE	The value of the property.
UOM	The units of measure of the property.
DATA TYPE	The data type of the property.


Access the History of an Operation

As an operator, you can access the events associated with an operation. An event is created each time the status of a serial/lot, operation, or the work order is changed.

1. Access the operation whose history you want to access.
2. Select **History**.

The **History** section appears, displaying the events associated with the operation and the serial/lot selected in the left pane. The events appear in the descending order of their timestamps (based on the **TIME STAMP** column). The following table provides information on the columns in the table.

Column	Description
ACTION	The action performed on the serial/lot.
SERIAL/LOT	The unique identifier for the serial/lot on which the action was performed.
OPERATION	The name of the operation for which the action was performed.
USER(S)	The name of the user who performed the action specified in the ACTION column.
TIME STAMP	The date and time when the action was performed.

Tip: To export the data to a .csv file, select . The data for the columns that appear in the table are exported into a .csv file. If the data contains unicode characters, to access the data in a Microsoft Excel worksheet:

- a. Access a blank worksheet.
- b. Go to **Data > From text/CSV**, and select the .csv file.
- c. Select the file origin: **65001:Unicode (UTF-8)**.
- d. Load the data.

This process is a requirement for Microsoft Excel.

Actions Recorded in the Work Order History

The following table provides a list of actions that appear in the **History** section of a work order.

Action	Description
Work Order Created	Indicates that the work order is created.
Work Order Ready	Indicates that the work order is ready for you to begin work on at least one serial/lot.
Work Order Started	Indicates that the work has begun on at least one serial/lot in the work order. This happens when at least one serial/lot in the work order has been clocked on for an operation.
Work Order Completed	Indicates that all the operations in the work order are completed for all the serials/lots in the work order.
Work Order Cancelled	Indicates that the work order is cancelled.
Work Order Planned Date Change	Indicates that the planned start and end dates of the work order have been changed.

Action	Description
Work Order Priority Change	Indicates that the priority for the work order has been changed.
Serial No Created	Indicates that an ID has been created for a serial/lot in the work order.
Serial/Lot Started	Indicates that work has begun on a serial/lot for the work order. This happens when the serial/lot has been clocked on for the first operation.
Serial/Lot Hold	Indicates that the serial/lot is on hold. This happens when a non-conformance is created on the serial/lot.
Serial/Lot Scrapped	Indicates that the serial/lot has been scrapped. This happens when a non-conformance is created on the serial/lot and the disposition method specified for the serial/lot is Scrap.
Serial/Lot Completed	Indicates that work on the serial/lot has been completed. This happens when all the operations defined in the associated route are completed for the serial/lot.
Serial/Lot Identifier Change	Indicates that the name of a serial/lot has been changed.
Operation Ready	Indicates that an operation is ready for you to begin work on the specified serial/lot.
Operation Started	Indicates that work for an operation for the specified serial/lot has begun.
Serial/Lot Clock On	Indicates that a serial/lot has been clocked on for an operation by an operator.
Serial/Lot Clocked Off	Indicates that a serial/lot has been clocked off for an operation by an operator.
Operation Hold	Indicates that work for an operation is on hold for a serial/lot. This happens when a non-conformance has been created on the serial/lot for the operation.
Operation Released	Indicates that an operation is released for the serial/lot. This happens when the serial/lot has been disposed to release the operation hold.
Operation Cancelled	Indicates that an operation is cancelled for the serial/lot. This happens when the serial/lot is scrapped at the operation.
Operation Completed	Indicates that an operation is completed for the serial/lot.
Hold Released	Indicates that hold is released on an operation. This happens when the serial/lot on which a non-conformance has been created has been disposed.
Order Segments Changed	Indicates that the sequence of an operation in the work order has been changed. This happens when operations have been added or removed (for example, the disposition for a defective serial/lot is set to rework).
Serial/Lot Split	Indicates that a serial/lot has been split up. This happens when a non-conformance has been created for some of the items in the lot.

Action	Description
Serial/Lot Planned Quantity Change	Indicates that the planned quantity of a serial/lot has changed. This happens when items have been added to the planned quantity of the lot or some of the items in the lot have been scrapped.
Quantity Completed	Indicates that completed quantity has been specified for a serial/lot for an operation using Unit Operations or Work Queue.

Clocking on an Operation

About Clocking on Serials/Lots for an Operation

When an operation is created in Route Editor or the ERP system, if it is specified that the operation requires clocking on, you must clock on the serial/lot on which you want to work. It indicates that the you are ready to accept the work and perform the operation.

Operations are planned for execution in one or more production units during production. You can, however, clock on serials/lots for an operation only in one production unit.

A clock-on process on an operation locks the operation for a production unit. As an operator, you can clock on serials/lots for an operation in the Ready status to indicate that you are ready to accept the work and perform the operation. After you clock on, the following actions take place:

- The operation is no longer available in the other production units.
- A timer is enabled to monitor the time you spent on the completion of an operation. The time you spent on an operation is visible only to you. The completion time of an operation may differ from one operator to another.
- A clock-on [status indicator](#) appears for the operation.

You can clock on multiple serials/lots at the same time. In addition, multiple users can clock on a single serial/lot.

Note: If an operation does not require clocking on (as defined in Route Editor or the ERP system), you cannot clock on serials/lots for the operation.


Clock on Serials/Lots for an Operation

You can clock on serials/lots for an operation only if the operation requires clocking on (as defined in Route Editor or the ERP system).

- If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.
- Ensure that the operation is in Ready or In Progress status.

1. In the **Unit Operations** page, in the **Machines** drop-down list box, select a machine. The **Open** workspace appears.

Tip: You can use the **USER(S)** column to access the IDs of the users who have currently clocked on the operation.

2. Select an operation in the Ready or In Progress status. The workspace for the operation appears.
3. **Optional:** Select  to view the details of the operation.
4. **Optional:** If required, update the labor type from the drop-down list box containing the labor types.

Note: By default, the default labor type for the operation is selected.

5. Select the **ON** button to enable the clock-on process on the operation.

Note: The **ON** button is enabled only if the operation requires clocking on (as defined in Route Editor or the ERP system).

The selected serial/lot is clocked on for the operation, and the status of the operation is changed to In Progress. A timer appears in the operation details section to track the time taken to complete the operation.

Clocking off an Operation

About Clocking off Serials/Lots for an Operation

If you want to stop working on an operation for some time, you can clock off the serials/lots, and then clock on again when you resume working on them. It provides visibility to the supervisor on the progress of work for the operation. The timer in the page displaying operation details stops tracking the time when you clock off and resumes tracking only when you clock on again.

The following conditions apply when you clock off serial/lot:

- You can clock off only the serials/lots that you have clocked on.
- When you complete an operation, the serial/lot is clocked off automatically.
- You can clock on or clock off serials/lots only if the operation requires clocking on (as defined in Route Editor or the ERP system).

Clock off a Serial/Lot for an Operation

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

1. In the **Unit Operations** page, in the **Machines** box, select the machine that is used to perform the operation.
The **Open** workspace appears, displaying a list of operations for the selected machine.
2. In the row containing the operation for which you want to clock off serials/lots, and then select **OFF**.

Note: The **OFF** button is enabled only if you have clocked on the serials/lots in the operation.



The serials/lots are clocked off.

Adding a Comment

About Adding a Comment

While working on a serial/lot, you can add a comment on the serial/lot or the work order to provide any additional information.


You can view the comment added to a serial/lot regardless of the operation you are performing on the serial/lot. For example, if you have added a comment to a serial/lot while performing the first operation, the comment also appears when you access the serial/lot for any subsequent operations. Similarly, when you add a comment to a work order, it appears when you access any of the serials/lots for the work order. For this reason, when you add a comment, it is a good practice to provide the details of the operation for which the comment is applicable.

If a work order or serial/lot contains comments, when you access an operation, the comments button () appears with a blue dot (). If you select that button, the number of comments for the work order or serial/lot appears on the **Work Order** or **Serial/lot** tabs, respectively.




You can add an image, video, or an attachment to a comment. The following types of attachments are supported:

- Microsoft Word (DOC/DOCX)
- Microsoft Power Point Presentation (PPT/PPTX)
- Microsoft Excel (XLS/XLSX)
- text document
- PDF



Add a Comment

1. Access the operation associated with the serial or lot or the work order for which you want to add a comment.
2. In the heading, select .
A window appears, displaying a list of comments for the work order. These comments are arranged in the reverse order of creation (that is, the latest comment appears first).
3. Depending on whether you want to add a comment to the work order or serial/lot, select the appropriate tab.
4. In the **ADD COMMENT** box, enter the comment.

Tip: If needed, you can apply formatting, change the alignment of the comment, or insert a link in the comment.

5. If you want to insert a document:
 - a) Ensure that the document that you want to insert is available on the Plant Applications server.
 - b) Select .
The **Upload Document** window appears.
 - c) In the **FILE NAME/URL** box, enter the path of the image.
 - d) Select **Upload**.
6. If you want to insert an image:
 - a) Select .
A blank window appears. If a message appears, asking you to allow access to the camera, select **Allow**.
 - b) Capture the image.
7. **Optional:** If you want to insert a video:
 - a) Select .
A blank window appears. If a message appears, asking you to allow access to the camera, select **Allow**.
 - b) Capture the video.
8. Select **Add**.

The comment has been added.

Tip: To modify a comment, select  and to delete a comment that you have added, select . If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

The following conditions apply when you modify or delete a comment:

- You can modify or delete comments added by others only if you have the permission to moderate comments. Otherwise, you can modify or delete only the comments that you have added.
- After you modify a comment and save your changes, you cannot view the original text.
- After you delete a comment, you cannot restore it.

Consuming a Lot

About BOM Items

The bill of materials (BOM) is a list of formulation items required to manufacture a product. Consuming a BOM item represents the process of utilizing a BOM item within an operation. The BOM items required to complete an operation are defined in Route Editor or in the ERP system, along with details on whether consuming a BOM item is mandatory to complete the operation.

Using Unit Operations, you can perform the following tasks:

- Access a list of BOM items associated with an operation.
- View the total number of mandatory BOM items to be consumed for all the serials/lots that you have clocked on for an operation. This number appears on the **BOM** tab when you access an operation.
- Specify the quantity of BOM items that have been consumed for each serial/lot. If an operation requires clocking on (as defined in Route Editor or the ERP system), you can complete an operation only if all the mandatory BOM items for each serial/lot in the operation are consumed. If, however, the operation does not require clocking on, you can complete the operation even if the mandatory BOM items are not consumed.

To consume a serial/lot during production, you must perform the following steps:

1. [Access a BOM item](#) to view the consumption history. You can use the consumption history of a BOM part within an operation to compare the required quantity with the consumed quantity of the BOM part.
2. [Consume a lot](#) during production.
3. [Create a lot](#), in case, the BOM part does not exist.

The color of a row in the table indicates the requirement type and the consumption status of a BOM part as described in the following table.

Color	Description
Pink	<p>Indicates that the BOM part is mandatory to complete an operation. When you select a mandatory BOM part, the page containing the part details and consumption history displays the MANDATORY label. To complete an operation, you must consume all the mandatory BOM parts in the operation.</p> <p>Note: The BOM tab in the Unit Operations application displays the quantity of mandatory BOM parts required to complete an operation when the following conditions are true:</p> <ul style="list-style-type: none"> • The required BOM parts are not consumed for an operation. • The quantity of BOM parts consumed is lesser than the required quantity of the BOM parts.
White	<p>Indicates that the BOM part is not mandatory to complete an operation.</p> <p>Note: These BOM parts are supplementary for an operation.</p>
Blue	<p>Indicates that consuming the BOM part is mandatory and the BOM part is consumed while executing an operation during production.</p>

Color	Description
	Note: The BOM part row turns blue when the consumed quantity of the BOM part is greater than or equal to the required quantity of the BOM parts for that operation.

Access a BOM Part

An operation contains a list of parts necessary to execute an operation. As an operator, you can access the **BOM** section in Unit Operations to consume the BOM parts for a product.

1. Select the operation whose BOM parts you want to access.
2. Select **BOM**.

The **BOM** section appears, displaying the BOM parts associated with the selected operation. The following table provide information on each column in the table.

Column	Description
ORDER	The recommended order of consumption of the BOM part in an operation.
PART#	The product code of the BOM item.
DESCRIPTION	The description of the BOM part.
REQ QTY	The planned quantity of the BOM parts required for the completion of an operation.
CONSUMED QTY	The actual quantity of the BOM parts consumed during the production.
UOM	The unit of measure (UOM) of the BOM part.

3. In the **BOM** section, select a part.
The page containing the part details and consumption history appears.


Specify Consumption of BOM Parts for an Operation


Consuming a lot represents the process of utilizing a BOM part within an operation. As an operator, you can access the **BOM** section in the Unit Operations application to consume the lots while executing an operation.

- If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.
- [Click on the operation](#) for which you want to specify BOM consumption.

1. Select **Unit Operations**.
2. In the **Machines** drop-down list box, select a machine.
The **Open** page appears, displaying a list of operations associated with the selected machine.
3. In the **Open** page, select an operation, and then select the **BOM** tab.
The **BOM** section appears, displaying the BOM parts associated with the selected operation.
4. In the **BOM** section, select a BOM part.
The page containing the selected BOM part details appears.

Tip: You can access the consumption history of the BOM parts in the **Consumed History** section.

5. In the **SERIAL/LOT#** box, enter the serial number or lot number of the BOM part that you want to consume in the operation. Alternatively, to search for a lot by using a barcode, select , and then scan for the barcode of the lot associated with the BOM part. The Unit Operations application supports the barcodes of standards Code 39 and Code 128 only.

Note: The **SERIAL/LOT#** box and the  button are available only when the operation associated with the BOM part is clocked on. Else, you can access only the Consumed History for that BOM part. The search result of the **SERIAL/LOT#** box is not case-sensitive.


The Available: *<quantity_of_parts>* message displays the quantity of BOM parts available in the lot for consumption. If the required quantity of the BOM parts specified in the **REQUIRED QTY** box is less than or equal to the quantity available in the lot, the Available: *<quantity_of_parts>* message appears in grey, else the message appears in red. In the **REQUIRED QTY** box, if you enter a lot number of a lot that is unavailable in the Plant Applications database or enter a value more than the available quantity in the lot, an informational message appears in red as described in the following table.

Informational Message Name	Message Condition	Corrective Actions
Available: <i><quantity_of_parts></i>	The available quantity in the lot is lesser than the required quantity specified in the REQUIRED QTY box.	Do one of the following tasks: <ul style="list-style-type: none"> Consume the available quantity of the BOM part from the existing lot, and then consume the remaining quantity from another lot. Search for another lot that contains the total required quantity of the BOM part, and then consume the BOM part.
Serial/Lot Not Found	The lot number or serial number is invalid.	Ensure that the lot is available in the database. You can create a lot on a machine, and then consume the BOM parts from the lot. For more information, refer to the Create a Lot on page 23 topic.
This serial/lot is currently not available. Production status = consumed, Current quantity = <i><value></i> .	The lot is not available in the database for consumption.	Search for another lot that contains BOM parts, and then consume the BOM part.
Lot identifier is found but not available for consumption	The selected lot does not contain BOM parts to consume.	Search for another lot that contains BOM parts, and then consume the BOM part.
Serial/lot does not match the material being consumed	The BOM part material differs from the material in the lot being consumed.	Ensure that the material in the BOM part and lot is identical.
Duplicate record found. Unable to consume.	More than one record or duplicate records are available for the same lot in the Production Unit. You cannot consume a BOM part from a lot with duplicate records in an operation.	Ensure that there are no duplicate records in the selected lot.
Unit of measure of the serial/lot does not match the unit of measure for the required quantity.	The unit of measure (UOM) of the BOM item and the lot are different.	Ensure that the UOM of the BOM item and the lot are the same.

Note: An error message appears when the Unit Operations application is unable to retrieve the lots for consumption from the Plant Applications database.

- In the **QTY TO CONSUME** box, enter the quantity of the BOM parts you want to consume in the operation.
 - If each BOM item has a separate lot number, enter the lot number of each BOM item in the **SERIAL/LOT#** box, and then enter 1 in the **QTY TO CONSUME** box. For example, suppose you have been assigned the motor assembling operation. For the endshields BOM item, since the required quantity is two, you must enter the lot numbers of the two endshields used in the motor. In this case, in the **QTY TO CONSUME** box, enter the value 1 for each wheel.
 - If the BOM items have a combined lot number, enter the lot number, and then enter the number of BOM items consumed in the **QTY TO CONSUME** box. For example, suppose you have been

assigned the motor assembling operation for a motor. If the operation requires four nuts and bolts, enter the lot number for the nuts and bolts BOM item, and then enter 4 in the **QTY TO CONSUME** box.

7. Select **Consume**.
An entry for the consumption of the material is added to the table in the **Consumed History** section. In case you consume more than one lot for an operation, the number of entries in the **Consumed History** section depends on the number of lots that are consumed. After an entry is created in the **Consumed History** section, you cannot cancel the consumption of the BOM part. If there are any issues in the **Consumed History** section, contact your Administrator through the Plant Applications Administrator Client.
8. **Optional:** Select the <part number> links in the page displaying BOM part details to navigate to the previous and next BOM parts in a sequential order of the BOM parts.
9. **Optional:** In the **JUMP TO PART NUMBER** box, specify the part number that you want to locate and then press Enter. You must enter the complete part number in the search box and the Unit Operations application displays only the BOM part that contains the search text. Alternatively, to search for a BOM part by using a barcode, select , and then scan for the barcode of the BOM part. The Unit Operations application supports the barcodes of standards Code 39 and Code 128 only. The page containing the selected BOM part details appears.

The BOM parts are consumed in the selected operation, and the quantity of the material consumed appears in the **CONSUMED QTY** box in the **BOM** section.

Create a Lot

As an operator, you can create a lot in the BOM section if the lot is not available for consumption while executing an operation.

- If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.
- You must clock on an operation to consume or create a lot.
- If the operation is not clocked on, the **SERIAL/LOT#** box is not enabled.

1. While consuming a lot, enter the lot number of the BOM part you want to consume in the **SERIAL/LOT#** box.
2. In the **QTY TO CONSUME** box, enter the quantity of the BOM parts you want to consume in the operation.
3. Select **Consume**.
A message appears, indicating that the lot number you entered is not available in the Plant Applications database and if you want to create a lot.
4. In the **EQUIPMENT** drop-down list box, select an equipment on which you want to create the lot.

Note: A list of equipment or units appear based on your product and equipment configuration and the unit of measure (UOM) of the BOM part and the equipment. Based on these conditions, you can do one of the following:

- Select one of the equipment, if more than one equipment is available in the Plant Applications database.
- By default, an equipment appears in the **EQUIPMENT** drop-down list box, if there is only one equipment available in the Plant Applications database.
- Create a lot on your current equipment if there is no equipment available in the Plant Applications database that matches with these conditions. However, you can create a lot on your current equipment only when the UOMs of your equipment and BOM part matches.

Else, an error message appears indicating that the unit of measure (UOM) of the equipment does not match with the UOM of the BOM part. To resolve this error, you can configure the product and equipment in the Plant Applications **Admin** page.

5. In the **QTY TO CREATE** box, enter the quantity of the BOM parts that you want to create on the lot.
6. Select **Yes**.

A lot is created in the Plant Applications database and the quantity of BOM parts specified are consumed from the lot created.

Completing an Operation

About Completing an Operation

Completing an operation involves completing all the activities or jobs associated with the operation. To complete an operation, you must perform the following tasks:

To complete an operation that requires clocking on, perform the following steps for all the serials/lots in the work order:

1. [Clock on the operation](#).
2. Perform the operation on each serial/lot that you have clocked on.
3. [Specify the consumption of BOM items required to complete the operation](#). Only if all the mandatory BOM items have been consumed for all the serials/lots in the work order, you can mark the operation complete.
4. [Provide data for quality variables](#) that have been defined for the operation in Plant Applications Administrator. Only if values for all the mandatory quality variables have been specified for all the serials/lots in the work order, you can mark the operation complete.
5. If needed, [create a non-conformance](#) for any defective serials/lots.
6. If needed, [provide a comment](#) on the serials/lots or work order.
7. [Provide the completed quantity](#) for each serial/lot on which you have completed the operation.

To complete an operation that does not require clocking on, you can [mark the operation complete](#) directly.

Note: When an operation is clocked on by multiple operators and an operator completes the operation, the operation is marked complete for all the operators.

After all the operations are completed on all the serials/lots in the work order, the work order is marked complete in Plant Applications Web Client. You can view the completion status of the work order in [Work Order Manager](#).

Specify a Quality Variable

- If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.
- [Clock on an operation](#) for which you want to provide data for quality variables.



Quality variables include details about the data that you must collect while performing an operation. These variables are defined in Plant Applications Administrator. The values that you provide for these variables help verify that the parameters that are critical to the quality and manufacturing processes are within the acceptable limits. You can use this data to review the performance of a production line and production unit and compare the quality of the products produced in each unit with projections for an operation.


For example, suppose you have been assigned the testing operation in a motor manufacturing unit. Quality variables can include the torque and rpm of the motor shaft. When you test each motor, you must

enter the torque and rpm values for the corresponding serial number. A quality supervisor can then verify that the torque and rpm fall within the acceptable range.

1. In the **Unit Operations** page, in the **Machines** drop-down list box, select a machine.
The **Open** page appears, displaying a list of operations for the selected machine.
2. In the respective application page, select an operation in progress.
The **Documents** section appears, displaying the documents associated with the operation. You can refer to the documents that appear in the **Documents** section for instructions or any other reference material.
3. Select **Quality**.
The **Quality** page appears, displaying the variables defined for the selected operation.

Tip:

- By default, all the quality variables appear. If you want to access only mandatory variables, select **Mandatory Variables** in the drop-down list box.
 - If you want to view the lowest, highest, lower quartile, upper quartile, and median values for each variable, select . If you want to view the same values plotted on a chart, select .
4. For each variable, enter data in the **SPEC** column.

Tip: If you want to plot the value on a chart, select .

If acceptable limits have been specified for the variable, the box in the **SPEC** column displays a color, indicating whether the value that you have entered is within the acceptable range.

5. Repeat steps 3 and 4 for each serial number in the operation.

The data for the quality variables is saved.

If a part contains a defect, [create a non-conformance](#). Otherwise, [complete the operation](#).

Provide the Completed Quantity for an Operation

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

After you perform an operation on a lot, you can provide the quantity of the lot on which you have performed the operation.

You can provide the completed quantity only if the following conditions are satisfied:


- The product is non-serialized.
- The operation requires clocking on (as defined in Route Editor or the ERP system).
- You have specified the BOM consumption for all the mandatory BOM items for the quantity of the lot that you want to mark complete. For example, in a lot of eight items, if you have performed the operation on two items, you must specify the BOM consumption for the two items. The quantity of the consumed BOM items must be greater than or equal to the required quantity to perform the operation.
- You have provided data for all the mandatory quality variables for the lot that you want to mark complete.
- The lot is clocked on by you.

Perform the following steps for the lot for which you want to mark the operation complete:

1. [Specify the consumption of all the mandatory BOM items](#).
2. [Provide data for all the mandatory quality variables](#).

1. Access the operation for which you want to provide completed quantity.

2. Select .

Note: The  button appears only if the lot is clocked on by you.

The **RECORD QUANTITY** window appears.

3. Enter the quantity of the lot for which you have completed the operation. The quantity that you enter must be less than or equal to the available quantity.
4. Select **Record**.


Tip: If you also want to clock off the lot, select **Rec + Clock Off**.


If the completed quantity of the lot is equal to the planned quantity, the operation is marked complete for the lot.


Mark an Operation Complete

- If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.
- For a non-serialized product, if the operation that you want to mark complete requires clocking on, [provide the completed quantity for the operation](#).

For an operation that requires clocking on, if the completed quantity of a serial/lot is equal to the planned quantity for the work order, the operation is automatically marked complete for the serial/lot. If, however, the operation does not require clocking on, if you have performed the operation on the serial/lot, you must mark the operation complete. It is then removed from the list in the **Open** page and appears in the **Complete** page. After all the operations on all the serials/lots in a work order are marked complete, the work order is marked complete in Plant Applications. You can view the completion status of the work order in [Work Order Manager](#).

1. Select the operation that you want to mark complete.
2. In the left pane, select the serial/lot for which you want to mark the operation complete, and then select .

Note: The  button appears only if the completed quantity of the serial/lot equals the planned quantity for the work order or if the operation does not require clocking on.

Tip: You can search for a serial/lot by entering a value in the search box or by scanning for the bar code using the  icon, and then selecting the check boxes from the filtered list that appears.

If the operation is marked complete for all the serials/lots in the work order, the operation no longer appears in the **Open** page. It appears in the **Complete** page until all the operations for all the serials/lots in the work order are marked complete.

Creating a Non-Conformance

About Creating a Non-Conformance

A non-conformance occurs when a serial/lot contains a defect (that is, it does not meet the specification or requirement of a process, system, internal policies and procedures, customer requirements, or regulatory body). Each non-conformance can be related to multiple defects.

You can create a non-conformance for the following types of products:

- **Serialized:** You can create a non-conformance for multiple serialized products at the same time. Defects that are created as part of a non-conformance appear in [Non Conformance](#), where they can be disposed.

- Non-serialized: You can create a non-conformance only for a single lot at a time. If only some quantity of the lot is defective, you can specify the quantity of the defective pieces. The lot is then split into sublots. This will allow you to continue working on the non-defective quantity, while the defective quantity is disposed using [Non Conformance](#).

The following conditions apply when you create a non-conformance:

- You can create a non-conformance on a serial/lot only if you are clocked on to the serial/lot.
- You can create a non-conformance only on the available quantity of a lot (that is, the quantity for which the operation is not yet complete).
- The defective serial/lot and the operation are changed to the On Hold status. Depending on the configuration, you are clocked off the serial/lot and the operation.
- You can complete the operation on the serial/lot only after the serial/lot is disposed in Non Conformance.

Create a Non-Conformance

1. Access the operation during which you want to create a non-conformance.
2. In the left pane, select the serial/lot for which you want to create a non-conformance.
3. Select **NCR**.
A list of non-conformances created for the serial/lot selected in the left pane appears.
4. In the workspace, select **Create Non Conformance**.

Note: The **Create Non Conformance** button is enabled only if you select a serial/lot that you have currently clocked on.

The **Create Non Conformance** window appears.

5. Provide values as specified in the following table.

Box or Section	Description
SUMMARY	Enter a summary for the non-conformance. A value is required.
AFFECTED QUANTITY	<ul style="list-style-type: none"> • For a serialized product, this box is disabled and populated with the value 1. • For a non-serialized product, enter the quantity of the lot that contains the defect. A value is required. <p>Note: The value in this box must be less than or equal to the quantity of the lot for which the operation is not complete.</p>
NON CONFORMANCE TYPE	This box is disabled and populated with the value Manufacturing Defect .
DEFECT TYPE	Select the type of the defect associated with the non-conformance. A value is required.
DEFECT REASON	Select Select Reason , specify the hierarchical set of reasons for the non-conformance, and then select Apply . Note: The reasons that appear in the Select Reasons window are pre-defined in Plant Applications Administrator, and appear based on the value in the NON CONFORMANCE TYPE box. If you want to modify the list of reasons, contact your administrator.
FULL DESCRIPTION	Enter the full description of the non-conformance.

6. Select **Submit**.

A non-conformance is created for the serial or the defective pieces of the lot, and appears in [Non Conformance](#).

- For a serialized product, depending on the configuration, you are clocked off the serial and the operation. You can complete the operation on the serial only after it is [disposed](#).
- For a non-serialized product, if the affected quantity is less than the available quantity of the lot, the lot is split into two sublots:
 - One lot contains the defective pieces. This lot is changed to the On Hold status, and the non-conformance for this lot appears in Non Conformance. This lot is numbered in the following format: <original lot number>-2. You can complete the operation on this lot only after it is disposed.
 - The other lot contains the remaining pieces. This lot is in the In Progress status. It is numbered in the following format: <original lot number>-1. If none of the pieces in this lot is defective, you can continue working on this lot. If, however, some of the pieces in this lot are defective, you can split this lot further by creating a non-conformance again.
 - The original lot is changed to the Cancelled status, and no longer appears in Unit Operations. Values of the quality variables, BOM consumption, and the completed quantity of this lot are copied to the subplot that contains the non-defective pieces.

Chapter 3

Non Conformance

Topics:

- [Overview](#)
- [Accessing a Defect](#)
- [Managing Non-Conformances](#)
- [Disposing a Defect](#)

Overview

About Non Conformance

A non-conformance occurs when a serial/lot contains a defect (that is, it does not meet the specification or requirement of a process, system, internal policies and procedures, customer requirements, or regulatory body). Each non-conformance can be related to multiple defects.






A defect for a non-conformance is created in Unit Operations and/or Work Queue. It then appears in Non Conformance, where you can perform the following tasks:

- Access the defects associated with a non-conformance.
- Create a disposition plan.
- Dispose defects.
- Maintain a record of non-conformances and corrective actions taken to address them.

Note: After a non-conformance is created, the associated serial/lot and operation are placed on hold, and the operators working on that serial/lot are clocked off by default. However, this behavior can be changed to keep the operator clocked on.

About Status Indicators

A status indicator is a color-coded icon that provides the status of a defect. The status of a defect depends on the status and [method of disposition](#) specified for the serial/lot. The following table provides information on the status indicators of a defect created on a serialized or a non-serialized product.

Status	Status Indicator	Description for a Serialized Product	Description for a Non-Serialized Product
Submitted		Indicates that the defect is submitted for disposition. This status indicator appears when the defect is not yet disposed.	Indicates that the defect is submitted for disposition. This status indicator appears when the defect is not yet disposed.
Active		Indicates that the disposition method is MRB, Rework, or Continue to process (CTP).	Indicates that one of the disposition methods for the lot is MRB, Rework, or CTP.
Planned		Indicates that the disposition method is Rework or CTP and the serial/lot has reached the operation specified in the USE UNTIL/REWORK OPERATION box.	Indicates that one of the disposition methods for the lot is Rework or CTP and the serial/lot has reached the operation specified in the USE UNTIL/REWORK OPERATION box.
Not a defect		Indicates that the defect is considered invalid. This status indicator appears when the disposition method is Clear.	Indicates that the defect is considered invalid. This status indicator appears when the only disposition method for the lot is Clear (that is, no other disposition methods have been specified for the lot).
Closed		Indicates that the disposition method for the defect is Use as is or Scrap.	Indicates that the disposition methods for the lot include Use as is and Scrap, but do not include MRB, Rework, or CTP.

Accessing a Defect

About Accessing Defects

Defects for a non-conformance are created in the [Unit Operations](#) and [Work Queue](#) applications. These defects then appear in the Non Conformance application.

Using Non Conformance, you can:




- [Access defects associated with a non-conformance.](#)
- [Dispose defects.](#)

Access a Defect

1. In the **Non Conformance** page, select **Show all Open**.

A list of all the defects, grouped by the associated non-conformance, appears in the workspace. The following table provides the description of the columns in the table.

Column	Description
STATUS	The status of the defect.
SERIAL/LOT#	The serial/lot number of the defective part. You can select the link in this column to search for all the defects associated with the serial/lot.
PLAN	The disposition plan created for the defect. You can select the link in this column to search for defects associated with the disposition plan. For a defect in the Submitted state, the value in this column is blank.
QTY	The quantity of the defective items in the serial/lot. For a serialized product, the value in this column is always 1.
OP	The operation during which the defect was created.
MATERIAL	The material of the defective part. You can select the link in this column to search for defects associated with the material.
MATERIAL FAMILY	The material family associated with the defective serial/lot.
MATERIAL DESC	The description of the material of the defective serial/lot.
DISP	The method of disposition performed on the defective serial/lot. For a defect in the Submitted status, the value in this column is blank.
CTP/REWORK OP	The operation until which a defective serial/lot can be processed before disposing the defect. This is applicable only if the disposition method for the defect is Continue-to-Process (CTP). During the operation specified in this column, the defect must be disposed.
DEFECT REASON <number>	The hierarchy of reasons identified for the defect.

Column	Description
ACTION REASON <number>	The hierarchy of actions identified for the defect.
ACTIONS	<p>The actions that you can perform on the serial/lot. Contains the following buttons:</p> <ul style="list-style-type: none"> : Select this button to dispose the defect. This button is enabled only for a defect in the Submitted status. : Select this button to modify the non-conformance details. This button is enabled only for a defect in the Submitted status. : Select this button, and then select Remove from Plan to remove the defect from a disposition plan.

2. If you want to search for a defect, in the **Enter a Serial/Lot, NCR, WO, Plan, Material, Material Family** box, enter any of the following details to search for the associated defects:

- Serial/lot number
- Non-conformance number
- Work order number
- Plan number
- Material
- Material Family

The entry is added to the left pane. A list of defects associated with the entry that you have entered appears in the workspace in the descending order of the created date or modified date. If you search for a defect using a material or material code, the list of defects are categorized as open and closed.

3. Select the defect that you want to access.

The **General** section appears in the workspace, displaying the defect information. The following table provides information on the columns in the table.

Column	Description
NC Type	The type of the non-conformance associated with the defect.
Summary	The summary of the defect.
Defect Reasons	The hierarchical list of reasons for the defect.
Material	The material of the defective serial/lot.
Created by	The user who created the defect.
Defect Type	The type of the defect.
Qty	The quantity of the defective serials/lots.
Material Family	The material family associated with the defective serial/lot.
Created on	The date and time at which the defect was created.

Tip: You can select the **Dispositions** and **History** tabs to access the [dispositions](#) and [history](#) of the defect, respectively.


[Dispose the defect.](#)

Access the Defect History

1. [Access the defect](#) whose history you want to access.

2. Select **History**.

The **History** section appears. The following table provides information on the columns in the table.

Column	Description
STATUS	The status of the defect.
DEFECT MODIFIED ON	The date and time at which the defect was modified.
SERIAL/LOT#	The serial/lot number associated with the defective part.
PLAN	The disposition plan for the defect. You can select the link in this column to search for all the defects associated with the plan.
OP	The operation during which the defect was created.
DISP	The disposition method for the defect.
CTP/REWORK OP	The operation until which the defective serial/lot can be processed before disposing the defect. This is applicable only if the disposition method for the defect is Continue-to-Process (CTP). During the operation specified in this column, the defect must be disposed.
MATERIAL	The material of the defective serial/lot.
QTY	The quantity of the defective serials/lots.
MATERIAL FAMILY	The material family of the defective serial/lot.
MATERIAL DESC	The description of the defective serial/lot.
VIEW	Contains the  button that allows you to access the hierarchical reasons and actions on the defect.

Managing Non-Conformances

About Managing Non-Conformances

A non-conformance is created in [Unit Operations](#) and/or [Work Queue](#). It then appears in Non Conformance, where you can perform the following tasks:

- [Access a Non-Conformance](#) on page 33.
- [Modify a Non-Conformance](#) on page 34.




You can then dispose the defects associated with the non-conformance.

Access a Non-Conformance

1. In the **Non Conformance** page, select **Show all Open**.

A list of all the defects, grouped by the associated non-conformance, appears in the workspace. The following table provides the description of the columns in the table.


Column	Description
STATUS	The status of the defect.
SERIAL/LOT#	The serial/lot number of the defective part. You can select the link in this column to search for all the defects associated with the serial/lot.
PLAN	The disposition plan created for the defect. You can select the link in this column to search for defects associated with the disposition plan. For a defect in the Submitted state, the value in this column is blank.
OP	The operation during which the defect was created.

Column	Description
MATERIAL	The material of the defective part. You can select the link in this column to search for defects associated with the material.
MATERIAL FAMILY	The material family associated with the defective serial/lot.
QTY	The quantity of the defective serials/lots for the non-conformance. For a serialized product, the value in this column is always 1.
DISP	The method of disposition performed on the defective serial/lot. For a defect in the Submitted status, the value in this column is blank.
CTP/REWORK OP	The operation until which a defective serial/lot can be processed before disposing the defect. This is applicable only if the disposition method for the defect is Continue-to-Process (CTP). During the operation specified in this column, the defect must be disposed.
MATERIAL DESC	The description of the material of the defective serial/lot.
DEFECT REASON <number>	The hierarchy of reasons identified for the defect.
ACTION REASON <number>	The hierarchy of actions identified for the defect.
ACTIONS	<p>The actions that you can perform on the serial/lot. Contains the following buttons:</p> <ul style="list-style-type: none"> •  : Select this button to dispose the defect. This button is enabled only for a defect in the Submitted status. •  : Select this button to modify the non-conformance details. This button is enabled only for a defect in the Submitted status. •  : Select this button, and then select Remove from Plan to remove the defect from a disposition plan.

- If you want to access the defects for a non-conformance, select the link for the non-conformance. Alternatively, in the **Enter a Serial/Lot, NCR, WO, Plan, Material, Material Family** box, enter any of the following details associated with the non-conformance:
 - Serial/lot number
 - Non-conformance number
 - Work order number
 - Plan number
 - Material
 - Material Family

The entry is added to the left pane. A list of defects associated with the non-conformance or with the entry that you have entered appears in the workspace in the descending order of the created date or modified date. If you search for a defect using a material or material family, the list of defects are categorized as open and closed.

Modify a Non-Conformance

- Access the [non-conformance](#) that you want to modify.
- In the row containing one of the defects of the non-conformance, select . The **Edit Non Conformance** window appears.
- Provide values as specified in the following table.

Box	Description
SUMMARY	Enter the summary of the non-conformance. A value is required.
NON CONFORMANCE TYPE	This box is disabled and populated with the value Manufacturing Defect .
DEFECT TYPE	Select the type of the defect associated with the non-conformance. A value is required.
DEFECT REASON	Select Select Reason , specify the hierarchical set of reasons for the non-conformance, and then select Apply . Note: The reasons that appear in the Select Reasons window are pre-defined in Plant Applications Administrator, and appear based on the value in the NON CONFORMANCE TYPE box. If you want to modify the list of reasons, contact your administrator.
FULL DESCRIPTION	Enter the full description of the non-conformance.

4. Select **Submit**.
The non-conformance is modified.

Disposing a Defect

About Disposing a Defect

A disposition is an action taken to resolve a non-conformance. The disposition method you select for a defect in Non Conformance determines the disposition plan for the defect.

A disposition plan includes the disposition, a description of the corrective actions to be taken (by using a hierarchy of actions), and any additional instructions to be followed to address the non-conformity. You configure the hierarchy of the disposition actions in Plant Applications Administrator, and then run a script file to link the hierarchy of the disposition actions for selection in Non Conformance.

The following table describes the available disposition methods.


Disposition	Effect
Use as is	The serial/lot is acceptable for being used as is.
Continue to process (CTP)	The serial/lot can undergo operations up to the specified CTP operation, at which point the defect can be addressed.
Clear	The serial/lot does not require any corrective action and is not considered defective.
Scrap	The serial/lot cannot be used and must be scrapped.
Rework	The serial/lot can be used after performing rework during a specified operation.
MRB	The serial/lot must undergo review by the material review board before disposing it.

Using Non Conformance, you can dispose the following types of products:

- Serialized: These products contain a unique identifier per piece (for example, a motor used in a pump). You can dispose a single defect or multiple defects for a serialized product at the same time.
- Non-Serialized: These products contain a unique identifier for a bunch of pieces (for example, a packet of screws). When you dispose a non-serialized product, you can select a different disposition method for different pieces in the same lot. You cannot dispose multiple defects for non-serialized products at the same time.

Access Dispositions

1. In the **Non Conformance** page, in the left pane, select the serial/lot, non-conformance number, work order number, plan number, or material for which you want to access dispositions.
A list of non-conformances associated with the selected item appears in the workspace, along with defects created for each non-conformance.
2. Select a defect associated with the non-conformance whose dispositions you want to access.
The defect information appears in the **General** section.
3. Select **Dispositions**.
A list of dispositions for the associated non-conformance appears, sorted in the descending order of the date of creation or modification. The following table provides information on the columns in the table.

Column	Description
DISPOSITION MOD ON	The date and time at which the disposition has been created or modified.
DISPOSITION MOD BY	The user who created or modified the disposition.
PLAN	The plan associated with the disposition. You can select the link in this column to search for all non-conformances associated with the plan.
SERIAL/LOT#	The material lot number or serial number that contains the defect. You can select the link in this column to search for all non-conformances associated with the serial/lot.
WORK ORDER	The work order associated with the serial/lot. You can select the link in this column to search for all non-conformances associated with the work order.
OP	The operation during which the defect has been identified.
QTY	The number of defective pieces in the serial/lot.
DISP	The type of the disposition method.
ACTION REASON 1	The first level of action to dispose the defect.
VIEW	Select  to access additional details of the defect.

Dispose a Single Defect for a Serialized Product

Ensure that you have configured the required disposition action reason tree in Plant Applications Administrator, and then linked the disposition action reason tree for selection in Non Conformance by using the appropriate script file.

This topic describes how to dispose a single defect for a serialized product. You can also:


- [Dispose multiple defects at the same time](#) for a serialized product.
- **Note:** You cannot dispose multiple defects at the same time for a non-serialized product.
- [Dispose a single defect for a non-serialized product](#).


The following conditions apply when you dispose a defect for a serialized product:

- If a defect has been added to a plan, you cannot dispose it separately; you can only dispose all the defects in the plan together.
- If a defect has already been disposed using one of the following methods, you cannot dispose it again:
 - Clear

- Use as is
- Scrap

1. Access the defect that you want to dispose.

Note: You can dispose a defect only if it is in the Submitted status, which is indicated by .

2. In the row containing the defect, select . The **Disposition** window appears.









3. Provide values as specified in the following table.

Box	Description														
SELECT DISPOSITION	Select an option as described in the following table. <table border="1"> <thead> <tr> <th>Option</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Clear</td> <td>Select this option if the defects raised for the non-conformance are not considered as defects.</td> </tr> <tr> <td>Continue to process</td> <td>Select this option if you want to allow work on the serials/lots, and then select the operation until which you can continue the work, in the USE UNTIL/REWORK OPERATION drop-down list box. When you do so, the status of the operation during which the defect was raised changes from on hold to in progress, and the operation that you select in the USE UNTIL/REWORK OPERATION box changes to On Hold. Note: If the operation at which the non-conformance has been created on the serial/lot is the last operation in the route, you cannot select this disposition method.</td> </tr> <tr> <td>Scrap</td> <td>Select this option if you want to discard the defective serials/lots.</td> </tr> <tr> <td>Use as is</td> <td>Select this option to use the serials/lots in the operations as they are.</td> </tr> <tr> <td>Rework</td> <td>Select this option to rework on the serials/lots, and then select the operation during which the serials/lots should be reworked, in the USE UNTIL/REWORK OPERATION box.</td> </tr> <tr> <td>MRB</td> <td>Select MRB to indicate that the defects must be reviewed by the material board, thus deferring the disposition to a later date. This will allow the quality team in your organization to determine the correct disposition method.</td> </tr> </tbody> </table>	Option	Description	Clear	Select this option if the defects raised for the non-conformance are not considered as defects.	Continue to process	Select this option if you want to allow work on the serials/lots, and then select the operation until which you can continue the work, in the USE UNTIL/REWORK OPERATION drop-down list box. When you do so, the status of the operation during which the defect was raised changes from on hold to in progress, and the operation that you select in the USE UNTIL/REWORK OPERATION box changes to On Hold. Note: If the operation at which the non-conformance has been created on the serial/lot is the last operation in the route, you cannot select this disposition method.	Scrap	Select this option if you want to discard the defective serials/lots.	Use as is	Select this option to use the serials/lots in the operations as they are.	Rework	Select this option to rework on the serials/lots, and then select the operation during which the serials/lots should be reworked, in the USE UNTIL/REWORK OPERATION box.	MRB	Select MRB to indicate that the defects must be reviewed by the material board, thus deferring the disposition to a later date. This will allow the quality team in your organization to determine the correct disposition method.
Option	Description														
Clear	Select this option if the defects raised for the non-conformance are not considered as defects.														
Continue to process	Select this option if you want to allow work on the serials/lots, and then select the operation until which you can continue the work, in the USE UNTIL/REWORK OPERATION drop-down list box. When you do so, the status of the operation during which the defect was raised changes from on hold to in progress, and the operation that you select in the USE UNTIL/REWORK OPERATION box changes to On Hold. Note: If the operation at which the non-conformance has been created on the serial/lot is the last operation in the route, you cannot select this disposition method.														
Scrap	Select this option if you want to discard the defective serials/lots.														
Use as is	Select this option to use the serials/lots in the operations as they are.														
Rework	Select this option to rework on the serials/lots, and then select the operation during which the serials/lots should be reworked, in the USE UNTIL/REWORK OPERATION box.														
MRB	Select MRB to indicate that the defects must be reviewed by the material board, thus deferring the disposition to a later date. This will allow the quality team in your organization to determine the correct disposition method.														
USE UNTIL/REWORK OPERATION	This box appears only for the following disposition methods: <ul style="list-style-type: none"> • Rework • Continue to process Select the operation until which the serial/lot can be processed. A value is required. After the serial/lot reaches the operation that you have specified, it must be disposed again.														
AFFECTED QUANTITY	This box is disabled and populated with the value 1.														

Box	Description
DEFECT REASON	Select a corrective disposition action reason and the associated subreasons, as applicable. Tip: In the Search box, enter a disposition action reason to search for, and then select the reason from the reasons list.
ADDITIONAL INFORMATION	Enter any relevant information, such as a URL, contact details of the supplier, or any information that is helpful to perform the root cause analysis of the non-conformance.

4. Select **Submit**.

The following actions take place based on the disposition method that you have selected.

Disposition Type	Result
Clear	<ul style="list-style-type: none"> The status of the defect is set to Not a Defect, indicated by . The hold on the serial/lot is released.
Continue to process (CTP)	<ul style="list-style-type: none"> The status of the defect is Active, indicated by . When the defect is in the Active status, the current serial/lot will be released from hold. When the operation specified in the USE UNTIL/REWORK OPERATION box is reached, the serial/lot will be placed on hold. The defect status is changed to Planned, indicated by .
Use as is	<ul style="list-style-type: none"> The status of the defect is set to Closed, indicated by . The hold on the serial/lot is released.
Scrap	<ul style="list-style-type: none"> The status of the defect is set to Closed, indicated by . The hold on the serial/lot is released.
Rework	<ul style="list-style-type: none"> The status of the defect is set to Active, indicated by . After completion of the rework operation, the status is changed to Planned, indicated by . The serial/lot continues to be on hold. The hold is released after the completion of rework.
MRB	<ul style="list-style-type: none"> The status of the defect is set to Active, indicated by . The serial/lot continues to be on hold.

Dispose a Single Defect for a Non-Serialized Product

Ensure that you have configured the required disposition action reason tree in Plant Applications Administrator, and then linked the disposition action reason tree for selection in Non Conformance by using the appropriate script file.

When you dispose a non-serialized product, you can select a different disposition method for different pieces in the same lot. For example, suppose in a packet of 50 screws, 20 must be scrapped and 30 can be used as is. You can split the lot into two sublots, and specify the disposition method as Scrap for a quantity of 20 screws and Use as is for the remaining 30 screws.


This topic describes how to dispose a single defect for a non-serialized product. You can also:


- [Dispose a single defect for a serialized product.](#)


- [Dispose multiple defects at the same time](#) for a serialized product.

Note: You cannot dispose multiple defects at the same time for a non-serialized product.

1. [Access the defect that you want to dispose.](#)

Note: You can dispose a defect only if it is in the Submitted status, which is indicated by .

2. In the row containing the defect, select  .
The **Dispositions** window appears.
3. Provide values as specified in the following table.

Box or Section	Description
SL/LOT	<p>This section contains the lot number and the quantity of defective pieces in the lot. Select the lot.</p> <p>Tip: To access the non-conformance number, the name of the user who created the non-conformance, and the date and time at which the non-conformance has been created, select .</p>

Box or Section	Description
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DISPOSITION

For each disposition method that you want to specify for the items in the lot, select an option as described in the following table, and then enter the quantity.

Option	Description
Clear	Select this option if the defects raised for the non-conformance are not considered as defects.
Continue to process	<p>Select this option if you want to allow work on the lot, and then select the operation until which you can continue the work, in the USE UNTIL/REWORK OPERATION drop-down list box. When you do so, the status of the operation during which the defect was raised changes from on hold to in progress, and the operation that you select in the USE UNTIL/REWORK OPERATION box changes to On Hold.</p> <p>Note: If the operation at which the non-conformance has been created on the serial/lot is the last operation in the route, you cannot select this disposition method.</p>
Scrap	Select this option if you want to discard the defective serials/lots.
Use as is	Select this option to use the serials/lots in the operations as they are.
Scrap	Select this option to discard the serials/lots.
Rework	Select this option to rework on the serials/lots, and then select the operation during which the serials/lots should be reworked on, in the USE UNTIL/REWORK OPERATION box.
MRB	Select MRB to indicate that the defects must be reviewed by the material board, thus deferring the disposition to a later date. This will allow the quality team in your organization to determine the correct disposition method.

Repeat this step for all the disposition methods that you want to use for the lot.

For example, suppose in a packet of 50 screws, 20 must be scrapped and 30 can be used as is. In that case:

- a. In the **Dispositions** box, select **Scrap**, and then enter 20.
- b. In the **Dispositions** box, select **Use as is**, and then enter 30.

Each time you select a disposition, the affected quantity is updated with the remaining quantity that must be disposed. The sum of the quantity that you have entered for each disposition method for a lot must be equal to the available quantity for the lot (that is, the affected quantity must be zero).







Box or Section	Description
USE UNTIL/REWORK OPERATION	<p>This box appears only for the following disposition methods:</p> <ul style="list-style-type: none"> • Rework • Continue to process <p>Select the operation until which the serial/lot can be processed. A value is required. After the serial/lot reaches the operation that you have specified, it must be disposed again.</p>
SELECT DISPOSITION ACTION REASON	<p>For each disposition that you have specified in the Dispositions box, select the corrective disposition action reason and the associated subreasons, as applicable.</p> <p>Tip: In the Search box, enter a disposition action reason to search for, and then select the reason from the reasons list.</p>
ADDITIONAL INFORMATION	<p>Enter any relevant information, such as a URL, contact details of the supplier, or any information that is helpful to perform the root cause analysis of the non-conformance.</p>










4. Select **Submit**.

Note: The **Submit** button is enabled only if the following conditions are satisfied:

- You have selected a disposition method for all the defective items in the lot (that is, the affected quantity is zero).
- For the disposition methods Rework and Continue to process, you have selected an operation in the **USE UNTIL/REWORK OPERATION** box.

A disposition plan is created for the lot. The following actions take place based on the disposition method that you have selected.

Disposition Type	Result
Clear	<p>If this is the only disposition method specified for the lot:</p> <ul style="list-style-type: none"> • The status of the defect is set to Not a Defect, indicated by . • The hold on the serial/lot is released. <p>If the disposition methods also include Use as is or Scrap (but do not include MRB, Continue to Process, or Rework):</p> <ul style="list-style-type: none"> • The status of the defect is set to Closed, indicated by . • The hold on the serial/lot is released. <p>If the disposition methods also include MRB, CTP, or Rework:</p> <ul style="list-style-type: none"> • The status of the defect is Active, indicated by . When the defect is in the Active status, the hold on the serial/lot is released. • In the case of CTP or Rework, when the operation specified in the USE UNTIL/REWORK OPERATION box is reached, the serial/lot will be placed on hold. The defect status is changed to Planned, indicated by .
Continue to process (CTP)	<ul style="list-style-type: none"> • The status of the defect is Active, indicated by . When the defect is in the Active status, the hold on the serial/lot is released. • When the operation specified in the USE UNTIL/REWORK OPERATION box is reached, the serial/lot will be placed on hold. The defect status is changed to Planned, indicated by .

Disposition Type	Result
Use as is	<p>If the disposition methods for the lot do not include MRB, Rework, or CTP:</p> <ul style="list-style-type: none"> The status of the defect is set to Closed, indicated by . The hold on the serial/lot is released. <p>If the disposition methods for the lot include MRB, Rework, or CTP:</p> <ul style="list-style-type: none"> The status of the defect is Active, indicated by . When the defect is in the Active status, the hold on the serial/lot is released. In the case of Rework or CTP, when the operation specified in the USE UNTIL/REWORK OPERATION box is reached, the serial/lot is placed on hold. The defect status is changed to Planned, indicated by .
Scrap	<p>If the disposition methods for the lot do not include MRB, Rework, or CTP:</p> <ul style="list-style-type: none"> The status of the defect is set to Closed, indicated by . The hold on the serial/lot is released. <p>If the disposition methods for the lot include MRB, Rework, or CTP:</p> <ul style="list-style-type: none"> The status of the defect is Active, indicated by . When the defect is in the Active status, the current serial/lot will be released from hold. In the case of Rework or CTP, when the operation specified in the USE UNTIL/REWORK OPERATION box is reached, the serial/lot will be placed on hold. The defect status is changed to Planned, indicated by .
Rework	<ul style="list-style-type: none"> The status of the defect is set to Active, indicated by . After completion of the rework operation, the status is changed to Planned, indicated by . The serial/lot continues to be on hold. The hold is released after the completion of rework.
MRB	<ul style="list-style-type: none"> The status of the defect is set to Active, indicated by . The serial/lot continues to be on hold.

Add Defects to a Disposition Plan

If the disposition method and reasons for multiple defects are the same, you can dispose them at the same time. To do so:

1. Add the defects to a new or existing disposition plan.
2. Dispose the defects.

You cannot add a defect to a plan if:

- The defect is created for a non-serialized product.
- The defect is already added to a plan.

1. Access a non-conformance by performing one of the following tasks:

- If the non-conformance appears in the workspace or in the left pane, select the link.
- Enter the non-conformance number in the **Search** box that appears in the left pane or in the workspace.

All the defects associated with the non-conformance appear in the workspace.

2. Select the check box corresponding to each defect that you want to add to a plan.

Note: The check box appears only if the defect is for a serialized product and if the defect is not added to a plan.

Tip: To select all the defects for a non-conformance, select the check box in the heading column.

3. Select .

The **Create a Plan or add to an existing Plan** window appears, displaying a list of plans.

4. If you want to add the defects to an existing plan, select the plan, and then select **Apply**. The selected defects are added to the plan.

Tip: You can search for an existing plan using the **Search** box.

5. If you want to add the defects to a new plan, select **Add to a New Plan**, and then select **Apply**. A plan is created with a system-generated name, and the selected defects are added to the plan.
6. Repeat steps 1 through 5 to add defects from other non-conformances to the plan.

[Dispose the defects added to the plan.](#)

Dispose Multiple Defects for a Serialized Product

1. Ensure that you have configured the required disposition action reason tree in Plant Applications Administrator, and then linked the disposition action reason tree for selection in Non Conformance by using the appropriate script file.
2. [Add all the defects that you want to dispose to a plan.](#)

This topic describes how to dispose multiple defects at the same time for a serialized product. You can also dispose a single defect for a [serialized](#) or [non-serialized](#) product.

Note: You cannot dispose multiple defects at the same time for a non-serialized product.









1. Search for the plan by performing one of the following steps:
 - If the plan appears in the workspace or in the left pane, select the link.
 - Enter the plan number in the **Search** box that appears in the left pane or in the workspace.

A list of defects added to the plan appear in the workspace.

2. Select .

The **Disposition** window appears, displaying a list of serials/lots corresponding to the defects in the plan. The check boxes for all the serials/lots in the list are selected and disabled.

3. Provide values as specified in the following table.

Disposition Type	Result
Clear	<ul style="list-style-type: none"> The status of the defect is set to Not a Defect, indicated by . The hold on the serial/lot is released.
Continue to process (CTP)	<ul style="list-style-type: none"> The status of the defect is Active, indicated by . When the defect is in the Active status, the current serial/lot will be released from hold. When the operation specified in the USE UNTIL/REWORK OPERATION box is reached, the serial/lot will be placed on hold. The defect status is changed to Planned, indicated by .
Use as is	<ul style="list-style-type: none"> The status of the defect is set to Closed, indicated by . The hold on the serial/lot is released.
Scrap	<ul style="list-style-type: none"> The status of the defect is set to Closed, indicated by . The hold on the serial/lot is released.
Rework	<ul style="list-style-type: none"> The status of the defect is set to Active, indicated by . After completion of the rework operation, the status is changed to Planned, indicated by . The serial/lot continues to be on hold. The hold is released after the completion of rework.
MRB	<ul style="list-style-type: none"> The status of the defect is set to Active, indicated by . The serial/lot continues to be on hold.

Modify the Continue-to-Process (CTP) Disposition Method

A Continue-to-Process (CTP) disposition method implies that the serial/lot can undergo operations up to the specified CTP operation, at which point the defect can be addressed. As a quality engineer, you can modify the following CTP disposition details:

- The operation until which the serial/lot can be processed.
- The disposition method, which can be changed from CTP to any of the other disposition methods such as, Clear, Scrap, Rework or Use as is.
- The disposition action reasons.
- Additional information related to the disposition.

The following conditions apply when you modify a CTP disposition method:

- When the you select the CTP disposition method for a plan, all the defects in the plan are moved to the Active status.
- You can modify the CTP disposition method only if all the defects in the plan are in the Active status. If at least one of the serials/lots completes the CTP operation (that is, the defect moves to the Submitted status), you cannot modify the CTP disposition method.
- You can dispose the plan if all the serials/lots complete the CTP operation (that is, all the defects are moved to the Submitted status).

- Search for the plan that is associated with the defect by performing one of the following steps:
 - If the plan appears in the left pane or workspace, select the link.
 - Enter the plan number in the **Enter a Serial/Lot, NCR, WO, Plan, Material, Material Family** box. When you dispose multiple defects, the plan number is added or selected by you when you create a

plan. When you dispose a single defect, the plan number is generated when you submit the disposition method.

