GE VERNOVA

Asset Performance Management

On-Premises APM

V5.0.7.0.0

SAP Adapters

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Chapter 1

Overview

Topics:

- Overview of the EAM Adapters
- EAM Adapter Workflow

Overview of the EAM Adapters

The APM Connect EAM Adapters transfer data from your existing Enterprise Asset Management (EAM) system into APM using the APM Connect Administration Center.

APM Connect is built upon a fundamental premise that you are using an external EAM system to store information about your equipment, the locations in which the equipment exists, failures of the equipment and locations, and work that has been performed on the equipment and locations.

APM provides tools that let you analyze and process this data. Before you can analyze the data in APM, however, you must transfer it from your EAM system into your APM system. After the data exists in APM, it can be analyzed to determine the state of your equipment and locations, and the reliability, trends, potential risks, and probability of failures associated with them.

EAM Adapter Workflow

This workflow provides the basic, high-level steps for using this module.

Procedure

1. Identity the records you want to transfer from your EAM system(s) to APM.
2. Apply filter parameters in the context file as necessary.
3. Do one of the following.
   - Schedule a job(s) to run in the APM Connect Administration Center.
   - Execute a run-now job.
4. Check that the record was transferred into APM.

   Note: This step is not necessary to complete the data transfer. However, it is a check to ensure that the transfer was executed successfully.
5. If the transfer was not successful, view the execution log for errors.

Chapter 2

Workflows

Topics:

- Asset Management Workflow
- Event Management Workflow
- Notification Creation Workflow
- Work Management Workflow
- Task and Confirmation Generation Workflow
- Work Order Generation Workflow

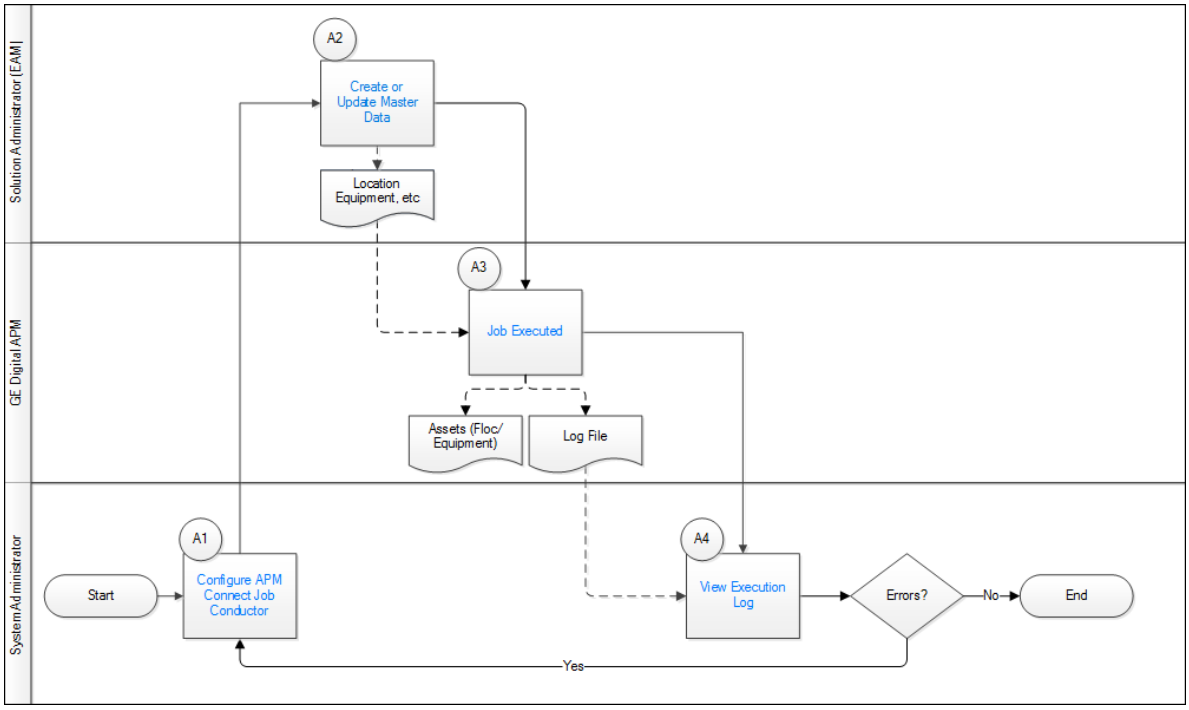
Asset Management Workflow

EAM Extraction and Notification: Asset Management Workflow

The purpose of Asset Management workflow is to extract and load assets (Equipment and or Functional Location records) from your EAM System to APM. As these records are loaded, they will be related to a superior asset record, if one is identified on the asset. Assets are managed in the EAM system with the data being transferred to APM to support analysis.

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.



1. Configure APM Connect Job Conductor on page 4
2. Create or Update Master Data on page 5
3. Job Executed on page 5
4. View Execution Log on page 5

Configure APM Connect Job Conductor

Persona: System Administrator

The APM System Administrator will configure the APM Connect Job Conductor to define what jobs will be run, assign the context parameters, and schedule the triggers to execute the job on a scheduled basis. Alternatively, the job can be executed manually from the Job

Conductor. Then, you will update the context file that is located on the APM Connect server to apply assigned filters for the extractions.

Create or Update Master Data

Persona: Solution Administrator (EAM)

The EAM Solution Administrator is responsible for managing the master data (Location, Equipment & taxonomy structure) as well as the asset hierarchy in the EAM system. The administrator will follow his or her own processes/procedures for loading new data or updating existing master data.

Job Executed

Persona: APM

When the job executes, it will extract records that are used to store information about locations in the EAM system, including but not limited to the locations at which the physical pieces of equipment are installed. The job will use the context file parameters as filters to define the data that is extracted.

View Execution Log

Persona: System Administrator (APM)

This step is not necessary to complete the data transfer. However, it is a check to ensure that the transfer was executed successfully. The execution log is used to view information about the job execution such as its status, ID, trigger type, and other details. The log also contains information about the errors and warnings that occurred during the execution process. If there are errors, then the Solution Administrator can modify the parameters, and then re-run the job manually.

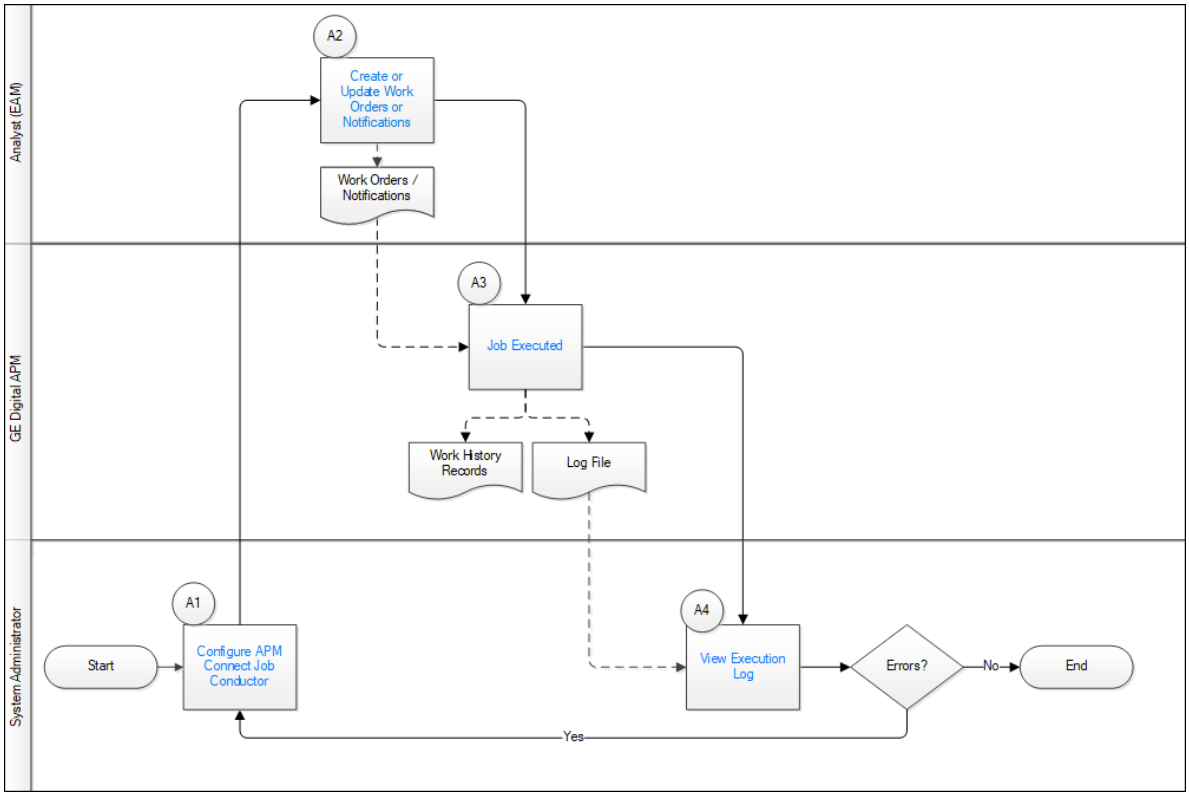
Event Management Workflow

EAM Extraction and Notification: Event Management Workflow

The purpose of the Event Management Workflow is to extract and load notification and order information from your EAM System to APM as work history records. As these records are loaded, they may be related to an equipment and/or functional location record, if they are identified on the records.

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.



1. Configure APM Connect Job Conductor on page 6
2. Create or Update Work Orders or Notifications on page 6
3. Job Executed on page 6
4. View Execution Log on page 7

Configure APM Connect Job Conductor

Persona: System Administrator

The APM System Administrator will configure the APM Connect Job Conductor to define what jobs will be run, assign the context parameters and schedule the triggers to kick off the job on a scheduled basis. Alternatively, the job can be kicked of manually from the Job Conductor. Then they will update the context file which is located in the APM Connect server file to apply assigned filters for the extractions.

Create or Update Work Orders or Notifications

Persona: System Administrator

The EAM Analyst (Planner/Scheduler) is responsible for creating EAM specific requests for work to be completed. These documents have various names based on the EAM system. In SAP they are called Notifications or Work Orders, and in Maximo Work Orders and Service Requests. They will follow their own processes/procedures for creating the documents, and approval workflows as configured in their own system.

Job Executed

Persona: APM

The Job will send the information from the work order and/or notification to APM as a Work history record.

APM Connect will use the common filters in the context file to determine the scope of the extraction required by that Job. Common filters include: Maintenance Plant, Notification & Work Order types, Equipment & Functional Location Taxonomy, Create and Change dates, Functional Location, Equipment numbers.

The job to extract new or updated items from the EAM source can be executed automatically based on the schedule parameters. This method ensures synchronization between your SAP database and your APM database.

View Execution Log

Persona: Solution Administrator

This step is not necessary to complete the data transfer. However, it is a check to ensure that the transfer was executed successfully. The execution log is used to view information about the Job execution such as its status, ID, trigger type, and other details. The log also contains information about the errors and warnings that occurred during the execution process. If there are errors, then the Solution Administrator can modify the parameters, and re-run the job manually.

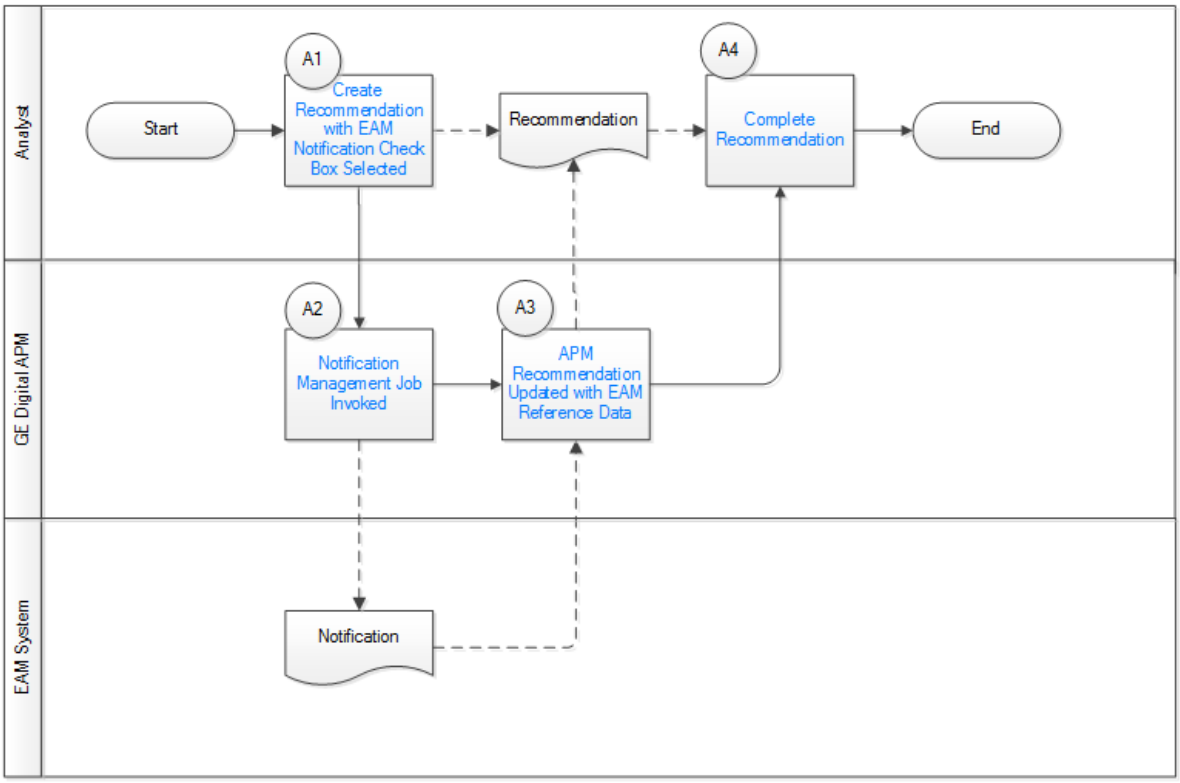
Notification Creation Workflow

EAM Extraction and Notification: Notification Creation Workflow

The purpose of the Notification Creation Workflow is to create a notification in SAP in reference to a APM Recommendation, and then take data from the new notification to populate the data on the recommendation.

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.



1. Create Recommendation with EAM Notification Check Box Selected on page 8
2. Notification Management Job Invoked on page 8
3. APM Recommendation Updated with EAM Reference Data on page 8
4. Complete Recommendation on page 9

Create Recommendation with EAM Notification Check Box Selected

Persona: Analyst

User creates a recommendation manually or from any of the APM modules. After all the approval steps are completed, select the box to the left of **EAM Notification** check box to trigger the Notification job.

Notification Management Job Invoked

Persona: APM

A notification created in your EAM system that represents the APM recommendation.

The notification is created in the EAM system and the APM Recommendation is updated, the notification is created in SAP, and the recommendation will be updated with values for:

- Work Request Reference
- Work Request Equipment
- Work Request Functional Location

APM Recommendation Updated with EAM Reference Data

Persona: APM

The job updates the APM Recommendation with the EAM notification reference information.

Complete Recommendation

Persona: Analyst

The intended work detailed on the APM Recommendation record is completed and closed.

Work Management Workflow

Work Management Workflow

This workflow provides the basic, high-level steps for using this module.

Procedure

- Manage Scheduled Work in SAP Workflow
  1. In SAP, on a Maintenance Plan, enter a value, or the combination of values, configured to trigger the creation of a Task record.
  2. In the Administration Center, run the Work Management Job.
     One or more Task records are automatically created in APM.

     Note: If the Task records are created from Maintenance Plans that are associated with Equipment or Functional Locations that do not already exist in APM, corresponding Equipment and Functional Location records will be created automatically and linked to the new Task records. These Equipment and Functional Location records will contain values only in key fields as defined in the mappings (for example, Equipment ID, Functional Location Internal ID, CMMS System). You will need to run the Equipment Extraction and Functional Location Adapters to populate the remaining fields.
  3. In APM, create an Inspection record or Calibration Event record.
  4. Link the new record to the Inspection Task or Calibration Task record that you created by running the Work Management Job.
  5. Close the Work Order.
  6. Do one of the following.
     - In APM, update the Confirmation record with any modified information.
     - In SAP, validate the Confirmation.
- Manage Scheduled Work in APM
  1. In APM, create a Task record.
  2. Schedule Work Order creation.
  3. In APM, create an Inspection record or a Calibration Event record.
  4. Close the Work Order.
  5. Do one of the following:
     - In APM, update the Confirmation record.
     - In SAP, validate the Confirmation.

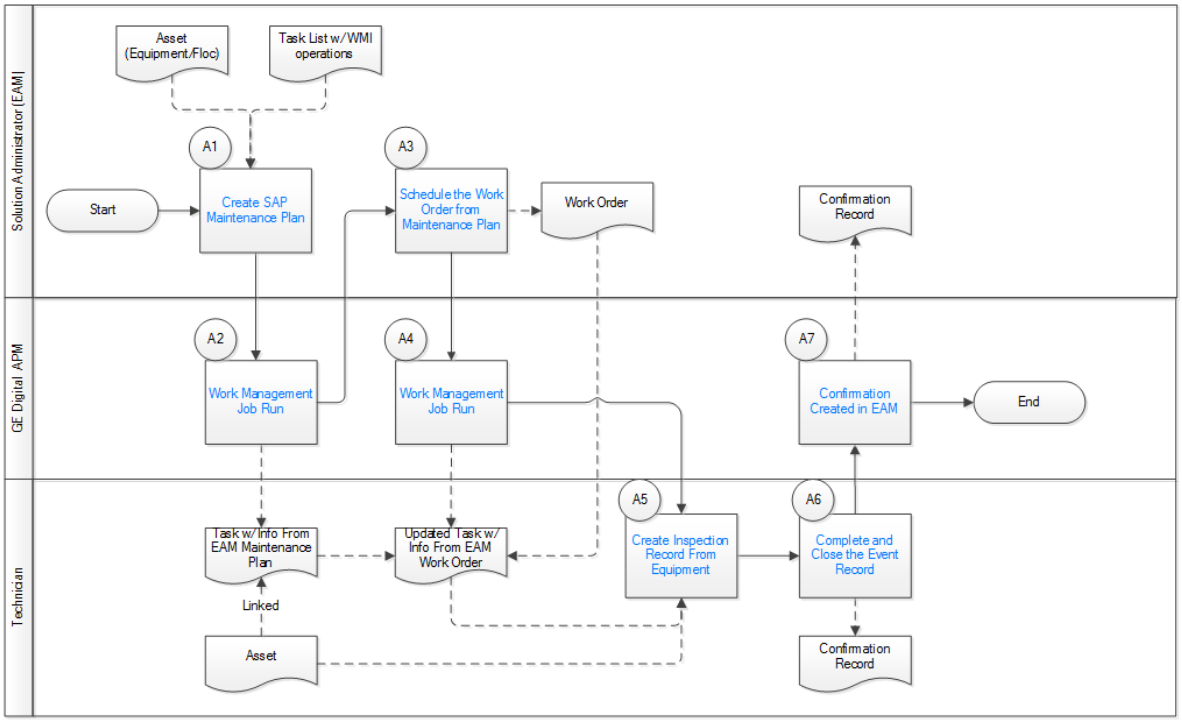
Task and Confirmation Generation Workflow

EAM Work Management: Task and Confirmation Generation Workflow

Work Management Integration workflows manage the collection of detailed condition assessment data like inspections and calibrations, while accounting for resources and costs on orders in the EAM system. The Task & Confirmation Generation workflow documents the approach where the schedule is managed in SAP. The Work Management Interface program creates task records in APM. Each of these will contain information about the EAM maintenance plan, item, task list, work order, and operation from which it was created.

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.



1. Confirmation Created in EAM on page 11
2. Complete and Close the Event Record on page 11
3. Create Inspection Record from Equipment on page 11
4. Work Management Job Run on page 11
5. Schedule the Work Order from Maintenance Plan on page 11
6. Work Management Job Run on page 11
7. Create SAP Maintenance Plan on page 11

Create SAP Maintenance Plan

Persona: Solution Administrator (EAM)

This workflow assumes that the required configuration is in place to set tasks to a control key. In SAP, create a maintenance plan that contains a maintenance item, task list, and at least one operation. One of the operations must meet the criteria in the task configuration table.

Work Management Job Run

Persona: APM

When the Work Management Job is run, an Inspection Task record is created for each configured operation. This task record now has field values containing identifying information about the maintenance plan, maintenance item, task list, and the operation. The Inspection record must be linked to the Equipment record representing the asset in SAP.

Schedule the Work Order from Maintenance Plan

Persona: Solution Administrator (EAM)

Schedule the maintenance plan. Then, the system generates a work order for it, and the work order is released.

Work Management Job Run

Persona: APM

When the Work Management job is run, the Inspection Task record is updated with information about the maintenance plan, maintenance item, task list, and operation.

Create Inspection Record from Equipment

Persona: Technician

An inspection is entered for the equipment and task used in this example. This can be from many of the inspection event families, such as Full Inspection.

Complete and Close the Event Record

Persona: Technician

When actual work hours are entered for the inspection and it is marked closed, a Confirmation record is automatically created in APM, and a corresponding time confirmation is automatically entered for the work order in SAP. The work order number is also automatically removed from the Inspection Task record.

Confirmation Created in EAM

Persona: APM

A corresponding time confirmation for the work order is created in SAP. The work order number is also automatically removed from the Inspection Task record.

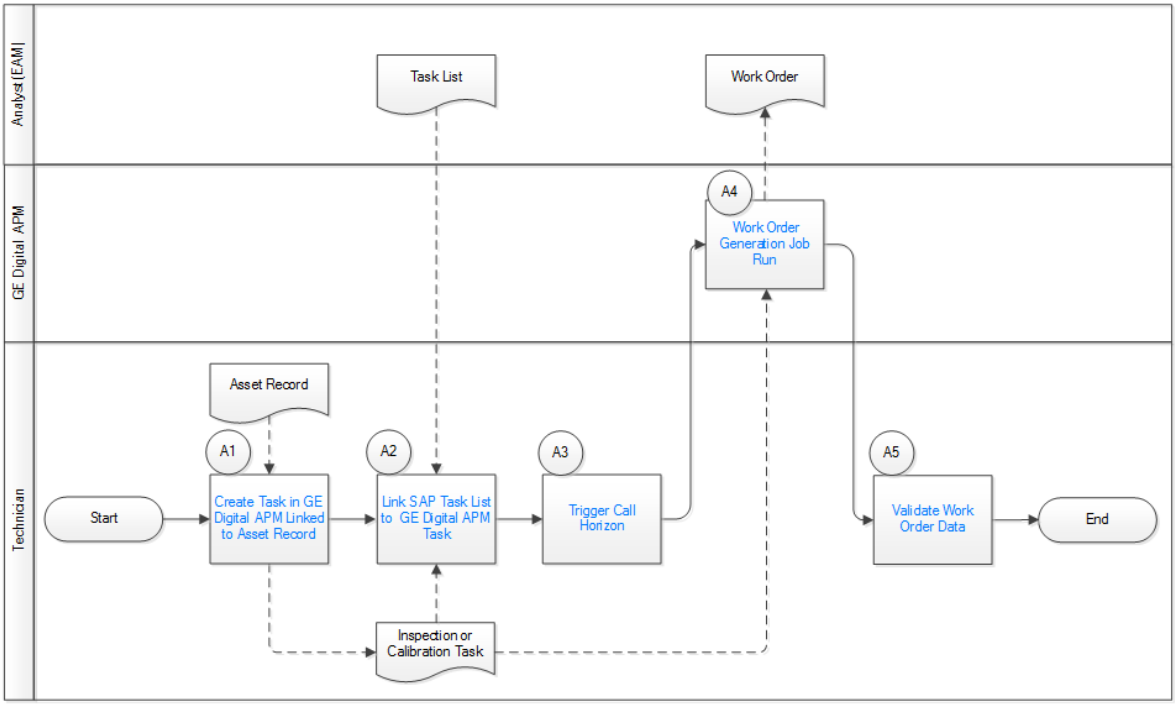
Work Order Generation Workflow

EAM Work Management: Work Order Generation Workflow

Work Management Integration workflows manage the collection of detailed condition assessment data like inspections and calibrations, while accounting for resources and costs on orders in the EAM system. The Work Order Generation Workflow documents the approach where the schedule is managed in APM. The adapter generates work orders in SAP based on APM Inspection or Calibration Tasks triggered by the call horizon interval on the APM task.

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.



1. Create Task in APM Linked to Asset Record on page 12
2. Link SAP Task List to APM Task on page 13
3. Trigger Call Horizon on page 13
4. Work Order Generation Job Run on page 13
5. Validate Work Order Data on page 13

Create Task in APM Linked to Asset Record

Persona: Technician

In this process flow, the work is managed in APM and related to objects in the EAM system. This step creates the Task in APM that is linked to the Equipment record.

