Meridium APM Operator Rounds

3.6.1.1.0

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About This Document

This file is provided so that you can easily print this section of the Meridium APM Help system.

You should, however, use the Help system instead of a printed document. This is because the Help system provides hyperlinks that will assist you in easily locating the related instructions that you need. Such links are not available in a print document format.

The Meridium APM Help system can be accessed within Meridium APM itself or via the Meridium APM Documentation Website (https://www.me-ridium.com/documentation/WebHelp/WebHelpMaster.htm).

> **Note**: If you do not have access to the Meridium APM Documentation Website, contact [Meridium Global Support Services](#).

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About the Operator Rounds Documentation

A complete Operator Rounds implementation involves performing the following tasks:

- Installing and configuring the product.
- Performing administrative tasks in the Data Configuration Manager.
- Configuring and analyzing Operator Rounds records in the Meridium APM Framework application.
- Completing Operator Rounds tasks on a device.

This documentation explains how to configure Operator Rounds and how to complete Operator Rounds tasks on a device. This documentation does not assume any specific audience. It explains what a user would need to know to configure the Operator Rounds product to use in the Meridium APM Framework application and on a device. We assume that you know which tasks you are responsible for and can find the documentation associated with those tasks using the Table of Contents or the Search feature in the Help system.

The Operator Rounds documentation is not provided on the device. If you want to provide documentation to device users who do not have access to the Meridium APM Help, you can print the **Device Tasks** section of this documentation.

Overview of Operator Rounds

The*Meridium APM Operator Rounds* module lets you transfer data between the Meridium APM Framework application and a handheld device. Using the Meridium APM Framework application, you can create Route records and link them to Measurement Location records, which store information about the checkpoints at which someone will need to record reading values.

After the Route records and Measurement Location records have been created, you can download them to a device. Using the device, you can enter a reading value for each checkpoint along the Route. For example, if a Route record is linked to three Measurement Location records (Flow Rate Check, Temperature Check, and Leak Check), you would need to perform each check and use the device to enter a reading value based on your findings. You can also enter recommendations on the device based on your findings.

After you have completed a Route (i.e., taken readings at all checkpoints along that Route), you can upload the data back to Meridium APM. Doing so will create a Reading record for each reading value stored on the device, and each Reading record will be linked to the Measurement Location record that represents the associated checkpoint. In addition, any recommendation that you entered on the device will be used to create an Operator Rounds Recommendation record when the data is uploaded to Meridium APM.

After the data is uploaded to Meridium APM, you can use Meridium APM analytical tools to analyze the findings and recommendations, assess reading compliance, create Alert records, and so on.

The following image shows the **Operator Rounds Start Page**, which you can use as a starting point for performing tasks within Operator Rounds.

Operator Rounds System Requirements

The *Operator Rounds* license is required to take advantage of Operator Rounds functionality. In addition, your system must contain the basic Meridium APM system architecture and the following additional components:

- **Meridium APM Sync Server:** This computer houses the Meridium APM Sync Services and the Microsoft Sync Framework, which provides the infrastructure for the Operator Rounds solution. The Meridium APM Sync Server provides a connection between handheld devices and the Meridium APM Application Server so that data can be synchronized between the devices and the Meridium APM database.

  A *supporting instance of the Meridium APM Application Server* resides on the Meridium APM Sync Server to facilitate the connection between handheld devices and the database. This documentation assumes that the Sync Server machine has been configured according the system requirements for the Application Server.

  Meridium APM Sync Services requires that the following components exist on any machine where it is installed:

  - **Microsoft Sync Framework v2.0**, which includes Microsoft Sync Framework Services and Microsoft Sync Services for ADO. This component should be installed after Meridium APM Sync Services is installed. Meridium APM V3.6.0.0.0 has been tested using *only* the English version of the Microsoft Sync Framework.

  - **A database must exist to house several database tables that are used by Meridium APM Sync Services**. After you install Meridium APM Sync Services, you must specify the connection information to this database. We recommend that you use a database other than the Meridium APM database to store these database tables.

  If you are using a virtual machine (VM) to host your Meridium APM Sync Server, we recommend that:

  - You increase the physical server CPU and hard drive space requirements by 20% to ensure that the application will perform equivalently in a virtualized environment.

  - You double the physical server memory requirements.

  - Each VM have its own dedicated processor cores and memory allocation to ensure appropriate performance.

  Meridium, Inc. supports Hyper-V and VMWare platforms.

  These requirements may not be sufficient, depending upon how your system is configured. Parameters that affect the hardware requirements include the number of users, modules purchased, database size, and other factors that can vary from one customer to another. For help refining your specific system requirements, consult a member of the Meridium Inc. Global Support Services or Professional Services department.

- **Handheld Device(s):** You can use Meridium APM Operator Rounds on as many

handheld devices as you like. On each device, you will need to install the Meridium APM Mobile Framework software and the Operator Rounds application itself. The type of device that you use will depend upon the Operator Rounds add-on(s) that you use. The following table lists the supported devices associated with each add-on and information about which devices are used in the Meridium, Inc. testing environment.

Operator Rounds add-on	Supported devices	Device used in the Meridium, Inc. testing environment	Supported ID Types
Barcode	Intermec and Motorola scanners	• Intermec CN70 device • Motorola MC9500-k series device* • Motorola/ Psion Omnii XT15 with 1 D barcode reader	Code 39 barcodes
Bluetooth	Devices with an ARMV4 *or* ARMV4I processor *and* either of the following software installed:	What do we test on?	
RFID	• Intermec 70 series scanners with the Intermec IP30 Handheld RFID reader • i.roc Ci70-Ex device with eCom LF RFID reader (TLB30) • i.roc Ci70-EX device with eCom HF RFID reader (UNI13)	• Intermec CN70 device with an Intermec IP30 Handheld RFID reader • i.roc Ci70-Ex device with eCom LF RFID reader (TLB30) • i.roc Ci70-EX device with eCom HF RFID reader (UNI13)	• International Standards Organization 18000-6B Generation 2 • Electronic Product Code Global Class 1 Generation 2

*Full testing of the Meridium APM Mobile Framework and the Operator Rounds application has not been completed on this device. Rather, only the functionality associated with the barcode add-on has been tested on this device.

The handheld devices that you want to use to collect data for Operator Rounds must use one of the following operating systems:

- Windows Mobile 2003
- Windows Mobile 5.0
- Windows Mobile 6.0
- Windows Mobile 6.5
- Windows Embedded Handheld 6.5

Additionally, you must install the following prerequisites on the handheld devices:

- .NET Compact Framework 3.5
- Microsoft SQL CE 3.5 SP1
- Microsoft Sync Services for ADO.NET 1.0 SP1

> **Note:** The .NET Compact Framework, Microsoft SQL CE, and Microsoft Sync Services for ADO.NET are distributed by Meridium, Inc. and included in the Meridium APM Sync Services installation. They can be downloaded from the Meridium APM Sync Server to a device after Meridium APM Sync Services has been installed.

After you have installed and configured the basic architecture, you will need to perform some configuration steps specifically for Operator Rounds.

The following image provides an illustration of the components that are required for deploying Operator Rounds.
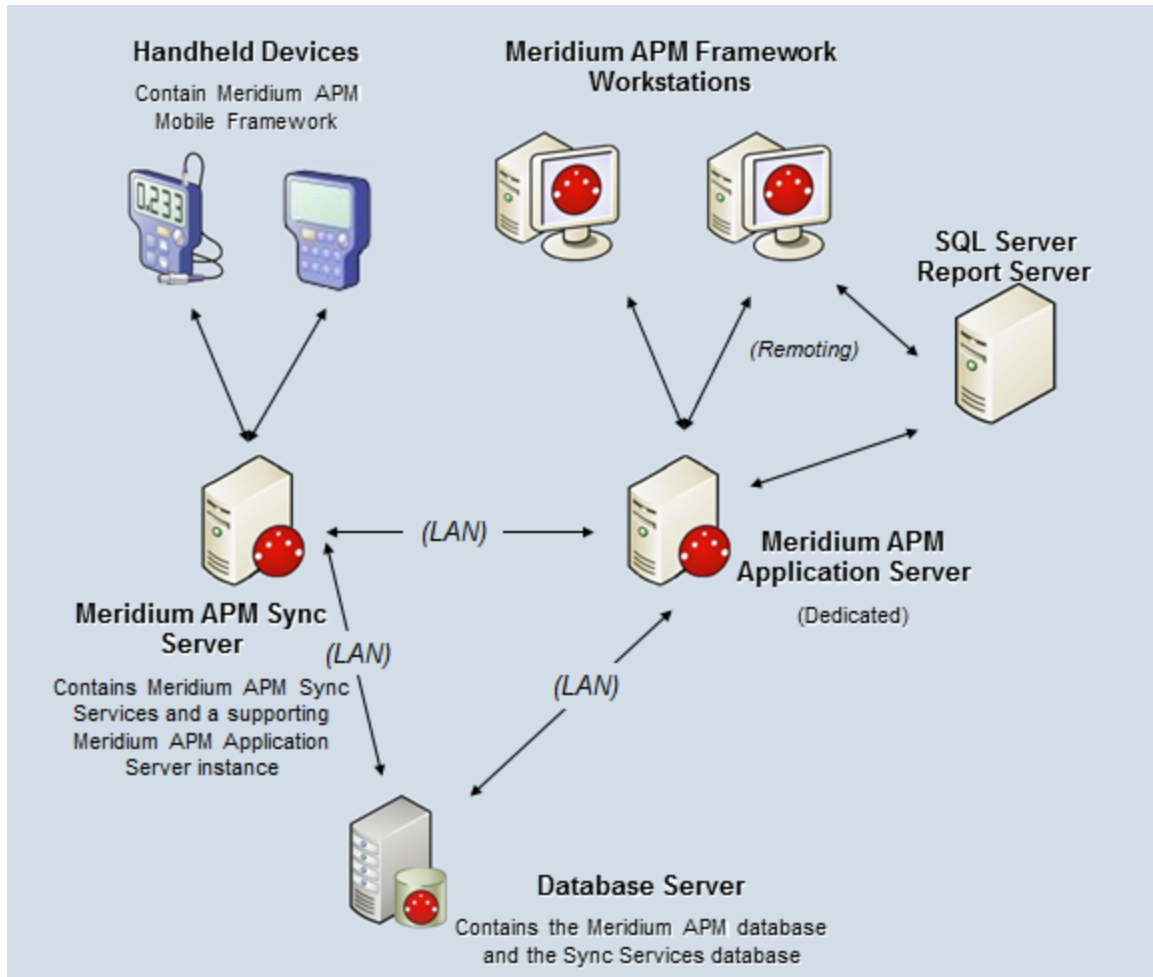
Note: While this image depicts only a single, dedicated Meridium APM Application Server, keep in mind that your implementation may contain one or more of these machines. The purpose of this image is to depict the interaction of the Meridium APM Sync Server with the basic Meridium APM components and not to provide details on the basic components themselves.

Using Operator Rounds Across Multiple Time Zones

Depending upon how your company operates, you may need to see the times that were recorded in one time zone displayed to you using your *local* time zone. For example, the time zone offset between Eastern Standard Time (EST) and UTC is -05:00 hours, and the time zone offset between Gulf Standard Time (GST) and UTC is +04:00 hours. If a reading or recommendation is entered at 3:04 P.M. on the 23rd of April by a Security User whose time zone is Eastern Standard Time (EST), when the corresponding record is viewed by a Security User whose time zone is Gulf Standard Time (GST), the time should be shown as *12:04 A.M.* on the *24th* of April.

If needed, you can configure Operator Rounds to work with multiple time zones. The following information explains how it works and the steps you will need to complete to take advantage of this functionality.

How Does It Work?

When a device user downloads data from the device to the Meridium APM database, the Sync Server will use information associated with the device user's Meridium APM Security User record to complete the transaction. In this way, the Meridium APM system can obtain time zone information about that Security User.

When a time value is saved in a field whose UTC field property is set to *True*, the Meridium APM system will:

- Convert the date and time entered by the device user in their time zone (as defined by the Timezone setting in their Security User record) to the corresponding UTC time and date.
- Store the date and time in the database in the UTC time zone.

The next time that a Security User views that record, the Meridium APM system will retrieve the Timezone setting associated with the Security User who is currently logged in and use it to:

- Determine how to convert the UTC time and date value (stored in the database) into the corresponding time and date.
- Display the time and date that corresponds with the Security User's time zone.

Consider the previous example: If a Security User's Timezone setting is set to Eastern Standard Time (EST), when that user enters a reading at *3:04 P.M.* on the 23rd of April using the EST time zone, the Meridium APM system will store that value in UTC time (i.e., 8:04 P.M.). When the same reading is viewed by a Security User whose Timezone setting is set to Gulf Standard Time (GST), however, the Meridium APM system will convert the time value from UTC to GST by adding 4 hours to the UTC time (i.e., 12:04 A.M.), which is the day after the reading was recorded in the EST time zone.

About Routes and Measurement Locations

In most manufacturing facilities, some work is performed at regular intervals to ensure that equipment items function properly and that safety measures are maintained. For example, when a shift starts or ends, a series of safety checks might be performed on equipment items that move large amounts of materials, (e.g., a dump truck). Most likely, one person will perform the work at multiple checkpoints to maintain efficiency.

Using Meridium APM Operator Rounds, you can define a series of checkpoints as a single *Route*, where the Route represents the checkpoints that should logically be performed in succession by the same person. You can [define as many Routes as you need] to accommodate the varied maintenance schedules of the equipment and locations in your facility.

In Meridium APM, a Route is represented by a Route record that stores the description and status of the Route (i.e., active versus inactive). Route records are linked to Measurement Locations records, which define the individual checkpoints that should be performed along the Route.

Measurement Location records store information such as the type of readings users should collect when they reach the checkpoint and the alerts that should be triggered when users enter readings that meet certain criteria. Measurement Location records are linked to a Route record, an Equipment or Functional Location record, a Checkpoint Task record, which defines the frequency by which the readings should be collected, and Checkpoint Condition records, which tell the device when to display subsequent checkpoints based upon a reading value.

To better understand how a Route works, consider the following example of a dump truck that is inspected at the beginning of every shift. Because these checks make sense to perform in succession, (i.e., they require the same tools or they are performed by the same person) they can be grouped into the same Route. You could create a Route record and link it to multiple Measurement Location records that dictate the checks that should be performed along that Route, and at each checkpoint, you would enter a reading value.

The following numbered callouts have been added to the following image to highlight the five checkpoints on the Route. Each checkpoint corresponds with one Measurement Location record.

1. Tire tread depth

2. Truck bed condition

3. Oil level

4. Fuel level

5. Hydraulic pressure

You can also see that the checkpoints are numbered according to the sequence in which they should be completed, which is based upon the layout of the items that need to be checked.

For each checkpoint along the Route, you would need to enter a reading. For example, at checkpoint 1, you would record the tire tread depth. At checkpoint 2, you would record the condition of the truck bed, and so on. After all checkpoints along a Route have been completed and a reading value has been recorded, the Route is considered complete until the checkpoints need to be completed again.

Operator Rounds Data Model

Operator Rounds leverages the fundamental Meridium APM entity and relationship family infrastructure for storing data in the Meridium APM database. The data that is stored in the Meridium APM database can be transferred to a handheld device, where you can record readings and create recommendations. Those readings and recommendations can then be transferred to the Meridium APM database, where they will be converted into records.

Before you begin using Operator Rounds in the Meridium APM Framework application, you must decide on the equipment and locations for which you want to record readings. Via the Configuration Manager application, you must relate the Equipment and Functional Location families to the Operator Rounds Recommendation family through the Has Recommendations relationship, if you want to create Recommendation records based upon your findings and link them to the Equipment or Functional Location record. By default, *Operator Rounds Recommendation records* will be linked to Measurement Location records.

Additionally, if you want to link Measurement Location records to Event records, which you can do via the **Apply Template Group Builder**, you will need to create the relationship family and definition manually. You can use any family that you like as the predecessor family. Throughout this documentation, however, the family is referred to as simply the *Event* family.

When you are working with records in Operator Rounds, it is helpful to visualize the data model illustration.

 In the following illustration:

- The shaded boxes represent entity families.
- The arrows represent relationship families. You can determine the direction of each relationship from the direction of the arrow head
- Black arrows and boxes represent entity families, relationship families, and associated relationship definitions that are configured in the baseline database and do not require customizing for baseline functionality to work.
- Red arrows and boxes represent entity families, relationship families, and associated relationship definitions that require customizing if you want to implement the workflow that involves them. In some cases, you might need to create the relationship family, relationship definition, or entity family from scratch if you want to implement the associated functionality.
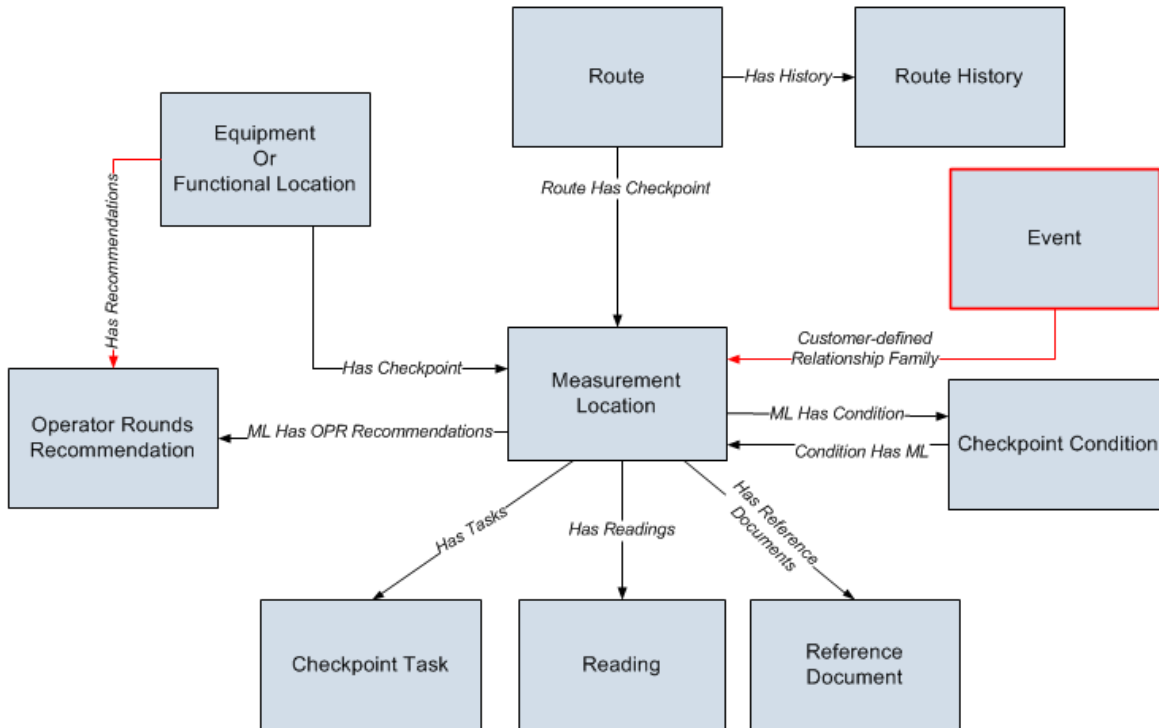
In addition to the families shown in this image, the following families are also used by Operator Rounds but are explained elsewhere in this documentation:

- Measurement Location Template (which is linked to the Measurement Location family as a predecessor through the *Template Has Checkpoint* relationship).
- Template Group
- Checkpoint Template Sequence
- Operator Rounds Recommendation in Error
- Reading in Error

How Do Operator Rounds Records Correspond to What Users See on a Device?

The [Operator Rounds data model](#) consists of the following families:

- Equipment or Functional Location
- Route
- Measurement Location
- Checkpoint Condition
- Checkpoint Task
- Reading
- Operator Rounds Recommendation
- Reference Document

You must create Equipment or Functional Location, Route, Checkpoint Task, Checkpoint Condition, and Measurement Location records in the Meridium APM Framework application. Remember that each Measurement Location record represents a checkpoint that must be completed, and each Measurement Location record is linked to a Checkpoint Task record that defines the schedule for the checkpoint.

When users perform a download operation on a device, they download Route records and the Measurement Location records to which they are linked to the device. Then, they use the device to enter readings for each checkpoint along the Route. When those readings are uploaded to Meridium APM, a corresponding Reading record is created.

In addition, device users can create recommendations on the device, which results in the creation of Operator Rounds Recommendation records after they are uploaded to Meridium APM.

> Note: You can also create Reading records and Operator Rounds Recommendation records in the Meridium APM Framework application just as you would create any record in your database.

Because the concept of a record does not always have meaning in terms of the device itself, throughout this documentation, when we refer to an item on the device that has a corresponding record in Meridium APM, the term *record* is not always used. Keep in mind, though, that data that appears on the device corresponds directly to records that have been created in the Meridium APM Framework application.

Accessing the Operator Rounds Start Page

The **Operator Rounds Start Page** provides access to the features associated with Operator Rounds. To access ALL the features associated with Operator Rounds you must be a member of the Operator Rounds *Administrator* Security Group. Members of the Operator Rounds *Mobile User* Security Group will have view only privileges to Operator Rounds, meaning that if members of this Security Group try to modify content in Operator Rounds, a message will appear, indicating that the user has insufficient privileges to perform the task.

After Operator Rounds records have been created, they can be downloaded to a device, where a device user can then perform the tasks associated with this data and record his or her findings.

To access the Operator Rounds Start Page:

- On the Meridium APM Framework main menu, click **Go To**, point to **APM Foundation**, and then click **Operator Rounds**.

  The **Operator Rounds Start Page** appears.
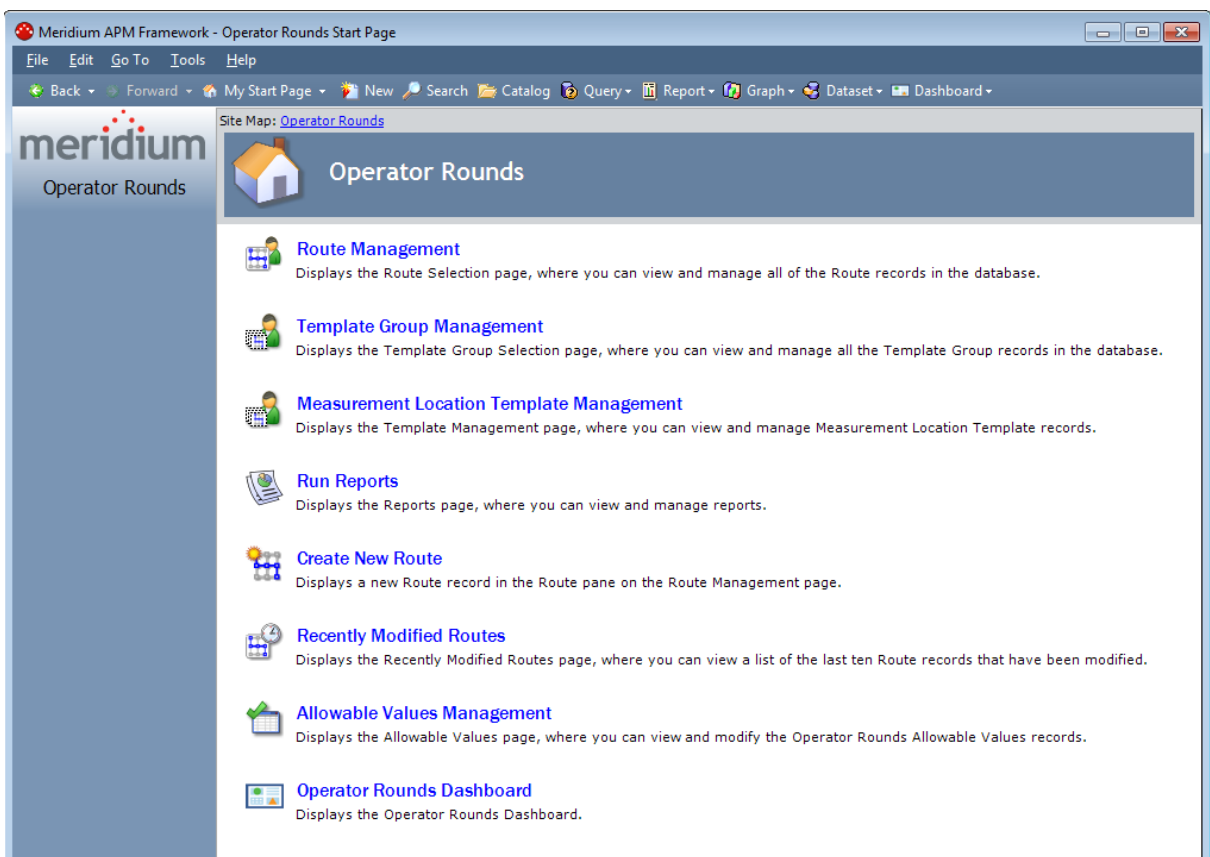
Aspects of the Operator Rounds Start Page

The **Operator Rounds Start Page** displays the following links, which let you access features in Operator Rounds:

- **Route Management:** Displays the [Operator Rounds Route Selection page](#), where you can view and manage all Route records in the database.

- **Template Group Management:** Displays the [Template Group Selection page](#), where you can view and manage all the Template Group records in the database.

- **Measurement Location Template Management:** Displays the [Operator Rounds Template Management page](#), where you can view and manage Measurement Location Template records.

- **Run Reports:** Displays the [Operator Rounds Reports page](#), where you can view and manage reports.

- **Create New Route:** Displays the a new Route record in the Route pane on the **Operator Rounds Route Management - <Route ID> page**.

- **Recently Modified Routes:** Displays the [Operator Rounds Recently Modified Routes page](#), where you can view a list of the last ten Route records that have been modified.

- **Allowable Values Management:** Displays the [Operator Rounds Allowable Values page](#), where you can view and modify Operator Rounds Allowable Values records.

- **Operator Rounds Dashboard:** Displays the [baseline Operator Rounds dashboard on the Dashboard page](#), where you can view summary information for equipment and locations that you analyze in the Operator Rounds module.

First-Time Deployment Workflow

Deploying and configuring Operator Rounds for the first time includes completing multiple steps, which are outlined in the tables in this topic. The steps in this section of the documentation provide all the information that you need to deploy Operator Rounds on top of the basic Meridium APM architecture.

The installation and configuration steps are split up into the following categories:

- APM Sync Server machine
- Module-level configuration tasks
- Handheld devices

Whether a step is required or optional is indicated in the **Required/Optional** cell. Steps are marked as *Required* if you must perform the step to take advantage of Operator Rounds functionality.

The person responsible for completing each task may vary within your organization. We recommend, however, that the steps be performed in relatively the same order in which they are listed in the table.

> **Note:** After you have performed all the steps outlined in this topic, you can create Routes.

APM Sync Server

Step	Task	Required/Optional	Notes
1	Configure the Meridium APM Sync Server. Configuring the Meridium APM Sync Server includes completing the following steps: • Install Meridium APM Sync Services. • Install the Microsoft Sync Framework. • Modify the file *web.config*. • Modify the file *MeridiumSync.config*.	Required	None

Step	Task	Required/Optional	Notes
2	[Configure security for the MeridiumSyncService Service]().	Optional	You must complete this step only if you change the anonymous user account for the MeridiumSyncService service.

Module-Level Configuration Tasks

Step	Task	Required/Optional	Notes
1	[If you have equipment and location data in families outside of the baseline Equipment and Functional Location families, review the Operator Rounds data model to determine which relationship definitions you will need to modify to include your custom equipment and locations families](). Modify any relationship definitions as needed via the Configuration Manager application.	Optional	None
2	[Assign the desired Security Users to the Operator Rounds Security Groups]() via the Configuration Manager application.	Required	None
3	[Configure the Has Recommendations relationship family to include the Equipment or Functional Location families as the predecessors to the Operator Rounds Recommendation family]() via the Configuration Manager application.	Required	None
4	Via the Configuration Manager application, modify the Measurement Location family code item if you want the Scan ID field in Measurement Location records to be populated automatically.	Optional	None

Step	Task	Required/Optional	Notes
5	Via the Configuration Manager application, modify the Template ID family code item if you want Measurement Location values to be skipped or not overwritten when a Measurement Location template or Template Group is used.	Optional	None
6	Manage Measurement Location Template mappings if you added fields to the Measurement Location Template family via the Configuration Manager application.	Required	None
7	Via the Configuration Manager application, modify the Route family code item so that the field that is used by the Asset View in the Route pane is a Measurement Location family field other than Asset ID.	Optional	None
8	Via the Configuration Manager and Meridium APM Framework applications, create a Scheduled Item to track reading compliance.	Required	None
9	Modify the download query via the Meridium APM Framework application.	Optional	None
10	Modify the security query via the Meridium APM Framework application.	Optional	None
11	Configure Operator Rounds to use the Readings - Oracle query.	Optional	This task is necessary only if you are using an Oracle database.

> ┌**IMPORTANT:** In addition to these tasks, after you relate the Equipment and Functional Location families to the Operator Rounds Recommendation family (using the Has Recommendations relationship), you should compile the database and reset IIS on the Meridium APM Application Server.

Hand Held Devices

The following tasks need to be performed on *each* handheld device that you want to use with Operator Rounds.

Step	Task	Required/Optional	Notes
1	Ensure that all the handheld devices that you want to use with Operator Rounds meet the software requirements.	Required	None
2	Install the .NET Compact Framework.	Required	None
3	Install Microsoft SQL CE.	Required	None
4	Install Microsoft Sync Services for ADO.NET.	Required	None
5	Install the Meridium APM Mobile Framework.	Required	None
6	Identify the Sync Server within the Meridium APM Mobile Framework.	Required	None
7	Specify the security query to be used with the Meridium APM Mobile Framework.	Required	None
8	Modify the user time-out value.	Optional	You must complete this step only if you want the user time-out value to be a value *other than* four hours.
9	Install Operator Rounds.	Required	None

Step	Task	Required/Optional	Notes
10	Configure barcode scanning. Configuring barcode scanning includes the followings steps: • Install the Barcode add-on. • Enable barcode scanning.	Optional	You must complete this step only if you want to use a barcode scanner with Operator Rounds.
11	Configure RFID tag scanning. Configuring RFID scanning includes the following steps: • Install the RFID add-on. • Enable RFID tag scanning.	Optional	You must complete this step only if you want to use an RFID scanner with Operator Rounds.
12	Install translations for Operator Rounds.	Optional	None

Upgrade or Update Operator Rounds to 3.6.1.1.0

The following tables list the steps that are required to update or upgrade Operator Rounds to 3.6.1.1.0. These steps assume that you have completed the steps for upgrading the components of the basic Meridium APM architecture.

Update from version V3.6.1.0.0

This module will be updated to 3.6.1.1.0 automatically when you update the components in the basic Meridium APM system architecture. No additional steps are required.

Upgrade from any version V3.6.0.0.0 through V3.6.0.12.3

Step	Task	Required/Optional	Notes
1	Upgrade the Meridium APM Sync Server.	Required	None
2	Configure the Meridium APM Sync Server. Configuring the Meridium APM Sync Server includes completing the following steps: • Define the database that will be used by the Meridium APM Sync Services Server. • Define the Meridium APM Application Server, database, and Sync Services Security User for the Sync Services.	Required	None
3	Upgrade handheld devices.	Required	None
4	Via the Configuration Manager and Meridium APM Framework applications, create a Scheduled Item to track reading compliance.	Required	None

Step	Task	Required/Optional	Notes
5	Via the Configuration Manager and Meridium APM Framework applications, configure Operator Rounds to work across multiple time zones.	Optional	None
6	Via the Meridium APM Framework application, identify and modify existing Measurement Location records that are linked to Reference Document records whose combined file size exceeds 2 MB.	Optional	None
7	Configure Operator Rounds to use the Readings - Oracle query.	Optional	This task is necessary only if you are using an Oracle database.
8	For each new hand held device you want to use, complete the steps in the **Hand Held Devices** section of the Operator Rounds first-time deployment workflow, and then restart the device(s).	Optional	Required only if you want to use the following devices: • eCom/ Intermec i.roc Ci70-Ex hand held device with LF/HF RFID functionality • Motorola/ Psion Omnii XT15 with 1 D barcode reader

Upgrade from any version V3.5.1.0.0 through V3.5.1.12.0

Step	Task	Required/Optional	Notes
1	Upgrade the Meridium APM Sync Server.	Required	None
2	Configure the Meridium APM Sync Server. Configuring the Meridium APM Sync Server includes completing the following steps: • Define the database that will be used by the Meridium APM Sync Services Server. • Define the Meridium APM Application Server, database, and Sync Services Security User for the Sync Services.	Required	None
3	Upgrade handheld devices.	Required	None
4	Via the Configuration Manager and Meridium APM Framework applications, create a Scheduled Item to track reading compliance.	Required	None
5	Via the Configuration Manager and Meridium APM Framework applications, configure Operator Rounds to work across multiple time zones.	Optional	None
6	Via the Meridium APM Framework application, identify and modify existing Measurement Location records that are linked to Reference Document records whose combined file size exceeds 2 MB.	Optional	None

Step	Task	Required/Optional	Notes
7	Configure Operator Rounds to use the Readings - Oracle query.	Optional	This task is necessary only if you are using an Oracle database.
8	For each new hand held device you want to use, complete the steps in the **Hand Held Devices** section of the Operator Rounds first-time deployment workflow, and then restart the device(s).	Optional	Required only if you want to use the following devices: • eCom/ Intermec i.roc Ci70-Ex hand held device with LF/HF RFID functionality • Motorola/ Psion Omnii XT15 with 1 D barcode reader

Upgrade from any version V3.5.0 SP1 LP through V3.5.0.1.9.0

Step	Task	Required/Optional	Notes
1	Upgrade the Meridium APM Sync Server.	Required	None

Step	Task	Required/Optional	Notes
2	Configure the Meridium APM Sync Server. Configuring the Meridium APM Sync Server includes completing the following steps: • Define the database that will be used by the Meridium APM Sync Services Server. • Define the Meridium APM Application Server, database, and Sync Services Security User for the Sync Services.	Required	None
3	Upgrade handheld devices.	Required	None
4	Via the Configuration Manager and Meridium APM Framework applications, create a Scheduled Item to track reading compliance.	Required	None
5	Via the Configuration Manager and Meridium APM Framework applications, configure Operator Rounds to work across multiple time zones.	Optional	None
6	Via the Meridium APM Framework application, identify and modify existing Measurement Location records that are linked to Reference Document records whose combined file size exceeds 2 MB.	Optional	None
7	Configure Operator Rounds to use the Readings - Oracle query.	Optional	This task is necessary only if you are using an Oracle database.

Step	Task	Required/Optional	Notes
8	For each new hand held device you want to use, complete the steps in the **Hand Held Devices** section of the Operator Rounds first-time deployment workflow, and then restart the device(s).	Optional	Required only if you want to use the following devices: • eCom/ Inter-mec i.roc Ci70-Ex hand held device with LF/HF RFID func-tionality • Motorola/ Psion Omnii XT15 with 1 D barcode reader

Upgrade from any version V3.5.0 through V3.5.0.0.7.1

Step	Task	Required/Optional	Notes
1	Upgrade the Meridium APM Sync Server.	Required	None
2	Configure the Meridium APM Sync Server. Configuring the Meridium APM Sync Server includes com-pleting the following steps: • Define the database that will be used by the Meridium APM Sync Services Server. • Define the Meridium APM Application Server, database, and Sync Services Security User for the Sync Services.	Required	None

Step	Task	Required/Optional	Notes
3	Upgrade handheld devices.	Required	None
4	Via the Configuration Manager and Meridium APM Framework applications, create a Scheduled Item to track reading compliance.	Required	None
5	Via the Configuration Manager and Meridium APM Framework applications, configure Operator Rounds to work across multiple time zones.	Optional	None
6	Via the Meridium APM Framework application, identify and modify existing Measurement Location records that are linked to Reference Document records whose combined file size exceeds 2 MB.	Optional	None
7	Configure Operator Rounds to use the Readings - Oracle query.	Optional	This task is necessary only if you are using an Oracle database.

Step	Task	Required/Optional	Notes
8	For each new hand held device you want to use, complete the steps in the **Hand Held Devices** section of the Operator Rounds first-time deployment workflow, and then restart the device(s).	Optional	Required only if you want to use the following devices: • eCom/ Intermec i.roc Ci70-Ex hand held device with LF/HF RFID functionality • Motorola/ Psion Omnii XT15 with 1 D barcode reader

Upgrade from any version V3.4.5 through V3.4.5.0.1.4

Step	Task	Required/Optional	Notes
1	Upgrade the Meridium APM Sync Server.	Required	None
2	Configure the Meridium APM Sync Server. Configuring the Meridium APM Sync Server includes completing the following steps: • Define the database that will be used by the Meridium APM Sync Services Server. • Define the Meridium APM Application Server, database, and Sync Services Security User for the Sync Services.	Required	None

Step	Task	Required/Optional	Notes
3	Upgrade handheld devices.	Required	None
4	Via the Configuration Manager and Meridium APM Framework applications, create a Scheduled Item to track reading compliance.	Required	None
5	Via the Configuration Manager and Meridium APM Framework applications, configure Operator Rounds to work across multiple time zones.	Optional	None
6	Via the Meridium APM Framework application, identify and modify existing Measurement Location records that are linked to Reference Document records whose combined file size exceeds 2 MB.	Optional	None
7	Configure Operator Rounds to use the Readings - Oracle query.	Optional	This task is necessary only if you are using an Oracle database.

Step	Task	Required/Optional	Notes
8	For each new hand held device you want to use, complete the steps in the **Hand Held Devices** section of the Operator Rounds first-time deployment workflow, and then restart the device(s).	Optional	Required only if you want to use the following devices: • eCom/ Intermec i.roc Ci70-Ex hand held device with LF/HF RFID functionality • Motorola/ Psion Omnii XT15 with 1 D barcode reader

Installing Meridium APM Sync Services

The following instructions provide details on installing Meridium APM Sync Services using the Meridium APM Server and Add-ons installer. When you install the Meridium APM Sync Services component, you will also install a supporting instance of the Application Server.

> **Note:** IIS will be reset automatically by the installer before the installation process begins.

To install Meridium APM Sync Services:

1. On the Meridium APM Sync Server machine, insert the Meridium APM distribution DVD, and navigate to the folder **\\General Release\Meridium APM Framework and Server Setup\Setup\Meridium APM Server and Add-ons**.

2. Double-click the file **Setup.exe**.

   A message appears, asking if you want to allow setup.exe to make changes to the machine.

3. Click the **Yes** button.

   The **Meridium APM Server and Add-ons** installer appears, displaying the **Preparing Setup** screen, which contains a progress bar.
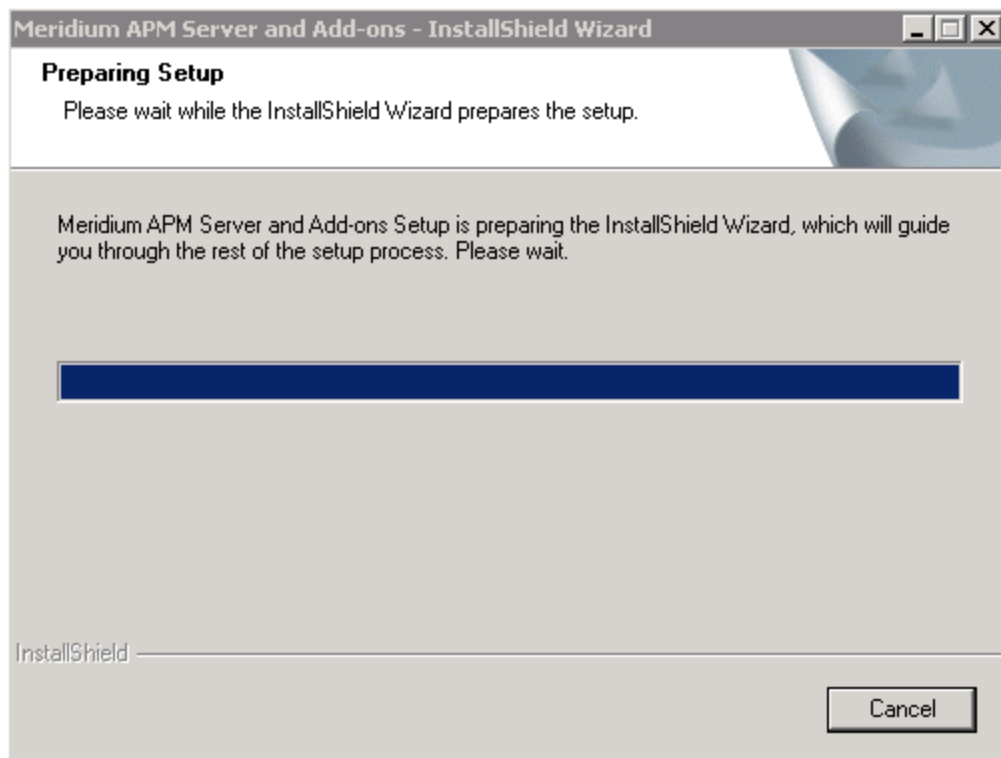
After the progress bar reaches the end, the Welcome screen appears.
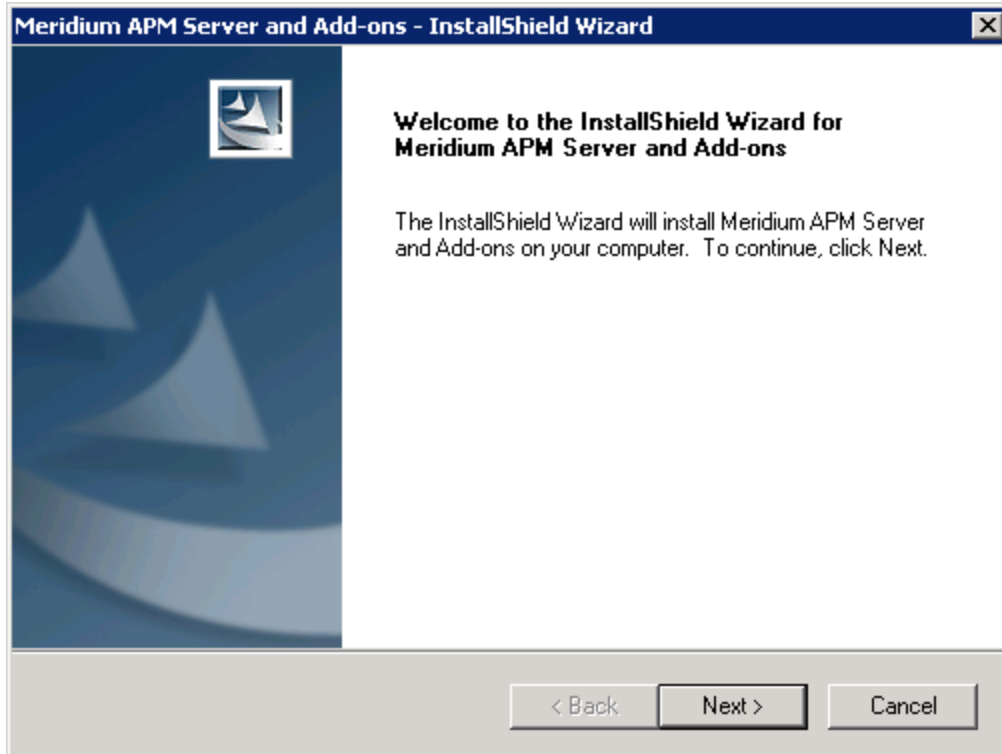
4. Click the **Next** button.

   The **License Agreement** screen appears.
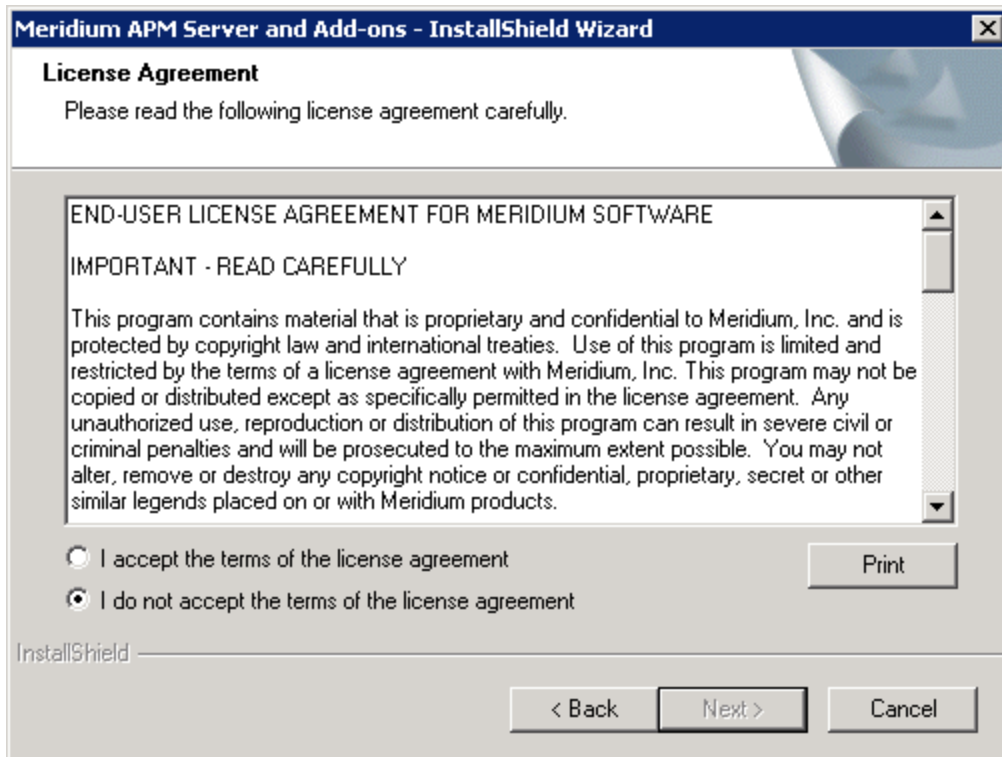
5. Read the entire license agreement, and then select the **I accept the terms of the license agreement** option.

    The **Next** button is enabled.

    > **Note:** If you do not accept the terms of the license agreement, accept the default selection, and then click the **Cancel** button to cancel the installation process and exit the installer. If you want to print the license agreement, click the **Print** button.

6. Click the **Next** button.

    The **Select Installation Location** screen appears, prompting you to select the location where the software will be installed. The software will be saved to the following folder on the Meridium APM Sync Server by default: **C\Program Files\Meridium**.
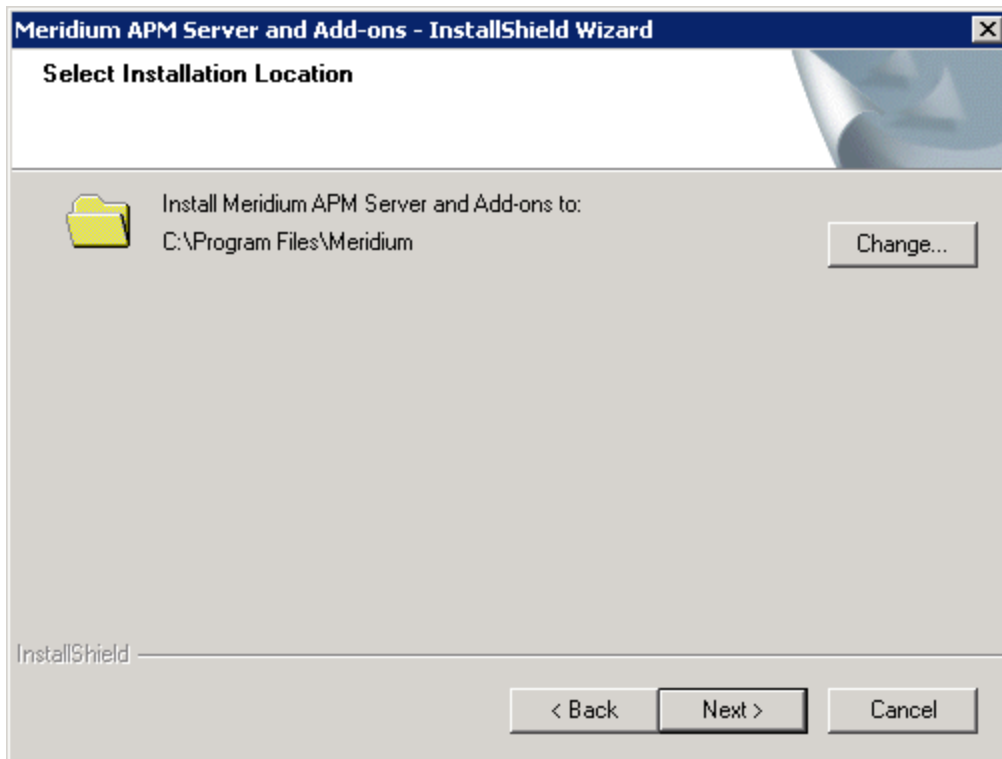
7. If you are satisfied with the default location where the software will be installed, click the **Next** button.

    -or-

    If you want to change the location where the software will be installed, click the **Change** button, and navigate to the location where you want to install the software. The folder path that you select will be displayed in place of the default folder path. When you are satisfied with the installation location, click the **Next** button.

The **Select the features you want to install** screen appears, and the Meridium APM Application Server node is highlighted automatically in the tree.
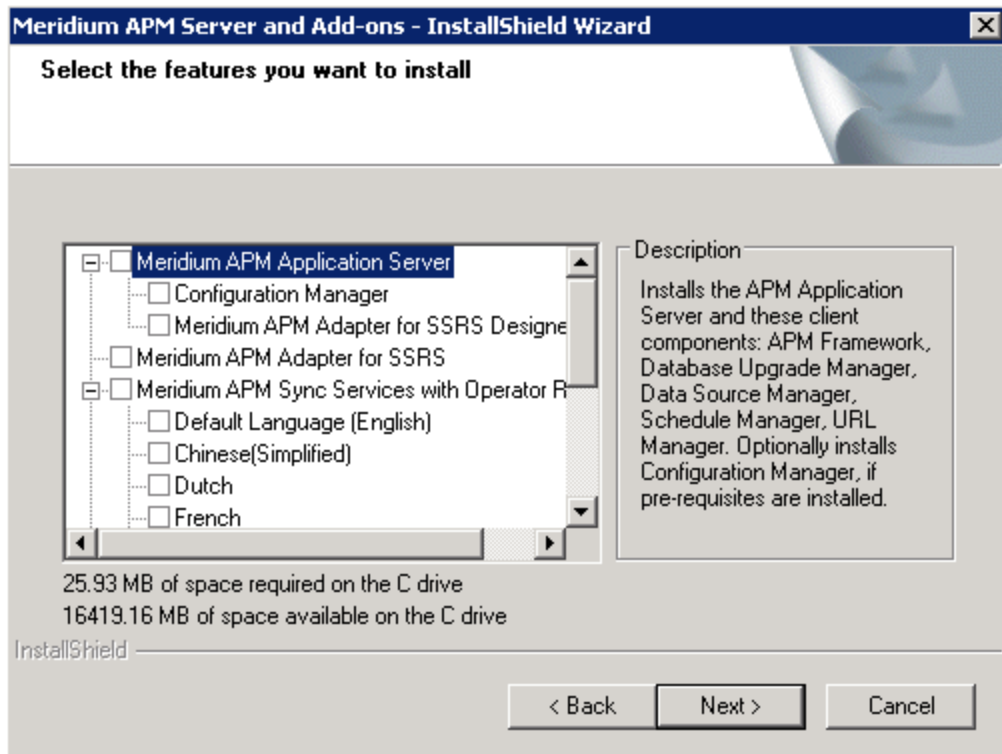
> ┌**IMPORTANT:** The **Select the features you want to install** screen lets you specify which features and languages you want to install on the Meridium APM Sync Server machine. *Theseinstructions* assume that you want to deploy the Meridium APM Sync Services option and a supporting instance of the Meridium APM Application Server. For details on the applications that are installed automatically with the Application Server, select the **Meridium APM Application Server** node, and read the description to the right. While the English version of Sync Services is installed automatically, you can install additional languages.

8. Select the **Meridium APM Application Server** and **Meridium APM Sync Services with Operator Rounds** check boxes.

   All the subnodes that appear below these nodes become selected automatically.
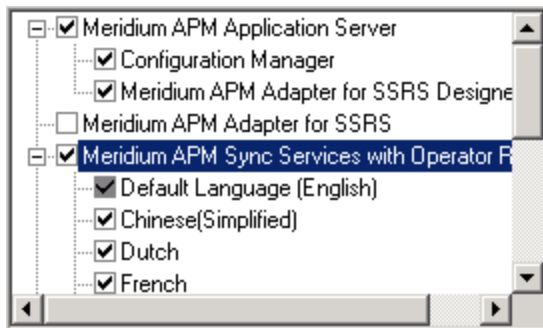
9. Below the **Meridium APM Sync Services with Operator Rounds** node, clear the check box for any language that you do not want to install.

    > **Note:** The **Default Language (English)** check box cannot be cleared. English is the default language for Meridium APM and will *always* be installed.

10. Click the **Next** button.

    The installer performs a check to make sure that your system meets the requirements of the components that you have selected. Specifically, the installer will check for Microsoft Sync Framework v2.0.

    If Microsoft Sync Framework v2.0 is not found, the **Meridium Installer screen** will appear and contain a message indicating that Microsoft Sync Framework v2.0 was not found and must be installed before you can use sync services. This message is expected. After you have installed Meridium APM Sync Services, you will install the Microsoft Sync Framework.

    If you see this screen, read the entire message, and then click the **Next** button.

    The **websites** screen appears.

    When Meridium APM Sync Services is installed, the installer creates a virtual directory within a website that is configured in the IIS Manager on the Meridium APM Sync Server. If you have more than one website configured on the Meridium APM Sync Server, this screen lets you choose which website to use.

Note: Throughout this documentation, we assume that you have chosen to install Meridium APM Sync Services under the website *Default Web Site*. If you install it under a different website, wherever our documentation refers to the Default Web Site, you will need to substitute the website that you selected during this step.

11. In the list of websites, select the website where you want to create a virtual directory for Meridium APM Sync Services.

Note: If you have only one website configured, that website will be selected in the list automatically. In this case, you can simply accept the default selection.

12. Click the **Next** button.

The **Complete the Installation** screen appears.

13. Click the **Install** button.

The **Setup Status** screen appears and displays a progress bar, indicating the progress of the installation process.

After the progress bar reaches the end, the **Installation is Complete** screen appears.

This screen contains a message, indicating that Meridium APM Server and Add-ons has been installed successfully. You can also select to optionally launch the APM System Administration tool when the installer window closes. By default, this option is set to *Yes*.

14. If you want the APM System Administration tool to be launched as soon as you click the **Finish** button, accept the default selection and move on to the next step.

    -or-

    If you do not want the APM System Administration tool to be launched at this time, clear the **Launch APM System Administration now** check box.

15. Click the **Finish** button.

    The **Meridium APM Server and Add-ons** installer closes. Additionally, if the **Launch APM System Administration now** check box was selected, the **APM System Administration** window appears. At this point, you can verify that Sync Services was installed successfully and then refer back to the checklist.

Upgrading Meridium APM Sync Services from V3.4.5 to V3.6.0.0.0

To upgrade the Meridium APM Sync Services from one version to another, you will need to upgrade Meridium APM Sync Services software. Upgrading the Meridium APM Sync Server is one step in the comprehensive process required for upgrading Meridium APM from one version to another. You should not upgrade the Meridium APM Sync Server until you have reviewed the complete process for upgrading from your current version. For more information, see the Installation, Configuration, and System Administration documentation.

> **Note:** IIS will be reset automatically by the installer before the old version of Meridium APM is uninstalled and before the installation process begins.

To upgrade Meridium APM Sync Services:

1. On the Meridium APM Sync Server machine, insert the Meridium APM DVD, and navigate to the folder **General Release\Meridium APM Framework and Server Setup\Setup\Meridium APM Server and Add-ons**.

   Double-click the file **Setup.exe**.

   A message appears, asking if you want to allow setup.exe to make changes to your machine.

2. Click the **Yes** button.

   The **Meridium APM Server and Add-ons** installer appears, displaying the **Preparing Setup** screen. The **Preparing Setup** screen contains a progress bar that indicates when the installer is ready to upgrade components on your machine.
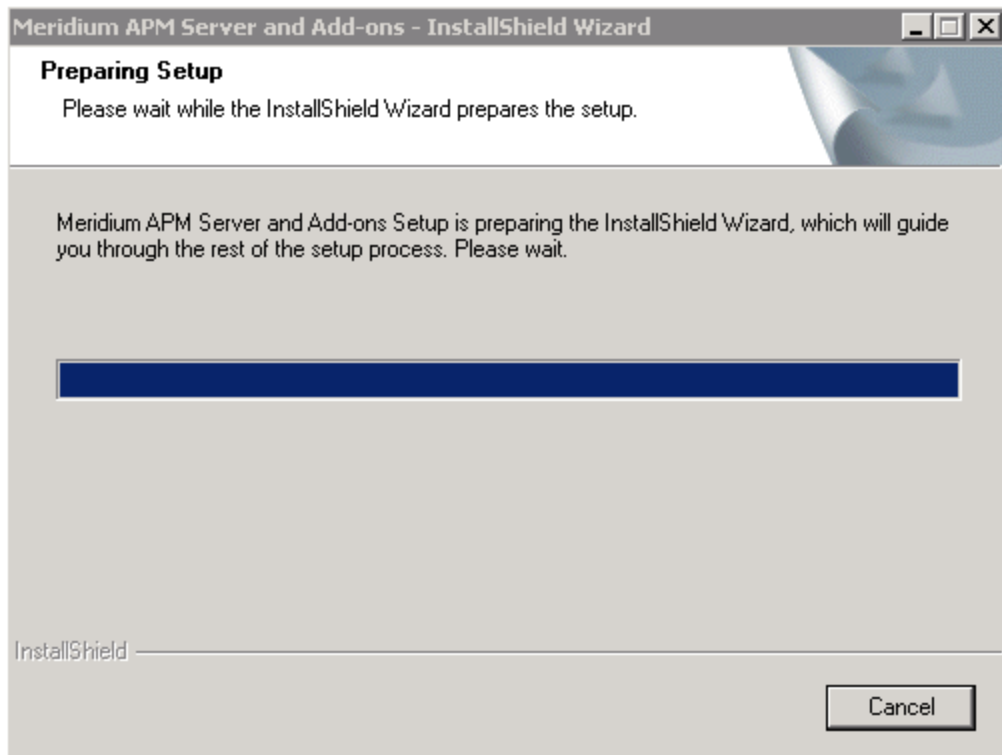
After the progress bar reaches the end, the Welcome screen appears.

3. Click the **Next** button.

A message appears, indicating that an older version of Meridium APM Application Server and Add-ons is installed on this machine and that it will be uninstalled automatically before you can install the new version.

4. Click the **Yes** button.

The **License Agreement** screen appears.
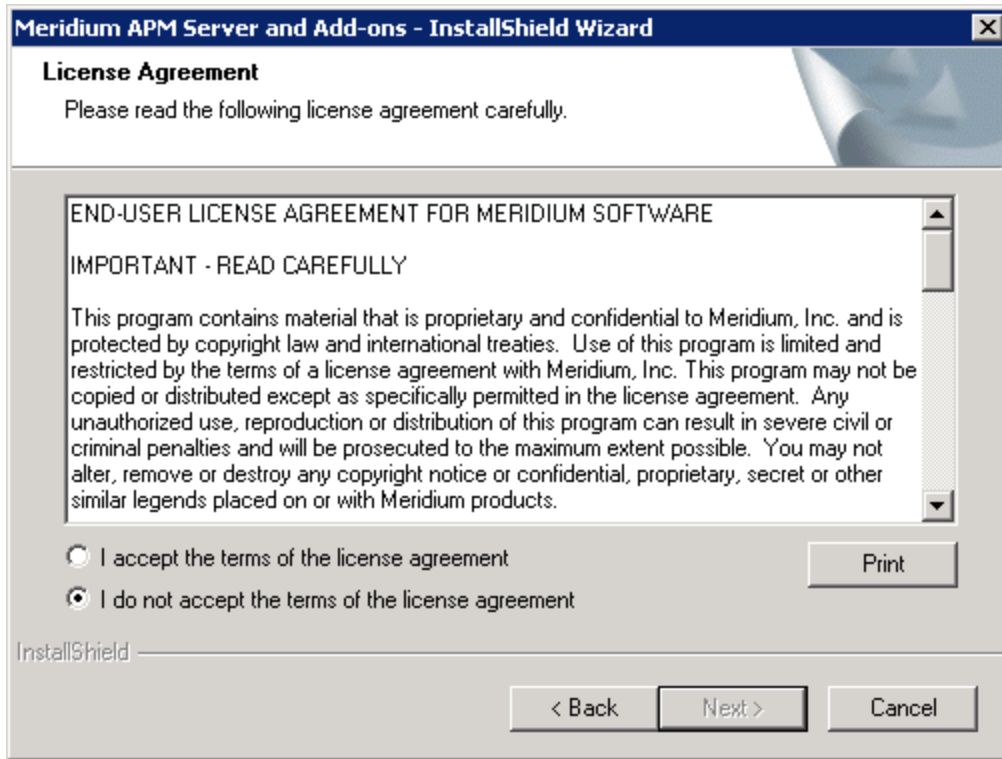
5. Read the entire license agreement, and then select the **I accept the terms of the license agreement** option.

The **Next** button is enabled.

> **Note:** If you do not accept the terms of the license agreement, accept the default selection, and then click the **Cancel** button to cancel the installation process and exit the installer.

> Œ **Hint:** If you want to print the license agreement, click the **Print** button.

6. Click the **Next** button.

The **Select Installation Location** screen appears, prompting you to select the location where the Meridium APM Server and Add-ons will be installed. The Meridium APM Server and Add-ons software will be saved to the following folder on the APM Application Server by default: **C\Program Files\Meridium**.
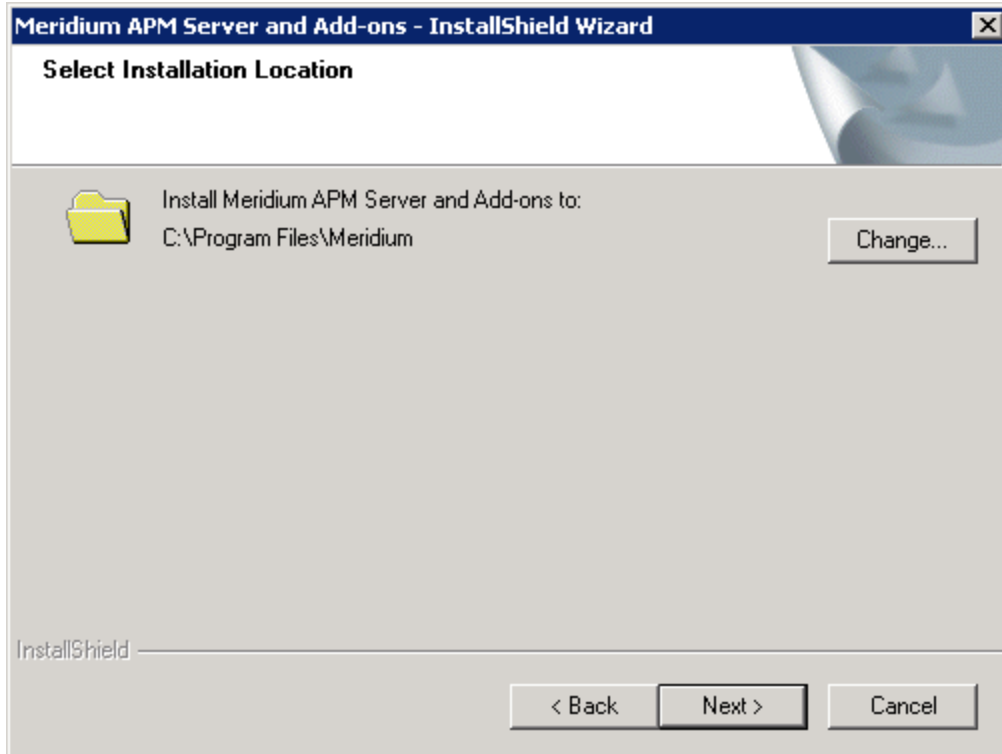
7. If you are satisfied with the default location where the software will be installed, click the **Next** button.

   -or-

   If you want to change the location where the software will be installed, click the **Change** button, and navigate to the location where you want to install the Meridium APM Server and Add-ons software. The folder path that you select will be displayed in place of the default folder path. When you are satisfied with the installation location, click the **Next** button.

   The **Select the features you want to install** screen appears, and the Meridium APM Application Server node is highlighted automatically in the tree.
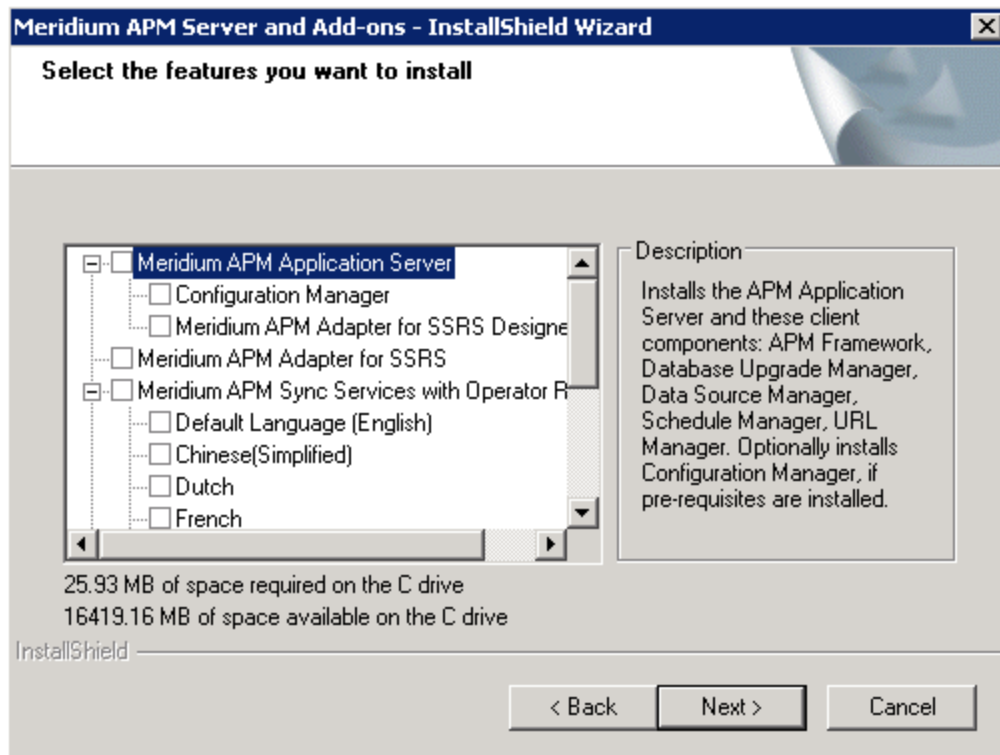
┌IMPORTANT: The **Select the features you want to install** screen lets you specify which features and languages you want to install on the Application Server machine. *These instructions* assume that you want to deploy only the Meridium APM Sync Services option, which will install the English version Meridium APM Sync Services. While the English version is automatically installed, you can install additional languages.

8. Select the **Meridium APM Sync Services with Operator Rounds** check box.

   All available languages are selected automatically.

9. Clear the check box for any language that you do not want to install.

   Note: The **Default Language (English)** check box cannot be cleared. English is the default language for Meridium APM and will *always* be installed.

10. Click the **Next** button.

    The installer performs a check to make sure that your system meets the requirements of the components that you have selected. Specifically, the installer will check for Microsoft Sync Framework v2.0.

    If Microsoft Sync Framework v2.0 is not found, the **Meridium Installer screen** will appear and contain a message indicating that Microsoft Sync Framework v2.0 was not found and must be installed before you can use sync services. This message is expected. After you have installed Meridium APM Sync Services, you will install the Microsoft Sync Framework.

    If you see this screen, read the entire message, and then click the **Next** button.

    The **websites** screen appears.

    ![websites screen of the Meridium APM Server and Add-ons InstallShield Wizard showing "Setup must create a virtual directory for Meridium. Select a website from the following list for Meridium's virtual directory." with "Default Web Site" selected in a dropdown, and Back, Next, Cancel buttons.]

    When Meridium APM Sync Services is installed, the installer creates a virtual directory within a website that is configured in the IIS Manager on the Meridium APM Sync Server. If you have more than one website configured on the Meridium APM Sync Server, this screen lets you choose which website to use.

    > Note: Throughout this documentation, we assume that you have chosen to install Meridium APM Sync Services under the website *Default Web Site*. If you install it under a different website, wherever our documentation refers to the Default Web Site, you will need to substitute the website that you selected during this step.

11. In the list of websites, select the website where you want to create a virtual directory for Meridium APM Sync Services.

> **Note:** If you have only one website configured, that website will be selected in the list automatically. In this case, you can simply accept the default selection.

12. Click the **Next** button.

    The **Complete the Installation** screen appears.

13. Click the **Install** button.

    A message appears, indicating that the older version of Meridium APM is being removed. After the older version is removed, the **Setup Status** screen appears and displays a progress bar, indicating the progress of the installation process.

After the progress bar reaches the end, the **Installation is Complete** screen appears.

This screen contains a message, indicating that Meridium APM Server and Add-ons has been installed successfully. You can also select to optionally launch the APM System Administration tool when the installer window closes. By default, this option is set to *Yes.*

14. If you want the APM System Administration tool to be launched as soon as you click the **Finish** button, accept the default selection and move on to the next step.

    -or-

    If you do not want the APM System Administration tool to be launched at this time, clear the **Launch APM System Administration now** check box.

15. Click the **Finish** button.

    The **Meridium APM Server and Add-ons** installer closes. Additionally, if the **Launch APM System Administration now** check box was selected, the **APM System Administration** window appears. At this point, you can verify that Sync Services was installed successfully and then refer back to the checklist:

    - From V3.5.1
    - From V3.5.0 SP1 LP
    - From V3.5.0
    - From V3.4.5

Upgrading Meridium APM Sync Services from V3.5.0 and Later

To upgrade the Meridium APM Sync Services from one version to another, you will need to upgrade Meridium APM Sync Services software. Upgrading the Meridium APM Sync Server is one step in the comprehensive process required for upgrading Meridium APM from one version to another. You should not upgrade the Meridium APM Sync Server until you have reviewed the complete process for upgrading from your current version. For more information, see the Installation, Configuration, and System Administration documentation.

To upgrade Meridium APM Sync Services:

1. On the Meridium APM Sync Server machine, insert the Meridium APM DVD, and navigate to the folder **General Release\Meridium APM Framework and Server Setup\Setup\Meridium APM Server and Add-ons**.

   Double-click the file **Setup.exe**.

   A message appears, asking if you want to allow setup.exe to make changes to your machine.

2. Click the **Yes**button.

   The **Meridium APM Server and Add-ons** installer appears, displaying the **Preparing Setup** screen. The **Preparing Setup** screen contains a progress bar that indicates when the installer is ready to upgrade components on your machine.
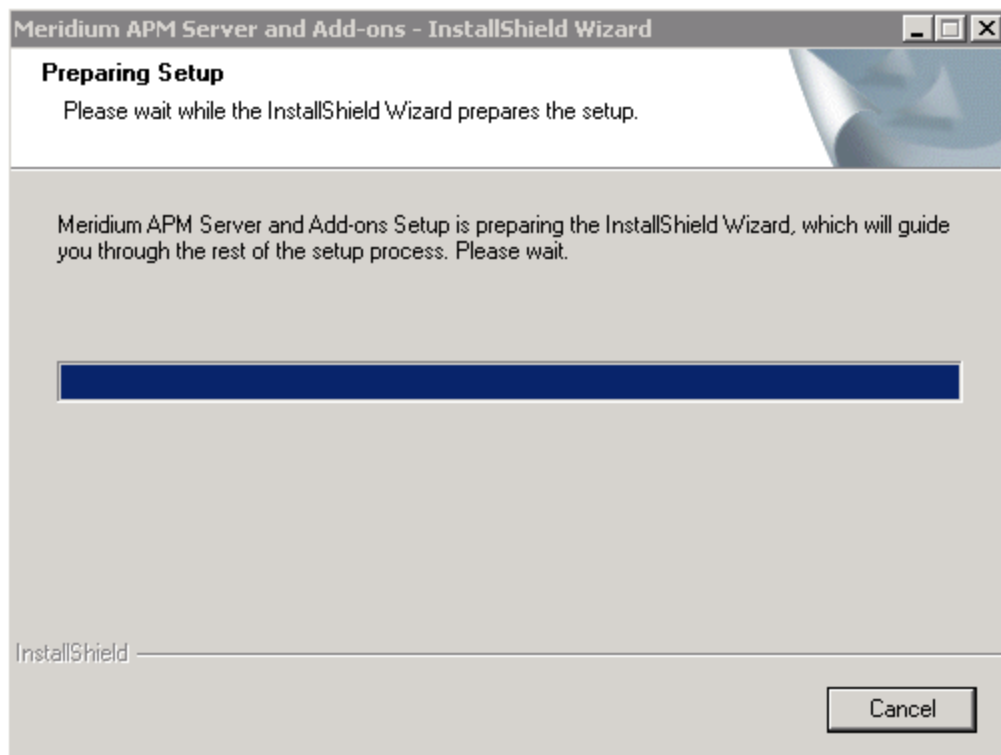
After the progress bar reaches the end, a message appears, asking if you want to upgrade your server.

4. Click the **Yes** button.

The **Setup Status** screen appears, displaying a progress bar that indicates the status of the upgrade process.
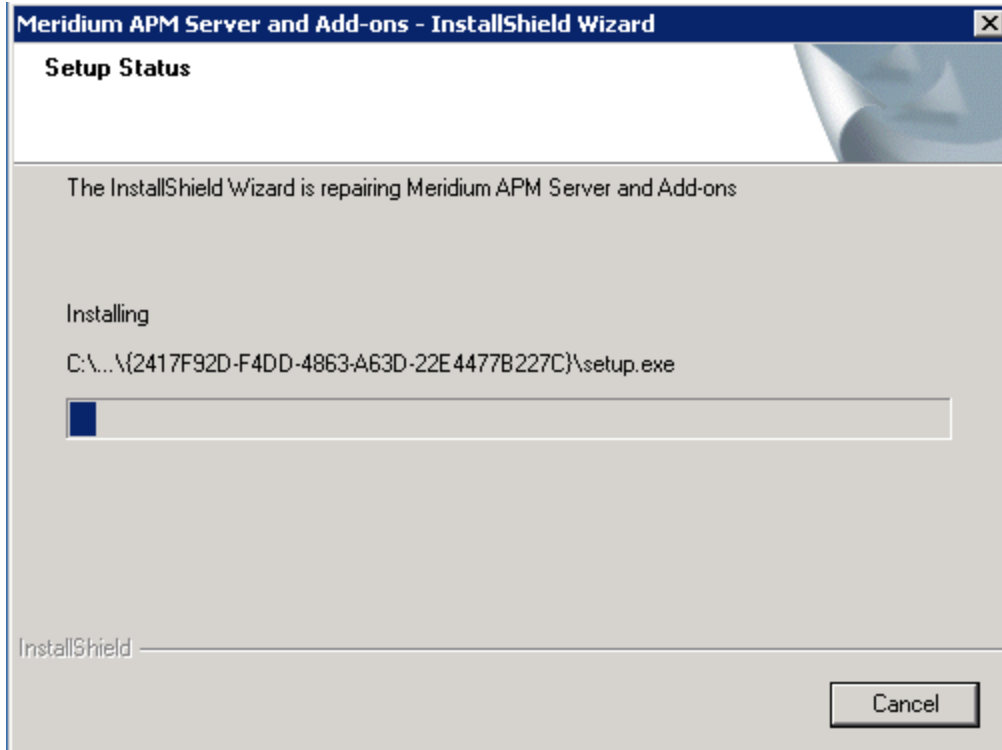
After the progress bar reaches the end, a message appears, indicating that your server is being configured. After your server is configured, the **Maintenance Complete** screen appears.
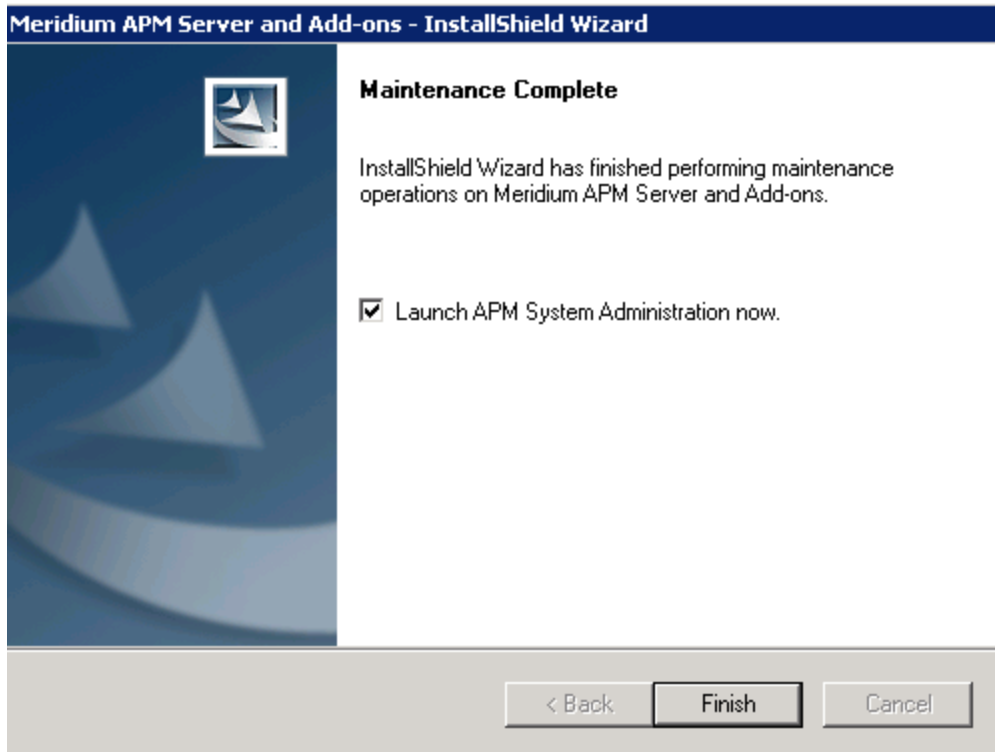
This screen contains a message, indicating that the software has been upgraded successfully. You can also select to optionally launch the APM System Administration tool when the installer window closes. By default, this option is set to *Yes.*

5. Accept the default selection.

6. Click the **Finish** button.

    The **Meridium APM Server and Add-ons** installer closes, and the System Administration tool appears. At this point, you should refer back to the checklist:

    - V3.5.1
    - V3.5.0 SP1 LP
    - V3.5.0

Verifying That Meridium APM Sync Services Was Installed Successfully

To confirm that Meridium APM Sync Services was successfully installed and is properly configured:

- Launch Internet Explorer and navigate to the URL **http://<Sync_Server_Name>.meridium.com/MeridiumSyncService/MeridiumSyncService.svc**, where **<Sync_Server_Name>** is the name or IP address of the server on which Meridium APM Sync Services is installed.

  The following page should appear.

If an error message appears or this page cannot be displayed, there is a problem with the installation or configuration of Meridium APM Sync Services. In this case, review the installation and configuration steps to ensure that you have completed all required tasks.

Installing the Microsoft Sync Framework

To run Meridium APM Sync Services, Microsoft Sync Framework v2.0 must be installed on the Meridium APM Sync Server machine. We recommend that you install this component after [installing Meridium APM Sync Services](). Doing so will install .NET Framework 3.5 SP1, which is a prerequisite for the Microsoft Sync Framework. You will not be able to use Meridium APM Sync Services until after the Microsoft Sync Framework is installed.

The Meridium APM distribution includes the English version of Microsoft Sync Framework v2.0. The following instructions provide details on installing it. Note that the distribution package for the Microsoft Sync Framework also includes Microsoft Sync Framework Services and Microsoft Sync Services for ADO. Following these instructions will result in all three components being installed.

To install Microsoft Sync Framework v2.0 on the Meridium APM Sync Server:

1. On the Required 3rd Party Components DVD, navigate to the folder **Microsoft Sync Framework x86_en**.

2. Double-click the file **Setup.exe**.

   The installer is launched, and the installation process begins.

3. Proceed through the installer to complete the installation. Except for being asked to accept the license agreement, you will not be prompted to supply any information.

> **Note:** During the installation, an error message will be displayed, indicating that the installer was unable to locate the file SyncSDK.msi. **This error is expected**; it occurs because Meridium, Inc. does not distribute the folder Microsoft Sync Framework SDK with the Microsoft Sync Framework installation package. When you see this error message, simply click the **Close** button to proceed with the installation. This error message will not interfere with a successful installation of the required components.

About the File web.config

When you [install Sync Services](#) on the Meridium APM Sync Server, the file web.config is created in the folder <root>\MeridiumSyncService, where <root> is the drive and root folder that you selected at installation (e.g., C:\Program Files\Meridium).

Before you can sync data from a device to the Meridium APM database, you need to define the connection information to the database that will contain the database tables that are used by the Meridium APM Sync Services. You can do so by modifying the *web.config* file using the APM System Administration tool on the Meridium APM Sync Services Server.

> **Note:** We recommend that you use a database other than the Meridium APM database to store the database tables that are used by Meridium APM Sync Services.

Instructions in this section of the documentation provide details on modifying the file *web.config* for a connection to the database that will be used by the Meridium APM Sync Services Server. The steps for modifying the file are different depending on which database provider you are using.

To get started, we need to know which database provider you are using:

- [Oracle is my database provider.](#)
- [SQL is my database provider.](#)

Modifying the File web.config for An Oracle Sync Services Database Connection

The following instructions provide details on using the APM System Administration tool to define in the *web.config* file the connection information to an Oracle database that will contain the database tables that are used by the Meridium APM Sync Services.

These instructions assume that:
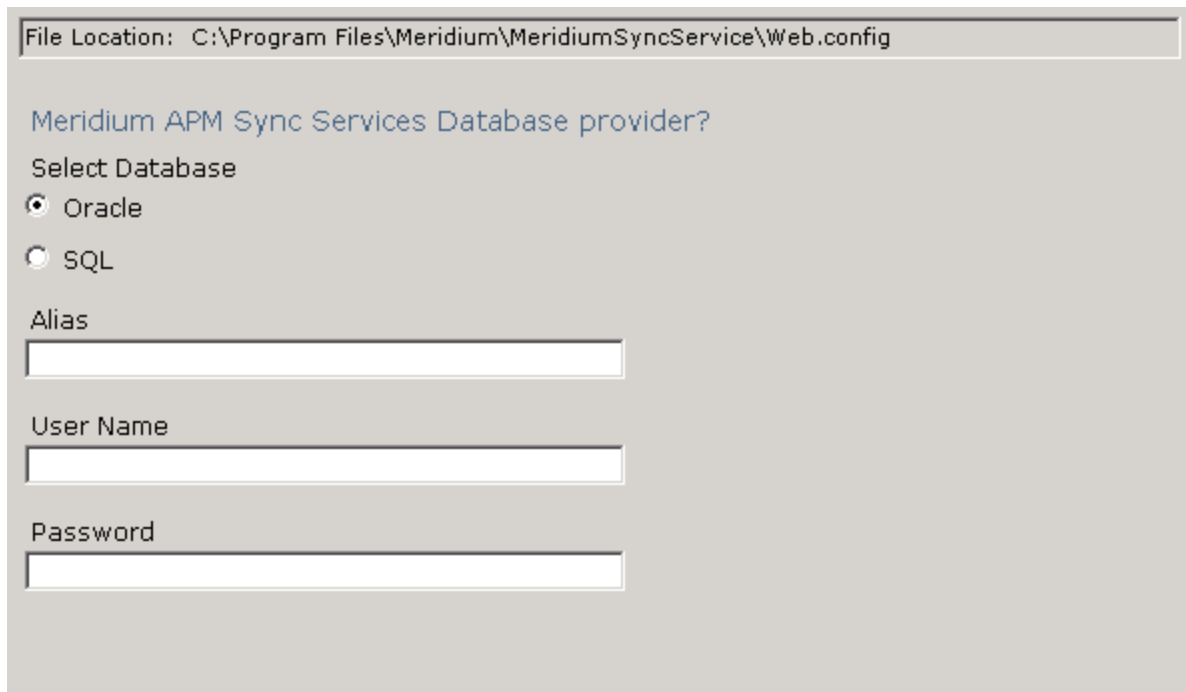
- The Oracle database that will contain the database tables for the Meridium APM Sync Services already exists.

  -and-

- You have on the Meridium APM Sync Server machine.

> **Note:** If you are *changing* the Sync Services database, we recommend that you first create a back-up of the original database.

To modify the *web.config* file for an Oracle database connection:

1. In the **APM System Administration** window, in the **Configuration** section, click the **Sync Services Database** link.

   The content of the *web.config* file appears in the **Meridium APM Sync Services Database provider** section to the right. These settings specify connection information to the database that contains the database tables that are used by the Meridium APM Sync Services.

   File Location: C:\Program Files\Meridium\MeridiumSyncService\Web.config

   Meridium APM Sync Services Database provider?
   Select Database
   ⦿ Oracle
   ⦾ SQL

   Alias

   User Name

   Password

2. For the **Select Database** setting, accept the default setting, *Oracle*, and move on to the next step.

3. In the **Alias** text box, enter the database alias. This setting is case-sensitive.

4. In the **User Name** text box, enter the user name that you want to use to connect to the database.

5. In the **Password** text box, enter the password associated with the user name you entered in the **User Name** text box. This setting is case-sensitive.

6. At the bottom of the **APM System Administration** window, click the **Save** button.

   Your changes are saved to the *web.config* file.

Modifying the File web.config for a SQL Sync Services Database Connection

The following instructions provide details on using the APM System Administration tool to define in the *web.config* file the connection information to a SQL database that will contain the database tables that are used by the Meridium APM Sync Services.

These instructions assume that:
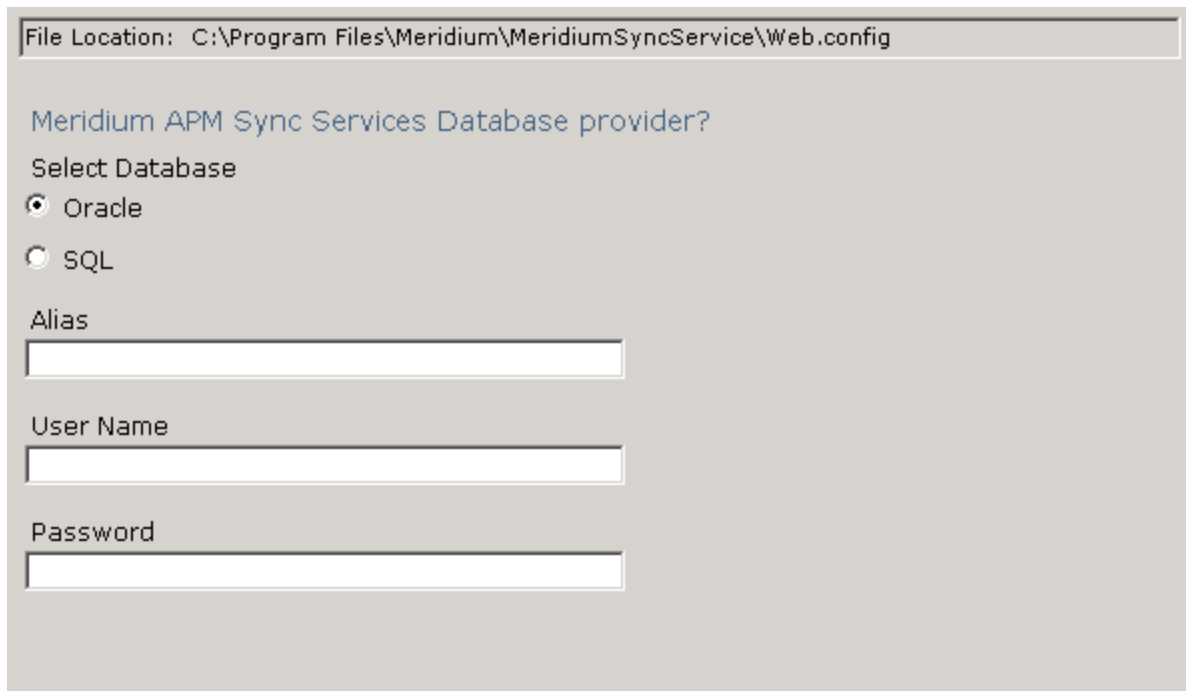
- The SQL database that will contain the database tables for the Meridium APM Sync Services already exists.

  -and-

- You have accessed the APM System Administration tool on the Meridium APM Sync Server machine.

> Note: If you are *changing* the Sync Services database, we recommend that you first create a back-up of the original database.

To modify the *web.config* file for a SQL database connection:

1. In the **APM System Administration** window, in the **Configuration** section, click the **Sync Services Database** link.

   The content of the *web.config* file appears in the **Meridium APM Sync Services Database provider** section to the right. These settings specify connection information to the database that contains the database tables that are used by the Meridium APM Sync Services.

File Location: C:\Program Files\Meridium\MeridiumSyncService\Web.config

Meridium APM Sync Services Database provider?

Select Database

⦿ Oracle

◯ SQL

Alias

User Name

Password

2. For the **Select Database** setting, select the **SQL** option.

   The SQL settings appear and replace the Oracle settings.

   File Location: C:\Program Files\Meridium\MeridiumSyncService\Web.config

   Meridium APM Sync Services Database provider?
   Select Database
   ○ Oracle
   ● SQL

   DB Server

   DB Name

   User Name

   Password

3. In the **DBServer** text box, enter the name of the Database Server that contains the database.

4. In the **DB Name** text box, enter the database name.

5. In the **User Name** text box, enter the user name that you want to use to connect to the database.

6. In the **Password** text box, enter the password associated with the user name you entered in the **User Name** text box. This setting is case-sensitive.

7. At the bottom of the **APM System Administration** window, click the **Save** button.

   Your settings are saved to the *web.config* file.

Modifying the File MeridiumSync.config

When you perform a sync operation in the Meridium APM Mobile Framework, the device connects to the Meridium APM Sync Server, which in turn connects to the specified Meridium APM Application Server and logs in to the data source defined in the file *MeridiumSync.config*. Security User credentials are required for logging in to the data source.

Before you can perform a sync operation, you will need to define the following settings on the Meridium APM Sync Server:

- The Meridium APM Application Server
- The Meridium APM data source
- The Meridium APM Sync Services Security User credentials that will be used to connect the Meridium APM Sync Server to the Meridium APM database

  The user you specify must have the family-level privileges required to access all data that needs to be downloaded to the handheld device for a given application. The MI Operator Rounds Administrator and MI Operator Rounds Mobile User Security Groups, which are provided with the baseline Operator Rounds product, have these privileges. Therefore, you can create your own Security User and assign it to either one of these Security Groups for this purpose.

To specify these settings, you will need to modify the *MeridiumSync.Config* file via the APM System Administration tool on the Meridium APM Sync Server machine.

The following instructions provide details on defining the Meridium APM Application Server, data source, and Sync Services Security User credentials in the *MeridiumSync.config* file. These instructions assume that you have:

- Created the Security User whose credentials you will enter in the configuration file and granted them the appropriate permissions to Operator Rounds families.

  -and-

- Accessed the APM System Administration tool on the Meridium APM Sync Services server machine.

To modify the *MeridiumSync.Config* file using the APM System Administration tool:

1. In the **APM System Administration** window, in the **Configuration** section, click the **Meridium Sync Config** link.

   The contents of the *MeridiumSync.Config* file appear to the right in the **Meridium Sync Config Changes** section.

File Location: C:\Program Files\Meridium\MeridiumSyncService\Bin\MeridiumSync.Config

Meridium Sync Config Changes

Server:

APP_SERVER_MACHINE

Data Source:

User Name:

Password:

By default, the **Server** text box contains the name of the machine on which you are currently working.

2. In the **Server** text box, enter the name of the Meridium APM Application Server machine that you want to use with Sync Services.

3. In the **Data Source** text box, enter the name of the Meridium APM data source to which you want to log in. This data source must be configured on the Application Server machine defined in the **Server** text box.

> **IMPORTANT:** This setting is case-sensitive. You must define the data source name using the same case that is used in Data Source Manager.

4. In the **User Name** text box, enter the User ID of the Meridium APM Security User that you want to use for logging in to the data source identified in the **Data Source** text box.

5. In the **Password** text box, enter the password associated with the Meridium APM Security User identified in the **User Name** text box. This password will be encrypted in the file.

6. At the bottom of the **APM System Administration** window, click the **Save** button.

   Your changes are saved to the *MeridiumSync.config* file.

Configuring Security for the MeridiumSyncService Service

When you install Meridium APM Sync Services, the service *MeridiumSyncService* is created under the Default Web Site in IIS on the Meridium APM Sync Server machine. The Windows user account that is configured at the *Default Web Site* level to be used for anonymous access is granted permission to the following folder:

<root>\MeridiumSyncService

Where **<root>** is the drive and root folder into which the Meridium APM Sync Services was installed (e.g., C:\Program Files\Meridium).

If you configure a different Windows user account to be used for anonymous access at the *MeridiumSyncService* level, you must grant that user the following permissions to the folder <root>\MeridiumSyncService:

- Modify
- Read & Execute
- List Folder Contents
- Read
- Write

If these permissions are not granted, when any user attempts to perform a sync operation in the Meridium APM Mobile Framework, an error message will be displayed, and synchronization will fail. For details on granting these permissions, see the Microsoft documentation.

Installing the .NET Compact Framework

To install the .NET Compact Framework on a handheld device:

1. On the device, launch Internet Explorer and navigate to the URL **http://<machine>/MeridiumSyncService**, where **<machine>** is the name or IP address of the server on which Meridium APM Sync Services is installed.

   Depending on the type of handheld device that you are using, you are redirected automatically to one of the following URLs, and then a download screen appears:

   - For mobile devices: **http://<machine>/MeridiumSyncService/winmodownload.aspx**.
   - For tablets: **http://<machine>/MeridiumSyncService/tabletdownload.aspx**.

2. If the device is running Windows Mobile 2003, tap the link **PPC2003\NETCFv35.PPC.ARMV4.CAB**.

   -or-

   If the device is running Windows Mobile 5.0 or later, tap the link**WCE500\NETCFv35.WM.ARMV4i.CAB**.

   A message appears, asking if you really want to download the file.

3. Tap the **Yes** button.

   The file is downloaded, and the .NET Compact Framework is installed. When the installation is complete, a message will appear indicating that the installation was successful and instructing you to restart the device.

Installing Microsoft SQL CE

To install Microsoft SQL CE on a handheld device:

1. On the device, launch Internet Explorer and navigate to the URL **http://<ma-chine>/MeridiumSyncService**, where **<machine>** is the name or IP address of the server on which Meridium APM Sync Services is installed.

   Depending on the type of handheld device that you are using, you are redirected automatically to one of the following URLs, and then a download screen appears:

   - For mobile devices: **http://<ma-chine>/MeridiumSyncService/winmodownload.aspx**.

   - For tablets: **http://<machine>/MeridiumSyncService/tabletdownload.aspx**.

2. If the device is running Windows Mobile 2003, tap the link **PPC2003\SQLCE.PPC.ARM4.CAB**.

   -or-

   If the device is running Windows Mobile 5.0 or later, tap the link **WCE500\SQLCE.WCE5.ARMV4i.CAB**.

   A message appears, asking if you really want to download the file.

3. Tap the **Yes** button.

   The file is downloaded, and Microsoft SQL CE is installed. When the installation is complete, a message will appear indicating that the installation was successful.

Installing Microsoft Sync Services for ADO.NET

To install Microsoft Sync Services for ADO.NET on a handheld device:

1. On the device, launch Internet Explorer and navigate to the URL **http://<machine>/MeridiumSyncService**, where **<machine>** is the name or IP address of the server on which Meridium APM Sync Services is installed.

   Depending on the type of handheld device that you are using, you are redirected automatically to one of the following URLs, and then a download screen appears:

   - For mobile devices: **http://<machine>/MeridiumSyncService/winmodownload.aspx**.
   - For tablets: **http://<machine>/MeridiumSyncService/tabletdownload.aspx**.

2. If the device is running Windows Mobile 2003, tap the link **PPC2003\SYNCSERVICES.WCE.CAB**.

   -or-

   If the device is running Windows Mobile 5.0 or later, tap the link **WCE500\SYNCSERVICES.WM.CAB**.

   A message appears, asking if you really want to download the file.

3. Tap the **Yes** button.

   The file is downloaded, and Microsoft Sync Services for ADO.NET is installed. When the installation is complete, a message will appear indicating that the installation was successful.

Installing the Meridium APM Mobile Framework

To install the Meridium APM Mobile Framework on a handheld device:

1. On the device, launch Internet Explorer and navigate to the URL **http://<ma-chine>/MeridiumSyncService**, where **<machine>** is the name or IP address of the server on which Meridium APM Sync Services is installed.

   Depending on the type of handheld device that you are using, you are redirected automatically to one of the following URLs, and then a download screen appears:

   - For mobile devices: **http://<ma-chine>/MeridiumSyncService/winmodownload.aspx**.
   - For tablets: **http://<machine>/MeridiumSyncService/tabletdownload.aspx**.

2. Tap the link **MFX.APM.360.ARM4.CAB**.

   A message appears, asking if you want to download the .CAB file.

3. Tap the **Yes** button.

   The file is downloaded, and the Meridium APM Mobile Framework is installed. When the installation is complete, a message appears indicating that the installation was successful. Then, the Meridium APM Mobile Framework screen appears, indicating that no users are available on the device yet.

Installing Operator Rounds

The following instructions assume that the Meridium APM Mobile Framework has already been installed on the device on which you want to install Operator Rounds.

To install Operator Rounds on a device:

1. From the **Start** menu, tap **Programs**.

   The **Programs** screen appears.

2. Tap **APM Mobile Framework**.

   The **Meridium APM Mobile Framework** screen appears.

3. Tap the **Applications** button.

   The **Add/Remove Applications** screen appears.

4. In the list of available applications, tap the **Install** button that appears to the right of the **Operator Rounds** option.

   A message appears, asking if you are sure that you want to install Operator Rounds.

5. Tap the **Yes** button.

   The installation process begins. The Meridium APM Mobile Framework closes, and the Operator Rounds application is installed. After the installation is complete, the Meridium APM Mobile Framework will reopen automatically and return you to the **Meridium APM Mobile Framework** screen.

Installing Translations for Operator Rounds

The following instructions assume that the Meridium APM Mobile Framework has already been installed on the device on which you want to install translations for Operator Rounds.

> **Note:** To deploy translations for Operator Rounds, in addition to completing the following steps, you will also need to make sure that the regional setting on the device is set to the corresponding language.

To install translations for Operator Rounds on a device:

1. From the **Start** menu, tap **Programs**.

    The **Programs** screen appears.

2. Tap **APM Mobile Framework**.

    The **Meridium APM Mobile Framework** screen appears.

3. Tap the **Applications** button.

    The **Add/Remove Applications** screen appears.

4. In the list of available applications, tap the **Install** button that appears to the right of the desired language option. For example, if you want to install Spanish translations, you would tap the **Install** button to the right of the **Spanish Language** option.

    A message appears, asking if you are sure that you want to install translations for the selected language.

5. Tap the **Yes** button.

    The installation process begins. The Meridium APM Mobile Framework closes, and the translations are installed. After the installation is complete, the Meridium APM Mobile Framework will reopen automatically and return you to the **Meridium APM Mobile Framework** screen.

Installing the Barcode Add-On

The following instructions assume that the Meridium APM Mobile Framework has already been installed on the device on which you want to install the Barcode add-on.

To install the Barcode add-on on a device:

1. From the **Start** menu, tap **Programs**.

   The **Programs** screen appears.

2. Tap **APM Mobile Framework**.

   The **Meridium APM Mobile Framework** screen appears.

3. Tap the **Applications** button.

   The **Add/Remove Applications** screen appears. The screen that you see will look similar to this, with the exception of the specific version numbers and installed applications.

4. In the list of available applications, tap the **Install** button that appears to the right of the **Barcode** option.

   A message appears, asking if you are sure that you want to install the Barcode add-on.

5. Tap the **Yes** button.

   The installation process begins. The Meridium APM Mobile Framework closes, and the Barcode add-on is installed. After the installation is complete, the Meridium APM Mobile Framework will reopen automatically, and the **Meridium APM Mobile Framework** screen will be displayed. At this point, you can enable Barcode scanning.

Enabling Barcode Scanning

To enable barcode scanning, the Barcode add-on must be installed on the device.

