Rounds Data Collection

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Chapter

1

Overview

Topics:

Overview of the Rounds Data Collection Module

The Rounds Data Collection module allows users to perform route-based, recurring tasks such as operator checks, routine maintenance, lubrication tasks, safety inspections, etc. It provides a user friendly interface for quickly completing the Routes and checks when they are due. Generally, data collection will be done using a mobile device such as a tablet computer, as the user completes the required asset checks. Proactive warnings can be set up in the Rounds Designer module to alert the user if the findings indicate a problem with the asset, including advisory notes on what action to take next. Users can create recommendations for action, such as a maintenance follow-up, directly from the mobile device. As data is collected, it is transferred automatically to the APM database, where it is used in various asset performance management workflows (for example, monitoring asset health, and tracking completion of preventive maintenance strategies). Rounds data collection can be performed while disconnected from the network, in offline mode. However, this functionality is only available in the APM Mobile Application.

For more information on the APM Mobile Application, refer the Getting Started documentation.

Access the RDC Overview page

Before You Begin

You can access the **RDC Overview** page only if you are a member of one of the following Security Groups, or a Role that includes one of these groups:

- MI Operator Rounds User
- MI Lubrication Management User
- MAPM Security Group

Important: To ensure the validity of recorded data, the device you are using must have the same time zone as your user time zone.

Procedure

In the **Applications** menu, navigate to the **HEALTH** section, and then select **Rounds Data Collection**. The **RDC Overview** page appears.

The tabs at the top of the page summarize Route information in various categories. You can select a tab to view one of the following sections:

- **Overdue Items** : Displays a list of Routes that are overdue, allowing you to access the Route or mark it done. The number on the tab indicates the number of Routes that are overdue.
- **Due Items** : Displays a list of Routes that are due, allowing you to access the Route or mark it done. The number on the tab indicates the number of Routes that are due. If the Route has a schedule set, then the due date is the value in the Next Date field of the Route. If the Route does not have a schedule set, then the due date is the earliest date among all the Next Date values specified for all the Checkpoints in the Route.
- **Assigned Routes** : Displays a list of Routes that are assigned to you. From this section, you can enable or disable offline access, or mark a Route done. The number on the tab indicates the number of Routes that are assigned to you.
- **Recommendations** : Displays a list of all Recommendations. The number on the tab indicates the number of Recommendations.

This page also includes the following items:

- The **Route Completion** graph: Plots the number of readings taken as a percentage of the number of readings that were due on the Routes that have been marked done in the last 30 days.
- **Checkpoint Schedule Compliance (excluding conditional checks)** graph
- The **Device Settings** button: By default, a mobile device must be connected to the network while you take readings. You can also take the readings offline by enabling offline access and setting the download horizon and sync interval with the device using this button.
- The **Scan** button: You can use this button to scan the barcode of an asset or a location using the camera of the mobile device that is used for data collection.

    Note: This button appears only if you are using the APM mobile application.

Chapter

2

Workflow

Topics:

Rounds: Collect Rounds Data Workflow

This workflow describes how the Rounds Analyst and the Technician collects Rounds data. Rounds Technicians complete operator, lubrication, maintenance or similar checks as defined in the Asset Strategy along a Route. Data is captured using a mobile device and uploaded to APM where it can be used in Health Indicators, Policies, etc. The Rounds Technician will also initiate required maintenance via Performance Recommendations.

In the following workflow diagram, the blue text in a shape indicates that the corresponding description has been provided in the sections that follow the diagram. For more information, refer to the Interpreting the Workflow Diagrams topic in the APM Product Workflows documentation.

Note: For information on the personas associated with a APM module, refer to the APM Product Workflows documentation.
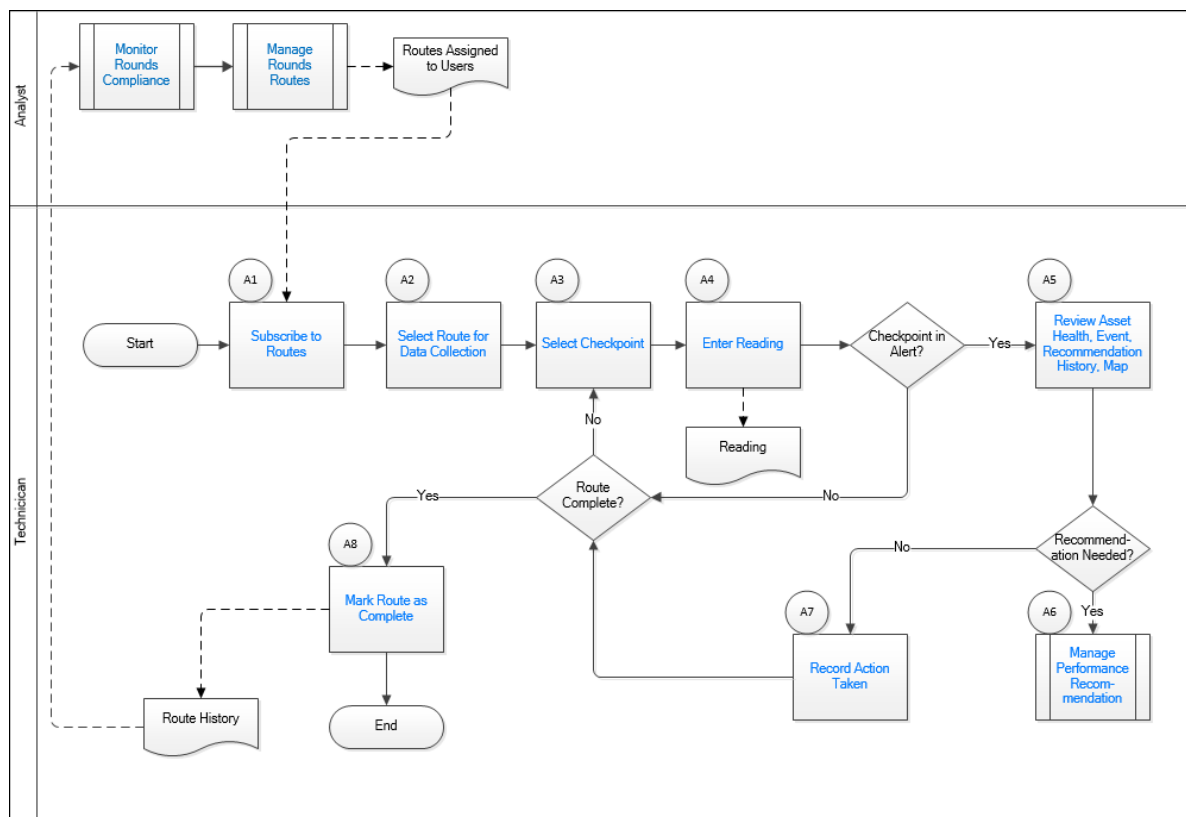
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8. Mark Route as Complete on page 7
9. Record Action Taken on page 7
10. Manage Performance Recommendation on page 7

Monitor Rounds Compliance

Persona: Analyst

A Route History record is created for each Route execution, including data on how many readings were collected compared to the number expected, and any closing comment. This data is used to monitor overall compliance with Rounds requirements.