Link SAP Task List to APM Task

Persona: Technician

A query is made on the SAP system to return Task Lists that exist in SAP, so that the users can select the required task list that should be linked to the APM Task.

Trigger Call Horizon

Persona: Technician

A call horizon is entered on the APM task, which controls the interval at which work orders are generated in SAP.

Work Order Generation Job Run

Persona: APM

The job creates a Work Order in SAP based on the associated Task List/Maintenance Plan, and the work order number is copied back to the task in APM.

Validate Work Order Data

Persona: Technician

This is not a required step in the workflow, but can be used to validate the process. The process can be validated by searching for the Equipment in the Global Search, verifying the relationships, and verifying that the task includes the EAM work order data.

Chapter 3

Data Extraction Jobs

Topics:

- Data Extraction Jobs

Data Extraction Jobs

Data extractions, also referred to as jobs, are orchestrated through the different adapters. Depending on the type of data (i.e., Equipment, Functional Location, Work History) you want to extract, there is a corresponding job. SAP extractions are facilitated by the APM Connect Administration Center and a corresponding context file. The context file contains filter parameters that are applied to each extraction adapter Job. The filter parameters define the scope of the data extraction.

More Details

The following SAP and SAP PI adapters are available for data extractions:

- Equipment Adapter: Extracts records that are used to store information about physical pieces of equipment, such as pumps, motors, and compressors.
- Functional Location Adapter: Extracts records that are used to store information about locations in your organization including, but not limited to, the locations at which the physical pieces of equipment are installed.
- Work History Adapter: Extracts records that are used to store data about work that was performed against your locations and equipment, as well as failures that occurred for those locations and equipment. Additionally, it allows you to transfer Notifications and Orders from SAP to APM.
- Notification Management Adapter: Allows you to transfer Recommendation records from APM to SAP in the form of Notifications.
- Technical Characteristics Adapter: Allows you to transfer Functional Location characteristics and Equipment characteristics from SAP to APM.
- Work Management Adapter: Allows you to manage scheduled work in SAP and APM.
- PWORK Adapter: The Planned Work Adapter job allows you to retrieve information about the work planned for your assets.
- EAM Extractions should be filtered such that the load does not exceed 10 MB or more than 10,000 records in a single load. Proper batching should be applied in all cases.

About Time Zone Data

APM stores the dates and times of transactions in Universal Coordinated Time (UTC) format. This enables the data to flow through the system in a single time zone format. APM Connect supports the time zones defined in https://docs.microsoft.com/en-us/previous-versions/windows/embedded/gg154758(v=winembedded.80).

To provide information with the time stamp relevant to your operations, the system converts UTC to your time zone by using the time zone information configured in your user definition.

Important: If you change the time zone information configured in your user definition, all the records will reflect the new time zone.

The following sections contain the time zone considerations relevant to specific systems.

Maximo

APM stores the time stamp associated with the data extracted from Maximo in UTC and displays the time stamp based on your configured time zone.

SAP

SAP provides a set of baseline time zone codes, which contain most of the standard time zones across the world. SAP also provides the ability for administrators to define their own custom time zone, as needed. Before you use a customized time zone, you must configure the timezone_control table in APM Connect to include the customized time zone.

SAP defines two types of time zones:

- **System:** This time zone is based on SAP Application Server Operating System and is derived from the context file. You cannot modify this type of time zone.
- **User:** This time zone is based on the user who created the SAP record. You can modify and store this type of time zone in the SAP user interface.

APM stores the time stamp associated with the data extracted from SAP in UTC and displays the time stamp based on the time zone configured for the user who created the SAP record.

Note: If the data extracted from SAP contains only the date, then APM will assign the time 00:00:00 and adjust the assigned time with the SAP system or user time zone. This may lead to a date mismatch when you choose to display the data in APM. To prevent this, APM stores the assigned reference time stamp as a string within the data, which is hidden by default. If you need this information, you can configure APM to display the data.

Chapter 4

Equipment and Functional Location Adapters

Topics:

- About the Equipment and Functional Location Adapters
- About the Technical Characteristics Adapter

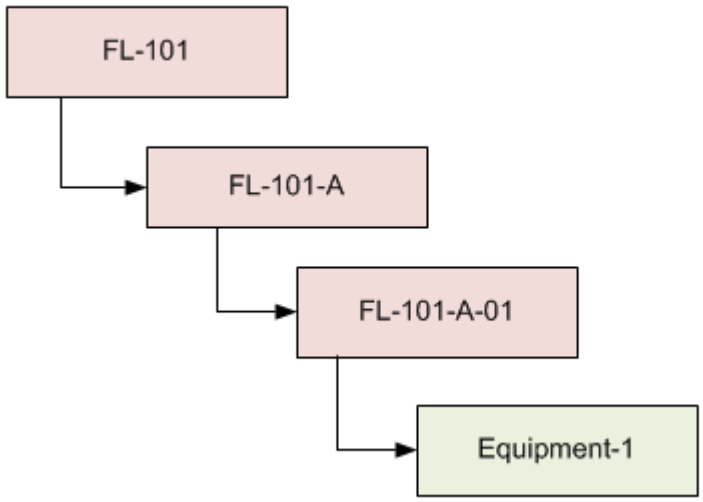
About the Equipment and Functional Location Adapters

The Equipment Adapter lets you extract Equipment items from your SAP system into your APM system. When you do so, for each SAP Equipment item that meets the criteria defined in the extraction Job, a corresponding Equipment record is created in the APM database.

Likewise, the Functional Location Adapter lets you extract Functional Locations from your SAP system into your APM system. When you do so, for each Functional Location that meets the criteria defined in the extraction Job, a corresponding Functional Location record is created in the APM database.

Because the SAP system allows you to define a hierarchy in which Functional Locations are related to other Functional Locations, and because Equipment items are also related to Functional Locations, when you run either the Equipment Adapter or the Functional Location Adapter, the SAP hierarchy is maintained. In some cases, to maintain the hierarchy, placeholder records are created in the APM database to represent the SAP relationships.

For example, suppose that the SAP system contains the following Functional Locations and Equipment items, where the Functional Locations are shaded red, and the Equipment items



are shaded green.

In this case, if you were to run the Functional Location Adapter, the following Functional Location records would be created automatically in the APM database:

- FL-101
- FL-101-A
- FL-101-A-01

Then, if you were to run the Equipment Adapter, the following Equipment record would be created automatically in the APM database:

- Equipment-1

This Equipment record would be linked automatically to the Functional Location record for FL-101-A-01.

Suppose, however, that using the same SAP data structure example, you decide to run the Equipment Adapter before running the Functional Location Adapter. In this case, when running the Equipment Adapter, the Equipment record Equipment-1 would be created

automatically to represent that SAP Equipment item. In addition, the following placeholder Functional Location record would also be automatically created to represent the SAP Functional Location that is directly associated with the Equipment:

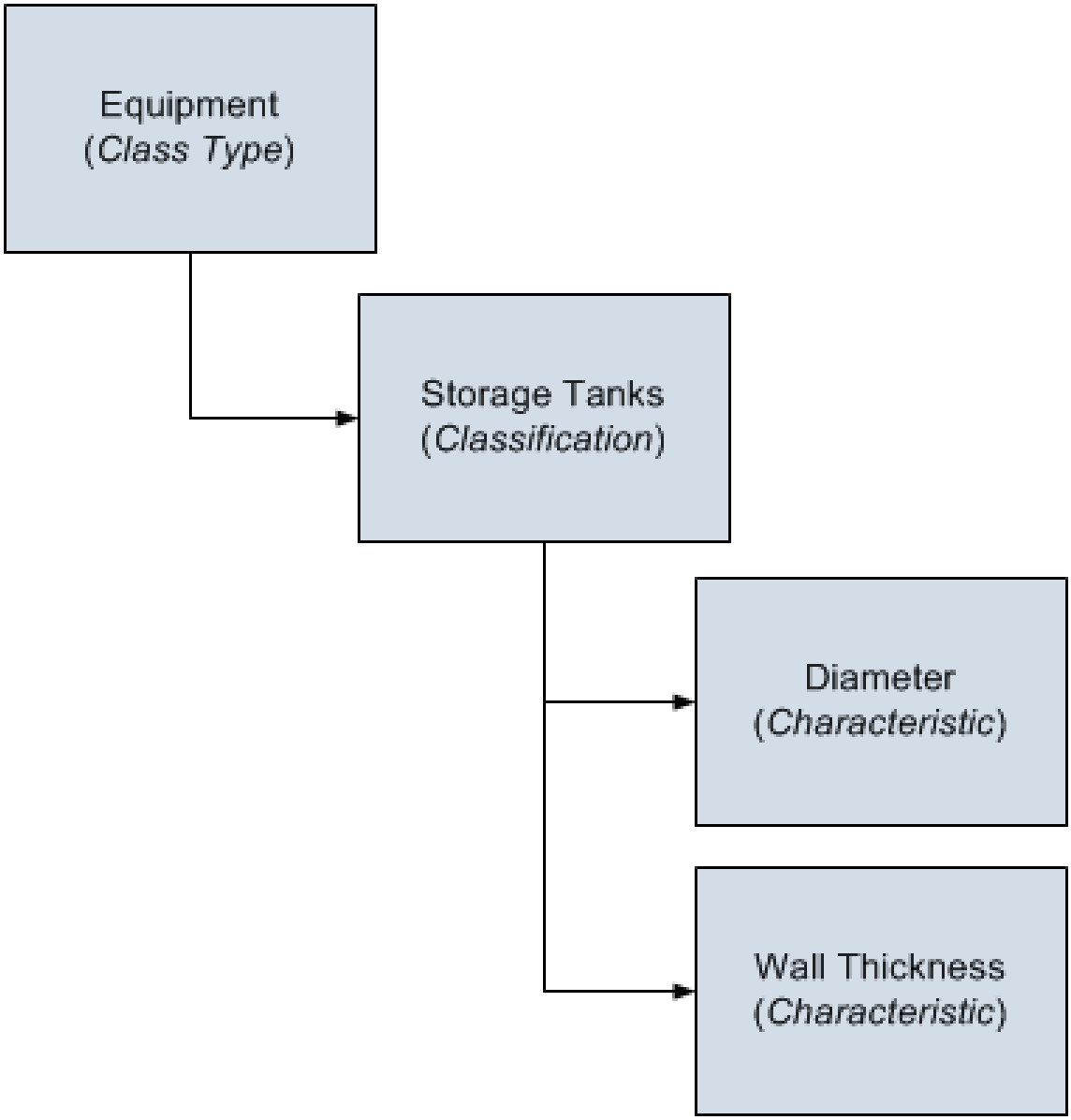
- FL-101-A-01

The Equipment record would be automatically linked to the Functional Location record FL-101-A-01. This placeholder record would contain a value only in the Functional Location key fields. You would need to run the Functional Location Adapter to populate the remaining fields in the placeholder Functional Location record.

About the Technical Characteristics Adapter

Note: You can run the Technical Characteristics Adapters successfully only if the SAP Technical Characteristics license is active.

In SAP, you can assign specific characteristics to Equipment and Functional Locations. Each characteristic belongs to a Classification, and each Classification belongs to a Class Type. For example, the Class Type Equipment Class might contain the classification Storage Tanks, which might contain the Characteristics Diameter and Wall Thickness, as illustrated in the following image:



When you extract Equipment and Functional Locations from SAP into the APM system, their corresponding Characteristics will not be extracted into the Equipment and Functional Location records that are created during the extraction process. If you want to extract their corresponding Characteristics, you will need to run the Technical Characteristics Adapter. When you run these adapters, Technical Characteristic records are created to store the Characteristics that have been configured to be extracted, and these records are linked automatically to the appropriate Equipment and Functional Location records.

Note: When Technical Characteristic classifications are updated in APM, they will override any changes made to the classifications parameter in the context file.

Numeric Value Format

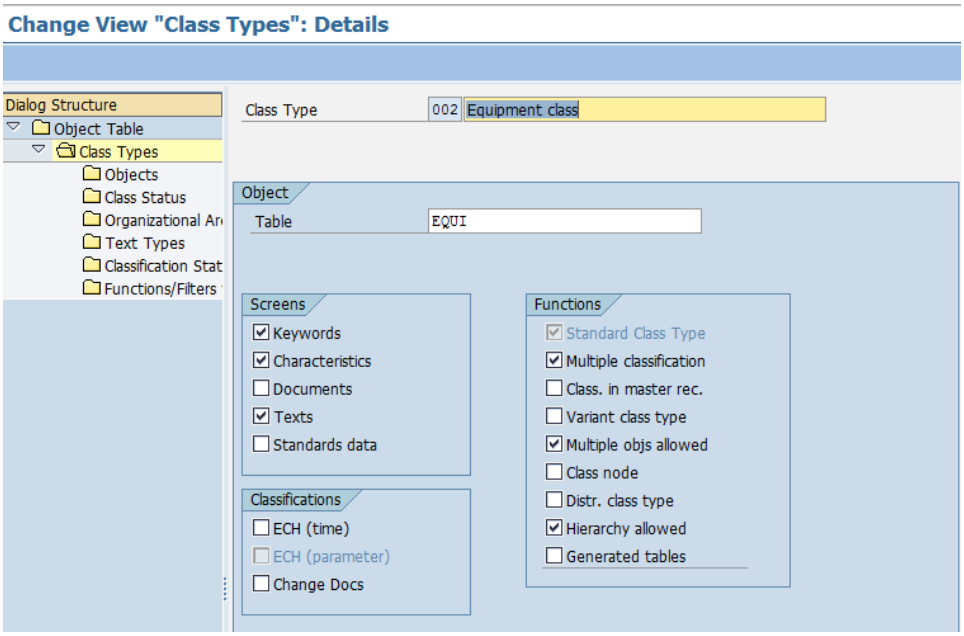
The format in which numbers are displayed in APM is determined by the SAP user that is used to extract the SAP data. For example, if the SAP user is configured to display the value

one thousand one hundred and one-tenth as 1.100,1. The value in APM will be displayed in the same format.

Multiple Objects Allowed

The Technical Characteristic Adapter can transfer Equipment and Functional Locations configured for multiple objects allowed. This functionality is enabled by EQUIPMENT_CLASS context parameter in the context file.

Equipment and Functional Locations are configured for multiple objects in SAP, as shown in the following image.



This indicator tells you whether several different types of object can be classified in classes of this class type. This allows you to classify objects that are logically related to each other in the same class.

APM Actions and Results

In APM, you can configure which Characteristics you want to extract from SAP. When you do so, various actions that you perform in the APM system and the SAP system cause specific results, as seen in the following table.

Action	Result	Notes
Select the **Extract From CMMS System** check box in a CMMS Characteristic record.	The next time the Technical Characteristics Adapter is run, the characteristic is extracted.	During the extraction process, a corresponding Technical Characteristic record is created.
Clear the **Extract From CMMS System** check box in a CMMS Characteristic record.	If a Technical Characteristic record has been created using this CMMS Characteristic record, it is not deleted automatically when you delete the CMMS Characteristic record. Instead, the next time that the Technical Characteristics Adapter is run, the corresponding Technical Characteristic record is deleted.	To begin extracting the characteristic again, you will need to select the **Extract From CMMS System** check box.

Action	Result	Notes
Delete a CMMS Characteristic record.	If a Technical Characteristic record has been created using this CMMS Characteristic record, it is not deleted automatically when you delete the CMMS Characteristic record. Instead, the next time that the Technical Characteristics Adapter is run, the corresponding Technical Characteristic record is deleted. In addition, until the CMMS Characteristic record is recreated and flagged for extraction, beginning with the next time the Technical Characteristics Adapter is run, the characteristic is no longer extracted.	To begin extracting the characteristic again, you will need to: • Refresh the APM system to reflect the current SAP characteristics, which will cause the CMMS Characteristic record to be recreated. • Select the **Extract From CMMS System** check box in that CMMS Characteristic record.

Action	Result	Notes
Delete a CMMS Classification record.	All CMMS Characteristic records that were linked to the CMMS Classification record are deleted automatically. If a Technical Characteristic record has been created using this CMMS Classification record, it is not deleted automatically when you delete the CMMS Classification record. Instead, the next time that the Technical Characteristics Adapter is run, the corresponding Technical Characteristic records are deleted automatically. In addition, until the CMMS Classification record is recreated and flagged for extraction, beginning with the next time the Technical Characteristics Adapter is run, characteristics belonging to that classification are no longer extracted.	To begin extracting characteristics belonging to this classification again, you will need to: • Refresh the APM system to reflect the current SAP classifications, which will cause the CMMS Classification record to be recreated automatically. • Select the **Extract From CMMS System** check box in the CMMS Classification record. • Refresh the APM system to reflect the current SAP characteristics, which will cause the CMMS Characteristic records that were previously deleted to be recreated automatically. • Select the **Extract From CMMS System** check box in the appropriate CMMS Characteristic records.

Action	Result	Notes
Delete a CMMS Classification Type record.	All CMMS Classification and CMMS Characteristic records that were linked (directly or indirectly) to the CMMS Classification Type record are deleted automatically. If a Technical Characteristic record has been created using this CMMS Classification Type record, it is not deleted automatically when you delete the CMMS Classification Type record. Instead, the next time that the Technical Characteristics Adapter is run, the Technical Characteristic record is deleted automatically. In addition, until the CMMS Classification Type record is recreated and its CMMS Classification and CMMS Characteristic records are flagged for extraction, beginning with the next time the Technical Characteristics Adapter is run, no characteristics are extracted.	To begin extracting characteristics again, you will need to: • Recreate the CMMS Classification Type record. Refresh the APM system to reflect the current SAP classifications and characteristics, which will cause CMMS Classification records to be recreated. • Select the **Extract From CMMS System** check box in the desired CMMS Classification records. • Refresh the APM system to reflect the current SAP classifications and characteristics, which will cause CMMS Classification records to be recreated. • Select the **Extract From CMMS System** check box in that CMMS Characteristic record.

SAP Actions and Results

Action	Result
Specify a value for a characteristic that is configured to be extracted.	The next time the Technical Characteristics Adapter is run, a Technical Characteristic record is created and linked to the corresponding Equipment or Functional Location record.
Remove a value for a characteristic that is configured to be extracted.	The next time the Technical Characteristics Adapter is run, the corresponding Technical Characteristic record is updated by removing the value from the Value field.
Assign a new classification to an Equipment or Functional Location, and specify values for the characteristics belonging to that class.	The next time the Technical Characteristics Adapter is run, Technical Characteristic records representing the new characteristic values are created and linked to the corresponding Equipment or Functional Location record.
Remove the assignment of a classification from an Equipment or Functional Location record.	The next time the Technical Characteristics Adapter is run or you refresh the APM system to reflect current SAP characteristics, the corresponding Technical Characteristic record is deleted.
Delete a characteristic from a classification.	The next time the Technical Characteristics Adapter is run, the corresponding Technical Characteristic record is deleted.

Chapter 5

Planned Work Adapter

Topics:

- About the Planned Work Adapter

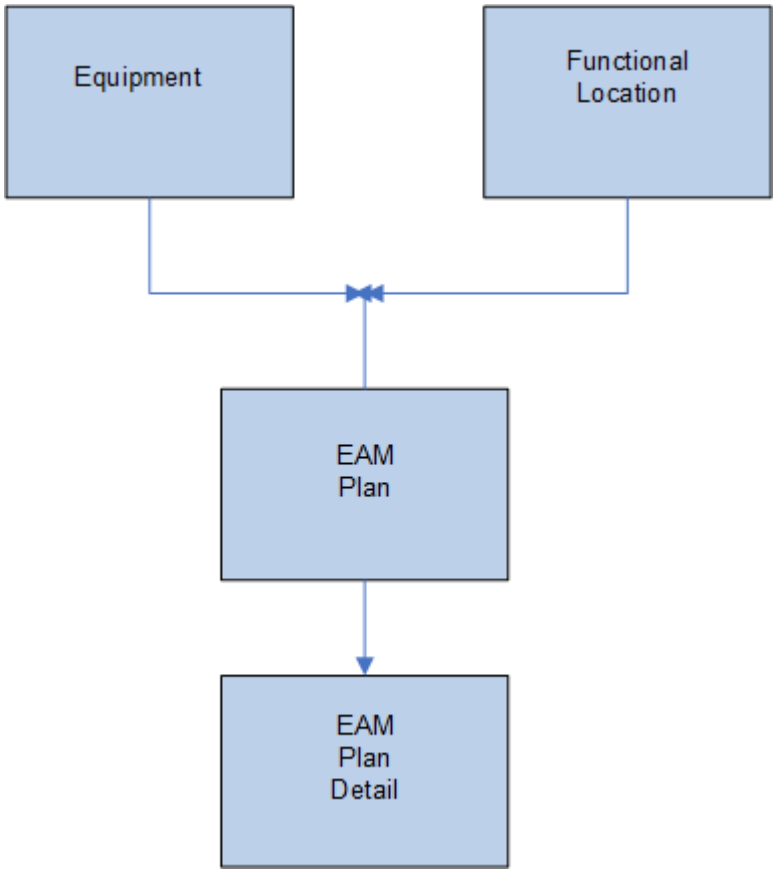
About the Planned Work Adapter

The Planned Work Adapter job allows you to retrieve information about the work planned for your assets.

When Maintenance Plan Items are associated with a Technical Object, you can extract Maintenance Plan, Item, and Operation data from the EAM to create EAM Plan records and EAM Plan Detail records in APM. To extract the data, you run the Planned Work Adapter job.

Note: The Planned Work Adapter supports only the Single Cycle Maintenance Plans in the Planned Work Interface with SAP.

The relationship between the item that has planned work resembles the following figure, although it is possible that a single item could be related to multiple Planned Work records.



Chapter 6

Work History Adapter

Topics:

- About the Work History Adapter

About the Work History Adapter

If Orders and Notifications are associated with a Technical Object, you can extract Orders and Notifications from SAP to create Work History records and Work History Detail records in APM. To do so, you will need to run the Work History Adapter Job.

When you extract an Order (with or without Notifications), the following Work History records are created:

- One Work History record to represent the Order Header, which appears on the **HeaderData** tab in SAP. This Work History record will be created for the Technical Objects that appears on the **HeaderData** tab in SAP. This means that the Work History record will be populated with values representing those Technical Objects, and it will also be linked to the Equipment or Functional Location records representing those objects. Only this Work History record will contain cost values and estimated and actual confirmed hours.
- One Work History record per object that appears in the Order's object list (i.e., on the Objects tab when you are viewing the Order). These Work History records will be created for the Technical Objects that are specifically associated with those items. This means that these Work History records will be populated with values representing those Technical Objects, and they will also be linked to the Equipment or Functional Location records representing those Technical Objects.

When you extract a Notification that is not associated with an Order, one Work History record is created to represent the Notification, and this Work History record will be linked to Equipment and Functional Location records representing the Notification reference objects. Specifically:

- If the Notification has only an Equipment reference object, the Work History record for that Notification will be linked to an Equipment record.
- If the Notification has only a Functional Location reference object, the Work History record for that Notification will be linked to a Functional Location record.
- If the Notification has Equipment and Functional Location reference objects, the Work History record for that Notification will be linked to an Equipment record and a Functional Location record.

If a Notification has items, one Work History Detail record will be created to represent each item.

The following tables detail what to expect when running a Work History Job based on your SAP work order and notification combinations:

Orders Without Notifications

After you:	...Run this Job:	...Result:
Create an Order that is not associated with a Notification.	SAP_WorkHistory	A Work History record is created.
Update the Order referenced above.	SAP_WorkHistory	The corresponding Work History record is updated.

Orders With Notifications

Table 1: Notifications Without Items:

After you:	...Run this Job:	...Result:
Create an Order that is associated with a Notification without items.	SAP_WorkHistory	A Work History record is created to capture the data in the Order and the Notification.
Update only the Order.	SAP_WorkHistory	The corresponding Work History record is updated.
Update only the Notification.	SAP_WorkHistory	The corresponding Work History and Work History Detail records are updated.
Update both the Order and Notification.	SAP_WorkHistory	The corresponding Work History and Work History Detail records are updated.