To enable barcode scanning:

1. On the device, access the **Device Settings** screen.

   The **DeviceSettings** screen appears.

2. Tap the **More** button.

3. Tap the **Barcode** button.

   The **Barcode Settings** screen appears.

   ![Barcode Settings screen showing an unchecked "Enable Barcode" check box with Cancel and Save buttons]
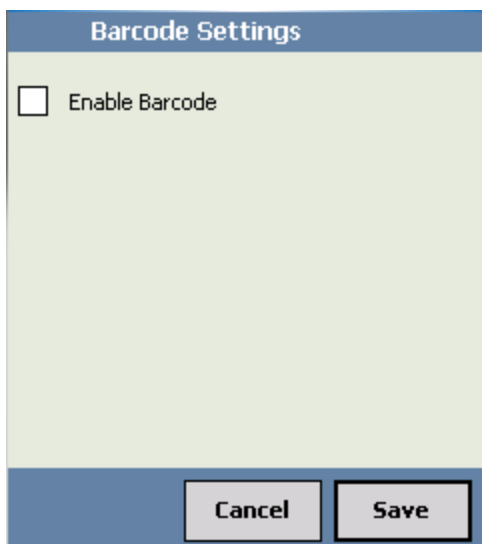
4. Select the **Enable Barcode** check box.

5. Tap the **Save** button.

   Barcodes scanning is enabled, and the **Device Settings** screen returns to focus. You can tap the **Close** button to return to the login page.

Installing the RFID Add-On

Before you can scan RFID tags with a device, the RFID add-on must be installed on the device. The following instructions provide details on installing the RFID add-on on a device on which the Meridium APM Mobile Framework has already been installed.

To install the RFID add-on on a device:

1. On the Start menu, tap Programs.

   The **Programs** screen appears.

2. Tap **APM Mobile Framework**.

   The **Meridium APM Mobile Framework** screen appears.

3. Tap the **Applications**button.

   The **Add/Remove Applications** screen appears. The screen that you see will look similar to this, with the exception of the specific version numbers and installed applications.

4. In the list of applications, tap the **Install** button that appears to the right of the **RFID** option.

   A message appears, asking if you are sure that you want to install the RFID add-on.

5. Tap the **Yes** button.

   The installation process begins. During this process, the Meridium APM Mobile Framework closes, and the RFID add-on is installed.

   After the installation process is complete, the Meridium APM Mobile Framework reopens automatically, and the **Meridium APM Mobile Framework** screen appears.

Enabling RFID Tag Scanning

To enable RFID scanning, the RFID add-on must be installed on the device.

To enable RFID scanning:

1. Access the **Device Settings** screen.

   The **Device Settings** screen appears.

2. Tap the **More** button.

   A menu appears, displaying additional buttons that are conditionally enabled according to the add-ons that you have installed. The following image shows what this menu looks like when only the RFID add-on only has been installed. A red outlined has been added to this image to highlight this menu.

3. Tap the **RFID** button.

    The **RFID Settings** screen appears.
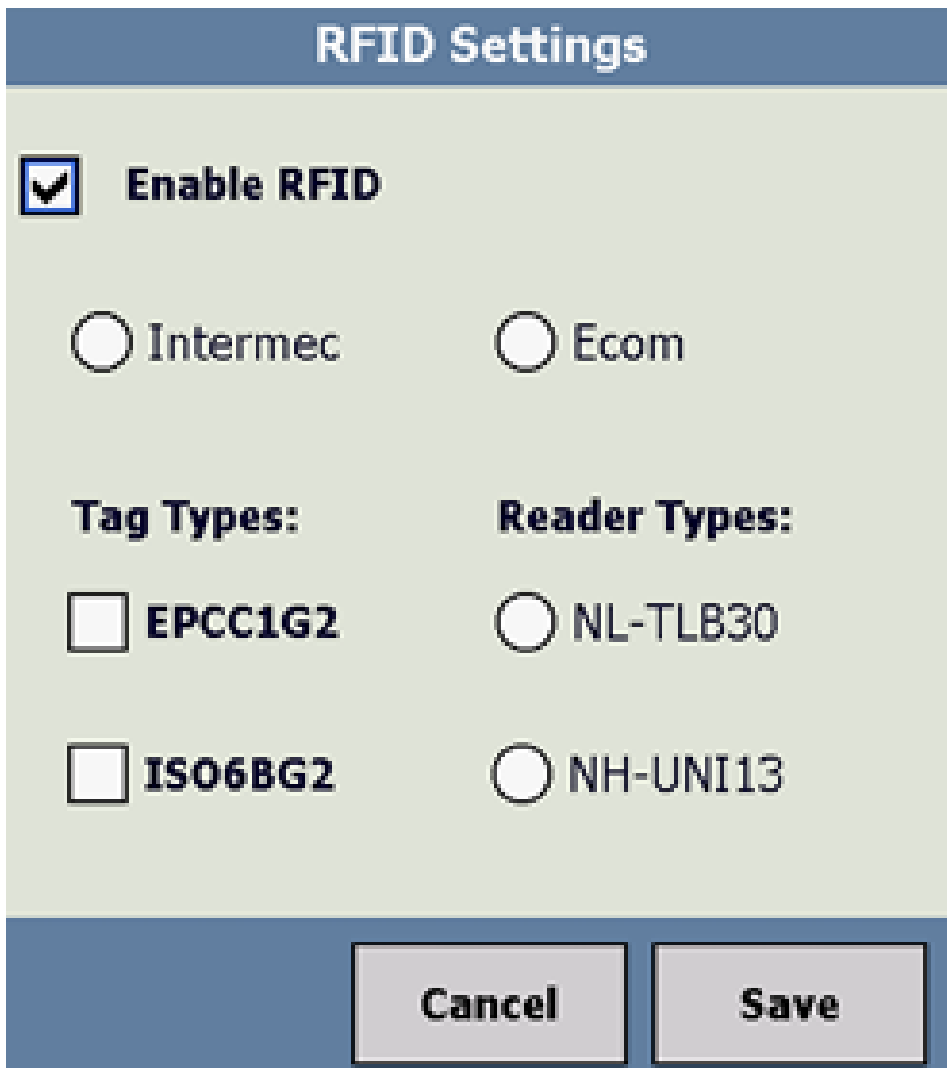
4. Select the **Enable RFID** check box.

5. Select the type of RFID reader (i.e., **Intermec** or **Ecom**) that you will use.

6. If you selected **Intermec**, select the check box(es) that correspond with the classification of RFID tags that you will use:

- **EPCC1G2:** You should select this check box if your RFID tags are classified as Electronic Product Code Class 1 Generation 2 tags.
- **ISO6BG2:** You should select this check box if your RFID tags are classified as International Standards Organization 18000-6B Generation 2 tags.

7. If you select **Ecom**, select the check box(es) that correspond with the classification of RFID types that you will use:

- **NL-TLB30**: You should select this check box if your RFID reader types are classified as Low Frequency.
- **NH-UNI13:** You should select this check box if your RFID reader types are classified as High Frequency.

8. Click the **Save** button.

RFID scanning is enabled, and the **Device Settings** screen returns to focus. You can tap the **Close** button to return to the login page.

Accessing the Device Settings Screen

To access the Device Settings screen:

1. On the device, from the **Start** menu, tap **Programs**.
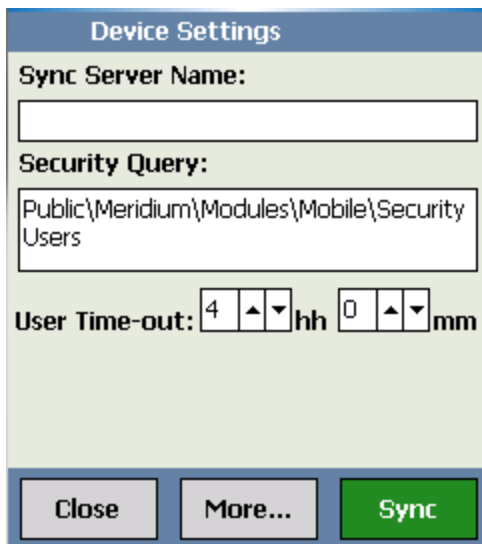
   The **Programs** screen appears.

2. Tap **APM Mobile Framework**.

   The **Meridium APM Mobile Framework** screen appears.

3. Tap the **Settings** button.

   The **Device Settings** screen appears.

Identifying the Sync Server Within the APM Mobile Framework

For the Meridium APM Mobile Framework to be able to communicate with the Meridium APM Sync Server, you must identify the name of the Meridium APM Sync Server that you want to use. These instructions provide details on doing so.

To identify the Meridium APM Sync Server that you want to use within the Meridium APM Mobile Framework:

1. On the device, from the **Start** menu, tap **Programs**.

    The **Programs** screen appears.

2. Tap **APM Mobile Framework**.

    The **Meridium APM Mobile Framework** screen appears.

3. Tap the **Settings** button.

    The **Device Settings** screen appears.

4. In the **Sync Server Name** text box, type the name or IP address of the server on which Meridium APM Sync Services is installed.

    > ͼHint: At this point, you can also specify the security query.

5. Tap the **Sync** button.

    The **Synchronizer** screen appears, displaying the progress of the synchronization process. When the synchronization process is complete, a message will appear, indicating whether or not the process was successful.

6. When the process is complete, tap the **Close** button.

Specifying the Security Query

To specify the security query:

1. On the device, from the **Start** menu, tap **Programs**.

   The **Programs** screen appears.

2. Tap **APM Mobile Framework**.

   The **Meridium APM Mobile Framework** screen appears.

3. Tap the **Settings** button.

   The **Device Settings** screen appears, displaying [the Sync Server Name](#) and **Security Query** text boxes. The **Security Query** text box is used to store the path to the query that determines who can log into Operator Rounds on the device. Note that the default security query is *Security Users*, which is stored in the Meridium APM Catalog folder \\Public\Meridium\Modules\Mobile.

4. In the **Security Query** text box, enter the path to the query that you want to use to determine who can log into Operator Rounds on the device.

   If the query is stored in the Meridium APM Catalog folder \\Public\Meridium\Modules\Operator Rounds\Queries\Download Queries, type the name of the query. If the query is stored in a subfolder of the Meridium APM Catalog folder \\Public\Meridium\Modules\Operator Rounds\Queries\Download Queries, type the path to the query, starting with the first subfolder name.

   For example, if the Chicago Users query is stored in the Meridium APM Catalog folder \\Public\Meridium\Modules\Operator Rounds\Queries\Download Queries, type `Chicago Users`.

   Likewise, if the Chicago Users query is stored in the Meridium APM Catalog folder \\Public\Meridium\Modules\Operator Rounds\Queries\Download Queries\Users\Chicago, type `Users\Chicago\ChicagoUsers`.

5. Tap the **Sync** button.

   The **Synchronizer** screen appears, displaying the progress of the synchronization process.

6. When the process is complete, tap the **Close** button.

   The **Device Settings** screen returns to focus.

7. Tap the **Close** button.

   The login screen returns to focus.

Modifying the User Time-out Value

By default, if the handheld device is left idle for *four hours or longer* and is *not* in the process of downloading data, the current Security User will be logged out of the Meridium APM Mobile Framework automatically, and the log in screen will be displayed. You can change the default user time-out value via the **Device Settings** screen to decrease or increase the amount of time a use should remain logged in to the Meridium APM Mobile Framework if the device is left idle and is *not* in the process of downloading data.

To modify the user time-out value:

1. Access the **Device Settings** screen.

2. Use the **User Time-out** boxes to select or type the value that represents the amount of time a user should remain logged in to the Meridium APM Mobile Framework if the device is left idle and is *not* in the process of downloading data.

3. Tap the **Close** button.

   The login screen returns to focus, and your changes to the time-out value are applied.

Upgrading HandHeld Devices

After you upgrade the Meridium APM Sync Server, you will need to upgrade each hand-held device that connects to that server. This can be done by initiating a synchronization operation from within the Meridium APM Mobile Framework or from within Operator Rounds on each device that needs to be upgraded. After any updated data has been transferred to the server, a message will appear in the synchronization log, indicating that the server has been updated and that an update of the handheld components needs to be performed. The update will begin automatically.

During the update process, depending upon the device's operating system, messages may appear indicating that the Meridium APM components are already installed and that they need to be reinstalled. if you see these messages, you must click the **Yes** button. One message will appear for each component that is installed (i.e., Meridium APM Mobile Framework, Operator Rounds, and the Barcode and/or RFID add-ons). On other device operating systems, however, these messages do not appear, and the Meridium APM Mobile Framework closes automatically to allow the upgrade process to be completed.

When the upgrade process is complete, all applications that were previously installed will be reinstalled and updated automatically to the version to which you upgraded. In addition, any settings that were previously configured will be retained (e.g., the name of the security query). You will be redirected to the Operator Rounds login screen, where you can log in and begin using the Operator Rounds application.

> **Note:** You are not required to update handheld devices all at once or within a specific timeframe after upgrading the Meridium APM Sync Server. If desired, you can simply allow the update to occur automatically the next time users synchronize with the server.

Overview of the Uninstallation Process

To fully uninstall Operator Rounds from a device, complete the following steps in the following order:

1. Uninstall the Barcode add-on if it is installed.

2. Uninstall the RFID add-on if it is installed.

3. Uninstall translations if any are installed.

4. Uninstall Operator Rounds.

5. Uninstall the Meridium APM Mobile Framework.

Uninstalling the Barcode Add-On

To uninstall the Barcode add-on from the device, you will need to enter the username and password for a Security User who is a Super User or a member of the MI Operator Rounds Administrator Security Group.
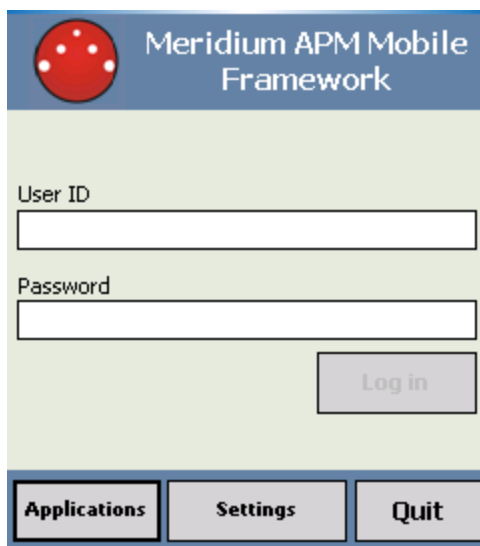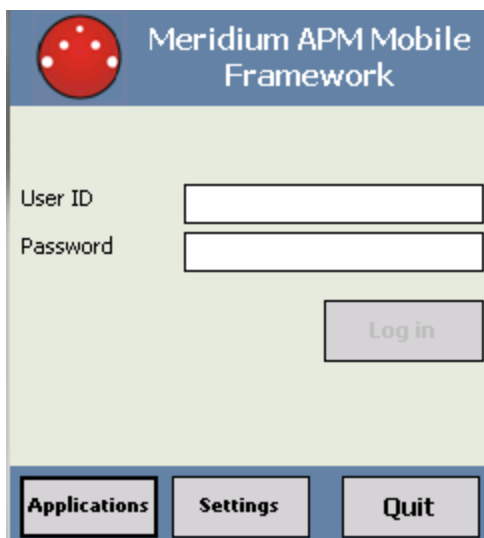
To uninstall the Barcode add-on from a device:

1. On the device, from the **Start** menu, tap **Programs**.

    The **Programs** screen appears.

2. Tap **APM Mobile Framework**.

    The **Meridium APM Mobile Framework** screen appears.

3. Tap the **Applications** button.

    The **Add/Remove Applications** screen appears. This following image shows an example of the **Add/Remove Applications** screen. The screen that you see will look similar to this, with the exception of the specific version numbers and installed applications.

4. In the list of available applications, to the right of the **Barcode** option, tap the **Uninstall** button.

   The **Uninstall** screen appears, prompting you to enter your username and password.

5. In the **User ID** text box, enter your username.

   The **Uninstall** button is enabled.

6. In the **Password** text box, enter your password.

   > **Note:** If the credentials that you enter are not associated with a Security User who is a Super User or member of the MI Operator Rounds Administrator Security Group, a message will appear, indicating that you do not have the privileges required to uninstall the application.

7. Tap the **Uninstall** button.

    The uninstallation process begins. The Meridium APM Mobile Framework closes, and the Barcode add-on is uninstalled. After the uninstallation process is complete, the Meridium APM Mobile Framework will reopen automatically and return you to the **Meridium APM Mobile Framework** screen.

Uninstalling the RFID Add-On

To uninstall the RFID add-on from the device, you must first enter the username and password for a Security User who is a Super User or a member of the MI Operator Rounds Administrator Security Group.

To uninstall the RFID add-on from a device:

1. On the device, from the **Start** menu, tap **Programs**.

   The **Programs** screen appears.

2. Tap **APM Mobile Framework**.

   The **Meridium APM Mobile Framework** screen appears.
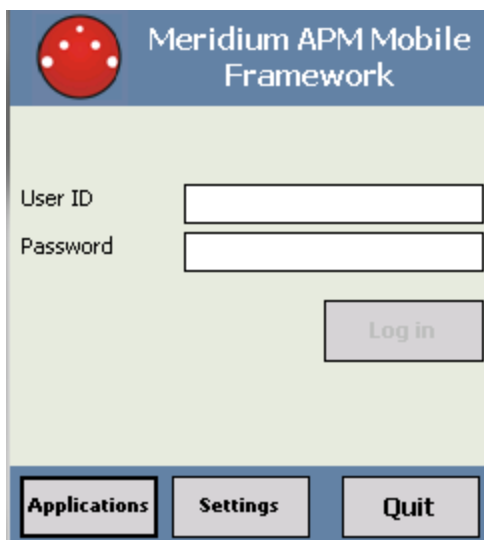
3. Tap the **Applications** button.

   The **Add/Remove Applications** screen appears. This following image shows an example of the **Add/Remove Applications** screen. The screen that you see will look similar to this, with the exception of the specific version numbers and installed applications.
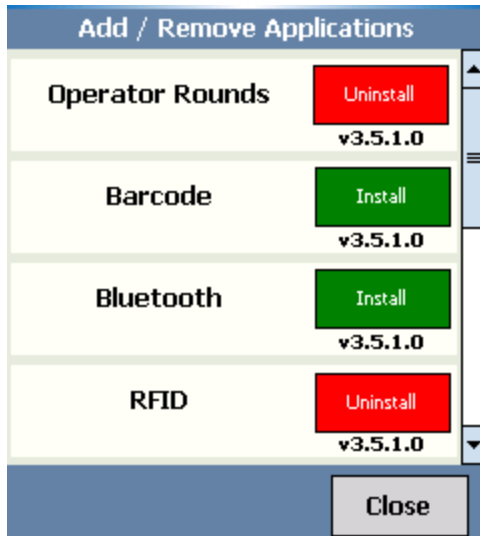
4. In the list of available applications, to the right of the **RFID** option, tap the **Uninstall** button.

   The **Uninstall** screen appears, prompting you to enter your username and password.
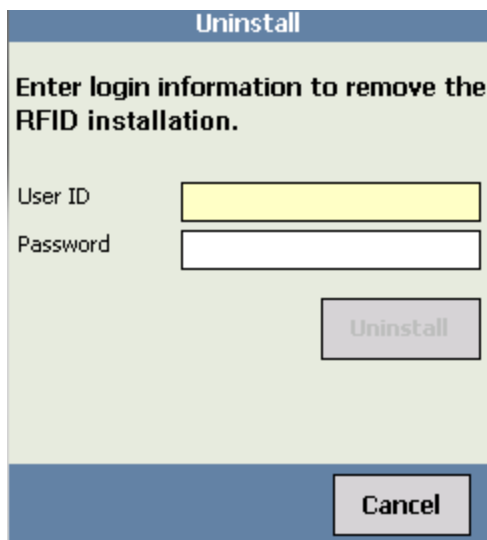
5. In the **User ID** text box, enter your username.

   The **Uninstall** button becomes enabled.

6. In the **Password** text box, enter your password.

   Note: If the credentials that you enter are not associated with a Security User who is a Super User or member of the MI Operator Rounds Administrator Security Group, a message will appear, indicating that you do not have the privileges required to uninstall the application.

7. Tap the **Uninstall** button.

    The uninstallation process begins. During this process, the Meridium APM Mobile Framework closes, and the RFID add-on is uninstalled.

    After the uninstallation process is complete, the Meridium APM Mobile Framework reopens automatically, and the **Meridium APM Mobile Framework** screen appears.

Uninstalling Translations

To uninstall translations from the device, you will need to enter the username and password for a Security User who is a Super User or a member of the MI Operator Rounds Administrator Security Group.
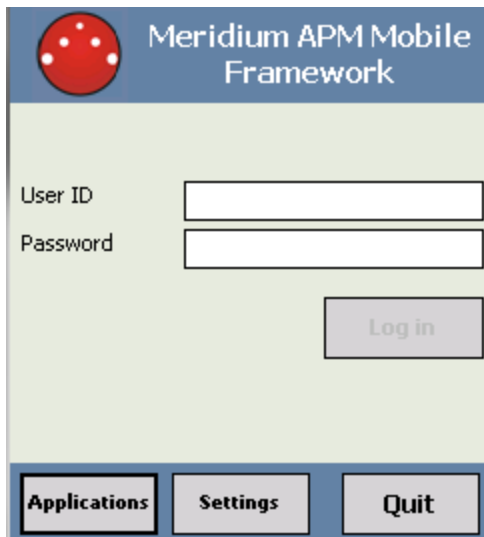
To uninstall a non-English version of Operator Rounds from a device:

1. On the device, from the **Start** menu, tap **Programs**.

    The **Programs** screen appears.

2. Tap **APM Mobile Framework**.

    The **Meridium APM Mobile Framework** screen appears.

3. Tap the **Applications** button.

    The **Add/Remove Applications** screen appears. This following image shows an example of the **Add/Remove Applications** screen. The screen that you see will look similar to this, with the exception of the specific version numbers and installed applications.
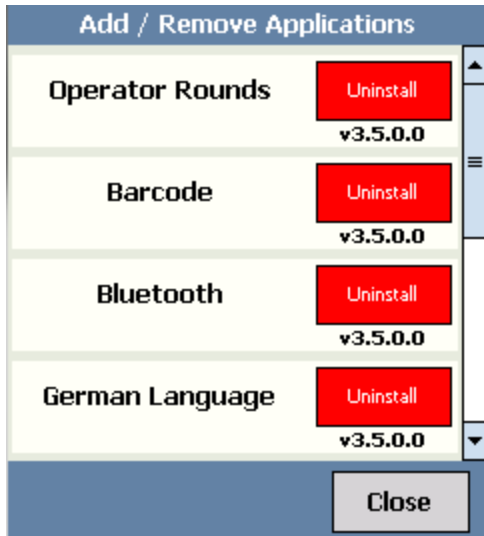
4. In the list of available applications, tap the **Uninstall** button that appears to the right of the language whose translations you want to uninstall.

   The **Uninstall** screen appears, prompting you to enter your username and password.

5. In the **User ID** text box, enter your username.

   The **Uninstall** button is enabled.

6. In the **Password** text box, enter your password.

   > **Note:** If the credentials that you enter are not associated with a Security User who is a Super User or member of the MI Operator Rounds Administrator Security Group, a message will appear, indicating that you do not have the privileges required to uninstall the application.

7. Tap the **Uninstall** button.

   The uninstallation process begins. The Meridium APM Mobile Framework closes, and the translations are uninstalled. After the uninstallation process is complete, the Meridium APM Mobile Framework will reopen automatically and return you to the **Meridium APM Mobile Framework** screen.

Uninstalling Operator Rounds

To uninstall Operator Rounds from the device, you will need to enter the username and password for a Security User who is a Super User or a member of the MI Operator Rounds Administrator Security Group.

To uninstall Operator Rounds from a device:

1. On the device, from the **Start** menu, tap **Programs**.

   The **Programs** screen appears.

2. Tap **APM Mobile Framework**.

   The **Meridium APM Mobile Framework** screen appears.

3. Tap the **Applications** button.

   The **Add/Remove Applications** screen appears. This following image shows an example of the **Add/Remove Applications** screen. The screen that you see will look similar to this, with the exception of the specific version numbers and installed applications.

4. In the list of available applications, to the right of the **Operator Rounds** option, tap the **Uninstall** button.

    The **Uninstall** screen appears, prompting you to enter your username and password.

5. In the **User ID** text box, enter your username.

    The **Uninstall** button is enabled.

6. In the **Password** text box, enter your password.

> **Note:** If the credentials that you enter are not associated with a Security User who is a Super User or member of the MI Operator Rounds Administrator Security Group, a message will appear, indicating that you do not have the privileges required to uninstall the application.

7. Tap the **Uninstall** button.

The uninstallation process begins. The Meridium APM Mobile Framework closes, and the Operator Rounds application is uninstalled. After the uninstallation process is complete, the Meridium APM Mobile Framework will reopen automatically and return you to the **Meridium APM Mobile Framework** screen.

Uninstalling the Meridium APM Mobile Framework

To uninstall the Meridium APM Mobile Framework from a device:

1. On the handheld device, access the Remove Programs feature supplied by the operating system.

2. In the list of installed programs, select **MFX APM Mobile Framework**, and tap the **Remove** button.

   A message appears, asking if you really want to remove the program.

3. Tap the **Yes** button.

   The Meridium APM Mobile Framework is removed from the handheld device.

Operator Rounds Security

The following Security Groups are provided as part of the baseline Operator Rounds product:

- MI Operator Rounds Administrator
- MI Operator Rounds Mobile User

These groups support the users who will configure Operator Rounds in the Meridium APM Framework application and users who will access Operator Rounds on a device. All of these groups have privileges assigned to them by default. The baseline privileges are summarized in the following table.

Family	MI Operator Rounds Administrator	MI Operator Rounds Mobile User
Entity Families		
Checkpoint Condition	View, Update, Insert, Delete	View
Checkpoint Task	View, Update, Insert, Delete	View, Update
Health Indicator	View	View
Health Indicator Mapping	View, Update, Insert, Delete	View
Hierarchy Item Child Definition	View, Update, Insert, Delete	View
Hierarchy Item Definition	View, Update, Insert, Delete	View
Measurement Location	View, Update, Insert, Delete	View
Measurement Location Template	View, Update, Insert, Delete	View
Operator Rounds Allowable Values	View, Update, Insert, Delete	View
Operator Rounds Recommendation	View, Update, Insert, Delete	View, Update, Insert, Delete
Reading	View, Update, Insert, Delete	View, Update, Insert, Delete

Family	MI Operator Rounds Administrator	MI Operator Rounds Mobile User
Reference Document	View, Update, Insert, Delete	View
Route	View, Update, Insert, Delete	View, Update
Route History	View, Update, Insert, Delete	View, Insert
Task	None	View, Update
Template Group	View, Update, Insert, Delete	View
Relationship Families		
Condition Has ML	View, Update, Insert, Delete	View
Has Checkpoint	View, Update, Insert, Delete	View
Has Checkpoint Template	View, Update, Insert, Delete	View
Has Health Indicator	View	View
Has History	View, Update, Insert, Delete	View, Insert
Has Readings	View, Update, Insert, Delete	View, Update, Insert, Delete
Has Recommendations	View, Update, Insert, Delete	View, Update, Insert, Delete
Has Reference Documents	View, Update, Insert, Delete	View
Has Tasks	View, Update, Insert, Delete	View
Health Indicator Has Mapping	View, Update, Insert, Delete	View
Health Indicator Has Source	View	View

Family	MI Operator Rounds Administrator	MI Operator Rounds Mobile User
ML Has Condition	View, Update, Insert, Delete	View
ML Has OPR Recommendation	View, Update, Insert, Delete	View, Update, Insert, Delete
Route Has Checkpoint	View, Update, Insert, Delete	View
Template Has Checkpoint	View, Update, Insert, Delete	View

Based on the default security privileges, users who should be able to configure Operator Rounds in the Meridium APM Framework application should be assigned to the MI Operator Rounds Administrator Security Group. Users who should be able to access Operator Rounds on a device should be assigned to the MI Operator Rounds Mobile User Security Group. Only users of this Security Group can log on to Operator Rounds on a device.

Users who should be able to run Operator Rounds queries to view Operator Rounds data after it has been uploaded from a device will need a combination of the privileges listed in the preceding table, depending on the families included in the queries they want to run.

Configuring the Has Recommendations Relationship

The Has Recommendations relationship is used to link Operator Rounds Recommendation records to Equipment or Functional Location records. Because no relationship definitions are provided for this purpose, however, you will need to configure the following definition for the families that you want to use with Operator Rounds:

- **Predecessor:** Equipment or Functional Location family
- **Predecessor Cardinality:** Zero or One
- **Successor:** Operator Rounds Recommendation
- **Successor Cardinality:** Zero or Many

Why Do I Need to Modify Family Code Items?

You can modify Operator Rounds rules to enhance the baseline functionality as described in the following table.

Family	Baseline Functionality	Enhanced Functionality	Code Items Requiring Modification
Measurement Location	These records are linked automatically to Equipment and Functional Location records, and the following Measurement Location fields are populated automatically with values that are stored in the linked Equipment or Functional Location record: • Related Asset Id • Asset Description	You can specify that an additional Measurement Location field, Scan ID, should be populated automatically with a value that is stored in the Equipment or Functional Location record.	Measurement Location

Family	Baseline Functionality	Enhanced Functionality	Code Items Requiring Modification
Measurement Location	When you apply a Measurement Location template to a Measurement Location record or apply a Template Group to Route, the following Measurement Location fields are not populated with values from the template: • Scan ID • Sequence • Template Additionally, in this scenario, the following Measurement Location fields will be populated with values from the template *only* if they do not already contain a value: • Asset ID • Asset Description	You can specify that different or additional Measurement Location fields should: • Be skipped when a template is applied. • Not be overwritten if the field already contains a value when a template is applied.	Template ID field
Operator Rounds Recommendation	These records are not linked automatically to an Equipment or Functional Location record.	You can specify that these records be linked automatically to an Equipment or Functional Location record.	Operator Rounds Recommendation Has Recommendations

Family	Baseline Functionality	Enhanced Functionality	Code Items Requiring Modification
Route	These records are grouped by Asset ID in the Asset View of the Route pane.	You can specify that these records be grouped by another value (e.g., Asset Description) in the Asset View of the Route pane.	Route

Modifying the Template ID Field Code Item

By default, when you apply a Measurement Location template to a Measurement Location record or apply a Template Group to a Route, some fields in the Measurement Location records will not be populated with the value from the template.

The Measurement Location fields in the following list will not be populated automatically with the value stored in the template. In other words, these fields are skipped.

- Template

  > Note: While the *rules* dictate that this field is skipped, the Meridium APM system will automatically populate the Measurement Location record with the Template ID of the corresponding Measurement Location Template. This rule is in place to avoid duplicate functionality.

- Scan ID
- Sequence

In addition, when you apply a Measurement Location template to a Measurement Location record, some fields will be populated with the value from the template only if they do not already contain a value. The Measurement Location fields in the following list will be populated automatically *only* if that field is empty. In other words, if a value is stored in these fields, it will not be overwritten.

- Asset ID
- Asset Description

If desired, you can modify the Template ID field rules in the Measurement Location family rules to specify the field values in Measurement Location records that the Meridium APM system should:

- Skip when a template is applied.
- Not overwrite when a template is applied.

For example, if you want the following fields to be skipped when a template or Template Group is used:

- Template (MI_MEAS_LOC_TEMPL_C)
- Product (MI_MEAS_LOC_PRODUCT_C)
- Scan ID (MI_CHECK_PT_BARCD_ID_C)

...the code would look like this:

```
Public Overrides ReadOnly Property FieldsToIgnore() As String()
    Get
        Return New String() {"MI_MEAS_LOC_TEMPL_C", "MI_MEAS_LOC_PRODUCT_C", "MI_CHECK_PT_BARCD_ID_C"}
    End Get
End Property
```

Likewise, if you want to prevent the values in the following fields from being overwritten when a template or Template Group is used:

- Asset ID (MI_MEAS_LOC_RELAT_ASSET_ID_C)
- Asset Description (MI_MEAS_LOC_ASSET_DESCR_C)
- Sequence (MI_MEAS_LOC_SEQ_N)

...the code would look like this:

```
Public Overrides ReadOnly Property FieldsNoOverwrite() As String()
    Get
        Return New String() {"MI_MEAS_LOC_RELAT_ASSET_ID_C", "MI_MEAS_LOC_ASSET_DESCR_C", "MI_MEAS_LOC_SEQ_N"}
    End Get
End Property
```

Note: You must type field IDs in all capital letters.

Modifying the Has Checkpoint Family Code Item

You can modify the Has Checkpoint family rules so that the Scan ID field in Measurement Location and Lubrication Requirement records will be populated automatically from fields in Equipment or Functional Location records. For example, if your scan IDs (i.e., barcode IDs or RFID tags) match the value in the Equipment Technical Number field in your Equipment records, you might want to modify the Has Checkpoint family rules to specify that the Equipment Technical Number be populated automatically in the linked Measurement Location record's Scan ID field.

To modify the Has Checkpoint family code item:

1. On the Configuration Manager main window, on the **Relationship Family** tab, select the **Has Checkpoint** family.

2. In the **Tasks** section, click the **Manage Family Business Rules** link.

   The project appears in the **Meridium APM Rules Editor** (VSTA).

3. In the **Project Explorer** pane, double-click the **MIR_HS_MEASLOC** code item.

   The code associated with the code item appears in the main display area on the **Meridium APM Rules Editor** window.

4. Within the **MIR_HS_MEASLOC** class, locate the text **MyBase.New(record)**.

```
<MetadataFamily()> _
Public Class MIR_HS_MEASLOC
    Inherits Baseline.MIR_HS_MEASLOC.MIR_HS_MEASLOC

    Public Sub New(ByVal record As Meridium.Core.DataManager.DataRecord)
        MyBase.New(record)
    End Sub
End Class
```

5. Place your cursor after the text **(record)**, and press Enter.

6. Type the following code:

```
If CurrentRelationship.Predecessor.Family.ID = "[Family ID]" Then
    MyBase._AssetBarcdID_FieldID = "[Scan ID]"
End If
```

   ...where:

- **[Family ID]** is the ID of the Equipment or Functional Location family.
- **[Scan ID]** is the ID of the Equipment or Functional Location family field that you want to use to map to the barcodes or RFID tag field.

   > **Note:** You must type the IDs using capital letters.

For example, the following code excerpt shows a rule in the Has Checkpoint family code item that has been modified such that the Scan ID field in the Equipment family will be populated automatically with the value in the Equipment Technical Number field in the related Equipment record.

```
<MetadataFamily()> _
Public Class MIR_HS_MEASLOC
    Inherits Baseline.MIR_HS_MEASLOC.MIR_HS_MEASLOC

    Public Sub New(ByVal record As Meridium.Core.DataManager.DataRecord)
        MyBase.New(record)
        If CurrentRelationship.Predecessor.Family.ID = "MI_EQUIP000" Then
            MyBase._AssetBarcdID_FieldID = "MI_EQUIP000_EQUIP_TECH_NBR_C"
        End If
    End Sub
End Class
```

Modifying the Operator Rounds Recommendation Family Code Item

By default, Operator Rounds Recommendation records are not linked automatically to Equipment and Functional Location records. If desired, you can modify the Operator Rounds Recommendation rules and the Has Recommendations rules to link Operator Rounds Recommendation records to Equipment and Functional Location records automatically.

The following code excerpt shows a rule in the Operator Rounds Recommendation family code item that will link Operator Rounds Recommendation records to Equipment records automatically:

```
<MetadataFamily()> _
Public Class MI_OPR_REC
    Inherits Baseline.MI_OPR_REC.MI_OPR_REC

    Public Sub New(ByVal record As Meridium.Core.DataManager.DataRecord)
        MyBase.New(record)
        MyBase._Asset_FamilyID = "Asset"
        MyBase._AssetID_FieldID = "ASSET_ID_CHR"
    End Sub
End Class
```

...where:

- **[Asset Family ID]** is the ID of the Equipment or Functional Location family to which you related the Operator Rounds Recommendation family through the Has Recommendations relationship.

- **[Asset ID Field ID]** is the ID of the Equipment or Functional Location family field that you want to use to map to the Operator Rounds Recommendation family. This means that for a link to be created between the Equipment or Functional Location record and the Operator Rounds Recommendation record, the value stored in this field must exist in the **Asset ID** cell on the Operator Rounds Recommendation datasheet when the Recommendation record is created.

> **Note:** You must specify the family ID and field ID you specified when you modified the Measurement Location family code item. Also, make sure to type the field ID in all capital letters.

Modifying the Has Recommendation Family Code Item

By default, Operator Rounds Recommendation records are not linked automatically to Equipment or Functional Location records. If desired, you can modify the Operator Rounds Recommendation rules and the Has Recommendations rules to link Operator Rounds Recommendation records to Equipment and Functional Location records automatically.

For example, the following code excerpt shows a rule in the Has Recommendations family code item that will link Equipment records to Operator Rounds Recommendation records automatically.

```
<MetadataFamily()> _
Public Class MI_Has_Recommendations
    Inherits Baseline.MI_Has_Recommendations.MI_Has_Recommendations

    Public Sub New(ByVal record As Meridium.Core.DataManager.DataRecord)
        MyBase.New(record)
        MyBase._AssetID_FieldID = "ASSET_ID_CHR"
    End Sub
End Class
```

...where [Asset ID Field ID] is the ID of the Equipment family field that you want to use to map to the Operator Rounds Recommendation family. This means that for a link to be created between the Equipment record and an Operator Rounds Recommendation record, the value stored in this field is the value that must exist in the **Asset ID** cell on the Operator Rounds Recommendation datasheet when the Operator Rounds Recommendation record is created.

> **Note:** Make sure this is the same field ID you specified when you modified the Measurement Location family code item. Also, make sure to type the field ID in all capital letters.

Modifying the Route Family Code Item

By default, in the Asset View of the Route pane, a Route will be grouped by the value stored in the Asset ID field in the Measurement Location records. You can modify the Route family rules, however, so that a Route will be grouped by a different field in the Asset View. For example, you can choose to display the value stored in the Asset Description field instead. The field that you specify must belong to the Measurement Location family.

For example, the following code excerpt shows a rule in the Route family code item that will group the Route by the Asset Description field.

```
<MetadataFamily()>  _
Public Class MI_ROUTE000
    Inherits Baseline.MI_ROUTE000.MI_ROUTE000

    Public Sub New(ByVal record As Meridium.Core.DataManager.DataRecord)
        MyBase.New(record)
    End Sub
    Public Overridable ReadOnly Property GroupByField() As String
        Get
            Return "MI_MEAS_LOC_ASSET_DESCR_C"
        End Get
    End Property
End Class
```

...where **[Return]** is the ID of the Measurement Location family field that you want to use instead of the Asset ID field. This means that when you view Measurement Location nodes in the Route pane in the Asset View, they will be grouped by the value stored in this field.

> **Note:** Be sure to type the Field ID in all capital letters.

In this example, the Asset View in the Route pane would display the value stored in the Asset Description field, as shown in the following image.

Managing Measurement Location Template Mappings

The Measurement Location Template family and the Measurement Location family are provided as part of the baseline Operator Rounds data model. If you create a Measurement Location Template record in the Meridium APM Framework application, you can then create a Measurement Location record based on that template. If you do so, all values in Measurement Location Template fields that also exist on the Measurement Location datasheet will be mapped automatically to the new Measurement Location record.

You might find that the Measurement Location Template and Measurement Location datasheets do not contain all fields that your Operator Rounds users need. If so, you can add fields to the Measurement Location Template family so the values from the new fields will be mapped to Measurement Location records based on that template. To do so, you will need to:

- Create a new Measurement Location Template field.
- Add the new Measurement Location Template field to the Measurement Location Template datasheet.
- Create a new Measurement Location field. We recommend that the field caption of this field be the same as the field caption you defined for the Measurement Location Template field. This will ensure that the text in the field IDs that identify the fields are the same. *If they are not the same, the values will not be mapped from the Measurement Location Template to the Measurement Location record.*
- Add the new Measurement Location field to the Measurement Location datasheet.
- Modify the physical tables for both families.

Creating a Scheduled Item for Compliance Tracking

If your system is properly configured, the Meridium APM system will track the status of readings to determine whether they are compliant or not. The status of a reading is based upon whether the reading is recorded and transferred to the Meridium APM Database according to the schedule that is defined for the checkpoint. For example, if a reading is due *every 4 hours*, and a reading is recorded *after 5 hours* instead, that reading is considered *Completed* for the 4-hour increment in which it occurred, not for the time period that was missed. Therefore, the missed reading will be considered *Non-compliant.*

To enable the compliance tracking functionality, you will need to create one *Compliance Tracking* Scheduled Item in the Meridium APM Schedule Manager application. When the Compliance Tracking Scheduled Item is executed, it will check the value stored in the Non-compliance Date fields in all the Checkpoint Task records that are linked to a Measurement Location record in any Route. If the current date and time is passed the Non-compliance Date value, the Meridium APM system will automatically create a Reading record for the corresponding checkpoint and set the value in the Status field to *NC* (Non-compliant). The schedule that you specify here will determine the frequency at which the scheduled item will run. We recommend that you specify a schedule that is more frequent than the schedules defined in the Checkpoint Task records for the Routes.

The following instructions provide details on creating the Checkpoint Tracking Scheduled Item.

To create a Scheduled Item for compliance tracking:

1. Log in to the Meridium APM Schedule Manager application.

2. Click the **Add New** link below the **Scheduled Items** grid.

   The **Choose a Meridium Assembly** dialog box appears.

3. Navigate to the **Meridium.FieldDataCollection.dll** file, and then click the **Open** button.

   The **Compliance Schedule** dialog box appears.
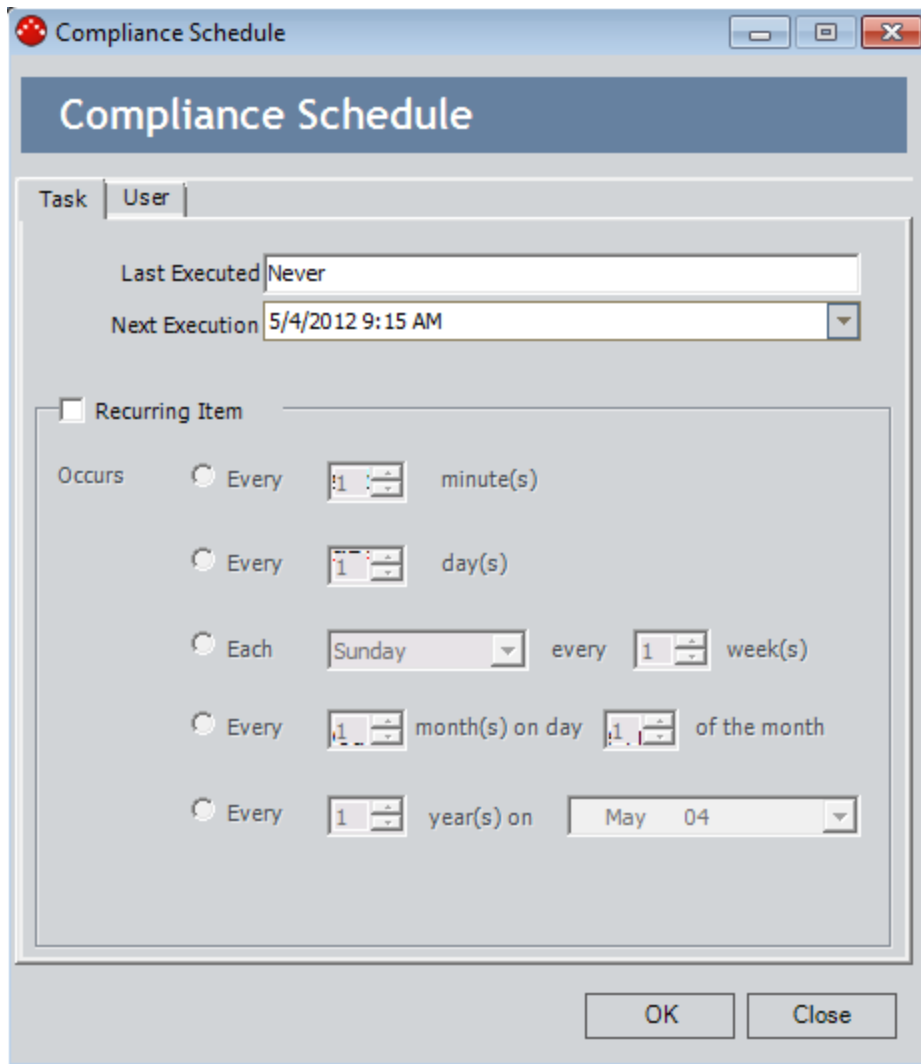
4. Specify the schedule on which you want the Compliance Tracking Scheduled Item to run.

5. Click the **User** tab.

   The **User** tab appears.

6. In the **User ID** and **Password** text boxes, enter the username and password for the Security User that will be used to execute the Scheduled Item. This must be a Super User or belong to either the MI Operator Rounds Administrator or MI Operator Rounds User Security Group.

7. Click **OK**.

   The Scheduled Item is created, and a new row appears in the **Scheduled Items** grid.

Scheduled Items

	Item Type △				
	ID	Caption	Description	Last Execution	Next Execution
	⊟ Item Type: Meridium.OPR.UI.Scheduler.ComplianceWorkItem				
▶	Compliance Scheduler	Compliance Scheduler	Compliance Scheduler creates non-compliant readings when the no...	1/1/0001 12:00:00 AM	5/4/2012 9:15:17 AM

Configuring Operator Rounds to Work Across Multiple Time Zones

> **Note:** When you deploy and configure Operator Rounds for the first time, it will work across multiple time zones automatically. You need to configure Operator Rounds to work across multiple time zones only if you are upgrading from an earlier version of Operator Rounds.

To configure Operator Rounds to work across multiple time zones, you will need to complete the following steps:

1. For the fields in the following table, set the UTC field property to *True*.

Family	Field(s)
Checkpoint	• Last Date (MI_MEAS_LOC_LAST_DT_D) • Next Date (MI_MEAS_LOC_NEXT_DT_D)
Checkpoint Template	• Last Date (MI_ML_TMPLT_LAST_DT_D) • Next Date (MI_ML_TMPLT_NEXT_DT_D)
Reading	Reading Taken Date (MI_READING0_RDG_TAKEN_DT_D)
Checkpoint Task	Non-compliance Date (MI_CP_TASK0_NON_COMP_D)

2. For all Operator Rounds users, make sure their Security User record contains a value in the Timezone field.

Modifying Measurement Location Records Linked to Large Reference Documents

There are known limitations when downloading Routes to handheld devices when the Reference Document records associated with the Route (i.e., the reference document files stored in the Meridium APM database that are retrieved by the Reference Document record) have a combined file size that *exceeds* 2 MB. Specifically, if you attempt to download a Route and the combined file size of the associated reference document files exceeds 2 MB, an error message will appear on the device, and the reference document files will not be downloaded to the device. As such, when you upgrade to V3.6.0.0.0, you should set the Download Stored Document field to *False* in existing Measurement Location records whose associated Reference Document records have a combined file size that exceeds 2 MB so that the handheld device will not attempt to download the associated reference document files when you download the associated Route.

To identify and update existing Measurement Location records that are linked to Reference Document records whose combined file size exceeds 2 MB:

1. Run one of the following queries:

   - For users of a SQL database, run the following query:

   SELECT Sum(datalength(MI_REF_DOCUMENTS.MI_REF_DOCUMENTS_DOC_B)) FROM [MI Reference Document] JOIN_PRED [MI_MEAS_LOC] ON {MI Has Reference Documents} JOIN MI_REF_DOCUMENTS ON [MI Reference Document].ENTY_KEY = MI_REF_DOCUMENTS.ENTY_KEY

   - For users of an Oracle database, run the following query:

   SELECT Sum(length(MI_REF_DOCUMENTS.MI_REF_DOCUMENTS_DOC_B)) FROM [MI Reference Document] JOIN_PRED [MI_MEAS_LOC] ON {MI Has Reference Documents} JOIN MI_REF_DOCUMENTS ON [MI Reference Document].ENTY_KEY = MI_REF_DOCUMENTS.ENTY_KEY

   The query results are displayed. The following image shows an example of the results that are returned by the SQL version of this query.

Length	ENTY_ID
83942	PMP-3821~Filter Check
19073	PMP-6924~Pump Stroke Check
19073	PMP-3834~Pump Check
19073	PMP-3824~Pump Stroke Check
5644	PMP-3902~Pump Stroke Check
83942	PMP-3827~Filter Check
19073	PMP-3820~Pump Stroke Check
20574	C-FUGAL PMP 001~Pressure Reading
19073	C-FUGAL PMP 002~Pump Check
20574	BP PC-002~Pump Check
25425	AQA AC-HEX 07~CONDITION of: Power Source
83942	C-SHELL&T-HE-003~Vent Check
89565	QA-PC-1000~Asset Cond: Currently Operating
83942	QA-PC-1001~Vent Check
5644	QA-PC-1003~Temperature Reading
19073	QA-PMP-1234~Pressure Reading
11888	QA-PMP-2468~Tank Level

One row is displayed for each Measurement Location record in your database (identified by the value in the **ENTY_ID** column) that is associated with one or more Reference Document record. The value in the **Length** column is combined file size (in bytes) of the reference documents that are associated with each Measurement Location record through Reference Document records.

In this example, you can see that none of the Measurement Location records returned by the query are associated with reference documents that exceed the 2 MB file size limit.

2. Open each Measurement Location record whose reference documents have a combined file size that exceeds 2 MB (i.e, whose Length value exceeds *2,097,152*), clear the **Download Stored Document** check box, and then save the record.

   Your changes are saved to the database. Now, when you download to the handheld device the route containing these Measurement Location records, the device will not attempt to download the associated reference document files.

Configuring the Product to Use the Readings - Oracle Query

> **Note:** You should perform this task if you upgraded to V3.6.0.3.0 *or later* and use an Oracle database.

The queries *Readings* and *Readings - Oracle* contain syntax that is database-specific and can be interpreted only on SQL Server or Oracle databases, respectively. If you are using a SQL Server database, the product is configured by default to use the SQL Server version of the query (i.e., Readings), so no manual steps are required. If, however, you are using an Oracle database, you will need to configure the product manually to use the Oracle version of the query (i.e., Readings - Oracle).

To configure the product to use the Oracle version of the query:

1. Rename the Readings query. For example, you might want to rename it *Readings - SQL*.

2. In the Readings - Oracle query, remove the text *-Oracle* from the name.

About Navigating the Operator Rounds Module

Within the Meridium APM Framework application, the Operator Rounds module provides the following navigational tools:

- A start page with links that provide access to the main features of Operator Rounds. You can use these links to complete the Operator Rounds workflow.

- A Site Map that you can use to navigate within the Operator Rounds module. The Site Map indicates your current location and shows the typical path for arriving there. To access a previous page, you can click its hyperlinked name in the Site Map.

Using the Operator Rounds Site Map

The Site Map in Operator Rounds allows you to navigate from the current page to other pages in Operator Rounds. The **Operator Rounds** link, which provides access to the **Operator Rounds Start Page**, will always be available. Links to other pages may also be available, depending upon your location in the application. You can click any link that is available to access the corresponding page.

The following image shows an example of what the Site Map looks like on the **Operator Rounds Route Selection** page. A red outline has been added to the image to highlight the Site Map.
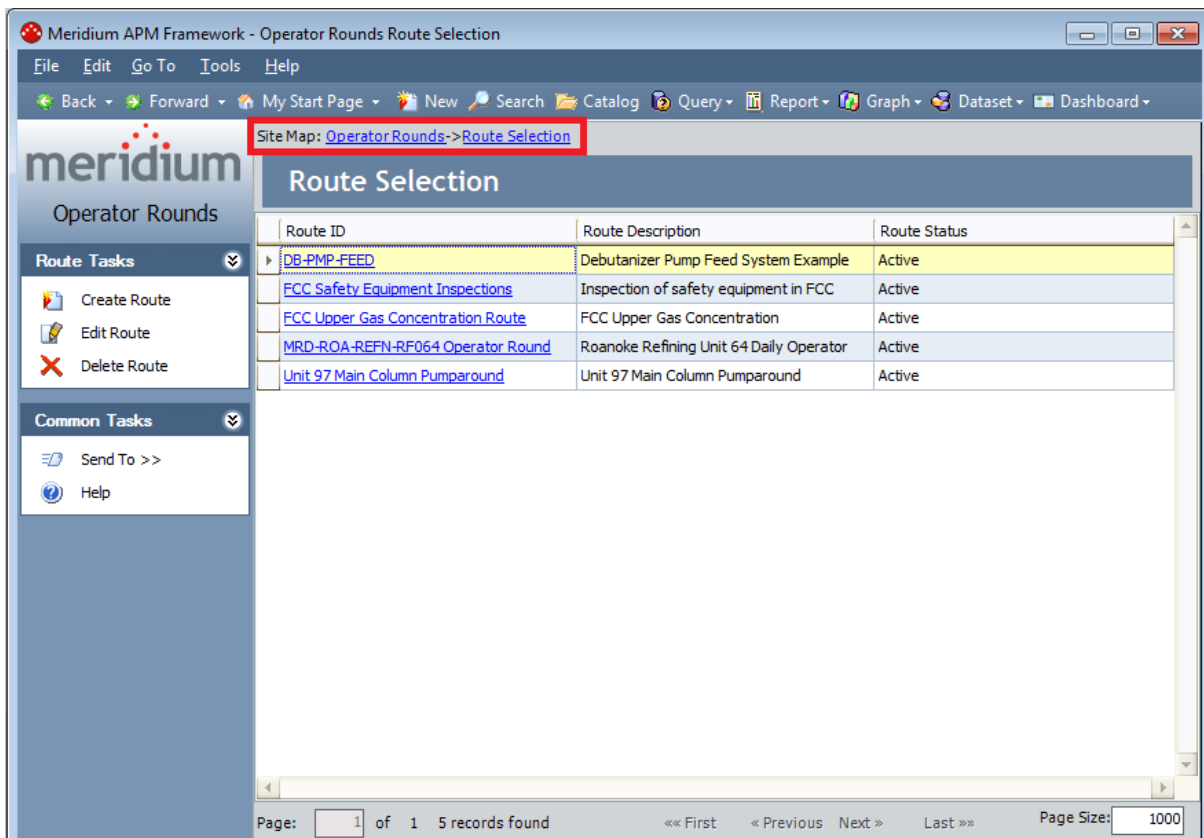
The Associated Pages Menus in Operator Rounds

Associated Pages menus that are configured for the Operator Rounds module appear in the following locations:

- On the **Route Management** page when a Measurement Location record is selected is the Route pane. The Associated Pages that are displayed on this menu are configured for the [Measurement Location](#) family.

- On the **Template Group Management** page when:

  - A Measurement Location Template record is selected on the **Template Group Management** page in the Template Group pane.

    ...or in the Record Manager when:

  - A Measurement Location Template record is selected on the **Operator Rounds Template Management** page.

Whether you access this **Associated Pages** menu via the **Template Group Management** page or the **Operator Rounds Template Management** page, the Associated Page that is displayed will be the same. The Associated Page that appears on this menu is configured for the [Measurement Location Template](#) family.

Measurement Location Associated Pages

The following Associated Pages are configured by default for the Measurement Location family.

> **Note:** To see the underlying URL for each Associated Page, you can use the URL Manager application.

Caption	Description
Create Readings	Displays the **(new Reading)** window, where you can create a Reading record linked to the Measurement Location record.
Trend Readings	Displays in the Graph Viewer the **Trend of Readings Plot** graph, which displays the reading values and dates for all Reading records linked to the Measurement Location record.

Measurement Location Template Associated Pages

The following Associated Page is configured by default for the Measurement Location Template family.

> **Note:** To see the underlying URL for each Associated Page, you can use the URL Manager application.

Caption	Description
Update Existing MLs	Displays the **Measurement Location Update** window, where you can select the Measurement Location records to which you want to apply changes that have been made to the Measurement Location Template record from which the Measurement Location record was created.
Disassociate MLs	Displays the **Disassociate Measurement Locations** window, where you can select the Measurement Location records from which you want to remove the link to the selected Measurement Location Template record.

About the Operator Rounds Dashboard

The Operator Rounds dashboard displays information for equipment and locations that you analyze using the Operator Rounds module and provides a way to navigate to various pages in the Meridium APM Framework. The Operator Rounds dashboard consists of the:

- Catalog item *OPR Dashboard* that is stored in the following location: \\Public\Meridium\Modules\Operator Rounds\Dashboards

- Underlying queries that are stored in the following location: \\Public\Meridium\Modules\Operator Rounds\Queries\Dashboard Queries

Throughout the documentation, the term *Operator Rounds dashboard* is used to refer to the dashboard Catalog item and the underlying queries that are displayed on the **Dashboard** page.

Accessing the Operator Rounds Dashboard

You can access the Operator Rounds dashboard via the **Operator Rounds Start Page**.

To access the baseline Operator Rounds dashboard:

- On the **Operator Rounds Start Page**, click the **Operator Rounds Dashboard** link.

    The Operator Rounds dashboard is displayed on the **Dashboard** page.
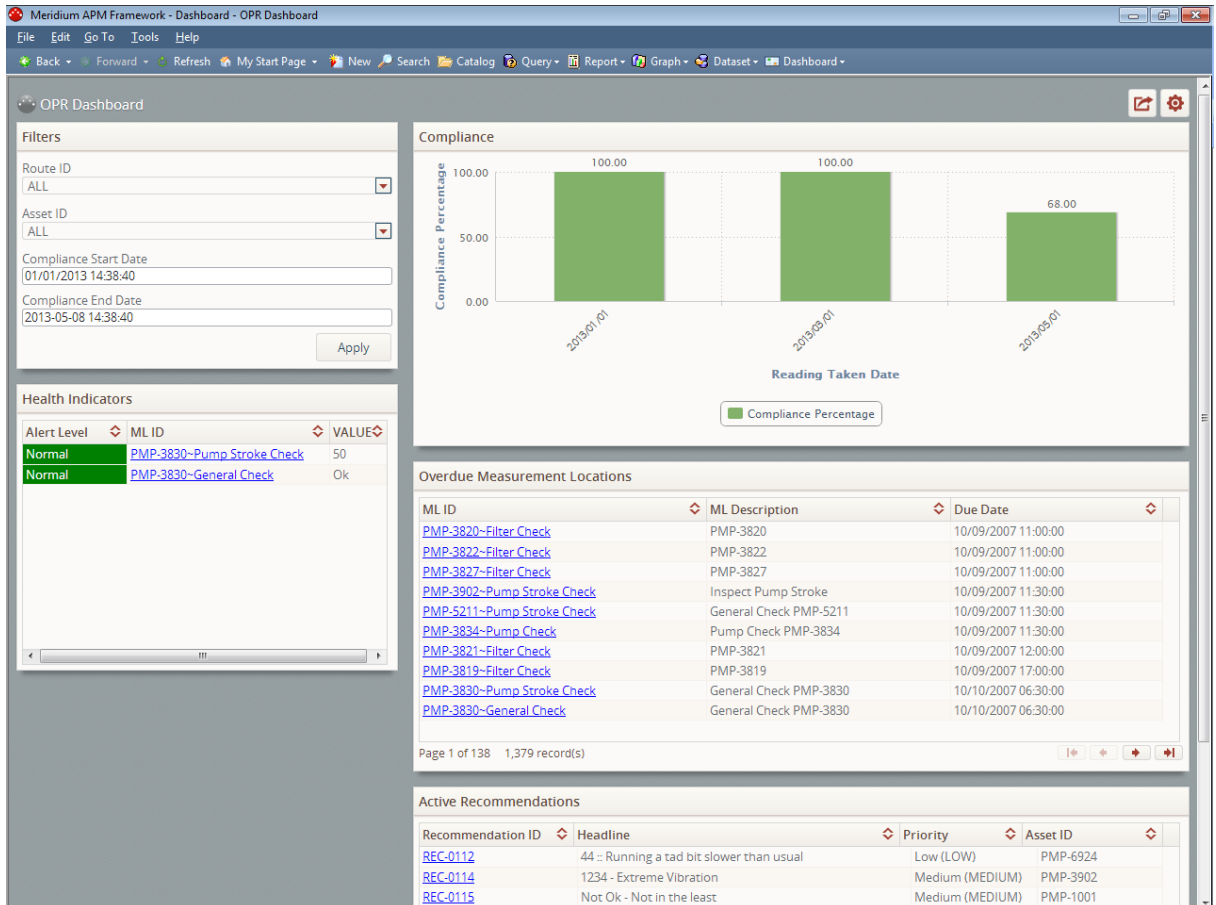
Aspects of the Operator Rounds Dashboard

The Operator Rounds dashboard and options for configuring the dashboard and its display are displayed on the **Dashboard** page.
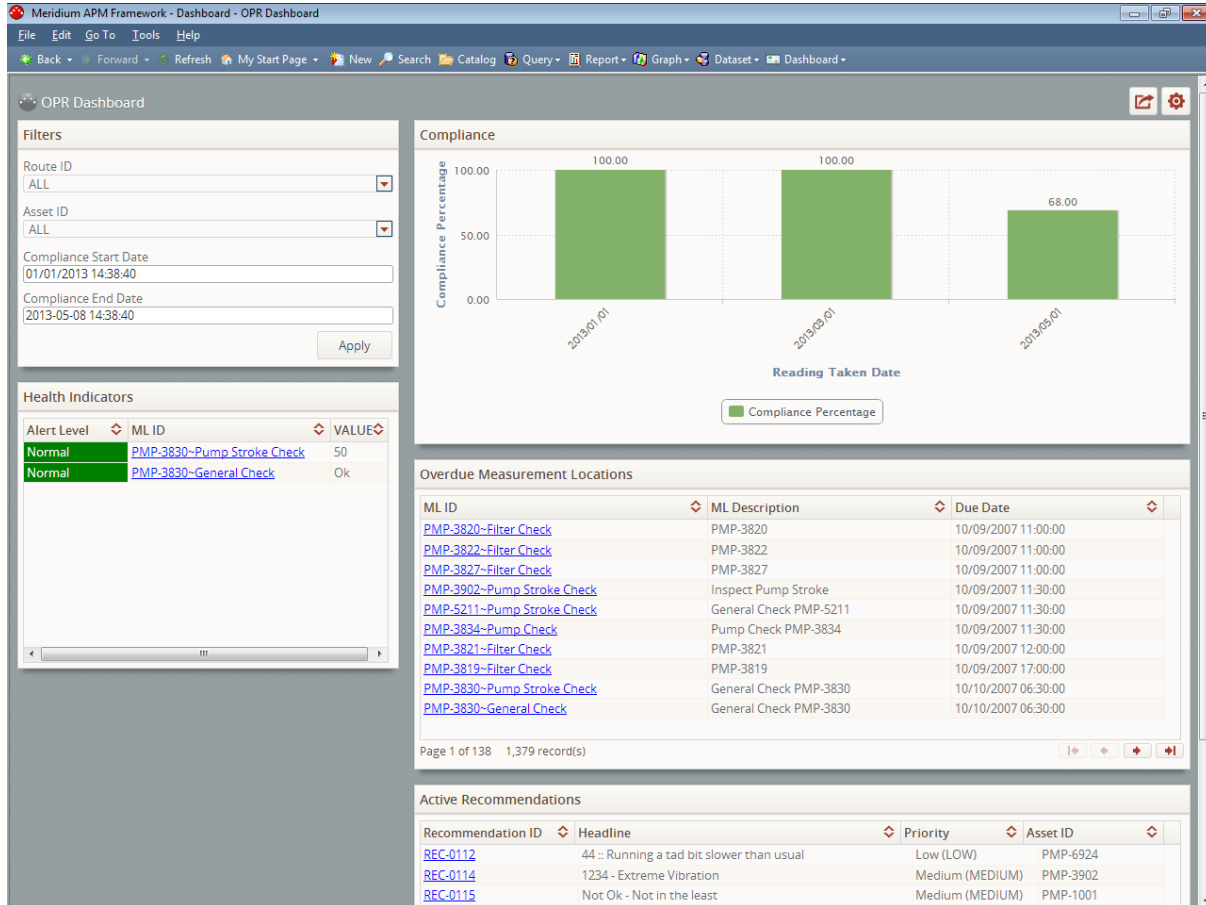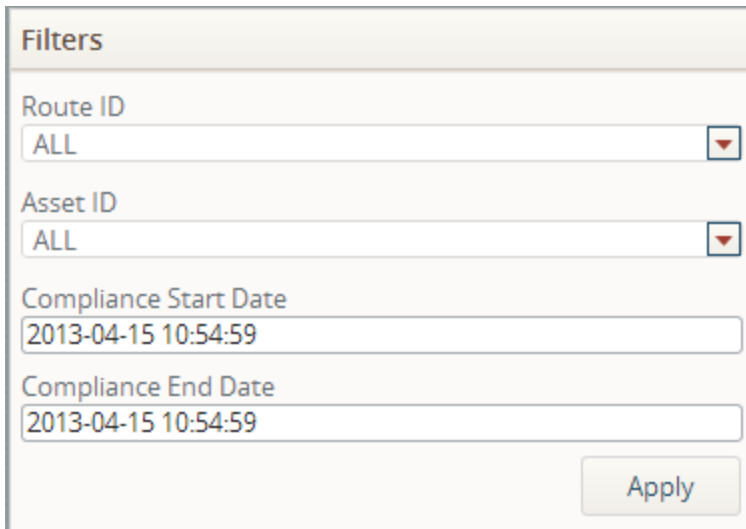
The Operator Rounds dashboard displays the following sections:

- [Filters](#)
- [Health Indicators](#)
- [Compliance](#)
- [Overdue Measurement Locations](#)
- [Active Recommendations](#)

Filters

The **Filters** section is a configured **Content Filter** dashboard section that contains lists and fields that are used to filter data that is displayed in other sections on the dashboard.

The **Filters** section contains the following lists and boxes that are used to filter the data that is displayed in other sections on the dashboard:
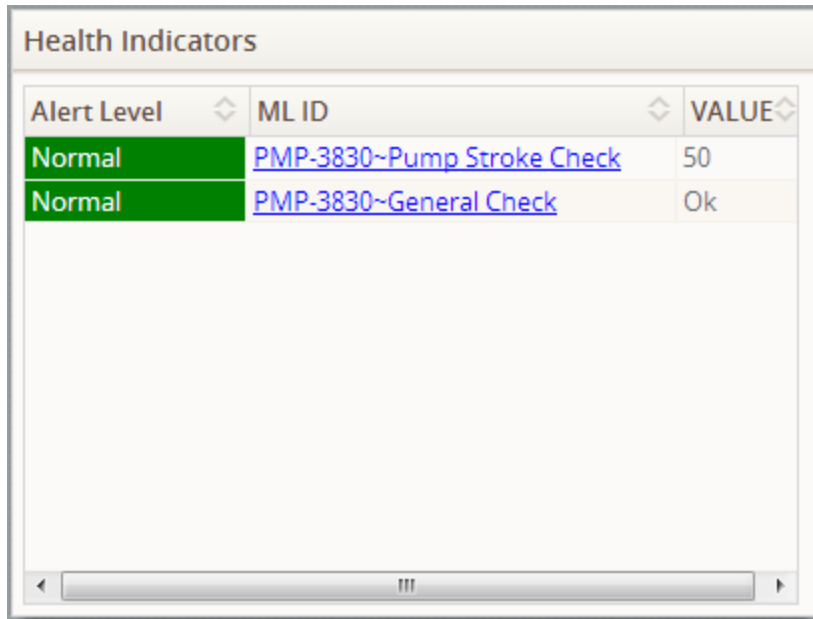
- **Route ID list:** Displays a list of unique Route Id values for each Route record that is stored in your database. The value that you select in this field is used to filter the data that is displayed in *all* other sections on the dashboard.

- **Asset ID list:** Displays a list of unique Related Asset Id values for each Measurement Location record that is stored in your database. The value that you select in this field is used to filter the data that is displayed in *all* other sections on the dashboard.

- **Compliance Start Date box:** The value that you select or type in this box is used to filter the data that is displayed in the **Compliance** section on the dashboard.

- **Compliance End Date box:** The value that you select or type in this box is used to filter the data that is displayed in the **Compliance** section on the dashboard.

Health Indicators

The **Health Indicators** section is a configured **List - Query Result** dashboard section that contains a grid that displays information about Measurement Location records and the following records that are linked to Measurement Location records:

- Reading
- Health Indicator

One row is displayed for each Measurement Location record.

The grid contains the following columns of information:

- **Alert Level:** The background color of these cells corresponds with the status of the Health Indicator record that is linked to the Measurement Location record.

- **ML ID:** Displays the value in the ML ID field in the Measurement Location record that is associated with the Health Indicator record. Values in this column appear as hyperlinks, which you can click to access the **Asset Health Manager** page for the Health Indicator record associated with the Measurement Location record.

- **Value:** Depending upon which field contains a value, displays the value in the Reading Value Character or Reading Value Numeric field in the most recent Reading record that is linked to the Measurement Location record.

Compliance

The **Compliance** section is a configured **Chart - Series** dashboard section that displays a bar graph that plots *compliance percentage*, the percentage of readings that are considered compliant.
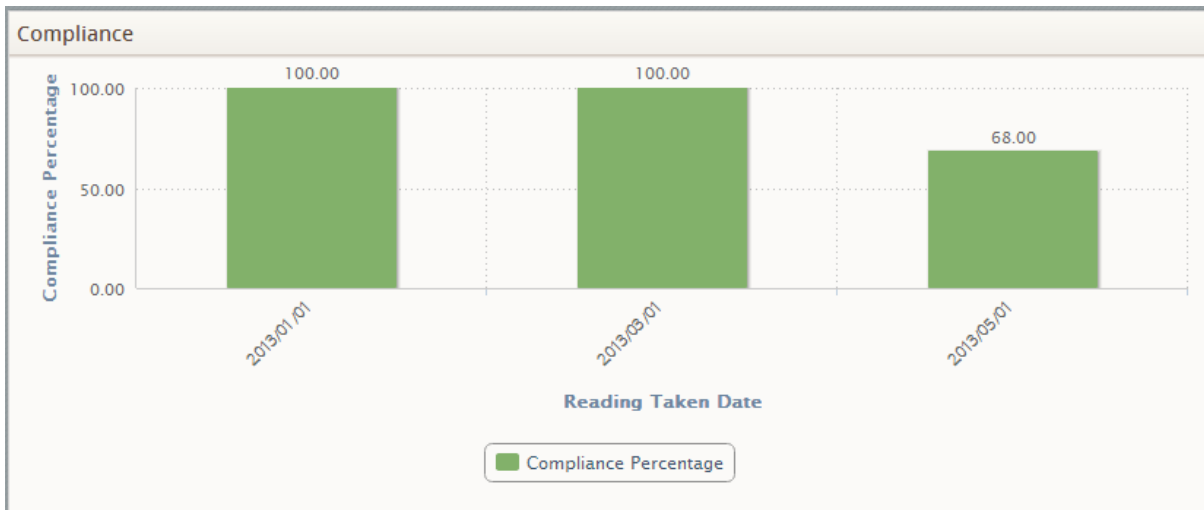
Compliance percentage is calculated by the Compliance Percentage query using the results of the following queries as inputs to the calculation:

- Completed Reading Count
- Non-compliance Reading Count

Compliance percentage is calculated according to the following formula:

Compliance percentage = (Number of Completed readings / (Number of Completed readings + Number of Non-compliant readings)) x 100

For example, if the input queries resulted in *100* Completed readings and *10* Non-compliant readings, the compliance percentage would be calculated as follows:

Compliance percentage = (Number of Completed readings / (Number of Completed readings + Number of Non-compliant readings)) x 100

Compliance percentage = (100 / (100 + 10)) x 100

Compliance percentage = (100 / 110) x 100

Compliance percentage = .9 x 100

Compliance percentage = 90

The axes on the graph displayed in this section are configured in the following way:

- **X-axis:** Displays one bar for each unique Reading Taken Date in the Readings records returned by the Compliance Percentage query. In the image displayed in

this topic, one bar is displayed for each of the following dates:

- 01-01-2013
- 03-01-2013
- 05-01-2013

- **Y-axis:** Displays the compliance percentage for each Reading Taken Date plotted on the x-axis. The following table lists the compliance percentages associated with each Reading Taken Date plotted on the graph displayed in the image in this topic.

Reading Taken Date	Compliance per-centage
01-01-2013	100
03-01-2013	100
05-01-2013	68

A legend that indicates that the graph measures compliance percentage is displayed below the x-axis. You can click bars in the graph to view a detail dialog box that displays the Reading Taken Date and compliance percentage for the Reading records associated with a specific date.

Overdue Measurement Locations

The **Overdue Measurement Locations** section is a configured **List - Query Result** dashboard section that contains a grid that displays information about Measurement Location records that are linked to Checkpoint Task records whose Next Date field contains a value that is associated with a date that is *before* today's date.

ML ID	ML Description	Due Date
MRD-ROA-REFN-RF064~ ~ General Housekeeping ~ 01	General Housekeeping	11/04/2010 0
MRD-ROA-REFN-RF098~ ~ General Housekeeping ~ 18	General Housekeeping	11/14/2010 0
EW-3434891~ ~ Eyewash Inspection ~ 03	Eyewash Inspection	11/28/2010 0
EW-9854879~ ~ Eyewash Inspection ~ 04	Eyewash Inspection	11/28/2010 0
SS-32111285~ ~ Safety Shower Inspection ~ 02	Safety Shower Inspection	11/28/2010 0
E0011A-097~E0011A-097 ~ Heat Exchanger Check ~ 03	Heat Exchanger Check	03/16/2012 0
G0019-097~G0019-097 ~ Check the condition of the pump ~ 02	Check the condition of the pump	03/16/2012 0
GM0019-097~GM0019-097 ~ Motor Check ~ 01	Motor Check	03/16/2012 0
000000000001034166~T0052-064 ~ Tank Level Check ~ 04	Tank Level Check	01/22/2013 0
000000000001033225~G0027-064 ~ Pump Oil Level Check ~ 03	Pump Oil Level Check	01/22/2013 0

Page 1 of 4   36 record(s)

The following columns of information are displayed in the grid:

- **ML ID:** Displays the Record ID of the Measurement Location record. This value appears as a hyperlink, which you can click to access the **Route Management** page for the Measurement Location record.

- **ML Description:** Displays the value in the ML Description field in the Measurement Location record.

- **Due Date:** Displays the value in the Next Date field in the Checkpoint Task record that is linked to the Measurement Location record.

Active Recommendations

The **Active Recommendations** section is a configured **List - Query Result** dashboard section that contains a grid that displays information about Operator Rounds Recommendation records that are in a Created state.

Recommendation ID	Headline	Priority	Asset ID
REC-0112	44 :: Running a tad bit slower than usual	Low (LOW)	PMP-6924
REC-0114	1234 - Extreme Vibration	Medium (MEDIUM)	PMP-3902
REC-0115	Not Ok - Not in the least	Medium (MEDIUM)	PMP-1001
REC-0116	HIGH (as in 'Way Too' High)	High (HIGH)	PMP-1003
REC-0117	1010 - Under way too much pressure	High (HIGH)	QA-PMP-1234
REC-0118	Below The Fold (No Headline)	Low (LOW)	PMP-3834
REC-1283	Not Looking Very Good	Medium (MEDIUM)	PMP-3457
REC-0222	Manually Created OPR Recommendation	Medium (MEDIUM)	C-FUGAL PMP 002
REC-1226	QA Test Recommendation 1226	Medium (MEDIUM)	PMP-1001
REC-1227	QA Test Recommendation 1227	Medium (MEDIUM)	PMP-1001

The following columns of information that correspond with Operator Rounds Recommendation fields are displayed in the grid:

- Recommendation ID
- Headline
- Priority
- Asset ID

Values in the **Recommendation ID** column appear as hyperlinks, which you can click to open the Operator Rounds Recommendation record in Record Manager.

About Routes

A *Route* is a series of checkpoints that a single user should execute in a specific order. You can use Operator Rounds to manage the Routes that will be transferred to a hand-held device, where the person responsible for that Route will record a reading value for each checkpoint that is defined for the Route.

A Route consists of the following records and links:

- One Route record.
- Multiple Measurement Location records that are linked to the Route record.
- Checkpoint Task records that are linked to the Measurement Location records.
- Equipment or Functional Location records to which each Measurement Location record is linked.
- Checkpoint Condition records that are linked to the Measurement Location records as successors.
- Multiple Measurement Location records that are linked to the Checkpoint Condition records as successors.
- Route History records that are linked to the Route record.

The following image illustrates the records listed above and how they are related to one another to make up a Route. In this image, the arrows represent relationship families, and each box represents a single record in that entity family:
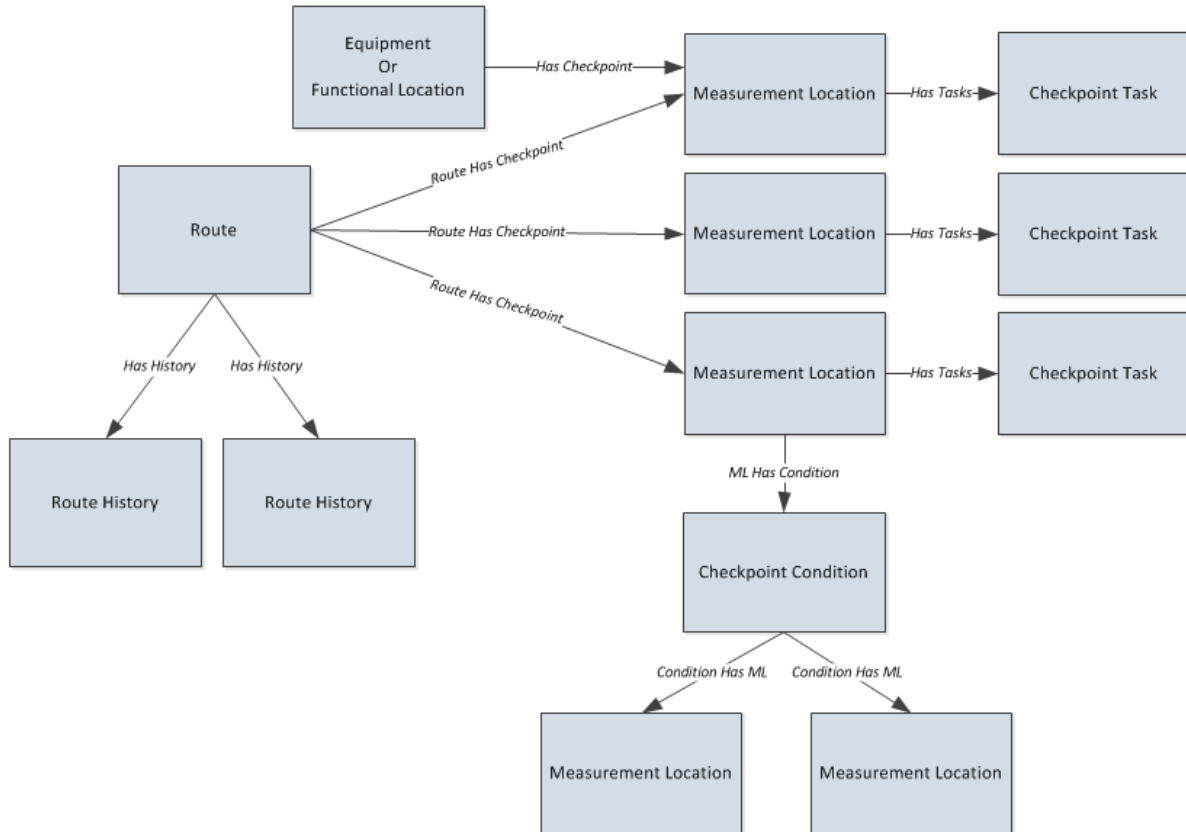
You can manage Routes via the **Route Management** page. With the exception of Checkpoint Task and Route History records, all records that make up a Route will appear in the Route pane on the [Route Management page](#), where the Route record is shown as the root record. You can use the Route pane to create and manage your Routes. The following image shows an example of the Route pane.
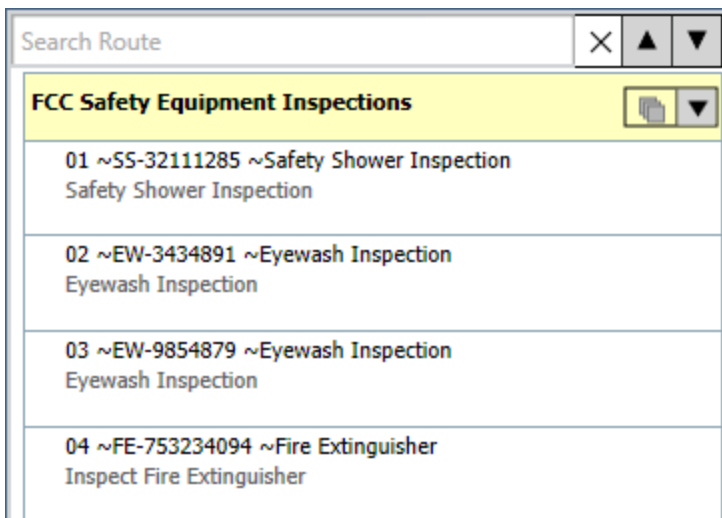
Checkpoint Task and Route History records appear in the Datasheet area on the **Route Management** page.

Each Measurement Location record that is linked directly to the Route record will be linked to one Checkpoint Task record that stores the schedule on which that checkpoint should be addressed. You can work with Checkpoint Task records using the ML Task View datasheet for the Measurement Location family. This datasheet is a custom data-sheet that displays both the Measurement Location datasheet and the Checkpoint Task datasheet.

You can view the Route History records that are linked to a Route record using the Route History datasheet for the Route family.

Workflow for Creating a Route

By creating a Route, you are defining all the checkpoints that should be completed on that Route, including the order in which those checkpoints should be completed. To create a Route, you will need to complete the following steps:

1. Create a Route record to represent the Route.

2. Add checkpoints to the Route by creating Measurement Location records.

3. Define a schedule for the Route, checkpoints within the Route, or both.

4. Define the order in which the checkpoints should appear to the user on the device.

5. Configure the allowable values that users can select when entering readings on a device.

6. Configure alerts based on readings that users might select on the device.

7. Add conditions to the Route by creating Checkpoint Condition records that are linked to Measurement Location records. Each Checkpoint Condition record represents a logic statement that tells the handheld device to display additional Measurement Locations if the condition defined in that logic statement is met.

8. Add reference documents to the checkpoints, if desired.

Alternatively, you can apply one or more Template Groups to a Route.

Accessing the Route Management Page

The **Route Management** page can be accessed using the following methods:

- [Creating a new Route record](#).
- [Opening an existing Route record](#).

Aspects of the Route Management Page

The **Route Management** page lets you manage a single Route. You can access the **Route Management** page by creating a new Route record or opening an existing one. The title of this page will change to identify the Route with which you are currently working. When you open a Route record on the **Route Management** page, the page name will be appended with the Route ID in the Route record. When you create a new Route record, the page name will appear as *Route Management -*, without a Route ID, until after you save the record. The following image shows an example of how the **Route Management** page appears when you open the existing Route record with the Route ID *DB-PMP-FEED*.
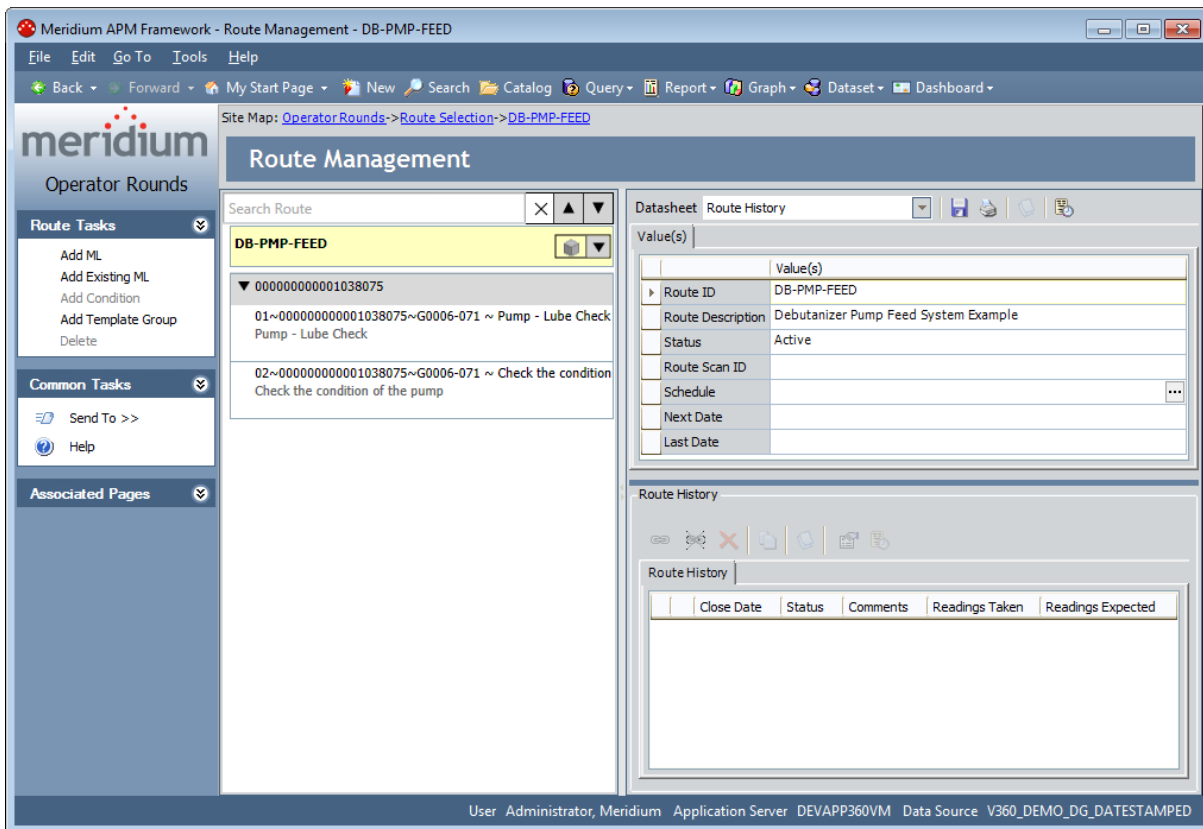
The **Route Management** page contains the **Route Management** workspace, which contains the following items:

- Route pane
- Datasheet area

The **Route Management** page contains the following task menus:

- Route Tasks
- Common Tasks
- Associated Pages

Route Tasks
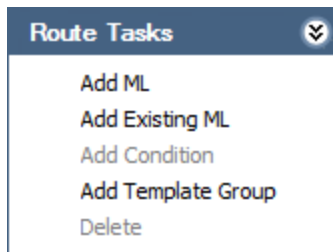
The **Route Tasks** menu on the **Route Management** page contains the following links:

- **Add ML:** Creates a new Measurement Location record and adds it to the Route pane.

- **Add Existing ML:** Displays the **Add Existing Measurement Location to <Route ID>** window, from which you can add an existing Measurement Location record to the Route.

- **Add Condition:** Creates a new Checkpoint Condition record and adds it to the Route pane below the Measurement Location record that is currently selected. This link is disabled when the Route record is selected in the Route pane.

- **Add Template Group:** Displays the **Apply Template Group Builder**, which you can use to apply a Template Group to a Route.

- **Delete:** After displaying a confirmation message, deletes the selected record. This link is disabled when the Route record is selected in the Route pane.

> **Note:** These links are disabled when you select an Equipment/Functional Location node in the Asset View.

Common Tasks
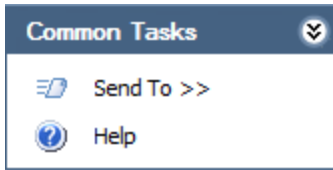
The **Common Tasks** menu on the **Route Management** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), in an email message, or a Home Page.

- **Help:** Displays the context-sensitive Help topic for the **Route Management** page.

Aspects of the Datasheet Area on the Route Management Page

The Datasheet area on the **Route Management** page displays the contents of the record that is currently selected in the Route pane to the left, with the exception of Checkpoint Condition records.

When the Route node is selected in the Route pane, the contents of the corresponding Route record and any associated Route History records are displayed in the Datasheet area via the *Route History* datasheet.

When a Measurement Location node is selected in the Route pane, the contents of the corresponding Measurement Location record are displayed in the Datasheet area via the datasheet that was last displayed for the Measurement Location family. The default

datasheet for the Measurement Location family is the *ML Task View* datasheet and is the datasheet that is intended to be used for working with Measurement Location records.
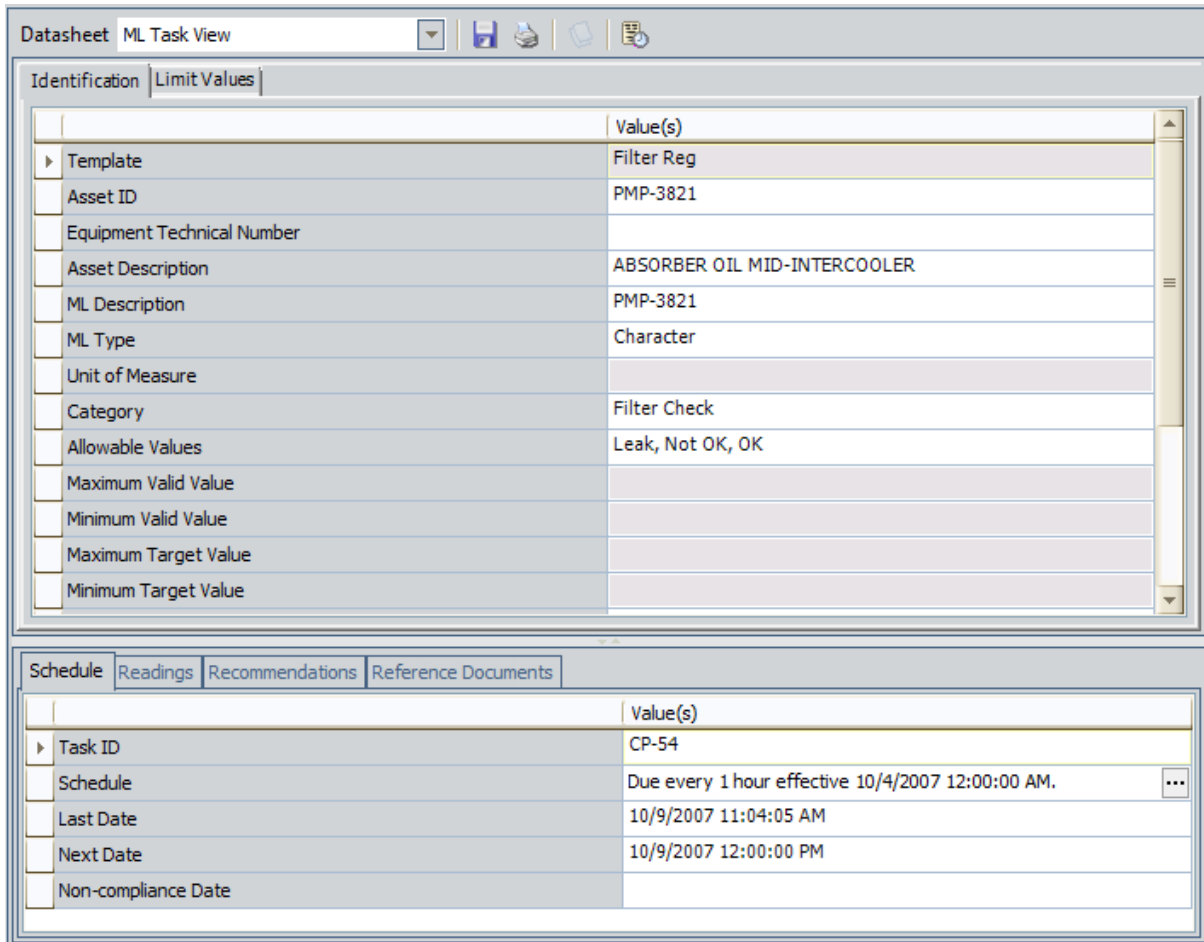
The ML Task View datasheet is a custom datasheet that displays the contents of Measurement Location record at the top and the following tabs at the bottom:

- **Schedule:** Displays the contents of the Checkpoint Task record that is linked to the Measurement Location record represented by the selected Measurement Location node. You can use the Checkpoint Task record to define the schedule on which you want the associated checkpoint to be completed via the device. This tab will be selected by default but appears only if the record represented by the currently selected Measurement Location node is linked directly to the Route record.

- **Readings:** Displays the list of Reading records that are linked to the Measurement Location record represented by the currently selected Measurement Location node. This tab will be selected by default only if the record represented by the currently selected Measurement Location node is linked to a predecessor Checkpoint Condition node.

- **Recommendations:** Displays the list of Operator Rounds Recommendation records that are linked to the Measurement Location record represented by the

currently selected Measurement Location node.

- **Reference Documents:** Displays the list of Reference Document records that are linked to the Measurement Location record represented by the currently selected Measurement Location node and buttons that you can use to work with these Reference Document records.

The contents of these tabs will change automatically, based upon the Measurement Location node that is selected in the Route pane. In addition, the tab that is currently displayed will remain displayed as you select different Measurement Location nodes. Further, the tab that is last selected when you leave the Route Management page is saved and will persist for the current user. This means that the next time that user logs in, the tab that was last selected will be selected by default when that user selects a Measurement Location node.

You can adjust the size of the bottom section of the ML Task View datasheet by clicking and dragging the divider. When you do so, these changes are saved and will persist for the current user. This means that the next time that user logs in, these changes will be displayed.

The Readings Tab

The **Readings** tab appears below the Measurement Location record on the ML Task View datasheet and displays the results of the Reading query that is stored in the folder \\Public\Meridium\Modules\Operator Rounds\Queries\ML Administration Queries.

The following image shows an example of what the **Readings** tab looks like in the Datasheet area on the **Route Management** page. A red outline has been added to the image to highlight the **Readings** tab.

Each row in the grid represents one Reading record that is linked to the Measurement Location record represented by the selected Measurement Location node. The following columns are included in the query by default and contain the value stored in the corresponding field in the Reading record represented by that row:

- **Reading Taken Date:** The date on which the reading was taken on the device. This value is displayed as a hyperlink, which you can click to view the contents of the corresponding Reading record in a new window. This value is stored in the

Reading Taken Date field in the corresponding Reading record.

- **Reading Value:** The reading value taken for the associated checkpoint. Depending upon the ML type of the associated Measurement Location record, this value is stored in either the Reading Value Character or Reading Value Numeric field in the corresponding Reading record.

- **Unit of Measure:** The UOM associated with a *numeric* reading value, if a numeric reading was taken. If a character reading was taken, this cell will be empty. This value is stored in the Unit of Measure field in the corresponding Reading record.

- **Taken By:** The username of the handheld user who was logged in to Operator Rounds when the reading was taken on the device. This value is stored in the Reading Taken By field in the corresponding Reading record.

- **Action Taken:** The action that was taken in conjunction with the reading for the associated checkpoint. This value is stored in the Action Taken field in the corresponding Reading record.

- **Comment:** Comments that were entered for the reading on the device. This value is stored in the Comment field in the corresponding Reading record.

- **Status:** The [compliance status of the reading](). This column displays the value stored in the Status field in the corresponding Reading record.

Below the grid, options appear that you can use to navigate the query results (e.g., **Next** and **Previous**). By default, 25 Reading records can be displayed per page and are sorted in descending order by the most recent value in the **Reading Taken Date** column.

When you [create a Reading record in the Meridium APM Framework application]() and link it to a Measurement Location record, the new Reading record will appear automatically on the **Readings** tab for the corresponding Measurement Location node.

The Recommendations Tab

The **Recommendations** tab appears below the Measurement Location record on the ML Task View datasheet and displays the results of the Recommendations query that is stored in the folder \\Public\Meridium\Modules\Operator Rounds\Queries\ML Administration Queries.

The following image shows an example of what the **Recommendations** tab looks like in the Datasheet area on the **Route Management** page. A red outline has been added to the image to highlight the **Recommendations** tab.

Each row in the grid represents one Operator Rounds Recommendation record that is linked to the Measurement Location record represented by the selected Measurement Location node. The following columns are included in the query by default and contain

the value stored in the corresponding field in the Operator Rounds Recommendation record represented by that row:

- **Recommendation Headline:** The description of the recommendation. This value is displayed as a hyperlink, which you can click to view the contents of the associated Operator Rounds Recommendation record in a new window. This value is stored in the Recommendation Headline field in the corresponding Operator Rounds Recommendation record.

- **Recommendation Priority:** The priority assigned to the recommendation. This value is stored in the Recommendation Priority field in the corresponding Operator Rounds Recommendation record.

- **Creation Date:** The date on which the corresponding Operator Rounds Recommendation record was created. This value is generated automatically by the Meridium APM system and stored in the Creation Date field in the corresponding Operator Rounds Recommendation record.

- **Author Name:** The name of the Security User who was logged in when the Operator Rounds Recommendation record was created. This value is stored in the Author Name field in the corresponding Operator Rounds Recommendation record.

Below the grid, options appear that you can use to navigate the query results (e.g., **Next** and **Previous**). By default, 25 Operator Rounds Recommendation records can be displayed per page and are sorted in descending order by the most recent value in the **Creation Date** column.

When you create an Operator Rounds Recommendation record and link it to a Measurement Location record in the Meridium APM Framework application, the new Operator Rounds Recommendation record will appear automatically on the **Recommendations** tab for the corresponding Measurement Location node.

The Reference Documents Tab

The **Reference Documents** tab appears below the Measurement Location record on the ML Task View datasheet and displays the results of the Stored Ref Docs query that is stored in the folder \\Public\Meridium\Modules\Operator Rounds\Queries\ML Administration Queries.

The following image shows an example of what the **Reference Documents** tab looks like in the Datasheet area on the **Route Management** page. A red outline has been added to the image to highlight the **Reference Documents** tab.

Each row in the grid represents one Reference Document record that is linked to the Measurement Location record represented by the selected Measurement Location node. The following columns are included in the query by default and contain the value

stored in the corresponding field in the Reference Document record represented by that row:

- **ID:** The ID of the reference document. This value is displayed as a hyperlink, which you can click this value to view the contents of the associated Reference Document record in a new window. This value is stored in the ID field in the corresponding Reference Document record.
- **Description:** The description entered for the reference document. This value is stored in the Description field in the corresponding Reference Document record.
- **Document Path:** The file path to the reference document. This value is stored in the Document Path field in the corresponding Reference Document record.

Below the grid, options appear that you can use to navigate the query results (e.g., **Next** and **Previous**). By default, 25 Reference Document records can be displayed per page and are sorted in alphabetical order by the value in the **ID** column. Below these options, the following buttons appear:

- **Add Existing:** Displays the **Find Items** window, where you can search for an existing Reference Document record to link to the Measurement Location record represented by the selected Measurement Location node. The search results will display only the Reference Document records that are not linked to the Measurement Location record represented by the currently selected Measurement Location node.
- **Add New:** Displays a new, blank Reference Document record in a new window, where you can create a new Reference Document record and link it to the Measurement Location record represented by the selected Measurement Location node.
- **Remove Selected:** After displaying a confirmation message, deletes the link between the Measurement Location record and the Reference Document record so that selected Reference Document record no longer appears on the **Reference Documents** tab for that Measurement Location node.

When you link a Reference Document record to a Measurement Location record, the new Reference Document record will appear automatically on the **Reference Documents** tab for the corresponding Measurement Location node.