You can view the Monitor Rounds Compliance workflow in the Workflow section of the Rounds Designer documentation.

Manage Rounds Routes

Persona: Analyst

Checkpoints are organized into Routes.

You can view the Manage Rounds Routes workflow in the Workflow section of the Rounds Designer documentation.

Subscribe to Routes

Persona: Technician

All Routes to which the user is assigned are available whenever the device is connected to a network, but to enable access to Routes while offline, Technicians must subscribe to each Route that they want to access offline. Subscribed Routes are automatically downloaded to the mobile device if they are due within the specified download horizon, and are updated with any changes on the specified synchronization frequency.

The Technician may need to select a download horizon and synchronization interval that is different from the default settings specified by the system administrator. The download horizon should be long enough to cover any period where the mobile device is expected to be disconnected from the APM server. A longer synchronization interval can be used to reduce data transfer, for example, if the mobile device connection incurs data usage fees.

Select Routes for Data Collection

Persona: Technician

The Technician selects a Route to complete from the list of routes that are Due or Overdue.

Select Checkpoint

Persona: Technician

The Route should be organized logically based on the location of assets or some other scheme, however, in some cases, users may choose or be forced to execute the Route out of order. A compatible barcode or RFID reader can be used to automatically select a Checkpoint, or even a different Route, that the Technician will check next.

Enter Reading

Persona: Technician

The Technician performs the required check (inspection, lubrication, maintenance task, etc.) and records the results. If the device is currently connected, the value is immediately uploaded to the database and visual confirmation provided to the user. If the device is disconnected, the value is retained on the device until a connection is established.

Review Asset Health, Event, Recommendation History, and Map

Persona: Technician

Rounds data is collected on a per-shift basis and communication between shifts or mobile users can be a challenge. To help facilitate understanding of previously collected data, a comprehensive history of the asset is available to mobile device users:

- Asset Health data: History of recent Readings for the currently displayed Checkpoint; health indicators from other sources such as process historians; health indicators calculated by policies.
- Event history: Any relevant events that have happened to the asset, such as work history, calibrations, alerts from automated monitoring systems (for example, Emerson AMS, GE System 1, etc.), or events generated by policies.
- Performance Recommendation history: This history indicates whether an issue has already been noted and acted on when determining whether a new Performance Recommendation to address the current asset condition needs to be created.
- Recent readings, recommendations and related images for the Route can also be displayed on a Map.

Mark Route as Complete

Persona: Technician

When the Technician finishes entering readings for the Checkpoints on a Route, they must mark the Route as "Done." The Technician is presented with a summary of the readings and recommendations entered, and can provide a closing comment. It is not required for readings to be entered for every Checkpoint, so marking a Route as complete is required in order for APM to correctly track completion statistics (see Monitor Rounds Compliance) and to update the next due date if the Route is configured on a schedule.

Record Action Taken

Persona: Technician

In some cases, the mobile user may take action in the field to address or document the condition found. In such cases, the mobile user should document this action by selecting a pre-configured action or by entering a comment.

Manage Performance Recommendation

Persona: Technician

The new recommendation is managed for approval and implementation through the Manage Performance Recommendation workflow.

You can view the Manage Performance Recommendation workflow in the Workflow section of the Rounds Designer documentation.

Chapter

3

Data Collection Settings

Topics:

About Data Collection Settings

In Rounds Data Collection, you can modify your data collection settings to suit the circumstances under which you are collecting data for Routes. For example, you can determine when a Route is downloaded to your device so that you can access that Route when your device is disconnected from a wireless network. You can also specify the frequency at which data is synchronized with the APM database, and you can clear route data from local storage if it becomes out of synchronization with the database.

About Offline Access

Rounds Data Collection includes the capability for you to complete Routes when the device you are using is in an offline, or disconnected, state. If you want to access a Route while disconnected from a network, you must enable offline access for the Route in order to download the Route information to your device's internal storage. After this is done, you can enter readings, create recommendations, and mark a Route done while the device is disconnected from a network. Then, when your device is reconnected to a network, the recorded data is synchronized automatically with the APM database.

About Device Settings

You can modify certain device settings to support collecting data for Routes when your device is disconnected from a network. An administrative user may specify default values for these device settings in the Application Settings for Rounds, and individual users may modify these values via the **Device Settings** window in Rounds Data Collection if necessary.

The following device settings can be modified:

- The Download Horizon setting establishes how long before a Route or Checkpoint is due that it is downloaded to your device. Based on how long your device will be disconnected from a network prior to a Route becoming due, you can increase the Download Horizon to ensure that you can still access that Route when it becomes due while your device is offline.
- The Sync Interval setting establishes how often data is synchronized with the APM database. If your mobile device is subject to slow connection speeds, it may take several minutes to download all the data. In this scenario, we recommend that you increase the Sync Interval, since a Sync Interval as brief as one minute may result in the device attempting to synchronize continuously.

Enable Offline Access for a Route

Before You Begin

If necessary, modify the Download Horizon and Sync Interval device settings.

About This Task

If you want to take readings on a Route while disconnected from a network, you must enable offline access for the Route.

Procedure

1. Access the **RDC Overview** page.
2. In the workspace, select the **Assigned Routes** tab.

   The **Assigned Routes** section appears, displaying a list of Routes that have been assigned to you by a Rounds Designer user.