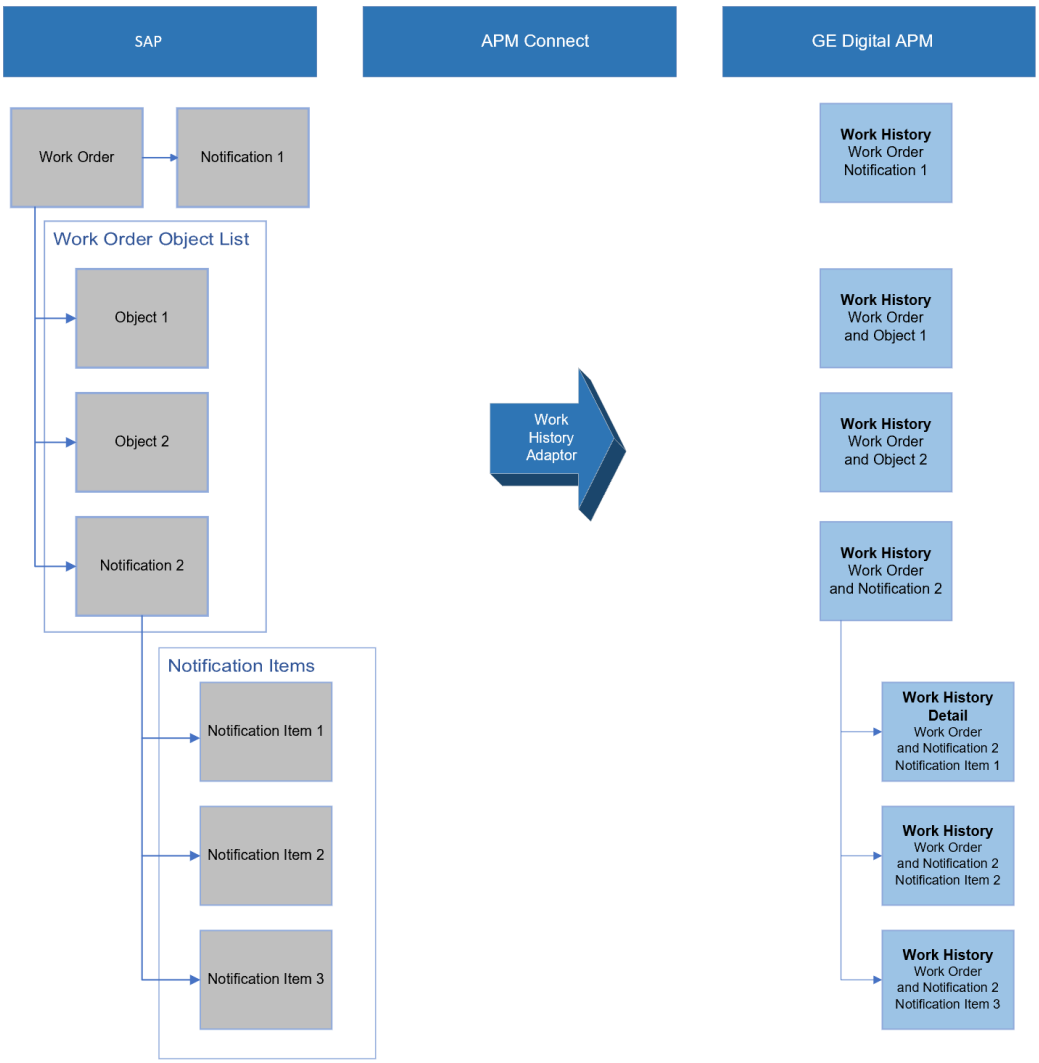
Table 2: Notifications With Items:

After you:	...Run this Job:	...Result:
Create a Notification with items, but do not associate it with an Order.	SAP_WorkHistory	A Work History record and a Work History Detail record are created to capture the data in the Notification.
Update the Notification referenced above.	SAP_WorkHistory	The corresponding Work History and Work History Detail records are updated.

Notifications and Work Orders transferred from SAP into APM maintain their SAP ID in the Work History Detail and Work History record naming convention.

For example, suppose Work Order 18652 and Notification 20087 are related in SAP. Then, the Work Order and Notification are transferred into APM. One Work History record will be created using the following syntax: WH ~ <Notification Number> ~ <Work Order Number>. In this example, the Work History record ID would be WH~20087~18652.

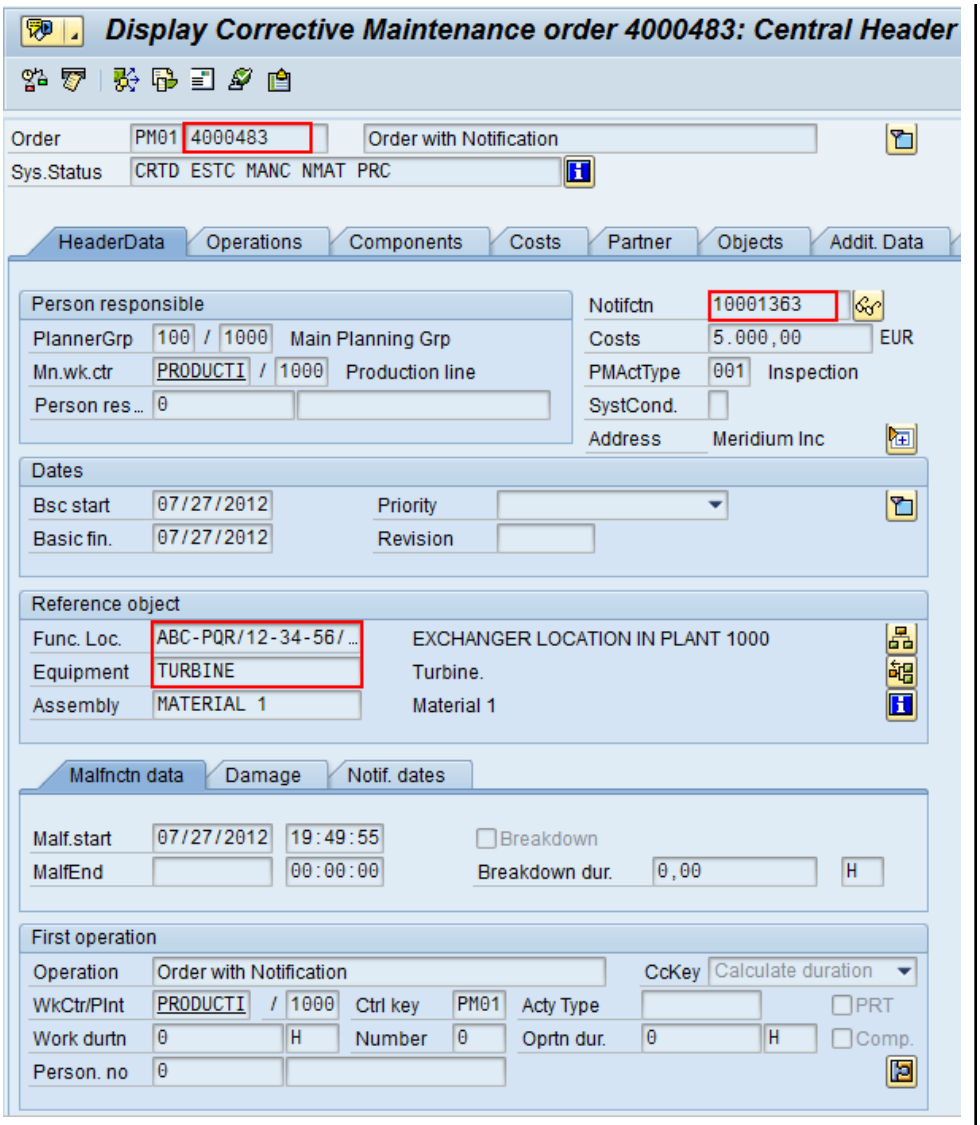
The following diagram exemplifies how records in SAP are mapped to Work History records in APM.



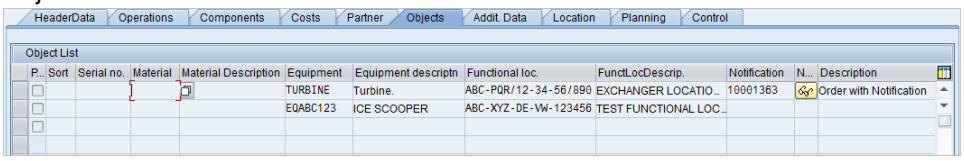
Example: Order With Notification: Items on Object List

Suppose the following SAP Order exists, where the red outlines indicate that:

- The Order number is 4000483.
- The associated Notification number is 10001363.
- The reference Technical Objects are Functional Location ABC-PQR/12-34-56/8 and Equipment TURBINE.



In addition, you can see from the Objects tab that there are items on the object list:



If you were to extract this Order, two Work History records would be created:

- One for the Order and Notification combination.
- One for the object list item EQABC123.

Work History Record for the Order and Notification Combination

Suppose there is a Work History record for the Order and Notification combination, where the associated Technical Object is TURBINE, and the Work History record is also linked to the Equipment record TURBINE.

If the Notification contained items, a Work History Detail record would also be created to capture additional information about that Notification.

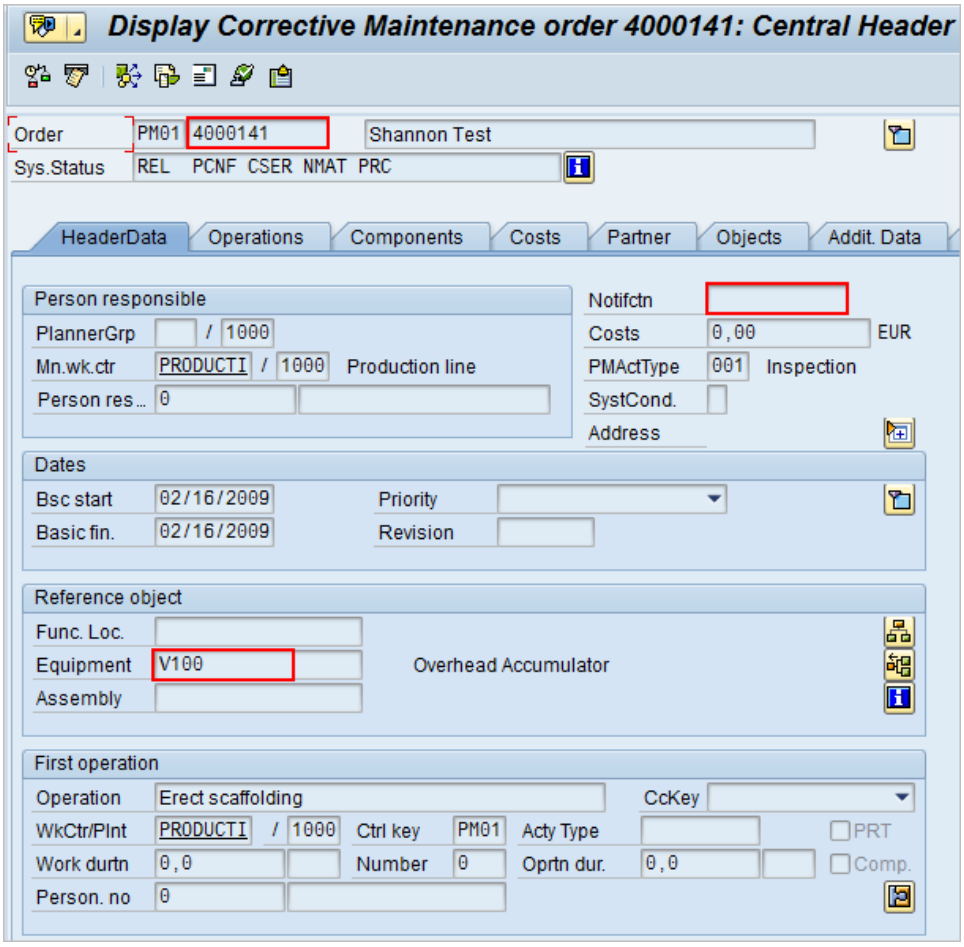
Work History Record for the Object List Item EQABC123

Suppose the Work History record for the object list item EQABC123, and that the Work History record is also linked to the Equipment record EQABC123.

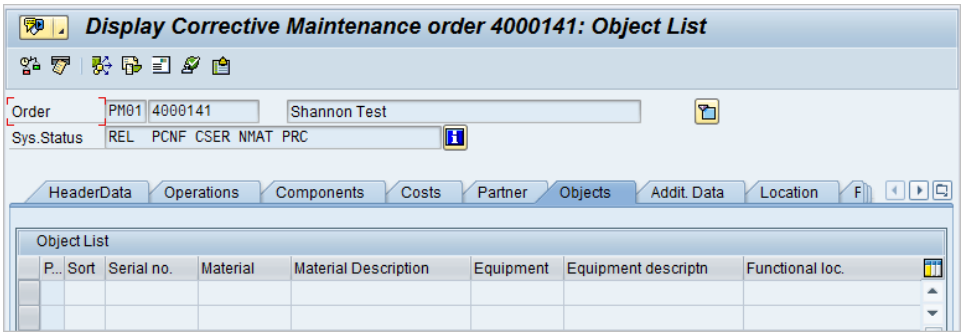
Example: Order Without Notification: No Items on Object List

Suppose the following SAP Order exists, where the red outlines indicate that:

- The Order number is 4000141.
- There is no associated Notification.
- The reference Technical Object is Equipment V100.



In addition, you can see from the Objects tab that there are no items on the object list:



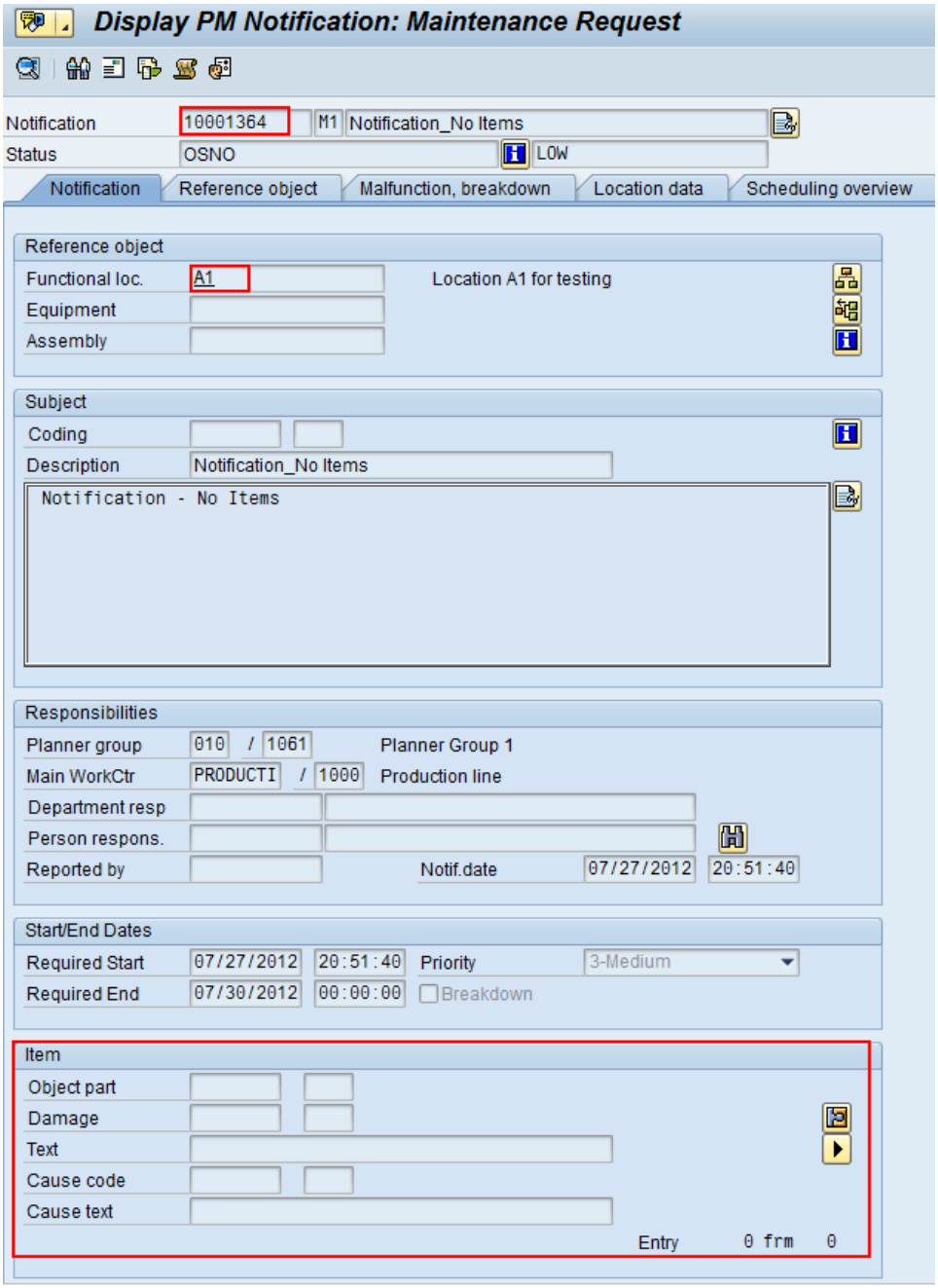
If you were to extract this Order, the following Work History record would be created, with the following:

- The referenced technical object is V100.
- The Work History record is linked to the Equipment record V100.

Example: Notification Without Order: Without Notification Items

Suppose the following SAP Notification exists, where the red outlines indicate that:

- The Notification number is 10001364.
- The reference Technical Object is Functional Location A1.
- There are no items.



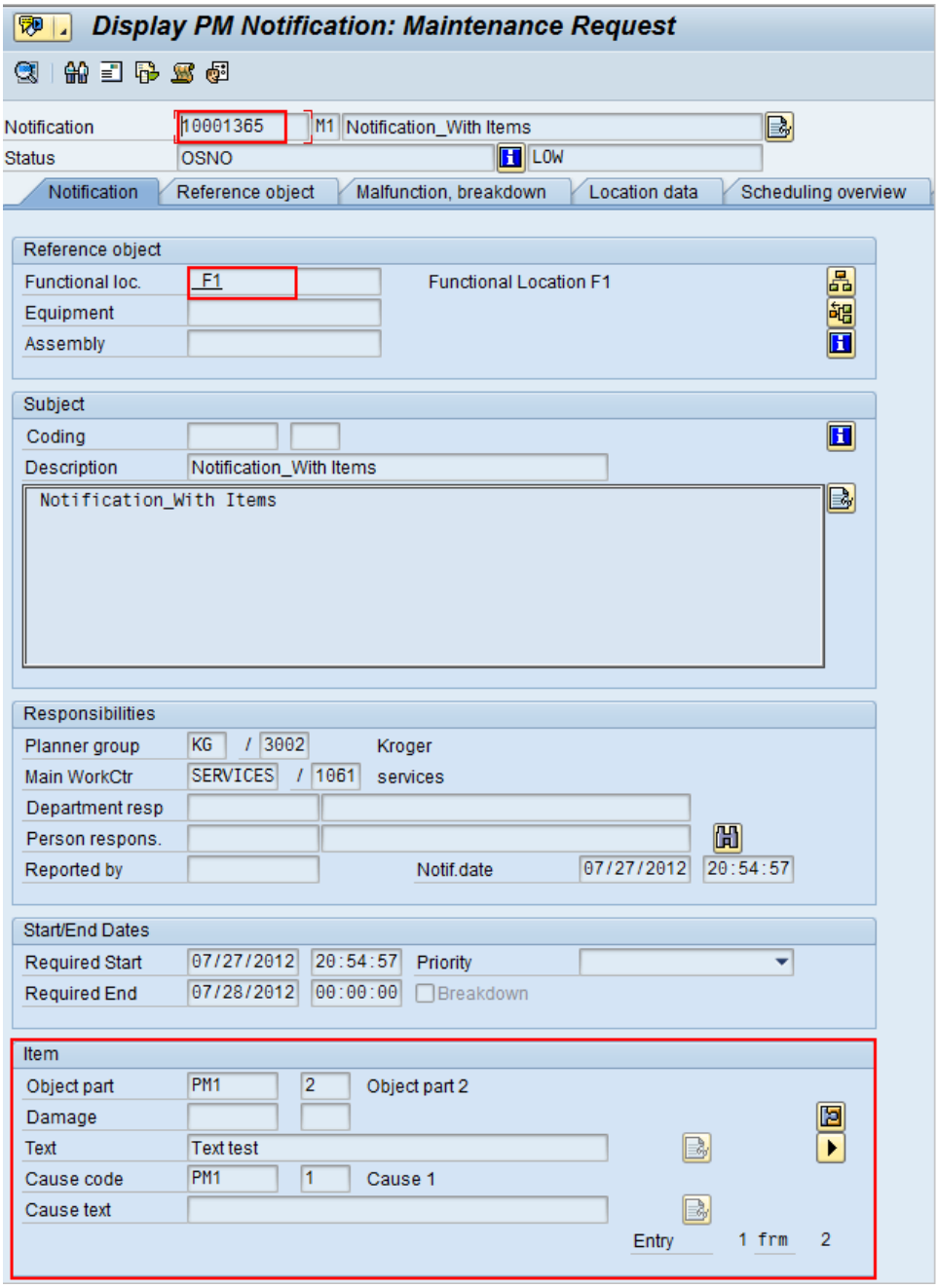
If you were to extract this Notification, the Work History record would be created, with the following:

- The Work History record is associated with the Notification's Technical Object A1.
- The Work History record is linked to the Functional Location record A1.

Example: Notification Without Order: With Notification Items

Suppose the following SAP Notification exists, where the red outlines indicate that:

- The Notification number is 10001365.
- The reference Technical Object is Functional Location F1.
- There are two items.



If you were to extract this Notification, the following records would be created:

- One Work History record.
- Two Work History Detail records: one to capture additional information about the first notification item, and another to capture additional information about the second notification item.

The Work History record, would be created with the following:

- The Work History record is associated with the Notification's Technical Object F1.
- The Work History record is linked to the two Work History Detail records.
- The Work History record is linked to the Functional Location record F1.

Chapter 7

Technical Characteristics Adapter

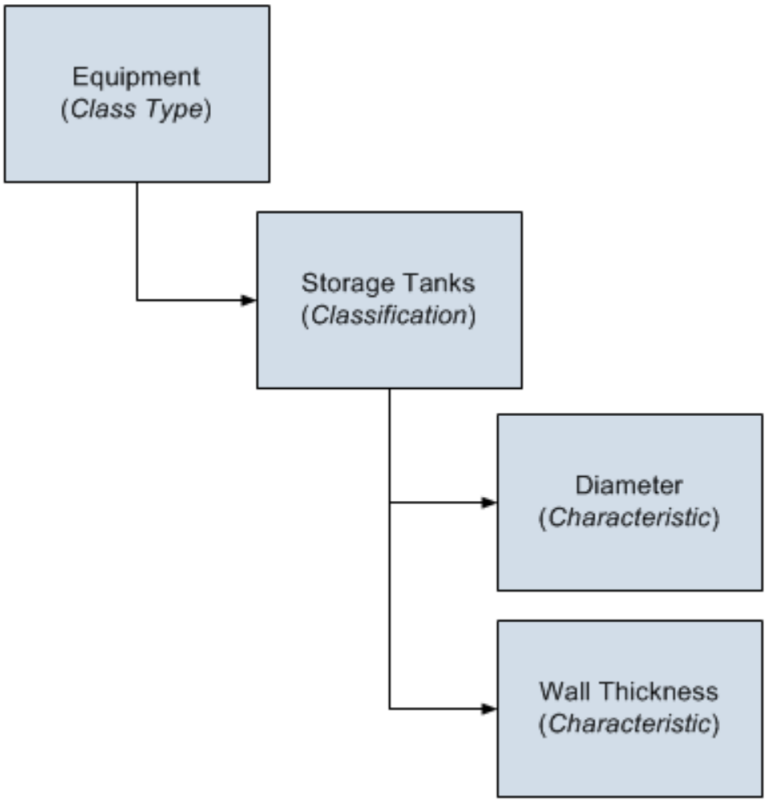
Topics:

- About Technical Characteristics Adapter

About Technical Characteristics Adapter

Note: You can run the Technical Characteristics Adapters successfully only if the SAP Technical Characteristics license is active.

In SAP, you can assign specific characteristics to Equipment and Functional Locations. Each characteristic belongs to a Classification, and each Classification belongs to a Class Type. For example, the Class Type Equipment Class might contain the classification Storage Tanks, which might contain the Characteristics Diameter and Wall Thickness, as illustrated in the following image:



When you extract Equipment and Functional Locations from SAP into the APM system, their corresponding Characteristics will not be extracted into the Equipment and Functional Location records that are created during the extraction process. If you want to extract their corresponding Characteristics, you will need to run the Technical Characteristics Adapter. When you run these adapters, Technical Characteristic records are created to store the Characteristics that have been configured to be extracted, and these records are linked automatically to the appropriate Equipment and Functional Location records.