Overview of the Route Pane

The following image shows the Route pane as it appears on the **Route Management** page when you open an existing Route. A red outline has been added to the image to highlight the Route pane.
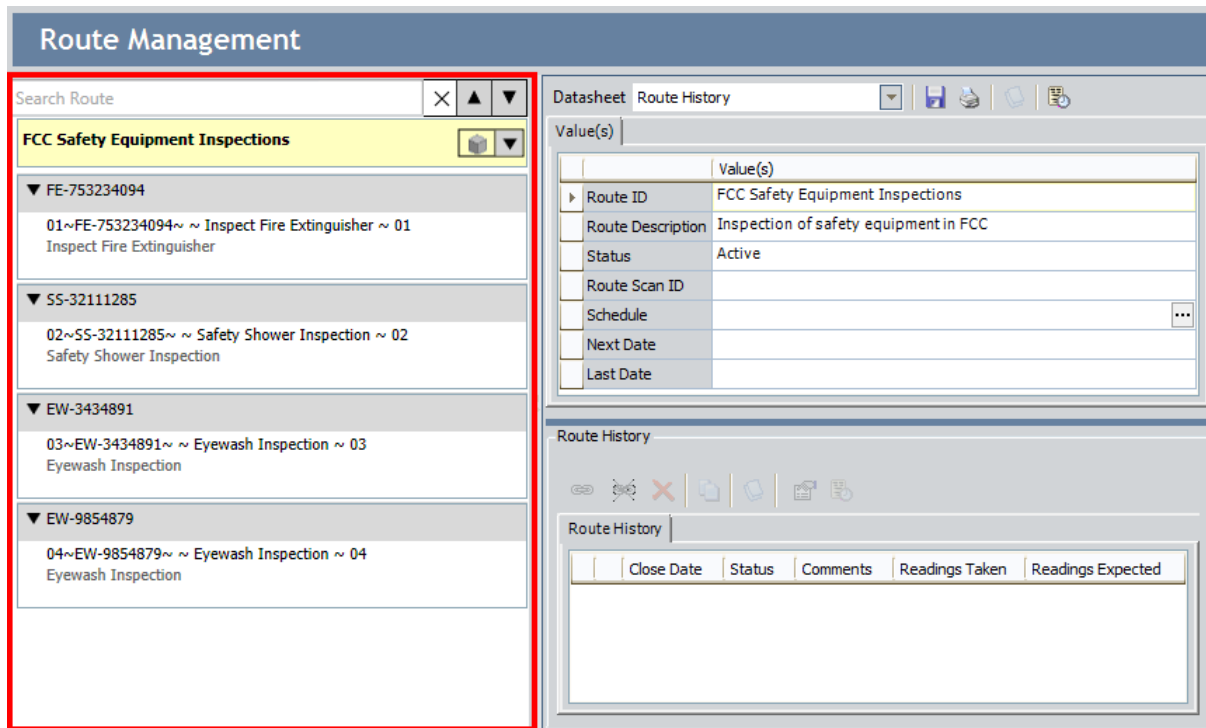
The Route pane contains the following items:

- The **Search Route** text box, where you can type search criteria to search the Measurement Location and Checkpoint Condition nodes that appear in the Route pane. The **Search Route** text box is outlined in red in the following image.
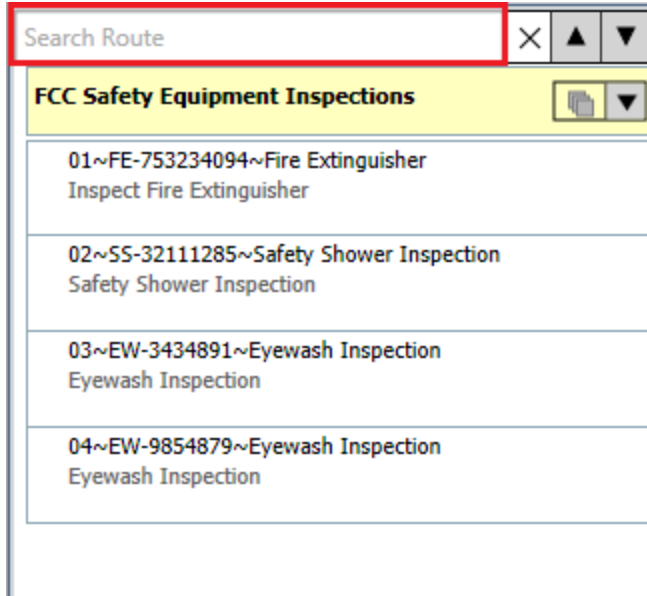
The search criteria will be highlighted within the contents of the Route, as shown in the following image.
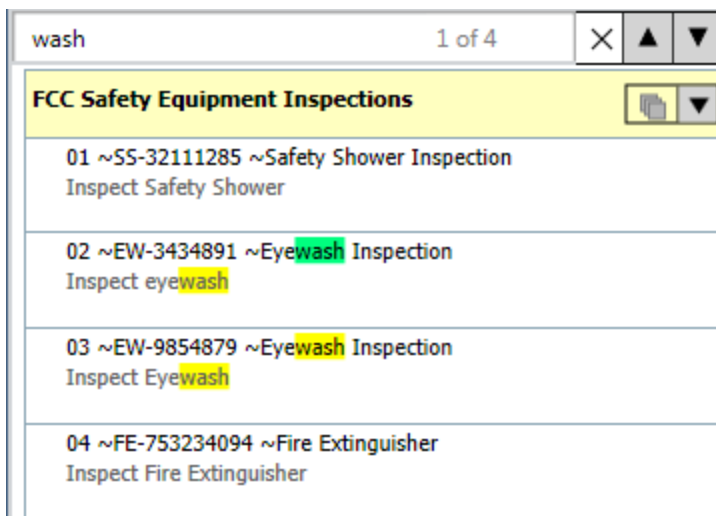
To the right of the **Search Route** text box, the following buttons appear:

[×] Clears the search criteria and the search results.

[▲] Highlights the previous search result.

[▼] Highlights the next search result.

- A root node representing a Route record. The Route node is always displayed at the root level in the Route pane. In the following image, the Route node is outlined in red.
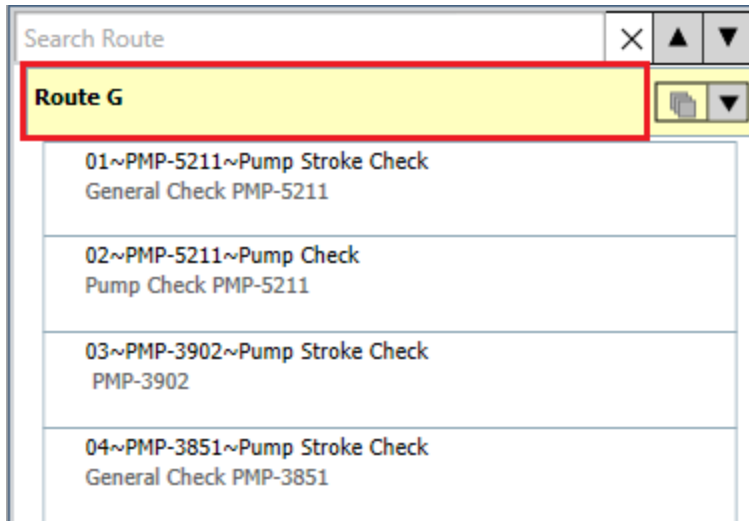
- The Views menu, which you can use to change the way the Measurement Location nodes are displayed in the Route pane. This menu is highlighted in red in the following image.
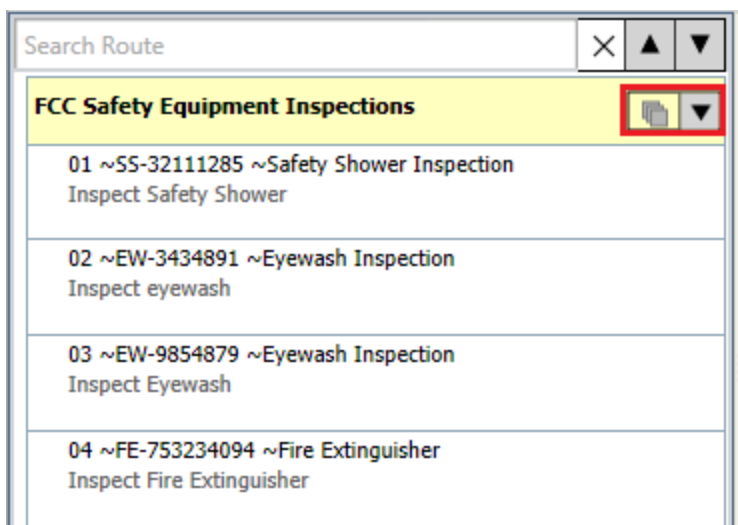
The icon that appears here depends upon the view that is currently applied to the Route pane. By default, the ML View is applied to the Route pane. You can click the ▼ button to change the view. The following options are available from the Views menu:

ML View: Displays the Measurement Location nodes in a list.

Asset View: Groups the Measurement Location nodes by the IDs of the Equipment or Functional Location records to which they are linked. In the baseline Meridium APM database, the value stored in the Asset ID field in the Measurement Location record is displayed in the Asset View. If, however, your system has been configured to use a Measurement Location family field other than Asset ID, that value will be displayed instead. Throughout the documentation, we assume that you are

using the Asset ID field.

- Multiple subnodes representing the contents of the Route (e.g., Measurement Location records). In the following image, the subnodes are outlined in red.
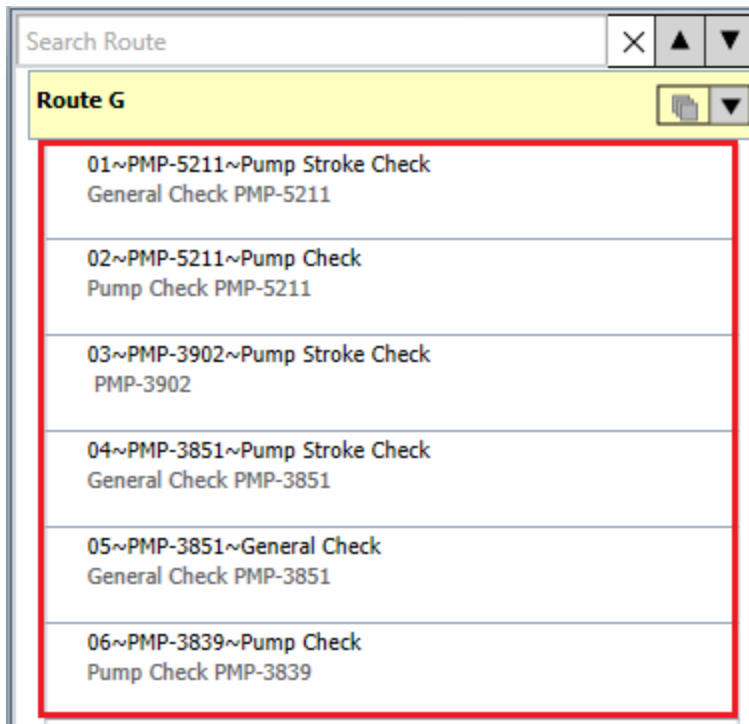
- Shortcut menus, which you can use to work with the contents of the Route.

You can use the features in the Route pane to complete the following tasks:

- Create Measurement Location records to represent each checkpoint on the Route.
- Sequence the order in which the checkpoints should be addressed.
- Add conditions to the Route, as needed.
- Search the checkpoints in the Route to locate the ones that you want to work with.
- View the Measurement Locations in a list or grouped by the Asset IDs of the Equipment or Functional Location records to which they are linked.

You can change the width of the Route pane by clicking and dragging the pane border to the right or left.

About the Contents of the Route Pane

The Route pane displays nodes representing the following records that together make up a Route:

- Route record.
- Measurement Location records that are linked to the Route record.
- Checkpoint Condition records that are linked to Measurement Location records.

Call outs have been added to the following image to highlight the nodes that represent the records in the preceding list.
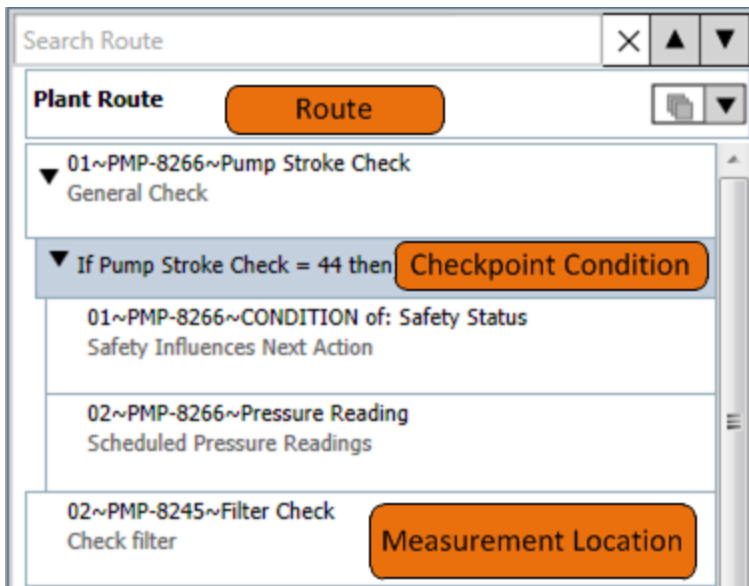
Measurement Location nodes are sorted automatically by the value in the Sequence field in the corresponding Measurement Location record, which represents to the order in which that checkpoint will be displayed on the device.

You can select the Route node and Measurement Location nodes in the Route pane to view and modify the contents of the corresponding record in the Datasheet area to the right of the Route pane. Checkpoint Condition records, however, can be modified within the Route pane itself. Their datasheet does not appear in the Datasheet area.

In addition, you can view the Measurement Location nodes grouped by the ID of the Equipment or Functional Location record to which they are linked. When you do so, the ID appears in the Route pane as a separate node that is shaded gray. Throughout this documentation, these nodes are referred to generically as *Equipment/Functional Location nodes* to indicate that they represent an ID in either an Equipment or Functional Location record. Where possible, we use the term *Equipment node* to refer specifically to a node that stores an ID in an Equipment record and *Functional Location node* to refer specifically to a node that stores an ID in a Functional Location record. The following image shows the Route pane, where the Measurement Location nodes are grouped by ID, and the Equipment/Functional Location nodes are shaded gray.
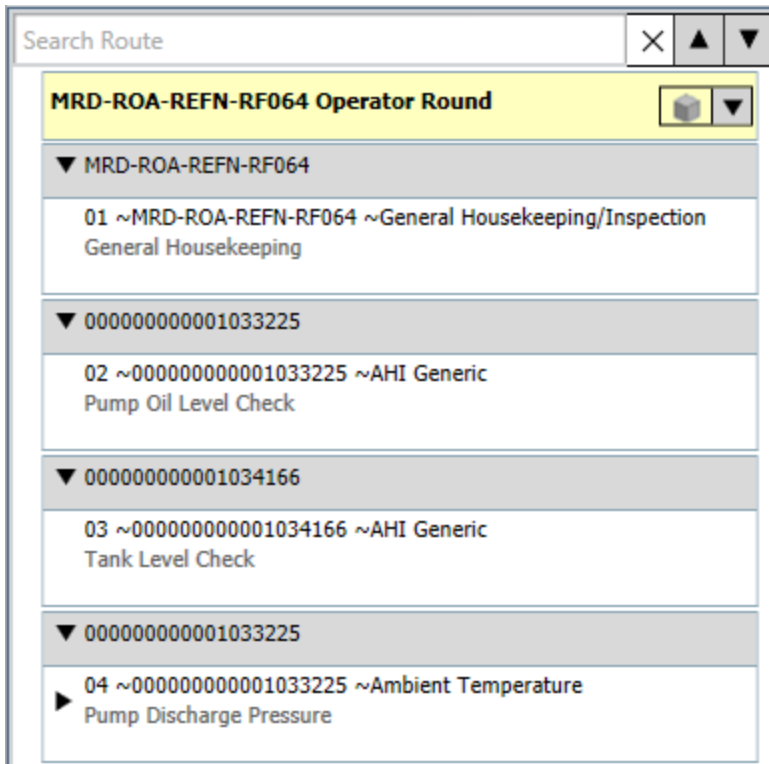
If a Measurement Location or Checkpoint Condition record is linked to one or more successor records, in the Route pane, an arrow will appear to the left of that Measurement Location or Checkpoint Condition node. The direction of the arrow indicates whether the successor nodes are displayed or hidden. You will see the following arrows in the Route pane:

▶ Indicates that the successor nodes are hidden. You can click this arrow to display the successor nodes.

▼ Indicates that the successor nodes are currently displayed. You can click this arrow to hide the successor nodes.

Note: These arrows should not be confused with the arrows that appear to the right of the **Search Route** text box and are used to navigate the search results.

When you right-click any node in the Route pane, a shortcut menu appears with options that allow you to work with the contents of the Route pane.

The Route Node

The Route pane will contain only *one* Route node, which will always appear at the top of the Route pane. The value that is displayed in the Route pane for the Route node is the value stored in the Route ID field in the corresponding Route record. Consider the following image, where the Route node is selected in the Route pane, and the contents of the corresponding Route record is displayed in the Datasheet area to the right.
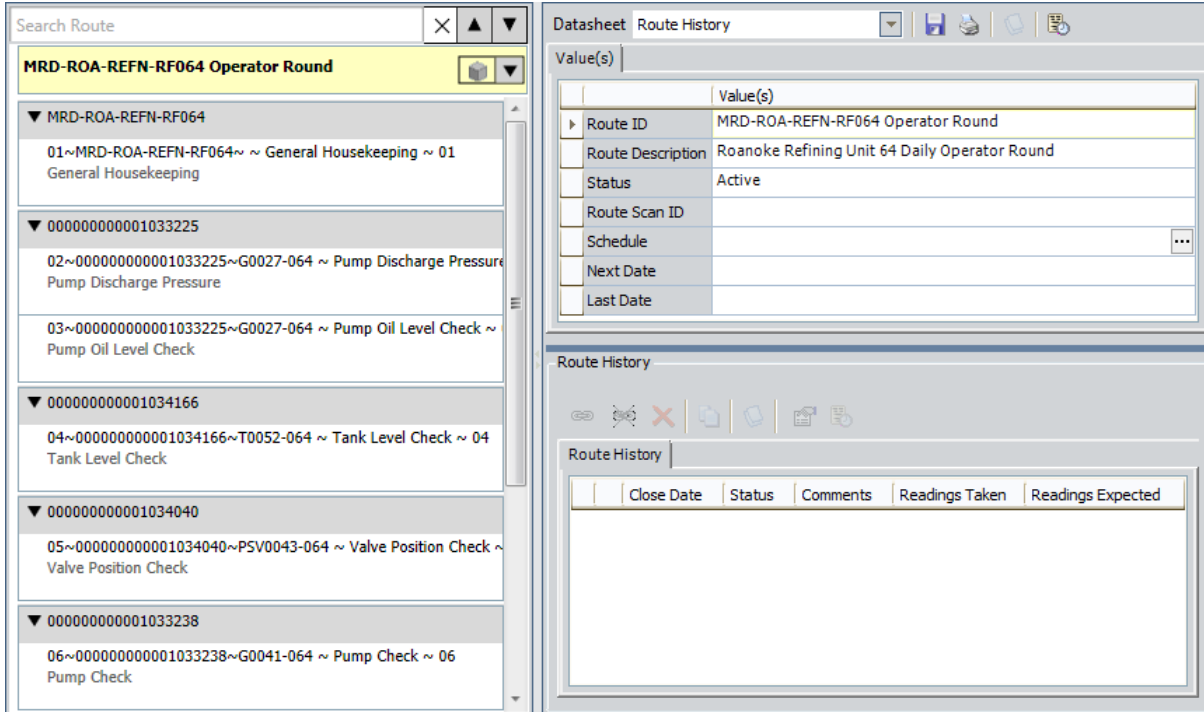
Using the datasheet, you can modify the contents of the Route record as desired, and then save the record using the 💾 button on the Datasheet toolbar. If you navigate away from the Route node without saving the changes to the Route record, a message will appear, asking if you want to save the changes.

Measurement Location Nodes

Measurement Location records store the details of the *checkpoint* for which a device user will need to record a reading. In the Route pane, Measurement Location nodes appear below the Route node representing the Route record to which they are linked. For each Measurement Location node that appears in the Route pane, the following information appears:

- The value stored in the Sequence field in the corresponding Measurement Location record.
- The Entity ID, as defined in the database for the Measurement Location family. In the baseline database, the ID Template for the Measurement Location family is **<Asset ID> ~ <Category>**, where:
  - **<Asset ID>** is the value stored in the Asset ID field in the corresponding Measurement Location record.
  - **<Category>** is the value stored in the Category field in the corresponding Measurement Location record.

  The ID Template can be modified via the Configuration Manager.

- The value stored in the ML Description field in the corresponding Measurement Location record. In the Route pane, the description value is always displayed below the Entity ID. Throughout this documentation, when we refer to a Measurement Location node, we refer to it by its ML Description.

When you link a Measurement Location record to a Route record, a new node will appear in the Route pane. The new node will be indented. Consider the following image.
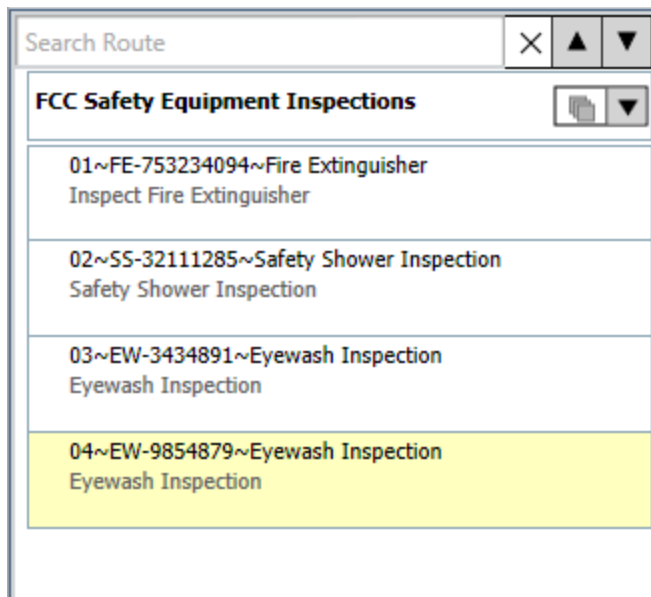
In this image, you can see that four Measurement Location records are linked to the Route record, as indicated by their position directly below the Route node.

Measurement Location records can also be linked to predecessor Checkpoint Condition records. These checkpoints will appear to the device user only if the defined condition is met. Conditions and Checkpoint Condition records are explained elsewhere in this documentation.

The order in which Measurement Location nodes are displayed in the Route pane represents the order in which the checkpoints will appear to the user on the handheld device. You can change the order in which the Measurement Location nodes are displayed in the Route pane by clicking and dragging the Measurement Location node from its current location and dropping it in the desired location.

You can modify Measurement Location records via the Datasheet area when a Measurement Location node is selected in the Route pane and save your changes using the using the ⊟ button on the Datasheet toolbar. If you navigate away from the Measurement Location node without saving the changes to the record, a message will appear, asking if you want to save the changes.

Checkpoint Condition Nodes

A *condition* identifies which checkpoint should appear on the device if the user enters a specific reading value for the previous checkpoint. In other words, the condition defines:

- The *initial checkpoint* whose reading value should trigger a subsequent checkpoint.
- The *specific reading value* that should trigger another checkpoint.
- The *subsequent checkpoint* that should be triggered by that reading value.

In the Meridium APM database, a single condition is represented by:

- One Measurement Location record that identifies the initial checkpoint.
- One Checkpoint Condition record that identifies the specific reading value.
- One or many Measurement Location records that identify the subsequent checkpoints.

In the Route pane, Checkpoint Condition nodes are displayed within the context of the Measurement Location node representing the initial and subsequent checkpoints. Specifically, the Checkpoint Condition node appears below the Measurement Location record representing the initial checkpoint. Likewise, the Measurement Location node representing the subsequent checkpoint appears below the Checkpoint Condition node.

Consider the following image. In this image, you can see the Checkpoint Condition node, which is colored blue and displayed below the initial Measurement Location node *Pump Discharge Pressure*. Below the Checkpoint Condition node, you can see the subsequent Measurement Location node *Verify Valve is Closed*.
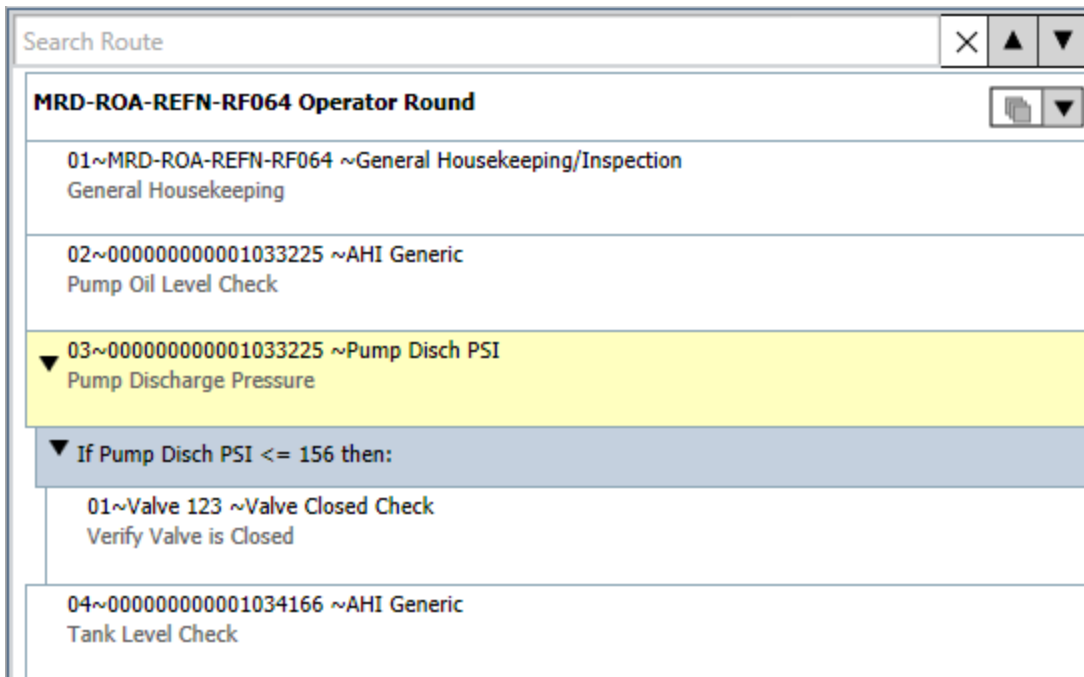
You can [modify Checkpoint Condition records via the Checkpoint Condition node](#), and your changes will be saved automatically.

The Shortcut Menu

The shortcut menu in the Route pane contains options that you can use to work with the contents of the Route pane. You can access this menu by right-clicking any node that is displayed in the Route pane. The options that appear on this menu will vary depending upon the node that you right-clicked to access the menu. If multiple nodes are selected at one time (e.g., if you are arranging the nodes), the shortcut menu will not appear.

The following image shows an example of what the shortcut menu looks like when it contains *all* the possible options.

Add ML

Add Existing ML

Add Condition

Add Template Group

Delete

Expand

Collapse
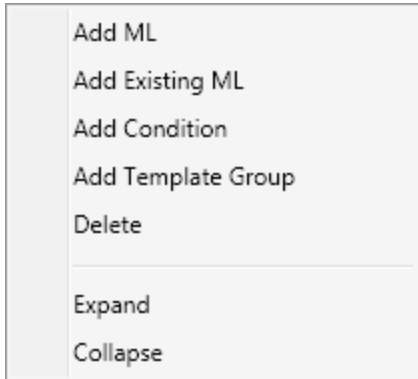
The following table provides details on the links that are available on this menu from each entry point.

Link	Description	Available From the Following Nodes
Add ML	Creates a new Measurement Location record and displays it in the Route pane in a location that is relative to the node that you right-clicked to access the menu.	Equipment/Functional Location Checkpoint Condition Measurement Location Route
Add Existing ML	Displays the **Add Existing Measurement Location to <Route ID>** window, where you can search for existing Measurement Location records and then add them to the Route.	Equipment/Functional Location Checkpoint Condition Measurement Location Route

Link	Description	Available From the Following Nodes
Add Condition	Creates a new Checkpoint Condition record and displays it in the Route pane in a location that is relative to the node that you right-clicked to access the menu.	Checkpoint Condition Measurement Location
Delete	After displaying a confirmation message, deletes the record represented by the node that you right-clicked to access the menu.	Equipment/Functional Location Checkpoint Condition Measurement Location
Expand	Displays ALL the nodes that are currently hidden below the node that you right-clicked to access the menu.	Equipment/Functional Location Checkpoint Condition Measurement Location Route
Collapse	Hides ALL the records that appear below the node that you right-clicked to access the menu.	Equipment/Functional Location Checkpoint Condition Measurement Location Route

About Changing the View in the Route Pane

When you work with a Route in the Route pane, you can choose to view the Measurement Location nodes in the Route pane in two ways:

- **As a flat list.** This view is applied to the Route pane by default the first time you access the **Route Management** page. This view is helpful when you want to view the list of checkpoints that will be executed on a Route, regardless of the associated equipment or location. This is the *ML View*.

  -or-

- **Grouped by the equipment or locations to which the checkpoints apply.** This view is helpful when you want to sequence the checkpoints based upon the equipment or location to which they apply. This is the *Asset View*. In the baseline Meridium APM database, the value stored in the Asset ID field in the Measurement Location record will be displayed on each Equipment or Functional Location node. If, however, your system has been configured to use a Measurement Location field other than Asset ID, that value will be displayed instead. Throughout this documentation, we assume that the Asset ID field is used.

You can change the view that is applied to the Route using the [Views menu](#), which appears to the right of the Route record in the Route pane, as shown in the following image.
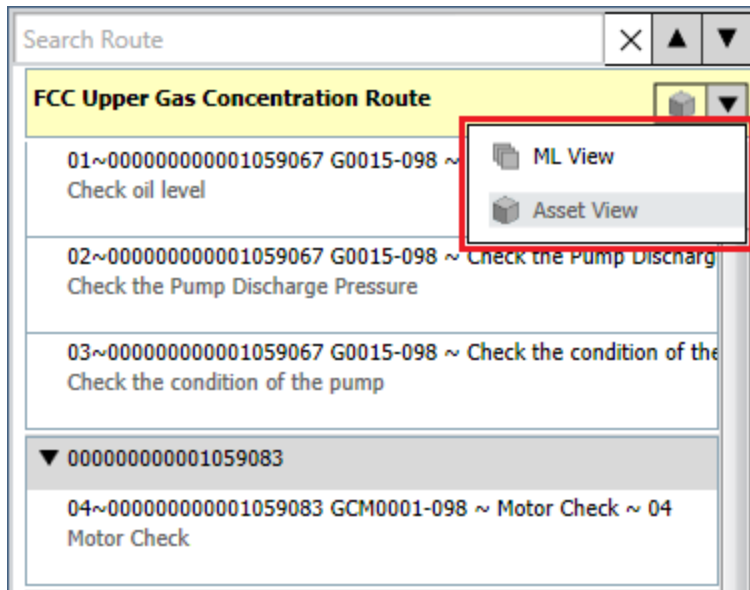
When you change the view that is applied to the Route pane:

- The record that was selected in the previous view will remain selected in the new view. For example, if a Measurement Location record is selected in the ML View and you change the view to the Asset View, the same Measurement Location record will be selected.

- If you had typed search criteria in the **Search** text box, your search criteria and search results in the previous view will be retained in the new view.

In addition, the view that is last applied to the Route pane when you leave the **Route Management** page is saved and will persist for the current user. This means that the next time that user logs in, the view that was last applied to the Route pane will be applied by default.

The functionality described in this documentation is available in both the Asset View and the ML View with one exception. In the Asset View, when you create a new Measurement Location record, the Asset ID field will be populated automatically with the ID of the Equipment or Functional Location record with which you are working. Consider the following image, where the Measurement Location record with the ML Description *Inspect Safety Shower* is selected in the Asset View.
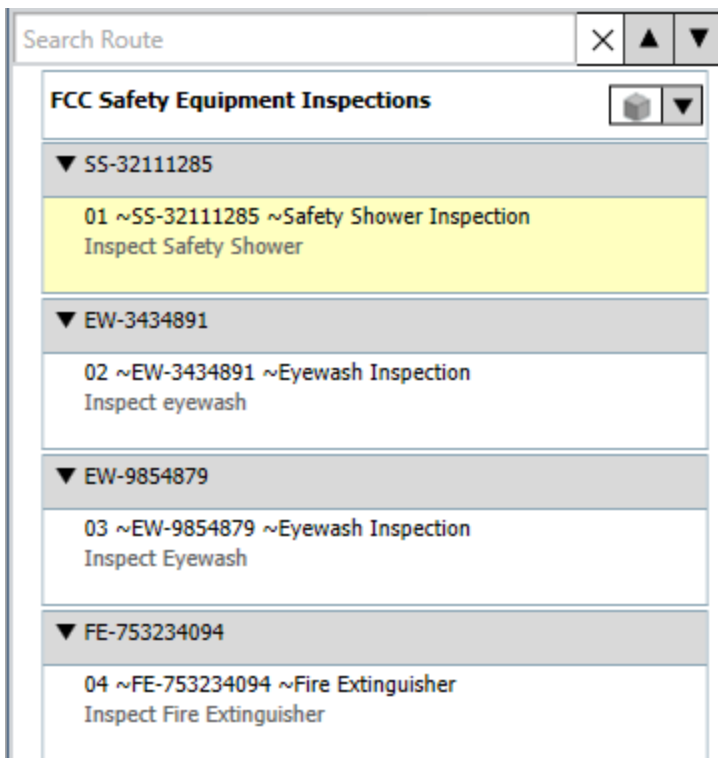
In this image, you can see that *Inspect Safety Shower* is linked to the Equipment record with the ID *SS-32111285*. In this case, if you add a new Measurement Location record either by selecting the Equipment node or the Measurement Location record, the new Measurement Location record will be linked automatically to the Equipment record with the ID *SS-321111285* and displayed under that Equipment node.

In the ML View, however, when you add a new Measurement Location record, you will need to specify the ID of the Equipment or Functional Location record to which you want to link the Measurement Location record. If you create a Measurement Location record without specifying an ID, when you switch to the Asset View, the Measurement Location record will appear below an empty Equipment/Functional Location node. At

this point, you can specify the ID, and the Measurement Location will be displayed automatically below the Equipment or Functional Location node with the specified ID.

> **Note:** This assumes that the ID you type is a valid ID for an existing record. If you type an ID that does not match an existing record, a link will not be created between the Measurement Location record and the Equipment or Functional Location record. The value that you type in the Asset ID field will, however, appear in the Asset View as an Equipment/Functional Location node.

The Views Menu
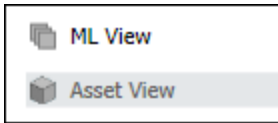
In the Route pane, the Views menu that appears to the right of the Route node contains the following options:

- **ML View:** Displays the Measurement Location nodes in a flat list. This is the view that is applied to the Route by default.
- **Asset View:** Displays the Measurement Location nodes grouped by the Equipment and Functional Location IDs that are stored in the Measurement Location records that the nodes represent.

When the Views menu is expanded, the view that is currently applied to the Route pane will be highlighted in gray. In the previous image, the **Asset View** is selected. When the menu is collapsed, the icon that is displayed on the menu indicates the view that is currently applied to the Route pane. This icon corresponds to the icon that appears to the left of the text on the expanded Views menu. For example, the following image shows the Views menu as it appears when it is collapsed in the *Asset View*.
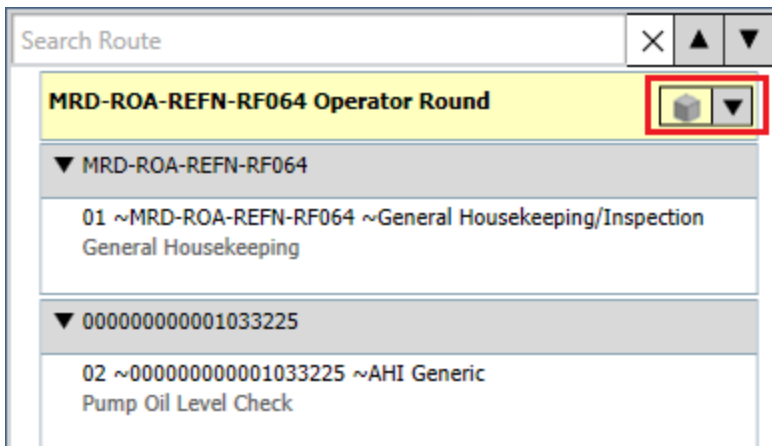
About Searching in the Route Pane

The Route pane contains a search feature, which you can use to locate the desired Measurement Location or Checkpoint Condition node. When you do so, you are searching the:

- Sequence, Entity ID, and ML Description values that are displayed in the Route pane for each Measurement Location node, as shown in the following image. Arrows have been added to the image to highlight each value.

-and-
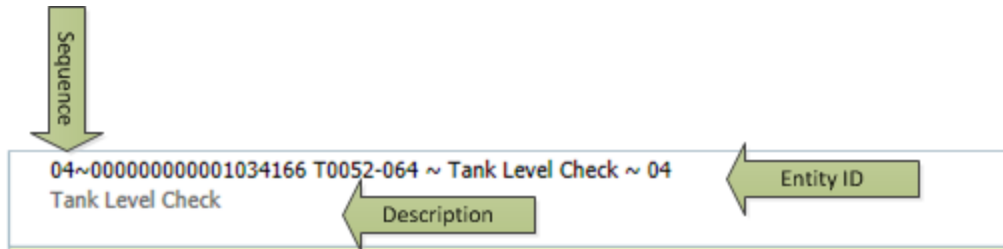
- The text that is displayed for each Checkpoint Condition node. The following image shows a Checkpoint Condition node.
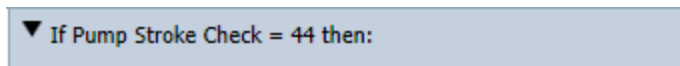
Search results will not be returned for the Route node or the Equipment/Functional Location nodes (shown in the Asset View).

Using the **Search Route** text box, you can search for character values, numeric values, symbols, and spaces. The Meridium APM system will search for the values as you type them. If you type multiple values, the Meridium APM system will search for these values as a continuous string. In other words, the Meridium APM system will search for the string that you type and return results that include that string as stand-alone text and within text.

In addition, the search feature is case *insensitive*, which means that you can search for lowercase or capitalized characters, and the Meridium APM system will locate matching results in either case.

Consider the examples that are shown in the following table.

If you search for:	...The Meridium APM system will return results like:
g	gear agitator

If you search for:	...The Meridium APM system will return results like:
ge	<mark>ge</mark>ar <mark>GE</mark>-101
g e	Heatin<mark>g e</mark>lement
-32	SS<mark>-32</mark>1111285
<=	<= (i.e., as in a Checkpoint Condition record)

When you start typing in the **Search Route** text box, the default text, *Search Route*, will disappear, and the Meridium APM system will return search results automatically. When results are found, in the Route pane:

- The matching text will be highlighted <mark>yellow</mark>, while the first matching result in the list is selected by default and highlighted green. As you navigate the search results, the currently selected result will be highlighted green. You can think of the green highlight as the cursor.

- The **Search Route** text box will display the number of results that are found in the format **x of n**, where **n** is the total number of results that are highlighted in yellow in the Route pane, and **x** is the number representing the search result that is currently selected and highlighted green.

- If the *first* search result exists in a node that is currently hidden, it will be displayed automatically. Any subsequent results that exist in hidden records, however, will remain hidden until you navigate to that result. Keep in mind that the total number of results will always be displayed in the **Search Route** text box.

Consider the following image, which shows search results for *ge* in the Route pane.
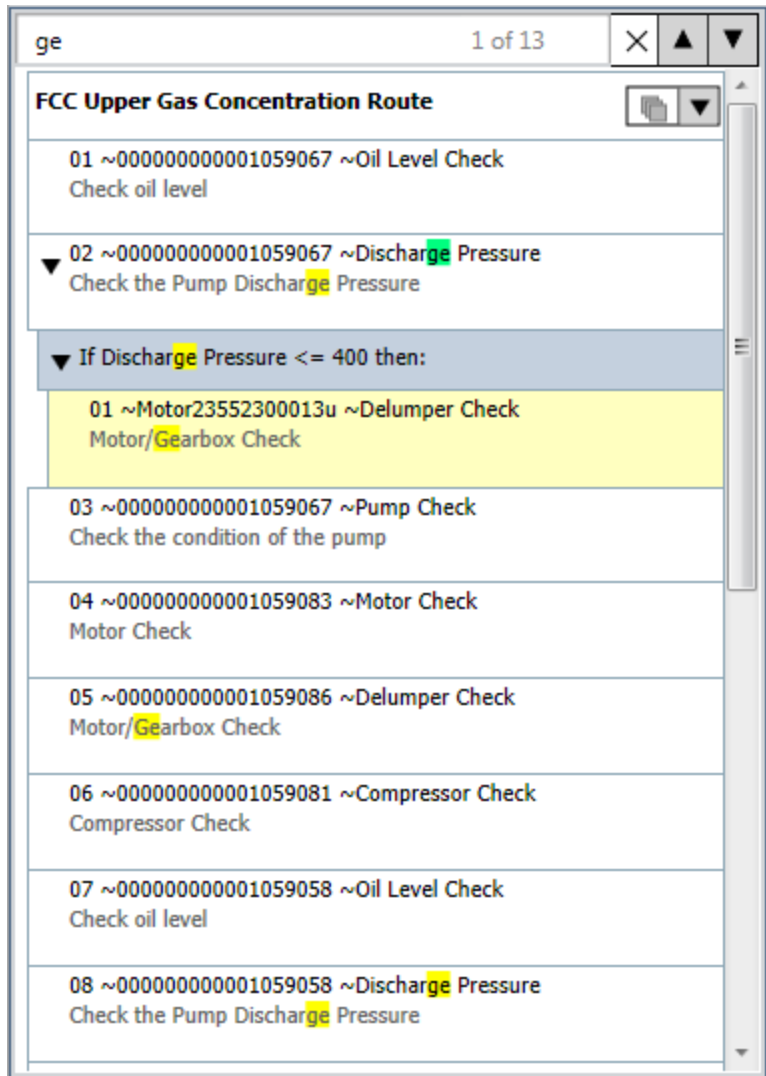
In this image, you can see that:

- 13 results were found, and the first result is selected by default and highlighted green.
- The subsequent search results are highlighted yellow.
- Results are highlighted only in the Measurement Location and Checkpoint Condition nodes.

If, however, you perform a search where no results are found:

- In the **Search Route** text box, the text **x of n** will appear as **0 of 0** and highlighted orange.
- No text in the Route pane will be highlighted yellow or green.
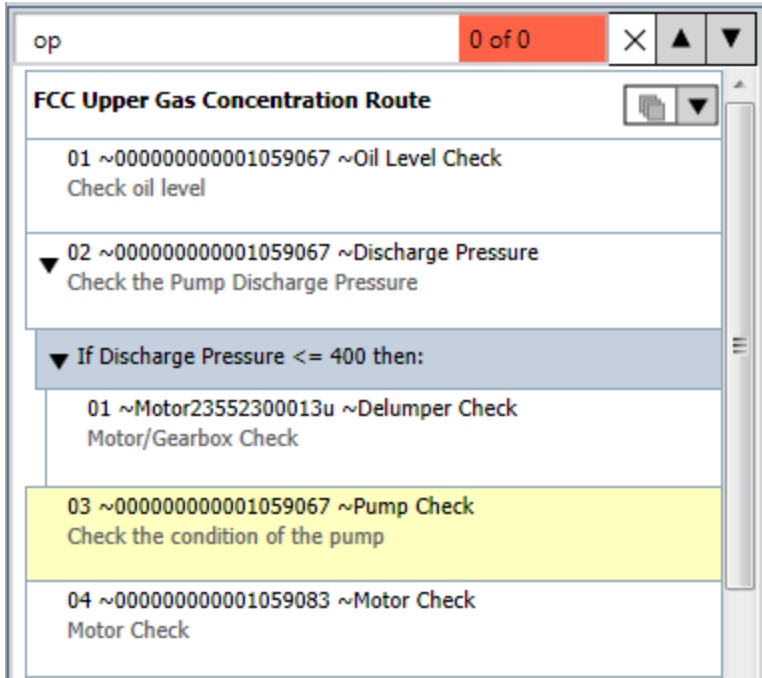
While the previous images show the *ML View*, the search feature works the same in the Asset View. For example, the following image shows search results for *ge* as they appear in the Asset View.
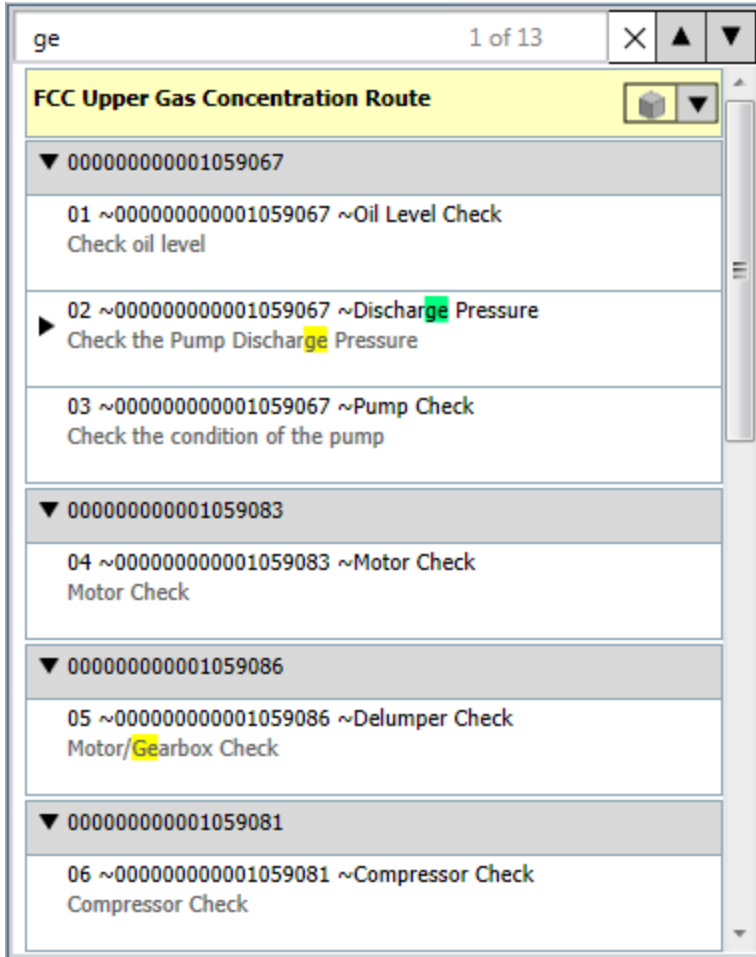
If you perform a search in one view and then switch to a different view, the search string that you typed in the previous view and the search results will be retained in the new view. In other words, you can switch views mid-search, and your results will be retained.

To clear the current search results and criteria, click the ☒ button to the right of the **Search Route** text box.

Working with Search Results in the Route Pane

After you perform a search in the Route pane and results are returned, you can browse those results using the arrow buttons to the right of the **Search Route** text box. In the following image, the arrow buttons are outlined in red.
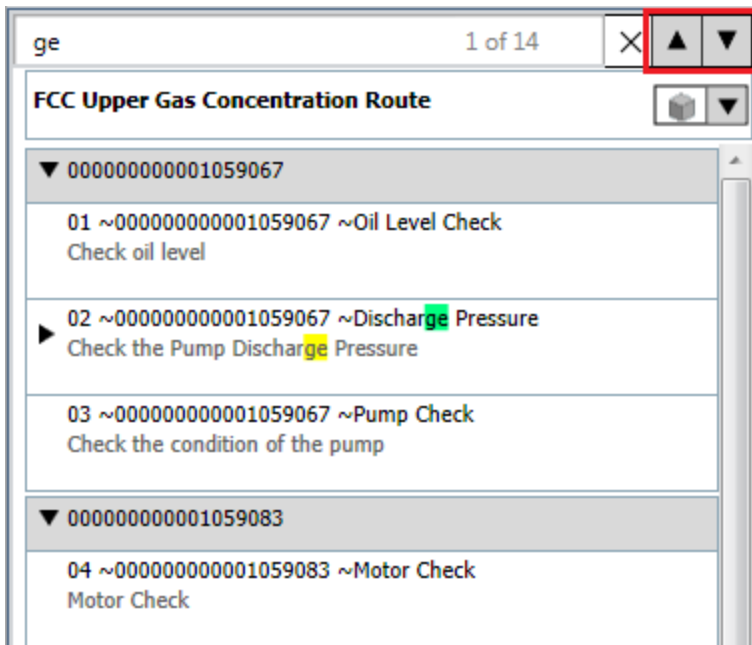
The ▲ button selects the previous search result.

The ▼ button selects the next search result.

As you browse the results in this way, the result that you navigate to will be highlighted green to indicate that it is currently selected. You can think of the green highlight as the cursor. Likewise, the result that you navigate away from (previously highlighted green) will be highlighted yellow. In addition, the **x** portion in the text **x of n** that appears in the **Search Route** text box will automatically display the number representing the result that is currently selected in relation to the total number of search results (**n**). Keep in mind that as you navigate the search results, the node that is currently selected in the Route pane will remain selected. Navigating the search results does not select the *node* in which the search result exists.

Continuing with the previous example, if you were to navigate to the second result using the ▼ button:

- The **x of n** text would be displayed as *2 of 14*, as shown in the following image.

  -and-

- The second result would be highlighted green, while the previous result would be highlighted yellow.
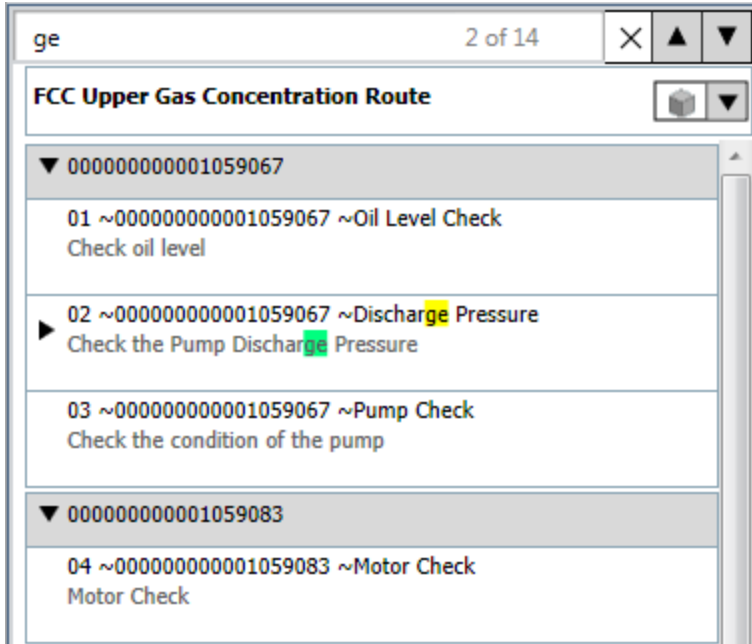
In that Asset View, if Measurement Location nodes are hidden and results are found in those records, the collapsed nodes will be expanded automatically as you navigate the results. Continuing with the previous example, in the image shown above, you can see that the predecessor Measurement Location node *Discharge Pressure* is collapsed. In this case, if you use the ▼ button to navigate to the next search result, because the successor Checkpoint Condition node contains the search text, the predecessor Measurement Location node will be expanded automatically, as shown in the following image.

About Creating Route Records

Before you can define the checkpoints that should be addressed along a Route, you must create a Route record. The Route records that you create will depend upon the needs of your company. For example, consider a water bottling facility, which contains a Bottling System that consists of the following equipment:

- Filling Machine
- Capping Machine
- Labeling Machine

Assume that each day you want someone to perform a general plant check on each machine in the Bottling System. In this case, you might want to create one Route record that will be linked to multiple Measurement Location records identifying detailed checks that should be performed on each piece of equipment. Alternatively, you could create one Route record for a *General Plant Check* Route, which would include a general check of the entire plant. For a Route like this, you might want to include the following check-points:

- Leak check
- Temperature check
- Ink level check
- Vibration check

The instructions in this documentation provide details on creating a Route record from the **Operator Rounds Start Page**.

Note that this is not the only method that you can use. You can also create a Route record by clicking the **Create Route** link on the **Route Tasks** menu on the **Operator Rounds Route Selection** page.

Creating a Route Record from the Operator Rounds Start Page

Before you can create Measurement Location records and link them to a Route record, you must create the Route record.

> **Note:** Only members of the MI Operator Rounds Administrator Security Group can access the features described in these instructions. If you are not a member of the MI Operator Rounds Administrator Security Group and you click the **Create New Route** link, an error message will appear, indicating that you have insufficient security privileges.

To create a Route record:

1. On the **Operator Rounds Start Page**, click the **Create New Route** link.

   The new Route record appears on the **Route Management** page.

2. In the Datasheet area to the right of the Route pane, in the **Route ID** cell, type a unique ID for the Route. The Route ID will be displayed in the Route pane and on the Handheld device.

3. In the **Route Description** cell, type a description of the Route. The Route description will appear on the **Operator Rounds Route Selection** page.

4. In the **Status** list, select **Active** or **Inactive**. *Active* is selected by default.

   > ŒHint: Inactive Route records will not be downloaded to a device unless you modify the Download to Hand Held query to include them.

5. In the **Route Scan ID** cell, type the scan ID.

6. Define a schedule for the Route, if desired.

7. On the datasheet toolbar, click the 🖫 button.

   The Route record is saved to the database. At this point you can add Measurement Location records to the Route.

> **Note:** If you want to assign a scan ID to the Route record when creating the Route record you can do so, but we recommend that you read the **About Scan IDs** topic in this Help system first.

The Route ID Value and the HandHeld Device

The value stored in the Route ID field in the Route record will be displayed in multiple locations on the Handheld device. The number of characters that can be displayed on the Handheld for the Route ID is less than the number of characters that can be saved in the Route ID field in the Route record. More specifically, the Handheld will display up to 30 characters for the Route ID.

> **Note:** In addition to individual letters and numbers, character limits include spaces, punctuation, special characters, and capitalization.

When you create or modify a Route record, if the number of characters that you enter in the Route ID field exceeds the 30 character limit on the Handheld, the **Route ID** cell will be colored yellow to indicate that not all of the characters will be displayed on the Handheld. The yellow cell color serves as a warning and does not prevent you from saving the Route record. For example, the following image shows a Route record, where the value in the Route ID field exceeds 30 characters.

When you are working with the Route ID field, keep in mind that the warning:

- Does not prevent you from saving the Route record.

- Appears only after you navigate away from the Route ID field.

- Will be displayed on the datasheet only until you *navigate away from the record*. After you navigate away from a newly created record, the warning will disappear.

- Will not appear again in the Route record where it was previously displayed, unless you modify the Route ID value. For example, if you save a Route record whose Route ID field meets the criteria for the warning to appear, the next time you open that record, the warning will appear again *only* if you modify the value in the Route ID field.

Accessing the Operator Rounds Route Selection Page

The **Operator Rounds Route Selection** page lets you view and manage the Route records that exist in the Meridium APM database.

To access the Operator Rounds Route Selection Page:

- On the **Operator Rounds Start Page**, click the **Route Management** link.

  The **Operator Rounds Route Selection page** appears, displaying all existing Route records.
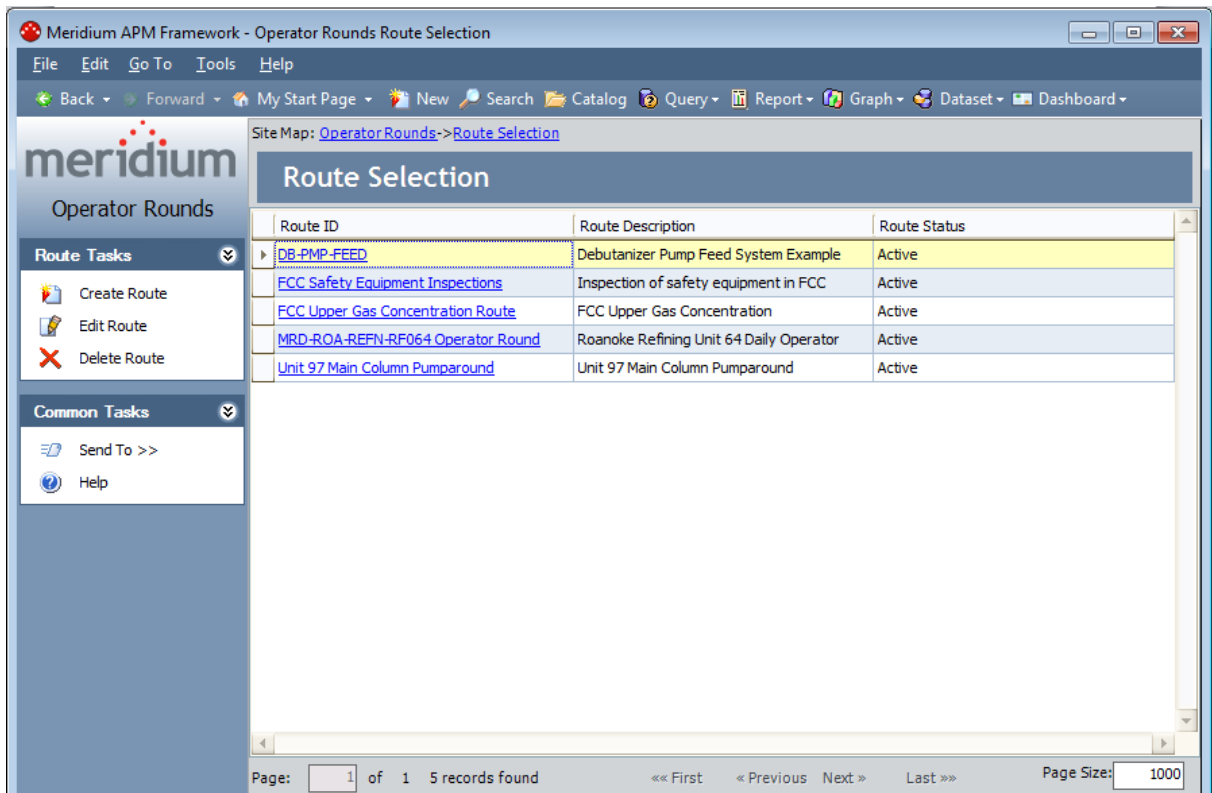
Aspects of the Operator Rounds Route Selection Page

The **Operator Rounds Route Selection** page contains a grid that displays the results of the Route Management query, which returns all the Route records that exist in the database in alphabetical order by Route ID. Each row in the grid represents one Route record. For each Route record, the following information appears:

- **Route ID:** The name of the Route as it appears in the Route record. The Route ID appears as a hyperlink, which you can click to open the Route record on the **Route Management** page.

- **Route Description:** The description of the Route as it appears in the Route record.

- **Route Status:** The status of a Route as it appears in the Route record. The status can be *Active* or *Inactive*. The following image shows an example of a grid that contains one active and one inactive Route.

	Route ID	Route Description	Route Status
▶	DB-PMP-FEED	Debutanizer Pump Feed System Example	Inactive
	FCC Safety Equipment Inspections	Inspection of safety equipment in FCC	Active

Only active Routes will be downloaded to the device. Inactive Routes will not be downloaded to a device unless you modify the Download query to include them.

Below the grid, various options (e.g., **First** and **Previous** links) are available that allow you to navigate the results. These options function just like they do in a standard grid.

The **Operator Rounds Route Selection** page contains the following task menus:

- Route Tasks
- Common Tasks

Using the **Operator Rounds Route Selection** page, you can:

- Open an existing Route.
- Create a new Route.

Route Tasks Menu
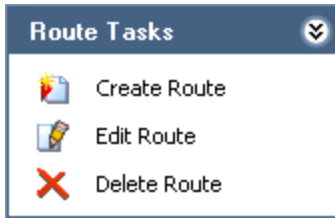
The **Route Tasks** menu on the **Operator Rounds Route Selection** page contains the following links:

- **Create Route:** Displays a new Route record on the**Operator Rounds Route Management**page.
- **Edit Route:** Displays the selected Route record on the **Operator Rounds Route Management** page, where you can modify the record and then save your changes.
- **Delete Route:** After asking for confirmation, deletes the selected Route record from the database.

Common Tasks Menu

The **Common Tasks** menu on the **Operator Rounds Route Selection** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), in an email message, or a Home Page. This link is disabled if there are no existing Route records.

- **Help:** Displays the context-sensitive Help topic for the**Operator Rounds Route Selection**page.

Opening an Existing Route

After a Route record has been created and saved, you can access the Route it represents and modify its content at any time via the **Operator Rounds Route Selection** page.

After a Route record has been *modified*, you can also open the Route it represents from the **Operator Rounds Recently Modified Routes** page.

To open an existing Route:

1. On the **Operator Rounds Start Page**, click the **Route Management** link.

    The **Operator Rounds Route Selection** page appears, displaying all the Route records that exist in the database.
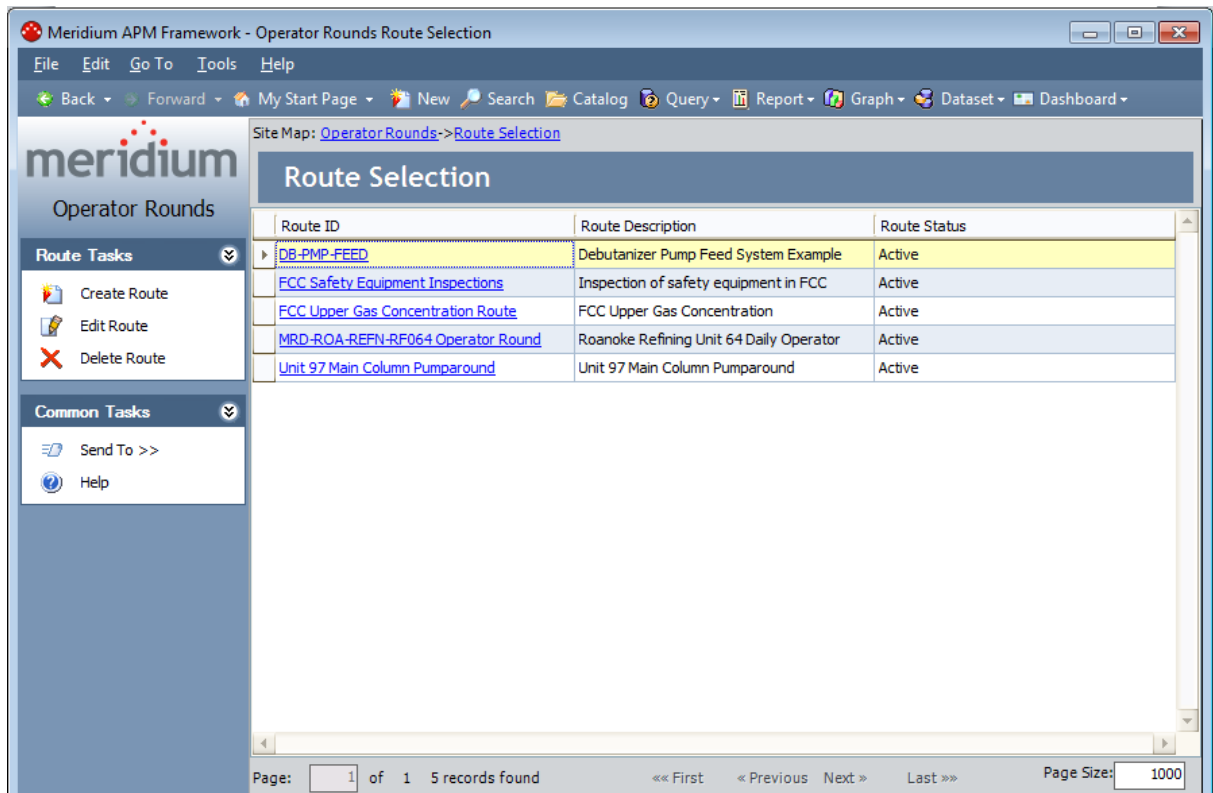
2. Select the row containing the Route that you want to modify, and on the **Route Tasks** menu, click the **Edit Route** link.

    The Route appears on the **Operator Rounds Route Management** page.

About Adding Checkpoints to a Route

Checkpoints are the stops along a Route at which a device user will need to record a reading. For each checkpoint that you want to include in a Route, you will need to add *one* Measurement Location record to the Route. The order in which the Measurement Location nodes are displayed in the Route pane represents the order in which the checkpoints will appear to the user on the handheld device. You can [change the order in which the Measurement Location nodes are displayed](#) by dragging the Measurement Location node from its current location and dropping it in the desired location.

A Measurement Location record can be linked to:

- One Route record as a successor. In the Route pane, a node representing a successor Measurement Location record that is linked to the Route record is displayed directly below the Route node.

- Checkpoint Condition records as a predecessor or successor. In the Route pane, a node representing a *successor* Measurement Location record that is linked to a Checkpoint Condition record is displayed below the Checkpoint Condition node representing that Checkpoint Condition record and indented to the right. Likewise, a node representing a *predecessor* Measurement Location record that is linked to a Checkpoint Condition record, is displayed above the Checkpoint Condition node, and the Checkpoint Condition node is indented to the right.

Measurement Location records that appear below a Checkpoint Condition record will appear to a device user *only* if the [condition defined in the Checkpoint Condition record](#) is met.

When you add a Measurement Location record to a Route, the new node that appears in the Route pane for that record will appear in a location that is relevant to the currently selected node. Before you create a Measurement Location record, use the following guidelines to determine which node to select in the Route pane so that the new node will appear in the desired location:

- If you want the new Measurement Location node to appear below an existing Measurement Location node, select the existing Measurement Location node.

- If you want the new Measurement Location node to appear below an existing Checkpoint Condition node, select the existing Checkpoint Condition node.

- If you want the new Measurement Location record to appear *last* in the Route pane, select the Route record.

When you are adding Measurement Location records to a Route, keep in mind that the values in the record define the checkpoint and directly represents what the device user will see on the Handheld. More specifically, the values stored in some Measurement Location family fields are:

- [Displayed directly on the **Readings - Detail** screen](#) when you are recording a reading for the corresponding checkpoint.

- [Used by the Meridium APM system to display messages to the device user](#) that

provide guidance about the reading value that should be recorded for a that checkpoint.

You can add Measurement Location records to a Route using the following methods on the **Route Management** page:

- [Create a single Measurement Location record from scratch](#).
- [Create a single Measurement Location record from a Measurement Location Template](#).
- [Add one or more existing Measurement Location records](#).

Creating a Measurement Location Record from Scratch

After you have created a Route record, you can create Measurement Location records and link them to the Route record to represent a checkpoint on that Route. The following instructions assume that you are viewing the desired Route on the **Route Management** page.

To create a Measurement Location record from scratch:

1. In the Route pane, select the node that will determine the position of the new Measurement Location node. For example, if you want a new Measurement Location node to appear below an existing Measurement Location node, select the existing Measurement Location node. In the following image, the first Measurement Location node is selected, so the new Measurement Location node will appear below it.

2. On the **Route Tasks** menu, click the **Add ML** link.

   A new Measurement Location record is created, a corresponding node appears in the Route pane, and the contents of the record are displayed in the Datasheet area to the right of the Route pane.

3. In the datasheet area, complete the fields as desired. Note that the ML Type field is required.

4. On the datasheet toolbar, click the 💾 button.

   The Measurement Location record is saved to the database.

Creating a Measurement Location Record from a Template

After you have created a Route record, you can create a Measurement Location record and link it to the Route record to represent a checkpoint on that Route. The following instructions assume that you are viewing the desired Route on the **Route Management** page and that the desired Measurement Location Template exists.

To create a Measurement Location record from a Template:

1. In the Route pane, select the node that will determine the position of the new Measurement Location node. For example, if you want a new Measurement Location node to appear below an existing Measurement Location node, select the existing Measurement Location node. In the following image, the first Measurement Location node is selected, so the new Measurement Location node will appear below it.

2. On the **Route Tasks** menu, click the **Add ML** link.

   A new Measurement Location record is created, a corresponding Measurement Location node appears in the Route pane, and the contents of the record are displayed in the Datasheet area to the right of the Route pane.

3. In the datasheet area, in the **Template** list, select the Measurement Location Template record whose field values you want to use to populate fields in this Measurement Location record, and then click in any other cell.

The remaining fields are populated based on the values in the selected Measurement Location Template record. Note that you can modify the values if desired.

4. On the datasheet toolbar, click the 💾 button.

   The Measurement Location record is saved to the database.

Adding Existing Measurement Location Records to a Route

The following instructions provide details on searching for one or more existing Measurement Location records and adding them to a Route. A given Measurement Location record can be linked to only one Route record. This means that the search results will include only Measurement Location records that are not linked to a Route record or a Checkpoint Condition record.

When you add to a Route a Measurement Location record that is linked to an Equipment or Functional Location record, that link will be retained. Likewise, if you add a Measurement Location record that is not linked to an Equipment or Functional Location record, in the Asset View, the new node will appear under a blank Equipment/Functional Location node.

To add existing Measurement Location records to a Route:

1. [Open the Route](#) to which you want to add an existing Measurement Location record.

2. Select the node under which you want the new Measurement Location node to appear.

3. On the **Route Tasks** menu, click the **Add Existing ML** link.

4. The **Add Existing Measurement Locations to <Route ID>** window appears. The **Search In** list contains the *Measurement Location* family by default, and you cannot change this value.

5. Perform a search for the Measurement Location records that you want to add to the Route.

6. In the search results, select the rows containing the records that you want to add to the Route.

7. Click the **Add** button.

   The selected Measurement Location records are linked to the Route record, and nodes representing these records are added to the Route pane. The following image shows what the new nodes look like in the ML View:

...and this image shows what the new nodes look like in the Asset View. Notice that a new Equipment node has been created for the Equipment record to which the Measurement Location records are linked.

Search Route	✕ ▲ ▼

Unit 97 Main Column Pumparound 📦 ▼

▼ GM0019-097

01~GM0019-097~Motor Check
Motor Check

▼ G0019-097

02~G0019-097~Pump Check
Check the condition of the pump

▼ E0011A-097

03~E0011A-097~Heat Exchanger Check
Heat Exchanger Check

▼ 000000000001016872

04~000000000001016872~
Average Flow Rate (DCS)

05~000000000001016872~
Average Pressure (DCS)

Defining Reading Value Parameters for Numeric Checkpoints

For *numeric* checkpoints, you can provide guidance to the device user about the reading value that should be entered for each checkpoint. Unlike defining alerts, where you can specify the points at which further action will be required from the device user, reading value parameters provide guidance to the device user on the reading values that are valid for that particular checkpoint. Specifically, you can define:

- A range of valid reading values that consists of a maximum and minimum value. If the device user enters a reading that is outside that range, a message will appear indicating that the reading value must fall between the minimum and maximum values that defines the range. These values are stored in the Maximum Valid Value and Minimum Valid Value fields in Measurement Location records, respectively.

- Only a minimum valid reading value, and if the device user enters a reading that is lower than the specified minimum valid reading value, a message will appear indicating that the reading value must be higher than the minimum valid reading value. This value is stored in the Minimum Valid Value field in Measurement Location records.

- Only a maximum valid reading value, and if the device user enters a reading that is higher than the specified maximum valid reading value, a message will appear indicating that the reading value must be lower than the maximum valid reading value. This value is stored in the Maximum Valid Value field in Measurement Location records.

- A range of reading values that represent a target for that reading and consists of a maximum and minimum target value. This range will be displayed on the **More Information** screen on the device. These values are stored in the Maximum Target Value and Minimum Target Value fields in Measurement Location records, respectively.

For example, assume that a device user will need to record for a pump checkpoint the number of strokes the rod takes per minute and that the reading value should be between *150* and *200*. To provide this type of guidance on the device, you can define the following values in the Measurement Location record representing the checkpoint:

Maximum Valid Value: 200

Minimum Valid Value: 150

On the Handheld, if you enter for this checkpoint the reading value *222*, a message will appear automatically, indicating that the reading value must be between the defined range. The following image shows the message that would be displayed in this case.

PMP-1001
Pump

General Check PMP-1001

Value must be between 150 and 200.

Value

Last: 50   UOM: SPM

Description

Action   ▼

> **Note:** In this image, you can see that the **Value** text box is empty. This is because the mobile Operator Rounds system will automatically clear the invalid value if one is entered. If a *valid* reading value was entered previously, that value will be displayed in its place.

In this way, you could also define only a minimum valid value parameter. For example, if the Maximum Valid Value field is empty but the Minimum Valid Value field contains the value *150*, if you enter a reading value on the device that is lower than *150*, a message like the one shown in the following image will be displayed to the device user.

PMP-1001
Pump

General Check PMP-1001

Value must be greater than 150.

Value

Last: 151   UOM: SPM

Description

Action   ▼

Likewise, you could define only a maximum valid value parameter, and a message similar to the one shown in this image would be displayed to the user.

From any reading, you can view the target range that is defined for the checkpoint via the More Information screen. In this way, device users can look at this range to determine the reading value that is expected to be entered for the checkpoint. Continuing with the same example, assume the reading value that is expected for the checkpoint should be between *160* and *175*. To provide this type of guidance on the device, you can define the following values in the Measurement Location record representing that checkpoint:

Maximum Target Value: 175

Minimum Target Value: 160

On the Handheld, if the device user accesses the **More Information** screen from this checkpoint, they will see the defined target range. The following image shows what the **More Information** screen looks like in this case. A red outline has been added to the image to highlight the target range values.
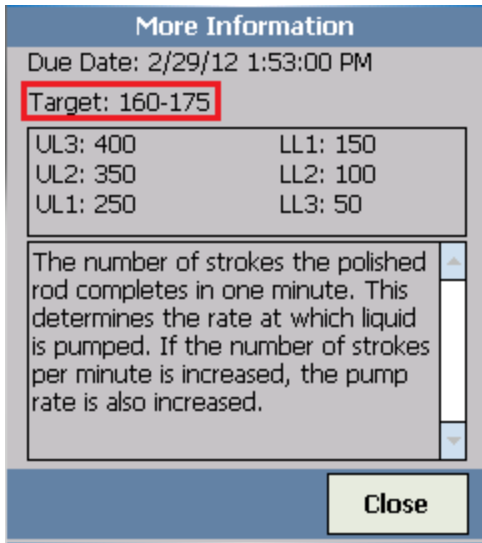
OE Hint: If you want only one value to be displayed for the target value, you can enter a value in only one of the Measurement Location fields for this purpose (i.e., either Maximum Target Value or Minimum Target Value). If you do so, only that value will be displayed in the location outlined in the preceding image.

About Measurement Location Fields and the Readings - Detail Screen

The values stored in the following Measurement Location family fields will be displayed on the **Readings - Detail** screen on the device. In other words, for each of the following fields, a corresponding section appears on the **Readings - Detail** screen that will display the value from that field.

- Asset ID
- Asset Description
- ML Description

While the values stored in the Allowable Values field are also displayed on the device, the additional functionality associated with the Allowable Values field exceeds the scope of this discussion. For that reason, the [Allowable Values field is explained elsewhere in the documentation](#).

The number of characters that will appear on the **Readings - Detail** screen for each of the fields listed above is less than the number of characters that you can save in that field in the Measurement Location record. More specifically, on the **Readings - Details** screen:

- The Asset ID section will display up to 40 characters.
- The Asset Description section will display up to 80 characters.
- The ML Description section will display up to 70 characters.

> **Note:** In addition to individual letters and numbers, character limits include spaces, punctuation, special characters, and capitalization.

When you create or modify a Measurement Location record, if the number of characters you enter in the field in the Measurement Location record exceeds the number of characters that will be displayed on the **Readings - Detail** screen (as described in the preceding list), the Meridium APM system will color the cell yellow to indicate that not all of the characters will be displayed on the Handheld. The yellow cell color serves as a warning and does not prevent you from saving the Measurement Location record. For example, the following image shows a Measurement Location record whose **ML Description** cell is colored yellow because the value in the field exceeds 70 characters, which is the character limit for the corresponding section on the **Readings - Detail** screen.

	Value(s)
Template	Temperature Check
Asset ID	PMP-8269
Equipment Technical Number	
Asset Description	COOLING WATER
ML Description	This Checkpoint requires a temperature reading in Degrees Farenheit (F)
ML Type	Numeric
Unit of Measure	Degrees Farenheit (F)
Category	
Allowable Values	
Maximum Valid Value	
Minimum Valid Value	
Maximum Target Value	
Minimum Target Value	
More Information	
Status	Active
Sequence	04
Product	
Bluetooth Measurement Type	
Barcode ID	
Scan to Unlock?	☐

When you are working with the fields listed above, keep in mind that the warning:

- Does not prevent you from saving the Measurement Location record.
- Appears only after you navigate away from the field.
- Will be displayed on the datasheet only until you *navigate away from the record*. After you navigate away from a newly created record, the warning will disappear.
- Will not appear again in a record where it was previously displayed, unless you modify the value in the affected field. For example, if you save a Measurement Location record whose ML Description field meets the criteria for the warning to appear, the next time you open that record, the warning will appear again *only* if you modify the value in the ML Description field.

Because you can use Measurement Location Template records to create Measurement Location records and populate them automatically with the values stored in the template, the same rules exist for the corresponding fields in the Measurement Location Template family.

About Configuring Alerts Based on Readings

If you want device users to receive alerts on the device when they record reading values that meet certain criteria, you can define the criteria on the **Limit Values** tab of the ML Task View datasheet for the Measurement Location family. You can configure alerts for character readings and for numeric readings.

> **Note:** If you create Reading records in the Meridium APM Framework, alerts will not be displayed for the reading value.

Configuring Alerts for Character Readings

When a checkpoint requires a character reading, you can configure alerts that will appear when the readings *equal* a specified value. For example, suppose the Measurement Location record for the *Flow Rate Check* checkpoint contains the following allowable values: *Normal, None, High,* and *Low*. In this case, you might configure alerts that would appear on the device if a user enters a reading value of *None, High,* or *Low*. To do so, you would configure the **Limit Values** tab of the Measurement Location record as shown in the following image.
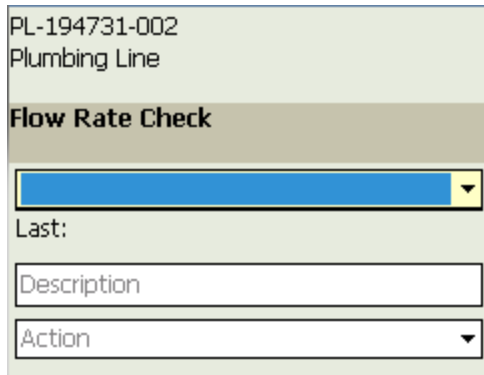
Identification	Limit Values	Numeric	Character	Message	Action
Upper Level 3			High	Needs maintenance.	Check resevoir
Upper Level 2			None	Needs maintenance	Check pump
Upper Level 1					
Lower Level 1			Low	Needs maintenance	Inspect seals
Lower Level 2					
Lower Level 3					

Notice that the **Character** column contains the values that will cause an alert to appear: *None, High,* and *Low*. The **Message** column contains the message that will be displayed for each alert, and the **Action** column contains the values that will be available in the **Action** list on the **Readings -Alert** screen.

> **Note:** The values in the **Action** list on the device will be displayed in the order in which they appear (from top to bottom) in the **Action** column on the **Limit Values** tab.

For example, the following image shows what the *Flow Rate Check* checkpoint looks like on the device.

PL-194731-002
Plumbing Line

Flow Rate Check

Last:

Description

Action

If you enter a reading value of *Low* for this checkpoint, the text *Needs maintenance* should be displayed on the device, as indicated by the **Message** column in the corresponding Measurement Location record. This value is shown in the image of the **Limit Values** tab. The following image shows what the alert for the reading value *Low* looks like on the device.

PL-194731-002
Plumbing Line

Flow Rate Check

Low

Last:

Description

Action

Needs maintenance

The **Action** list would contain the values *Check reservoir*, *Check pump*, and *Inspect seals*, as indicated by the **Action** column in the corresponding Measurement Location record. These values are shown in the image of the **Limit Values** tab. The following image shows these values in the **Action** list. A red outline has been added to the image to highlight these values. The device user can select one of these values to indicate which task they performed in response to the alert.
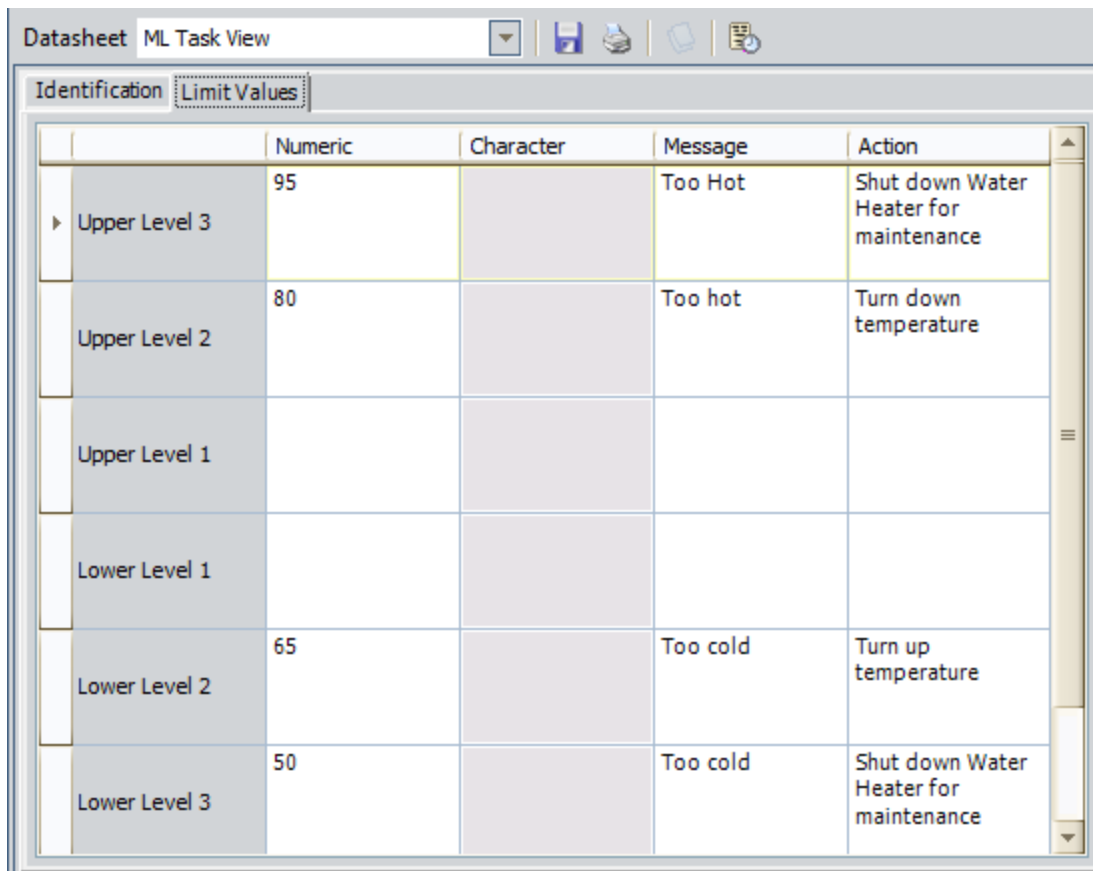
Configuring Alerts for Numeric Readings

When a checkpoint requires a numeric reading value, you can configure alerts that will appear when the reading value equals a specified value or falls between a certain range of values, depending on the following conditions:

- If allowable values ARE defined in a Measurement Location record where the ML Type field contains the value Numeric, you can configure alerts that will appear when the readings *are equal to* those values.

- If allowable values are not defined in a Measurement Location record where the ML Type field contains the value Numeric, you can configure alerts that will appear when the readings *fall within a range* of values.

For example, suppose a checkpoint requires a temperature check and accepts numeric reading values. If you do not define allowable values on the **Identification tab** of the Measurement Location record, which means users can enter *any* reading value on the device, you might want to alert them if the temperature falls below a certain temperature or rises above a certain temperature.

In the following image, you can see that Lower Level and Upper Level values have been defined for *Upper Level 3*, *Upper Level 2*, *Lower Level 2*, and *Lower Level 3*.

		Numeric	Character	Message	Action
▶	Upper Level 3	95		Too Hot	Shut down Water Heater for maintenance
	Upper Level 2	80		Too hot	Turn down temperature
	Upper Level 1				
	Lower Level 1				
	Lower Level 2	65		Too cold	Turn up temperature
	Lower Level 3	50		Too cold	Shut down Water Heater for maintenance

The *Lower Level 3* value of *50* indicates that if a reading value is *less than or equal to 50*, an alert will be displayed with:

- The message *Too cold*, as specified by the value in the **Message** cell.

  -and-

- The action *Shut down water heater for maintenance*, as specified in the **Action** cell.

Similarly, the Upper Level 2 value of 80 indicates that if a reading value is *greater than or equal to 80*, an alert will be displayed with the message *Too Hot* and the available action *Turn down temperature*.

> **Note:** The values in the **Action** list on the device will be displayed in the order in which they appear (from top to bottom) in the **Action** column on the **Limit Values** tab.

When you are working with *lower-level values*, keep in mind that any reading that is *less than or equal to* the value will trigger the alert. Likewise, when working with *upper-level values*, keep in mind that any reading that is *greater than or equal to* the value will trigger the alert.

Continuing from the previous example, if a device user enters a reading value of *80* at this checkpoint, the following alert would appear.

In the **Action** list, you would also see the list of actions indicated by the values in the **Action** cells in the corresponding Measurement Location record. Device users can select one of these values to indicate which task was performed in response to the alert.

WH-00002452
Water Heater

Check water temperature

80 ▼

Last:

Description

▼

Shut down Water Heater for maintenance
Turn down temperature
Turn up temperature
Shut down Water Heater for maintenance

About Schedules

In most cases, you will want readings to be taken for a piece of equipment or location on a regular basis. For example, you might need to check the water tank on the bottling line for leaks every six months. Likewise, if you operate a machine with safety switches, you might want to check the safety switches each time a new shift begins. To manage these scenarios, you can define schedules that specify when readings should be completed. On a handheld device, you will use these dates when you select the Routes that should be downloaded to the device.

You can define a schedule for a Route, individual checkpoints within a Route, or a combination of these. The type of schedule that you use will depend on the specific Routes and checkpoints that you need to manage. For example:

- If all of the checkpoints within a Route should be due at the same time, you can define a schedule for a Route.
- If the checkpoints within a Route should be due at different times, you can define a separate schedule for each checkpoint.
- If most of the checkpoints within a Route should be due at the same time, but some checkpoints should be due *less* frequently than the other checkpoints, you can define a schedule for the Route *and* for certain checkpoints within the Route.

> **Note:** If a checkpoint is associated with both types of schedules, the checkpoint will be downloaded to the device only if *both* schedules indicate that it is due.

In many cases, recording readings on a defined schedule ensures industry compliance. If your system has been configured correctly, the Meridium APM system automatically tracks whether readings associated with checkpoint schedules are compliant or not. Therefore, the schedule that you define for an individual checkpoint also depends upon the compliance standards for the associated piece of equipment or location.

> **Note:** The Meridium APM system tracks compliance only for individually scheduled checkpoints (i.e., based on schedules defined via Checkpoint Task records), not for entire Routes (i.e., based on schedules defined via Route records). However, you can view the number of checkpoint readings that were completed out of the total number of readings expected for a Route via the Route History records that are created each time a Route is uploaded to Meridium APM.

About Defining Schedules for Routes

You can define a schedule for a Route via the Route record. The Route schedule that you define will apply to all checkpoints within the Route except those with separate schedules that are *less* frequent than the Route schedule, if any.

The schedule that you define in the Schedule window determines the next date and time on which a Route becomes due. This date indicates the earliest time at which the Route should be completed. For example, if a Route should be completed anytime within a certain week, the date determined by the schedule should be at the *beginning* of the week within which the Route should be completed.

The date and time on which the Route should be completed is stored in the Next Date field of the Route record and is calculated automatically according to the defined schedule. For example, if you specified that the Route should be completed every 4 hours:

- The Schedule field might contain the text *Due every 4 hours beginning on May 2, 2012 at 11:00 A.M.*

- The Next Date value would be *May 2, 2012 at 03:00 P.M.*

  As you can see, these times are separated by a 4 hour increment, which is in accordance with the defined schedule.

After you upload a Route from a device to Meridium APM:

- The Last Date field in the Route record is updated to reflect the date and time at which the Route status was changed to *Finished.*

- The Next Date field in the Route record is updated based on the values in the Schedule field.

  > **Note**: If a Route is completed before it is due (i.e., prior to the date and time in the Next Date field), when you upload the Route to Meridium APM, the Last Date and Next Date fields in the Route record will *not* be updated.

Continuing with the previous example, if you completed the Route on May 2, 2012 at 03:30 P.M. and uploaded the Route on May 2, 2012 at 03:45 P.M:

- The Last Date value in the Route record would be *May 2, 2012 03:30 P.M,* which is the time that the Meridium APM system changed the Route status to *Finished* (because you completed the route).

- The Next Date value in the Route record would be *May 2, 2012 07:00 P.M.* This value is updated according to the defined schedule (i.e., *Due every 4 hours beginning on May 2, 2012 at 11:00 A.M.)* and not according to the Last Date value.

  > **Note:** You can also define a schedule in which the next date that a Route should be completed is a certain amount of time after the Route was last completed. With this type of schedule, the Last Date value *would* be used to determine the Next Date value. For example, if the defined schedule in this example was *Due 4*

hours after last occurrence..., the Next Date value would be *May 2, 2012 07:30 P.M.* (i.e., 4 hours after the date and time in the Last Date field).

About Defining Schedules for Measurement Locations

You can define a schedule for a checkpoint via the Checkpoint Task record, which is linked to the Measurement Location record representing the checkpoint. The Checkpoint Task datasheet is displayed on the **Schedule** tab below the ML Task View datasheet for the Measurement Location family.

> **Note:** You cannot define schedules for Measurement Location records that are part of a condition.

When you are working with Checkpoint Task records and schedules associated with checkpoints, it is important that you understand how the fields in the Checkpoint Task records work and how compliance is tracked by the Meridium APM system. The schedule that you define in the **Schedule** window determines the following dates for the reading associated with a checkpoint:

- The next date and time on which the reading becomes due (i.e., the earliest time at which the reading should be completed). This value is stored in the Next Date field in the Checkpoint Task record and is calculated automatically according to the defined schedule.
- The date and time on which the reading becomes non-compliant. This value appears in the Non-compliance Date field in the Checkpoint Task record and is calculated according to the defined schedule.

For example, if you specified that the checkpoint should be completed every 4 hours:

- The Schedule field might contain the text *Due every 4 hours beginning on May 2, 2012 at 11:00 A.M.*
- The Next Date value would be *May 2, 2012 at 03:00 P.M.*
- The Non-Compliance Date value would be *May 2, 2012 at 07:00 P.M.*

    As you can see, these times are separated by 4 hour increments, which is in accordance with the defined schedule.

After you upload a reading from a device to Meridium APM or create a Reading record manually, the following fields are updated in the Checkpoint Task record:

- Last Date, which contains the last date and time on which a reading was taken for the checkpoint.
- Next Date
- Non-compliance Date

Continuing with the previous example, if you took the reading on May 2, 2012 at 03:30 P.M. and uploaded that reading on May 2, 2012 at 03:45 P.M:

- The Last Date value would be *May 2, 2012 03:30 P.M.,* which is the time that you took the reading.

- The Next Date value would be updated to *May 2, 2012 07:00 P.M.*
- The Non-compliance Date value would be updated to *May 2, 2012 11:00 P.M.*

As you can see, the Next Date and Non-compliance Date values are updated according to the defined schedule and not according to the Last Date value.

> **Note:** You can also define a schedule in which the next date that a reading should be completed is a certain amount of time after the reading was last completed. With this type of schedule, the Last Date value *would* be used to determine the Next Date and Non-compliance Date values. For example, if the defined schedule in this example was *Due 4 hours after last occurrence...*, the Next Date value would be *May 2, 2012 07:30 P.M.* (i.e., 4 hours after the date and time in the Last Date field).

About Readings and Compliance Tracking

If your system has been properly configured, the Meridium APM system will track the status of readings to determine whether they are compliant or not. The status of a reading is based upon whether the reading is recorded according to the schedule that is defined for the checkpoint. For example, if a reading is due *every 4 hours*, and no reading is uploaded during a given *4 hour increment*, the reading for the missed time period is considered *Non-compliant*. If a reading is uploaded after *5 hours* instead of *4 hours*, the reading is considered *Completed* for the 4-hour increment in which it occurred.

> **Note:** The Meridium APM system tracks compliance only for individually scheduled checkpoints (i.e., based on schedules defined via Checkpoint Task records), not for entire Routes (i.e., based on schedules defined via Route records).

The date and time on which a reading will be considered non-compliant is stored in the Non-compliance Date field in the Checkpoint Task record linked to the Measurement Location record for which the reading is due. The Non-compliance Date value is calculated according to the schedule that is stored in the Schedule field. More specifically, the Non-compliance Date value is the current Next Date value plus one schedule cycle.

For example, if the schedule for the *Check Safety Switch* checkpoint is defined as *due every 4 hours beginning on May 2, 2012 at 07:00 A.M.*, the Next Date value will be *May 2, 2012 at 11:00 A.M.* Therefore, the Non-compliance Date value would be the Next Date value plus 4 hours (i.e., the schedule), which is *May 2, 2012 at 03:00 P.M.*

Depending upon the status of a reading, a Reading record may be created automatically or the Status value in a Reading record may be updated automatically. A reading can have one of the following statuses:

- *Non-compliant*, which is represented by the value *NC* in the Reading record.
- *Completed*, which is represented by the value *C* in the Reading record.
- *Ignored*, which is represented by the value *I* in the Reading record.

The status of a reading is also displayed in the **Status** column in the grid on the **Readings tab** below the ML Task View datasheet of the Measurement Location family.

The following sections of the documentation provide details on what each of the compliance statuses mean for readings.

What does the Non-compliant status mean?

The Non-compliant status indicates that the reading for a checkpoint was not uploaded to the Meridium APM database before the date and time stored in the Non-compliance Date field in the Checkpoint Task record.

Reading records with a Non-compliant status value are created automatically by the Meridium APM system when the non-compliance date and time is reached. The following fields in a non-compliant Reading record are updated automatically:

- Reading Value field is empty.
- The Reading Taken Date field value is set to the current Non-Compliance Date minus one second.

After a non-compliant Reading record is created, if a reading for that checkpoint is uploaded to the Meridium APM database (before the next due date), the Meridium APM system will create the new Reading record and set the status in that record to *Ignored*.

What does the Completed status mean?

The Completed status indicates that the reading was uploaded to the Meridium APM system in accordance with the specified schedule. These readings are considered to be *compliant*.
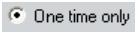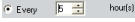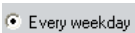
What does the Ignored status mean?

The Ignored status indicates that a reading was uploaded to the Meridium APM database after a non-compliant Reading record was created and before the checkpoint was next due. In other words, at the time when the non-compliant Reading record gets created, the Next Date value is also updated to indicate the next date on which the checkpoint will be due. If a reading is uploaded between the non-compliant date and next date that it is due, the value in the Status field of that Reading record will be set to *Ignored*.

About the Schedule Window

The **Schedule** window is used to define [schedules for Routes and checkpoints](#). You can access the **Schedule** window by clicking the ⋯ button in the **Schedule** cell of the record for which you want to define a schedule.

The following table lists the schedules by which you can configure an item to be due using the **Schedule** window.

Recurrence Pattern	Schedule Description	Example	Example Selections
One time only	One time only.	June 20, 2007 at 4:00 P.M.	
Hourly	Every **x** number of hours.	Every five hours.	
	x number of hours after the last occurrence.	Five hours after the last occurrence.	
Daily	Every **x** number of days.	Every two days.	
	Every weekday.	Every weekday.	
	x number of days after the last occurrence.	Two days after the last occurrence.	
Weekly	Every **x** number of weeks on the **x** day of the week.	Every two weeks on Wednesday.	
	x number of weeks after the last occurrence.	Two weeks after the last occurrence.	
Monthly	Day **x** of every **x** month.	Day 15 of every one month.	
	The **x** day of every **x** number of months, where you define the day of the week.	The first Friday of every two months.	

Recurrence Pattern	Schedule Description	Example	Example Selections
	x number of months after the last occurrence.	One month after the last occurrence.	
Yearly	Every **x** day of every **x** number of years, where you define the month of the year.	Every April 15 of every one year.	
	The **x** day of every **x** number of years, where you define the day of the week and the month of the year.	The third Friday of June, every three years.	
	x number of years after the last occurrence.	Two years after the last occurrence.	

Note that in addition to indicating when an item is due, you can also use the **Range of Recurrence** section of the **Schedule** window to indicate:

- **The date on which the schedule should become active.** For example, if you configure an item to be due the first Monday of every week and the current day is Monday, you might want to wait a week before putting the schedule in place. To do so, you could select the date of the following Monday in the Start fields in the **Range of Recurrence** section.

- **The date by which the schedule should end.** For example, suppose you configure a pump inspection to be due every Friday. If you know that after Friday, December 29, 2007, the pump will be replaced, you might want to set an end date for the schedule. You can select the following options for a schedule end date:
    - **No end date.** The schedule does not have an end date.
    - **End after x number of occurrences.** The schedule ends after a specific number of occurrences.
    - **End by x date.** The schedule ends by a specific date.

About Configuring Values that Users Can Select When Entering Readings on a Device

When a device user is ready to enter a reading value for a checkpoint, he or she can enter the exact value or select a value from a list. If you want the device user to be able to select a value from a list, you will need to configure that list in the Meridium APM Framework application.

You might want to configure a list of allowable values, for example, if *multiple* users will be taking readings at the same checkpoint on different dates. Instead of letting device users enter their own values, limiting them to a list of values ensures data consistency, which will be important if you need to query the values after they are uploaded from the device.

For example, for a Tank Level Check, you might want to limit a user's choices to *Low*, *OK*, or *High*. If you do not limit the choices in this way, users could enter any value they considered appropriate. As a result, after the data is uploaded from the device, the database could contain various reading values that mean the same thing, such as *Fine*, *No leaks*, *OK* and so on.

Allowable values are stored in the *Operator Rounds Allowable Values* records. Each record contains a value and the category and type of each value. The value in the record represents a value that will be available in a list on the device.

To completely configure a list of values for device users, you will need to:

1. Create the appropriate Operator Rounds Allowable Values records to store the values that will be available in the list.

2. Select the values in the **Allowable Values** list in the Measurement Location record representing the checkpoint at which users will need to select a reading value.

For example, suppose device users need to check the general condition of a pump, and you want them to select one of the following values: *Leak*, *Motor Temp. High*, *Noise*, *OK*, *Vibration*.

To configure this list of values, you would need to create one Operator Rounds Allowable Values records for each of the acceptable values, as shown in the following image.

Note that the type and category for each record is the same. Only the value varies from one record to the next.

In addition, you would need to create a Measurement Location record and select the following values in the following fields.

Field	Value
ML Type	Character
Category	Pump Check
Allowable Values	Leak, Motor Temp. High, Noise, OK, and Vibration.

Typically, you will not need to define allowable values in Measurement Location records where the ML Type field contains the value *Numeric* because the actual readings recorded against that checkpoint are likely to vary too much. For instance, for a Temperature Check, you might want users simply to enter the exact temperature, and you would not configure a list of allowable values.

After you have defined the allowable values and selected them in a Measurement Location record, you can use the allowable values to set up alerts that will be displayed to a user if a certain reading value is recorded. The allowable values that are selected in the **Allowable Values** list on the **Identification** tab will be available for selection on the **Limit Values** tab.

In addition, when you are defining a condition for a checkpoint on a Route, allowable values are used to specify which reading value should trigger additional checkpoints to appear to the handheld user.

Accessing the Operator Rounds Allowable Values Page

On the **Operator Rounds Allowable Values** page, you can view and modify the Operator Rounds Allowable Values records.

To access the Operator Rounds Allowable Values page:

- On the **Operator Rounds Start Page**, click the **Allowable Values Management** link.

  The **Operator Rounds Allowable Values** page appears, displaying all existing Operator Rounds Allowable Values records in a grid.

Note: The baseline Allowable Values records are shown in this image.

Aspects of the Operator Rounds Allowable Values Page

The **Operator Rounds Allowable Values** page displays all the Operator Rounds Allowable Values records that exist in the database. From this page, you can modify, create, or delete Operator Rounds Allowable Values records.

> **Note:** The baseline Meridium APM database contains Allowable Values records, where the value in the Type field is *Character*, and the value in the Category field is *AHI Generic*.

The **Operator Rounds Allowable Values** page contains the following items:

- [Common Tasks menu](#): Provides access to common functionality.
- **Allowable Values workspace:** Contains the **Operator Rounds Allowable Values** grid. Each row in the grid represents one Operator Rounds Allowable Values record that exists in the database. The following columns are displayed that correspond with values in the Operator Rounds Allowable Values records:
  - Type
  - Category
  - Value

  The grid is sorted alphabetically by the **Type** and **Category** columns, by default. You can use the standard grid customization options to modify the way the grid appears. For example, you can apply a filter on the **Category** column to show only the Allowable Values records whose Category is *AHI Generic*.

You can use the **Operator Rounds Allowable Values** page to:

- [Create new Operator Rounds Allowable Values records](#).
- [Modify existing Operator Rounds Allowable Values records](#).
- [Delete Operator Rounds Allowable Values records](#).