3. In the row for each Route for which you want to enable offline access, select the check box.

4. In the upper-right corner of the section, select .

The icon appears in the **Off-Line Access Enabled** column for the specified Routes to indicate that offline access is enabled.

Note: If you want to disable offline access for a Route, select the check box in the row for the Route, and then select .

Results

- The Route is downloaded to your device's local storage when the Route's Next Date is within the specified Download Horizon. The Route information downloaded includes the past five Readings for each Checkpoint on the Route.
- If the Route is currently due or overdue, it will appear on the **RDC Overview** page in the **Due** or **Overdue** lists, respectively, with the icon next to the Route name, indicating that the Route has been downloaded to the device. While the Route is in the process of synchronizing with the APM database, the icon appears.
- When there is a network connection, the Route is synchronized with the APM database at the frequency specified by the Sync Interval device setting.

Modify Device Settings

About This Task

Depending on your access to a network when you are collecting data for Routes, you may need to modify the device settings that affect how Routes enabled for offline access are handled.

Note: Device settings are stored as user preferences, which means that, if you are signed in to APM, your settings will be maintained regardless of the device that you use to access the application. However, your settings may be overwritten if a Super User modifies the default device settings and chooses to overwrite existing user preferences in the Rounds Designer module. If a Super User has done so, you will need to sign out of and back in to the APM mobile application for this change to take effect.

Procedure

1. Access the **RDC Overview** page.
2. Select **Device Settings**.

   Note: If you are using a small screen device, select .

   The **Device Settings** window appears.

   Note: The **Scan Option** box is not currently used.
3. Clear the **Use Default Settings** check box.
4. In the **Download Horizon** box, specify the amount of time before a Route or Checkpoint is due to indicate that it should be downloaded to a device.

   Tip: If you anticipate that devices will be disconnected from a network for extended periods of time, increase the Download Horizon. This will enable users to access the Routes that will become due during the period that the device is disconnected.

5. In the **Sync Interval** box, specify the frequency at which the information downloaded to the device should be synchronized with the APM database when the device is connected to a network.

    Tip: You may want to increase the Sync Interval to reduce network traffic when devices are connected to a network or, if the mobile devices that will be used are subject to slow connection speeds (for example, if they use cellphone connections), it may take several minutes to download all the data. In this scenario, we recommend that you increase the Sync Interval, since a Sync Interval as brief as one minute may result in devices attempting to synchronize continuously.

    The data from the device is uploaded to the database. Changes made in Rounds Designer are also reflected in the corresponding records in Rounds Data Collection.

6. In the **Batch Upload Size (# Readings Posted at a Time)** box, specify the number of readings uploaded to the server per batch.

    Tip: A lower number of readings per batch will take longer to upload but be less subject to server timeouts.

7. Select **Done**.
    The settings are saved.

Disable Network Connection

About This Task

If your network connectivity is intermittent, you may want to force the Rounds Data Collection module to behave as if your device is offline.

Note: To take readings on a Route while the Rounds Data Collection module behaves as if your device is offline, you must enable offline access for the Route. See Enable Offline Access for a Route for more information.

Procedure

1. Access the **RDC Overview** page.
2. Select one of the following:

Option	Description
Device Settings	Appears on large screen devices
≡	Appears on small screen devices

The **Device Settings Window** appears.

3. Select the **Disable Network Connection** check box.
4. Select **Done**.
    Network connectivity is disabled.

Clear Route Data from Local Storage

About This Task

It is possible for Route data stored on an Android, iOS, or Windows device to become out of synchronization with the data in the APM database. If this happens, you can clear Route data from your device's local storage. You may need to do this if:

- You are no longer assigned to a Route.
- A Route downloaded to your device was deleted from the database.
- Route information displayed on your device does not align with changes made by a Route administrator in Rounds Designer.
- A Route is marked done on the device, but the readings are not uploaded to the server, and the Route is not in a completed state on the server.

Procedure

1. Access the **RDC Overview** page.
2. Select **Device Settings**.

   Note: If you are using a small screen device, select ☰.

   The **Device Settings** window appears.
3. Select the check boxes under the **Clear data from Local Storage** option, as per your requirement:

   - **Route Data** - Removes existing Route structure data and completed Routes structure data from the device.
   - **Readings** - Removes cached readings from the device.
   - **Recommendations** - Removes cached Recommendation data from the device.
   - **Documents** - Removes cached documents from the device.

   Note: This action clears data from the mobile device. Data that has already uploaded to be APM database will be retained and synchronized to the device at the next Sync Interval.
4. Select **Done**.
   Route data is deleted from the device's local storage. At the next Sync Interval, updated Route data is downloaded onto the device.

   Note:

   - On a small screen device, the **Done** option is not available. The alternate action is to select outside the **Device Settings** window, to close the window.
   - Readings and recommendations for Routes in progress are not deleted from the mobile device. If the same Routes and Checkpoints remain on the device after resynchronizing the Route data, then these readings and recommendations will be displayed on the data collection page as before.
   - Route data will not be cleared if Route synchronization is in progress.
   - The **Clear data from Local Storage** check box is always cleared when you access the **Device Settings** window.

Chapter
4

Data Collection

Topics:

About Data Collection

To collect data in the Rounds Data Collection module, you must first access a Route in the **RDC Overview** page by selecting it in the **Overdue Items** or **Due Items** section, or by scanning the barcode of an asset or location. You can then provide readings for Measurement Locations or Lubrication Requirements, as well as create recommendations based on these readings. If geolocation services are enabled, geolocation data will be saved automatically. After you have completed taking readings on a Route, you can mark it done through one of several methods.

About the Route Progress Bar

To indicate the progress a user makes while entering readings on a Route, Rounds Data Collection displays a progress bar indicating the percentage of a Route for which you have entered readings as well as the number of Checkpoints for which you have entered readings on a Route.

This progress bar appears in the following places:

- In the **Route Map** pane
- In the **RDC Overview** page, in the **Overdue Items** and **Due Items** sections

This progress bar tracks only the progress of an individual user on a specific device for a given Route. In other words, the progress bar does not take into account any activity that occurs on that route by other users on other devices.