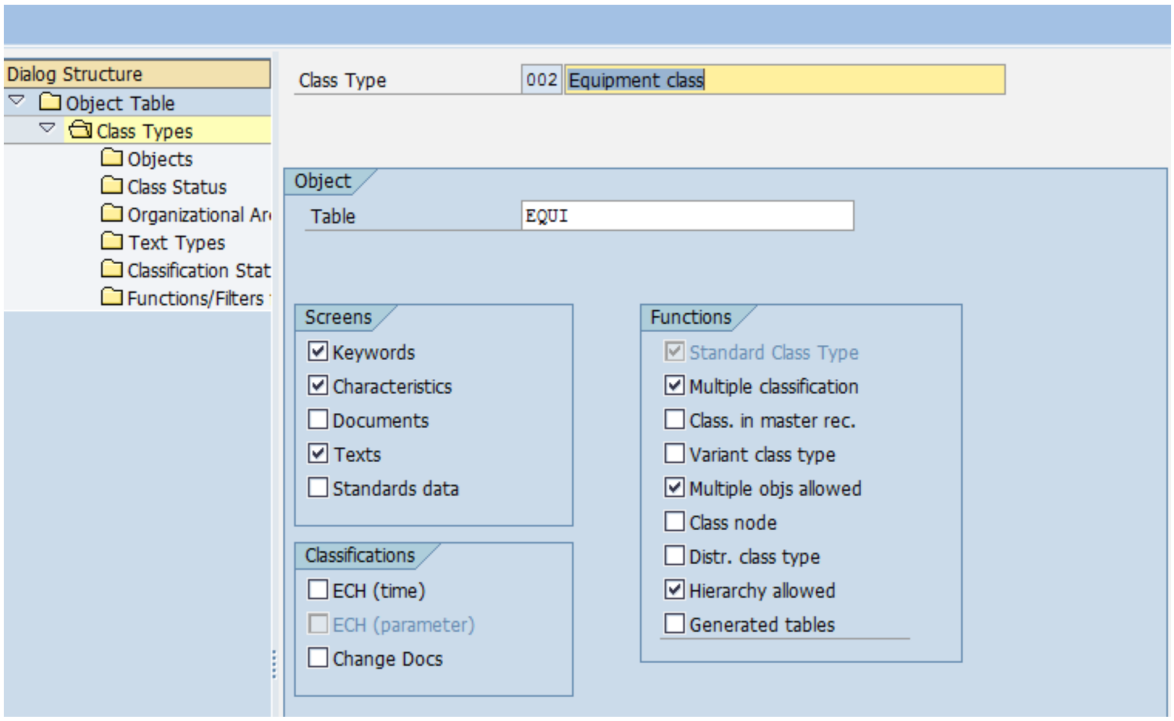
Numeric Value Format

The format in which numbers are displayed in APM is determined by the SAP user that is used to extract the SAP data. For example, if the SAP user is configured to display the value one thousand one hundred and one-tenth as *1.100,1*. The value in APM will be displayed in the same format.

Multiple Objects Allowed

The Technical Characteristic Adapter can transfer Equipment and Functional Locations configured for Multiple Objects Allowed. This functionality is enable by context parameters in the context file.

Equipment and Functional Locations are configured for Multiple Object in SAP, as shown in the following image.



This indicator tells you whether several different types of object can be classified in classes of this class type. This allows you to classify objects that are logically related to each other in the same classes.

APM Actions and Results

In APM, you can configure which Characteristics you want to extract from SAP. When you do so, various actions that you perform in the APM system and the SAP system cause specific results, as seen in the following table.

Action	Result	Notes
Select the **Extract From CMMS System** check box in a CMMS Characteristic record.	The next time the Technical Characteristics Adapter is run, the characteristic is extracted.	During the extraction process, a corresponding Technical Characteristic record is created.
Clear the **Extract From CMMS System** check box in a CMMS Characteristic record.	If a Technical Characteristic record has been created using this CMMS Characteristic record, it is not deleted automatically when you delete the CMMS Characteristic record. Instead, the next time that the Technical Characteristics Adapter is run, the corresponding Technical Characteristic record is deleted.	To begin extracting the characteristic again, you will need to select the **Extract From CMMS System** check box.
Delete a CMMS Characteristic record.	If a Technical Characteristic record has been created using this CMMS Characteristic record, it is not deleted automatically when you delete the CMMS Characteristic record. Instead, the next time that the Technical Characteristics Adapter is run, the corresponding Technical Characteristic record is deleted. In addition, until the CMMS Characteristic record is recreated and flagged for extraction, beginning with the next time the Technical Characteristics Adapter is run, the characteristic is no longer extracted.	To begin extracting the characteristic again, you will need to: • Refresh the APM system to reflect the current SAP characteristics, which will cause the CMMS Characteristic record to be recreated. • Select the **Extract From CMMS System** check box in that CMMS Characteristic record.

Action	Result	Notes
Delete a CMMS Classification record.	All CMMS Characteristic records that were linked to the CMMS Classification record are deleted automatically. If a Technical Characteristic record has been created using this CMMS Classification record, it is not deleted automatically when you delete the CMMS Classification record. Instead, the next time that the Technical Characteristics Adapter is run, the corresponding Technical Characteristic records are deleted automatically. In addition, until the CMMS Classification record is recreated and flagged for extraction, beginning with the next time the Technical Characteristics Adapter is run, characteristics belonging to that classification are no longer extracted.	To begin extracting characteristics belonging to this classification again, you will need to: • Refresh the APM system to reflect the current SAP classifications, which will cause the CMMS Classification record to be recreated automatically. • Select the **Extract From CMMS System** check box in the CMMS Classification record. • Refresh the APM system to reflect the current SAP characteristics, which will cause the CMMS Characteristic records that were previously deleted to be recreated automatically. • Select the **Extract From CMMS System** check box in the appropriate CMMS Characteristic records.
Delete a CMMS Classification Type record.	All CMMS Classification and CMMS Characteristic records that were linked (directly or indirectly) to the CMMS Classification Type record are deleted automatically. If a Technical Characteristic record has been created using this CMMS Classification Type record, it is not deleted automatically when you delete the CMMS Classification Type record. Instead, the next time that the Technical Characteristics Adapter is run, the Technical Characteristic record is deleted automatically. In addition, until the CMMS Classification Type record is recreated and its CMMS Classification and CMMS Characteristic records are flagged for extraction, beginning with the next time the Technical Characteristics Adapter is run, *no* characteristics are extracted.	To begin extracting characteristics again, you will need to: • Recreate the CMMS Classification Type record. Refresh the APM system to reflect the current SAP classifications and characteristics, which will cause CMMS Classification records to be recreated. • Select the **Extract From CMMS System** check box in the desired CMMS Classification records. • Refresh the APM system to reflect the current SAP classifications and characteristics, which will cause CMMS Classification records to be recreated. • Select the **Extract From CMMS System** check box in that CMMS Characteristic record.

SAP Actions and Results

Action	Results
Specify a value for a characteristic that is configured to be extracted.	The next time the Technical Characteristics Adapter is run, a Technical Characteristic record is created and linked to the corresponding Equipment or Functional Location record.
Remove a value for a characteristic that is configured to be extracted.	The next time the Technical Characteristics Adapter is run, the corresponding Technical Characteristic record is updated by removing the value from the Value field.
Assign a new classification to an Equipment or Functional Location, and specify values for the characteristics belonging to that class.	The next time the Technical Characteristics Adapter is run, Technical Characteristic records representing the new characteristic values are created and linked to the corresponding Equipment or Functional Location record.
Remove the assignment of a classification from an Equipment or Functional Location record.	The next time the Technical Characteristics Adapter is run or you refresh the APM system to reflect current SAP characteristics, the corresponding Technical Characteristic record is deleted.
Delete a characteristic from a classification.	The next time the Technical Characteristics Adapter is run, the corresponding Technical Characteristic record is deleted.

Chapter 8

Notification Management Adapter

Topics:

- About the Notification Management Adapter

About the Notification Management Adapter

The Notification Management Adapter supplies the communication between APM Connect and an SAP system.

You can create or update a notification using a General Recommendation record in APM Connect.

Create an SAP Notification from a Recommendation Record

Before You Begin

- Ensure the Create EAM Notification field exists in the family of the necessary Recommendation record and that it also exists on the datasheet.
- Ensure the EAM Notification Type field exists in the family of the necessary Recommendation record and on the datasheet as an enabled field. In the baseline database, Notification Type is already available in all baseline Recommendation families that exist for the purpose of using the SAP Adapters. It is not, however, included on any baseline datasheets or configured as an enabled field. The following instructions assume that an administrative user has enabled the field and added it to the datasheet.

Procedure

1. Create a new General Recommendation record or access an existing Recommendation record.
2. Link the Recommendation record to an Equipment or Functional Location record that represents an SAP Equipment or Functional Location.

   Note: If you select an Equipment or Functional Location record that does not exist in SAP, after you save the record, an SAP Notification will be created in SAP but its Equipment or Functional Location field will be blank.
3. Select the **Create EAM Notification?** check box.
4. In the **Notification Type** box, specify the type of notification that you want to create.

   Note: Unless otherwise configured, the default SAP Notification Type will be M2.
5. Select .
   The record is saved.

Results

After you create a new Recommendation record, the adapter does the following:

- Creates an SAP Notification in SAP.
- Populates the Work Request Reference field with the ID of the corresponding SAP Notification.
- Populates the Work Request Equipment field with the value in the Equipment field in the SAP Notification, as available.
- Populates the **Work Request Functional Location** field with the value in the Functional Location field in the SAP Notification, as available.
- After the Work Request Reference field is populated, the Create Work Request field is disabled.

Note: If a Notification could not be created, a message appears indicating the problem. In addition, you will be unable to save the Recommendation record until you clear the **Create EAM Notification?** check box.

Update an SAP Notification from a Recommendation Record

Once an SAP Notification is created from a Recommendation record, the Recommendation record and the SAP Notification can be updated. This topic describes how to update an existing SAP Notification by updating the corresponding Recommendation record in APM.

Before You Begin

Note: Only Recommendation records with the **Create EAM Notification?** check box selected can be updated.

Create an SAP Notification from a Recommendation record.

Procedure

1. Access a Recommendation record that you want to update.
2. Select the field you want to update.
3. Enter the updated information.
   For example, if you would like to update the description of an existing Recommendation record, modify the text in the **Description** box as needed.
4. Select .

   The Recommendation record is updated in APM, and the SAP Notification is updated in your SAP system.

Chapter 9

Work Management Adapter

Topics:

- About the Work Management Adapter

About the Work Management Adapter

Note: You can run the Work Management Adapter only if the SAP Work Management license is active.

The Work Management Adapter facilitates integration with the SAP planning and scheduling modules for condition assessment activities. The adapter allows you to manage scheduled work in SAP and APM.

About Task Records

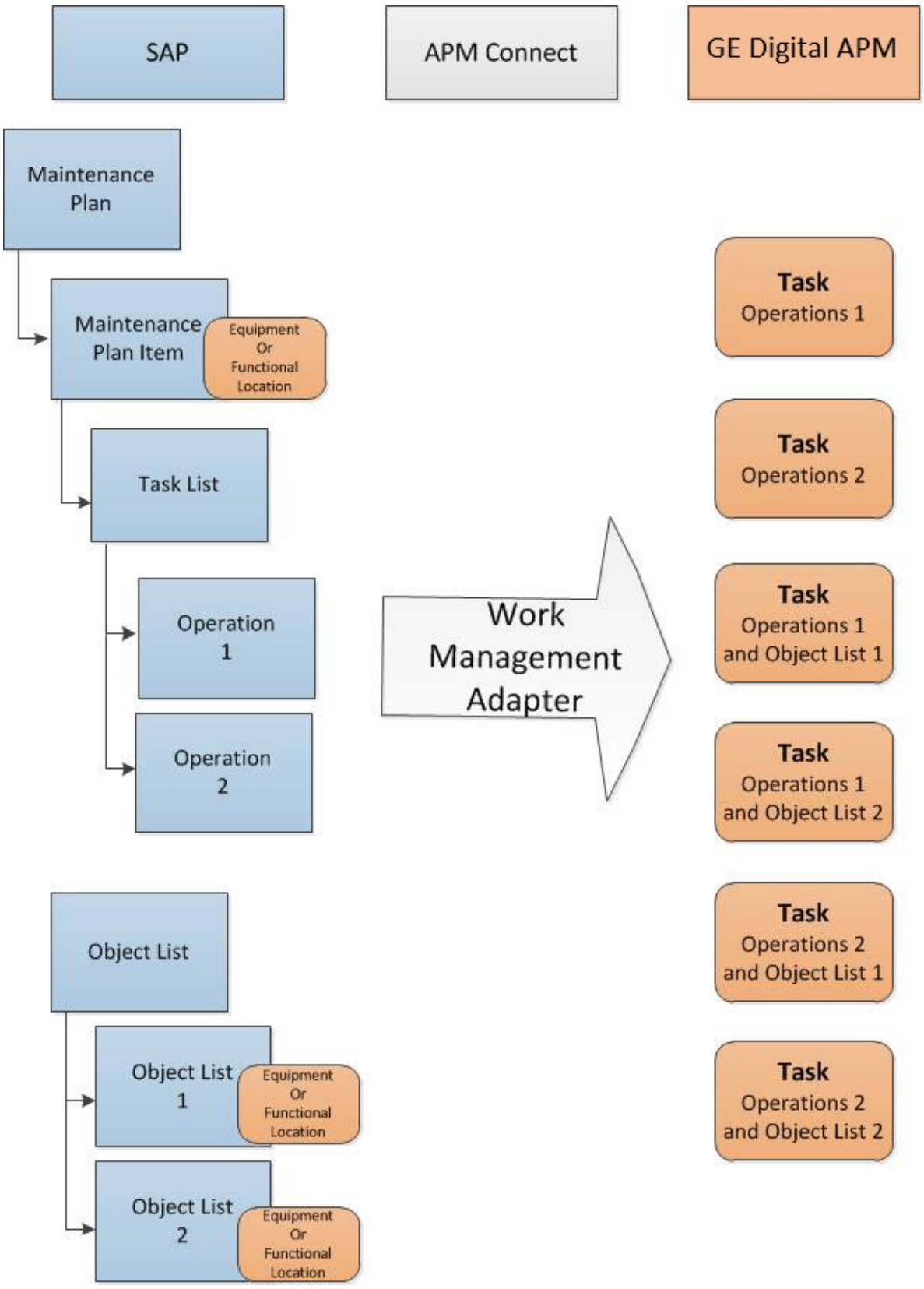
If an SAP Maintenance Plan has a Task List that has Operations and Object Lists that meet the criteria defined in the context file, when you run the Work Management Adapter in the APM Connect Administration Center, one or more Task records will be created in APM. The corresponding Task record will be created based on the configuration defined in the context file.

If you modify a Maintenance Plan and then run the Work Management Adapter again, the corresponding Task record will be updated automatically in APM. Likewise, if you add an Order to the Maintenance Plan, the corresponding Task record will also be updated automatically in APM.

When you run the Work Management Adapter, it creates Tasks in APM using the following items in SAP:

- Operations
- Object Lists

For example, suppose you have a Maintenance Plan with two Operations and two Object Lists. When you run the Work Management Adapter, six Tasks will be created and associated with the particular asset in APM as show in the following image:


SAP
APM Connect
GE Digital APM
Maintenance Plan
Maintenance Plan Item
Equipment Or Functional Location
Task List
Operation 1
Operation 2
Object List
Object List 1
Equipment Or Functional Location
Object List 2
Equipment Or Functional Location
Work Management Adapter
Task Operations 1
Task Operations 2
Task Operations 1 and Object List 1
Task Operations 1 and Object List 2
Task Operations 2 and Object List 1
Task Operations 2 and Object List 2

About Last and Next Date from SAP

When transferring Work Management data from SAP to APM, the Desired Interval field is populated with a null value. The Next Date field will populate with the next execution date of the Task (APM) or Operation (SAP) when it is transferred to APM.

Note: Last Date and Next Date values are calculated in SAP, not in APM.

The following chart includes the possibilities for the Last Date and Next Date fields upon transferring data from SAP to APM Task records:

Workflow Step	Step Narrative	Last Date Field	Next Date Field
The Plan is created, but not scheduled, and the Work Management Job is run.	The Tasks of a Plan are created in APM when the Work Management Job is run.	Null	Null
The Plan is scheduled, but not called, and the Work Management Job is run.	The Plan is scheduled. The Task created previously is updated in APM.	Null	If the Plan is On Hold, the field will contain the next execution date. Otherwise, the field is Null.
The Plan is called for the first time, and the Work Management Job is run.	The Task previously created will be updated with information from the Work Order from SAP.	Null	The next date that the task is scheduled to run.
The Task is executed in APM.	An Inspection Event is linked to the Task. The Inspection Hours field is set, and the Inspection is closed. A Confirmation record is created.	Date is set to Date of Confirmation.	The next date that the task is scheduled to run.

SAP Maintenance Plans Supported

The Work Management Adapter creates APM Inspection or Calibration Tasks from SAP Operations on the Task List from the following plan types:

- Single Cycle: Time-Based
- Single Cycle: Performance-Based
- Strategy Plan: Time-Based
- Strategy Plan: Performance-Based
- Multiple Counter Plan

About Discontinued Task Records

If a Task record was created from SAP data and you modify the SAP data in a way that causes that Task record to become obsolete, you can run the Work Management Job to resolve the differences.

When you run the adapter, the Tasks in APM are validated against the Operations in SAP. The adapter will search for Task records in APM and Operations in SAP to determine associations based on the following values: Equipment or Functional Location, Maintenance Plan, Maintenance Plan Item, Task List, and Operation. If a Task record in APM is found in SAP, it is determined to be valid. If the Task record in APM is not found in SAP, it will be discontinued. The adapter updates the Task record in APM as follows:

- The Task ID for the record will be set to **DISCONTINUED**.
- The value in the Reason field will be prepended with the following:
  <Date> - <User ID> - <Previous Task ID> was discontinued due to changes in SAP. The previous Task ID was <Previous Task ID>.

  Where <Date> is the UTC date and time on which the Task ID was set to **DISCONTINUED** and <User ID> is the user name of the user updating the record.

  For example, suppose a Calibration Task record was created from an Operation with the control key ZMI2. If you later change the control key and run the report, the Calibration Task record will be discontinued.

Notes:

- When a Task ID in a Task record has been set to **DISCONTINUED**, if you run Work Management Adapter again and the data is still not valid, the Task record will be skipped. In other words, its Reason field will not contain more than one instance of the text **DISCONTINUED**.
- If you modify the SAP data so that it corresponds to the existing discontinued Task record, running the adapter will reactivate the discontinued Task record.

About Call Horizon

When the scheduled item that APM delivers for the purpose of creating SAP Orders is executed, the APM system performs a calculation on the Next Date and Call Horizon values in all Task records. The calculated result is passed into the query Get Tasks for Work Order Generation. If the result meets the criteria defined for the query column ([Task].[Next Date] - [Task].[Call Horizon]), the Task record meets the remaining criteria defined in the query, and the Task does not already contain a value in the Work Order Number field, an Order will be created from the Task record.

Using the baseline query, an SAP Order will be created if the Task record meets all query criteria (i.e., the Maintenance Plan field does not contain a value) and the calculated result meets the following criteria:

Task Next Date - Task Call Horizon = A date between the Last Executed Date and the Next Execution Date of the scheduled item.

Suppose the scheduled item contains the following values:

Last Executed Date	Next Execution Date
July 1, 2008 1:00:00 A.M.	July 2, 2008 1:00:00 A.M.

Based on these values, an SAP Maintenance Order will be created automatically if the Next Date of the Task record minus its Call Horizon is between July 1, 12:00:00 A.M. and July 2, 12:00:00 A.M.

Suppose a Task record contains the following values:

Next Date	Call Horizon
July 11, 2008 3:00:00 A.M.	10

Using these Task record values, if you subtract the Call Horizon, 10 days, from the Next Date, July 11, 2008 3:00:00 A.M., the result is July 1, 2008 3:00:00 A.M.

Because July 1, 2008 3:00:00 A.M. falls between the Last Executed Date of July 1, 2008 1:00:00 A.M. and July 2, 2008 1:00:00 A.M., the Task record

will be used to generate an Order (assuming that the Task record meets the remaining query criteria).

In other words:

July 11, 2008 3:00:00 A.M. (Task Next Date) - 10 (Call Horizon) = July 1, 2008 3:00:00 A.M. (A date between the Last Executed Date and the Next Execution Date of the scheduled item)

Note: If the scheduled item is being executed for the first time, APM assumes a Last Executed Date of 1/1/1900. Also, if the Call Horizon field does not contain a value, the value is treated as zero (0).

Create a Task Record

Before You Begin

Note:

To complete the following steps, use the Task datasheet that is configured for use with the SAP Adapter. For Inspection Task records, use the Inspection Task for SAP Integration Adapter datasheet. For Calibration Task records, use the Calibration Task for SAP Integration datasheet. These datasheets are defined on the corresponding Task family in the baseline database, but they are not set as the default datasheets.

To create the Task record, make sure to use the Task Builder and not the Record Manager. Otherwise, the Task record will not be linked to the Equipment or Functional Location record, and the Work Management Adapter will not work as expected.

You can create an SAP Order from a Task record only if all of the following conditions are true:

- The Work Order Number field in the Task record is blank.
- The Task record was not created automatically from SAP data.

Procedure

1. In APM, create an Inspection Task or Calibration Task record
2. In the Task record, in the Task List field, select .

   The **Locate Task List** window appears.
3. In the **Search Criteria** section, enter the desired search criteria.

   Note: If you accept the default criteria, the search results will return all Task Lists.
4. Select **Search**.
   The Task Lists that meet the search criteria appear in the **Search Results** section.
5. In the **Search Results** section, select the row containing the desired Task List, and then select **OK**.
   The Task List field on the Task record is updated with the Task List group number.
6. In the Last Date field, enter or select the last date on which the task was executed.
7. In the Desired Interval field, enter the desired interval.
   The value in the Next Date field is updated automatically based on the Last Date and the Desired Interval.
8. In the Call Horizon field, enter the desired call horizon.

   Tip: For details about call horizons, refer to the http://help.sap.com/.
9. Save the Task record.

Create an Event Record or Inspection Record

About This Task

Note:

The following instructions work correctly only if the SAP Interfaces - Work Management license is active.

When creating the Inspection record or Calibration Event record, be sure to use the process defined by the module rather than the Record Manager. Otherwise, the record will not be linked to the Equipment or Functional Location record, and the Work Management Adapter will not work as expected.

Procedure

1. Using the process defined by the module, create an Inspection record or Calibration Event record. As you proceed through the Event Builder, on the **Task(s) Selection** screen, select the appropriate Task record. This could be:
   - A Task record that was generated from SAP.
   - A Task record that you created manually to generate an SAP Order automatically.
2. If the Event record is an Inspection record, select values in the Commencement Date and Completion Date fields. Ensure that the Completion Date is a date after the Commencement Date.

Close a Work Order

Procedure

1. Access the event record linked to the task record you want to mark as complete.
2. In the **Tasks Addressed** box, select the task ID for the record you transferred from SAP by running the Work Management Adapter.
3. In the **Actual Work Time** box, enter a value for the number of hours worked to complete the task.
4. In the Event record, in the **Actual Work Time** box, enter the time (in hours) that you spent completing the work.
5. Do one of the following:
   - If the Event record is a Calibration Event record, select the **Calibration Close** check box.
   - If the Event record is an Inspection record, select the Inspection **Task Complete** check box.
6. Save the Event record.
   The event record is saved, and the work order is closed. A confirmation record is created in APM and in SAP.

   Important: When transferring Work Management data from SAP into APM, the Desired Interval field is populated with a null value. After the Plan is called, the Next Date field will populate with the next execution date based on calculations made by SAP.

Results

After saving the record, the following occurs:

- A Confirmation record is created and linked to the Event record and the Task records to which the Event record is linked. The number of Confirmation records created equals the number of Task records that are linked to the Event record. In addition, a Confirmation is created in SAP for each Confirmation record that is created in APM.

  If only one Confirmation record is created, the Actual Work Time in the Confirmation record matches the Actual Work Time in the Event record. If more than one Confirmation record is created, the Actual Work Time in the Event record is split evenly between those Confirmation records.

  For example, if an Event record is linked to two Task records, two Confirmation records will be created. If the Actual Work Time in the Event record is 14, the Actual Work Time in each Confirmation record will be 7 (14/2).
- The Work Order Numbers in the Task records that are linked to the Event record are removed.
- The Confirmation that is created in SAP is marked as final.

Update an SAP Confirmation by Updating the Actual Work Time in a Confirmation Record

Procedure

1. Access the Confirmation record that you want to modify.
2. Modify the **Actual Work Time** value, and then save the record.