Common Tasks Menu
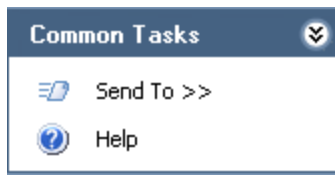
The **Common Tasks** menu on the **Operator Rounds Allowable Values** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), in an email message, or a Home Page. This link is disabled no Operator Rounds Allowable Values records are displayed.
- **Help:** Displays the context-sensitive Help topic for the **Operator Rounds Allowable Values** page.

Allowable Values and the Measurement Location Datasheet: An Example

To fully understand how allowable values work in Operator Rounds, you must understand how the values you type in an Operator Rounds Allowable Values record correspond to fields on the Measurement Location datasheet. The connection is best understood through an example.

Suppose your database contains the Operator Rounds Allowable Values records shown in the following image.

Type	Category	Value
Character	Tank Level	High
Character	Tank Level	Low
Character	Tank Level	None
Character	Tank Level	Normal

Note that for a Tank Level category, the allowable values are *High*, *Low*, *None*, and *Normal*.

If you create a Measurement Location record and select *Character* in the **ML Type** list and *Tank Level* in the **Category** list, you could select *High*, *Low*, *None*, and *Normal* in the **Allowable Values** list, as shown in the following image.

On the device, the list of available options for this checkpoint would look like this:

In addition, on the **Limit Values** tab on the ML Task View datasheet, the allowable values will be available for selection in either the **Numeric** or **Character** lists, depending upon the value that you select in the **ML Type** list. In this example, the **Character** list on the **Limit Values** tab would look like the following image.
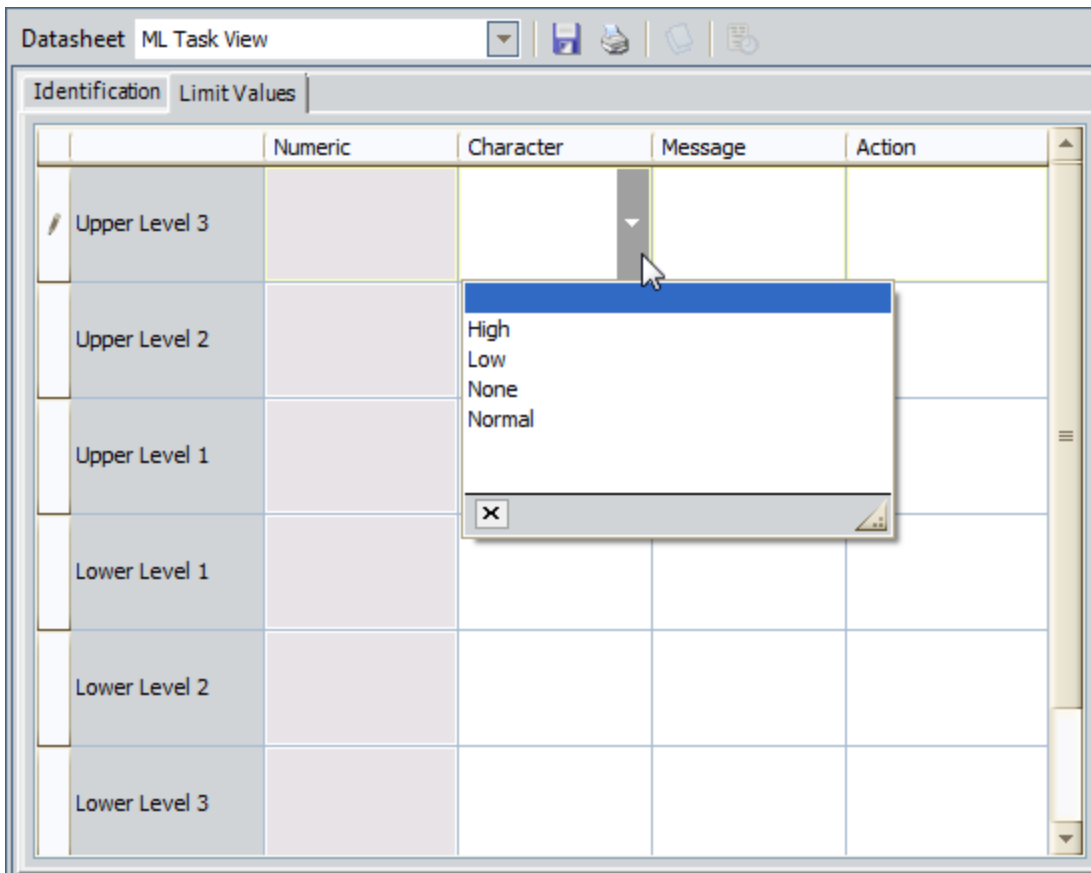
About Creating Operator Rounds Allowable Values Records

You can create Operator Rounds Allowable Values records in two ways:

- [Create the first Operator Rounds Allowable Values records with a specific type and category](#).
- [Create subsequent Operator Rounds Allowable Values records with a specific type and category](#). For example, if the allowable values for a Tank Check are *Low*, *OK*, and *High*, and you have already created an Operator Rounds Allowable Values record where the value in the Type field is **Character**, the value in the Category field is *Tank Check*, and the value in the Value field is *Low*, you can use those existing values to define the allowable values *OK* and *High*.

Creating the First Allowable Value for a Specific Type and Category

To create the first allowable value for a specific type and category:

1. Access the **Operator Rounds Allowable Values** page.

2. In the **Operator Rounds Allowable Values** grid, in the first empty row at the bottom of the grid, in the **Type** cell, click the ▾ button, and select the type of checkpoint to which this value applies: **Character** or **Numeric**.

3. In the same row, in the **Category** cell, type a category to which the value belongs (e.g., Plumbing Lines Check).

4. In the same row, in the **Value** cell, type the value that should appear as an option when device users are entering a reading value for a checkpoint with the specified category.

5. Click the 💾 button.

   The Operator Rounds Allowable Values record is saved.

Creating Subsequent Allowable Values for a Specific Type and Category

The following instructions explain how to use the **Operator Rounds Allowable Values** page to create subsequent Operator Rounds Allowable Values records with a specific type and category. You can also use these instructions to modify values in an existing Operator Rounds Allowable Values record.

To create subsequent allowable values for a specific type and category:

1. Access the **Operator Rounds Allowable Values** page.

2. In the first empty row at the bottom of the grid, in the **Type** cell, click the ▾ button, and select a value in the list: **Character** or **Numeric**.

   The list in the **Category** cell in that row is populated automatically with the values that exist in Operator Rounds Allowable Values records whose Type value corresponds with your selection in the **Type** cell.

3. In the same row, in the **Category** cell, type a value or click the ▾ button, and select a value from the list.

4. In the same row, in the **Value** cell, type the desired value.

5. Continue entering information in this way to create subsequent records.

6. Click the 💾 button.

   The new Operator Rounds Allowable Values records are saved to the database.

Deleting Operator Rounds Allowable Values Records

You can delete any Operator Rounds Allowable Values record that is *not* associated with a Measurement Location or Measurement Location Template record.

To delete Operator Rounds Allowable Values records:

1. Access the **Operator Rounds Allowable Values** page.

2. In the **Operator Rounds Allowable Values** grid, select the row associated with the Operator Rounds Allowable Values record that you want to delete. In the following image, the row associated with the Operator Rounds Allowable Values record that contains the following values is selected:

   - **Type:** Character
   - **Category:** Catalyst Check
   - **Value:** Added Catalyst
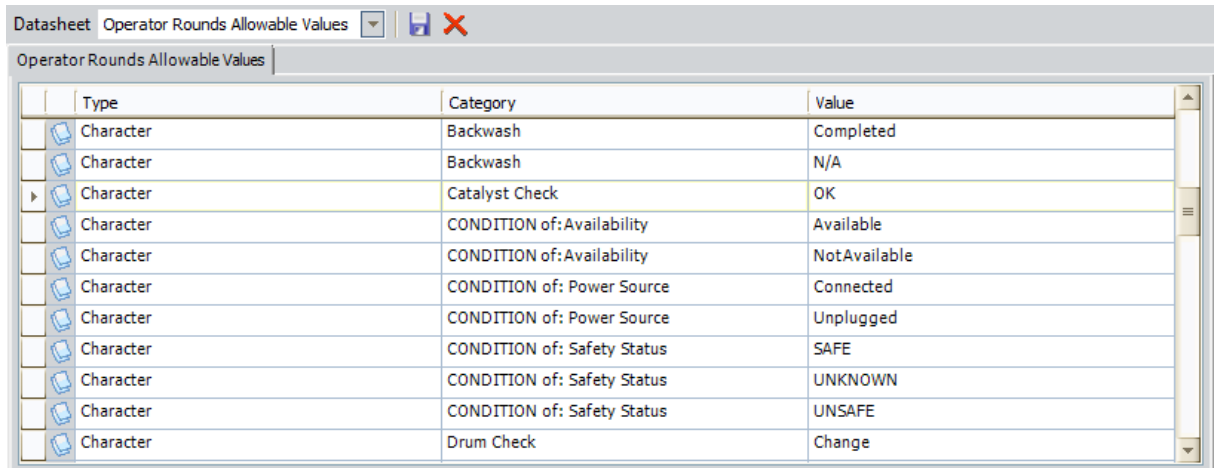
3. Click the ✖ button that appears above the grid.

   A confirmation message appears, asking if you are sure you want to delete the Operator Rounds Allowable Values record.

4. Click the **Yes** button.

   The Operator Rounds Allowable Values record is deleted, and the associated row is removed from the grid.

You can repeat these steps for each Operator Rounds Allowable Values record that you want to delete.

About Adding Conditions to a Route

When a device user is executing the checkpoints along a Route, if the reading value that is taken for a checkpoint indicates further investigation is needed on the piece of equipment or location, you may want the device user to see additional checkpoints on the device and record reading values for those additional checkpoints. To accomplish this, you can add *conditions* to the checkpoints on the Route. A c*ondition* allows you to add logic to the Route to specify that when a particular reading value is recorded for a checkpoint, additional checkpoints should be displayed to the device user.

For example, suppose the first checkpoint on Route X is *Equipment Running?*, and you want to indicate in the Route definition that if the reading value recorded for *Equipment Running?* is *Not Running*, the device user should check the safety switch on the piece of equipment. In this case, you would add a condition to the Route for the *Equipment Running?* checkpoint.

In other words, a condition identifies which checkpoint should appear on the device if the user enters a specific reading value for the previous checkpoint and defines:

- The *initial checkpoint* whose reading value should trigger a subsequent checkpoint.
- The *specific reading value* that should trigger another checkpoint.
- The *subsequent checkpoint* that should be triggered by that reading value.

In the Meridium APM database, a single condition is represented by:

- One Measurement Location record that identifies the initial checkpoint.
- One Checkpoint Condition record that identifies the specific reading value.
- One or many Measurement Location records that identify the subsequent checkpoints.

In the Route pane, Checkpoint Condition nodes are displayed in the context of the Measurement Location node representing the initial and subsequent checkpoints. Specifically, the Checkpoint Condition node appears below the Measurement Location record representing the initial checkpoint. Likewise, the Measurement Location node representing the subsequent checkpoint appears below the Checkpoint Condition node.

The following image shows how the Measurement Location and Checkpoint Condition records will be linked to one another to define a condition.
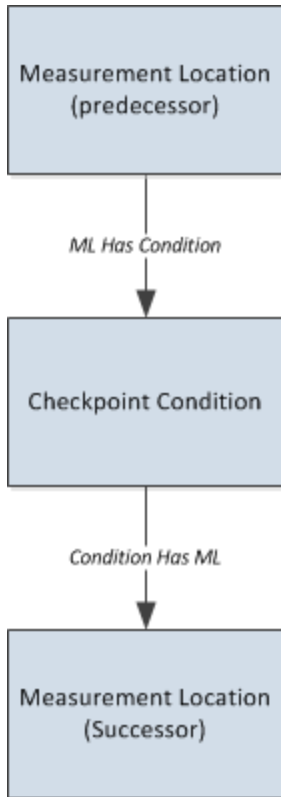
A single Checkpoint Condition record can be linked as a successor to only *one* Measurement Location record. A Measurement Location record, however, can be linked to multiple successor Checkpoint Condition records. Likewise, a Checkpoint Condition record can be linked to multiple successor Measurement Location records.

Consider the following image, which shows an example of what Route X would like after the condition is defined.
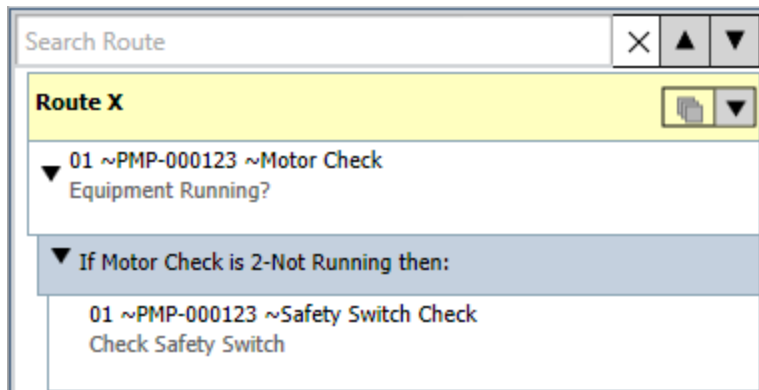
Notice that in this image the Checkpoint Condition record (colored blue) displays the following text:

If <ML Category> is <Reading value> then:

The text that is displayed on Checkpoint Condition nodes will vary depending upon the type of checkpoint to which it is linked (i.e., character or numeric). This is determined by the value stored in the ML Type field in the predecessor Measurement Location record. The previous image shows an example of a Checkpoint Condition node that represents a Checkpoint Condition record that is linked to a *character* type Measurement Location record.

To add and manage conditions in a Route, you must be logged in as a member of the MI Operator Rounds Administrator Security Group or have View, Update, Insert, and Delete privileges to the following families:

- Checkpoint Condition
- ML Has Condition
- Condition Has ML

Example of a Route with a Condition

[Continuing with the previous example](), where the first checkpoint on Route X is *Equipment Running?*, and you want to indicate in the Route definition that if the reading value recorded for *Equipment Running?* is *Not Running*, the device user should check the safety switch on the piece of equipment. In this case, create the following records and relationships:

- One successor Checkpoint Condition record that is linked to the Measurement Location record with the ML Description *Equipment Running?*. In this record, you will select the reading value that should trigger the additional checkpoint. In this case, you would select*2-Not Running*.
- One successor Measurement Location record with the ML Description *Safety Switch Check* that is linked to the Checkpoint Condition record. This checkpoint will appear to the device user only if the reading value taken for *Equipment Running?* checkpoint is *2-Not Running*.

The following image shows how these records are linked to one another.

```
┌─────────────────────────┐
│  Measurement Location   │
│                         │
│   Equipment Running?    │
└─────────────────────────┘
             │
      ML Has Condition
             ▼
┌─────────────────────────┐
│  Checkpoint Condition    │
│                         │
│  If Motor Check is 2-Not │
│      Running then:       │
└─────────────────────────┘
             │
      Condition Has ML
             ▼
┌─────────────────────────┐
│  Measurement Location   │
│                         │
│   Check Safety Switch   │
└─────────────────────────┘
```

The following image shows how these records would look in the Route pane.

In this case, the condition statement is: *If Motor Check reading value is 2-Not Running, then display the Check Safety Switch checkpoint.* Further, you can define additional conditions for the:

- *Equipment Running?* checkpoint. For example, you could define a second condition statement like: *If Equipment Running? reading value is 3-No, Offline, then display the Offline Status checkpoint.*

- *Check Safety Switch* checkpoint. For example, you could define a condition statement like: *If Check Safety Switch reading value is 1-Not Tripped, then display the Bearing Check checkpoint.*

About Defining Checkpoint Condition Records

When you create a Checkpoint Condition record, its corresponding node will appear in the Route pane below the predecessor Measurement Location node and indented to the right. If you want to add a Checkpoint Condition node in a particular location (e.g., between two existing Checkpoint Condition nodes), you should select the Checkpoint Condition node *after which* the new Checkpoint Condition node should appear. Keep in mind that you cannot change the order in which Checkpoint Condition nodes appear.

On the **Route Management** page, a datasheet is not displayed for Checkpoint Condition records. Instead, the values in the Checkpoint Condition record can be modified within the Route pane itself via the Checkpoint Condition node. Depending upon the type of checkpoint for which you are creating a condition (i.e., character or numeric), the values that you define will vary. Remember that the type of condition is determined by the value in the ML Type field in the predecessor Measurement Location record. This field can contain the following values:

- Character
- Numeric

The topics in this section of the Help provide details on the text that is displayed for a Checkpoint Condition node for each checkpoint type and provides details on how you would define a Checkpoint Condition node for that type.

Defining Checkpoint Condition Records for a Character Checkpoint

When you create a Checkpoint Condition record that is linked to a Measurement Location record whose ML Type field contains the value *Numeric,* the following text is displayed on the Checkpoint Condition node:

If **<ML Category>** is **<Reading value>** then:

...where:

- **<ML Category>** is the value stored in the Category field in the Measurement Location record. This value is populated automatically after you create the Checkpoint Condition record and is used to identify the predecessor Measurement Location record whose reading value may trigger the additional checkpoints to appear.
- **<Reading value>** is a list that contains the values that are stored in the Allowable Values field in the predecessor Measurement Location record. This value is used to specify which reading value should trigger the additional checkpoints to appear. You will need to select ONE value in this list.

You will need to specify the value that you want to use as the trigger for displaying the subsequent checkpoint. The value that you select here corresponds to the reading value that the user will select on the device. You can select this value by selecting the Checkpoint Condition record in the Route pane. The following image shows an example of what a character Checkpoint Condition record (colored blue) looks when it is selected in the Route pane.
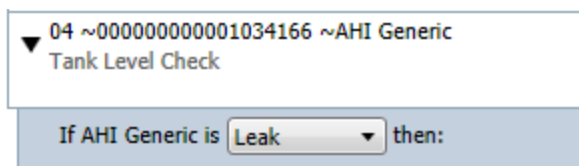
In this image, you can see that *AHI Generic* is the ML Category and *Leak* is the reading value.

Defining Checkpoint Condition Records for a Numeric Checkpoint

When you create a Checkpoint Condition record that is linked to a Measurement Location record whose ML Type field contains the value *Character*, the following text is displayed on the Checkpoint Condition node:

If **<ML Category>** **<=><Reading value>** then:

...where:

- **<ML Category>** is the value stored in the Category field in the Measurement Location record. This value is populated automatically after you create the Checkpoint Condition record and is used to identify the predecessor Measurement Location record whose reading value may trigger the additional checkpoints to appear.

- **<=>** is a list of quantifiers (e.g., > and <) that lets you specify the parameters of the condition when used in conjunction with the value in the **<Reading value>** cell. The default value is = (equals).

- **<Reading value>** is a manually entered value that lets you specify the parameters of the condition when used in conjunction with the value in the **<=>** cell. This value must be numeric and is used to specify which reading value or reading value range should trigger additional checkpoints to appear. You will need to type ONE value in this cell.

In other words, you can specify that if the reading value is *less than*, *equal to*, or etc. to the value in the <Reading value> cell, the successor checkpoint should appear.

- The quantifier that will connect the *if this* statement to the Reading value that the user records on the device. You can do so by selecting the Checkpoint Condition record in the Route pane and then selecting the desired value in the **<=>** list.

    -and-

- The numeric reading value that will be used as the parameter against which the Reading value will be evaluated. You can do so by selecting the Checkpoint Condition record in the Route pane and typing the desired value in the **<Reading value>** cell.

The following image shows an example of what a numeric Checkpoint Condition record (colored blue) looks like when it is selected in the Route pane.
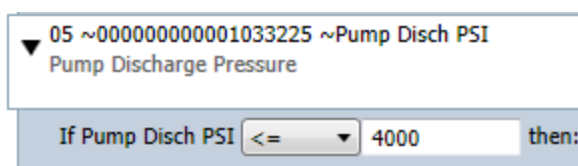
In this image, you can see that:

- *Pump Disch PSI* is the ML Category.
- *<=* is the quantifier.
- *4000* is the reading value.

Adding Conditions to a Route for a Character ML

The following instructions provide details on creating a Checkpoint Condition record and linking it to:

- A predecessor Measurement Location record whose ML Type value is *character*.

  -and-

- A successor Measurement Location record.

These instructions assume that you are viewing a Route on the **Route Management** page, where the Route is linked to at least one Measurement Location record whose ML Type value is *character*.

To add a condition to a Route for a character ML:

1. In the Route pane, select the:

   - Measurement Location node representing the checkpoint whose reading value should trigger additional checkpoints to appear.

     -or-

- Existing Checkpoint Condition node that is linked to the desired Measurement Location record and below which you want a new Checkpoint Condition node to appear.

2. On the **Route Tasks** menu, click the **Add Condition** link.

   A new Checkpoint Condition record is created and linked to the selected Measurement Location record that is represented by the selected Measurement Location node. In the Route pane, the Checkpoint Condition node is displayed below the predecessor Measurement Location node.
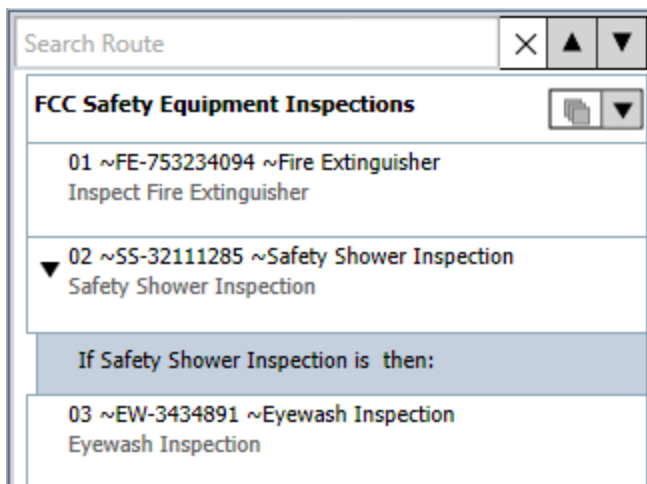
   The previous image shows the Checkpoint Condition node *If Safety Shower Inspection is then:*.

3. Select the Checkpoint Condition node.
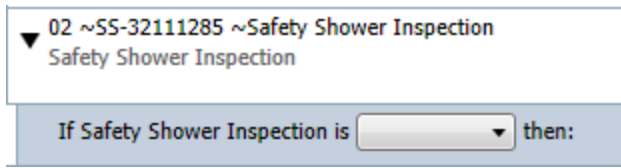
   The **<Reading value>** list is enabled.

   ```
   ▼ 02 ~SS-32111285 ~Safety Shower Inspection
     Safety Shower Inspection

     If Safety Shower Inspection is [        ▼] then:
   ```

4. In the **<Reading value>** list, select the reading value that should trigger an additional checkpoint to appear.

   The Checkpoint Condition record is saved automatically. At this point, the Checkpoint Condition node displays part of the final condition statement, similar to the one shown in the following image.

   ```
   ▼ 02 ~SS-32111285 ~Safety Shower Inspection
     Safety Shower Inspection

     If Safety Shower Inspection is [2-Leak  ▼] then:
   ```
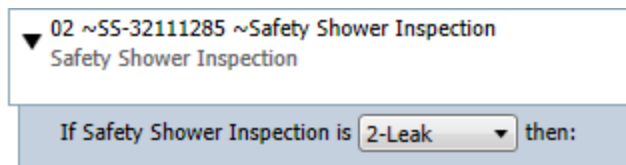
   In this example, the condition statement is: *If the Safety Shower Inspection reading is 2-Leak, then:*.

5. Select the Checkpoint Condition node, and on the **Route Tasks** menu, click the **Add ML** link.

   A new, blank Measurement Location record is created and linked to the Checkpoint Condition record as a successor. In the Route pane, the Measurement Location node is displayed below the corresponding Checkpoint Condition node. In the following image, you can see the new Measurement Location node shaded yellow.

   ```
   ▼ 02 ~SS-32111285 ~Safety Shower Inspection
     Safety Shower Inspection

     ▼ If Safety Shower Inspection is 2-Leak then:

       01 ~ ~
   ```

6. In the Datasheet area, complete the fields on the Measurement Location datasheet, as desired.

7. On the datasheet toolbar, click the 🖫 button.

   The Measurement Location record is saved. At this point, the condition statement is complete. For example, consider the following image.

In this example, the final condition statement is: *If the Safety Shower Inspection is 2-Leak, then display the Check fittings checkpoint.*

Adding Conditions to a Route for a Numeric ML

The following instructions provide details on creating a Checkpoint Condition record and linking it to:

- A predecessor Measurement Location record whose ML Type value is *numeric*.

  -and-

- A successor Measurement Location record.

These instructions assume that you are viewing a Route on the **Route Management** page, where the Route is linked to at least one Measurement Location record whose ML Type value is *numeric*.

To add a condition to a Route for a numeric ML:

1. In the Route pane, select the:

   - Measurement Location node representing the checkpoint whose reading value should trigger additional checkpoints to appear.

     -or-

   - Existing Checkpoint Condition node that is linked to the desired Measurement Location record and below which you want a new Checkpoint Condition node to appear.

2. On the **Route Tasks** menu, click the **Add Condition** link.

   A new Checkpoint Condition record is created and linked to the Measurement Location record that is represented by the selected Measurement Location node. In the Route pane, the Checkpoint Condition node is displayed below the pre-decessor Measurement Location node.

   The previous image shows the Checkpoint Condition node *If Discharge Pressure equals then:*.

3. Select the Checkpoint Condition node.

   The <=> list and <Reading value> cell are enabled.

4. In the **<=>** list, select the desired quantifier. For example, the following image shows the quantifier <= (less than or equal to) selected in the **<=>** list.

5. In the **<Reading value>** cell, type the numeric value representing the reading value that should trigger the additional checkpoint to appear. For example, the following image shows the value *400*.

The Checkpoint Condition record is saved automatically.

At this point, the Checkpoint Condition node displays part of the final condition statement. In this example, the condition statement is: *If the Check the Pump Discharge Pressure reading is less than or equal to 400, then display the following checkpoint.*

6. Select the Checkpoint Condition node, and on the **Route Tasks** menu, click the **Add ML** link.

A new, blank Measurement Location record is created and linked to the Checkpoint Condition record as a successor. In the Route pane, the Measurement Location node is displayed below the Checkpoint Condition node. In the following image, you can see the new Measurement Location node shaded yellow.

7. In the Datasheet area, complete the fields on the Measurement Location datasheet, as desired.

8. On the datasheet toolbar, click the 💾 button.

The Measurement Location record is saved. At this point, in the Route pane, the condition statement is complete. For example, consider the following image.

In this image, you can see that the final condition statement is: *If the Check the Pump Discharge Pressure reading is less than or equal to 400, then display the Motor/Gearbox Check checkpoint.*

About This Example

The example in this section of the documentation illustrates how a Route with conditions will behave on the handheld device. The first section describes the Route as it is defined in the Meridium APM Framework application, and the second section describes how that Route will behave after it is downloaded to a handheld device.

Example: Route Defined in the Meridium APM Framework

Suppose you have a *Motor Route* that contains the following checkpoints:

1. Visual Inspection

2. Vibration Check

3. Temperature Check

4. Bearings Check

Assuming that none of the checkpoints yield negative reading results (e.g., a leak), on the device, these checkpoints will be displayed to the user in the order in which they are listed above. If, however, the reading value taken during the *Visual Inspection* checkpoint is *Leak*, the next checkpoint on that Route should be *Inspect Leak*, which is not in the preceding list. So, the full list of checkpoints would look like this, where the *Inspect Leak* checkpoint has been inserted to account for this condition:

1. Visual Inspection

2. Inspect Leak

3. Vibration Check

4. Temperature Check

5. Bearings Check

To support this scenario, you would need to add a condition to the Route, specifying that if the *Visual Inspection* reading value is *Leak*, the device should display the additional *Inspect Leak* checkpoint.

To do so, you would need to create the following records *in addition to*the existing Route and Measurement Location records that define the checkpoints that are listed above:

- One successor Checkpoint Condition record that is linked to the Measurement Location record *Visual Inspection*and stores the reading value that will trigger the additional checkpoint: *Leak*.

- One successor Measurement Location record that is linked to the Checkpoint Condition record and represents the checkpoint that will appear if the reading value *Leak* is recorded for the *Visual Inspection* checkpoint: *Inspect Leak*.

The following image shows what the *Motor Route* would look like in the Route pane. You can see additional Checkpoint Condition and Measurement Location nodes identified by the orange boxes (the boxes have been added to the image for clarification and are not available in the UI).
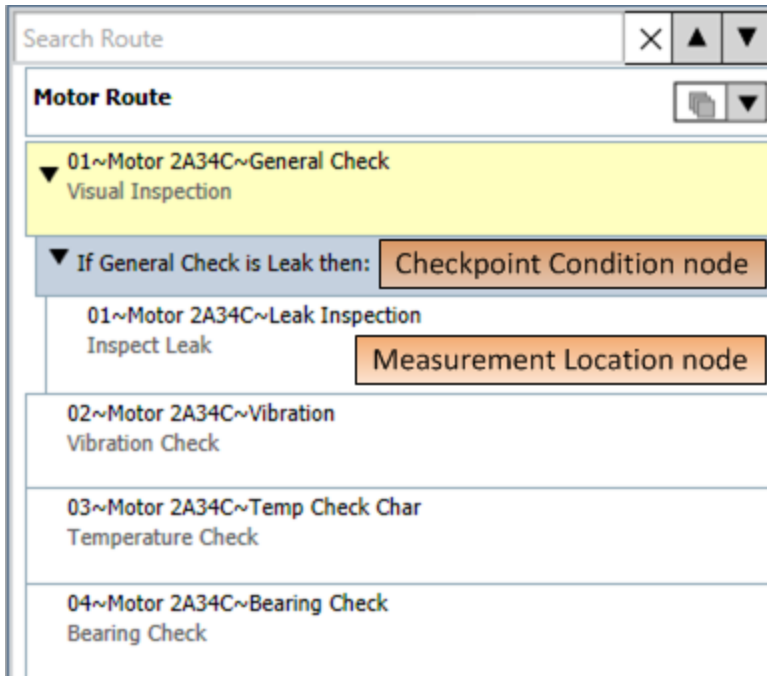
In addition, suppose that if the leak looks milky (i.e., there is water in the oil), you want the device user to inspect the seals on the water line. In this case, you would add another condition on the *Inspect Leak* checkpoint. The following image shows what this condition looks like in the Route pane. A red outline has been added to the image to highlight the Checkpoint Condition node and the Measurement Location node.
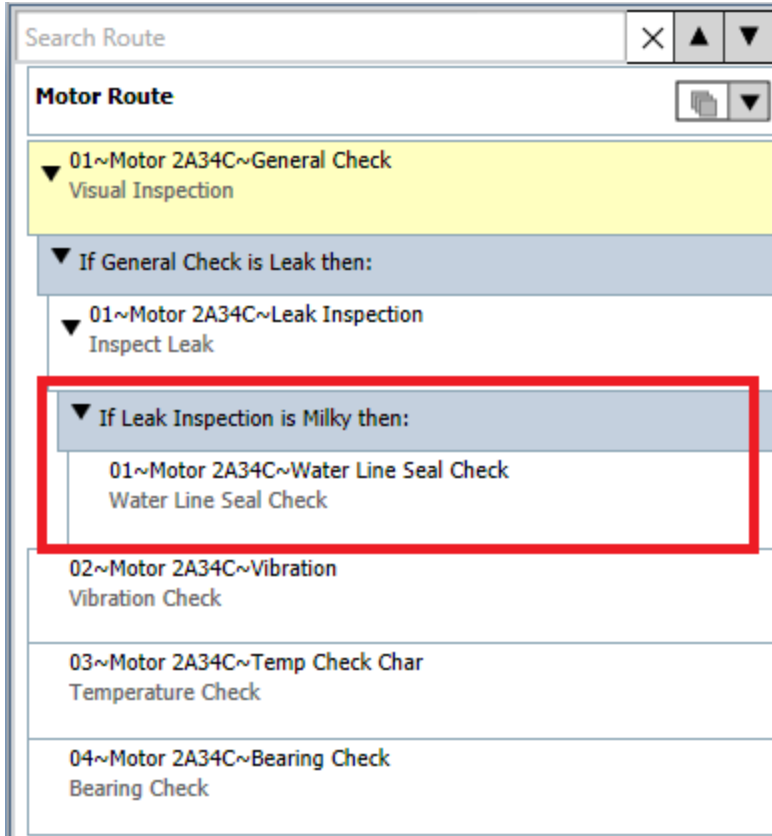
On the device, if the user identifies a milky leak as a result of performing the *Inspect Leak* checkpoint, the full list of checkpoints would look like this, where the *Water Line Seal Check* checkpoint has been inserted to account for this condition:

1. Visual Inspection
2. Inspect Leak
3. Water Line Seal Check
4. Vibration Check
5. Temperature Check
6. Bearing Check

Likewise, if the condition that is defined on the Inspect Leak checkpoint is met, the checkpoints will be displayed to the device user in the following order:

1. Visual Inspection
2. Inspect Leak
3. Water Line Seal Check
4. Vibration Check

5. Temperature Check

6. Bearing Check

When the Motor Route is downloaded to the handheld device, the device will indicate that there are only *4* checkpoints on the *Motor Route*. The additional checkpoints will appear on the device only if the conditions that trigger those checkpoints are met.

Example: Route on the Device

Suppose you have defined the following *Motor Route* in the Meridium APM Framework.

After you download the *Motor Route* to the handheld device and view it, the *Visual Inspection* checkpoint appears first. The following image shows this checkpoint.

Remember that the *Visual Inspection* checkpoint has a condition defined for it. Depending upon the reading that is recorded for this checkpoint, the following checkpoints may appear:

- *Inspect Leak*, if the reading value is *Leak*.
- *Vibration Check*, if the reading value is anything other than *Leak.*

Let's assume that for the *Visual Inspection* checkpoint, the device user records the reading *Leak*. In this case, the condition defined for the *Visual Inspection* checkpoint is met, and the *Inspect Leak* checkpoint is displayed next. The following image shows this checkpoint.

Remember that the *Inspect Leak* checkpoint also has a condition defined for it. Depending upon the reading value that is recorded for this checkpoint, the following checkpoints may appear:

- *Water Line Seal Check*, if the reading value is *Milky*.
- *Vibration Check*, if the reading value is anything other than *Milky*.

Let's assume that the for the *Inspect Leak*checkpoint, the device user records the reading *Water Only*. In this case, the *Vibration Check* checkpoint is displayed next. The following image shows this checkpoint.

Because there are no additional conditions defined for the remaining checkpoints on the *Motor Route*, the remaining checkpoints will be displayed to the user in the order in which they appear in the Route pane:

- *Temperature Check*
- *Bearing Check*

About Applying a Template Group to a Route

When you apply a [Template Group](#) to a Route, the Meridium APM system will use the contents of the Template Group to create records and relationships in the Route. The new records and relationships in the Route will be created using the values stored in the source records from the Template Group. The following table provides a mapping of the source records and relationships in the Template Group to the new records and relationships in the Route.

Source Record/Relationship - Template Group	New Record/Relationship - Route
Measurement Location Template	Measurement Location
Checkpoint Condition	Checkpoint Condition
Checkpoint Template Sequence[1]	ML Has Checkpoint Checkpoint Has ML Route Has Checkpoint

1.   Checkpoint Template Sequence records cannot be modified through the UI. These records are used by the Meridium APM system to create and maintain the structure of a Template Group because physical relationships do not exist between the records that make up a Template Group.

When you apply a Template Group to a Route, you can select the Equipment or Functional Location records to which you want to link ALL the new Measurement Location records, and a link will be created automatically between the selected records and the Measurement Location records (i.e., one per piece of equipment or location). In other words, for *each* Equipment or Functional Location record that you select, *one* Template Group will be added to the Route, and *all* the new Measurement Location records will be linked to the selected Equipment or Functional Location record. If you do not specify an Equipment or Functional Location record, the Measurement Location records will still be created but no link will be created to any Equipment or Functional Location records.

Consider the following image, which shows a Template Group containing multiple Measurement Location Template and Checkpoint Condition nodes. The records represented by these nodes are associated with one another through Checkpoint Template Sequence records, which are not displayed in the UI.

Template for Pumps

01~Running?
YES/NO

▼ If Yes - No is 2-No then:

01~Check offline status
Offline for maintenance?

▼ If Yes - No is 1-Yes then:

01~Pump Check - Daily
Check the condition of the pump

02~Pump - Lube Check
Pump - Lube Check

03~Pump Discharge Pressure - Daily - 150 - 200 Range
Check the Pump Discharge Pressure

▼ If Discharge Pressure <= 149 then:

01~Pressure Vacuum
Pressure Vacuum

▼ If Discharge Pressure >= 201 then:

01~Position Check
Position Check

Continuing with the previous example, if you applied this Template Group to a Route and selected the following Equipment records in the **Apply Template Group Builder**, the Route will look similar to the following image:

- *1002188 Guard Case Charge ~ Centrifugal*

  -and-

- *1008856 Propane Cavern Loading,*
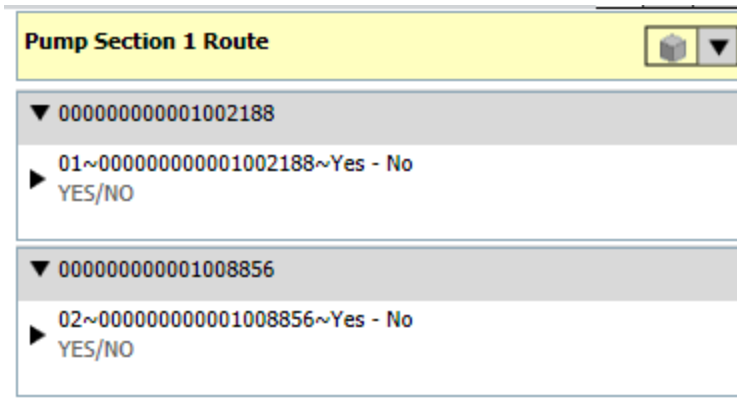
In this image, you can see a Route with two sets of Measurement Location and Check-point Condition nodes from the same source Template Group that are now linked to different Equipment records. This image shows the Asset View to more clearly illustrate this point.

When you apply a Template Group to a Route, some values in the Measurement Location Template records are not copied to the new Measurement Location records. The following values are not copied to new Measurement Location records by default:

- Scan ID
- Sequence

In addition, the following values are copied to the Measurement Location record only if the Measurement Location record does not already contain values in these fields:

- Asset ID
- Asset Description

You can apply a Template Group to a Route when any node in the Route is selected, and the records that are created from the Template Group will appear below the currently selected node. You can use the following table to determine which node to select when you apply a Template Group to a Route so that the newly created records will appear in the desired location in the Route pane.

Select this node:	The new records will appear here:
Route	At the bottom of the Route directly below the root level.
Measurement Location	Directly below the Measurement Location node.

Select this node:	The new records will appear here:
Checkpoint Condition	Below the Checkpoint Condition node and indented (i.e., the new Measurement Location records and Checkpoint Condition records are successors to the selected Checkpoint Condition record.)
Equipment/Functional Location[1]	Below the Equipment/Functional Location node and any existing Measurement Location nodes that are also linked to that Equipment/Functional Location node (available only in the Asset View).

If you access the Apply Template Group Builder via an Equipment/Functional Location node, the Meridium APM system will automatically link the new Measurement Location records to the Equipment or Functional Location record represented by that Equipment/Functional Location node, and the Select Asset screen will be skipped in the builder.

You can apply a Template Group to a Route using the Apply Template Group Builder, which takes you step-by-step through applying a Template Group to a Route.

Accessing the Apply Template Builder

The following instructions provide details on accessing the **Apply Template Builder**, which you can use to apply a Template Group to a Route.

To access the Apply Template Group Builder:

1. Open the Route to which you want to apply a Template Group.

2. In the Route pane, select the node below which you want the Template Group to be applied.

3. On the **Route Tasks** menu, click the **Add Template Group** link.

   The **Apply Template Group Builder** appears, displaying the **Welcome** screen.
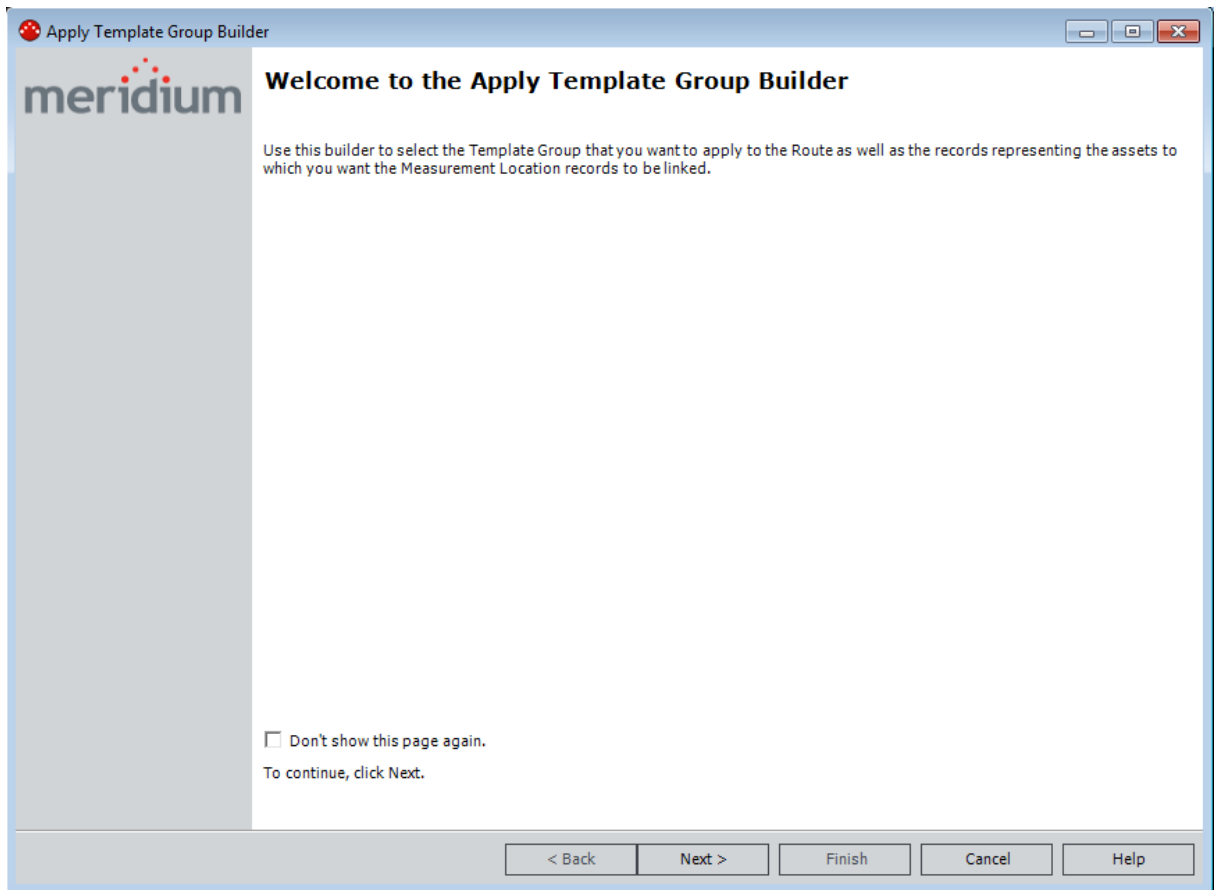
Applying a Template Group To a Route

The following instructions provide details on using the **Apply Template Group Builder** to apply a Template Group on a Route. These instructions assume that you have accessed the Route to which you want to apply a Template Group.

These instructions represent the baseline behavior of this builder. If you have customized the builder via custom URLs, you may see additional screens in the builder in your implementation.

> **Note:** For details on the parameters accepted by the **Apply Template Group Builder** URL, see the URLs section of this Help system.

To apply a Template Group using the Apply Template Group Builder:

1. Access the **Apply Template Builder**.

2. On the Welcome screen, click the **Next** button.

   The **Select Asset** screen appears.
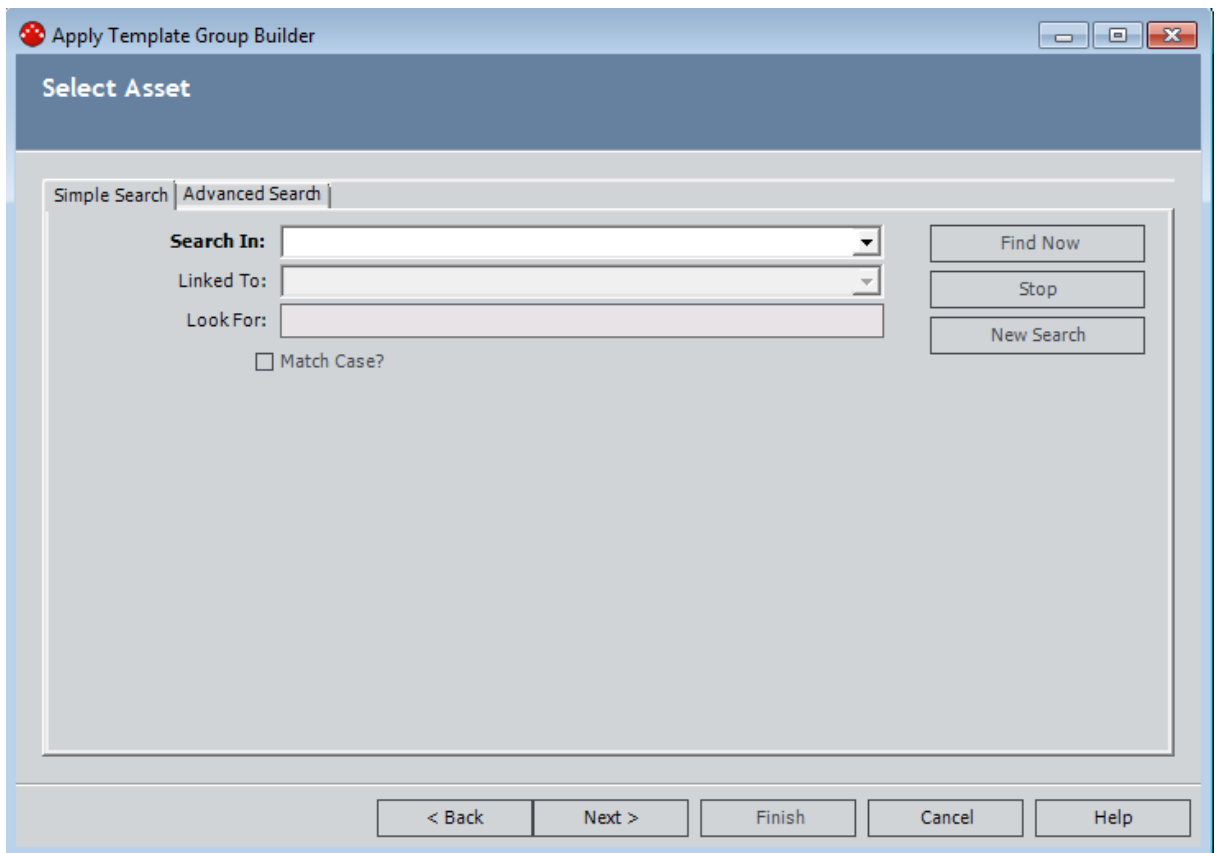
> **Note:** If you accessed the **Apply Template Group Builder** from an Equipment/Location node, the **Select Asset** screen does not appear. Instead the **Select Template Group** screen appears.

3. Perform a search for the records representing the equipment and locations to which you want to link the Measurement Location records that are created from the Template Group. The **Search In** list contains all the families that are predecessors to the Measurement Location family through the Has Checkpoint relationship.

   The search results appear.

4. In the search results, select the row(s) containing the desired record(s).

5. Click the **Next** button.

   The **Select Template Group** screen appears.

6. Perform a search for the Template Group record representing the Template Group that you want to apply to the Route.

7. In the search results, select the row containing the desired record.

8. Click the **Finish** button.

   The **Apply Template Group Builder** closes, and the **Applying Templates** dialog box appears, indicating the progress of this process.
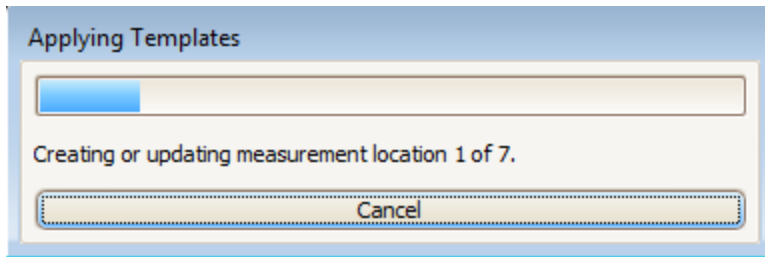
   When the process finishes, the **Applying Templates** dialog box closes, revealing the Route pane that is populated with the newly created nodes.
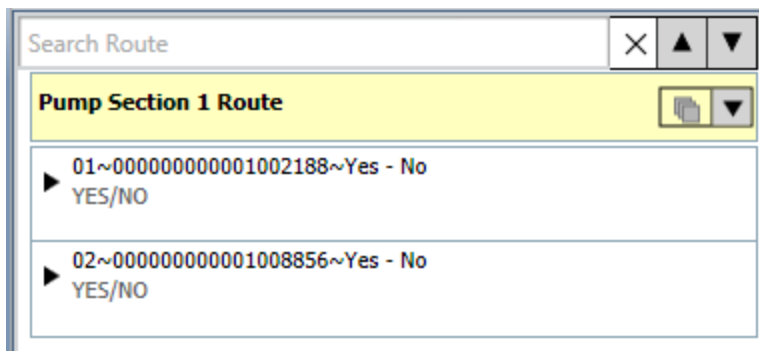
About Arranging Checkpoints on a Route

The order in which the checkpoints are presented on the device corresponds to the order in which the Measurement Location nodes appear in the Route pane in the Meridium APM Framework application. More specifically, the value stored in the Sequence field in the associated Measurement Location records is used to determine the order in which the checkpoints will appear on the handheld device.

For example, a checkpoint represented by a Measurement Location record with the Sequence value *01* will appear before a checkpoint represented by a Measurement Location record with the Sequence value *02*. On the Measurement Location datasheet, the Sequence field is disabled and populated automatically by the Meridium APM system, based upon the current location of that Measurement Location node in the [Route pane](#).

You can use the Route pane to [sequence the Measurement Location nodes](#) according to the order in which you want the checkpoints to appear to a user on the handheld device. We recommend that you sequence the Route by arranging Measurement Location nodes in an order that corresponds to the proximity of the associated equipment and locations. For example, suppose you want to perform a visual inspection of a Pump. You will want to create Measurement Location records that represent each checkpoint on the Pump that you will need to visually inspect. Further, you will want to arrange the Measurement Location nodes in the order in which the user should conduct the visual inspection. For example, you may want the user to start at the back of the pump and move towards the front.

> Œ Hint: In this case, you may find it beneficial to sequence the checkpoints [using the Asset View](#).

Measurement Location records are sequenced automatically starting with 01, based upon the record to which they are linked as a successor. In other words, all the Measurement Location records that are linked directly to the Route record as successors will be numbered 01, 02, 03, and so on, and all the Measurement Locations that are linked to Checkpoint Condition records will be numbered as 01, 02, 03, and so on within that condition.

Consider the following image, which shows:

- Five Measurement Location nodes that are positioned directly below the Route node.
- Two Measurement Location nodes that are positioned directly below a Checkpoint Condition record (shaded blue).
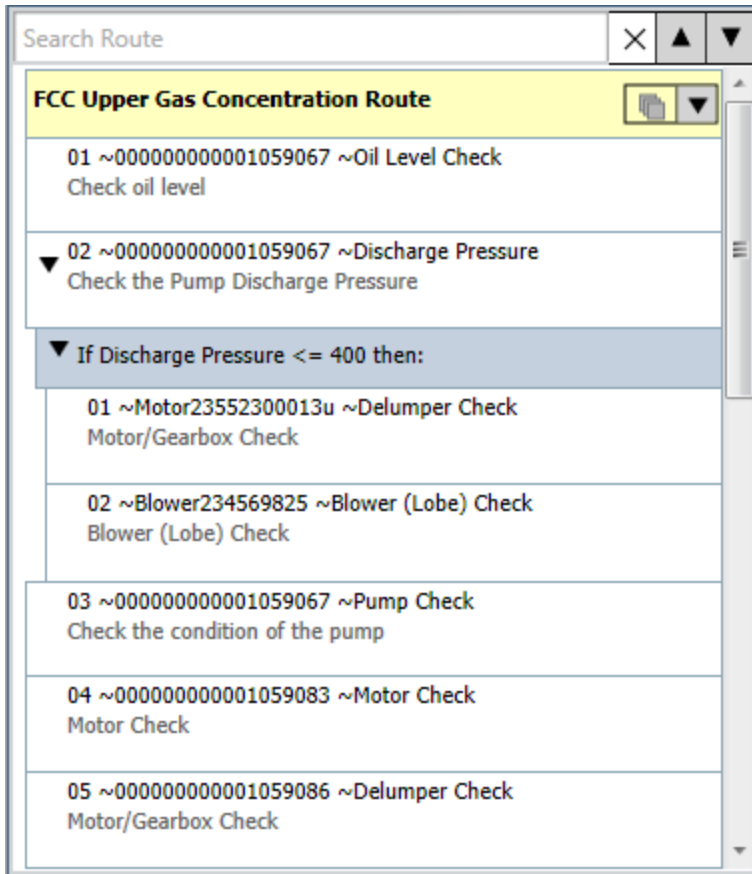
You can see that the:

- Five Measurement Location nodes are numbered 01 through 05.
- Two Measurement Location nodes are numbered 01 and 02. Measurement Location nodes that are part of a condition are assigned their own sequence structure, which is also sequential starting with 01.

You can change the sequence of Measurement Location nodes by dragging them from their current location and dropping them in the desired location. When you do so, the value in the Sequence fields in the corresponding Measurement Location records will be updated automatically to reflect the current location of each nodes. In addition, the Sequence values in the Measurement Location records represented by the surrounding the Measurement Location nodes that were moved will also be updated.

Guidelines for Sequencing Measurement Location Records

You can use the Route pane to drag a Measurement Location node from its current location and drop it into the desired location. When you do so, the value in the Sequence field in the corresponding record and the records represented by the surrounding nodes will be updated automatically with the new sequence number. For example, consider the following image, which shows a Route that contains five Measurement Location nodes.
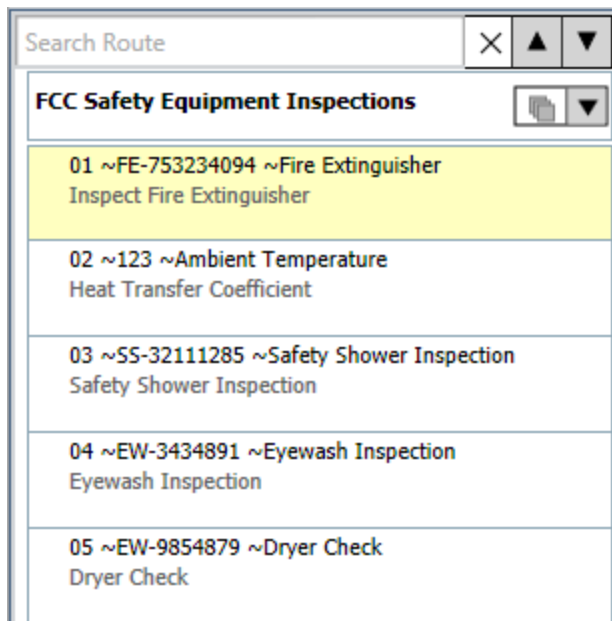
In this image, you can see that the Measurement Location node *Inspect Fire Extinguisher* contains the Sequence value *01*, and the Measurement Location node *Eyewash Inspection* contains the Sequence value *04*.

If you drag the *Inspect Fire Extinguisher* node from its current location and drop it directly after the location where the *Eyewash Inspection* node currently exists, the Sequence value for *Inspect Fire Extinguisher* node will be updated automatically to *04*, and the Sequence value for the *Eyewash Inspection* node will updated automatically to *03*. Likewise, the *Heat Transfer Coefficient* node that contained the Sequence value *02* will be updated automatically with *01*.

Search Route

FCC Safety Equipment Inspections

01 ~123 ~Ambient Temperature
Heat Transfer Coefficient

02 ~SS-32111285 ~Safety Shower Inspection
Safety Shower Inspection

03 ~EW-3434891 ~Eyewash Inspection
Eyewash Inspection

04 ~FE-753234094 ~Fire Extinguisher
Inspect Fire Extinguisher

05 ~EW-9854879 ~Dryer Check
Dryer Check
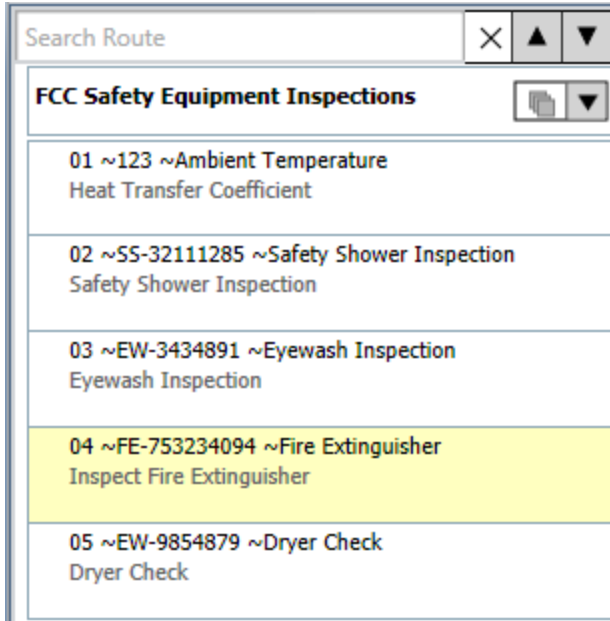
In this way, you can drag and drop any Measurement Location node to any location within the Route. In addition, you can select more than one Measurement Location node at one time and drag those nodes to a different location, using the Ctrl or Shift keys. As you drag a group of Measurement Location nodes, text is displayed that indicates the number of Measurement Location nodes that are selected.

The following list contains guidelines that you should use when arranging Measurement Location nodes in the Route pane.

- When you move a Measurement Location node representing a record that is linked to successor records, the successor nodes will be moved along with the predecessor node.

- You can drag an Equipment/Location node to move *all* the Measurement Location nodes that are grouped under that Equipment/Location node and any successor records that are linked to the Measurement Location records represented by the Measurement Location nodes.

- If you drop a Measurement Location node that existed within a condition to a location outside of that condition, the link between the corresponding Measurement Location record and the Checkpoint Condition record will be deleted and a direct link will be created between that Measurement Location record and the Route record automatically.

- If you drop a Measurement Location node whose Measurement Location record is linked directly to the Route record to a location within a condition, the link between the Measurement Location record and the Route record will be deleted and a link will be created between the Measurement Location record and the Checkpoint Condition record automatically.

About Deleting Records in a Route

If a Route should no longer contain a record, you can delete that record. Deleting the record will remove the link between that record and its predecessor record and delete it from the Meridium APM database. If the record that you want to delete is linked to other records as a predecessor, deleting the record will not delete the successor records from the Meridium APM database.

If you want to delete an entire Route, you can delete the Route record, and that Route will no longer appear in the Operator Rounds interface. The successor records that are linked to that Route record, however, will not be deleted from the Meridium APM database.

Deleting a Route Record

The following instructions provide details on deleting a Route record, which causes the associated Route to no longer be accessible within Operator Rounds. An alternative to deleting a Route record is to modify the Route record or delete the unused records from the Route.

To delete a Route record:

1. Access the **Route Selection** page.

2. In the grid, select the Route record that you want to delete.

	Route ID	△	Route Description	Route Status
	DB-PMP-FEED		Debutanizer Pump Feed System Example	Active
	FCC Safety Equipment Inspections		Inspection of safety equipment in FCC	Active
	FCC Upper Gas Concentration Route		FCC Upper Gas Concentration	Active
	MRD-ROA-REFN-RF064 Operator Round		Roanoke Refining Unit 64 Daily Operator Round	Active
▶	Route X		No longer needed	Inactive

3. On the **Route Tasks** menu, click the **Delete Route** link.

   The **Delete Route** confirmation dialog box appears, asking if you really want to delete the Route record.

4. Click the **Yes** button.

   The Route record is deleted and removed from the grid on the **Route Selection** page.

Deleting Records from a Route

The following instructions provide details on deleting records that are directly or indirectly linked to the Route record. When you delete a record that belongs to a Route, you are deleting the link between that record and its predecessor record. If that record is linked to other successor records, however, the successor records will not be deleted.

To delete a record from a Route:

1. Open the Route whose record you want to delete.

2. In the Route pane, select the node representing the record that you want to delete.

3. On the **Route Tasks** menu, click the **Delete** link.

   A confirmation message appears, asking if you really want to delete...

   - The current record, if the record is not linked to other successor records.

        -or-

   - The current record and its successor records, if the record is linked as a predecessor to other successor records.

4. Click the **Yes** button.

   The selected node is removed from the Route pane, and its corresponding record is deleted from the Meridium APM database.

Accessing the List of Recently Modified Route Records

On the **Operator Rounds Recently Modified Routes** page, you can view a list of the last ten Route records that have been modified and the Security User who last modified the Route record.

To access the Operator Rounds Recently Modified Routes page:

- On the **Operator Rounds Start Page**, click the **Recently Modified Routes** link.

  The **Operator Rounds Recently Modified Routes** page appears, displaying the last ten Route records that were modified.
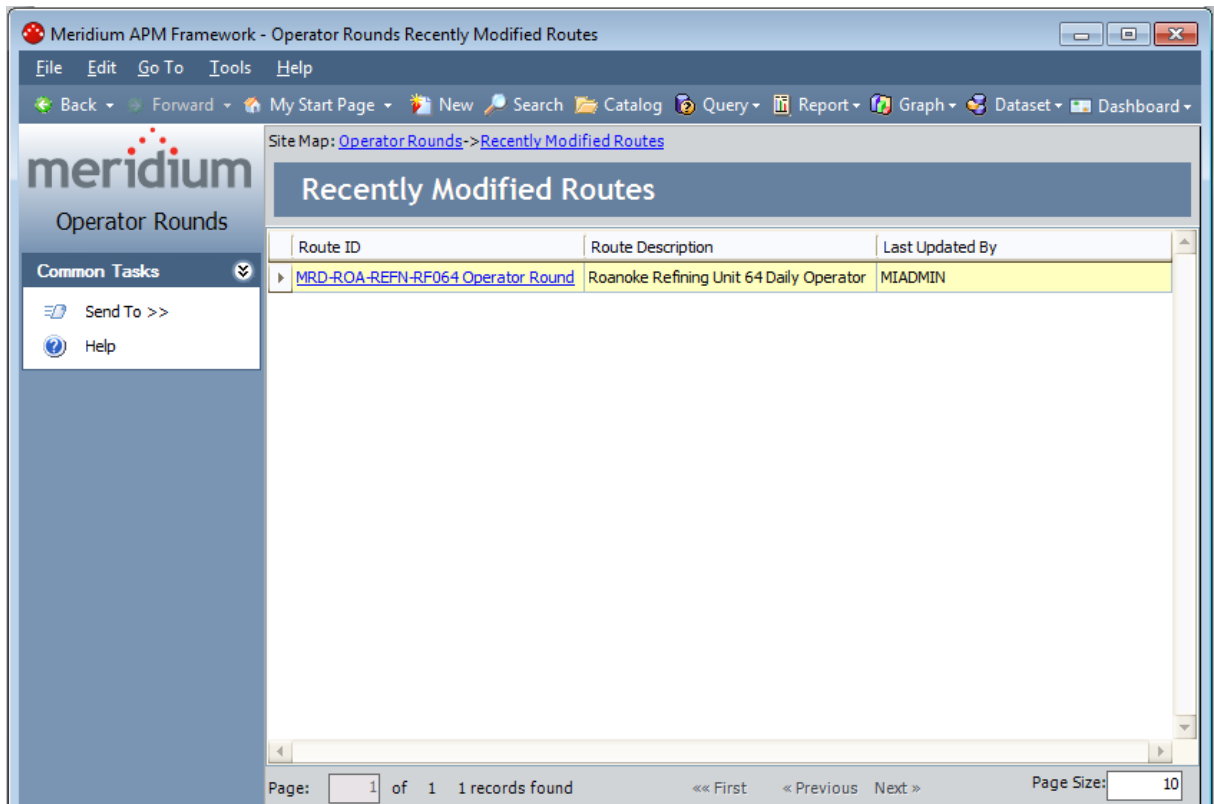
Aspects of the Operator Rounds Recently Modified Routes Page

The **Operator Rounds Recently Modified Routes** page contains the following items:

- **Common Tasks menu:** Provides access to common functionality.
- **Recently Modified Routes workspace:** Displays a list of Route records that were recently modified.

Each row in the **Recently Modified Routes** workspace represents one Route record that was recently modified, and the columns contain the following information:

- **Route ID:** The name of the Route as it appears in the Route record. The ID appears as a hyperlink, which you can click to open the Route record in the Record Manager.
- **Description:** The description of the Route as it appears in the Route record.
- **Last Updated By:** The name of the Security User who last updated the Route record.

> **Note:** The maximum number of records that can be displayed on the **Operator Rounds Recently Modified Routes** page is 10. If you change the page size to a number *greater than* 10, only up to 10 records will be displayed.

Using the **Operator Rounds Recently Modified Routes** page, you can open a Route that was recently modified.

Common Tasks Menu
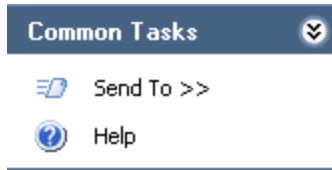
The **Common Tasks** menu on the **Operator Rounds Recently Modified Routes** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), in an email message, or a Home Page.This link is disabled if no Route records are displayed.

- **Help:** Displays the context-sensitive Help topic for the **Operator Rounds Recently Modified Routes** page.

Opening Recently Modified Routes

The following instructions provide details on opening a Route that was recently modified.

To open a recently modified Route:

1. Access the Operator Rounds Recently Modified Routes page.

2. In the **Recently Modified Routes** grid, click the hyperlinked Route ID of the Route that you want to view.

   The selected Route appears on the **Route Management** page.
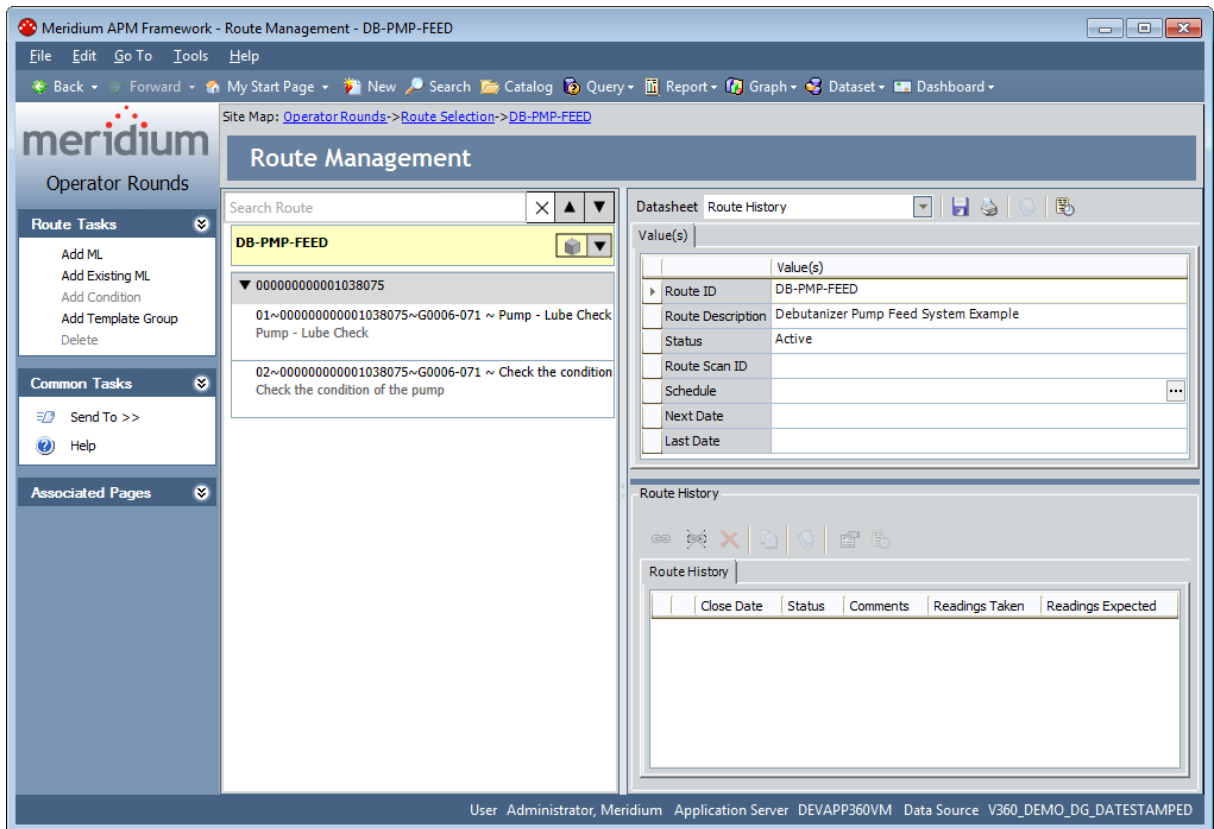
About Measurement Location Templates and Template Groups

A [Measurement Location Template record](#) serves as a template that you can use as the basis for creating multiple Measurement Location records. A Template Group serves as a container for multiple Measurement Location Template records and Checkpoint Condition records that are connected to one another in a structure like a Route. You can use a Template Group to create corresponding Measurement Location and Checkpoint Condition records in a Route in the same structure that is defined in the Template Group. You can use Operator Rounds to manage [Template Groups and individual checkpoint templates and conditions that can be applied to a Route](#). In this way, you can add multiple Measurement Location and Checkpoint Condition records to a single Route at one time using the **Apply Template Group Builder**.

A Template Group consists of the following records:

- One Template Group record.
- One or more Measurement Location Template records.
- Zero or more Checkpoint Condition records.
- Multiple Checkpoint Template Sequence records.

Unlike the structure of a Route, the records that make up a Template Group are not linked to one another in the database through a Relationship family. Instead, the structure of the records that are displayed in the UI is stored in multiple records that are created automatically in the Checkpoint Template Sequence family. Throughout the documentation when we refer to the relationship between the records that make up a Template Group, we will not use the term *linked*. Instead, we use the term *associated* to differentiate between records that are related to one another through a physical link in the database and those that are related to one another only visually in the UI.

The following image illustrates the records described above and how they make up a Template Group. In this image, each box represents a single record in that entity family, and the arrows represent the association between the records while not representing a physical link in the database.
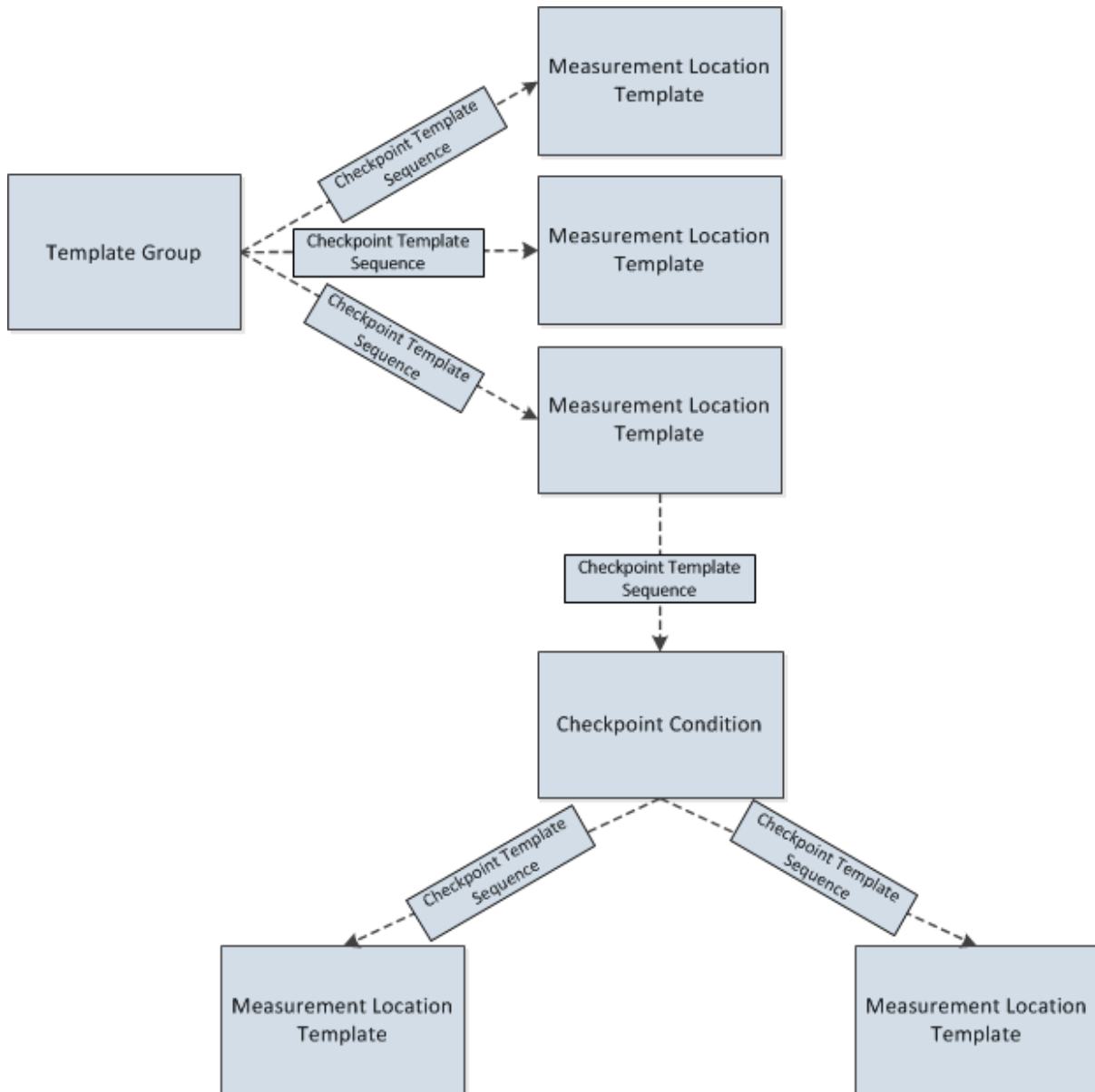
You can manage Template Groups via the **Template Group Management** page. With the exception of Checkpoint Template Sequence records, all the records that make up a Template Group will appear in the Template Group pane on the **Template Group Management** page, where the Template Group record is shown as the root node. You can use the Template Group pane to create and manage your Template Groups. The following image shows an example of the Template Group pane.

You can [add new or existing Measurement Location Template records to the Template Group](). You can work with Measurement Location Template records via the Datasheet area on the **Template Group Management** page.

Workflow for Creating a Template Group

By creating a Template Group, you are defining a group of checkpoint templates and conditions that can be used to create corresponding checkpoints and conditions in a Route, including the order in which those checkpoints should be completed relative to one another. To create a Template Group, you will need to complete the following steps:

1. Create a Template Group record.

2. Add the desired Measurement Location Template records to that Template Group.

3. Define the order in which the checkpoints should appear on the Route.

4. Add Checkpoint Template records to the Template Group, which represent conditional logic for that Template Group.

After you have created a Template Group, you can apply it to a Route using the **Apply Template Group Builder**.

Accessing the Template Group Management Page

The **Template Group Management** page can be accessed in the following ways:

- [Create a new Template Group](#).
- [Open an existing Template Group](#).

Aspects of the Template Group Management Page

The Template Group Management page lets you manage a single Template Group. You can access the **Template Group Management** page by creating a new Template Group record or opening an existing one. The title of this page will change to identify the Template Group with which you are currently working. When you open a Template Group record on the **Template Group Management** page, the page name will be appended with the Template Group ID in the Template Group record. When you create a NEW Template Group record, the page name will appear as *Template Group Management -*, without a Template Group ID, until after you save the record. The following image shows an example of what the **Template Group Management** page looks like when you open the existing Template Group record with the Template Group ID *Benchmark Group*.
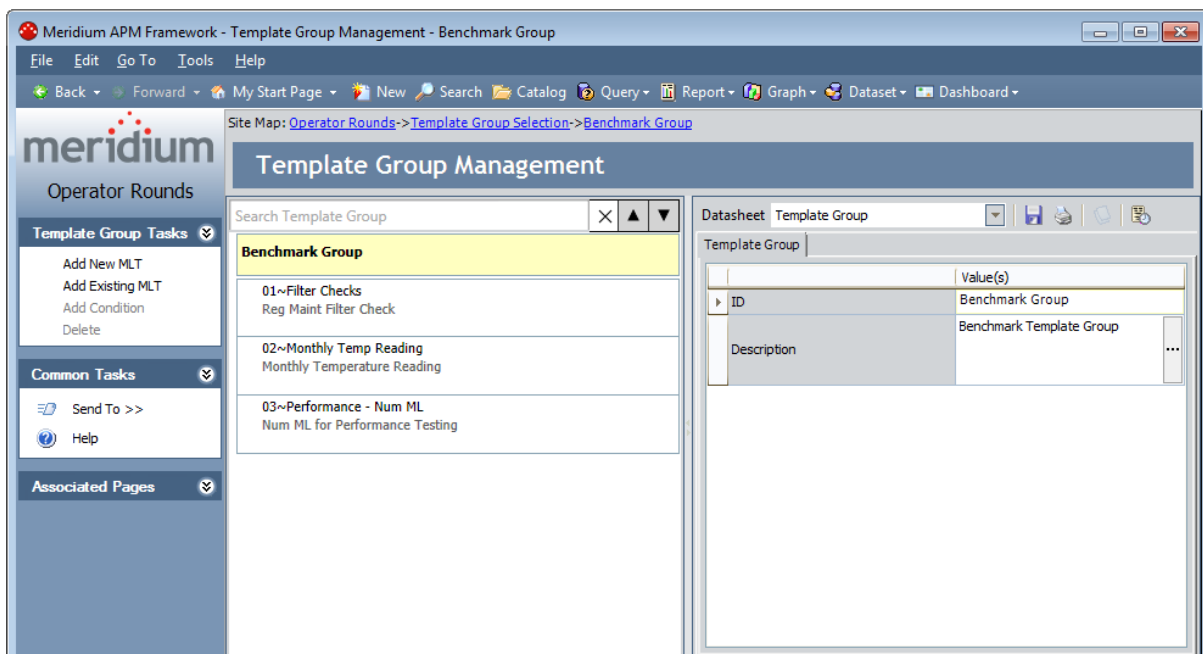
The **Template Group Management** page contains the **Template Group Management** workspace, which contains the following items:

- Template Group pane
- Datasheet area

The**Template Group Management** page contains the following task menus:

- [Template Group Tasks](#)
- [Common Tasks](#)
- **Associated Pages**

Template Group Tasks
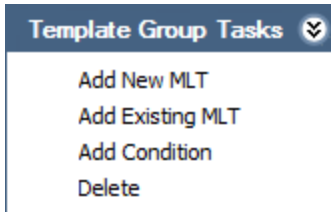
The **Template Group Tasks** menu on the **Template Group Management** page contains the following links:

- **Add New:** Creates a new Measurement Location Template record and adds it to the Template Group pane.

- **Add Existing MLT:** Displays the **Add Existing Measurement Location Templates to <Route ID>** window, where you can search for existing Measurement Location Template records and then add them to the Template Group.

- **Add Condition:** Creates a new Checkpoint Condition record and adds it to the Template Group pane. This link is disabled when the Template Group node is selected in the Template Group pane.

- **Delete:** After displaying a confirmation message, deletes or removes the selected record from the Template Group. This link is disabled when the Template Group node is selected in the Template Group pane.

Common Tasks
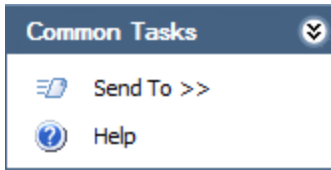
The **Common Tasks** menu on the **Template Group Management** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), an email recipient, or a Home Page.

- **Help:** Displays the context-sensitive Help topic for the **Template Group Management** page.

The Datasheet Area on the Template Group Management Page

The Datasheet area on the **Template Group Management** page displays the contents of the record whose corresponding node is currently selected in the Template Group pane to the left, with the exception of Checkpoint Condition records.

When a Template Group node is selected in the Template Group pane, the contents of the corresponding Template Group record is displayed in the Datasheet area via the *Template Group* datasheet.

When a Measurement Location Template node is selected in the Template Group pane, the contents of the corresponding Measurement Location Template record is displayed in the Datasheet area via the *Measurement Location Template* datasheet.

When you are viewing an *existing* Measurement Location Template record, the datasheet is disabled by default, and the **Edit ML Template** check box will appear above the **Datasheet** list (as shown in the previous image). This check box is clear by default. You can select this check box to enable the fields on the Measurement Location Template record. When you create a new Measurement Location Template record, however, this check box will not appear. The **Edit ML Template** check box appears only after you navigate away from the newly created Measurement Location Template node and back again.

Overview of the Template Group Pane

The following image shows what the Template Group pane looks like in the **Template Group Management** workspace on the **Template Group Management** page.
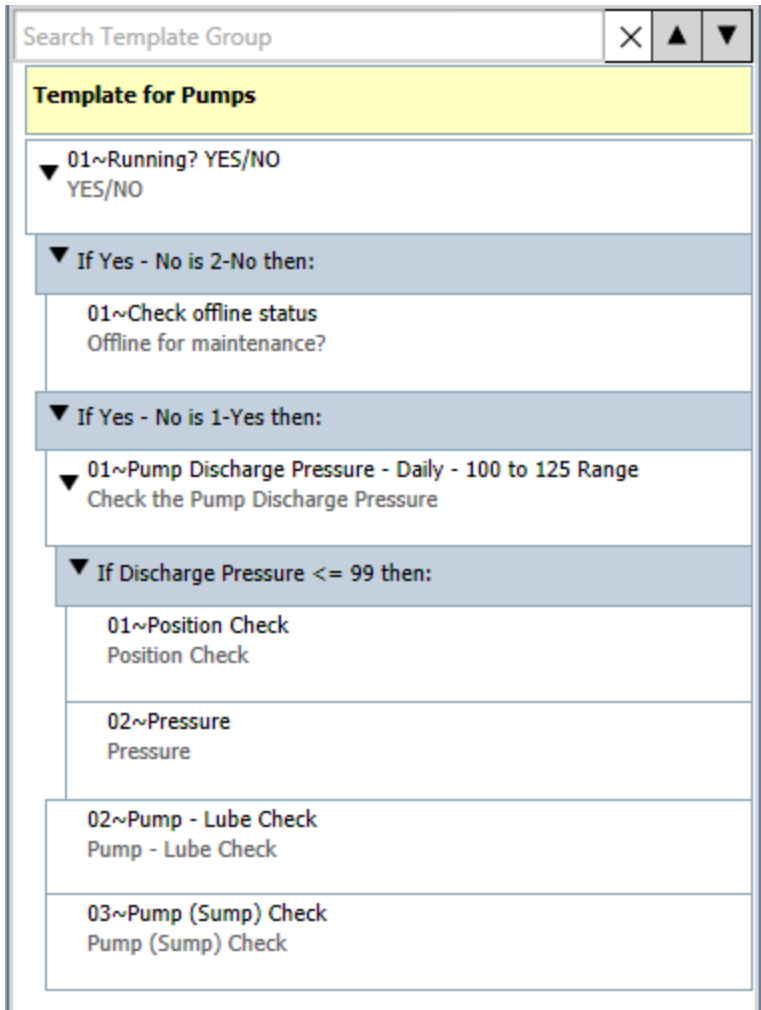
The Template Group pane contains the following items:

- The **Search Template Group** text box, where you can type search criteria to search the Measurement Location Template and Checkpoint Condition nodes that appear in the Template Group pane. The **Search Template Group** text box is outlined in red in the following image.
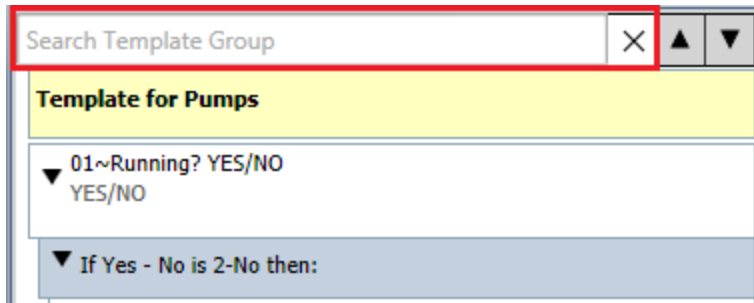
The search criteria will be highlighted within the contents of the Template Group, as shown in the following image.
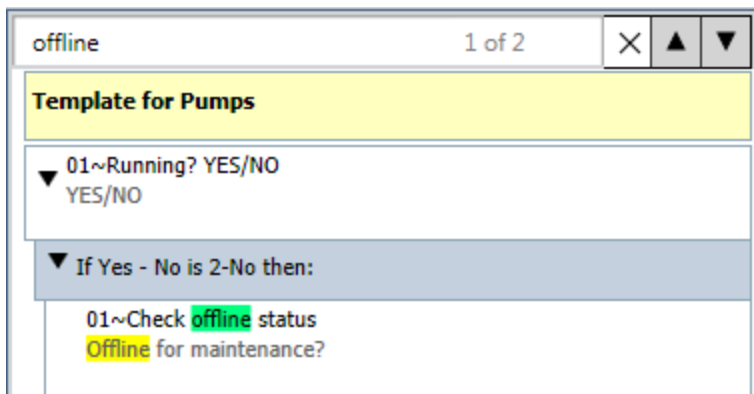
To the right of the **Search Template Group** text box, the following buttons appear:

$\boxed{\times}$ Clears the search criteria and the search results.

$\boxed{\blacktriangle}$ Highlights the previous search result.

$\boxed{\blacktriangledown}$ Highlights the next search result.

- A root node representing a Template Group record. The Template Group node is always displayed at the root level in the Template Group pane. In the following image, the Template Group node is outlined in red.
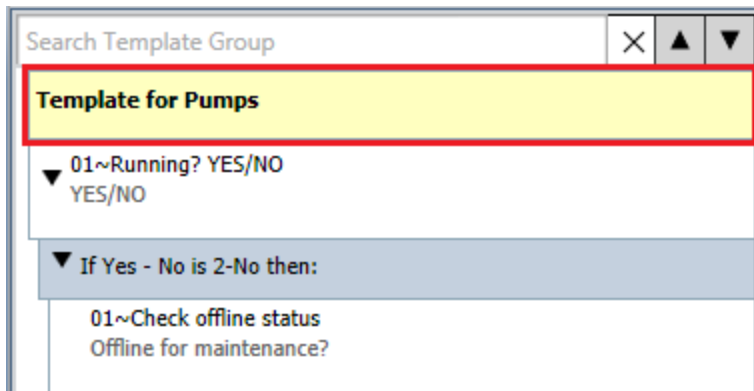
- Multiple subnodes representing the contents of the Template Group (i.e., Measurement Location Template and Checkpoint Condition records). In the following image, the subnodes are outlined in red.
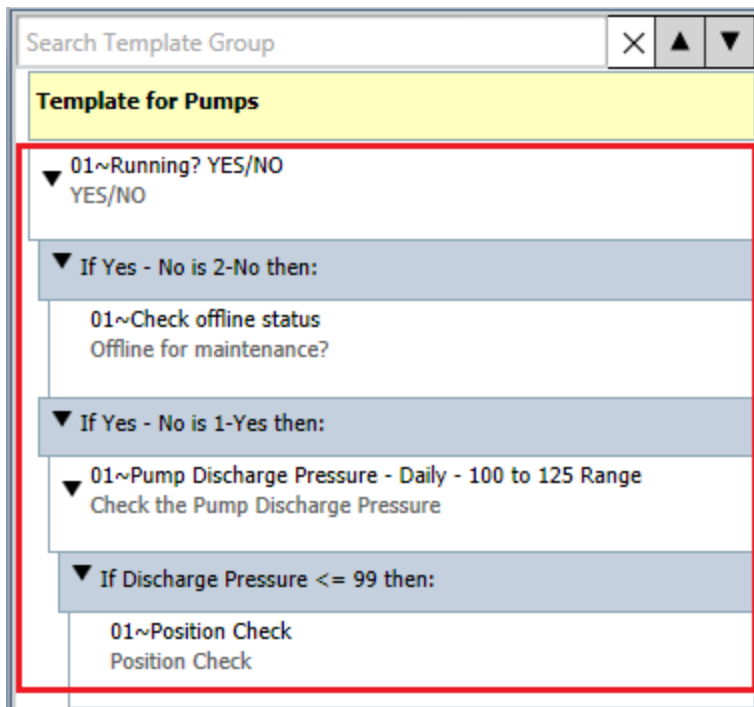
- [Shortcut menus](), which you can use to work with the contents of the Template Group.

You can use the features in the Template Group pane to complete the following tasks:

- [Create Measurement Location Template records]() to represent checkpoints that you can add to a Route.
- [Sequence the order of the Measurement Location Template nodes]().
- [Add conditions to the Template Group](), as needed.
- [Search the nodes]() to locate the ones that you want to work with.

You can change the width of the Template Group pane by clicking and dragging the pane border to the right or left.

About the Contents of the Template Group Pane

The Template Group pane displays nodes that represent the following records that make up a Template Group:

- Template Group record.
- Checkpoint Condition records.
- Measurement Location Template records.

Call outs have been added to the following image to highlight the nodes that represent the records in the preceding list.
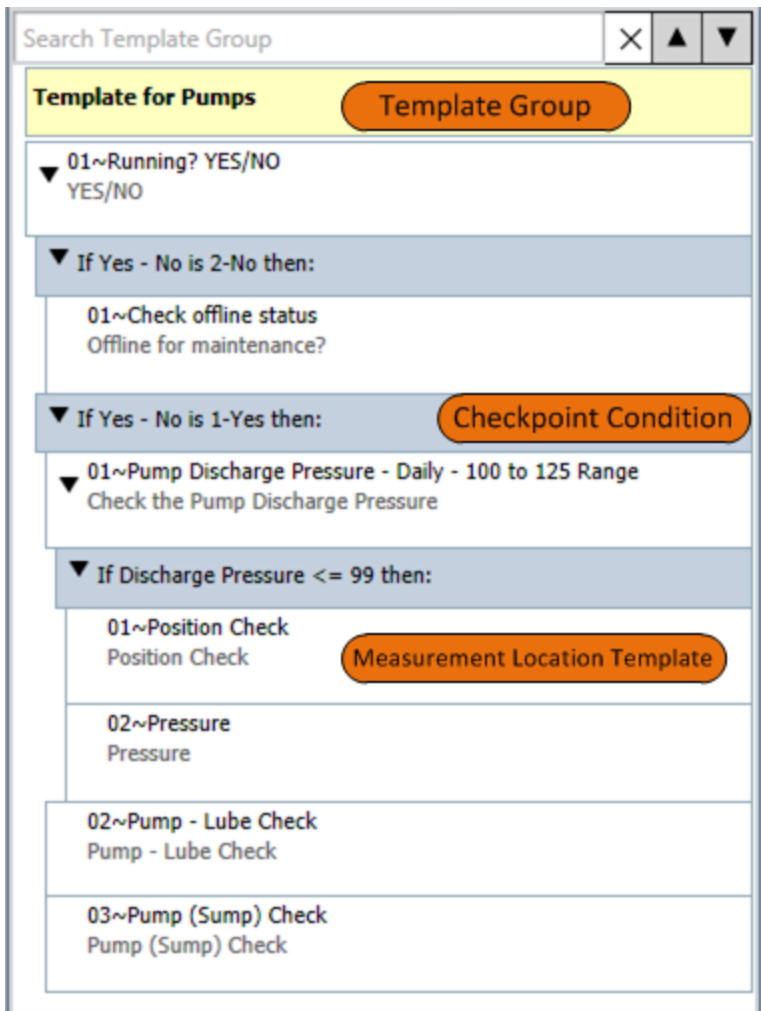
The order in which the checkpoint templates appear in the Template Group pane corresponds to the order in which Measurement Location nodes will appear in the Route pane after you apply a Template Group to a Route. Measurement Location Template nodes are sequenced automatically starting with *01*, based upon their position in the Template Group pane, relative to the other Measurement Location Template records. You can rearrange the nodes as desired.

You can select the Template Group node and Measurement Location Template nodes in the Template Group pane to view and modify the contents of the corresponding record in the Datasheet area to the right of the Template Group pane. Checkpoint Condition records, however, can be modified within the Template Group pane itself. Their data-sheet does not appear in the Datasheet area.

If a Measurement Location Template or Checkpoint Condition record is associated with one or more successor records, an arrow will appear to the left of that Measurement Location Template or Checkpoint Condition node. The direction of the arrow indicates whether the successor nodes are displayed or hidden. You will see the following arrows in the Template Group pane:

- ▶ Indicates that the successor nodes are hidden. You can click this arrow to display the successor nodes.
- ▼ Indicates that the successor nodes are currently displayed. You can click this arrow to hide the successor nodes.

> **Note:** These arrows should not be confused with the arrows that appear to the right of the **Search Template Group** text box and are used to navigate the search results.

When you right-click any node in the Template Group pane, a shortcut menu appears with options that allow you to work with the contents of the Template Group pane.

The Template Group Node

The Template Group pane will contain only ONE Template Group node, which will always appear at the top of the Template Group pane. The value that is displayed in the Template Group pane for the Template Group node is the value stored in the ID field in the corresponding Template Group record. Consider the following image, where the Template Group node is selected in the Template Group pane, and the contents of the corresponding Template Group record is displayed in the Datasheet area to the right.

Using the datasheet, you can modify the contents of the Template Group record as desired, and then save the record using the 💾 button on the Datasheet toolbar. If you navigate away from the Template Group node without saving the changes to the Template Group record, a message will appear, asking if you want to save the changes.

Measurement Location Template Nodes

Measurement Location Template records store the details of the *checkpoint template*, which can be used to create Measurement Location records in a Route. In the Template Group pane, Measurement Location Template nodes can appear below the Template Group node or below Checkpoint Condition nodes. For each Measurement Location Template node that appears in the Template Group pane, the following information appears:

- A number representing the sequence in which the Measurement Location Template appears in relation to the other Measurement Location Template nodes that are associated with the same predecessor node.

- The Entity ID, as defined in the ID Template for the Measurement Location Template family. In the baseline database, the ID Template for the Measurement Location Template family is **<Template ID>**, where **<Template ID>** is the value stored in the Template ID field in the corresponding Measurement Location Template record.

  The ID Template can be modified via the Configuration Manager.

- The value stored in the ML Description field in the corresponding Measurement Location Template record. In the Template Group pane, the description value is always displayed below the Entity ID. Throughout this documentation, when we refer to a Measurement Location Template node, we refer to it by its ML Description.

When you add Measurement Location Template record to a Template Group, a new node will appear in the Template Group pane directly below the node with which it is directly associated. Consider the following image.
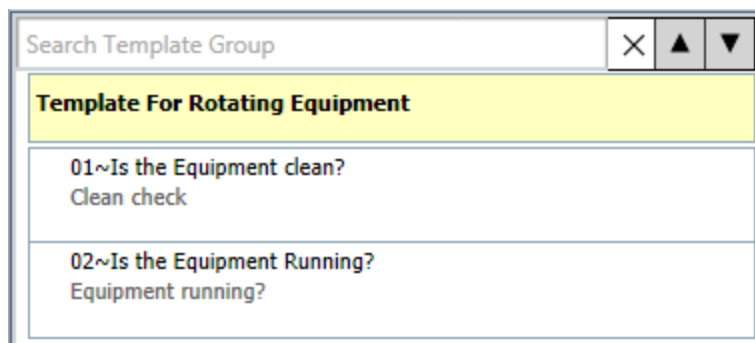
In this image, you can see that two Measurement Location Template records are associated directly with the Template Group record as successors, as indicated by their position directly below the Template Group node.

Measurement Location Template records can also be successors to Checkpoint Condition records, which represent conditional logic that can be applied to the checkpoints. After a Template Group containing conditions is applied to a Route, the checkpoints that are created as successors within a conditions will appear to the device user only if the

defined condition is met. Condition nodes and Checkpoint Condition records are explained elsewhere in this documentation.

You can change the order in which the Measurement Location Template nodes are displayed in the Template Group pane by clicking and dragging the Measurement Location Template node from its current location and dropping it in the desired location.

You can modify Measurement Location Template records via the Datasheet area when a Measurement Location Template node is selected in the Template Group pane and save your changes using the 💾 button on the Datasheet toolbar. If you navigate away from the Measurement Location Template node without saving the changes to the record, a message will appear, asking if you want to save the changes.

Checkpoint Condition Nodes in the Template Group Pane

On a Route, a *condition* identifies which checkpoint should appear on the device if the user enters a specific reading value for the previous checkpoint. Likewise, in a Template Group, a condition represents the condition that will be created when the Template Group is applied to a Route. When you define a condition, you will need to define:

- The *initial checkpoint* whose reading value should trigger a subsequent checkpoint.
- The *specific reading value* that should trigger another checkpoint.
- The *subsequent checkpoint* that should be triggered by that reading value.

In a Template Group, a single condition is represented by:

- One Measurement Location Template record that identifies the initial checkpoint.
- One Checkpoint Condition record that identifies the specific reading value.
- One or more Measurement Location Template records that identify the subsequent checkpoints.

In the Template Group pane, Checkpoint Condition nodes are displayed within the context of the Measurement Location Template node representing the initial and subsequent checkpoints. Specifically, the Checkpoint Condition node appears below the Measurement Location Template node representing the initial checkpoint. Likewise, the Measurement Location Template node representing the subsequent checkpoint appears below the Checkpoint Condition node.

Consider the following image. In this image, you can see the Checkpoint Condition node, which is colored blue and displayed below the initial Measurement Location Template node *Yes/No*. Below the Checkpoint Condition node *If Yes - No is 2-No then:*, you can see the subsequent Measurement Location Template node *Offline for maintenance?*.

In other words, after the Template Group containing this condition is applied to a Route, an identical condition will be created on the Route that specifies the following condition for the Route:

If a device user enters the value *No* for the checkpoint *Yes/No* (highlighted in yellow in the previous image), then the next checkpoint that should be displayed to the device user is *Offline for maintenance?* (shown below the Checkpoint Condition node in the previous image).

You can modify Checkpoint Condition records via the Checkpoint Condition node in the Template Group pane, and your changes will be saved automatically.

The Shortcut Menu in the Template Group Pane

The shortcut menu in the Template Group pane contains options that you can use to work with the contents of the Template Group. You can access this menu by right-clicking any node that is displayed in the Template Group pane. The options that appear on this menu will vary depending upon the node that you right-clicked to access the menu. If multiple nodes are selected at one time (e.g., if you are arranging the nodes), the shortcut menu will not appear. With the exception of the **Expand** and **Collapse** links, the links that are available on the shortcut menu function the same way as they do on the **Template Group Tasks** menu.

The following image shows an example of what the shortcut menu looks like when it contains *all* the possible options.

| Add New |
| Add Existing MLT |
| Add Condition |
| Delete |
| |
| Expand |
| Collapse |
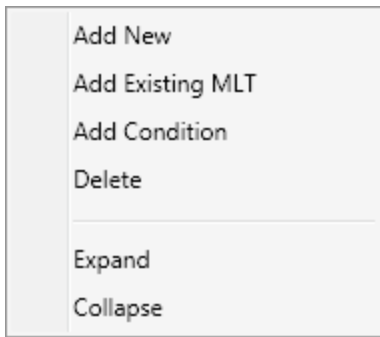
The following table provides details which links are available on this menu from each entry point.

Link	Available From the Following Nodes
Add New	Checkpoint Condition
	Measurement Location Template
	Template Group
Add ML	Checkpoint Condition
	Measurement Location Template
	Template Group
Add Existing MLT	Checkpoint Condition
	Measurement Location Template
	Template Group
Add Condition	Checkpoint Condition
	Measurement Location Template

Link	Available From the Following Nodes
Delete	Checkpoint Condition
	Measurement Location Template
Expand	Checkpoint Condition
	Measurement Location Template
	Template Group
Collapse	Checkpoint Condition
	Measurement Location Template
	Template Group

About Searching in the Template Group Pane

The Template Group pane contains a search feature, which you can use to locate the desired Measurement Location Template or Checkpoint Condition node. When you do so, you are searching the:

- Sequence, Entity ID, and ML Description values that are displayed in the Template Group pane for each Measurement Location Template node, as shown in the following image. Arrows have been added to the image to highlight each value.