> **A Route with 60 Checkpoints**
>
> Consider a Route with 60 Checkpoints that uses Route Scheduling. Assume that two users download the same route. Both users will see the route with 60 checkpoints. If the first user collects 30 readings, they will see their progress bar at 50%. If user 2 collects 45 readings, they will see their progress bar at 75%. The Progress Bar for a route on a device is not aware of other users working on the route.
>
> Consider the same 60 Checkpoint route that uses Checkpoint Scheduling. If one user downloads this route and enters 15 readings on their device, the progress bar for that user on that device for that route will indicate that the Route is 25% complete. The first user uploads and marks the route done, leaving 45 checkpoints still due. If a second user then downloads the same route, this second user does not see that the Route is 25% complete. Instead, this user sees that there are 45 Checkpoints remaining on the Route, and 0% of those 45 Checkpoints have been completed.

About Barcode Scanning

You can quickly and accurately collect data by scanning barcodes. The benefits of scanning barcodes are as follows:

- Improves asset management
- Improves efficiency as barcodes eliminate manual input of data
- Improves processes and streamlines tasks

To use barcode scanning, you should verify that the barcode type that you want to use is currently supported by the APM mobile application. You should also validate that your physical barcodes are compliant with the recommended dimensions and specifications for that type of barcode.

The following table lists the supported barcode types and the platforms that support them.

Table 1: Supported Barcode Types

Barcode Type	Android	iOS	Windows
QR_CODE **Note:** This barcode type is recommended based on performance and accuracy.	Yes	Yes	Yes
DATA_MATRIX	Yes	Yes	Yes
UPC_A	Yes	Yes	Yes
UPC_E	Yes	Yes	Yes
EAN_8	Yes	Yes	Yes
EAN_13	Yes	Yes	Yes
CODE_39	Yes	Yes	Yes
CODE_93	Yes	Yes	Yes
CODE_128	Yes	Yes	Yes
CODABAR	Yes	No	Yes
ITF	Yes	Yes	Yes
RSS14	Yes	No	Yes
PDF_417	Yes	Yes	Yes
RSS_EXPANDED	Yes	No	No
MSI	No	No	Yes
AZTEC	Yes	Yes	Yes

Note:

- Use barcodes that have a length of up to 20 characters.
- Barcode scanning is dependent on the camera resolution of the mobile devices and on the condition of the printed barcode.

About Geolocation Data for Readings and Recommendations

If geolocation services are enabled on a device, relevant geolocation data will be saved automatically when you provide readings or create a recommendation.

Accessing Geolocation Data

You can view the geolocation data that is saved for readings, recommendations, and photos via a Map query delivered in the baseline APM catalog.

Availability of Geolocation Data

Location data will be stored only if geolocation services are able to obtain coordinates. This is contingent on the user having granted permission for the APM website or application to access geolocation services on the device in use. In addition, geolocation services may be intermittent; if the geolocation service does not provide a valid response, no location information will be saved to the database.

Note: When using Google Chrome, location data is saved only when using a secure connection over https. For more information, refer to the Google Chrome security documentation.

Accuracy of Geolocation Data

In general, for horizontal location detection when using GPS-based location services (that is, when outdoors and using a smartphone or tablet with built-in GPS), there is >95% probability of the location being accurate within 3.5 meters.

Note: If you are indoors while taking a reading or creating a recommendation, GPS-based geolocation may not work, and accuracy will be limited.

If geolocation is inferred from IP network address, wi-fi, or a cell location, it may be significantly less accurate. For example, if using a browser, geolocation will be inferred from the IP address and wi-fi based location information. At best, a browser is only able to isolate location to a 3 to 5 mile radius, though it could be significantly less accurate. If you are accessing the internet via a corporate network, it is possible that the exposed IP address may imply a different location, possibly even a different country, than where you are physically located.

Access a Route for Data Collection

This topic describes how to access a Route from the **RDC Overview** page.

Before You Begin

- To access a Route for data collection, the Route must be due or overdue.
- If you want to take readings while offline, the Route must be enabled for offline access and downloaded to the device.

Important: To ensure the validity of recorded data, the device you are using must have the same time zone as your user time zone.

About This Task

Note: If you are using the APM mobile application on a device that supports barcode scanning, you can also access the Route by scanning the barcode of the asset or location.

Procedure

1. Access the **RDC Overview** page.
2. Depending on whether the Route that you want to access is overdue or due, select one of the following tabs:
   - **Overdue Items**
   - **Due Items**

   A list of Routes appears.

   Note: The ⬡ icon (blue color) next to a Route's name indicates that the Route is available for offline access. The ⬡ icon indicates that the Route is synchronizing with the APM database and you cannot open the Route until the synchronization is complete.
3. Select the Route that you want to access.

   The Route appears.

In the **Route Map** pane, assets appear in blue tabs, and Checkpoints appear in gray tabs. On the right side of the page, the workspace for the selected tab appears. The workspace for a Checkpoint includes boxes in which you can enter readings as well as the following sections:

- **Additional Instructions** (appears only if the Checkpoint is a Measurement Location): Contains any specific information or instructions provided by the Route administrator.
- **Lubrication Requirement Summary** (appears only if the Checkpoint is a Lubrication Requirement): Summarizes basic information about the Lubrication Requirement.
- **Reference Documents**: Contains reference documents added by the Route administrator.
- **Measurement Trend**: Displays a trend chart for the latest five readings for the selected Checkpoint.

Tip: You can select the Asset ID at the top of the workspace to open the health summary information for the asset in Asset Health Manager.

Next Steps

- Provide Readings

About Small Screen Devices

To enhance data collection on small screen devices, such as mobile phones and small tablets, APM automatically adjusts the page layout when you use Rounds Data Collection in portrait mode on any device with a screen less than 769 pixels wide. Regardless of the screen width of your device, the page layout of Rounds Data Collection switches between portrait and landscape modes when you rotate your device, enabling devices with a screen less than 769 pixels wide to use the original page layout when in landscape mode.

Supported Features on Small Screen Devices

The following features are not supported in Rounds Data Collection on small screen devices:

- Selecting an asset name at the top of the workspace for a Route to view the health summary information for that asset in Asset Health Manager.
- Selecting the reading date/time in the in the **Measurement Trend** graph section of the workspace for a Measurement Location to view the **Health Source** page.

All other standard features of Rounds Data Collection are supported on small screen devices.