Results

- The associated SAP Confirmation is canceled in SAP, and a new SAP Confirmation is created. The counter in the new SAP Confirmation is one digit higher than the counter in the canceled SAP Confirmation.
- The Actual Work Time field in the Inspection record or Calibration Event record to which this Confirmation record is linked is updated automatically to reflect the updated value in the Confirmation record. If this is the only Confirmation record that is linked to the Inspection or Calibration Event record, the Actual Work Time in the Inspection or Calibration Event record will match the value in the Confirmation record.
- If more than one Confirmation record is linked to the Inspection or Calibration Event record, the Actual Work Time in the Event record is updated to be the sum of the values in the Actual Work Time fields in all of those Confirmation records.

  For example, if an Event record is linked to this Confirmation record and two other Confirmation records, and the final values in the Actual Work Time fields of those Confirmation records are 7, 6, and 5, the Event record will contain the value 18 (7 + 6 + 5) in the Actual Work Time field.

Validate SAP Confirmations Against APM Confirmation Records

About This Task

After you have created SAP Confirmations from APM Confirmation records, you can validate the information in the SAP Confirmations against the information in the APM Confirmation records.

Procedure

1. In SAP, run the following transaction: IW43.

The (**Display PM Order Confirmation: Initial**) window appears.

2. Do one of the following:
   - If you know the Confirmation number of the Confirmation that you want to validate, in the **Confirmation** text box enter the Confirmation number, which appears in the Confirmation Number field on the Confirmation datasheet in the APM system.
   - If you know the Order number associated with the Confirmations that you want to validate, in the **Order** text box, enter the Order number, which appears in the Work Order Number field on the Confirmation datasheet in the APM system.
3. Select .
   If only one Confirmation meets the specified criteria, the **Display PM Order Confirmation: Actual Data** screen appears, displaying the values that appear on the Confirmation datasheet in the APM system.

   If more than one Confirmation meets the specified criteria, the **Display PM Order Confirmation: Confirmation Overview** screen appears, displaying a list of the Confirmations that meet the specified criteria. In the list, you can see the values that appear on the Confirmation datasheet in the APM system.

Chapter 10

Filter Parameters

Topics:

- About Filter Parameters

About Filter Parameters

Filter parameters determine what data will be transferred from the EAM source systems to APM, and are applied to the extraction job in the context file. There are two types of filter parameters: configuration parameters and adapter filter parameters. Each adapter has specific filters that apply only to that adapter. Additionally, there are some filter parameters that are common to all of the SAP adapters. When an adapter job executes, it will apply all common filters and those unique to the specific adapter job. This topic provides an overview of the adapter filter parameters for the following adapters:

- Equipment
- Functional Location
- Work History
- Technical Characteristics
- Work Management

Scope of the Filter Parameters

By entering a value into the parameter, you limit the scope of the extraction to the values in the parameter. If no value is entered into a parameter, all data for that parameter will be transferred from the EAM system source into APM.

Additionally, changes made in the context file will change the scope of all jobs connected to that context file. For example, if you changed the FLOC_CLASS value in the context file, all Functional Location jobs in the APM Connect Administration Center, associated with that context file, will change accordingly. However, you can use more than one context file for multiple SAP systems.

How Times and Dates are Used

There are certain conditions that apply to some of the common filter parameters, as shown in the following table:

Condition	Expect Result	Notes
If the start date parameter is empty	The start date defaults to 1/1/1900.	None
If the end date parameter is empty	The end date defaults to the current date.	None
If the start time parameter is empty	The start time defaults to 00:00:00.	This only applies to the Work History Adapter, and only if the start and end dates are the same.
If the end time parameter is empty	The end time defaults to the current time.	This only applies to the Work History Adapter.
If a date range is not entered	The Job defaults to the date of the last successful run.	None
If it is the very first execution and no dates are specified	Records for all dates will be extracted.	None

Using Multiple Values

Important: If you are using multiple values, you should not exceed 500 values.

Multiple values can be entered into the parameters using comma separated values. For example, if you wanted to extract data from Equipment Classes M, S, and A, the equipment class parameter would look like the following: **<EQUIPMENT_CLASS>** M,S,A **</EQUIPMENT_CLASS>**. Comma separated values can be used with the following parameters:

- Plants
- Equipment numbers
- Equipment categories
- Equipment classes
- Equipment Types
- Functional Location Numbers
- Functional Location Categories
- Function Location Classes
- Function Location Types
- Order System Status
- Order user statuses
- Notification system statuses
- Notification user statuses
- Notification Numbers
- Notification type
- Work Order type
- Work Order numbers
- Maintenance Plans

Apply Common Filter Parameters

There are common filter parameters in the context file that operate in the same manner, no matter which adapter you are using to extract data. This topic describes how to configure the common filter parameters.

Before You Begin

Before you can transfer data with an adapter, you must import an adapter job to which filters can be applied.

Procedure

1. On the machine on which you installed APM Connect, navigate to `<root:\\>APMConnect\Config`.

   Note: If you are using multiple SAP systems, there will be multiple context files to which you will need to apply the filter parameters.
2. Right-click on the `<System>_context.xml` file, and then select **Edit**.
   The context file opens.
3. As necessary, configure the following common parameters in the table:

Common Filter Parameters	Description	Value Requirements	Required, Optional
CHANGE_DATE_START	Date value that limits the data extracted to records changed on or after the specified date.	Dates must be entered in the following format: YYYYMMDD.	Optional
CHANGE_DATE_END	Date value that limits the data extracted to records changed on or before the specified date.	Dates must be entered in the following format: YYYYMMDD.	Optional
CREATE_DATE_START	Date value that will limits the data extracted to records created on or after the specified date.	Dates must be entered in the following format: YYYYMMDD.	Optional
CREATE_DATE_END	Date value that limits the data extracted to records created on or before the specified date.	Dates must be entered in the following format: YYYYMMDD.	Optional
LANGUAGE	The SAP code that represents the language.	Must be a single character.	Required
MAINT_PLANT	ID(s) of the Maintenance Plant whose data you want to extract.	Plant values cannot exceed four characters.	Optional

4. Save the changes to the context file.

Results

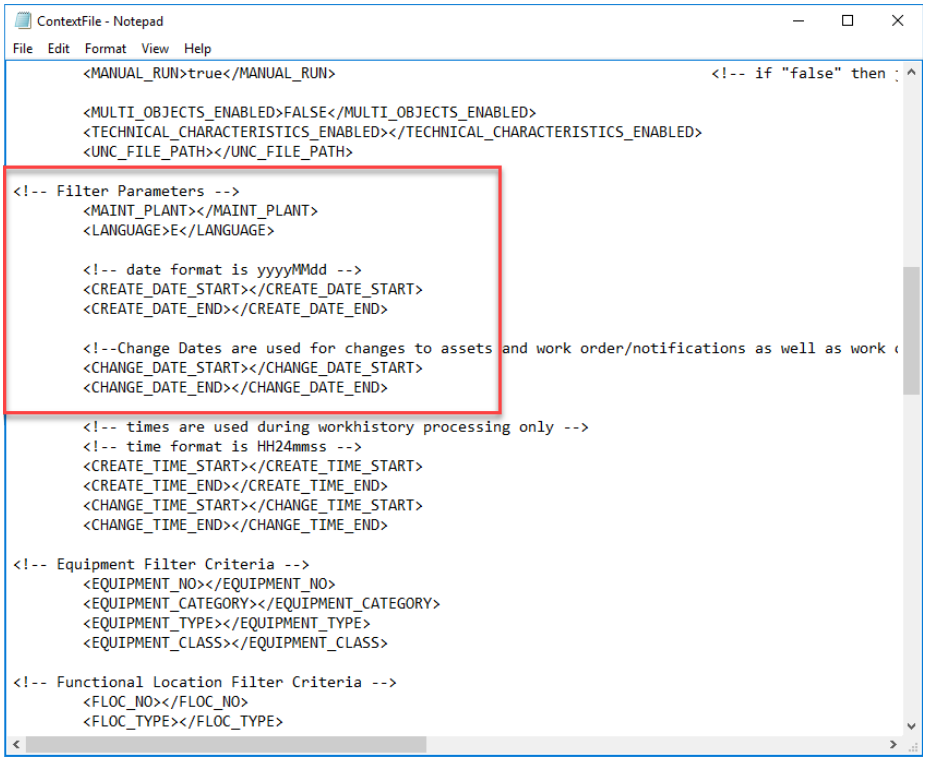
When Jobs are executed in the APM Connect Administration Center, APM Connect will use the common filters in the context file to determine the scope of the extraction required by that job. Now, you can configure the filter parameters specific to the adapter job that you would like to run.

Using the Common Filters

To extract English records created between January 1st and December 31, 2000, and changed between January 1st and December 31st, 2012, from maintenance plant 1000:

1. In the **CREATE_DATE_START** field, enter the following to reflect January 01, 2000: `20000101`.
2. In the **CREATE_DATE_END** field, enter the following to reflect December 31, 2000: `20001231`.
3. In the **CHANGE_DATE_START** field, enter the following to reflect January 01, 2012: `20120101`.
4. In the **CHANGE_DATE_END** field, enter the following to reflect December 31, 2012: `20121231`.
5. In the **LANGUAGE** field, enter the following SAP code for English: `E`.
6. In the **<MAINT_PLANT>** field, enter the following maintenance plant ID: `1000`.

   The necessary filter parameters are entered into the context file, as shown in the following image:



7. Save the context file.
   Only records with English descriptions created in 2000 and changed in 2012 from maintenance plant 1000 will be extracted when an Adapter is run in the APM Connect Administration Center.

Next Steps

- Common filters can be applied to each adapter. After the necessary common filters are configured, you can apply the following adapter specific parameters:
  - Equipment Adapter filter parameters.
  - Functional Location Adapter filter parameters.
  - Work History Adapter filter parameters.
  - Technical Characteristic filter parameters.
  - Work Management filter parameters.

Apply Equipment Filter Parameters

In the context file, there are filter parameters that apply specifically to the Equipment Adapter Jobs. These filter parameters determine which Equipment data will be transferred from the EAM source system into APM. This topic outlines the functions of Equipment-specific filters, and how to apply them.

Before You Begin

Before you can manipulate the Equipment Adapter data, you must first complete the following:

- Import the Equipment Adapter Job into the APM Connect Administration Center.

Procedure

1. On the machine on which you installed APM Connect, navigate to `<root:\\>\APMConnect\Config`.

   Note: If you are using multiple SAP systems, there will be multiple context files to which you will need to apply the filter parameters.
2. Right-click the file `<System>_context.xml`, and then select **Edit**.

   The context file opens.
3. As needed, configure the Common Filters.
4. As needed, configure the following Equipment Filter parameters in the table:

Equipment Filter Parameters	Description	Value Requirements	Required or Optional
EQUIPMENT_NO	Equipment that you want to extract.	The Equipment number should not exceed 18 characters. You cannot exceed 500 Equipment numbers.	Optional
EQUIPMENT_CATEGORY	ID of the Equipment Category that will limit the Equipment extracted	The Equipment Category should not exceed one character.	Optional
EQUIPMENT_TYPE	ID of the Equipment Type that will limit the Equipment extracted.	The Equipment Type should not exceed 10 characters.	Optional
EQUIPMENT_CLASS	ID of the Equipment Classification that will limit the Equipment extracted.	The Equipment Class should not exceed 18 characters. If an Equipment has multiple classifications, as long as you specify one of those classifications, the Equipment record will be extracted.	Optional

5. Save the changes to the context file.

Results

The Equipment filter parameters are configured, and the Equipment Adapter Job can be run in the APM Connect Administration Center. When a job is run in the APM Connect Administration Center, the job will look to the context files for the parameters of the extraction. If no filters are entered to limit the records extracted, all Equipment records will be extracted.

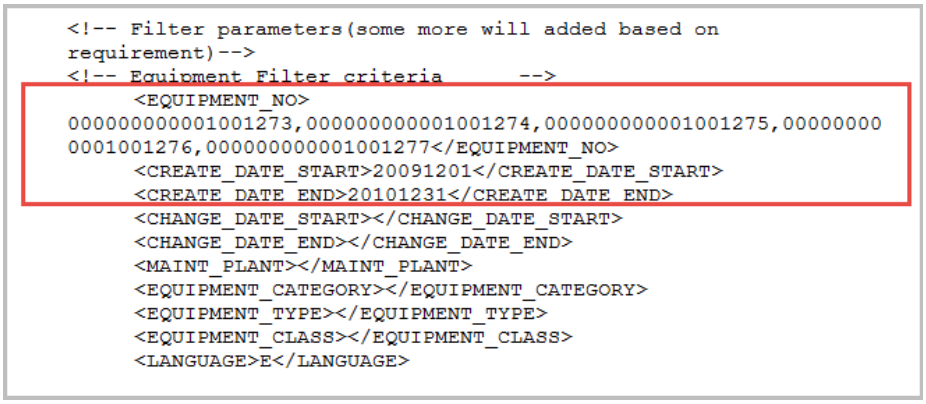
SAP Equipment Data Extraction

To extract Equipment records created between December 2009 and December 2010 with Equipment numbers 1001273-1001277:

1. In the **CREATE_DATE_START** field, enter the following to reflect the date December 1, 2009: `20091201`.
2. In the **CREATE_DATE_END** field, enter the following to reflect the date December 31, 2010: `20101231`.
3. In the **EQUIPMENT_NO** field enter the following Equipment identification numbers: `000000000001001273,`

000000000001001274,000000000001001275,000000000001001276,
000000000001001277.

The necessary filter parameters are entered in the context file, as shown in the following image:



4. Save the context file.
   Only Equipment records with the IDs 1001273-1001277 created between December 2009 and December 2010 are extracted when the Job is run in the APM Connect Administration Center.

Next Steps

After you have applied the filters in the context file, you can run the associated job in the APM Connect Administration Center.

Apply Functional Location Filter Parameters

In the context file, there are filter parameters that apply specifically to the Functional Location Adapter. These filter parameters determine which Functional Location data will be transferred from the EAM source system into APM. This topic outlines the functions of Functional Location-specific filters, and how to apply them.

Before You Begin

Before you can manipulate the Functional Location data, you must first import the functional location adapter job into the APM Connect Administration Center.

Procedure

1. On the machine on which you installed APM Connect, navigate to `<root:\\>\APMConnect\Config`.

   Note: If you are using multiple SAP systems, there will be multiple context files to which you will need to apply the filter parameters.
2. Right-click the file `<System>_context.xml`, and then select **Edit**.
   The context file opens.
3. As necessary, configure the Common Filters.
4. As necessary, configure the following Functional Location Filter parameters in the table:

Functional Location Parameters	Description	Value Requirements	Required or Optional
FLOC_NO	Number that identifies the Functional Location record you want to extract.	The Functional Location number should not exceed 40 characters. You cannot exceed 500 Functional Location numbers.	Optional
FLOC_CATEGORY	ID of the Functional Location Category that will limit the Functional Locations extracted.	The Functional Location Category should not exceed one character.	Optional
FLOC_CLASS	ID of the Functional Location Classification that will limit the Functional Locations extracted.	The Functional Location Class should not exceed 18 characters.	Optional
FLOC_TYPE	ID of the Functional Location Type that will limit the Functional Locations extracted.	The Functional Location Type should not exceed ten characters.	Optional
TECHNICAL_CHARACTERISTICS_ENABLED	Determines whether technical characteristics are extracted during the static data job. Setting the value to False removes these records and improves performance.	True or False	Required

5. Save the changes to the context file.

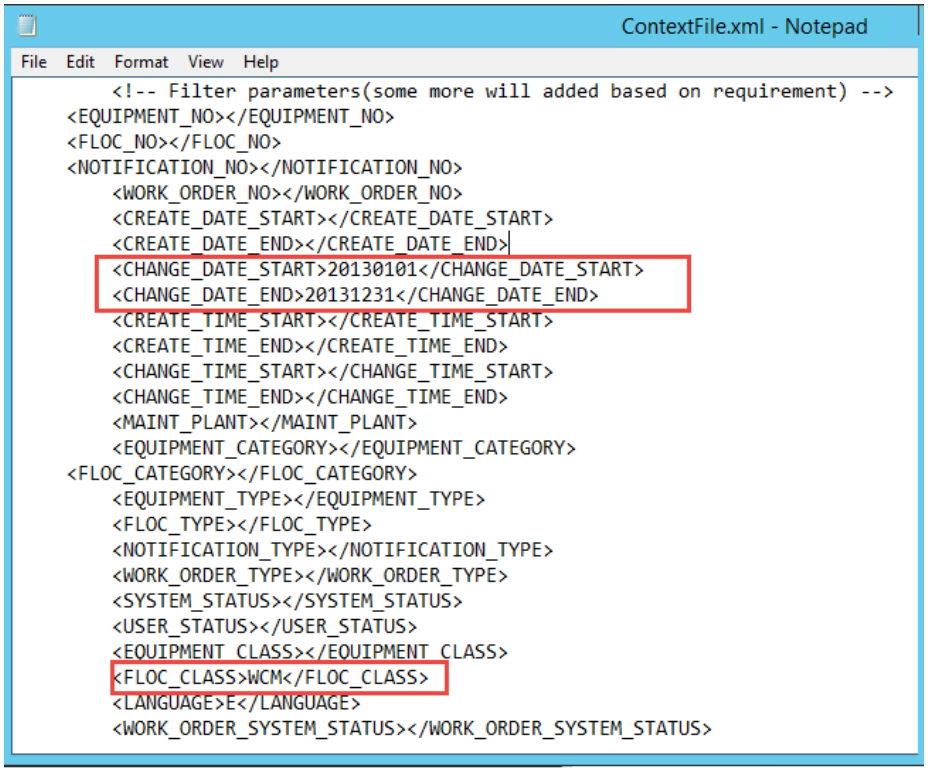
Results

The Functional Location filters parameters are configured, and the Functional Location Adapter Job can be run in the APM Connect Administration Center. When a Job is run in the APM Connect Administration Center, the Job will reference the context files for the parameters of the extraction. If no filters are entered to limit the records extracted, all Functional Location records will be extracted.

SAP Functional Location Extraction

To extract Functional Location records changed between January 1 and December 31, 2013, with the Functional Location class WCM:

1. In the **CHANGE_DATE_START** field, enter `20130101`.
2. In the **CHANGE_DATE_END** field, enter `20131231`.
3. In the **FLOC_CLASS** field, enter `WCM` to limit records extracted to those with the Functional Location class of WCM, as shown in the following image:



4. Save the context file.
   Only Functional Location records with the Functional Location class WCM that were modified between January 1 and December 31, 2013, are extracted when the Job is run in the APM Connect Administration Center.

Next Steps

After you have applied the filters in the context file, you can run the associated job in the APM Connect Administration Center.

Apply Work History Filter Parameters

There are filter parameters in the context file that specifically apply to the Work History Adapter. The filter parameters determine which Work History data will be transferred from SAP into APM. This topic describes the functions of Work History-specific filters, and how to apply them.

Before You Begin

Before you can manipulate the Work History data, you must import the work history adapter job into the APM Connect Administration Center.

Procedure

1. On the machine on which you installed APM Connect, navigate to `<root:\\>\APMConnect\Config`.
2. Right-click the file `<System>_context.xml`, and then select **Edit**.
   The context file opens.

3. As necessary, configure the Common Filters.
4. As necessary, configure the following Work History parameters in the context file:

Work History Parameters	Description	Value Requirements
CHANGE_TIME_START	Time value. Retrieves records changed at or after the specified time.	Time values must be entered in the following format: HHMMSS.
CHANGE_TIME_END	Time value. Retrieves records changed at or before the specified time.	Time values must be entered in the following format: HHMMSS.
CREATE_TIME_START	Time value. Retrieves records created at or after the specified time.	Time values must be entered in the following format: HHMMSS.
CREATE_TIME_END	Time value. Retrieves records created at or before the specified time.	Time values must be entered in the following format: HHMMSS.
WORK_ORDER_SYSTEM_STATUS	Work Order system status that limits the work orders you will extract.	Work Order System Status should not exceed four characters.
WORK_ORDER_USER_STATUS	Work Order user status that limits the work orders you will extract.	Work Order User Status should not exceed four characters.
NOTIFICATION_SYSTEM_STATUS	Notification system status that limits the notifications you will extract.	Notification system status should not exceed four characters.
NOTIFICATION_USER_STATUS	Notification user status that limits the notifications you will extract.	User status should not exceed four characters.
NOTIFICATION_NO	Number that identifies the Notification record.	Notification Number should not exceed 12 characters.
WORK_ORDER_NO	Number that identifies the Work Order record.	Work Order Number should not exceed 12 characters.
NOTIFICATION_TYPE	Order type that limits the orders you will extract.	Notification type should not exceed two characters.
WORK_ORDER_TYPE	ID of the work order that limits the orders you will extract.	Work Order type should not exceed four characters.
EQUIPMENT_CATEGORY	ID of the Equipment category that limits the Equipment data extracted.	Equipment category should not exceed one character.
EQUIPMENT_CLASS	ID of the Equipment class that limits the Equipment data extracted.	Equipment class should not exceed 18 characters.
EQUIPMENT_TYPE	ID of the Equipment Type that will limit the Equipment extracted.	Equipment type should not exceed 10 characters.
FLOC_CATEGORY	ID of the Functional Location Category that will limit the Functional Locations extracted.	Functional Location category should not exceed one character.
FLOC_CLASS	ID of the Functional Location Classification that will limit the Functional Locations extracted.	Functional Location class should not exceed 18 characters.
FLOC_TYPE	ID of the Functional Location Type that will limit the Functional Locations extracted.	Functional Location type should not exceed 10 characters.

Results

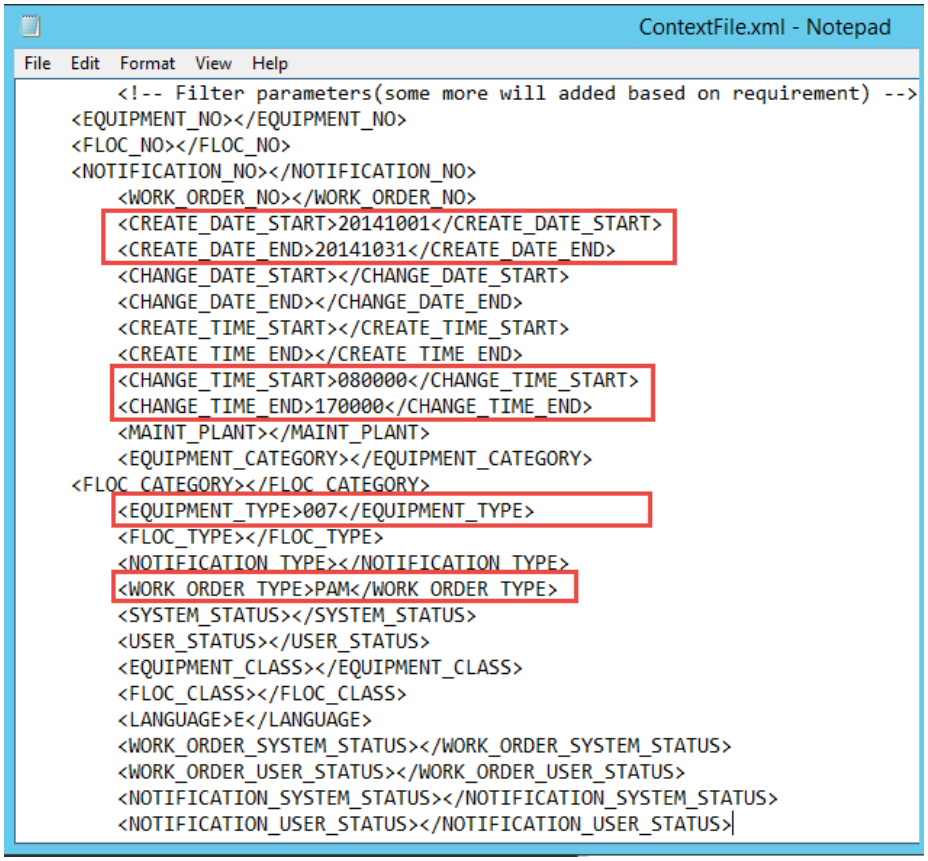
The context file is configured, and the Work History Adapter Job can be run in the APM Connect Administration Center. When a Job is run in the APM Connect Administration Center, the job will look to the context files for the parameters of the extraction. If no filters are entered to limit the records extracted, all Work History records for work orders and notifications will be extracted.