  -and-
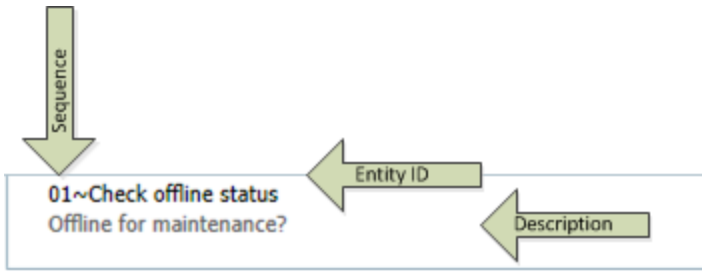
- The text that is displayed for each Checkpoint Condition node. The following image shows a Checkpoint Condition node.
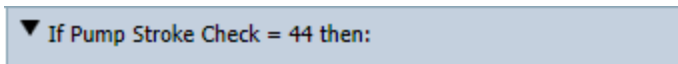
Search results will not be returned for the Template Group node.

Using the **Search Template Group** text box, you can search for character values, numeric values, symbols, and spaces. The Meridium APM system will search for the values as you type them. If you type multiple values, the Meridium APM system will search for these values as a continuous string. In other words, the Meridium APM system will search for the string that you type and return results that include that string as stand-alone text and within text.

In addition, the search feature is case *insensitive*, which means that you can search for lowercase or capitalized characters, and the Meridium APM system will locate matching results in either case.

Consider the examples that are shown in the following table.

If you search for..	The Meridium APM system will return results like...
g	gear
	agitator

If you search for..	The Meridium APM system will return results like...
ge	==ge==ar ==GE==-101
g e	Heatin==g e==lement
-32	SS==-32==1111285
<=	*<=* (i.e., as in a Checkpoint Condition record)

When you start typing in the **Search Template Group** text box, the default text, *Search Template Group*, will disappear, and the Meridium APM system will return search results automatically. When results are found, in the Template Group pane:

- The matching text will be highlighted ==yellow==, while the first matching result in the list is selected by default and highlighted ==green==. As you navigate the search results, the currently selected result will be highlighted green. You can think of the green highlight as the cursor.

- The **Search Template Group** text box will display the number of results that are found in the format **x of n**, where **n** is the total number of results that are highlighted in yellow in the Template Group pane, and **x** is the number representing the search result that is currently selected and highlighted green.

- If the *first* search result exists in a node that is currently hidden, it will be displayed automatically. Any subsequent results that exist in hidden records, however, will remain hidden until you navigate to that result. Keep in mind that the total number of results will always be displayed in the **Search Template Group** text box.

Consider the following image, which shows search results for *Pump* in the Template Group pane.
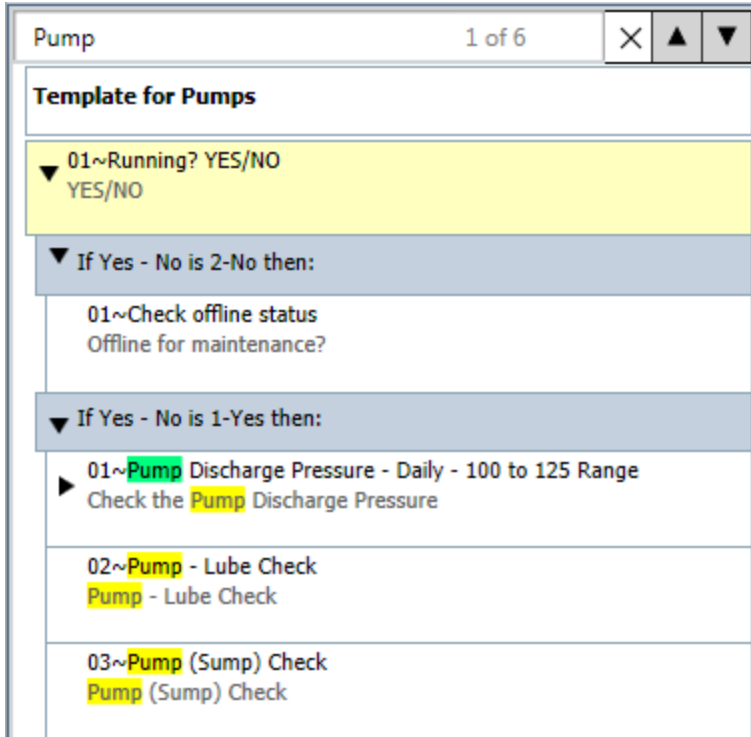
In this image, you can see that:

- 6 results were found, and the first result is selected by default and highlighted green.
- The subsequent search results are highlighted yellow.
- Results are highlighted only in the Measurement Location Template and Check-point Condition nodes.

If, however, you perform a search where no results are found:

- In the **Search Template Group** text box, the text **x of n** will appear as **0 of 0** and highlighted orange.
- No text in the Template Group pane will be highlighted yellow or green.

To clear the current search results and criteria, click the ☒ button to the right of the **Search Template Group** text box.

Working with the Search Results in the Template Group Pane

After you perform a search in the Template Group pane and results are returned, you can browse those results using the arrow buttons to the right of the **Search Template Group** text box. In the following image, the arrow buttons are outlined in red.
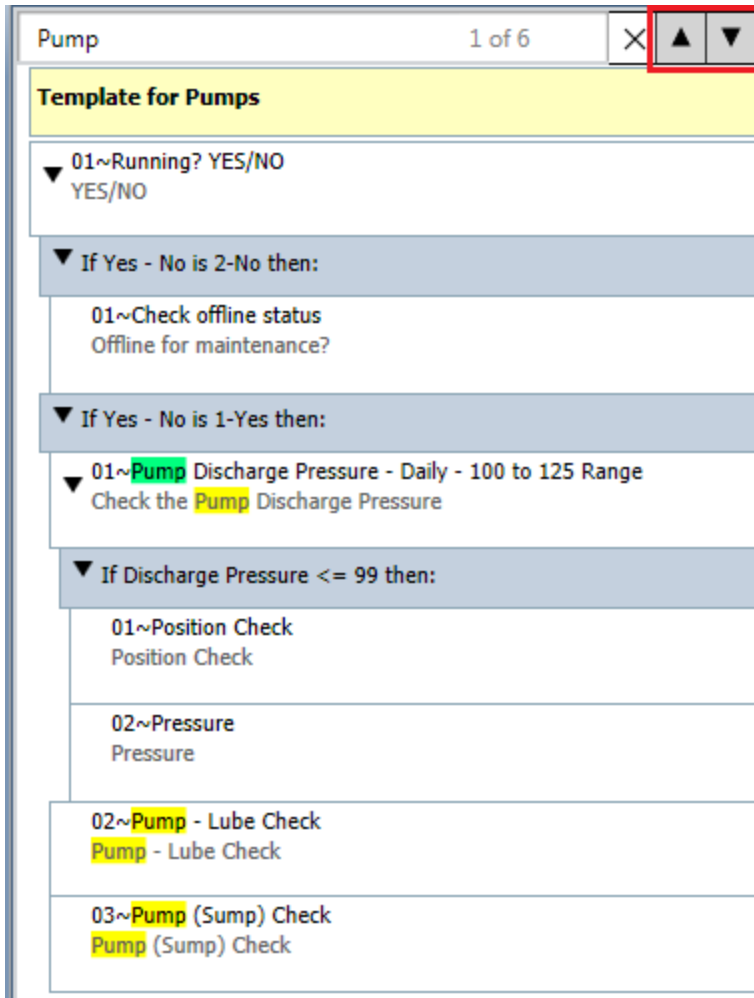
The ▲ button selects the previous search result.

The ▼ button selects the next search result.

As you browse the results in this way, the result that you navigate to will be highlighted green to indicate that it is currently selected. You can think of the green highlight as the cursor. Likewise, the result that you navigate away from (previously highlighted green) will be highlighted yellow. In addition, the **x** portion in the text **x of n** that appears in the **Search Template Tasks** text box will automatically display the number representing the result that is currently selected in relation to the total number of search results (**n**). Keep

in mind that as you navigate the search results, the node that is currently selected in the Template Group pane will remain selected. Navigating the search results does not select the *node* in which the search result exists.

Continuing with the previous example, if you were to navigate to the second result using the ▼ button:

- The **x of n** text would be displayed as *2 of 6*, as shown in the following image.

    -and-

- The second result would be highlighted green, while the previous result would be highlighted yellow.
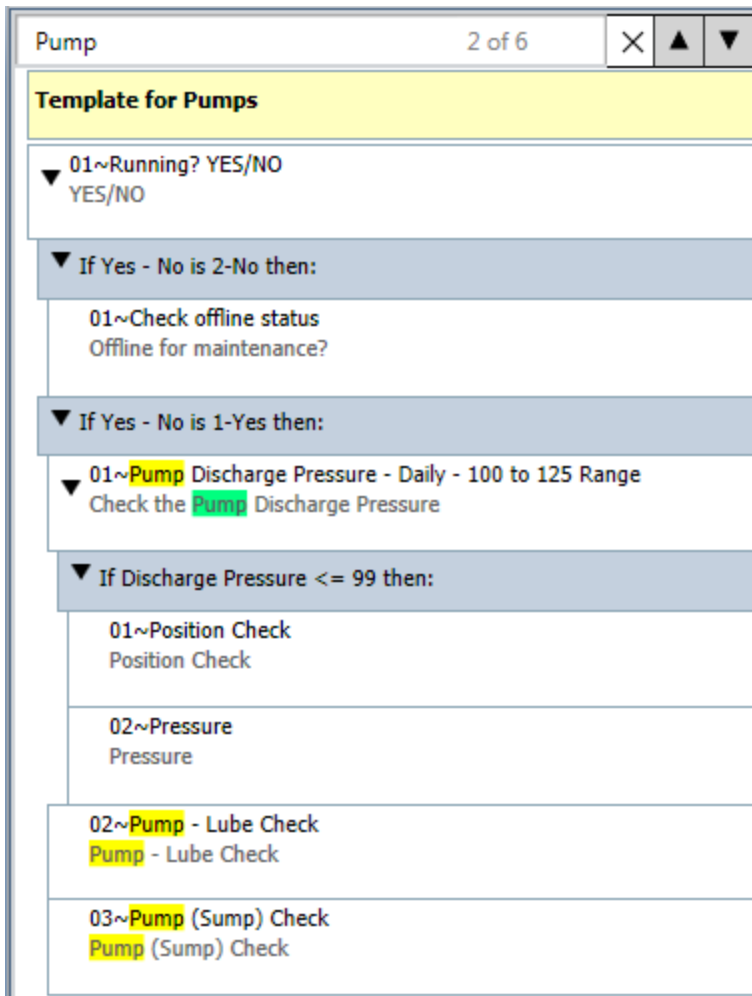
Creating a Template Group Record

Before you can configure a Template Group to apply to a Route, you will need to create a Template Group record to represent the Template Group.

To create a Template Group record:

1. On the **Template Group Selection** page, on the **Template Group Tasks** menu, click the **New Template Group** link.

   A new Template Group record appears in the Datasheet area on the **Template Group Management** page, and a new, blank Template Group node appears at the root level in the Template Group pane.
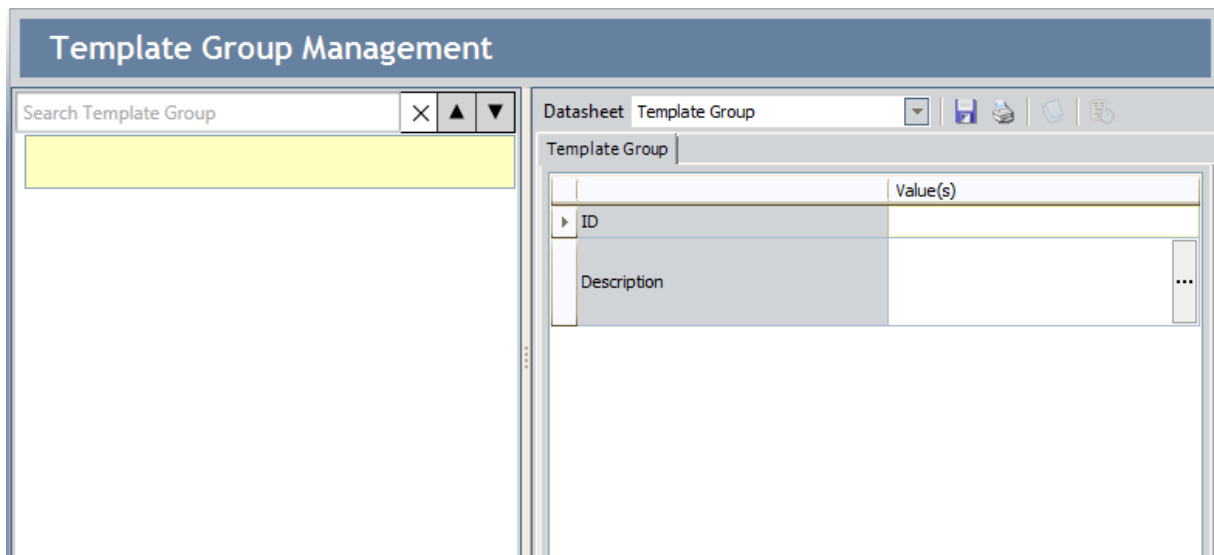
2. In the Datasheet area, on the Template Group datasheet, in the **ID** text box, type an ID for the Template Group.

3. In the **Description** text box, type a description for the Template Group.

4. On the Datasheet toolbar, click the 💾 button.

   The Template Group record is saved, and the Template Group node displays the value stored in the ID field. You can now add Measurement Location Template records to the Template Group.

Accessing the Template Group Selection Page

On the **Template Group Selection** page, you can view a list of all Template Group records that exist in the database. You can use this page to create a new Template Group record, open an existing Template Group record, or delete an existing Template Group record.

To access the Template Group Selection page:

- On the **Operator Rounds Start Page**, click the **Template Group Management** link.

  The **Template Group Selection** page appears, displaying all existing Template Group records.
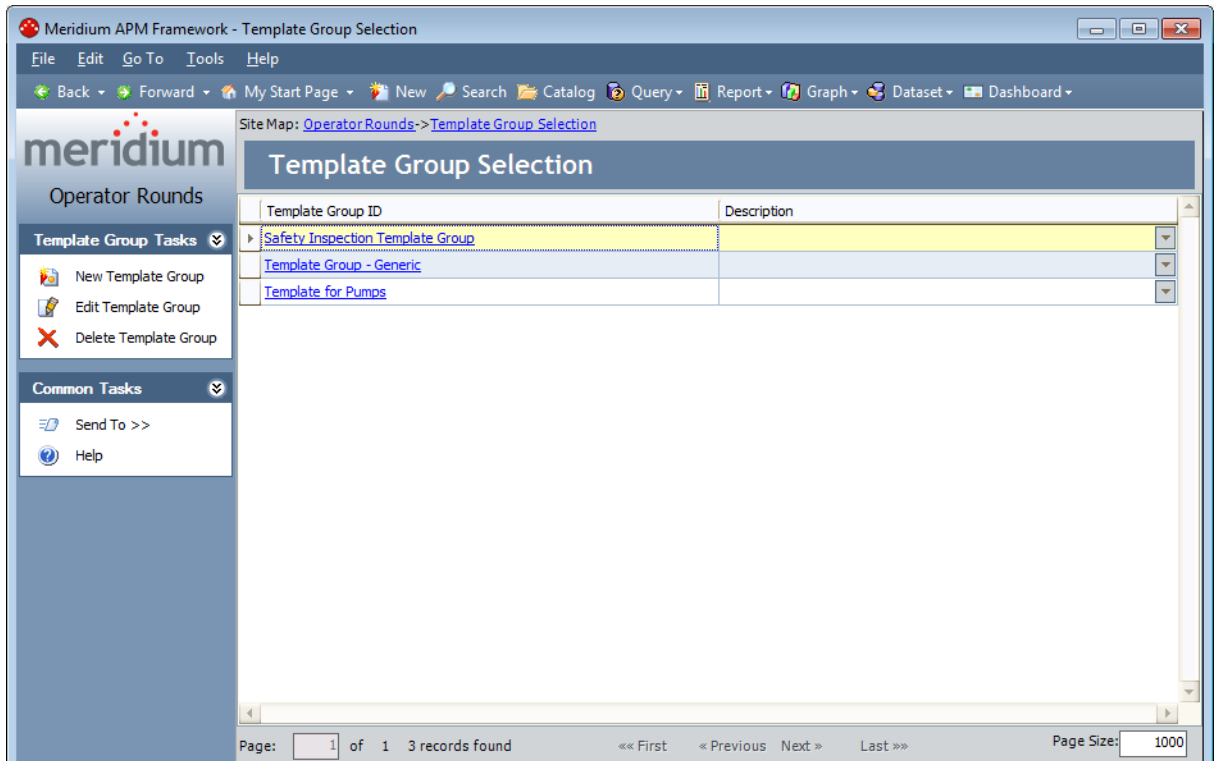
Aspects of the Template Group Selection Page

The **Template Group Selection** page contains the following items:

- **Task menus:** Provide access to specific functionality related to Template Groups and the **Template Group Selection** page. The following task menus are available: **Template Group Tasks** menu and **Common Tasks** menu.
- **Template Group Selection workspace:** Displays a grid containing a list of all existing Template Group records, sorted by Template Group ID.

Using the **Template Group Selection** page, you can perform the following tasks:

- Create new Template Group records.
- Modify existing Template Groups.
- Delete Template Group records.

Template Group Tasks Menu
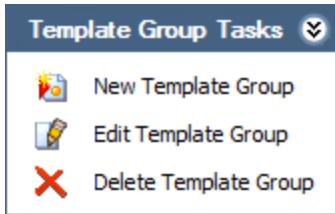
The **Template Group Tasks** menu on the **Template Group Selection** page contains the following links:

- **New Template Group:** Displays a new Template Group record on the **Template Group Management** page.

- **Edit Template Group:** Displays the selected Template Group record on the **Template Group Management** page, where you can modify the record and then save your changes.

- **Delete Template Group:** After asking for confirmation, deletes the selected Template Group record from the database.
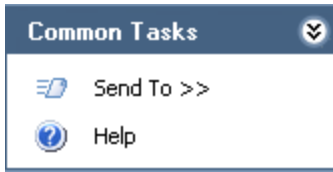
Common Tasks Menu

The **Common Tasks** menu on the **Template Group Selection** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), in an email message, or a Home Page. This link is disabled if there are no existing Template Group records.

- **Help:** Displays the context-sensitive Help topic for the **Template Group Selection** page.

Opening a Template Group Record

To open a Template Group record:

- On the [Template Group Selection page](#), in the row containing the Template Group record that you want to open, click the hyperlinked value in the **Template Group ID** cell.

  The Template Group record appears on the **Template Group Management** page.
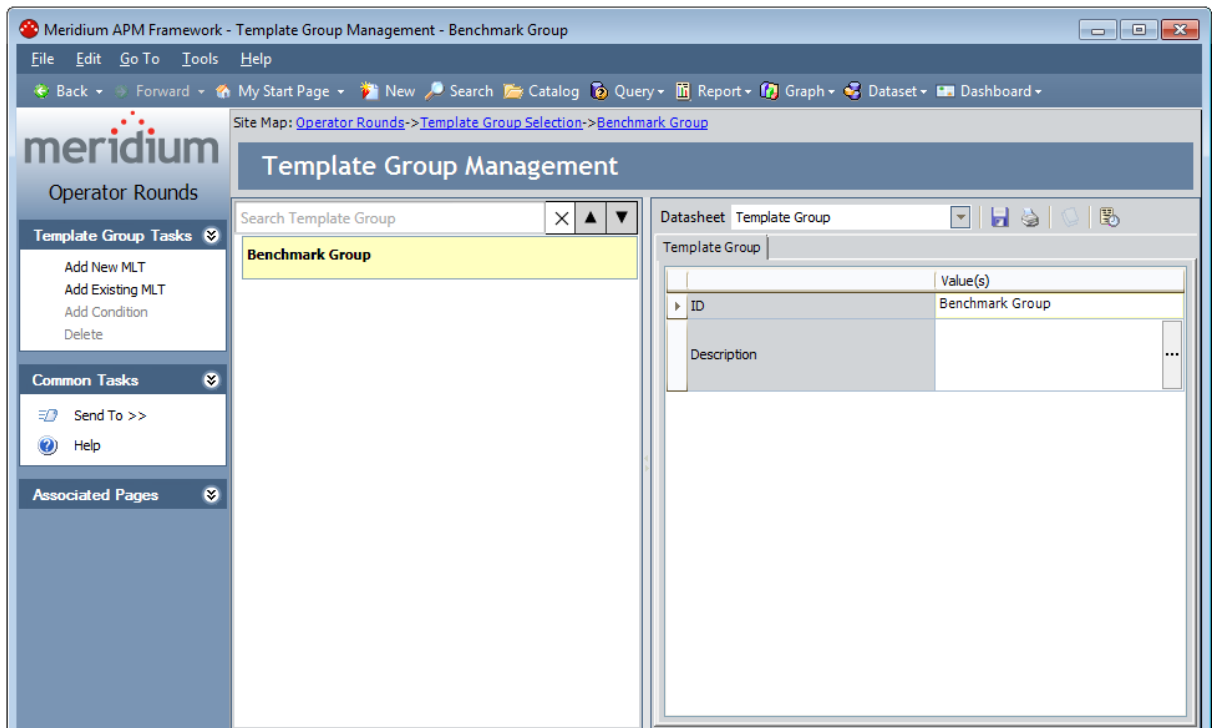
About Managing Measurement Location Template Records

You can manage Measurement Location Template records in the following ways:

- **Template Group pane** on the **Template Group Management** page. This method allows you to create and manage Measurement Location Template records in the context of the Template Group to which they belong.

- The **Operator Rounds Template Management** page and the Record Manager. This allows you to manage Measurement Location Template records on an individual basis and make the Measurement Location Template record available to add to a Template Group at a later time.

Throughout this section, documentation is provided for both methods for managing Measurement Location Template records. The method that you use will depend upon whether the Measurement Location Template records belong to Template Groups.

Accessing the Operator Rounds Template Management Page

Meridium APM provides the Template Management query, which is run when you access the **Operator Rounds Template Management** page. On this page, you can view a list of all Measurement Location Template records that exist in the database. You can use this page to view existing Measurement Location Template records or create new ones.

To access the Operator Rounds Template Management page:

- On the **Operator Rounds Start Page**, click the **Measurement Location Template Management** link.

  The **Operator Rounds Template Management** page appears, displaying all existing Measurement Location Template records.
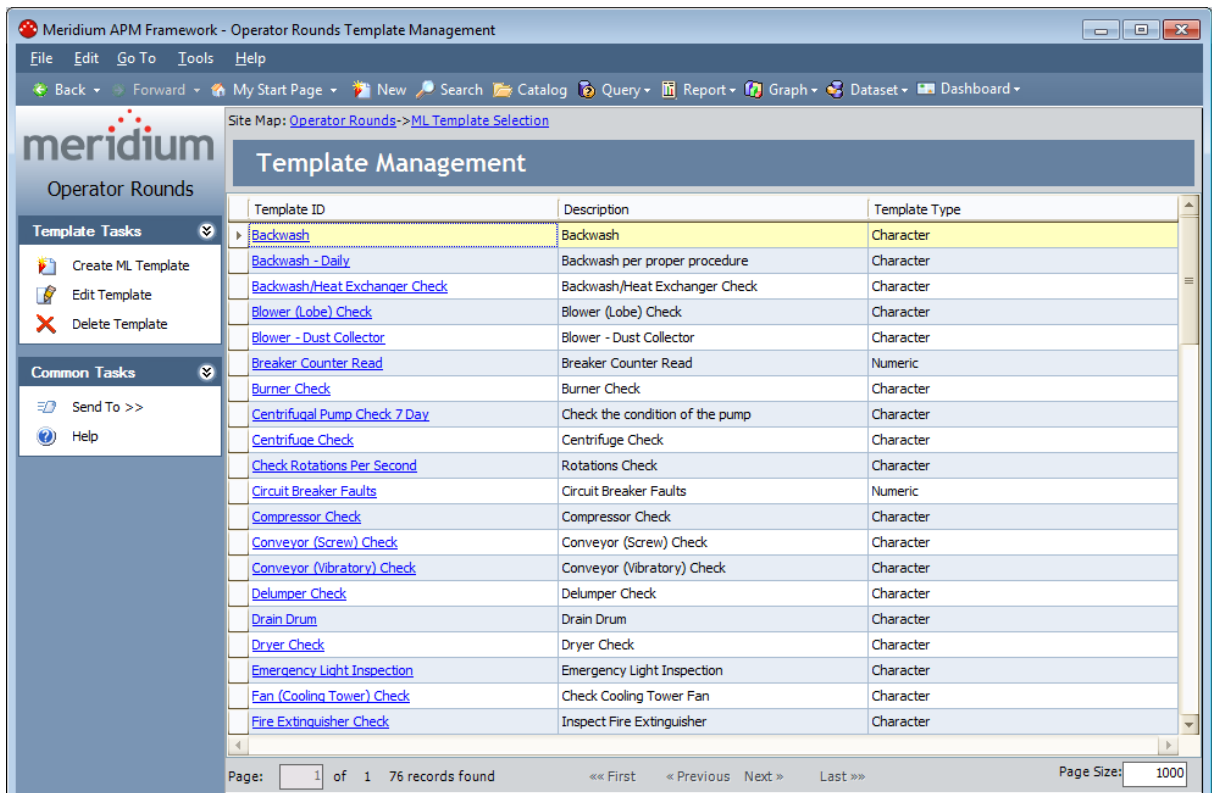
Aspects of the Operator Rounds Template Management Page

The **Operator Rounds Template Management** page contains the following items:

- **Task menus:** Provide specific functionality. The following task menus are available: <u>Template Tasks</u> and <u>Common Tasks</u>.
- **Template Management workspace:** Displays a list of all existing Operator Rounds Measurement Location Template records.

Using the **Operator Rounds Template Management page**, you can perform the following tasks:

- View the <u>schedule</u> associated with each Measurement Location Template record.
- <u>Create new Measurement Location Template records</u>.
- Modify existing Measurement Location Template records.
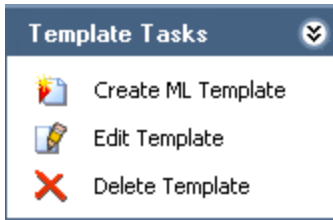
Template Tasks Menu

The **Template Tasks** menu on the **Operator Rounds Template Management** page contains the following links:

- **Create ML Template:** Displays a new Measurement Location Template record in the Record Manager.

- **Edit Template:** Displays the selected Measurement Location Template record in the Record Manager, where you can modify the record and then save your changes.

- **Delete Template:** After asking for confirmation, deletes the selected Measurement Location Template record from the database.
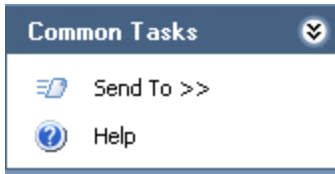
Common Tasks Menu

The **Common Tasks** menu on the **Operator Rounds Template Management** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), in an email message, or a Home Page. This link is disabled if there are no existing Measurement Location Template records.
- **Help:** Displays the context-sensitive Help topic for the **Operator Rounds Template Management** page.

About Creating Measurement Location Template Records

You can create Measurement Location Template records using the following methods:

- [Create it and automatically add it to a Template Group](#).
- [Create it using Template Management, and it will be available to add to a Template Group later](#).

About Adding Measurement Location Templates to a Template Group

A *Measurement Location Template* serves as a template that you can use as the basis for creating multiple *checkpoints*, which are the stops along a Route at which a device user will need to record a reading. Details about Measurement Location Templates are stored in Measurement Location Template records. When you add a Measurement Location Template record to a Template Group, the Measurement Location Template record will be represented by a *Measurement Location Template node* in the Template Group pane, and will appear in a location that is relevant to the currently selected node.

Before you add a Measurement Location Template to a Template Group, use the following guidelines to determine which node to select in the Template Group pane so that the new node will appear in the desired location:

- If you want the new Measurement Location Template node to appear below an existing Measurement Location Template node, select the existing Measurement Location Template node.

- If you want the new Measurement Location Template node to appear below an existing Checkpoint Condition node as the first successor node, select the existing Checkpoint Condition node.

- If you want the new Measurement Location Template node to appear *last* in the Template Group pane, select the Template Group node.

In addition, you can add the *same* Measurement Location Template record to a Template Group more than once, and each instance of that Measurement Location Template can participate in independent predecessor and successor relationships. In other words, a single Measurement Location Template record can be represented by multiple nodes in a Template Group. If you modify the contents of a Measurement Location Template record that is represented by *multiple* nodes, keep in mind that your changes will be reflected in ALL the nodes that represent that record.

For example, you can add to a Template Group the Measurement Location Template record with the ML Description *Rotations Check* to a Template Group as nodes with the sequence values *01*, *03*, and *06*. You can also add Checkpoint Condition nodes and other Measurement Location Template nodes as predecessors and successors to each of the three nodes. Further, if you modify the Template ID value in the Measurement Location Template record from *Rotations Check* to *Check Rotations Per Second*, ALL the nodes that represent that record will be updated automatically with the new Template ID value. The following image shows a Template Group that contains multiple instance of the same Measurement Location Template record with the Template ID value *Check Rotations Per Second*. Each node representing this record is outlined in red.
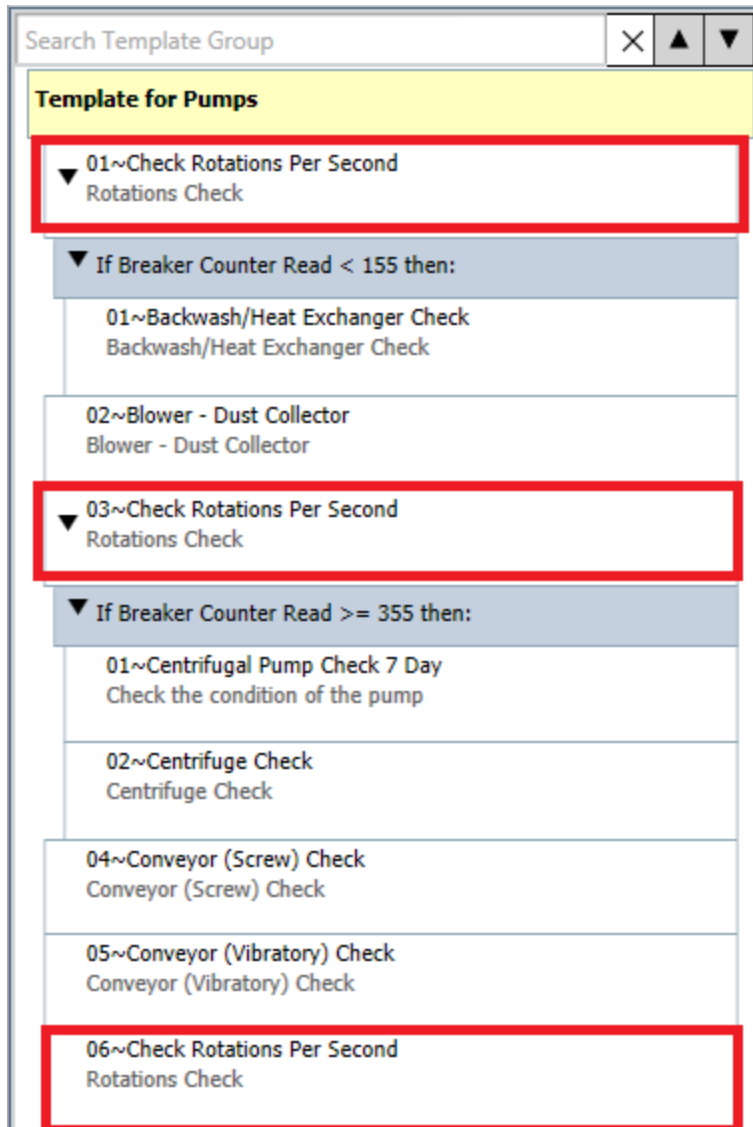
You can add Measurement Location Templates to a Template Group using the following methods:

- [Add an existing Measurement Location Template](#).
- [Create a new Measurement Location Template and add it automatically to the Template Group](#).

By default, the Measurement Location Template datasheet contains almost all the [fields that appear in the Measurement Location records](#). After a Measurement Location Template record exists, you can use it to create Measurement Location records. When you do so, all the values in the Measurement Location Template record will be copied automatically to the Measurement Location record, with the following exceptions:

- **Asset ID:** This value will be copied to the Measurement Location record only if the Asset ID field in the Measurement Location record is empty. Otherwise, this values

will not be copied automatically to the Measurement Location record.

- **Asset Description:** This value will be copied to the Measurement Location record only if the Asset Description field in the Measurement Location record is empty. Otherwise, this value will not be copied automatically to the Measurement Location record.

- **Scan ID:** This value will not be copied automatically to the Measurement Location record, by default.

- **Sequence:** This value will not be copied automatically to the Measurement Location record, by default.

In addition, when you create a Measurement Location record from a Measurement Location Template record, the schedule that is defined in the Measurement Location Template record is used to populate fields in the Checkpoint Task record that is linked automatically to the new Measurement Location record.

Creating Measurement Location Template Records and Adding Them to a Template Group

The following instructions provide details on creating a Measurement Location Template record and adding it automatically to a Template Group. These instructions assume that you are viewing the Template Group to which you want to add a new Measurement Location Template.

To create a Measurement Location Template record and add it to a Template Group automatically:

1. In the Template Group pane, select the node that will determine the position of the new Measurement Location Template node. For example, if you want a new Measurement Location Template node to appear below an existing Measurement Location Template node, select the existing Measurement Location Template node. In the following image, the first Measurement Location Template node is selected, so the new Measurement Location node will appear below it.
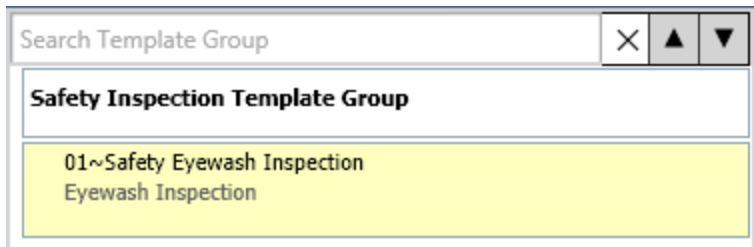
2. On the **Template Tasks** menu, click the **Add New** link.

   A new Measurement Location Template node appears in the Template Group pane, and the datasheet for that record appears in the Datasheet area to the right.

3. On the datasheet, in the **Template ID** cell, enter an ID for the Measurement Location Template. This field is required, and the value must be unique.

4. In the **ML Type** list, select the value that corresponds to the type of Measurement Location that this Measurement Location Template represents. You can choose from *Character* or *Numeric*.

5. Complete the remaining fields as desired.

6. On the Datasheet toolbar, click the 💾 button.

    The record is saved.

Creating Measurement Location Template Records Without Adding Them to a Template Group

To create a Measurement Location Template record:

1. On the **Operator Rounds Template Management** page, on the **Template Tasks** menu, click the **Create ML Template** link.

   A new Measurement Location Template record appears in the Record Manager.

2. Complete the fields as desired. Note that the Template ID field and the ML Type field are required.

3. On the **Common Tasks** menu, click the **Save** link.

The Measurement Location Template record is saved. You can now create a Measurement Location record using this template.

Defining Reading Value Parameters for Numeric Checkpoint Templates

Reading value parameters allow you to provide guidance to device users about the reading value that should be entered for each numeric checkpoint. Measurement Location Template records contain the same fields as Measurement Location records. Therefore, you can define reading value parameters in Measurement Location Template records that you want to copy to the Measurement Location records created from that template.

For the purposes of this documentation, the details of how reading value parameters are defined and used on the Handheld is discussed in the context of creating Measurement Location records.

Measurement Location Template Fields and the Readings - Detail Screen

The values stored in the following *Measurement Location* family fields will be displayed on the **Readings - Detail** screen on the device. In other words, for each of these fields, a corresponding section appears on the **Readings - Detail** screen that will display the value from that field.

- Asset ID
- Asset Description
- ML Description

Measurement Location Template records contain fields with the same caption whose values are used to populate Measurement Location records created from that template. Therefore, you can define in the template the equipment and checkpoint description values that you want to appear in the Measurement Location record that is created using that template. Unlike other fields in Measurement Location Template records that are copied to a Measurement Location record, a rule exists on the fields listed above that will color the cell yellow if the value that you enter exceeds a particular character limit. The yellow cell color serves as a warning and does not prevent you from saving the Measurement Location Template record nor from creating Measurement Location records from that template.

The character limit corresponds to the amount of text that can be displayed in the corresponding section on the Readings - Details screen where the value from the Measurement Location record will appear. For the purposes of this documentation, the details on the behavior of these fields is discussed in the context of creating Measurement Location records.

About Configuring Alerts in a Measurement Location Template Record

If you want device users to receive alerts on the device when they record reading values that meet certain criteria, criteria for the alerts must be defined on the **Limit Values** tab of the ML Task View datasheet for the Measurement Location record representing the checkpoint at which you want to record readings.

Because you can use Measurement Location Template records to create Measurement Location records, you can define alert criteria on the **Limit Values** tab of Measurement Location Template record, and those values will be copied to any Measurement Location record that you create using the template.

The steps for defining alert criteria in a Measurement Location Template record is the same as the steps for defining alert criteria in a Measurement Location record. For the purposes of this documentation, the details on alerts and defining alert criteria are discussed in the context of Measurement Location records.

Adding Existing Measurement Location Templates to a Template Group

The following instructions provide details on adding an existing Measurement Location Template record to a Template Group. These instructions assume that you are viewing the Template Group to which you want to add an existing Measurement Location Template.

To add an existing Measurement Location Template to a Template Group:

1. In the Template Group pane, select the node that will determine the position of the new Measurement Location Template node. For example, if you want a new Measurement Location Template node to appear below an existing Measurement Location Template node, select the existing Measurement Location Template node.
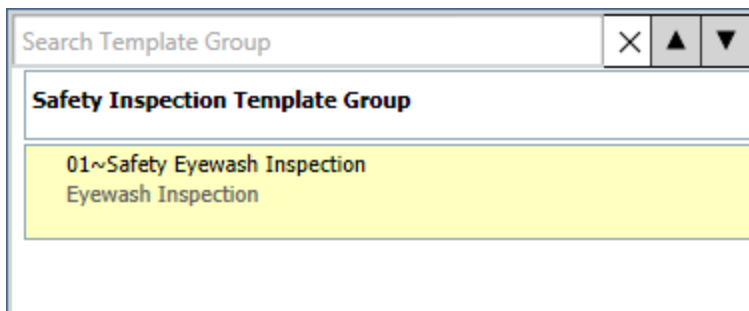
2. On the **Template Group Tasks** menu, click the **Add Existing MLT** link.

   The **Add Existing Measurement Location Templates to <Route ID>** window appears. The **Search In** text box contains *Measurement Location Template* by default. You cannot change this value.

3. Perform a search for the Measurement Location Template record that you want to add to the Template Group.

4. In the search results, select the row(s) containing the desired record(s).

5. Click the **Add** button.

   The selected Measurement Location Template record(s) is added to the Template Group, and the node(s) representing the record(s) are displayed in the Template Group pane and selected by default.
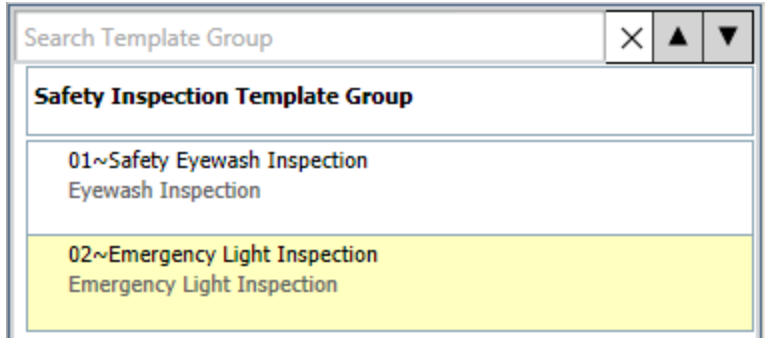
About Modifying Measurement Location Template Records

Because you can manage Measurement Location Template records that currently belong to a Template Group and those that do not belong to a Template Group, you can manage *changes* to Measurement Location Templates in the following ways:

- Using the Template Group pane on the **Template Group Management** page.

- Using the **Template Management** page and the Record Manager.

If you modify a Measurement Location Template record that has been applied to a Measurement Location record either individually or as part of a Template Group, you may want to update the Measurement Location records with the changes from the source Measurement Location Template record. You can do so using the **Update Existing MLs** link on the **Associated Pages** menu when you are viewing a Measurement Location Template record.

Modifying Measurement Location Template Records via the Template Group Pane

The following instructions provide details on modifying a Measurement Location Template record that belongs to a Template Group, using the Template Group pane.

For details on modifying a Measurement Location Template record that does not belong to a Template Group, see the instructions for modifying Measurement Location Template records via the Record Manager.

To modify a Measurement Location Template record via the Template Group pane:

1. Open the Template Group to which the Measurement Location Template record that you want to modify belongs.

2. In the Template Group pane, select the Measurement Location Template record that you want to modify.

   The contents of the record appears in the Datasheet area.

3. Above the **Datasheet** list, select the **Edit ML Template** check box.

    The fields on the datasheet are enabled.

4. Modify the contents of the record as desired.

5. On the Datasheet toolbar, click the 💾 button.

    Your changes are saved. At this point, if the Measurement Location Template record has already been applied to one or more Measurement Location records, you may want to update the Measurement Location records with the changes you made to the source Measurement Location Template record.

Modifying Measurement Location Template Records via the Record Manager

The following instructions provide details on modifying a Measurement Location Template record that does not belong to a Template Group, using the **Operator Rounds Template Management** page and the Record Manager.

For details on modifying a Measurement Location Template record that belongs to a Template Group, see the instructions on modifying Measurement Location Template records via the Template Group pane.

To modify a Measurement Location Template record via the Record Manager:

1. Access the **Operator Rounds Template Management** page.

2. In the grid, select the row containing the Measurement Location Template record that you want to modify.

3. On the **Template Tasks** menu, click the **Edit Template** link.

   The record appears at the root level in the record hierarchy in the **Record Explorer** pane in the Record Manager, and the contents of the record are displayed in the Datasheet area.

4. Modifying the contents of the record as desired.

5. On the Datasheet toolbar, click the 🖫 button.

   The record is saved. At this point, if the Measurement Location Template record has already been applied to one or more Measurement Location records, you may want to update the Measurement Location records with the change you made to the source Measurement Location Template record.

About Updating Measurement Location Records with Changes From a Source Template

You can use a Measurement Location Template to create a Measurement Location record in the following ways:

- Manually, by applying the template via the **Template** list on the Measurement Location datasheet.

  -or-

- Automatically through a Template Group.

If you modify the contents of the Measurement Location Template record that was used to create the Measurement Location record, you may want to update the Measurement Location records with the changes you made to the source template to keep the Measurement Location records in sync with the source template.

When you update a Measurement Location record with changes from the source Measurement Location Template record, the following values are *not* copied to new Measurement Location records by default:

- Template
- Scan ID
- Sequence

In addition, the following values are copied to the Measurement Location record only if the Measurement Location record does not already contain values in these fields:

- Asset ID
- Asset Description

You can update Measurement Location records with changes from a source template via the **Measurement Location Update** window. Additionally, you can remove the link between a Measurement Location record and its source template via the Disassociate Measurement Locations window.

Overview of the Measurement Location Update Window

You can update a Measurement Location record with changes from its source template (i.e., linked Measurement Location Template record) using the **Measurement Location Update** window. You can access this window by clicking the **Update Existing MLs** link on the **Associated Pages** menu. This link appears only when you are viewing a Measurement Location Template record.

The following image shows an example of what the **Measurement Location Update** window looks like when you access it for the Measurement Location Template record with the ID *Blower - Dust Collector*.
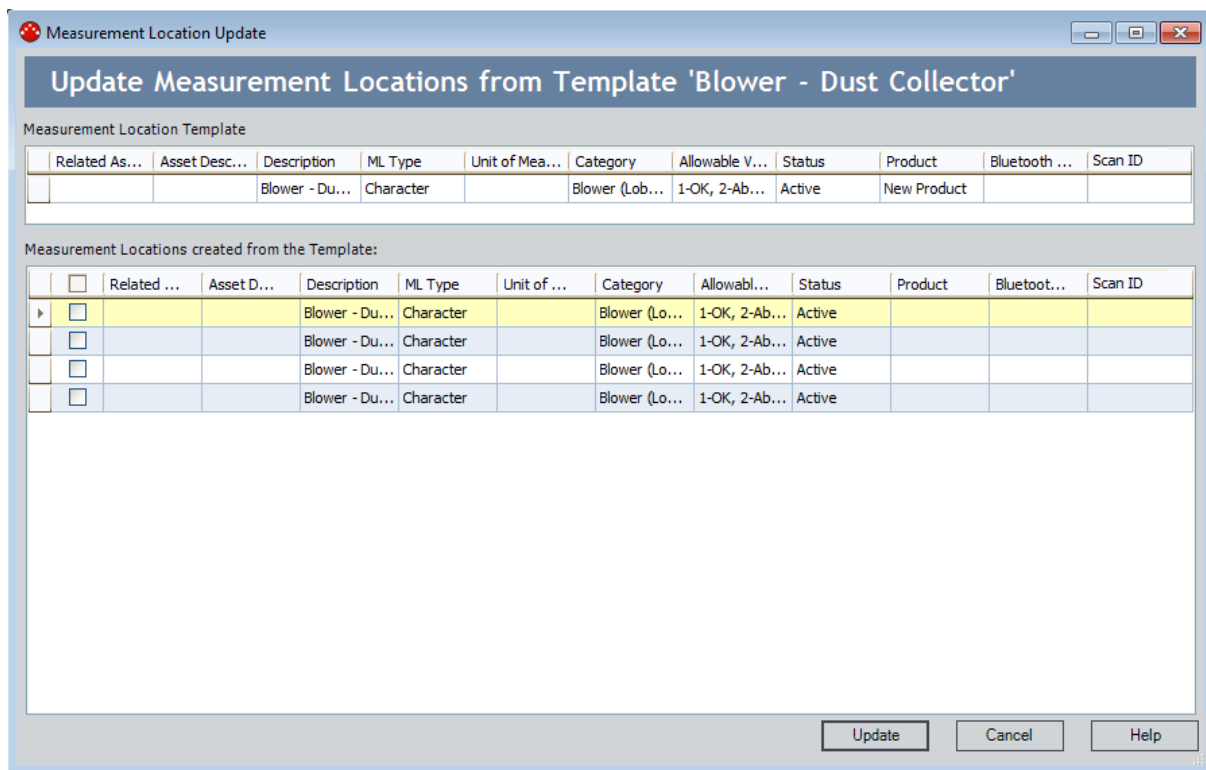
In this image, you can see that the ID of the Measurement Location Template record is displayed in the header. In this case, the ID is *Blower - Dust Collector*. This window contains the following sections:

- **Measurement Location Template:** Contains a grid that displays the results of the Measurement Location Template query that is stored in the folder \\Public\Meridium\Modules\Operator Rounds\Queries. This grid contains details about the Measurement Location Template record with which you are currently working. You can use this grid and the **Measurement Locations created from the Template** grid to compare the values that are currently stored in the Measurement Location records to the values in the source template. This grid contains standard grid functionality.

- **Measurement Locations created from the Template:** Contains a grid that displays the results of the Update Measurement Locations from MLT query that is stored in the folder \\Public\Meridium\Modules\Operator Rounds\Queries. This grid contains details about the Measurement Location records that were created using the Measurement Location Template record. You can use this grid and the **Measurement Location Template** grid to compare the values that are currently stored in the Measurement Location Template record. This grid contains standard grid controls.

  The first column in this grid contains check boxes, which you can use to select the Measurement Location record in that row. Selecting a Measurement Location record indicates that you want to update that Measurement Location record with the contents of the Measurement Location Template record. You can select the check box in the column header to select ALL the Measurement Location records in the grid at one time.

Below the grids, the following buttons appear:

- **Update:** Updates the selected Measurement Location records with the values stored in the Measurement Location Template record shown in the **Measurement Location Template** grid.
- **Cancel:** Closes the **Measurement Location Update** window without updating any records.
- **Help:** Displays the context-sensitive Help topic for the **Measurement Location Update** window.

After you click the **Update** button and the Meridium APM system updates the selected records, the window refreshes, and:

- The **Measurement Locations created from the Template** section is replaced by a section titled **The following Measurement Locations were updated**, which displays only the Measurement Location records whose values were updated with values from the source template. You can use this grid to view the changes that were made to these records.
- The **Update** and **Cancel** buttons disappear, and a **Close** button is displayed in their place. You can use the **Close** button to close the **Measurement Location Update** window.

Overview of the Disassociate Measurement Locations Window

You can use the **Disassociate Measurement Locations** window to remove the link between a Measurement Location record and its source template (i.e., linked Measurement Location Template record) if you want to delete the Measurement Location Template record for any reason *or* if you want to stop managing a Measurement Location record through its source template. You can access the **Disassociate Measurement Locations** window by clicking the **Disassociate MLs** link on the **Associated Pages** task menu from the following locations:

- The **Template Group Management** page
- Record Manager (when you are working with a Measurement Location Template record)

The **Disassociate Measurement Locations** window contains the **Disassociate Measurement Locations for <Record ID>** workspace, where **<Record ID>** is the Record ID of the Measurement Location Template record for which you accessed the window. The following image shows an example of the Disassociate Measurement Locations window when accessed for the Measurement Location Template record with the Record ID *Fuel Tank Status*.
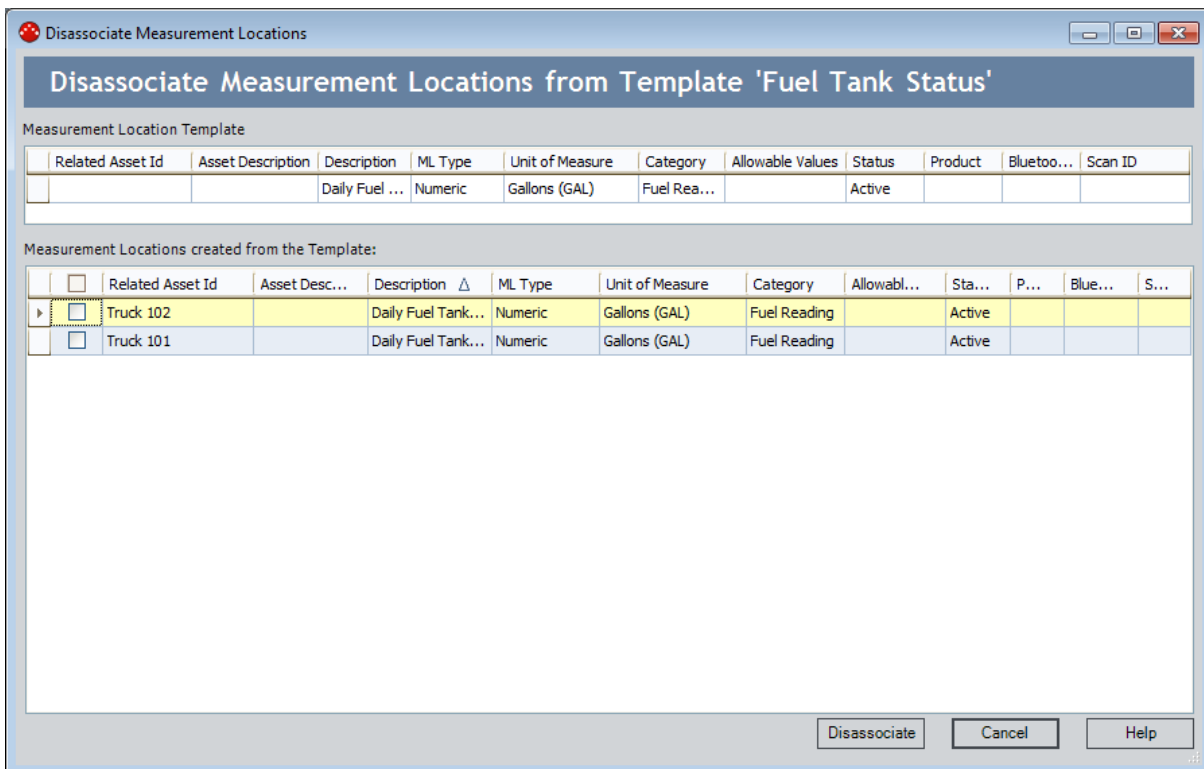
The **Disassociate Measurement Locations for <Record ID>** workspace contains the following grids:

- **Measurement Location Template:** Contains one row containing details about the Measurement Location Template record for which you accessed the window. Specifically, the grid displays the results of the Measurement Location Template query that is stored in the Catalog folder \\Public\Meridium\Modules\Operator Rounds\Queries. This grid contains standard grid functionality.

- **Measurement Locations created from the Template:** Contains one row for each Measurement Location record that was created from the Measurement Location Template record for which you accessed the window. Specifically, the grid displays the results of the Update Measurement Locations from MLT query that is stored in the Catalog folder \\Public\Meridium\Modules\Operator Rounds\Queries. This grid contains standard grid functionality.

  The first column in this grid contains check boxes, which you can use to select the Measurement Location record in that row. Selecting a Measurement Location record indicates that you want to [remove the link between the Measurement Location Template record and that Measurement Location record](#). You can select the check box in the column header to select *all* the Measurement Location records in the grid at one time.

Below these grids, the following buttons appear:

- **Disassociate:** [Removes the link between the selected Measurement Location records and the Measurement Location Template record](#) for which you accessed the **Disassociate Measurement Locations** window. When you do this, the value in the Template field in the Measurement Location record will be cleared (i.e., it will no longer be populated with the value stored in the Template ID field in the Measurement Location Template record).

- **Cancel:** Closes the **Disassociate Measurement Locations** window without updating any records.

- **Help:** Displays the context-sensitive Help topic for the **Disassociate Measurement Locations** window.

Updating Measurement Location Records with Changes from the Source Template

The following instructions provide details on updating Measurement Location records with changes from the source template. You can do so via an **Associated Page** link that appears when you are viewing a Measurement Location Template record. These instructions can be used whether you are working with the Measurement Location Template record in the Template Group pane or in the Record Manager.

To update Measurement Location record with changes from the source template:

1. Open the Measurement Location Template record whose changes you want to update in the Measurement Location records that were created from that template.

2. On the **Associated Pages** menu, click the **Update Existing MLs** link.

    The **Measurement Location Update** window appears.
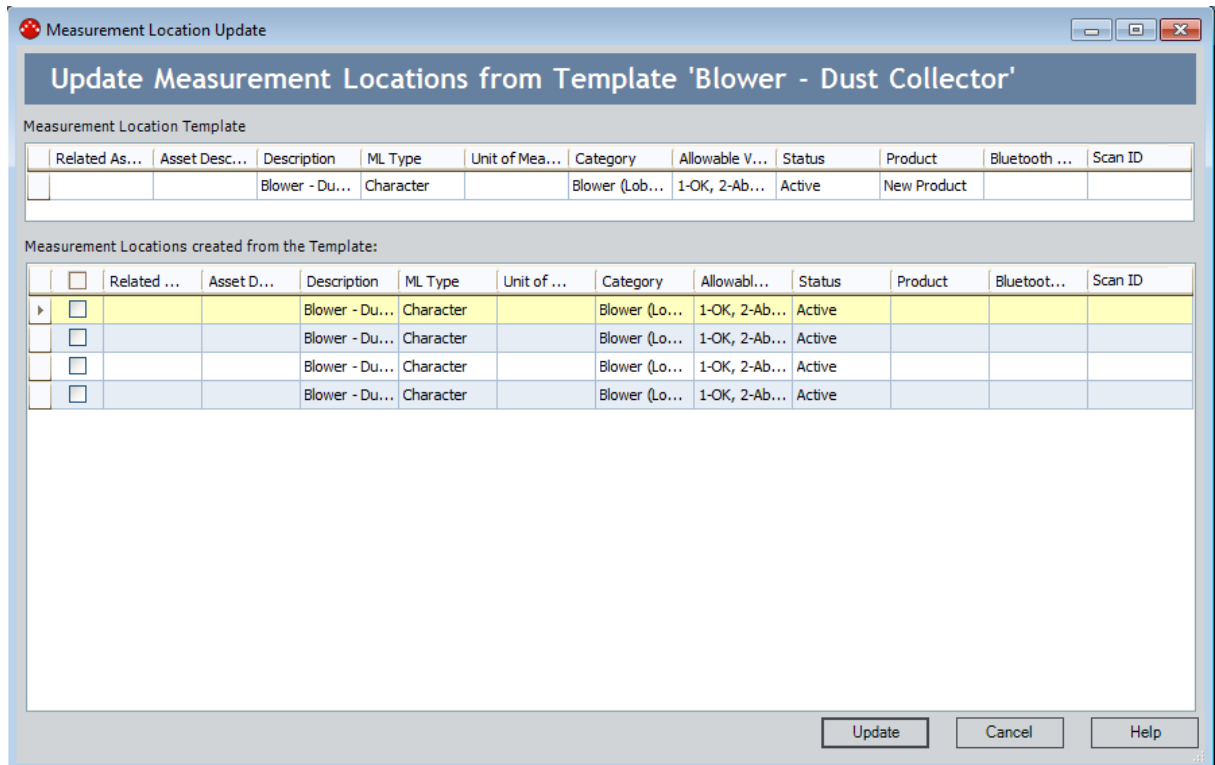
3. In the **Measurement Locations created from the Template** grid, in the first column, select the check box in the rows containing the Measurement Location records that you want to update with the changes from the source template.

Measurement Locations created from the Template:

	☑	Related ...	Asset D...	Description	ML Type	Unit of ...	Category	Allowabl...	Status	Product	Bluetoot...	Barcode ID
▶	✔			Blower - Du...	Character		Blower (Lo...	1-OK, 2-Ab...	Active			
	✔			Blower - Du...	Character		Blower (Lo...	1-OK, 2-Ab...	Active			
	✔			Blower - Du...	Character		Blower (Lo...	1-OK, 2-Ab...	Active			
	✔			Blower - Du...	Character		Blower (Lo...	1-OK, 2-Ab...	Active			

> Œ**Hint:** You can select *all* the rows by selecting the check box in the column header, as shown in the preceding image.

4. Click the **Update** button.

   The selected Measurement Location records are updated with the changes from the source template, and the **Measurement Location Update** window is refreshed and displays the Measurement Location records that were updated.

Measurement Location Update

Update Measurement Locations from Template 'Blower - Dust Collector'

Measurement Location Template

	Related As...	Asset Desc...	Description	ML Type	Unit of Mea...	Category	Allowable V...	Status	Product	Bluetooth ...	Barcode ID
			Blower - Du...	Character		Blower (Lob...	1-OK, 2-Ab...	Active	New Product		

The following Measurement Locations were updated:

	Related ...	Asset De...	Description	ML Type	Unit of M...	Category	Allowable...	Status	Product	Bluetoot...	Barcode ID
▶			Blower - Du...	Character		Blower (Lob...	1-OK, 2-Ab...	Active	New Product		
			Blower - Du...	Character		Blower (Lob...	1-OK, 2-Ab...	Active	New Product		
			Blower - Du...	Character		Blower (Lob...	1-OK, 2-Ab...	Active	New Product		
			Blower - Du...	Character		Blower (Lob...	1-OK, 2-Ab...	Active	New Product		

Close

5. Click the **Close** button.

   The **Measurement Location Update** window closes.

Removing the Link Between a Measurement Location Record and its Source Template

If you want to stop managing a Measurement Location record through its source template, you can remove the link between the Measurement Location record and its associated Measurement Location Template record. You may want to do this if there is something unique about a particular Measurement Location record, and you want to manage it separately from the other Measurement Location records that were created from the same source template. These instructions assume that you are working with the Measurement Location Template record in Record Manager. The same steps can be used when you are working with Measurement Location Template records on the **Template Group Management** page.

To remove the link between a Measurement Location record and its associated Measurement Location Template record:

1. Open the Measurement Location Template record from which you want to remove the link to a Measurement Location record created from that template.

2. On the **Associated Pages** menu, click the **Disassociate MLs** link.

   The **Disassociate Measurement Locations window** appears.
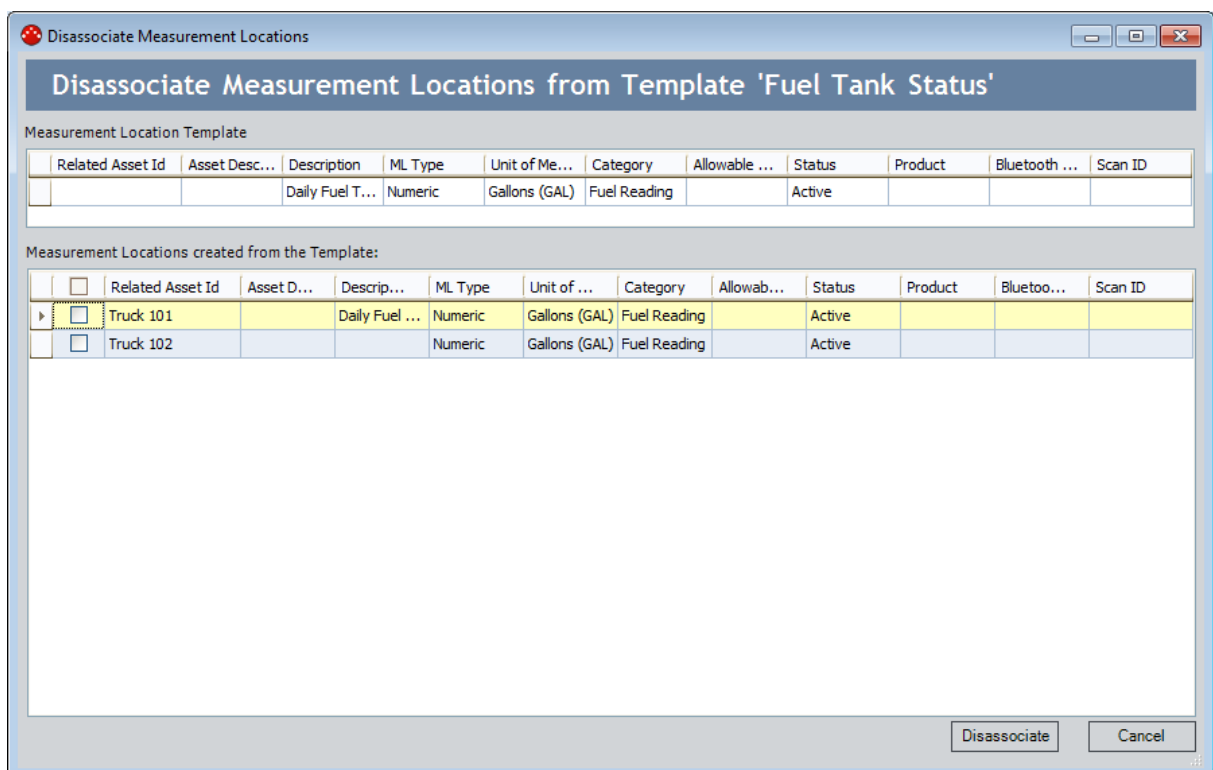
3. In the **Measurement Locations created from the Template grid**, locate the row representing the Measurement Location record whose link to the Measurement

Location Template record you want to remove, and then select the check box in the first column.

In the following image, the check box in the row representing the Measurement Location record with the Related Asset Id *Truck 101* is selected.
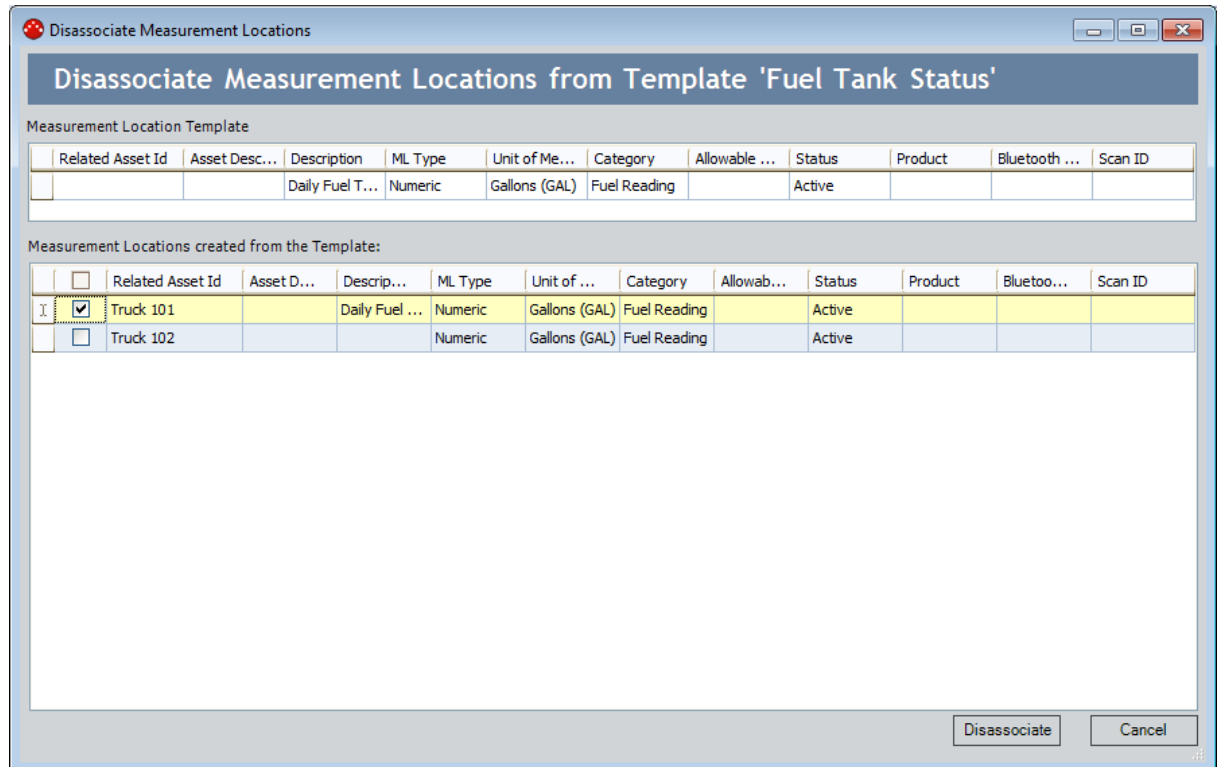
4. Click the **Disassociate** button.

A confirmation message appears, asking if you are sure you want to remove the link between the Measurement Location Template record and Measurement Location record.

5. Click the **Yes** button.

The Meridium APM system performs the following actions:

- The link between the Measurement Location Template record and the Measurement Location record is removed.

- The value in the Template field in the Measurement Location field is cleared (i.e., is no longer populated with the value stored in the Template ID field in the Measurement Location Template record).

- The row representing the Measurement Location record is removed from the grid.
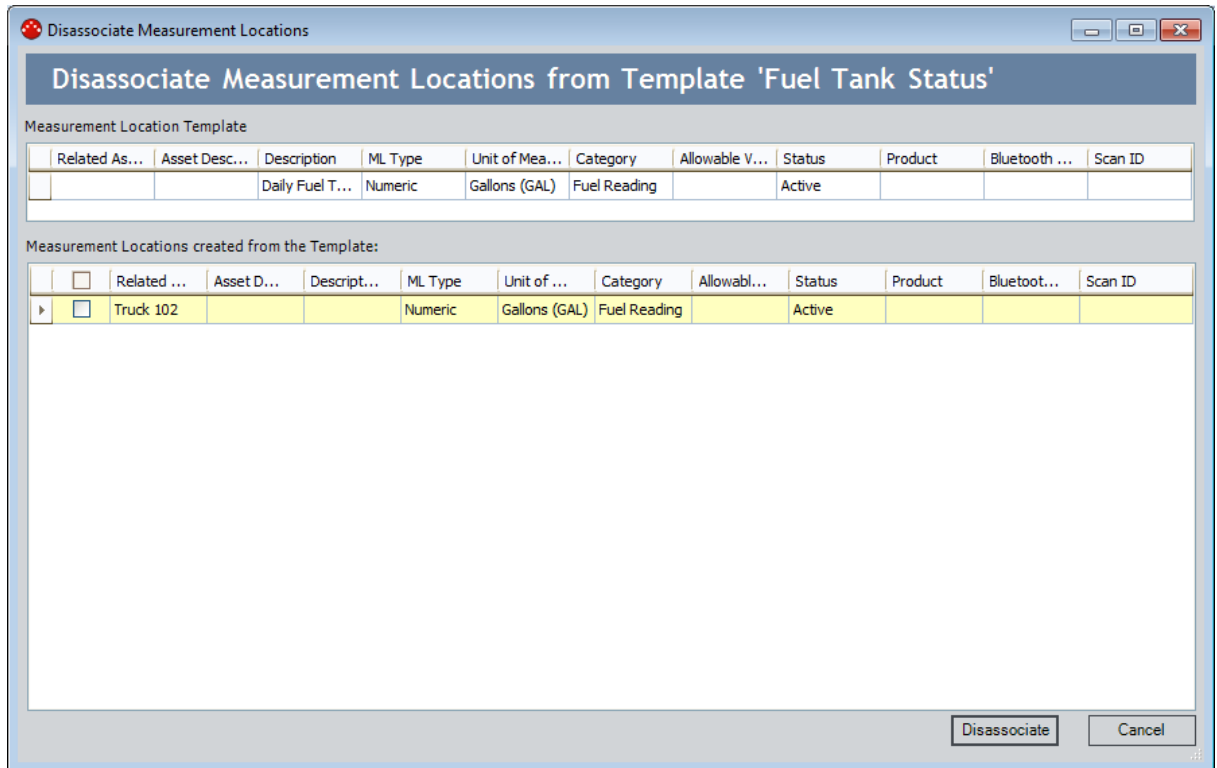
6. Click the **Cancel** button.

   The **Disassociate Measurement Locations** window closes, and the Record Manager or **Template Group Manager** page returns to focus (depending upon the location from which you initiated this action).

Deleting Measurement Location Template Records

You may want to delete a Measurement Location Template record if you will no longer use it to create Measurement Location records. You can delete a Measurement Location Template record only if it is *not* currently linked to any Measurement Location records.

To delete a Measurement Location Template record:

1. Access the Operator Rounds Template Management page.

2. In the grid in the **Template Management** workspace, select the row representing the Measurement Location Template record that you want to delete.

   In the following image, the Measurement Location Template record with the Template ID *FUEL TANK CHECK* is selected.

Template ID	Description	Template Type
Bluetooth	Bluetooth ML Temp Reading	Numeric
CONDITIONAL Asset Availability	Asset availability influences next action	Character
CONDITIONAL Power Source	Power Influences Next Action	Character
CONDITIONAL Pressure Assessment	Pressure Influences Next Action	Numeric
CONDITIONAL Safety Assessment	Safety Influences Next Action	Character
Daily Temp Reading	Daily Temperature Reading	Numeric
Filter Checks	Reg Maint Filter Check	Character
FUEL TANK CHECK	Daily Fuel Tank Check	Numeric
Fuel Tank Status	Daily Fuel Tank Check	Numeric
Hourly Flow Rate	Hourly Check for Liquid Flow Rates	Numeric
Hourly Temp Reading	Hourly Temperature Reading	Numeric
Monthly Temp Reading	Monthly Temperature Reading	Numeric
Operating Status	Currently Operating (Yes/No)?	Character
Performance - Char ML	Char ML for Performance Testing	Character
Performance - Generic	Generic ML Template for QA Perf Testing	Character
Performance - Num ML	Num ML for Performance Testing	Numeric
Pressure Reading	Scheduled Pressure Readings	Numeric
Pump char	General Check	Character
Pump check char	Pump Check	Character
Pump Num	General Reading	Numeric
QA Vent Check	General Vent Check	Character
QA VIBRATION Test	QA Check for Good Vibrations	Numeric
Weight of Bin Contents	Daily Monitoring of Bin Weight	Numeric
Wkly Temp Check	Weekly Temperature Check (Observation)	Character

3. On the **Template Tasks** menu, click the **Delete Template** link.

   A confirmation message appears, asking if you are sure you want to delete the Measurement Location Template record.

4. Click the **Yes** button.

The Measurement Location Template record is deleted, and the associated row is removed from the grid.

Template Management

Template ID	Description	Template Type
Bluetooth	Bluetooth ML Temp Reading	Numeric
CONDITIONAL Asset Availability	Asset availability influences next action	Character
CONDITIONAL Power Source	Power Influences Next Action	Character
CONDITIONAL Pressure Assessment	Pressure Influences Next Action	Numeric
CONDITIONAL Safety Assessment	Safety Influences Next Action	Character
Daily Temp Reading	Daily Temperature Reading	Numeric
Filter Checks	Reg Maint Filter Check	Character
Fuel Tank Status	Daily Fuel Tank Check	Numeric
Hourly Flow Rate	Hourly Check for Liquid Flow Rates	Numeric
Hourly Temp Reading	Hourly Temperature Reading	Numeric
Monthly Temp Reading	Monthly Temperature Reading	Numeric
Operating Status	Currently Operating (Yes/No)?	Character
Performance - Char ML	Char ML for Performance Testing	Character
Performance - Generic	Generic ML Template for QA Perf Testing	Character
Performance - Num ML	Num ML for Performance Testing	Numeric
Pressure Reading	Scheduled Pressure Readings	Numeric
Pump char	General Check	Character
Pump check char	Pump Check	Character
Pump Num	General Reading	Numeric
QA Vent Check	General Vent Check	Character
QA VIBRATION Test	QA Check for Good Vibrations	Numeric
Weight of Bin Contents	Daily Monitoring of Bin Weight	Numeric
Wkly Temp Check	Weekly Temperature Check (Observation)	Character

About Adding Conditions on a Template Group

When you define a Checkpoint Condition record for a Template Group, you are adding logic to the Template Group that will be applied to the Route to which you add the Template Group. Because Checkpoint Condition records serve the same purpose within a Template Group that they serve within a Route, information regarding the contents of a Checkpoint Condition records is documented in the Route Management section of the documentation. Specifically, you can define Checkpoint Condition records for character and numeric ML types.

Instructions for adding Checkpoint Condition records to a Template Group, however, are documented herein. You can add the following types of conditions to a Template Group using the Template Group pane:

- Character
- Numeric

When you apply to a Route a Template Group that contains conditions, for each Checkpoint Condition record that exists in the Template Group, one new Checkpoint Condition record will be created and added to the Route. The new Checkpoint Condition records will contain the same values that are stored in the source Checkpoint Condition records.

In a Template Group, a single condition is represented by:

- One Measurement Location Template record that identifies the initial checkpoint.
- One Checkpoint Condition record that identifies the specific reading value.
- One or many Measurement Location Template records that identify the subsequent checkpoints.

The following image illustrates the connection that exists between the Measurement Location Template and Checkpoint Condition records that make up a condition.

A single Checkpoint Condition record can be associated as a successor to only ONE Measurement Location Template record. A Measurement Location Template record, however, can be associated with multiple successor Checkpoint Condition records. Likewise, a Checkpoint Condition record can be associated with multiple successor Measurement Location Template records.

Consider the following image, which shows an example of a what the Template Group *Template for Pumps* looks like after conditions are defined.

Notice that in this image, the Checkpoint Condition nodes (colored blue) display the following text:

If <ML Template Category> is <Reading value> then:

The text that is displayed on Checkpoint Condition nodes will vary depending upon the type of checkpoint template with which it is associated (i.e., character or numeric). This is determined by the value store din the ML Type field in the predecessor Measurement Location Template record.

Adding Conditions to a Template Group for a Character ML

The following instructions provide details on creating a Checkpoint Condition record and adding it to a Template Group:

- As a successor to a Measurement Location Template record whose ML Type value is *character*.

  -and-

- As a predecessor to a Measurement Location Template record.

These instructions assume that you are viewing a Template Group on the **Template Group Management** page, where the Template Group is linked to at least one Measurement Location Template record whose ML Type value is *character*.

To add a condition to a Template Group for a character ML:

1. In the Template Group pane, select the:

   - Measurement Location Template node representing the checkpoint whose reading value should trigger additional checkpoints to appear.

     -or-

   - Checkpoint Condition node that is linked to the desired Measurement Location Template record and below which you want a new Checkpoint Condition node to appear.

2. On the **Template Group Tasks** menu, click the **Add Condition** link.

   A new Checkpoint Condition record is created and appears below the predecessor Measurement Location Template record that is represented by the selected Measurement Location Template node.
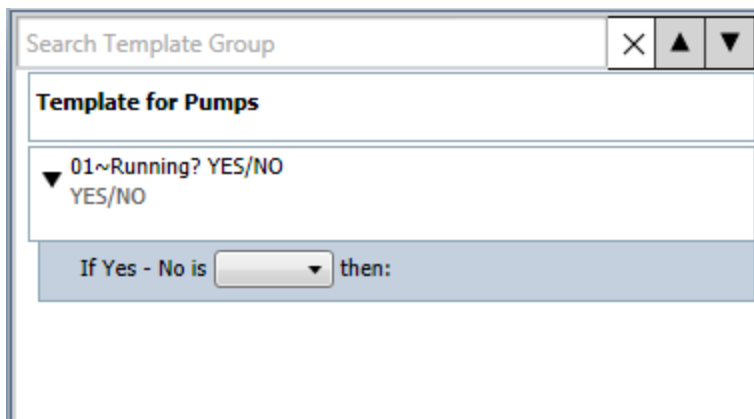
   The previous image shows the Checkpoint Condition *If Yes - No is then:* colored blue.

3. Select the Checkpoint Condition node.
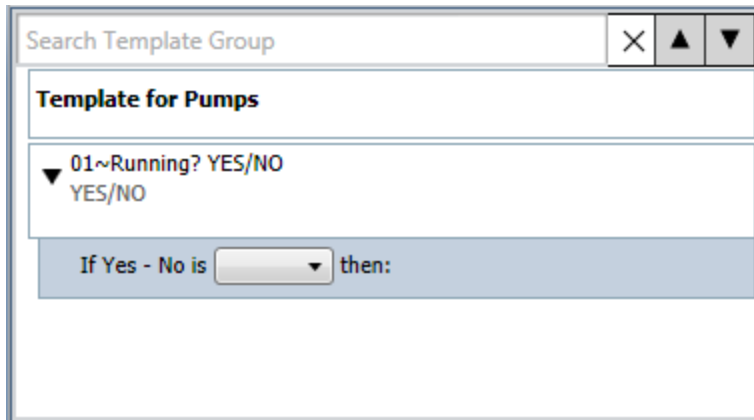
   The **<Reading value>** list is enabled.

4. In the **<Reading value>** list, select the reading value that should trigger an additional checkpoint to appear.

   The Checkpoint Condition record is saved automatically. At this point, the Checkpoint Condition node displays part of the final condition statement, similar to the one shown in the following image.
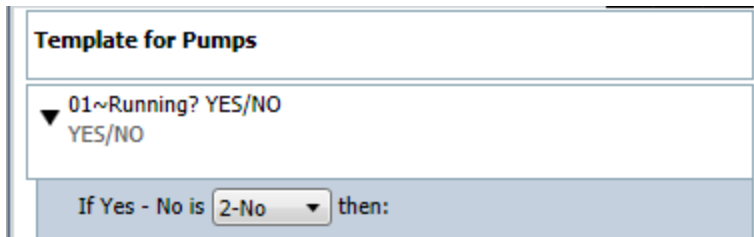
   In this example, the condition statement is: *If Yes - No reading is 2-No, then:*

5. Select the Checkpoint Condition node, and then on the **Template Group Tasks** menu, click the:

   - **Add New** link, if you want to create a new Measurement Location Template record.

     -or-

   - **Add Existing** link, if you want to add an existing Measurement Location Template record.

   The Measurement Location Template record is added to the Template Group, and a Measurement Location Template node appears below the predecessor Checkpoint Condition record. In the following image, you can see a new Measurement Location Template node shaded yellow.

6. In the Datasheet area, complete or modify the fields on the Measurement Location Template datasheet, as desired.

7. On the datasheet toolbar, click the 🖫 button.

The Measurement Location Template record is saved. At this point, the condition statement is complete. For example, consider the following image.

In this example, the final condition statement is: *If the Yes - no is 2-No, then display the Offline for maintenance? checkpoint.*

Adding Conditions to a Template Group for a Numeric ML

The following instructions provide details on creating a Checkpoint Condition record and adding it to a Template Group:

- As a successor to a Measurement Location Template record whose ML Type value is *numeric*.

  -and-

- As a predecessor to a Measurement Location Template record.

These instructions assume that you are viewing a Template Group on the **Template Group Management** page, where the Template Group is linked to at least one Measurement Location Template record whose ML Type value is *numeric*.

To add a condition to a Template Group for a numeric ML:

1. In the Template Group pane, select the:

    - Measurement Location Template node representing the checkpoint whose reading value should trigger additional checkpoints to appear.

      -or-

- Checkpoint Condition node that is linked to the desired Measurement Location Template record and below which you want a new Checkpoint Condition node to appear.

2. On the **Template Group Tasks** menu, click the **Add Condition** link.

    A new Checkpoint Condition record is created and appears below the predecessor Measurement Location Template record that is represented by the selected Measurement Location Template node.

    The previous image shows the Checkpoint Condition node *If Discharge Pressure equals then*:

3. Select the Checkpoint Condition node.

    The <=> list and <Reading value> cell are enabled.

4. In the **<=>** list, select the desired quantifier. For example, the following image shows the quantifier **<=** (less than or equal to) selected in the **<=>** list.

5. In the **<Reading value>** cell, type the numeric value representing the reading value that should trigger the additional checkpoint to appear. For example, the following image shows the value *99*.

   The Checkpoint Condition record is saved automatically.
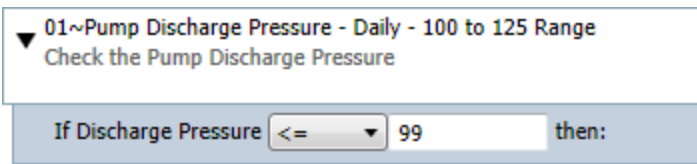
   At this point, the Checkpoint Condition node displays part of the final condition statement. In this example, the condition statement is: *If the Check the Pump Discharge Pressure reading is less than or equal to 99, then display the following checkpoint.*

6. Select the Checkpoint Condition node, and on the **Template Group Tasks** menu, click the:

   - **Add New** link, if you want to create a new Measurement Location Template record.

   -or-

   - **Add Existing** link, if you want to add an existing Measurement Location Template record.

   The Measurement Location Template record is added to the Template Group, and a Measurement Location Template node appears below the predecessor Checkpoint Condition record. In the following image, you can see an existing Measurement Location Template node shaded yellow.
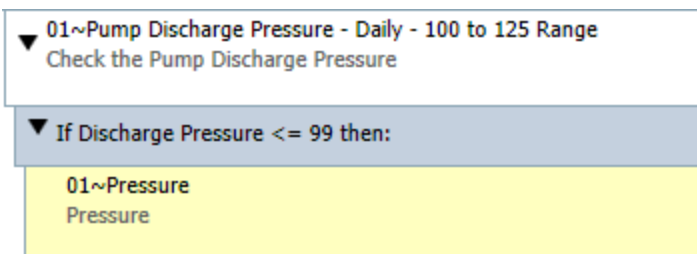
7. In the Datasheet area, complete or modify the fields on the Measurement Location Template datasheet, as desired.

8. On the datasheet toolbar, click the 🖫 button.

   The Measurement Location Template record is saved. At this point, in the Template Group pane, the condition statement is complete. For example, consider the following image.
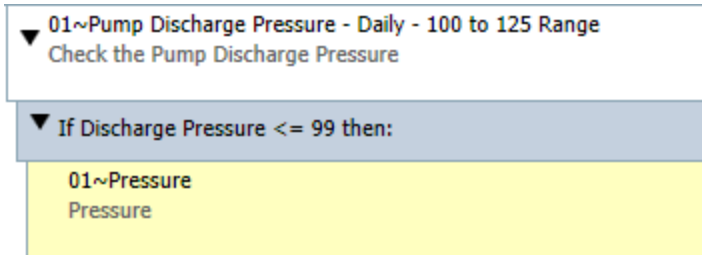
   In this image, you can see that the final condition statement is: *If the Check the Pump Discharge Pressure reading is less than or equal to 99, then display the Pressure checkpoint.*

About Arranging Checkpoint Templates in a Template Group

The order in which the checkpoint templates appear in the Template Group pane corresponds to the order in which checkpoints will appear in the Route pane after you apply a Template Group to a Route. Measurement Location Template nodes are sequenced automatically starting with *01*, based upon their position in the Template Group pane, relative to the other Measurement Location Template records that are associated with the same predecessor node. In other words, all the Measurement Location Template nodes that appear directly below the Template Group node will be numbered *01*, *02*, *03*, and so on. Likewise, all the Measurement Location Template nodes that appear directly below Checkpoint Condition nodes will be numbered as *01*, *02*, *03*, and so on within that condition.

Consider the following image, which shows a Template Group whose Measurement Location Template nodes are numbered beginning with *01*, inside and outside of conditions.

Unlike Measurement Location records, whose sequence values is stored in the Sequence field in that record, the sequence associated with a Measurement Location

Template record is stored in a Checkpoint Template Sequence record, which the code uses to maintain the structure of a Template Group. For more information on the records that make up a Template Group, see the section of the documentation about Measurement Location Templates and Template Groups.

You can change the sequence of Measurement Location Template nodes by dragging them from their current location in the Template Group pane and dropping them in the desired location. When you do so, the sequence value associated with the Measurement Location Template records will be updated automatically to reflect the current location of each node. In addition, the Sequence values in the Measurement Location Template records represented by the surrounding nodes will also be updated.

After you apply a Template Group to a Route, Measurement Location records are created for each Measurement Location Template record in that Template Group. While the structure of the Template Group is replicated in the Route pane, the sequence values associated with the individual Measurement Location Templates may not be the same in the Measurement Location records, depending upon the location in the Route where you apply the Template Group. Consider the following image, which shows a Route. Assume that below the Measurement Location node with the sequence value *02*, you add the Template Group shown in the previous image.
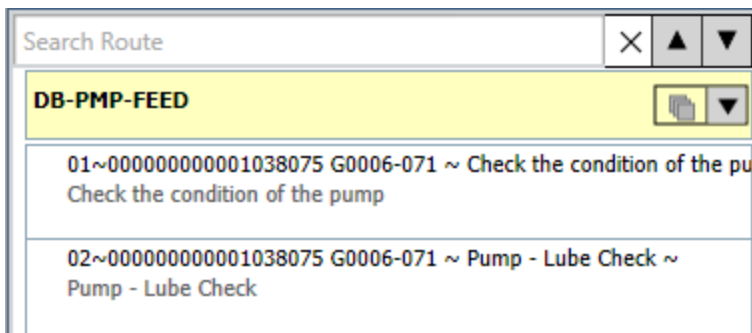
After the Measurement Location records are created from the Measurement Location Template records, the nodes will appear in the same position as they appeared in the Template Group, relative to the other nodes within that Template Group. The sequence value that is assigned to the Measurement Location node that is created for the first Measurement Location Template node, however, will not be numbered *01*as it was in the Template Group. Instead, the node will be numbered*03*. Likewise, the sequence values associated with all subsequent Measurement Location nodes in the Route will reflect the current position of that node. The following image shows an example of this scenario. In this image you can see that the *Yes/No* Measurement Location with the sequence value *03* was created from the Measurement Location Template *Yes/No*, which is sequenced as *01* in the source Template Group.
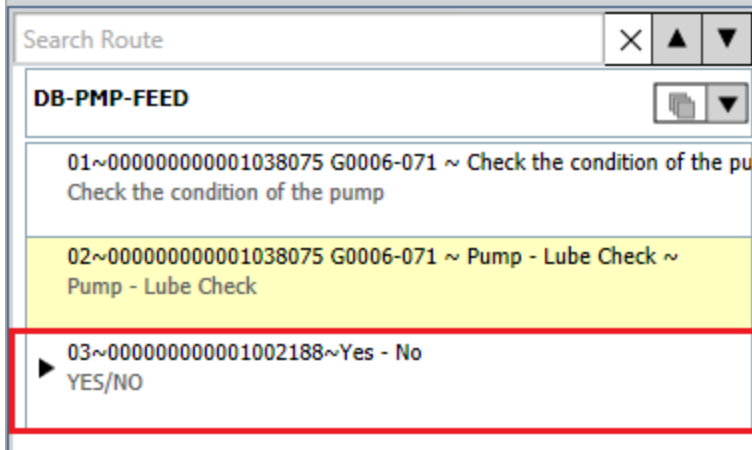
If you change the sequence associated with a Measurement Location Template in the Template Group and then apply updates to the Measurement Location records created from that source Measurement Location Template record, the sequence value will not be updated in the Measurement Location record.

Guidelines for Arranging Checkpoint Templates in a Template Group

You can use the Template Group pane to drag a Measurement Location Template node from its current location and drop it into the desired location. When you do so, the sequence value in the Template Group pane is updated automatically for the node that you moved and the surrounding nodes.

Consider the following image. In this image, you can see seven Measurement Location Template nodes, where the Measurement Location Template node with the sequence *03* is selected.
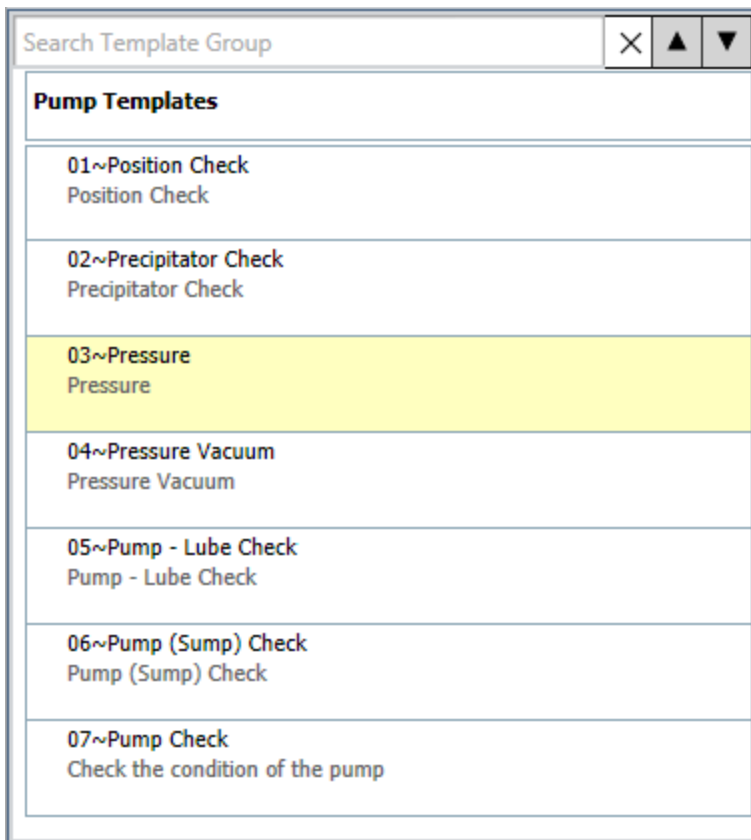
If you drag this Measurement Location Template node from its current position (i.e., *03*) and drop it below the Measurement Location Template node with the sequence value *06*:

- The Measurement Location Template node with the sequence *03* will appear below the Measurement Location Template node with the sequence *06* (and is selected by default), and the sequence value will be updated automatically to *06*.

- The Measurement Location Template node *Pump - Lube Check* with the previous sequence value *06* will be updated automatically with the new sequence value *05*.

- The Measurement Location Template node *Pressure Vacuum* with the original sequence value *04* will be updated automatically with the new sequence value *03*.

At the database level, when you arrange Measurement Location Template nodes, the sequence value in the Checkpoint Template Sequence record that is associated with the corresponding Measurement Location Template records will be updated automatically to reflect the new location of the node. In addition, the Checkpoint Template Sequence records for the surrounding Measurement Location Template nodes will also be updated automatically. This will ensure that after the Template Group is applied to a Route that the nodes are arranged in the Route pane in the same order in which they appear in the Template Group pane. Keep in mind that Checkpoint Template Sequence records cannot be modified manually in Meridium. Instead, the Meridium APM system uses these records to create and maintain the structure of a Template Group.

You can select more than one Measurement Location Template node at one time using the Ctrl or Shift keys, and then drag those nodes to a different location. As you drag a group of Measurement Location Template nodes, text is displayed that indicates the number of Measurement Location Template nodes that are currently selected.

The following list contains guidelines that you should use when arranging Measurement Location Template nodes in the Template Group pane.

- When you move a Measurement Location Template node representing a record that is related to successor records, the successor nodes will be moved along with

the predecessor node. In addition, the collapsed or expanded state of these nodes will persist in the new location. For example, if a predecessor node and only one of the successor nodes are expanded when you drag the nodes, after they are dropped in a new location, the predecessor node and the one successor node will remain expanded, while the other nodes remain collapsed.

- If you drop a Measurement Location Template node that existed within a condition to a location outside of that condition, the association between the corresponding Measurement Location Template record and the Checkpoint Condition record will be removed and a new association will be created automatically between that Measurement Location Template record and the record represented by the node under which it was dropped.

- If you drop a Measurement Location Template node whose Measurement Location Template record is associated with the Template Group record to a location within a condition, the association between that Measurement Location Template record and the Template Group record will be removed and a new association will be created between that Measurement Location Template record and the Checkpoint Condition record automatically.

About Deleting Records in a Template Group

If a Template Group should no longer contain a Measurement Location Template or condition, you can remove that node from the Template Group using the **Delete** link on the **Template Group Tasks** menu. While the link is labeled *Delete*, when you delete a Measurement Location Template record from a Template Group, the underlying record will not be deleted from the Meridium APM database. Instead, only the reference to the Measurement Location Template via the Checkpoint Template Sequence record will be deleted. When you delete a Template Group record or a Checkpoint Condition record, however, the record itself will be deleted from the Meridium APM database.

More specifically, when you delete a Measurement Location Template from a Template Group, the Meridium APM system will:

- Delete the *association* between the Measurement Location Template record and its predecessor record (i.e., in the Checkpoint Template Sequence record).
- Remove the Measurement Location Template node from the Template Group pane.
- Remove or delete the successor records that are associated with the Measurement Location Template record. Checkpoint Condition records that are successors to a Measurement Location Template record that is removed from a Template Group will be deleted from the database. Other Measurement Location Template records that are associated with a Measurement Location Template record that is removed from a Template Group, however, will also be removed from the Template Group as described above.

Likewise, when you *delete* a Checkpoint Condition record, any Measurement Location Template records that are associated with the Checkpoint Condition record as successors will be removed from the Template Group. Other Checkpoint Condition records that are associated with the Checkpoint Condition record as successors, however, will also be deleted.

If you want to delete an entire Template Group, you can [delete the Template Group record](#), and that Template Group will no longer appear in the Operator Rounds interface. When you do so, only the Checkpoint Condition records will be deleted from the Meridium APM database. The Measurement Location Template records belonging to that Template Group will not be deleted. You can delete an entire Template Group via the **Template Group Selection** page.

Deleting a Template Group Record

To delete a Template Group record:

1. On the **Template Group Selection** page, select the row containing the Template Group record that you want to delete.

2. On the **Template Group Tasks** menu, click the **Delete Template Group** link.

   A confirmation message appears, asking if you are sure that you want to delete the Template Group record.

3. Click the **Yes** button.

   The Template Group record is deleted.

Deleting Checkpoint Condition Records from a Template Group

The following instructions provide details on deleting Checkpoint Condition records from a Template Group.

To delete a Checkpoint Condition record from a Template Group:

1. Open the Template Group containing the Checkpoint Condition record you want to delete.

2. In the Template Group pane, select the Checkpoint Condition node representing the Checkpoint Condition record that you want to delete.

3. On the **Template Group Tasks** menu, click the **Delete** link.

   A confirmation message appears, asking if you really want to delete:

   - The Checkpoint Condition record only, if the Checkpoint Condition record is not a predecessor to any successor records.

   - The Checkpoint Condition record and all its successor records, if the Checkpoint Condition record is a predecessor to successor records.

4. Click the **Yes** button.

   The selected Checkpoint Condition record is deleted, along with any successor Checkpoint Condition records. In addition, if the Checkpoint Condition record(s) were associated with any Measurement Location Template records, those records are removed from the Template Group.

Removing Measurement Location Template Records from a Template Group

The following instructions provide details on removing a Measurement Location Template record from a Template Group. Doing so does not delete the Measurement Location Template record from the database. Instead, only the references stored in the Checkpoint Template Sequence records for that Measurement Location Template record and its predecessor and successor records are deleted.

To remove a Measurement Location Template record from a Template Group:

1. Open the Template Group containing the Measurement Location Template record you want to remove.

2. In the Template Group pane, select the Measurement Location Template node representing the Measurement Location Template record you want to remove from the Template Group.

3. On the **Template Group Tasks** menu, click the **Delete** link.

    A confirmation message appears, asking if you really want to remove the Measurement Location Template record from the Template Group and informing you that any conditions associated with the Measurement Location Template record as successors will be deleted.

4. Click the **Yes** button.

    The selected Measurement Location Template record is removed from the Template Group, along with any other successor Measurement Location Template records, and if the Measurement Location Template record is associated with successor Checkpoint Condition records, those records are deleted.

Using Reference Documents on a Device

A reference document is a file (e.g., a Word document) that contains supplementary information that users need to view while they are working. In the case of Operator Rounds, a reference document contains supplementary information about a checkpoint that you might want device users to be able to see while entering a reading value for that checkpoint. For example, if a user is supposed to take several readings on the same piece of equipment, you might want them to be able to access an image dictating the exact locations at which the readings should be taken.

To access reference documents on a handheld device, you must:

1. Create a Reference Document record for the reference document and set it up so that the reference document should be stored in the Meridium APM database.

2. Link the Reference Document record to the Measurement Location record representing the checkpoint that is associated with the reference information.

3. Sync the device with the Meridium APM database.

In addition, the device must contain the appropriate software application for displaying the reference document type. For example, if a reference document is a Microsoft Word document, the device must have a word processing program such as Mobile Word in order to view the reference document on the device.

You can link [new](#) or [existing](#) Reference Document records to Measurement Location records via the ML Task View datasheet for the desired Measurement Location record.

> **Note:** The reference document that you see on the device is the reference document that is stored in the Meridium APM database. The original reference document, however, is stored in the location specified by the file path in the Reference Document record (i.e., a network drive or local computer). If the original document is modified, you will need to manually update the corresponding Reference Document record so that device users can see those changes.

Linking New Reference Document Records to Measurement Location Records

To create a Reference Document record and link it to a Measurement Location record:

1. [Open the Route](#) that contains the Measurement Location that you want to associate with a reference document, and select the corresponding Measurement Location node.

   The contents of the Measurement Location record are displayed in the [Datasheet area on the **Route Management** page](#).

2. In the Datasheet area, select the **Reference Documents** tab.

   The **Reference Documents** tab appears.
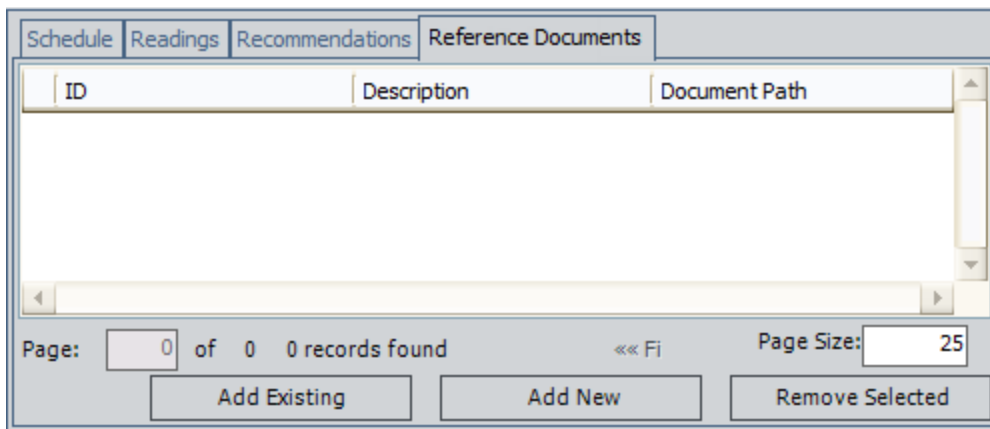
3. Click the **Add New** button.