While the supported features behave in the same way when you are using a small screen device as they do when you are using a larger device, the following features are displayed differently:

- The **RDC Overview** page
  As shown in the following image, the contents of the page are adjusted to fit a small screen device.
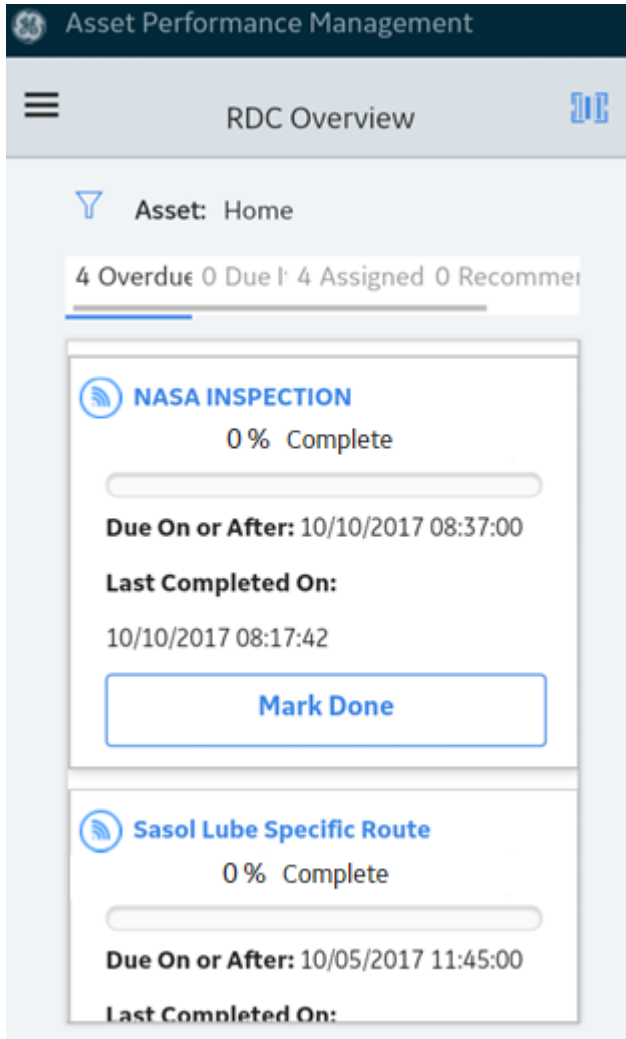
- The barcode scanner

  On a small screen device, the button you select to open the barcode scanner (⬛⬛) appears in the upper-right corner of a Route and of the **RDC Overview** page, as shown in the following image.

- The **Device Settings** window

  On a small screen device, the button you select to open the **Device Settings** window (☰) appears in the upper-left corner of the **RDC Overview** page page. Within the **Device Settings** window, buttons rather than drop-down list boxes appear in the **Download Horizon** and **Sync Interval** sections. Additionally, the **Scan Option** section does not appear on a small screen device. The following image shows the **Device Settings** window on a small screen device.
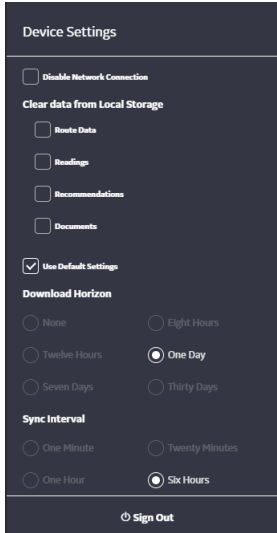
- The **Route Map** pane

  On a small screen device, the **Route Map** pane does not appear automatically when you access a

  Route for data collection. The button you select to view the **Route Map** pane (⇥) appears in the upper-left corner of the workspace for a Route. The **Route Map** pane appears the same on a small screen device as it does on a larger screen device.

Scan a Barcode to Access a Route or Checkpoint

This topic describes how to access a Route or Checkpoint by scanning its assigned barcode.

Before You Begin

- Assign a Scan ID to the Route or Checkpoint.
- To access a Route for data collection, the Route must be due or overdue.

Procedure

1. Access the **RDC Overview** page.
2. In the upper-right corner of the page, select **Scan**.
   The barcode scanner for your mobile device appears.
3. Using your mobile device, scan the barcode assigned to the Route or Checkpoint that you want to access.

   A **Scan** window appears that allows you to navigate to the matching Checkpoint or Route.
4. Select **OK**.

Results

- If the barcode that you scanned is associated with a Checkpoint on the current Route as well as a Checkpoint on a different Route, the Checkpoint on the current Route opens automatically.
- If the barcode that you scanned is associated with a Route that is not the current Route, a window appears that allows you to navigate to the Route that you want to access.
- If the barcode that you scanned is associated with a Checkpoint on more than one Route but not on the current Route, a window appears that allows you to navigate to the matching Checkpoint whose related Checkpoint Task has the earliest Next Date. If multiple Checkpoints have the same Next Date, you can navigate to the first Route, sorted alphabetically, that contains the Checkpoint.

Provide Readings for a Measurement Location

This topic describes how to provide readings for a Measurement Location on a Route.

About This Task

Note: Depending on your device and system settings, a message may appear, asking if you want to allow the device to use geolocation data.

Procedure

1. Access the Route for which you want to provide readings.
2. In the **Route Map** pane, select a Measurement Location.
   The workspace for the Measurement Location appears.

   Tip: You can use the arrows at the top of the workspace for the selected checkpoint to navigate between checkpoints.
3. In the **Reading** box, select or enter the reading for the Checkpoint.
4. As necessary, select or enter values in the **Action Taken** and **Comments** boxes.

Results

- A Reading record is created.
- Readings are saved automatically.

  Note: The ⬚ icon indicates that a reading is successfully saved to the device.
- The progress bar that appears in the **Route Map** pane and in the **RDC Overview** page in the **Overdue Items** and **Due Items** sections is updated to reflect the number of checkpoints for which you have provided readings as well as the percentage of the Route that is complete.
- If the value that you entered in the **Reading** box is normal, then the Measurement Location is marked with a ✅ icon on the **Route Map** pane.
- If the value that you entered in the **Reading** box is in alert, then a message appears below the Reading field, specifying the action that you should take. The Measurement Location is marked with a 🔵 icon in the **Route Map** pane.

Provide Readings for a Lubrication Requirement

This topic describes how to provide readings for a Lubrication Requirement on the Route.