SAP Work History Extraction

To extract Work History records created in 2014 between October 1-31st, changed between the hours of 8:00 A.M. and 5:00 P.M., with the Work Order type maintenance orders, with the Equipment Type mobile cranes:

1. In the **CREATE_DATE_START** field, enter the following to reflect October 1, 2014: `20141001`.
2. In the **CREATE_DATE_END** field, enter the following to reflect October 31, 2014: `20141031`.
3. In the **CHANGE_TIME_START** field, enter the following to reflect 8:00 A.M.: `080000`.
4. In the **CREATE_TIME_END** field, enter the following to reflect 5:00 P.M.: `170000`.
5. In the **WORK_ORDER_TYPE** field, enter the following SAP code for Maintenance order: `PAM`.
6. In the **EQUIPMENT_TYPE** field, enter the following SAP code for Mobile Cranes: `007`.

   The necessary parameters are in the context file, as shown in the following image:



7. Save the context file.
   Only Work History records that are Maintenance Orders for Mobile Cranes created in October 2014, changed between the hours of 8:00 A.M. and 5:00 P.M., will be extracted when the Work History Job is run in APM Connect Administration Center.

Next Steps

After you have applied the filters in the context file, you can run the associated job in the APM Connect Administration Center.

Apply Technical Characteristics Filters

In the context file, there are filter parameters that apply specifically to the Technical Characteristics Adapter jobs. These filter parameters determine which Technical Characteristics data will be transferred from the EAM source system into APM.

Before You Begin

Before you can manipulate the Technical Characteristics Adapter data, you must import the Technical Characteristics Adapter job into the APM Connect Administration Center.

Procedure

- To configure filter parameters for the Functional Location Technical Characteristics Adapter:

1. On the machine on which you installed APM Connect, navigate to `<root:\\>\APMConnect\Config`.
2. Right-click on the file `<System>_context.xml`, and then select **Edit**.
   The context file opens.
3. As necessary, configure the Common Filters.
4. As needed, configure the following Functional Location Technical Characteristics filter parameters in the table:

Functional Location Parameters	Description	Value Requirements	Required/ Default or Optional
EQUIPMENT_NO	Equipment number that defines the Equipment that you want to extract.	The Equipment number should not exceed 18 characters.	Optional
EQUIPMENT_CATEGORY	ID of the Equipment Category that will limit the Equipment extracted.	The Equipment Category should not exceed one character.	Optional
EQUIPMENT_CLASS	ID of the Equipment Classification that will limit the Equipment extracted. If an Equipment has multiple classifications, as long as you specify one of those classifications, the Equipment record will be extracted. **Note:** When Technical Characteristic classifications are updated in APM, they will override any changes made to the EQUIPMENT_CLASS parameter in the context file.	The Equipment Class should not exceed 18 characters.	Optional
EQUIPMENT_TYPE	ID of the Equipment Type that will limit the Equipment extracted.	The Equipment Type should not exceed 10 characters.	Optional
TECHNICAL_CHARACTERISTICS_ENABLED	Determines whether technical characteristics and functional characteristics are gathered during static data. Setting the value to False removes these records and improves performance.	True or False	Required

5. Save the changes to the context file.

The Equipment Technical Characteristics filter parameters are configured, and the Equipment Technical Characteristics Adapter Job can be run in the APM Connect Administration Center. When a Job is run in the APM Connect Administration Center, the Job will look to the context files for the parameters of the extraction. If no filters are entered to limit the records extracted, all Equipment Technical Characteristics records will be extracted.

- To configure filter parameters for the Functional Location Technical Characteristics Adapter:

1. On the machine on which you installed APM Connect, navigate to `<root:\\>\APMConnect\Config`.
2. Right-click on the file `<System>_context.xml`, and then select **Edit**.
   The context file opens.
3. As necessary, configure the Common Filters.
4. As needed, configure the following Functional Location Technical Characteristics filter parameters in the table:

Functional Location Parameters	Description	Value Requirements	Required/ Default or Optional
FLOC_NO	Functional Location number that defines the Functional Location that you want to extract.	The Functional Location number should not exceed 40 characters.	Optional
FLOC_CATEGORY	ID of the Functional Location Category that will limit the Functional Locations extracted.	The Functional Location Category should not exceed one character.	Optional
FLOC_CLASS	ID of the Functional Location Classification that will limit the Functional Locations extracted.	The Functional Location Class should not exceed 18 characters.	Optional
FLOC_TYPE	ID of the Functional Location Type that will limit the Functional Locations extracted.	The Functional Location Type should not exceed 10 characters.	Optional

5. Save the changes to the context file.

The Functional Location Technical Characteristics filters parameters are configured, and the Technical Characteristics Adapter Job can be run in the APM Connect Administration Center. When a Job is run in the APM Connect Administration Center, the Job will look to the context files for the parameters of the extraction. If no filters are entered to limit the records extracted, all Technical Characteristics records will be extracted.

Next Steps

After you have applied the filters in the context file, you can run the associated job in the APM Connect Administration Center.

Apply Work Management Filters

There is a filter parameter in the context file that applies specifically to the Work Management Adapter. The filter parameter determines which Work Management data will be transferred from SAP into APM.

Before You Begin

Before you can apply Work Management filters, you must import the Work Management Job into the APM Connect Administration Center.

Procedure

1. On the machine on which you installed APM Connect, navigate to `<root:\\>\APMConnect\Config`.

2. Right-click the file `<System>_context.xml`, and then select **Edit**.
   The context file opens.
3. As needed, configure the Common Filters.
4. As needed, configure the Work Management filter parameter in the table:

   Important: If you change any of the required parameters after loading data, you must rerun the Work Management job.

Work Management Filter Parameter	Description	Value Requirements	Required/ Default or Optional
MAINTENANCE_PLAN	Maintenance Plan ID number that defines the Work Management data that you want to extract.	The Maintenance Plan ID is 12 characters.	Optional
INSPECTION_FAMILY	Determines to which family the Inspection records are associated.	To use the default association, enter the value MI_TASKINSP.	Required
INSPECTION_CONDITION	Determines the SAP control key used to identify trigger values for Inspection records.	The parameter requires specific syntax as follows: <SAP Table>-<SAP Field> EQ '<Key Value 1>, <Key Value 2>,<Key Value 3>, etc.' To use the default configuration, enter the following value PLPO-STEUS EQ 'ZMI1'.	Required
CALIBRATION_FAMILY	Determines to which family the Calibration records are associated.	To use the default configuration enter the value MI_TASKCALB.	Required
CALIBRATION_CONDITION	Determines the SAP control key used to identify trigger values for Calibration records.	The parameter requires specific syntax as follows: <SAP Table>-<SAP Field> EQ '<Key Value 1>, <Key Value 2>,<Key Value 3>, etc.' To use the default configuration, enter the following value PLPO-STEUS EQ 'ZMI2'.	Required

Note:

For Inspection_Condition and Calibration_Condition you can only use the PLPO, PLAS, and PLKO SAP tables. The valid comparison operators are:

EQ: Equal to.
GE: Greater than or equal to.
LE: Less than or equal to.
LT: Less than.
GT: Greater than.
NE: Not equal to.

Results

The context file is configured, and the Work Management Adapter Job can be run in the APM Connect Administration Center. When a Job is run in the APM Connect Administration Center,

the Job will look to the context file for the parameters of the extraction. If no filters are entered to limit the records extracted, all Work Management records will be extracted.

Example

Example 1: Configure Work Management to use Non-default Control Keys

Suppose you want to use the SAP field STEUS with the control keys PM01 and PM02 to trigger Calibration task records. Additionally, suppose you want to use the control keys QM01 and QM02. In this case, you should configure the context file as follows:

1. In the **INSPECTION_FAMILY** parameter, enter `MI_TASKINSP`.
2. In the **INSPECTION_CONDITION** parameter, enter `PLPO-STEUS EQ 'QM01,QM02'`.
3. In the **CALIBRATION_FAMILY** parameter, enter `MI_TASKCALB`.
4. In the **CALIBRATION_CONDITION** parameter enter, `PLPO-STEUS EQ 'PM01,PM02'`.

   The Work Management parameters are configured.

```
<INSPECTION_FAMILY>MI_TASKINSP</INSPECTION_FAMILY>
<INSPECTION_CONDITION>PLPO-STEUS EQ 'QM01,QM02'</INSPECTION_CONDITION>
<CALIBRATION_FAMILY>MI_TASKCALB</CALIBRATION_FAMILY>
<CALIBRATION_CONDITION>PLPO-STEUS EQ 'PM01,PM02'</CALIBRATION_CONDITION>
```

Example 2: Configure Work Management to use Non-default Control Keys

Suppose you want to use the SAP field USROO from the PLPO table, the control key values PM01 or PM02 for Calibration Task, and the control key QM01 or QM02 for Inspection Tasks.

1. In the **INSPECTION_FAMILY** parameter, enter `MI_TASKINSP`.
2. In the **INSPECTION_CONDITION** parameter, enter `PLPO-USR00 EQ 'QM01,QM02'`.
3. In the **CALIBRATION_FAMILY** parameter, enter `MI_TASKCALB`.
4. In the **CALIBRATION_CONDITION** parameter enter `PLPO-USR00 EQ 'PM01,PM02'`.

   The Work Management parameters are configured.

```
<INSPECTION_FAMILY>MI_TASKINSP</INSPECTION_FAMILY>
<INSPECTION_CONDITION>PLPO-USR00 EQ 'QM01,QM02'</INSPECTION_CONDITION>
<CALIBRATION_FAMILY>MI_TASKCALB</CALIBRATION_FAMILY>
<CALIBRATION_CONDITION>PLPO-USR00 EQ 'PM01,PM02'</CALIBRATION_CONDITION>
```

Note:

The conditions follow standard SAP select query filtering rules.

Consider the following example:

```
<INSPECTION_CONDITION>( PLPO-STEUS EQ 'QM01' ) OR (
          PLKO-AENNR EQ '1234 , '4587' OR PLKO-AENNR EQ
'5678' ) AND ( PLAS-TECHV EQ 'A1234' AND
          PLAS-TECHV EQ 'B1234' ) OR ( PLPO-AEDAT GE
'20171218' ) OR ( PLPO-STEUS NE 'QM01' )
          </INSPECTION_CONDITION>
```

Next Steps

After you have applied the filters in the context file, you can run the associated job in the APM Connect Administration Center.

Chapter 11

Deployment and Upgrade: SAP

Topics:

- First-time Deployment
- Upgrade

First-time Deployment

Deploy the SAP Adapters for the First Time

The following outlines the steps that you must complete to deploy and configure this module for the first time.

About This Task

These instructions assume that you have completed the steps for deploying the basic APM system architecture.

These tasks may be completed by multiple people in your organization. We recommend, however, that the tasks be completed in the order in which they are listed.

Results

Task	Notes
Configure the Context File Directory for Multiple SAP Systems on page 76	This step is required.
Enable Multiple Cultures From a Single Source System on page 77	This step is required.
Install SAP Java Connector on page 77	This step is required.
Configure the Context File on page 78	This step is required.
Configure Context Parameters on page 89	This step is required.
Configure the Logging on page 90	This step is required.
Configure Site Reference Values on page 91	This step is required.
Mount a File Share on page 93	This step is required.
Establish SFTP Transfer in a Windows SAP Server on page 97	This step is required.
Secure Data Transfer to a Linux SAP Server on page 97	This step is required.
Establish SFTP Transfer in a Linux SAP System on page 98	This step is required.
Establish Data Transfer via Web Services on page 99	This step is required.
Create File Share Folder Structure on page 100	This step is required.
Install the ABAP Base Service Pack Add-on on page 100	This step is required.
Verify ABAP Installation on page 102	This step is required.
Install the Dual ABAP Package on page 103	This step is required.
Uninstall the ABAP Base Service Pack Add-on on page 104	This step is required.
Create APM Connect User Profile in SAP on page 105	This step is required.
Assign Profile to APM Connect User on page 109	This step is required.
Identify Trigger Values for Creating Task Records on page 110	This step is required.

Task	Notes
Configure APM to Create Notifications from Recommendation Records on page 110	This step is required.
Deploy and Configure the SAP Connector Files on page 111	This step is required.
Configure Notification Priority on page 112	This step is required.
Create an SAP EAM System Record on page 112	This step is required.
Test the Connection Defined in an EAM System Record on page 113	This step is required.
Create the Intermediate Repository Database on page 113	This step is required.
Run the Static Data Job on page 115	This step is required.
Configure SAP Task and Confirmation Creation on page 115	This step is required.
Add Entries to the /MIAPM/TASK_CNF Table on page 116	This step is required.
Configure the Query Get Tasks for Work Order Generation on page 116	This step is required.
Schedule Work Orders on page 117	This step is required.
Identify Classifications to Extract on page 118	This step is required.
Identify Characteristics to Extract on page 119	This step is required.

Configure the Context File Directory for Multiple SAP Systems

APM Connect allows you to extract data from multiple SAP Systems using the Master Job to extract from multiple systems. You must set up the appropriate directory structures.

About This Task

Additionally, jobs are automatically configured to run a full extraction or load per context file for each job cycle, allowing different configurations per SAP System.

Important: This step is required only if you are using multiple SAP Systems from which you plan on extracting data. If you are not using multiple SAP systems, you can skip this procedure and proceed to the next step, install the SAP Java connector, in the APM Connect Base First-Time Deployment Workflow.

Procedure

1. On the machine on which you installed APM Connect, navigate to the following location: `C:\APMConnect\Config\`.
2. Create a new folder for each SAP System using the following folder structure: `C:\APMConnect\Config\<SAP System Name>`.
3. In each SAP system folder, place a copy of the context file.
4. Label each copy of the context file using the following format: `SAP_<system name>_Contextfile.xml`.

   Important: You must label the context file with SAP_ at the beginning of the file name, or APM Connect will be unable to read the context file during the extraction.

The directory structure is in place with the complete file path: `C:APMConnect\Config\<SAP system name>\SAP_<SAP system name>_Contextfile.xml`.For example, a configured directory will resemble the following: `C:\APMConnect\Config\Q-66\SAP_Q66_Contextfile.xml`.

Enable Multiple Cultures From a Single Source System

To enable data flow when there are multiple cultures configured for a single source system, you must complete the following steps.

Procedure

1. Create a context file for each culture originating from a specific source system.
   a) Assign a CMMS_ID and TARGET_CMMS_ID that indicates the culture.
   For example, consider a source system that supports both French and Spanish. Your CMMS_ID and TARGET_CMMS_ID for the two systems could resemble `SRC1_client_FR` and `SRC1_client_ES`.
2. Create the Intermediate Repository database for the first CMMS_ID you define.
3. For each additional CMMS_ID defined in Step 1.a on page 77, run the addSourceSystem job.
4. For each CMMS_ID defined in Step 1.a on page 77, create an EAM system record, using the CMMS_ID in the **System Name** field.
5. Select **Test Connection** for each EAM System record you created.

Results

You have configured APM Connect to support multiple cultures from a single source system.

Install SAP Java Connector

To facilitate data transfer, there must be a java connector between SAP and the APM Connect server. This topic describes how to establish the connection via the SAP Java Connector (SAP JCO), when SAP Java connector was not setup through the installation.

About This Task

Note: The APM Connect installer automatically places the files sapjco3.dll and sapjco.jar into the location C:\APMConnect\Utilities\runtime\lib. You must complete the remaining steps in this topic manually.

Procedure

1. Navigate to the location where you downloaded the SAP Java Connector package from the SAP marketplace, and copy the following files:
   - sapjco3.dll
   - sapjco3.jar

   Note:
   - If you are using a 64-bit machine, per the APM Connect system requirements, you must select the 64-bit installer.
   - You need to download the Connector version based on the JDK/JRE and Microsoft Visual Studio version on the APM Connect server.

- The SAP Java Connector 3.1 requires a JDK/JRE 8, 11, or 17.
- The SAP Java Connector 3.1 running on Windows operating systems requires the Microsoft Visual Studio 2013, C/C++ runtime libraries to be installed on the system.

2. Navigate to C:\APMConnect\Utilities\runtime\lib\wrapper, and then paste the copied files in that location.
3. Copy the file sapjco3.dll again.
4. Navigate C:\windows\system32, and then paste the copied file in that location.

Results

The Java Connecter is installed.

Configure the Context File

This topic describes how to access and configure parameters in these context files.

Before you can run a job in the APM Connect Administration Center, you must specify a set of connection parameters and corresponding values to establish a connection between APM Connect components, APM, and your EAM system. Each of these connections is used when running a job, and it is required. The connections are established via context files.

Tip: The SAP Adapters support connections between multiple SAP systems and multiple APM databases by using one context file for each SAP system or APM database.

Procedure

1. On the APM Connect server, access your context file. If you installed it in the default location, navigate to the following folder: C:\APMConnect\Config
2. Configure the context file for your type of deployment.

   Important: Changes made to the context file will override changes made in the Context parameters section of APM Connect Administration Center.

   To configure the context file, enter the appropriate values for each parameter into the context file according to the following table.

Interface Mode Selection		
Parameters	**Description**	**Default or Recommended Value**
SAP_CLOUD_ENABLED	Determines whether the Adapter will be used in a cloud environment.	You must enter one of the following values: • true: Adapter will be run in the cloud. • false: Adapter will be run on premises.
LOAD_MERIDIUM_APM	Determines whether the data will be loaded into the Meridium database.	You must enter one of the following values: • true: Data will be loaded into the Meridium database. • false: Data will not be loaded into the Meridium database.
LOAD_DIGITAL_APM	Determines whether the data will be loaded into the Predix database.	You must enter one of the following values: • true: Data will be loaded into the Predix database. • false: Data will not be loaded into the Predix database.

Interface Mode Selection		
Parameters	**Description**	**Default or Recommended Value**
CMMS_ID	The CMMS ID is used as the identifier for your SAP system, and is <SAP System ID>-<SAP Client ID>. For example, if your System ID is D03 and your Client ID is 001, then your CMMS ID would be DO3-001.	This value is required. Enter a unique value. **Note:** When supporting multiple cultures from a single source system, the value indicates the language of the culture.
TARGET_CMMS_ID	This parameter indicates the CMMS ID that receives data and matches the value of CMMS_ID.	This value is required only when enabling multiple cultures from a single source system. Enter a unique value. **Note:** When supporting multiple cultures from a single source system, the value indicates the language of the culture.
SOURCE_SYSTEM_TYPE	Identifies the type of system connecting with APM.	This value is required. You must enter one of the following values: • SAP: If the source system is SAP. • SAP-PI: If the source system is SAP-PI.

Intermediate Repository (IR) Connection		
Parameters	**Description**	**Default or Recommended Value**
IR_HOST	The IP address of the IR.	Enter the host name of the PostgresSQL server. If you installed APM Connect using the default settings, then the value is localhost.
IR_PORT	The port number of the IR.	Enter your PostgreSQL port. The default value is 5432.
IR_DATABASE	The database in which the IR data is stored.	Enter a name for the IR database. This value will be used to create the IR database.
IR_SCHEMA	The schema in which the IR database will be created.	The default value is public.
IR_USERID	The IR user name.	Enter the user name for the PostgresSQL database. The default user name is postgres.
IR_PASSWORD	The IR system password.	Enter the password for the PostgresSQL database that was created during installation.

SAP Connection		
Parameters	**Description**	**Default or Recommended Value**
SAP_CLIENT	The SAP client from where the data is imported.	Enter a unique value.
SAP_HOST	The IP address or the host name of the SAP application server.	Enter a unique value.
SAP_LANGUAGE	The language in which the SAP system sends messages to APM Connect.	The default value is EN.
SAP_SYSTEM_NUMBER	The instance number of the SAP application server.	Enter a unique value.
SAP_USERID	The SAP system user ID.	Enter a unique value.

SAP Connection		
Parameters	**Description**	**Default or Recommended Value**
SAP_PASSWORD	The SAP system password.	Enter a unique value.
SAP_SYSTEM_TIMEZONE	The SAP Application Server Operating System time zone.	The default value is EST.
SAP_FILE_ENCODING	Determines the encoding of the source data.	The default value is UTF8. All the character encoding supported by the Java Virtual Machine (JVM) are correct.
EXTRACT_NUM_PARALLEL_JOB	Determines the maximum number of SAP background jobs allowed during extraction.	The recommended value is 10.
IR_LOAD_NUM_PARALLEL_JOBS	Determines the maximum number of SAP background jobs allowed during loading.	The recommended value is 10.

File System		
Parameters	**Description**	**Default or Recommended Value**
PLSAP_INPUT	The path of the directory you created, which SAP uses to place data files used by APM Connect.	Enter a unique value.
PLSAP_OUTPUT	The path of the directory used by APM Connect to search for the files created by SAP. This directory should be shared with the SAP server.	Enter a unique value.
IR_TALEND_OUTPUT	The temporary workspace used when moving files from SAP to APM Connect.	Enter your unique directory path.
SFTP_STAGING_DIR	The temporary storage location for files that are waiting to be loaded.	Enter your unique value (for example, C:\APMConnect\Staging).
LOG_BASE_DIR	The location where the EAM logs need to be generated. This location needs to be the share location where APM can reach for the EAM logs. For installation, it has to be some sub-folder within the share location setup for the Data Loaders.	Example: `C:\APMConnect\DataLoaderFiles\<DataSource>\EAMLogs\`
UNC_FILE_PATH	Provide the same location where the Log Files are created for the EAM interfaces. The file path must be in UNC format as the APM Application Server would need to access the generated logs.	Example: `\\<APMCShareFolderName>\<DataSource>\EAMLogs\` For more information, refer to the Create Data Loaders File Share section in the Set Permissions for APM Connect Directory topic.

Parameters	Description	Default or Recommended Value
APM Connection **Note:** The APM Connection Parameters are not required for a cloud deployment.		
APM_API_APP_SERVER	The APM API application server name.	Enter the name of your APM API server.
APM_API_USE_SSL	Specifies whether the APM API application uses SSL.	The valid values are: • true: The API application uses SSL. • false: The API application does not use SSL. The default value is false.
APM_APP_SERVER	The APM application server name.	Enter the name of your APM server.
APM_DATASOURCE	The APM data source to which the data will be exported.	Enter the name of your APM data source.
APM_USERID	The APM Framework user ID.	Enter a unique value.
APM_PASSWORD	The APM Framework password.	Enter a unique value.

Miscellaneous		
Parameters	**Description**	**Default or Recommended Value**
MANUAL_RUN	Determines how the date parameters will be treated.	You must enter one of the following values: • true: The dates specified in the context files will be used. Additionally, the dates of the last successful run stored in the database will not be updated. • false: The date range used during the extraction will be the date of the last successful record as stored in the database. Each time a job is run successfully, the database is updated with those dates and all the subsequent runs will use the dates from the last successful record.
MULTI_OBJECTS_ENABLED	Determines if different types of objects that are logically related to each other can be classified into a single class type. For example, you can use class type *023* to classify both materials and batches.	You must enter one of the following values: • true: Used if the SAP system is enabled to allow multiple objects. • false: Used if the SAP system is not enabled to allow multiple objects. This is the default value.

Miscellaneous		
Parameters	**Description**	**Default or Recommended Value**
TECHNICAL_CHARACTERISTICS_ENABLED	Determines if the technical characteristics of Equipment or Functional Location will be extracted.	You must enter one of the following values: • true: If you are using Equipment or Functional Location Adapter. • false: If you are not using Equipment or Functional Location Adapter. This is the default value.
TARGET_CMMS_ID	Within a source system, this identifies a plant with unique culture settings. For example, if the default source system uses English with the identity of PLT-EN, but there is a plant attached to that source system that requires German, using the ID PLT-DE enables the successful transfer of data between APM and the target plant.	None.

Filter		
Parameters	**Description**	**Default or Recommended Value**
MAINT_PLANT	The ID(s) of the Maintenance Plant whose data you want to extract.	Plant values cannot exceed four characters.
LANGUAGE	The SAP code that represents the language of the description to transfer data into APM.	The value must be a single character.
CREATE_DATE_START	The date value that limits the data extracted to records created on or after the specified date.	Date must be entered in the following format: YYYYMMDD.
CREATE_DATE_END	The date value that limits the data extracted to records created on or before the specified date.	Date must be entered in the following format: YYYYMMDD.
CHANGE_DATE_START	The date value that limits the data extracted to records changed on or after the specified date.	Date must be entered in the following format: YYYYMMDD.
CHANGE_DATE_END	The date value that limits the data extracted to records changed on or before the specified date.	Date must be entered in the following format: YYYYMMDD.

Equipment Filter Criteria		
Parameters	**Description**	**Default or Recommended Value**
EQUIPMENT_NO	The number that identifies the Equipment record that you want to extract.	Equipment number should not exceed 18 characters. You cannot exceed 500 Equipment numbers. For multiple Equipment records, separate the numbers using commas.
EQUIPMENT_CATEGORY	The ID of the Equipment category that limits the Equipment records extracted.	Equipment category ID must be a single character. For multiple Equipment categories, separate the IDs using commas.
EQUIPMENT_TYPE	The ID of the Equipment type that limits the Equipment records extracted.	Equipment type ID should not exceed 10 characters. For multiple Equipment types, separate the IDs using commas.
EQUIPMENT_CLASS	The ID of the Equipment classification that limits the Equipment records extracted.	Equipment classification ID should not exceed 18 characters. If an Equipment has multiple classifications, if you specify any one of those classifications, the Equipment record will be extracted. For multiple Equipment classifications, separate the IDs using commas.