2. Select .






The **Disposition** window appears, displaying a list of serials/lots corresponding to the defects in the plan. The check boxes for all the serials/lots in the list are selected and disabled.









3. Modify values as specified in the following table.











Box	Description												
Dispositions	<p>This box contains the value Continue to process. If you want to continue with the CTP disposition method, but want to specify a different CTP operation or reasons, do not modify this value. If, however, you want to specify a different disposition method, select an option as described in the following table.</p> <table border="1"> <thead> <tr> <th>Option</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Clear</td> <td>Select this option if the defect raised for the serial/lot is not considered a defect.</td> </tr> <tr> <td>Use as is</td> <td>Select this option to use the serial/lot in the operations as it is.</td> </tr> <tr> <td>Scrap</td> <td>Select this option to discard the serial/lot.</td> </tr> <tr> <td>Rework</td> <td>Select this option to rework on the non-conforming part, and then select the operation on which the defective pieces should be reworked, in the USE UNTIL/REWORK OPERATION box.</td> </tr> <tr> <td>MRB</td> <td>Select MRB to indicate that the defect must be reviewed by the material board, thus deferring the disposition to a later date. This will allow the quality team in your organization to determine the correct disposition method.</td> </tr> </tbody> </table>	Option	Description	Clear	Select this option if the defect raised for the serial/lot is not considered a defect.	Use as is	Select this option to use the serial/lot in the operations as it is.	Scrap	Select this option to discard the serial/lot.	Rework	Select this option to rework on the non-conforming part, and then select the operation on which the defective pieces should be reworked, in the USE UNTIL/REWORK OPERATION box.	MRB	Select MRB to indicate that the defect must be reviewed by the material board, thus deferring the disposition to a later date. This will allow the quality team in your organization to determine the correct disposition method.
Option	Description												
Clear	Select this option if the defect raised for the serial/lot is not considered a defect.												
Use as is	Select this option to use the serial/lot in the operations as it is.												
Scrap	Select this option to discard the serial/lot.												
Rework	Select this option to rework on the non-conforming part, and then select the operation on which the defective pieces should be reworked, in the USE UNTIL/REWORK OPERATION box.												
MRB	Select MRB to indicate that the defect must be reviewed by the material board, thus deferring the disposition to a later date. This will allow the quality team in your organization to determine the correct disposition method.												
USE UNTIL/REWORK OPERATION	<p>Select the operation until which the serial/lot can be processed. This box appears only for the following disposition methods:</p> <ul style="list-style-type: none"> • Continue to process • Rework 												
SELECT DISPOSITION ACTION REASON	Select the hierarchy of reasons for the disposition action.												
ADDITIONAL INFORMATION	Enter any relevant information, such as a URL, contact details of the supplier, or any information that is helpful to perform the root cause analysis of the non-conformance.												

4. Select **Submit**.

The following actions take place based on the disposition method that you have selected.

Disposition Type	Result for a Serialized Product	Result for a Non-Serialized Product
<p>Clear</p>	<ul style="list-style-type: none"> The status of the defect is set to Not a Defect, indicated by . The hold on the serial/lot is released. 	<p>If this is the only disposition method specified for the lot:</p> <ul style="list-style-type: none"> The status of the defect is set to Not a Defect, indicated by . The hold on the serial/lot is released. <p>If the disposition methods also include Use as is or Scrap (but do not include MRB, Continue to Process, or Rework):</p> <ul style="list-style-type: none"> The status of the defect is set to Closed, indicated by . The hold on the serial/lot is released. <p>If the disposition methods also include MRB, CTP, or Rework:</p> <ul style="list-style-type: none"> The status of the defect is Active, indicated by . When the defect is in the Active status, the hold on the serial/lot is released. In the case of CTP or Rework, when the operation specified in the USE UNTIL/REWORK OPERATION box is reached, the serial/lot will be placed on hold. The defect status is changed to Planned, indicated by .

Disposition Type	Result for a Serialized Product	Result for a Non-Serialized Product
Continue to process (CTP)	<ul style="list-style-type: none"> The status of the defect is Active, indicated by . When the defect is in the Active status, the current serial/lot will be released from hold. When the operation specified in the USE UNTIL/REWORK OPERATION box is reached, the serial/lot will be placed on hold. The defect status is changed to Planned, indicated by . 	<ul style="list-style-type: none"> The status of the defect is Active, indicated by . When the defect is in the Active status, the hold on the serial/lot is released. When the operation specified in the USE UNTIL/REWORK OPERATION box is reached, the serial/lot will be placed on hold. The defect status is changed to Planned, indicated by .
Use as is	<ul style="list-style-type: none"> The status of the defect is set to Closed, indicated by . The hold on the serial/lot is released. 	<p>If the disposition methods for the lot do not include MRB, Rework, or CTP:</p> <ul style="list-style-type: none"> The status of the defect is set to Closed, indicated by . The hold on the serial/lot is released. <p>If the disposition methods for the lot include MRB, Rework, or CTP:</p> <ul style="list-style-type: none"> The status of the defect is Active, indicated by . When the defect is in the Active status, the hold on the serial/lot is released. In the case of Rework or CTP, when the operation specified in the USE UNTIL/REWORK OPERATION box is reached, the serial/lot is placed on hold. The defect status is changed to Planned, indicated by .

Disposition Type	Result for a Serialized Product	Result for a Non-Serialized Product
<p>Scrap</p>	<ul style="list-style-type: none"> The status of the defect is set to Closed, indicated by . The hold on the serial/lot is released. 	<p>If the disposition methods for the lot do not include MRB, Rework, or CTP:</p> <ul style="list-style-type: none"> The status of the defect is set to Closed, indicated by . The hold on the serial/lot is released. <p>If the disposition methods for the lot include MRB, Rework, or CTP:</p> <ul style="list-style-type: none"> The status of the defect is Active, indicated by . When the defect is in the Active status, the hold on the serial/lot is released. In the case of Rework or CTP, when the operation specified in the USE UNTIL/REWORK OPERATION box is reached, the serial/lot is placed on hold. The defect status is changed to Planned, indicated by .
<p>Rework</p>	<ul style="list-style-type: none"> The status of the defect is set to Active, indicated by . After completion of the rework operation, the status is changed to Planned, indicated by . The serial/lot continues to be on hold. The hold is released after the completion of rework. 	<ul style="list-style-type: none"> The status of the defect is set to Active, indicated by . After completion of the rework operation, the status is changed to Planned, indicated by . The serial/lot continues to be on hold. The hold is released after the completion of rework.
<p>MRB</p>	<ul style="list-style-type: none"> The status of the defect is set to Active, indicated by . The serial/lot continues to be on hold. 	<ul style="list-style-type: none"> The status of the defect is set to Active, indicated by . The serial/lot continues to be on hold.

Chapter 4

Work Order Manager

Topics:

- [About](#)
- [Accessing a Work Order](#)
- [Creating a Work Order](#)
- [Modifying a Work Order](#)
- [Adding a Comment](#)
- [Prioritizing a Work Order](#)
- [Clocking Off a Serial/Lot](#)
- [Cancelling a Work Order](#)

About

About Work Order Manager

As a supervisor, you can use Work Order Manager to manage work orders. Each row in the **Work Order Manager** page represents a work order or an operation. You can perform the following tasks in Work Order Manager:

- [Access a work order and its details.](#)
- [Search for a work order.](#)
- [Create a work order.](#)
- [Prioritize a work order.](#)
- [Modify the planned dates of a work order.](#)
- [Cancel a work order.](#)

About Work Orders, Operations, and Serials/Lots

A work order is a request to manufacture a certain quantity of products. It contains information on the model, route, and quantity of a product that must be manufactured. Work orders are created for a specific product and must be completed on a production line.

Work orders are created in Plant Applications from the following sources:

- ERP System: You can import work orders from an ERP system to Plant Applications using the import services.
Note: For information on the import services, refer to the Plant Applications ERP Integration Guide.
- Route Editor: You can create work orders manually using Route Editor.
- Work Order Manager: You can create work orders manually using Work Order Manager.

These work orders then appear in Work Order Manager.

To manufacture each type of product, a sequence of tasks must be performed. Each task or a set of tasks is called an operation. An operation is an executable job performed on a production unit of a production line. Operations can be defined either in the route using Route Editor or in the work order that you import from an ERP system.

About Status Indicators



A status indicator is a color-coded icon that provides the status of a work order, operation, or a serial/lot. The progress of work of all the serials/lots and operations indicates the overall status of a work order. The following table provides information on the status indicators for a serial/lot, operation, and a work order.

Note: During production, the status of an operation may differ as follows:

- When a serial/lot is on hold, the status of the operation associated with that serial/lot can be In Progress.
- When a serial/lot is scrapped, the operation in which the serial/lot is scrapped along with all subsequent operations that were configured to be performed on the serial/lot is Cancelled.

Table 1: Status Indicators of a Work Order

Status	Status Indicator	Description for a Serial/Lot	Description for an Operation	Description for a Work Order
Not Ready		Not applicable	Indicates that none of the serials/lots are available for you to begin the operation.	Not applicable
Ready		Indicates that no operation has been performed on the serial/lot yet, and the serial/lot is ready for you to perform the operation.	Indicates that you can begin work for the operation.	Indicates that you can begin work for the work order.
In Progress		Indicates that work has begun on the serial/lot (that is, the serial/lot is clocked on or was clocked on in the past).	Indicates that work for the operation has begun on at least one serial/lot (that is, at least one serial/lot is clocked on for the operation or was clocked on in the past).	Indicates that work has begun for at least one serial/lot in the work order (that is, at least one serial/lot in the work order is clocked on or was clocked on in the past).
On Hold		Indicates that a defect has been created for the serial/lot. After the defect is closed, the status is changed to the previous status.	Indicates that the operation is on hold. For example, if the disposition method specified for a defect is Continue to Process (CTP), and the defect is re-evaluated during a future operation, that future operation is on hold. When the serial/lot is ready for that future operation, the operation status is Ready or In Progress, and the serial/lot status is On Hold.	Not applicable
Cancelled		Not applicable	Indicates that the operation is in the Cancelled status. For example, when a serial/lot is scrapped or split, the status of the current operation on the serial/lot is changed to Cancelled.	Indicates that the work order is cancelled.
Scrapped		Indicates that the serial/lot has been scrapped.	Not applicable	Not applicable

Status	Status Indicator	Description for a Serial/Lot	Description for an Operation	Description for a Work Order
Split		Indicates that the lot has been split up. This happens when a non-conformance has been created on some of the items in the lot.	Not applicable	Not applicable
Completed		Indicates that all operations for the serial/lot are completed.	Indicates that the operation is completed for all serials/lots.	Indicates that all the operations associated with all the serials/lots in the work order are completed.

Accessing a Work Order

About Accessing a Work Order

Using Work Order Manager, you can access work orders and operations in the released, on hold, or completed state. You can also access the following details of a work order:

- [Status of the serials/lots](#) in the work order, along with the current operation being performed on each of them.
- [Summary](#)
- [A list of clocked on and clocked off operations](#)
- [A list of BOM items](#) for each serial/lot in the work order, along with the required and consumed quantities
- [History](#)
- [A list of non-conformances](#) created for serials/lots in the work order
- [A list of properties](#)

Access a Work Order

As a supervisor, you can access work orders in the Released (that is, Ready or In Progress), On Hold, and Completed statuses associated with a production line or material family.

1. In the **Work Order Manager** page, depending on the status of the work order that you want to access, select one of the following tabs:
 - **Released**
 - **On hold**
 - **Completed**
2. In the **Property** box, select one of the following properties by which you want to filter the work orders.
 - **Production Line**
 - **Material Family**


Depending on your selection in the **Property** box, the adjacent drop-down list box contains the list of production lines or material families.

3. Select the production lines or material families based on which you want to filter the work orders.

Note: If you select a single production line or material family, the name of the selected line or family appears in the drop-down list box. If you select more than one line or family, the quantity of the selected lines or families appears (for example, 2 selected).

A list of work orders associated with the selected production lines or material families appears. If you have accessed a work order in the released state, the work orders in the In Progress status appear first with an ascending sort applied in the **ACT START** column, followed by those in the Ready status with an ascending sort applied in the **PRI** column and then the **PLAN START** column (that is, the oldest work orders appear first in the table). The following table provides information on the columns in the table.

Description
<p>SThe status of the work order.</p> <p>T</p> <p>A</p> <p>T</p> <p>U</p> <p>S</p>
<p>Whe unique identifier of the work order.</p> <p>O</p> <p>R</p> <p>K</p> <p>O</p> <p>R</p> <p>D</p> <p>E</p> <p>R</p>
<p>SThe quantity of serials/lots created in the work order.</p> <p>E</p> <p>R</p> <p>Note:</p> <p>I If the planned quantity of serials/lots in the COMP QTY column is greater than one, the SERIAL/LOT column displays</p> <p>A the quantity of serials/lots associated with the work order. Select the link in this column to access a list of serials/lots</p> <p>L and the statuses of each serial/lot associated with the work order. For more information, refer to the About Status</p> <p>/ Indicators on page 52 topic.</p> <p>L The value in the SERIAL/LOT column does not include the number of serials/lots that are in the Cancelled status.</p> <p>O</p> <p>T</p>
<p>Mhe name of the material associated with the work order.</p> <p>A</p> <p>T</p> <p>E</p> <p>R</p> <p>I</p> <p>A</p> <p>L</p>
<p>CThe total quantity of items completed out of the total number of items in the serials/lots planned in the work order. The value</p> <p>On this column appears in the following format: <completed quantity> of <available quantity to be completed>. For example,</p> <p>Msuppose 5 lots are planned for a work order, and each lot contains 10 items. If 10 items from the first lot and 5 items from the</p> <p>Psecond lot are completed, the value in this column is 15 of 50.</p> <p>Q</p> <p>T</p> <p>Y</p>
<p>Hhe quantity of serials/lots that are on hold in the work order.</p> <p>O</p> <p>L</p> <p>D</p> <p>Q</p> <p>T</p> <p>Y</p>

Description O I U M N
S The quantity of serials/lots scrapped in the work order. C R A P Q T Y
P The priority of the work order. For instructions on how to prioritize a work order, refer to the Prioritize a Work Order on page R77 topic. I
P The date and time when the work order was planned to begin. The date and time appear in the following format: mm/dd Lh:mm (for example, 03/27 10:58). A N S T A R T
P The date and time when the work order was planned to end. The date and time appear in the following format: mm/dd Lh:mm. A N E N D
A The actual start date and time of the work order. The date and time appear in the following format: mm/dd hh:mm. C T S T A R T
A The actual end date and time of the work order. This column contains a value only for a work order in the Completed status. C The date and time appear in the following format: mm/dd hh:mm. T E N D
A Contains the  button to allow you to cancel the work order. This button is enabled only for a work order that is in the C Ready status. T I O N S


Note: The number of work orders that appear in a page depends on the resolution of your computer screen.

Tip: By default, the list is grouped by the work order. If you want to sort the list by operations, select **By Operations**.

4. Select the work order that you want to access.
The page for the work order appears, displaying a list of serials/lots for the work order.

[Access the Work Order Status.](#)

Search for a Work Order

1. In the **Work Order Manager** page, select  in the main navigation bar.
A window containing a list of search options appears.
2. Provide the search criteria as described in the following table.

Box	Description
SERIAL/LOT	Enter a serial/lot number to access the associated work orders. You must enter the complete serial/lot number.
WORK ORDER	Enter a work order number to access the details of the work order. You must enter the complete work order number.
MATERIAL FAMILY	Select the material family used for the serials/lots in the work order. If you select a value in this box, options in the MATERIAL box are filtered accordingly.
MATERIAL	Select the material used for the serials/lots in the work order. This box contains a list of materials that belong to the material family you have selected.
WORK ORDER STATUS	Select the status of the work order that you want to access.

A list of work orders based on the search criteria appear.

Tip: To clear the results and perform a new search, select **Clear Results**.

Access a List of Operations

As a supervisor, you can access operations in the Ready, In Progress, On Hold, and Completed statuses associated with a production line or material family.

1. In the **Work Order Manager** page, select one of the following tabs:
 - **Released:** Select this tab if you want to access a list of operations that are ready or in progress.
 - **On hold:** Select this tab if you want to access a list of operations that are on hold.
 - **Completed:** Select this tab if you want to access a list of operations that are completed.
2. Select **By Operations**.
A list of operations in the status that you have selected appears. The following table provides information on the columns in the table.

Description

**O
I
U
M
N**

SThe status of the operation.

**T
A
T
U
S**

OThe name of the operation.

**P
E
R
A
T
I
O
N**

SThe serial/lot number on which the operation is being performed.

**E
R
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A
L
/
L
O
T**

Whe work order for which the operation is performed on serials/lots.

**O
R
K
O
R
D
E
R**

Mhe material family associated with the material.

**A
T
E
R
I
A
L
F
A
M
I
L
Y**

Mhe name of the material associated with the work order.

**A
T
E
R
I
A
L**

Description
<p>Q The quantity of serials/lots completed or produced out of the total quantity of serials/lots on which the operation must be performed. The value in this column appears in the following format: <completed quantity> of <planned quantity> (for example, 2 of 5).</p> <p>P</p> <p>Q</p> <p>T</p> <p>Y</p>
<p>P The priority of the work order. For instructions on how to prioritize a work order, refer to the Prioritize a Work Order on page 77 topic.</p> <p>I</p>
<p>U The production unit on which the operation is performed.</p> <p>N</p> <p>I</p> <p>T</p>
<p>S The date and time when the operation has begun. The date and time appear in the following format: mm/dd hh:mm (for example, 03/27 10:58). For an operation in the Ready status, the value in this column is blank.</p> <p>A</p> <p>R</p> <p>T</p> <p>E</p> <p>D</p> <p>O</p> <p>N</p>
<p>R The date and time when the operation was ready. The date and time appear in the following format: mm/dd hh:mm.</p> <p>E</p> <p>A</p> <p>D</p> <p>Y</p> <p>O</p> <p>N</p>

Access a Serial/Lot Status


[Access the work order](#) whose status you want to view.

The page for the work order appears, displaying the **Current Status** section, which contains the current operation being performed on each serial/lot in the work order and the status of each serial/lot at the current operation. The **All Serials/Lots** section displays a list of serials/lots in the work order, along with the status of each serial/lot. The following table provides information on the columns in the table.


Column	Description
STATUS	The color-coded status indicator of the serial/lot. For more information, refer to the About Status Indicators on page 52 topic.
SERIAL/LOT	The unique identifier of the serial/lot.
CURRENT OP	The name of the operation that is being performed on the serial/lot.
SEQUENCE NUMBER	The sequence in which the operation is performed.
USER(S)	The names of the users who are currently working on the operation.

Column	Description
COMP QTY	The quantity of serials/lots completed or produced out of the total quantity of serials/lots planned in the serial/lot. The value in this column appears in the following format: <completed quantity> of <planned quantity> (for example, 2 of 5).
CURRENT UNIT	The name of the unit where the serial/lot is being produced.

Tip:

- By default, the current status for all the serials/lots appears in the **Current Status** section. If you want to access the status for a single serial/lot, select the serial/lot in the **All Serial/Lots** section.
- To modify the names of the serials/lots in the table, select , modify the names, and then select **Save**.

Note: To perform this action, you must be granted the permission using Security.

Tip: To export the data to a .csv file, select . The data for the columns that appear in the table are exported into a .csv file. If the data contains unicode characters, to access the data in a Microsoft Excel worksheet:

- a. Access a blank worksheet.
- b. Go to **Data > From text/CSV**, and select the .csv file.
- c. Select the file origin: **65001:Unicode (UTF-8)**.
- d. Load the data.

This process is a requirement for Microsoft Excel.


Access the Work Order Summary

As a supervisor, you can access the summary of serials/lots and operations associated with a work order in the Ready, In Progress, and Completed statuses. You can also view the users who worked on the operations and the time taken to complete each operation.

1. [Access the work order](#) whose summary you want to view.
The page for the work order appears, displaying the **Current Status** section. The **All Serials/Lots** section displays a list of serials/lots in the work order, along with the status of each serial/lot.
2. Select **Summary**.
The **Summary** section appears, displaying a list of serials/lots in the work order. The following table provides information on the columns in the table.

Column	Description
STATUS	The status of the serial/lot at each operation. For information, refer to the About Status Indicators on page 52 topic.
SERIAL/LOT	The unique identifier of the serial/lot.
OPERATION	The name of the operation.
STARTED TIME	The start date and time of the operation. This value appears in the following format: mm/dd hh:mm. If an operation is cancelled for a serial/lot, the value in this column is blank.
COMP QTY	The quantity of serials/lots completed or produced out of the total quantity of serials/lots planned in the serial/lot. The value in this column appears in the following format: <completed quantity> of <planned quantity> (for example, 2 of 5).

Column	Description
COMPLETED TIME	The end date and time of the operation. This value appears in the following format: mm/dd hh:mm. If an operation is not yet completed, the value in this column is blank.
COMPLETED BY	The name of the user who worked on the operation. If an operation is not yet completed, the value in this column is blank.
SEQUENCE NUMBER	The sequence number of the operation defined in Route Editor.
DURATION	The duration for which the operation was performed on the serial/lot. The value in this column is calculated as the difference between values in the STARTED TIME and COMPLETED TIME columns. This value appears in the following format: hh:mm:ss <ul style="list-style-type: none"> For an operation in the ready status, the value in this column is blank. For an operation in progress, the value in this column is updated continuously. For an operation in the completed status, the value in this column is static (no longer updated).
UNIT	The production unit on which the operation is performed.

Tip: To export the data to a .csv file, select . The data for the columns that appear in the table are exported into a .csv file. If the data contains unicode characters, to access the data in a Microsoft Excel worksheet:

- a. Access a blank worksheet.
- b. Go to **Data > From text/CSV**, and select the .csv file.
- c. Select the file origin: **65001:Unicode (UTF-8)**.
- d. Load the data.

This process is a requirement for Microsoft Excel.


Access the Clocked-on Records

As a supervisor, you can perform the following tasks in the **Clocked on** section:

- Access a list of records that indicate the clocked-on or clocked-off status of operations and the operators working on them.
 - View the time each serial/lot was clocked on for an operation by an operator for an uninterrupted duration. For example, if an operator clocks on serial A at 9am, clocks off at 10am, and then clocks on again at 10.15am, two records appear in the list. If another operator clocks on the same serial/lot for the same operation, another record appears in the list.
 - Clock off a serial/lot for an operation on behalf of an operator.
- [Access the work order](#) for which you want to view the clocked on and clocked off operations. The page for the work order appears, displaying the **Current Status** section.
 - Select **Clocked on**. The **Clocked on** section appears, displaying a list of records. A record is created each time an operator clocks on a serial/lot for an operation. If the operator clocks off and clocks on the serial/lot again, another record is created. The following table provides information on the columns in the table.

Column	Description
USER(S)	The names of the users who worked on the operation.
SERIAL/LOT	The unique identifier of the serial/lot on which the operation is performed.
OPERATION	The name of the operation being performed.
CLOCKED ON	The date and time when the operator clocked on the serial/lot for the operation. The value in this column appears in the following format: mm/dd hh:mm
CLOCKED OFF	The date and time when the operator clocked off the serial number for that operation. The value in this column appears in the following format: mm/dd hh:mm
DURATION	The uninterrupted duration for which an operator has clocked on the serial/lot for an operation. Note: If the operator clocks off and clocks on again, another record is created for the new session. The value in this column appears in the following format: hh:mm:ss <ul style="list-style-type: none"> For a clocked-on operation, the value in this column is updated continuously. For a clocked-off operation, the value in this column is static (not updated).
LABOR TYPE	The labor type of the operator who clocked on the serial/lot. The possible values for labor type are defined in Route Editor and Work Queue.
ACTIONS	Contains a toggle to allow you to clock off the serial/lot for the operation on behalf of an operator.

Tip: By default, the records for all the serials/lots appear in the **Clocked On** section. If you want to access the records for a single serial/lot, select the serial/lot in the **All Serial/Lots** section.

Tip: To export the data to a .csv file, select . The data for the columns that appear in the table are exported into a .csv file. If the data contains unicode characters, to access the data in a Microsoft Excel worksheet:

- Access a blank worksheet.
- Go to **Data > From text/CSV**, and select the .csv file.
- Select the file origin: **65001:Unicode (UTF-8)**.
- Load the data.

This process is a requirement for Microsoft Excel.

Access BOM Items

A Bill of Material (BOM) contains BOM formulations that define a list of items and the quantity of each BOM item needed to produce a product. BOM items are defined and associated with BOM formulations in Plant Applications. Using Plant Applications Web Client, you can manage BOM items as follows:

- In Route Editor, you can link BOM formulations to a route, and then link BOM items to operations.
 - In Work Queue and Unit Operations, you can specify the consumption of BOM items for each serial/lot.
 - In Work Order Manager, you can view the required and consumed quantity of each BOM item for each serial/lot.
- [Access the work order](#) whose BOM items you want to view.
The page for the work order appears, displaying the **Current Status** section. The **All Serials/Lots** section displays a list of serials/lots in the work order, along with the status of each serial/lot.

- In the left pane, select the serial/lot for which you want to access the BOM items.
- Select **BOM**.
A list of BOM items associated with the serial/lot appears. The following table provides information on the columns in the table.

Note: The list of BOM items appears only if you select a serial/lot in the left pane. If **All Serials/Lots** is selected, the list of BOM items does not appear.

Tip: You can search for a BOM item by entering the part number in the **Search part here** box or by scanning the bar code of the part number.


Column	Description
ORDER	The order in which the BOM items may be consumed.
PART#	The part number of the BOM item.
DESCRIPTION	The description of the BOM item.
REQ QTY	The required quantity of consumption of the BOM item to perform the operation on the serial/lot.
CONSUMED QTY	The cumulative consumed quantity of the BOM item.
UOM	The units of measure of the BOM item.
SERIAL/LOT#	The serial/lot for which the BOM item has been used.

Access the Work Order History

As a supervisor, you can access the events associated with a work order. An event is created each time an action is taken for the work order (for example, a work order is created, a serial/lot is put on hold, or a serial/lot is clocked on).

- [Access the work order](#) whose history you want to access.
The page for the work order appears, displaying the **Current Status** section.
- Select **History**.
The **History** section appears, displaying the events associated with the work order. The events appear in descending order of their time stamps (based on the **TIME STAMP** column). The following table provides information on the columns in the table.

Column	Description
ACTION	The action performed on the serial/lot.
SERIAL/LOT	The unique identifier of the lot or serial number for which the action was performed.
OPERATION	The name of the operation for which the action was performed.
USER(S)	The name of the user who performed the action specified in the ACTION column. If the action is performed automatically, this column contains the name of the user who triggered the action. For example, if a defect has been created for a serial/lot, the status of the serial/lot is automatically changed to On Hold. In this case, the value in the USER(S) column contains the name of the user who created the defect.
TIME STAMP	The date and time when the action was performed. If multiple actions are performed at the same time, they contain the same value in this column. For example, if the last operation for all the serials/lots in a work order is completed, the value in this column for the actions Operation Completed and Serial/Lot Completed will be the same.

Tip: To export the data to a .csv file, select . The data for the columns that appear in the table are exported into a .csv file. If the data contains unicode characters, to access the data in a Microsoft Excel worksheet:

- a. Access a blank worksheet.
- b. Go to **Data > From text/CSV**, and select the .csv file.
- c. Select the file origin: **65001:Unicode (UTF-8)**.
- d. Load the data.

This process is a requirement for Microsoft Excel.

Actions Recorded in the Work Order History

The following table provides a list of actions that appear in the **History** section of a work order.

Action	Description
Work Order Created	Indicates that the work order is created.
Work Order Ready	Indicates that the work order is ready for you to begin work on at least one serial/lot.
Work Order Started	Indicates that the work has begun on at least one serial/lot in the work order. This happens when at least one serial/lot in the work order has been clocked on for an operation.
Work Order Completed	Indicates that all the operations in the work order are completed for all the serials/lots in the work order.
Work Order Cancelled	Indicates that the work order is cancelled.
Work Order Planned Date Change	Indicates that the planned start and end dates of the work order have been changed.
Work Order Priority Change	Indicates that the priority for the work order has been changed.
Serial No Created	Indicates that an ID has been created for a serial/lot in the work order.
Serial/Lot Started	Indicates that work has begun on a serial/lot for the work order. This happens when the serial/lot has been clocked on for the first operation.
Serial/Lot Hold	Indicates that the serial/lot is on hold. This happens when a non-conformance is created on the serial/lot.
Serial/Lot Scrapped	Indicates that the serial/lot has been scrapped. This happens when a non-conformance is created on the serial/lot and the disposition method specified for the serial/lot is Scrap.
Serial/Lot Completed	Indicates that work on the serial/lot has been completed. This happens when all the operations defined in the associated route are completed for the serial/lot.
Serial/Lot Identifier Change	Indicates that the name of a serial/lot has been changed.
Operation Ready	Indicates that an operation is ready for you to begin work on the specified serial/lot.



Action	Description
Operation Started	Indicates that work for an operation for the specified serial/lot has begun.
Serial/Lot Clock On	Indicates that a serial/lot has been clocked on for an operation by an operator.
Serial/Lot Clocked Off	Indicates that a serial/lot has been clocked off for an operation by an operator.
Operation Hold	Indicates that work for an operation is on hold for a serial/lot. This happens when a non-conformance has been created on the serial/lot for the operation.
Operation Released	Indicates that an operation is released for the serial/lot. This happens when the serial/lot has been disposed to release the operation hold.
Operation Cancelled	Indicates that an operation is cancelled for the serial/lot. This happens when the serial/lot is scrapped at the operation.
Operation Completed	Indicates that an operation is completed for the serial/lot.
Hold Released	Indicates that hold is released on an operation. This happens when the serial/lot on which a non-conformance has been created has been disposed.
Order Segments Changed	Indicates that the sequence of an operation in the work order has been changed. This happens when operations have been added or removed (for example, the disposition for a defective serial/lot is set to rework).
Serial/Lot Split	Indicates that a serial/lot has been split up. This happens when a non-conformance has been created for some of the items in the lot.
Serial/Lot Planned Quantity Change	Indicates that the planned quantity of a serial/lot has changed. This happens when items have been added to the planned quantity of the lot or some of the items in the lot have been scrapped.
Quantity Completed	Indicates that completed quantity has been specified for a serial/lot for an operation using Unit Operations or Work Queue.

Access the Non-Conformance Details of a Work Order

As a supervisor, you can access the defects created on a serial/lot when the materials produced do not conform to specifications within the manufacturing process. After an operator creates a defect during an operation in the Non Conformance or the Work Queue application, the status of the associated serial/lot and operation is set to on hold, and the operators working on that serial/lot are clocked off (Depending on the configuration in Plant Applications Administrator, the serial/lot may still remain clocked on.). You can then access the defect details in the **NCR** section.

1. [Access the work order](#) whose non-conformance details you want to access.
2. Select **NCR**.

The **NCR** section appears, displaying a list of non-conformances created on each defective serial/lot in the work order. The following table provides information on the columns in the table.

Column	Description
STATUS	The status of the defect for which a non-conformance has been created.
SERIAL/LOT#	The serial/lot number for which the non-conformance has been created.
OP	The operation during which the non-conformance has been created.
DISP	The disposition method implemented on the serial/lot. If the serial/lot is yet to be disposed, the value in this column is blank.
MATERIAL	The material of the serial/lot.
MATERIAL FAMILY	The material family associated with the material.
MATERIAL DESC	The description of the material.
CTP/REWORK OP	The operation until which the serial/lot can be processed if the disposition method is Continue to Process (CTP).
ACTIONS	Contains the following buttons: <ul style="list-style-type: none"> : Select this button to access the non-conformance details. : Select this button to access the defect history.

Access Properties

A property is an additional attribute that is assigned to a route, an operation, or a material to produce a product. Properties are created in Property Definition and assigned values in the following ways:

- Properties for routes and operations are assigned values in Route Editor.
- Properties for materials are assigned values in an ERP system. These materials are imported to Plant Applications using import services.

The **Properties** section in Work Order Manager contains a list of properties defined for a work order and/or the associated material and operations.

1. [Access the work order](#) whose properties you want to access.
2. Select **Properties**.

The **Properties** section appears, displaying a list of properties assigned to the work order, along with properties assigned to the associated operations or material. The following table provides information on each column in the table.

Column	Description
LEVEL	The level at which the property has been defined. This column contains one of the following values: <ul style="list-style-type: none"> • Material • All Operations • <Operation name>
CATEGORY	The category of the property as defined in Property Definition.
GROUP	The group to which the property belongs.
NAME	The name of the property.
VALUE	The value of the property.

Column	Description
DATA TYPE	The data type of the property.
UOM	The units of measure of the property.

Creating a Work Order

About Creating a Work Order

A work order is a request to manufacture certain quantity of a product in a given time. It contains information about the product, the quantity to be manufactured, the planned start time and end time, a list of serials/lots, and the route that must be used to manufacture the product.


Work orders are created in Plant Applications from the following sources:

- ERP System: You can import work orders from an ERP system to Plant Applications using the import services.
- Route Editor: You can create work orders manually using Route Editor.
- Work Order Manager: You can create work orders manually using Work Order Manager.

You can create a work order only for a released route.

Create a Work Order

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security. Refer to [Create a Role](#) on page 141.

1. In the **Work Order Manager** page, select . The **Create Work Order** window appears, displaying the **General** section.
2. In the **CHOOSE MATERIAL** box, select the product for which you want to create a work order.
3. Provide values as specified in the following table.

Box	Description
MATERIAL	Select the material for which you want to create the work order.
ROUTE	This box contains a list of released routes for the material that you have selected. All the revisions of a route, if any, appear in this box, indicated by R[< revision number>] at the end of the route name. Select the route for which you want to create a work order.
WORK ORDER	You must enter a value in this box. Enter a unique name for the work order that does not exceed 100 characters. If a work order with the same name exists: <ul style="list-style-type: none"> • If the work order is ready, a message appears, asking you to confirm if you want to delete it and replace with the one that you are creating. • If the work order is in progress, you cannot create this work order.
NO OF LOTS	Enter the number of lots of the product that must be manufactured as part of the work order. The value in this box determines the number of rows that appear in the ENTER SERIAL/LOT# section.

Box	Description
PRIORITY	Enter the priority in which the work order must be completed. A value is required. <ul style="list-style-type: none"> If you want to assign the highest priority for the work order, enter 1. If you want to assign the lowest priority for the work order, enter 0. <p>Note: By default, the value in this column is a hyphen (-), which indicates the lowest priority.</p>
SERIAL/LOT# PREFIX	Enter the prefix for each serial/lot. For example, you can use this value to identify the serials/lots that belong to the same work order.
PLAN START	Enter the planned date and time to begin work on the work order. By default, this box is populated with the current date and time.
PLAN END	Enter the planned date and time to complete the work on the work order. By default, this box is populated with the date and time that is 24 hours from the current date and time.
SERIAL/LOT#	Enter the unique suffix for each serial/lot. A value is required.
GENERATED SERIAL/LOT#	Identifies the serial/lot that will be assigned to each lot in the work order. This box is disabled and populated with a combination of the values in the SERIAL/LOT# PREFIX and SERIAL/LOT# boxes.
QUANTITY	Enter the quantity of the product that must be manufactured for each lot. For a serialized product, the value in this box must be 1.

- Select the **Properties** tab.

The **Properties** section appears, displaying the properties defined for the route and operations that you selected in the **General** section. The following table provides information on each column in the table.

Column	Description
LEVEL	The level at which the property has been defined. This column contains one of the following values: <ul style="list-style-type: none"> All Operations <Operation name>
CATEGORY	The category of the property as defined in Property Definition.
GROUP	The group to which the property belongs.
NAME	The name of the property.
VALUE	The value of the property. You can add a value or modify an existing value in this column.
DATA TYPE	The data type of the property.
UOM	The units of measure of the property.

- Select **Create**.

The work order is created.

Modifying a Work Order

About Modifying a Work Order

You can perform the following tasks to modify a work order:

- **Change the work order plan:** You can change the planned start and end dates and the priority of a work order.
- **Add an operation:** You add an operation to the serials/lots for which the next operation is not ready. To add an operation:
 1. Create an operation.
 2. Assign a sequence number to the operation such that the number lies between the sequence numbers of the previous and next operations, and it is greater than the latest ready operation. If, however, you want to perform this operation at the same time as another operation, provide the same sequence number as that operation.
All the serials/lots in the work order are added to the operation.
 3. If you do not want the operation to be performed on a serial/lot, remove it from the operation.
- **Remove an operation:** You can remove an operation if it is no longer required to complete the work order. However, you can remove the operation only if it is not ready.
- **Remove an operation for a serial/lot:** You can remove an operation for a serial/lot if it is no longer required to complete the work order for that serial/lot. However, you can remove the operation only if the serial/lot is not ready for the operation.
- **Modify an operation:** You can modify the details of an operation such as the name, description, behavior, and so on. You can modify an operation only if it is ready or not started. You can modify the sequence number of an operation only if the operation is not ready. And, the sequence number must be greater than or equal to the sequence number of the latest in-progress operation in the work order.
- **Replace an operation:** You can replace an operation with a new one by removing serials/lots from the operation and adding them to the new operation. You can, however, replace an operation only for serials/lots for which the operation is not started.
- **Change BOM assignments of an operation:** You can change the BOM assignment of an operation only if the operation is not started.
- **Add a property group or change a property value:** You can add a property group or change the value of a property in an operation only if the operation is not yet started.
- **Change the documents attached to an operation:** You can upload a document to the document store, or attach or remove a document from an operation that is not started.

Replacing an operation

Suppose a work order has the following operations:

- Turning
- Drilling
- Assembling
- Painting
- Testing
- Packaging


For two of the lots, you want to perform endurance testing instead of the normal testing operation. In that case, before the testing operation is started on the two lots:

1. Create the endurance testing operation such that the sequence number is the less than or equal to that of the testing operation (and greater than that of the painting operation), and save the changes to the work order. All the lots in the work order are added to the operation.
2. Except for the two lots on which you want to perform endurance testing, remove all the lots from the endurance testing operation.
3. Remove the two lots from the testing operation.

Change the Work Order Plan

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.



This topic describes how to modify a work order's details such as planned start and end dates and priority.


1. [Access the work order](#) whose plan you want to modify.
2. In the upper-right corner of the page, select , and then select **Edit work order plan**. The **Edit Work Order Plan** window appears.
3. As needed, modify the planned start and end dates and priority of the work order.
4. Select **Update**.
The changes made to the work order are saved.

Add or Remove Operations from a Work Order

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.


You can only add an operation after the latest ready or in-progress operation. You can only remove an operation that is not ready.

1. [Access the work order](#) that you want to modify.
2. In the upper-right corner of the page, select , and then select **Edit workorder**. The **Edit <work order>** page appears, displaying a list of operations in the work order.
3. If you want to add an operation, in the left section, select , and provide values as specified in the following table.

Tip: You can also copy an operation by selecting .

Column	Description
SEQ	Enter the sequence number of the operation such that the number lies between the two operations between which you want to add the operation. If, however, the operation must be performed at the same time as another operation, provide the same sequence number as that operation. Note: You can add an operation only after the latest ready or in-progress operation.
NAME	Enter a unique name for the operation that does not exceed 100 characters. Note: The name must be unique among all operations in the route.


Column	Description
DESCRIPTION	Enter a description for the operation that does not exceed 1000 characters.
BEHAVIOR	<p>Select the behavior of the operation. The following options are available:</p> <ul style="list-style-type: none"> • Non Clocking: Select this option if the operation does not require a manual clocking on. If you select this option, you can mark an operation complete even if serials/lots are not clocked on, mandatory BOM items are not consumed, or values for mandatory quality variables are not specified. • Clocking: Select this option if the operation requires manual clocking on and clocking off. By default, Clocking is selected for an operation.
LABOR TYPES	<p>Select the labor type for the operation. A value is required if the operation required clocking.</p> <p>Note: If the behavior of the operation is set to Non Clocking, this field is disabled.</p>
DEFAULT LABOR	<p>Select the default labor type. A value is required if the operation requires clocking. You can choose from the list of values that you selected in the LABOR TYPES column.</p> <p>When an operator clocks on a serial/lot number using the Work Queue or Unit Operations application, by default, the labor type that you select in this column is selected. The operator can, however, choose a different one from the ones that you selected in the LABOR TYPES column.</p> <p>Note: If the behavior of the operation is set to Non Clocking, this field is disabled.</p>
EQUIPMENT	<p>Select the equipment that is used to perform the operation. You can select multiple pieces of equipment for the same operation, and you can select the same piece of equipment for multiple operations.</p> <p>When you select multiple pieces of equipment, the selected number appears. You can select the drop-down list box to view the selected pieces of equipment.</p> <p>Tip: You can also select the equipment used in an operation from the Resources section.</p>

4. If you want to remove an operation that is not ready, in the left pane containing the list of operations, select .
5. Select **Save**.
The changes made to the work order are saved.


Remove an Operation for a Serial/Lot

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

You can remove an operation for a serial/lot only if the serial/lot is not ready for that operation.

1. [Access the work order](#) associated with the serial/lot for which you want to remove an operation.
2. In the upper-right corner of the page, select , and then select **Edit workorder**.
The **Edit <work order>** page appears, displaying a list of operations in the work order.
3. Select **Lot Status**.


The **Lot Status** section appears, displaying a list of operations, along with their status for each serial/lot in the work order.

4. Select the operation that you want to remove.
5. In the row containing the serial/lot for which you want to remove the operation, select .
6. Select **Save**.
The changes made to the work order are saved.

Modify an Operation

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

You can modify an operation only if it is ready or not started. You can modify the sequence number of an operation only if the operation is not ready. And, the sequence number must be greater than or equal to the sequence number of the latest in-progress operation in the work order.

1. [Access the work order](#) that you want to modify.
2. In the upper-right corner of the page, select , and then select **Edit workorder**.
The **Edit <work order>** page appears, displaying a list of operations in the work order.
3. For the operation that you want to modify, provide values as specified in the following table.

Column	Description
SEQ	Enter the sequence number of the operation such that the number lies between the two operations between which you want to add the operation. If, however, the operation must be performed at the same time as another operation, provide the same sequence number as that operation.
NAME	Enter a unique name for the operation that does not exceed 100 characters. Note: The name must be unique among all operations in the route.
DESCRIPTION	Enter a description for the operation that does not exceed 1000 characters.
BEHAVIOR	Select the behavior of the operation. The following options are available: <ul style="list-style-type: none"> • Non Clocking: Select this option if the operation does not require a manual clocking on. If you select this option, you can mark an operation complete even if serials/lots are not clocked on, mandatory BOM items are not consumed, or values for mandatory quality variables are not specified. • Clocking: Select this option if the operation requires manual clocking on and clocking off. By default, Clocking is selected for an operation.
LABOR TYPES	Select the labor type for the operation. A value is required if the operation required clocking. Note: If the behavior of the operation is set to Non Clocking , this field is disabled.


Column	Description
DEFAULT LABOR	<p>Select the default labor type. A value is required if the operation requires clocking. You can choose from the list of values that you selected in the LABOR TYPES column.</p> <p>When an operator clocks on a serial/lot number using the Work Queue or Unit Operations application, by default, the labor type that you select in this column is selected. The operator can, however, choose a different one from the ones that you selected in the LABOR TYPES column.</p> <p>Note: If the behavior of the operation is set to Non Clocking, this field is disabled.</p>
EQUIPMENT	<p>Select the equipment that is used to perform the operation. You can select multiple pieces of equipment for the same operation, and you can select the same piece of equipment for multiple operations.</p> <p>When you select multiple pieces of equipment, the selected number appears. You can select the drop-down list box to view the selected pieces of equipment.</p> <p>Tip: You can also select the equipment used in an operation from the Resources section.</p>

4. Select **Save**.
The changes made to the work order are saved.

Change the BOM Assignments of an Operation

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.


You can change the BOM assignment of an operation only if the operation is not started.


1. [Access the work order](#) that you want to modify.
2. In the upper-right corner of the page, select , and then select **Edit workorder**.
The **Edit <work order name>** page appears, displaying a list of operations in the work order.
3. Select **BOM**.
The **BOM** workspace appears, displaying a list of BOM items in the **PRODUCT DESCRIPTION** column. The **SEQUENCE**, **PRODUCT CODE**, **QT PER**, and **UOM** columns are populated with the sequence number of the BOM item, the product code, the quantity needed per operation, and the units of measure of the associated BOM formulation, respectively. You cannot modify these values.
4. In the **OPERATION** column, select the operation that you want to link to the BOM items. You can only select an operation that is not started. If the behavior of an operation is set to Non Clocking, the operation does not appear in the list.
5. Select **Save**.
The changes made to the work order are saved.

Change the Property Groups or Values of a Work Order

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

You can add a property group or modify the values of properties in a work order only if the corresponding operations are ready or not started.



1. [Access the work order](#) that you want to modify.
2. In the upper-right corner of the page, select , and then select **Edit workorder**.

- The **Edit <work order>** page appears, displaying a list of operations in the work order.
3. Select **Properties**.
The **Properties** workspace appears, displaying a list of property groups assigned to the route appears.
 4. If you want to enter or modify the value of a property:
 - a) Expand the group that contains the property whose value you want to enter or modify.
A list of properties in the group appears.
 - b) Enter or modify the value in the **VALUE** column for each property for which you want to provide a value. The following conditions apply when you provide a value for a property:
 - If a property has been specified as mandatory in the Property Definition application, you must provide a value for the property.
 - The value must be of the same data type as specified in the **DATA TYPE** column.
 5. If you want to assign a property group to an operation or all operations in the work order:
 - a) If you want to assign a property group to an operation, select the operation. If you want to assign a property group to all operations in the work order, select **ALL OPERATIONS**.
Note: You can select an operation only if it is not started. You can select **ALL OPERATIONS** only if at least one of the operations is not started.
 - b) Select .
The **Assign Property Group(s)** window appears, displaying the property groups that have group definitions.
 - c) Select the check boxes corresponding to the property groups that you want to assign.
Tip: If you want to assign all the property groups, select the check box in the heading.
 - d) Select **Assign**.
 6. Select **Save**.
The changes made to the work order are saved.

Change the Documents in a Work Order

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

You can upload a document to the document store, or attach or remove a document from an operation or all operations in the work order. When you upload a document, it is stored in a document store application named Apache CouchDB. The following conditions apply when you upload a document or attach a document:



- You can use documents of the PDF format only.
 - The maximum file size allowed is 25 MB.
 - You can attach a document to an operation only if the operation is not started.
 - You can attach a document to all the operations in the work order if at least one of the operations is not started.
1. [Access the work order](#) that you want to modify.
 2. In the upper-right corner of the page, select , and then select **Edit workorder**.
The **Edit <work order name>** page appears, displaying a list of operations in the work order.
 3. Select **Documents**.
The **Documents** workspace appears, displaying a list of documents associated with the work order.
 4. If you want to upload a document to the document store:
 - a) Select .
The **Upload document** window appears.

- b) Provide values as specified in the following table, and then select **Upload**.

Box	Description
FILE NAME / URL	Identifies the URL or path to the document. The URL must use the HTTPS protocol. Tip: If the document is stored in the local machine or in a network location accessible from the local machine, you can select Browse to go to the path.
NAME	Identifies the name of the document. Enter a unique value that does not exceed 100 characters. Important: If a document with the same name exists, a new version of the same document is created, and is assigned the product line, material, and equipment of the original document. Therefore, you must ensure that the document name is unique among all the documents stored in the Plant Applications file store.
ENGINEERING REVISION #	Identifies the revision number of the document as specified in your organization. For example, if the document that you want to upload is a design document of revision number 15, enter 15. Note: The engineering revision number is different from the revision number maintained in the document store.
DESCRIPTION	Identifies the description of the document. You must enter a value.

Note: You can also [upload a new version of a document](#).

The document is uploaded to the document store.



5. If you want to attach a document to an operation or all operations in the work order:
 - a) If you want to attach the document to all the operations, select **ALL OPERATIONS**. If you want to attach the document to a single operation, select the operation. You can, however, select an operation only if it is not started.
 - b) Select .
The **Attach Documents and/or URLs** window appears, displaying a list of documents that are available.
Tip:
 - You can preview a document by selecting the link in the **FILE/URL** column.
 - By default, the latest version of each document appears in the list. If you want to attach a previous version of a document, in the row containing the document, select .
 - c) In each row containing the document that you want to attach, select the check box.
Tip: You can select all the documents in the list by selecting the check box in the column heading.
 - d) Select **Attach**.
The document is attached to the operation or all operations in the work order.

Adding a Comment

About Adding a Comment

While working on a serial/lot, you can add a comment on the serial/lot or the work order to provide any additional information.





You can view the comment added to a serial/lot regardless of the operation you are performing on the serial/lot. For example, if you have added a comment to a serial/lot while performing the first operation, the comment also appears when you access the serial/lot for any subsequent operations. Similarly, when you add a comment to a work order, it appears when you access any of the serials/lots for the work order. For this reason, when you add a comment, it is a good practice to provide the details of the operation for which the comment is applicable.

If a work order or serial/lot contains comments, when you access an operation, the comments button () appears with a blue dot (). If you select that button, the number of comments for the work order or serial/lot appears on the **Work Order** or **Serial/lot** tabs, respectively.



You can add an image, video, or an attachment to a comment. The following types of attachments are supported:

- Microsoft Word (DOC/DOCX)
- Microsoft Power Point Presentation (PPT/PPTX)
- Microsoft Excel (XLS/XLSX)
- text document
- PDF

Add a Comment

1. Access the operation associated with the serial or lot or the work order for which you want to add a comment.
2. In the heading, select .
A window appears, displaying a list of comments for the work order. These comments are arranged in the reverse order of creation (that is, the latest comment appears first).
3. Depending on whether you want to add a comment to the work order or serial/lot, select the appropriate tab.
4. In the **ADD COMMENT** box, enter the comment.
Tip: If needed, you can apply formatting, change the alignment of the comment, or insert a link in the comment.
5. If you want to insert a document:
 - a) Ensure that the document that you want to insert is available on the Plant Applications server.
 - b) Select .
The **Upload Document** window appears.
 - c) In the **FILE NAME/URL** box, enter the path of the image.
 - d) Select **Upload**.
6. If you want to insert an image:
 - a) Select .
A blank window appears. If a message appears, asking you to allow access to the camera, select **Allow**.
 - b) Capture the image.
7. **Optional:** If you want to insert a video:
 - a) Select .
A blank window appears. If a message appears, asking you to allow access to the camera, select **Allow**.
 - b) Capture the video.
8. Select **Add**.

The comment has been added.

Tip: To modify a comment, select  and to delete a comment that you have added, select . If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

The following conditions apply when you modify or delete a comment:

- You can modify or delete comments added by others only if you have the permission to moderate comments. Otherwise, you can modify or delete only the comments that you have added.
- After you modify a comment and save your changes, you cannot view the original text.
- After you delete a comment, you cannot restore it.

Prioritizing a Work Order

About Prioritizing a Work Order

Priority is the order in which a work order must be completed. When you assign a priority to a work order, the work order with the highest priority is completed first on a production line. The following conditions apply when you prioritize a work order:

- 1 denotes the highest priority, and 0 denotes the lowest priority.
- You can prioritize a work order in the Ready or the In Progress status.
- You cannot prioritize a work order in the Completed status.

Prioritize a Work Order

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

1. In the **Work Order Manager** page, depending on the status of the work order that you want to prioritize, select one of the following tabs:
 - **Released**
 - **On hold**
2. In the row containing the work order that you want to prioritize, in the **Priority** box, enter the priority of the work order.

Note: You cannot leave the **Priority** box blank. If you do not want to specify a priority, enter 0.

Tip: You can also specify the priority by accessing the work order details and selecting .

The priority is set for the work order.

Clocking Off a Serial/Lot

About Clocking Off a Serial/Lot

As a supervisor, you can clock off a serial/lot for an operation on behalf of an operator (in cases such as the operator has forgotten to clock off the serial/lot). This will help capture the time the operator spent on performing the operation on the serial/lot more accurately.

Clock Off a Serial/Lot

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

1. [Access the work order](#) for which you want to clock off a serial/lot.
The page for the work order appears, displaying the **Current Status** section.
2. Select **Clocked On**.
The **Clocked On** section appears, displaying a list of clocked on or clocked off records for the work order.
3. In the row containing the combination of the operator, serial/lot, and the operation that you want to clock off, in the **ACTIONS** column, switch the toggle.

Note: The toggle in the **ACTIONS** column is enabled only if the serial/lot is currently clocked on by the operator.

Cancelling a Work Order


About Cancelling a Work Order


You can cancel a work order when you no longer need it. When you cancel a work order, the work order is removed from the Work Order Manager, Unit Operations, and Work Queue applications. The following conditions apply when you cancel a work order:

- You can cancel a work order only in the Ready status.
- You cannot cancel a work order in the In Progress or Completed status.

Cancel a Work Order

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

1. In the **Work Order Manager** page, depending on the status of the work order that you want to cancel, select one of the following tabs:
 - **Released**
 - **On hold**
2. In the row containing the work order that you want to cancel, select .

Note: The  button is enabled only if the work order is in the Ready status.

A message appears, asking you to confirm that you want to cancel the work order.

3. Select **Yes**.
The work order is cancelled.

Chapter 5

Route Editor

Topics:

- [Overview](#)
- [Creating a Route](#)
- [Accessing a Route](#)
- [Modifying a Route](#)
- [Releasing a Route](#)
- [Archiving a Route](#)
- [Creating a Route Revision](#)
- [Deleting a Route](#)
- [Creating a Work Order](#)

Overview

About the Route Editor Application

As a supervisor, you can use Route Editor to manage routes in Plant Applications.

A route defines the process and operations required to manufacture a product. It specifies a list of operations you must perform on the components, and the order in which you must perform these operations.

A route contains the following components:

- **Operations:** An operation is the main work segment in a route. An operation is a sequence of tasks that you must perform to manufacture the product.
- **Bill of materials (BOMs):** A BOM contains BOM formulations that define a list of items and the quantity of each BOM item needed to produce a product.
- **Properties:** A property is an additional attribute that is assigned to a route or an operation to produce a product.
- **Documents:** A document is a reference material used to perform an operation (for example, standard operating procedure, circuit diagram).

Using Route Editor, you can:

- Define the end-to-end workflow of using a route, which includes the sequence of operations for manufacturing a product.
- Create a work order.
- Release the route for use in a work order.
- Maintain the revision history of each released route.
- Define the bill of material (BOM) items that are required for each operation in a route.
- Link reference documents such as standard operating procedures, circuit diagrams, and other documents required to perform each operation.
- Assign properties to a route or an operation, and modify their default values.
- Create, copy, modify, release, archive, revise, and delete a route.

About Routes

A route defines the process and operations to manufacture a product. It also specifies the order in which you must perform these operations.

A route contains the following components:

- **Operations:** The main work segment in a route. An operation is a sequence of tasks that you must perform to manufacture the product.
- **BOM:** A list of materials used in an operation, along with the quantity that is required for each item. BOM formulations and BOM items are defined in Plant Applications. Each operation is linked to a BOM item.
- **Documents:** Reference materials used to perform an operation (for example, standard operating procedure, circuit diagram).

Routes in a Motor Manufacturing Unit

Suppose you want to create routes for a motor manufacturing unit. This involves manufacturing the following components and assembling them:

- Shell
- Stator
- Rotor
- Endshields

In this case, you will create the following routes:

- Shell: Includes welding sheets of metal into cylindrical shape. In addition, the route includes reference documents, which contains latest diagrams of the steel rods and information on how to weld them.
- Stator: Includes assembling windings with the shells, and turning them to accommodate endshields.
- Rotor: Includes injecting the shaft, and verifying the load balance of the rotor.
- Endshields: Includes turning and drilling the endshields so that they can be fixed to the stator.
- Assembly: Includes assembling the stator, rotor, and endshields to produce the final product. This route can also include painting, testing, and packaging the product.

About Operations

An operation consists of tasks that you perform while producing a product (for example, drilling, turning, and painting). When you define a route, you define a set of operations that must be performed to complete the route. Each operation is associated with one or more pieces of equipment that are defined in Plant Applications.

You can also specify whether the operation requires clocking on. For example, if clocking on and clocking off is already tracked in an ERP system, it is not required to clock on again using Plant Applications Web Client. In that case, when creating an operation for a route, you can specify that the operation does not clocking on.

Using Route Editor, in addition to creating an operation, you can copy, modify, and delete an operation.

Operations in a Motor Assembly Route

Suppose you want to create a route for assembling the parts of a motor. The following tasks are involved in completing the route:

- Shell turning
- Stator and endshield assembling
- Rotor and endshield assembling
- Testing
- Painting
- Packaging

For each of these tasks, you will create an operation and associate it with one or more pieces of equipment as follows.

Operation	Equipment
Shell turning	The lathe machine
Stator and endshield assembling	The pneumatic bolt tightener
Rotor and endshield assembling	The pneumatic bolt tightener

Operation	Equipment
Testing	<ul style="list-style-type: none"> The testing workstation The weighing machine
Painting	The spray paint workstation
Packaging	<ul style="list-style-type: none"> The packaging machine The labelling machine

About Bill of Material (BOM)

A Bill of Material (BOM) contains BOM formulations that define a list of items and the quantity of each BOM item needed to produce a product. BOM items are defined and associated with BOM formulations in Plant Applications.

Using Route Editor, you can perform the following tasks:

- Link a BOM formulation to a route.
- Link BOM items to operations in the route.

After the route is released and used in a work order, you can provide details on the actual quantity of BOM items that are consumed, using the Work Queue module. This allows you to keep a track of the quantity of material that is consumed.