Procedure

1. Access the Route for which you want to provide readings.
2. In the **Route Map** pane, select a Lubrication Requirement.

   The workspace for the selected Lubrication Requirement appears.

   Tip: You can use the arrows at the top of the workspace for the selected checkpoint to navigate between checkpoints.
3. In the **Completion Status** box, select a value.
4. As necessary, enter a value in the **Quantity Added** box.

Results

- A Reading record is created.
- Readings are saved automatically.

  Note: The 🔲 icon indicates that a reading is successfully saved to the device.
- The progress bar that appears in the **Route Map** pane and in the **RDC Overview** page in the **Overdue Items** and **Due Items** sections is updated to reflect the number of checkpoints for which you have provided readings as well as the percentage of the Route that is complete.
- If you selected **Skip** in the **Completion Status** box, the Lubrication Requirement record is marked with a ⊖ icon in the **Route Map** pane.
- If you selected **Done** in the **Completion Status** box, the Lubrication Requirement record is marked with a ✅ icon in the **Route Map** pane.

Provide Readings for an Asset

This topic describes how to provide readings for Checkpoints in the workspace for a selected asset on a Route.

Procedure

1. Access the Route for which you want to provide readings.
2. In the **Route Map** pane, select an asset.

   The workspace for the asset appears.

   Tip: You can use the arrows at the top of the workspace to navigate between assets.
3. In the boxes, select or enter the readings for each Checkpoint associated with the selected asset.

Results

- A Reading record is created.
- Readings are saved automatically.

  Note: The 🔲 icon indicates that a reading is successfully saved to the device.
- The progress bar that appears in the **Route Map** pane and in the **RDC Overview** page in the **Overdue Items** and **Due Items** sections is updated to reflect the number of checkpoints for which you have provided readings as well as the percentage of the Route that is complete.

Create a Recommendation in the Workspace for a Checkpoint

Before You Begin

- Provide Readings

About This Task

You can create the following types of recommendations in Rounds Data Collection:

- **New Recommendation:** This Rounds recommendation is linked to the checkpoint.

- **Standalone Recommendation:** This Rounds recommendation is linked to the asset that is associated with the checkpoint.

Procedure

1. Access a Route containing a checkpoint for which you want to create a recommendation.
2. Select the tab for the Checkpoint.

   The datasheet for the Checkpoint appears.

3. On the upper-right corner of the page, select .

   The **Recommendations** pane appears, displaying a list of recommendations linked to the Checkpoint.

4. In the upper-left corner of the **Recommendations** pane, select .

   If you want to create a standalone recommendation, then select .

   A blank datasheet for the recommendation appears.

   If you are creating a new recommendation, and the reading for the checkpoint is in Alert, then the **Recommendation Headline** box is populated with a summary of the alert condition.

5. If you want to attach an image of the asset or the checkpoint, select the **Capture Image** button above the datasheet.
   The camera application on the mobile device opens, allowing you to capture the image of the asset or the checkpoint.

   Note: The **Capture Image** button appears only if you are accessing the Rounds Data Collection module using the APM mobile application.

6. As needed, enter values in the available fields, and then, in the lower-right corner of the pane, select **Save**.

   Note: If you select **Create Work Request?**, you must have the appropriate privileges to create EAM notifications (e.g., be a member of the MI SAP Interface User Security Group). In addition, your Operator Rounds Recommendation family fields must be configured to match your EAM field settings.

   The Rounds recommendation record is created.

Results

- The recommendation that you have created is listed in:
  - The **Recommendations** section on the **RDC Overview** page.
  - The **Recommendations** pane of the Route, both in the Rounds Designer module and the Rounds Data Collection module.
- If you attached an image to the recommendation, a Reference Document record for the image is linked to the recommendation and to the related checkpoint.

Create a Recommendation in the Workspace for an Asset

Before You Begin

- Provide Readings

About This Task

You can create the following types of recommendations in Rounds Data Collection:

- **New Recommendation:** This Rounds recommendation is linked to the checkpoint.
- **Standalone Recommendation:** This Rounds recommendation is linked to the asset that is associated with the checkpoint.

Procedure

1. Access a Route containing a checkpoint for which you want to create a recommendation.
2. Select the tab for an asset that is associated with the Checkpoint for which you want to create a recommendation.

   The workspace for the selected asset appears.
3. Next to the box for the Checkpoint for which you want to create a recommendation, select ⟍.

   The **Recommendations** window appears.
4. Select ⟍.

   If you want to create a standalone recommendation, then select ⚡.

   A blank datasheet for the recommendation appears.

   If you are creating a new recommendation, and the reading for the checkpoint is in Alert, then the **Recommendation Headline** box is populated with a summary of the alert condition.
5. If you want to attach an image of the asset or the checkpoint, select the **Capture Image** button above the datasheet.
   The camera application on the mobile device opens, allowing you to capture the image of the asset or the checkpoint.

   Note: The **Capture Image** button appears only if you are accessing the Rounds Data Collection module using the APM mobile application.
6. As needed, enter values in the available fields, and then, in the lower-right corner of the pane, select **Save**.

   Note: If you select **Create Work Request?**, you must have the appropriate privileges to create EAM notifications (e.g., be a member of the MI SAP Interface User Security Group). In addition, your Operator Rounds Recommendation family fields must be configured to match your EAM field settings.

   The Rounds recommendation record is created.

Results

- The recommendation that you have created is listed in:
  - The **Recommendations** section on the **RDC Overview** page.
  - The **Recommendations** pane of the Route, both in the Rounds Designer module and the Rounds Data Collection module.
- If you attached an image to the recommendation, a Reference Document record for the image is linked to the recommendation and to the related checkpoint.

Mark a Route Done

About This Task

To mark a Route done once you have completed taking readings on the Route, select one of the following methods.

Procedure

- Mark a Route done from the **Route Map** pane.

    1. Access the Route that you want to mark done.
    2. Select **Mark Done**.

        The **Mark Route Done** window appears.

        This window displays the following information:

        Readings Taken

        This field is populated automatically with the number of MLs/LRs completed.

        Readings Expected

        This field is populated automatically with the number of MLs/LRs expected.

        Recommendations Raised

        This field is populated automatically with the number of Recommendations added.

        Note: The count does not include the standalone recommendations.