   A new Reference Document record appears in a new window.
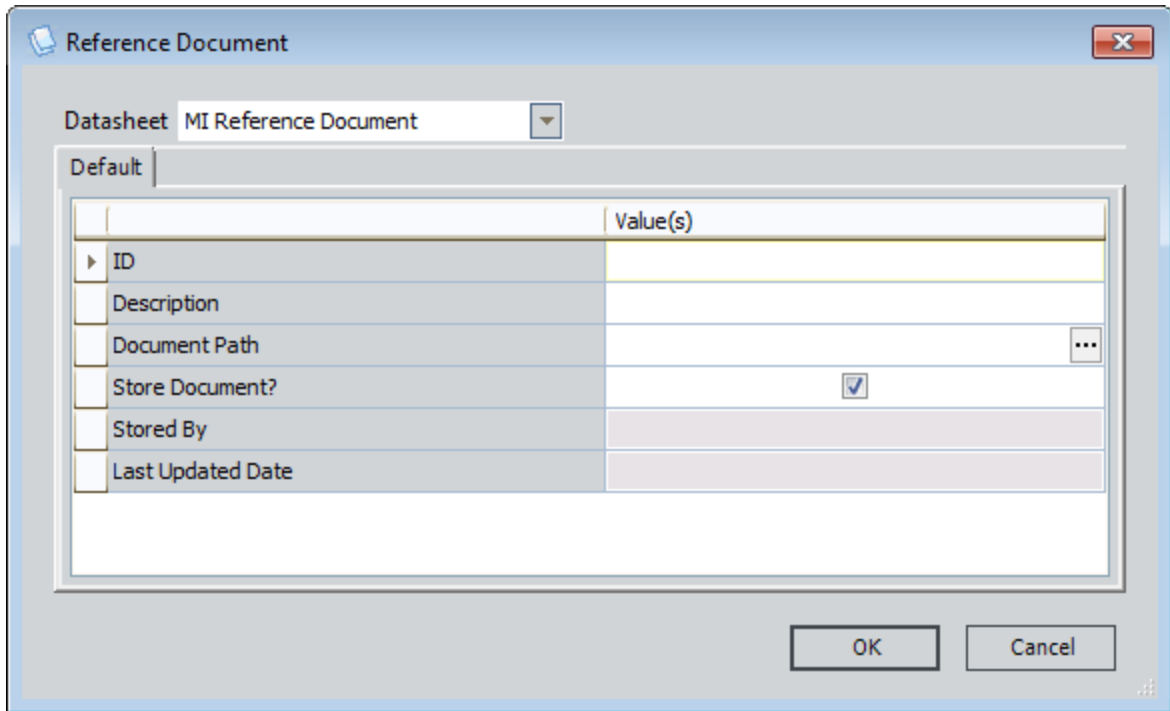
4. In the **ID** text box, type an ID for the reference document. The ID is what is displayed to the device user on the **Ref - Docs** screen when more than one Reference Document record is linked to the Measurement Location record.

> ŒHint: You should limit the ID to 31 characters. The device can display up to 31 characters. If an ID contains more than 31 characters, the remaining characters will not be displayed on the device.

5. In the **Description** text box, type a description of the reference document.

6. In the **Document Path** text box, click the ⋯ button.

   The **Reference Document Path** dialog box appears.

   In the **Document Path** text box, you can type the path to the reference document, or you can click the ⋯ button to browse for the document. These instructions assume that you want to browse for the document.

7. Click the [...] button, and select the desired file.

   The **Document Path** text box is populated with the path to the selected file.
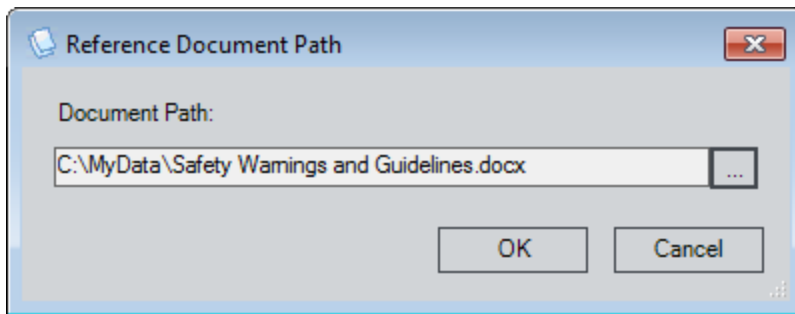
8. Click **OK.**

   The **Document Path** text box is populated with a link to the document.
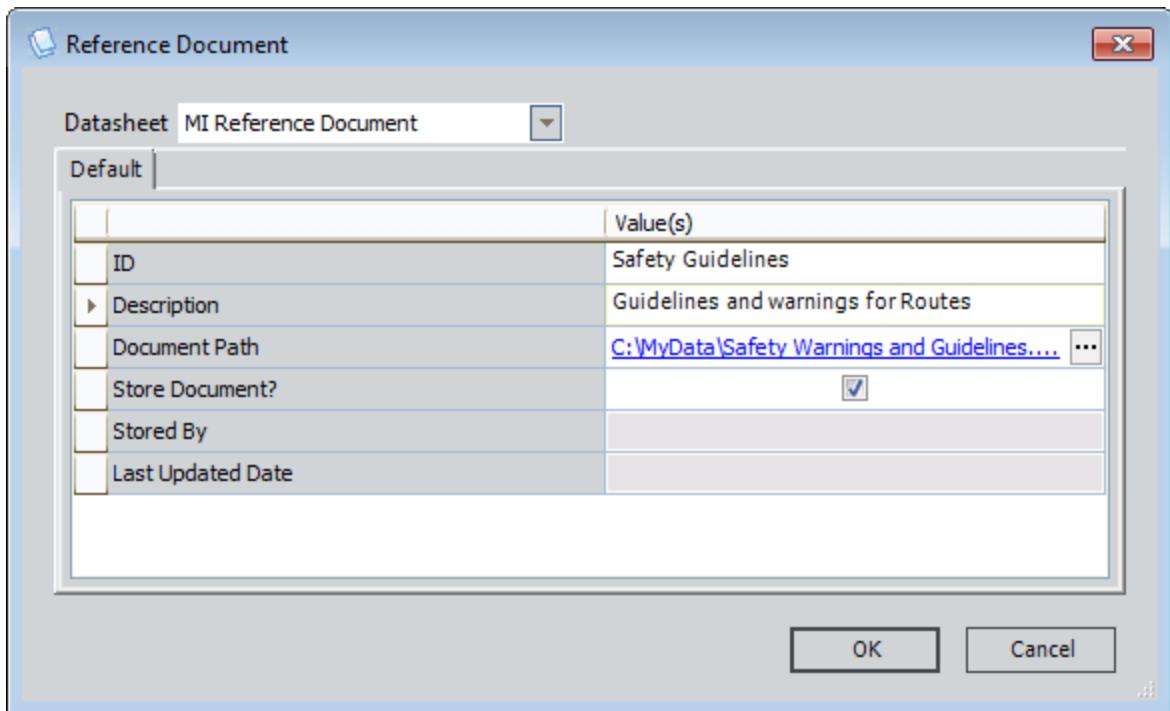
9. Accept the default setting for the **Store Document?** check box (i.e., *selected*). If you clear this check box, the reference document will not be visible on the device.

10. Click **OK.**

   The new Reference Document record is linked to the selected Measurement Location record and is displayed on the **Reference Documents** tab. In addition, a copy of the reference document is saved to the Meridium APM database.

After this Measurement Location record is downloaded to the device, the device user will be able to view the reference document.

Linking Existing Reference Document Records to Measurement Location Records

To link an existing Reference Document record to a Measurement Location record:

1. Open the Route that contains the Measurement Location that you want to asso-ciate with a reference document, and select the corresponding Measurement Loca-tion node.

   The contents of the Measurement Location record are displayed in the Datasheet area on the Route Management page.

2. In the Datasheet area, select the **Reference Documents** tab.

   The **Reference Documents** tab appears.
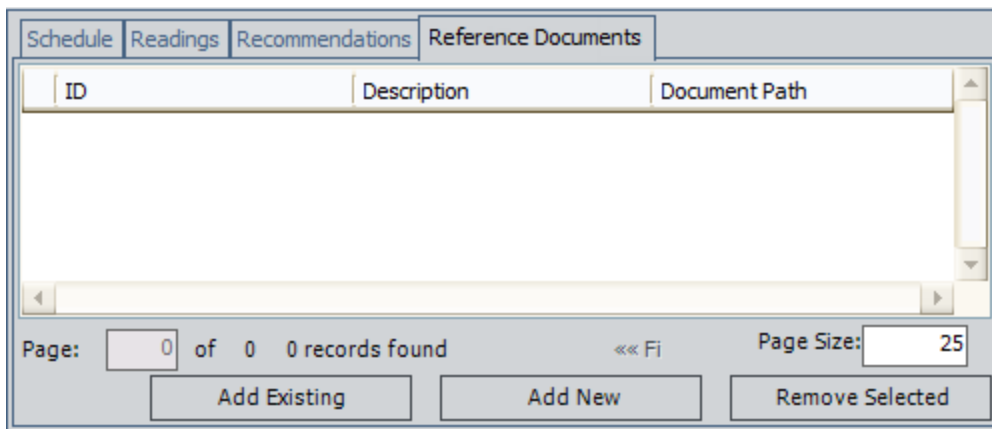
3. Click the **Add Existing** button.

   The **Find Items** window appears, and the Reference Document family is selected in the **Search In** text box.

4. Search for the desired Reference Document record, and select it.

   The selected Reference Document record is linked to the selected Measurement Location record and displayed on the **Reference Documents** tab.
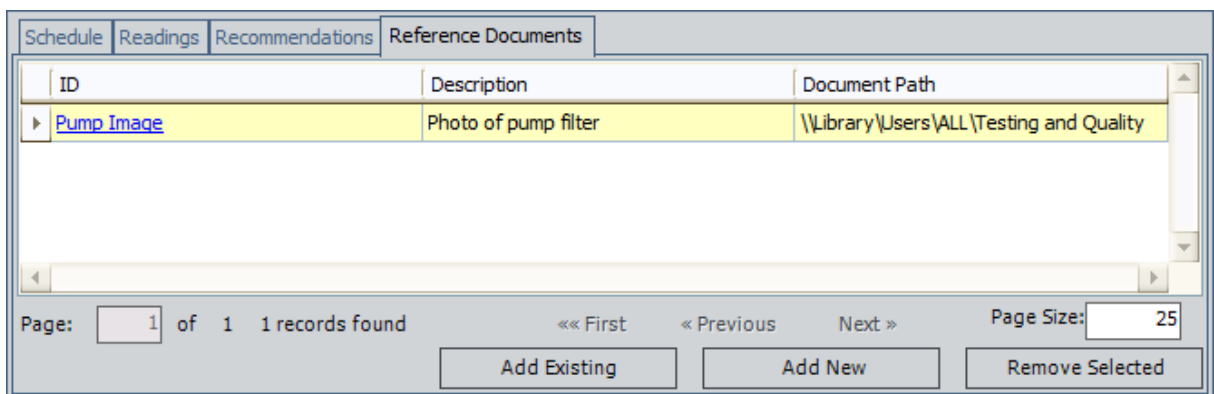
5. Click the ID of the Reference Document record that you just added.

    The **<Reference Document ID> (Reference Document)** window appears.
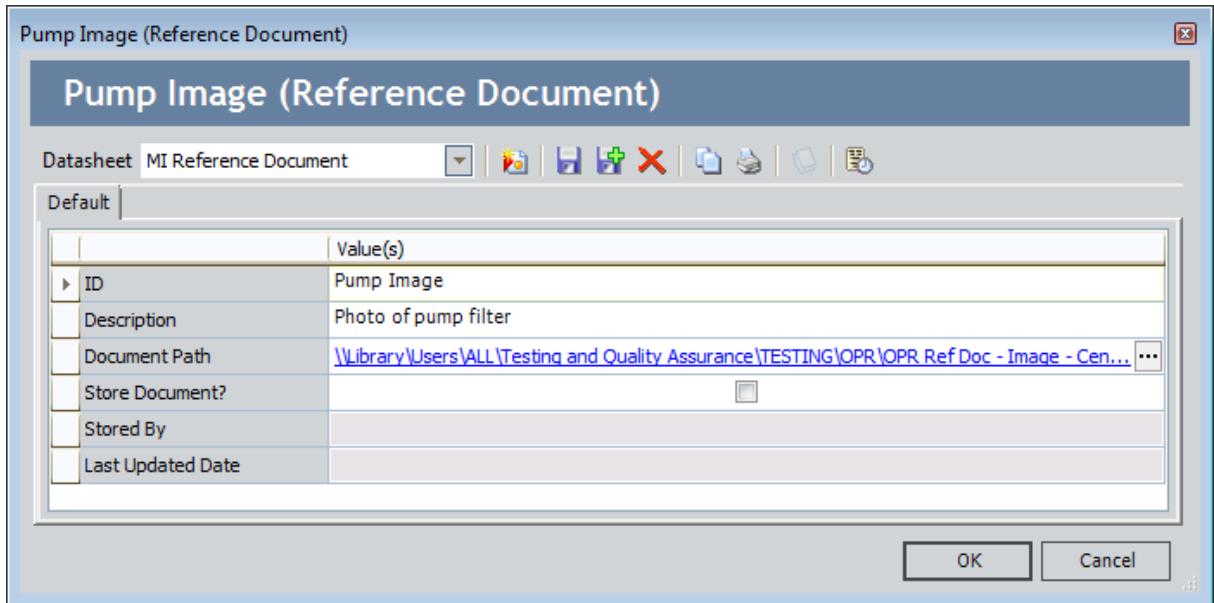
6. Select the **Store Document?** check box.

7. Click **OK**.
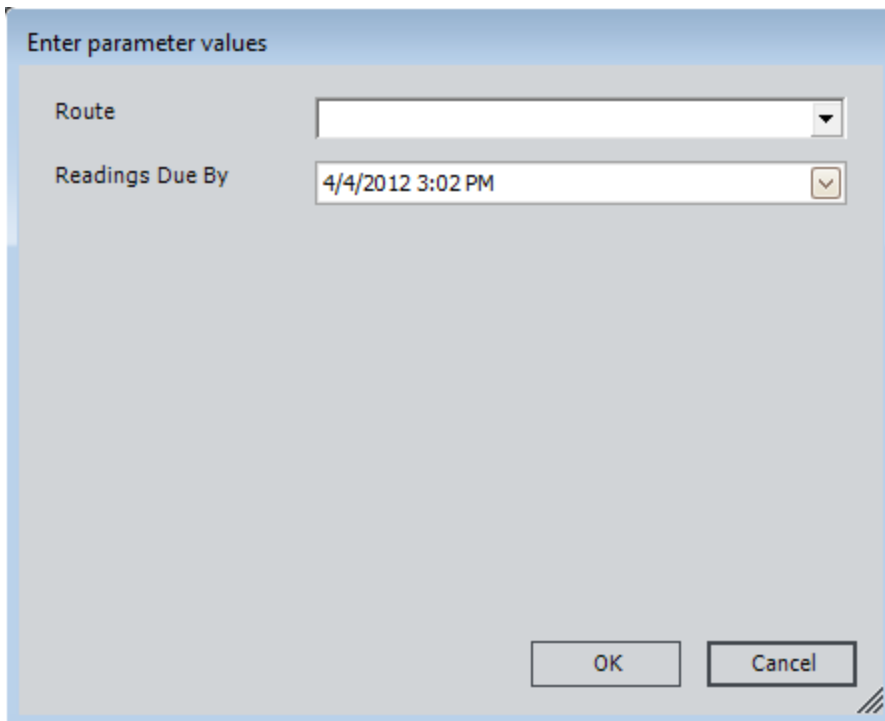
    A copy of the reference document is saved to the Meridium APM database. After this Measurement Location record is downloaded to the device, the device user will be able to view the stored reference document.

About the Download Query

Before device users can enter readings, they must download Route records and Measurement Location records to the device. Meridium APM supplies the Download Master query, which you can configure in the Meridium APM Framework application to return Route records and Measurement Location records based on the desired criteria. When users tap the **Sync Data** button on the device, the Download Master query is executed, and the Route records and Measurement Location records that meet the query criteria are downloaded to the device.

> **IMPORTANT:** By default, Meridium APM Operator Rounds is configured to look for the Download Master query in the Catalog folder \\Public\Meridium\Modules\Mobile\Operator Rounds. If you want to rename this query, you can do so, but you will need to update the device settings so that the device retrieves data from the correct query. Also, if you want to create a different query for device users to use to download data, you can do so, but again, you will need to update the device settings. Regardless of whether you want to use the default Download Master query or another custom query, it must be stored in the *Operator Rounds* folder or a subfolder of the *Operator Rounds* folder in order for device users to use it.

For example, if you run the default query in Meridium APM, you will see the following prompts.
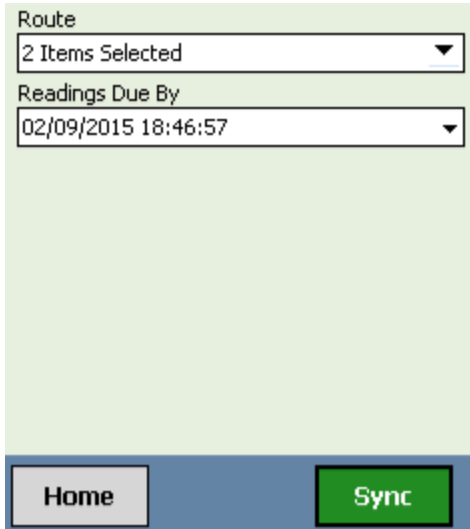
From this window, you can select one or more Route records and a date, and the query results would display Measurement Location records that are linked to the selected

Route records and that are linked to a Checkpoint Task record with the selected date or an earlier date in the Next Date field.

When a user taps the **Sync Data** button on the device, fields are displayed that correspond with these prompts, as shown in the following image.

By default, the Download Master query contains a prompt for the Route records and for the value in the Next Date fields in Checkpoint Task records that are linked to the Measurement Location records that are linked to the selected Route records. These prompts let device users define the following information:

- The Routes whose checkpoints they want to view.
- The checkpoints for which readings are due.

You can modify the Download Master query in any way to suit the needs of your device users.

Tips for Configuring a Download Query

When configuring a download query, consider the following:

- The query must contain at least one prompt.
- If you do not want to see inactive Route records on the device, define criteria on the Status field of the Route family to exclude inactive records.
- If you do not want to see inactive Measurement Location records on the device, define criteria on the Status field of the Measurement Location family to exclude inactive records.
- If you add prompts or configure the prompts such that they return additional values and users have already downloaded data to a device, they will need to perform an upload operation before they can see the additional content on the **Download** screen. For example, if the Route prompt displayed five Route records when a user last downloaded data and you create a new Route record, the user will see the new Route in the Route prompt only after they tap the **Sync** button on **Download** screen.
- The default Download Master query is configured to allow device users to download multiple Route records at a time.
- You *cannot* configure the Route prompt to contain an option that lets users download all Route records at once by selecting only one value in the prompt.

About the Security Query

The security query determines who can log into Meridium APM Operator Rounds on the device. The default security query is Security Users, which is stored in the Meridium APM Catalog folder \\Public\Meridium\Modules\Mobile.

Only Super Users or users that are both members of the MI Operator Rounds Mobile User Security Group and are returned by the security query defined on the **Device Settings** screen on the device will be able to log into Operator Rounds on the device. The default security query does not restrict access beyond the Security Group requirement. If desired, you can restrict access further by using a query with more limiting criteria. If you decide to use a more restrictive query, you must specify it on the **Device Settings** screen on the device.

Meridium APM has a minimum set of requirements for the security query. The default security query meets these requirements. If you want to use a customized security query, we recommend that you start with a copy of the baseline security query and make modifications from that copy. This will ensure that your query meets the minimum set of requirements.

Tips for Configuring a Security Query

When configuring a security query, consider the following:

- The first five columns in the design grid must contain at least the following fields, which are included in the baseline query:

  - ENTY_KEY (from the Security User family)

  - User ID (from the Security User family)

  - Password (from the Security User family)

  - LOCK_SEQ_NBR (from the Security User family)

  - Group ID (from the Security Group family)

  - Super User? (from the Security User family)

- The criteria on the Group ID field must be *('MI Operator Rounds Mobile User')*.

- You might consider adding the Is a User relationship family and the Human Resource family to the design grid. Because of the way that Human Resource records and Security User records are linked, doing so will allow you to filter the query results based on values in fields in Human Resource records. For example, if you want to allow only users at a certain site to access Operator Rounds on the device, you could add the Site Code field from the Human Resource family and then add criteria that defines the desired site.

About Barcodes and RFID Tags

You may use Operator Rounds in a facility in which barcodes or Radio Frequency Identification (RFID) tags are assigned to equipment. If barcode or RFID tag scanning has been enabled, when a device user scans a barcode or RFID tag, the associated checkpoint will be displayed on the device, which tells the user the action they need to perform to complete that checkpoint. After the action is complete, (e.g., vibration measurements taken) the device user can enter the reading value that is associated with the piece of equipment.

The following image illustrates a device scanning a barcode on a piece of equipment, and the device displaying the Reading record for the associated checkpoint.
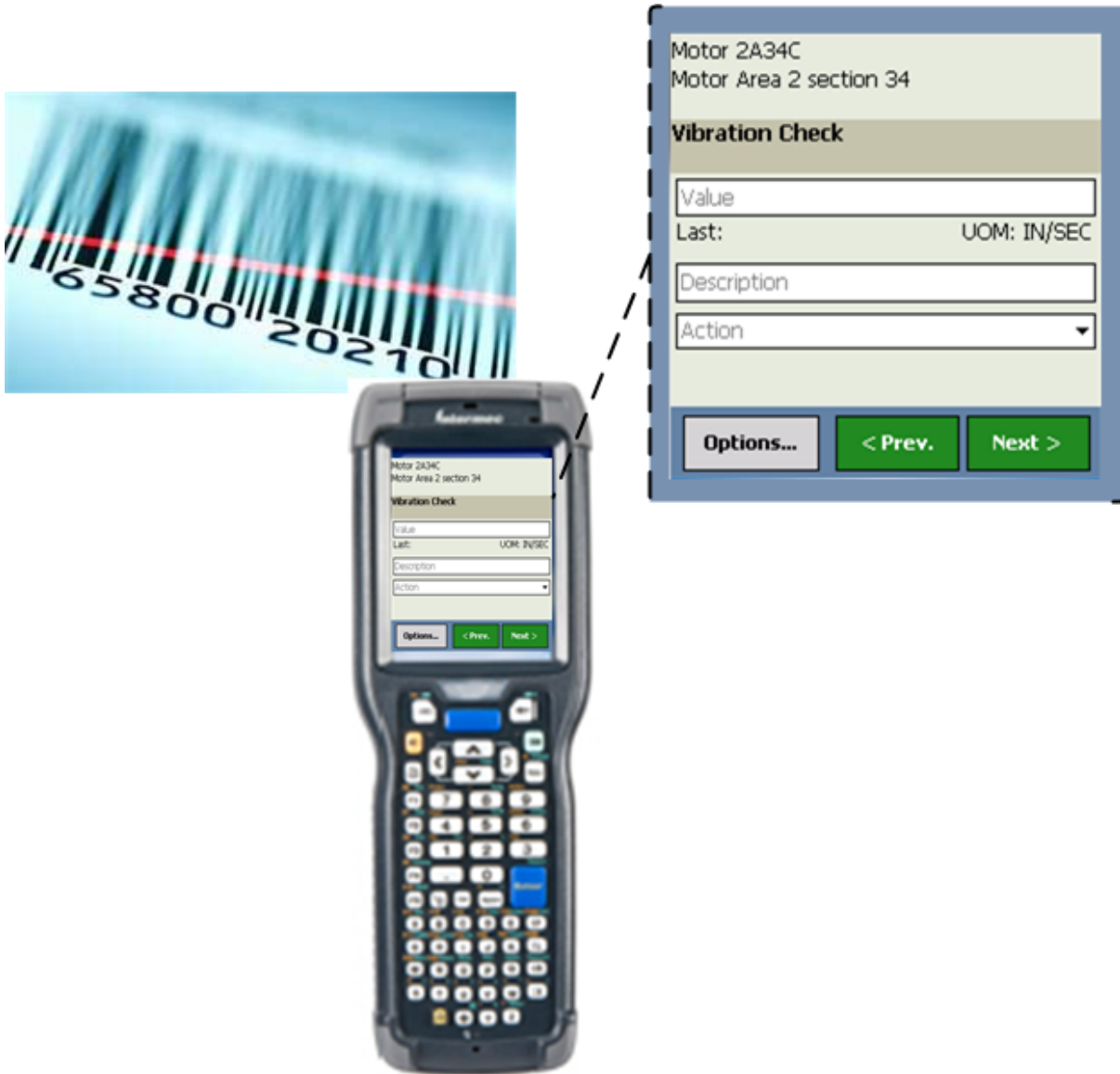
We recommend that you use barcodes *or* RFID tags (not both) to identify your equipment and locations. When you use barcodes *or* RFID tags, this allows a single checkpoint to be associated with only one Measurement Location record, as illustrated in the following image. In the following image, the line represents a relationship family, and the boxes represent entity families that are configured in the baseline database.

Equipment or Functional Location
Barcode *or* RFID tag assigned to piece of equipment or location

Has Checkpoint

Measurement Location
Scan ID value matches scan ID of the barcode *or* RFID tag
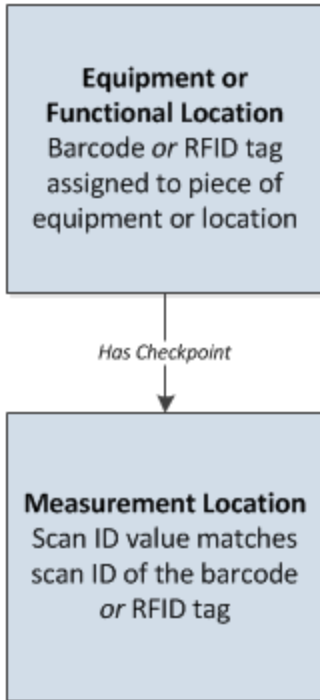
When Barcodes and RFID Tags Must Be Used Together

The Meridium APM Best Practice recommendation is to use barcodes *or* RFID tags (not both) to identify your equipment and locations. This allows a single checkpoint to be associated with only one Measurement Location record.

For example, if you use barcodes in one unit within a site, you should use barcodes in *all* units within that site. Consider the following image that illustrates the Operator Rounds records that would need to exist in this scenario. In the following image, boxes represent entity families, and lines represent relationship families that are configured in the baseline database. Each Measurement Location record represents a single checkpoint on the piece of equipment or location (represented by an Equipment or Functional Location record).
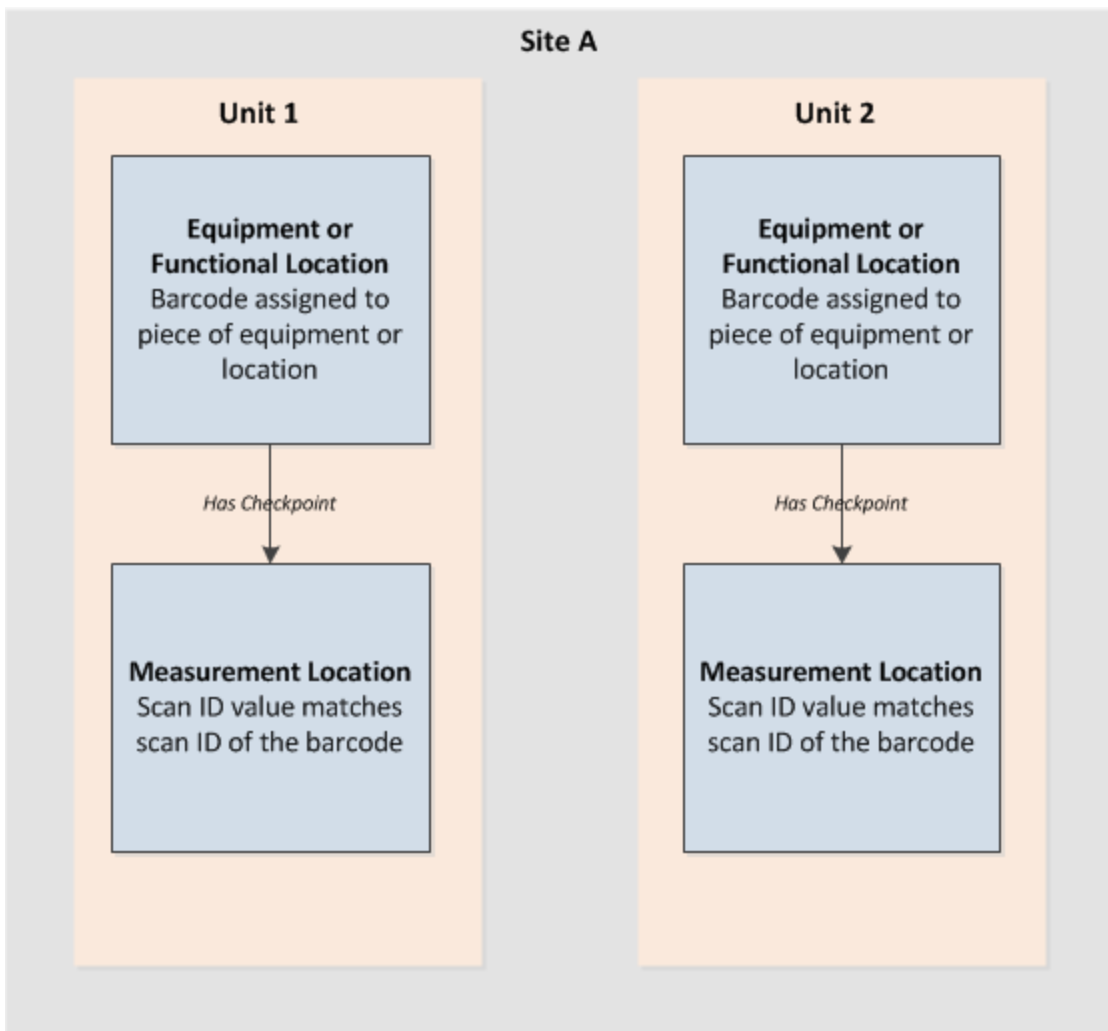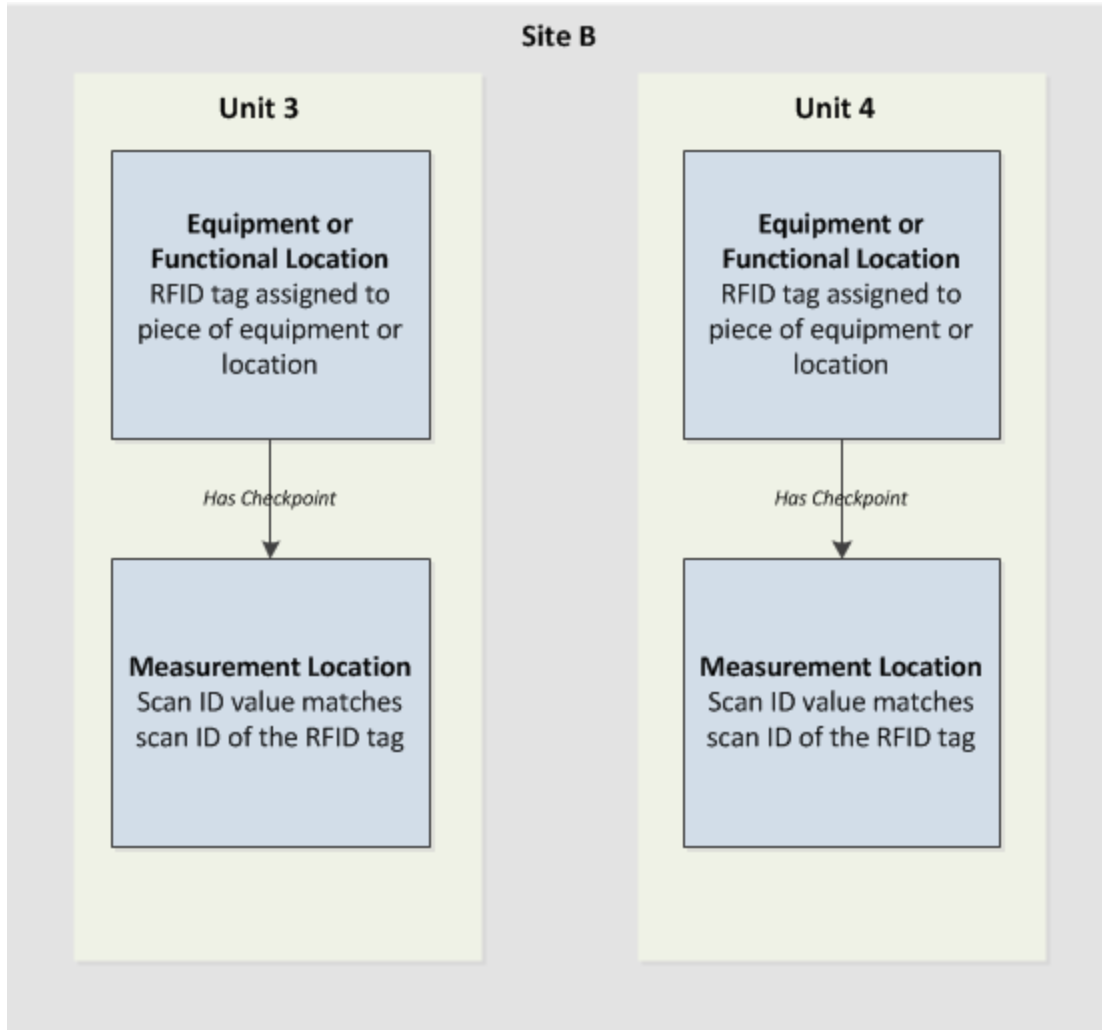
Note that *Unit 1* and *Unit 2* use barcodes because they are both within *Site A*. *Unit 3* and *Unit 4* use RFID tags because they are both with *Site B*.

Further, if your company policy or resource limitations dictate that you must use a barcode *and* an RFID tag at any one level in your location hierarchy, you must create *two* Measurement Location records, one that is associated with the barcode and one that is associated with the RFID tag.

Consider the following images that illustrates the Operator Rounds records that would need to exist in this scenario. In the following images, boxes represent entity families, and lines represent relationship families that are configured in the baseline database. The two Measurement Location records represent a *single* checkpoint on the piece of equipment or location (represented by an Equipment or Functional Location record).

About Assigning Scan IDs in Operator Rounds

Before you can start entering readings on a route, *scan IDs* must be assigned to Operator Rounds records. Scan IDs are used to identify the barcode or RFID tag that is associated with a particular piece of equipment or location, and they are stored in the Scan ID field in the following records:

- Route records.
- Measurement Location records that are linked directly to a Route record.
- Measurement Location Template records.
- Equipment or Functional Location records if the datasheet for these families have been configured to display the Scan ID field.

> **Note:** If you assign a scan ID to an Equipment or Functional Location record and you want the device to display the reading for that piece of equipment or location when a device user scans the associated barcode or RFID tag, a Measurement Location record representing the checkpoint(s) for that piece of equipment or location must be assigned the same scan ID.

The documentation in this section provides details on assigning scan IDs to records in Operator Rounds and how the scan IDs are used on the device. The documentation does *not* provide details on creating barcodes or RFID tags. We assume that you have existing barcodes or RFID tags or a means of creating them.

How you assign your scan IDs will vary depending upon your company's needs. We recommend that you read the Tips for Assigning Scan IDs topic in this documentation before assigning scan IDs to Meridium APM records.

Tips for Assigning Scan IDs

After you download a Route record to a device and scan a barcode or an RFID tag, the device will search for the value that is stored in the Scan ID field in the Route record or Measurement Location record. When you scan a barcode or RFID tag that matches the scan ID that you assigned to a Route record, the device will display the Readings-Detail screen, which contains a Reading record for the first checkpoint defined on the Route. Before you assign scan IDs to barcodes or RFID tags, you should consider the following tips:

- For barcodes, longer scan IDs are more difficult to scan than shorter scan IDs, and using letters in scan IDs will make the barcode longer. We recommend, therefore, that you use only numbers and limit the scan ID to 25 characters.

- If you assign a scan ID to a Route record *and* its Measurement Location records, the scan IDs should be variants of a unique scan ID. For example, if the scan ID assigned to the Route record is *1000*, the scan IDs that you assign to the Measurement Location records would be *1001*, *1002*, *1003*, and so on.

- If you [assign a scan ID](#) to an Equipment or Functional Location record and then create Measurement Location records that are linked to that Equipment or Functional Location record, the Measurement Location records will inherit the scan ID that is assigned to the piece of equipment or location by default. You can, however, modify the scan ID on the Measurement Location record. Assigning a scan ID to an Equipment or Functional Location record is beneficial when an Equipment or Functional Location record is linked to more than one Measurement Location record, and those Measurement Location records are associated with different routes.

- If you assign a scan ID to a Measurement Location record and then assign a different scan ID to the associated Equipment or Functional Location record, the Measurement Location record will retain its unique scan ID. This means that on the device, if you scan the barcode or RFID tag associated with the Equipment or Functional Location record but not a Measurement Location record, a message will appear, indicating that the barcode or RFID tag could not be found.

- If you assign the same scan ID to multiple Measurement Locations records and then scan the barcode or RFID tag, the device will display the first checkpoint it finds that contains that scan ID (i.e., the one with the lowest sequence value).

- If you assign the same scan ID to multiple, *sequential* Measurement Location records (i.e., create a scan group) and then scan the barcode or RFID tag, the device will display the first checkpoint it finds that contains the scan ID (i.e., the one with the lowest sequence value). If you navigate to a checkpoint that is outside the scan group, a message will appear, indicating that you have reached the end of the scan group and prompts you to scan another barcode or RFID tag to view the Reading record for the next checkpoint.

- If you want to lock a Reading record for a given checkpoint until the device user scans the associated barcode or RFID tag, you can select the **Scan to Unlock?** check box in the Measurement Location record.

- While you cannot assign a scan ID directly to a Measurement Location record that is a successor record in a condition, these checkpoints will be considered part of the *same* scan ID as the predecessor Measurement Location record. In other words, if you scan a barcode or RFID tag to view a Reading record for a checkpoint, and then enter a reading that triggers a condition, you will not need to scan a barcode or RFID tag again until you have completed the readings within that condition. Further, if a condition is defined for a Measurement Location record that is part of a scan group, you will not need to scan again until after you have completed all the checkpoints within the scan group, including any conditions that are defined for the subsequent checkpoints in the scan group.

About Assigning Scan IDs to Records

The datasheet for the Route family contains the Route Scan ID field, which is used to store the scan ID that you want to assign to the Route record. When you scan a barcode or RFID tag that matches the scan ID that you assigned to a Route record, the device will display the **Readings-Detail** screen, which contains a Reading record for the first check-point defined on the Route.

To assign a scan ID to a Route record:

1. Open the Route record to which you want to assign a scan ID.

2. On the datasheet, type the scan ID in the **Route Scan ID** cell.

3. On the Datasheet toolbar, click the button.

   The scan ID is saved with the Route record.

Assigning Scan IDs to Equipment or Functional Location Records

When the Equipment or Functional Location family is configured correctly, the data-sheet for that family contains the Scan ID field, which is used to store the scan ID that you want to assign to a piece of equipment or location. Additionally, if you create Measurement Location records and link them to the Equipment or Functional Location family, by default, the Scan ID value in the Equipment or Functional Location record will be used to populate the Scan ID field in the Measurement Location record. You can, however, modify the value in the scan ID field in the Measurement Location record. When you scan a barcode or RFID tag that matches the scan ID that you assigned to the Equipment or Functional Location record, the device will display the **Readings-Detail** screen, which displays a Reading record for the associated checkpoint.

To assign a Scan ID to an Equipment or Functional Location record:

1. Open the record to which you want to assign a scan ID.

   The record appears in the Record Manager.

2. On the datasheet, type the scan ID in the **Scan ID** cell.

3. On the **Common Tasks** menu, click the **Save** link.

   The scan ID is saved with the record. At this point, you can link the Equipment or Functional Location record to a Measurement Location record.

About Assigning Scan IDs to Measurement Location and Measurement Location Template Records

You can assign scan IDs to the following records to identify the barcode or RFID tag that is associated with that record:

- Measurement Location records that are linked directly to a Route record.
- Measurement Location Template records.

The following table lists the methods that you can use to assign scan IDs to Measurement Location and Measurement Location Template records.

Record	Method
Measurement Location Template	Manually by entering the scan ID into the Scan ID field in the Measurement Location Template record.
Measurement Location	Automatically by linking a Measurement Location record to an Equipment or Functional Location record to which a scan ID is assigned. When you do so, the Scan ID field in Measurement Location record will be populated automatically with the value in the Scan ID field in the Equipment or Functional Location record.
Measurement Location	Automatically by creating a Measurement Location record using a Measurement Location Template record to which a scan ID is assigned.
Measurement Location	Manually by entering the scan ID into the Scan ID field in the Measurement Location record.

Manually Assigning Scan IDs

The ML Task View datasheet for the Measurement Location family and the Measurement Location Template datasheet for the Measurement Location Template family contain the Scan ID field that is used to assign scan IDs to these records.

To manually assign a scan ID to a Measurement Location or Measurement Location Template record:

1. Open the Measurement Location or Measurement Location Template record to which you want to assign a scan ID.

2. On the datasheet, in the **Scan ID** cell, type the scan ID. The following image shows an example of a scan ID in the **Scan ID** cell in a Measurement Location record.

3. On the datasheet toolbar, click the 💾 button.

   The record is saved.

Specifying Checkpoints as Locked

In some cases, you will want to require the device user to be standing in front of the piece of equipment or location when the reading is taken. In these cases, you can lock the checkpoint until the device user scans the barcode or RFID tag that is assigned to the corresponding Measurement Location record. When a checkpoint is *locked*, a user will be unable to enter any reading values for the checkpoint until after the associated barcode or RFID tag is scanned. The following instructions provide details for specifying a checkpoint as locked via the Measurement Location datasheet. Additionally, a checkpoint will be specified as locked if the Measurement Location record was created from a Measurement Location Template record whose *Scan to Unlock?* field is set to *True*.
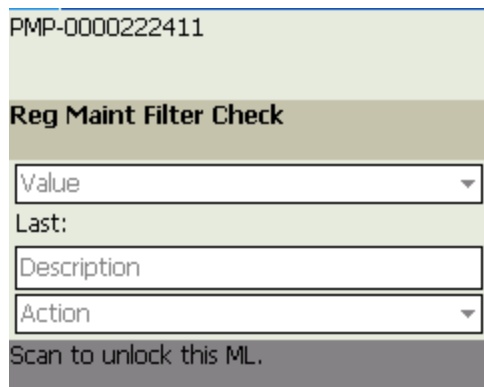
To specify a checkpoint as locked:

1. Open the Route that contains the Measurement Location record representing the checkpoint that you want to specify as locked on the device.

2. In the Route pane, select the Measurement Location node representing the checkpoint that you want to specify as locked on the device.

   The Measurement Location record appears in the Datasheet area.

3. On the datasheet, select the **Scan to Unlock?** check box.

4. On the datasheet toolbar, click the click the 🖫 button.

   The record is saved. On the device, the **Readings - Detail** screen will look similar to the following image.

About Scan Groups

You may want to assign the same barcode or RFID tag to multiple Measurement Location records that are defined sequentially in a Route. This is considered a *scan group*. A scan group consists of one or more, sequential checkpoints whose Measurement Location records contain the same scan ID. If a Route includes a scan group, when you scan the barcode or RFID tag for that scan group, the first checkpoint in the group will appear.

For example, consider the Route shown in the following image.

The Measurement Location nodes that are shaded red in the preceding image have the same scan ID in their Scan ID fields: *10059*.

On the device, when you scan the barcode or RFID tag *10059*, the checkpoint whose Measurement Location record has the sequence value *03*, will be displayed automatically because it is defined first in the scan group.

If you tap the **Next** button from this reading, the next checkpoint will be displayed, and so on until you reach the end of the scan group. When you do so, a message will appear, indicating that you have reached the end of the scan group and prompts you to scan another barcode or RFID tag. Likewise, if you are viewing the first checkpoint within the scan group, and you tap the **Prev** button, a message will appear, indicating that you have reached the end of the scan group and prompts you to scan another barcode or RFID tag.

> **Note:** Because a scan group can consist of a *single* Measurement Location record, the device will treat a single Measurement Location record (with a scan ID) in the same way it treats a scan group that consists of multiple Measurement Location records.

Accessing Operator Rounds on a Device

To access Operator Rounds on a device, you must be one of the following types of Users:

- Super User.
- Member of the MI Operator Rounds Mobile User Security Group
- Member of the MI Operator Rounds Administrator Security Group
- Security User that is returned by the security query that is specified on the **Settings** screen.
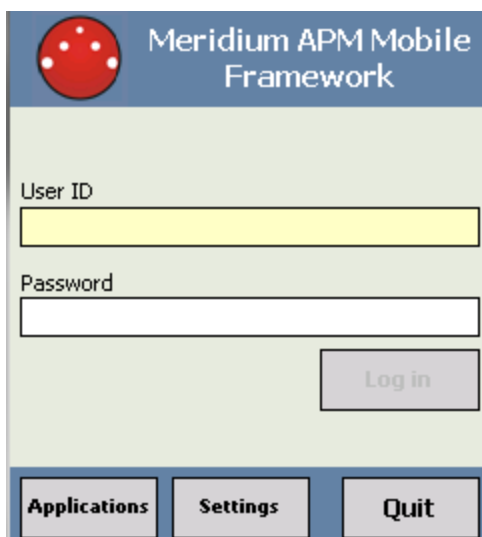
To access Operator Rounds on a device:

1. On the device **Start** menu, tap **Programs**.

   The **Programs** screen appears.

2. Tap **APM Mobile Framework**.

   The login screen appears.

3. In the **User ID** text box, enter your User ID.

4. If your user account was set up with a password, in the **Password** text box, enter this password. The characters you enter will appear as asterisks. Passwords are case-sensitive.

5. Tap the **Log in** button.

   The Home screen appears.

Operator Rounds Device Workflow

After the handheld device has been configured and the Operator Rounds application has been installed, you can begin recording readings for the checkpoints on a Route, using the following workflow:

1. Download Routes to the device.

2. View the list of Routes on the device.

3. Record readings for the checkpoints on the Route, until all the checkpoints on that Route have been completed.

4. Download the readings to Meridium APM.

About Navigating Operator Rounds on a Device

If you are using a device with a keypad, you can use the keypad or the touch-screen to navigate Operator Rounds. Because Meridium APM does not limit the types of devices it will support and because not all devices have a keypad, this documentation assumes that you are using the touch-screen to navigate applications on the device. Therefore, in all instructions for completing tasks on a device, we explain where to tap the screen to navigate to the next step.

If you are using a device with a keypad and you want to use the keypad for navigation, we assume that you are familiar with the keypad and its functions. For example, we assume that you know how the left and right arrow buttons work. In some cases, the keypad buttons may work differently in Operator Rounds than they work in other applications.

We also assume that you are familiar with how to use the scanner on your device. Therefore, in all instructions that include scanning a barcode or RFID tag, we do not specify which buttons to press to initiate the scanner.

Getting Started With Operator Rounds: The Home Screen

After you log in to Operator Rounds, you will see the Home screen.

The username of the user who is currently logged in is displayed at the top of the screen along with the current date.

From this screen, you can:

- Tap the **Sync Data** button to download Route records from Meridium APM to the device.
- Tap the **View Routes** button to view the Route records that were last downloaded.
- Tap the **Recommendations** button to:
  - View all recommendations that have been created and not yet uploaded to Meridium APM.

    -or-
  - Create a new recommendation.
  - Create a new recommendation.
- Tap the **Sync Data** button to upload existing records from the device to Meridium APM.
- Tap the **Settings** link to select a download query and delete existing data. This button appears only if you are logged in as a Super User or member of the MI Operator Rounds Administrator Security Group. The following image shows what the Home screen looks like when you are logged in as one of these Security Users. The **Settings** button is outlined in red.
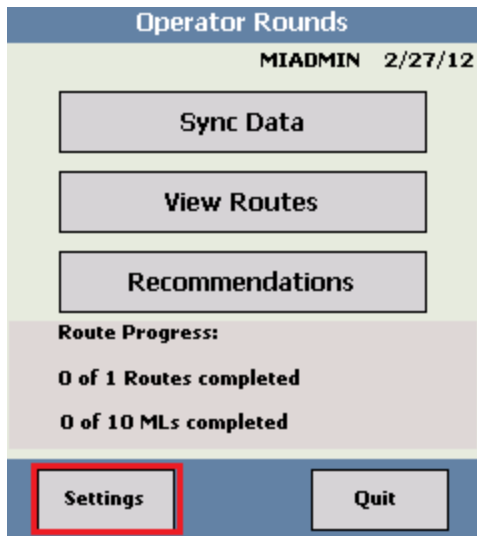
- Tap the **Quit** button to [log out of Operator Rounds](#).

You can also see the number of Route records and Measurement Location records that were last downloaded and the number that are complete.

> Œ**Hint:** A measurement location (i.e., checkpoint) is complete when a reading value for it has been saved. A Route is complete when a reading value has been saved for all of its measurement locations (i.e., checkpoints).

The **Route Progress** section displays the following information:

- **x of n Routes completed**, where **x** represents the number of Routes that are complete, and **n** represents the total number of downloaded Route records.

- **x of n MLs completed**, where **x** represents the number of checkpoints that are complete, and **n** represents the number of downloaded Measurement Location records that are linked directly to the Route record (for ALL downloaded Route records). If the Measurement Location records on a Route contain conditions, and those conditions are met, additional checkpoints will appear on the device. When this happens, the **n** number will increase by one for each additional checkpoint.

Note that if you try to navigate away from the Home screen before the progress indicators have been updated, the progress indicators will read **Stopped Route Update** and **Stopped ML Update**, and you can then navigate away from the screen.

General Navigation Tips

When you are viewing any screen (except for the Home screen), you will see buttons along the bottom of the screen to indicate the actions that you can perform from that screen. For example, the following image shows the **Routes** screen.
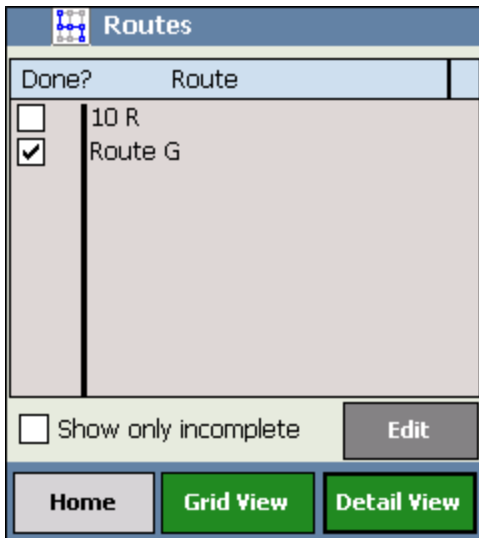
From the **Routes** screen, you can:

- Tap the **Home** button to return to the Home screen.
- Tap the **Grid View** button to view the checkpoints in a grid layout on the Readings - Grid screen.
- Tap the **Detail View** button to view the checkpoints in a detail layout on the Readings - Detail screen.

Whenever you are viewing a screen from which you can perform *more than three* actions, you will see the **Options** button in the lower left corner of the screen next to buttons indicating the actions that you are most likely to perform from the current screen.
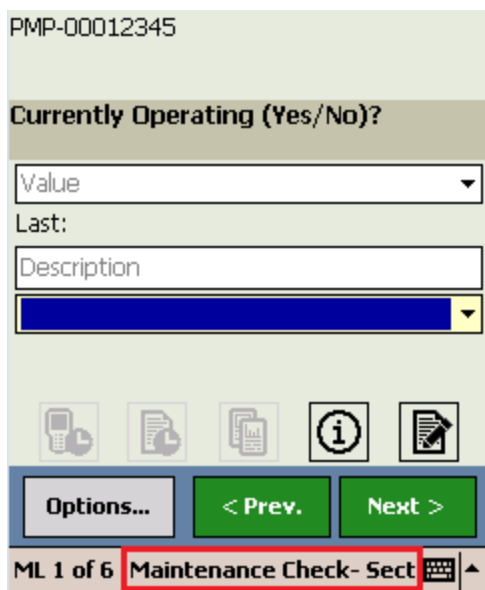
When you see the **Options** button, you can tap it to view a grid of buttons that represent the actions that you can perform on the current screen.

For example, in the following image, because you can do more than view the previous and next reading from this screen, the **Options** button is displayed next to the **<Prev.** and **Next>** buttons.

In addition, as you are recording readings for the checkpoints on a Route, the following information will appear at the bottom of the screen:

- The name of the Route appears in the bottom right corner of the screen, as shown in the following image.

- The text **ML x of n**, where **x** represents the number of checkpoint that you are viewing, and **n** represents the total number of checkpoints on the current Route. As you navigate through the checkpoints, these values will change in the following ways:

  - **x** will display the number associated with the current checkpoint. For example, if there are 6 checkpoints, and you are viewing the first one in the list, the number 1 will appear. Likewise, if you view the third checkpoint, the number 3 will appear.

- **n** may increase, if additional checkpoints are triggered due to a condition on the Route.

In the following image, this text is outlined in red.

The Options Menu

The **Option** menu appears at the bottom of the **Readings - Detail** screen and the **Manage Recommendations** screen. The options that are available on the **Options** menu will vary depending upon where you access the menu. In addition, some options will be disabled depending upon the data that you are currently working with.

A red outline has been added to following image to highlight the **Options** menu that is displayed on the **Readings - Detail** screen.
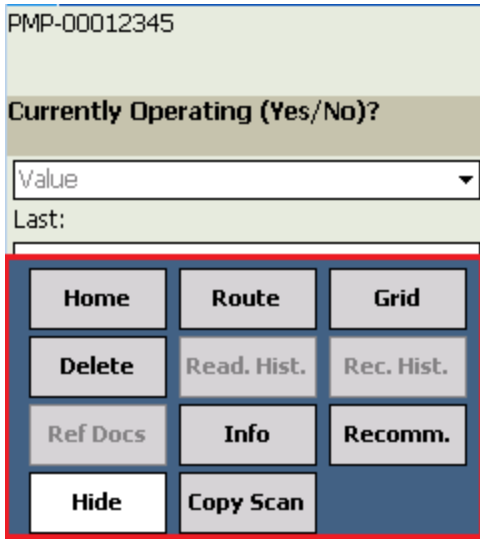
A red outline has been added to the following image to highlight the **Options** menu that is displayed on the **Manage Recommendations** screen.
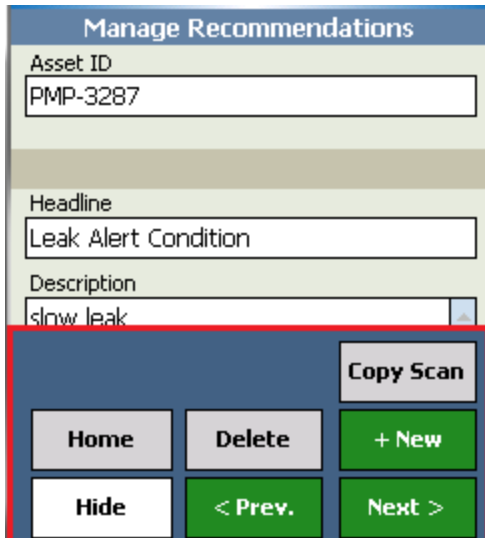
The following list describes all the buttons you might see on the **Options** menu. Regardless of your current location, each time you tap these buttons, the outcome will be the same. The following list is a comprehensive explanation of all buttons you could

possibly see. You can use this list to determine the outcome of tapping a button whenever you see it.

- **Home:** Displays the Home screen.
- **Route:** Displays the Routes screen.
- **Grid:** Displays the **Readings - Grid** screen, where you can see all checkpoints on the current Route and their associated reading.
- **Delete:** Deletes the reading or recommendation that you are currently working with.
- **Read. Hist:** Displays the last five readings that were recorded for the checkpoint that you are currently working with. This button is disabled if there is no reading history for the checkpoint that you are currently viewing.
- **Rec. Hist.:** Displays the last five recommendations that were created for the piece of equipment or location associated with the checkpoint that you are currently working with. This button is disabled if there is no recommendation history for the checkpoint that you are currently viewing.
- **Ref Docs:** Displays the list of reference documents associated with the checkpoint that you are currently working with. This button is disabled if there are no reference documents for the checkpoint that you are currently viewing.
- **Info**: Displays the More Information screen.
- **Recomm.:** Displays a new recommendation for the checkpoint that you are currently working with.
- **Copy Scan:** Allows you to paste the scan ID for the next barcode or RFID tag that you scan into a text box on the screen. You can tap this button to enable this functionality. This button will remain selected until after you scan a barcode or RFID tag.
- **+ New:** Displays a new recommendation. This button is available only when you are viewing the Manage Recommendations screen.

Note that when you tap the **Options** button, you will see the **Hide** button in its place. You can tap this button to close the **Options** menu.

In addition to the **Options** menu, buttons appear on the **Readings - Detail** screen, which provide one tap access to the most commonly used options on the **Options** menu.

The Quick Access Buttons

At the bottom of the **Readings - Detail** screen, buttons appear as icons, which allow you to quickly access the most commonly used features associated with a checkpoint. Each button corresponds to a button on the **Options** menu.

The following image shows the buttons as they appear on the **Readings - Detail** screen. Call outs have been added to the image to highlight the name of each button.
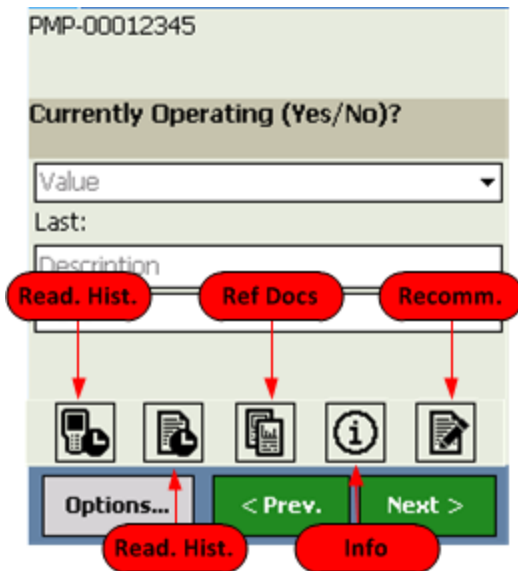
These buttons behave in the same way as the [corresponding option on the **Options** menu](#).

Aspects of the Readings - Grid Screen

The **Readings - Grid** screen displays the [list of checkpoints that are part of the current Route](). The checkpoints are displayed in ascending numeric order by their sequence value. Each row represents one checkpoint. For each checkpoint that appears in this list, the following information is displayed:

- **Value:** The reading value for the checkpoint, if one has been recorded. If a reading value has not been recorded for a checkpoint, this column will be empty.

- **Identifier:** A combination of values that are used to identify the checkpoint. The following values are displayed in the **Identifier** column for each checkpoint:

  - ID of the piece of equipment or location to which the checkpoint belongs.

  - Category value stored in the corresponding Measurement Location record.

The following image shows an example of what the **Readings - Grid** screen looks like with three checkpoints.
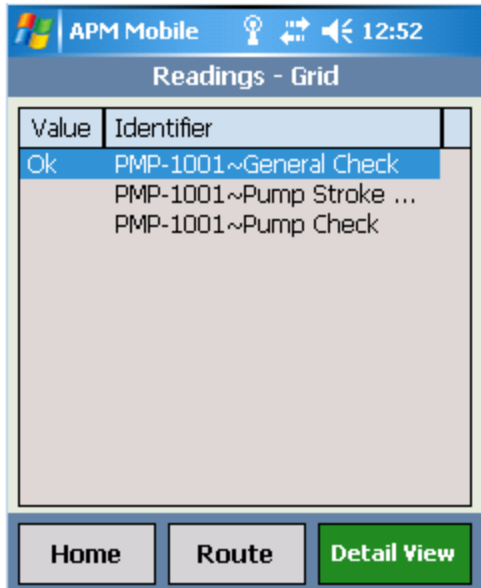
Below the list of checkpoints, the following buttons appear:

- **Home:** Displays the Home screen.

- **Route:** Displays the **Routes** screen.

- **Detail View:** Displays the selected checkpoint in a detailed layout, where you can record a reading value for it.

Keep in mind that as you record readings for checkpoints, if a condition has been defined for a checkpoint, a reading value that you enter may trigger additional checkpoints to appear. When this happens, the additional checkpoint will appear automatically, just like the checkpoints that are not triggered by specific reading values. Only a Route administrator can configure conditions on a Route that will trigger additional

checkpoints to appear. You will know if additional checkpoints were triggered along the Route, if...

- More checkpoints are displayed in the list on the **Readings - Grid** screen than were displayed prior to taking readings on the Route.

- The number of checkpoints that was displayed on the Home screen prior to recording readings has increased after you recorded readings on the Route.

About Configuring Settings

From the Home screen within the Operator Rounds application, you can access the Specify Download Settings screen. This screen contains the following options:

- **Download Query:** A text box in which you can specify the query that is run when you tap the **Sync Data** button on the Home screen. The default download query is *Download Master*, which is stored in the following Meridium APM Catalog folder \\Public\Meridium\Modules\Mobile\Operator Rounds.

  If you want to use a different query, you must specify that query on the Specify Download Settings screen. Your changes are saved automatically.

  > **Note:** Before you can download Routes from Meridium APM to the device for the *first time*, you will need to retrieve the parameters for the Download query.

- **Delete All Data**: A button that, after asking for confirmation, deletes ALL the readings and recommendations that are currently stored on the device. This button is disabled if no readings or recommendations are currently stored on the device.

At the bottom of the screen, the **Close** button appears. This button closes the **Specify Download Settings** screen and then displays the Home screen.

The following image shows the **Specify Download Settings** screen.
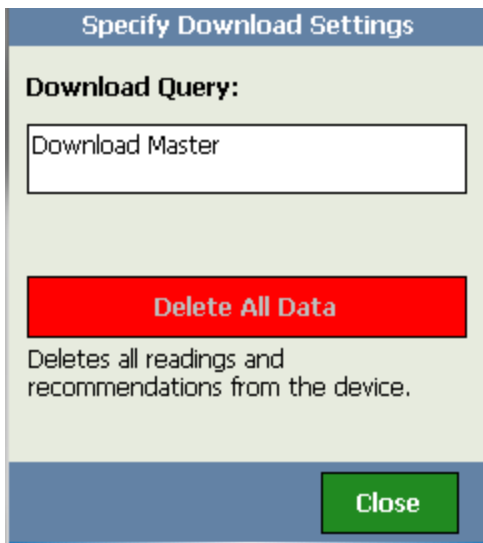
In this image, you can see that the **Delete All Data** button is disabled (i.e., the text is gray). This means that there are currently no readings or recommendations stored on the device.

Accessing the Specify Download Settings Screen

You can access the **Specify Download Settings** screen only if you are logged in as a Super User or a member of the MI Operator Rounds Administrator Security Group.
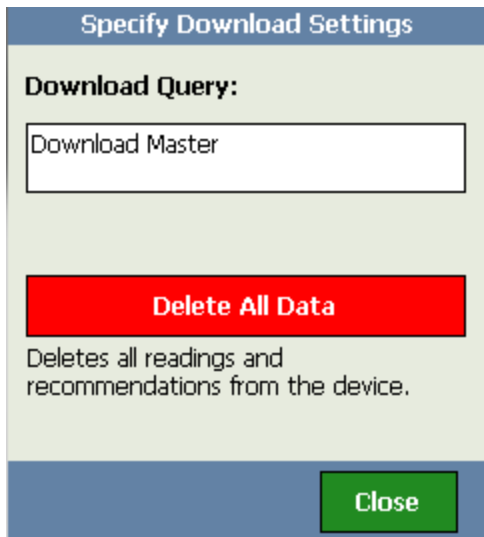
To access the Specify Download Settings screen:

1. On the device, log in to Operator Rounds.

   The Home screen appears.

2. Tap the **Settings** button.

   The **Specify Download Settings** screen appears.

Specifying the Download Query

The download query is used to return the list of Measurement Location records that are due on or by a specified date for a given Route.

To specify the download query:

1. On the device, [access the **Specify Download Settings** screen](#).

   The **Specify Download Settings** screen appears, displaying the **Download Query** text box, which contains the name of the query that will be used to download data from Meridium APM to the device. The default download query is *Download Master*.

2. In the **Download Query** text box, enter the path to the query that you want to use to download Route records to the device.

   If the query is stored in the Meridium APM Catalog folder \\Public\Meridium\Modules\Operator Rounds\Queries\Download Queries, type the name of the query. If the query is stored in a subfolder of the Meridium APM Catalog folder \\Public\Meridium\Modules\Operator Rounds\Queries\Download Queries, type the path to the query, starting with the first subfolder name.

   For example, if the Chicago Routes query is stored in the Meridium APM Catalog folder \\Public\Meridium\Modules\Operator Rounds\Queries\Download Queries, type `Chicago Routes`.

   Likewise, if the Chicago Routes query is stored in the Meridium APM Catalog folder \\Public\Meridium\Modules\Operator Rounds\Queries\Download Queries\Sites\Chicago, type `Sites\Chicago\ChicagoRoutes`.

3. Tap the **Save** button.

   The setting is saved, and the Home screen appears again.

Retrieving Sync Parameters

The *first* time that you use Operator Rounds on the Handheld device, you will need to retrieve the query parameters for the Download query from Meridium. When you do so, the parameter values that are configured for the Download query prompts will be selected in lists that correspond with these prompts. You will need to use these parameters to download Routes.

The following instructions assume that you have specified the Download query on the **Specify Download Settings** screen.

To retrieve Sync parameters for the Download query:

1. Access the Operator Rounds Home screen.

2. Tap the **Sync Data** button.

   The following screen appears.

   Tap Sync to retrieve parameters.

   Home   Sync
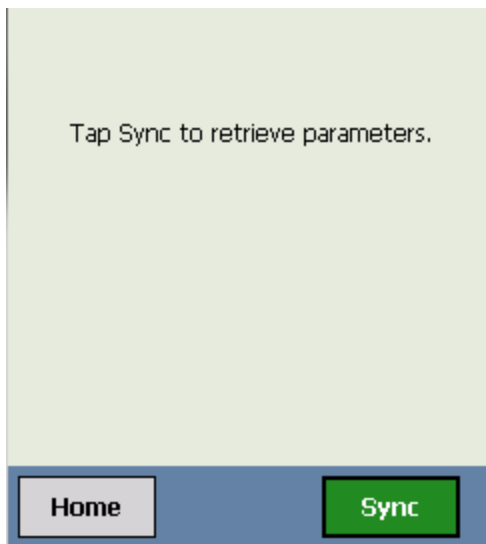
3. Tap the **Sync** button.

   The **Synchronizer** screen appears and displays the progress of the download process.
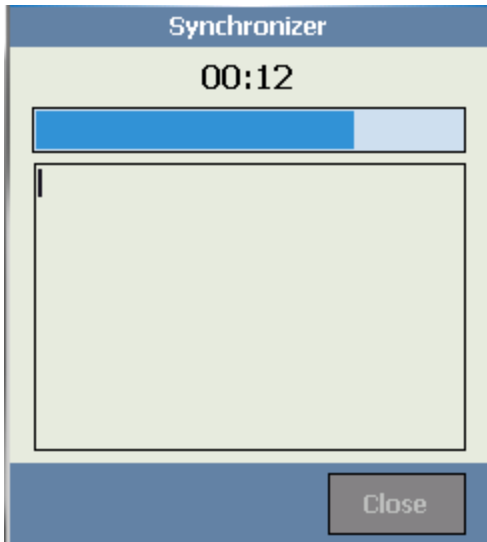
After the Routes are downloaded to the device, the screen refreshes and displays a message indicating that the Sync is finished.
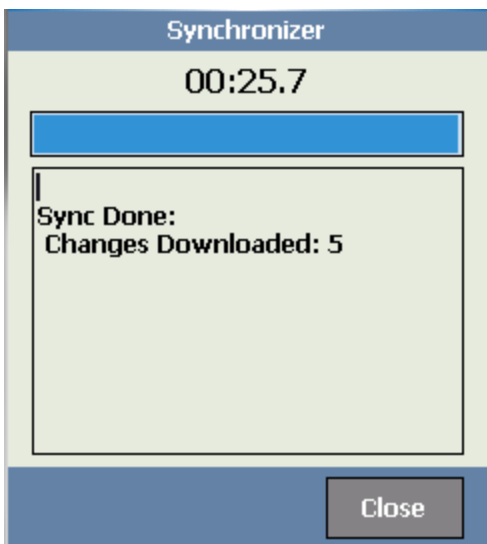
4. Tap the **Close** button.

   Fields appear that correspond with the query prompts for the Download query. At this point, you can download Routes to the device.

Deleting All Readings and Recommendations from the Device

The following instructions provide details on deleting ALL the readings and recommendations that are currently stored on the device. These instructions assume that readings or recommendations are currently stored on the device.

To delete all readings and recommendations from the device:

1. Access the **Specify Download Settings** screen.

2. Tap the **Delete All Data** button.

   A confirmation message appears, asking if you really want to delete all the readings and recommendations from the device.

3. Tap the **Yes** button.

   All the readings and recommendations are deleted, and a confirmation message appears, indicating that the data has been deleted.

4. Tap **OK**.

   The confirmation message closes, revealing the **Specify Download Settings** screen, where the **Delete All Data** button is disabled.
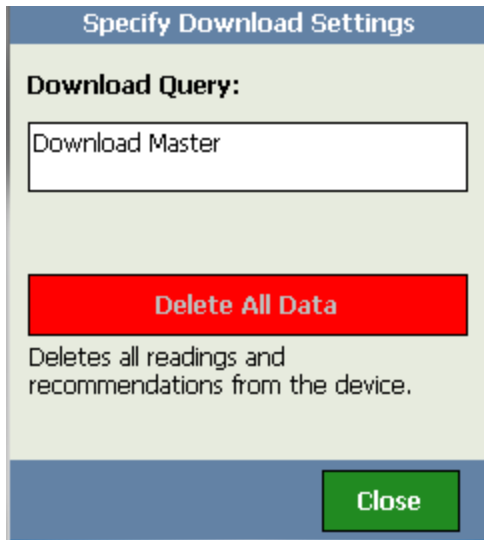
About the Scanning Barcodes and RFID Tags Documentation

This section of the documentation provides details on how the Operator Rounds application works with a barcode or RFID tag scanner, including notes and tips about scanning barcodes and RFID tags. This documentation assumes that you are familiar with how to use the scanner on your device and does *not* provide details on how to scan barcodes using the device (e.g., we do not specify which buttons to press to initiate the scanner in any instructions that include scanning a barcode or RFID tag).

About Scanning Barcodes and RFID Tags

When you scan a barcode or RFID tag, the checkpoint that is associated with the barcode or RFID tag will be displayed on the **Readings - Detail** screen on the device. More specifically, the application will search for a checkpoint whose corresponding Measurement Location record's Scan ID field contains a value that matches the barcode or RFID tag ID. The first checkpoint that the Meridium APM system finds that meets this criteria will be displayed on the device.

This topic provides tips and notes for scanning barcodes and RFID tags using a scanner on a device in conjunction with Operator Rounds. We recommend that you read this topic in its entirety before you begin scanning barcodes or RFID tags.

Tips for scanning barcodes

- We recommend that you hold the device at a 90 degree angle and scan the barcode starting at the top.
- If the barcode scanner is enabled but after you scan a barcode the screen does not change, you should adjust the angle of the scanner and try scanning again.

Tips for scanning RFID tags

- Point the device in the direction of the RFID tag that you want to scan, and scan the tag. If more than one RFID tag is scanned, the **Scan Results** screen will be displayed, where you can select the checkpoint for which you want to record readings.

Notes about scanning barcodes and RFID tags

- If you scan a barcode or an RFID tag and a message appears indicating that the scan ID does not exist, this means that the scan ID has not been properly configured or assigned. If you receive this message, you should check the **Routes** or **Download** screen to be sure that the correct Route records and Measurement Location records have been downloaded to the device.
- If you scan a barcode or RFID tag that is stored in the Route record (and not in any Measurement Location records), the device will display the checkpoint on that Route with the sequence value *01*.
- If you scan a barcode or RFID tag that is part of a scan group, the device will display the first checkpoint that is defined in that scan group. You can navigate through a scan group without scanning the barcode or RFID tag again. When you reach the end of the scan group (i.e., you have recorded readings for all the checkpoints in that group), a message will appear, indicating that you have completed the scan group and prompts you to scan a different barcode or RFID tag.
- If you see a message on the **Readings - Detail** screen that indicates the checkpoint is locked, you will need to scan the barcode or RFID tag assigned to that checkpoint before you can record a reading. The text boxes on the screen will be

disabled until after you scan the associated barcode or RFID tag.

- Scanning is disabled on the **Synchronizer** screen.
- If more than one RFID tag is picked up by a single scan, the **Scan Results** screen will appear. You can use this screen to select the checkpoint for which you want to record a reading.

Pasting a Scan ID into a Reading or Recommendation

When you scan a barcode or RFID tag, you will be navigated automatically to the checkpoint associated with that barcode or RFID tag. You can, however, temporarily disable this navigation and enable the Copy Scan feature instead. You can use the Copy Scan feature to paste a scan ID value into a reading or recommendation when you scan the barcode or RFID tag.

For example, assume you are creating a recommendation for an piece of equipment, and you want to include the scan ID for the piece of equipment in the recommendation. Instead of manually typing the ID value, you can use the Copy Scan feature to populate the recommendation automatically with the scan ID.

The following instructions provide details on using the Copy Scan feature to paste a scan ID into a reading or recommendation. These instructions assume that you know how to access the **Copy Scan** button (i.e., on the Options menu or at the bottom of the screen).

To paste a barcode ID into a reading or recommendation:

1. Access the reading or recommendation into which you want to paste the scan ID.

2. Tap the text box into which you want to paste the scan ID (e.g., Description).

3. Tap the **Copy Scan** button.

    The **Copy Scan** button is selected.

4. Scan the barcode or RFID tag whose ID you want to paste into the reading or recommendation.

    The scan ID value appears in the active text box. At this point, the **Copy Scan** button is automatically deselected, and the next time you scan a barcode or RFID tag, the associated checkpoint will appear.

Downloading Routes from Meridium APM to a Device

Before you can enter reading values for checkpoints on a device, you must download Routes to the device. When you do so, you are downloading the Measurement Location records that correspond to the checkpoints along that Route.

> **IMPORTANT:** Before you can successfully work with a Route, all the Measurement Location nodes must have a valid sequence value. You should make sure that your Route is sequenced properly before downloading the data to the device.

Specifically, you are downloading the Measurement Location records that are linked directly to the Route record representing that Route. In addition, the Meridium APM system will also download any conditions that a have been defined for the checkpoints on a Route. Keep in mind, however, that the total number of Measurement Location records that is displayed on the Home screen are the Measurement Location records that are linked directly to the Route record. The additional checkpoints will be accounted for on the device only after a given condition is met and a reading is recorded for the subsequent checkpoint.

> **Note:** If you sync data on device on which Operator Rounds data already exists, data for Routes that have a status of *Finished* will be removed from the device and uploaded to Meridium APM automatically as part of the sync operation. Data for Routes that have a status of *In Progress* will remain on the device.

The following instructions assume that the Download query and the Sync parameters have been specified.

To download Routes to a device:

1. On the device, access Operator Rounds.

   The Home screen appears.

2. Tap the **Sync Data** button.

   Fields are displayed and prompt you to select the Route name and the desired date filter.
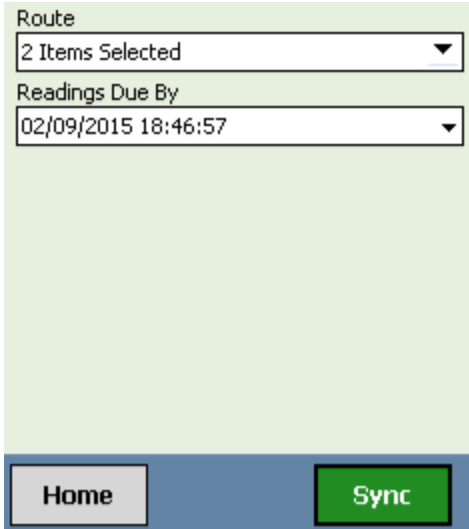
> **Note:** If you previously downloaded Routes to the device, lists that correspond with any non-date prompts will retain your previous selection.

3. In the **Route** list, select the Route(s) that you want to download.
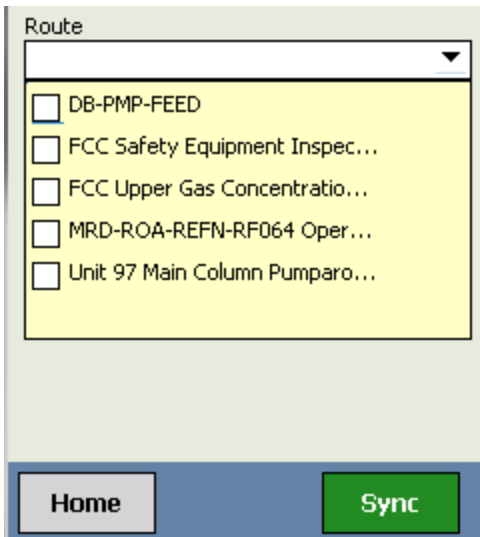
As you select Routes, text will be displayed in the **Route** cell that corresponds with the number of Route records that are selected. For example, the following image shows what the **Route** cell looks like when two Routes are selected in the list.
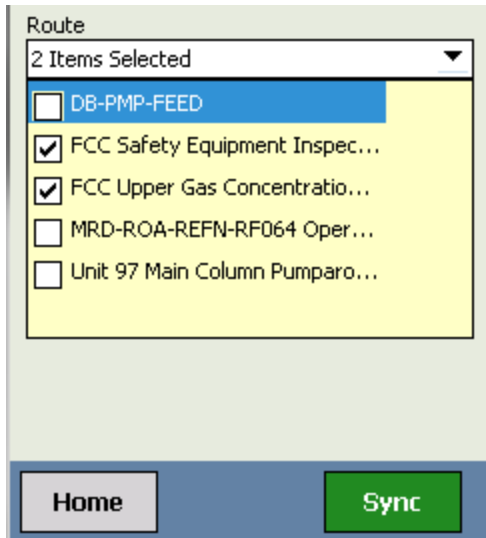
4. When you have made your selections, tap the ▼ button in the **Route** cell.

   The **Route** list collapses.

5. In the **Readings Due By** box, tap the date that you want to use to filter the Measurement Location records that will be downloaded to the device. The current date is selected by default. You can use the ◄ and ► buttons to navigate to the previous or next month, respectively.
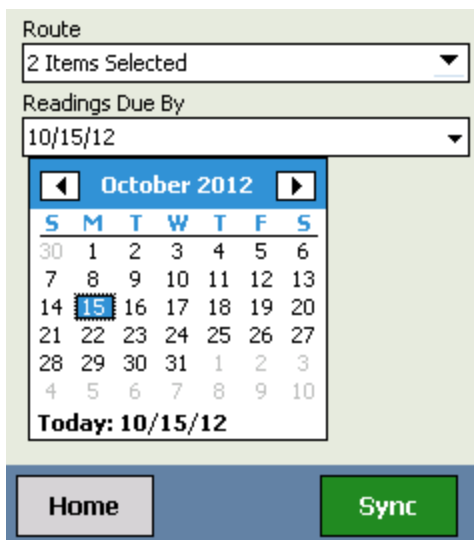
   After you tap a day, the Calendar closes automatically, and the date is displayed in the **Readings Due By** cell.

Note the following information:

- The Measurement Location records that will be downloaded to the device are those whose readings are due *before midnight* on the date you specify in the **Readings Due By** prompt. The date on which a reading becomes due is determined by the value that is stored in the Next Date field in the record that corresponds with the type of schedule that is defined for the Measurement Location.

- If a Measurement Location is associated with a checkpoint schedule *and* a Route Schedule, the Measurement Location will be downloaded to the device only if *both* schedules indicate that it is due.

- If the Next Date fields in the associated Route and Checkpoint Task records are empty, the corresponding Measurement Location record will not be downloaded to the device.

6. Tap the **Sync** button.

The **Synchronizer** screen appears, indicating the progress of the download process.
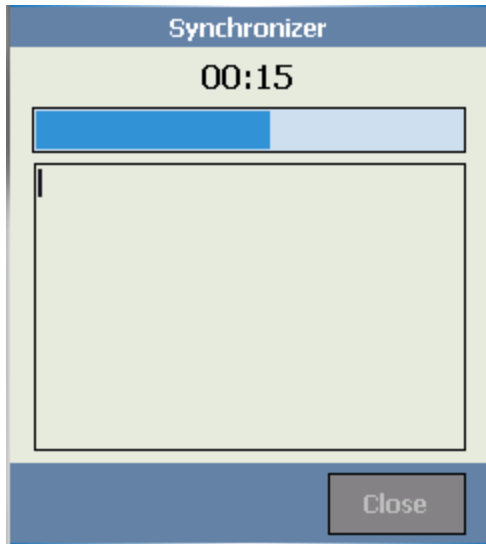
After the Routes are downloaded to the device, the screen refreshes and displays a message indicating that the Sync is finished.
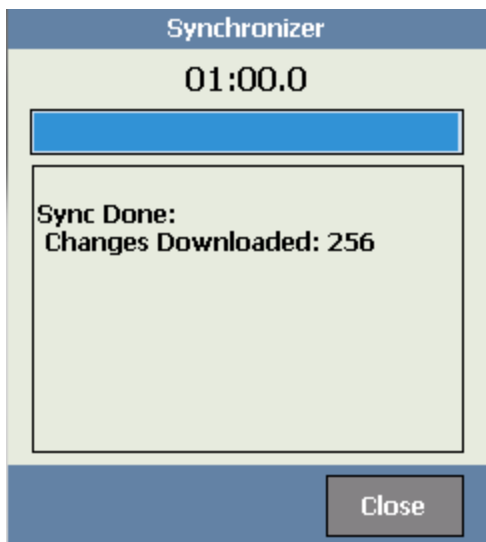
Note: A Route record must be linked to at least one Measurement Location record to be downloaded to the device. Otherwise, that Route will not be downloaded, even if you select it in the **Route** prompt.

7. Tap the **Close** button.

The fields that correspond with the Download query prompts appear again. At this point you can access the Home screen to begin working with the checkpoints in the Routes.

Viewing Routes

To view the Route records on a device:

1. On the device, on the Home screen, tap the **View Routes** button.

   The **Routes** screen appears, displaying all Route records that were last <u>down-loaded</u>. The Route records are displayed in ascending alphanumeric order. The **Done?** column displays a check box, which is selected automatically when the <u>status of a Route</u> is *Finished.*
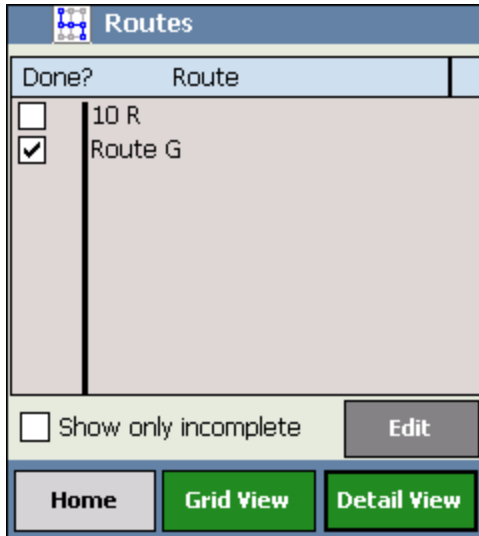
   The **Route** column displays the Route ID for each Route record that meets the criteria you defined when you <u>downloaded the Route records</u> from Meridium APM.

2. If desired, you can view only those Routes that have a <u>status</u> of *In Progress*, by selecting the **Show only incomplete** check box.

3. If desired, you can view and modify the <u>status of a Route</u> by selecting the Route and tapping the **Edit** button.
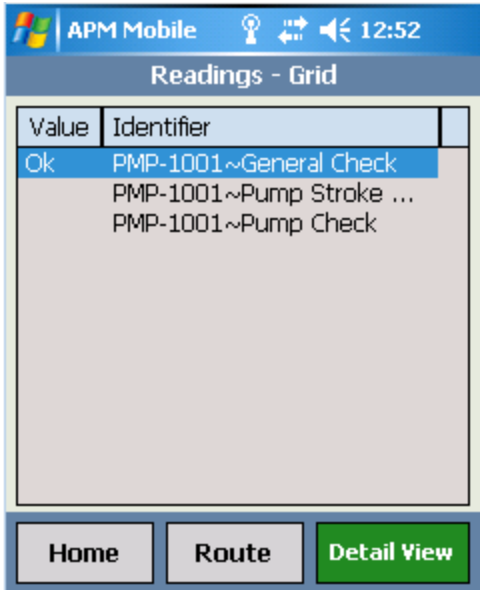
Viewing the List of Checkpoints on a Route

The following instructions provide details on accessing a list of the checkpoints that are part of a given Route.

To view a list of checkpoints on a Route:

1. On any screen where the option is available, tap the **Options** button.

2. On the Options grid, tap the **Grid** button.

   The **Readings - Grid** screen appears, displaying the list of checkpoints that are part of the current Route.

   Notice that the **Value** column displays the reading value for each checkpoint, if one has been entered.

About Route Statuses

Routes on a device can have a status of either *In Progress* or *Finished.* If you enter reading data for any checkpoint in a Route, the status of the Route will be *In Progress*, by default. After you enter reading data for all checkpoints in the Route, the Meridium APM system changes the status of the Route to *Finished* automatically.

When working with Routes on a device:

- A Route's status must be *In Progress* in order for you to modify reading data for the checkpoints in the Route.
- A Route's status must be *Finished* in order for you to [upload data for the Route to Meridium APM](#).

If desired, you can [change the status of a Route](#) manually. For example:

- If you want to upload readings for an incomplete Route to Meridium APM, prior to syncing, you can change the status of the Route to *Finished*.
- If you want to modify readings for a checkpoint that is part of a completed Route, you can change the status of the Route to *In Progress.*

When you change the status of a Route, you can also provide comments about the Route. These comments will be stored in the Route History record that is created when the completed Route is uploaded to Meridium APM.

Changing the Status of a Route

To change the status of a Route:

1. On the device, on the Home screen, tap the **View Routes** button.

   The **Routes** screen appears.

2. Tap the name of the Route for which you want to change the status.

3. Tap the **Edit** button.

   The **<Route ID>** screen appears, where <Route ID> is the value in the Route ID field in the corresponding Route record.

4. In the **Status** list, select the desired status.

5. In the **Comments** text box, type any comments about the Route.

    > **Note:** If you changed the status from *In Progress* to *Finished*, this field is required.

6. Click the **Save** button.

    The **Routes** screen returns to focus. The check box in the **Done?** column is selected or cleared based on the updated Route status.

Aspects of the Readings - Detail Screen

The **Readings - Detail** screen displays the details of a checkpoint. While the screen is not labeled *Readings - Detail*, we refer to this screen as the **Readings - Detail** screen throughout the documentation.

On the **Readings - Detail** screen, you can:

- Record a reading for the checkpoint.
- Enter comments in the **Description** text box.
- Specify any actions you took as a result of the reading via the **Action** list.
- Create recommendations based on the reading.

The following image shows an example of the **Readings - Detail** screen.
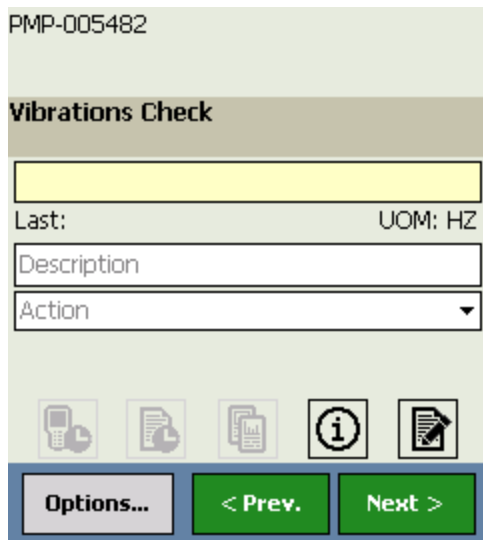
In this image, you can see that the **Readings - Detail** screen contains the following items:

- **Asset information:** Displays the ID and description for the piece of equipment or location associated with this checkpoint. Specifically, this section displays the following values from the corresponding Measurement Location record:
  - Asset ID
  - Asset Description

  The following image shows the equipment/location information section on the **Readings - Detail** screen. Labels have been added to the image to highlight the values in this section.
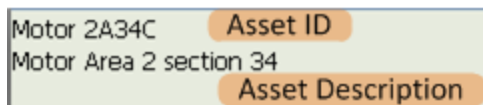
- **Checkpoint description:** Displays a description of the checkpoint. Specifically, this section displays the value stored in the ML Description field in the Measurement Location record. The following image shows an example of the checkpoint description section.

Vibration Check

- **Value:** A text box where you can enter the reading value for the checkpoint. The **Value** label appears as a watermark in the text box. The following image shows the **Value** text box.

Value

If allowable values were defined in the corresponding Measurement Location record in the Meridium APM Framework application, an arrow ▾ will appear, and the **Value** text box will appear as a list that contains the list of allowable values that are available for selection.

When you tap or type in the text box, the *Value* watermark will disappear automatically. The following image shows what the **Value** text box looks like when it contains a reading value. Note that in this example, the checkpoint is a *numeric* type.

155
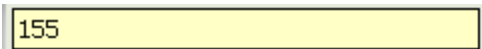
- **Last:** Displays the most recent reading that was saved for the checkpoint, which is determined by the value stored in the [Reading History for the checkpoint](). If no value exists, the Last value will be empty. The **Last** label appears below the **Value** text box, as shown in the following image. A red outline has been added to the image to highlight this section.

Value
Last: UOM: IN/SEC

- **UOM:** Displays the unit of measure associated with the checkpoint. Specifically, this section displays the value stored in the UOM field in the corresponding Measurement Location record. The **UOM** label appears below the **Value** text box, as shown in the following image. A red outline has been added to the image to highlight this section.

Value
Last: UOM: IN/SEC
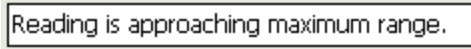
This label is not displayed for *character* checkpoints.

- **Description:** A text box where you can enter comments about the reading. The **Description** label appears as a watermark in the text box. The following image shows the **Description** text box.

Description

When you tap or type in the text box, the *Description* watermark will disappear automatically. The following image shows what the **Description** text box looks like when it contains comments.

Reading is approaching maximum range.

- **Action:** A list of actions from which you can select an action that is associated with the reading. Specifically, this list contains the values stored in the Action field on the **Limit Values** tab in the corresponding Measurement Location record. The **Action** label appears as a watermark in the list. The following image shows the **Action** list.

Action

When you tap or type in the text box, the *Action* watermark will disappear automatically. The following image shows what the **Action** list looks like when it contains a value.

Restart

Note that if you select a value in the **Action** list and later you decide you want to remove it, you can select the null value in this list.

About the More Information Screen

The **More Information** screen displays information about the checkpoint beyond what is displayed on the **Readings - Detail** screen. The information that is displayed varies depending upon whether the reading that you are currently working with is a *numeric* or *character* checkpoint. In either case, however, this screen contains at least the following items:

- **Due date:** The date the reading is due. This value is determined by the schedule defined in the Checkpoint Task record that is linked to the corresponding Measurement Location record.

- **More Information:** The value stored in the More Information field in the Measurement Location record represented by the checkpoint. This section is not labeled on the screen.

In the bottom right of the screen, the **Close** button appears, which closes the **More Information** screen and returns to the screen from which you accessed the **More Information** screen.

The following image shows an example of what the **More Information** screen looks like when you access it from a character reading.
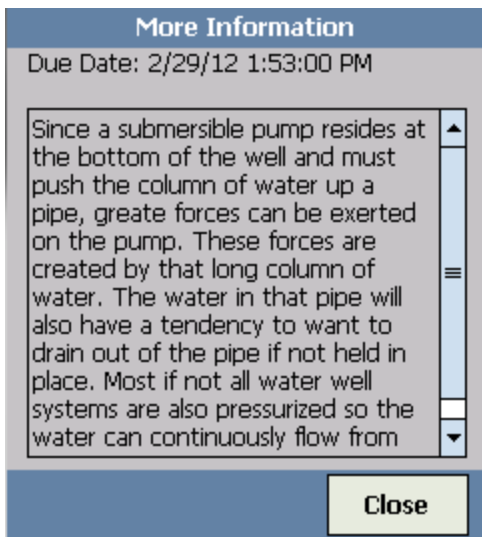
When you are working with a *numeric* reading, this screen contains the following *additional* items:

- **Target:** The numeric range for the reading. The range is determined using the values stored in the Minimum Target Value and Maximum Target Value fields in the corresponding Measurement Location record.

- **Limit values:** The upper limit and lower limit values that are defined on the **Limit Values** tab in the corresponding Measurement Location record. The upper limit values 1 through 3 are displayed in descending order as *UL3,UL2,* and*UL1*. The lower limit values 1 through 3 are displayed in ascending order as*LL1,LL2,* and*LL3*.

The following image shows an example of what the **More Information** screen looks like when you access it from a numeric reading.
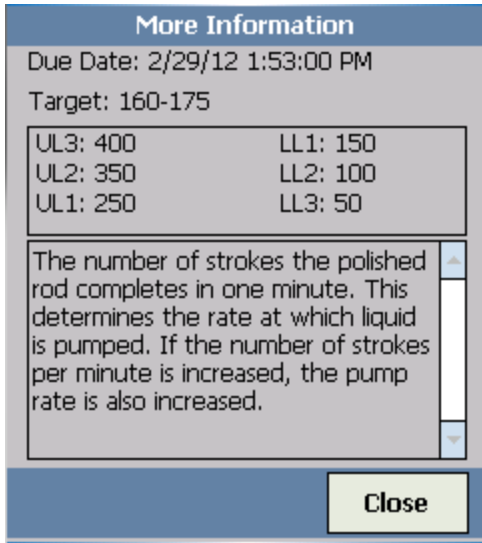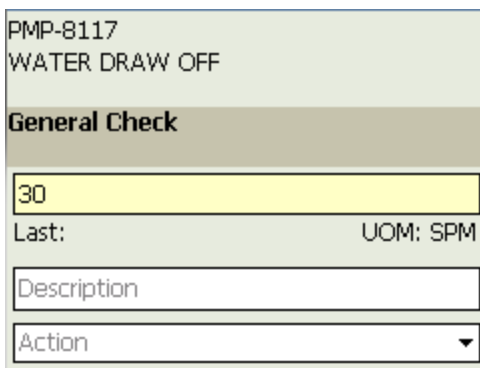
Working with Numeric Readings on the Readings - Detail Screen

When you enter a reading for a *numeric* checkpoint using the **Readings - Detail** screen, depending upon the [reading value parameters that have been set up for the numeric checkpoint](#), a message may appear after you enter a reading value. Specifically, you may see a message indicating that the value you entered:

- Is outside a specified range.
- Must be greater than the minimum valid reading value. This value is stored in the Minimum Valid Value [field in Measurement Location records](#).
- Must be less than the maximum valid reading value. This value is stored in the Maximum Valid Value [field in Measurement Location records](#).

In addition, if one of these messages appears, the value that you entered will be cleared automatically and replaced with the value that was entered for the checkpoint since it was last synced with the Meridium APM database. Note that if you see this message after you enter the *first* reading value for the checkpoint, the previously entered value will be null.

For example, assume that for the *General Check* checkpoint, the minimum valid reading value parameter is *35*. In this case, if you enter the reading value *30*, no message will be displayed.

PMP-8117
WATER DRAW OFF

General Check

30
Last: UOM: SPM

Description

Action

If, however, you change the reading value from *30* to *40*, a message will appear indicating that the reading value must be lower than *35*, and the reading value will be reverted back to *30* automatically.

While you can save a reading with a value that triggered one of these messages, if you see one of these messages, you should check the reading value again and change it if the previous reading you entered was a mistake.

In addition, if you enter a reading value that has been configured in the Meridium APM Framework application to trigger an alert, when you try to navigate away from that checkpoint on the device, the Readings - Alert screen will appear.

Responding to a Reading Alert

On the device, if you enter a reading value that has been configured in the Meridium APM Framework application to trigger an alert, when you try to navigate away from that checkpoint on the device, the Readings - Alert screen will appear, where you can enter comments, record any action you took as a result of the reading, or change the reading value.

The following image shows an example of the Readings - Alert screen. While the screen is not labeled *Readings - Alert*, we refer to this screen as the Readings - Alert screen.

When you see the Readings - Alert screen on the device, you can:

- Modify the reading value by selecting or entering a different value in the **Value** list.
- Enter or modify the text in the **Desc** text box. If you entered text in the Description field on the **Readings - Detail** screen, the Description field on the Reading - Alert screen will contain that text.
- Specify any action that you took by selecting a value in the **Action** list. You cannot enter a value that does not already exist in the list.
- [Create a recommendation](#).
- Tap the **Next** button to confirm the value and view the next checkpoint that is associated with the Route.

> **Note:** If you changed the original reading value to another value before tapping the **Next** button, the Readings - Alert screen will continue to be displayed after you tap the **Next** button. You can click the **Next** button again to determine if the updated value also triggers an alert. If it does not trigger an alert, the next checkpoint will be displayed. If the updated value also triggers an alert, the Readings - Alert screen will continue to be displayed and you must click the **Next** button again to navigate to the next checkpoint that is associated with the Route.

Entering Readings

The following instructions provide details on recording readings using the **Readings - Detail** screen. These instructions assume that you are accessing the **Readings - Detail** screen from the Home screen. Alternatively, you can use a barcode or RFID tag scanning device to access the **Readings - Detail** screen, if barcode or RFID tag scanning is enabled.

To enter readings:

1. On the device, on the Home screen, tap the **View Routes** button.

   The **Routes** screen appears, displaying all Route records that were last downloaded.
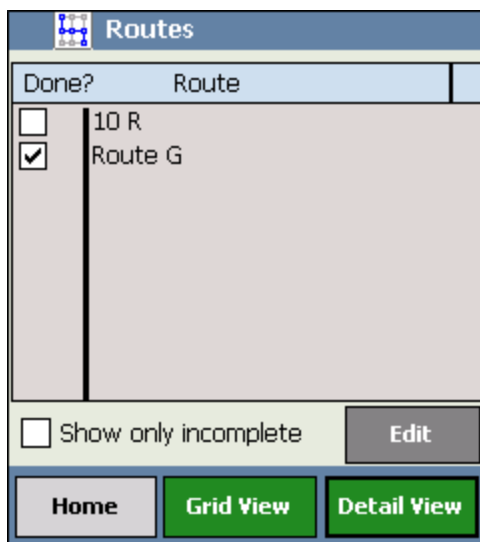
2. Select the row containing the Route that is associated with the checkpoint for which you want to enter readings.

3. Tap the **Detail View** button.

   The **Readings - Detail** screen appears, displaying the first checkpoint associated with the Route.

The order in which the checkpoints appear corresponds to the sequence value of the associated Measurement Location records in the Meridium APM Framework application. A checkpoint that is associated with a Measurement Location record with a sequence value of 1 will appear before a checkpoint that is associated with a Measurement Location record with a sequence value of 2.

4. In the **Value** text box, if a list is:

- Displayed, select a reading value from the list.

- Not displayed, enter the appropriate value.

5. In the **Desc** text box, enter comments about the reading or the condition of the piece of equipment or location being inspected.

> Œ**Hint:** If you did not enter a value for a checkpoint associated with a Measurement Location record whose ML Type value is *Character* (e.g., you were unable to reach the piece of equipment or location or the piece of equipment was offline), you can use the **Description** text box to indicate the reason. A Reading record will still be created when you upload data to Meridium APM. While the Value field will be empty, the Description field will contain your comments.

6. In the **Action** list, select the action that you want to associate with the reading.

7. At this point, you can [create a recommendation](#) based on the reading value or the condition of the piece of equipment or location being inspected.

8. Tap the **Next** button.

   The reading value is saved, and the next checkpoint along the Route appears. While you are recording readings for a Route, it is helpful to keep in mind that:

   - If the reading value you entered triggered an alert, the [Readings - Alert screen](#) appears instead of the next checkpoint.

   - If the reading value you enter triggers an additional checkpoint to appear, due to a condition defined for the previous checkpoint, the total number of checkpoints on the Route will increase, and the additional checkpoint(s) will appear on the **Readings - Grid** screen.

9. Continue recording readings in this way for all the checkpoints on the Route.

   After you have entered a reading value for ALL checkpoints along the Route, when you tap the **Next** button, a message appears, indicating that the Route is complete and asks if you want to view the Routes list.

10. At this point, you can:

    - Tap **No** to remain on the current checkpoint.