About Properties

A property is an additional attribute that is assigned to a route or an operation to produce a product. Properties are defined and grouped under property groups in Plant Applications Administrator.

Using Route Editor, you can assign a property group to a route, and provide values for custom properties that are specific to the route. For example, if the route is for assembling a motor, you can provide the material grade, ERP project number, and other details specific to the route.

You can assign a property group to a route or an operation.

About Documents

Using Route Editor, you can add a document that contains reference material to perform an operation (for example, circuit diagram, standard operating procedure). To do so, you must first [upload the document](#), and then [attach it to the appropriate route](#).

Creating a Route

About Creating a Route

A route defines the process and operations required to manufacture a product. It also specifies the order in which you must perform these operations.

A route is used in a work order or a process order in the Plant Applications database. This work order or process order is associated with a purchase order created in the ERP system, and is imported into Plant Applications using the ERP Integration services.

To create a route and make it available for use in a work order or a process order, you must perform the following steps:

1. [Add a route.](#)
2. [Create operations in the route.](#)
3. [Link each operation to one or more pieces of equipment and BOM items.](#)
Note: The equipment and BOM items exist in Plant Applications.
4. [Assign property groups and underlying properties to the route or individual operations in the route.](#)
Note: The property groups are created in the Property Definition module.
5. [Provide values to the underlying properties in each property group.](#)
Note: If a property contains a default value, you can retain it or modify it.
6. [Attach a document to the route or individual operations in the route.](#)
Note: The document must exist in Apache CouchDB. If it does not exist, [upload it to Apache CouchDB](#) before attaching it.
7. [Release the route.](#)

When you access a draft route, the **Edit Route** page appears, as shown in the following image:

The screenshot shows the 'Edit ROUTE - Auto' page. At the top, there is a breadcrumb trail: < Back Edit ROUTE - Auto Save. Below this, there is a header section with 'AutomationBOMFormulati...' and 'MATERIAL: AutomationProduct (Automati... Line: Automation-Line Revision: 1'. A table below the header shows 'Description: 500 CC Bikes', 'Material Family: AutomationProductF...', 'Created On: 02/26/20 15:50 by bm_operator_1', and 'Last Modified: 02/26/20 15:56 by bm_operator_1'. The main content area has a tabbed interface with 'Overview', 'Resources', 'BOM', 'Documents', and 'Properties'. The 'Overview' tab is active, showing a search bar and a table of operations. The table has columns: SEQ, NAME, DESCRIPTION, BEHAVIOR, LABOR TYPES, DEFAULT LABOR, and EQUIPMENT. There are five operations listed, each with a 'Clocking' behavior, '2 select...' labor types, 'Direct' default labor, and 'RP-MFG BU BOAO//0...' equipment.

SEQ	NAME	DESCRIPTION	BEHAVIOR	LABOR TYPES	DEFAULT LABOR	EQUIPMENT
1	Framework ...	Framework ...	Clocking	2 select...	Direct	RP-MFG BU BOAO//0...
2	Inject Molding	Inject Molding	Clocking	2 select...	Direct	RP-MFG BU BOAO//0...
3	Powder Coat...	Powder Coati...	Clocking	2 select...	Direct	RP-MFG BU BOAO//0...
4	Parts Assem...	Parts Assem...	Clocking	2 select...	Direct	RP-MFG BU BOAO//0...
5	Engine Moun...	Engine Moun...	Clocking	2 select...	Direct	RP-MFG BU BOAO//0...

The **Edit Route** page contains the following sections:

- **Faceplate:** Contains details that you have provided while adding the route, such as name, description, product line, and other related information. This section also contains buttons to modify these details, and release, revise, archive, or delete the route. You can expand or collapse this section.
- **Operations:** Contains a list of operations in the route. You can select an operation to access its details and link it to one or more pieces of equipment. You can create, copy, or delete an operation in this section.
- **Resources:** Contains a list of equipment used for each operation. You can also access a list of operations assigned to each piece of equipment, and assign more operations.
- **BOM:** Contains a list of BOM items assigned to each operation, along with details on the quantity of BOM items required for the operation, units of measurement, and whether consuming the BOM items is mandatory to perform the operation. You can also assign a BOM item to each operation.
- **Properties:** Contains a list of property groups and underlying properties linked to the route or individual operations in the route, along with the default values, units of measurement, and data type,

as specified in the Property Definition module. You can also assign a property group, and provide values for the underlying properties.


- **Documents:** Contains a list of documents that are attached to the route or individual operations in the route. You can upload a document to Apache CouchDB, attach it to the route or an operation, upload a new version of a document, and remove the document from the route or operation.

Add a Route

This topic describes how to create a route. You can also [copy an existing one](#).

- Ensure that the production line that you want to use is route-enabled. When you do so, a virtual unit is created on the line, and a path is created on the line that contains the virtual unit.
- Associate the material with the virtual unit on any line where you want to produce the material
- Ensure that a BOM formulation is defined for the material. This is required if you want to leverage raw material tracking in the route.

If these components do not exist, contact the Plant Applications administrator.

1. In the **Route Editor** page, select .
The **Create Route** window appears. The **REVISION** box is disabled and populated with the value 1 because this is the first draft of the route.
2. Provide values as specified in the following table.

Field	Description
NAME	Enter a unique name for the route that does not exceed 100 characters.
DESCRIPTION	Enter a description for the route that does not exceed 1000 characters.
PRODUCTION LINE	Select a production line to which the route belongs. This box contains a list of production lines defined in Plant Applications Administrator. A value is required in this field.
MATERIAL	Select the material that you want to use in the route. This box is enabled after you select a value in the PRODUCTION LINE box. It contains a list of materials defined for the production line in Plant Applications.
BOM FORMULATION	Select the BOM formulation that you want to use in the route. This box is enabled after you select a value in the MATERIAL box. It contains a list of BOM formulations configured for the material in Plant Applications.

3. Select **Next**.

The route is created and is in the draft state. The **Edit Route** page appears, allowing you to create an operation.

[Add an operation to the route.](#)


Copy a Route

This topic describes how to copy a route. You can also [create a new one](#).

The following conditions apply when you copy a route:

- A copied route is in the draft state by default, regardless of the state of the original route.
- The operations, BOM items, properties, and documents in the route are also copied.
- If you are copying a released or an archived route, the copied route contains the same property definitions and document versions that existed when the route was released or archived. For example,

suppose a route was linked to a document version 4 and a property group with three properties. After the route was released, suppose the latest version of the document is 6 and another property has been added to the property group. However, when you copy the route, it will be linked to document version 4, and the property group contains only three properties. Therefore, if you want the latest versions of the attached documents and properties of the route, you must manually attach the document and the property group again with the copied route. Changes to the BOM formulation of the original route, however, are reflected automatically in the copied route.

1. In the **Route Editor** page, perform one of the following tasks:
 - If you want to copy a route in the draft state, select the route that you want to copy. The **Edit Route** page appears.
 - If you want to copy a route in the released or archived state, select **Released** or **Archived**, respectively, and then select the route that you want to copy. The **View Route** page appears.
2. Select , and then select **Duplicate**. The **Copy Route** window appears.
 - The **NAME** box contains a value in the following format: Copy of <name of the original route>
 - The **REVISION** box is disabled and populated with the value 1, regardless of the value in the **REVISION** box of the original route. This is because this is the first draft of the copied route.
 - The remaining boxes are populated with the corresponding values in the original route.
3. Enter a unique name for the copied route. The name must not exceed 100 characters.
4. As needed, modify values in the remaining boxes, and then select **Copy**.

The route is copied. You can now add or remove operations, property groups, and documents to the copied route.

Create an Operation


An operation is an activity that consists of steps that you perform while producing a product.

You can create operations in a route that is in the draft state. However, if you want to create an operation in a released or archived route, you must first [revise the route](#).

When you create an operation, you can set the sequence of the operation, and select the equipment used for that operation.

This topic describes how to create an operation. You can also [copy an existing one](#).

[Create a route](#).

1. In the **Route Editor** page, select the route for which you want to create an operation. The **Edit Route** page appears, displaying a list of operations in the route.
2. Select .
3. Provide values as specified in the following table.

Column	Description
SEQ	Enter the sequence number of the operation. By default, the value in this column for the first operation is 1. The default sequence numbers of the subsequent records are automatically incremented by 10. However, you can modify this sequence number as per your requirement. This gap allows you to add new operations between two operations without the need to modify the sequence numbers of all the operations. If you want to perform multiple operations simultaneously (that is, for parallel tasks), provide the same sequence number.
NAME	Enter a unique name for the operation that does not exceed 100 characters. Note: The name must be unique among all operations in the route.
DESCRIPTION	Enter a description for the operation that does not exceed 1000 characters.
BEHAVIOR	Select the behavior of the operation. The following options are available: <ul style="list-style-type: none"> • Non Clocking: Select this option if the operation does not require a manual clocking on. If you select this option, you can mark an operation complete even if serials/lots are not clocked on, mandatory BOM items are not consumed, or values for mandatory quality variables are not specified. • Clocking: Select this option if the operation requires manual clocking on and clocking off. By default, Clocking is selected for an operation.
LABOR TYPES	Select the labor types for the operation. A value is required. Note: If the behavior of the operation is set to Non Clocking , this field is disabled.
DEFAULT LABOR	Select the default labor type. A value is required. You can choose from the list of values that you selected in the LABOR TYPES column. When an operator clocks on a serial/lot number using the Work Queue or Unit Operations application, by default, the labor type that you select in this column is selected. The operator can, however, choose a different one from the ones that you selected in the LABOR TYPES column. Note: If the behavior of the operation is set to Non Clocking, this field is disabled.
EQUIPMENT	Select the equipment that is used to perform the operation. You can select multiple pieces of equipment for the same operation, and you can select the same piece of equipment for multiple operations. When you select multiple pieces of equipment, the selected number appears. You can select the drop-down list box to view the selected pieces of equipment. Tip: You can also select the equipment used in an operation from the Resources section.

The operation is created and added to the route.

[Link a BOM item to the operation.](#)

Link a BOM Item to an Operation

A bill of material (BOM) contains BOM formulations that define a list of items and the quantity of each BOM item needed to produce a product. You can link a BOM item to a *single* operation. You can link multiple BOM items to an operation.

- Ensure that the route is linked to the BOM formulation that is associated with the BOM items that you want to link. To do so, in the **Edit Route** window of the route, select the appropriate value in the **BOM Formulation** box.
 - [Create an operation in the route.](#)
1. Access the route that is linked to the operation to which you want to link a BOM item. The **Edit Route** page appears, displaying a list of operations linked to the route.
 2. Select **BOM**. The **BOM** workspace appears, displaying a list of BOM items in the **PRODUCT DESCRIPTION** column. The **SEQUENCE**, **PRODUCT CODE**, **QT PER**, and **UOM** columns are populated with the sequence number of the BOM item, the product code, the quantity needed per operation, and the units of measure of the associated BOM formulation, respectively. You cannot modify these values.
 3. For each operation, select a value in each column as described in the following table.

Note: You can link a BOM item to an operation only if **ALL OPERATIONS** is selected in the **Operations** section.

Column	Description
OPERATION	Contains a list of operations that you have added to the route. Select the operation that you want to link to the BOM item. You can select just <i>one</i> of the operations. If a BOM item is already assigned to an operation, the operation does not appear in the list. If the behavior of an operation is set to Non Clocking, the operation does not appear in the list.
MANDATORY	Identifies whether the BOM item is required to perform the operation. By default, the value in this box is No .

4. Select **Save**.
Each BOM item is linked to the selected operations.

[Attach a document to the route.](#)


Upload a Document

Using Route Editor, you can add a document that contains reference material to perform an operation (for example, circuit diagram, standard operating procedure). To do so, you must first upload the document, and then attach it to the appropriate route.

When you upload a document, it is stored in a document store application named Apache CouchDB. The following conditions apply when you upload a document to attach to a route:

- You can use documents of the PDF format only.
- The maximum file size allowed is 25 MB.

Apache CouchDB must be installed, and the credentials must be provided while installing Plant Applications Web Client. For more information, contact your administrator.

1. In the **Route Editor** page, select the route for which you want to upload a document.
2. Select **Documents**, and then select .
The **Upload document** window appears.

3. Provide values as specified in the following table.

Box	Description
FILE NAME / URL	Identifies the URL or path to the document. The URL must use the HTTPS protocol. Tip: If the document is stored in the local machine or in a network location accessible from the local machine, you can select Browse to go to the path.
NAME	Identifies the name of the document. Enter a unique value that does not exceed 100 characters. Important: If a document with the same name exists, a new version of the same document is created, and is assigned the product line, material, and equipment of the original document. Therefore, you must ensure that the document name is unique among all the documents stored in the Plant Applications file store.
ENGINEERING REVISION #	Identifies the revision number of the document as specified in your organization. For example, if the document that you want to upload is a design document of revision number 15, enter 15. Note: The engineering revision number is different from the revision number maintained in the document store.
DESCRIPTION	Identifies the description of the document. You must enter a value.

4. Select **Upload**.

The document is uploaded to the document store.

[Attach the document to a route or an operation.](#)

Attach a Document

You can attach a document to an operation or a route so that an operator can refer to it when performing the operation.


[Upload the document that you want to attach.](#)

1. In the **Route Editor** page, select the route to which you want to attach a document.
2. Select **Documents**.
A list of documents attached to the route or to an individual operation in the route appears.
Tip: You can access a list of documents attached to each operation by selecting the corresponding operation.
3. If you want to attach the document to the route, select **ALL OPERATIONS**. If you want to attach the document to an operation, select the operation.
A list of documents attached to the route or operation appears.

4. Select **+**.

The **Attach Documents and/or URLs** window appears, displaying a list of documents that are available.

Tip:

- You can preview a document by selecting the link in the **FILE/URL** column.
- By default, the latest version of each document appears in the list. If you want to attach a previous version of a document, in the row containing the document, select .

5. In each row containing the document that you want to attach, select the check box.

Tip: You can select all the documents in the list by selecting the check box in the column heading.

6. Select **Attach**.

The document is attached to the route or operation.


[Assign a property group to the route or operation.](#)

Assign a Property Group


When you assign a property group to a route, you can provide values for custom properties that are specific to the route. For example, if the route is for assembling a motor, you can provide the assembly line number, types of motors that are normally assembled on the line, and other details specific to the route.

You can assign a property group to a route or an operation.

Ensure that the property group and underlying properties have been defined in the Property Definition module. For more information, refer to [Property Definition](#).

1. In the **Route Editor** page, select the route to which you want to assign a property group.
2. Select **Properties**.
A list of property groups assigned to the route appears.
3. If you want to assign a property group to an operation, select the operation. If you want to assign a property group to the route, select **ALL OPERATIONS**.
4. Select .
The **Assign Property Group(s)** window appears, displaying the property groups that have group definitions.
5. Select the check boxes corresponding to the property groups that you want to assign.
Tip: If you want to assign all the property groups, select the check box in the heading.
6. Select **Assign**.

The selected property groups are assigned to the route or operation.

Tip: By default, the latest version of each property is assigned to the route or operation. If you want to assign an earlier version, select  in the **ACTIONS** column, and then select the version that you want to assign.

[Provide values for each property in the group.](#)


Provide Values for Properties

When properties are defined in Plant Applications, default value for each property may be provided. Using Route Editor, you can provide values for each property (and overwrite default values if they exist).

[Assign a property group to the route or operation.](#)

1. In the **Route Editor** page, select the route for which you want to provide values for properties.
2. Select **Properties**.
A list of property groups assigned to the route appears.

Tip: If the property has been assigned to an operation, you can select the operation to access a list of property groups assigned to the operation (instead of accessing property groups assigned to all the operations in the route).

3. Select  corresponding to the property group for which you want to provide values.

A list of properties in the property group appears. If a default value has been provided for a property in the Property Definition module, it appears in the **VALUE** column.

4. Enter or modify the value in the **VALUE** column for each property for which you want to provide a value. The following conditions apply when you provide a value for a property:
 - If a property has been specified as mandatory in the Property Definition module, you must provide a value for the property.
 - The value must be of the same data type as specified in the **DATA TYPE** column.
5. Select **Save**.

The values for the properties are saved.

[Release the route.](#)

Accessing a Route

About Accessing a Route

Using Route Editor, you can access the routes in the draft, released, or archived state. You can also access the following details of a route:

- [Operations in the route.](#)
- [Resources](#)
- [BOM Items](#)
- [Documents](#)
- [Properties](#)

Access a Route

As a supervisor, you can access the routes in the Draft, Released, and Archived states.

1. Access Plant Applications Web Client.
2. In the left pane, select **Route Editor**.

The **Route Editor** page appears, displaying a list of routes that are in the draft state. The number of operations that appear in a page depends on the resolution of your computer screen. The following table provides information on each column in the table.

Column	Description
STATUS	The status of the route.
NAME	The name of the route.
MATERIAL	The material number used in the route.
MATERIAL DESC	The description of the material.
PRODUCTION LINE	The name of the production to which the route belongs.
DESCRIPTION	The description of the route.
LAST MODIFIED	The date and time when the route was last modified. The date and time appear in the format mm/dd hh:mm (for example, 03/27 10:58).
MODIFIED BY	The name of the user who has modified the route the last time.
REVISION	The number of times the route has been revised.

3. Select the route whose details you want to view.
The **Edit Route** window appears, displaying the list of operations in the route. You can also view the following details of the route:

- Resources
- BOM Items
- Documents
- Properties

Access List of Operations

[Access the route for which you want to view the operations.](#)

The list of operations in the route appears, displaying the **Overview** section. The following table provides information on each column in the table.

Column	Description
SEQ	The sequence number of the operation.
NAME	The name of the operation.
DESCRIPTION	The description of the operation.
BEHAVIOR	The behavior of the operation. The following options are available: <ul style="list-style-type: none"> • Clocking: If this option is selected, the operation requires manual clocking on and clocking off. • Non Clocking: If this option is selected, the operation does not require a manual clocking on.
LABOR TYPES	The labor type of the operation.
DEFAULT LABOR	The default labor type.
EQUIPMENT	The equipment that is used to perform the operation. There can be multiple equipment for the same operation.

Access Resources

Using Route Editor, you can access the resources used for an operation (such as the equipment).

1. [Access the route for which you want to access the documents.](#)
2. Select **Resources**.

A list of resources associated with the route or the operation appears. The following table provides information on each column in the table.

Column	Description
ORDER	The unit hierarchy of the units on the line.
EQUIPMENT	The name of the equipment.
OPERATION	The operations for which the equipment is used. You can use a single piece of equipment for multiple operations.

Access BOM Items

A Bill of Material (BOM) contains BOM formulations that define a list of items and the quantity of each BOM item needed to produce a product. In Route Editor, you can link BOM formulations to a route, and then link BOM items to operations.

1. [Access the route for which you want to access the BOM items.](#)
2. Select **BOM**.

The list of BOM items appear. The following table provides information on each column in the table.




Column	Description
SEQUENCE	The order of the BOM item in the formulation.
PRODUCT CODE	The identifier of the product in which the BOM item is used.
PRODUCT DESCRIPTION	The description of the product in which the BOM item is used.
OPERATION	The operation for which the BOM item is used.
QTY	The quantity of the BOM item required to manufacture each serial/lot of the product.
UoM	The unit of measure of the BOM item.
MANDATORY	Identifies whether the consumption of BOM items is mandatory to complete the operation. The possible values are Yes and No .

Access Documents

A route may have documents containing reference materials to perform an operation, such as circuit diagram, standard operating procedures, and so on. You can access the documents that are attached to a route.

1. [Access the route for which you want to access the documents.](#)
2. Select **Documents**.

A list of documents associated with the route or the operation appears. The following table provides information on each column in the table.

Column	Description
NAME	The name of the attached document.
REV	The current revision number of the attached document along with the total number of revisions. For example, if the document has been revised five times, and the fourth revision is used in the attachment, it displays 4 of 5.
DESCRIPTION	The description of the attached document.
FILE/URL	The location from where the attached document is uploaded. Select the link in this column to view the location of the document.
OPERATION	The operations for which the attached document may be referenced. You can use a single document for multiple operations.
ACTIONS	The actions that you can perform on the document. The following options are available: <ul style="list-style-type: none"> •  : Displays all the revisions in the document. •  : Uploads a new version of the document. •  : Removes the attached document.

Access Properties

A property is an additional attribute that is assigned to a route, an operation, or a material to produce a product. Properties for routes and operations are created in Property Definition and assigned values in Route Editor.

1. [Access the route for which you want to access the properties.](#)
2. Select **Properties**.

The property groups assigned to the route or the operations appear.

3. Expand the property group.

A list of property definitions in the property group appears. The following table provides information on each column in the table.

Column	Description
MANDATORY	Specifies if the property is mandatory to perform the operation. For mandatory properties, the check box in this column is selected.
NAME	The name of the property.
REVISION	The current revision number of the property out of the total number of revisions.
VALUE	The value of the property.
UOM	The units of measure of the property.
DATA TYPE	The data type of the property.
ACTIONS	The actions that you can perform on the property.

Modifying a Route

About Modifying a Route

You can modify a route only if it is in the draft state. You can modify a route to perform one or more of the following tasks:

- [Modify the details of a route](#)
- [Modify the details of an operation](#)
- [Link a different BOM item to an operation](#)
- [Create an operation](#)
- [Copy an operation](#)
- [Delete an operation](#)
- [Upload a document](#)
- [Attach a document to a route or an operation](#)
- [Upload a new version of a document](#)
- [Assign a property group to a route or an operation](#)
- [Provide values for properties in a property group](#)


Note: By default, the **Route Editor** page contains only the latest revision of each route. If you want the list to contain all the revisions of each route, contact your administrator to modify the settings in Plant Applications Administrator.

Modify the Details of a Route

This topic describes how to modify the name, description, and BOM formulation of a route. You can, however, modify these details only if you have never created a revision of the route.

1. In the **Route Editor** page, select the route that you want to modify.
The **Edit Route** page appears.

2. Select .

Note: The  button is enabled only if you have never created a revision of the route.

3. As needed, modify values as specified in the following table.

Field	Description
NAME	Identifies the name of the route. Enter a unique value that does not exceed 100 characters.
DESCRIPTION	Identifies the description for the route. Enter a value that does not exceed 1000 characters.
BOM FORMULATION	Identifies the BOM formulation that you want to use in the route. This box contains a list of BOM formulations configured for the material in Plant Applications Administrator. You can select a value.

Note: You cannot modify values in the **REVISION**, **PRODUCTION LINE**, and **MATERIAL** boxes.

4. Select **Update**.

The changes made to the route are saved.

Modify an Operation

You can modify an operation if you want to change the name, description, equipment, or sequence of the operation.

1. In the **Route Editor** page, select the route containing the operation that you want to modify. The **Edit Route** page appears, displaying a list of operations in the route.
2. As needed, modify values as specified in the following table.

Column	Description
SEQ	Identifies the sequence number of the operation. By default, the value in this column is 1. If multiple operations must be performed simultaneously, provide the same sequence number. Tip: When setting the sequence numbers, provide a gap in their values so that you can easily add new operations between other operations. For example, if the sequence number of the first operation is 1, set the sequence number of the second operation to 10. This allows you to add new operations between these two operations without the need to modify the sequence numbers of all the operations.
NAME	Identifies the name for the operation. Enter a unique name for the operation that does not exceed 100 characters. Note: The name must be unique among all operations in the route.
DESCRIPTION	Identifies the description for the operation. Enter a description that does not exceed 1000 characters.
BEHAVIOR	Identifies the behavior of the operation. A value is required. The following options are available: <ul style="list-style-type: none"> • Non Clocking: Select this option if the operation does not require a manual clocking on. If you select this option, you can mark an operation complete even if serials/lots are not clocked on, mandatory BOM items are not consumed, or values for mandatory quality variables are not specified. • Clocking: Select this option if the operation requires manual clocking on and clocking off. By default, Clocking is selected for an operation.

Column	Description
LABOR TYPES	<p>Identifies the labor types for the operation. A value is required. The following options are available:</p> <ul style="list-style-type: none"> • Non Clocking: Select this option if the operation does not require a manual clocking on. If you select this option, you can mark an operation complete even if serials/lots are not clocked on, mandatory BOM items are not consumed, or values for mandatory quality variables are not specified. • Clocking: Select this option if the operation requires manual clocking on and clocking off. By default, Clocking is selected for an operation.
DEFAULT LABOR	<p>Identifies the default labor type. A value is required. You can choose from the list of values that you selected in the LABOR TYPES column.</p> <p>When an operator clocks on a serial/lot using the Work Queue or Unit Operations application, by default, the labor type that you select in this column is selected. The operator can, however, choose a different one from the ones that you selected in the LABOR TYPES column.</p>
EQUIPMENT	<p>Identifies the equipment that is used to perform the operation. You can select multiple pieces of equipment for the same operation, and you can select the same piece of equipment for multiple operations.</p> <p>Tip: You can also select the equipment used in an operation by accessing the Resources section.</p>


3. Select **Save**.

The changes made to the operation are saved.

Copy an Operation

This topic describes how to copy an operation. You can also [create a new operation](#).

Note: When you copy an operation, the BOM items and documents are not copied.

1. In the **Route Editor** page, select the route in which you want to copy an operation. The **Edit Route** page appears.
2. In the left pane, in the row containing the operation that you want to copy, select . A new row for the copied operation appears in the **Overview** section.
 - The name of the copied operation is in the following format: Copy <name of the original operation>
 - The remaining columns are populated with the corresponding values in the original operation.
3. Enter a unique name for the operation. The name must not exceed 100 characters.
4. As needed, modify values as specified in the following table.

Column	Description
SEQ	<p>Identifies the sequence number of the operation. If multiple operations must be performed simultaneously, provide the same sequence number.</p> <p>Tip: When setting the sequence numbers, provide a gap in their values so that you can easily add new operations between other operations. For example, if the sequence number of the first operation is 1, set the sequence number of the second operation to 10. This allows you to add new operations between these two operations without the need to modify the sequence numbers of all the operations.</p>
NAME	Identifies the name for the operation. Enter a unique name that does not exceed 100 characters.
DESCRIPTION	Identifies the description for the operation. Enter a description that does not exceed 1000 characters.
BEHAVIOR	<p>Identifies the behavior of the operation. A value is required. The following options are available:</p> <ul style="list-style-type: none"> • Non Clocking: Select this option if the operation does not require a manual clocking on. If you select this option, you can mark an operation complete even if serials/lots are not clocked on, mandatory BOM items are not consumed, or values for mandatory quality variables are not specified. • Clocking: Select this option if the operation requires manual clocking on and clocking off. By default, Clocking is selected for an operation.
LABOR TYPES	<p>Identifies the labor types for the operation. A value is required. The following options are available:</p> <ul style="list-style-type: none"> • Non Clocking: Select this option if the operation does not require a manual clocking on. If you select this option, you can mark an operation complete even if serials/lots are not clocked on, mandatory BOM items are not consumed, or values for mandatory quality variables are not specified. • Clocking: Select this option if the operation requires manual clocking on and clocking off. By default, Clocking is selected for an operation.
DEFAULT LABOR	<p>Identifies the default labor type. A value is required. You can choose from the list of values that you selected in the LABOR TYPES column.</p> <p>When an operator clocks on a serial/lot using the Work Queue or Unit Operations application, by default, the labor type that you select in this column is selected. The operator can, however, choose a different one from the ones that you selected in the LABOR TYPES column.</p>
EQUIPMENT	<p>Identifies the equipment that is used to perform the operation. You can select multiple pieces of equipment for the same operation, and you can select the same piece of equipment for multiple operations.</p> <p>Tip: You can also select the equipment used in an operation from the Resources section.</p>

5. As needed, modify the property definitions and values.
6. Select **Save**.


The operation is copied.

- [Link a BOM item to the operation](#)

- [Attach a document to the operation](#)
- [Assign a property group](#) to the operation, and [provide values for the underlying properties](#).
-

Delete an Operation

You can delete an operation if it is no longer needed to produce the product using the route.

- If you have made any changes to the route, save the changes.
1. In the **Route Editor** page, select the route for which you want to delete an operation. The **Edit Route** page appears.
 2. In the left pane, select  in the row containing the operation that you want to delete. A message appears, asking you to confirm that you want to delete the operation.
 3. Select **Yes**, and then select **Save**.




The operation is deleted.

Note: The equipment, BOM items, documents, and properties associated with the operation are not deleted.


Upload a New Version of a Document

Using Route Editor, you can access all the versions of a document that you upload to the document store.

You can upload a new version of a document whether or not it is attached to a route or an operation. If the document has already been attached to a route or an operation, after you upload the new version, you must manually attach the newer version to the route or the operation.

1. If the document has been attached to a route or an operation, perform the following steps:
 - a) In the **Route Editor** page, select the route to which you have attached the document.
 - b) Select **Documents**.
A list of documents attached to the route or to an individual operation in the route appears.
Tip: You can access a list of documents attached to each operation by selecting the corresponding operation.
 - c) In the row containing the document for which you want to upload a new version, select .
The **Upload document** window appears. With the exception of the **FILE NAME / URL** box, all the boxes are disabled and populated with values from the previous version of the document.
 - d) In the **FILE NAME / URL** box, enter the URL or path to the version of the document that you want to upload.
Tip: If the document is stored in the local machine, you can select **Browse** to go to the path.
 - e) Select **Upload**.
The new version of the document is uploaded. As needed, you must attach this new version to all the routes and operations that use this document.
Note: You can access each version of the document by selecting  in the row that contains the document.
2. If the document has not been attached to a route or an operation, perform the following steps:
 - a) In the **Route Editor** page, select a route.
 - b) Select **Documents**.
 - c) In the upper-right corner of the **Documents** section, select .
The **Upload Document** window appears.

- d) Provide the same values as those provided for the previous version of the document, and then select **Upload**.
The new version of the document is uploaded.

Note: You can access each version of the document by selecting **+**, and then selecting  in the window that appears.


Releasing a Route

About Releasing a Route

A route must be released for it to be available in a work order or a process order. The following conditions apply when you release a route:

- You can release a route only if it is in the draft state.
- You cannot release a route that is archived.
- You cannot modify a route that is released. However, you can revise or copy the route after it is released.
- After you release a route, you cannot reverse the action.

Release a Route

- The route that you want to release must contain at least one operation.
 - Each operation in the route must be associated with at least one piece of equipment.
1. In the **Route Editor** page, select the route that you want to release.
The **Edit Route** page appears.
 2. Select , and then select **Release**.
A message appears, specifying that the action cannot be reversed, and asking you to confirm that you want to release the route.
 3. Select **Release**.

The route is released. This route is now available to be linked to a work order.

Use the route in a work order.

Note: A work order is created in an Enterprise Resource Planning (ERP) application and imported into Plant Applications Web Client using the Plant Applications Enterprise Resource Planning (ERP) scheduler and import services. For more information, refer to the Plant Applications ERP Integration Guide. The work order is then consumed in the Work Order Manager, Unit Operations, Work Queue, and other modules. For more information, refer to corresponding sections of the documentation.

Archiving a Route


About Archiving a Route

If you no longer want to use a route, you can archive it. The following conditions apply when you archive a route:

- You can archive a route that is in the released state.
- You cannot archive a route that is in the draft state.

- You cannot modify an archived route. However, if you want to use an archived route in future, you can revise or copy the route.
- An archived route is not available for use in a work order or a process order.
- After you archive a route, you cannot reverse the action.

Archive a Route

1. In the **Route Editor** page, select **Released**, and then select the route that you want to archive. The **View Route** page appears.
2. Select , and then select **Archive**.
A message appears, specifying that the action cannot be reversed, and asking you to confirm that you want to archive the route.
3. Select **Archive**.

The route is archived.


Creating a Route Revision

About Creating a Route Revision

After you release or archive a route, you cannot modify it. However, if you want to update the route (for example, remove an operation or change the BOM formulation), you must create a revision of the route. The following conditions apply when you create a route revision:

- You can create a route revision for a released or archived route.
- You cannot create a route revision for a draft route.
- You can create a route revision only on the latest version of the route (includes draft versions as well).
- After revising a route, any subsequent changes to the route properties or documents attached to the route are not reflected in the route. For example, if another property definition has been added to the property group or a new revision of the document has been uploaded, the changes are not reflected in the revised route. If you want the changes to reflect in the revised route, you must link the property group or the document again to the route. Changes to the BOM formulation of the route, however, are reflected automatically in the revised route.

Create a Route Revision


1. In the **Route Editor** page, perform one of the following tasks:
 - If you want to create a revision of a released route, select **Released**.
 - If you want to create a revision of an archived route, select **Archived**.
2. Select the route whose revision you want to create. The **View Route** page appears.
3. Select , and then select **Revision**.
The **Revise Route** window appears, displaying the route details.

Note: The name, description, production line, material, and BOM formulation are copied from the latest version of the route. You cannot modify these details. You can add, modify, or remove an operation. You can also assign a different BOM item, equipment, property group, or document.

4. Select **Next**.
The **Edit Route** page appears. The operations, resources, BOM items, properties, and documents linked to the route are the same as that of the latest version of the route.

5. As needed, add, modify, or remove operations, or assign a different BOM item, property, or document.
6. Select **Save**.

The route revision is created and is in the draft state. The value in the **REVISION** box is incremented by 1.

Tip: To access the previous versions of the route, in the **Released** or **Archived** section, select  in the row containing the route.


Deleting a Route

About Deleting a Route

If you no longer want to work with a draft route, you can delete it. The following conditions apply when you delete a route:

- You cannot delete a route that is released or archived.
- You can only delete a route that is in the draft state.
- The operations in the route are deleted.
- The BOM items, properties, and documents used in the route are not deleted from the Plant Applications database.

Delete a Route

1. In the **Route Editor** page, select the route that you want to delete.
The **Edit Route** page appears.
2. Select , and then select **Delete**.
A message appears, asking you to confirm that you want to delete the route.
3. Select **Delete**.

The route and the operations linked to it are deleted.

Creating a Work Order

About Creating a Work Order

A work order is a request to manufacture certain quantity of a product in a given time. It contains information about the product, a list of serials/lots and the quantity to be manufactured, the planned start time and end time, and the route that must be used to manufacture the product.

Work orders are created in Plant Applications from the following sources:


- ERP System: You can import work orders from an ERP system to Plant Applications using the import services.
- Route Editor: You can create work orders manually using Route Editor.
- Work Order Manager: You can create work orders manually using Work Order Manager.

These work orders then appear in [Work Order Manager](#), where you can manage them.

When you create a work order in Route Editor, the following conditions apply:

- You can create a work order only for the latest version of a released route.
- You cannot create a work order for a draft or an archived route.
- A work order belongs to a single route. You can, however, create multiple work orders for a route.

Create a Work Order

1. In the **Route Editor** page, select **Released**.
A list of released routes appears.
2. Select the route for which you want to create a work order.
The **View Route** page appears.
3. Select , and then select **Create Work Order**.
The **Create Work Order** window appears.
4. Provide values as specified in the following table.

Box	Description
WORK ORDER	You must enter a value in this box. Enter a unique name for the work order that does not exceed 100 characters. If a work order with the same name exists: <ul style="list-style-type: none"> • If the work order is ready, it is deleted and replaced with the one that you are creating. • If the work order is in progress, you cannot create this work order.
ORDER QUANTITY	Enter the quantity of the product that must be manufactured as part of the work order. The value in this box must not exceed 100. The value in this box determines the number of rows that appear in the ENTER SERIAL/LOT# section.
PRIORITY	Enter the priority in which the work order must be completed. <ul style="list-style-type: none"> • If you want to assign the highest priority for the work order, enter 1. • If you want to assign the lowest priority for the work order, enter 0 or leave the box blank.
SERIAL/LOT# PREFIX	Enter the prefix for each serial/lot to be manufactured. The value in this box helps identify the serials/lots that belong to the same work order.
PLAN START	Enter the planned date and time to begin work on the work order.
PLAN END	Enter the planned date and time to complete the work on the work order. By default, this box is populated with the date and time that is 24 hours from the current date and time.
SERIAL/LOT#	You must enter a value in all the rows. Enter a unique value for each serial/lot.
GENERATED SERIAL/LOT#	Identifies the serial/lot that will be assigned to each product in the work order. This box is disabled and populated with a combination of the values in the SERIAL/LOT# PREFIX and SERIAL/LOT# boxes.

5. Select **Create**.

Tip: If you want to create another work order for the same route, select **Create and Add Another**.

The work order is created, and it appears in [Work Order Manager](#).

Chapter 6

Work Queue

Topics:

- [Overview](#)
- [Accessing an Operation](#)
- [Adding Operations to](#)
- [Removing Operations from](#)
- [Clocking On a Serial or Lot](#)
- [Clocking Off a Serial or Lot](#)
- [Adding a Comment](#)
- [Consuming a Lot](#)
- [Completing an Operation](#)
- [Creating a Non-Conformance](#)

Overview

About the Work Queue Application

As an operator, you can use the Work Queue application for maintaining a list of operations that you must perform, and report the status of completion of each operation.

Each row in Work Queue represents an operation to be performed. By default, Work Queue contains the operations in which at least one serial number is currently clocked on by you. You can add additional operations that are ready or in progress to Work Queue.

Using the Work Queue module, you can perform the following tasks:

- [Access an operation.](#)
- [Add operations to Work Queue.](#)
- [Clock on a serial or lot.](#)
- [Clock off a serial or lot.](#)
- [Provide data for a quality variable.](#)
- [View the status of an operation.](#)
- [Access documents associated with an operation.](#)
- [Access a list of BOM parts associated with a serial or lot.](#)
- [Specify the consumption of BOM parts during production.](#)
- [Specify whether you have completed working on a serial or lot.](#)
- [Creating a non-conformance.](#)
- [Add a comment.](#)

About Work Orders, Operations, and Serials/Lots

A work order is a request to manufacture a certain quantity of products. It contains information on the model, route, and quantity of a product that must be manufactured. Work orders are either created in Route Editor or imported into Plant Applications using the Enterprise Resource Planning (ERP) scheduler and import services.

Work orders are grouped by product and are assigned to a specific production line for manufacturing.

A work order comprises the job details and operations. To manufacture each type of product, a sequence of tasks must be performed. Each task or a set of tasks is called an operation. An operation in a work order is an executable job performed on a Production Unit of a Production Line. Operations can be defined either in the route using the Route Editor module or in the work order that you import from an ERP system.

When all the operations are completed, the status of the work order changes to Completed in the Work Queue application.

Note: If BOM parts are configured for an operation and marked as mandatory, the operation is marked complete only if the BOM parts are consumed. Similarly, if quality variables are configured for an operation, the operation is marked complete only if values for the quality variables are provided.

The quantity of the product to be manufactured determines the number of serial numbers that are created.

Work Orders, Operations, and Sequence Numbers in a Motor Manufacturing Unit

Suppose you want to manufacture the following motors:

- 3 motors of model A
- 2 motors of model B

The following table provides the work orders, operations, and serial numbers for the plan.

Work Order Number	Work Order Description	Operations	Serial Numbers
W.O 1	To manufacture motors of model A	<ul style="list-style-type: none"> • Shell turning • Rotor assembling • End shield assembling • Painting 	<ul style="list-style-type: none"> • W.O. 1_S1 • W.O. 1_S2 • W.O. 1_S3
W.O 2	To manufacture motors of model B	<ul style="list-style-type: none"> • Shell turning • Rotor assembling • End shield assembling 	<ul style="list-style-type: none"> • W.O. 2_S1 • W.O. 2_S2

Suppose Operator 1 wants to work on the shell turning operation for the two types of motors. Operator 1 can clock on the following serial numbers.

Work Order Number	Operation	Serial Number
W.O 1	Shell turning	W.O.1_S1
W.O 1	Shell turning	W.O.1_S2
W.O 1	Shell turning	W.O.1_S3
W.O 2	Shell turning	W.O.2_S1
W.O 2	Shell turning	W.O.2_S2





Suppose Operator 2 wants to work on the rotor assembling operation. When Operator 2 logs in to the application, Work Queue displays the rotor assembling operation only after the shell turning operation has been completed for at least one serial number.







About the Status of a Serial/Lot and an Operation

The status of an operation indicates the progress of work for the operation.

The status of a serial/lot indicates the progress of work on the serial/lot *for that specific operation*. For example, suppose a work order includes performing operations 1 and 2. If operation 1 has been completed for a serial/lot, the status of the serial/lot for operation 1 is *complete*. If operation 2 is yet to begin on the same serial/lot, the status of the serial/lot for operation 2 is *ready*.

In the Work Queue application, the status of a serial/lot or an operation is automatically determined and displayed with a color-coded indicator. The following table provides a list of status indicators defined for a serial/lot and an operation.

Status	Status Indicator	Description for a Serial/Lot	Description for an Operation
Not ready		Not applicable	Indicates that none of the serials/lots is available for you to perform the operation.
Cancelled		Indicates that the work for the serial/lot has been cancelled. This happens if a defect has been created for the serial/lot, and the disposition provided in NCR Management is Scrapped.	Not applicable
Ready		Indicates that the serial/lot is available for you to perform the operation.	Indicates that at least one serial/lot in the work order is available for you to perform the operation, and the operation is not in progress for any of the serials/lots.
Clocked on by you		Indicates that the serial/lot is currently clocked on only by you for the operation.	Indicates that at least one serial/lot in the operation is currently clocked on by you, and none of the serials/lots in the operation is clocked on by others.

Status	Status Indicator	Description for a Serial/Lot	Description for an Operation
Clocked on by another user		Indicates that the serial/lot is currently clocked on by multiple users for the operation, but is not clocked on by you for the operation.	Indicates that the serials/lots are currently clocked on by multiple users for the operation, but are not clocked on by you for the operation.
Clocked on by other users		Indicates that the serial/lot is clocked on by multiple users for the operation, but is currently not clocked on by you for the operation.	Indicates that the serials/lots are clocked on by multiple other users for the operation, but none of them are clocked on by you for the operation.
Clocked on by you and other users		Indicates that the serial/lot is currently clocked on by you and other users for the operation.	Indicates that the serials/lots for the operation are currently clocked on by you and other users.
Clocked on by other users in the past		Indicates that work for the serial/lot has begun, but the serial/lot is currently not clocked on for the operation.	Indicates that work has begun for at least one serial/lot in the operation in the past, but currently, no serial/lot is clocked on for the operation.
On hold		Indicates that the serial/lot is on hold. This status indicator appears if a defect has been created for the serial/lot for the operation. After the defect is closed, the status is changed to the original status.	Not applicable
Complete		Indicates that the operation is complete for the serial/lot.	Indicates that the operation is complete for all the serials/lots in the work order (or scrapped as applicable).

Accessing an Operation

About Accessing an Operation

Using Work Queue, you can access operations added to Work Queue or operations grouped by work order. You can also access the following details of an operation:



- [Documents](#) linked to the associated route
- [List of Bill of Material \(BOM\) items](#) required for each serial/lot, along with the required quantity and consumed quantity
- [Quality variables](#)
- [Non-conformances](#)
- [Properties](#) defined for the operation or the associated route or material
- [History](#)

Note: Documents, BOM, Quality, NCR, Properties, and History are standard tabs. You can show or hide them using the Configuration Management application. You can also rearrange the order of the tab display.




Access an Operation

As an operator, you can access operations in the Ready or In Progress status.

1. Access Plant Applications Web Client.
2. In the left pane, select **Work Queue**.
The **Queue** page appears, displaying a list of operations that are added to Work Queue. The number of operations that appear in a page depends on the resolution of your computer screen. The following table provides information on each column in the table.

Column	Description
STATUS	The status of the operation.
OP	The name of the operation.
WORK ORDER	The unique identifier of a work order.
DESCRIPTION	The description of the operation.
SERIAL/LOT	If the work order contains only one serial/lot, this column contains the unique ID of the serial/lot. If the work order contains multiple serials/lots, this column contains a link, specifying the number of serials/lots in the work order. When you select the link, a window appears, displaying the statuses and IDs of all the serials/lots in the work order for the operation. Note: The value in this column does not include the number of serials/lots that are in the Cancelled status.
COMPLETED	The number of serials/lots for which the operation has been completed out of the total number of serials/lots on which you must perform the operation.
SCRAP	The number of serials/lots that have been scrapped during the operation.
ON HOLD	The number of serials/lots that are on hold.
ON/OFF	Contains buttons to click on or click off an operation. The number in the ON button indicates the number of serials/lots that are clocked on. These buttons are disabled for an operation that does not require clocking on.
COMP/REC	Contains the following buttons: <ul style="list-style-type: none"> • : Allows you to provide the completed quantity for an operation on a serial/lot. • <complete button> : Allows you to mark an operation complete after the completed quantity for a serial/lot equals the planned quantity.
COMPLETED	Indicates whether the operation is complete.

Tip: You can perform the following tasks in the **Queue** page:

- Access the operations grouped by work order by selecting **By Work Order**.
 - Manually refresh the list of operations by selecting .
 - Add or remove columns from the table by selecting .
 - Filter the list of operations by selecting  in a column heading.
 - Search for an operation in the queue using the **Search the queue** box.
 - Add an operation to the queue. For information, refer to [About Adding Operations to the Work Queue](#) on page 113.
3. If you want to access the details of an operation, select the operation.
The workspace for the operation appears, displaying the details of the operation and the associated serials/lots, such as documents, BOM items, and so on.

Access Documents

You can access the documents that are related to a route. The documents can be instruction manuals or technical publications, which may be required to perform the operation. They have been added to the operation or the associated route using the Route Editor application or the ERP system.

1. Access the operation whose documents you want to access.
2. Select **Documents**.
A list of documents associated with the operation or the associated route appear.
3. Select the document that you want to access.
The document appears in the workspace.

Tip: You can rotate the document.

Access BOM Items

An operation contains a list of BOM items necessary to perform the operation. As an operator, you can access the **BOM** section to specify the consumption of the BOM items for a product.

1. Select the operation whose BOM items you want to access.
2. Select **BOM**.
The **BOM** section appears, displaying the BOM items associated with the selected operation.

The number of the BOM tab indicates the total number of mandatory BOM items that are yet to be consumed to complete the operation on the serial/lot.

In Unit Operations, the number of the **BOM** tab indicates the total number of mandatory BOM items that are yet to be consumed to complete the operation on the serial/lot. In Work Queue, the number on the **BOM** tab indicates the total number of mandatory BOM items that are yet to be consumed to complete the operation on all the serials/lots that you have clocked on for the operation. The following table provides information on each column in the table.

Column	Description
ORDER	The recommended order of consumption of the BOM item in an operation.
PART#	The product code of the BOM item.
DESCRIPTION	The description of the BOM item.
REQ QTY	The planned quantity of the BOM items required for the completion of the serial/lot for the operation.
CONSUMED QTY	The actual quantity of the BOM items consumed during the production.
UOM	The unit of measure (UOM) of the BOM item.
SERIAL/LOT#	The serial/lot of the raw material that was consumed.

3. In the **BOM** section, select an item.
The page containing the item details and consumption history appears.

Access the Quality Variables of an Operation

Quality variables include details about the data that are collected while performing an operation. These variables are defined in Plant Applications Administrator. The values that you provide for these variables help verify that the parameters that are critical to the quality and manufacturing processes are within the acceptable limits. You can use this data to review the performance of a production line and production unit and compare the quality of the products produced in each unit with projections for an operation.

For example, suppose you have been assigned the testing operation in a motor manufacturing unit. Quality variables can include the torque and rpm of the motor shaft. When you test each motor, you must enter the torque and rpm values for the corresponding serial number. A quality supervisor can then verify that the torque and rpm fall within the acceptable range.



1. Access the operation whose quality variables you want to access.

2. Select **Quality**.

The **Quality** section appears, displaying a list of quality variables defined for the operation, and values for these variables for the serial/lot selected in the left pane. These variables are grouped based on the quality variable group. In Unit Operations, the number on the **Quality** tab indicates the total number of mandatory quality variables for the serial/lot that still require a value. In Work Queue, the number on the **Quality** tab indicates the total number of mandatory quality variables for all the serials/lots that you have clocked on for the operation and that still require a value. The following table provides information on the columns in the table.

Column	Description
VARIABLE NAME	The name of the variable.
SPEC	The value of the variable. You can enter a value only if you have clocked on the serial/lot. If an acceptable range has been defined for the variable, after you enter a value, the box in this column displays a color, indicating whether the value is within the acceptable range.
CHART	Contains a chart that plots the lower and upper limits for the variable and the value that you have entered in the SPEC column. The CHART column appears only in the Box Whisker view.



Tip:

- By default, all the quality variables appear. If you want to access only mandatory variables, select **Mandatory Variables** in the drop-down list box.
 - If you want to view the lowest, highest, lower quartile, upper quartile, and median values for each variable, select . If you want to view the same values plotted on a chart, select .
3. In the left pane, select the serial/lot whose variable values you want to access. The **Quality** section displays the quality variables for the selected serial/lot.

Access a Non-Conformance

1. Access the operation performed on the serial/lot whose non-conformance you want to access.
2. Select **NCR**.
The **NCR** section appears, displaying a list of non-conformances for the serial/lot selected in the left pane.
3. In the left pane, select the serial/lot whose non-conformance you want to access.
A list of non-conformances for the serial/lot that occurred at the operation appears. The following table provides information on the columns in the table.

Column	Description
STATUS	The status of the non-conformance.
SERIAL/LOT	The unique identifier of the serial/lot.
OP	The operation during which the non-conformance has been created.
DISP	The disposition method chosen for the serial/lot.
MATERIAL	The material of the serial/lot.
MATERIAL FAMILY	The material family of the serial/lot.
MATERIAL DESC	The material description of the serial/lot.

Column	Description
CTP/REWORK OP	<ul style="list-style-type: none"> For a Rework disposition method, this field contains the operation during which rework must be performed on the serial/lot. For a Continue-to-Process (CTP) disposition method, this field contains the operation until which you can continue to work with the serial/lot. For a disposition method other than CTP or Rework, this column is blank.
ACTIONS	<p>Contains the following buttons:</p> <ul style="list-style-type: none"> : Select this button to access the non-conformance details. : Select this button to access the defect history.

Access the Properties of an Operation

A property is an additional attribute that is assigned to a route, an operation, or a material to produce a product. Properties are created in Property Definition and assigned values in the following ways:

- Properties for routes and operations are assigned values in Route Editor.
- Properties for materials are assigned values in an ERP system. These materials are imported to Plant Applications using import services.

1. Access the operation for which you want to access the properties.
2. Select **Properties**.

The properties assigned to the operation, route, or material appear. The following table provides information on the columns in the table.

Column	Description
LEVEL	<p>The level at which the property has been defined - operation, route, or material.</p> <ul style="list-style-type: none"> If a property has been defined at the route or material level, the value in this column is All Operations. If a property has been defined at the operation level, the value in this column is Operation.
CATEGORY	The category to which the property group belongs.
GROUP	The group to which the property belongs.
NAME	The name of the property.
VALUE	The value of the property.
UOM	The units of measure of the property.
DATA TYPE	The data type of the property.


Access the History of an Operation

As an operator, you can access the events associated with an operation. An event is created each time the status of a serial/lot, operation, or the work order is changed.

1. Access the operation whose history you want to access.
2. Select **History**.

The **History** section appears, displaying the events associated with the operation and the serial/lot selected in the left pane. The events appear in the descending order of their timestamps (based on the **TIME STAMP** column). The following table provides information on the columns in the table.

Column	Description
ACTION	The action performed on the serial/lot.
SERIAL/LOT	The unique identifier for the serial/lot on which the action was performed.
OPERATION	The name of the operation for which the action was performed.
USER(S)	The name of the user who performed the action specified in the ACTION column.
TIME STAMP	The date and time when the action was performed.

Tip: To export the data to a .csv file, select . The data for the columns that appear in the table are exported into a .csv file. If the data contains unicode characters, to access the data in a Microsoft Excel worksheet:

- Access a blank worksheet.
- Go to **Data > From text/CSV**, and select the .csv file.
- Select the file origin: **65001:Unicode (UTF-8)**.
- Load the data.

This process is a requirement for Microsoft Excel.

Actions Recorded in the Work Order History

The following table provides a list of actions that appear in the **History** section of a work order.

Action	Description
Work Order Created	Indicates that the work order is created.
Work Order Ready	Indicates that the work order is ready for you to begin work on at least one serial/lot.
Work Order Started	Indicates that the work has begun on at least one serial/lot in the work order. This happens when at least one serial/lot in the work order has been clocked on for an operation.
Work Order Completed	Indicates that all the operations in the work order are completed for all the serials/lots in the work order.
Work Order Cancelled	Indicates that the work order is cancelled.
Work Order Planned Date Change	Indicates that the planned start and end dates of the work order have been changed.
Work Order Priority Change	Indicates that the priority for the work order has been changed.
Serial No Created	Indicates that an ID has been created for a serial/lot in the work order.
Serial/Lot Started	Indicates that work has begun on a serial/lot for the work order. This happens when the serial/lot has been clocked on for the first operation.
Serial/Lot Hold	Indicates that the serial/lot is on hold. This happens when a non-conformance is created on the serial/lot.

Action	Description
Serial/Lot Scrapped	Indicates that the serial/lot has been scrapped. This happens when a non-conformance is created on the serial/lot and the disposition method specified for the serial/lot is Scrap.
Serial/Lot Completed	Indicates that work on the serial/lot has been completed. This happens when all the operations defined in the associated route are completed for the serial/lot.
Serial/Lot Identifier Change	Indicates that the name of a serial/lot has been changed.
Operation Ready	Indicates that an operation is ready for you to begin work on the specified serial/lot.
Operation Started	Indicates that work for an operation for the specified serial/lot has begun.
Serial/Lot Clock On	Indicates that a serial/lot has been clocked on for an operation by an operator.
Serial/Lot Clocked Off	Indicates that a serial/lot has been clocked off for an operation by an operator.
Operation Hold	Indicates that work for an operation is on hold for a serial/lot. This happens when a non-conformance has been created on the serial/lot for the operation.
Operation Released	Indicates that an operation is released for the serial/lot. This happens when the serial/lot has been disposed to release the operation hold.
Operation Cancelled	Indicates that an operation is cancelled for the serial/lot. This happens when the serial/lot is scrapped at the operation.
Operation Completed	Indicates that an operation is completed for the serial/lot.
Hold Released	Indicates that hold is released on an operation. This happens when the serial/lot on which a non-conformance has been created has been disposed.
Order Segments Changed	Indicates that the sequence of an operation in the work order has been changed. This happens when operations have been added or removed (for example, the disposition for a defective serial/lot is set to rework).
Serial/Lot Split	Indicates that a serial/lot has been split up. This happens when a non-conformance has been created for some of the items in the lot.
Serial/Lot Planned Quantity Change	Indicates that the planned quantity of a serial/lot has changed. This happens when items have been added to the planned quantity of the lot or some of the items in the lot have been scrapped.
Quantity Completed	Indicates that completed quantity has been specified for a serial/lot for an operation using Unit Operations or Work Queue.

Adding Operations to

About Adding Operations to the Work Queue

Each row in Work Queue represents an operation to be performed. By default, Work Queue contains the operations that meet at least one of the following criteria:

- Operations in which at least one serial number has been clocked on
- Operations that you previously added to Work Queue, but not completed

In addition, you can add an operation or all the available operations in a work order to Work Queue. You can add an operation if at least one serial number is available for you to begin work.

Adding operations to Work Queue has the following advantages:

- Extends the list of operations that you want to perform
- Provides visibility on the progress of work that you plan to complete.


To add operations, you can enter the serial number (on which you want to perform an operation) manually or scan the bar code. You can also enter the name of the operation or work order.

Note: If you add operations by entering operation names, all the operations with that name are added to Work Queue, regardless of the work order associated with each of them. Therefore, we recommend that you add operations by entering the serial numbers or work order names instead of entering operation names.

Add Operations to Work Queue

If you want to add operations by scanning the bar code of a serial number, ensure that the camera has been enabled.

1. In the **Work Queue** page, in the **Enter a serial/lot no. or work order or operation to add to queue** box, enter the name of the operation or work order that you want to add to Work Queue. You can also enter a serial number on which you want to perform an operation.
2. Select **+**.

Tip: You can also scan the bar code of the serial number by selecting .

- If you entered (or scanned) a serial number, the operations that you can perform on the serial number are added to Work Queue.
- If you entered the name of an operation, all the operations that contain the name and are ready are added to Work Queue.
- If you entered the name of a work order, all the operations in the work order are added to Work Queue.

[Complete the operation.](#)


Removing Operations from


About Removing Operations from Work Queue

If you no longer want to work on operations in Work Queue, you can remove them from Work Queue.

You can only remove the operations that you have added manually to Work Queue. If you attempt to remove an operation that has been assigned to you or clocked on by you, the operation appears again when you refresh the page.

Remove Operations from Work Queue

In the **Work Queue** page, in the row containing the operation that you want to remove, select . The operation is removed from Work Queue.

Tip: To remove all the operations that you have manually added, in the upper-right corner of the page, select .

Clocking On a Serial or Lot

About Clocking On Serials/Lots for an Operation

When an operation is created in Route Editor or the ERP system, if it is specified that the operation requires clocking on, you must clock on the serial/lot on which you want to work. It indicates that the you are ready to accept the work and perform the operation.

Operations are planned for execution in one or more production units during production. You can, however, clock on serials/lots for an operation only in one production unit.

A clock-on process on an operation locks the operation for a production unit. As an operator, you can clock on serials/lots for an operation in the Ready status to indicate that you are ready to accept the work and perform the operation. After you clock on, the following actions take place:

- The selected operation is no longer available in the other production units.
- A timer is enabled to monitor the time you spent on the completion of an operation. The time you spent on an operation is visible only to you. The completion time of an operation may differ from one operator to another.
- A clock-on [status indicator](#) appears for the serial/lot and the operation.

You can clock on multiple serials/lots at the same time. In addition, multiple users can clock on a single serial/lot.