    3. Enter comments as required, and then select **OK**.

        The **Route Marked Done** dialog box appears, indicating that the Route is marked done, and asking you to close the tab.

    4. Select **OK**, and then close the tab.

- Mark a Route done from the **Due Items** or **Overdue Items** section.

    1. Access the **RDC Overview** page.
    2. Depending on whether the Route that you want to access is overdue or due, select one of the following tabs:

        ◦ **Overdue Items**
        ◦ **Due Items**

        A list of Routes appears.

    3. In the row for the Route that you want to mark done, select **Mark Done**.

        The **Mark Route Done** window appears.

        This window displays the following information:

        Readings Taken

        This field is populated automatically with the number of MLs/LRs completed.

        Readings Expected

        This field is populated automatically with the number of MLs/LRs expected.

        Recommendations Raised

        This field is populated automatically with the number of Recommendations added.

        Note: The count does not include the standalone recommendations.

    4. Enter comments as required, and then select **OK**.

        The Route is marked done.

- Mark a Route done from **Assigned Routes** section.

    1. Access the **RDC Overview** page.
    2. Select the **Assigned Routes** tab.

        The **Assigned Routes** section appears, displaying a list of the Routes assigned to you.

    3. Select the check box that corresponds to the Route that you want to mark done.

4. In the upper-right corner of the section, select **Mark Done**.

   The **Mark Route Done** window appears.

   This window displays the following information:

   Readings Taken

   This field is populated automatically with the number of MLs/LRs completed.

   Readings Expected

   This field is populated automatically with the number of MLs/LRs expected.

   Recommendations Raised

   This field is populated automatically with the number of Recommendations added.

   Note: The count does not include the standalone recommendations.

5. Enter comments as required, and then select **OK**.

   The Route is marked done.

Results

- If you are working online, the Route no longer appears in the **Due Items** or **Overdue Items** section on the **RDC Overview** page.

  If you are working offline, the Route continues to appear in the **Due Items** or **Overdue Items** list, as applicable, with information about the Route completion.

  Tip: If you are offline, you can select **Edit Comment** to modify the comment that you entered when you marked the Route done.

- A Route History record is created and displayed in the **Route History** section of the Route when you access it via the Rounds Designer module.

Chapter

5

Reference

Topics:

About Saving Reading Records

In Rounds Data Collection, when you enter a reading, the reading is immediately saved to the device. If the device is offline, readings will be saved to the server the next time the device is online. If the device is online, the reading will be saved to the server after ten seconds of user inactivity.

Rounds Data Collection uses the following icons to illustrate the save status of a reading record:

Indicates that the reading is not yet saved to the device's local storage.

Indicates that the reading is saved to the device's local storage.

Indicates that the reading is not yet saved to the server.

Indicates that the reading is saved to the server.

About Recommendations

You can create the following types of recommendations in Rounds Data Collection:

New Recommendation

This Rounds recommendation is linked to the Checkpoint. Create this recommendation if you want to provide suggestions on the Checkpoint. The information about the Checkpoint and the asset linked to it is populated in the datasheet for the recommendation.

Standalone Recommendation

This Rounds recommendation is linked to the asset that is associated with the Checkpoint. Create this recommendation if you want to provide suggestions on the asset that is linked to that Checkpoint. The information of only that asset is populated in the datasheet for the recommendation. The information about the Checkpoint is not populated. Standalone recommendations do not appear in the **Recommendations** pane of a Route. They appear only in the **Recommendations** section in the **RDC Overview** page.

About Filtering the Route

When accessing a Route from the **RDC Overview** page, the Rounds Data Collection module allows you to filter the Route. By default, all MLs and LRs in the Route are displayed, but you can filter the Route to show:

- **Asset Headers Only**: When the **Asset Headers Only** option is selected, the ML/LR nodes for the currently selected asset are displayed based on the Asset Header, and the checkpoint details are hidden. When you select the ML/LR on the next asset, the ML/LR nodes for the new asset are displayed, and the previous ones are closed.

   Note: When the **Asset Headers Only** option is selected, the first available checkpoint for that asset is displayed, respecting any filters that are applied.

- **Measurement Locations**: When the **Measurement Locations** option is selected, the ML nodes for the currently selected asset are displayed.
- **Lubrication Requirements**: When the **Lubrication Requirements** option is selected, the LR nodes for the currently selected asset are displayed. The LR nodes are can be filtered based on priority, as defined in Rounds Designer Admin.
- **Only Incomplete Checkpoints**: When the **Only Incomplete Checkpoints** option is selected, the ML/LR nodes that are incomplete are displayed.
- **Only Checkpoints in Alert**: When the **Only Checkpoints in Alert** option is selected, the ML/LR nodes that are in alert are displayed.

More than one filter can be selected, and the results are displayed based on a logical And operation.

- If you select **Only Incomplete Checkpoints** and **Only Checkpoints in Alert**, only measurement locations that are incomplete are displayed.
- If you select **Lubrication Requirements** and **Only Checkpoints in Alert**, only lubrication requirements that are in alert are displayed.

  Note: You will not be able to select both **Only Incomplete Checkpoints** and **Only Checkpoints in Alert**. It is not a valid combination.

About the Measurement Trend Graph

The **Measurement Trend** graph plots the trend for the current reading and the latest five readings that you have entered for a Checkpoint.
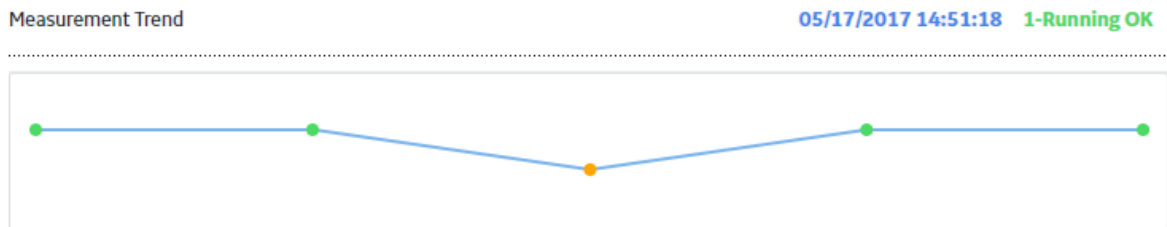
When you select the reading date/time, the **Health Source** page for the Measurement Location appears, displaying the following sections:

Note: The link to access the **Health Source** page is not provided on small screen devices.