Functional Location Filter Criteria		
Parameters	**Description**	**Default or Recommended Value**
FLOC_NO	The ID of the Functional Location that limits the Functional Location records extracted.	Functional Location ID should not exceed 40 characters. You cannot exceed 500 Functional Location numbers. For multiple Functional Locations, separate the IDs using commas.
FLOC_TYPE	The ID of the Functional Location type that limits the Functional Location records extracted.	Functional Location type ID should not exceed 10 characters. For multiple Functional Location types, separate the IDs using commas.
FLOC_CLASS	The ID of the Functional Location classification that limits the Functional Location records extracted.	Functional Location classification ID should not exceed 18 characters. For multiple Functional Location classifications, separate the IDs using commas.
FLOC_CATEGORY	The ID of the Functional Location category that limits the Functional Location records extracted.	Functional Location category ID must be a single character. For multiple Functional Location categories, separate the IDs using commas.

Planned Work Filter Criteria		
Parameters	**Description**	**Default or Recommended Value**
MAINTENANCE_PLAN	Maintenance Plan ID number that defines the Planned Work data that you want to extract.	The Maintenance Plan ID is 12 characters. If this filter is not specified, all Planned Work data is extracted.

Work History Filter Criteria		
Parameters	**Description**	**Default or Recommended Value**
NOTIFICATION_NO	The number that identifies the Notification record that you want to extract.	Notification number should not exceed 12 characters. For multiple Notification records, separate the numbers using commas.
WORK_ORDER_NO	The number that identifies the Work Order record that you want to extract.	Work Order number should not exceed 12 characters. For multiple Work Order records, separate the numbers using commas.
NOTIFICATION_TYPE	The Notification type that limits the Work Order records that you want to extract.	Notification type should not exceed two characters. For multiple Notification types, separate the Notification types using commas.
WORK_ORDER_TYPE	The ID of the Work Order type that limits the orders that you want to extract.	Work Order type should not exceed four characters. For multiple Work Order types, separate the IDs using commas.
WORK_ORDER_SYSTEM_STATUS	The Work Order systems status that limits the Work Orders that you want to extract.	Work Order system status should not exceed four characters.
WORK_ORDER_USER_STATUS	The Work Order user status that limits the Work Orders that you want to extract.	Work Order user status should not exceed four characters.
NOTIFICATION_SYSTEM_STATUS	The Notification system status that limits the notifications that you want to extract.	Notification system status should not exceed four characters.
NOTIFICATION_USER_STATUS	Notification user status that limits the notifications that you want to extract.	Notification user status should not exceed four characters.
CREATE_TIME_START	The time value that limits the data extracted to records created on or after the specified time.	Time must be in the following format: HHMMSS.
CREATE_TIME_END	The time value that limits the data extracted to records created on or before the specified time.	Time must be in the following format: HHMMSS.
CHANGE_TIME_START	The time value that limits the data extracted to records changed on or after the specified time.	Time must be in the following format: HHMMSS.
CHANGE_TIME_END	The time value that limits the data extracted to records changed on or before the specified time.	Time must be in the following format: HHMMSS.

Work Management		
Parameters	**Description**	**Default or Recommended Value**
MAINTENANCE_PLAN	The number that identifies the maintenance plan record.	The maintenance plan number must not exceed 12 characters.
INSPECTION_FAMILY	Determines the family to which the Inspection records are associated.	To use the default association, enter the value `MI_TASKINSP`.
INSPECTION_CONDITION	Determines the SAP control key used to identify trigger values for Inspection records.	The parameter requires the following specific syntax: *`<SAP Table>-<SAP Field> EQ '<Key Value 1>,<Key Value 2>,<Key Value 3>, etc.`*' To use the default configuration, enter the following value: `PLPO-STEUS EQ 'ZMI1'`.
CALIBRATION_FAMILY	Determines the family to which the Calibration records are associated.	To use the default configuration, enter the value `MI_TASKCALB`.
CALIBRATION_CONDITION	Determines the SAP control key used to identify trigger values for Calibration records.	The parameter requires the following specific syntax: *`<SAP Table>-<SAP Field> EQ '<Key Value 1>,<Key Value 2>,<Key Value 3>, etc.`*' To use the default configuration, enter the following value: `PLPO-STEUS EQ 'ZMI2'`.

Parameters	**Description**	**Default or Recommended Value**
Queue **Note:** The Queue parameters apply only to cloud deployment.		
QUEUE_HOST	The queue host name.	Enter your unique value, which was provided during installation.
QUEUE_HOST_1	An additional queue host name.	Enter your unique value, which was provided during installation.
QUEUE_HOST_2	An additional queue host name.	Enter your unique value, which was provided during installation.
QUEUE_PORT	The queue port.	Enter your unique value, which was provided during installation.
QUEUE_PORT_1	An additional queue port.	Enter your unique value, which was provided during installation.
QUEUE_PORT_2	An additional queue port.	Enter your unique value, which was provided during installation.
QUEUE_USER	The queue user name.	Enter your unique value, which was provided during installation.
QUEUE_PASSWORD	The queue password.	Enter your unique value, which was provided during installation.
CUSTOMER_NAME	The coded customer name.	Enter your unique value, which was provided during installation.
USE_SSL	Provides for encryption and authentication of the data and its transmission to the server.	Enter a unique value.

Parameters	Description	Default or Recommended Value
TRUSTSTORE_FILE	Location of the file with all the necessary keys and certificates for data transfer to the server using the active message queue.	Enter a unique value.
TRUSTSTORE_PASSWORD	Password of the trust store for APM Connect to retrieve the keys.	Enter a unique value.

Parameters	Description	Default or Recommended Value
SFTP SFTP Connection is supported only for the SAP Adapters, and configuration is required only if you are using FTP to transfer information between your systems. **Important:** If you are using an SAP System with the SAPFTP_SERVERS table, you must configure that table to activate SFTP servers according to the SAP Help system. You can refer to SAP OSS 1605054 for more details. Typically, this will apply to any SAP version later than ECC6 EHP5.		
PLSAP_FTP_HOST	The SFTP server host name.	Enter a unique value.
PLSAP_FTP_USERID	The SFTP server user name.	Enter a unique value.
PLSAP_FTP_PASSWORD	The SFTP server password.	Enter a unique value.
PLSAP_FTP_PORT	The SFTP server port.	If the default configuration was followed, enter one of the following values: • 22: For SFTP connection.
PLSAP_FTP_MODE	The mode by which files are copied.	Enter one of the following values: • SERVER: To use file shares. • SFTP: To use standard secure FTP. • WS for the Webservice Transfer.
PLSAP_FTP_SCAN_DIR	The remote SFTP directory used to scan for files.	Enter a unique value.
PLSAP_FTP_NUM_OF_RETRY	The number of times to scan the SFTP server for files.	10
PLSAP_FTP_SLEEP_TIME	The time in seconds between scans.	10
PLSAP_SFTP_SCP_COMMAND	The command name created when establishing the SFTP transfer in SAP.	Enter a unique value.

Parameters	Description	Default or Recommended Value
SFTP **Note:** The SFTP parameters apply only to cloud deployment.		
SFTP_HOST	The SFTP server host name.	Enter your unique value, which was provided during installation.
SFTP_USERID	The SFTP server user name.	Enter your unique value, which was provided during installation.
SFTP_PASSWORD	The SFTP server password.	Enter your unique value, which was provided during installation.
SFTP_PORT	The SFTP server port.	Enter your unique value, which was provided during installation.

Parameters	Description	Default or Recommended Value
SFTP_LANDING_DIR	The directory path where the shared files are stored.	Enter your unique value, which was provided during installation.
USE_SSH_KEY	Determines if SSH security configuration will be used by the adapters.	You must enter one of the following values: • true: SSH configuration will be used. • false: SSH configuration will not be used.
SSH_PRIVATE_KEY	The directory where the SSH key is stored.	Enter a unique value. The SSH key must be generated by the user in the openSSH format. This key can be stored in any directory on the APM Connect server, but it is recommended to store it in the following directory: `C:\APMConnect\Config`

Parameters	Description	Default or Recommended Value
Email Notification **Note:** The Email Notification parameters apply only to cloud deployment.		
EMAIL_FROM	The email address from which the notification email will be sent.	Enter a unique value.
EMAIL_TO	The email address(es) to which the email will be sent.	Enter a unique value.
FAILURE_DETAIL_REPORT_ENABLED	Indicates whether the failure detail report will be sent when a record fails to load.	You must enter one of the following values: • true: The failure detail report, detailing the records that failed to load into APM and the reason for failure, will be sent. • false: The failure detail report will not be sent.
FAILURE_DETAIL_REPORT_JRXML_FILE_PATH	Directory where the JasperReport file to generate the failure detail report in PDF will be delivered.	Enter a unique value.
LOAD_SUMMARY_REPORT_ENABLED	Indicates whether the load complete report will be loaded with each extraction.	You must enter one of the following values: • true: The load complete report, detailing the number of records that were extracted and successfully loaded into APM, will be sent. • false: The load complete report will not be sent.
LOAD_SUMMARY_REPORT_JRXML_FILE_PATH	Directory where the JasperReport file to generate the summary detail report in PDF will be delivered.	Enter a unique value.
REPORT_TARGET_DIR	Directory where the report file will be delivered.	Enter a unique value.
SMTP_HOST	The host for SMTP installation the APM Connect server.	Enter a unique value.
SMTP_PORT	The port for SMTP.	The default value is 25.

Guardrail		
Parameters	**Description**	**Default or Recommended Value**
EQUIPMENT_THRESHOLD	The maximum number of records that should be transferred from SAP to APM in a single run of the Equipment Adapter.	The default value is 100000.
FLOC_THRESHOLD	The maximum number of records that should be transferred from SAP to APM in a single run of the Function Location Adapter.	The default value is 100000.
WORKHISTORY_THRESHOLD	The maximum number of records that should be transferred from SAP to APM in a single run of the Work History Adapter.	The default value is 50000.
OVERRIDE_GUARDRAILS	Indicates whether the job will continue if the number of records exceeds the defined threshold.	The default value is Y, which means that the job will run regardless of the number of records included. A warning notification will also be sent to the email address specified in the EMAIL_TO parameter within the Email Notification Parameters section of this file. If you set this parameter to N, the job will be terminated when the number of records exceeds the defined threshold, and an error notification will be sent.

Parameters	**Description**	**Default or Recommended Value**
SAP PI **Note:** Enter the appropriate values for the following parameters into the context file only if you are deploying the SAP Adapters for Process Integration (SAP PI) (in which case the parameter SAP_USE_PI should have the value true).		
SAP_USE_PI	Determines whether the SAP PI connection will be used.	You must enter one of the following values: • true: SAP PI connection will be used. • false: SAP PI connection will not be used. This is the default value.
SAP_SYSTEM_ID	The system IDs of the SAP systems from which you want to extract data.	Enter a unique value.
SAP_PI_HOST	The SAP PI server host.	Enter a unique value. For example: • http://your.pi_system.com - when not using SSL. • https://your.pi_system.com - when using SSL.
SAP_PI_PORT	The SAP PI server port.	Enter a unique value.
SAP_PI_RECEIVER_PARTY	The receiver party configured in the SAP PI ID configurations.	This is optional and unique to the user.
SAP_PI_RECEIVER_SERVICE	The receiver service configured in the SAP PI ID configurations.	This is optional and unique to the user.
SAP_PI_SENDER_PARTY	The sender party configured in the SAP PI ID configurations.	This is optional and unique to the user.

Parameters	Description	Default or Recommended Value
SAP_PI_SENDER_SERVICE	The sender service configured in the SAP PI ID configurations.	If not specified, the default value is Meridium_APMConnect. The value must match what is in the communication channel in SAP.
SAP_PI_USERID	The SAP PI user ID.	Enter a unique value.
SAP_PI_PASSWORD	The SAP PI password.	Enter a unique value.
COMPRESS_TYPE	Determines if the files will be compressed and the method of compression that is used.	You must enter one of the following values: • None: Files are not compressed. **Note:** If you do not compress files, large extractions will take a long time. • SAPCAR: Files are compressed by SAP. This is the recommended value. If used, you must install the SAPCAR file on the APM Connect server. • ZIP: Files are compressed through a standard zip method.
COMPRESS_SAP_COMMAND_NAME	The value of the command name created.	You must enter one of the following values: • ZSAPCAR: The command name for SAP compression. • ZSZIP: The command name for standard compression.
FILE_MOVE_USE_PI	Determines if APM Connect should use SAP PI to extract and load data.	You must enter one of the following values: • true: SAP PI will move the data from SAP to APM Connect. • false: APM Connect will directly copy the data from SAP.
MAX_FILE_WAIT_SEC	Defines how long the PI Adapters will wait for the extraction to complete before the job times out.	The recommended value is `1000`.
SAP_PI_AAE	If you are using SAP 7.3 or above, you may use the Advanced Adapter Engine (AAE). This parameter allows this functionality to be used during extraction.	You must enter one of the following values: • true: If you are using AAE. • false: If you are not using AAE. This is the default value.

Configure Context Parameters

Procedure

1. In the APM Connect Administration Center, in the **Job Conductor** workspace, select the Job for which you would like to set parameters.
2. At the bottom of the **Job Conductor** workspace, select **Context parameters**.
   The **Context parameters** section appears.
3. In the **Context parameter** column, scroll down to the context parameter you would like to configure.
4. In the **Custom value** box, configure context parameters, and select the **Active** check boxes for the following:
   - **APM User_ID**: Enter your APM user name
   - **APM_PASSWORD**: Enter your APM password.
   - **IR_USERID**:Enter your intermediate repository user name.

- **IR_PASSWORD**: Enter your intermediate repository password.
- **SAP_USERID**: Enter you SAP System user name.
- **SAP_PASSWORD**: Enter your SAP system password.
- **CONFIG_FILE_PATH**: Enter the file path to the location where the context file is stored.
- **LOG4j_FILE_PATH**: Enter the filed path to the location where the Log4j file is stored. If you installed APM Connect in the default location, then enter \APMConnect\Config \log4jproperties
- **MANUAL_RUN**: Enter true or false to determine whether or not the dates recorded in the context file will be used during extraction.

  Note: If the MANUAL_RUN parameter is set to true, the dates specified in the context file will be used. Additionally, the dates of the last successful run stored in the database will not be updated. If set to false, the date range used during the extraction will be the date of the last successful run, as stored in the database. Each time a Job is run successfully, the database is updated with those dates, and all subsequent runs will use the dates from the last successful run.

The context parameters are configured.

5. Repeat steps 1 on page 89-4 on page 89 for every imported Job you will run.
6. To configure the Master job to run, select the SAP_MASTER_INTERFACE Job.
7. At the bottom of the **Job Conductor** workspace, select **Context parameters**.

   The **Context parameters** section appears, displaying the following parameters:

   - **RUN_STATIC_DATA**:The Static Data Job
   - **RUN_EQUIPMENT**:The Equipment Job
   - **RUN_FLOC**:The Functional Location Job
   - **RUN_WORKHISTORY**:The Work History Job
   - **RUN_WORKMANAGEMENT**: The Work Management Job
   - **RUN_PWORK**: The Planned Work Job.
   - **MASTER_CONFIG_FILE_DIR**:The file path to context files for the jobs
   - **SYSTEM_TO_RUN**: The source system from which you want to extract data
   - **RUN_TC_EQUIPMENT**: The Equipment Technical Characteristic Job
   - **RUN_TC_FLOC**:The Functional Location Technical Characteristics Job
8. For each extraction jobs you want to run, in the **Custom value** column enter true, and then select the **Active** check box.
9. In the **MASTER_CONFIG_FILE_DIR Custom value** box, enter the directory where the context file(s) is stored.
10. In the **SYSTEM_TO_RUN Custom value** box enter:

    - The name of the system directory from which you want to extract data.
    - * to extract from all systems.
11. Select **Enter**.

Results

The Jobs are configured to run.

Configure the Logging

Before You Begin

The **Talend Administration Center** is installed and deployed in the application server.

About This Task

This topic describes how to configure APMC Logs using **Talend Application Center** and log4j2.propertiles file.

Procedure

1. Log in to **Talend Administration Centre**.
2. In the **Job Logging Levels**, select the logging levels.
   The logging levels are saved.
3. Set the JVM parameter for the logs to a specific folder.
   The APMC logs are configured.

   Note: By default log files are located in the `C:\APMConnect\Logs`.To facilitate the download of the APMC Logs in the APM, the logs should be linked through APM reference document.

   Important: To customize the logs, the reference to log4j2.propertiles file is passed to the job by providing the `-Dlog4j.configurationFile={path to your custom log4j2 file}` as JVM parameter.

Configure Site Reference Values

To assign site references to records using values other than those in the baseline configuration, you must modify the **autojoin_control** table in the Intermediate Repository.

About This Task

Important: Site Reference records corresponding to the site references that you specify must exist in APM before you can transfer records.

Procedure

- Configure the Site Reference Value to Use an Indirect Site Reference Value

  1. Access a database browser tool, and then access your Intermediate Repository (PostgreSQL) database.
  2. Locate the **autojoin_control** table, and then locate the **site_reference** column.

     Tip: For details about what each column in the **autojoin_control** table contains, see About Site Filtering Configuration.
  3. Update the value in the **site_reference** column using the format `#FIELD_ID#`, where FIELD_ID represents the ID of the field from which you want to populate the site reference value.

     For example, if you want the site reference value to be the value in the SAP Maintenance Plant field of the corresponding Equipment or Functional Location.

     - Where the value `#MI_FNCLOC00_SAP_SYSTEM_C#` occurs, replace the value with `#MI_FNCLOC00_MAINT_PLNT_C#`
     - Where the value `#MI_EQUIPOO_SAP_SYSTEM_C#` occurs, replace the value with `#MI_EQUIP000_MAINT_PLANT_C#`

     When you import record into APM from your SAP System, its Site Reference Key will be the value in the field that you specified. In the example above, the Site Reference Key will be the SAP Maintenance Plant of the corresponding Equipment or Functional Location.

- Configure the Site Reference Value to be A Specific Site Name

  1. Access a database browser tool, and then access your Intermediate Repository (PostgreSQL) database.
  2. Locate the **autojoin_control** table, and then locate the **site_reference** column.

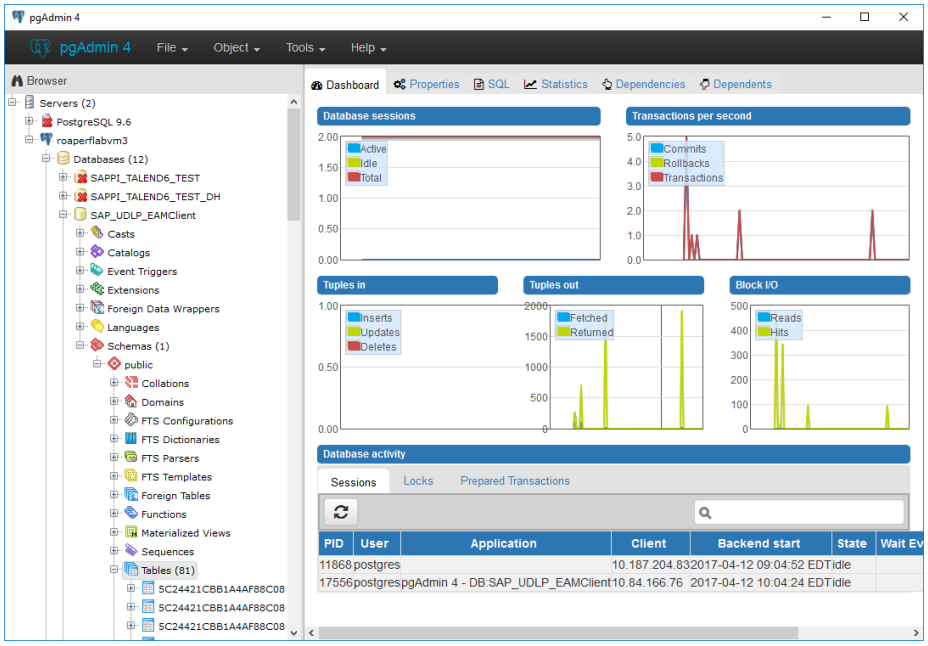
     Tip: For details about what each column in the **autojoin_control** table contains, see About Site Filtering Configuration.
  3. Where the value `#MI_EQUIPOO_SAP_SYSTEM_C#` occurs, replace the value with the Site name as defined in a APM Site Reference record.

     When you import records into APM from your SAP System, its Site Reference Key will be the name of the Site as defined in the Site Reference record.

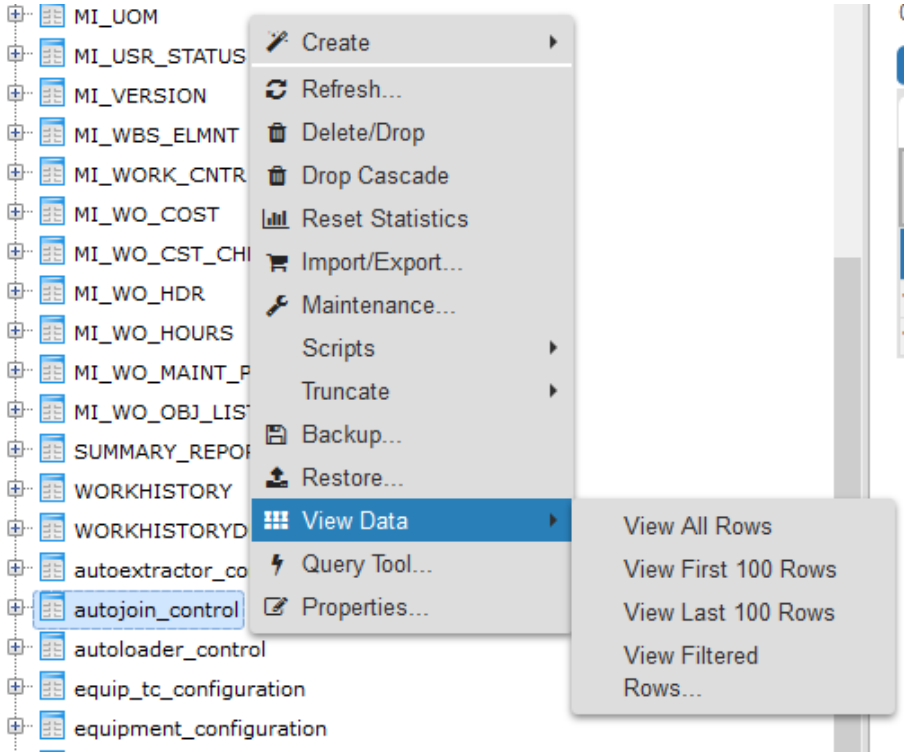
     Configure MI_EQUIP000_CST_CNR_C as an Indirect Site Reference

     In this example, the database browser tool used in this example is pgAdmin4, the IR database name is SAP_UDLP_EAMClient. You can use the database browser of your choice.

     1. On your APM Connect server, open pgAdmin4.
        PgAdmin4 is open displaying your available servers.
     2. Navigate the server tree to the appropriate IR database, access your tables.
        In this example, the path is `Servers(2)\roaperflabvm3\Databases\SAP_UDLP_EAMClient\Schemas(1)\public\Tables (81)`. The list of tables in your IR database are visible.

     3. Locate the table **autojoin_control**, right click, and then select the **View Data** drop-down.



4. Select **View All Rows**.
   The Query -1 tab is populated with the autojoin table.
5. In each row, in the **site_reference** column, enter `#MI_EQUIP000_CST_CNR_C#`

   Tip: This example assumes that the existing values in the **site_reference**column correspond to values in the MI_EQUIP000 and MI_FNCLOC00 families. If they do not, you must also update the **apm_site_reference_family** column to the corresponding family.

   The value in the MI_EQUIP000_CST_CNR_C field will be used to populate the Site Reference Key in corresponding records.

Mount a File Share

This topic details the basic process for setting up a file share based on your operating systems.

Before You Begin

Important: The process can vary greatly between organizations based on network configurations. Additionally, this procedure should be completed by an administrator with the expertise to manage network configurations.

- Be sure that you understand the recommended configurations to enable file shares within the APM Connect architecture.
- You will need access to the Linux console and root privileges on your Linux server.
- You will need the APM Connect server service account user name and password.
- You should be a network administrator with working knowledge of your network configurations.