Note: If an operation does not require clocking on (as defined in Route Editor or the ERP system), you cannot clock on serials/lots for the operation.

Clock On Serials/Lots for an Operation

You can clock on a serial/lot only if the operation requires clocking on (as defined in Route Editor or the ERP system).

- Ensure that you have the permission to perform this task. For more information, refer to [Security](#)
 - Ensure that the operation is in the Ready or In Progress status.
1. In the **Work Queue** page, in the row containing the operation on which you want to begin work, select the **ON** button.

Alternatively, you can select the operation and work order combination from the **Work Queue** page, and then select the **ON** button in the page heading.

Note:


- If none of the serials/lots of an operation has been clocked on, the operation will not appear in the work queue. In that case, [add the operation to Work Queue](#).

- The **ON** button is enabled only if the operation requires clocking on (as defined in Route Editor or the ERP system).

The **Select Serial (s) to ClockOn** window appears, displaying a list of serials/lots in the operation that are available.

2. In the **LABOR TYPE** drop-down list box, select the type of labor you will perform at the operation.


Note: By default, the default labor type for the operation is selected. Different serials/lots of the same work order can be clocked on with different labor types.

Tip: To change the labor type for serials/lots that are currently clocked-on, select an operation and work order combination, and then select  to expand the header section, and then in the **LABOR TYPE** drop-down list box, select the type of the labor you will perform at the operation.

3. In the **EQUIPMENT** box, select the piece of equipment that you will use to perform the operation.

Note: If the operation is associated with only one piece of equipment, it is automatically selected.

4. If you want to clock on all the available serials/lots, select the check box in the heading row of the table. If you want to clock on specific serials/lots, perform one of the following steps:

- Select the check box for each serial/lot that you want to clock on.
- Search for a serial/lot by entering the value in the **Search in available serial numbers** box, and then select the check boxes from the filtered list that appears.
- Scan the bar code of the serial/lot by selecting .

5. Select **Clock On**.

- The selected serials/lots are clocked on. In the **Queue** page, the number of serials/lots that are clocked on is updated in the **OFF/ON** column, in the **ON** button.
- All the serials/lots that you have clocked on are assigned the selected labor type.
- The assigned labor type is displayed with the serial/lot name in the clocked-on serials/lots list.

[Access documents related to the operation.](#)

Clocking Off a Serial or Lot

About Clocking Off Serials/Lots for an Operation

If you want to stop working on an operation for some time, you can clock off the serials/lots, and then clock on again when you resume working on them. It provides visibility to the supervisor on the progress of work for the operation. The timer in the page displaying operation details stops tracking the time when you clock off an operation and resumes tracking only when you clock on the operation again.

The following conditions apply when you clock off serials/lots:

- You can clock off only the serials/lots that you have clocked on.
- You can clock off multiple serials/lots for an operation at the same time.
- When you complete an operation, the serials/lots are clocked off automatically.
- You can clock on or clock off serials/lots only if the operation requires clocking on (as defined in Route Editor or the ERP system).


Clock Off a Serial/Lot for an Operation

Ensure that you have the permission to perform this task. For more information, refer to [Security](#).

1. In the **Work Queue** page, in the row containing the operation on which you want to stop working, select **OFF**.

Note: The **OFF** button is enabled only if you have clocked on at least one serial/lot in the operation.

The **Select Serial number(s) to clock off** window appears, displaying a list of serials/lots in the operation that you have clocked on.



2. If you want to clock off all the available serials/lots, select the check box in the heading column of the table.
3. If you want to clock off selected serials/lots, perform one of the following steps:
 - Select the check box for each serial/lot that you want to clock off.
 - Search for a serial/lot by entering the value in the **Search in available serial numbers** box, and then select the check boxes from the filtered list that appears.
 - Scan the bar code of the serial/lot by selecting .
4. Select **Clock off**.
 - The selected serials/lots are clocked off. In the **Work Queue** page, the number of serials/lots that are clocked on is updated in the **OFF/ON** column.
 - When you clock off all the serials/lots of a work order that previously had all the serials/lots clocked-on, the labor type of the work order displayed in the header is changed to the default value.

Adding a Comment

About Adding a Comment

While working on a serial/lot, you can add a comment on the serial/lot or the work order to provide any additional information.


You can view the comment added to a serial/lot regardless of the operation you are performing on the serial/lot. For example, if you have added a comment to a serial/lot while performing the first operation, the comment also appears when you access the serial/lot for any subsequent operations. Similarly, when you add a comment to a work order, it appears when you access any of the serials/lots for the work order. For this reason, when you add a comment, it is a good practice to provide the details of the operation for which the comment is applicable.




If a work order or serial/lot contains comments, when you access an operation, the comments button () appears with a blue dot (). If you select that button, the number of comments for the work order or serial/lot appears on the **Work Order** or **Serial/lot** tabs, respectively.

You can add an image, video, or an attachment to a comment. The following types of attachments are supported:



- Microsoft Word (DOC/DOCX)
- Microsoft Power Point Presentation (PPT/PPTX)
- Microsoft Excel (XLS/XLSX)
- text document
- PDF

Add a Comment

1. Access the operation associated with the serial or lot or the work order for which you want to add a comment.
2. In the heading, select .
A window appears, displaying a list of comments for the work order. These comments are arranged in the reverse order of creation (that is, the latest comment appears first).

3. Depending on whether you want to add a comment to the work order or serial/lot, select the appropriate tab.
4. In the **ADD COMMENT** box, enter the comment.
Tip: If needed, you can apply formatting, change the alignment of the comment, or insert a link in the comment.
5. If you want to insert a document:
 - a) Ensure that the document that you want to insert is available on the Plant Applications server.
 - b) Select  .
The **Upload Document** window appears.
 - c) In the **FILE NAME/URL** box, enter the path of the image.
 - d) Select **Upload**.
6. If you want to insert an image:
 - a) Select  .
A blank window appears. If a message appears, asking you to allow access to the camera, select **Allow**.
 - b) Capture the image.
7. **Optional:** If you want to insert a video:
 - a) Select  .
A blank window appears. If a message appears, asking you to allow access to the camera, select **Allow**.
 - b) Capture the video.
8. Select **Add**.

The comment has been added.

Tip: To modify a comment, select  and to delete a comment that you have added, select  . If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

The following conditions apply when you modify or delete a comment:

- You can modify or delete comments added by others only if you have the permission to moderate comments. Otherwise, you can modify or delete only the comments that you have added.
- After you modify a comment and save your changes, you cannot view the original text.
- After you delete a comment, you cannot restore it.

Consuming a Lot

About BOM Items

The bill of materials (BOM) is a list of formulation items required to manufacture a product. Consuming a BOM item represents the process of utilizing a BOM item within an operation. The BOM items required to complete an operation are defined in Route Editor or in the ERP system, along with details on whether consuming a BOM item is mandatory to complete the operation.

Using Unit Operations, you can perform the following tasks:

- Access a list of BOM items associated with an operation.
- View the total number of mandatory BOM items to be consumed for the serials/lots that you have clocked on for an operation. This number appears on the **BOM** tab when you access an operation.

- Specify the quantity of BOM items that have been consumed for each serial/lot. If an operation requires clocking on (as defined in Route Editor or the ERP system), you can complete an operation only if all the mandatory BOM items for each serial/lot in the operation are consumed. If, however, the operation does not require clocking on, you can complete the operation even if the mandatory BOM items are not consumed.

The color of a row in the list of BOM items indicates the requirement type and the consumption status of a BOM item, as described in the following table.

Color	Description
Pink	Indicates that the BOM item is mandatory to complete an operation. To complete an operation, you must consume all the mandatory BOM items in the operation. The BOM section displays the quantity of mandatory BOM parts required to complete an operation when the following conditions are true: <ul style="list-style-type: none"> The required BOM items are not consumed for an operation. The quantity of BOM items consumed is less than the required quantity of the BOM items.
White	Indicates that the BOM item is not mandatory to complete an operation (that is, BOM items are supplementary for an operation).
Blue	Indicates that consuming the BOM item is mandatory and the BOM item is consumed while executing an operation during production. The row containing the BOM item turns blue when the consumed quantity of the BOM item is greater than or equal to the required quantity of the BOM items for that operation.

Access BOM Items

An operation contains a list of BOM items necessary to perform the operation. As an operator, you can access the **BOM** section to specify the consumption of the BOM items for a product.

- Select the operation whose BOM items you want to access.
- Select **BOM**.

The **BOM** section appears, displaying the BOM items associated with the selected operation.

The number of the BOM tab indicates the total number of mandatory BOM items that are yet to be consumed to complete the operation on the serial/lot.

In Unit Operations, the number of the **BOM** tab indicates the total number of mandatory BOM items that are yet to be consumed to complete the operation on the serial/lot. In Work Queue, the number on the **BOM** tab indicates the total number of mandatory BOM items that are yet to be consumed to complete the operation on all the serials/lots that you have clocked on for the operation. The following table provides information on each column in the table.


Column	Description
ORDER	The recommended order of consumption of the BOM item in an operation.
PART#	The product code of the BOM item.
DESCRIPTION	The description of the BOM item.
REQ QTY	The planned quantity of the BOM items required for the completion of the serial/lot for the operation.
CONSUMED QTY	The actual quantity of the BOM items consumed during the production.


Column	Description
UOM	The unit of measure (UOM) of the BOM item.
SERIAL/LOT#	The serial/lot of the raw material that was consumed.

- In the **BOM** section, select an item.
The page containing the item details and consumption history appears.

Specify Consumption of BOM Items for an Operation

If clocking on is required for the operation, [click on the serials/lots](#) for which you want to specify BOM consumption.

- Access the operation for which you want to specify the consumption of BOM items.
The page for the operation appears, displaying the **Documents** section. On the **BOM** tab, a number appears, which indicates the total number of mandatory BOM items to be consumed for all the serials/lots that you have clocked on for the operation.
- Select **BOM**.
A list of serials/lots appears.
- Select the serial/lot for which you want to specify the consumption of BOM items.
A list of BOM items for the selected serial/lot appears in the workspace.
- Select the BOM item whose consumption you want to specify.
A window appears, providing information on the required quantity of the BOM item, whether consuming the BOM item is mandatory to complete the operation, and the quantity that has been already consumed for the serial/lot.
- In the **SERIAL/LOT#** box, enter the serial/lot of the BOM item that you want to consume in the operation. Alternatively, to search for a serial/lot by using a barcode, select , and then scan for the barcode of the serial/lot associated with the BOM item. Only the barcodes of standards Code 39 and Code 128 are supported.

Note: The **SERIAL/LOT#** box and the  button are available only when the operation associated with the BOM item is clocked on. Else, you can access only the consumed history for that BOM item. The search result of the **SERIAL/LOT#** box is not case-sensitive.


The Available: *<quantity_of_parts>* message displays the quantity of BOM items available in the lot for consumption. If the required quantity of the BOM items specified in the **REQUIRED QTY** box is less than or equal to the quantity available in the lot, the Available: *<quantity_of_parts>* message appears in grey, else the message appears in red. In the **REQUIRED QTY** box, if you enter a serial/lot number of a lot that is unavailable in the Plant Applications database or enter a value more than the available quantity in the lot, a message appears, as described in the following table.

Informational Message Name	Message Condition	Corrective Actions
Available: <i><quantity_of_parts></i>	The available quantity in the lot is less than the required quantity specified in the REQUIRED QTY box.	Perform one of the following tasks: <ul style="list-style-type: none"> Consume the available quantity of the BOM item from the existing lot, and then consume the remaining quantity from another lot. Search for another lot that contains the total required quantity of the BOM item, and then consume the BOM item.
Serial/Lot Not Found	The lot number is invalid.	Ensure that the lot is available in the database. You can create a lot on a machine, and then consume the BOM items from the lot.

Informational Message Name	Message Condition	Corrective Actions
This serial/lot is currently not available. Production status = consumed, Current quantity = <value>.	The lot is not available in the database for consumption.	Search for another lot that contains the BOM items, and then consume the BOM item.
Lot identifier is found but not available for consumption	The selected lot does not contain the BOM items to consume.	Search for another lot that contains BOM items, and then consume the BOM item.
Serial/lot does not match the material being consumed	The BOM item material differs from the material in the lot being consumed.	Ensure that the material in the BOM item and lot are identical.
Duplicate record found. Unable to consume.	More than one record or duplicate records are available for the same lot in the production unit. You cannot consume a BOM item from a lot with duplicate records in an operation.	Ensure that there are no duplicate records in the selected lot.
Unit of measure of the serial/lot does not match the unit of measure for the required quantity.	The unit of measure (UOM) of the BOM item and the lot are different.	Ensure that the UOM of the BOM item and the lot are the same.

6. In the **QTY TO CONSUME** box, enter the quantity of consumption of the BOM item.
 - If each BOM item has a separate ID, enter the ID of each BOM item in the **SERIAL/LOT#** box, and then enter 1 in the **QTY TO CONSUME** box. For example, suppose you have been assigned the bicycle assembling operation. For the wheels BOM item, if each wheel has a separate ID, you must enter the IDs of the two wheels used in the bicycle. In this case, in the **QTY TO CONSUME** box, enter the value 1 for each wheel.
 - If the BOM items have a combined lot number, enter the lot number, and then enter the number of BOM items consumed in the **QTY TO CONSUME** box. For example, suppose you have been assigned the bicycle assembling operation. For the wheels BOM item, if both the wheels belong to a lot, enter the lot ID of the wheels, and then enter 2 in the **QTY TO CONSUME** box.

Note: If the lot number that you have entered does not exist in Plant Applications, a window appears, asking you whether you want to create the lot number. If that happens, enter the quantity to create and consume, and then select **Yes**.

7. Select **Consume**.
An entry for the consumption of the material is added to the table in the **Consumed History** section. If you consume more than one lot for an operation, the number of entries in the **Consumed History** section depends on the number of lots that are consumed. After an entry is created in the **Consumed History** section, you cannot cancel the consumption of the BOM item. If there are any issues in the **Consumed History** section, contact your administrator.
8. Repeat steps 3 through 7 for each serial/lot on which you have performed the operation.
9. **Optional:** Select the <BOM item number> links in the page displaying BOM item details to navigate to the previous and next BOM items in a sequential order of the BOM items.
10. **Optional:** In the **JUMP TO PART NUMBER** box, specify the BOM item number that you want to locate and then press Enter. You must enter the complete BOM item number in the search box. Alternatively, to search for a BOM item by using a barcode, select , and then scan for the barcode of the BOM item. Only the barcodes of standards Code 39 and Code 128 are supported.

The page containing the selected BOM item details appears. The BOM items are consumed in the selected operation, and the quantity of the BOM items consumed appears in the **CONSUMED QTY** box in the **BOM** section.

[Provide data for quality variables](#) for each serial/lot in the operation.

Completing an Operation

About Completing an Operation

Completing an operation involves performing the operation on all the serials/lots as specified in the work order.

To complete an operation that requires clocking on, you must perform the following tasks:

1. [Clock on each serial/lot](#) associated on which you want to perform the operation.
2. Perform the operation on each serial/lot that you have clocked on.
3. [Specify the consumption of BOM items](#) for each serial/lot on which you have performed the operation. Only if all the mandatory BOM items have been consumed for all the serials/lots in the work order, you can mark the operation complete.
4. [Provide data for quality variables](#) that have been defined for the operation in Plant Applications Administrator. Only if values for all the mandatory quality variables have been specified for all the serials/lots in the work order, you can mark the operation complete.
5. If needed, [create a non-conformance](#) for any defective serials/lots.
6. If needed, [provide a comment](#) on the serials/lots or work order.
7. [Provide the completed quantity](#) for each serial/lot on which you have performed the operation.

To complete an operation that does not require clocking on, you can [mark the operation complete](#) directly.

Note: When an operation is clocked on by multiple operators and an operator completes the operation, the operation is marked complete for all the operators.

After all the operations in a work order are completed on all the serials/lots, the work order is marked complete. You can view the completion status of the work order in [Work Order Manager](#).

Provide Data for Quality Variables

Quality variables include details about the data that you must collect while performing an operation. These variables are defined in Plant Applications Administrator. The values that you provide for these variables help verify that the parameters that are critical to the quality and manufacturing processes are within the acceptable limits. You can use this data to review the performance of a production line and production unit and compare the quality of the products produced in each unit with projections for an operation.

For example, suppose you have been assigned the testing operation in a motor manufacturing unit. Quality variables can include the torque and rpm of the motor shaft. When you test each motor, you must enter the torque and rpm values for the corresponding serial number. A quality supervisor can then verify that the torque and rpm fall within the acceptable range.



For an operation that requires clocking on, you can mark the operation complete only after you provide data for all the mandatory quality variables. For an operation that does not require clocking on, however, you can mark the operation complete even if you have not provided data for the mandatory quality variables.

If the operation required clocking on, [clock on the serials/lots](#) for which you want to provide data for quality variables.


1. Select the operation for which you want to provide data for the quality variables.
2. Select **Quality**.
A list of serials/lots in the operation appear in the left section.

3. Select the serial/lot whose data you want to provide.
A list of quality variables defined for the operation appear in the workspace.

Tip:

- By default, all the quality variables appear. If you want to access only mandatory variables, select **Mandatory Variables** in the drop-down list box.
- If you want to view the lowest, highest, lower quartile, upper quartile, and median values for each variable, select . If you want to view the same values plotted on a chart, select .

4. For each variable, enter data in the **SPEC** column.

Tip: If you want to plot the value on a chart, select .

If acceptable limits have been specified for the variable, the box in the **SPEC** column displays a color, indicating whether the value that you have entered is within the acceptable range.

5. Repeat steps 3 and 4 for each serial/lot in the operation.

The data for the quality variables is saved.

If a serial/lot contains a defect, [create a non-conformance](#). Otherwise, [mark the operation complete for the serial/lot](#).

Provide the Completed Quantity for an Operation


After you perform an operation on a lot, you can provide the quantity of the lot on which you have performed the operation.


You can provide the completed quantity only if the following conditions are satisfied:

- The operation requires clocking on (as defined in Route Editor or the ERP system).
- You have specified the BOM consumption for all the mandatory BOM items for the quantity of lot that you want to mark complete. For example, in a lot of eight items, if you have performed the operation on two items, you must specify the BOM consumption for the two items. The quantity of the consumed BOM items must be greater than or equal to the required quantity to perform the operation.
- You have provided data for all the mandatory quality variables for all the lots that you want to mark complete.
- The lots are clocked on by you.

Perform the following steps for all the lots for which you want to provide the completed quantity:

- [Specify the consumption of all the mandatory BOM items](#).
- [Provide data for all the mandatory quality variables](#).

1. In the row containing the operation for which you want to provide the completed quantity, select .

Note: The  button appears only if there is at least one lot that for which you can provide the completed quantity.

The **Select Serial/Lot number(s) to Record Quantity** window appears, displaying a list of lots for which you can provide the completed quantity. In the **COMPLETED** column, the quantity of the completed lots (out of the planned quantity) appears.

2. For each lot for which you want to provide the completed quantity, select the check box, and then enter the quantity in the **REC QUANTITY** column. The quantity that you enter must be less than or equal to the available quantity.

Tip:

- If you want to provide the completed quantity for all the lots in the list, select the check box in the heading row of the table.
 - You can search for a lot by entering a value in the **Search in clocked on serial numbers** box, and then selecting the check boxes from the filtered list that appears.
3. Select **Record**.

Tip: If you also want to clock off the selected lots, select **Rec + Clock Off**.


Note: The **Record** and **Rec + Clock Off** buttons are enabled only if you select the check box for at least one lot.


The value in the **COMPLETED** column for the operation is updated. If the completed quantity of a lot is equal to the planned quantity, the operation is marked complete for the lot.

Mark an Operation Complete

For an operation that requires clocking on, if the completed quantity of a serial/lot is equal to the planned quantity for the work order, the operation is automatically marked complete for the serial/lot. If, however, the operation does not require clocking on, and if you have performed the operation on the serial/lot, you must mark the operation complete. It is then removed from the list in the **Work Queue** page. After all the operations are marked complete for all the serials/lots in a work order, the work order is marked complete in Plant Applications. You can view the completion status of the work order in [Work Order Manager](#).

If the operation that you want to mark complete requires clocking on, [provide the completed quantity of the serial/lot for the operation](#).


1. In the row containing the operation that you want to mark complete, select .

Note: The  button appears only if the completed quantity of the serial/lot equals the planned quantity for the work order or if the operation does not require clocking on.

The **Select Serial/Lot number(s) to Complete** window appears, displaying a list of serials/lots in the work order that are clocked on by you for the operation. If, however, the operation does not require clocking on, a list of all the serials/lots in the work order appears.

2. Select the check boxes corresponding to the serials/lots for which you want to mark the operation complete, and then select **Complete**.

Tip:

- If you want to mark the operation complete for all the serials/lots in the list, select the check box in the heading row of the table.
- You can search for a serial/lot by entering a value in the search box or by scanning for the bar code using the  icon, and then selecting the check boxes from the filtered list that appears.

Note: By default, the **EQUIPMENT** box is populated with the piece of equipment assigned for the operation. If required, you can select a different piece of equipment.

If the operation is marked complete for all the serials/lots in the work order, the operation no longer appears in the **Queue** page. It appears in the **By Work Order** page until all the operations in the work order are complete.

Creating a Non-Conformance

About Creating a Non-Conformance

A non-conformance occurs when a serial/lot contains a defect (that is, it does not meet the specification or requirement of a process, system, internal policies and procedures, customer requirements, or regulatory body). Each non-conformance can be related to multiple defects.

You can create a non-conformance for the following types of products:

- Serialized: You can create a non-conformance for multiple serialized products at the same time. Defects that are created as part of a non-conformance appear in [Non Conformance](#), where they can be disposed.
- Non-serialized: You can create a non-conformance only for a single lot at a time. If only some quantity of the lot is defective, you can specify the quantity of the defective pieces. The lot is then split into sublots. This will allow you to continue working on the non-defective quantity, while the defective quantity is disposed using [Non Conformance](#).

The following conditions apply when you create a non-conformance:

- You can create a non-conformance on a serial/lot only if you are clocked on to the serial/lot.
- You can create a non-conformance only on the available quantity of a lot (that is, the quantity for which the operation is not yet complete).
- The defective serial/lot and the operation are changed to the On Hold status. Depending on the configuration, you are clocked off the serial/lot and the operation.
- You can complete the operation on the serial/lot only after the serial/lot is disposed in Non Conformance.

Create a Non-Conformance

1. Access the operation during which you want to create a non-conformance.
2. In the left pane, select the serial/lot for which you want to create a non-conformance.
3. Select **NCR**.
A list of non-conformances created for the serial/lot selected in the left pane appears.
4. In the workspace, select **Create Non Conformance**.

Note: The **Create Non Conformance** button is enabled only if you select a serial/lot that you have currently clocked on.

The **Create Non Conformance** window appears.

5. Provide values as specified in the following table.

Box or Section	Description
SUMMARY	Enter a summary for the non-conformance. A value is required.
AFFECTED QUANTITY	<ul style="list-style-type: none">• For a serialized product, this box is disabled and populated with the value 1.• For a non-serialized product, enter the quantity of the lot that contains the defect. A value is required. <p>Note: The value in this box must be less than or equal to the quantity of the lot for which the operation is not complete.</p>

Box or Section	Description
NON CONFORMANCE TYPE	This box is disabled and populated with the value Manufacturing Defect .
DEFECT TYPE	Select the type of the defect associated with the non-conformance. A value is required.
DEFECT REASON	Select Select Reason , specify the hierarchical set of reasons for the non-conformance, and then select Apply . Note: The reasons that appear in the Select Reasons window are pre-defined in Plant Applications Administrator, and appear based on the value in the NON CONFORMANCE TYPE box. If you want to modify the list of reasons, contact your administrator.
FULL DESCRIPTION	Enter the full description of the non-conformance.

6. Select **Submit**.

A non-conformance is created for the serial or the defective pieces of the lot, and appears in [Non Conformance](#).

- For a serialized product, depending on the configuration, you are clocked off the serial and the operation. You can complete the operation on the serial only after it is [disposed](#).
- For a non-serialized product, if the affected quantity is less than the available quantity of the lot, the lot is split into two sublots:
 - One lot contains the defective pieces. This lot is changed to the On Hold status, and the non-conformance for this lot appears in Non Conformance. This lot is numbered in the following format: <original lot number>-2. You can complete the operation on this lot only after it is disposed.
 - The other lot contains the remaining pieces. This lot is in the In Progress status. It is numbered in the following format: <original lot number>-1. If none of the pieces in this lot is defective, you can continue working on this lot. If, however, some of the pieces in this lot are defective, you can split this lot further by creating a non-conformance again.
 - The original lot is changed to the Cancelled status, and no longer appears in Unit Operations. Values of the quality variables, BOM consumption, and the completed quantity of this lot are copied to the subplot that contains the non-defective pieces.

Chapter 7

Time Booking

Topics:

- [Time Booking](#)

Time Booking

About the Time Booking Application

As an operator or supervisor, you can view your labor records (timesheet). You can also add missing time records, or modify the applied time of a previously submitted record. When an operator performs a clock off, the time difference between the clock on and clock off is the default calculated applied labor time for that labor record. In the event of any discrepancy, you can manually adjust the applied labor time.

You can use the Time Booking application in the following scenarios:

- an operator has made a mistake related to vouchering a transaction (for example, clocked off 10 minutes late)
- an operator forgot to clock off at the end of a shift
- an operator did not clock on at all for the day
- the vouchering or punchout system was not working
- the MES system was down

Users with an operator role have access to view and edit records that were transacted by them. Users with a supervisor role can view and edit records for other users, in addition to managing their own records.

Important: A submitted labor record cannot be deleted, regardless of the role of the submitter.

Operators and supervisors can adjust the applied labor time for three types of operation statuses:

- ready
- in-progress
- completed

Operators and supervisors can perform the following tasks in the Time Booking application:

1. View the labor records by a time period.
2. Create a labor record. The following labor types are available:
 - Direct
 - Rework
 - Setup
 - Indirect
3. Modify the applied time for a labor record.

Access a Labor Record

In the Time Booking page, depending on the time period by which you want to view the labor records, in the **View By** box, select one of the following options:

- Today: Labor records created from 12:00 AM to 11:59 PM today.
- Last 7 days: Labor records processed starting at 12:00 AM seven days ago to 11:59 PM of today.
- Custom: Labor records for the defined date and time range.

Apart from the labor records, a snapshot of the applied labor time is displayed in the following manner:

- Total applied time: Aggregate of the applied time of the labor records that are displayed for the selected time period.

Note: If the applied time is more than 24 hours, the total applied time is displayed in number of days.

- Total filtered time: Aggregate of the applied time of the labor records that are displayed for the selected time period when a filter is applied to the table.

Add Applied Time for a Work Order

To add the applied time for a work order, you must create a labor record.

Note: Once a labor record is created and submitted, an operator or a supervisor cannot delete it.

1. In the Time Booking page, in the **View By** box, select a time period to view the labor records.
2. Select **Add New Record** and select the type of labor record you want to add.
A blank row with the selected labor type is displayed.
3. Provide values as specified in the following table:

Column	Description
Work Order	Enter the work order name of the selected labor type for which you want to add the applied labor time.
Serial/Lot#	Enter the serial or lot number associated with the work order.
Operation	Enter the type of operation for which you want to add the applied labor time.
Machine	Enter the name of the machine for which you want to add the applied labor time.
Applied Time	Enter the time range, in HH:MM format, that you want to add as applied time for this labor record. Alternatively, you can also select the <insert clock icon> and select the time range from the list

Note:

- If you have selected a labor of type Direct, the information that is populated in the **Work Order**, **Serial/Lot**, **Operation**, and **Machine** columns are of the same type.
 - Only work orders that are ready, in-progress, and completed are populated in the respective fields.
 - If you add an indirect labor record, then the fields **Work Order**, **Serial/Lot**, **Operation**, and **Machine** are not mandatory. However, you must select the reason.
4. To create more labor records, repeat steps 2 through 4.

Tip:

- To cancel the current record, select **X**.
 - To cancel all the records that you are currently creating, select **Cancel**.
5. Select **Submit**.

The labor records are added to the table.

Modify Applied Time for a Labor Record

1. In the Time Booking page, select the **View By** list, and select a time period to view the labor records.
2. Locate the labor record that you want to modify.
You can either use the filters or the Search option to locate the record.
3. Modify the value in the **Applied Time** column.
4. Select **Submit**.

Note:

- You cannot modify any other data in the record.
- You cannot delete a labor record.

The applied time for the labor record is modified.

Switch to a Different User

If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

1. In the Time Booking page, select **Change User** located below your username.
The **Change User** window appears and displays all the usernames configured in the User Account Authentication (UAA) system.

Note: If you do not have the permission to switch to a different user, **Change User** is not available.

2. Enter the username of the user you want to switch to.
A list of usernames that matches your entry appears.
3. Select the username of the user you want to switch to, and select **Change**.
The records of the user you switched to are displayed.

Chapter 8

Property Definition

Topics:

- [Overview](#)
- [Managing Property Categories](#)
- [Managing Property Groups](#)
- [Managing Property Definitions](#)

Overview

About the Property Definition Application

You can access the Property Definition application to define properties that are tailored to the requirements of your business. The data acquired from these properties can be further processed and used for different purposes in the respective applications. For example, you can define properties to capture additional business data related to ERP inbound messages.

Using this application, you can:

- Access the existing property definitions.
- Create, modify, or delete a property category.
- Create, modify, or delete a property group for a selected category.
- Create, modify, or delete a property definition.
- Link properties to a group.
- Filter property definitions by category and group.

About Property Definitions

Properties enable you to capture the business data that can be used for further analysis. Each property is associated with a group, and, in turn, each group is mapped to a category.

A property definition contains the following components:

- **Property Category:** A property category is a parent object that denotes the area of application to which a property group belongs. You can use it to organize the property groups and definitions associated with the application.
- **Property Group:** A property group is a collection of properties. You can use it to group fields that are commonly used so that the individual fields are automatically added in the configured applications.
- **Property Definition:** A property definition includes the alias name, data type, default value and other information of the property.

Default Categories, Groups and Properties

The following table includes the default categories, groups and properties defined in the ERP and Route Editor applications:

Category	Group	Property
ERP App	Material Import	unitofmeasure
ERP App	MaterialLot Import	<ul style="list-style-type: none">• Receive Line• Receiver Status• Receiver Unit• Inventory Line
Route App	WorkOrder Import	No default properties

Note: Do not delete the aforementioned Categories, Groups and Properties that appear in the Property Definition by default.

The above properties can be used in the respective applications to store, process, and analyze data.


Example: The value of the unitofmeasure property is set by the ERP import for materials.

You can also create more property definitions in the aforementioned groups as required.

Example: When you import a material, if you require more information on the material, you can add more property definitions in the Material Import group to capture and utilize that information. Refer to [Create a Property Definition](#) on page 134.

Managing Property Categories



Create a Property Category

1. Select .
The **Property Definition** page appears, displaying a list of properties available in Plant Applications Web Client.
2. From the **CATEGORY** drop-down list box, select **Create New**.
The **Create Property Category** page appears.
3. Enter a category name in the **CATEGORY NAME** text box and then select **Create**.

Note: When you create a category for the Route Editor application, the category name should include the string **Route**. A category which does not include the string **Route** in its name cannot be used in the application.

The newly created category is added to the **CATEGORY** list.

Modify a Property Category



1. Select .
The **Property Definition** page appears, displaying a list of properties available in Plant Applications Web Client.
2. Select the **CATEGORY** drop-down list box.
The list of categories is displayed.
3. Select  in the row containing the category you want to modify.
The **Update Property Category** window appears.
4. Modify the category name in the **CATEGORY NAME** text box.
5. Select **Update**.

The category name is updated.

Delete a Property Category

[Delete all the property groups](#) that are included in the property category you want to delete.

Important: You must not delete the [default groups](#) that appear in the application such as Material Import, MaterialLot Import, and WorkOrder Import. If you delete any default property group, the corresponding application integration will stop working.

1. Select .
The **Property Definition** page appears, displaying a list of properties available in the Plant Applications Web Client.
2. Select the **CATEGORY** drop-down list box.
The list of previously created property categories appear.
3. Select  in the row containing the category you want to delete.
The **Delete Property Category?** window appears.

4. Select **Delete**.

The property category is deleted.

Managing Property Groups

Create a Property Group

For an ERP application, you should use only the default groups available in the Property Definition application. However, you can create new groups for the Route Editor application. Create groups only in the category that includes the string **Route** in its name. You can add these property groups to a route or an operation in the Route Editor application. For more information, refer to [Assign a Property Group](#) on page 89.

1. Select .

The **Property Definition** page appears, displaying a list of properties available in the Plant Applications Web Client.

2. From the **CATEGORY** drop-down list box, select a required category for which you want to associate this group.

Note: You can skip to step 3, if you want to create a group and not map it to a category.

3. From the **GROUP** drop-down list box, select **Create New**.
The **Create Property Group** page appears.

4. Enter a group name in the **GROUP NAME** text box and then select **Create**. The newly created group is added to the **Group** list and is mapped to the selected category.

Note: To create multiple property groups and map it to a specific category, perform the following:

- a. From the **CATEGORY** drop-down list box, select a required category.
- b. Now, perform step 3 and 4 by not changing the category for creating each group. The newly created groups are mapped to the selected category respectively.

Modify a Property Group

You must not modify the [default groups](#) that appear in the application such as Material Import, MaterialLot Import, and WorkOrder Import. If you modify any default property group, the corresponding application integration will stop working.

1. Select .

The **Property Definition** page appears, displaying a list of properties available in the Plant Applications Web Client.

2. Select the property category of the property group you want to modify, from the **CATEGORY** drop-down list box.

The groups in the **GROUP** drop-down list are filtered based on the category selected.

3. Select the **GROUP** drop-down list box.

4. Select  in the row containing the group you want to modify.

Important: Do not modify the default property groups such as Material Import, MaterialLot Import, WorkOrder Import.

The **Update Property Group** window appears.


5. Update the group name in the **GROUP NAME** text box.

The group name is updated.

Delete a Property Group


All the property definitions included in the group should be deleted before deleting the property group.

Important: You must not delete the [default groups](#) that appear in the application such as Material Import, MaterialLot Import, and WorkOrder Import. If you delete any default property group, the corresponding application integration will stop working.

1. Select .
The Property Definition page appears, displaying a list of properties available in the Plant Applications Web Client.
2. Select the **GROUP** drop-down list box.

Note: Alternately, you can first select the property category to the which the group you want to delete belongs, from the **CATEGORY** drop-down list box, and then select the **GROUP** drop-down list box.

The list of groups appear.

3. Select  in the row containing the group you want to delete.
The **Delete Property Group?** window appears.
4. Select **Delete**.

The group is deleted.

Managing Property Definitions



About Creating a Property Definition

Property Definition enables you to create new properties for various applications and add the relevant data for the properties such as the alias name, data type, default value and so on. Each property is associated with a group, and, in turn, each group is mapped to a category.

Using the Property Definition application, in addition to creating a property, you can copy, modify, and delete a property, category, or group.

Create a Property Definition

- For an ERP application, you should create property definitions in only the default groups, Material Import, MaterialLot Import, and WorkOrder Import.
- For Route Editor, you should create property definitions in the groups that belong to the categories that include the word **Route** in their names.

1. Select .
The **Property Definition** page appears, displaying a list of properties available in the Plant Applications Web Client.
2. Select a category and an associated group for which you want to create a property definition from the **CATEGORY** and **GROUP** drop-down list boxes respectively.
3. Select .
A blank row appears.
4. Enter the values as specified in the following table.

Box	Description
PROPERTY NAME	Denotes the name for the property. You must enter a value that is unique to a group.
ALIAS NAME	Enter an alias for the property.
DATA TYPES	Select a data type for the property. Note: A data type defines the format in which the data is stored and displayed in the application.
DEFAULT VALUE	Enter a default value for the property based on the data type.
REQUIRED VALUE	Select this check box only if you want the property to be a required value.
PROPERTY GROUP	Displays the group name based on the selection in the GROUP drop-down list box. You cannot edit this field if you have already selected the group from the GROUP drop-down list box. Note: <ul style="list-style-type: none"> If you have selected a specific category from CATEGORY, you can select a group that is mapped to the selected category from this drop-down list box. If you have left CATEGORY and GROUP drop-down list boxes to defaults, this drop-down list box displays a list of groups defined in the Plant Applications database. You must select the group to which you want to assign the property.
UOM	This box contains a list of UOMs defined in the Plant Applications database. Select a unit of measurement (UOM) for the property.

5. Select **Save**.


A property definition is created. This property definition is integrated with the respective application.

Note: To modify the property definition details, select **Edit**. To create another property definition with the details of the current property definition, select **Copy**.

[Assign a property group](#) to a route in the Route Editor application, and then [provide values for the property definition](#).

Modify a Property Definition


You must not modify the [default property definitions](#) that appear in the application such as, Receive Line. If you modify any default property definition, the corresponding application integration will stop working.

1. Select . The **Property Definition** page appears, displaying a list of properties available in the Plant Applications Web Client.
2. Select a category and an associated group that includes the property definition you want to modify, from the **CATEGORY** and **GROUP** drop-down list boxes respectively. The property definitions are filtered based on the selected category and group.
3. Edit the details of the property definition. The following details are available for editing:
 - **DATATYPES**
 - **DEFAULT VALUE**
 - **REQUIRED VALUE**
 - **UOM**
4. Select **Save**.

The property definition is updated.

Delete a Property Definition


You must not delete the [default property definitions](#) that appear in the application. If you delete a default property definition, the corresponding ERP integration will stop working. You should install the definition using a GUID. For more information, refer to ERP Integration Guide.

1. Select .
The **Property Definition** page appears, displaying a list of properties available in the Plant Applications Web Client.
2. Select the property category from the **CATEGORY** drop-down list box, and then select the property group of the property definition from the **GROUP** drop-down list box.
The property definitions are filtered based on the selected category and group.
3. Select **Delete** in the **Actions** column in the row containing property definition you want to delete.
The **Delete Property?** window appears.
4. Select **Delete**.

The property definition is deleted.

Copy a Property Definition

You can copy a property definition when you want to create a new property definition but do not want to re-enter all the property definition values.

1. Select .
The **Property Definition** page appears, displaying a list of properties available in Plant Applications Web Client.
2. **Optional:** Select a category and an associated group that includes the property definition you want to copy, from the **CATEGORY** and **GROUP** drop-down list boxes respectively.
3. Select **Copy** in the **Actions** column in the row containing property definition you want to delete.
A copy of the property definition is created.
4. Edit the property definition details, as needed.

Box	Description
PROPERTY NAME	Denotes the name for the property. You must enter a value that is unique to a group.
ALIAS NAME	Enter an alias for the property.
DATA TYPES	Select a data type for the property. Note: A data type defines the format in which the data is stored and displayed in the application.
DEFAULT VALUE	Enter a default value for the property based on the data type.
REQUIRED VALUE	Select this check box only if you want the property to be a required value.

Box	Description
PROPERTY GROUP	<p>Displays the group name based on the selection in the GROUP drop-down list box. You cannot edit this field if you have already selected the group from the GROUP drop-down list box.</p> <p>Note:</p> <ul style="list-style-type: none"> • If you have selected a specific category from CATEGORY, you can select a group that is mapped to the selected category from this drop-down list box. • If you have left CATEGORY and GROUP drop-down list boxes to defaults, this drop-down list box displays a list of groups defined in the Plant Applications database. You must select the group to which you want to assign the property.
UOM	<p>This box contains a list of UOMs defined in the Plant Applications database. Select a unit of measurement (UOM) for the property.</p>

Note:

- You cannot have multiple property definitions with the same name in the same group. You can have multiple properties with same name in different groups.
- If a group was selected in the **Groups** drop-down list box at step 2, the value of **GROUP** column is non-editable. A copy of the property definition will be created in the same group and it is mandatory to change the property name.
- If a group was not selected in the **Groups** drop-down list box, the value of **GROUP** column is editable. You can select any group from the drop-down list of **GROUP** column.

5. Select **Save**.

The property definition is saved.

Chapter 9

Security

Topics:

- [Overview](#)
- [Managing Applications](#)
- [Managing Roles](#)
- [Managing Groups](#)
- [Managing Resources](#)
- [Managing Assignments](#)

Overview

About the Security Application

As an Administrator, you can use the Security application to provide permissions to group of users to access various Plant Applications modules. It also enables you to provide access to perform various tasks within the applications. You can provide department-level, line-level and unit-level access privileges to the users.

Terminology used in Security application:

- Applications: Various modules of Plant Applications such as, Work Order Manager.
- Resources: A resource is a unit, line, or a department. Example: Welding Department
- Groups: A group is a collection of people and sub-groups. You can create a group of users doing the same task on the same resource. Example: You can have a group of supervisors for each line. Example: Supervisors_LineA, Supervisors_LineB, Supervisors_LineC.
A group can also have multiple sub-groups: Example: You can create a group All_Supervisors and add Line A, B & C supervisors to that group.
- Role: A role contains a set of permissions required to perform various tasks. Example: Role1 may include permission to create a work order, update a work order and so on.
- Assignment: Enables you to assign a role and resources to groups. An assignment defines the tasks and the resources to which a group of users have access.

The following table describes the tasks that are now secure. A user needs permission to these tasks to be able to perform the tasks.

Application	Tasks	Lowest level of resource that could be added to an assignment
Unit Operations and Work Queue	<ul style="list-style-type: none"> • Execute work orders <ul style="list-style-type: none"> ◦ clock on ◦ clock off ◦ provide completed quantity for an operation ◦ specify a quality variable ◦ mark an operation as complete • Consume BOM • Create raw material lots 	<ul style="list-style-type: none"> • Unit
Work Order Manager	<ul style="list-style-type: none"> • Create a work order • Edit a work order plan <ul style="list-style-type: none"> ◦ change start/end dates ◦ update the priority • Edit the work order (change operations) • Change lot identifiers • Clock off another operator • Cancel a work order 	<ul style="list-style-type: none"> • Line
Unit Operations, Work Queue, and Work Order Manager	<ul style="list-style-type: none"> • Edit and delete comments of other users 	<ul style="list-style-type: none"> • Site

Application	Tasks	Lowest level of resource that could be added to an assignment
Time Booking	<ul style="list-style-type: none"> Edit and delete labor records of other users 	<ul style="list-style-type: none"> Site
ERP	<ul style="list-style-type: none"> Import the details related to Work Orders, Material Lots, and Outside Processing (OSP) from ERP to MES. To enable this, the user should have the permission to: <ul style="list-style-type: none"> Create a Work Order Edit a Work Order Execute a Work Order Cancel a Work Order Create Raw Material Lots 	<ul style="list-style-type: none"> Line

Note: When you create an assignment, if you add a resource that is at lower level than the lowest level required, the permissions will fail. Example: Suppose you want a user to have permission to create a work order, while creating an assignment, if you include only a unit level resource, the permission will fail, because work orders are created on lines and not on units.

Example 1: Ram and Ravi are operators. To provide them access to Non Conformance, perform the following steps:

1. Create a group such as Operators_1.
2. Add Ram and Ravi to Operators_1.
3. Add Operators_1 group to Non Conformance. Ram and Ravi can then access

Example 2: John and Stacy are supervisors. To give them access to edit work order plans on Line 1 in Work Order Manager, perform the following steps:

1. Create a role such as Supervision_1 and provide permission to edit work order plan.
2. Create a group such as Supervisors_Line1 and, add John and Stacy to the group.
3. Ensure that the Supervisors_Line1 group has been added to Work Order Manager.
4. Create an assignment to assign the role Supervision_1, the resource Line 1 to Supervisors_Line1. John and Stacy will then have the permission to edit work order plans on Line 1 in Work Order Manager.

Example 3: Carol and David are supervisors. To give them access to edit work orders on Line 2 in Work Order Manager, perform the following steps:

1. Create a role such as Supervision_2 and provide permission to edit a workorder.
2. Create a group such as Supervisors_Line2 and add Carol and David to the group.
3. Ensure that the Supervisors_Line2 group has been added to Work Order Manager.
4. Create an assignment to assign the role Supervision_2, the resource Line 2 to Supervisors_Line2. Carol and David will then have the permission to edit work orders on Line 2 in Work Order Manager.


Example 4: You can create an assignment to give permission to all the supervisors (John, Stacy, Carol and David) of the Site1 (includes Line 1 and Line 2) access to moderate comments on an application (example: Unit Operations).

1. Create a role Moderator and provide permission to edit and delete comments.
2. Create a group such as Supervisors_All and add Supervisors_1 and Supervisors_Line2 to the group.
3. Ensure that the Supervisors_All group has been added to the application for which you want to access comments (example: Unit Operations).
4. Create an assignment to assign the Moderator role, the Site1 resource to Supervisors_All group. All the supervisors included in Supervisors_All will now have access to edit or delete comments from within the application (example: Unit Operations).

Managing Applications

Add a Group to an Application

As an Administrator, you can add a group to an application to manage application access for multiple users conveniently and easily. When you add a group to an application, all the users associated with the group can access the application.


1. Select .
The **Applications** page appears, displaying a list of applications.
2. Select an application.
The **Application Details** page appears, displaying a list of groups associated with the selected application.
3. Select **Add Group**.
The **GROUP NAME** window appears.
4. In the **Enter a Group Name** box, specify a group name that you want to add to the application, and then select **Add**.

Tip: When you enter three or more characters, a list of group names that contain the characters appear. If the group does not exist, you can enter the full name of the group to create a new one in UAA. To create new users, refer to the Operations Hub documentation

The group is added to the application. The users associated with the group can now access the application.

Remove a Group from an Application

As an Administrator, you can remove a group from an application if you do not want the group of users to have access to that application.


1. Select **Applications**.
The list of applications appears.
2. Select the application from which you want to remove the group.
3. Select  in the row containing the group.
A message appears, asking you to confirm that you want to remove the group.
4. Select **Delete**.

The group is removed from the application.

Managing Roles

Create a Role

A role contains a set of permissions required to perform various tasks. Example: Role1 may include, the permission to create a work order, update a work order, and so on.

1. Select **Roles**.
The **Roles** page appears, displaying the list of roles.
2. Select .
The **Create Role** page appears.

- Provide values as specified in the following table

Field	Description
ROLE NAME	Provide a unique name for the role.
ROLE DESCRIPTION	Provide a description for the role.

- Select a role category from the **ROLE CATEGORY** list.
The relevant permissions appear in the **PERMISSIONS** workspace.

ROLE CATEGORY	PERMISSIONS (with description)
Work Order Execution	<p>Execute a work order The ability to execute a work order by clocking on, clocking off, confirming completed quantities, logging quality variables and completing execution.</p> <p>Consume raw material The ability to search for a raw material lot and consume quantity.</p> <p>Create raw material lots The ability to create raw material lots.</p> <p>Change lot identifiers The ability to modify the serial numbers or lot identifiers within a work order.</p>
Work Order Management	<p>Create a work order The ability to create a new work order.</p> <p>Change a work order plans The ability to change the planned start or end dates or the priority of a work order.</p> <p>Change lot identifiers The ability to modify the serial numbers or lot identifiers within a work order.</p> <p>Cancel a work order The ability to cancel a work order that has not been started.</p> <p>Edit a work order The ability to modify operation definitions within a work order.</p> <p>Clock off others The ability to clock off any user that is currently clocked on.</p>
Time Booking	<p>Moderate time booking records The ability to edit other users time booking records. This permission is only applicable at a site level resource.</p>
Comments	<p>Moderate comments The ability to edit and delete other users comments. This permission is only applicable at a site level resource.</p>


- Switch the toggles of the permissions you want to include in the role.
- Repeat steps 4 and 5 to include permissions of other role categories.

Note: The **Summary** page appears, displaying the list of selected role categories and permissions.

- Select **Create**.


The role is created.

Modify a Role

1. Select **Roles**.
The **Roles** page appears, displaying the list of roles previously added.
2. Select .
3. Modify the **ROLE DESCRIPTION**, as needed.
4. Select a role category from the **ROLE CATEGORY** list.
The relevant permissions appear on the **PERMISSIONS** workspace.
5. Switch the toggles of the permissions you want to include or remove from the role.
6. Repeat Step 4 and 5 to include or remove permissions of other role categories.
Tip: You can view the list of selected role categories and permissions in the **Summary** page.
7. Select **Update**.
The role is modified.

Delete a Role

You cannot delete a role which is part of an assignment.


1. Select **Roles**.
The **Roles** page appears displaying the list of roles previously added.
2. Select .
3. Select **Delete**.

The role is deleted.

Managing Groups


Create UAA Groups


As an administrator, you can create new UAA groups based on your requirement. Example: You can create a group for the users who perform the same task on the same resource. You can have a group of supervisors for each line such as, Supervisors_LineA, Supervisors_LineB, Supervisors_LineC.

1. Select **Groups**.
The **Groups** page appears, displaying the list of the previously created groups.
2. Select .
3. Enter a name for the group, in the **GROUP NAME** text box.
4. Enter a description for the group, in the **DESCRIPTION** text box.
5. Select **Add**.


The group is created and add to the list of groups on the **Groups** page.

Add or Delete Members from Groups

1. Select **Groups**.
The **Groups** page appears, displaying the list of groups.
2. In the row containing the group that you want to modify, select .



- The **Members** page appears, displaying the members added to the group.
3. To add members to the group, perform the following steps:
 - a) Select the users or groups you want to add to the group from the **Search for Users and add them to this group** drop-down list box.
Note: You can select multiple groups.
 - b) Select .


Note: A group can have sub-groups.

The members (users or groups) are added to the group. The count of the total members of the group is updated.
 4. To delete a member from the group, select  in the row containing the group you want to delete. The member is deleted from the group. The count of the total members of the group is updated.

Add or Delete Applications from Groups



When an application is added to the group, the users in the group can access the application.


1. Select **Groups**.
The **Groups** page appears displaying the list of groups.
2. Select  in the row containing the group you want to modify.
The **Members** page appears, displaying the members added to the group.
3. Select **Applications**.
4. To add applications to the group perform the following steps:
 - a) Select the applications you want to add to the group from the **Search for Applications to add them to this group** drop-down list box.
Note: You can select multiple applications.
 - b) Select .

The applications are added to the group. The count of total applications of the group is updated.
5. To delete applications from the group, select  in the row containing the group you want to delete. The applications are deleted from the group. The count of the total applications of the group is updated.

Add or Delete Assignments from Groups




When an assignment is added to the group, the users in the group can perform the roles included in the assignment, on the resources added to the assignment.

1. Select **Groups**.
The **Groups** page appears, displaying the list of groups.
2. Select  in the row containing the group to which you want to add an assignment.
The **Members** page appears displaying the members added to the group.
3. Select **Assignments**.
The list of assignments that are already added to the group appear.
4. To add assignments to the group perform the following steps:
 - a) Select the applications you want to add to the group from the **Search for Assignments to add them to this group** drop-down list box.
 - b) Select .

- The assignments are added to the group. The count of total assignments of the group is updated.
- To delete assignments from the group, select  in the row containing the assignment which you want to delete.
The assignment is deleted from the group. The count of the total assignments of the group is updated.

Managing Resources

Add a Resource to an Assignment

- Select **Resources**.
The **Resources** page appears, displaying list of departments.
- Select  in the row containing the department for which you want to view the lines.
The lines which are part of the selected department appear.
- Select  in the row containing the line for which you want to view the units.
The units which are part of the selected line appear.
- Select  to add the units, lines, or departments to an assignment.
Note: When you add a department to an assignment, all the lines and units included in the department are added to an assignment. When you add a line to the assignment, all the units included in the line are added to the assignment.

The resources are added to the assignment.




To create an assignment refer to [Create an Assignment](#) on page 145.

Managing Assignments



Create an Assignment

- Create a role.
- Add members to the groups.

An assignment must contain only one role. It can contain multiple resources and groups.

- Select **Create Assignments**.
The **Create Assignments** window appears.
- To add a role to the assignment, select **Roles** and then, in the row containing the role you want to add to the assignment, select .
The role is added to the assignment.
- To add groups to the assignment, select **Groups** and then, in the row containing the group you want to add to the assignment, select .
The group is added to the assignment.
- To add a resource to the assignment:
 - Select **Resources**.
The **Resources** page appears, displaying the list of departments.
 - Select  for the department for which you want to view the lines.

The lines that owned by the selected department appear.

- c) Select  for the line for which you want to view the units.
The units that are part of the selected line appear.
- d) Select  to add the unit, line, or department to the assignment.

Note: When you add a department to the assignment, all the lines and units included in the department are added to the assignment. When you add a line to the assignment, all the units included in the line are added to the assignment.

Tip: If you do not want to create an assignment after adding roles, groups or resources, select **Discard**.

The assignment is created..





Access an Assignment

1. Select **Assignments**.
The **Assignments** page appears.
2. Refer to each of an assignment as described in the following table:


Field	Description
CREATED BY	The user who created the assignment.
CREATED DATE	The date on which the assignment was created.
ASSIGNMENT NAME	Name of the assignment.
MODIFIED BY	The user who modified the assignment.
MODIFIED DATE	The date on which the assignment was modified.
ACTIONS	The actions you can perform on an assignment. Includes the following: <ul style="list-style-type: none">• Modify an Assignment on page 146• Delete an Assignment on page 147


Note: The above columns are hidden, by default. You can add them to the grid using the Column Chooser.

Modify an Assignment

1. Select **Assignments**.
The list of assignments appears on the page.
2. Select  for the assignment you want to edit.
The **Edit Assignment** window appears, displaying the previously selected role, groups, and units.
3. Select  in the box of the group, role or unit that you want to delete from the assignment.
4. To change the name of the assignment, modify the value in the **ASSIGNMENT NAME** box.
5. To add a role to the assignment, select **Roles**, and then, in the row containing the role that you want to add to the assignment, select .
6. To add a group to the assignment, select **Groups**, and then, in the row containing the role that you want to add to the assignment, select .
The group is added to the assignment.
7. To add a resource to the assignment,
 - a) Select **Resources**.
The **Resources** page appears, displaying the list of departments.

b) Select  in the rows containing the departments for which you want to view the lines.

c) Select  in the rows containing the lines for which you want to view the units.

d) Select  to add the units, lines, or departments to the assignment.


Note: When you add a department to the assignment, all the lines and units included in the department are added to the assignment. When you add a line to the assignment, all the units included in the line are added to the assignment.

8. Select **Save**.

The assignment is modified.

Delete an Assignment

1. Select **Assignments** in the header section.
The list of assignments appears on the page.

2. Select  in the row containing the assignment you want to delete.

The assignment is deleted from the list.

Chapter 10

Configuration

Topics:

- [Overview](#)
- [Standard Tab](#)
- [Custom Tab](#)
- [Custom Calls](#)

Overview

About Configuration

As a system integrator, you can use **Configuration** to perform the following tasks in the Unit Operations and Work Queue applications:

- Show or hide the tabs.
- Arrange the sequence of tabs.
- Integrate external applications and services.

The Configuration application contains the following pages:

- [Standard Tab](#)
- [Custom Tab](#)
- [Custom Calls](#)

Standard Tab

About Standard Tab

Standard Tab displays the list of standard and custom tabs that are associated with the Work Queue or Unit Operations application. You can use this page to show or hide the default and custom tabs in the Work Queue or Unit Operations application. You can also specify the order in which they appear in these applications.

In this page, you can perform the following tasks:

- [Show or hide](#) the application-specific default and custom tabs.
- Change the sequence of the application-specific tabs.

The screenshot shows the configuration interface for the Standard Tab. At the top, there are three tabs: 'Standard Tab' (selected), 'Custom Tab', and 'Custom Calls'. Below the tabs, there are two main sections: 'APPLICATIONS' and 'Work Queue'. The 'APPLICATIONS' section has a sub-section for 'Unit Operations'. The 'Work Queue' section is currently active. The main content area displays a list of tabs with their status (ON/OFF), names, descriptions, and reorder options (up/down arrows). The tabs listed are: Documents, Quality, NCR, BOM, Properties, History, and Custom-1. The 'Custom-1' tab is highlighted with a 'CustomTab' label.

ON/OFF	TAB NAME	REORDER
<input checked="" type="checkbox"/>	Documents A display to present operators with the documents to execute the operation	↑ ↓
<input checked="" type="checkbox"/>	Quality A display to enable operators to record quality variables when executing the operation	↑ ↓
<input checked="" type="checkbox"/>	NCR A display that enables operators to create non-conformances and read all logged non-conformances when executing the operation	↑ ↓
<input checked="" type="checkbox"/>	BOM A display to enable operators to consumer raw materials when executing the operation	↑ ↓
<input checked="" type="checkbox"/>	Properties A display that presents operator with all the properties configured for the operation.	↑ ↓
<input checked="" type="checkbox"/>	History A display the presents the history of all actions performed at the operation	↑ ↓
<input checked="" type="checkbox"/>	Custom-1 CustomTab Custom tab	↑ ↓

Show or Hide Tabs

You can configure to show or hide tabs in the Unit Operations and Work Queue applications.




1. Log in to the Plant Applications Web Client.

2. Select .

The **Configuration** page appears with **Standard Tab** selected by default. The **Standard Tab** page lists all the available default and custom tabs for a selected application.

3. In the **Standard Tab** page, from the **Application** section in the left pane, select an application for which you want to show or hide tabs.

The list of default and custom tabs appears. The following table provides information on each column in the table.

Column	Description
ON/OFF	You can switch the toggle to either show or hide the associated tab in the selected application.
TAB NAME	The name of the tab along with its description that appears in the selected application. For Custom tabs,  appears as a suffix to the tab name. You can create custom tabs using the Custom Tab page.
REORDER	Use  or  to shift the tab names up or down to arrange them in a sequence depending on how you want them to appear in the selected application.