- **Trend Chart**: This section appears only if the type of the Measurement Location is numeric. It displays the **Measurement Trend** graph in full screen, allowing you to set the From and To dates for the graph.

- **Reading History**: Displays a list of readings in the graph, along with the date and time on which each reading was taken.

  Note: You cannot view the graph and the **Reading History** section if you are working offline.

A link to open the related asset in Asset Health Manager also appears on the upper-right corner of the page.

Chapter

6

Troubleshooting

Topics:

Troubleshooting Scenarios

Troubleshooting Scenarios

The following topics can help you troubleshoot issues that you may have with the Rounds Data Collection module:

- Incorrect Number of Routes are Shown and Data is not Uploaded
- Routes, Readings, and Recommendations Disappear from the Device and Reappear Randomly
- Readings and Recommendations are not Synced to the Server

Incorrect Number of Routes are Shown and Data is not Uploaded

Description

- You may not see all the assigned Routes in Rounds Data Collection (RDC)
- Readings and recommendations are not uploaded, and warnings or errors appear

Cause

This may occur due to application cache issues.

Solution

Procedure

1. Clear the application cache regularly.

   ⚠️ **Warning:** Clearing application cache will clear any offline data that is not synced to the cloud.

2. Clear the device data on the APM mobile app. To do this:

   a) Go to **Device Settings** and select the check boxes for **Route Data**, **Readings**, **Recommendations**, and **Documents**.

   b) Select **Done**.
      This will remove any old data on the device.

3. The frequency at which this activity must be performed depends on multiple factors such as Route scheduling, ML scheduling frequency, and user activity. We recommend doing this on a weekly basis, typically at the end of a work week.

   ⚠️ **Warning:** This action will delete data on the device; therefore, make sure all data is synced onto the server before performing this step. After the data sync is completed, the cloud icon (🔵) turns blue.

Routes, Readings, and Recommendations Disappear from the Device and Reappear Randomly

Description

- Routes will appear and then disappear randomly on the APM mobile application

- Readings and recommendations data collected on the devices suddenly disappears

Cause

This may occur if the Route is not marked for offline access

Solution

Many industrial settings do not have consistent network access to the APM server in the field. To avoid intermittent network connectivity, we recommend that you download Routes onto the device by enabling offline access. To enable offline access for a Route:

1. Navigate to **Health** > **Rounds Data Collection**.
2. Select the **Assigned Routes** tab.
3. Select the Routes that you plan to work on for the day or shift, then select **Enable Offline-Access** (📶).

This will download the Route on to the device and you can work offline.

Do not select too many Routes for offline access because it will affect performance. Select only those Routes that you will work on for the current shift.

Readings and Recommendations are not Synced to the Server

Description

- Readings and recommendations remain on the device, but are not uploaded to the server.
- Readings and recommendations take a long time to upload.

Cause

This may occur if the network is weak and unreliable.

Solution

Many industrial settings do not have consistent network access to the APM server in the field. To avoid intermittent network connectivity, we recommend that you download Routes onto the device by enabling offline access.

After the Routes are fully downloaded onto the device (a solid blue Wi-Fi icon will be seen next to the Route in the Rounds Data Collection Overview page), disable the network connection.

To do this:

1. Access the **Settings** option on the app.
2. Select the **Disable Network Connection** check box.

When you are offline, continue to take readings and recommendations. The data collected is stored on the device; the app will not upload data while working offline. After you finish with the Route, you can mark it complete and proceed with the next Route. When data collection is complete, find a location with good network reception. Clear the **Disable Network Connection** check box; this triggers the connection back to the server and the data is uploaded on the server.

To increase upload performance, consider syncing throughout the day. For example, if you take 100 readings on a large Route, consider going online and uploading those readings. You can then continue the Route; when it is finished, you can mark it complete and then upload the remaining readings and recommendations. Encouraging users to upload more often will improve the server efficiency for all APM

users. This will optimize the RDC performance on the device and will not overload the server by uploading large numbers of Routes simultaneously.

Frequently Asked Questions

Frequently Asked Questions

This topic covers the frequently asked questions (FAQs) for Rounds Data Collection.

1. Where can I obtain the mobile app?

    Download the APM mobile application from your company's app store, which is linked to either Google Play or the iOS App Store. This will ensure the app uses your company's VPN. It will also help in maintaining connectivity if the app is expected to be used in the Open Internet.

2. Which version of the app needs to be used?

    Always make sure that the APM mobile app version matches the version of the APM web application; this applies for both hosted and on-prem releases.

3. What are the recommended device settings?

    - **Sync Interval**: We recommend setting the device Sync Interval to at least 20 minutes. If Routes do not change frequently, consider a minimum of one hour or longer.
    - **Download Horizon**: The Download Horizon should be consistent with how long you plan to be offline. If you are performing shift-based Routes, consider 8 or 12 hours. If you plan to be offline for several days, consider the 7-day option.

      Note: The smaller the horizon, the faster is the download performance.
    - **Batch Upload Size**: If the network is expected to be very disruptive, readings will not sync or will take a lot of time to sync . To alleviate this, set the batch size to 10 readings.
    - **Maximum length of time (seconds) that is allowed to retrieve GIS data**: This setting is available on the APM web application (**Admin** > **Application Settings** > **Rounds Designer** > **Default Device Settings**). We recommend retaining it at the default setting (2 seconds). This can be increased, but do not set this beyond 10 seconds.

4. Can I use a browser on a smart phone or tablet to collect readings instead of the app?

    No. We do not recommend using the browser on smart devices to collect readings. This may result in data loss.

5. Is there a limit on the number of Routes that can be marked for offline access?

    While it is possible to assign many Routes to users, we recommend that you only mark the Routes you will be performing in a shift for offline access. For example, if you have 50 Routes assigned and you only plan to run three during your shift, mark only those three Routes for offline access. If you were to select all 50 for offline use, the system will download the data for all 50 Routes and keep it in sync. This can lead to excessive sync times, making you wait for Route data that you may not need immediately. We suggest having no more than five Routes marked for offline access at a given time. This number is flexible and depends on the number of checkpoints on a given Route. Try to limit the total number of offline checkpoints to 750 or less.