      -or-

    - Tap **Yes** to view the **Routes** screen. These instructions assume that you want to view the **Routes** screen.

    The **Routes** screen appears, and the **Done** check box is selected in the row containing the Route that you completed.

Aspects of the Scan Results Screen

It is possible for multiple RFID tags to be picked up by a single scan. When this happens, the **Scan Results** screen is displayed, where you can select the checkpoint for which you want to record readings. The following image shows an example of the **Scan Results** screen.
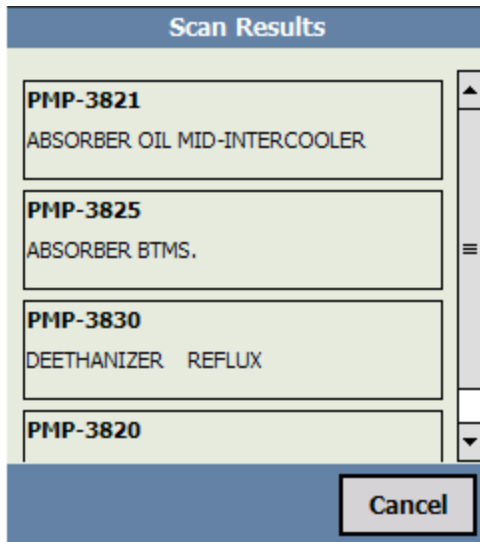
The **Scan Results** screen displays a list of checkpoints returned by the scan. Asset information is displayed for each checkpoint in the list. Specifically, the following values from the corresponding Measurement Location record are displayed for each checkpoint:

- Asset ID
- Asset Description

The following image shows the equipment/location information that is displayed on the **Scan Results** screen for the Measurement Location record whose ID field contains the value *PMP-3825*. Callouts have been added to the image to highlight the values that make up the equipment information.
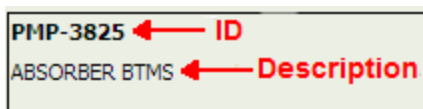
Below the list of checkpoints, the **Cancel** button is displayed. You can click this button to navigate back to the screen that you were viewing before you performed the scan. For example, if you were viewing the Home screen before you performed the scan, you would be navigated back to the Home screen when you clicked the **Cancel** button.

Selecting a Checkpoint from the List of Checkpoints Returned by a Scan

The **Scan Results** screen appears when more than one RFID tag is picked up by a single scan. You can use this screen to select the checkpoint for which you want to record readings. The following instructions assume that you are viewing the **Scan Results** screen.

To select the checkpoint for which you want to record readings:

- On the **Scan Results** screen, tap the information for the checkpoint for which you want to record readings.

  The **Readings - Detail** screen is displayed for the checkpoint. At this point, you can proceed with entering the readings for the checkpoint.

  For example, the following image shows an example of the **Scan Results** screen.
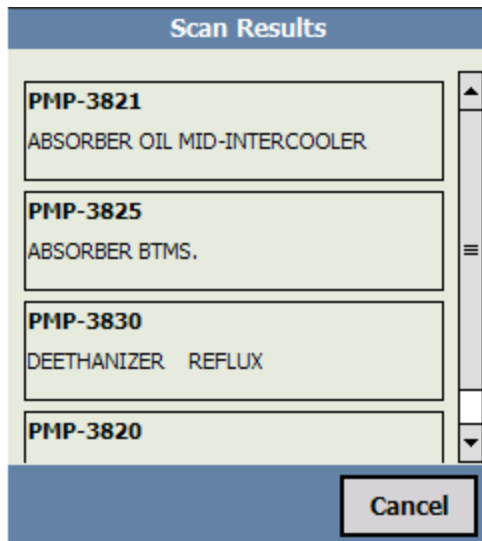
  Continuing with the example, suppose you tapped the information for the checkpoint associated with the following values in the associated Measurement Location record:

  - ID: PMP-3825
  - Description: ABSORBER BTMS.

  The **Readings - Detail** screen would be displayed for that checkpoint, as shown in the following image.

Deleting a Reading

To delete a reading:

1. [Access the Route](#) that contains a checkpoint whose reading value you want to delete.

2. Tap the **Detail View** button.

   The first checkpoint that is associated with the Route appears.

3. Using the **Next** button, navigate to the checkpoint whose reading value you want to delete.

4. When the desired checkpoint appears on the screen, tap the **Options** button at the bottom of the screen.

5. Tap the **Delete** button.

   A message appears, asking if you are sure you want to delete the reading value.

6. Tap the **Yes** button.

   The Reading value is deleted, and a blank form displays the checkpoint. You can now enter a different reading.

About Creating Recommendations

On the device, you can create a recommendation from:

- [A reading](#).
- [An alert](#).
- [The Home screen](#).

When you choose to create a recommendation, you will see the **New Recommendation** screen. Depending on how you access it, certain fields will be populated automatically. Also, the way in which you access the screen determines what will happen with the Recommendation record when you upload your data to Meridium APM.

For example, when you access the **New Recommendation** screen from the **Home** screen, no fields are populated automatically. When you access it from the Readings - Alert screen, however, the Headline, Description, and Asset ID fields are populated automatically.
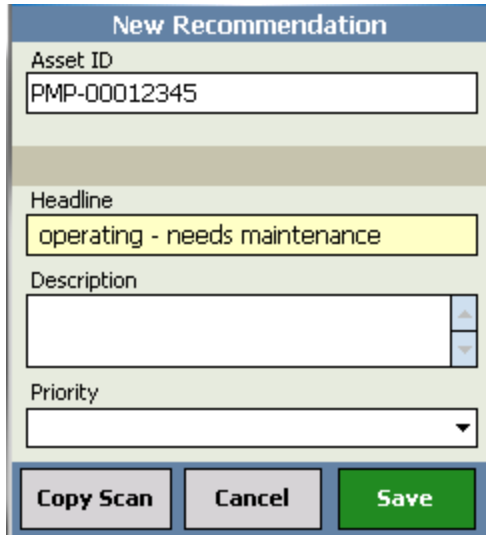
> Œ**Hint:** If at any time you are creating a recommendation and receive an **Out of Memory** error, tap **OK** on the error message, and upload your data to Meridium APM. You can then continue working on the device.

Creating a Recommendation from a Reading

To create a recommendation from a reading:

1. On the device, on the <u>Readings - Detail screen</u>, tap the ⊞ button.

   The **New Recommendation** screen appears.

   New Recommendation

   Asset ID

   PMP-00012345

   Headline

   operating - needs maintenance

   Description

   Priority

   | Copy Scan | Cancel | Save |

   The following text boxes are populated automatically with values from the reading:

   - The **Asset ID** text box is populated with the Asset ID of the Equipment or Functional Location record to which the associated Measurement Location record is linked. You cannot change the value. When you <u>upload the recommendation to Meridium APM</u>, a link will be created between this Operator Rounds Recommendation record and the:
     - Equipment or Functional Location record with the specified Asset ID.
     - Measurement Location record to which the Reading is linked.
   - The **Headline** text box is populated with the value in the **Value** text box in the reading.
   - The **Description** text box is populated with the value in the **Description** text box in the reading.

   If the Measurement Location record that is associated with this Operator Rounds Recommendation record contains a value in the **Asset Description** text box, that value will appear below the Asset ID.

2. In the **Headline** text box, enter a headline for the recommendation.

3. In the **Description** text box, enter a description of the recommendation.

Note: If you entered text in the **Description** text box on the **Readings - Detail** screen, that text will appear in the **Description** text box on the **New Recommendation** screen. You can modify the description on this screen, and the updated text will be displayed when you return to the **Readings - Detail** screen.

4. In the **Priority** list, select a priority for the recommendation. You can select **High**, **Medium**, or **Low**.

5. Tap the **Save** button.
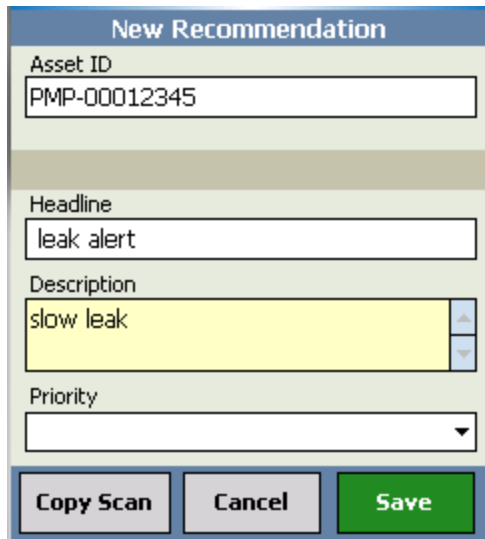
   The recommendation is saved, and the **Readings - Detail** screen returns to focus.

Creating a Recommendation from an Alert

To create a recommendation from an alert:

1. On the device, on the Readings - Alert screen, tap the [icon]

    The **New Recommendation** screen appears.

    ```
    New Recommendation
    Asset ID
    PMP-00012345

    Headline
    leak alert
    Description
    slow leak

    Priority
    ▼

    Copy Scan    Cancel    Save
    ```

    The **Asset ID** text box is populated automatically with the Asset ID of the Equipment or Functional Location record to which the associated Measurement Location record is linked. You cannot change the value. When you upload the recommendation to Meridium APM, a link will be created between this Operator Rounds Recommendation record and the:

    - Equipment or Functional Location record with the specified Asset ID.
    - Measurement Location record to which the Reading is linked.

    If the Measurement Location record associated with this Operator Rounds Recommendation record contains a value in the **Asset Description** text box, that value will appear below the Asset ID field.

    The **Headline** text box contains the value you entered for the reading, followed by:

    - The text **Alert Condition** if the reading is a character reading.
    - The text **Upper Level Alert** or **Lower Level Alert** if the reading is a numeric reading.

2. In the **Description** text box, enter a description of the recommendation.

    > **Note:** If you entered text in the **Description** text box on the **Readings - Detail** screen, that text will appear in the Description field on the **Recommendations**

screen. You can modify the description on this screen, and the updated text will be displayed when you return to the **Readings - Detail** screen.

3. In the **Priority** list, select a priority for the recommendation. You can select **High**, **Medium**, or **Low**.

4. Tap the **Save** button.
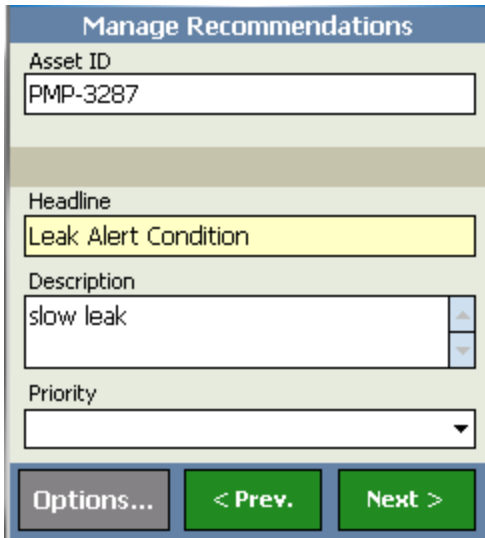
    The recommendation is saved, and the Readings - Alert screen returns to focus.

Creating a Recommendation from the Home Screen

To create a recommendation from the Home screen:

1. On the device, on the Home screen, tap the **Recommendations** button.

   The **Manage Recommendations** screen appears.

   If any recommendations have already been created and have not been uploaded to Meridium APM, this screen will display the last recommendation saved to the device. You will need to tap the **Options** button and then tap the **+ New** button to see a blank recommendation, where you can continue with the following instructions.

   -or-

   If no recommendations have been created and saved to the device, a message appears, indicating that no recommendations exist and asking if you want to create a new recommendation. Tap the **Yes** button.

   The **New Recommendation** screen appears.

2. In the text box that is displayed at the top of the screen, type the Asset ID of the Equipment or Functional Location record to which you want to link the Operator Rounds Recommendation record. If you type a valid ID (as it is stored in the Meridium APM database) and the family of that entity is related to the Operator Rounds Recommendation family through the Has Recommendations relationship, when you upload the recommendation to Meridium APM, a link will be created between the Operator Rounds Recommendation record and the Equipment or Functional Location record with the ID you typed.

   For example, suppose the Asset ID for a Pump record is PMP-101. In order for a link to be created between this Operator Rounds Recommendation record and PMP-101, you would need to type **PMP-101** in the text box that is displayed at the top of the screen. In addition, the Pump family would need to be related to the Operator Rounds Recommendation family through the Has Recommendations relationship.

3. In the **Headline** text box, enter a headline for the recommendation.

4. In the **Description** text box, enter a description of the recommendation.

5. In the **Priority** list, select a priority for the recommendation. You can select **High**, **Medium**, or **Low**.

6. Tap the **Save** button.
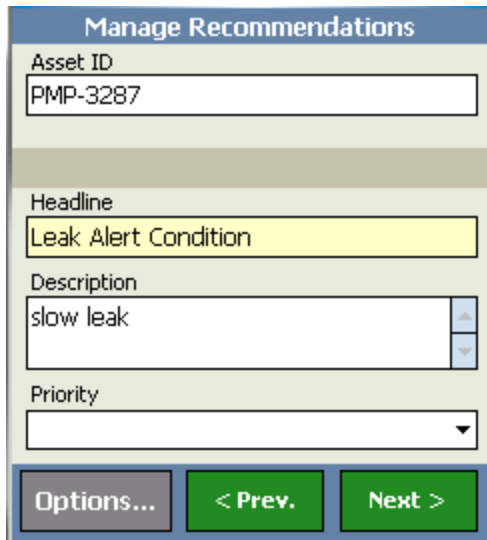
   The recommendation is saved to the device. To return to the **Home** screen, tap the **Close** button.

Modifying a Recommendation

To modify a Recommendation:

1. On the device, on the Home screen, tap the **Recommendations** button.

   The **Manage Recommendations** screen appears.

2. Locate the Recommendation that you want to modify by tapping the **Next** button until the desired Recommendation appears.

3. Modify the Recommendation as desired. The change is saved automatically and will persist when you leave the **Manage Recommendations** screen.

   Note: If the Recommendation was created from a reading, the Asset ID value is read-only.

Deleting a Recommendation

To delete a recommendation:
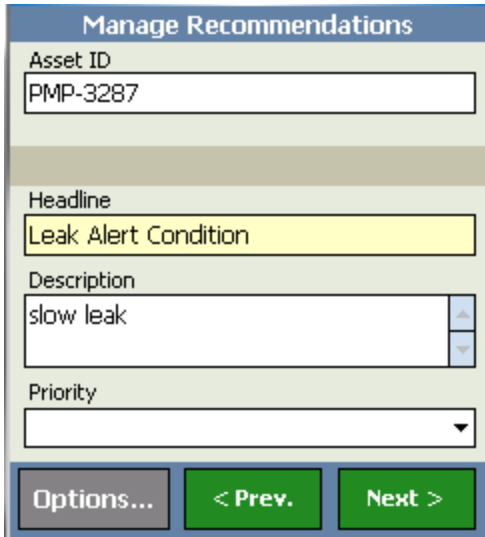
- Wherever you see the **Manage Recommendations** screen, tap the **Options** button, and then tap the **Delete** button to delete the currently displayed recommendation.

Viewing All Recommendations that Need to be Uploaded to Meridium APM

To view all recommendations created on the device after the last download operation and before the last upload operation:

1. On the device, on the Home screen, tap the **Recommendations** button.

   The **Manage Recommendations** screen appears.

   The screen displays the last recommendation saved on the device.

   > **Note:** If a recommendation was created from a reading, the Asset ID value is read-only.

2. To see the recommendation that was created after the one that is displayed, tap the < **Next** button.

3. Continue tapping the < **Next** and **<Prev** buttons to view all recommendations.

Viewing a Log of Recent Recommendations for an Asset

If you have uploaded recommendations to Meridium APM and the corresponding Operator Rounds Recommendation records are linked to the Equipment or Functional Location records and Measurement Location records, you can view a log of those Recommendation records on the device. To do so, you must access the Recommendation History feature from a Measurement Location record that is linked to the desired Equipment or Functional Location record.

For example, suppose the Measurement Location *Smoke Alarm Check* is linked to the Equipment record *Alarm-4543*. If you create the recommendation *Replace alarm against Alarm-4543* and upload it to Meridium APM, the next time you view any checkpoints for Alarm-4543 you will see the Operator Rounds Recommendation record *Replace alarm against Alarm-4543* in the Recommendation History.

To view a log of recent Recommendation records that were linked to a specific Equipment or Functional Location record:

- On the **Readings - Detail** screen, tap the [icon] button.

  The **Recommendation History** screen appears.
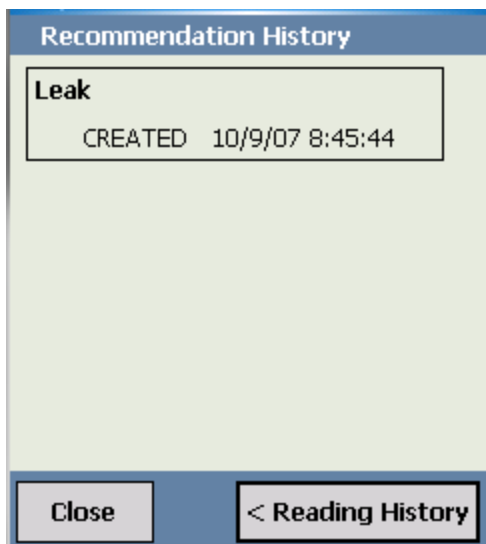
  The **Recommendation History** screen displays a log of Operator Rounds Recommendation records that were recently linked to the Equipment or Functional Location record that is linked to the previously displayed Measurement Location record. Note that it displays only the Operator Rounds Recommendation records that have been uploaded to Meridium APM. By default, the screen displays the last five Operator Rounds Recommendation records that were linked to the specific Equipment or Functional Location record. In the image of the **Recommendation History** screen, you can see that only one Operator Rounds Recommendation

record has been linked to the Equipment or Functional Location record to which the Measurement Location record is linked.

Each Operator Rounds Recommendation record is surrounded by a box. For each Operator Rounds Recommendation record, you can:

- View the Recommendation Headline.
- View the status of the record (as it is stored in the Status field on the OPR Recommendation datasheet in the Meridium APM Framework application).
- View the date and time that the Operator Rounds Recommendation record was saved to the device.
- Tap the ⬇ button to view the description that was saved with the Operator Rounds Recommendation record. You can hide the comments by tapping the ⬆ button.

To close the **Recommendation History** screen and return to the screen from which you launched the screen, tap the **Close** button.

To access reading history from this screen, you can tap the **Reading History** button.

About Reference Documents

If a Reference Document record is [linked to a Measurement Location record](#) and your device contains the appropriate application, you can access the file defined in that Reference Document record while viewing the associated checkpoint on the device. For example, if you have a word processing program on your device, such as Mobile Word, you can access a Microsoft Word document that is defined in a Reference Document record.

The type of files that you can view as reference documents on the device is determined by the software that is installed on the device. For example, if a Microsoft Word document is the reference document, you can open it on the device only if the appropriate word processing software is installed on the device.

Accessing a Reference Document

To access a reference document on a device:

1. On the **Readings - Detail** screen, tap the ▤ button.

   The **Ref - Docs** screen appears.
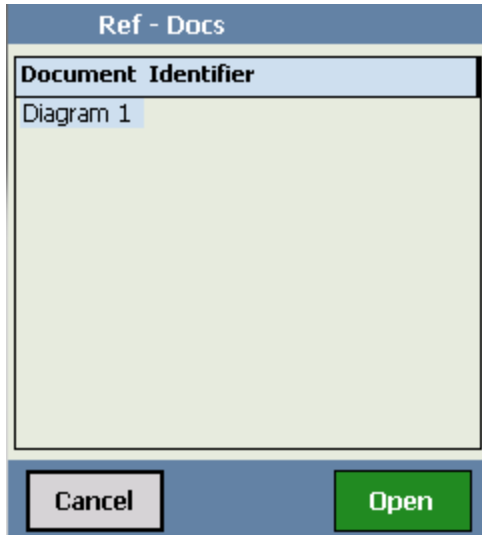
2. Highlight the reference document that you want to open, and tap the **Open** button.

   The file defined in the Reference Document record opens in the appropriate application.

3. Click **OK** to close the file.

   Depending on the type of file that you were viewing, after you close it, you might see a screen that displays the file Test.[EXT], where [EXT] is the file extension of the file that you were viewing. This file is stored automatically in the folder \\Program Files\Meridium on the device. The **Meridium APM** folder was created automatically when you opened the file. If you see this screen, click **OK** to close it and return to the Operator Rounds application.

What to Do I Do if a File Defined in a Reference Document Changes?

If you have downloaded a Measurement Location record that is linked to a Reference Document record and the content of the file defined in that record has changed, you will need to download the Measurement Location record again. After you complete this procedure, you will be able to see the updated file when you [access the reference document](#).

Viewing a Log of Recent Readings

While taking a reading for a checkpoint, you might want to see a log of recent Reading records that have been linked to the associated Measurement Location record. For example, suppose the checkpoint dictates that you should inspect a smoke alarm and indicate whether or not it needs batteries. If your reading indicates that it needs batteries, you might want to see how many times in the past year the same smoke alarm has needed batteries. If you find that in the past year, the smoke alarm light indicator has signaled that it needs batteries, you might recommend replacing the smoke alarm.

To view a log of recent Reading records for a Measurement Location record:

- On the **Readings - Detail** screen, tap the ▣ button.

  The **Reading History** screen appears.
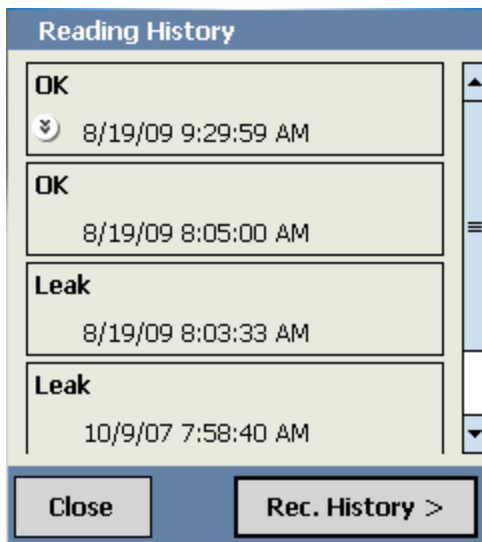
The **Reading History** screen displays a log of recent Readings that are linked to the Measurement Location. Note that it displays only the Reading records that have been uploaded to Meridium APM. In addition, the device will display only readings that have been completed, ignoring any *Non-compliant* or *Ignored* readings. By default, the screen displays the last five Reading records that were linked to the Measurement Location record.

Each Reading record is surrounded by a box. For each record, you can:

- See the date and time the record was saved to the device.
- Tap the ▾ button to view the comments that were saved with the Reading record. You can hide the comments by tapping the ▴ button.

To close the **Reading History** screen and return to the previous screen, tap the **Close** button.

To access recommendation history from this screen, tap the **Rec. History** button.

What Happens When I Upload Data from a Device?

When you upload data from a device to Meridium APM, data that was saved to the device is transferred to Meridium APM as records. For example, when you upload a recommendation, a Recommendation record will be created automatically in Meridium APM.

The status of a Route determines whether or not data for the Route will be uploaded to Meridium APM. Specifically:

- Data for Routes that have a status of *Finished* will be uploaded to Meridium APM and removed from the device.
- Data for Routes that have a status of *In Progress* will *not* be uploaded to Meridium APM and will remain on the device.

After you upload data for a Route to Meridium APM, a Route History record will also be created and linked to the Route record.

> ŒHint: Because the Meridium APM system uses the reading data that you upload to determine whether readings associated with checkpoint schedules are compliant or not, you should upload data to Meridium on a regular basis.

Uploading Data from a Device after a Sync Server Upgrade

Performing a synchronization operation on the device after the Meridium APM Sync Server has been upgraded to a new version will initiate an upgrade of the components that are installed on the device. In this case, after any updated data has been transferred to the server, a message in the synchronization log will indicate that the server has been updated and that an update of the handheld components needs to be performed. The update will begin automatically.

During the update, messages will appear indicating that the Meridium APM components are already installed and that they need to be reinstalled. You must click the **Yes** button in response to these messages. One message will appear for each component that is installed (i.e., Meridium APM Mobile Framework, Operator Rounds, and the Barcode and/or RFID add-ons, and any language packs).

After the new versions of the Meridium APM components have been installed, you will need to reconfigure your settings on the following screens the device:
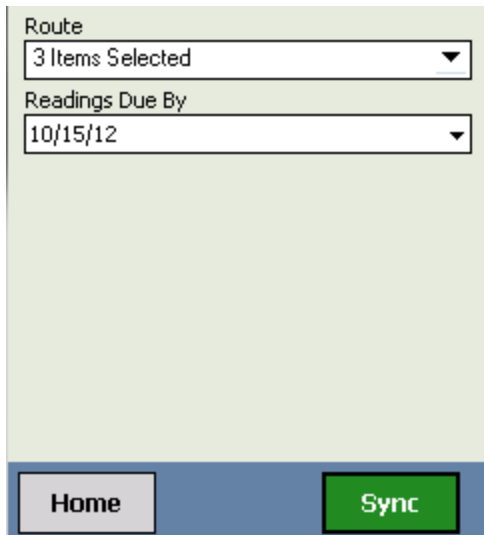
- **Device Settings** screen
- **Specify Download Settings** screen

Uploading Data from a Device to Meridium APM

To upload data from a device to Meridium APM:

1. On the device, on the Home screen, tap the **Sync Data** button.
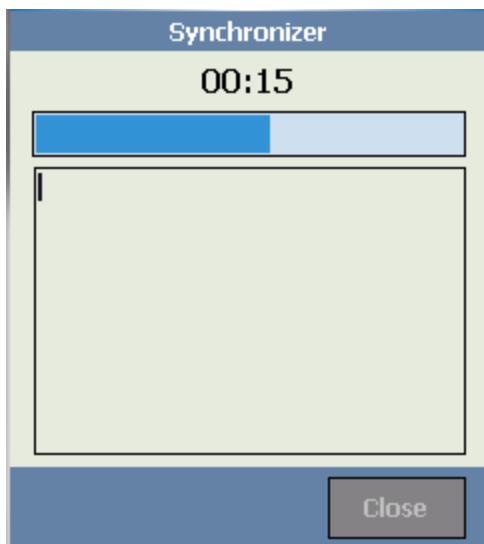
   Fields are displayed that correspond with the query prompts that are configured in the Download query in the Meridium APM Framework application. The parameters that were last used are selected by default.

2. Tap the **Sync** button.

   The **Synchronizer** screen appears, indicating the progress of the synchronization process.

After the Routes are uploaded to Meridium APM, the screen refreshes and displays a message indicating that the Sync is finished.
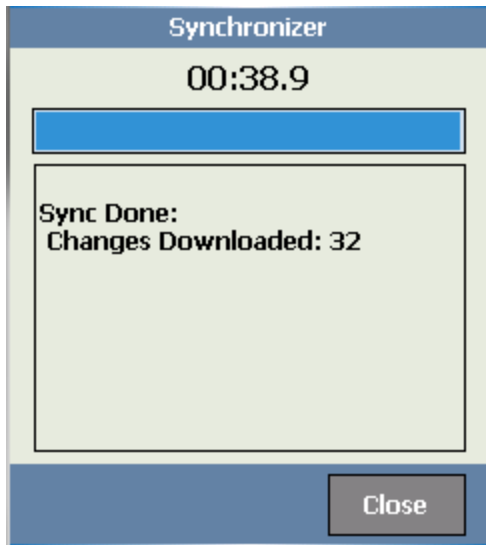
3. Tap the **Close** button.

The fields that correspond with the Download query prompts appear again. All the data that was successfully uploaded to Meridium APM is removed from the device, which means the **Route Progress** area on the Home screen will not reflect these Routes or checkpoints.

At this point, you can [download additional Routes if desired](#).

About Viewing a Log of Recent Activity

When you perform certain actions on the device, such as tap the **Sync** button to download Route records, those actions are recorded in a text file that is stored in the folder in which the Meridium APM Mobile Framework was installed.

This file contains information about errors that have occurred and other actions that have been performed. Most likely, you will need to use the log to troubleshoot problems you might encounter.

Accessing the Log

To access the log:

1. On the device, navigate to the folder in which the Meridium APM Mobile Framework was installed (\\My Device\Program Files\APM Mobile Framework).

2. Open the file **log**.

   The file is opened.

Interpreting the Log

The **log** file contains information about events that have occurred on the device while you were using the Meridium APM Mobile Framework. In some cases, these events produce errors, which are also recorded in the log. For each event, you will see the following information:

- The date and time the event took place.
- The type of entry included in the log: Error, Info, Trace, Debug, Warn, Fatal
- A brief message about the event.
- A full description of the event if it produced an error.

For example, consider the following entry:

08/24/2009 15:10:42|Info|Creating Schema for Application||

From this entry, you can see that:

- The event was recorded at 15:10:42 (3:10:42 PM).
- The log contains an *Info* entry for this event.
- The event occurred when you created the schema for the application.
- No full description is provided.

When an event produces an error, the log entry also contains the error information. For example, consider the following entry:

07/09/2009 15:21:42|Error|There was a problem synchronizing.|TargetInvocationExceptionSystem.Reflection.TargetInvocationException: TargetInvocationException...

> **Note:** The error would continue, but the ellipsis has been added to the documentation to shorten the example.

From this entry, you can see that:

- The event was recorded at 15:21:42 (3:21:42 PM).
- The log contains an *Error* entry for this event.
- The error resulted from the device being unable to synchronize.
- A full description of the error is provided.

Logging Out of Operator Rounds

To log out of Operator Rounds:

- On the device, on the Home screen, tap the **Quit Application** button.

  The Operator Rounds application closes.

Reviewing Measurement Locations Whose Readings Generated an Alert

To review Measurement Location records whose readings generated an alert:

- In the Meridium APM Framework Application, on the **Operator Round Reports page**, click the link to the **Measurement Location In Alert** link.

  The report appears in the results viewer.

Reviewing Recommendation Records Created Today

To review Recommendation records that were created on the current date:

1. In the Meridium APM Catalog, navigate to the folder **Public\Meridium\Operator Rounds\Queries**.

2. Open the **Operator Rounds Recommendations - Conditional Alert** query.

   The query results appear, displaying all Operator Rounds Recommendation records that were created on the current date.

   If the Operator Rounds Recommendation record contains a value in the Asset ID field, it will appear in the **Asset ID** column of the results. You can click the hyperlink in any **Recommendation Headline** column to open the Recommendation record in the Record Manager.

   If desired, you can create a Conditional Alert record that will send an email message with the results of this query to anyone who should review them.

Operator Rounds Recommendations - Conditional Alert : Select (				
Asset ID	Recommendation He...	Recommendation Desc...	Recommendation Pri...	Creation Date
PMP-3819	Leak	description of recomme...	Low (LOW)	17-Nov-2009

Reviewing Overdue Measurement Location Records

A Measurement Location record is overdue if the value in the Next Date field in the Checkpoint Task record to which it is linked is *before* the current date. For example, if the current date is 12/15/2006 and the Next Date value is 12/14/2006, the Measurement Location record is considered overdue. Keep in mind that the Next Date value is updated automatically when data is uploaded from a device.

To review overdue Measurement Location records:

1. In the Meridium APM Catalog, navigate to the folder **Public\Meridium\Modules\Operator Rounds\Queries**.

2. Open the query **Aging Query - SQL Server** or **Aging Query - Oracle**, depending on the type of database you are using.

   The query resultsappear.

Route ID	Related Asset ID	Link	Category	Last Date	Next Date	Days Overdue
10 R	PMP-3825	Open ML	Pump Check	10/9/2007	10/10/2007	769
10 R	PMP-3827	Open ML	Pump Check	10/9/2007	10/10/2007	769
10 R	PMP-3830	Open ML	Pump Stroke Check	10/9/2007	10/10/2007	769
10 R	PMP-3830	Open ML	General Check	10/9/2007	10/10/2007	769
10 R	PMP-3819	Open ML	Filter Check	10/9/2007	10/9/2007	770
10 R	PMP-3820	Open ML	Filter Check	10/9/2007	10/9/2007	770
10 R	PMP-3821	Open ML	Filter Check	10/9/2007	10/9/2007	770
10 R	PMP-3822	Open ML	Filter Check	10/9/2007	10/9/2007	770
10 R	PMP-3827	Open ML	Filter Check	10/9/2007	10/9/2007	770
61	PMP-8276	Open ML	Pump Stroke Check		1/8/2008	679
61	PMP-7884	Open ML	Pump Stroke Check		1/8/2008	679
61	PMP-8266	Open ML	Pump Stroke Check		1/8/2008	679
61	PMP-8262	Open ML	General Check		1/8/2008	679
61	PMP-8264	Open ML	Pump Check		1/8/2008	679
61	PMP-8117	Open ML	Pump Stroke Check		1/8/2008	679
61	PMP-8109	Open ML	Pump Check		1/8/2008	679

Note the following information:

- This query includes only Measurement Locations whose schedules are defined via a Checkpoint Task Record.

- Each row represents a Measurement Location record that is overdue. In the **Last Date** column, you can see the last date on which a reading was entered. In the **Next Date** column, you can see the date on which the last reading should have been taken. The **Days Overdue** column displays the number of days the Measurement Location record is overdue.

- You can click a hyperlink in the **Route ID** column to open the Route record in the Record Manager.

- You can click a hyperlink in the **Link** column to open the Measurement Location record in the Record Manager.

Viewing a Graph of Readings

The **Trend Readings** graph, which is provided as baseline Operator Rounds content, allows you to view all numeric readings that exist for a Measurement Location record.

> **Note:** If you try to access the **Trend Readings** link while viewing a Measurement Location record that contains the value *Character* in the ML Type field, an error message will appear, and you will not be able to access the Trend Readings graph.

To view a graph of reading values:

1. Open the Route whose readings you want to view.

2. In the Route pane, select the Measurement Location node representing the Measurement Location record whose reading values you want to view in a graph.

3. On the **Associated Pages** menu, click the **Trend Readings** link.

   The **Graph Viewer Trend of Readings Plot** page appears, displaying the Trend of Readings Graph.

   The x-axis displays the dates on which the readings were taken. The y-axis displays a range of reading values.

Viewing the Readings Recorded for the Checkpoints on a Route

After a Route has been completed and the readings have been downloaded to the Meridium APM database, you can view those readings in Operator Rounds.

The following instructions provide details on viewing the readings that are recorded for the checkpoints on a Route.

To view the readings recorded for the checkpoints on a Route:

1. [Open the Route](#) containing the checkpoints whose readings you want to view.

2. In the Route pane, select the desired Measurement Location node representing the checkpoint whose associated readings you want to view.

3. In the Datasheet area, select the **Readings** tab.

   The Reading records that are linked to the Measurement Location record represented by that node are displayed in a list, sorted by the date on which the reading was recorded. At this point, you can:

- Select additional Measurement Location nodes to view the readings associated with those checkpoints.

- Open a Reading record to view its contents.

- Open a Reading record and modify its contents.

Creating a Reading Record

In some cases, you might need to create a Reading record in the Meridium APM Framework application. For example, suppose a user uploaded data from a device but forgot to save a reading value for a checkpoint. Upon upload, the associated Measurement Location record is removed from the device. Instead of downloading the one Measurement Location record back to the device, you might want to create a Reading record manually in the Meridium APM Framework.

To create a Reading record:

1. Open the Route record that is linked to the Measurement Location record to which you want to link a Reading record.

2. In the Route pane, select the Measurement Location node, representing the Measurement Location record to which you want to link the new Reading record.

3. On the **Associated Pages** menu, click the **Create Reading** link.

    The new Reading window appears, displaying the Reading datasheet.

The following fields are populated automatically:

- **Asset ID**: Contains the text that is stored in the Related Asset ID field in the linked Measurement Location record.

- **Reading Taken By:** Contains the name of the Security User who is currently logged in to the Meridium APM Framework application.
- **Reading Taken Date:** Contains the current date.

  Fields on the Reading datasheet are conditionally enabled based upon the value in the ML Type field in the associated Measurement Location record. If the ML Type field contains the value:

- *Character*, the Reading Value Numeric and Unit of Measure fields are disabled.
- *Numeric*, the Reading Value Character field is disabled.

4. Depending upon which field is enabled according to the criteria listed above, type the reading value in one of the following fields on the Reading datasheet:

   - **Reading Value Character**
   - **Reading Value Numeric**

5. If you typed the reading value in the **Reading Value Character** field, proceed to step 8. If you typed the reading value in the **Reading Value Numeric** field, in the **Unit of Measure** list, select the unit of measure for the reading value.

6. In the **Comment** field, type any comments about the reading value. For example, you might want to indicate the reason why you are creating the Reading record manually.

7. Select a value in the **Action Taken** list. The available values are the values stored in the **Action** column on the **Limit Values** tab of the Measurement Location datasheet. In addition to those values, you will also see the value *Not Taken*. This value is applicable to device users only. You should not select this value when creating a Reading record in the Meridium APM Framework.

8. Click **OK**.

   The Reading record is linked to the Measurement Location record, and the new Reading record appears on the [Readings tab on the ML Task View datasheet](#) for the Measurement Location record.

Viewing the Contents of a Reading Record

The following instructions provide details on opening a Reading record to view its contents.

To view the contents of a Reading record:

1. [Access the list of Reading records](#) containing the Reading record whose contents you want to view.

2. In the list, in the row containing the Reading record whose contents you want to view, in the **Reading Taken Date** cell, select the hyperlinked date value.

   The Reading record appears in a new window.
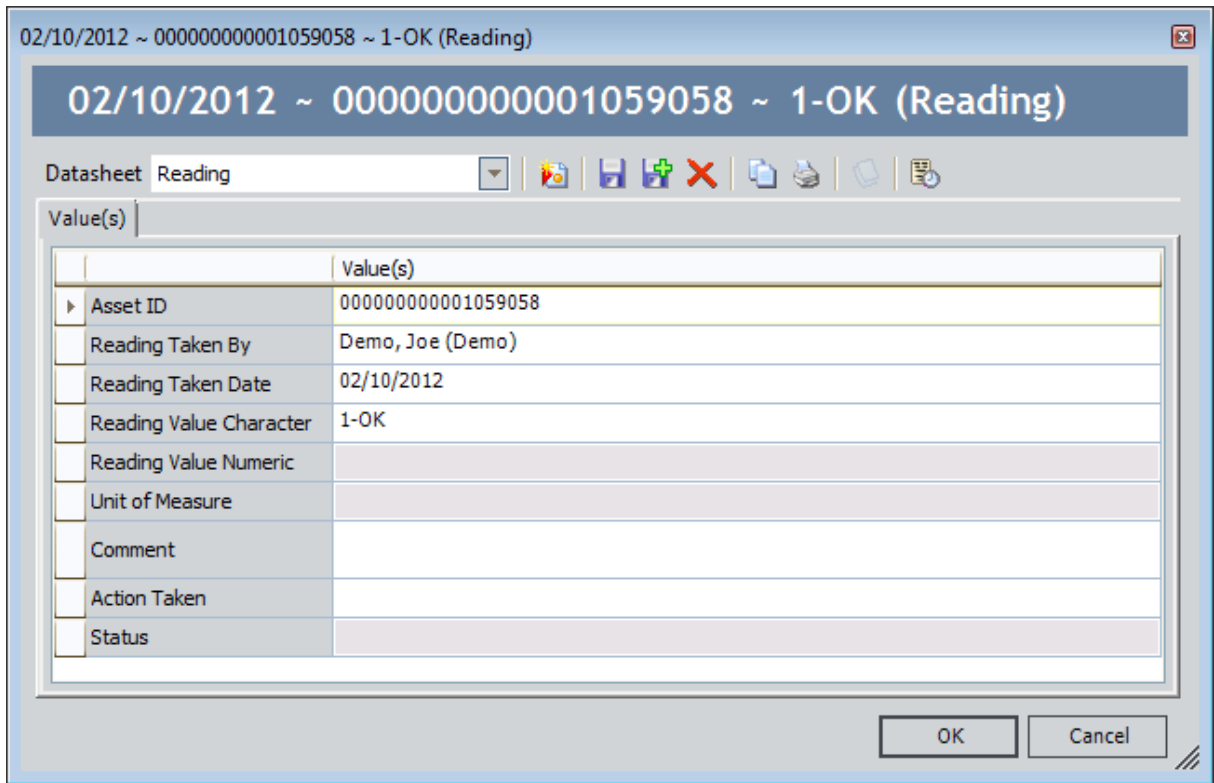
3. When you are finished, click **OK**.

   The record closes.

Modifying Reading Records

To modify a Reading record:

1. [Open the Reading record whose contents you want to modify](#).

2. [Modify the contents of the record](#), as desired.

3. When you are finished, click **OK**.

    Your changes are saved.

Accessing the Operator Rounds Reports Page

You can use the **Operator Rounds Reports** page to [open reports](#) that are stored in the Catalog folder \\Public\Meridium\Modules\Operator Rounds\Reports and view them in the Report Viewer.

To access the Operator Rounds Reports page:

- On the **Operator Rounds Start Page**, click the **Run Reports** link.

  The **Operator Rounds Reports** page appears.
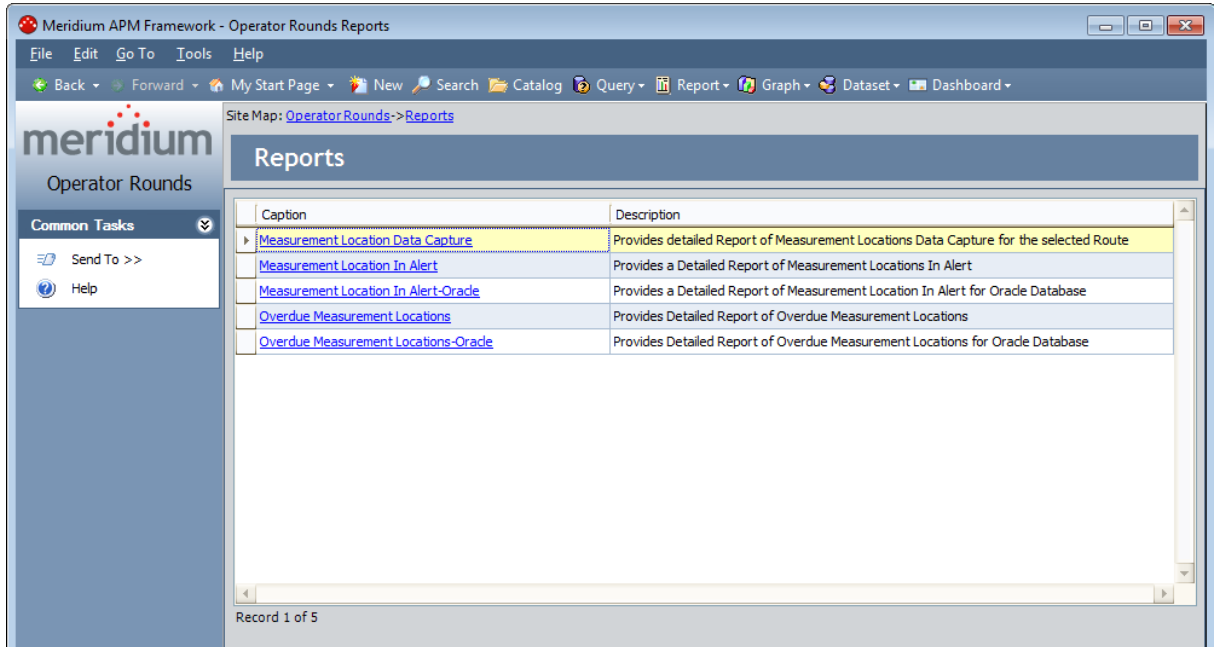
Aspects of the Operator Rounds Reports Page

The **Operator Rounds Reports** page contains a grid that displays one row for each report that is stored in the Catalog folder \Public\Meridium\Modules\Operator Rounds\Reports.
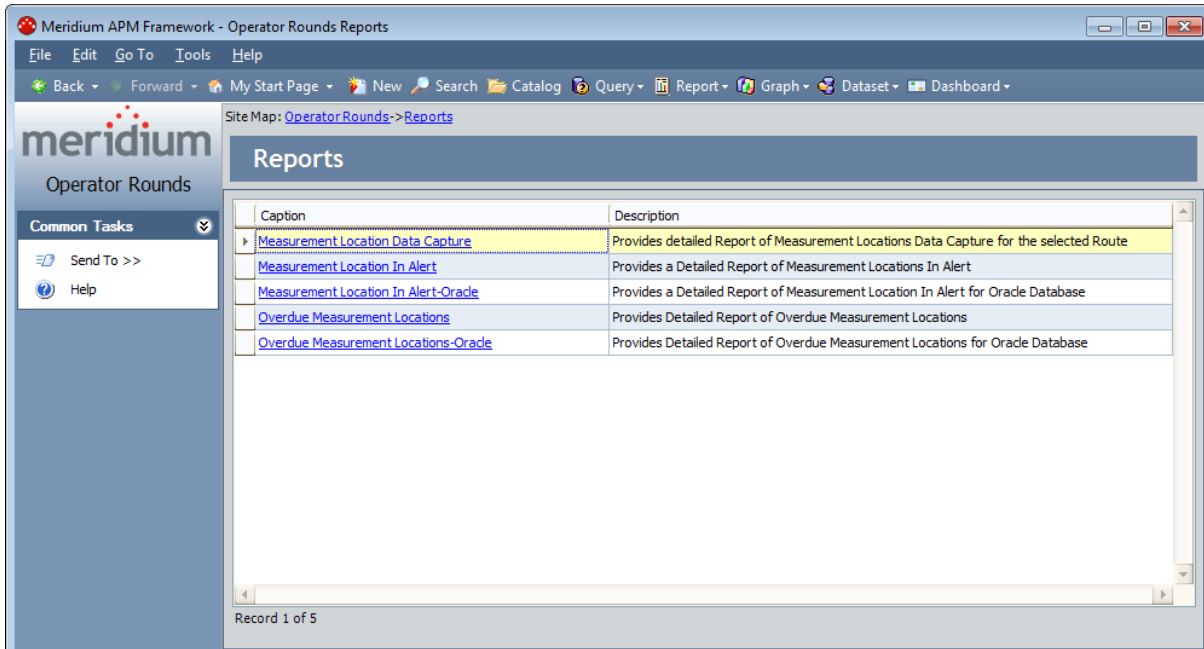
The grid contains the following columns:

- **Caption:** Displays the hyperlinked report caption, which you can click to open the report.
- **Description:** Displays the report description.

The **Operator Rounds Reports** page contains one task menu, **Common Tasks**.
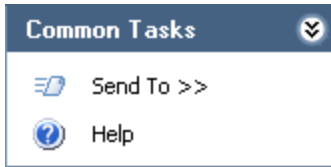
Common Tasks Menu

The **Common Tasks** menu on the **Operator Rounds Reports** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), in an email message, or a Home Page.
- **Help:** Displays the context-sensitive Help topic for the **Operator Rounds Reports** page.

Opening Reports from the Operator Rounds Reports Page

To open a report from the Operator Rounds Reports page:

- In the grid on the **Operator Rounds Reports** page, click the hyperlinked caption of the report that you want view.

> **Note:** If the report is based on a query that contains prompts, the **Enter Query Parameters** dialog box will appear. After you select the desired values, click **OK** to view the report.

The selected report appears in the Report Viewer, where you can view the report and perform various tasks related to the report.

About Folders and Items Used by Meridium APM Framework Users

The Catalog folder \\Public\Meridium\Modules\Operator Rounds contains the following subfolders that contain items that are intended to be used by Meridium APM Framework users, either before or after data has been transferred from a device to Meridium APM:

- [Dashboards](#)
- [Explorers](#)
- [Graphs](#)
- [Queries](#)
- [Reports](#)

The information in this section of the documentation is intended to serve as a quick reference to details that are provided elsewhere in the specific Operator Rounds instructions.

> **Note:** All of the Public folders exist by default. Any baseline item in the Baseline folder is also available in the corresponding Public folder. Throughout this documentation, however, we refer to items in the Public folder.

Dashboards Folder

The following table lists the dashboard that is stored in the Catalog location \\Public\Meridium\Modules\Operator Rounds\\Dashboards. The dashboard name is listed in the table. The dashboard name and caption are the same.

Dashboard	Behavior and Usage
OPR Dashboard	Displays the baseline Operator Rounds dashboard on the **Dashboard** page.

Explorers Folder

The following table lists the configured explorers that are stored in the Catalog location \\Public\Meridium\Modules\Operator Rounds\Explorers. The configured explorers are listed by name in the table. The configured explorer name and caption are the same unless otherwise noted.

Configured Explorer	Behavior and Usage
OPR Explorer	A configured explorer that is not used by the baseline Operator Rounds product but still exists in the Meridium APM Catalog to support custom implementations that have been configured to use it. If you are using the OPR Explorer configured explorer in a custom URL, we recommend that you modify the URL to use the **Route Management** page instead.
Route Explorer	A configured explorer that is not used by the baseline Operator Rounds product but still exists in the Meridium APM Catalog to support custom implementations that have been configured to use it. If you are using the Route Explorer configured explorer in a custom URL, we recommend that you modify the URL to use the **Route Management** page instead.

Graphs Folder

The following table lists the graph that is displayed in the Catalog location \\Public\Meridium\Modules\Operator Rounds\Graphs. The graph name is listed in the table. The graph name and caption are the same.

Graph	Behavior and Usage
Trend of Readings Plot	Displays the reading value in all Reading records that are linked to a given Measurement Location record. You can use the graph to determine if your reading values are improving over time.

Queries Folder

The following table lists the queries that are stored in the Catalog location \\Public\Meridium\Modules\Operator Rounds\Queries. The queries are listed by name in the table. The query name and caption are the same unless otherwise noted. In addition to the queries listed in the table, the Queries folder contains the following subfolders:

- Dashboard Queries
- Download Queries
- Graph Queries
- ML Administration Queries
- Report Queries

Query	Behavior and Usage
Aging Query - Oracle	Returns all Measurement Location records that are linked to a Checkpoint Task record with a Next Date that does not match the date on which a Reading record was created. For example, if the Next Date of a Checkpoint Task record is 12/15/2008, and a Reading record was not created on that date, the Measurement Location record to which it is linked will appear in the query results. In other words, each row in the query represents an overdue Measurement Location record. In each row, you can click a hyperlink to view the Measurement Location record or the Route record to which the Measurement Location record is linked. You can also see from the results how many days the Measurement Location record is overdue. **Note:** This query works on an Oracle schema only. To see the query results on a SQL Server data source, use the query Aging Query - SQL Server.
Aging Query - SQL Server	Displays the same results as the Aging Query - Oracle. This query, however, works on a SQL Server data source only.

Query	Behavior and Usage
Allowable Values	Returns all Operator Rounds Allowable Values records. Each row in the results represents an Operator Rounds Allowable Values record. Each row also contains a hyperlink in the **Link** cell. When you click a link, a prompt appears, displaying the Type and Category values stored in that associated Operator Rounds Allowable Values record. If you accept the default values in the prompt and click **OK**, the Bulk Data Form will appear, displaying ALL Operator Rounds Allowable Values records with the Type and Category values that were displayed in the prompt.
AllTemplates	Returns all Measurement Location Template records. Each row in the results represents one Measurement Location Template record. This query is used to populate the **Template** list on the datasheet for Measurement Location records.
Measurement Location Template	Displays a prompt for the EntityKey of a Measurement Location Template record, and then displays details from the specified record. The results of this query are displayed in the **Measurement Location Template** section on the: • Measurement Location Update window. • Disassociate Measurement Locations window .
Most Recent Reading	This query is used by the query Measurement Locations in Alert and is not meant to be run on its own. We recommend that you not modify this query.
Operator Rounds Recommendations - Conditional Alert	Returns all Operator Rounds Recommendation records that were created on the current date.
Route Management	Displays a list of all Route records that exist in the database. This query is run when you access the **Operator Rounds Route Selection** page. In each row, you can click to view or modify the Route record.
Route Management Configuration	Displays a list of all the Route records that exist in the database. This query is run when you access the **Route Management** page.

Query	Behavior and Usage
Template Management	Displays a list of all Measurement Location Template records that exist in the database. This query is run when you access the **Operator Rounds Template Management** page. In each row, you can click the hyperlinked Template ID to view the Measurement Location Template record.
TemplateUniqueness	This query is used by the Meridium APM system to determine if the value you entered in the Template ID field in the Measurement Location Template record is already used by a different Measurement Location Template record.
Update Allowable Values	This query is run when you click a link in the **Link** column when viewing the results of the query Allowable Values. This query is not meant to be run on its own. We recommend that you not modify this query.
Update Measurement Locations from MLT	The results of this query are displayed in the following locations: • The **Measurement Locations created from the Template** section on the Measurement Location Update window and Disassociate Measurement Locations window. • The **The following Measurement Locations were updated** section on the Measurement Location Update window and Disassociate Measurement Locations window.

Dashboard Queries Folder

The following table lists the queries that are stored in the Catalog location \\Public\Meridium\Modules\Operator Rounds\Queries\Dashboard Queries. The table lists the queries by name. The query name and caption are the same unless otherwise noted.

Query	Behavior and Usage
Active Recommendations	Returns all Operator Rounds Recommendation records that are in a Created state. This query contains a prompt on the Asset ID field in the Operator Rounds Recommendation record and the Route Id field in the Route record that is associated with the Operator Rounds Recommendation record. The results of this query are displayed in the **Active Recommendations section** on the baseline Operator Rounds dashboard.
Completed Reading Count	Returns all Reading records whose Status field contains the value *C*, which indicates that the reading is compliant. This query contains prompts on the: ● Route ID field in the Route record that is associated with the Reading record. ● Asset ID field in the Measurement Location record that is associated with the Reading record. ● Reading Taken Date field in the Reading record. There are two prompts on this field that correspond with the following fields on the **Enter parameter values** dialog box that is displayed when you run this query: 　■ **Start Date:** The date that you type or select in this box must be *equal to or before* the Reading Taken Date in the Reading record. 　■ **End Date:** The date that you type or select in this box must be *equal to or after* the Reading Taken Date in the Reading record. The results of this query are used to display information in the **Compliance section** on the baseline Operator Rounds dashboard.

Query	Behavior and Usage
Compliance	Returns all records that are returned by the Completed Reading Count and Non-compliance Reading Count queries. This query contains the same prompts that the Completed Reading Count and Non-compliance Reading Count queries contain. The results of this query are used by the Compliance Percentage query to calculate a compliance percentage that is displayed in the **Compliance** section on the baseline Operator Rounds dashboard.
Compliance Percentage	Performs a calculation using the results of the following queries to determine a compliance percentage: • Completed Reading Count • Non-compliance Reading Count This query contains the same prompts that the Completed Reading Count and Non-compliance Reading Count queries contain. The results of this query are displayed in the graph that is displayed in the **Compliance** section on the baseline Operator Rounds dashboard.
MLAHI	Returns Health Indicator records that are linked to Measurement Location records. This query contains prompts on the: • Route ID in the Route record that is associated with the Measurement Location record. • Asset ID field in the associated Measurement Location record. The results of this query are displayed in the **Health Indicators** section on the baseline Operator Rounds dashboard.

Query	Behavior and Usage

Non-compliance Reading Count	Returns all Reading records whose Status field contains the value *NC*, which indicates that the reading is non-compliant. This query contains prompts on the:
	
	• Route ID field in the Route record that is associated with the Reading record.
	
	• Asset ID field in the Measurement Location record that is associated with the Reading record.
	
	• Reading Taken Date field in the Reading record. There are two prompts on this field that correspond with the following fields on the **Enter parameter values** dialog box that is displayed when you run this query:
	
	  ■ **Start Date:** The date that you type or select in this box must be *equal to or before* the Reading Taken Date in the Reading record.
	
	  ■ **End Date:** The date that you type or select in this box must be *equal to or after* the Reading Taken Date in the Reading record.
	
	The results of this query are used to display information in the **Compliance** section on the baseline Operator Rounds dashboard.

Query	Behavior and Usage

OPR Parameters Query	Returns all Route records that contain a unique Route ID value and all Measurement Location records that contain a unique Related Asset Id value. This query contains prompts on the:
	
	• Route ID field in Route records.
	
	• Asset ID field in Measurement Location records.
	
	• Reading Taken Date field Reading records that are associated with a particular Route and Measurement Location record. There are two prompts on this field that correspond with the following fields on the **Enter parameter values** dialog box that is displayed when you run this query:
	
	  ▪ **Start Date:** The date that you type of select in this box must be *equal to or before* the Reading Taken Date in the Reading record.
	
	  ▪ **End Date:** The date that you type or select in this box must be *equal to or after* the Reading Taken Date in the Reading record.
	
	The results of this query are displayed in the **Filters** section on the baseline Operator Rounds dashboard, where your selections are passed into corresponding prompts contained in other underlying dashboard queries. This query is configured in such a way to optimize performance when working with the **Filters** section on the Operator Rounds dashboard. The use of the Security User family in the baseline configuration of this query is inconsequential to the results displayed by the query, and is used only to ensure that the query returns results.

Overdue Measurement Locations	Returns Measurement Location records that are linked to Checkpoint Task records whose Next Date field contains a value that is associated with a date that is *before* today's date. The results of this query are displayed in the **Overdue Measurement Locations** section on the baseline Operator Rounds dashboard.

Download Queries Folder

The queries that are stored in the Catalog location \\Public\Meridium\Modules\Operator Rounds\Queries\Download Queries are not used by the Operator Rounds module.

Graph Queries

The following table lists the query that is stored in the Catalog location \\Public\Meridi-um\Modules\Operator Rounds\Queries\Graph Queries. The query name is listed in the table. The query name and caption are the same.

Query	Behavior and Usage
Trend of Readings	This query is run when you [access the Trend of Readings Plot graph]().

ML Administration Queries Folder

The following table lists the queries that are stored in the Catalog location \\Public\Meridium\Modules\Operator Rounds\Queries\ML Administration Queries. The queries are listed by name in the table. The query name and caption are the same unless otherwise noted.

Query	Behavior and Usage
Readings	Displays a prompt for the Entity_Key of the Measurement Location record to whose readings you want to view and then returns the list of Reading records that are linked to the Measurement Location record with that Entity ID. This query is run automatically when you select the **Readings** tab on the ML Task View datasheet for the Measurement Location family. **Note:** As of V3.6.0.3.0, this query works with *SQL Server* databases only. If you are using an Oracle database, you will need to configure the product to use the Readings - Oracle query.
Readings - Oracle	Displays the same results as the Readings query. **Note:** This query is new to V3.6.0.3.0 and works with *Oracle* databases only. If you are using a SQL Server database, you do *not* need to use this query. The product is configured to use the SQL Server equivalent query (Readings) by default. If you are using an Oracle database, you will need to configure the product to use this query.
Recommendations	Displays a prompt for the Entity_Key of the Measurement Location record to whose recommendations you want to view and then returns the list of Operator Rounds Recommendation records that are linked to the Measurement Location record with that Entity ID. This query is run automatically when you select the Recommendations tab on the ML Task View datasheet for the Measurement Location family.
Stored Ref Docs	Displays a prompt for the Entity_Key of the Measurement Location record to whose stored reference documents you want to view and then returns the list of Reference Document records that are linked to the Measurement Location record with that Entity ID. This query is run automatically when you select the Reference Documents tab on the ML Task View datasheet for the Measurement Location family.

You can modify any of these queries. The following fields, however, are required for the query to function properly on the ML Task View datasheet. You should not remove or modify these fields:

- ENTY_KEY in the Measurement Location family.
- ENTY_KEY in the family whose records are returned by the query (e.g., Reference Document).

Report Queries Folder

The following table lists the queries that are stored in the Catalog location \\Public\Meridium\Modules\Operator Rounds\Queries\Report Queries. The queries are listed by name in the table. The query name and caption are the same unless otherwise noted.

Query	Behavior and Usage
Measurement Location Data Capture	Displays a prompt asking you to select a Route record, and then returns all Measurement Location records that are linked to the selected Route record, sorted by the sequence number from the Measurement Location records.
Measurement Location in Alert	Displays Measurement Location records whose last reading value entered on the device triggered an alert. Each row represents a Measurement Location record. In each row, you can click a hyperlink to view the Route record to which the Measurement Location record is linked, the Measurement Location record, and the Trend of Readings Plot graph. Note: This query works on a SQL Server database only. To see the query results on an Oracle schema, use the query Measurement Locations in Alert - Oracle.
Measurement Location in Alert - Oracle	Displays the same results as the query Measurement Locations in Alert. This query, however, works on an Oracle schema only.
Overdue Measurement Locations	Displays a prompt asking you to select a Route record, and then returns all overdue Measurement Location records that are linked to that Route record. Each row in the results represents a Measurement Location record whose Schedule value indicates that the checkpoint is overdue for maintenance.
Overdue Measurement Locations- Oracle	Displays the same results as the Overdue Measurement Locations query. This query, however, works on an Oracle schema only.

Reports Folder

The following table lists the reports that are stored in the Catalog location \\Public\Meridium\Modules\Operator Rounds\Reports. The reports are listed by name in the table. The report name and caption are the same unless otherwise noted.

Report	Behavior and Usage
Measurement Location Data Capture	Displays a prompt asking you to select a Route record, and then displays a formatted version of the results from the Measurement Location Data Capture query for the selected Route record. A link to this report appears on the **Operator Rounds Reports** page.
Measurement Location In Alert	Displays a formatted version of the results from the Measurement Location In Alert query. A link to this report appears on the **Operator Rounds Reports** page. Note: This report works on a SQL Server database only. To see the report on an Oracle schema, use the query Measurement Locations in Alert - Oracle.
Measurement Location in Alert - Oracle	Displays the same results as the report Measurement Locations in Alert. This report, however, works on an Oracle schema only.
Overdue Measurement Locations	Displays a prompt asking you to select a Route record, and then displays a formatted version of the results from the Overdue Measurement Locations query for the selected Route record. A link to this report appears on the **Operator Rounds Reports** page.
Overdue Measurement Locations-Oracle	Displays the same results as the Overdue Measurements Locations query. This report, however, works with an Oracle schema only.

About Folders and Items Used by Device Users

The Catalog folder \\Public\Meridium\Modules\Mobile and the following subfolders contain items that are intended to be used by device users:

- [Operator Rounds](#)
- [UI](#)

The information in this section of the documentation is intended to serve as a quick reference to details that are provided elsewhere in the specific Operator Rounds instructions.

> **Note:** All of the Public folders exist by default. Any baseline item in the Baseline folder is also available in the corresponding Public folder. Throughout this documentation, however, we refer to items in the Public folder.

Mobile Folder

The following table lists the queries that are stored in the Catalog location \\Public\Meridium\Modules\Mobile. The queries are listed by name in the table. The query name and caption are the same unless otherwise noted. You should not move the queries in the Mobile folder to another Catalog folder. The Mobile folder contains one subfolder, Operator Rounds.

Query	Behavior and Usage
OPR Mobile Administrator	Returns a list of Security Users who are either Super Users or members of the MI Operator Rounds Administrator Security Group. This query is used by the device to determine whether a Security User who is trying to remove an installation from the device is one of these types of Security Users. IMPORTANT: You should not move these queries to another Catalog folder.
Security Users	Returns a list of all Security Users who are either Super Users or members of the MI Operator Rounds Mobile User Security Group. This query is used by the Operator Rounds application on the device to determine which users can log in on the device. We recommend that you not modify this query. Note that if you want to rename this query, you can do so, but you will need to update the device settings so that the device retrieves data from the correct query. Also, if you want to create a different query for device users to use to download data, you can do so, but again, you will need to update the device settings. IMPORTANT: You should not move these queries to another Catalog folder.

Operator Rounds Folder

The following table lists the queries that are stored in the Catalog location \\Public\Meridium\Modules\Mobile\Operator Rounds. The queries are listed in the table by name. The query name and caption are the same unless otherwise noted. You should not move the queries in this location to another Catalog folder. The Operator Rounds folder also contains one subfolder, UI.

Query	Behavior and Usage
Download Master	Displays a prompt asking for Route records and linked Measurement Location records that are due on or before a certain date. By default, this query is run when you tap the **Sync Data** button on the Operator Rounds Home screen on the device. This means that the query prompts that you see when you run the query in the Meridium APM Framework are the same query prompts you see when you tap the **Sync Data** button on the device. Note that if you want to rename this query, you can do so, but you will need to update the device settings so that the device retrieves data from the correct query. Also, if you want to create a different query for device users to use to download data, you can do so, but again, you will need to update the device settings.
Has Reference Documents	This query is used by the device and should not be modified in any way.
Measurement Locations	This query is used by the device and should not be modified in any way.
Mobile Reference Documents	This query is used by the device and should not be modified in any way.
Recommendation History	This query is not used.
Routes	This query is used by the device and should not be modified in any way.

UI Folder

The following table lists the queries that are stored in the Catalog location \\Public\Meridium\Modules\Mobile\Operator Rounds\UI. These queries are used by the device to determine whether a button should be disabled or enabled. Buttons on the device will be enabled or disabled depending upon whether there is associated data available to view. For example, the **Ref. Docs** button will be disabled if there are no reference documents associated with a checkpoint.

The queries are listed in the table by name. The query name and caption are the same unless otherwise noted.

Query	Behavior and Usage
EnableReadingHistory	Supports the QuickAccessEnable query.
EnableRecommendationHistory	Supports the QuickAccessEnable query.
EnableReferenceDocuments	Supports the QuickAccessEnable query.
QuickAccessEnable	Returns the list of Measurement Location records that exist in the database and indicates with a *True* value whether records in the following families are linked to the Measurement Location records. If at least one record in these families is linked to the Measurement Location record, the device will enable the corresponding button when you are viewing the checkpoint representing that Measurement Location record.

Measurement Location

Measurement Location records store details about checkpoints on a Route. The following table provides an alphabetical list and description of the fields that exist for the Measurement Location family. The information in the table reflects the baseline state and behavior of these fields. This list is not comprehensive.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
ATG	Logical	This field is used by the Meridium APM system.	This field does not appear on any datasheet by default. The value is set automatically by the Meridium APM system.	None

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Allowable Values	Char-acter	The values the user can select when entering a reading for this check-point.	On the datasheet, this field appears as a list labeled **Allowable Values**and con-tains all the values in the Value field in the Operator Rounds Allowable Values records whose type values match the value stored in the **ML Type** and **Category** lists in the Measurement Location record. For each value in the list, a check box appears that you can select to indicate that the corresponding allowable value should appear on the device for this checkpoint. For example, suppose you select **Character** in the **ML Type** list and **Pump Check** in the **Category** list in a Meas-urement Location record. If four Operator Rounds Allow-able Values records contain the value *Character* in their Type field and *Pump Check* in their Category field, the **Allow-able Values** list on the Meas-urement Location datasheet will contain the values in the Value field of those four Oper-ator Rounds Allowable Values records. The values in this list are also used to populate the **Numeric** and **Character** lists on the **Limit Values** tab on the ML Task View datasheet. These values are used to set up alerts that will be dis-played to device users if they enter a certain reading value. If you clear a check box from	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
			the **Allowable Values** list and the corresponding allowable value is used on the **Limit Values** tab, that allowable value will automatically be removed from the **Limit Values** tab.	

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Asset Description	Character	A description of the equipment or location represented by the Equipment or Functional Location record to which you want to link the Measurement Location record.	On the datasheet, this field appears as a text box labeled **Asset Description**. When the Measurement Location record is linked to: • An Equipment record, this field is populated automatically with the value in the Equipment Short Description field in the linked Equipment record. • A Functional Location record, this field is populated automatically with the value in the Functional Location Description field in the linked Functional Location record. If you do not want Meridium APM to populate the field automatically, you can enter a description for the equipment or location directly into the **Asset Description** cell. A rule exists on this field that will color the cell yellow if the value you enter exceeds the character limit for the corresponding section on the Handheld. You can, however, save the Measurement Location record with a value that exceeds the character limit on the Handheld. In addition, if you are working in the Asset View in the Route pane, and you add a Measurement Location	• **Identification** tab on the ML Task View datasheet. • **Identification** tab on the Measurement Location datasheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
			record under an Asset ID node, after you save the Measurement Location record, the Asset ID and Asset Description fields will be populated automatically with the values stored in the Equipment or Functional Location record that is rep-resented by that Asset ID node.	
Bluetooth Meas-urement Type	-	-	*This field is not currently used by the Operator Rounds module.*	-
Category	Char-acter	The cat-egory to which the check-point belongs.	On the datasheet, this field appears as a list labeled **Cat-egory** and contains the val-ues that are defined in the Category field in the Operator Rounds Allowable Values records whose type matches the value that is stored in the ML Type field in the Meas-urement Location record. You can select a value from the list. For example, if you select **Character** in the **ML Type** list in a Measurement Location record and four Operator Rounds Allowable Values records contain the value *Character* in their Type field, the **Category** list on the Meas-urement Location datasheet will contain the values in the Category field of those four Operator Rounds Allowable Values records.	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Check-point Locked	Logical	Indicates whether a check-point should be locked on the device until the device use scans the associated barcode or RFID tag.	When this field is set to: • *True*, the device user must scan the barcode or RFID tag associated with a Measurement Location record before they can record readings. • *False*, the device user does not have to scan the barcode or RFID tag associated with a Measurement Location record before they can record readings. This field is disabled when the Scan ID field is disabled.	This field appears as a check box labeled **Scan to Unlock?** on the following tabs on the following data-sheets: • **Identification** tab on the ML Task View data-sheet. • **Identification** tab on the Measurement Location data-sheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Descrip-tion	Char-acter	A descrip-tion of the check-point.	On the datasheet, this field appears as a text box labeled **ML Description**, in which you can enter a description of the action users will be com-pleting when they enter read-ings for this checkpoint (e.g., Pump Check, Vibration Check, or Temperature Check). A rule exists on this field that will color the cell yellow if the value you enter exceeds the character limit for the cor-responding section on the Handheld. You can, however, save the Measurement Location record with a value that exceeds the character limit on the Handheld.	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet. • **Value(s)** tab on the Sequence Meas-urement Locations data-sheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Download Stored Document	Logical	Indicates whether t-he Refer-ence Document records associated with a route will be down-loaded to the hand-held device.	On the datasheet, this field appears as a check box. By default, this field is set to: • *False*, when the combined file size of the associated reference document files is *greater than* 2 MB. When this field is set to *False*, the associated files will *not* be downloaded to the device. • *True*, when the combined file size of the associated reference document files is less than or equal to 2 MB. When this field is set to *True*, the associated files will be downloaded to the device.	**Iden-tification** tab on the Meas-urement Location datasheet.
Last Date (Deprec-ated)	Date	This field is not used.	N/A	N/A

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Maximum Target Value	Num-ber	A number rep-resenting the highest target reading value that is accept-able for the check-point.	On the datasheet, this field appears as a text box labeled **Maximum Target Value**, in which you can enter a num-ber. Together, the value stored in this field and the value stored in the Minimum Target Value field define a tar-get range that is displayed on the **More Information** screen on the Handheld. This field is disabled when the value in the ML Type field contains *Character*. A rule exists on this field that will compare the value you enter in the Maximum Target Value field with the value you enter in the Minimum Target Value field. If you enter a value in the Maximum Target Value field that is less than the value in the Minimum Tar-get Value field, a message will appear, indicating that the value must be greater than the value in the Min-imum Target Value.	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Maximum Valid Value	Num-ber	A number rep-resenting the highest reading value that is accept-able for the check-point.	On the datasheet, this field appears as a text box labeled **Maximum Valid Value**, in which you can enter a num-ber. This value is used by the Handheld to check the read-ing value that is entered by the device user and display a message if the value they enter is higher than this value. Together, this value and the value in the Min-imum Valid Value field define the valid value parameters for a reading. This field is disabled when the ML Type field contains *Character*. A rule exists on this field that will compare the value you enter in the Maximum Valid Value field with the value you enter in the Minimum Valid Value field. If you enter a value in the Maximum Valid Value field that is less than the value in the Minimum Valid Value field, a message will appear, indicating that the value must be greater than the value in the Min-imum Valid Value.	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Minimum Target Value	Num-ber	A number rep-resenting the lowest target reading value that is accept-able for the check-point.	On the datasheet, this field appears as a text box labeled **Minimum Target Value**, in which you can enter a num-ber. Together, the value stored in this field and the value stored in the Maximum Target Value field define a tar-get range that is displayed on the **More Information** screen on the Handheld. This field is disabled when the value in the ML Type field contains *Character*. A rule exists on this field that will compare the value you enter in the Maximum Target Value field with the value you enter in the Minimum Target Value field. If you enter a value in the Minimum Target Value field that is greater than the value in the Max-imum Target Value field, a message will appear, indic-ating that the value must be less than the value in the Max-imum Target Value.	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Minimum Valid Value	Num-ber	A number rep-resenting the lowest reading value that is accept-able for the check-point.	On the datasheet, this field appears as a text box labeled **Minimum Valid Value**, in which you can enter a num-ber. This value is used by the Handheld to check the read-ing value that is entered by the device user and display a message if the value they enter is lower than this value. Together, this value and the value in the Maximum Valid Value field define the valid reading value parameters for a checkpoint. This field is disabled when the ML Type field contains *Character*. A rule exists on this field that will compare the value you enter in the Maximum Valid Value field with the value you enter in the Minimum Valid Value field. If you enter a value in the Minimum Valid Value field that is greater than the value in the Max-imum Valid Value field, a message will appear, indic-ating that the value must be less than the value in the Max-imum Valid Value.	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
ML Type	Char-acter	The type of data that users can enter when cre-ating a Reading record linked to the Meas-urement Location record.	On the datasheet, this field appears as a list labeled **ML Type** and contains the fol-lowing values: • *Character*. If you select **Character**, users can record any reading value for this checkpoint. • *Numeric*. If you select **Numeric**, they must record a numeric reading value for this checkpoint.	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet. • **Value(s)** tab on the Sequence Meas-urement Locations data-sheet.
More Inform-ation	Char-acter	Additional inform-ation about the check-point that you want to be dis-played on the **More Inform-ation** screen on the Hand-held.	On the datasheet, this field appears as a text box labeled **More Information**, in which you can enter additional information about the check-point. The value that you enter in this field will be dis-played on the **More Inform-ation** screen on the Handheld.	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Next Date (Deprecated)	Date	This field is not used.	N/A	N/A
Product	Character	The product produced by the piece of equipment that is associated with this checkpoint.	On the datasheet, this field appears as a text box. You can enter a value directly in the **Product** cell. You can use this field to further define the checkpoint when a single piece of equipment produces multiple products. For instance, if a machine produces both packaging supplies and labeling supplies, you might want to perform different checks on the machine depending on the item being produced at the time. If the packaging supplies are produced using Lever A and the labeling supplies are produced using Lever B, you would probably not want to check Lever A when the machine is producing labels.	• **Identification** tab on the ML Task View datasheet. • **Identification** tab on the Measurement Location datasheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Related Asset Id	Char-acter	The ID of the Equip-ment or Functional Location record to which you want to link the Meas-urement Location record.	On the datasheet, this field appears as a text box labeled **Asset ID**. When the Measurement Loca-tion record is linked to: • An Equipment record, this field is populated auto-matically with the value in the Equipment ID field in the linked Equipment record. • A Functional Location record, this field is pop-ulated automatically with the value in the Functional Location field in the linked Functional Location record. If you have assigned a Scan ID to the Equipment or Func-tional Location record, the Scan ID field on the Meas-urement Location datasheet will be populated with the same Scan ID that appears in the Equipment or Functional Location record. A rule exists on this field that will color the cell yellow if the value you enter exceeds the character limit for the cor-responding section on the Handheld. You can, however, save the Measurement Location record with a value that exceeds the character limit on the Handheld. In addition, if you are work-	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet. • **Value (s)** tab on the Sequence Meas-urement Locations data-sheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
			ing in the Asset View in the Route pane, and you add a Measurement Location record under an Asset ID node, after you save the Measurement Location record, the Asset ID and Asset Description fields will be populated automatically with the values stored in the Equipment or Functional Location record that is represented by that Asset ID node.	
Scan ID	Character	The ID of the barcode or RFID tag that identifies the checkpoint.	This field enabled only when you are working with a Measurement Location record that is linked directly to a Route record, (i.e., it is disabled when you are working with a Measurement Location record that is linked to a predecessor Checkpoint Condition record).	• **Identification** tab on the ML Task View datasheet. • **Identification** tab on the Measurement Location datasheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Sequence	Number	A number indicating the order in which the checkpoint should be completed relative to other checkpoints along the same Route.	On the datasheet, this field is disabled and populated automatically with the value that corresponds to the position of the corresponding Measurement Location node in the Route pane. The Meridium APM system uses this value to determine the order in which a checkpoint should be displayed to a device user. You should not modify this value.	• **Identification** tab on the ML Task View datasheet. • **Identification** tab on the Measurement Location datasheet. • **Value(s)** tab on the Sequence Measurement Locations datasheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Status	Char-acter	The status of the Meas-urement Location record. This field contains the value *Active* by default.	On the datasheet, this field appears as a list labeled **Status** and contains the fol-lowing values: • Active • Inactive You can select a value from the list.	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet. • **Value(s)** tab on the Sequence Meas-urement Locations data-sheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Technical Equip-ment Number	Char-acter	The Tech-nical Equip-ment Number of the Equip-ment record or the Descrip-tion of the Functional Location record to which you linked the Meas-urement Location record.	On the datasheet, this field appears as a text box labeled **Equipment Technical Num-ber.** If the Measurement Loca-tion record is linked to an Equipment record, this field is populated automatically with the value stored in the Equipment Technical Num-ber field in the Equipment Record. If the Measurement Location record is linked to a Functional Location record, this field is populated auto-matically with the value stored in the Description field in the Functional Loca-tion record.	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet. • **Value (s)**tab on the Sequence Meas-urement Locations data-sheet.

Field	Data Type	Description	Behavior and Usage	Data-sheet/Tab
Template	Char-acter	The Record ID of the Meas-urement Location Template record that you want to use to populate fields in the Meas-urement Location record.	On the datasheet, this field appears as a list labeled **Tem-plate** and is populated using the results of the AllTem-plates query stored in the Catalog folder \\Public\Meridi-um\Modules\Operator Round-s\Queries. You can select a value from the list. When you do so, other fields in the record will be populated automatically based on the values in that Measurement Location Tem-plate record. After you save a Meas-urement Location record, the Template field is disabled.	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet.
Unit of Measure	Char-acter	The unit of meas-ure that users can specify when entering a numeric reading value for the check-point.	On the datasheet, this field appears as a list labeled **Unit of Measure**. You can select a value from the list. This field is disabled if the ML Type field contains the value *Character*.	• **Iden-tification** tab on the ML Task View data-sheet. • **Iden-tification** tab on the Meas-urement Location data-sheet.

Route

Route records store details about a Route. The following table provides an alphabetical list and description of the fields that exist for the Route family. The information in the table reflects the baseline state and behavior of these fields. This list is not comprehensive.

Field	Data Type	Description	Behavior and Usage
Last Date	Date	The date and time on which the Route status was changed to *Finished.*	This field is populated automatically after the Route is uploaded to Meridium APM.
Next Date	Date	The date and time on which the readings for the Route become due.	This field is populated automatically based on the values in the Schedule field and the Last Date field. If the Last Date field is empty, the value in the Next Date field is calculated using the schedule and the current date and time.

Field	Data Type	Description	Behavior and Usage
Route Id	Character	A name for the Route.	The value in this field is used to identify the Route in the Route pane, Route list, and on the Handheld. A rule exists on this field that will color the cell yellow if the value you enter exceeds 30 characters. The yellow color indicates that you have entered more than 30 characters in the field and serves as a reminder that the Handheld device will display only 30 characters from this field. You can, however, save the Route record with a name that exceeds 30 characters.
Schedule	Character	The schedule by which you want to take readings for the Route.	This field contains a ⋯ button that you can click to view the **Schedule** window, where you can define the schedule for the associated Route.

Measurement Location Template

Measurement Location Template records store details about measurement location templates that can be used to create checkpoints on a Route. The following table provides an alphabetical list and description of the fields that exist for the Measurement Location Template family. The information in the table reflects the baseline state and behavior of these fields. This list is not comprehensive.

Field	Data Type	Description	Behavior and Usage
Allowable Values	Character	The values the user can select when entering a reading for the checkpoint created from the template.	On the datasheet, this field appears as a list labeled **Allowable Values** and contains all the values in the Value field in the Operator Rounds Allowable Values records whose type values match the value stored in the **ML Type** and **Category** lists in the Measurement Location Template record. For each value in the list, a check box appears that you can select to indicate that the corresponding allowable value should appear on the device for a checkpoint created from the template. For example, suppose you select **Character** in the **ML Type** list and **Pump Check** in the **Category** list in a Measurement Location Template record. If four Operator Rounds Allowable Values records contain the value *Character* in their Type field and *Pump Check* in their Category field, the **Allowable Values** list on the Measurement Location Template datasheet will contain the values in the Value field of those four Operator Rounds Allowable Values records.

Field	Data Type	Description	Behavior and Usage
Asset Description	Character	A description of the equipment or location represented by the Equipment or Functional Location record to which you want to link the Measurement Location record created from the template.	On the datasheet, this field appears as a text box labeled **Asset Description**. A rule exists on this field that will color the cell yellow if the value you enter exceeds the character limit for the corresponding section on the Handheld. You can, however, save the Measurement Location Template record with a value that exceeds the character limit on the Handheld.

Field	Data Type	Description	Behavior and Usage
Checkpoint Locked	Logical	Indicates whether a checkpoint will be locked on the device until the device user scans the associated barcode or RFID tag.	On the datasheet, this field appears as a check box labeled **Scan to Unlock?**. This field is populated automatically in new Measurement Location records that are created from the Measurement Location Template record. If you modify this value, it is *not* updated automatically in existing Measurement Location records that were created from the Measurement Location Template record. When this field is set to: • *True*, the device user must scan the barcode or RFID tag associated with a Measurement Location record that was created from the Measurement Location Template record before they can record readings. • *False*, the device user does not have to scan the barcode or RFID tag associated with a Measurement Location record that was created from the Measurement Location Template record before they can record readings.

Field	Data Type	Description	Behavior and Usage
Description	Character	A description of the template.	On the datasheet, this field appears as a text box labeled **ML Description**, in which you can enter a description of the action users will be completing when they enter readings for a checkpoint that is created from the template (e.g., Pump Check, Vibration Check, or Temperature Check. A rule exists on this field that will color the cell yellow if the value you enter exceeds [the character limit for the corresponding section on the Handheld](#). You can, however, save the Measurement Location Template record with a value that exceeds the character limit on the Handheld.
Related Asset ID	Character	The ID of the Equipment or Functional Location record to which you want to link the Measurement Location record created from the template.	On the datasheet, this field appears as a text box labeled **Asset ID**. You can enter the ID of the desired Equipment or Functional Location record. A rule exists on this field that will color the cell yellow if the value you enter exceeds [the character limit for the corresponding section on the Handheld](#). You can, however, save the Measurement Location Template record with a value that exceeds the character limit on the Handheld.
Scan ID	Character	The ID of the barcode or RFID tag that identifies the checkpoint.	The value in this field is *not* populated automatically in Measurement Location records that you create using the Measurement Location Template record.

Field	Data Type	Description	Behavior and Usage
Template ID	Character	The ID for the template.	On the datasheet, this field appears as a text box labeled **Template ID**. You can enter an ID for the template. This value must be unique. A rule exists on this field that will check whether the value that you enter in Template ID field is already used in a different Measurement Location Template record. If the value is already used in a Measurement Location Template record, a message will appear indicating that the ID already exists.

Checkpoint Task

Checkpoint Task records store details on the [schedule on which a checkpoint should be executed](#). The following table provides an alphabetical list and description of the fields that exist for the Checkpoint Task family. The information in the table reflects the baseline state and behavior of these fields. This list is not comprehensive.

Field	Data Type	Description	Behavior and Usage
Last Date	Date	The date and time on which the last reading was recorded for this checkpoint.	This field is populated automatically after a Reading record is created and linked to the Measurement Location record to which the Checkpoint Task record is linked. This value is generated based on the defined [schedule](#) and the current date.
Next Date	Date	The date and time on which the next reading for this checkpoint becomes due.	This field is populated automatically based on the values in the Schedule field and the Last Date field. If the Last Date field is empty, the value in the Next Date field is calculated using the schedule and the current date and time.
Non-compliance Date	Date	The date and time after which the [reading will be considered non-compliant](#).	This field appears as a text box labeled **Non-compliance Date** and is populated automatically based on the value in the Schedule field.
Schedule	Character	The schedule by which you want to take readings for this checkpoint.	This field contains a 🔳 button that you can click to view the **Schedule** window, where you can define the schedule for the associated checkpoint.
Task ID	Character	The ID of the Checkpoint Task record.	This field is populated automatically with a value in the format **CP-<n>**, where **<n>** is a number representing the number of Checkpoint Task records that have been initiated (even if they were not actually saved). You can change the value if desired.

Route History

Route History records store information about the completion of a Route. The following table provides an alphabetical list and description of the fields that exist for the Route History family. The information in the table reflects the baseline state and behavior of these fields. This list is not comprehensive.

Field	Data Type	Description	Behavior and Usage
Close Date	Character	The date and time on which the Route status was changed to *Finished.*	This field is populated automatically after the Route is uploaded to Meridium APM.
Comments	Text	Comments about the Route.	This field is populated with the text that a device user typed in the **Comments** text box on the **Route Status** screen of a device.
Readings Expected	Number	The number of checkpoints in the associated Route record.	This field is populated automatically after the Route is uploaded to Meridium APM. If the Route contains conditions, this field accounts only for the checkpoints whose conditions were met.
Readings Taken	Number	The number of checkpoints in the associated Route record for which readings were taken.	This field is populated automatically after the Route is uploaded to Meridium APM.

Field	Data Type	Description	Behavior and Usage
Status	Character	The status of the Route that was uploaded to Meridium APM. A status of *Finished* indicates that: • All of the checkpoints in the Route were completed. -or- • The device user manually changed the status of an incomplete Route to *Finished.*	This field is populated with the status that a device user selected in the **Status** list on the **Route Status** screen of a device.

About Interpreting Uploaded Data

This section of the documentation provides information on interpreting data in the following records that are created or updated when you upload data into Meridium APM:

- [Checkpoint Task](#)
- [Operator Rounds Recommendation](#)
- [Operator Rounds Recommendation in Error](#)
- [Reading](#)
- [Reading in Error](#)

Interpreting Checkpoint Task Records

When you upload data into Meridium APM from a handheld device, certain fields in Checkpoint Task records are updated automatically. The following table lists these fields and their values before and after uploading data into Meridium APM.

Field	Value before upload	Value after upload
Last Date	The date and time a reading was last taken.	The date and time the reading was saved to the device.
Next Date	The next date a reading should be taken based upon the values in the Last Date field and the Schedule field.	The next date *and* time a reading should be taken based upon the values that exist in the Last Date field and the Schedule field.

Interpreting Operator Rounds Recommendation Records

When you upload data into Meridium APM from a handheld device, certain fields in Operator Rounds Recommendation records are populated automatically. The following table lists these fields, the values that are populated in them, and some fields that you must populate manually.

Field	Value
Recommendation ID	The system-generated ID for the Operator Rounds Recommendation record.
Recommendation Headline	The text that appeared in the **Headline** cell on the **Recommendations** screen on the device.
Recommendation Description	The text that appeared in the **Description** cell on the **Recommendations** screen on the device.
Recommendation Priority	The value that was selected in the **Priority** cell on the **Recommendations** screen on the device.
Asset ID	The value that appeared in the **Asset ID** cell on the **Recommendations** screen on the device.
Asset Description	The value that is stored in the Asset Description field in the Equipment or Functional Location record to which the Operator Rounds Recommendation record is linked.
Source ML Description	For Operator Rounds Recommendation records created via the **Readings - Detail** screen on the device, the value that is stored in the ML Description field in the Measurement Location record associated with the checkpoint for which you created an Operator Rounds Recommendation record.
Required Equipment Status	This field is *not* populated automatically. You should manually type in this field the state in which the piece of equipment should exist before the recommended action can be executed.
Status	The value *Created (Created).*
Author Name	The name of the Security User who was logged on to Operator Rounds when the recommendation was created.

Field	Value
Reviewer Name	This field is *not* populated automatically. You should select in the list that is displayed for this field the name of the person who should review the Operator Rounds Recommendation record.
Assigned To Name	This field is *not* populated automatically. You should select in the list that is displayed for this field the name of the person to whom the Operator Rounds Recommendation record should be assigned.
Final Approver Name	This field is *not* populated automatically. You should select in the list that is displayed for this field the name of the person who should approve the Operator Rounds Recommendation record.

Interpreting Operator Rounds Recommendation in Error Records

An Operator Rounds Recommendation in Error record is created any time that you try to upload data from a device to create an Operator Rounds Recommendation record, but the upload process fails for some reason. Operator Rounds Recommendation in Error records contain values from the data that was entered on the device.

Interpreting Reading Records

When you upload data into Meridium APM from a handheld device, one Reading record is created for every reading value that was saved to the device. The following table list the values that are populated in fields in Reading records after you upload data into Meridium APM.

Field	Value
Asset Id	The value in the Asset ID field of the Measurement Location record to which the Reading record is linked.
Reading Taken By	The name of the Security User who was logged on to Operator Rounds when the reading value was entered.
Reading Taken Date	The date the reading value was saved on the device.
Reading Value Character	The reading value if it is a character reading. **Note:** This field is enabled only for character readings.
Reading Value Numeric	The reading value if it is a numeric reading. **Note:** This field is enabled only for numeric readings.
Unit of Measure	The unit of measure associated with the reading. **Note:** This field is enabled only for numeric readings.
Comment	The text that was entered in the **Description** cell on the **Readings - Detail** screen for the Measurement Location to which this Reading record is linked.
Action Taken	The value that was selected in the **Action Taken** cell on the **Readings - Detail** screen for the Measurement Location to which this Reading record is linked.
Status	One of the following combinations of the ID and Description of the System Codes stored in the Reading Status System Code Table: • C (Completed) • I (Ignored) • NC (Non-compliant) This value Indicates the compliance status for the reading.

Interpreting Reading in Error Records

A Reading in Error record is created any time that you try to upload data from a device to create a Reading record, but the upload process fails for some reason. Reading in Error records contain values from the data that was entered on the device.

System Code Tables Used by Operator Rounds

The following System Code Tables are used by Operator Rounds:

Table ID	Table Description	Function
MI_RECOMMENDATION_TYPE	CORE, Recommendation Type	Used to populate the **Recommendation Type** list in Recommendation records. Note that the Recommendation Type field is not included on the baseline OPR Recommendation datasheet.
MI_FDC_STATUS_TYPE	Status type for Checkpoint families	None
MI_OPR_BT_MEAS_TYPE	-	*This System Code Table is not currently used by the Operator Rounds module.*
MI_OPR_MEAS_LOC_TYPE	List of Measurement Location types	Used to populate the **Measurement Location Type** list in Measurement Location records and the **Type** list on the **Operator Rounds Allowable Values** page.
MI_TASK_TYPE_REFERENCE	CORE, Reference values to limit task type lists when creating tasks	Used to populate the Task Type field in Checkpoint Task records.
Reading Status	Reading Status	Used to populate the Status field in Reading records.
Route Status	Route Status	Used to populate the Status field in Route History records.
UOME	Units of measure	Used to populate the **Unit of Measure** list in Measurement Location records.

URL Paths for Operator Rounds

The following table lists and describes the paths for accessing features in Operator Rounds. Note that to construct a valid URL, you must prepend **meridium://** to the path.

Feature	Path	Description
Apply Template Group Builder	OPR/ApplyTemplateGroup	Serves as the path for providing access to the **Apply Template Group Builder**. This path requires parameters that let you customize the URL.
Operator Rounds Allowable Values	OPR/AllowableValues	Displays the **Operator Rounds Allowable Values** page.
Operator Rounds Reports	OPR/Reports	Displays the **Operator Rounds Reports** page.
Operator Rounds Start Page	OPR	Displays the **Operator Rounds Start Page**.
Recent Routes	OPR/RecentRoute	Displays the **Operator Rounds Recently Modified Routes** page.
Route Management	OPR/RouteExplorer	Displays a Route record on the **Route Management** page. This path requires a parameter.
Route Selection	OPR/RouteManagement	Displays the **Operator Rounds Route Selection** page.
Template Group Management	OPR/TemplateGroupExplorer	Displays the **Template Group Management** page. This path requires a parameter.
Template Group Selection	OPR/TemplateGroupMGT	Displays the **Template Group Selection** page.

Feature	Path	Description
Template Management	OPR/TemplateManagement	Displays the **Operator Rounds Template Management** page.
Update Measurement Locations	OPR/APPLYMLT	Displays the **Measurement Location Update** window, where you can view the Measurement Location records that were created from a given Measurement Location Template record and update those Measurement Location records with changes from the source template. This path requires a parameter.

Parameters for the ApplyTemplateGroup URL

The ApplyTemplateGroup URL lets you construct a hyperlink that will open the **Apply Template Group Builder** and present certain selections to the user. The base URL, **OPR/ApplyTemplateGroup**, accepts the parameters in the following table.

Parameter Name	Description	Accepted Value(s)	Notes
TemplateKey	Specifies the Entity Key of the Template Group record that belongs to the Template Group that you want to apply to one or more pieces of equipment or locations.	The numeric Entity Key of the desired Template Group record.	This parameter is required.
EventRelationship	Specifies the ID of the relationship family that relates Event families to the Measurement Locations family.	The ID of the desired relationship family.	This parameter is optional. If you include it, the **Select Event** screen will appear, where the **Search In** list displays the families that are predecessors to the Measurement Location family in the relationship family with the specified ID.

Parameter Name	Description	Accepted Value(s)	Notes
ShowRoute	Specifies whether or not you want to show the **Select Route** screen in the **Apply Template Group Builder**.	True False	This parameter is optional. If you omit it, the **Select Route** screen *will* be displayed. If you include it, the value can be set to either of the following values: • **True:** Displays the **Select Route** screen. • **False:** Hides the **Select Route** screen. In other words, omitting this parameter has the same effect as setting it to True.

Examples of the ApplyTemplateGroup URL

- meridium://OPR/ApplyTemplateGroup?**TemplateKey=123456**

  Displays the **Apply Template Group Builder**, which you can use to create Measurement Location records from the Measurement Location Template records that are linked to the Template Group record with the Entity Key 123456. The builder will display the **Select Route** screen since the ShowRoute parameter has been omitted from the URL.

- meridium://OPR/ApplyTemplateGroup?TemplateKey=123456&**EventRelationship=Event_Has_ML**

  Displays the **Apply Template Group Builder**, which you can use to create Measurement Location records from the Measurement Location Template records that are linked to the Template Group record with the Entity Key 123456. In addition, the builder will display the **Select Event** screen, where the **Search In** list displays any family that serves as a predecessor in the relationship family with the ID Event_Has_ML.

- meridium://OPR/ApplyTemplateGroup?TemplateKey=123456&**ShowRoute=False**

  Displays the **Apply Template Group Builder**, which you can use to create Measurement Location records from the Measurement Location Template records that are linked to the Template Group record with the Entity Key 123456. The builder will not display the **Select Route** screen since the ShowRoute parameter has been set to False.

Parameters for the RouteExplorer URL

The RouteExplorer URL lets you construct a hyperlink that will open a Route record on the **Route Management** page. The base URL, OPR/RouteExplorer, accepts one parameter, EntityKey, which accepts the numeric Entity Key of the desired Route record. The EntityKey parameter is required.

The following URL is an example of the RouteExplorer URL:

meridium://OPR/RouteExplorer?EntityKey=1234567

Displays the Route record with the EntityKey 1234567 on the **Route Management** page.

Parameters for the TemplateGroupExplorer URL

The TemplateGroupExplorer URL lets you construct a hyperlink that will open a Template Group record on the **Template Group Management** page. The base URL, OPR/TemplateGroupExplorer, accepts one parameter, EntityKey, which accepts the numeric Entity Key of the desired Template Group record. The EntityKey parameter is required.

The following URL is an example of the TemplateGroupExplorer URL:

meridium://OPR/TemplateGroupExplorer?EntityKey=1234567

Displays the Template Group record with the EntityKey 1234567 on the **Template Group Management** page.

Parameters for the APPLYMLT URL

The APPLMLT URL lets you construct a hyperlink that will open the **Measurement Location Update** window, from which you can update Measurement Location records with the changes from the source Measurement Location Template record. The base URL, OPR/APPLYMLT, accepts one parameter, MLTKey, which accepts the numeric Entity Key of the desired Measurement Location Template record. The MLTKey parameter is required.

The following URL is an example of the APPLYMLT URL:

meridium://OPR/APPLYMLT?MLTKey=1234567

Displays on the **Measurement Location Update** window the Measurement Location records that were created from the Measurement Location Template record with the EntityKey 1234567.

Barcode

An identifier that can be attached to a piece of equipment or location in your facility. A barcode can be scanned by a handheld device when performing checkpoints on a Route.

Handheld Device

A device that you use to record readings for checkpoints along a Route. Data that you record using a handheld device can be transferred to the Meridium APM system. You can also transfer data from the Meridium APM system to a handheld device.

Route

A series of checkpoints, each for which a reading should be recorded, in a specific order. A [Route consists of multiple records and links](#).

Radio Frequency Identification (RFID) Tag

An identifier that can be attached to a piece of equipment or location in your facility. An RFID tag can be scanned by a handheld device when performing checkpoints on a Route.

Meridium APM Sync Server

The machine on which Meridium APM Sync Services and the Microsoft Sync Framework is installed. This machine provides a connection between handheld devices and the Meridium APM Application Server so that data can be synchronized between the devices and the Meridium APM database.

Scan ID

A value used to identify a barcode or RFID tag. This value is [stored in the Scan ID field in multiple Operator Rounds records](#).

About the Lubrication Management Documentation

A complete Lubrication Management implementation involves performing the following tasks:

- Installing and configuring the product. This documentation assumes that all the necessary components have been installed and properly configured.
- Performing administrative tasks in the Data Configuration Manager . This documentation assumes that all necessary configuration steps have been completed in the Configuration Manager.
- Configuring and analyzing Lubrication Management records in the Meridium APM Framework application.

This documentation explains how to configure and analyze Lubrication Management records in the Meridium APM Framework application. This documentation does not, however, assume any specific audience. It simply explains what a user would need to know to configure Lubrication Management in the Meridium APM Framework application. We assume that you know which tasks you are responsible for and can find the documentation associated with those tasks using the Table of Contents or the Search feature of the Help system.

Overview of Lubrication Management

The *Meridium APM Lubrication Management* module lets you create Route records and link them to Lubrication Requirement records, which store information about the checkpoints at which someone will need to record reading values.

After the Route records and Lubrication Requirement records have been created, you can print the Lubrication Management Data Capture report and record reading values for each checkpoint along the Route. For example, if a Route record is linked to three Lubrication Requirement records, you would need to perform each check and use the report printout or the Meridium APM Framework application to record those reading values. You can also create Recommendation records based on your findings.

After the desired data has been recorded, you can use Meridium APM analytical tools to analyze the findings and recommendations, create Alert records, and so on.

Lubrication Management System Requirements

The *Lubrication Management* license is required to take advantage of Lubrication Management functionality. In addition, your system must contain the basic Meridium APM system architecture.

After you have installed and configured the basic system architecture, you will need to perform some configuration tasks specifically for the Lubrication Management feature.

About Routes and Lubrication Requirements

In most manufacturing facilities, some work is performed at regular intervals to ensure that equipment items function properly and that safety measures are maintained. For example, when a shift starts or ends, a series of safety checks must be made to ensure the rotating equipment will function properly. Most likely, one person will perform work at multiple checkpoints to maintain efficiency.

Using Meridium APM Lubrication Management, you can define a series of checkpoints as a single *Route*, where the Route represents the checkpoints that should logically be performed in succession by the same person. You can define as many Routes as you need to accommodate the varied maintenance schedules of the equipment and locations in your facility.

In Meridium APM, a Route is represented by a Route record that stores the description and status of the Route (i.e., active versus inactive). Route records are linked to Lubrication Requirement records, which define the individual checkpoints that should be performed along the Route.

A Lubrication Requirement record stores information such as the type of checkpoint, the lubricant and method of applying it that should be used at that checkpoint, and the frequency by which the checkpoint should be completed. A Lubrication Requirement record is linked to a Route record and an Equipment or Functional Location record.

To understand how a Route works, consider the following example. As part of your yearly maintenance routine at your house, you might inspect various door hinges that require lubrication. Because these lubrication checks make sense to perform in succession (i.e., they require the same tools) by the same person, they can be grouped into the same Route.

To track the work using Meridium APM Lubrication Management, you could create a Route record and link it to multiple Lubrication Requirement records that dictate the hinge checks that should be performed along that Route. At each checkpoint, you would enter a reading value.