4. Select **Update** to save your changes.

You can navigate to the corresponding application to verify if the changes you made are reflected.

Custom Tab

About Custom Tab

Custom tabs are useful to load external third-party web applications. Using Configuration, you can add and configure (the information that will be displayed) custom tabs to Work Queue and Unit Operations applications.

Note: The external application URL must be Cross-Origin Resource Sharing (CORS)-enabled so that specified input parameters or custom properties can be transferred from the integrated application to the external application.

In this page, you can perform the following tasks:

- [Create a new custom tab](#) and associate it to either Work Queue, Unit Operations, or both the applications.
- [Adding input parameters to custom tab URLs.](#)
- [Modify a custom tab.](#)
- [Delete a custom tab.](#)

Create a Custom Tab

1. In the **Configuration** page, select **Custom Tab**.
2. In the **CUSTOM TABS** section left pane, select **CREATE NEW**. The **Create New Custom Tab** section appears on the right pane.
3. Under **Tab Configuration**, provide values as specified in the following table.

Note: Name, Description, and URL are mandatory fields to create a custom tab.

Field	Description
DISPLAY NAME	Enter a unique name that does not exceed 100 characters.
DESCRIPTION	Enter a description that does not exceed 1000 characters.
URL	Enter the URL of the external web application. For example, <code>https://<hostname>:<portnumber>/workqueue-app/api/workqueue/operations?workOrderId={WorkOrderId}&segmentId={segmentid}</code> . Note: Only CORS-enabled URLs are valid.
Authentication	Switch the toggle to enable URL authentication and display the web application within the custom tab screen. Note: For Single Sign-On, only Operations Hub UAA authentication is supported. However, you can use an application URL that has a different authentication method. You may have to provide credentials at the login screen.

Field	Description
Enable Serial Left Nav	Select the check box to embed the out of the box serial/lot filter left navigation pane into the custom tab.
Input Parameters	<p>Select to add input parameters to the header. If you want to add parameters to the URL, you must add them using parenthesis {}.</p> <p>For example: <code>https://10.181.213.73:8445/workqueue-app/api/workqueue/operations?workOrderId={WorkOrderId}&segmentId={segmentid}</code></p>

- Under **Tab Association**, switch the toggle corresponding to the application for which you want to associate the custom tab.
- Select **Create** to create and save the custom tab configuration. You can now see the custom tab listed under the **Standard Tab** section. To enable the custom tab, select **Standard Tab** and then switch the toggle corresponding to the custom tab.

Note: For Custom tabs, appears as a suffix to the tab name.

- Optional:** Select **Reset** to reset the configured values.

Add Input Parameters to Custom Tab URLs

- In the **CUSTOM TAB** page, under **Tab Configuration**, select **Add another input parameter**. The **PARAMETER** box appears.
- Select an input parameter from the **PARAMETER** box.

Note: The input parameters are a list of all property definitions including definitions under the MaterialLot and Material property groups. However, the **Configuration** application does not support the property definitions within the MaterialLot Import and Material Import property groups even though they are listed.

- Enter the alias name in the **ALIAS** text box based on the selected input parameter.


Note: The alias name is the external application's input parameter. It is mapped to the internal application's input parameter to read values.

Modify a Custom Tab

- In the **Configuration** page, select **Custom Tab**.
- In the **CUSTOM TABS** page, in the left pane, select the custom tab that you want to modify. The **Custom Tab Details** section appears in the right pane.
- Under **Tab Configuration**, modify the custom tab details.
- To reset configured values, select **Cancel**, and set a new configuration.
- Under **Tab Association**, switch the toggle corresponding to the application that contains the custom tab.
- Select **Update**.

The changes made to the custom tab are saved.

Delete a Custom Tab

- In the **Configuration** page, select **Custom Tab**.
- In the **CUSTOM TABS** page, in the left pane, select  for the custom tab that you want to delete. A message appears, asking you to confirm that you want to delete the custom tab.

3. Select **Ok**.

The custom tab record is deleted.

Custom Calls

About Custom Calls

Custom Calls allow you to configure and integrate an external service as a PRE or a POST call with an action performed in the integrated application. This configuration is action-specific, not application-specific. For example, for any action (Clock on/off or Complete), if there is any PRE/POST call configuration created, the expected behaviour must be same in the **Unit Operations** and **Work Queue** applications.

In this page, you can perform the following tasks:

- Access a list of actions and their details. You can also modify the details of an action.
- Configure and integrate an external service.
- [Create a PRE call](#).
- [Create a POST call](#).
- [Delete a Custom Call](#) on page 154

Standard Tab Custom Tab Custom Calls

ACTIONS

ClockOff

ClockOn

Complete

RecordQuantity

Custom Call Details Cancel

PRE POST

URL

Enter URL here...

METHOD GET

Authentication

Input Parameters

Add another input parameter

Output Parameters

PARAMETER	ALIAS
Enter text...	boolean

Display Message Key

Enter text...

Create a PRE or POST Call

1. In the **Configuration** page, select **Custom Calls**.
2. In the **Actions** section, in the left pane, select a required action from the list of actions for which you want to create a PRE or POST call.
3. Under **Custom Call Details** section, select **PRE** or **POST** based on the requirement.
Provide values as specified in the following table.

Field	Description
URL	<p>Enter the external service URL.</p> <p>For example, <code>https://10.181.213.73:8445/workqueue-app/api/workqueue/operations?workOrderId={WorkOrderId}&segmentId={segmentid}</code>.</p> <p>Note: Only CORS-enabled URLs are valid.</p>
METHOD	Select the request type (GET or POST) that will be used to call the external service.
Authentication	<p>Switch the toggle to enable URL authentication.</p> <p>Note: Only Operations Hub UAA authentication is supported.</p>
Add another input parameter	Select to add as many input parameters you would like to pass to the external service URLs. The PARAMETER list along with the ALIAS text box appears.
PARAMETER	<p>Select an input parameter from the PARAMETER drop-down list box that you want to add to the URL.</p> <p>Note: The input parameters are a list of all property definitions including definitions under the MaterialLot and Material property groups. However, the Configuration application does not support the property definitions within the MaterialLot Import and Material Import property groups even though they are listed.</p>
ALIAS	<p>Enter the alias name in the ALIAS text box based on the selected input parameter.</p> <p>Note: The alias name is the external application's input parameter. It is mapped to the internal application's input parameter to read values.</p>

4. Under **Output Parameters**, provide values as specified in the following table.

Field	Description
PARAMETER	Enter the output parameter so that data can be transferred from an external service to the integrated application.
ALIAS	<p>Indicates the boolean value (true or false), which is a property returned by the API to determine if the request is successful. You cannot modify this field.</p> <p>If an output parameter is not supplied, standard API responses are assumed with 200 being True and all other codes as False .</p> <p>Note: Ensure that this field is a part of the response from the external API so that the integrated application can read and verify if the API call was executed successfully.</p>
Display Message Key	Enter a string output parameter, which is a property returned by the API that contains a custom user message. This is used only when the boolean parameter returns a false value.

5. Select **Update** to save your changes.

Delete a Custom Call

If you no longer want to work with a custom call, you can delete it.

1. In the **Configuration** page, select **Custom Calls**.

2. In the **Actions** section, in the left pane, select a required action from the list of actions for which you want to create a PRE or POST call.
3. Under **Custom Call Details** section, select **PRE** or **POST** based on the requirement.
4. In the **URL** box, delete the application URL.
5. Select **Update** to save your changes.

Chapter 11

Approval Cockpit

Topics:

- [Overview](#)
- [Configuring a Workflow](#)
- [Modifying a Workflow](#)
- [Executing a Workflow](#)

Overview

About the Approval Cockpit Application

You can use Approval Cockpit to create and execute approval workflows for action events raised in Plant Applications.

For example, to release a route in the Route Editor application, the event must pass through an approval workflow process in the Approval Cockpit application. The delegated approver groups in the workflow should provide their approval before releasing a route.

After you configure an approval workflow for an action event, the execution of the workflow becomes an automated process whenever the respective event is initiated in Plant Applications. The delegated groups log in to the Approval Cockpit application to access the tasks awaiting their response, and can track the status of the workflows in progress.

Important: To access the Approval Cockpit application, ensure that all the workflow users (members in group names) are a part of the UAA group and client with `mes.approval_cockpit.user` scope.

As an administrator, you must complete the following tasks to enable the workflow configuration and execution in Approval Cockpit:

1. In Plant Applications Administrator,
 - Verify that the action events for Approval Cockpit are available as production units under **Plant Model > APC Department > APC Line**.
 - Verify that each production unit also has a variable group to list variables related to the action events.

For more information on production units and variable groups, refer to the *Plant Applications Administrator Help*.

2. In Approval Cockpit,
 - [Configure a workflow for an action event](#).
 - [Modify the configured workflows](#).
3. In Plant Applications Administrator, for every workflow configuration:
 - Verify that the display sheets are available under **Client Management > Displays > APC Line**. Create display sheets with the naming convention: `ProductionUnitName_WorkflowLevel_WorkflowGroup`.

Tip: Display sheets for a typical two-level workflow can look like this:

```
Route Approval Form_Level 1_Approvers 1
```

```
Route Approval Form_Level 1_Approvers 2
```

```
Route Approval Form_Level 1_Monitoring
```

```
Route Approval Form_Level 2_Approvers 1
```

```
Route Approval Form_Level 2_Rejection
```

- Verify that the variables are linked to the display sheets. Modify the display sheets to set display options and variables.

For more information on autolog displays and variables, refer to the *Plant Applications Administrator Help*.

4. In Approval Cockpit, as a supervisor, you can:

- [Participate in the approval workflows.](#)

Configuring a Workflow

About Configuring a Workflow

A workflow involves a series of tasks that are set up to acquire approvals from responsible groups.

Workflows can be configured to be simple with only one level of approvals, or they can be complex with multi-level approval processes. Separate groups to handle rejections and escalations, and monitor overall process can be included in a workflow.

As an administrative user in Plant Applications, you can create and set up a workflow in the Approval Cockpit application with the following tasks:


- [Create and save a basic workflow.](#)
- [Add workflow levels.](#)
- [Add a monitoring group to the workflow.](#)
- [Add a rejection responding group to the workflow.](#)
- [Add an escalation responding group to the workflow.](#)

Create a Workflow

This topic describes how to create a basic workflow for approvals.

The action event for which you want to create a workflow is available as a production unit in Plant Applications Administrator.

The approval workflow you are creating for an action event cannot be deleted. It can only be modified.

1. In the **Approval Cockpit** page, on the **Approver Configuration** tab, select . The **Add Workflow Details** screen appears.
2. Provide values as specified in the following table.

Field	Description
WORKFLOW NAME	Enter a unique name for the workflow that does not exceed 100 characters.
SELECT FORM	Select a form to use with the workflow. This box contains a list of forms defined for the Approval Cockpit workflows. These forms are production units created under the Approval Cockpit department and line in Plant Applications Administrator. A set of variables associated to the form or unit serve as an approval questionnaire.
PRODUCTION LINE	Select a production line to which the workflow belongs. This box contains all the production lines defined in Plant Applications Administrator.

3. Select **Add**. The **Create New Workflow** page appears with the added workflow details.
 4. [Add the first level of approvers in a workflow.](#)
To create and save a basic workflow, you must add groups under the **Approvers 1** section.
 5. Select **Save**. The workflow is saved to the list of workflows on the **Approver Configuration** tab.
- Add a [monitoring group](#), [rejection responding group](#), or [escalation responding group](#).

- [Add another level to your workflow.](#)
- In Plant Applications Administrator, ensure that the display sheets are created for the configured workflow under the client management section.

Add Monitoring Group

The role of a monitoring group in a workflow is to supervise the workflow process.

[Create and save a basic workflow.](#)

You can add a monitoring group while configuring a workflow. You can also add and [modify monitoring group](#) during workflow execution.

1. In the **Create New Workflow** page, under the **Monitoring Group** section, select **Add**.
The **Add Monitoring Group** screen appears with a list of group names.
2. Select the group you want to assign to monitor the workflow process.
3. Select **Add**.
The selected group is listed under the **Monitoring Group** section.
4. Select **Save**.
The workflow configuration is saved. If you want to modify the added group name, you must [delete](#) the current one, and add a new one.

Add Approvers Group

The groups listed under the **Approvers 1** section, under **Level 1** are the initial approvers in a workflow.

Specify the workflow details to create a workflow.

You cannot save a workflow in Approval Cockpit without adding the **Approvers 1** section. [All additionally added approver sections can be deleted from a workflow.](#)

1. In the **Create New Workflow** page, under the **Approvers 1** section, select **Add**.
The **Add Alternative Approver Groups** screen appears with a list of group names.
2. Select the check box for the groups you want to assign as approvers to the workflow.
3. Select **Add**.
The selected groups are listed under the **Approvers 1** section. The workflow process requires any one group among the selected groups to provide their approval.
4. To add additional approver sections in the same level, select **Add New Approver Group**, and repeat steps 2 and 3 to add approvers.
Every additional section in the same level is incrementally labeled. For example, Approvers 2, Approvers 3, etc. The sections are added with an AND operator implying that the approval workflow must pass through all the approver sections in the given order.
5. Select **Save**.
The workflow configuration is saved.



You have the option to add a [monitoring group](#), [rejection responding group](#), or an [escalation responding group](#) to your workflow.

Add a Workflow Level

Workflows can have one or many levels of approval processes. By default, every workflow has one level labeled as **Level 1**.

[Create and save a basic workflow.](#)

Each workflow level inserts sections on approvers, rejection, and escalation.

1. In the **Create New Workflow** page, select **Add New Level**.
A new level is added to the workflow. New levels are labeled incrementally, such as Level 2, Level 3, etc.
2. To insert a level above an existing level, select  on any existing level, and then select **Add new level above**.
A new level is inserted above the existing level.
3. To insert a level below an existing level, select  on any existing level, and then select **Add new level below**.
A new level is inserted below the existing level.
4. Select **Save**.
The workflow configuration is saved.

In Plant Applications Administrator, ensure that the display sheets are created under the client management section. Every level and every group in the level should have a display sheet with the naming convention: `ProductionUnitName_WorkflowLevel_WorkflowGroup`.

Add Response Groups for Rejection

The role of a rejection group in a workflow is to assess the reasons for rejecting an approval workflow, and take further action.

[Create and save a basic workflow.](#)

You have the option to add a rejection responding group at every level in a workflow only after adding the approvers group for that respective level.

Note: In workflows, if a group member is part of both the approver and the rejection responding groups, then during the workflow execution, the member's role as a rejection responder overrides their approver's role. Such members are not allowed to approve any levels in the workflow. However, they can confirm or undo a rejection, if it occurs in the workflow.

1. In the **Create New Workflow** page, under the **Rejection Responding Group** section, select **Add**.
The **Add Rejection Responding Group** screen appears with a list of group names.
2. Select the group you want to assign as responders to an approval rejection in a workflow.
3. Select **Add**.
The selected group is listed under the **Rejection Responding Group** section.
4. Select **Save**.
The workflow configuration is saved.

Add Response Groups for Escalation

The role of an escalation group in a workflow is to resolve any setback faced due to delay in getting approvals.

[Create and save a basic workflow.](#)

You have the option to add an escalation responding group at every level in a workflow only after adding the approvers group for that respective level.

1. In the **Create New Workflow** page, under the **Escalation Responding Group** section, select **Add**.
The **Add Escalation Responding Group** screen appears with a list of group names.
2. Select the group you want to assign as responders to any escalation in a workflow.
3. Select **Add**.
The selected group is listed under the **Escalation Responding Group** section.

4. Enter the number of days in **SET ESCALATION REPORTING TIME** after which any pending approvals are escalated. An email is sent to the escalation responding group to take action on the pending approvals.

Note: An escalation can be set to a maximum of 365 days. If the escalation reporting time is not set, then by default the system sets a period of 2 days to escalate the pending approvals.

5. Select **Save**.
The workflow configuration is saved.

Modifying a Workflow

About Modifying a Workflow

This topic describes how to modify an approval workflow.

A workflow created in the Approval Cockpit application cannot be deleted. It can be only modified to update its existing configuration. Every new update is saved as a revised version of the workflow. You can perform the following tasks to modify a workflow:


- [Add](#) or [delete](#) levels in a workflow.
- [Add](#) or [delete](#) approver groups in a workflow level.
- [Add](#) or [delete](#) the group names from the approver groups.
- [Add](#), [modify](#), or [delete](#) a group name from the monitoring group.
- [Add](#) or [delete](#) a group name from the rejection responding group.
- [Add](#) or [delete](#) a group name from the escalation responding group.

Modify Monitoring Group

This topic describes how to update a monitoring group that is configured in a workflow.

A monitoring group exists in a workflow.


During workflow execution, monitoring group can be modified at every workflow level.

1. Log in to the Plant Applications Web Client.
2. In the **Approval Cockpit** page, on the **Approver Execution** tab, access the workflow for which you want to modify the monitoring group and select , then select **Edit Monitoring Group**. The **Update Monitoring Group** screen appears with a list of group names.
3. Select the group you want to assign to monitor the workflow process.
4. Select **Update**.
The selected group is saved as the monitoring group for the workflow.


Delete a Workflow Level

This topic describes how to delete a level in a workflow.

You cannot delete **Level 1** in a workflow.

1. In the **Approval Cockpit** page, on the **Approver Configuration** tab, select  for the workflow you want to modify.
The **Create New Workflow** page appears with the existing workflow configuration.
2. Access the workflow level you want to delete.



Workflows can have multiple levels. You can expand and collapse workflow levels. Levels can have one or more approver groups. Levels can also have rejection and escalation groups.

3. Select  on the level you want to delete, and then select **Delete**.
The workflow level with any configured approvers, rejection, or escalation is deleted from the workflow.
4. Select **Update**.
The updated workflow configuration is saved.

Delete an Approver Group from Workflow Level

This topic describes how to delete additional approver groups added to a level in a workflow.



You cannot delete the **Approvers 1** section, under **Level 1** in a workflow.

1. In the **Approval Cockpit** page, on the **Approver Configuration** tab, select  for the workflow you want to modify.
The **Create New Workflow** page appears with the existing workflow configuration.
2. Access the workflow level you want to modify.
Workflows can have multiple levels. Levels can have one or more approver groups.
3. Select  for the approver group you want to delete.
At least one approver group is mandatory for a workflow level.
4. Select **Update**.
The updated workflow configuration is saved.

Delete a Group Name from Workflow Groups

This topic describes how to delete group names from the monitoring, approvers, rejection, and escalation groups in a workflow.

You cannot delete the only assigned group name under the **Approvers 1** section, under **Level 1** in a workflow.

1. In the **Approval Cockpit** page, on the **Approver Configuration** tab, select  for the workflow you want to modify.
The **Create New Workflow** page appears with the existing workflow configuration.
2. Access the workflow level and group you want to modify.
Workflows can have a monitoring group and multiple levels. Levels can have one or more approver groups. Levels can also have rejection and escalation groups. Any assigned group names are listed under the respective workflow groups.
3. Select  for the group name you want to delete.
4. Select **Update**.
The updated workflow configuration is saved.

Executing a Workflow

About Executing a Workflow

Workflows configured in the Approval Cockpit application are implemented when the workflow specific events are raised in Plant Applications.

Based on the configured workflow, an email notification is sent to the groups participating at different stages of the approval process. The group participants are required to review the workflow request, and provide their approval (or rejection).

Note: A group assigned to a workflow can have 1, 2, 3, or more participants. Emails are sent to all of them to participate in the approval process. Any one participant can approve (or reject) and accomplish the request. The workflow request is removed from the other group participants' task list.

On the **Approver Execution** tab:

- You can sort the workflows by their status:

Status	Description
Pending	The workflow for the action event is in progress.
Approved	The workflow for the action event ended with an approved result.
Rejected	The workflow for the action event ended with a rejected result.

- Select any workflow to view a history of its current status.

LEVEL 01	LEVEL 02	LEVEL 03	LEVEL 04
✓ Approvers 01 Approved by: JohnDoe	✓ Approvers 01 Approved by: JohnDoe	Approvers 01	Approvers 01
✓ Approvers 02 Approved by: Smith	✓ Approvers 02 Approved by: Philip	Approvers 02	Approvers 02
✓ Approvers 03 Approved by: Criss	✗ Approvers 03 Rejected by: Shawn	Approvers 03	Approvers 03
✓ Approvers 04 Approved by: Peter	Approvers 04	Approvers 04	Approvers 04

Workflow Status: Level 02 - Approver Group 03, Shawn has rejected the request, Please contact admin for further investigation

- [Add](#) or [modify](#) a monitoring group at any level during workflow execution.


You can perform the following tasks with the workflow requests assigned to you.

- [Approve or reject after you review the workflow request.](#)
- [Ask for re-verification of an approved workflow level.](#)

Approve or Reject a Workflow

This topic describes how to accomplish a workflow request for approval.

An email notification is sent to you on the workflow request.

- Log in to the Plant Applications Web Client.
- In the **Approval Cockpit** page, on the **Approver Execution** tab, access the workflow assigned to you and select , then select **Review**.
The **Approver Level Questions** screen appears with a list of questions to be answered for quality check. These questions are variables associated to the workflow from the Plant Applications Administrator.
- Enter your answers in the text box for the questions.
The mandatory questions need an answer to proceed to the next step. To set the questions to be mandatory or non-mandatory, refer to Plant Applications Administrator.
- Select **Approve** or **Reject** based on your review.
Based on the status (approved or rejected), the workflow proceeds to the next activity in the process. The rejected workflows are routed to the rejection responding group, if assigned. If not, then the workflow is terminated at this point with no further action.

Send Approvals for Re-verification

This topic describes how to request for re-verifying already approved workflow levels.

You can request approval re-verification only for levels that are one level above you in a workflow. For example, if you are a workflow **Level 3** approver, you can request re-verification for **Level 2**, but not **Level 1**.

1. Log in to the Plant Applications Web Client.
2. In the **Approval Cockpit** page, on the **Approver Execution** tab, access the workflow assigned to you and select , then select **Review**.

The **Approver Level Questions** screen appears with a list of quality variables associated to the workflow.

3. Select **Request Re-Verification** based on your review.

If answers to the questions are not meeting the quality requirements, you can ask for re-verifying the approvals granted at one level above you.

The **Select Approver Groups for Re-Verification** screen appears with a list of approver groups assigned to the level you want to re-verify.

4. Select the groups you want to assign to re-verify the approved level.
5. Select **Save**.

The status of the level you requested for re-verification is changed from approved to pending. This level must go through the approval process all over again.

Chapter 12

Downtime

Topics:

- [About Downtime](#)
- [About Non-Productive Time in Downtime Calculations](#)
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Use the Downtime Displays app to access the downtime overview and downtime events list for the equipment assigned to you. You can also view the list of KPIs and add non-productive time events and downtime events for the machines assigned to you. Learn more...

About Downtime

As an operator, you can use the Downtime application to access the downtime overview and downtime events list for the equipment assigned to you.

You can access the following pages in the Downtime application:

- **Events:** A list of downtime events and their statuses corresponding to the equipment selected in the **My Machines** page appears. Only the machines that you as an operator can access appear in this page. In this page, you can perform the following actions:
 - [Add a downtime event](#)
 - [Add a non-productive time \(NPT\) event](#)
 - [Modify existing downtime events](#)
 - [Split events](#)
 - [Merge events](#)
 - [Access KPIs](#)
 - [Access downtime events](#)
 - [Add a downtime event](#)
 - [Add a non-productive time \(NPT\) event](#)
 - [Modify existing downtime events](#)
 - [Split events](#)
 - [Merge events](#)
 - [Delete events](#)
- **KPIs:** An overview of key performance indicators (KPIs) such as overall equipment effectiveness (OEE), availability, mean time between failures (MTBF), and mean time to repair (MTTR) appears for all the equipment that you as an operator can access. The line charts for downtime breakdown and downtime by category also appear in this page.

Note: If no data is available for a KPI or chart, a message indicating the non-availability of data for the corresponding KPI or chart appears in the **KPIs** page.

About Non-Productive Time in Downtime Calculations

When accessing the KPIs in Downtime, OEE Dashboard, and Reports, you can include or exclude non-productive time (NPT) in the downtime calculation of KPIs.

The following sections describe various scenarios of downtime calculations.

Scenario 1: Downtime Duration is Within NPT Duration

The following table describes the scenario when the NPT event starts before the start time of the downtime event and ends after the end time of the downtime event. The table further includes the downtime calculation in this scenario.

Time Entry Type	Start Time (mm/dd/yy hh: mm)	End Time (mm/dd/yy hh: mm)	Duration (mins)	Downtime Calculation (mins)	
				Include NPT	Exclude NPT
Downtime	5/10/18 5:08	5/10/18 5:10	2	0	2
NPT	5/10/18 5:05	5/10/18 5:15	10		

The downtime duration is calculated as follows:

- When NPT is included: The downtime duration is ignored by the application. In this scenario, the downtime duration appears as 0 mins.
- When NPT is excluded: The actual downtime duration appears. In this scenario, the downtime duration appears as 2 mins.

Scenario 2: Downtime Starts Before NPT Starts and Ends Before NPT Ends

The following table describes the scenario when the downtime event starts after the start time of the NPT event and ends before the end time of the NPT event. The table further includes the downtime calculation in this scenario.

Time Entry Type	Start Time (mm/dd/yy hh:mm)	End Time (mm/dd/yy hh:mm)	Duration (mins)	Downtime Calculation (mins)	
				Include NPT	Exclude NPT
Downtime	5/10/18 5:17	5/10/18 5:25	8	3	8
NPT	5/10/18 5:20	5/10/18 5:30	10		

The downtime is calculated as follows:

- When NPT is included: Only the downtime duration before the NPT event starts appears as the downtime duration. In this scenario, the downtime duration appears as 3 mins.
- When NPT is excluded: The actual downtime duration appears. In this scenario, the downtime duration appears as 8 mins.

Scenario 3: Downtime Starts After NPT Starts and Ends After NPT Ends

The following table describes the scenario when the downtime event starts after the start time of the NPT event and ends after the end time of the NPT event. The table further includes the downtime calculation in this scenario.

Time Entry Type	Start Time (mm/dd/yy hh:mm)	End Time (mm/dd/yy hh:mm)	Duration (mins)	Downtime Calculation (mins)	
				Include NPT	Exclude NPT
Downtime	5/10/18 5:47	5/10/18 5:52	5	2	5
NPT	5/10/18 5:40	5/10/18 5:50	10		

The downtime is calculated as follows:

- When NPT is included: Only the downtime duration after the NPT event ends appears as the downtime duration. In this scenario, the downtime duration appears as 2 mins.
- When NPT is excluded: The actual downtime duration appears. In this scenario, the downtime duration appears as 5 mins.

Scenario 4: Downtime Starts Before NPT Starts and Ends After NPT Ends

The following table describes the scenario when the downtime event starts before the start time of the NPT event and ends after the end time of the NPT event. The table further includes the downtime calculation in this scenario.


Time Entry Type	Start Time (mm/dd/yy hh: mm)	End Time (mm/dd/yy hh: mm)	Duration (mins)	Downtime Calculation (mins)	
				Include NPT	Exclude NPT
Downtime	5/10/18 5:34	5/10/18 5:41	7	2	7
NPT	5/10/18 5:35	5/10/18 5:40	5		

The downtime is calculated as follows:

- When NPT is included: The sum of downtime durations before the NPT event starts and after the NPT event ends appears as the downtime duration. In this scenario, the downtime duration appears as 2 mins.
- When NPT is excluded: The actual downtime duration appears. In this scenario, the downtime duration appears as 7 mins.

Access KPIs

The Downtime application enables you to access key performance indicators (KPIs) and a summary of downtime events for the equipment assigned to you. In the **KPIs** page, you can review the overall equipment effectiveness (OEE), availability, mean time between failures (MTBF), and mean time to repair (MTTR) values. You can use the charts for Downtime Breakdown and Downtime by Category to review the durations of different downtime events and their reasons.

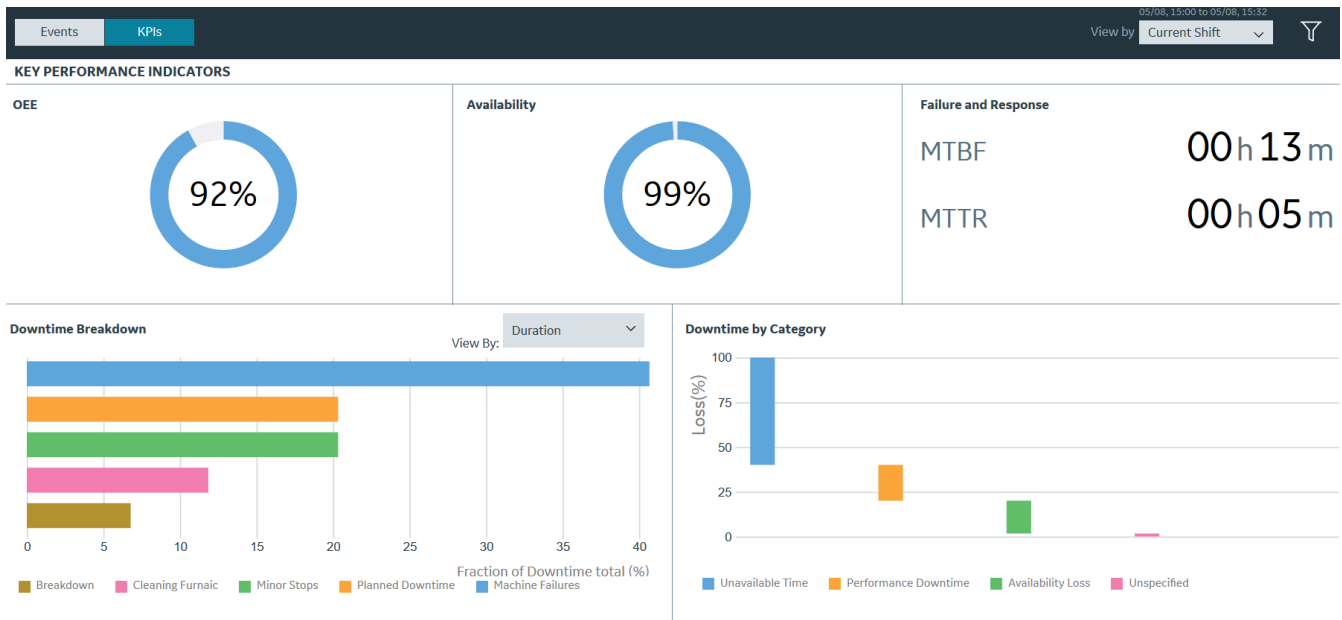
1. Log in to the Plant Applications Web Client.
2. Select .
The **Events** page appears.
3. Select the **KPIs** tab.

The Donut chart appears in the dashboard summarizing the OEE and availability of the equipment. Each KPI shows the following status information.

Status	Colors	Range
Good	Blue	> 85 percent
Moderate	Yellow	> 50 percent and <= 85 percent
Low	Red	<= 50 percent

Note: The maximum value for the KPIs are set to 100% by default. However, you can override this by setting **OEE Max Limit Override** to true. The OEE Max Limit Override flag allows the OEE cap beyond 100%. When this flag is set to false and the KPI actual value is more than 100%, the value is defaulted to 100% in the chart.

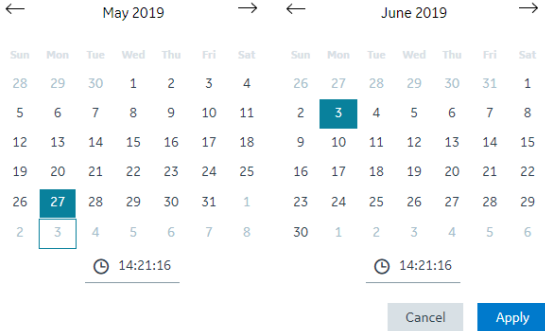
The time duration for MTBF and MTTR values appears in hours and minutes.




Note: These KPI metrics are based on the **OEE Aggregation Store** setting. If **OEE Aggregation Store** is set to False, the values are calculated on the fly every time the chart is opened or refreshed. If it is set to True, the values are populated from the OEE Aggregation tables. For more information, refer to the OEE Aggregation Store topic.

- In the drop-down list box containing the time range options, select a time range as described in the following table.

Time Range	Description
Last <number> Hours	Select to access all KPIs within <number> hours prior to the current Production Day. The value of <number> is configured in Plant Applications Administrator.
Previous Day	Select to access all KPIs from the day prior to the current Production Day.
Current Day	Select to access all KPIs from the start time of the current Production Day until the current time. If there are no shifts configured for the plant, this option is selected by default.
Current Shift	Select to access all KPIs from the start time of the ongoing shift until the current time. If shifts are configured for the plant, this option is selected by default.
Previous Shift	Select to access all KPIs from the shift prior to the current shift.


Time Range	Description
Last 7 days	Select to access all KPIs within seven days prior to the current Production Day.
Custom	<p>Select to access all KPIs within a date and time range that you specify by using a calendar window.</p> <p>The following calendar window appears when you select the Custom option.</p>  <p>To specify a custom date and time range in the calendar window:</p> <ol style="list-style-type: none"> In the START DATETIME section, select a date and enter a time in the format hh:mm:ss. In the END DATETIME section, select a date and enter a time in the format hh:mm:ss. Select Apply.

- Optional:** Select , then select the **NPT** check box, and then select **Apply** to include any non-productive time (NPT) in the results. For more information, refer to the [About Non-Productive Time in Downtime Calculations](#) on page 166 topic.
- In the **Downtime Breakdown** section, in the **View By** box, select **Duration** or **Count** to access downtime events.

You can access the loss percentage and reasons for the downtime events in the **Downtime by Category** chart.

Access a Downtime Events List

You can access the list of downtime events for the selected time range to review the status and details for the downtime events.

- Log in to the Plant Applications Web Client.
- Select .

The **Events** page appears, displaying a list of downtime events and their details in a tabular format. In the table displaying the list of downtime events and their details, you can resize a column or drag and drop a column to a new position. The column settings you select in the table are retained when you access the **Events** page later.

Note: The date and time format is m/dd/yyyy hh:mm:ss or dd/m/yyyy based on the localisation settings.

05/08, 15:00 to 05/08, 15:32

View by: Current Shift

Drag a column header here to group by that column

DT STATUS	LOCATION	CATEGORY	START TIME	DURATION	UP TIME	REASON L1	ACTIONS
Active	Big Unit2	Performance	15:31:00	00:01:00	00:01:00	Performance Loss	
Active	Big Unit2	Availability	15:29:00	00:01:00	00:04:00	Availability loss	
Active	Big Unit2	Planned	15:24:00	00:01:00	00:01:00	Planned Maintenance	
Active	Big Slave3	Availability	15:22:00	00:01:00	00:07:00	Availability loss	
Active	Big Unit2	Performance	15:14:00	00:01:00	00:03:00	Performance Loss	
Complete	Big Unit1	Unavailable Time	15:12:00	00:12:00	00:12:00	Machine Failures	
Active	Big Unit2	Availability	15:10:00	00:01:00	00:01:00	Availability loss	
Active	Big Unit2	Quality	15:08:00	00:01:00	00:01:00	Quality Losses	
Active	Big Unit2	Quality	15:06:00	00:01:00	00:01:00	Quality Losses	
Active	Big Unit2	Quality	15:04:00	00:01:00	00:01:00	Quality Losses	

Page 1 of 2 (11 records) 1 2

A summary of unplanned, planned, external, and NPT downtime events within a time range appears in the page. In addition, the following information appears in a tabular format for each downtime event.

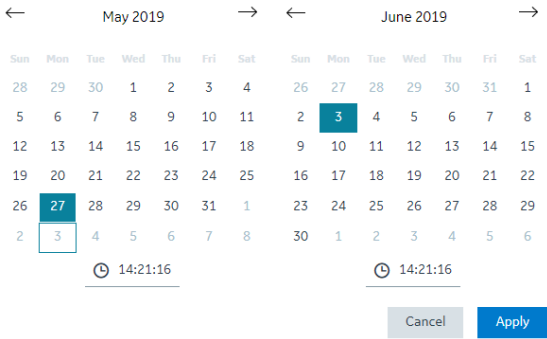
Column	Description
DT Status	<p>The downtime status for a downtime event along with the corresponding color.</p> <ul style="list-style-type: none"> Green: Active Blue: Open Black: Complete <p>Note: The color scheme is based on the default color scheme setting in the Plant Applications Administrator.</p>
Category	The downtime category for a downtime event.
Location	The location of an equipment experiencing downtime.
Start Time	The start time for the downtime event.
Duration	<p>The downtime duration for the downtime event.</p> <p>Note: The value in this field is blank for open downtime events.</p>
Reason	The downtime reason for the downtime event.
Actions	<p>The actions that you can perform on a downtime event. You can select one of the following action items:</p> <ul style="list-style-type: none"> : Select to modify a downtime event. : Select to split a downtime event. : Select to delete a downtime event. : Select to copy faults and reasons from a downtime event to the required selected downtime events.

Note: You can filter the downtime events based on filters applied to the selected columns. Select appearing next to the column name and then select required filters from the menu to include in the

list. You also can drag a column to the column header to group the downtime events based on the column selected.

Tip: The downtime events are listed in multiple pages. One page contains maximum of seven downtime events.








3. In the drop-down list box containing the time range options, select a time range as described in the following table. The range that you select appears in the form of date and time interval next to the drop-down list box containing the time range options.


Time Range	Description
Previous Day	Select to access all downtime events from the day prior to the current Production Day.
Current Day	Select to access all downtime events from the start time of the current Production Day until the current time. If there are no shifts configured for the plant, this option is selected by default.
Current Shift	Select to access all downtime events from the start time of the ongoing shift until the current time. If shifts are configured for the plant, this option is selected by default.
Previous Shift	Select to access all downtime events from the shift prior to the current shift.
Last 7 days	Select to access all downtime events within seven days prior to the current Production Day.
Custom	<p>Select to access all downtime events within a date and time range that you specify by using a calendar window.</p> <p>The following calendar window appears when you select the Custom option.</p>  <p>To specify a custom date and time range in the calendar window:</p> <ol style="list-style-type: none"> a. In the START DATETIME section, select a date and enter a time in the format hh:mm:ss b. In the END DATETIME section, select a date and enter a time in the format hh:mm:ss c. Select Apply.

Note: The shift values for current and previous shifts are determined by the settings selected in the Plant Applications Department level. The time-interval that you select appears in the form of date and time next to the time-interval drop-down list box.

4. **Optional:** Select a downtime event to access the **Quick Edit** page and perform the following tasks:
 - a) In the **FAULT CODE** section, select the box for the Fault Code, and then select a Fault Code associated with the downtime event.


- Tip:** Alternatively, within the **FAULT CODE** section, you can enter the text to search for and select a Fault Code.
- b) In the **REASONS** section, select **Top <number>** to access the **Top <number> Reasons** menu, and then select a reason associated with the Fault Code.
- The <number> represents a numeric value ranging from 0 to 5, indicating the top downtime reasons most frequently selected by the operator. You can configure reasons in the Plant Applications Administrator.
- Note:** The values that appear in the **L1, L2, L3, and L4** boxes for the levels of reasons are configured in the Plant Applications Administrator and are automatically populated, if available, based on the reason you select in the **Top <number> Reasons** menu.
- c) In the **ADD COMMENTS** section, select **Click to add/edit comment**.
The **Comment** window appears.
- d) In the **ADD COMMENT** box, enter a comment for the changes you made, and select **Add Comment**.
- e) Select **Save** to apply your changes.
5. **Optional:** In the table displaying the list of downtime events and their details, select an option to perform an action as described in the following table.


Option	Description
	Select to filter the downtime events based on the specified duration. You can also select the NPT check box, and then select Apply to include any non-productive time (NPT) in the results.
	Select to update the downtime events list with the latest information available for your equipment. Note: This icon is enabled only when there are updates to the downtime events list. Else, one of the following icon appears: <ul style="list-style-type: none">  Indicates that there are no updates to the downtime events list.  Indicates that the RabbitMQ service is down.
	Select either to add a downtime event or add a non-productive time (NPT) downtime event .
	Select to merge downtime events for the equipment from the same location . Note: This icon is enabled only when you select the check boxes for more than one downtime event in the table.
	Select to delete multiple downtime events . Note: This icon is enabled only when you select the check boxes for more than one downtime event in the table.

- In the **Events** page, select  and then select **Add Downtime Event** from the menu to add a downtime event.
The **Add Downtime Event** page appears.

Add Downtime Event Cancel


START TIME


 2019/05/09

 11:25:12

TO

END TIME

 2019/05/09

 11:26:12

OPEN

LOCATION

Click to add location

FAULT CODE

Select fault code

REASONS Top 0


Click to add reasons

ACTIONS Top 0

Click to add actions

ADD COMMENT

Type comment here



- In the **START TIME** and **END TIME** box, enter a duration for the downtime event.
- In the **LOCATION** section, select **Click to add location**. The Select location windows appears. Select a department, line, and machine in the **DEPARTMENT**, **LINE**, and **MACHINE** sections, respectively, where you plan to add the downtime event. Select **Apply**.
Tip: Alternatively, within the **DEPARTMENT**, **LINE**, and **MACHINE** sections, in the search box displaying , you can enter the text to search for and select the required item.
- In the **FAULT CODE** box, select a Fault Code to describe the downtime event.
Tip: Alternatively, within the **FAULT CODE** box, enter the text to search for and select a Fault Code.
- In the **REASONS** section, select **Top <number>** to access the **Top <number> Reasons** menu, and then select a reason associated with the Fault Code.
The <number> represents a numeric value ranging from 0 to 5, indicating the top downtime reasons most frequently selected by the operator. You can configure reasons in Plant Applications Administrator.
- Note:** The values that appear in the **L1**, **L2**, **L3**, and **L4** boxes for the levels of reasons are configured in Plant Applications Administrator and are automatically populated, if available, based on the reason you select in the **Top <number> Reasons** menu.
- In the **ACTIONS** section, select **Top <number>** to access the **Top <number> Actions** menu, and then select an action taken by the operator for the downtime event.
The <number> represents a numeric value ranging from 0 to 5, indicating the top actions most frequently performed by the operator. You can configure actions in Plant Applications Administrator.

Note: The values that appear in the **L1**, **L2**, **L3**, and **L4** boxes for the levels of actions are configured in Plant Applications Administrator and are automatically populated, if available, based on the action you select in the **Top <number> Actions** menu.

9. In the **ADD COMMENT** box, enter a comment for the downtime event. Depending on the configuration in Plant Applications Administrator, this step can be optional or mandatory.
10. Select **Save** to add the downtime event for the selected machine.


The newly added downtime event appears in the table displaying the list of downtime events and their details in the **Events** page.

Add an NPT Downtime Event


1. Log in to the Plant Applications Web Client.
2. Select .
The **Events** page appears, displaying a list of downtime events and their details in a tabular format.
3. In the **Events** page, select  and then select **Add NPT** to add a non-productive time (NPT) downtime event.
The **Add NPT Event** page appears.

Add NPT Event Cancel

START TIME

 2019/05/09 🕒 12:22:03

END TIME


 2019/05/09 🕒 12:23:03

Click to add location

Click to add reasons

Type comment here

4. In the **START TIME** and **END TIME** box, enter a duration for the NPT downtime event.
5. In the **LOCATION** section, select **Click to add location**. The **Select location** window appears. Select a department, line, and machine in the **DEPARTMENT**, **LINE**, and **MACHINE** sections, respectively, where you plan to add the NPT downtime event. Select **Apply**.

Tip: Alternatively, within the **DEPARTMENT**, **LINE**, and **MACHINE** boxes, in the search box displaying , you can enter the text to search for and select the required item.

6. In the **REASONS** section, select **Click to add reasons**. The **Select Reasons** window appears. Select the levels of reasons from the available reasons and then select **Apply**.

6. Select the **Reasons** tab, and then modify the Fault Code and reasons for the downtime event.
 - a) In the **FAULT CODE** section, select the required Fault Code.

Tip: Alternatively, within the **FAULT CODE** section, enter the text to search for and select a Fault Code.
 - b) In the **REASONS** section, select reasons corresponding to the Fault Code for the downtime event.

Note: Select **Top <number>** to access the **Top <number> Reasons** menu, and then modify the action taken by the operator for the downtime event. The <number> represents a numeric value ranging from 0 to 5, indicating the top downtime reasons most frequently selected by the operator. You can configure reasons in Plant Applications Administrator.

The values that appear in the **L1, L2, L3, and L4** boxes for the levels of reasons are configured in Plant Applications Administrator and are automatically populated, if available, based on the reason you select in the **Top <number> Reasons** menu.
 - c) In the **ADD/EDIT COMMENTS** section, select **Click to add/edit comment**. The Comment window appears. In the **ADD COMMENT** box, enter a comment or modify the comment for the changes you made and select **Add Comment**
7. Select the **Actions** tab, and then, in the **ACTIONS** section, modify the level of reasons for an event.

Note: Select **Top <number>** to access the **Top <number> Actions** menu, and then modify the action taken by the operator for the downtime event. The <number> represents a numeric value ranging from 0 to 5, indicating the top actions most frequently performed by the operator. You can configure actions in Plant Applications Administrator.


The values that appear in the **L1, L2, L3, and L4** boxes for the levels of actions are configured in Plant Applications Administrator and are automatically populated, if available, based on the action you select in the **Top <number> Actions** menu.

 - a) In the **ADD/EDIT COMMENTS** section, select **Click to add/edit comment**. The **Comment** window appears. In the **ADD COMMENT** box, enter a comment or modify the comment for the changes you made and select **Add Comment**
8. As needed, select the **NPT** tab, and then modify the event details for an NPT.
 - a) In the **End Time** box, modify the duration for the non-productive time (NPT) downtime event.
 - b) In the **ADD/EDIT COMMENTS** section, select **Click to add/edit comment**. The Comment window appears. In the **ADD COMMENT** box, enter a comment or modify the comments entered for the NPT downtime event and select **Add Comment**.

Note: The **NPT** section appears based on the selected Fault Code and downtime reasons.
9. Select **Save** to save the modified details of the downtime event.

The modified details appear for the downtime event.


Copy Faults and Reasons to the Selected Downtime Event

1. Log in to the Plant Applications Web Client.
2. Select 

The **Events** page appears, displaying a list of downtime events and their details.
3. [Access the required downtime events list.](#)
4. In the list of downtime events, select the check box of the target downtime events to copy the faults and reasons.

Note: The selected downtime events and equipment must belong to the same location.

The  button is enabled for the cleared rows.

5. Select  for the source downtime event row from which you want to copy the faults and/or reasons.



Note: Depending on the configuration set for the **CopyPaste Type** site parameter in the Plant Applications Administrator, one of the following options is displayed for the downtime event:

- Reason only
 - Fault only
 - Both fault and reason
6. Select **OK** to confirm that you want to copy the faults and/or reasons for the selected downtime events.

The target downtime events now have the same faults and reasons as the source downtime event.

Split a Downtime Event

You can split a downtime event into multiple downtime events of equal or customized duration. Splitting an event allows you to add the reason for the downtime events that happened during the overall downtime duration.

1. Log in to the Plant Applications Web Client.
2. Select .
The **Events** page appears, displaying a list of downtime events and their details.
3. [Access the required downtime events list.](#)
4. Select  corresponding to a downtime event to split the downtime event.
The **Split** page appears.
5. In the **Split** page, enter the number of target downtime events and the option to split the duration.
 - a) In the **Split Durations** section, select one of the following options:
 - **Equally:** The total duration of the selected source downtime event is equally divided into the duration of target downtime events.
Note: If you select this option, you cannot modify the duration for downtime events later.
 - **Manually:** The total duration of the selected source downtime event is manually divided into the duration of new target downtime events.
 - b) In the **Number of Events** box, select how many events you want to split the downtime event into, and then select **Next**.

Note: You can split a downtime event to a maximum of six downtime events.

The **Split Event** page appears.

6. In the **Split Event** page, enter the duration and reason for the downtime.
 - a) In the **Duration** column, enter a duration in the boxes corresponding to the time format hh:mm:ss.
Note: You can enter the duration for target downtime events only if you selected **Manually** in the **Split Durations** section.
 - b) In the **Quick Pick** column, you can select **Top <number>** to access the **Top <number> Reasons** menu, and then select a reason associated with a Fault Code.
The <number> represents a numeric value ranging from 0 to 5, indicating the most frequently selected reasons for a downtime.

Note: The values that appear in the **L1**, **L2**, **L3**, and **L4** boxes for the levels of reasons are configured in the Plant Applications Administrator and are automatically populated, if available, based on the reason you select in the **Top <number> Reasons** menu.

- Tip:** Alternatively, you can select a downtime reason in the **L1** box, and then select the associated reason levels, if available, in the **L2**, **L3**, and **L4** boxes.
- c) The information displayed in the **Reason** column depends on the configuration set for the **CopyPaste Type** site parameter in the Plant Applications Administrator.

Note:

The options for the **CopyPaste Type** site parameter are:

- Reason only
- Fault only
- Both fault and reason


For example, if the **CopyPaste Type** site parameter in Plant Applications Administrator is set to **Reason only**, then the fault is not displayed in the **Reason** column.

7. Select **Save** to split the downtime event in the selected number of target downtime events.

The target downtime events, and the list and details of downtime events appear in the **Events** page.

Merge Downtime Events

You can merge multiple downtime events into one event.

1. Log in to the Plant Applications Web Client.
2. Select .
The **Events** page appears, displaying a list of downtime events and their details in a tabular format.
3. [Access the required downtime events list.](#)
4. In the **Events** page, select the check box for each source downtime event that you want to merge into a single downtime event.

Note: You can merge downtime events associated with the equipment from the same location only.



5. Select  to merge the selected events.

The merged downtime event appears in the table displaying the list of downtime events and their details in the **Events** page.

Note:

- When you merge downtime events, the time interval between the source downtime events is also added to the downtime duration of the merged downtime event.
- If the reasons for downtime differ between the source downtime events, the new merged downtime event uses the reason associated with the oldest source downtime event.

Delete a Downtime Event

1. Log in to the Plant Applications Web Client.
2. Select .
The **Events** page appears, displaying a list of downtime events and their details in a tabular format.
3. In the table displaying the list of downtime events and their details, select  to delete a single or multiple downtime events.

Note:

- To delete a downtime event, select ✕ for the downtime event in the table displaying the list of downtime events and their details.
- To delete multiple downtime events, select the check box for each of them in the table displaying the list of downtime events and their details, and then select ✕ to delete the selected downtime events.

The selected downtime events are deleted and no longer appear in the table displaying the list of downtime events and their details in the **Events** page.

Chapter 13

OEE Dashboard

Topics:

- [About OEE Dashboard](#)
- [Access the Equipment Summary](#)
- [Customise Time Duration to Refresh Data](#)

About OEE Dashboard

As a supervisor, you can use the OEE Dashboard application to review summary and status information for plant lines and units. Here, you can identify production inefficiencies contributing to lower OEE.

Note: To access information about a Production Unit in the OEE Dashboard application, you must specify Production Rate Specification for the Production Unit in Plant Applications Administrator. Else, the Production Unit does not appear in the OEE Dashboard application. For more information, refer to the OEE: Production Metrics topic in the Proficy Plant Applications Help.

The following donut charts display line and machine metrics:

- **OEE:** Overall equipment effectiveness (OEE) is a measure of production health or status. By comparing OEE between machines or group of machines, you can identify lines or machines with production inefficiencies like waste, downtime, speed/performance loss, and production throughput that contribute to lower OEE.
- **Performance:** You can review line and unit performance rates to compare how much each line or unit produced against projections.
- **Quality:** You can review the quality rate to identify lines with high waste counts, which reduces quality and contributes to a lower OEE.
- **Availability:** You can review the Availability rate for a Machine or group of Machines for a selected time range (for example, Current Shift, Yesterday).

The following OEE Dashboard dashboard displays information for the selected department HISTCENT, viewed by Lines in that department. It contains KPI information for each of the lines collected over the past week.

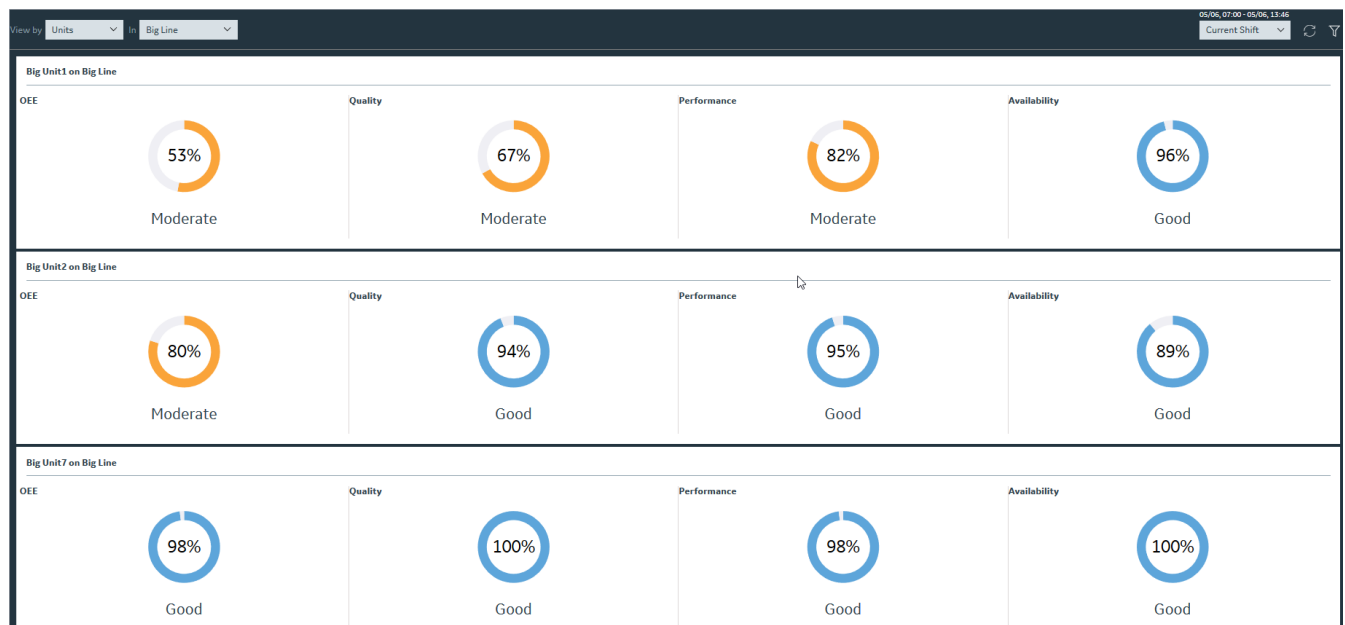


Figure 1: OEE Dashboard Dashboard

When you expand a KPI card, you can review detailed information such as downtime reasons, downtime by category, scrap breakdown, and loss by category as Pareto and waterfall charts.

The following example expands the view of the Availability KPI.

- In the **Downtime Breakdown** section, a Pareto chart displays the downtime breakdown by reasons, while in the **Downtime by Category** section, a waterfall chart displays the downtime by category.
- In the **Downtime Breakdown** or **Downtime by Category** section, select an option in the **View by** drop-down list box to view the chart by Duration or Count.
- You can access a similar expanded view for Quality and Performance KPIs.

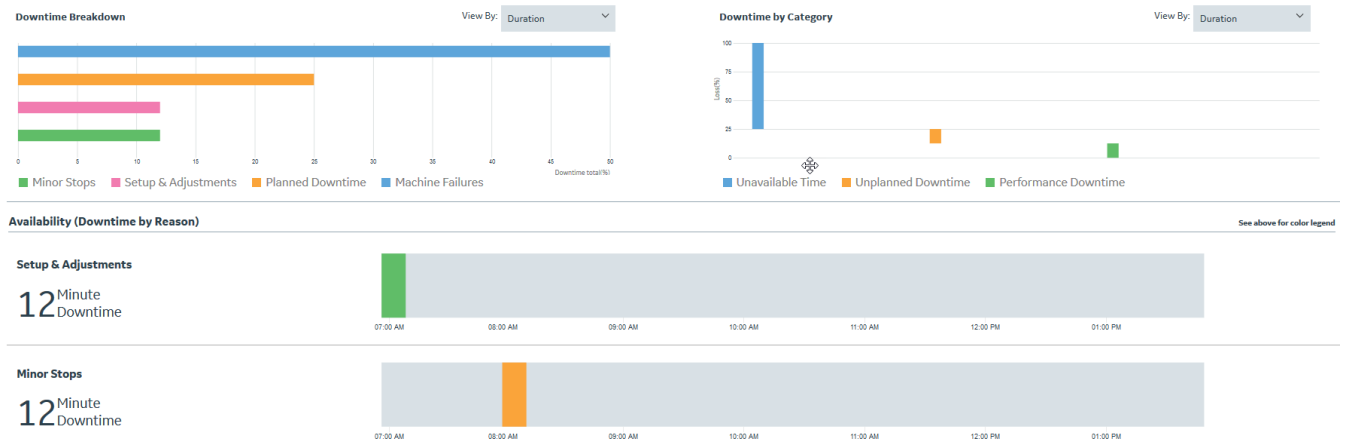


Figure 2: Availability: Expanded View

A Gantt chart displays the up and downtime on the time axis. The grey colored vertical strips represent the up-time, and the other colored strips display the downtime events for different categories.

If you select the Line level, the Gantt chart displays the downtime events for individual Units. If you select the Unit level, the Gantt chart displays the individual downtime reasons. In both the cases, colors displayed for the downtime events are based on the categories, and they are inconsistent with the Waterfall and Pareto charts.

When you pause on a chart, a tooltip displays the following details:


- Fraction: Corresponding percentage of the total downtime
- Count: Number of events
- Duration: Downtime duration

You can use the OEE Dashboard application to perform the following tasks.