In the following image, you can see a Hinge Maintenance Route for a home that contains four checkpoints, which means that the Route record is linked to four Lubrication Requirement records and an Equipment record (i.e., hinge). Two of the checkpoints are at different doors in the home and the other two are at a refrigerator door and a cabinet door. You can also see that the checkpoints are numbered according to the sequence in which they should be completed, which is based on the layout of the items that need to be checked.

Hinge Maintenance
Route
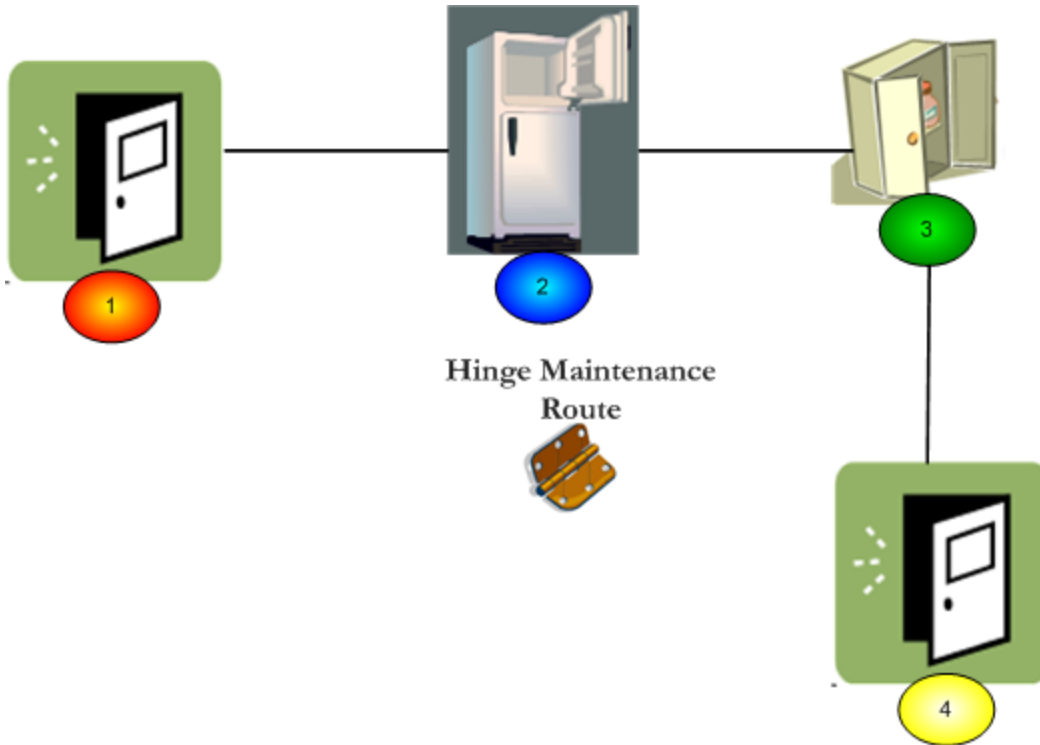
For each checkpoint along the Route, you would need record the action taken. For example, at Checkpoint 1, which is associated at an entry door, you might indicate that you applied the petroleum-based lubricant to the hinges. At Checkpoint 2, which is located at the refrigerator door, you might indicate that you applied the appropriate silicone spray lubricant, and so on.

After all checkpoints have been completed and an action has been recorded, the Route is considered *complete* until the checkpoints need to be completed again.

Lubrication Management Data Model

Before you begin using Lubrication Management in the Meridium APM Framework application, you must decide on the Equipment and Functional Location records for which you want to record readings. Via the Configuration Manager application, you must relate the Equipment or Functional Location family to the Lubrication Requirement family through the Has Checkpoint relationship. If you want to create Recommendation records based upon your findings, you will also need to relate the same family to the Lubrication Management Recommendation family through the Has Recommendations relationship. Refer to the following Lubrication Management data model for more information.
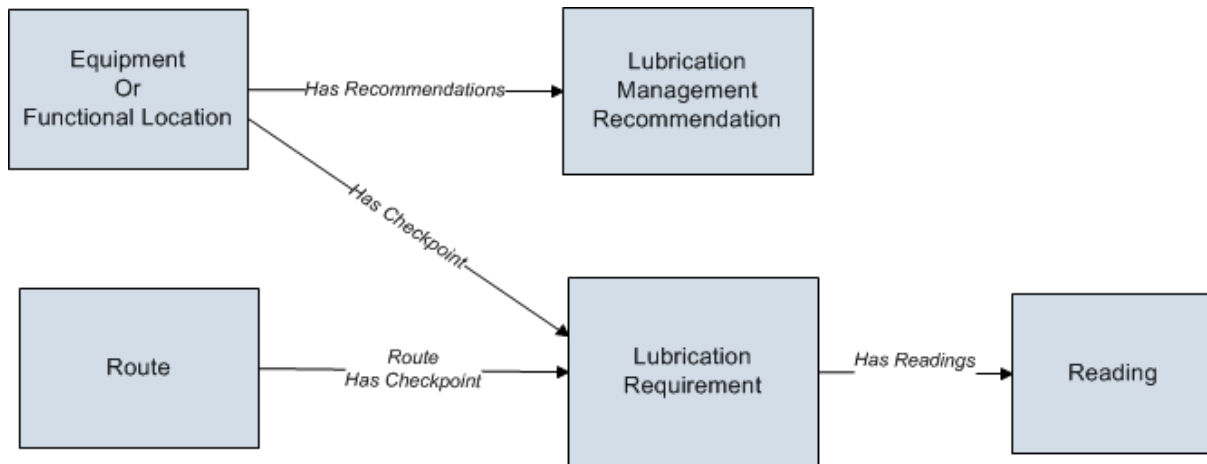
> Note: The Lubrication Requirement Template family and the Lubricant family are not included in this image because they are not related to any other families in the Lubrication Management data model.

The following relationship definitions are configured in the baseline database:

- The Route family is related to the Lubrication Requirement family through the Route Has Checkpoint relationship.
- The Lubrication Requirement family is related to the Reading family through the Has Readings relationship.

Accessing the Lubrication Management Start Page

The **Lubrication Management Start Page** provides access to the features associated with Lubrication Management. To access ALL the features associated with Lubrication Management, you must be a member of the Lubrication Management *Administrator* Security Group. Members of the Lubrication Management Security *User* Security Group will have view only privileges to Lubrication Management, meaning that if members of this Security Group try to modify content in Lubrication Management, a message will appear, indicating that the user has insufficient privileges to perform the task.

To access the Lubrication Management Start Page:

- On the Meridium APM Framework main menu, click **Go To**, point to **APM Foundation**, and then click **Lubrication Management**.

  The **Lubrication Management Start Page** appears.
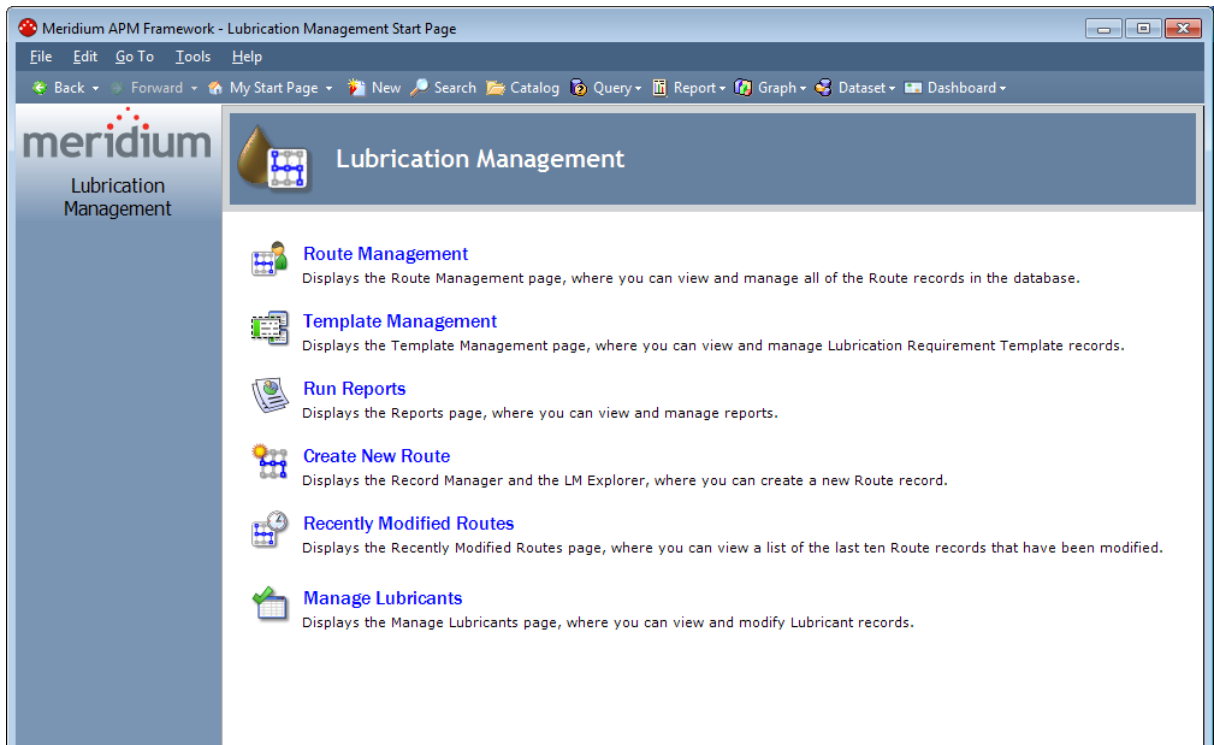
Aspects of the Lubrication Management Start Page

The **Lubrication Management Start Page** displays the following links, which let you access features in Lubrication Management:

- **Route Management:** Displays the [Lubrication Management Route Management page](#), where you can view and manage all Route records in the database.

- **Template Management:** Displays the [Lubrication Management Template Management page](#), where you can view and manage Lubrication Requirement Template records.

- **Run Reports:** Displays the [Lubrication Management Reports page](#), where you can view and manage reports.

- **Create New Route:** Displays the Record Manager with the [LM Explorer pane](#), where you can create a new Route record.

- **Recently Modified Routes:** Displays the [Lubrication Management Recently Modified Routes page](#), where you can view a list of the last ten Route records that have been modified.

- **Manage Lubricants: Displays the [Lubrication Management Manage Lubricants page](#), where you can view and modify Lubricant records.**

First-Time Deployment Workflow

Deploying and configuring Lubrication Management for the first time includes completing multiple steps, which are outlined in the table in this topic. The steps in this section of the documentation provide all the information that you need to deploy Lubrication Management on top of the basic Meridium APM system architecture.

Whether a step is required or optional is indicated in the **Required/Optional** cell. Steps are marked as *Required* if you must perform the step to take advantage of Lubrication Management functionality.

The person responsible for completing each step may vary within your organization. We recommend, however, that the steps be performed in relatively the same order in which they are listed in the table.

Step	Task	Required/Optional	Notes
1	Configure the Has Checkpoint Relationship via the Configuration Manager application.	Required	None
2	Configure the Has Recommendations relationship via the Configuration Manager application.	Required	None
3	Via the Configuration Manager application, modify the following family code items so that Lubrication Requirement records can be linked to Equipment and Functional Location records: • Lubrication Requirement • Has Checkpoint • Lubrication Management Recommendation • Has Recommendations	Required	None

Step	Task	Required/Optional	Notes
4	Manage Lubrication Management Template mappings if you added fields to the Lubrication Management Template family via the Configuration Manager application.	Optional	This step is necessary only if you have added fields to the Lubrication Management Template family.

IMPORTANT: In addition to these tasks, after you relate the Equipment and Functional Location families to the Lubrication Requirement family (using the Has Checkpoint relationship) and the Lubrication Management Recommendation family (using the Has Recommendations relationship), you should compile the database and reset IIS on the Meridium APM Application Server.

Upgrade or Update Lubrication Management to 3.6.1.1.0

The following tables list the steps that are required to update or upgrade Lubrication Management to 3.6.1.1.0. These steps assume that you have completed the steps for upgrading the basic Meridium APM system architecture.

Update from version V3.6.1.0.0

This module will be updated to 3.6.1.1.0 automatically when you update the components in the basic Meridium APM system architecture. No additional steps are required.

Upgrade from any version V3.6.0.0.0 through V3.6.0.12.3

Lubrication Management will be upgraded and configured for 3.6.1.1.0 automatically when you upgrade the components in the basic Meridium APM system architecture. No additional steps are required.

Upgrade from any version V3.5.1.0.0 through V3.5.1.12.0

Lubrication Management will be upgraded and configured for 3.6.1.1.0 automatically when you upgrade the components in the basic Meridium APM system architecture. No additional steps are required.

Upgrade from any version V3.5.0 SP1 LP through V3.5.0.1.9.0

Lubrication Management will be upgraded and configured for 3.6.1.1.0 automatically when you upgrade the components in the basic Meridium APM system architecture. No additional steps are required.

Upgrade from any version V3.5.0 through V3.5.0.0.7.1

Lubrication Management will be upgraded and configured for 3.6.1.1.0 automatically when you upgrade the components in the basic Meridium APM system architecture. No additional steps are required.

Upgrade from any version V3.4.5 through V3.4.5.0.1.4

Lubrication Management will be upgraded and configured for 3.6.1.1.0 automatically when you upgrade the components in the basic Meridium APM system architecture. No additional steps are required.

Lubrication Management Security

The following Security Groups are provided as part of the baseline Lubrication Management product:

- MI Lubrication Management Administrator
- MI Lubrication Management User

These groups support the users who will configure Lubrication Management in the Meridium APM Framework application. All of these groups have privileges assigned to them by default. The baseline privileges are summarized in the following table.

Family	MI Lubrication Management Administrator	MI Lubrication Management User
Lubrication Requirement	View, Update, Insert, Delete	View
Lubrication Requirement Template	View, Update, Insert, Delete	View
Reading	View, Update, Insert, Delete	View,Update, Insert, Delete
Route	View, Update, Insert, Delete	View
Lubrication Management Recommendation	View, Update, Insert, Delete	View, Update, Insert, Delete
Lubricant	View, Update, Insert, Delete	View
Reference Document	View, Update, Insert, Delete	View
Has Checkpoint	View, Update, Insert, Delete	View
Has Readings	View, Update, Insert, Delete	View, Update, Insert, Delete
Has Recommendations	View, Update, Insert, Delete	View, Update, Insert, Delete
Has Reference Documents	View, Update, Insert, Delete	View
Route Has Checkpoint	View, Update, Insert, Delete	View

Based on the default security privileges, users who should be able to configure Lubrication Management in the Meridium APM Framework application should be assigned to the MI Lubrication Management Administrator Security Group.

Users who should be able to access Lubrication Management to view Lubrication Management data after it has been created should be assigned to the Lubrication Management Security User group.

Configuring the Has Checkpoint Relationship

The Has Checkpoint relationship is used to link Lubrication Requirement records to Equipment or Functional Location records. Because no relationship definitions are provided for this family, however, you will need to configure the following definition for the families that you want to use with Lubrication Management:

- **Predecessor:** Equipment or Functional Location family
- **Predecessor Cardinality:** Zero or One
- **Successor:** Lubrication Requirement
- **Successor Cardinality:**Zero or Many

Configuring the Has Recommendations Relationship

The Has Recommendations relationship is used to link Lubrication Management Recommendation records to Equipment or Functional Location records. Because no relationship definitions are provided for this purpose, however, you will need to configure the following definition for each Equipment or Functional Location family that you want to use with Lubrication Management:

- **Predecessor:** Equipment or Functional Location family
- **Predecessor Cardinality:** Zero or One
- **Successor:** Lubrication Management Recommendation
- **Successor Cardinality:** Zero or Many

Why Do I Need to Modify Family Code Items?

Out-of-the-box, a Lubrication Requirement record will not be linked automatically to an Equipment or Functional Location record after you save the Lubrication Requirement record. Likewise, a Lubrication Management Recommendation record will not be linked automatically to an Equipment or Functional Location record after a Lubrication Requirement Recommendation record is saved.

If, however, you modify the family code item for the following families, Lubrication Requirement and Lubrication Management Recommendation records that contain a valid Asset ID in their Asset ID fields will be linked to the associated record when you save a record in that family.

- [Lubrication Requirement](#)
- [Has Checkpoint](#)
- [Lubrication Management Recommendation](#)
- [Has Recommendations](#)

In addition, if you modify the Lubrication Requirement family code item, after you specify a valid Asset ID in the **Asset ID** cell of a Lubrication Requirement record and save the record, the **Asset Description** cell of that Lubrication Requirement record will be populated automatically.

Modifying the Lubrication Requirement Family Code Item

To modify the Lubrication Requirement family code item:

1. On the Configuration Manager main window, on the **Entity Family** tab, select the **Lubrication Requirement** family.

2. In the **Tasks** section, click the **Manage Family Business Rules** link.

   The project appears in the **Meridium APM Rules Editor** (VSTA).

3. In the **Project Explorer** pane, expand **MI_LUBR_REQ**, double-click the **MI_LUBR_REQ** code item.

   The content of the code item appears in the main display area.

4. Within the **MI_LUBR_REQ** class, locate the text **MyBase.New(record)**.

```
<MetadataFamily()> _
Public Class MI_LUBR_REQ
    Inherits Baseline.MI_LUBR_REQ.MI_LUBR_REQ

    Public Sub New(ByVal record As Meridium.Core.DataManager.DataRecord)
        MyBase.New(record)

    End Sub
End Class
```

5. Place your cursor after the text **(record)**, and press ENTER.

6. Type the following:

   ```
   MyBase._Asset_FamilyID = "[Family ID]"

   MyBase._AssetID_FieldID = "[Asset ID Field ID]"

   MyBase._AssetDesc_FieldID = "[Asset Description Field ID]"
   ```

   ...where:

   - **[Family ID]** is the ID of the Equipment or Functional Location family to which you related the Lubrication Requirement family through the Has Checkpoint relationship.

   - **[Asset ID Field ID]** is the ID of the Asset ID field in the family that you specified with the **[Family ID]** value. For a link to be created between the Equipment or Functional Location record and a Lubrication Requirement record, when users create a Lubrication Requirement record, they must type in the Asset ID field a value that is stored in the field that you specify with the **[Asset ID Field ID]** value.

- **[Asset Description Field ID]** is the ID of the Asset Description field in the family that you specified with the **[Family ID]** value. If you specify the Asset ID field ID, after a user saves a Lubrication Requirement record that contains a valid Asset ID, the Asset Description field of that Lubrication Requirement record will be populated automatically with the value stored in the field that you specify with the **[Asset Description Field ID]** value.

For example, if the following is true:

- The Equipment family is related to the Lubrication Requirement family through the Has Checkpoint relationship.
- You want users to type in the **Asset ID** cell on the Lubrication Requirement datasheet the value stored in the Asset ID field of an Equipment record.
- The ID of the Asset ID field in the Equipment family is ASSET_ID_CHR.
- You want the **Asset Description** cell on the Lubrication Requirement datasheet to be populated with the value stored in the Asset Description field of the Equipment record.
- The ID of the Asset Description field in the Equipment family is ASSET_DESC_CHR.

...the code would look like this:

```
<MetadataFamily()>  _
Public Class MI_LUBR_REQ
    Inherits Baseline.MI_LUBR_REQ.MI_LUBR_REQ

    Public Sub New(ByVal record As Meridium.Core.DataManager.DataRecord)
        MyBase.New(record)
        MyBase._Asset_FamilyID = "Asset"
        MyBase._AssetID_FieldID = "ASSET_ID_CHR"
        MyBase._AssetDesc_FieldID = "ASSET_DESC_CHR"
    End Sub
End Class
```

Modifying the Has Checkpoint Family Code Item

You can modify the Has Checkpoint family rules so that the Scan ID field in Measurement Location and Lubrication Requirement records will be populated automatically from fields in Equipment or Functional Location records. For example, if your scan IDs (i.e., barcode IDs or RFID tags) match the value in the Equipment Technical Number field in your Equipment records, you might want to modify the Has Checkpoint family rules to specify that the Equipment Technical Number be populated automatically in the linked Measurement Location record's Scan ID field.

To modify the Has Checkpoint family code item:

1. On the Configuration Manager main window, on the **Relationship Family** tab, select the **Has Checkpoint** family.

2. In the **Tasks** section, click the **Manage Family Business Rules** link.

   The project appears in the **Meridium APM Rules Editor** (VSTA).

3. In the **Project Explorer**pane, double-click the **MIR_HS_MEASLOC** code item.

   The code associated with the code item appears in the main display area on the **Meridium APM Rules Editor** window.

4. Within the **MIR_HS_MEASLOC** class, locate the text **MyBase.New(record)**.

```
<MetadataFamily()>  _
Public Class MIR_HS_MEASLOC
     Inherits Baseline.MIR_HS_MEASLOC.MIR_HS_MEASLOC

     Public Sub New(ByVal record As Meridium.Core.DataManager.DataRecord)
          MyBase.New(record)
     End Sub
End Class
```

5. Place your cursor after the text **(record)**, and press Enter.

6. Type the following code:

```
If CurrentRelationship.Predecessor.Family.ID = "[Family ID]" Then
     MyBase._AssetBarcdID_FieldID = "[Scan ID]"
End If
```

   ...where:

- **[Family ID]** is the ID of the Equipment or Functional Location family.
- **[Scan ID]** is the ID of the Equipment or Functional Location family field that you want to use to map to the barcodes or RFID tag field.

   > **Note:** You must type the IDs using capital letters.

For example, the following code excerpt shows a rule in the Has Checkpoint family code item that has been modified such that the Scan ID field in the Equipment family will be populated automatically with the value in the Equipment Technical Number field in the related Equipment record.

```
<MetadataFamily()> _
Public Class MIR_HS_MEASLOC
    Inherits Baseline.MIR_HS_MEASLOC.MIR_HS_MEASLOC

    Public Sub New(ByVal record As Meridium.Core.DataManager.DataRecord)
        MyBase.New(record)
        If CurrentRelationship.Predecessor.Family.ID = "MI_EQUIP000" Then
            MyBase._AssetBarcdID_FieldID = "MI_EQUIP000_EQUIP_TECH_NBR_C"
        End If
    End Sub
End Class
```

# Modifying the Lubrication Management Recommendation Family Code Item

To modify the Lubrication Management Recommendation family code item:

1. On the Configuration Manager main window, on the **Entity Family** tab, select the **Lubrication Management Recommendation** family.

2. In the **Tasks** section, click the **Manage Family Business Rules** link.

   The projects appears in the **Meridium APM Rules Editor** (VSTA).

3. In the **Project Explorer** pane, expand **MI_LM_REC**, and double-click the **MI_LM_REC** code item.
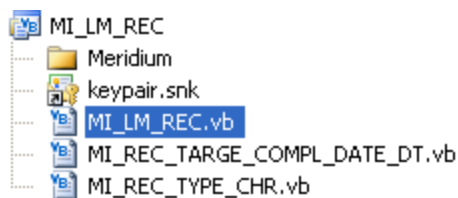
4. Within the **MI_LM_REC** class, locate the text **MyBase.New(record)**.

5. Place your cursor after the text **(record)**, and press ENTER.

6. Type the following:

   MyBase._Asset_FamilyID = "[Family ID]"

   MyBase._AssetID_FieldID = "[Field ID]"

   ...where:

   - **[Family ID]** is the ID of the Equipment or Functional Location family to which you related the Lubrication Management Recommendation family through the Has Recommendations relationship.

   - **[Field ID]** is the ID of the Equipment or Functional Location family field that you want to use to map to the Lubrication Management Recommendation family. This means that for a link to be created between the Equipment or Functional Location record and the Lubrication Management Recommendation record, the value

stored in this field must exist in the **Asset ID** cell on the Lubrication Management Recommendation datasheet when the Recommendation record is created.

> **Note:** You must specify the family ID and field ID you specified when you modified the Lubrication Requirement family code item.

For example, if you want a link to be created between an Equipment record and an Lubrication Management Recommendation record when the value in the **Asset ID** cell on the Lubrication Management Recommendation datasheet is the same as the value in the **Asset ID** cell of an Equipment record, the code would look like this:

```
<MetadataFamily()> _
Public Class MI_LM_REC
    Inherits Baseline.MI_LM_REC.MI_LM_REC

    Public Sub New(ByVal record As Meridium.Core.DataManager.DataRecord)
        MyBase.New(record)
        MyBase._Asset_FamilyID = "Asset"
        MyBase._Asset_FieldID = "Asset"
    End Sub
End Class
```

Modifying the Has Recommendation Family Code Item

To modify the Has Recommendations family code item:

1. On the Configuration Manager main window, on the **Relationship Family** tab, select the **Has Recommendations** family.

2. In the **Tasks** section, click the **Manage Family Business Rules** link.

   The project appears in the **Meridium APM Rules Editor** (VSTA).

3. In the **Project Explorer**pane, double-click the **MI_Has_Recommendations** code item.

   The associated code appears in the main display area of the **Meridium APM Rules Editor**.

4. Within the **MI_Has_Recommendations** class, locate the text **MyBase.New(record)**.

```
<MetadataFamily()> _
Public Class MI_Has_Recommendations
    Inherits Baseline.MI_Has_Recommendations.MI_Has_Recommendations

    Public Sub New(ByVal record As Meridium.Core.DataManager.DataRecord)
        MyBase.New(record)
    End Sub
End Class
```

5. Place your cursor after the text **(record)**, and press ENTER.

6. Type the following:

   MyBase._AssetID_FieldID = "[Field ID]"

   ...where:

   - **[Field ID]** is the ID of the Equipment family field that you want to use to map to the Lubrication Management Recommendation family. This means that for a link to be created between the Equipment record and an Lubrication Management Recommendation record, the value stored in this field is the value that must exist in the **Asset ID** cell on the Lubrication Management Recommendation datasheet when the Lubrication Management Recommendation record is created.

   > **Note:** Make sure this is the same field ID you specified when you [modified the Lubrication Requirement family code item](#).

   For example, if you want a link to be created between an Equipment record and an Lubrication Management Recommendation record when the value in the **Asset ID** cell on the Lubrication Management Recommendation datasheet is the same as

the value in the **Asset ID** cell of an Equipment record, the code would look like this:

```vb
<MetadataFamily()> _
Public Class MI_Has_Recommendations
    Inherits Baseline.MI_Has_Recommendations.MI_Has_Recommendations

    Public Sub New(ByVal record As Meridium.Core.DataManager.DataRecord)
        MyBase.New(record)
        MyBase._AssetID_FieldID = "ASSET_ID_CHR"
    End Sub
End Class
```

Managing Lubrication Requirement Template Mappings

The Lubrication Requirement Template family and the Lubrication Requirement family are provided as part of the baseline Lubrication Management product. If you create a Lubrication Requirement Template record in the Meridium APM Framework application, you can then create a Lubrication Requirement record based on that template. If you do so, all values in Lubrication Requirement Template fields that also exist on the Lubrication Requirement datasheet will be mapped automatically to the new Lubrication Requirement record.

You might find that the Lubrication Requirement Template and Lubrication Requirement datasheets do not contain all fields that your Lubrication Management users need. If so, and you want to add fields so the values from the new Lubrication Requirement Template fields will be mapped to Lubrication Requirement records based on that template, you will need to:

- Create a new Lubrication Requirement Template field.
- Add the new Lubrication Requirement Template field to the Lubrication Requirement Template datasheet.
- Create a new Lubrication Requirement field. Note that we recommend that the field caption of this field be the same as the field caption you defined for the Lubrication Requirement Template field. This will ensure that the text in the field IDs that identifies the fields are the same. *If they are not the same, the values will not be mapped from the Lubrication Requirement Template to the Lubrication Requirement record.*
- Add the new Lubrication Requirement field to the Lubrication Requirement datasheet.
- [Modify the physical tables for both families](#).

About the LM Explorer

The LM Explorer is the configured explorer that you will use to work with Lubrication Management records in the Record Manager. It displays the following records, where the Route record is displayed at the root level:

- Route
- Lubrication Requirement
- Reading
- Reference Document
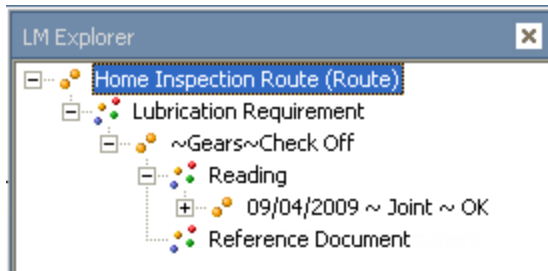
The **LM Explorer** pane will appear in the Record Manager in place of the standard **Record Explorer** pane when you create Route records using the **Create New Route** link on the **Lubrication Management Start Page**.

You can right-click any family node in the record hierarchy and create a record for that family. After you have created and saved a record for a given family, any related families that are configured to appear in the **LM Explorer** pane will be displayed below that family. For example, after you create a Route record and save it, the Lubrication Requirement family node will appear in the record hierarchy.

> **Note:** To create a Reading record, you should use the **Create Reading** link on the **Associated Pages** menu instead of the shortcut menu in the **LM Explorer** pane.

Lubrication Management Associated Pages

The following Associated Page is configured by default for the Lubrication Requirement family:

- **Create Reading:** Displays the **(new Reading)** window, where you can create a Reading record linked to the Measurement Location record.

 Note: To see the underlying URL for this Associated Page, you can use the URL Manager application.
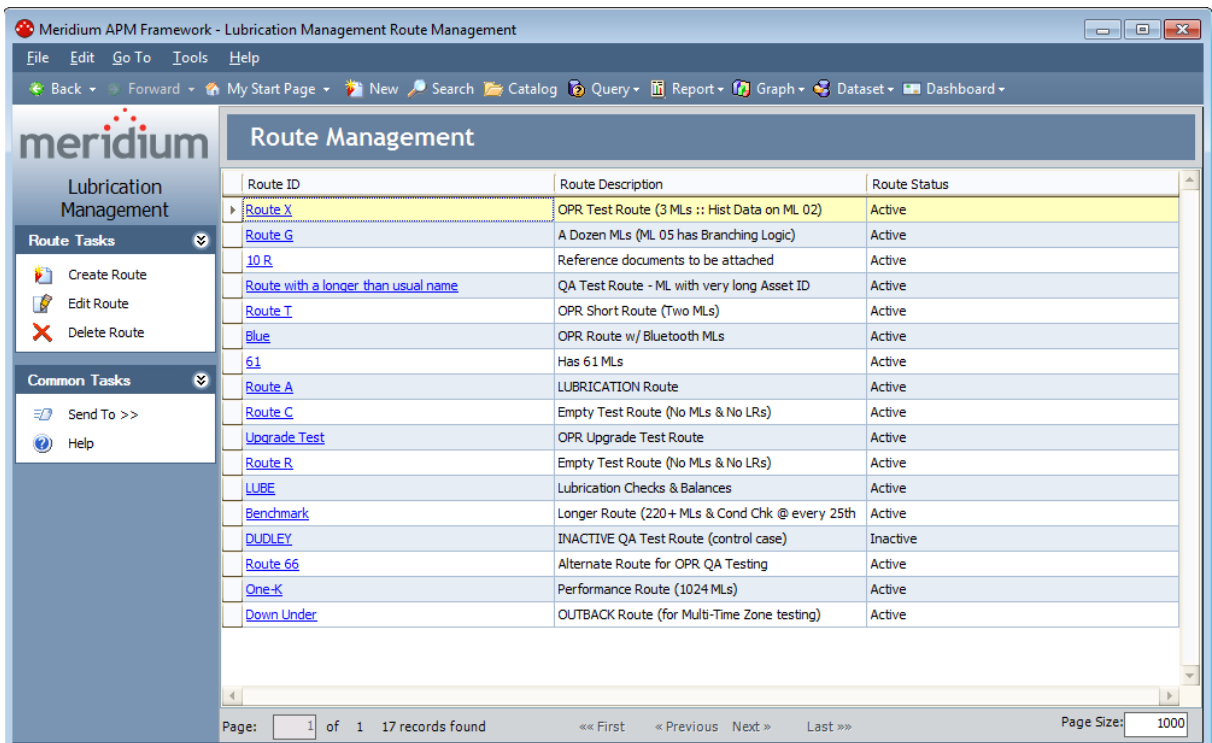
Accessing the Lubrication Management Route Management Page

Meridium APM provides the Route Management query, which is run when you access the **Lubrication Management Route Management** page. On this page, you can view a list of all Route records that exist in the database. You can use this page to view the existing Route records or create new Route records.

To access the Lubrication Management Route Management Page:

- On the **Lubrication Management Start Page**, click the **Route Management** link.

  The **Lubrication Management Route Management page** appears, displaying all existing Route records.

Aspects of the Lubrication Management Route Management Page

The **Lubrication Management Route Management** page displays the following items:

- **Task Menus:** Menus that provide specific functionality. The following task menus are available: **Route Tasks** and **Common Tasks**.
- **Route Management workspace:** The area that provides a list of Route records.

The **Route Management** workspace displays the results of the Route Management query, which returns all Route records that exist in the database. Each row on this page represents one Route record. The columns display the following information for each Route record:

- **Route ID:** The name of the Route. The Route ID appears as a hyperlink, which you can click to open the Route record in the Record Manager.
- **Route Description:** The description of the Route.
- **Route Status:** The status of a Route: Active or Inactive.

Route ID	Route Description	Route Status
Route X	Route X	Active
Route G	Route G	Active

At the bottom of the page, various options (e.g., **First** and **Previous** links) are available to allow you to navigate the results. These options function just like they do in the query results.

Using the **Lubrication Management Route Management** page, you can create a new Route record or modify an existing Route record, if desired.
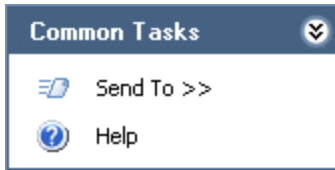
Route Tasks Menu
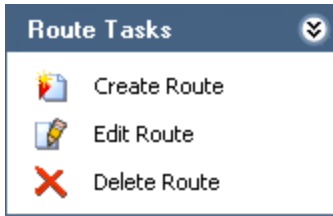
The **Route Tasks** menu on the **Lubrication Management Route Management** page contains the following links:

- **Create Route:** Displays a new Route record in the Record Manager.
- **Edit Route:** Displays the selected Route record in the Record Manager, where you can modify the record and then save your changes.
- **Delete Route:** After asking for confirmation, deletes the selected Route record from the database. Note that you can delete only one Route record at a time using this link. If you select multiple rows, the row with the right arrow indicator represents the Route record that will be deleted.

Common Tasks Menu

The **Common Tasks** menu on the **Lubrication Management Route Management** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), in an email message, or a Home Page.This link is disabled if there are no existing Route records.
- **Help:** Displays the context-sensitive Help topic for the **Lubrication Management Route Management** page.

About Creating Route Records

Before you can create [Lubrication Requirement](#) records that are linked to a Route record, you must create the Route record. Route records help you organize and group Lubrication Requirement records for a given piece of equipment or location. How you group Lubrication Requirement records depends on the needs of your company.

Some equipment may require multiple lubricant types, and some equipment will require the same lubricant. In this way, you would create a Route based on the requirements of the equipment.

For example, a house contains door hinges, which exist in various locations in the house and require multiple types of lubricants, depending on the hinge. A house also contains a furnace motor, which has only one location and requires only one type of lubricant. Hinges may require a silicone spray lubricant or a grease, while a furnace motor will require only a grease. This means that you could create a Route record and link it to Lubrication Requirement records based on:

- Multiple pieces of equipment that require the same lubricant (e.g., grease for a furnace motor and hinges that require grease).
- Multiple pieces of equipment that exists in one location and require different lubricants (e.g., silicone spray and grease for various hinges in the kitchen).
- One type of equipment that exists in multiple locations and requires the same lubricant (e.g., silicone spray for door hinges).
- One piece of equipment that exists in one location and requires one or more lubricants (e.g., grease for multiple components on the furnace motor).

Again, how you configure Route records will vary depending on the needs of your company. The instructions in this documentation provide details on creating a Route record from the **Lubrication Management Start Page**.

Note that this is not the only method that you can use, however. For example, you can also create a Route record by:

- Clicking the **Create Route** link on the [**Route Tasks**](#) menu on the **Lubrication Management Route Management** page.
- Clicking the **New** button on the Meridium APM Framework toolbar. Note that if you use this option, you will see the **Record Explorer** pane instead of the **LM Explorer** pane.

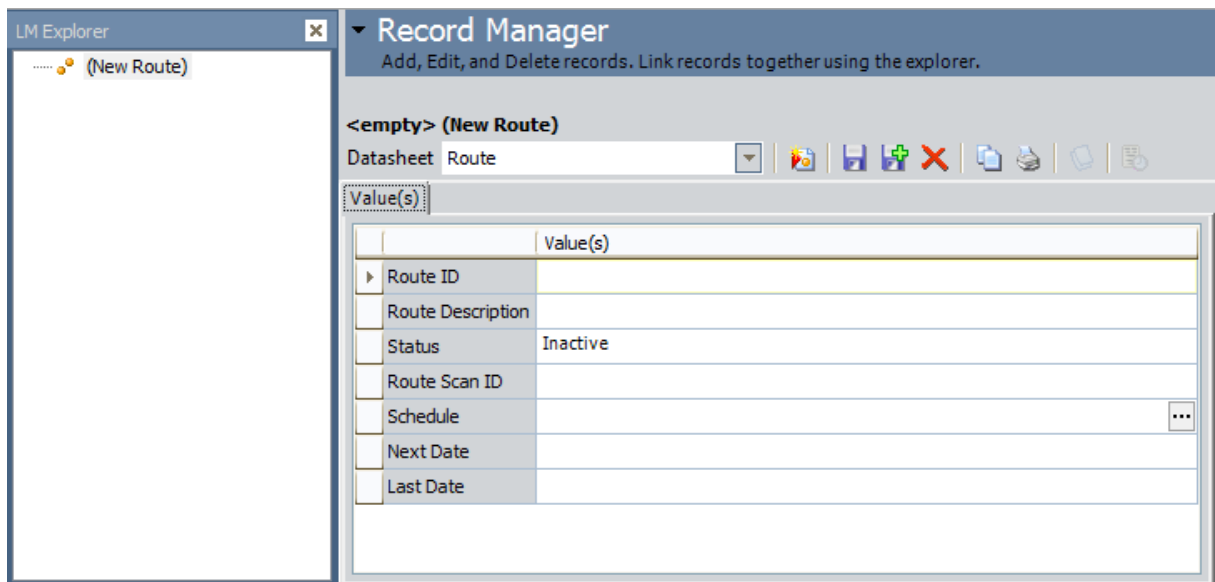# Creating a Route Record from the Lubrication Management Start Page

Before you can create Lubrication Requirement records and link them to a Route record, you must create the Route record.

> **Note:** Only members of the Lubrication Management Administrator Security Group can access the feature described in these instructions. If you are not a member of the Lubrication Management Security Group and you click the **Create New Route** link, an error message will appear, indicating that you have insufficient security privileges.

To create a Route record from the Lubrication Management Start Page:

1. On the **Lubrication Management Start Page**, click the **Create New Route** link.

   The new Route record appears in the Record Manager.

> **Note:** Only members of the Lubrication Management Administrator Security Group can access this feature. If you are not a member of the Lubrication Management Administrator Security Group and you click this link, an error message will appear, indicating that you have insufficient security privileges.

3. In the **Route ID** cell, type a unique ID for the Route.

4. In the **Route Description** cell, type a description of the Route.

5. In the **Status** list, select **Active** or **Inactive**. Note that **Active** is selected by default.

6. On the **Common Tasks** menu, click the **Save** link.

   The Route record is saved.

Note: The fields *Schedule*, *Next Date*, and *Last Date* in the Route record are not used in the Lubrication Management module.

Modifying an Existing Route Record

After a Route record has been created and saved, you can access the Route record and modify its content at any time. After a Route record has been modified, you can view that Route record on the **Lubrication Management Recently Modified Routes** page.

> **Note:** Modifying the contents of a Route record will not affect the Lubrication Requirement records that are linked to that Route record.

To modify an existing Route record:

1. On the **Lubrication Management Start Page**, click the **Route Management** link.

   The **Lubrication Management Route Management** page appears, displaying all the Route records that exist in the database.

2. Select the row containing the Route record that you want to modify, and on the **Route Tasks** menu, click the **Edit Route** link.

   The Route record appears in the Record Manager.

3. Modify the Route record as desired.

4. On the **Common Tasks** menu, click the **Save** link.

   Your changes are saved to the database, and the Route record can now be viewed on the **Lubrication Requirement Recently Modified Routes page**.

Accessing the List of Recently Modified Route Records

On the **Lubrication Management Recently Modified Routes** page, you can view a list of the last ten Route records that have been modified and the Security User who last modified the Route record.

To access the Lubrication Management Recently Modified Routes page:

- On the **Lubrication Requirement Start Page**, click the **Recently Modified Routes** link.

  The **Lubrication Management Recently Modified Routes** page appears, displaying the last ten Route records that were modified.
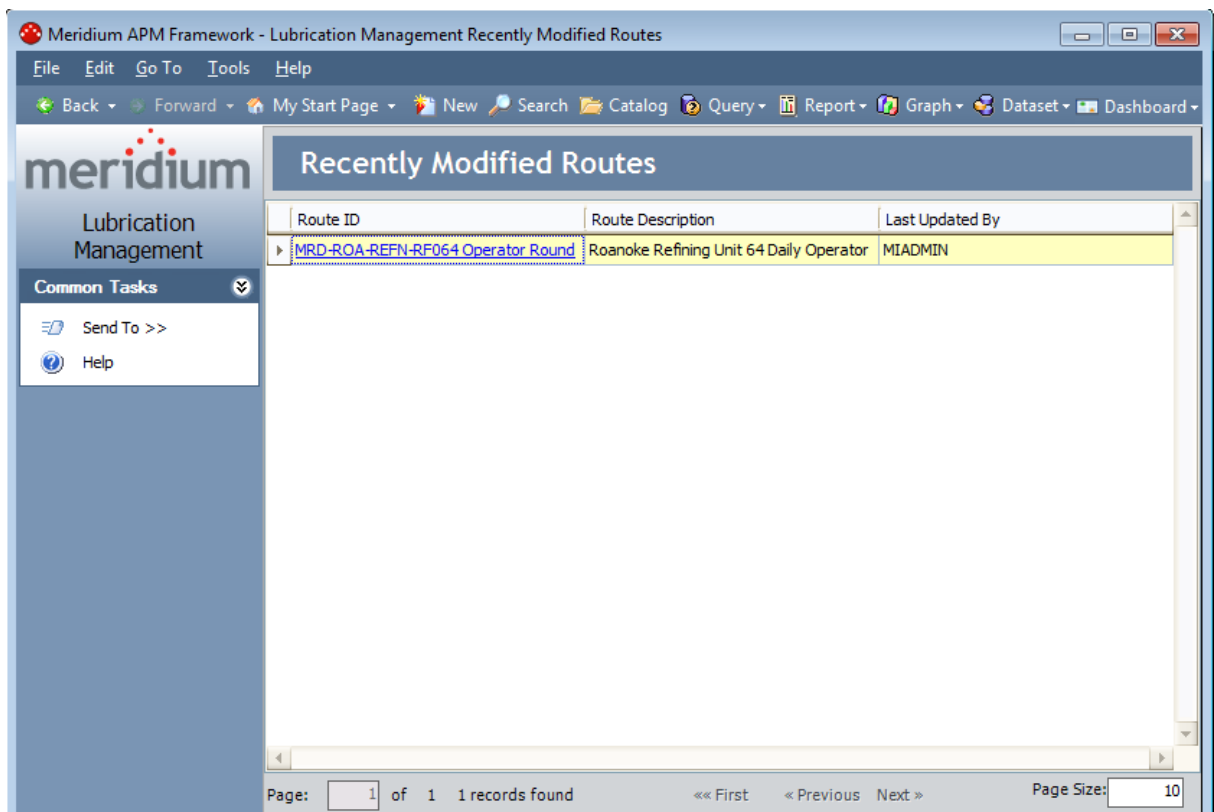
Aspects of the Lubrication Management Recently Modified Routes Page

The **Lubrication Management Recently Modified Routes** page contains the following items:

- **Common Tasks menu:** Provides access to common functionality.
- **Recently Modified Routes workspace:** Displays a list of Route records that were recently modified.

The **Recently Modified Routes** workspace displays the last ten Route records that have been modified. Each row in the results represents one Route record, and the columns contain the following information:

- **Route ID:** The name of the Route. The ID appears as a hyperlink, which you can click to open the Route record in the Record Manager.
- **Description:** The description of the Route.
- **Last Updated By:** The name of the Security User who last updated the Route record.

> **Note:** The maximum number of records that can be displayed on the **Lubrication Management Recently Modified Routes** page is 10. If you change the page size to a number *greater than* 10, only up to 10 records will be displayed.

Using the **Lubrication Management Recently Modified Routes** page, you can access an existing Route record and modify it.

Common Tasks Menu
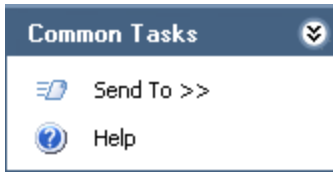
The **Common Tasks** menu on the **Lubrication Management Recently Modified Routes** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), in an email message, or a Home Page.This link is disabled if no Route records are displayed.

- **Help:** Displays the context-sensitive Help topic for the **Lubrication Management Recently Modified Routes** page.

About Configuring Lubricants that are Associated with a Checkpoint

Lubricant records serve as a means for organizing all the lubricants that are used by your company. A Lubricant record stores the following information about a lubricant:

- **Lubricant Manufacturer:** The company that manufactures the lubricant (i.e., the brand).
- **Lubricant:** The type of lubricant (e.g., silicone).
- **Method:** The method that is used to apply the lubricant (e.g., spray).

When you create a Lubricant record, the values that you enter in these fields will be used to populate the corresponding lists on the Lubrication Requirement datasheet, where you can select the desired values from a list.

Accessing the Lubrication Management Manage Lubricants Page

On the **Lubrication Management Manage Lubricants** page, you can view and modify Lubricant records.

To access the Lubrication Management Manage Lubricants page:

- On the**Lubrication Management Start Page**, click the **Manage Lubricants** link.

  The **Lubrication Management Manage Lubricants** page appears, displaying all existing Lubricant records in the Bulk Data Form.
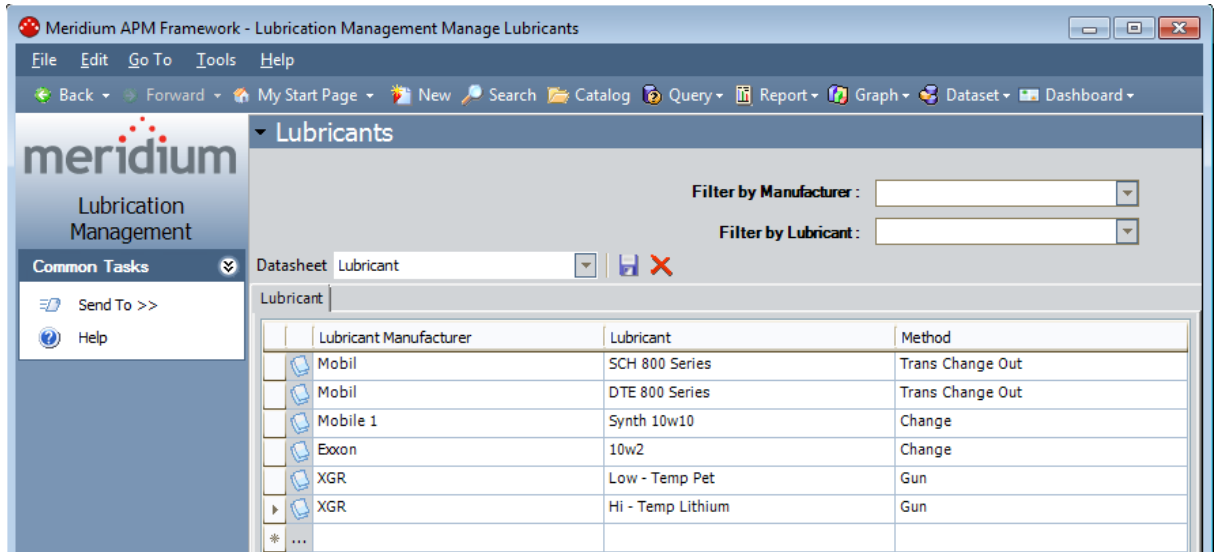
Aspects of the Lubrication Management Manage Lubricants Page

The **Lubrication Management Manage Lubricants** page displays all existing Lubricant records. From this page, you can modify, create, or delete Lubricant records.

The **Lubrication Management Manage Lubricants** page contains the following items:

- **Common Tasks menu:** Provides access to common functionality.
- **Lubricants workspace:** Displays all Lubricant records that exist in the database.

The **Lubricants** workspace contains two filtering lists:

- **Filter by Manufacturer:** Displays a list of all values in the Lubricant Manufacturer field in existing Lubricant records.
- **Filter by Lubricant:** Displays a list of all values in the Lubricant field in existing Lubricant records whose Lubricant Manufacturer value corresponds with your selection in the **Filter by Manufacturer** list. This list is enabled only when a value is selected in the **Filter by Manufacturer** list.

You may find it useful to filter the list to display only the Lubricant records with a specific Manufacturer or a combination of Manufacturer and Lubricant.

Each row in the **Lubricants** workspace represents one Lubricant record and displays the value in the Lubricant Manufacturer, Lubricant, and Method fields in that record.

Using the **Lubrication Management Manage Lubricants** page, you can create new Lubricant records, modify existing Lubricant record, or delete Lubricant records.
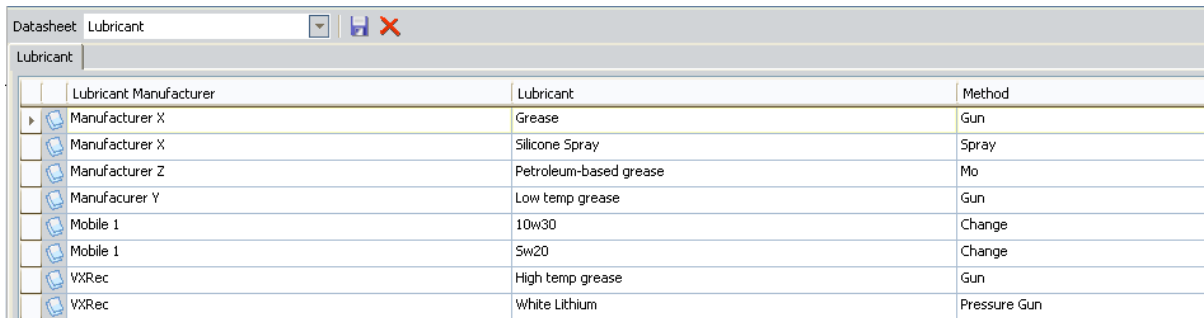
Common Tasks Menu
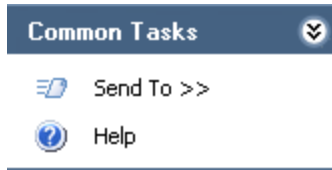
The **Common Tasks** menu on the **Lubrication Management Manage Lubricants** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), in an email message, or a Home Page.

- **Help:** Displays the context-sensitive Help topic for the **Lubrication Management Manage Lubricants** page.

Lubricants and the Lubrication Requirement Datasheet: An Example

To fully understand how Lubricant records work in Lubrication Management, you must understand how the values that you type in a Lubricant record correspond to fields on the Lubrication Requirement datasheet. The connection is best understood through an example.

Suppose your database contains Lubricant records that are configured as shown in the following image, which displays the records in the Bulk Data Form:

	Lubricant Manufacturer	Lubricant	Method
	Manufacturer X	Grease	Gun
	Manufacturer X	Silicone Spray	Spray
	Manufacturer Z	Petroleum-based grease	Mo
	Manufacurer Y	Low temp grease	Gun
	Mobile 1	10w30	Change
	Mobile 1	Sw20	Change
	VXRec	High temp grease	Gun
	VXRec	White Lithium	Pressure Gun

You can see that for Manufacturer X, the lubricants are Grease and Silicone Spray, and the Methods are Gun and Spray.

If you create a Lubrication Requirement record and select *Gun* in the **Method** list and *Manufacturer X* in the **Lubricant Manufacturer** list, you can select *Grease* or *Silicone spray* from the **Lubricant** list.

Datasheet	Lubrication Requirement			Value(s)
Identification				
	Template			
	Asset ID			
	Asset Description			
	Description			
	LR Type			Check Off
	Unit of Measure			
	Method			Gun
	Lubricant Manufacturer			Manufacturer X
	Lubricant			
	Status			Grease
	Schedule			Silicone Spray
	Last Date			
	Next Date			
	Sequence			
	Component			
	Number of Points			
	Capacity			

Filtering Lubricant Records

On the **Lubrication Management Manage Lubricants** page, you can filter the list for easier access to the desired records. You can filter the values in the Lubricant Manufacturer field or a combination of the Lubricant Manufacturer and Lubricant fields.

To filter the list on the Lubrication Management Manage Lubricants page:

1. In the **Lubricants** workspace, in the **Filter by Manufacturer** list, select a manufacturer on which you want to filter the Lubricant records. This list contains all unique values in the Lubricant Manufacturer field in existing Lubricant records.

   The Lubricant records are filtered based upon your selection. For example, consider the following Lubricant records.

Continuing with the example, if you selected *Chevron* in the **Filter by Manufacturer** list, the Lubricant records would be filtered according to your selection, as shown in the following image.
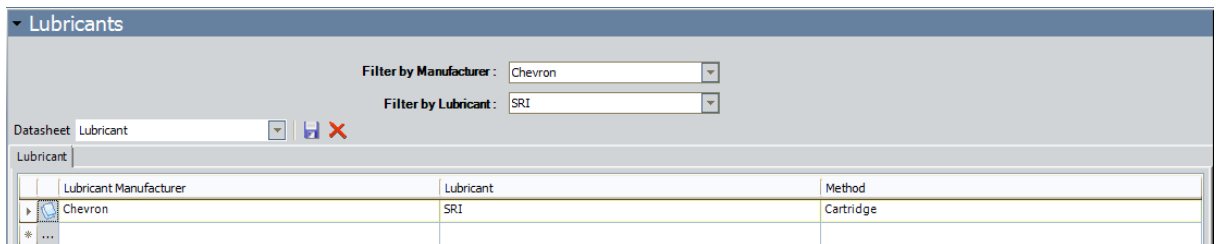
2. If you want to filter the records further (by lubricant), in the **Lubricants** workspace, in the **Filter by Lubricant** list, select a lubricant on which you want to filter Lubricant records. This list contains all unique values in the Lubricant field in Lubricant records that correspond with your selection in the **Filter by Manufacturer** list.

   The Lubricant records are filtered based upon your selection.

   Continuing with the example, if you selected *SRI* in the *Filter by Lubricant* list, the Lubricant records would be filtered according to your selection, as shown in the following image.

About Creating Lubricant Records

You can create Lubricant records in two ways:

- [Create the first Lubricant record](#).
- [Create subsequent Lubricant records](#).

Creating the First Lubricant Record

To create the first Lubricant record:

1. On the **Lubrication Management Start Page**, click the **Manage Lubricants** link.

   The **Lubrication Management Manage Lubricants** page appears.

2. In the **Lubricants** workspace, in the first empty row at the bottom of the grid, in the **Lubricant Manufacturer** list, type the name of the manufacturer.

3. In the same row, in the **Lubricant** cell, type the lubricant that is associated with the manufacturer (e.g., grease).

4. In the same row, in the **Method** cell, type the method that should be used with this lubricant. This information will indicate to the person who is responsible for completing the associated checkpoint how to apply the lubricant.

5. Click the **Save** button.

   The Lubricant record is saved.

Creating Subsequent Lubricant Records

The following instructions explain how to use the **Lubrication Management Manage Lubricants** page to create subsequent Lubricant records with a specific manufacturer. You can also use these instructions to modify values in an existing Lubricant record.

To create subsequent allowable values for a specific manufacturer:

1. On the **Lubrication Management Start Page**, click the **Manage Lubricants** link.

   The **Lubrication Management Manage Lubricants** page appears, displaying all existing Lubricant records in Bulk Data Form.

   > Œ**Hint:** If desired, you can [filter these records](#) by manufacturer to see all the records that exist for a specific manufacturer.

2. To add a new Lubricant record with the same manufacturer as one that already exists, in the first blank row at the bottom of the grid, in the **Lubricant Manufacturer** cell, click the ▾ button, and select a value from the list.

   The list in the **Lubricant** cell in that row is populated automatically with the values that exist in Lubricant records whose Lubricant Manufacturer value corresponds with your selection in the **Lubrication Manufacturer** cell.

3. In the same row, in the **Lubricant** cell, type a value or click the ▾ button, and select a value from the list.

4. In the same row, in the **Method** cell, type a value or click the ▾ button, and select a value from the list.

5. Continue entering information in each row as desired.

6. Click the 💾 icon.

   The new Lubricant records are saved to the database.

Options for Creating Lubrication Requirement Records

To create a Lubrication Requirement record, you can:

- [Create it from scratch](#).

  -or-

- [Create it from a template](#).

Accessing the Lubrication Management Template Management Page

Meridium APM provides the Template Management query, which is run when you access the Lubrication Management Template Management page. On this page, you can view a list of all Lubrication Requirement Template records that exist in the database. You can use this page to view the existing Lubrication Requirement Template records or create new Lubrication Requirement Template records.

To access the Lubrication Management Template Management Page:

- On the **Lubrication Management Start Page**, click the **Template Management** link.

  The **Lubrication Management Template Management** page appears, displaying all existing Lubrication Management Template records.
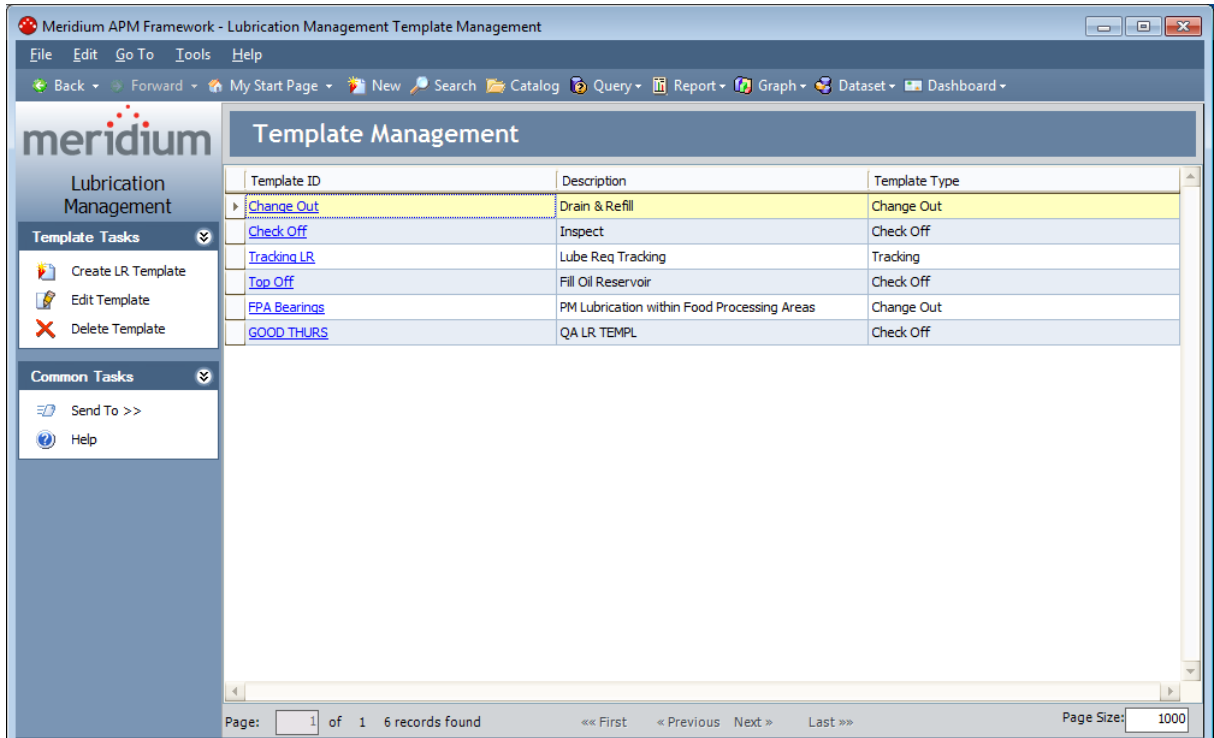
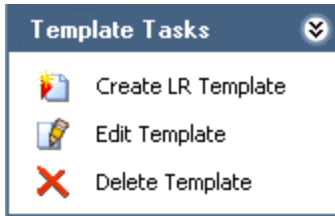# Aspects of the Lubrication Management Template Management Page

The **Lubrication Management Template Management** page contains the following items:

- **Task menus:** Provide specific functionality. The following task menus are available: **Template Tasks** and **Common Tasks**.
- **Template Management workspace:** Displays a list of all existing Lubrication Requirement Template records.

Using the **Lubrication Management Template Management page**, you can perform the following tasks:

- View the schedule associated with each Lubrication Requirement Template record.
- Create new Lubrication Requirement Template records.
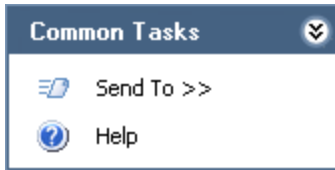- Modify existing Lubrication Requirement Template records.

Template Tasks Menu

The **Template Tasks** menu on the **Lubrication Management Template Management** page contains the following links:

- **Create LR Template:** Displays a new Lubrication Requirement Template record in the Record Manager.

- **Edit Template:** Displays the selected Lubrication Requirement Template record in the Record Manager, where you can modify the record and then save your changes.

- **Delete Template:** After asking for confirmation, deletes the selected Lubrication Requirement Template record from the database. Note that you can delete only one Lubrication Requirement Template record at a time using this link. If you select multiple rows, the row with the right arrow indicator represents the record that will be deleted.

Common Tasks Menu

The **Common Tasks** menu on the **Lubrication Management Template Management** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), in an email message, or a Home Page.This link is disabled if no Lubrication Requirement Template records are displayed.

- **Help:** Displays the context-sensitive Help topic for the **Lubrication Management Template Management** page.

Creating a Lubrication Requirement Template Record

If desired, you can create a Lubrication Requirement Template record that you can then use to create Lubrication Requirement records. By default, the Lubrication Requirement Template datasheet contains almost all the fields that appear on the Lubrication Requirement datasheet. After you save a Lubrication Requirement Template record, when you create a Lubrication Requirement record based on the template, all values in the template will be copied to the Lubrication Requirement record.

To create a Lubrication Requirement Template record:

1. On the **Lubrication Requirement Template Management**page, on the **Template Tasks** menu, click the **Create LR Template** link.

   A new Lubrication Requirement Template record appears in the Record Manager.

2. Complete the fields as desired. Note that the Template ID field and the LR Type field are required.

The Template ID field can contain any value you choose. The value you type will appear in the **Template** cell on the Lubrication Requirement datasheet when you create a new Lubrication Requirement record, so you will want to type a value that is meaningful to users who will be creating Lubrication Requirement records from this template.

> **Note:** If the Template ID contains an apostrophe, an error message appears when you create a Lubrication Requirement record from the Lubrication Requirement Template record.

If you select **Check Off** in the **LR Type** list, the Unit of Measure field will be disabled.

3. When you have completed the fields, on the **Common Tasks** menu, click the **Save** link.

   The Lubrication Requirement Template record is saved. You can now create a Lubrication Requirement record from this template.

Creating a Lubrication Requirement Record from Scratch

To create a Lubrication Requirement record from scratch:

1. On the **Lubrication Management Route Management**page, click the hyperlinked Route ID of the Route record to which you want to link Lubrication Requirement records.

   The Route record is displayed in the Record Manager.

2. In the **LM Explorer**pane, right-click the Lubrication Requirement family node, and on the shortcut menu, click **Create a new Lubrication Requirement to link to <root record>**, where **<root record>** is the Route ID of the Route record.

   The **(new Lubrication Requirement)** window appears, displaying a blank Lubrication Requirement datasheet.

3. Complete the fields as desired. Note that the LR Type field is required.

   If you select *Check Off* in the **LR Type** cell, the Unit of Measure field will be disabled.

4. Click **OK** to save the record.

   The Lubrication Requirement record appears in the Record Manager.

Creating a Lubrication Requirement Record from a Template

To create a Lubrication Requirement record from a Template:

1. On the **Lubrication Management Route Management** page, click the hyperlinked Route ID of the Route record to which you want to link Lubrication Requirement records.

   The Route record is displayed in the Record Manager.

2. In the **LM Explorer** pane, right-click the Lubrication Requirement family node, and on the shortcut menu, click **Create a new Lubrication Requirement to link to <root record>**, where **<root record>** is the Route ID of the Route record.

   The **(new Lubrication Requirement)** window appears, displaying a blank Lubrication Requirement datasheet.

3. In the **Template** list, select the Lubrication Requirement Template record whose field values you want to use to populate fields in this Lubrication Requirement record.

4. Click another field on the datasheet.

   The remaining fields are populated based on the values in the selected Lubrication Requirement Template record. Note that you can modify the values if desired.

~~Change Out (new Lubrication Requirement)

~~Change Out (new Lubrication Requirement)

Datasheet Lubrication Requirement

Identification

	Value(s)
Template	Change Out
Asset ID	
Asset Description	
Description	Drain & Refill
LR Type	Change Out
Unit of Measure	Liters (LITER)
Method	Change
Lubricant Manufacturer	Exxon
Lubricant	
Status	Active
Schedule	Due every 1 day effective 12/15/2008 12:00:00 AM.
Last Date	
Next Date	4/14/2012
Sequence	
Component	
Number of Points	1
Capacity	4
Capacity Unit of Measure	
Priority	

OK   Cancel

Note: The Lubricant field is not populated with the value in the **Lubricant** cell in the Lubrication Requirement Template record.

5. Complete the remaining fields as desired.

6. Click **OK** to save the record.

The Lubrication Requirement record appears in the Record Manager.

About Defining a Schedule for Lubrication Requirements

In most cases, you will want checkpoints to be completed on a regular basis. For example, you would want to lubricate some bearings hourly or some components daily. To manage these scenarios, you can define a schedule for each Lubrication Requirement.

After you define a schedule in a new Lubrication Requirement record, the Schedule field will contain a description of when the checkpoint should be completed. For example, if the schedule dictates that the checkpoint should be completed daily, the Schedule field might contain the text *Due every 1 day effective 8/8/13 7:00:00:00 AM*.
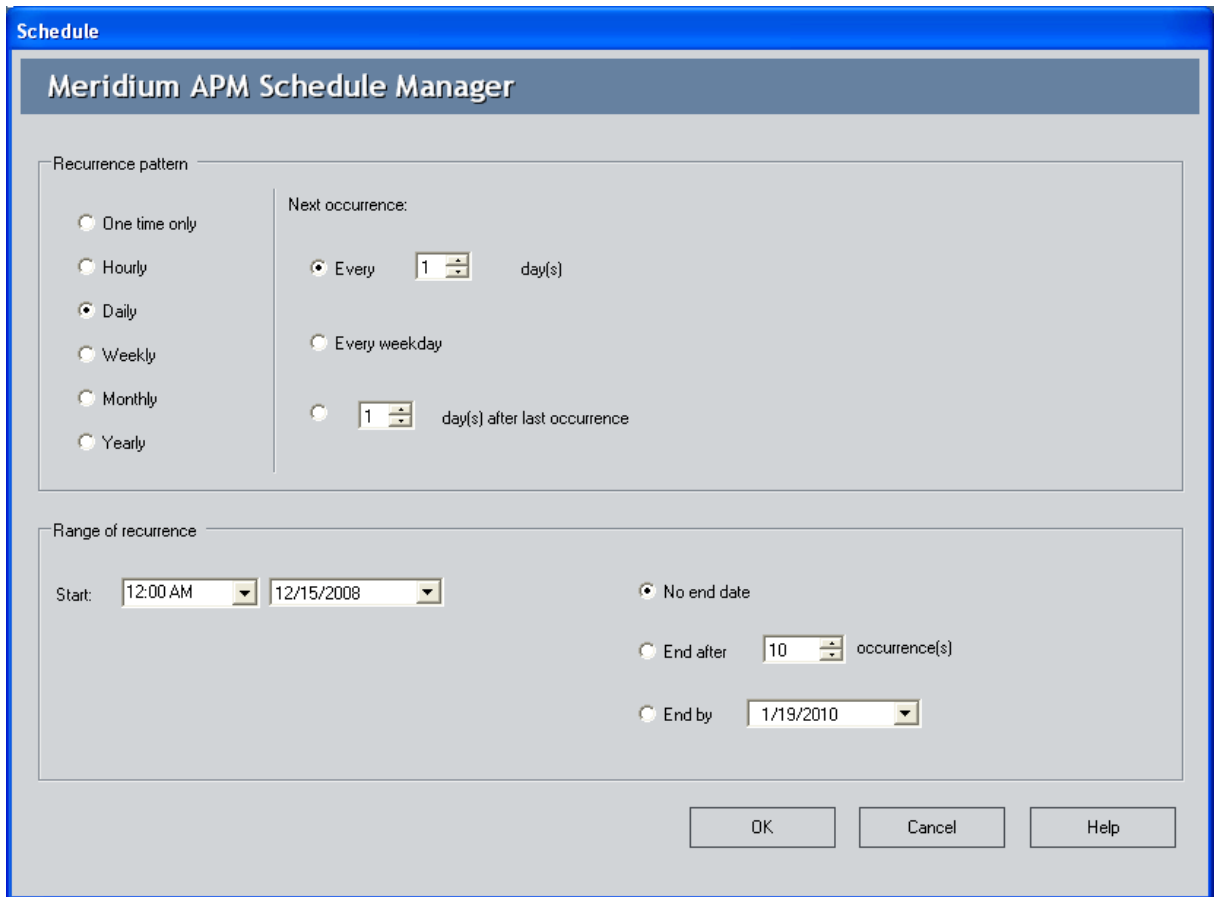
In addition, the value in the Next Date field in that Lubrication Requirement will be updated based on the schedule and the current date. After you link a Reading record to the Lubrication Requirement record, the Next Date value will be updated according to the defined schedule and the last date. You can modify a calculated Next Date value at any time, if desired.

Accessing the Scheduling Feature

To access the scheduling feature:

- On the Lubrication Requirement datasheet, in the **Schedule** cell, click the ⋯ button in the **Schedule** cell.

   The **Schedule** window appears.

About the Schedule Window

The following table lists the schedules by which you can configure an item to be due using the **Schedule** window.

Recurrence Pattern	Schedule Description	Example	Example Selections
One time only	One time only.	June 20, 2007 at 4:00 P.M.	
Hourly	Every **x** number of hours.	Every five hours.	
	x number of hours after the last occurrence.	Five hours after the last occurrence.	
Daily	Every **x** number of days.	Every two days.	
	Every weekday.	Every weekday.	
	x number of days after the last occurrence.	Two days after the last occurrence.	
Weekly	Every **x** number of weeks on the **x** day of the week.	Every two weeks on Wednesday.	
	x number of weeks after the last occurrence.	Two weeks after the last occurrence.	
Monthly	Day **x** of every **x** month.	Day 15 of every one month.	
	The **x** day of every **x** number of months, where you define the day of the week.	The first Friday of every two months.	
	x number of months after the last occurrence.	One month after the last occurrence.	

Recurrence Pattern	Schedule Description	Example	Example Selections
Yearly	Every **x** day of every **x** number of years, where you define the month of the year.	Every April 15 of every one year.	
	The **x** day of every **x** number of years, where you define the day of the week and the month of the year.	The third Friday of June, every three years.	
	x number of years after the last occurrence.	Two years after the last occurrence.	

Note that in addition to indicating when an item is due, you can also use the **Range of Recurrence** section of the **Schedule** window to indicate:

- **The date on which the schedule should become active.** For example, if you configure an item to be due the first Monday of every week and the current day is Monday, you might want to wait a week before putting the schedule in place. To do so, you could select the date of the following Monday in the Start fields in the **Range of Recurrence** section.

- **The date by which the schedule should end.** For example, suppose you configure a pump inspection to be due every Friday. If you know that after Friday, December 29, 2007, the pump will be replaced, you might want to set an end date for the schedule. You can select the following options for a schedule end date:

  - **No end date.** The schedule does not have an end date.

  - **End after x number of occurrences.** The schedule ends after a specific number of occurrences.

  - **End by x date.** The schedule ends by a specific date.

About Applying a Sequence Value to Lubrication Requirement Records

Each Lubrication Requirement record contains a Sequence field, which should contain a numeric value representing the order in which the checkpoint should be performed.

We recommend that you sequence the Route by arranging Lubrication Requirement records in an order that corresponds to the proximity of the associated equipment or locations. For example, suppose you want to lubricate ten bearings in the facility, and the bearings are labeled according to the area in which they reside (Bearings A-1 through A-5 reside in Area A; Bearings B-1 through B-5 reside in Area B).

In this case, you would want to make sure the user does not waste time traveling between Area A and Area B multiple times. So, you would specify sequence values of *1* through *5* in the Lubrication Requirement records linked to Bearings A-1 through A-5, and you would specify sequence values of *6* through *10* in the Lubrication Requirement records linked to Bearings B-1 through B-5.

When you are [creating a Lubrication Requirement record](#), if you know the order of that checkpoint relative to other checkpoints along the Route, you can type a numeric value specifying the order. For example, if you are creating a Lubrication Requirement record representing the first checkpoint that users should complete along the Route, you would type **1**.

If, on the other hand, you do not know the order of a checkpoint relative to other check-points along the Route (i.e., you have not finished creating the associated Lubrication Requirement records), you are not required to specify a value in the Sequence field when you create the record.

You can use the **Sequence Route** link on the **Associated Pages** menu to view all Lubrication Requirement records that are linked to the Route record. From the **Sequencing** page, you can [specify a sequence value in each Lubrication Requirement record while viewing all Lubrication Requirement records that are linked to the Route record](#).

Applying a Sequence Value to Lubrication Requirement Records

To apply a sequence value to each Lubrication Requirement record that is linked to a Route record:

1. On the [Lubrication Management Route Management page](#), open the Route record that is linked to the Lubrication Requirement records to which you want to apply a sequence value.

   The Route record appears in the Record Manager.

2. On the **Associated Pages** menu, click the **Sequence Route** link.

   The Sequencing page appears, displaying the linked Lubrication Management records in the order in which the records were created.
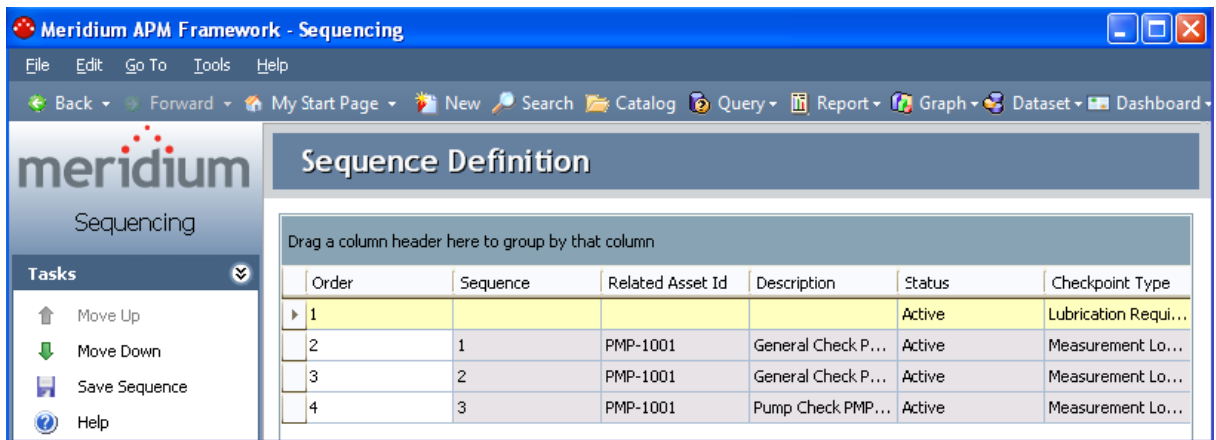
3. Locate the row representing the first checkpoint along the Route, and in the **Order** column, type **1**.

   The list is resorted, and the selected record appears at the top of the list.

4. For each checkpoint, in the **Order** column, continue typing a numeric value representing the order in which the checkpoints should be completed.

   > ŒHint: You can also use the **Move Up** and **Move Down** links on the **Tasks** menu to order the Lubrication Requirement records.

5. When you are finished sequencing the checkpoints along the Route, on the **Tasks** menu, click the **Save Sequence** link.

   The Lubrication Requirement records are saved with the specified sequence values. Note that the Sequence field is the first field in the ID Template for the Lubrication Requirement family. This means that Lubrication Requirement records will be displayed in the **LM Explorer** pane and in Search results in ascending order according to their sequence value.

For example, if the following checkpoints are sequenced like this:

Axle Check Off = 03
Hinge Check Off = 02
Pump Check Off = 01
Refrigerator Change Out= 04

...they will be displayed in the **LM Explorer** pane as shown in the following image.
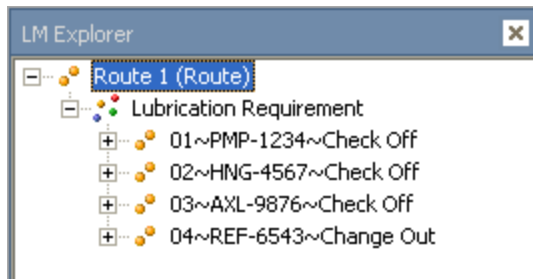
> **Note:** When you see Lubrication Requirement records in the **Record Explorer** pane or Search results, records with a Sequence value of 1 through 9 will have a prepended *0* in the Record ID. For example, if you type *1*, it will be reformatted as *01* in the Record ID.

About Reference Documents and Lubrication Requirements

A reference document is a file (e.g., a Word document) that contains supplementary information that users need to view while they are working. To associate a reference document with a Lubrication Requirement, you must:

1. Create a Reference Document record for the reference document.

2. Link the Reference Document record to the Lubrication Requirement record representing the checkpoint that is associated with the reference information.

You can link new Reference Document records to Lubrication Requirement records via the **LM Explorer** pane for the desired Lubrication Requirement record.

Linking New Reference Document Records to Lubrication Requirement Records

To create a Reference Document record that is linked to a Lubrication Requirement record:

1. On the [Lubrication Management Route Management](#) page, click the hyperlinked Route ID of the Route record that contains the Lubrication Requirement record with which you want to associate a reference document.

   The Route record is displayed in the Record Manager.

2. In the **LM Explorer** pane, expand the Lubrication Requirement record node with which you want to associate reference data.

   The Reading and Reference Document family nodes appear below the Lubrication Requirement record node.

3. Right-click the Reference Document family node, and on the shortcut menu, click **Create a new Reference Document record to link to <Lubrication Requirement record>**.

   A new Reference Document record appears in a new window.

4. In the **ID** text box, type an ID for the reference document.

5. In the **Description** text box, type a description of the reference document.

6. In the **Document Path** text box, click the ⋯ button.

   The **Reference Document Path** dialog box appears.

   In the **Document Path** text box, you can type the path to the reference document, or you can click the … button to browse for the document. These instructions assume that you want to browse for the document.

7. Click the … button, and select the desired file.

   The **Document Path** text box is populated with the path to the selected file.
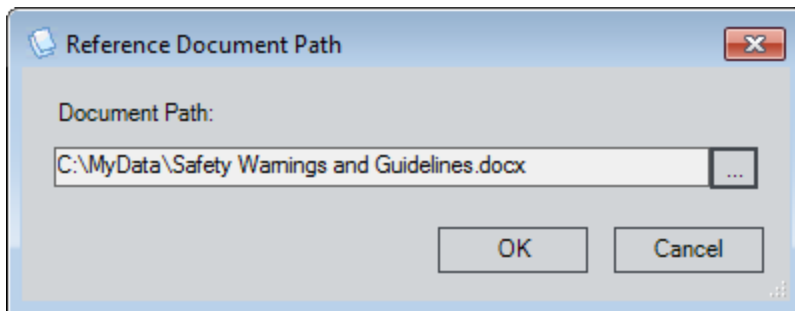
8. Click **OK**.

   The **Document Path** text box is populated with a link to the document.
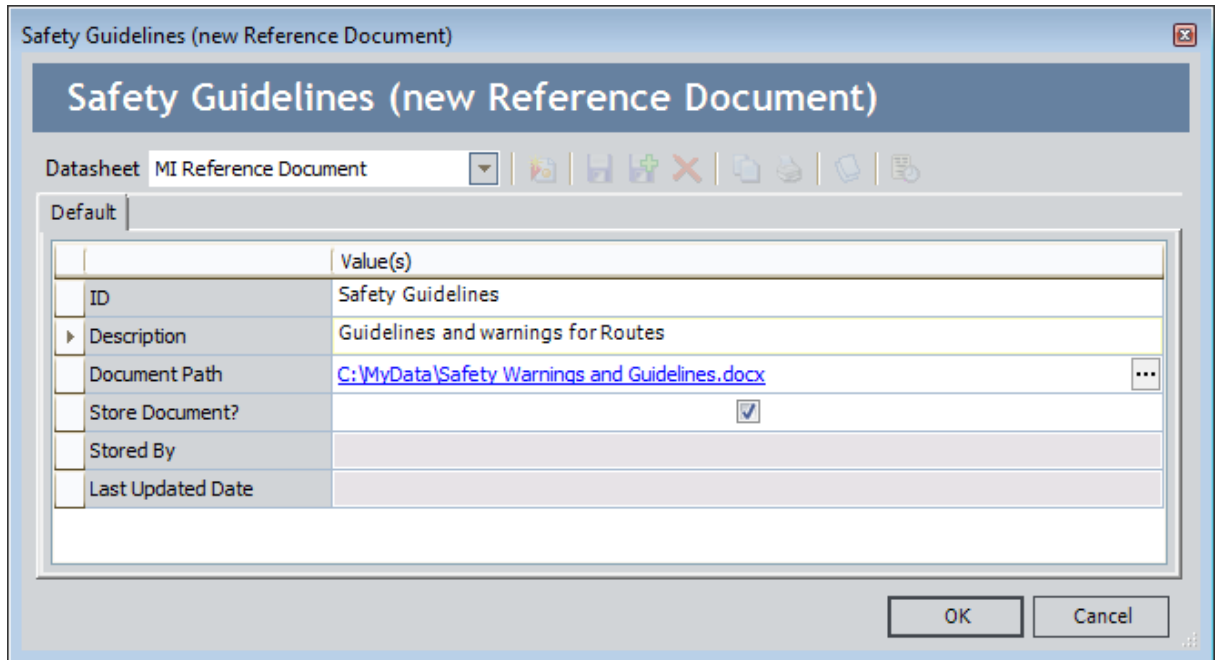
9. If you want to save a copy of the reference document to the Meridium APM database, accept the default setting for the **Store Document?** check box (i.e., *selected*).

10. Click **OK.**

The new Reference Document record is linked to the selected Lubrication Requirement record and is displayed on the **Reference Documents** tab.

Creating Lubrication Management Recommendation Records

To create a Lubrication Management Recommendation record:

1. On the Meridium APM Framework toolbar, click the **New** button.

   The **Select Family** dialog box appears.

2. In the list, select **Lubrication Management Recommendation**.

3. Click **OK**.

   The new Lubrication Management Recommendation record appears in the Record Manager.

4. Complete the fields on the datasheet as desired.

5. On the **Common Tasks** menu, click the **Save** link.

   The Lubrication Management Recommendation record is saved.

Accessing the Lubrication Management Reports Page

You can use the **Lubrication Management Reports** page to open the reports that are stored in the Catalog folder \\Public\Meridium\Modules\Lubrication Management\Reports and view them in the Report Viewer.

To access the Lubrication Management Reports page:

- On the **Lubrication Management Start Page**, click the **Run Reports** link.

  The **Lubrication Management Reports** page appears.
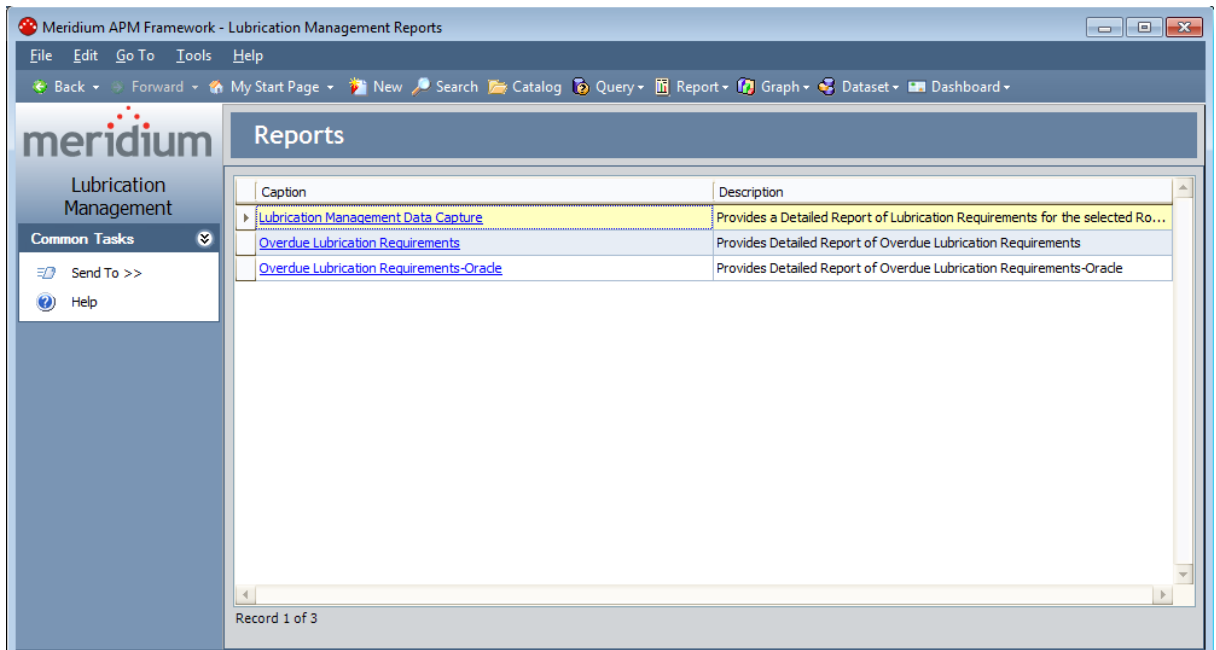
Aspects of the Lubrication Management Reports Page

The **Lubrication Management Reports** page contains a grid that displays one row for each report that is stored in the Catalog folder \\Public\Meridium\Modules\Lubrication Management\Reports.
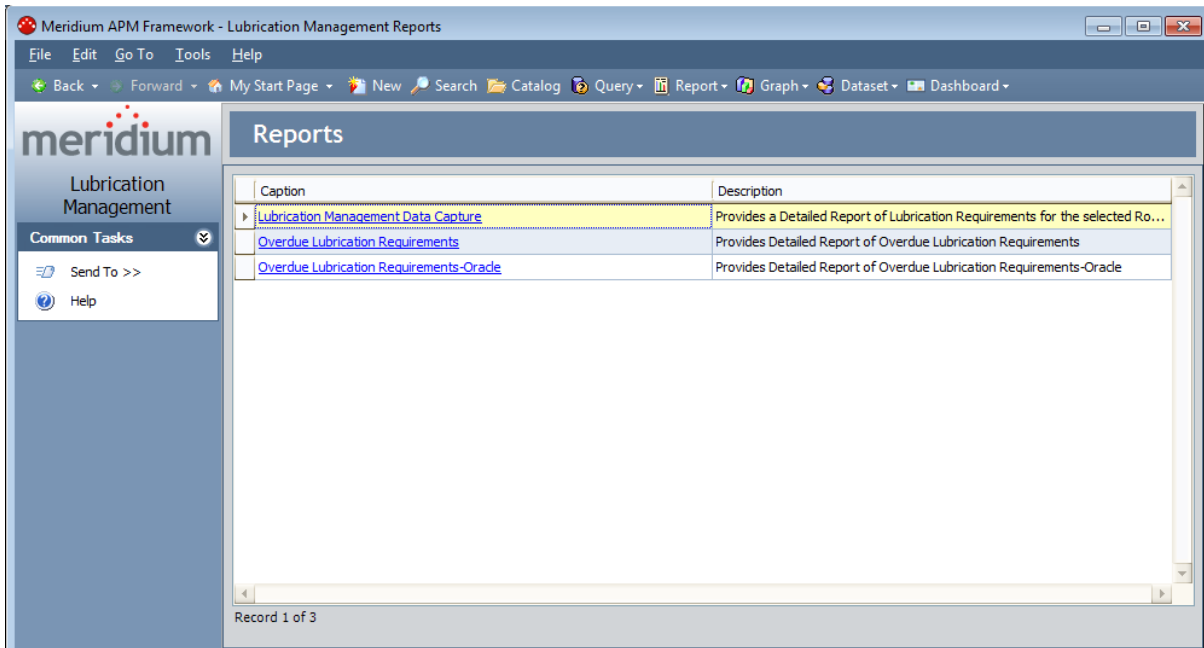
The grid contains the following columns:

- **Caption:** Displays the hyperlinked report caption, which you can click to open the report.
- **Description:** Displays the report description.

The **Lubrication Management Reports** page contains one task menu, **Common Tasks**.
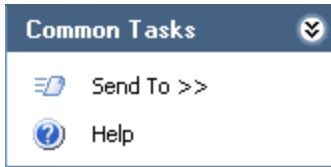
Common Tasks Menu

The **Common Tasks** menu on the **Lubrication Management Reports** page contains the following links:

- **Send To:** Displays a submenu with options that let you send a link to the current page to your desktop (create shortcut), in an email message, or a Home Page.

- **Help:** Displays the context-sensitive Help topic for the **Lubrication Management Reports** page.

Opening Reports from the Lubrication Management Report Page

To open a report from the Lubrication Management Reports page:

- In the grid on the **Lubrication Management Report** page, click the hyperlinked caption of the report that you want view.

> **Note:** If the report is based on a query that contains prompts, the **Enter Query Parameters** dialog box will appear. After you select the desired values, click **OK** to view the report.

The selected report appears on the Report Viewer page, where you can view the report and perform various tasks related to the report. If you want, you can print the report for users to reference when completing a checkpoint.

About the Lubrication Management Folder Structure

The Catalog folder \\Public\Meridium\Modules\Lubrication Management contains the following subfolders that contain items that are used by Lubrication Management:

- Explorers
- Queries
- Reports

The information in this section of the documentation is intended to serve as a quick reference to details that are provided elsewhere in the specific Lubrication Management instructions.

> **Note:** All of the Public folders exist by default. Any baseline item in the Baseline folder is also available in the corresponding Public folder. Throughout this documentation, however, we refer to items in the Public folder.

Explorers Folder

The following table lists the configured explorer that is stored in the Catalog location \\Public\Meridium\Modules\Lubrication Management\Explorers. The configured explorer name is listed in the table. The configured explorer name and caption are the same.

Configured Explorer	Behavior and Usage
LM Explorer	You can use the LM Explorer to create or open Route records instead of the standard **Record Explorer** pane. The difference between the **LM Explorer** pane and the **Record Explorer** pane is that the **LM Explorer** pane displays only Route, Lubrication Requirement, Reading, and Reference Document records. Since Lubrication Requirement records are linked to Equipment or Functional Location records, the standard **Record Explorer** pane will display those Equipment or Functional Location records. The **LM Explorer** pane, however, will not display these Equipment or Functional Location records or any other records that are linked to the records listed above.

Queries Folder

The Catalog location \\Public\Meridium\Modules\Lubrication Management\Queries contains the Report Queries folder. The following table lists the queries that are stored in the Report Queries folder. The reports are listed by name in the table. The query name and caption are the same unless otherwise noted.

Query	Behavior and Usage
Lubrication Management Data Capture	Displays a prompt asking you to select a Route record, and then returns all Lubrication Requirement records that are linked to the specified Route record.
Overdue Lubrication Requirements	Displays a prompt asking you to select a Route record, and then returns all overdue Lubrication Requirement records that are linked to that Route record. Each row in the results represents a Lubrication Requirement record whose Schedule value indicates that the checkpoint is overdue for maintenance.
Overdue Lubrication Requirements-Oracle	Displays the same results as the Overdue Lubrication Requirements query. This query, however, works on an Oracle schema only.

Reports Folder

The following table lists the reports that are stored in the Catalog location \\Public\Meridium\Modules\Lubrication Requirement\Reports. The reports are listed by name in the table. The report name and caption are the same unless otherwise noted.

Report	Behavior and Usage
Lubrication Requirement Data Capture	Displays a prompt asking for a Route record, and then displays a formatted version of the results from the Lubrication Requirement Data Capture query for the selected Route record. You can print this report and record reading values at the associated checkpoint. A link to this report appears on the **Lubrication Management Reports**page.
Overdue Lubrication Requirements	Displays a prompt asking for a Route record, and then displays a formatted version of the results from the Overdue Lubrication Requirements query for the selected Route record. A link to this report appears on the **Lubrication Management Reports**page.
Overdue Lubrication Requirements-Oracle	Displays the same results as the Overdue Measurement Locations report. This report, however, works on an Oracle schema only.

Lubrication Requirement

Lubrication Requirement records store details about the checkpoints for a Route. The following table provides an alphabetical list and description of the fields that exist for the Lubrication Requirement family and that are available on the **Identification** tab of the Lubrication Requirement datasheet. The information in the table reflects the baseline state and behavior of these fields. This list is not comprehensive.

Field	Data Type	Description	Behavior and Usage
ATG	Logical	This field is used by the Meridium APM system.	This field does not appear on any datasheet by default. The value is set automatically by the Meridium APM system.
Asset Description	Character	A description of the Equipment or Functional Location record to which you want to link the Lubrication Requirement record.	On the datasheet, this field appears as a text box labeled **Asset Description**. If you entered in the Asset ID field a value that is stored in the database, after you save the Lubrication Requirement record, the **Asset Description** cell will be populated automatically with the value in the Asset Description field of the associated record (as long as the field ID of the Asset Description field for that entity family is exactly ASSET_DESC_CHR). If you do not want Meridium APM to populate the field automatically, you can enter a description for the equipment or location to which you want to link the Lubrication Requirement record directly in the **Asset Description** cell. You are not required to type the description exactly as it is stored in the database.

Field	Data Type	Description	Behavior and Usage
Capacity	Number	A number representing the amount of lubricant that the component will hold.	On the datasheet, this field appears as a text box labeled **Capacity** in which you can enter the desired value.
Capacity Unit of Measure	Character	A value representing the UOM associated with the value in the Capacity field.	On the datasheet, this field appears as a text box. You can enter a value directly in the **Capacity Unit of Measure** cell.
Component	Character	The part of the equipment that requires lubrication (e.g., axle or bearing).	On the datasheet, this field appears as a text box. You can enter a value directly in the **Component** cell.
Last Date	Date	The date on which the last reading was recorded for this checkpoint.	On the datasheet, this field appears as a text box labeled **Last Date** and is populated automatically based on the defined schedule and the current date.
Lubricant	Character	The lubricant that is required for this checkpoint.	On the datasheet, this field appears as a list labeled **Lubricant** and is populated with the values stored in the Lubricant field in the existing Lubricant records. In addition, this list is filtered by the value that you select in the **Lubricant Manufacturer** list. You can select a value in the list.

Field	Data Type	Description	Behavior and Usage
Lubricant Manufacturer	Character	The company that manufactures the lubricant that users should use when completing this checkpoint.	On the datasheet, this field appears as a list labeled **Lubricant Manufacturer** and is populated with the values stored in the Lubricant Manufacturer field in the existing Lubricant records. In addition, this list is filtered by the value that you select in the **Method** list. You can select a value in the list.
LR Type	Character	The type of data that users can enter when creating a Reading record linked to the Lubrication Requirement record.	On the datasheet, this field appears as list labeled **LR Type** and contains the following values: • Check Off • Change Out • Tracking You can select a value from the list. This field is required.
Method	Character	The method that users should use when applying a lubricant at this checkpoint.	On the datasheet, this field appears as a list labeled **Method** and is populated with the values stored in the Method field in the existing Lubricant records. You can select a value from the list.
Next Date	Date	The date on which the next reading is due for this checkpoint.	On the datasheet, this field appears as a text box labeled **Next Date** and is populated automatically based on the values stored in the Schedule and Last Date fields.

Field	Data Type	Description	Behavior and Usage
Number of Points	Number	The number of points on the component that requires lubrication.	On the datasheet, this field appears as a text box labeled **Number of Points** in which you can enter the desired number of points. For example, if you typed `axle` in the **Component** cell, you might type `2` in the **Number of Points** cell.
Priority	Character	A value representing the priority associated with the lubrication requirement.	On the datasheet, this field appears as a text box. You can enter a value directly in the **Priority** cell.
Related Asset ID	Character	The ID of the Equipment or Functional Location record to which you want to link the Lubrication Requirement record.	On the datasheet, this field appears as a text box labeled **Asset ID**. You can enter an ID directly in this cell. If the Equipment or Functional Location family has been configured as specified in the Configuration Manager and you type a valid ID, after you save the Lubrication Requirement record, the Lubrication Requirement record will be linked to the record identified by the ID that you typed. You must type the ID exactly as it is stored in the database.
Schedule	Character	The schedule by which you want to complete this checkpoint.	On the datasheet, this field appears as a text box labeled **Schedule** and contains a ⋯ button, which you can click to view the **Schedule** window where you can [define the desired schedule]().

Field	Data Type	Description	Behavior and Usage
Sequence	Number	A number indicating the order in which the checkpoint should be completed relative to other checkpoints along the same Route.	On the datasheet, this field is disabled and populated automatically.
Status	Character	The status of the Lubrication Requirement record. By default, this field contains the value *Active*.	On the datasheet, this field appears as a list labeled **Status** and contains the following values: • Active • Inactive You can select a value in the list.
Template	Character	The ID of the Lubrication Requirement Template record that you want to use to populate fields in the Lubrication Requirement record.	On the datasheet, this field appears as a list labeled **Template** and contains the values stored in the Template ID fields in the Lubrication Requirement Template records that exist in the database. You can select a value from the list. When you do so, the remaining fields will be populated automatically with the values in the corresponding Lubrication Requirement Template record. Note that if you later remove the selection from the **Template** list, the fields that were populated automatically will remain populated.

Field	Data Type	Description	Behavior and Usage
Unit of Measure	Character	The unit of measure that users can specify when entering a reading value for this checkpoint.	On the datasheet, this field appears as a list labeled **Unit of Measure**. You can select a value from the list. This field is disabled if the LR Type field contains the value *Check Off*.

Lubrication Requirement Template

Lubrication Requirement Template records can be used to create Lubrication Requirement records and contain all the fields included in Lubrication Requirement records, with the exception of the Template field in the Lubrication Requirement record. In addition, Lubrication Requirement Template records include the additional field *Template ID*, which stores the ID for the template. This value appears in the Template field in the Lubrication Requirement record.

System Code Tables Used by Lubrication Management

The following System Code Tables are used by Lubrication Management.

Table ID	Table Description	Function
MI_FDC_STATUS_TYPE	Status types for Checkpoint families	Unknown
MI_RECOMMENDATION_ TYPE	CORE, Recommendation Type	Used to populate the **Recommendation Type** list in Recommendation records. Note that the Recommendation Type field is not included on the baseline LM Recommendation datasheet.
MI_LM_LUBR_REQ_TYPE	Types of Lubrication Requirement	Used to populate the **LR Type** list on the Lubrication Requirement record.
MI_LM_REFERENCES	List of references for Lubrication Management	Used to populate the **Unit of Measure** list in Lubrication Requirement records.

Lubrication Management URLs

The following table lists and describes the paths for accessing features in Lubrication Management. Note that to construct a valid URL, you must prepend **meridium://** to the path.

Note: Lubrication Management URLs do not accept any parameters.

Feature	Path	Description
Lubrication Management Start Page	LM	Displays the **Lubrication Management Start Page**.
Lubrication Management Route Management	LM/RouteManagement	Displays the **Lubrication Management Route Management** page.
Lubrication Management Template Management	LM/TemplateManagement	Displays the **Lubrication Management Template Management** page.
Lubrication Management Reports	LM/Reports	Displays the **Lubrication Management Reports** page.
Lubrication Management Recent Routes	LM/RecentRoute	Displays the **Lubrication Management Recently Modified Routes** page.
Lubrication Management Manage Lubricants	LM/ManageLubricants	Displays the **Lubrication Management Manage Lubricants** page.