- [Access the Equipment Summary](#) on page 184

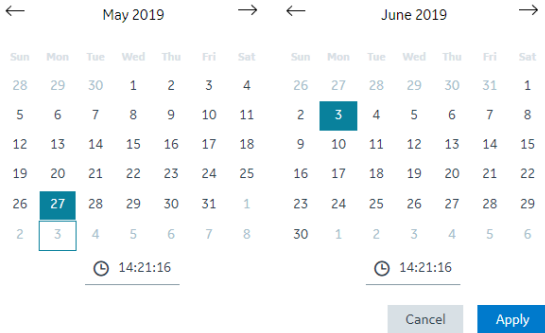
Access the Equipment Summary

The OEE Dashboard application in Plant Applications enables you to access the summary of Equipment for the Production Lines in a Department or Production Site or Production Units in a Production Line. The Equipment summary appears as a series of Donut charts for KPIs such as OEE, Performance, Quality, and Availability.

1. Log in to the Plant Applications Web Client.
2. Select . A page displaying the Equipment summary appears.
3. Select an option in the **View by** box as described in the following table.

Option	Description
Summary	When you select this option, a summary for all the Production Lines with Low OEE across departments appears in the page. This option is selected by default.
Lines	When you select this option, an In box appears, in which you can select a Department. After you select a Department, the page displays the Equipment summary for the Production Lines within the selected Department.
Units	When you select this option, an In box appears, in which you can select a Production Line. After you select a Production Line, the page displays the Equipment summary for the Production Units within the selected Production Line.

4. In the drop-down list box next to the **View by** box, select a time range as described in the following table.

Option	Description
Current Shift	Select to access the summary of the Equipment in the ongoing shift. By default, this option is selected.
Last Shift	Select to access the summary of the Equipment in the shift prior to the current shift.
Today	Select to access the summary of the Equipment on the current Production Day.
Yesterday	Select to access the summary of the Equipment from the day prior to the current Production Day.
Current Week	Select to access the summary of the Equipment within the ongoing Production Week.
Last Week	Select to access the summary of the Equipment within the Production Week prior to the current Production Week.
Custom	<p>Select to access the summary of the Equipment within a date and time range that you specify by using a calendar window.</p> <p>The following calendar window appears when you select the Custom option.</p>  <p>To specify a custom date and time range in the calendar window:</p> <ol style="list-style-type: none"> In the START DATETIME section, select a date and enter a time in the format hh:mm:ss. In the END DATETIME section, select a date and enter a time in the format hh:mm:ss. Select Apply.

Note: If there are no shifts configured for the plant, the **Current Shift** and **Last Shift** options do not appear.

The time range calculations for the **Current Shift** and **Last Shift** time range options are based on the `Site_Parameters` table rather than the `Crew_Schedule` table.

In the page displaying the Equipment summary:

- The time range that you select appears.
- The Donut charts summarizing OEE, Quality, Performance, and Availability for each KPI appear

Note: These KPI metrics are based on the **OEE Aggregation Store** setting. If **OEE Aggregation Store** is set to `False`, the values are calculated on the fly every time the chart is opened or refreshed. If it is set to `True`, the values are populated from the OEE Aggregation tables. For more information, refer to the [About OEE Aggregation Store](#) on page 218 topic.

Each KPI card displays the following status information.

Status	Colors	Range
Good	Blue	> 85 percent
Moderate	Yellow	> 50 percent and <= 85 percent
Low	Red	<= 50 percent

Note: The maximum value for the KPIs are set to 100% by default. However, you can override this by setting **OEE Max Limit Override** to `true`. The OEE Max Limit Override flag allows the OEE cap beyond 100%. When this flag is set to `false` and the KPI actual value is more than 100%, the value is defaulted to 100% in the chart.

5. To access the detailed KPI information, select **+** in the KPI card. The Availability KPI card with the detailed KPI information also includes summary statistics.


Note: The detailed KPI information is not available for the OEE KPI card.

The Pareto and Waterfall charts that show the detailed information for the selected KPI appear in the page displaying the Equipment summary. When you select **+** for a KPI card, the charts appear, displaying information about the KPI as described in the following table.

KPIs	Description
Quality	<p>Displays the following details about the calculated Quality by product:</p> <ul style="list-style-type: none"> • Scrap Breakdown: A Pareto chart displaying the top five reasons for the scrap breakdown. Select Get By Duration to access the breakdown information by duration. • Loss By Product: A Waterfall chart displaying losses by product. <p>Note: In the View by box for a chart, select Quantity or Count to access the data according to the selected option in the chart.</p>
Performance	<p>Displays the following details about the calculated Performance by product:</p> <ul style="list-style-type: none"> • Speed Loss Breakdown: A Pareto chart displaying the top five reasons for the speed loss breakdown. • Speed Loss By Category: A Waterfall chart displaying speed losses by category. <p>Note: In the View by box for a chart, select Duration or Count to access the data according to the selected option in the chart.</p>
Availability	<p>Displays the following details about the calculated Availability related to the uptime of the machine:</p> <ul style="list-style-type: none"> • Summary Statistics: A list of the number of events, total downtime, mean time to repair (MTTR), and mean time between failures (MTBF) values. By knowing MTBF and MTTR values, you can schedule around the availability of the Equipment while informed of the time between failures and the time it takes to resolve issues, thus enhancing OEE. • Downtime Breakdown: A Pareto chart displaying the top five reasons for the downtime breakdown. • Downtime by Category: A Waterfall chart displaying downtime by category. • A list of reasons for the downtime and color-coded charts that display uptime and downtime for the selected time range. <p>Note: In the View by box for a chart, select Duration or Count to access the data according to the selected option in the chart.</p>

When you hover over any bars in the charts, the tooltip displays the information about the attributes described in the following table.

Attribute	Description
Fraction	Corresponding percentage of the total downtime
Count	Number of events
Duration	Downtime duration

6. **Optional:** Select , then select the **NPT** check box, and then select **Apply** to include any non-productive time (NPT) in the results. For more information, refer to the [About Non-Productive Time in Downtime Calculations](#) on page 166 topic.

Customise Time Duration to Refresh Data

There are two configuration settings you can customise to regulate the data that is displayed in this application. They are:

- The frequency of refreshing a page if left idle for certain minutes
 - The number of hours for collating and displaying the data in the grid
1. In the Plant Applications Web Client folder, navigate to `C:\Program Files\GE Digital\PlantApplicationsWebClient\NodeUIApp\activities-app\assets`.
 2. Select the **app.properties.json** file to modify it in an editor of your choice.
 3. Modify the values for the following parameters:

- "lastNHours":8
- "refreshNMinutesDuration":10

Note: The values listed here are the default values for the parameters.

4. Save and close the **app.properties.json** file.
5. Refresh Plant Applications Web Client.
 - The modified value for the **refreshNMinutesDuration** is the frequency with which the data on an idle page is refreshed.
Example: If the **refreshNMinutesDuration** is set to 5 minutes and the user does not interact with the UI for 5 minutes, the list gets refreshed and the timestamp is updated accordingly.

Chapter

14

Reports

Topics:

- [About Reports](#)
- [OEE Parameters Calculation for Production Lines](#)
- [OEE Parameters Calculation for Standard Units](#)
- [OEE Parameters Calculation for Time-Based Units](#)
- [Viewing Reports](#)

About Reports

As a supervisor, you can generate OEE and production status reports for selected assets, displayed as a series of cards.

The Reports application enables you to generate OEE and production status reports for selected assets, displayed as a series of cards. You can access the KPI reports and production status of the plant by Department, Production Line, and Production Unit. The application also provides information about Planned vs. Actuals for each KPI.

The OEE reports track production conditions and events that contribute to manufacturing inefficiencies related to downtime, waste, and production throughput. The application automatically tracks OEE by product and order.

Note: To access information about a Production Unit in the Reports application, you must specify the **Production Rate Specification** attribute for the Production Unit in the Plant Applications Administrator. Else, a message indicating the non-availability of data for the corresponding unit appears in the Reports application. For more information, refer to the OEE: Production Metrics topic in the Proficy Plant Applications Help.

OEE is derived as a product of the following metrics:

$OEE = Availability \times Performance \times Quality$

Note: For information about the calculation of OEE parameters for time-based units, refer to the [OEE Parameters Calculation for Time-Based Units](#) on page 194 topic.

When reporting OEE statistics, the following thresholds apply:

Good	> 85 percent
Moderate	> 50 percent and <= 85 percent
Low	<= 50 percent

Note: The maximum value for the KPIs are set to 100% by default. However, you can override this by setting **OEE Max Limit Override** to true. The OEE Max Limit Override flag allows the OEE cap beyond 100%. When this flag is set to false and the KPI actual value is more than 100%, the value is defaulted to 100% in the chart.

The production status report provides data related to tracking of products and order-completion status (scheduled for production, in progress, or completed).

In the Reports application, in the **Show** list, you can select one of the following options to generate the corresponding report type:

- **Product OEE:** Displays the OEE report for a product. You can expand a row in the search results to compare planned versus actual KPI data for the product as shown in the following image.

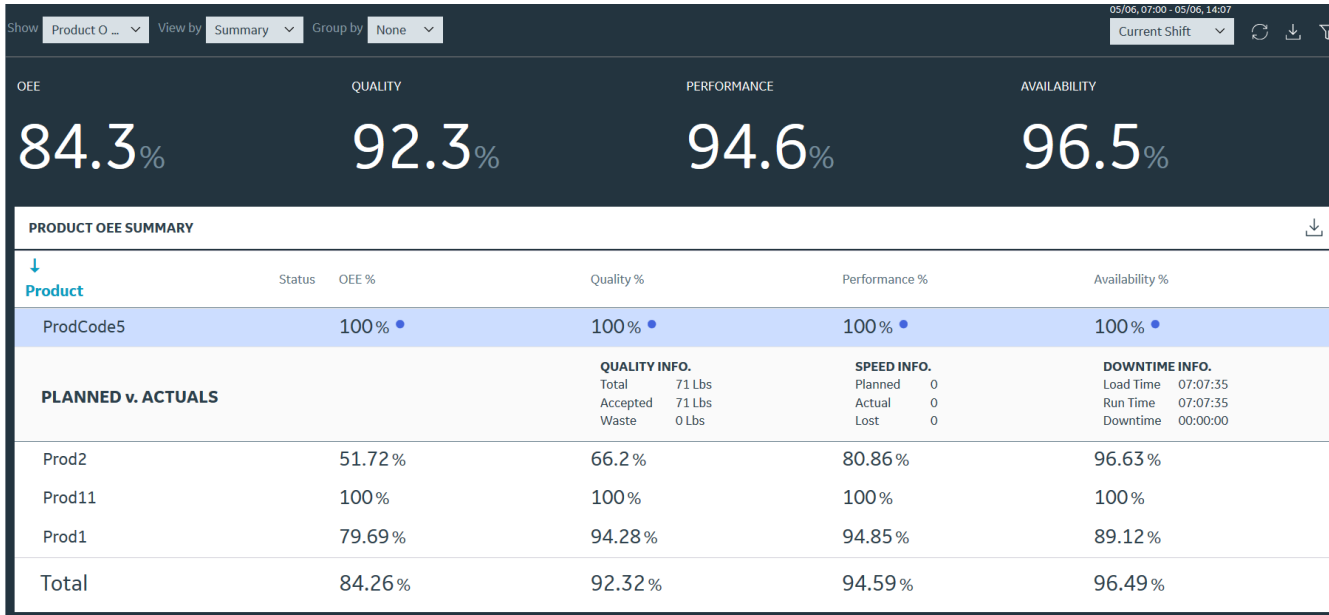


Figure 3: Product OEE Report

- **Order OEE:** Displays the OEE report for an order. You can expand a row in the search results to compare planned versus actual KPI data for the order as shown in the following image.

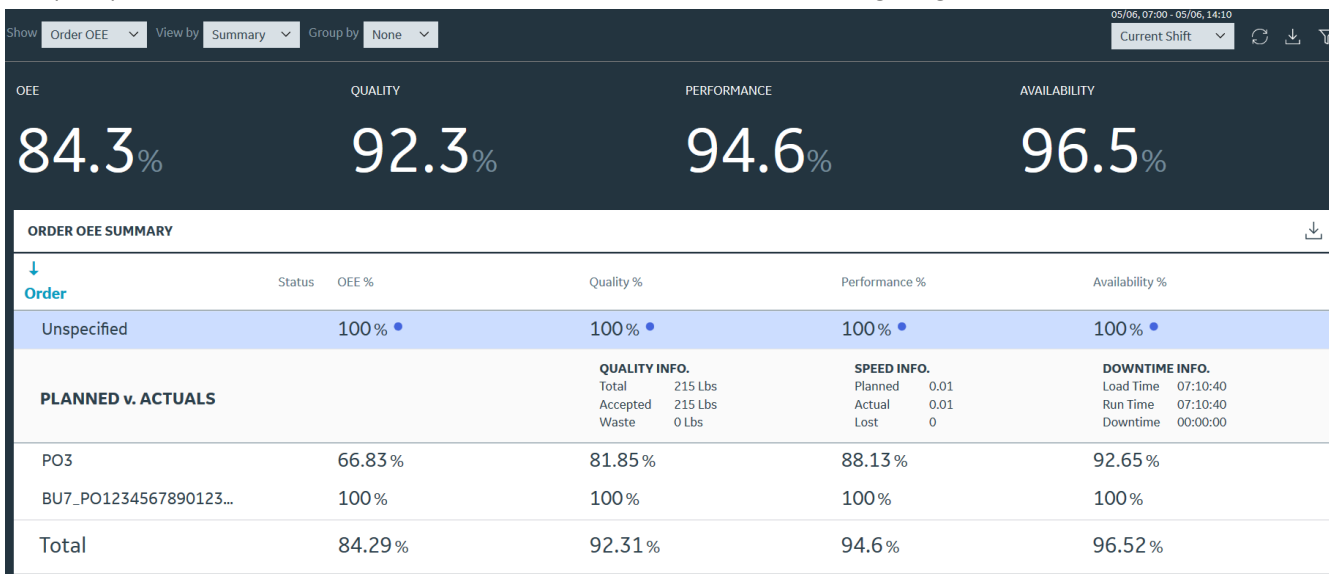


Figure 4: Order OEE Report

- **Production Status:** Displays the status of an order in a shift. You can expand a row in the search results to access more information about the order as shown in the following image.

05/06, 07:00 - 05/06, 14:12
Current Shift

Show Productio ... View by Summary Group by None

PRODUCTION STATUS SUMMARY

Order	Product	Status	Complete %	Start	End
PO3	Prod2	Active	100 %	02/09/2018, 3:48:00 PM	04/28/2020, 9:52:00 PM

PRODUCTION INFO

Path	BigPath1	Process Order	PO3
Line	Big Line	Process Order Status	Active
Unit	Big Unit1	Process Order Control Type	Time
Product Code	Prod2	Process Order Type	Scheduled
Description	Prod2		


PLANNED v. ACTUALS

QUALITY			SCHEDULE		
Planned	Actual	Estimated	Planned	Actual	Estimated
4,500	241,869	96,096.54	809days 03hrs 32mins	748days 21hrs 43mins	809days 06hrs 04mins

PO3	Prod2	Active	100 %	02/09/2018, 3:48:00 PM	04/28/2020, 9:52:00 PM
BU7_PO123456789...	ProdCode10	Active	100 %	06/02/2018, 9:27:55 AM	05/06/2019, 2:11:55 PM

Figure 5: Production Status Report

Tip:

You can select , select the **NPT** check box, and then select **Apply** to include any non-productive time (NPT) in these reports. For more information, refer to the [About Non-Productive Time in Downtime Calculations](#) on page 166 topic.

OEE Parameters Calculation for Production Lines

To calculate an OEE parameter (Availability, Performance, or Quality) value for a Production Line, the corresponding OEE parameter for each Production Unit within the Production Line are summed up based on the OEE mode selected for the Production Unit. For more information, refer to the following topics:

- [OEE Parameters Calculation for Standard Units](#) on page 192
- [OEE Parameters Calculation for Time-Based Units](#) on page 194

Note: These KPI metrics are based on the **OEE Aggregation Store** setting. If **OEE Aggregation Store** is set to False, the values are calculated on the fly every time the chart is opened or refreshed. If it is set to True, the values are populated from the OEE Aggregation tables. For more information, refer to the [About OEE Aggregation Store](#) on page 218 topic.

OEE Parameters Calculation for Standard Units

The classic OEE mode approach to the OEE calculation for standard units measures the performance and quality losses in terms of loss of production availability or productivity that are attributed to the performance and quality, respectively.

The classic OEE modes are Standard, None, Long Running 840D, and Long Running EDM are defined for a Production Unit in Plant Applications Administrator. The OEE calculation formula for all these modes are same.

The OEE parameters Availability, Performance, and Quality for the standard Production Units are calculated based on the formula described in the following table.

OEE Parameter	Calculation Formula
Availability	Availability = Net availability run time/Planned production time Where, Net availability run time = Planned production time - Availability downtime
Performance	Performance = Actual production/Target production Where, <ul style="list-style-type: none"> Actual production is the actual productivity of the Unit Target production is the potential productivity of the Unit
Quality	Quality = Net production/Actual production Where, <ul style="list-style-type: none"> Net production = Actual production - Waste Actual production is the actual productivity of the Unit Waste is the amount of rejected products

Classic-Mode OEE Parameters Calculation

In this example, the value for each OEE parameter per day for a bottle manufacturing plant is as shown in the following table.

Inputs	Value
Planned production time	24 hr
Availability downtime	1 hr
Actual production	900 bottles
Target production	1000 bottles
Waste	100 bottles

The following table provides the value of each OEE parameter calculated based on the formula described in the earlier section.

OEE parameter	Parameter value	Formula used	Explanation
Availability	$23/24 = 0.125$	Availability = Net availability run time / Planned production time.	Planned production time = 24 hr Availability downtime = 1 hr Net availability run time = $24 - 1 = 23$ hr
Performance	$900/1000 = 0.9$	Performance = Actual production / Target production	Actual production = 900 bottles Target production = 1000 bottles
Quality	$800/900 = 0.8889$	Quality = Net production / Actual production	Actual production = 900 bottles Waste = 100 bottles Net production = $900 - 100 = 800$ bottles

OEE Parameters Calculation for Time-Based Units

The time-based approach to the OEE calculation measures the performance and quality losses in terms of loss of production time or downtimes that are attributed to the performance and quality, respectively.

The OEE parameters Availability, Performance, and Quality for the time-based units are calculated based on the formula described in the following table.

OEE Parameter	Calculation Formula
Availability	$\text{Availability} = \frac{\text{Net availability run time}}{\text{Planned production time}}$ Where, Net availability run time = Planned production time - Availability downtime
Performance	$\text{Performance} = \frac{\text{Net performance run time}}{\text{Net production time}}$ Where, <ul style="list-style-type: none"> • Net production time = Planned production time - Availability downtime • Net performance run time = Net production time - Performance downtime
Quality	$\text{Quality} = \frac{\text{Net quality run time}}{\text{Net production time}}$ Where, <ul style="list-style-type: none"> • Net production time = Planned production time - Availability downtime - Performance downtime • Net quality run time = Net production time - Quality downtime

Time-Based OEE Parameters Calculation

In this example, the value for the production time and downtime for each OEE parameter is as shown in the following table.

Inputs	Value
Planned production time	60 minutes
Availability downtime	10 minutes
Performance downtime	10 minutes
Quality downtime	10 minutes

The following table provides the value of each OEE parameter calculated based on the formula described in the earlier section.

OEE parameter	Parameter value	Formula used	Explanation
Availability	$50/60 = 0.8333$	Availability = Net availability run time / Planned production time.	Planned production time = 60 minutes Availability downtime = 10 minutes Net availability run time = $60 - 10 = 50$ minutes
Performance	$40/50 = 0.8$	Performance = Net performance run time / Net production time	Planned production time = 60 minutes Availability downtime = 10 minutes Performance downtime = 10 minutes Net performance run time = $50 - 10 = 40$ minutes Net production time = $60 - 10 = 50$

OEE parameter	Parameter value	Formula used	Explanation
Quality	30/40 = 0.75	Quality = Net quality run time/Net production time	Planned production time = 60 minutes Availability downtime = 10 minutes Performance downtime = 10 minutes Quality downtime = 10 minutes Net quality run time = 50 - 10 = 40 minutes Net production time = 60 - 10 - 10 = 40 minutes

Viewing Reports

You can view the **Reports** summary for Product OEE, Order OEE, and Production status as a series of cards based on selected assets.

1. On the **Reports** screen, select an option from the **Show** drop-down list.
 - Product OEE
 - Order OEE
 - Production Status

Show determines the data to be displayed on the cards, such as OEE data or Production Status tracking data.

2. Select one of the following from the **View by** drop-down list:

- Summary (Default option)
- Department
- Line
- Unit

View by determines the physical assets upon which the display is based, such as Departments, Lines, and Units, with an additional summary view.

3. You can group the information as per your requirement

View by option	Grouping options
Summary (default option) or Department	<p>Group by drop-down-list contains the following options:</p> <ul style="list-style-type: none"> • None (default option) • Shift • Crew
Line	<p>In drop-down list contains a full list of department names. Example:</p> <ul style="list-style-type: none"> • <i>Department 1</i> • <i>Department 2</i> • <i>Department 3</i> <p>You can also group results by none, shift, or crew.</p>
Unit	<p>In drop-down list contains a full list of line names. Example:</p> <ul style="list-style-type: none"> • <i>Line 1</i> • <i>Line 2</i> • <i>Line 3</i> <p>You can also group results by none, shift, crew, or path.</p>

4. Select the required time range and click the refresh button next to the drop-down to view and update the results.

- Current Shift (Default)
- Last Shift
- Today
- Yesterday
- Current week
- Last week
- Custom
- Tomorrow (for Production Status only)
- Next Week (for Production Status only)
- Next Shift (for Production Status only)

The time range that you select will be displayed in the form of date and time next to the time-interval drop-down list. The **Reports** screen generates the report for the selected options. For example, if you select **Product OEE** by **Line** in *department 1* grouped by **Shift** for the current shift, the application generates a list with the following information:

- A summary of KPIs is displayed at the top: OEE, Quality, Performance, and Availability
 - Note:** The KPI values are based on the selected time range and not on the Product or Order time durations.
- For each line, grouped by shift, following columns are displayed:
 - *Product* – Products produced on the Machine or Machine group. If the report selected is **Product OEE**, this column shows the Product information. If the report selected is **Order OEE**, this column shows the Order information.

- **Status** – When an OEE exceeds an established threshold, the Status column displays a red dot.
- Separate columns display each KPI for the listed products: OEE %, Performance %, Availability %, and Quality %.
- The last row for each shift displays the **Total** value rolled up for each KPI card.

If you select **Production Status** in the **Show** drop-down list, you see the production status report for the model context selected through **View By** and **In** drop-down list and grouped by the **Group by** category. The report view includes the following information:

- **Order** (sortable) – The list of Orders in the Machine or Machine Group, or as a Summary, as per the orders configured in the Plant during the time range selection made.
 - **Product** – Name of the Product associated with the Order in the row.
 - **Status** – the status of the Order (for example: Completed, Active, Pending).
 - **Complete %** – completion percentage at the time the Report is displayed.
 - **Start** – start time of the Order. If the Order has already started or completed, this time shows the actual time, else it displays the planned time.
 - **End** – End time of the Order. If the Order is already completed, this time shows the actual time, else it displays the planned time. If the order is in process, it displays the estimated time.
 - **In-line View** – If you select a row, an in-line view opens, displaying Production Information along with the **Planned vs. Actual** values of Quality and Schedule.
5. **Optional:** Click a row to see the color chips for all the three KPIs. The colors of these chips indicate the ranges of the KPI values which are static and are not based on Product or plant model context.
 6. **Optional:** Click a row to see the details of the KPIs of that particular row. The row expands to display **Planned vs. Actual** raw values of the KPIs for the corresponding row.
 7. **Optional:** For any combination of the Options selected, once the data is retrieved and displayed they can be exported to a **csv** file by clicking the export icon on the right top corner of the cards.

Chapter 15

My Machines

Topics:

- [Select Machines](#)

Select Machines

As an Operator, you can use the My Machines application to select machines from the list of machines accessible to you across a plant model. The selected machines are set as your user preferences in the Plant Applications Web Client. The other applications in the Plant Applications Web Client, such as Downtime and Reports, display their application-specific data for only those machines that were set as your user preferences.

Note: Two user preferences are stored for a user. You can switch back to previous user preference using the **Restore Previous Profile** option.

When you load the My Machines application for the first time or if no machines are displayed, the machines for which you have access to appear in the **Selected Machines** section.

Note: If no machines are authorized to you, an error message is displayed. Contact your System Administrator.

1. Select the relevant departments, lines and machines from the **Departments, Lines** and **Machines** boxes, respectively. The list of machines appears.
2. Select the machines you want to set as your user preferences.

Note: The values that appear in the **Department, Line,** and **Machine** boxes are based on the Production Units associated with an active Display for which you have write access. You can configure Production Units for a Display in the Plant Applications Administrator.

The screenshot shows the My Machines application interface. At the top, there are three dropdown menus: "Departments", "Lines", and "Machines". Below these, the interface displays "3 DEPARTMENTS", "3 LINES", and "4 MACHINES". A table lists the selected machines with columns for Department, Line, and Machine. Each row has a checkbox on the left.

<input type="checkbox"/>	DEPARTMENTS ↑	LINES	MACHINES
<input type="checkbox"/>	Beer Manufacturing	> Vertical Mills	> VCNC-001
<input type="checkbox"/>	Beer Manufacturing	> Vertical Mills	> vertical mills unit in v
<input type="checkbox"/>	Garments	> Cutting	> Cutting Unit1
<input type="checkbox"/>	Ice Cream Manufacturing	> Ice Cream Line	> Ice Cream Unit1

3. Select **Save**.

Based on machines selected in the My Machines application, application-specific data appears in the other applications. For example, in the **Events** page in the Downtime application, the downtime records for the machines selected in the My Machines application appear.

Note: You must have at least one machine authorized to you. If you delete all the machines authorized to you, an error message is displayed and the option to save the changes is not available. If you want to delete all the machines, contact your System administrator.

Chapter 16

Analysis

Topics:

- [About Analysis](#)
- [Analyze a Process Order](#)
- [Analyze a Batch](#)
- [Add Tags, Variables, KPIs, Process Orders, and Batches](#)
- [Filter Tags, Variables, KPIs, Process Orders, and Batches](#)
- [Access Trend Charts](#)
- [Modify Charts](#)
- [Save an Analysis Trend](#)
- [Restore a Saved Trend](#)
- [Delete a Saved Trend](#)

About Analysis


As a supervisor, you can use the Analysis application to plot historical and live charts to visualize time series data available in Plant Applications and Historian.

Analysis application displays information for production batches in the form of a Gantt chart.

It enables operators, supervisors, and process engineers to analyze time series data and live issues, and to quickly troubleshoot issues and make improvements. Process engineers can also analyze the production batches and golden batches information.

Analyze a Process Order

You can use the Analysis application to analyze one or more Process Orders when Plant Applications is configured to use process orders instead of batches. In some organizations, a batch is identified as a process order number. In this scenario, the process order quantity is the batch quantity produced in a production run.

1. Log in to the Plant Applications Web Client.
2. Select .

The **Chart Configuration** page appears.


3. In the **Plant Model** list, select a plant model associated with the process order.
4. In the **Data type** list, select **Process Orders**.

Note: The **Process Orders** option appears only when the Plant Applications Web Client is configured to use process orders instead of batches.

5. Search for the process order that you want to analyze, and then, in the **Process Orders** section, select **Add Process Orders**.

Tip: You can add multiple process orders to compare their details.

6. Select **Plot** to access the **CHART CONTROLS** page, and then analyze the process order.


Tip: Alternatively, you can select  to access the **CHART CONTROLS** page.

By default, the **CHART CONTROLS** page appears in Normal View and a Gantt chart appears for the selected process order.

If you selected only one process order, the process order available in the five days before and after the selected process order also appears in the chart. You can hover over a process order to view its details. For more information about trend charts, refer to the [Types of Trend Charts](#) on page 212 topic.

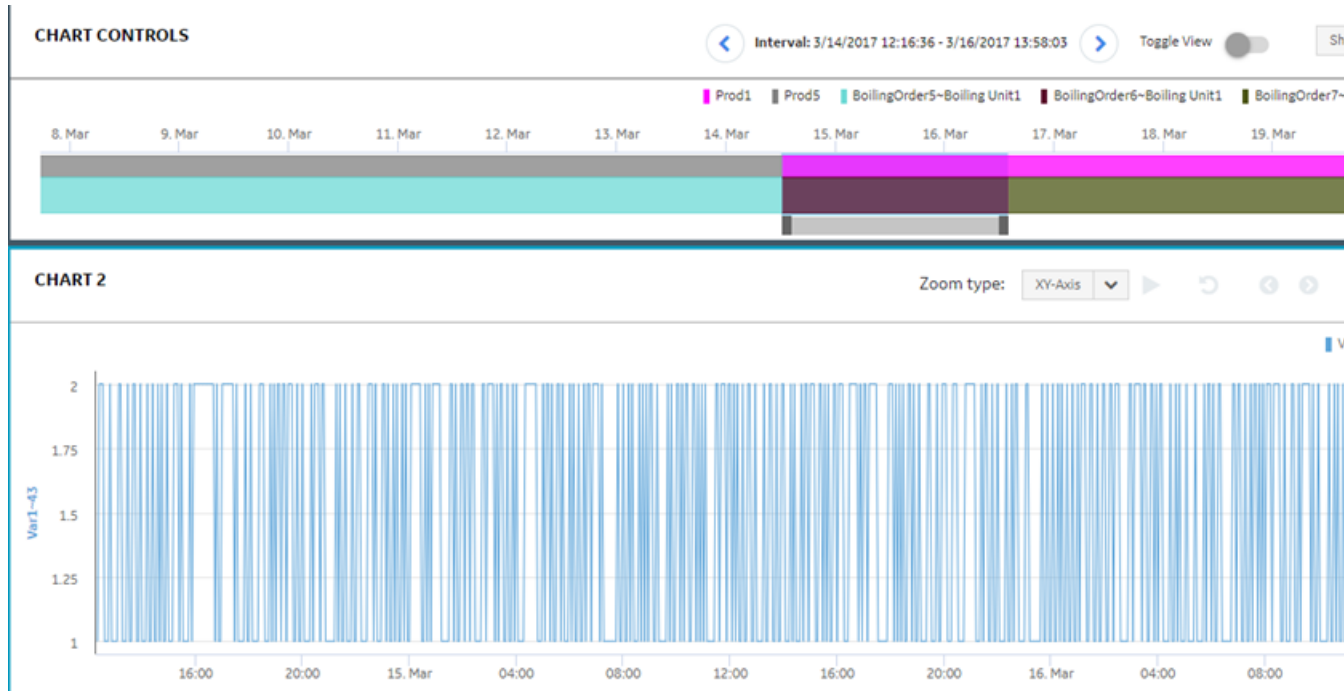
In the **CHART CONTROLS** page, you can use the **Toggle View** option to toggle between the interval and duration modes.

If you selected multiple process orders, then the Gantt chart appears in the duration mode only.

7. Analyze the selected process order with respect to variables in a Line chart by following these steps:
 - a. Select  to go back to the **Chart Configuration** page.
 - b. In the **Data type** list, select **Variables**.
 - c. Search for the variables you want to plot in the Line chart, then select **Add Chart**, and then select **Plot** to plot the selected variables for the selected process order in a single Line chart.

Tip: Select **Add Chart** to add more charts and plot a single variable or a combination of variables in different charts.


In the **CHART CONTROLS** page, the Line chart appears in the **CHART 2** section after the Gantt chart as shown in the following image.



You can set the time slider bar for the required time duration for the process order. When you update the time duration for the process order in the Gantt chart, the application updates the corresponding Line chart displaying the time series data. In addition, the application synchronizes the horizontal axis for the Gantt and Line charts.

Analyze a Batch

You can use the Analysis application to analyze a batch, compare the batch with the other batches, navigate to previous and next batches, and compare how the variables associated with the batch produced trend over the batch duration. The ANSI/ISA-88.01-1995 documentation defines a batch as the material that is being produced or that has been produced by a single execution of a batch process or an entity that represents the production of a material at any point in the process. Batches are produced on a single equipment or a process cell. A golden batch is a batch that is identified to be used as a reference batch for a few specific KPIs such as the best yield, lowest waste, best quality, and higher productivity.


1. Log in to the Plant Applications Web Client.
2. Select .
3. In the **Plant Model** list, select a plant model associated with the batch.
4. In the **Data type** list, select **Batches**.

Note: The **Batches** and **Golden Batches** options appear only when the Plant Applications Web Client is configured to use batches instead of process orders.

5. Search for the batch that you want to analyze, and then, in the **Batches** section, select **Add Batches**.

Tip: You can add multiple normal batches or golden batches to compare their details. For more information, refer to the [Add Tags, Variables, KPIs, Process Orders, and Batches](#) on page 207 topic.


6. Select **Plot** to access the **CHART CONTROLS** page, and then analyze the batch.

Tip: Alternatively, you can select  to access the **CHART CONTROLS** page.

By default, the **CHART CONTROLS** page appears in **Normal View**, displaying a Gantt chart for the selected batch. If you selected only one batch, the batches available within the five days before and after the selected batch also appears in the chart. You can hover over a batch to view its details. For more information about trend charts, refer to the [Types of Trend Charts](#) on page 212 topic.

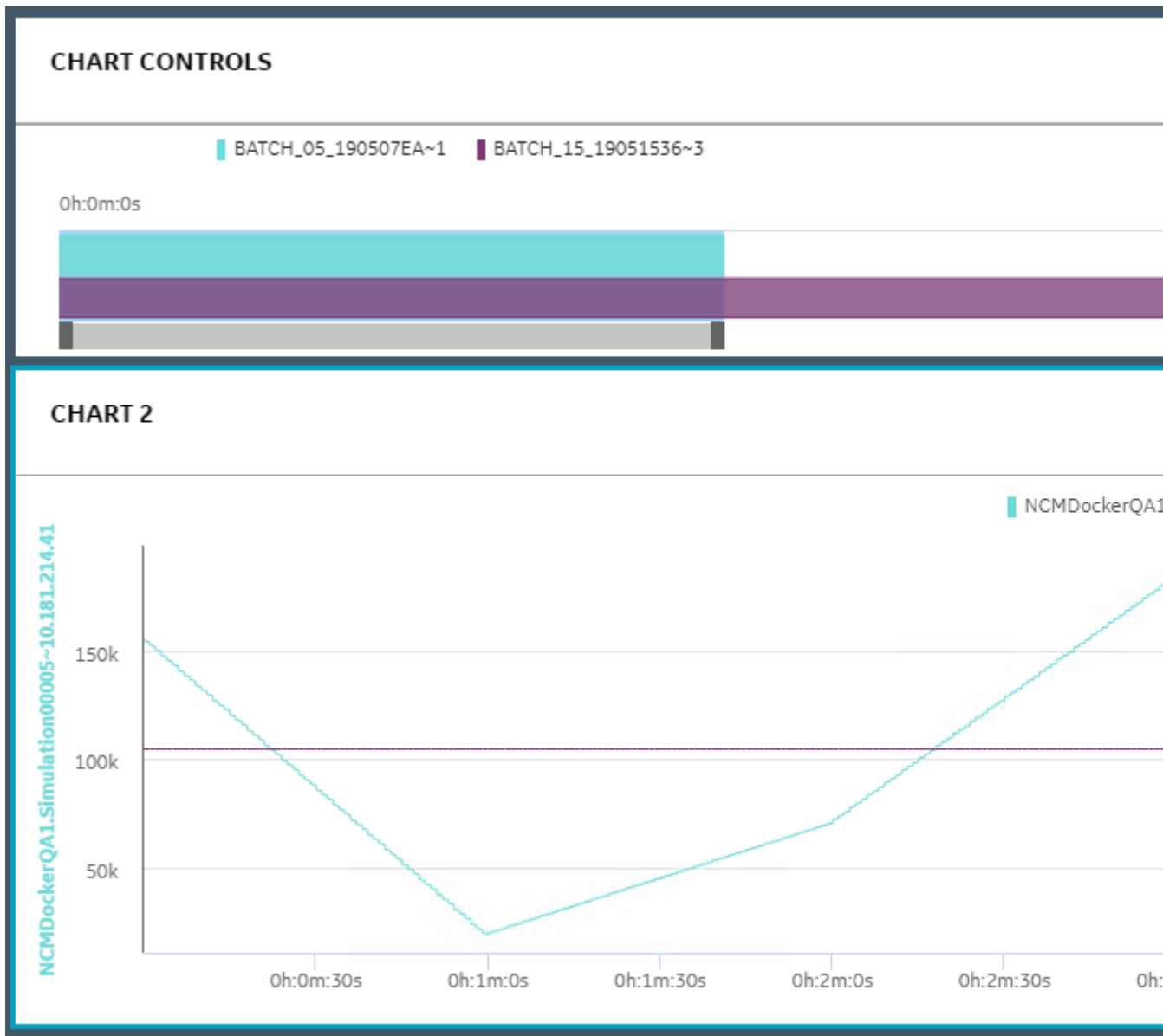
In the **CHART CONTROLS** page, you can use the **Toggle View** option to toggle between the interval and duration modes.

7. Analyze the selected batch with respect to variables in a Line chart by following these steps:

- a. Select  to return to the **Chart Configuration** page.
- b. In the **Data type** list, select **Variables**.
- c. Search for the variables you want to plot in the Line chart, then select **Add Chart**, and then select **Plot** to plot the selected variables for the selected batch in a single Line chart.

Tip: Select **Add Chart** to add more charts and plot a single variable or a combination of variables in different charts.


In the **CHART CONTROLS** page, the Line chart appears in the **CHART 2** section after the Gantt chart as shown in the following image.



You can set the time slider bar for the required time duration for the process order. When you update the time duration for the process order in the Gantt chart, the application updates the corresponding Line chart displaying the time series data. In addition, the application synchronizes the horizontal axis for the Gantt and Line charts.

Add Tags, Variables, KPIs, Process Orders, and Batches

You can add Historian tags, Plant Applications variables, KPIs, process orders, batches, and golden batches to the **Analysis** page to trend required charts and display tables for analyzing information.

1. Log in to the Plant Applications Web Client.
2. Select .
 - The **Chart Configuration** page appears. By default, the **Tags** option appears in the **Data type** list.
3. Select a context in the **Plant Model** list.

Note: You must expand the plant name to navigate and select the required department, line, or unit of your plant. The selected department, line, or unit appears for the plant model in the **Plant Model** list.

4. Select the required Historian server in the **Historians** list.

Note: The **Historians** list appears only when you select **Tags** in the **Data type** list. You can plot the Historian tags belonging to multiple Historian servers, limited to 10 servers only. The Historian server can be local or remote. A local Historian server is installed on the same node as the Process Analyzer. The remote Historian server is installed on a node different than that of the Process Analyzer. The minimum supported version is Historian 7.0 SP5 or later.

5. In the **Data type** list, select one of the following options:

- **Tags**
- **Variables**
- **KPI** (available for lines and units only)
- **Process Orders** (available only if Plant Applications Web Client is configured to use process orders)
- **Batches** (available only if Plant Applications Web Client is configured to use batches)
- **Golden Batches** (available only if Plant Applications Web Client is configured to use batches)

Tip: To sort the search results, select a column name. To filter the data, select . For more information, refer to the topic [Filter Tags, Variables, KPIs, Process Orders, and Batches](#) on page 209.

6. Depending on the data type, select one of the following options as shown in the following table.

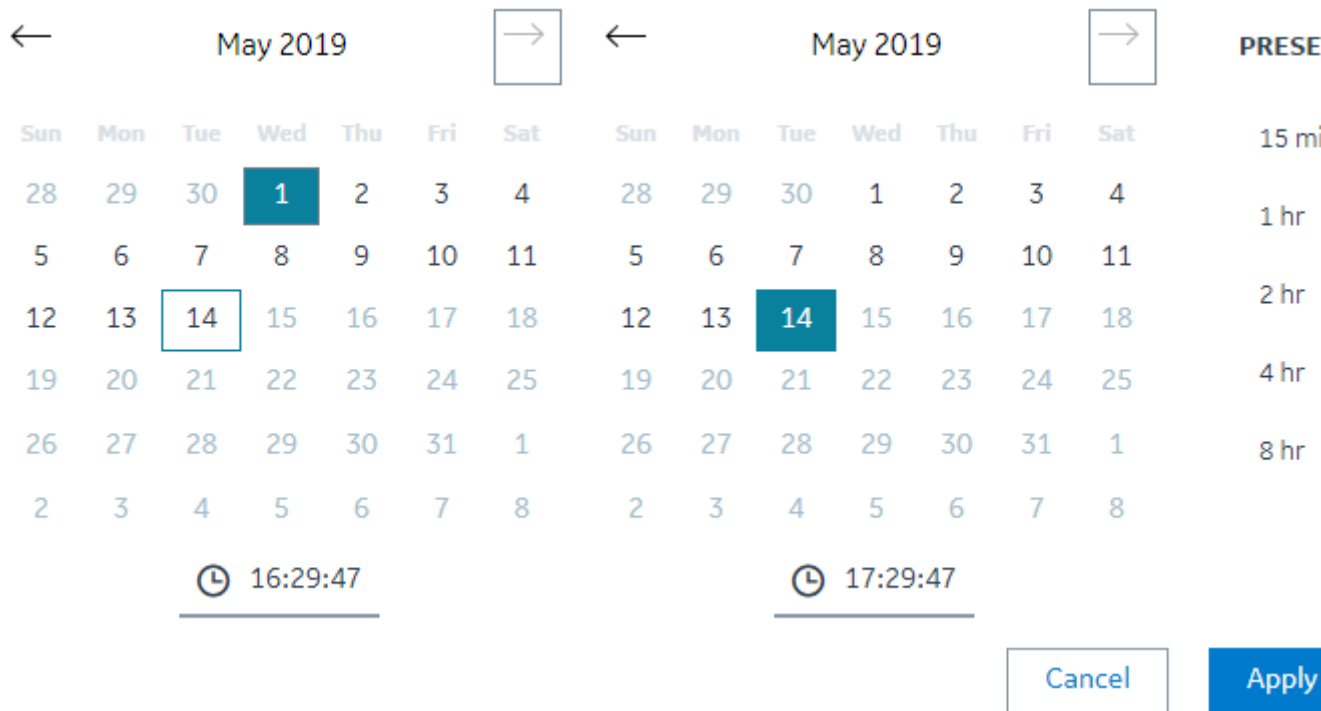
Data Type	Option
Variables	Add Chart
KPIs	Add Chart
Variables	Add Chart
Batches	Add Batches
Golden Batches	Add Batches
Process Orders	Add Process Orders

You can select multiple items.

Note: To add multiple items to an existing chart, select **Add Data** for the chart. Alternatively, to add a new chart, drag the required items to the **Add Chart** button. GE recommends that you should restrict the total count of tags or variables for Live charts to five to optimize the trend chart output.



7. Select to select an interval from the available Presets or to select a custom time interval by selecting the required dates and time, and then select **Apply**.

The default time duration selected is the current time minus one hour. If you select an interval from the calendar, the chart is enabled to be plotted as the Historical chart instead of the Live chart.




- After you add the required items to the charts, select **Plot**.
With larger data samples the loading time of the analysis session may increase.
A live chart is plotted on the screen as Chart 1.


The **Analysis** page appears, displaying the required trend charts and information.

Tip: You can select  to open the **Chart Configuration** page to search and add more tags, variables, KPIs, batches, or process orders for analysis. In the **Chart Configuration** page, you can select  to open the **Analysis** page.

You can further save an analysis trend to restore the analysis view. The trends you save are accessible by all users. For more information, refer to the [Save an Analysis Trend](#) on page 215 topic.

Filter Tags, Variables, KPIs, Process Orders, and Batches

- Log in to the Plant Applications Web Client.
- Select .
The **Chart Configuration** page appears as shown in the following image. By default, the **Tags** option appears in the **Data type** list.
- Select a context in the **Plant Model** list.
Note: You must expand the plant name to navigate and select the required department, line, or unit of your plant. The selected department, line, or unit appears for the plant model in the **Plant Model** list.
- Select the required Historian server in the **Historians** list.
- In the **Data type** list, select one of the following options:
 - Tags**

- **Variables**
 - **KPI** (available for lines and units only)
 - **Process Orders** (available only if Plant Applications Web Client is configured to use process orders)
 - **Batches** (available only if Plant Applications Web Client is configured to use batches)
 - **Golden Batches** (available only if Plant Applications Web Client is configured to use batches)
6. Select  to filter the required data.
The filter window appears based on the selected Data type.

The data is filtered per your selections.

Access Trend Charts


When you select tags, variables, or KPIs and add the data for analysis, your selections are added to a Live chart instance in the Analysis application.

Note: The following features are currently not available for live charts:



- Print preview and print
- Export
- Filter
- Zoom
- Range for y-axis
- Multifield and string tags

You cannot modify the live charts. The chart is autorefreshed with the x-axis duration set to 60 minutes.



Note: You can change the Sampling Mode of Trend Charts by changing the value of the `samplingMode` property in `app.properties.json` file at `C:\Program Files\GE Digital\PlantApplicationsUniversalClient\NodeUIApp\process-analyzer-app\assets`. By default, the value is set to `Interpolated`. The interpolated values are displayed on the chart. Another permissible value of `samplingMode` property is `Trend`, in that selection all the sample count values are displayed.

1. In the **Analysis** page, select  to access the historical chart for a live chart.

Note: Live mode is not supported when the batches with specific times are displayed along with Tags, Variables, and KPIs. You must edit the chart and select **Use Time** to reset before you switch to Live mode. For more information, refer to the [Modify Charts](#) on page 212 topic.


2. Select  for a chart to access a menu containing **Chart Info** and to **Show Statistics** options.
- Select **Chart Info** to access the Chart Type, Start and End date and time, and Tags information.
 - Select **Show Statistics** to access the Name of the trended tags, First Raw Value, Last Raw Value, Minimum Value, Maximum Value, Count, Raw Total, Raw Average, and Raw Standard Deviation.
 - Select **Remove Chart** or select  to delete the respective chart.

If you add more than two tags, variables, or KPIs to a chart for analysis, a common y-axis appears in the chart. The y-axis is automatically scaled based on the minimum and maximum values of all the individual y-axes.

3. **Optional:** To rename a chart, select the title, and then enter the new name.
4. **Optional:** Select  to zoom backwards, or select  to zoom forward for the saved zooms in a session.

In a Historical chart, you can drag and select a time frame to analyze. You can zoom forward multiple times. The forward and backward zooms are saved for a session or until the zoom is reset. For example, if the trend chart represents a longer time frame of one month, you can zoom in to a shorter time frame for a week, and further zoom in to specific hours or minutes of a day to analyze the trend data.







Note: When no data is available for a time window, or if the time window spans less than one second, you may not see any information.




Select  to reset the zoom to default.

You can also select one of the following options in the **Zoom type** list to refine your selection:

- **XY-Axis:** To zoom both x- and y-axes in the Historical chart.
- **X-Axis:** To zoom only x-axis in the Historical chart.
- **Y-Axis:** To zoom only y-axis in the Historical chart.


5. **Optional:** Use one of the following layout options.

Layout Options	Description
<p>Multi-select mode</p>	<p>Selects multiple trend charts or events from the session. After selecting the required trend charts and events you can perform the following actions:</p> <ul style="list-style-type: none"> • After you select multi-select mode, you can select  to view one or two trend charts in full-screen mode. You can select  to exit full-screen mode. • You can clear the Multi-select mode check box to return to the default mode. <p>You cannot modify the charts in multi-select mode.</p>
<p>Normal View</p>	<p>Displays the default view.</p>
<p>Column View</p>	<p>Displays the trend charts and batches information in two columns.</p>
<p>Stacked View</p>	<p>Displays the trend charts and batches information as stacked rows.</p>
<p> (Show / Hide Chart controls)</p>	<p>Enables the following behaviors:</p> <ul style="list-style-type: none"> • When the chart controls for the batches are not available, the chart controls are disabled. • When the chart controls for the batches appear, you can select the icon to hide chart controls. • When the chart controls for the batches are hidden, you can select the icon to show chart controls.
<p> (Export Trended Data)</p>	<p>Downloads trended data (both good and bad qualities data) to a .csv file.</p> <p>Note: When the chart appears blank; that is, the plotted variable has no data, if you export trended data, dummy data of the type bad quality appears in the .csv file.</p>
<p> (Export Raw Data)</p>	<p>Downloads raw data (only good quality data) as a .csv file.</p> <p>Note: When the chart appears blank; that is, the plotted variable has no data, if you export raw data, dummy data of the type bad quality appears in the .csv file.</p>
<p> (Preview Page)</p>	<p>Previews available trend charts for printing. You can select the Print Page button to print the charts.</p>

Layout Options	Description
 (Full screen)	Displays the selected charts in full-screen mode. Select  to exit full-screen mode. Note: You cannot use the keyboard shortcuts like F11 (to run in full-screen mode) or Esc (to exist full-screen mode).
 (Clear Analysis)	Deletes the trend charts and event information from the current session.

Modify Charts

You can modify the type, color, and scale of a displayed chart.

1. Select  next to the tag name to access the editing menu for the respective trend.
Note: You can enable or disable a trend on a chart by clicking on the respective tag name.
2. **Optional:** Select **Edit** to modify the following chart elements, and then select **OK** to apply the changes.

Select	Options
Type	<ul style="list-style-type: none"> • Line • Line Smoothed • Area • Area Smoothed • Scatter <p>For more information about chart types, refer to the Types of Trend Charts on page 212 topic.</p>
Color	Select a color for the trend chart.
Auto Scale	By default, Auto Scale is enabled. You can disable the default settings and provide your own range for the scale by providing Min and Max values.
Use Time	By default, Use Time is enabled, which means that the tag or variable uses the current time. You can disable the time and select the required date and time interval you want to analyze for the corresponding tag or variable.

3. **Optional:** Select the **Switch Y-Axis** option to switch the y-axis for the corresponding tag or variable.
4. **Optional:** You can show and hide rejection limits for the Plant Applications variables by using Show Spec Limits and Hide Spec Limits respectively. If the variable exceeds the rejection limits (L Rej, U Rej), the product is rejected.
Note: You can only display specification limits for Plant Applications variables. By default, the variable specifications limits do not appear in the chart.
5. Select **Remove** to remove a chart or variable from a trend chart.

Types of Trend Charts

Trend charts are graphical representations for showing how the value of one or more items changes over time.

Trend charts can display information as Line, Area, and Scatter charts.

Line is the default type of chart.

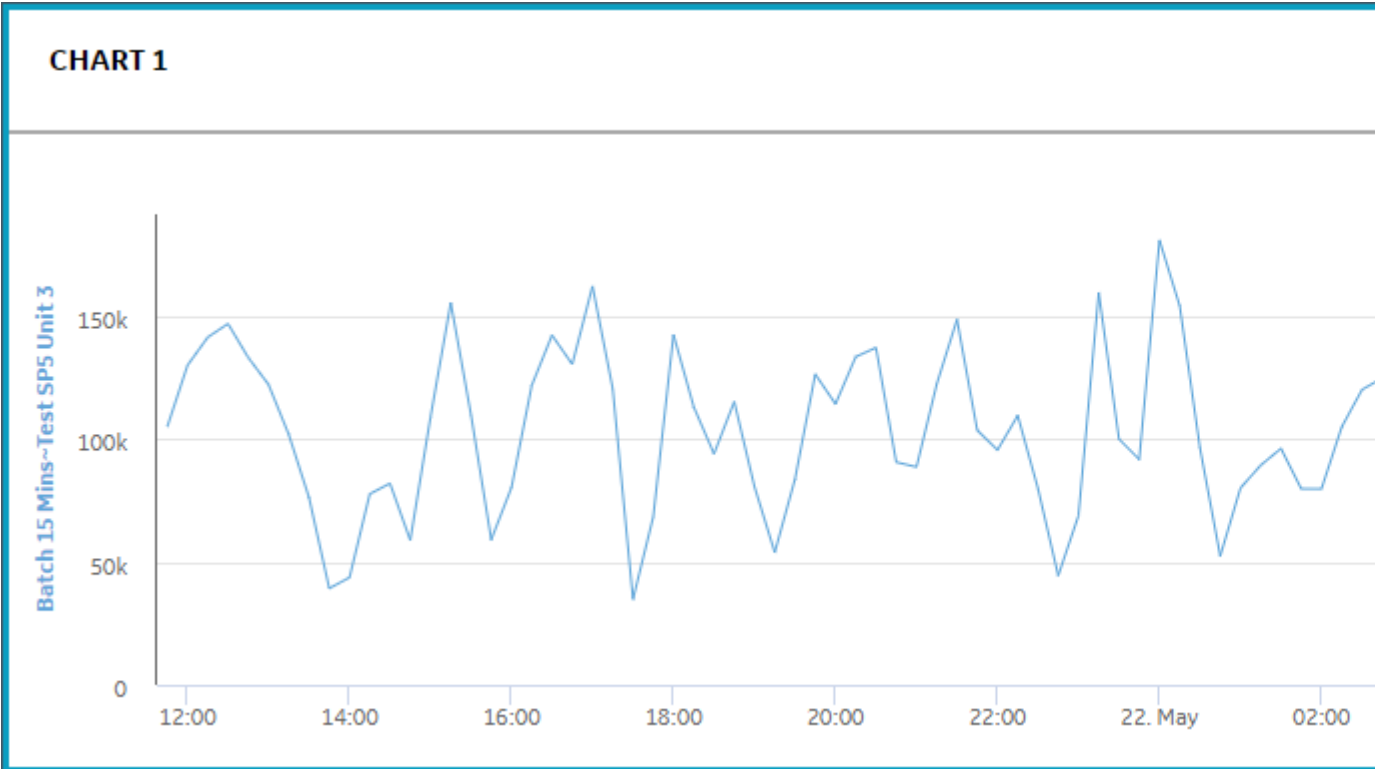


Figure 6: Line Chart

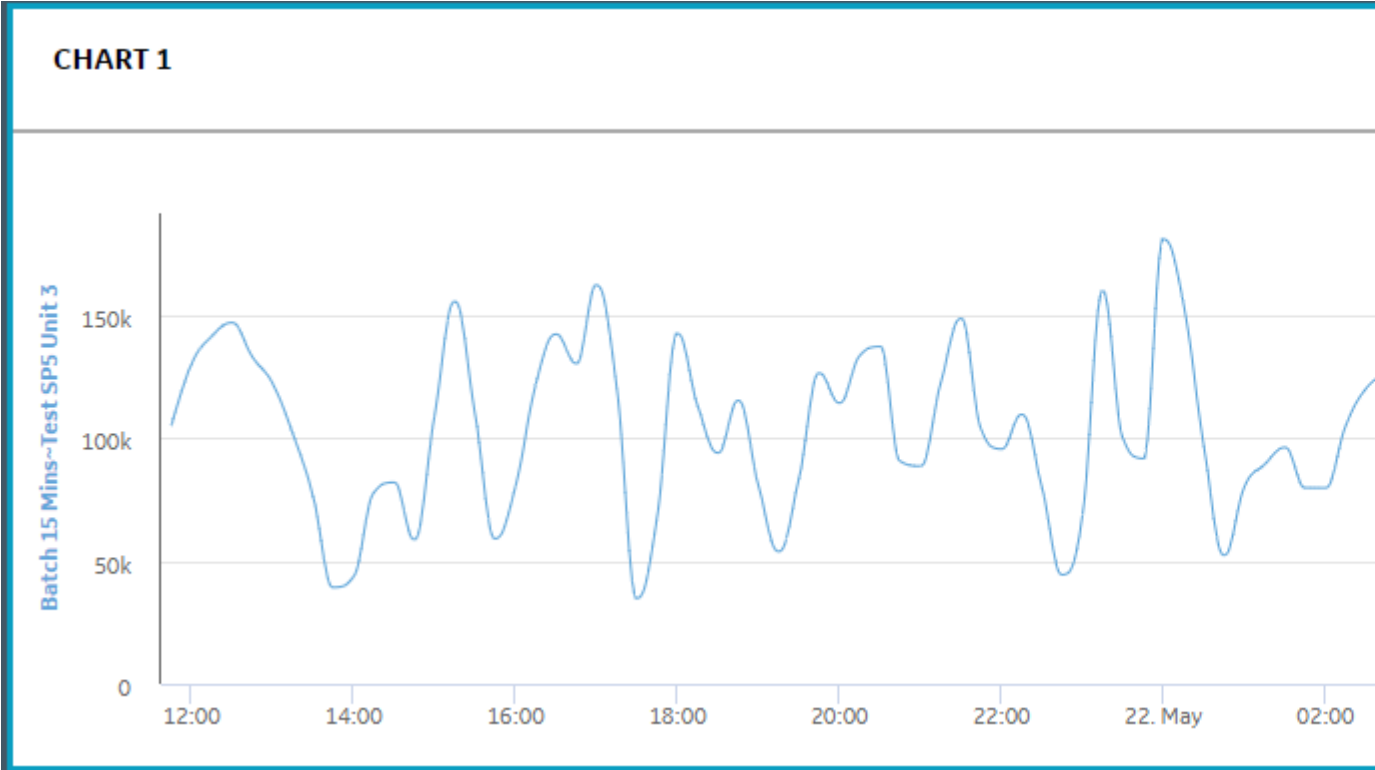


Figure 7: Line Smoothed Chart

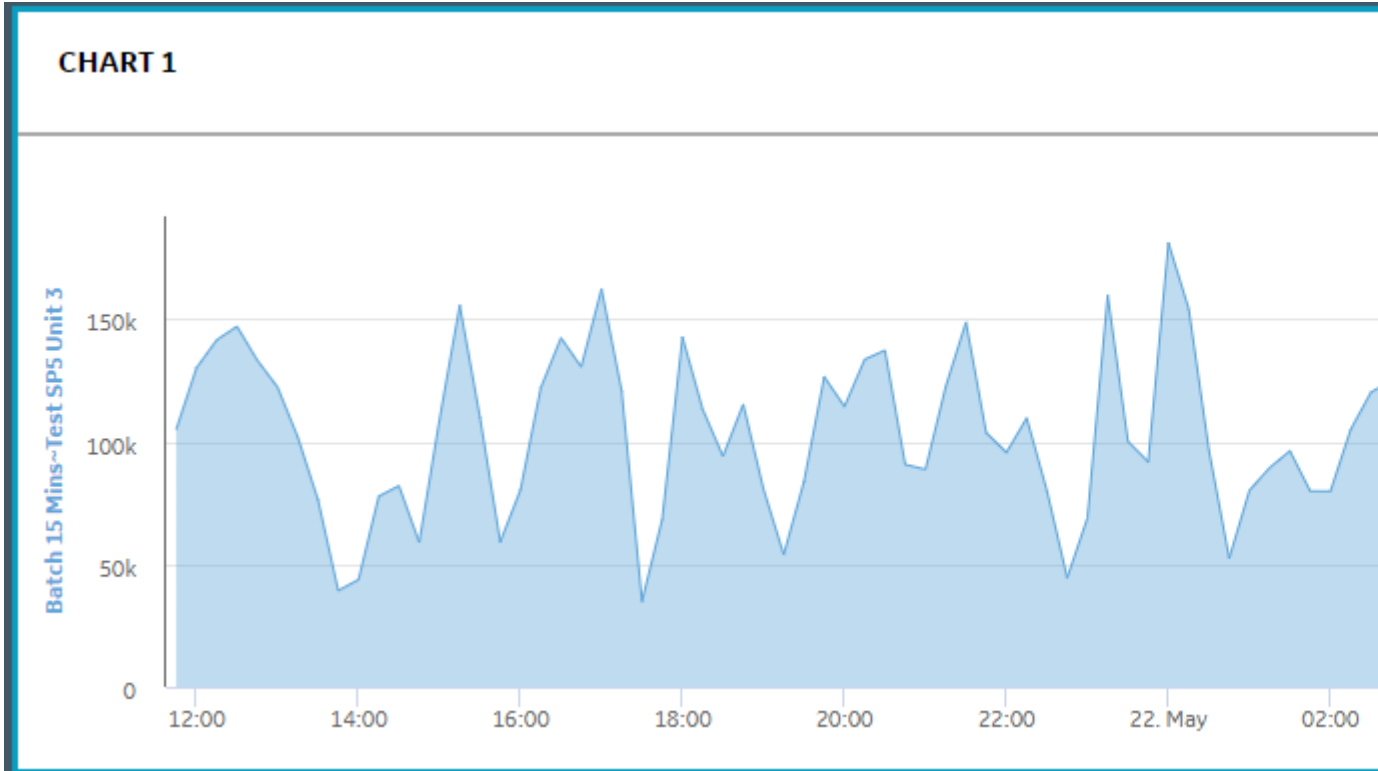


Figure 8: Area Chart

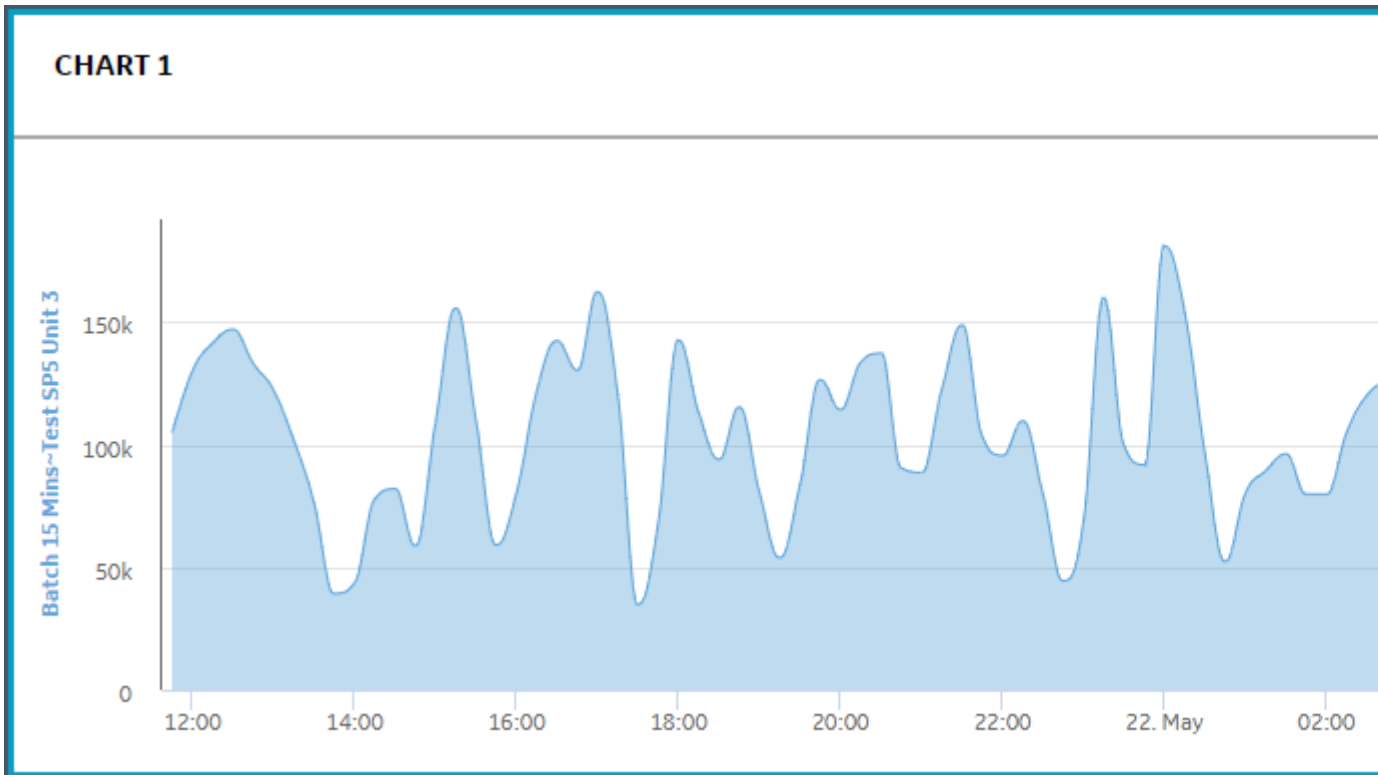


Figure 9: Area Smoothed Chart

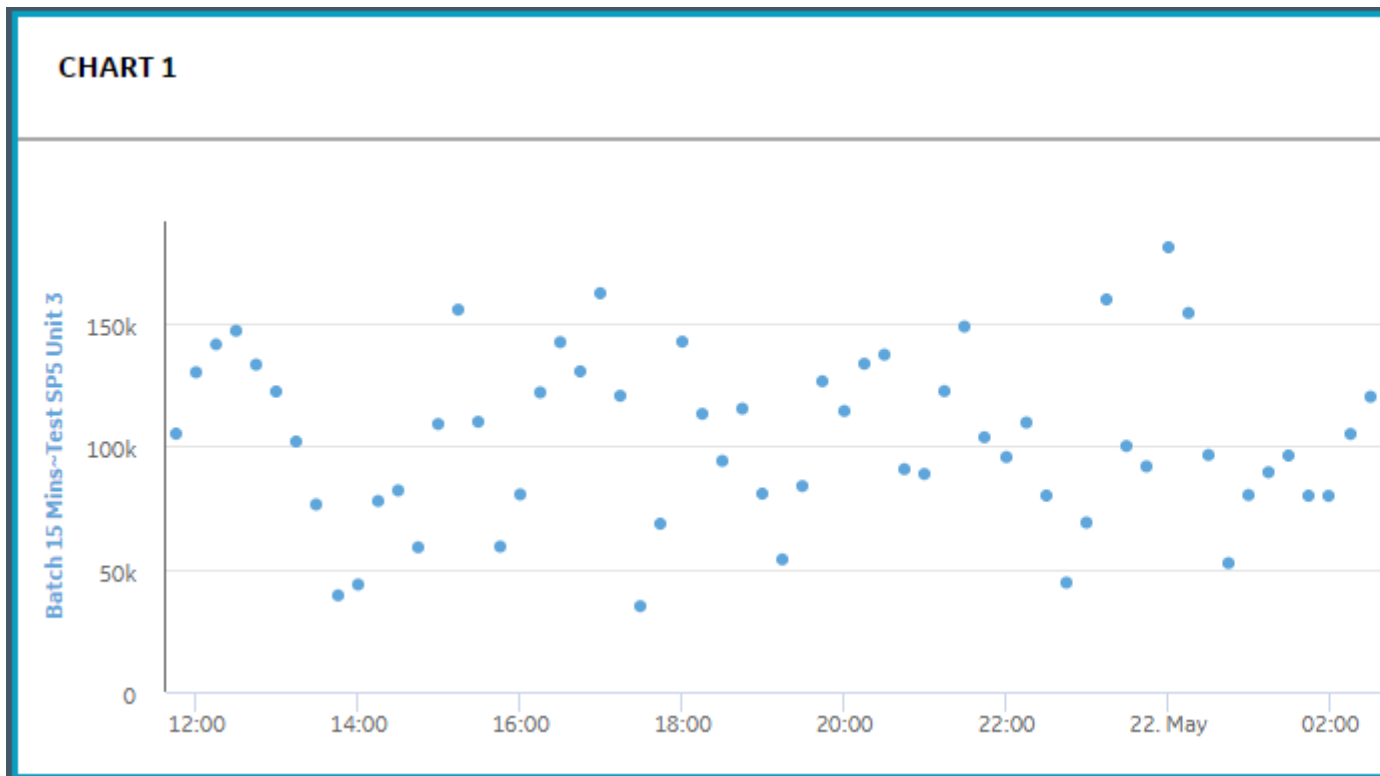






Figure 10: Scatter Chart

Save an Analysis Trend


1. Log in to the Plant Applications Web Client.
2. Select .
The **Chart Configuration** page appears.
3. Select a plant model and data type for which you want to view the trend chart.
4. Depending on the data type, select **Add Chart** or **Add Batches**, and then select **Plot**.
5. Select .
The **Save Trends** window appears.
6. In the **Title** box, enter a descriptive name for the chart.
7. Select **Save**.
The current analysis view is saved as an analysis trend and is accessible by all users.

Tip: To restore or delete the saved trend, select  in the **Chart Configuration** page. For more information, refer to the [Restore a Saved Trend](#) on page 215 and [Delete a Saved Trend](#) on page 216 topics.



Restore a Saved Trend

1. Log in to the Plant Applications Web Client.
2. Select .

The **Chart Configuration** page appears.

3. Select .
The **Restore Trends** window appears.
4. In the saved trends list, select the trend that you want to restore.
5. Select **Restore**.
The saved trend is restored as an analysis view.

Delete a Saved Trend

1. Log in to the Plant Applications Web Client.
2. Select .
The **Chart Configuration** page appears.
3. Select .
The **Restore Trends** window appears.
4. In the saved trends list, select the trend that you want to delete.
5. Select **Delete**.
The **Delete Trend** window appears, asking you to confirm that you want to delete the selected trend.
6. Select **Yes**.
The saved trend is deleted and is no longer accessible to any users.

Chapter 17

OEE Aggregation Store

Topics:

- [About OEE Aggregation Store](#)

About OEE Aggregation Store

The OEE Aggregation Store is designed to improve the performance of the Downtime Supervisor Screens.

The OEE Aggregation Store calculates the OEE values every 60 minutes for production units and then having those values available in the database. This way OEE values do not have to be calculated on the fly every time a Downtime Supervisor screen is opened or refreshed.

The values are populated within the OEE Aggregation Store database table. The OEE Aggregation Store is managed by the following parameters:

Table 2: Populate

Value	Result
True	Enables the population of the OEE Aggregation tables and use of the tables on the Downtime Supervisor screens.
False	Disables the population of the OEE Aggregation tables and use of the tables on the Downtime Supervisor screens.

Table 3: OEE Refresh Intervals

Value	Result
1-24	Defines the number of hours worth of data to refresh. For example: The OEE Refresh Intervals value is set to 5. At 2 PM the OEE Aggregation store table is updated to show values for 2 PM, 1 PM, 12 PM, 11 AM, and 10 AM.

Note: The OEE Aggregation Store functionality only applies to the new Downtime Supervisor screens. It will not be leveraged in our existing Plant Applications Client or Plant Applications Web.

Chapter

18

Activities

Topics:

- [About an Activity](#)
- [Add a Time-Based Event](#)
- [Add a Production-Based Event](#)
- [Add a User-Defined Event](#)
- [Add a Product-Change Event](#)
- [Access the Open Activities](#)
- [Customise Time Duration to Refresh Data](#)
- [Access the Completed or Skipped Activities](#)
- [Filter an Activity](#)
- [Search for an Activity](#)
- [Complete an Activity](#)
- [Modify the Values of Autolog Variables for a Completed Activity](#)
- [About the Statistical Analysis of Autolog Variables](#)
- [Modify the Value of an Autolog Variable](#)
- [Release an Activity](#)
- [Skip an Activity](#)
- [Access Existing Comments for an Activity](#)
- [Add a General Comment for an Activity](#)
- [Modify an Existing General Comment for an Activity](#)
- [Delete an Existing General Comment for an Activity](#)
- [Add an Overdue Comment for an Activity](#)

- [Modify an Existing Overdue Comment for an Activity](#)
- [Delete an Existing Overdue Comment for an Activity](#)
- [Add a Comment for a Variable](#)
- [Modify an Existing Comment for a Variable](#)
- [Delete an Existing Comment for a Variable](#)
- [About Accessing a Custom Form](#)
- [About Custom Forms](#)

About an Activity

As a supervisor or an operator, you can use the Activities application in the Plant Applications Web Client to add and perform activities associated with an event in the specified duration of a shift. For each activity, you can add values for only the supported Autolog variables available in the Plant Applications Administrator. The Autolog variables are measurements or calculations attached to a given production line and product values based on an event or time. Each Autolog variable is associated with an event.

The data type defines the value entered for the Autolog variable in the Autolog sheet. When you perform an activity, you can analyze the data entered for a variable in the Quartile view or in a Whisker chart. The Activities application supports Autolog variables of the following data types.

Data type	Description
Integer	An integer number.
Float	A floating-point number.
Boolean	A logical entity that can have two values: true and false.
String	A sequence of up to 25 characters.
Comment	A comment variable.
Custom	A user-defined data type.
Array	An array of any data type other than string.

You can perform an activity for the following types of events:

- **Time-based:** A time-based event is a generic term for an event that occurs at the scheduled time.
- **Production-based:** A production-based event is a generic term for a lot or batch. It represents the output of a given production line.
- **User-defined:** A user-defined event (UDE) is a generic, manually recorded event used to document important occurrences related to process operations.
- **Product change:** A product change event occurs when there is a product change on a Production Unit.
- **Process order change:** A process order change event occurs when the process order for the associated Production Unit is set to Complete in the Plant Applications Administrator.

Note: You cannot add a process order change event in the Activities application. You can only filter the activities associated with this event type.

For more information about the events and Autolog variables, refer to the Proficy Plant Applications Help.

You can categorize an activity as one of the types as described in the following table.

Type	Description
Open	All activities that are yet to be performed or completed, or are in progress, are categorized as open activities.
Completed	All activities that are completed or skipped are categorized as completed activities.

You can hover over an activity in the **Open** or **Completed** page to view the following information about the activity:

- **Time:** Displays the time stamp when the activity was created.
- **Product:** Displays the product associated with the activity.
- **Equipment:** Displays the equipment associated with the activity.

- **Process Order:** Displays the process order, if available, associated with the activity.

About Creating an Activity

When you add an event for a specific duration in the Plant Applications Web Client, the activity for that event is automatically created in the Activities application. The time stamp of a time-based event and the start and end time of a production-based and user-defined event must be within two hours of the current date and time.

Note: You cannot add a Process Order Change event by using the Activities application. The activities for a Process Order Change event are automatically created in the Activities application when you complete the Process Order in the associated Display and the option to create activities is set to **True**. You configure the Display associated with a Production Unit in the Plant Applications Administrator.

For more information, refer to the following topics:

- [Add a Time-Based Event](#) on page 222
- [Add a Production-Based Event](#) on page 223
- [Add a User-Defined Event](#) on page 224
- [Add a Product-Change Event](#) on page 224

About the Plant Applications Administrator Settings

In the Plant Applications Administrator, you can group variables in a Display (the Autolog sheet) and add a title for each group of variables. You can also configure the Plant Applications Administrator to create activities corresponding to the titles of variable groups. In this case, the application creates as many activities as there are titles for variable groups in the selected Autolog sheet.

The activity created with an event appears in the **Open** page. For more information about accessing open activities, refer to the [Access the Open Activities](#) on page 225 topic.

The activities are not created in the following scenarios:

- When there are no variables configured in the Display associated with an Autolog sheet or a Production Unit and the Display type is not set to custom
- When the Display associated with an Autolog sheet or a Production Unit is configured to create activities with titles corresponding to the titles of variable groups, but the variable groups have the same title
- When the option to create activities is set to **False** in the Display associated with an Autolog sheet or a Production Unit

If the **System Complete Activity On New Event** option in the Plant Applications Administrator is enabled for the Display and you create an activity in the Plant Applications Web Client whose product ID, process order ID, and unit ID match those of any existing activities, the existing activities are automatically set to complete. Depending on the number of such existing activities, the application might take some time to set all the activities as complete. You can then perform only the new activity that was last created.

In the Plant Applications Administrator, when the status of a production-based or user-defined event associated with the activity is set to a production status that has the **Lock Event Data** option enabled, then you do not have the privilege to modify the Autolog sheet for that event.


For more information about Plant Applications Administrator configurations for the Activities application, refer to the Proficy Plant Applications Help.

Add a Time-Based Event

1. Log in to the Plant Applications Web Client.

2. Select 

By default, the **Open** page appears.

3. In the **Open** page, select , and then select **Time Based Event**.

The **Add Time Based Event** window appears, displaying a list of time-based Autolog sheets accessible to the logged-in user as configured in Plant Applications Administrator.

4. In the **Choose activity** section, select an activity to create a time-based event on the selected activity.
5. In the **Add Event Details** section, in the **TIMESTAMP** box, select a date and time.

Note: The time stamp of the event must be within two hours from the current date and time.

6. **Optional:** In the **COMMENT** box, enter a comment for the event.
7. Select **Save**.


The time-based event for the selected activity is added and an activity is automatically created for the event. The activity appears in the **Open** page.

Add a Production-Based Event

1. Log in to the Plant Applications Web Client.

2. Select 

By default, the **Open** page appears.

3. In the **Open** page, select , and then select **Production Based Event**.

The **Add Production Event** window appears, displaying a list of production-based Autolog sheets accessible to the logged-in user as configured in Plant Applications Administrator.

4. In the **Choose activity** section, select an activity to create a production-based event on the selected activity.
5. In the **Event Details** section, in the **EVENT NUMBER** box, enter an event number that is unique per unit.

Note:

If the string of the event number of the last added event has numeric values in it, then the application automatically increments the last numeric value by 1. The string with the incremented numeric value for the new event appears in the **EVENT NUMBER** box. You can retain or modify this value. For example, if the event number of the last added event is PB79RQ89AP, then when you add an event, the value PB079RQ90AP appears in the **EVENT NUMBER** box. Similarly, if the event number of the last added event is PB79RQ89AP1, then for the new event, the value PB79RQ89AP2 appears in the **EVENT NUMBER** box.

6. In the **DURATION** box, select a start and end time for the production-based event.

Note: The start and end time of the event must be within two hours from the current date and time.



7. **Optional:** Specify values for the following optional properties: STATUS, APPLIED PRODUCT, and COMMENT.

Note: When the status of a production-based event associated with the activity is set to a production status that has the **Lock Event Data** option enabled, you do not have the privilege to modify the Autolog variables for that event.

8. Select **Save**.



The production-based event for the selected activity is added and an activity is automatically created for the event. The activity appears in the **Open** page.




Add a User-Defined Event

1. Log in to the Plant Applications Web Client.
2. Select .
By default, the **Open** page appears.
3. In the **Open** page, select , and then select **User Defined Event**.
The **Add User Defined Event** window appears, displaying a list of user-defined Autolog sheets accessible to the logged-in user as configured in Plant Applications Administrator.
4. In the **Choose activity** section, select an activity to create a user-defined event on the selected activity.
5. In the **Add Event Details** section, in the **EVENT NUMBER** box, enter an event number that is unique and not already added to the database.
6. In the **DURATION** box, select a start and end time for the production-based event.
7. **Optional:** Specify values for the following optional properties: STATUS, APPLIED PRODUCT, and COMMENT.
Note: When the status of a user-defined event associated with the activity is set to a production status that has the **Lock Event Data** option enabled, you do not have the privilege to modify the Autolog sheet for that event.
8. In the **REASONS** box, select a reason to create a user-defined event.
9. Select **Save**.

The user-defined event for the selected activity is added and an activity is automatically created for the event. The activity appears in the **Open** page.

Add a Product-Change Event


1. Log in to the Plant Applications Web Client.
2. Select .
The **Open** page appears.
3. In the **Open** page, select , and then select **Product Change Event**.
The **Add Product Change** window appears, displaying a list of Production Units on which you want to make a new product. The Production Units that you can access are configured in Plant Applications Administrator.
4. In the **Choose Activity** section, select a Production Unit to create a Product Change event on the selected Production Unit.
5. In the **Add Event Details** section, in the **PRODUCT GROUP** box, select the product group containing the product you want to make in the Production Unit.
Tip: In the **PRODUCT GROUP** box, you can select **All Products** if you are not sure you about the product group.
6. In the **PRODUCT** box, select the product you want to make by using the selected Production Unit.
7. In the **TIMESTAMP** box, enter the date and time from when you want to initiate the product change event on the selected Production Unit.
By default, the current date and time appears in the **TIMESTAMP** box. You can select the date and time by using the following options:

- Select  to select the date by using a calendar picker, or in the text box next to  you can manually enter the date in the format yyyy/mm/dd (for example, 2018/11/21).
 - In the text box next to , enter the time in the format hh:mm:ss (for example, 5:03:44).
8. **Optional:** In the **PRODUCT CHANGE HISTORY** section, refer to a history of all product changes on the selected Production Unit with a time stamp when the product was changed was made.
 9. Select **Save**.









The product change event is created for the Production Unit in Plant Applications Administrator. In Plant Applications Administrator, if the option to create activities is enabled in the Display associated with the Production Unit, then the activity associated with the product change event appears in the **Open** page. You can then [complete the activity](#) in the Activities application.

Access the Open Activities

To access the open activities, you must have the operator or supervisor role assigned to your user ID.



1. Log in to the Plant Applications Web Client.
2. Select .
The **Open** page appears.

By default, the option to automatically refresh activities in the **Open** page is disabled. You can switch the toggle to enable or disable the option to automatically refresh the page as described in the following table. After you select an option, your selection is saved.

Option	Description
	<p>When this option is selected:</p> <ul style="list-style-type: none"> • If  appears in the Open page, additional open activities are available in the shift. Select  to refresh the page and access all the open activities. • If  appears in the Open page, no additional open activities are available to access. • If  appears in the Open page, the RabbitMQ service is down.
	<p>When this option is selected:</p> <ul style="list-style-type: none"> • If  appears in the Open page, the manual refresh option is disabled. The page automatically refreshes when an additional open activity is available. • If  appears in the Open page, the RabbitMQ service is down.

Note: The number of records displayed in the **Open** page depends on the value that is configured for the maxRecordsToFetch property in the app.properties.json file. If the number of records in the database is more than the value configured for the maxRecordsToFetch property, a notification to contact the administrator appears.

You can select an option for an open activity as described in the following table.

Option	Action
Perform	<p>Select this option to perform an activity and enter values for the Autolog variables for the associated event. The Perform option for an activity appears when the activity is yet to be performed.</p> <p>Note: If the option to lock activities is set to True in Plant Applications Administrator, when you select Perform for an activity, the activity is locked and the In Progress option appears for the activity. Another operator cannot perform an activity until you release the activity.</p>
In Progress	<p>Select this option to perform an incomplete activity and enter values for the Autolog variables for the associated event. The In Progress option for an activity appears when the Status of the activity is not 100%.</p>
Complete	<p>Select this option to complete an activity. The Complete option for an activity appears when the Status of the activity is 100%.</p> <p>If there are no mandatory variables configured in the sheet (sampling Interval or test frequency not set to any variable), the Complete button is enabled even if the activity status is not 100% complete.</p> <p>Note: If the Overdue Task Requires Comment option is set to true in the Sheet display options and if the activity is overdue, then the Overdue comment window appears.</p>
Skip	<p>Select this option if you do not want to perform an activity. The Skip option for an activity appears when the activity is yet to be performed. When you select this option, a window used to enter skip comments appears.</p>
Release	<p>Select this option to release an activity that you are performing to let another user work on it or take over an activity while the first operator is still performing the activity. The Release option for an activity appears when the activity is yet to be completed.</p>
	<p>Select this option, and then select Add Comment to add a comment for the activity. If a comment already exists for an activity, select , and then select Add/Edit Comment to add a general comment and access, modify, or delete a general or overdue comment. For more information, refer to the following topics:</p> <ul style="list-style-type: none"> • Access Existing Comments for an Activity on page 244 • Add a General Comment for an Activity on page 244 • Modify an Existing General Comment for an Activity on page 245 • Modify an Existing Overdue Comment for an Activity on page 246 • Delete an Existing General Comment for an Activity on page 245 • Delete an Existing Overdue Comment for an Activity on page 246 <p>Note: To modify or delete comments, your role must have appropriate rights configured in the Plant Applications Administrator.</p>

Note:

- If the data source of the variable is Historian or Calculation Manager, you must have the Admin privilege to enter the variables.

- If the data source of the variable is Autolog, you must have the Read/Write, Manager, or Admin privileges to enter the variables.

Each field for an activity that appears in the **Open** page is described in the following table.

Field	Description
Activity	Displays the name of the activity. The default format for the activity name is configured in the Plant Applications Administrator.
Time Due	Displays the date and time when the activity is due for completion. The date and time is displayed in the format is mm/dd hh:mm (Example: 09/29 09:20) or dd/mm hh:mm (Example: 29/09 09:20) based on the localization settings. When you hover over the date and time, the complete date and time appears on the tool tip in the format mm/dd/yyyy hh:mm:ss or dd/mm/yyyy hh:mm:ss based on the localization settings.
Due In	<p>Displays the time in hh:mm:ss (for example, 02:00:21) until the activity is expected to be completed. If the activity is overdue, the time appears in red and within parentheses (for example, (02:00:21)). The value in this field is calculated using the formula:</p> <p>Due In = Current Time - Time Due</p> <p>Tip: Select the time in the Due In row for an overdue activity to enter an overdue comment. For more information, refer to the Add an Overdue Comment for an Activity on page 245 topic.</p>

Field	Description						
% Completed	<p>Displays the completion status of the activity as a percentage.</p> <p>The calculation of the completion status of the activity is based on criteria as described in the following table.</p> <table border="1"> <thead> <tr> <th>Criteria</th> <th>Percentage Completion Calculation</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> No sampling interval or test frequency set for variables associated with the time-based events No test frequency set for variables associated with the production-based or user-defined events </td> <td>The ratio of the total variables for which you entered values to the total variables</td> </tr> <tr> <td> <ul style="list-style-type: none"> Sampling interval or test frequency is set for variables associated with the time-based events Test frequency is set for variables associated with the production-based or user-defined events </td> <td>The ratio of the total variables with a test ID for which you entered values to the total variables with a test ID</td> </tr> </tbody> </table> <p>The test IDs for variables are generated in the Plant Applications database.</p> <p>In the Autolog sheet, the appearance of a box for entering a value depends on the following criteria:</p> <ul style="list-style-type: none"> The box appears with a white background for variables with a test ID in the Plant Applications database. The box appears with a grey background for variables with no test ID in the Plant Applications database <p>The status is set to:</p> <ul style="list-style-type: none"> 0%: If you have yet to perform the activity, enter values for any Autolog variables in the event associated with the activity, or no values exist for variables in the Plant Applications Administrator. 100%: If you enter values for all modifiable Autolog variables in the event associated with the activity. 	Criteria	Percentage Completion Calculation	<ul style="list-style-type: none"> No sampling interval or test frequency set for variables associated with the time-based events No test frequency set for variables associated with the production-based or user-defined events 	The ratio of the total variables for which you entered values to the total variables	<ul style="list-style-type: none"> Sampling interval or test frequency is set for variables associated with the time-based events Test frequency is set for variables associated with the production-based or user-defined events 	The ratio of the total variables with a test ID for which you entered values to the total variables with a test ID
Criteria	Percentage Completion Calculation						
<ul style="list-style-type: none"> No sampling interval or test frequency set for variables associated with the time-based events No test frequency set for variables associated with the production-based or user-defined events 	The ratio of the total variables for which you entered values to the total variables						
<ul style="list-style-type: none"> Sampling interval or test frequency is set for variables associated with the time-based events Test frequency is set for variables associated with the production-based or user-defined events 	The ratio of the total variables with a test ID for which you entered values to the total variables with a test ID						
Status	Displays the completion status of the activity such as Not Started, In Progress, Completed, System Completed, or Skipped.						
User	Displays the ID of the user who is performing the activity.						
Equipment	Displays the equipment type.						
Event Type	Displays the event type.						
Process Order	Displays the process order type.						
Product	Displays the product types.						

You can hover over an activity in the **Open** page, to access the following information about the activity:

- **Time:** Displays the time when the activity was created.
- **Product:** Displays the product associated with the activity.
- **Equipment:** Displays the equipment associated with the activity.
- **Process Order:** Displays the process order, if available, associated with the activity.

Customise Time Duration to Refresh Data

There are two configuration settings you can customise to regulate the data that is displayed in this application. They are:


- The frequency of refreshing a page if left idle for certain minutes
 - The number of hours for collating and displaying the data in the grid
1. In the Plant Applications Web Client folder, navigate to `C:\Program Files\GE Digital\PlantApplicationsWebClient\NodeUIApp\activities-app\assets.`
 2. Select the **app.properties.json** file to modify it in an editor of your choice.
 3. Modify the values for the following parameters:
 - "lastNHours":8
 - "refreshNMinutesDuration":10

Note: The values listed here are the default values for the parameters.









4. Save and close the **app.properties.json** file.
5. Refresh Plant Applications Web Client.
 - The modified value for the **refreshNMinutesDuration** is the frequency with which the data on an idle page is refreshed.
Example: If the **refreshNMinutesDuration** is set to 5 minutes and the user does not interact with the UI for 5 minutes, the list gets refreshed and the timestamp is updated accordingly.



Access the Completed or Skipped Activities

To access the completed or skipped activities, you must have the operator or supervisor role assigned to your user ID.

1. Log in to the Plant Applications Web Client.
2. Select .
The **Open** page appears.
3. Select the **Completed** tab to access all the activities that were completed or skipped.

By default, the option to automatically refresh activities in the **Completed** page is disabled. You can switch the toggle to enable or disable the option to automatically refresh the page as described in the following table. After you select an option, your selection is saved.

Option	Description
	<p>When this option is selected:</p> <ul style="list-style-type: none"> If  appears in the Open page, additional completed or skipped activities are available in the shift. Select  to refresh the page and access all the completed or skipped activities. If  appears in the Completed page, no additional completed or skipped activities are available to access. If  appears in the Completed page, the RabbitMQ service is down.
	<p>When this option is selected:</p> <ul style="list-style-type: none"> If  appears in the Completed page, the manual refresh option is disabled. The page automatically refreshes when an additional completed or skipped activity is available. If  appears in the Completed page, the RabbitMQ service is down.

In the **Completed** page, you can select , and then select **Add Comment** to add a comment for the activity. If a comment already exists for an activity, select , and then select **Add/Edit Comment** to add a General comment and access, modify, or delete a general, overdue, or skip comment. For more information, refer to the following topics:

- [Access Existing Comments for an Activity](#) on page 244
- [Add a General Comment for an Activity](#) on page 244
- [Modify an Existing General Comment for an Activity](#) on page 245
- [Modify an Existing Overdue Comment for an Activity](#) on page 246
- [Delete an Existing General Comment for an Activity](#) on page 245
- [Delete an Existing Overdue Comment for an Activity](#) on page 246
- [Skip an Activity](#) on page 243

Note: To modify or delete comments, your role must have appropriate rights configured in Plant Applications Administrator.

The following table describes all the fields for an activity that appear in the **Completed** page.

Field	Description
Activity	Displays the name of the activity. The default format for the activity name is in Plant Applications Administrator.
Time Completed	Displays the date and time when the activity was completed. The date and time is displayed in the format is mm/dd hh:mm (Example: 09/29 09:20) or dd/mm hh:mm (Example: 29/09 09:20) based on the localization settings. When you hover over the date and time, the complete date and time appears on the tool tip in the format mm/dd/yyyy hh:mm:ss or dd/mm/yyyy hh:mm:ss based on the localization settings.

Field	Description
Duration	Displays the time taken to complete the activity. The duration is displayed in the format hh:mm:ss (for example, 02:00:21).
% Complete	Displays the completion status of the activity as a percentage.
User	Displays the ID of the user who completed or skipped the activity.
Event Type	Displays the event type associated with the activity.
Equipment	Displays the equipment type.
Status	Displays the completion status of the activity as a percentage.
Process Order	Displays the process order type.
Product	Displays the product types.

You can hover over an activity in the **Completed** page to access the following information about the activity:

- **Time:** Displays the time when the activity was created.
- **Product:** Displays the product associated with the activity.
- **Equipment:** Displays the equipment associated with the activity.
- **Process Order:** Displays the process order, if available, associated with the activity.

Note: If you select the **Open** tab in the Activities application, and then select the **Completed** tab, the selection of the **View by** box and the active page number are retained.

4. In the drop-down list box next to the **View by** box, select a time range as described in the following table.

Option	Description
Last <number> Hours	Select to access all completed activities within <number> hours prior to the current Production Day. The value of <number> is configured in Plant Applications Administrator.
Previous Day	Select to access all completed activities from the day prior to the current Production Day.
Current Day	Select to access all completed activities from the start time until the end time of the current Production Day. If there are no shifts configured for the plant, this option is selected by default.
Current Shift	Select to access all completed activities from the start time until the end time of the ongoing shift.
Previous Shift	Select to access all completed activities from the shift prior to the current shift.

Option	Description
Last 7 days	Select to access all completed activities within seven days prior to the current Production Day.
Custom	Select to access all completed activities within a date and time range of up to seven days that you specify by using a calendar window. The following calendar window appears when you select the Custom option.

← May 2019 → ← June 2019 →

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	1	2	3	4	26	27	28	29	30	31	1
5	6	7	8	9	10	11	2	3	4	5	6	7	8
12	13	14	15	16	17	18	9	10	11	12	13	14	15
19	20	21	22	23	24	25	16	17	18	19	20	21	22
26	27	28	29	30	31	1	23	24	25	26	27	28	29
2	3	4	5	6	7	8	30	1	2	3	4	5	6

🕒 14:21:16

🕒 14:21:16

Cancel
Apply

To specify a custom date and time range in the calendar window:

- a. In the **START DATETIME** section, select a date and enter a time in the format hh:mm:ss.
- b. In the **END DATETIME** section, select a date and enter a time in the format hh:mm:ss.

Note: The end date must be within seven days of the start date.

- c. Select **Apply**.

Note: The **Previous Shift** and **Current Shift** options appear only when shifts are defined for the display in Plant Applications Administrator.

The list of completed activities appear based on the time range selected.

Note: The list of open activities displayed is refreshed based on the refreshNMinutesDuration set in the apps.properties.json file located at C:\Program Files\GE Digital\PlantApplicationsWebClient\NodeUIApp\\assets

Example: If the refreshNMinutesDuration is set to 5 minutes and the user does not interact with the UI for a duration greater than or equal to 5 minutes, the list gets refreshed and the timestamp is updated accordingly.

5. Select an activity to access the page displaying the Autolog history.

In the page displaying the Autolog history, you can access the overall details of the event associated with an activity and a maximum of 20 historical values of Autolog variables entered for the event at different durations when the activity was scheduled. If an activity associated with an event was skipped, no values are displayed for the Autolog variables.

The following table describes each field for an event that appears in the page displaying the Autolog history.

Field	Description
Event Name	Displays the unique ID of the event.
Date	Displays the current date and time in the format dd/mm/yyyy hh:mm:ss (for example, 27/03/2018 10:58:29).
Process Order	Displays the process order associated with the event.
Product	Displays the product associated with the process order.

In the page displaying the Autolog history, you can select any of the three views based on the specifications:

- **Data:** Displays only the Autolog variable details.
- **Spec:** Displays only the Autolog variable box is colored according to the specification limits for the Autolog variable as configured in Plant Applications Administrator.
- **Data & Spec:** Displays the Autolog variable details along with the background color according to the specification limits.

Note: The background of an Autolog variable box is colored according to the specification limits for the Autolog variable as configured in Plant Applications Administrator.


You can select **View Legend** to access all specification limits and the colors associated with them. The available specification limits are:



- **Reject**
- **Warning**
- **Target**
- **User**
- **Unavailable**

In the page displaying the Autolog history, you can select an Autolog variable to access information for that Autolog variable. If the specification limits for an Autolog variable are available, the following information appears:


- The lower and upper specification limits
- The specification limit associated with the variable based on the value entered for the variable
- The threshold value based on whether the entered value is higher or lower than the target value

Filter an Activity



You can filter activities either in the **Open** or **Completed** page based on the filter applied to the selected columns. Select  appearing next to the column name and then select required filters from the menu to include in the list. You also can drag a column to the column header to group the downtime events based on the column selected. criteria that you enter.


1. Log in to the Plant Applications Web Client.
2. Select .
3. Select the tab for which you want to apply a filter.
4. Select  appearing next to the column name.
5. As needed, select the applicable filter options, and then select **Apply**.

The activities based on the specified filtered criteria appears.

To reset the filter options to their default setting, select , select **Select All** from the filter options, and then select **Apply**.

Search for an Activity

1. Log in to the Plant Applications Web Client.
2. Select .
3. Select the tab for the type of the activity for which you want to search.
4. Select .
5. As needed, specify the search options within a specified start and end time.

Tip: To search for an activity using a barcode, select  for an option and scan for the barcode specific to the option. The application supports the barcodes of standards Code 39 and Code 128 only.

Note: In iPad, you can use  only in the Safari browser.

6. Select **Apply**.


The activities that match the search criteria appear.

Tip: To clear results and perform new search, select **Reset** in the page.

Complete an Activity

You can complete an activity by entering values for autolog variables in the autolog sheet that appears in the **Activity** section.

Note: You can enter values only for the autolog variables for which you have permissions. The permissions are assigned in the Plant Applications Administrator.

1. Log in to the Plant Applications Web Client.
2. Select .
3. Select **Perform** for the activity you want to complete.

The **Open** page appears.







The **Activity** section appears in addition to a section displaying information about the activity.

The fields in the section displaying information about the activity are described in the following table.

Field	Description
Date	Displays the date when you started to perform the activity. The locale settings of your computer determine the display format for the date.
Time	Displays the time on the specified date when you started to perform the activity. The locale settings of your computer determine the display format for the time.
Process Order	Displays the process order, if available, associated with the activity.
Product	Displays the product associated with the activity.

In the **Activity** section, the autolog sheet for the associated Display appears. You configure Display in Plant Applications Administrator. If the Engineering Units property is enabled for the Display associated with the event, the units of measurement defined for variables also appear next to the variable value in the **Activity** section.

In the **Activity** section, the icons as described in the following table appear.

Icon	Description
	Select to display the variable names along with the alias (if configured) and the associated specification limits. By default, this view is selected if any of the variable names in the list has an alias configured.
	In the  drop-down list, select either of the following: <ul style="list-style-type: none"> • Quartile View to statistically analyze an autolog variable value. • Specification Limit View to verify whether the autolog variable value is within the acceptable specification limits. For more information, refer to About the Statistical Analysis of Autolog Variables on page 239.
	Select to statistically analyze an autolog variable value in a Whisker chart. By default, the Whisker chart appears in the pane in the autolog sheet window.
	Select to access a custom form . <p>Note: This icon appears only if you have configured the Display associated with the activity to enable a custom form to appear in the pane. In this case, by default, the custom form appears in the pane.</p>
	Select to filter a variable associated with the activity. If you select this option, the Variable Name box appears. You can then enter the search text in the box, and then select Apply to filter a variable. All variables that match with any of the strings in the search text appear in the search results.

If the scroll type of the variables view is set to pagination, the variables view in the **Activity** section appears paginated according to the title of the variables group.

4. In the autolog sheet, enter data for all the modifiable autolog variables.

The application validates the entered values based on the data type, and, if configured in the Plant Applications Administrator, based on the Upper Entry and Lower Entry limits for the variables.

Note:

You can enter values for autolog variables available in the Plant Applications Administrator. Depending on the following configurations, you can enter values for the modifiable variables:

- When the status of a production-based or user-defined event associated with the activity is set to a production status that has the **Lock Event Data** option enabled, you do not have the privilege to modify the autolog sheet for that event.
- When the display associated with the activity has the **LockUnavailableCells** display option enabled, the only users who are members of the Administrator Security Group with an Access Level other than Read can enter values for the modifiable autolog variables that have no available data.
- If the data source of the variable is Historian or Calculation Manager, you must have the Administrator privilege to modify the variables.
- If the data source of the variable is autolog, you must have the Read/Write, Manager, or Administrator privileges to modify the variables.
- If you are in the process of adding or modifying the values of the autolog variables, and the system goes offline, you can continue to add or modify the value of the variables. However, the autolog sheet is updated only when the connectivity is restored.

Note: When the system is offline, you will not have access to the rest of the Plant Applications Web Client.

5. Press Tab to save the value.

Whether you enter the value in the Display associated with the autolog sheet in Plant Applications Administrator or in the window displaying the autolog sheet in the Activities application, the last entered variable value is updated automatically in the autolog sheet.

6. Select **Back**.

The behavior of the **Open** page and the percentage completion of the activity is based on the criteria and the **Auto Complete Display** display option as described in the following table. You set the **Auto Complete Display** display option for the Display associated with the activity in Plant Applications Administrator.

Criteria	Auto Complete Display Option Value	Behavior	Percentage Completion Calculation
<ul style="list-style-type: none"> No sampling interval or test frequency set for variables associated with the time-based events No test frequency set for variables associated with the production-based or user-defined events 	False	The Complete option appears for that activity. You can then select the Complete option to complete the activity. The activity then appears in the Completed page.	Optional variables are not used to calculate percentage of completion. Therefore, this value remains zero.
<ul style="list-style-type: none"> No sampling interval or test frequency set for variables associated with the time-based events No test frequency set for variables associated with the production-based or user-defined events 	True	The Complete option appears for that activity. You can select Complete to complete the activity. The activity then appears in the Completed page.	Optional variables are not used to calculate percentage of completion. Therefore, this value remains zero.

Criteria	Auto Complete Display Option Value	Behavior	Percentage Completion Calculation
<ul style="list-style-type: none"> Sampling interval or test frequency is set for variables associated with the time-based events Test frequency is set for variables associated with the production-based or user-defined events 	False	<p>If you enter values for:</p> <ul style="list-style-type: none"> Only a few selected modifiable autolog variables in an activity, the In Progress option appears for that activity. You can select In Progress, and then enter values for the remaining modifiable autolog variables. All modifiable autolog variables in an activity, the Complete option appears for that activity. You can then select the Complete option to complete the activity. The activity then appears in the Completed page. 	The ratio of the total variables with a test ID for which you entered values to the total variables with a test ID.
<ul style="list-style-type: none"> Sampling interval or test frequency is set for variables associated with the time-based events Test frequency is set for variables associated with the production-based or user-defined events 	True	<p>If you enter values for:</p> <ul style="list-style-type: none"> Only a few selected modifiable autolog variables in an activity, the In Progress option appears for that activity. You can select In Progress, and then enter values for the remaining modifiable autolog variables All applicable autolog variables in an activity, the activity is automatically moved to the Complete page. 	The ratio of the total variables with a test ID for which you entered values to the total variables with a test ID.


Note: If the activity is overdue and the option to enter overdue comments for an activity is required, the window for entering overdue comments appears. In the window for entering overdue comments, you must enter your comment about the overdue activity in the **ADD OVERDUE COMMENT** box, and then select **Save**.

7. **Optional:** Select , and then select **Add Comment** to enter a comment for a modifiable variable. For more information, refer to the [Add a Comment for a Variable](#) on page 247 topic.

Note:

If comments already exist for a variable,  appears for the variable.

In the **Open** page, an informational message appears, stating that the comment was successfully added.

8. **Optional:** For an array type variable, select , and then select **Show Trend** to view the graph for the tag values imported from Historian.

Note: The tags for the variables are configured in Plant Applications Administrator. If you enter a value for the array type variable from the Web Client, the **Show Trend** option is disabled.

9. Select the **Event** tab.

Note: This step is applicable only when the activity is associated with a production-based or user-defined event.

For an activity associated with a production-based event, the following table describes fields that appear in the **Event** section.

Field	Description
EVENT NUMBER	Displays the unique ID of the event. You can modify the value entered in this field.
START TIME	Displays the time when the production started for the event. You can modify the value entered in this field.
END TIME	Displays the time when the production stopped for the event. You can modify the value entered in this field.
EVENT STATUS	Displays the disposition status of the event. You can modify the value entered in this field.
PRODUCT	Displays the product associated with the event. You can modify the value entered in this field.
APPLIED PRODUCT	Displays the product actually associated with the event. You can modify the value entered in this field.
DIMENSION NAME	Displays the dimension of the event as configured in Plant Applications Administrator. This field is non-modifiable.
UNITS	Displays the equipment that produced (or contains) the production-based event. You can modify the value entered in this field.
INITIAL	Displays the initial value of the dimension. The value in this field appears blank if you do not modify the dimension value. This field is non-modifiable.
FINAL	Displays the current value of the dimension. You can modify the value entered in this field.
ADD BATCH COMMENT	Displays the option to add a comment or modify or delete comments for the event. Depending on the security levels defined for your role, you can add, modify, or delete comments.

For an activity associated with a user-defined event, the following table describes fields that appear in the **Event** section.

Field	Description
EVENT NUMBER	Displays the unique ID of the event. You can modify the value entered in this field.
START TIME	Displays the time when you started the user-defined event. You can modify the value entered in this field.
END TIME	Displays the time when the you stopped the user-defined event. You can modify the value entered in this field.
L1	Displays the reason for creating the user-defined event. You can modify the value entered in this field. Note: You configure the reason tree for a user-defined event in Plant Applications Administrator.
L2, L3, L4	Display the subreasons, if available, associated with the reason entered for the user-defined event. You can modify the value entered in these fields.
ADD COMMENT	Displays the option to add a comment or modify or delete comments for the event. You can modify or delete only those comments that were added by you.

10. **Optional:** In the **Event** section, enter the required value in the modifiable fields, and then select **Save**.

Note: The **Save** option is enabled only when you modify a value for a field.

The activity is completed and appears in the **Complete** page.

Modify the Values of Autolog Variables for a Completed Activity

The administrator of Plant Applications can set a time limit within which a supervisor or an operator can modify the values of the autolog variables for a completed activity.

1. Log in to Plant Applications Web Client.
2. Access the **Activities** page.
3. Select the **Completed** tab.
A list of completed activities appears.
4. Select the activity that you want to modify.
The **Data** section displays the details of the activities, the list of variables, and the time when a variable completed the event.
5. Point to the value that you want to modify.
An option to modify the value appears.

Note: If the option to modify is unavailable, it is due to one of the following reasons:

- You do not have the permission to modify the values. Contact your administrator.
- You have exceeded the time limit set by the administrator within which you can modify the values.

6. Select **Edit**.
The list of autolog variables that are configured for this activity appears.
 7. Modify the values for the required variables.
The updated values are automatically saved.
- Note:** You can also modify the autolog variables in the **Activity** section.
8. Optional: To modify the autolog variables in the **Spec** and **Data & Specs** sections, repeat steps 5 through 7.


About the Statistical Analysis of Autolog Variables

You can statistically analyze the value you enter for autolog variables in the Quartile view or Whisker chart that appear in the page displaying the autolog sheet.

You can view the page displaying the autolog sheet when you [complete an activity](#). The page displaying the autolog sheet also appears when you [modify the value of an autolog variable](#) for completed activities.

Access the Quartile View

A quartile is a type of quantile which divides the number of data points into four quarters. The Quartile view is an indicator of the range of values you can enter for a variable.





- To access the Quartile view, in the **Activity** page, select , and then select **Quartile View**.

You can view the values for the following statistical items for each variable:

- Lowest
- Lower Quartile
- Median
- Upper Quartile
- Highest


Note: The values for these statistical items are calculated based on the value entered for the variable in the last 20 completed activities associated with the same event. If no historical data exists for a variable, the value for these statistical items associated with the variable appear blank.

The following image illustrates a Quartile view for variables associated with an activity.

Activity		Event	
VARIABLE NAME		SPEC	
PROPERTIES			
	PM3 Basis Weight	 37.00	5
	PM3 Caliper	 34.00	1
	PM3 Moisture	 5.00	2

Access the Specification Limit View

Specification limits are the range of values you can enter for a variable.







- To access the Quartile view, in the page displaying the autolog sheet, select the , and then select **Specification Limit View**.

The values for the following parameters appear on the **Activity** page. The values for these parameters are entered in Plant Applications Administrator.

- Lower Reject
- Lower Warning
- Target
- Upper Warning
- Upper Reject

Based on the value you enter for a variable in the **Activity** page, the **Spec** column indicates whether the value is within the acceptable specification limits.


The following image illustrates a Quartile view for variables associated with an activity.

Activity		Event						
		All Variables						
VARIABLE NAME	SPEC	LOWER REJECT	LOWER WARNING	TARGET	UPPER WARNING	UPPER REJECT		
 PM3 Basis Weight	 55.00 lbs	40	45	55	65	70		
 PM3 Caliper	 21.00 caliper u...	15	20	30	40	45		
 PM3 Moisture	 -2 %	3	5	11	17	19		

The following table describes the color used to denote the specification limits.






Color	Description
White	No value is entered for the variable
Blue	The value entered for the variable is within the Upper and Lower User limits, or the Target value.
Green	The value entered for the variable is within the Upper and Lower Warning limits, and below or beyond the Upper and Lower User limits, respectively.
Yellow	The value entered for the variable is within the Upper and Lower Reject limits, and below or beyond the Upper and Lower Warning limits, respectively.
Red	The value entered for the variable is below or beyond the Upper and Lower Reject limits, respectively.

Access the Whisker Chart

The Whisker chart is a visual representation of the range of values for statistical items associated with the variable. To access the Whisker chart, in the page displaying the autolog sheet, select .

The following table describes statistical items and the icon associated with each item that appears in the Whisker chart.

Tip: You can hover an icon to view the value of each statistical item.










Statistical Item	Icon
	Represents the Lower Quartile point at left and the Upper Quartile point at right with median represented by a vertical line.
	Represents the Upper Reject limit beyond which the variable value is rejected.
	Represents the Lower Reject limit below which the variable value is rejected.
	Represents the Target value for the variable.
	Represents the Actual value you entered for the variable.

Note: The Lower, Median, and Upper Quartile points are calculated based on the values entered for the variable in the last 20 completed activities associated with the same event. If no historical data exists for

a variable, the values for these items appear blank. The values for Upper and Lower Reject limits are based on the Plant Applications Administrator configurations.

The following image illustrates a Whisker chart for variables associated with an activity.

Activity Event

	VARIABLE NAME	SPEC	
PROPERTIES			
	PM3 Basis Weight	 37.00	
	PM3 Caliper	 34.00	
	PM3 Moisture	 5.00	


Modify the Value of an Autolog Variable


You can modify the value of an Autolog variable entered for a completed or skipped activity depending on the following configurations in Plant Applications Administrator:

- When the status of a production-based or user-defined event associated with the activity is set to a production status that has the **Lock Event Data** option enabled, you do not have the privilege to modify the Autolog variables for that event.
- When the display associated with the activity has the **LockUnavailableCells** display option enabled, the users only in the Administrator security group with an Access Level other than Read can enter values for the modifiable Autolog variables that have no available data.

Note:

- If the data source of the variable is Historian or Calculation Manager, you should have Administrator permission to modify the variables.
- If the data source of the variable is Autolog, you should have Read/Write, Manager, or Administrator permission to modify the variables.

1. Log in to the Plant Applications Web Client.
2. Select .
3. Select the **Completed** tab.
4. Select the activity.

Tip: In the **Completed** page, you can select  appearing next to the column name to filter activities, and then select the activity.

The page displaying the Autolog history appears, displaying values for the modifiable Autolog variables. The last entered variable value appears automatically in the page, displaying the Autolog history irrespective of the application or page from which the value is modified.

In Plant Applications Administrator, if the Engineering Units display property is enabled for the display associated with the event, the units of measurement defined for variables also appear next to the variable value in the Autolog sheet.

5. Select the numeric value for the Autolog variable that you want to modify, and then select **EDIT**.

The text box for entering the Autolog variable value is now modifiable.


6. In the text box for the Autolog variable value, delete the old value and enter a new value, and then press Tab to save the new value.
7. Select **Back**.

The updated value for the Autolog variable appears in the page displaying the Autolog history.

In the page displaying the Autolog history, all the Completed and Skipped activities appear. If you modify the value of an Autolog variable later for a completed or skipped activity in the page displaying the Autolog history, the Status of the activity does not change. However, based on the values entered or deleted for Autolog variables in an activity, the percentage completion of the activity is updated accordingly in the % **Complete** box in the **Completed** page.

Release an Activity


You can view the **Release** option for an activity only when the activity is yet to be completed. After you release an activity, you can perform or skip that activity.

1. Log in to the Plant Applications Web Client.
2. Select .
3. Select the **Open** tab.
4. For the activity you want to perform but it is yet to be completed, select **Release**.

The activity is released and you can now perform or skip the released activity.

Skip an Activity

You can skip an open activity based on your requirements.

1. Log in to the Plant Applications Web Client.
2. Select .
3. Select the **Open** tab.

You can select the **Skip** option for an activity only when the activity is yet to be performed.

4. For the activity you want to skip, select **Skip**.

The window for entering skip comments appears.

Note: If the activity is overdue and the option to enter overdue comments for an activity is required, the window for entering overdue comments appears. In the window for entering overdue comments, you must enter your comment about the overdue activity in the **ADD OVERDUE COMMENT** box, and then select **Save**. The window for entering for skip comments then appears.



5. In the **ADD SKIP COMMENT** box, enter your comment about skipping the activity. An informational message stating that the comment was successfully added appears in the **Open** page.

Note: You can delete a skip comment added to a skipped activity in the **Completed** page. For more information, refer to the [Access the Completed or Skipped Activities](#) on page 229 topic.

6. Select **Save**.

The activity is skipped and no longer appears in the **Open** page. You can view the activity in the **Completed** page.



Access Existing Comments for an Activity


1. Log in to the Plant Applications Web Client.
2. Select .
The **Open** page appears.
3. Select the tab that includes the activity for which you want to access comments.
4. Select  for the activity, and then select **Add/Edit Comment**.
5. As needed, select or clear the **General**, **Overdue**, or **Skip** check boxes to filter the existing comments list by the selected options.
The **General**, **Overdue**, or **Skip** check boxes appear for an activity only when the comment type corresponding to the box exists for the activity.

You can access all the comments associated with the activity and perform actions on them.

Tip: If you are in the **ADD GENERAL COMMENT** box, then select **Show Comments** to access all existing comments entered for the activity.

Add a General Comment for an Activity

1. Log in to the Plant Applications Web Client.
2. Select .
The **Open** page appears.
3. Select the tab that includes the activity for which you want to add a general comment.
4. Select , and then select **Add Comment** for the activity.
A window for entering comments appears.

Note: If comments already exist for an activity, select , and then select **Add/Edit Comment** to access the window for entering comments.




5. In the **ADD GENERAL COMMENT** box, enter a comment for the activity, and then select **Save**.

Tip: Select **Show Comments** to access all existing comments entered for the activity.

An informational message stating that the comment was successfully added appears in the **Open** page.

The general comment is added for the activity. In the existing comments list in the window for entering comments, the most recently added comment appears last. The information about the user who added the comment, the type of comment, and time stamp when the comment was added also appear for the comment.

Modify an Existing General Comment for an Activity




1. Log in to the Plant Applications Web Client.
2. Select 
The **Open** page appears.
3. Select the tab that includes the activity for which you want to modify an existing general comment.
4. Select , and then select **Add/Edit Comment** for the activity.
5. **Optional:** In the window for entering general comments, select the **General** check box to filter comments in the existing comments list by the general type.
All general comments appear in the existing comments list in the window for entering comments.
6. Select  for an existing general comment.
The **EDIT GENERAL COMMENT** box appears, displaying the current comment.
7. Modify the comment, and then select **Save**.

Note: The position of a comment in the comments list remains constant even if you modify the comment later.

An informational message stating that the comment was successfully modified appears in the **Open** page.


The changes to the general comment are saved.

Delete an Existing General Comment for an Activity

1. Log in to the Plant Applications Web Client.
2. Select 
The **Open** page appears.
3. Select the tab that includes the activity for which you want to delete an existing general comment.
4. Select , and then select **Add/Edit Comment** for the activity.
5. **Optional:** In the window for entering general comments, select the **General** check box to filter comments in the existing comments list by the general type.
All general comments appear in the existing comments list in the window for entering comments.
6. Select  for an existing general comment.
The **Confirm Delete** window appears.
7. Select **Yes** to complete the delete action.
An informational message stating that the comment was successfully deleted appears in the **Open** page.

The general comment is deleted for the activity.

Add an Overdue Comment for an Activity

1. Log in to the Plant Applications Web Client.
2. Select 

The **Open** page appears.

3. Select the time in the **Due In** row for an overdue activity for which you want to add an overdue comment.



Tip: Alternatively, you can select **Complete** for an overdue activity after entering values for all the modifiable variables. For more information, refer to the [Complete an Activity](#) on page 234 topic.

A window for entering overdue comments appears.


4. In the **ADD OVERDUE COMMENT** box, enter a reason for the overdue comment, and then select **Save**.

The overdue comment is added for the activity. In the comments list in the window for entering comments, the most recently added comment appears last. The information about the user who added the comment, the type of comment, and the time stamp when the comment was added also appear for the comment.

Modify an Existing Overdue Comment for an Activity

1. Log in to the Plant Applications Web Client.
2. Select 
The **Open** page appears.
3. Select the tab that includes the activity for which you want to modify the overdue comment.
4. Select , and then select **Add/Edit Comment** for the activity.
A list of all existing comments appears in the window for entering comments.



Tip: Alternatively, for open activities, in the **Open** page, you can select the time in the **Due In** row for an overdue activity. All overdue comments appear in the list of comments in the window for entering comments. Skip step 5 if you use this navigation.

5. **Optional:** In the window for entering general comments, select the **Overdue** check box to filter comments in the existing comments list by the overdue type.
All overdue comments appear in the existing comments list in the window for entering comments.
6. Select  for an existing overdue comment.
The **EDIT OVERDUE COMMENT** box appears, displaying the current comment.
7. Modify the comment, and then select **Save**.


The changes to the overdue comment are saved.

Note: The position of a comment in the comments list remains constant even if you modify the comment later.

Delete an Existing Overdue Comment for an Activity




1. Log in to the Plant Applications Web Client.
2. Select 
The **Open** page appears.
3. Select the tab that includes the activity for which you want to delete the overdue comment.
4. Select , and then select **Add/Edit Comment** for the activity.
A list of all existing comments appears in the window for entering comments.

Tip: Alternatively, for open activities, in the **Open** page, you can select the time in the **Due In** row for an overdue activity. All overdue comments appear in the list of existing comments in the window for entering comments. Skip step 5 if you use this navigation.

5. **Optional:** In the window for entering general comments, select the **Overdue** check box to filter comments in the existing comments list by the overdue type.
All overdue comments appear in the existing comments list in the window for entering comments.
6. Select  for an existing overdue comment.
The **Confirm Delete** window appears.
7. Select **Yes** to complete the delete action.

The overdue comment is deleted for the activity.




Add a Comment for a Variable

1. Log in to the Plant Applications Web Client.
2. Select .
The **Open** page appears.
3. Depending on the status of an activity, select **Perform** or **In Progress** for the activity associated with the variable.
The page for entering data for the modifiable variables appears.
4. Select , and then select **Add Comment** for a variable to add a comment.
A window for entering comments for the selected variable appears.
Note: If comments already exist for a variable, select , and then select **Add/Edit Comment** to access the window for entering comments.
5. In the **ADD NEW COMMENT** box, enter a comment for the variable.
6. Select **Save**.

The most recently added comment appears last in the comments list in the window for entering comments. The information about the user who added the comment and time stamp when the comment was added also appears for the comment.

Tip: If you are in the **ADD NEW COMMENT** box, then select **Show Comments** to access all existing comments entered for the variable.

Modify an Existing Comment for a Variable




1. Log in to the Plant Applications Web Client.
2. Select .
The **Open** page appears.
3. Depending on the status of an activity, select **Perform** or **In Progress** for the activity associated with the variable.
The page for entering data for the modifiable variables appears.
4. Select , and then select **Add/Edit Comment** for a variable.
A comments list in the window for entering comments for the selected variable appears.
5. Select  for an existing comment.

- The **EDIT COMMENT** box appears, displaying the current comment.
6. Modify the comment, and then select **Save**.

Note: The position of a comment in the comments list remains constant even if you modify the comment later.

The changes to the variable comment are saved.

Delete an Existing Comment for a Variable

1. Log in to the Plant Applications Web Client.
 2. Select .
The **Open** page appears.
 3. Depending on the status of an activity, select **Perform** or **In Progress** for the activity associated with the variable.
The page for entering data for the modifiable variables appears.
 4. Select , and then select **Add/Edit Comment** for a variable.
A comments list in the window for entering comments for the selected variable appears.
 5. Select  for an existing comment.
The **Confirm Delete** window appears.
 6. Select **Yes** to complete the delete action.
- The comment is deleted for the variable.

About Accessing a Custom Form


You can access a custom form for an activity in the Activities application. The custom form must be embedded in an external URL.

You must configure Plant Applications Administrator to enable the use of custom forms for the display associated with the autolog sheet. For more information, refer to the Proficy Plant Applications Help.

To access the custom form and complete the associated activity, in the **Activities** page, select **Perform** for a new activity or **In Progress** for an ongoing activity. For more information, refer to the [Complete an Activity](#) on page 234 topic.

Depending on the Plant Application Administrator configurations for the display associated with the autolog sheet, you can access a custom form in the following UI areas:

- As a page: The URL of the custom form opens in a separate page.
- Embedded within the window displaying the autolog sheet: The custom form appears in an embedded pane in the window displaying the autolog sheet.

- Note:** To view the custom form, in the window displaying the autolog sheet, select .
- As a replacement of the window displaying the autolog sheet: The custom form replaces the window displaying autolog sheet.

About Custom Forms

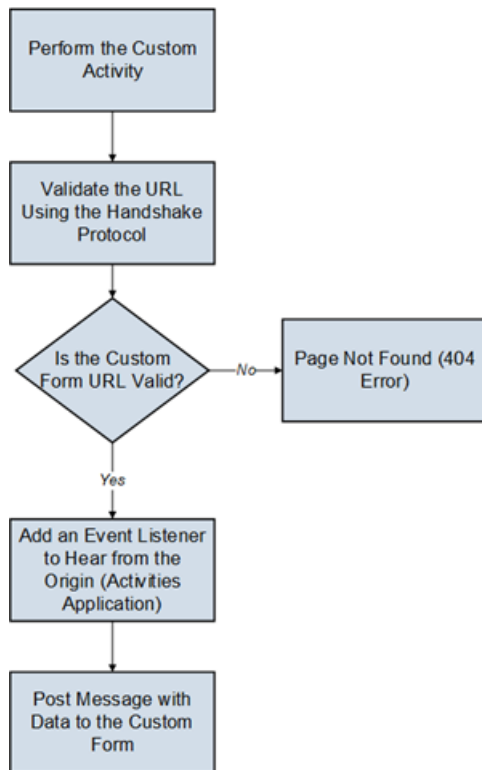
You can build and use your own custom forms in the Activities application. To associate a custom form with the Activities application, you must complete the following requirements in the Plant Applications Administrator:

- Configure the URL of the custom form.
- Configure the Autolog sheets to generate custom form driven activities.
- Configure the user name and password for the user authentication of the custom form.

For more information, refer to the Proficy Plant Applications Help.

Data Flow

When you perform custom activities, you are redirected to the custom activity URL. In addition to the external URL, some additional information is sent as a POST MESSAGE that is a part of HTML5 Web Messaging specification. The following data flow diagram describes the interaction between the Activities application and the custom form to establish the connection and send data.



The following procedure is described in the data flow diagram:

1. The user performs a custom activity in the Activities application.
2. The Activities application initiates the Handshake protocol by sending a message to the form and checks whether the URL of the custom form is valid or not.
 - If the URL is valid, the Activities application receives the message back. The application then adds an event listener to hear from the origin and then posts the message with the variable data to the custom form.
 - If the URL is not valid, a page not found 404 error message appears in the Activities application.

Post Data



The `window.postMessage()` method is used to send data from the Activities application to the custom form. The `window.postMessage()` method enables cross-origin communication between the following items:

- Window objects such as between a page and a window that the page spawned.
Example: The `window.postMessage()` method is used when you select the option to access the URL of the custom in a separate page.
- A page and iframe such as between a page and an iframe embedded within the page.
Example: The `window.postMessage()` method is used when you select the option to access the URL of the custom form embedded within the window displaying the autolog sheet or as a replacement of the window displaying the autolog sheet.

The arguments (also called as messages) passed to the `window.postMessage()` method are exposed to the receiving window through the event object. The Activities application creates an instance of target window to post message by using the following syntax:

```
targetWindow.postMessage(message, targetOrigin, [transfer]);
```

Where:

- `targetWindow`: A reference of the custom form window that receives the message.
- `message`: Data to be sent to the custom form. The data is serialized using the structured clone algorithm. The algorithm enables you to pass a broad variety of data objects safely to the destination window without serializing them.
- `targetOrigin`: The origin of target window. By default, asterisk (*) is set to indicate no preference. The `postMessage()` transmits vital information. It is absolutely critical that this argument be a URI whose origin is the same as the intended receiver of the message containing the password to prevent interception of the password by a malicious third party.
- `Transfer`: A sequence of transferable objects that are transferred with the message. An optional parameter not used in the Activities application.

Event Listener

An event listener is added by the Activities application when the custom form is loaded to receive the message coming from the Activities application as shown in the following code snippet.

```
window.addEventListener("message", receiveMessage, false);
function receiveMessage(event)
{
    if (event.origin !== "http://example.org:8080")
        return;
}
```

The properties of the dispatched message are:

- `data (event.data)`: The information passed by the Activities application.
- `origin`: The origin of the window that sent the message at the time `postMessage` was called. In the code snippet, the `http://example.org:8080` is an example of `origin`.

- `source`: A reference to the window object that sent the message. You can use this property to establish two-way communication between two windows with different origins.

Security Concerns

Remember the following security concerns when you use a custom activity:

- If you do not expect to receive messages from other sites, disable the Activities application to add any event listeners for message events.
- If you expect to receive messages from other sites, always verify the sender's identity using the `origin` and possibly `source` properties. Any window (including a URL, for example, `http://evil.example.com`) can send a message to any other window, and an unknown sender can send malicious messages. You must verify the syntax of the received message.

Note: Failure to check the `origin` and possibly `source` properties enables cross-site scripting attacks.

- Always specify an exact target origin, not an asterisk (*) in the Activities application configuration when you use `postMessage` to send data to other windows. A malicious site can change the location of the window without your knowledge. Therefore, the site can intercept the data sent using `postMessage`.

Data Sent to a Custom Form

The data sent to custom form in the `event.Data` object is in the JavaScript Object Notation (JSON) format. The following code sample shows the data sent to a custom form and the syntax to access the data.

```
{
  "loggedUserInfo": {
    "token": <<token>>
  },
  "header": {
    "activityId": <<activityId>>,
    "activityType": <<activityType>>,
    "activityDescription": <<activityName>>,
    "startTime": <<startTime>>
  },
  "productInfo": <<productId>>,
  "processOrderInfo": <<processOrder>>,
  "variableInfo": <<variable_data>>,
  "activityStatusInfo": {
    "statusId": <<Activity_statusId>>,
    "status": <<Activity_status>>,
    "readOnly": <<readOnly_status>>
  },
  "userConfigurationDetails": <<customActivityUser>>
}
```

- `loggedUserInfo`: Provides the user name and token. The UAA token is required when the custom forms use the public REST APIs provided to save variables into SOADB.
- `Header`: Provides the activity ID, activity type as Production, Time-Based, or User-Defined, activity description, and start time of the activity.
- `ProductInfo`: Provides the ID, name, and value of the product.
- `ProcessOrderInfo`: Provides the ID, name, and value of the process order.
- `Variables`: Provides the list of variables with ID, name, data type, and value.

- `ActivityStatusInfo`: Provides information regarding whether the activity is locked, read-only state, or modifiable.
- `userConfigurationDetails`: Provides the user name and password configured in Plant Applications.

Data Size

As a data point, the WebKit implementation (used by Safari and Chrome) does not currently enforce any limits regarding the size of the data sent through a message.

The following domains were tested for use of the custom form:

- Same domain: successful (same IP address)
- Cross domain: successful (with different IPs and ports, messages transfer between http and https)

The transmission process of data has the following limitations:

- Data cannot be transmitted using form headers, form body, or query parameters by using `postmessage`.
- All data is transmitted through `postmessage` only.

Chapter 19

Process Orders

Topics:

- [About Process Orders](#)
- [Access Open Orders](#)
- [Access Closed Orders](#)
- [Access Details of a Process Order](#)
- [Add a New Process Order](#)
- [Modify a Process Order](#)
- [Delete a Process Order](#)
- [Add Comments to a Process Order](#)
- [Modify Process Order Comments](#)
- [Delete Process Order Comments](#)
- [Modify a Process Order Status](#)
- [Sequence a Process Order](#)

About Process Orders

As a supervisor or an operator, you can use the Process Orders application in the Plant Applications Web Client to monitor the progress of a process order. Active process orders track actual production and quantities against process orders, and display remaining quantities, planned quantities, planned start times, and planned end times. You can reorder, change the status of, and edit process orders, and the production schedule provides normal, warning, and alarm indicators to aid in tracking progress.

Note:

- Only one type of path is displayed which corresponds to the **All Units run same schedule simultaneously** control type selected from the **Schedule Control Type** drop-down list box in the **Execution Path Configuration** page of Plant Applications Administrator.
- If you have configured an execution path only with other two control types, **Schedule Flows By Event** or **Schedule Flows Independently**, the following message is displayed: No execution path configured.
- For all the process orders that are imported from the ERP, you must set the Control Type by manually editing each process order. By default, the Control Type for the process orders that are imported from the ERP is set to **null**.

As a supervisor, you can use the Process Orders application to perform the following actions:

- [Access Open Orders](#) on page 254
- [Access Closed Orders](#) on page 257
- [Access Details of a Process Order](#) on page 261
- [Add a New Process Order](#) on page 264
- [Modify a Process Order](#) on page 267
- [Delete a Process Order](#) on page 267
- [Add Comments to a Process Order](#) on page 268
- [Modify Process Order Comments](#) on page 268
- [Delete Process Order Comments](#) on page 268
- [Modify a Process Order Status](#) on page 269
- [Sequence a Process Order](#) on page 269

Access Open Orders

To access the open process orders, you must have the operator or supervisor role assigned to your user ID.

1. Log in to Plant Applications Web Client.

2. Select .





By default, the **Open** page appears, displaying a list of process orders grouped by the associated execution path in a tabular format. The process orders are sorted based on their status (execution order), that is, Active, Planning, Next, or Pending. In the table displaying the list of open orders and their details, you can resize a column or drag and drop a column to a new position. The column settings you select in the table are retained when you access the **Open** page later. You can select the path headers to either collapse or expand the list of process orders associated to that execution path.

Open		Closed					
PATH		STATUS	ORDER	LINE	PRODUCT	QUANTITY	PLANNED START TIME
▼ PATH: ANA_PATH1 (1)							
	● ACTIVE	ANAU1_P...	Analyzer ...	Prod2	10000 Lbs	01/24, 15:44	
▼ PATH: BIGPATH1 (11)							
	● ACTIVE	THQ-TEST2	Big Line	Prod1	1 Lbs	04/15, 11:07	
	● NEXT	THQ-TEST3	Big Line	Prod1	1 Lbs	04/15, 11:10	
	● PENDING	procorder...	Big Line	Prod1	91 Lbs	04/15, 12:35	
	● PENDING	procorder...	Big Line	Prod1	90 Lbs	04/15, 12:33	









Note: The number of records displayed in the **Open** page depends on the value that is configured for the `maxRecordsToFetch` property in the `app.properties.json` file. If the number of records in the database is more than the value configured for the `maxRecordsToFetch` property, a notification to contact the administrator appears.

In addition, the following information appears in a tabular format for each process order.

Option	Action
STATUS	The process order status along with the corresponding color. <ul style="list-style-type: none"> • Green: Active • Blue: Next • Yellow: Pending • Orange: Planning
ORDER	The unique process order number.
LINE	The production line description.
PRODUCT	The product associated with the process order.
QUANTITY	The planned quantity for the process order.

Option	Action
PLANNED START TIME	The date and time when the process order was planned to begin. The date and time format is driven by localization setting. For example: mm/dd hh:mm or dd/mm hh:mm.
PLANNED END TIME	The date and time when the process order was planned to end. The date and time format is driven by localization setting. For example: mm/dd hh:mm or dd/mm hh:mm
ACTUAL START TIME	The actual start date and time of the process order. The date and time format is driven by localization setting. For example: mm/dd hh:mm or dd/mm hh:mm
ACTUAL END TIME	The actual end date and time of the process order. The date and time format is driven by localization setting. For example: mm/dd hh:mm or dd/mm hh:mm.
ACTIONS	<p>The actions that you can perform on a process order. You can select one of the following action items:</p> <ul style="list-style-type: none">  and  : Select to change the sequence of a pending process order.  : Select to change the status of process order.  : Select to edit, comment, or delete a process order.


3. **Optional:** In the table displaying the list of process orders and their details, select an option to perform an action as described in the following table.

Option	Description
	Select to Add a New Process Order on page 264.
	Select to update the process orders list with the latest information. Note: This icon is enabled only when there are updates to the process orders list. Else, one of the following icons appears: <ul style="list-style-type: none">  : Indicates that there are no updates to the process orders list.  : Indicates that there are additional open process orders available. Select  to refresh the page and access all the open process orders.  : Indicates that the RabbitMQ service is down.
	Select to automatically update the process orders. You can disable this, if you do not want to update the newly added process orders.
PATH 	Select to filter the process orders based on the selected path. Select a check box(es), and then select Apply to include the process orders that are grouped by selected paths in the results.

Option	Description
✕	Select to delete multiple process orders. Note: This icon is enabled only when you select the check boxes for one or more process orders in the table.
☰	Select to add or remove columns from the table displaying the process orders list. The added columns are retrieved when you access the Open page later. By default, the following columns appear in the specified order when you access the Open page: <ul style="list-style-type: none"> • STATUS • ORDER • PRODUCT • QUANTITY • LINE • PLANNED START TIME • PLANNED END TIME Tip: You can use the horizontal scroll bar in the table to drag the scroll box and access the data from all the added columns.

Access Closed Orders

To access the completed, cancelled, over produced, under produced, and error process orders, you must have the operator or supervisor role assigned to your user ID.



1. Log in to Plant Applications Web Client.
2. Select 

By default, the **Open** page appears, displaying a list of process orders grouped by the associated execution path in a tabular format. The process orders are sorted based on their actual end date.
3. Select the **Closed** tab to access all the process orders that were completed, cancelled, over produced, under produced, and error process orders. In the table displaying the list of closed orders and their details, you can resize a column or drag and drop a column to a new position. The column settings you select in the table are retained when you access the **Closed** page later.

PATH ▼		STATUS	ORDER	PRODUCT	QUANTITY	LINE	PLANNED START TIME
▼ PATH: BigPath1 (7)							
	● Complete	THQ-TEST2	Prod1	1 Lbs	Big Line	04/15	
	● Complete	Po-02-00	Prod1	90 Lbs	Big Line	04/14	
	● Complete	Po-03	Prod1	89 Lbs	Big Line	04/14	
	● Complete	Test 1 RENAME	Prod1	100 Lbs	Big Line	04/14	
	● Complete	QWER	Prod1	34 Lbs	Big Line	04/14	
	● Complete	test 160	Prod1	34 Lbs	Big Line	04/14	
	● Complete	WEB-TEST	Prod6	10 Lbs	Big Line	04/13	

In addition, the following information appears in a tabular format for each process order.

Option	Action
STATUS	The process order status along with the corresponding color. <ul style="list-style-type: none"> • Grey: Complete or Cancelled • Red: Error, Underproduced, or Overproduced
ORDER	The unique process order number.
LINE	The production line description.
PRODUCT	The product associated with the process order.
QUANTITY	The planned quantity for the process order.
PLANNED START TIME	The date and time when the process order was planned to begin. The date and time appear in the following format: mm/dd hh:mm (for example, 03/27 10:58).
PLANNED END TIME	The date and time when the process order was planned to end. The date and time format is driven by localization setting. For example: mm/dd hh:mm or dd/mm hh:mm
ACTUAL START TIME	The actual start date and time of the process order. The date and time format is driven by localization setting. For example: mm/dd hh:mm or dd/mm hh:mm

Option	Action
ACTUAL END TIME	The actual end date and time of the process order. The date and time format is driven by localization setting. For example: mm/dd hh:mm or dd/mm hh:mm.
ACTIONS	<p>The actions that you can perform on a process order. You can select one of the following action items:</p> <ul style="list-style-type: none">  : Select to change the status of process order.  : Select to edit, comment, or delete a process order.

4. In the **View by** drop-down list box containing the time range options, select a time range as described in the following table. The range that you select appears in the form of date and time interval next to the drop-down list box containing the time range options.

Option	Description
Last <number> Hours	Select to access all closed process orders within <number> hours prior to the current Production time. The value of <number> is configured in Plant Applications Web Client using the property "lastNHours" in the <code>apps.properties.json</code> file.
Previous Day	Select to access all closed process orders from the day prior to the current Production Day.
Current Day	Select to access all closed process orders from the start time until the end time of the current Production Day. If there are no shifts configured for the plant, this option is selected by default.
Current Shift	Select to access all closed process orders from the start time until the end time of the ongoing shift. If shifts are configured for the plant, this option is selected by default.
Previous Shift	Select to access all closed process orders from the shift prior to the current shift.

Option	Description
Last 7 days	Select to access all closed process orders within seven days prior to the current Production Day.
Custom	Select to access all closed process orders within a date and time range of up to seven days that you specify by using a calendar window. The following calendar window appears when you select the Custom option.

← May 2019 → ← June 2019 →

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	1	2	3	4	26	27	28	29	30	31	1
5	6	7	8	9	10	11	2	3	4	5	6	7	8
12	13	14	15	16	17	18	9	10	11	12	13	14	15
19	20	21	22	23	24	25	16	17	18	19	20	21	22
26	27	28	29	30	31	1	23	24	25	26	27	28	29
2	3	4	5	6	7	8	30	1	2	3	4	5	6

🕒 14:21:16

🕒 14:21:16

Cancel
Apply

To specify a custom date and time range in the calendar window:

- a. In the **START DATETIME** section, select a date and enter a time in the format hh:mm:ss.
- b. In the **END DATETIME** section, select a date and enter a time in the format hh:mm:ss.

Note: The end date must be within seven days of the start date.

- c. Select **Apply**.

Note: The **Previous Shift** and **Current Shift** options appear only when shifts are defined for the display in Plant Applications Administrator.









The list of closed process orders appear based on the time range selected.

Note: The list of closed process orders displayed is refreshed based on the **refreshNMinutesDuration** set in the `apps.properties.json` file.

- For docker-based installation, the `apps.properties.json` file is located at `<installation_directory>/PlantApplicationsDocker/plantapps-universal-client/production-scheduler-app`
- For standard installation, the `apps.properties.json` file is located at `C:\Program Files\GE Digital\PlantApplicationsWebClient\NodeUIApp\<application name>\assets`.

For example: If the **refreshNMinutesDuration** is set to 5 minutes and the user does not interact with the UI for a duration greater than or equal to 5 minutes, the list gets refreshed and the timestamp is updated accordingly.


5. **Optional:** In the table displaying the list of process orders and their details, select an option to perform an action as described in the following table.

Option	Description
+	Select to Add a New Process Order on page 264.
	<p>Select to update the process orders list with the latest information.</p> <p>Note:</p> <p>This icon is enabled only when there are updates to the process orders list. Else, one of the following icon appears:</p> <ul style="list-style-type: none"> : Indicates that there are no updates to the process orders list. : Indicates that there are additional open process orders available. Select  to refresh the page and access all the open process orders. : Indicates that the RabbitMQ service is down.
	Select to automatically update the process orders. You can disable this, if you do not want to update only the newly added process orders.
PATH 	Select to filter the process orders based on the selected path. Select a check box(es), and then select Apply to include the process orders the are grouped by selected paths in the results.
✕	Select to delete multiple process orders. <p>Note: This icon is enabled only when you select the check boxes for one or more process orders in the table.</p>
	<p>Select to add or remove columns from the table displaying the process orders list. The added columns are retrieved when you access the Open page later.</p> <p>By default, the following columns appear in the specified order when you access the Open page:</p> <ul style="list-style-type: none"> • STATUS • ORDER • PRODUCT • QUANTITY • LINE • ACTUAL START TIME • ACTUAL END TIME <p>Tip: You can use the horizontal scroll bar in the table to drag the scroll box and access the data from all the added columns.</p>

Access Details of a Process Order

As an operator, you can access the detailed information on the progression of a process order. The Process Order Details page allows you to view Statistics, Materials, Properties, and History for a selected process order. Using this page, you can also edit, comments, or change status of the process order.

1. Log in to Plant Applications Web Client.

- Select . By default, the **Open** page appears, displaying a list of process orders grouped by the associated execution path in a tabular format. You can select the **Closed** tab if you want to access details of process orders that are in the completed status.
- From the table, select a process order. The **Process Order Details** page appears. In the left panel, you can view the process order that you have selected along with remaining process orders grouped by their execution paths. In the right panel, you can view the high-level statistics of the process order that you have selected along with the other details that are segregated under the **Statistics, Materials, Properties, and ViewHistory** sections.

< Back	Current Order PO BOM reg 1			
Search	Product	no product	Forecast Quantity	20 Lbs
	Start Time	05/27 01:48	Actual Good Quantity	2 Lbs
	End Time	05/31 02:48	Predicted Remaining ...	18 Lbs
PO BOM reg 1	Statistics	Materials	Properties	View History
BOM test	PRODUCTION	QUANTITY	START	END
Automation PO-Wed May 27 15...	REMAINING	18 Lbs	162928.65	05/27
Automation PO-Wed May 27 12...	Actual	2 Lbs	05/27 00:49	
Automation PO-Wed May 27 13...	Planned	20 Lbs	05/27 01:48	05/31
Automation PO-Wed May 27 15...	PRODUCTION	PLANNED	PREDICTED	RUNNING
BOM 3	Time Efficiency			18103.183333...
Valid PO Path1	PRODUCTION	GOOD	BAD	GOOD BATCH
Fri PO 02	Production Effi...	2 Lbs	0 Lbs	1
Automation PO-Wed May 27 13...				
Automation PO-Wed May 27 13...				

The following table describes all the fields for the selected process order.

Option	Action
Current Order	The selected process order.
Product	The product associated with the process order.

Option	Action
Start Time	The planned start time of the process order.
End Time	The planned end time of the process order.
Forecast Quantity	The planned quantity for the process order.
Actual Good Quantity	The total accumulated quantity from the defined production counting units on the path.
Predicted Remaining Quantity	<p>The predicted remaining quantity.</p> <ul style="list-style-type: none"> If Control Type = Quantity Remaining Quantity Indicates how much product is left to be produced for the Order and is in row 1 under the Quantity column. Remaining Quantity = Planned Quantity - Total Good Quantity If Control Type = Duration Remaining Quantity indicating how much time is left to produce the Order. Remaining Quantity = [(ForecastEndTime - ForecastStartTime) - (CurrentTime - ActualStartTime)] * ProductionRate If Control Type = Time Remaining Quantity indicating how much time is left to produce the Order. Remaining Quantity = (ForecastEndTime - CurrentTime) * ProductionRate <p>Note: ProductionRate = Quantity Produced Till Now / Time Taken To Produce It</p>

4. To view the detailed information about the process order against the production metrics, select the **Statistics** tab.

The following table describes all the fields for the selected process order.

Option	Description
Production	The production metric.
Quantity	The quantity associated to the production metric.
Start	The planned start time of the process order.
End	The planned end time of the process order.
Planned	The planned duration to run the order.
Predicated	<p>The predicted total duration required to run the order.</p> <p>Predicted Total Duration = ForecastStartTime - ForecastEndTime</p>
Running	The amount of time an Order is in the Active status.
Down	The duration of down time accumulated on the production unit the process order is currently running on during the time the order was Active. This only applies to Units that are set up as a production point.
GOOD	The total quantity produced from Production Events with a Status that is considered Good production.
BAD	The total quantity produced from Production Events with a Status that is considered "Reject" or "Bad" production.
GOOD BATCH	The Number of Production Events with a Status that is considered good production.
BAD BATCH	The Number of Production Events with a Status that is considered rejected or bad production.


5. To view the associated BOM Formulation, select the **Materials** tab.
Details about the associated BOM Formulation appears.

Note: BOM formulation quantity must be non-zero.

- To view the history of changes made to a specific Process Order, select the **View History** tab. A History of all changes made to the Process Order appears.



The following table describes all the fields for the selected process order.

Option	Description
User	Displays the name of the user who made the change.
Change Time	The date and time when the process order was updated. The date and time are displayed in the format mm/dd hh:mm (for example, 03/27 13:05).
Trans Type	The transaction type such as insert or update.
Status	The process order status.
Forecast Start Date	The planned start date of the process order.
Forecast End Date	The planned end time of the process order.

- Optional:** You can use  to edit, comment, or change status of a process order. For more information, refer to the following topics.
 - [Modify a Process Order](#) on page 267
 - [Add Comments to a Process Order](#) on page 268
 - [Modify a Process Order Status](#) on page 269

Add a New Process Order

The process order appears in the Process Order view when a period containing the specified process order's projected start time is set. All information specified when adding the process order is preserved throughout the Process Order view.

- Log in to Plant Applications Web Client.
- Select . By default, the **Open** page appears, displaying a list of process orders grouped by the associated execution path in a tabular format.
- In the **Open** page, select . The **Add Process Order** page appears.

Add Process Order

Cancel

General Advanced

Process Information

PROCESS ORDER

PROCESS ORDER

PATH

Select Path

STATUS

PENDING

CONTROL TYPE

QUANTITY

TYPE

SCHEDULE

Product Information

PRODUCT

Select Product

4. Under the **General** tab, provide values as specified in the following table.

Option	Description
PROCESS ORDER	Enter a unique process order number that does not exceed 50 characters. Note: If the character length exceeds 50 characters, the Process Order name will be truncated.
PATH	Select or enter the production execution path code.
STATUS	The Pending status of the order.
CONTROL TYPE	Select a Control Type of Quantity, Duration, or Time.
TYPE	Indicates the process order type. You cannot edit this field.
PRODUCT	Select a Product for the Process Order.

Option	Description
BOM FORMULATION	Select the BOM formulation that you want to use in the order. It contains a list of BOM formulations configured for the material in Plant Applications. When you associate a bill of materials formulation with a process order, only the formulations associated with the selected product will be available for selection. Note: BOM formulation quantity must be non-zero.
START TIME END TIME	Enter a date and time in the Start time and End time boxes to complete the running of the order at the specified time. Note: The End time box is enabled only when the Open check box is cleared.
QUANTITY	Enter a Planned Quantity for the process order.

5. Select the **Advanced** tab.

Add Process Order
Cancel

General
Advanced

User Information

USER GENERAL 01
Type user name here

USER GENERAL 02
Type user name here

USER GENERAL 03
Type user name here

INFORMATION
Type information here

Advanced Information



BLOCK NUMBER
Type Block Number here

6. Under the **Advanced** tab, in the **User Information** and **Advanced Information** sections, provide values as specified in the following table.



Option	Description
USER GENERAL 01	Enter a unique name for the route that does not exceed 100 characters.
USER GENERAL 02	Enter additional, user-specific data about a process order.
USER GENERAL 03	Enter additional, user-specific data about a process order.
INFORMATION	Enter extended, user-specific data about a process order.
BLOCK NUMBER	Enter an identifier that signifies a collection of as many as 10 process orders.
PRODUCTION RATE	Enter a target Production Rate for the specified product that is manufactured according to the process order.

7. Select **Save**.
The process order is created.

Modify a Process Order



1. Log in to Plant Applications Web Client.
2. Select .
By default, the **Open** page appears, displaying a list of process orders grouped by the associated execution path in a tabular format. You can select the **Closed** tab if you want to edit process orders that are in the completed status.
3. From the **Actions** column, select  for a required process order.
4. From the menu, select **Edit**.
The **Edit Process Order** page appears.
5. As needed, modify process order parameters as required in the **General** and **Advanced** sections.
Note: When you associate a bill of materials formulation with a process order, only the formulations associated with the selected product will be available for selection.
6. **Optional:** In the **General** section, select **Add Comments** to either add, modify, or delete comments for the process order.
The **Add Comment** window appears.
7. In the **ADD COMMENT** box, enter a comment for the changes you made, and select **Add**.
Note: You can modify or delete only those comments that were added by you. However, based on the site parameter, you can also update comments from other users if you have the required permissions.
8. Select **Save**.
Note: The changes made to the process order are saved.

Delete a Process Order

1. Log in to Plant Applications Web Client.
2. Select .
By default, the **Open** page appears, displaying a list of process orders grouped by the associated execution path in a tabular format. You can select the **Closed** tab if you want to delete process orders that are in the completed status.
3. From the **Actions** column, select  for a required process order.
4. From the menu, select **Delete**.

- The **Delete** page appears.
5. Select **Ok** to complete the delete action.

Add Comments to a Process Order




1. Log in to Plant Applications Web Client.
2. Select .
By default, the **Open** page appears, displaying a list of process orders grouped by the associated execution path in a tabular format. You can select the **Closed** tab if you want to add comments to process orders that are in the completed status.
3. From the **Actions** column, select  for a required process order.
4. From the menu, select **Comment**.
The **Add Comment** page appears.
5. In the **ADD COMMENT** box, enter a comment for the changes you made, and select **Add**.

Note: You can modify or delete only those comments that were added by you. However, based on the site parameter, you can also update comments from other users if you have the required permissions.

Modify Process Order Comments

You can modify the comments made to a specific process order if security allows it.


Note: You can modify or delete only those comments that were added by you.

1. Log in to Plant Applications Web Client.
2. Select .
By default, the **Open** page appears, displaying a list of process orders grouped by the associated execution path in a tabular format. You can select the **Closed** tab if you want to modify the existing comments of process orders that are in the completed status.
3. From the **Actions** column, select  for a required process order.
4. From the menu, select **Comment**.
The **Add Comment** page appears.
5. Select  for an existing comment.
The **Add Comment** box appears, displaying the current comment.
6. Modify the comment, and then select **Save**.
The changes to the comment are saved.



Delete Process Order Comments

You can delete the comments made to a specific Process Order if security allows it.



Note: You can modify or delete only those comments that were added by you. However, based on the site parameter, you can also update comments from other users if you have the required permissions.

1. Log in to Plant Applications Web Client.
2. Select .

By default, the **Open** page appears, displaying a list of process orders grouped by the associated execution path in a tabular format. You can select the **Closed** tab if you want to delete the existing comments of process orders that are in the completed status.


3. From the **Actions** column, select  for a required process order.
4. From the menu, select **Comment**.
The **Add Comment** page appears.
5. Select  for an existing comment.
A confirmation message appears.
6. Select **Yes** to complete the delete action.
The selected comment is deleted for the process order.

Modify a Process Order Status

1. Log in to Plant Applications Web Client.
2. Select .
By default, the **Open** page appears, displaying a list of process orders grouped by the associated execution path in a tabular format. You can select the **Closed** tab if you want to change the status of process orders that are in the completed status.
3. From the **Actions** column, select  for a required process order.
Based on the current status of the process order, you can perform any of the following actions:
 - If the current Status is **Pending**, then you can either select Next or Planning based on the valid transition states configured for the execution path to which the process order belong.
 - If the current Status **Next**, then you can select Active or Pending based on the valid transition states configured for the execution path to which the process order belong.


Note: Activating a process order makes it the current running process order that product quantities, process order run times, and process order statistics are applied to.

 - If the current Status **Active**, then you can select Complete or Pending based on the valid transition states configured for the execution path to which the process order belong.



Note: For a given execution path, you can have only one process order that is in active or next state. Completing an **Active** process order allows a different process order to be activated. If another process order has a status of **Next**, it will automatically become the Active process order when the current Active process order is moved to **Complete**.
4. **Optional:** Alternatively, you can change the status of a process order from the Process Order Details page.
In the Process Order Details page, select  and then select the required status from the available options.

Sequence a Process Order

By default, process orders are sorted by schedule status, then implied sequence (descending), and then forecast start date. In the **Open** page, a selected process order that is in pending status can be moved up or down one row on the path it is bound to (switching places with the process order above or below it).

1. Log in to Plant Applications Web Client.
2. Select .

By default, the **Open** page appears, displaying a list of process orders grouped by the associated execution path in a tabular format.

3. From the **Actions** column, select  or  for a required process order that is in the pending status to move up or down one row on the path it is bound to.

Chapter 20

Alarm Notifications


Topics:

- [About an Alarm Event Notification](#)
- [Acknowledge an Alarm Notification](#)
- [Configure Alarm Notification Settings](#)

About an Alarm Event Notification

An alarm event occurs when a variable violates an alarm condition based on alarm rules configured for the variable specification limits, such as a reject or warning limit. You configure the alarm rules for a variable in Plant Applications Administrator. The alarm events are added for any production-based, time-based, or user-defined events that include the variable for which you configured the alarm rule. The variable corresponding to the equipment selected appears in the **My Machines** page.

Note: Only users with their user roles included in the Security Group assigned to the Alarm Display can access the alarm notifications. You assign the Alarm Display to a Security Group in Plant Applications Administrator.

Note: The Alarm Icon  appears on the application only when **enableAlarm** property is set to true in **localconfig.json** file in Apphub. It is set to true by default.

Alarm Conditions


Alarm conditions are based on alarm rules that compare data to product-based specification limits in real time. They are used to set alarms on critical variables where acknowledgement of a violation is required. Alarms capture key events that require an immediate action from an operator. You can also enter the cause reasons and the corrective actions based on the alarm condition.

Access Alarm Notifications

You can access alarm notifications in the following ways in the Plant Applications Web Client:

- **Float alarm notification:** Appears for a short duration in the main navigation bar in the Plant Applications Web Client. These notifications appear only when an alarm event is created for a variable and the **Notifications** pane is not already displayed. You can select **Show more** in the float alarm notification window to access the **Notifications** pane. A Float alarm notification appears in the main navigation bar in the Plant Applications Web Client for the duration of time set in the **Dismiss Float Alarm Notification** in of **Settings** pane.

Note: In the Activities application, you enter or modify the value of an Autolog variable value for an activity in the window displaying the Autolog sheet. If you refresh an application page and an alarm is triggered when the page is being refreshed, the float alarm notification for that alarm condition does not appear. Instead, the alarm notification appears in the **Notifications** pane only.

- **Notifications** pane: Appears when you select  in the Plant Applications Web Client. The pane lists all the new and modified unacknowledged alarms associated with a variable. In the **Notifications** pane, you can directly acknowledge a notification, or enter the cause and action reasons using the **Perform** button in the notification, and then acknowledge a notification. For more information, refer to the [Acknowledge an Alarm Notification](#) on page 273 topic.

Note: To acknowledge a notification, your role must have appropriate rights configured in Plant Applications Administrator.

You can also manage settings for the alarm notifications that appear in the **Notifications** pane and float notifications. For more information, refer to the [Configure Alarm Notification Settings](#) on page 275 topic.

After you acknowledge all alarms in the **Notifications** pane,  is replaced with .

Plant Applications Administrator Settings for Alarms

To access alarms in the Activities application, you configure the following settings for an Autolog variable in Plant Applications Administrator:


- Specification limits
- Alarm Template

Note: You configure an Alarm Template in the **Administer Alarms** section in Plant Applications Administrator.

To access notifications, you must assign the Alarm Display to a Security Group that includes your role in Plant Applications Administrator. For more information, refer to the Proficy Plant Applications Help.

Acknowledge an Alarm Notification

To acknowledge an alarm notification, your role must have appropriate rights configured in Plant Applications Administrator. As an operator or supervisor, you can access the **Notifications** pane to acknowledge an alarm notification.




1. Log in to the Plant Applications Web Client.
2. In the main navigation bar, select . The **Notifications** pane appears.

The alarm notifications that appear in the **Notifications** pane are displayed based on the scenarios described in the following table.

Scenario	Alarm Notification Behavior
When the variable value violates an alarm condition for the first time.	<ul style="list-style-type: none">• A new alarm event is added for the alarm condition and the notification for the alarm condition is added to the Notifications pane.• The time when the alarm was added appears in the Start field. The date and time is displayed in the format is mm/dd hh:mm (Example: 09/29 09:20) or dd/mm hh:mm (Example: 29/09 09:20) based on the localization settings. When you hover over the date and time, the complete date and time appears on the tool tip in the format mm/dd/yyyy hh:mm:ss or dd/mm/yyyy hh:mm:ss based on the localization settings.• The End field appears blank for the open alarm.
When the variable value is within the specification limits for all current and past events.	The alarm event is deleted for the alarm condition, and the alarm notification is removed from the Notifications pane.

Scenario	Alarm Notification Behavior
When the variable value is modified to be within the specification limits for an event. However, any past or current events still include variable value violating the alarm condition.	The time when the variable value was modified to be within the specification limits for an event appears in the End field. The date and time is displayed in the format is mm/dd hh:mm (Example: 09/29 09:20) or dd/mm hh:mm (Example: 29/09 09:20) based on the localization settings. When you hover over the date and time, the complete date and time appears on the tool tip in the format mm/dd/yyyy hh:mm:ss or dd/mm/yyyy hh:mm:ss based on the localization settings. The number of batches for which the alarm notification is still unacknowledged also appears.
When a closed alarm event is reopened because the variable value was modified to a value that violates the alarm condition.	<ul style="list-style-type: none"> The closed alarm event is reopened for the alarm condition and the notification for the alarm condition appears in the Notifications pane. The time when the alarm was added initially appears in the Start time option. The date and time is displayed in the format is mm/dd hh:mm (Example: 09/29 09:20) or dd/mm hh:mm (Example: 29/09 09:20) based on the localization settings. When you hover over the date and time, the complete date and time appears on the tool tip in the format mm/dd/yyyy hh:mm:ss or dd/mm/yyyy hh:mm:ss based on the localization settings. The End time option value appears blank for the open alarm.

In the **Notifications** pane, the priority is indicated by the numeric color-coded indicators described in the following table.

Indicator	Description
	A high priority alarm.
	A medium priority alarm.
	A low priority alarm.

- In a notification, select **Show More**.

A detailed view of the notification appears, displaying a sparkline (a line chart without axes or coordinates) between the two dash lines that indicate upper and lower reject or warning limits of the variable value as configured in the alarm template. If there is a product change associated with the variable, the dash lines appear modified, indicating the upper and lower reject or warning limits of the variable value for the new product.

By default, the sparkline plots a line graph based on the variable values trending four hours before and after the variable value on which the alarm was created. The actual variable value on which the alarm was triggered is indicated by a red dot.

Note: You set the duration of the time range for the variable value in the `BorderDuration` site parameter for Alarms in Plant Applications Administrator. By default, the value of the `BorderDuration` site parameter is set to 240 minutes.

Tip: In the **Notifications** pane, select **Expand All** to access the detailed view of all notifications. You can then select **Collapse All** to go back to the summary view of all notifications.

- Select **Perform** to enter cause and action reasons if configured in the Alarm Template in Plant Applications Administrator.

The **Perform** button appears only when the Alarm Template is configured to enter the cause and action reasons for acknowledging the alarm notification.

The **Edit Alarm** window appears.

5. In the **CAUSE REASONS** section, select **Add reasons**, and then select a reason and associated subreasons, as applicable, for the cause of the alarm notification.
6. In the **ADD COMMENTS** section, select **Add comment** to enter a new comment for the specified cause reason or to modify or delete any comments entered earlier for the alarm notification. You can delete or modify only those comments that were added by you.
7. In the **Edit Alarm** window, select the **Actions** tab.
8. In the **ACTIONS REASONS** section, select a corrective action for the cause of the alarm notification. The values in this section are populated based on the action reason tree you configure for the alarm in Plant Applications Administrator.
9. In the **ADD COMMENTS** section, select **Add comment** to enter a new comment for the specified action reason or to modify or delete any comments entered earlier for the alarm notification. You can delete or modify only those comments that were added by you.
10. Select the **ACKNOWLEDGE** check box to acknowledge the notification.



Note: The **ACKNOWLEDGE** check box is enabled only when you have entered the appropriate cause and action reasons for the alarm notification.

Tip: Alternatively, you can skip this step and select **Acknowledge** for the alarm notification in the **Notifications** pane to acknowledge the notification later.

11. **Optional:** Select **Acknowledge All** in the **Notifications** pane to acknowledge all notifications at once.
Only those alarm notifications for which your role has appropriate rights are acknowledged.

The acknowledged notification is removed from the **Notifications** pane.

Configure Alarm Notification Settings

1. Log in to the Plant Applications Web Client.
2. In the main navigation bar, select .
The **Notifications** pane appears.
3. In the **Notifications** pane, select .
The **Settings** pane appears.

Tip: To navigate back to the **Notifications** pane, select .

In the **Settings** pane, you can configure the options as described in the following table.

Option	Description
Sort Notifications by	<p>Select one of the following options to decide the order in which alarm notifications appear in the Notifications pane:</p> <ul style="list-style-type: none"> Priority: Select to access alarm notifications sorted by decreasing order of alarm priorities; that is, high priority alarms appear first, followed by medium priority alarms, and then low priority alarms. <p>Note: You set priority of an alarm notification in the alarm template in Plant Applications Administrator.</p> Time Received: Select to access alarm notifications sorted chronologically by the date (and time) when they were received; that is, any new alarm notification will appear first. <p>Note: By default, the alarm notifications are sorted by time received.</p>
View Alarms By	<p>Select one of the following options to view alarms only in the selected time range option, product, or process order:</p> <ul style="list-style-type: none"> Current Shift: Select to access all alarm notifications associated with activities in the ongoing shift. <p>Note: By default, this option is selected.</p> Current and Previous Shift: Select to access all alarm notifications associated with activities in the ongoing shift and from the shift prior to the current shift. Current Day: Select to access all alarm notifications associated with activities on the current Production Day. <p>Note: If shifts are not configured, this option is selected by default.</p> Current and Previous Day: Select to access all alarm notifications associated with activities on the current Production Day and from the day prior to the current Production Day. <p>Note: The Previous Shift and Current and Previous Shift options appear only when shifts are defined for the Display in Plant Applications Administrator.</p>
Dismiss Float Alarm Notification in	<p>Enter a duration in seconds after which the float alarms notifications disappear.</p> <p>Note: By default, the box value is set to 5 seconds.</p>
Until I Close Manually	<p>Select to close the float alarm notification window manually.</p> <p>Note: If you select this check box, the Dismiss Float Alarm Notification in is disabled.</p>

Tip: To restore the default settings, select **Reset**.

4. Select **Save**.

The notification settings are saved, and the **Notifications** pane appears again.

The alarm notifications appear in the **Notifications** pane according to the settings you saved.

Chapter 21

Waste

Topics:

- [About the Waste Application](#)
- [Configurations in Plant Applications Administrator](#)
- [Accessing Waste Event Records by Time Range](#)
- [About the Waste Event Records](#)
- [View the Details of an Event](#)
- [Creating a Waste Event](#)
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About the Waste Application

A waste event occurs when a product is rejected or lost in a processing stream. A waste event is calculated against a location and production unit. Waste events can be associated with a production-based event or time-based event. A production event can be associated with one or more waste events. Each waste event has a calculated amount of waste and the following factors are associated with it:

- Fault: the error in the processing stream or equipment that led to generation of waste
- Reason: the reason for the fault
- Action: the corrective action taken to fix the fault

Using the Waste application an operator or supervisor to create records for a waste event and associate it with a production event.

Configurations in Plant Applications Administrator

Before you access the Waste application in Plant Applications Web Client, the System Administrator must configure a minimum of one Waste+ unit and assign a minimum of one user to that unit in Plant Applications Administrator, .

Note: You can create a waste record only to a unit that you have access to.

Accessing Waste Event Records by Time Range

In the **View by** box, select a time range as described in the following table:

Option	Description
Last <number> Hours	Select to access waste event records from the last <number> hours prior to the current production day. For information on how to modify this configuration, refer the topic Customise Time Duration to Refresh Data.
Previous Day	Select to access waste event records from the day prior to the current production day.
Current Day	Select to access waste event records from the start time until the end time of the current production day. If there are no shifts configured for the plant, this option is selected by default.
Previous Week	Select to access waste event records for seven days prior to the current day.
Next Week	Select to access waste event records for seven days after the current day.
Custom	Select to access waste event records within a date and time range that you can specify by using a calendar window. To specify a custom date and time range in the calendar window: <ol style="list-style-type: none">1. In the START DATETIME section, select a date and enter a time in the format hh:mm:ss.2. In the END DATETIME section, select a date and enter a time in the format hh:mm:ss3. Select Apply.

Customise Time Duration to Refresh Data

There are two configuration settings you can customise to regulate the data that is displayed in this application. They are:

- The frequency of refreshing a page if left idle for certain minutes
 - The number of hours for collating and displaying the data in the grid
1. In the Plant Applications Web Client folder, navigate to `C:\Program Files\GE Digital\PlantApplicationsWebClient\NodeUIApp\activities-app\assets`.
 2. Select the **app.properties.json** file to modify it in an editor of your choice.
 3. Modify the values for the following parameters:
 - "lastNHours":8
 - "refreshNMinutesDuration":10

Note: The values listed here are the default values for the parameters.

4. Save and close the **app.properties.json** file.
5. Refresh Plant Applications Web Client.
 - The modified value for the **refreshNMinutesDuration** is the frequency with which the data on an idle page is refreshed.

Example: If the **refreshNMinutesDuration** is set to 5 minutes and the user does not interact with the UI for 5 minutes, the list gets refreshed and the timestamp is updated accordingly.

About the Waste Event Records

When you access the Waste application, based on the configurations in Plant Applications Administrator, the following columns appears in the **Events** page:

Field	Description
Event	The production event to which the waste is associated. Note: This field is populated only for a production-based event. In case of a time-based event, this field is blank.
Created On	The date and time when the waste record was created. The date and time is displayed in the format mm/dd/yyyy or dd/mm/yyyy based on the localisation settings.
Updated On	The date and time when the waste record was updated either by an operator a service. The date and time is displayed in the format mm/dd/yyyy or dd/mm/yyyy based on the localisation settings.
Type	The category of waste configured in Plant Applications Administrator.
Amount	The amount of waste that was generated for the event.
Measuring Unit	The unit of measurement that corresponds with the amount of generated waste.
Location	The specific piece of equipment along a production line that caused the waste.
Reasons	The reason selected to describe the cause of the waste. Note: The columns Reason 1, Reason 2,...Reason 5 refer to the top five reasons that are usually selected.

Field	Description
Actions	The corrective action taken to fix the fault. Note: The columns Action 1, Action 2,...Action 5 refer to the top five actions that are usually selected.
Actions	Lists the actions that you can perform on the waste event record such as Edit, Copy, and Delete.

View the Details of an Event

You can access the **Events Details** report of an event by selecting an event in the Waste page. The report provides all the details relevant to the selected event in the following sections:

- Event Information
- Waste Cause Information
- Waste Variables

Event Information

This section displays the generic details about the waste event and consists of the following fields:

Field	Description
Event	The production event to which the waste is associated. Note: This field is populated only for a production-based event. In case of a time-based event, this field is blank.
Created On	The date and time the waste event record was created.
Updated On	The date and time the waste event record was updated.
Amount	The amount of waste that was generated for the event.
Units	The unit of measurement that correspond with the amount of generated waste.
Product	The product that was being produced.
Added By	The name of the service or person who created the waste event.

Waste Cause Information

This section displays the details of the waste that was generated and consists of the following fields:

Field	Description
Location	The specific piece of equipment along a production line that caused the waste.
Fault	The error in the processing stream or equipment that led to generation of waste.
Type	The physical state of waste that was generated.
Waste Reason	The reason that describes the cause of the waste.
Waste Action	The corrective action taken to fix the fault that caused the waste.

Waste Variables

This section splits the production event into different timelines according to the amount of waste that was generated every time the production event was triggered. The final entry displays the overall waste that was generated for the entire production event.

Creating a Waste Event

A waste event is a material loss associated with a specific production event or the loss is calculated over time.

You can create two types of events to track waste – time-based and production-based. Using the Waste app, you can:

- track the amount of waste that was generated
- identify the type of waste
- assign a reason for generation of the waste

Creating a Production-Based Waste Event

You can track the waste that was generated for a specific production event. A production-based waste event is tagged to the event number.

1. Access the Waste page.
2. The **EVENT TIME** is the date and time of creating the waste event record.
3. Select **+** and select **Add Production Based Waste Event**.
4. In the **VIEW BY** box, select the time range to retrieve the events.
5. Select the **EVENT** box to select an event for which you want to create a waste record.
6. In the **LOCATION** box, select the source of the specific equipment that generated the waste.
7. In the **AMOUNT** field, enter the amount of waste that was generated.
8. In the **MEASURING UNITS** box, select the unit of measurement to correspond with the amount of generated waste.
9. In the **WASTE TYPE** box, select the category of waste as configured in the waste model that you created in Plant Applications Administrator.
10. In the **FAULT** box, select the error that led to the generation of waste.
11. In the **REASON** box, the reason is auto populated based on the error selected in the **FAULT** box.

Note:

- The reasons are configured in Plant Applications Administrator.
12. In the **ACTION** box, select the corrective action that was taken to fix the fault.
 13. Optional: In the **ADD COMMENT** field, enter a comment or observation and select **Save**.

Creating a Time-Based Waste Event

You can track the waste that was generated during a specific time period. You can create a time-based waste event for future production events as well. A time-based waste event is tagged to the start time of the event.


1. Access the Waste page.
2. Select **+** and select **Add Time Based Waste Event**.
3. The **EVENT TIME** is the date and time of creating the waste event record.
4. In the **UNIT** box, select the select the manufacturing line that generated the waste.

5. If a child unit is configured for the master unit, select it in the **LOCATION** box. If no child unit is configured, the **LOCATION** box is blank and if only one child unit is configured, it is auto-populated.
6. In the **AMOUNT** field, enter the amount of waste that was generated.
7. In the **MEASURING UNITS** box, select the unit of measurement to correspond with the amount of generated waste.
8. In the **WASTE TYPE** box, select the category of waste as configured in the waste model that you created in Plant Applications Administrator.
9. In the **FAULT** box, select the error that led to the generation of waste.
10. In the **REASON** box, the reason is auto populated based on the error selected in the **FAULT** box.

Note:

- The reasons are configured in Plant Applications Administrator.
11. In the **ACTION** box, select the corrective action that was taken to fix the fault.
 12. Optional: In the **ADD COMMENT** field, enter a comment or observation and select **Save**.


Modifying a Waste Event Record

1. Access the Waste page.
2. Select  for the record you want to modify.
The **Event Information** section appears. For more information about this section, refer View the Details of an Event.
3. Modify the required fields as needed and select **Save**.

Copying Fault and Reason to a Waste Event Record

The System Administrator must have assigned you the required permissions to perform this task.


If you need to modify only the **Fault** and **Reasons** fields of waste records based on the entries selected for these fields in another waste record, you can copy the entries and paste it in the required records.

1. Access the Waste page.
2. Select the check boxes for the respective records to which you want to copy the fault and reason, that is, the destination records.
3. In the **Actions** section, select  on the record from which you want to copy the fault and reason, that is, the source record.
4. Select **Copy** to complete the action.

The **Fault** and **Reason** fields in the destination records displays the copied entries for the respective fields.

Deleting a Waste Event Record

You must have the permission to delete a record. If you do not have the permission to perform this task, a message appears, stating the same. If that happens, request your administrator to provide the permission using Security.

1. Access the Waste page.
2. Select  for the waste event record you want to delete.
3. Click **OK** to delete the record.

Analysing a Waste Event

In the Waste application, you can access the Key Performance Indicators (KPIs) and a summary of the generated waste. You can analyse the wastage that occurred for an event, and perform an analysis based on the various KPIs that are available.

1. Access the Waste page.
2. Select the **KPIs** tab.
3. In the **VIEW BY** box, select the time range for which you want to perform the analysis.

The page displays the key performance indicators for the selected time range. The charts displayed on this page are generated by the OEE Dashboard app.

The following KPIs are displayed:

- OEE: Overall equipment effectiveness (OEE) is a measure of production health or status. By comparing OEE between machines or group of machines, you can identify lines or machines with production inefficiencies like waste, downtime, speed/performance loss, and production throughput that contribute to lower OEE.
- Quality: You can review the quality rate to identify lines with high waste counts, which reduces quality and contributes to a lower OEE.
For more information about OEE and Quality KPIs, refer OEE Dashboard.
- Waste Statistics: Two key concepts are used to derive this analysis. They are:
 - Mean Amount Per Event (MAPE) which is the mean amount of waste that is generated for an event.
 - Mean Amount Between Event (MABE) which is the production amount calculated between two consecutive waste event.
- Top Waste Cause: This chart displays waste events by the cause or reason associated with the generation of the waste. You can choose to view this chart by the quantity of waste generated (Quantity) or by the number of events (Count).
- Waste by Product Code: This chart displays waste events generated by product. You can choose to view this chart by the quantity of waste generated (Quantity) or by the number of events (Count).

Note:

These KPI metrics are based on the OEE Aggregation Store setting. If OEE Aggregation Store is set to False, the values are recalculated every time the chart is opened or refreshed. If it is set to True, the values are populated from the OEE Aggregation tables. For more information, refer to the OEE Aggregation Store topic.