About This Task

To enable writing files between the servers within your APM Connect architecture, file shares need to be mounted. Generally, this process involves, creating a file share to be mounted, then mounting the file share, and then making the file share permanent.

Procedure

- Create a File Share on a Windows Server, and then Mount the Share to a Linux Server
  1. On your APM Connect server (i.e., the Windows server on which you want to create the share), create a new folder for file sharing.

     Note: This share can be anywhere on your APM Connect server and can have any name.
  2. Right-click on the new folder, and then select **Properties**.
     The **<Folder Name> Properties** window appears.
  3. Select the **Sharing** tab, and then select **Advanced Sharing**.
     The **Advanced Sharing** window appears.
  4. Select the **Share this folder** check box.
     The other fields on the window are enabled.
  5. Optionally, edit the name in the **Share name:** box. If you do not edit this name, the name will default to the folder name.
  6. Select **Permissions**.
     The **Permissions for <Folder Name>** window appears.
  7. Select **Add...**.
     The **Select, Users, Computers, Service Accounts, or Groups** window appears.
  8. In the **Enter the object names to select (examples)** box, enter the name of your APM Connect service account user.

     Note: The user must have permission to read and write to the shared folder.
  9. Select **OK**.
     The **Select, Users, Computers, Service Accounts, or Groups** window closes.
  10. On the **Permissions for <Folder Name>** window, in the **Permissions for <Service User Name>** box, in the **Allow** column select the **Full Control** check box, the **Change** check box, and the **Read** check box.
  11. Select **OK**.
      The **Permissions for <Folder Name>** window closes.
  12. On the **Advanced Sharing** window, select **OK**.
      The **Advanced Sharing** window closes. Then, on the **<Folder Name> Properties** window, in the **Network File and Folder Sharing** section, the **Network Path:** subsection is populated.
  13. Record the network path.
  14. Access your SAP PI server or your SAP server (i.e., the Linux server to which you want to mount the share) via a Linux Command Line Editor tool (for example, Vim or Nano).
  15. Determine an existing directory that will be used as the share, or create a new directory.
  16. In that directory, to initiate the connection between your source and target share, execute a mount command. The command will likely require the APM Connect service account user, source of the file share folder you created on the APM Connect server, and target for the share on your Linux server.

      Tip: The exact mount command will vary based on the system that you are using. An example of a mount command is mount -t smbfs -o username=Administrator // recurring/c$ /mnt/recurring

17. To verify that the new mount is configured correctly, enter the command mount.

    The mount appears in the list of mounted shares.

    Tip: At this point, you should be able to write files from one share to another. To test, place a file in the source folder on the Windows machine, and then the file should appear in the target directory on the Linux machine.
18. On the Linux machine, navigate to the file /etc/fstab.

    Tip: Mounting the share into the /etc/fstab file makes the file share permanent meaning that upon reboot the file share is still be mounted. If you do not execute the mount in this location, once the machine is rebooted the mount will be disconnected.
19. Open the file to be edited using a data base editor (for example Vim or Nano).
20. Add a new line to the file defining the share, mount point, file system driver, and options.

    Tips:

    - The following is an example of the statement syntax: `//<Source Folder Name> / <Target Folder Name <Systems Type or Driver> username=username password=<password> 02`.
    - Additionally, the following is the same entry with sample values: `// APMConnectServer1/WindowsSharedFolder /opt/LinuxSharedFolder cifs –o username=APMConnectSeriveAccount1 password=APMConnect 0 2`
21. Close the file, and then return to the root directory.
22. To unmount the share created, execute the command umount (i.e., if the original mount directory was /opt/LinuxFileShare, then execute the command unmount /opt/LinuxFileShare).

    Tip: You must unmount the share from the original location for it to be mounted from the /etc/fstab file.
23. Execute the command mount.

    The original mount directory does not appear in the list of mounted shares, and the new share in the /etc/fstab folder can be mounted.
24. Execute the command mount –a.

    Tip: Executing the command will read the configuration from the /etc/fstab file, and then preform the mount operation based on the parameters in the file.
25. To verify that the share has been mounted, execute the command mount.

    The new mount point added to the /etc/fstab file appears in the list.

    At this point, you can place a file on the APM Connect server in the shared folder, and it will be transferred to the shared Linux folder.

- Create a File Share on a Linux Server, and then Mount the Share to a Linux Server

  1. Access your SAP Server (i.e., the Linux server to which you want to mount the share) via a Linux Command Line Editor tool (for example, Vim or Nano).
  2. Ensure that the nfs-kernel-server service is installed and running.

     Important: The name of this service can vary based on the Linux system.
  3. Create the directory that will be mounted to your SAP PI server or your SAP server.
  4. To grant the remote server permission to mount a local directory, locate the file /etc/exports.
  5. In that file, enter the directory you created in Step 3 on page 95, and then identify the server that can mount the directory.

For example, if you wanted to create the directory /opt/PI_FileShare and grant all users permissions to mount that directory, then you would enter the following: /opt/PI_FileShare *(rw, sync, no_root_squash, not_subtree_check).

Tip: You can find all of the export options and access control lists in the manual file accessed by executing the command man exports.

6. Restart the service /etc/init.d/nfs-kernel-server.
7. Access your SAP PI server or your SAP server (i.e., the Linux machine to which you want to mount the share).
8. Create a directory to which files will be written from the share.
9. Execute the mount command to mount the exported directory on to the SAP PI server or the SAP server.

   Tips:

   - The exact mount command will vary based on the system that you are using. An example of a mount command is mount example.hostname.com:/ubuntu/local/ubuntu.
   - For example, if your SAP server hostname is SAPServer1, your source directory is /opt/PI_FileShare, and your target directory is /opt/SAP_FileShare, you would enter the following: mount SAPServer1: /opt/PI_File_Share /opt/SAP_FileShare
10. The directory created in step 3 on page 95 appears in the list of mounted directories.

    Tip: At this point, you should be able to write files from one share to another. To test, place a file in the source folder on the Windows machine, and then the file should appear in the target directory on the Linux machine
11. On the Linux machine on which the share will be mounted, navigate to the file /etc/fstab.

    Tip: Mounting the share into the /etc/fstab file makes the file share permanent, meaning that upon reboot the file share will still be mounted. If you do not execute the mount in this location, once the machine is rebooted the mount will be disconnected.
12. Open the file to be edited using a database editor (for example, Vim or Nano).
13. Add a new line to the file defining the share, mount point, file system driver, and options.

    Tips:

    - The following is an example of the statement syntax: <exporting server hostname>:<exported Folder Name> <Target Folder Name> <Systems Type or Driver> 0 2.
    - Additionally, the following is the same entry with sample values: APMConnectServer1.company.com:/exportedFolder /opt/mountpointFolder nfs 0 2
14. Close the file, and then return to the root directory.
15. To unmount the share in the directory created in step 8, execute the command umount.

    For example if the original mount directory was /opt/LinuxFileShare, then execute the command unmount /opt/LinuxFileShare.

    Tip: You must unmount the share from the original location for it to be mounted from the /etc/fstab file.
16. Execute the command mount –a.

    Tip: Executing the command will read the configuration from the /etc/fstab file, and then preform the mount operation based on the parameters in the file.
17. To verify that the share has been mounted, execute the command mount.

The new mount point added to the /etc/fstab file appears in the list.

At this point, you can place a file on the APM Connect server in the shared folder, and it will be transferred to the shared Linux folder.

Establish SFTP Transfer in a Windows SAP Server

If you use SFTP to transfer files between SAP, APM Connect, and APM, you must complete additional configuration in SAP. You must download a PuTTy file and set up command names in SAP to use the PuTTy file.

About This Task

Note: If you using SAP PI, then you can skip this procedure.

Procedure

1. On your SAP system, in a browser, navigate to the PuTTY website.
2. Download the following PuTTy file: `pscp.exe`.
3. Copy it into the PATH on your SAP system. The recommended directory is `%WINDIR%/System32`.
4. In SAP, run the transaction code SM69.
5. In the **External Operation System Commands** screen, select .
6. In the **Definition** section, in the **Operating system command** box, enter following systems command: `pscp`.
7. Select **Save**.

Results

The PuTTy file is on the SAP system, and the corresponding command names are set up.

Secure Data Transfer to a Linux SAP Server

To enable secure SFTP data transfer from a Linux SAP server, you must first set up SSH.

Before You Begin

- The remote SAP system must have a version of SSH installed, for example, OpenSSH.
- The computer you use to connect to the remote server must have a version of SSH installed.
- You must be able to transfer your public key to the remote system. Either, you must be able to log in to the remote system with an established account user ID and password or have an administrator on the remote system add the public key to the `~/.ssh/authorized_keys` file for your account.

Procedure

1. Log in to the computer you are using to access the remote system, and, on the command line, enter `ssh-keygen -t rsa`.
2. At the resulting prompt, enter a file name and a password for the generated key.
   Alternatively, you can press Enter to generate the key into a default file: `~/.ssh/id_rsa.pub`. The remainder of this procedure will reference the generated file as `~/.ssh/id_rsa.pub`.

3. Enter the command `SCP` or `SFTP` to copy the key file you created in step 2 on page 97 to your account on the remote system.
   For example, `scp ~/.ssh/id_rsa.pub username@remoteserver:.`
4. At the system prompt, enter your password.
   The system copies the key file to the account home directory on the remote system.
5. Log in to the remote system with your credentials.
6. **Optional:** If your account on the remote system does not contain a `~/.ssh/authorized_keys` file, create one.
   For example:

   ```
   mkdir -p ~/.ssh
   touch ~/.ssh/authorized_keys
   ```

7. On the remote system, on the command line, enter `cat ~/id_rsa.pub >> ~/.ssh/authorized_keys`.

   The content of the generated key file is copied into a new line in the `~/.ssh/authorized_keys` file. You can verify the contents of the file by entering `more ~/.ssh/authorized_keys`.

Results

A secure connection to your Linux SAP server is established.

Establish SFTP Transfer in a Linux SAP System

If you use SFTP to transfer files from a Linux SAP server, you must complete additional configuration in SAP and the SAP server operating system. This procedure describes how to create a shell script that SAP uses when transferring data to APM.

About This Task

Note: The shell script can have any name, but this procedure uses `MI_SCRIPT.SH` for clarity.

Procedure

1. In a text editor, create a file, for example, `MI_SCRIPT.SH`, with contents as shown in the following example.

   ```
   #!/bin/bash
   #The following 5 arguments listed are retrieved from SAP:
   #$1    -sftp (constant)
   #$2    -pw   (constant)
   #$3    password (PLSAP_FTP_PASSWORD)
   #$4    Source file (PLSAP_INPUT+<interface>+filename.*)
   #$5    USER@HOST:

   arg1=$4
   arg1=${arg1/.csv.*/.csv}
   arg1=${arg1/.dat.*/.dat}
   arg1=${arg1/.dat.dat/.dat}
   arg1=${arg1/.DAT.dat/.dat}
   arg1=${arg1/.dat.DAT/.dat}

   sftp $5 <<EOF
   put $arg1
   ```

2. Copy the file `MI_SCRIPT.SH` into a directory on your SAP system.

   For simplicity, you should use the SAP home path.
3. In SAP, run the transaction code SM69.
4. In the **External Operation System Commands** screen, select .
5. In the **Definition** section, in the **Operating System Command** box, enter a value based on the following table.

Location of the Script	Value of Operating System Command
The script is in the SAP home path	`MI_SCRIPT`
Some other location	The full file path, for example, `/home/h8sadm/scripts/MI_SCRIPT.SH`

6. Select **Save**.

Results

The script file is on the SAP system, and the corresponding command names are set up.

Establish Data Transfer via Web Services

You can establish data transfer using Web Services by creating RFC Destination in SAP. If you use Web Services to transfer data between SAP and APM Connect, you must complete additional configuration steps in SAP.

About This Task

Procedure

1. In SAP, run the transaction code SM59.
2. In the **RFC Connections** screen, select **HTTP Connections to External Server**, and then select to create RFC Destination.
3. In the **RFC Destination** box, enter `APMCONNECT`.

   Note: To give a different name, job customizations can be done in the APM Connect server.
4. Select the **Technical Settings** tab, in the section that appears enter the values:
   - Target Host: Enter the server name where the EAMFileReciver service is deployed.
   - Service No.: Enter the port number of the EAMFileReciver service.
   - Path Prefix: Enter one of the following values:
     - If you are not using SAP PI/PO: `/services/EamFileReceiver`
     - If you are using SAP PI/PO:
       - For Advanced Adapter Engine (AAE): `/XISOAPAdapter/MessageServlet?senderParty=&senderService=GE_APM_SAP&receiverParty=&receiverService=&interface=EamFileReceiver_Out&interfaceNamespace=urn:ge.com:SAP:EamFileReceiver`
       - For non-Advanced Adapter Engine (AAE): `/sap/xi/engine?type=entry&Sender.Service=GE_APM_SAP&Interface=urn:ge.com:SAP:EamFileReceiver^EamFileReceiver_out`

Note: `GE_APM_SAP` is the default Sender Service name in SAP PI. If you are using a different service name, update the Sender Service value accordingly.

5. In the **Logon & Security** tab, select one of the following:
   - Basic Authentication: Select if you are using SAP PI.
   - Do Not Use a User: Select if you are not using SAP PI.
6. Select **Save**.

Results

The RFC Destination is created in the SAP system.

Create File Share Folder Structure

Data files written by SAP are placed in a specific directory defined by the context parameter PLSAP_INPUT. This topic describes how to create the appropriate directory structure.

Procedure

1. Navigate to the folder into which your SAP system writes files.

   Note: This folder will be different for each customer, but will likely be labeled `PLSAP_INPUT`.
2. Create a new folder for each of the following:
   - EQUIPMENT\ARC
   - FLOC\ARC
   - PWORK\ARC
   - TC_EQUI\ARC
   - TC_IFLOT\ARC
   - WMI\ARC
   - WORKHISTORY\ARC

Results

The directory is created, and SAP will write files to the specified location.

Install the ABAP Base Service Pack Add-on

Before You Begin

- Determine the release and level of your current ABAP installation by completing the steps to verify the ABAP installation.
- If you need to support both APM V3.6.x and APM V4.3.x simultaneously, there are additional considerations as described in Install the Dual ABAP Package on page 103.

Procedure

1. On a machine from which you can access the SAP Server, navigate to the FTP site provided to you.
2. Determine how to proceed based on your ABAP release, level, and type of SAP system.
   - For ECC6, if your currently installed ABAP release is 400_600 and the level is 0000 and above, proceed directly to step 16 on page 102. Otherwise, proceed to the next step.

- For S/4 Hana, if your currently installed ABAP release is 4XX_750 and the level is 0000 and above, proceed directly to Step 16 on page 102. Otherwise, proceed to the next step.

3. Depending on your SAP environment, navigate to the folder `\\SAP Interfaces ABAP Add-On\Service Pack Files\ECC6` or `\\SAP Interfaces ABAP Add-On\Service Pack Files\S/4 Hana`, and then select one of the following folders:
   - **Exchange Upgrade**: To upgrade the ABAP package when upgrading to a new SAP version.
   - **Install**: To install the ABAP Package for the first time.
   - **Upgrade**: To upgrade the ABAP package.
4. Copy the .pat files.
   The file names begin with either `D07` for ECC6 or `H4S` for S/4 Hana.
5. On the SAP Server, paste the copied file into the folder `\\usr\sap\trans\EPS\in`.
6. Log in to the SAP system as a user with:
   - SCTSIMPSGL and S_CTS_ADMIN authorizations.
   - SAP_ALL authorization.
7. Run the following transaction: SAINT.
   The **Add-On Installation Tool** screen appears.
8. In the page, select **Installation Package**, then select **Load packages**, and then select **From Application Server**.
9. Select **Yes**.
   The **SAINT: Uploading Packages from the File System** screen appears.
   Note: In an S/4 Hana environment, two files are uploaded and are displayed in the **SAINT: Uploading Packages from the File System** screen.
   In the row corresponding to the .pat file that you copied previously, the Message Text column displays Uploaded successfully.
10. At the top of the screen, select .
    The **Add-On Installation Tool** screen appears again.
11. Select **Start**.
    A new grid appears. MIAPMINT appears in the list of add-on packages that can be installed.
12. Select the row containing the value MIAPMINT in the first column, and then select **Continue**.
    The **Support Package selection** screen appears.
13. Select **Continue**, and then select **Continue** again.
    Note:
    - During the installation, the **Add Modification Adjustment Transports to the Queue** window might appear. If it does, select **No**.
    - During the installation, the **Open data extraction requests** window might appear. If it does, select **Skip**, and then select **Yes**.

    An installation progress indicator appears.
    When the progress indicator disappears, a message appears, indicating that the add-on package will be installed.
14. Select .

The status is updated to indicate that the add-on package will now be imported, and the installation process continues. When the installation process is complete, the status is updated to indicate that the add-on package was imported successfully.

15. Select **Finish**.
    The MIAPMINT add-on package appears in the list of installed add-on packages on the **Add-On Installation Tool** screen.
16. On the FTP site, navigate to the folder `\\SAP Interfaces ABAP Add-On\Support Package`.
17. Depending on your SAP environment, navigate to the `ECC6` folder or navigate to the `S/4 Hana` folder, and copy the .pat files.

    Note: For the Dual ABAP package, refer to Install the Dual ABAP Package.
18. On the SAP Server, paste the copied files into the folder `\\usr\sap\trans\EPS\in`.
19. Log in to the SAP system.
20. Run the following transaction: SPAM.
    The **Support Package Manager** screen appears.
21. Select **Menu**, then select **Support Package**, then select **Load Packages**, and then select **From Application Server**.
    A message appears, asking if you want to upload the package.
22. Select **Yes**.
    A summary screen appears, indicating that the package was uploaded successfully.
23. Select **Back**.
24. Select **Display/define**.
    The **Component Selection** window appears.
25. Select the MIAPMINT component.
26. When prompted, confirm that the patch will be imported into the queue, and then select .
27. Select **Menu**, then select **Support Package**, and then select .
    The **SPAM: Import: Queue** window appears.
28. In the **SPAM: Import: Queue** window, select .
    The import process begins. When it is complete, a message appears, indicating that the import process was successful.
29. Select **Continue**.
    Another message appears, indicating that the import process was successful.
30. Select .
31. Select **Menu**, then select **Support Package**, and then select .
    The installation is complete.

Verify ABAP Installation

Procedure

1. In SAP, in the **System** menu, select **Status...**.
   The **System: Status** window appears.
2. In the **SAP System data** subsection, select .
   The **System: Component information** window appears.

3. If you have deployed the ABAP Add-On package for the SAP Adapter, scroll down until you see the Software Component `MIAPMINT`.

   If you see the following values in the following columns, the Add-On was applied successfully:

   - Release:

     ECC6: `700_600`

     S/4 Hana: `700_750`
   - Level:

     ECC6: `0003`

     S/4 Hana: `0003`

   Note: If the level does not match, go back to the copy .pat files step of Install the ABAP Base Service Pack Add-on and rerun the installation steps.

Install the Dual ABAP Package

Use this procedure to provide SAP and SAP-PI data flows in situations that require access to both V3.6.x and V5.x (or later versions) APM at the same time.

Before You Begin

Important:

- This package is intended to support customers upgrading either all or part of their V3.x environment to V5.x (or later versions). This package should only be installed on a V3.x implementation with the most currently released V3.x ABAP package.
- The Dual ABAP package only supports ECC6 systems. When performing the installation, only use the information related to ECC6.
- If you are migrating V3.6 to V5.x (or later versions), you must have the latest ABAP package (at least V3.6.0 ABAP 0.7, 360_600 Level 10) before installing the Dual ABAP package.
- If you need to use SAP-PI Adapters on APM V3.6, install the adapters.
- If you need to use SAP-PI Adapters for both APM V3.6 and APM, obtain the software from:
  - For APM V3.6: `\SAP PI Package 3.6`.
  - For APM V5.x (or later versions): select the folder that reflects the correct SAP-PI level you need. For example, if you are using SAP-PI 7.5, you would select `\SAP PI 750`.

About This Task

Establishing an environment when you need to establish data flows from SAP or SAP-PI systems to APM V3.6.x and APM V5.x (or later versions) systems simultaneously requires you to use a different ABAP package than what you would use for a single version of APM.

This capability can be useful when you want:

- To test an SAP or SAP-PI system that you are migrating from APM to APM V5.x (or later versions).
- To connect an SAP or SAP-PI system to both a APM V3.6.x and APM V5.x (or later versions), simultaneously.

Procedure

1. In the APM Connect installation package, navigate to `\\SAP Interfaces ABAP Add-On \Service Pack Files\Dual Pack - V36 & V5`.
2. **Optional:** If you have previously installed the Dual ABAP package, start with the step that installs the support pack in Install the ABAP Base Service Pack Add-on on page 100.
3. Install the ABAP package as described in Install the ABAP Base Service Pack Add-on on page 100, using ECC6 as when you need to make choices.
4. Verify the package as described in Verify ABAP Installation on page 102.
   The release and level values should match these:

   Component:

   MIAPMINT

   Release:

   ECC6: 736

   Level:

   ECC6: 0000

Results

You have configured SAP or SAP-PI to use both APM V3.6.x and APM V5.x (or later versions).

Uninstall the ABAP Base Service Pack Add-on

This procedure describes how to uninstall the ABAP Base Service Pack Add-on.

Before You Begin

Note: The uninstall feature is available only with SAP spam version 0057 or later. To complete this procedure, you must use SAP client 000.

- Verify the release and level of your ABAP installation.

Procedure

1. Log in to the SAP server as a user with either SCTSIMPSGL and S_CTS_ADMIN authorizations or SAP_ALL authorization.
2. Enter `SAINT`.
   The **Add-On Installation Tool** screen appears.
3. Select **Installation Package** > **Load Packages** > **From Application Server**
4. Select **Yes**.

   In the **SAINT: Uploading Packages from the File System**, the **Message Text** column of the row corresponding to the `.pat` files that you originally copied displays `Uploaded successfully`.

5. In the **SAINT: Uploading Packages from the File System** window, select
6. In the **Add-On Installation Tool**, select **Uninstallable components**, then select **MIAPMINT** or **MIAPM**, and then select**Continue**.
7. In the **Start options** window, select **Default options**.
8. Select .
   The status is updated to indicate that the add-on package will now be imported and the uninstall process continues. When the process completes, the status is updated to show that the add-on package was removed successfully.

9. Select **Finish**.

Results

The add-on package is removed from the list of installed add-on packages in the **Add-On Installation Tool** screen.

Create APM Connect User Profile in SAP

To successfully transfer data between APM and SAP, you must create an APM Connect user for SAP. This topic describes the process of creating a user profile.

Before You Begin

- Review the APM Connect user profile requirements.
- You must have administrative rights to the SAP system.

Note: The values used for items such as the profile, system names, and userids are for example purposes only. Your values can be different.

About This Task

These steps must be performed in order on the SAP system. They create a profile that you will connect to the APM Connect user that communicates with SAP.

Procedure

1. In SAP, run the transaction `PFCG`.
2. In the **Role Maintenance** screen, in the **Role** box, enter your role name (for example, `ZRM_APMCONNECT_AUTH_PROFILE`), and then select **Single Role**.
3. In the **Display Roles** screen, select the **Authorizations** tab.
4. Define authorizations.
   a) In the **Maintain Authorization Data and Generate Profiles** section, in the **Change Authorization Data** row, select .
   b) In the **Choose Template** window, select **do not select templates**.
   c) In the **Change Role: Authorizations** window, select **Manually**.
   d) In the **Manual selection of authorizations** pane, in the **Authorization Object** box, enter the following authorization object values.

Authorization Object	Description
C_TCLA_BKA	Authorization for Class Types
I_AUART	PM: Order Type
I_BEGRP	PM: Authorization Group
I_BETRVORG	PM: Business Operation
I_INGRP	PM: Maintenance Planner Group
I_KOSTL	PM: Cost Centers
I_QMEL	PM/QM: Notification Types
I_SWERK	PM: Maintenance Plant
I_WERK	PM: Maintenance Planning Plant

Authorization Object	Description
S_BTCH_JOB	Background Processing: Operations
S_DATASET	Authorization for File Access
S_LOG_COM	Required if file transfer is SFTP/SCP. For server mode this authorization is not required.
S_RFC	Authorization Check for RFC Access
S_TABU_NAM	Table Access with Generic Standard

e) Select .

5. Define RFC access.

a) In the **Cross-application Authorization Objects** row, select to expand the workspace, then select the **Authorization Check for RFC Access** row, then select the **Activity** row, and then select .

b) In the **Define Values** window, select the **Execute** box, and then select .

c) In the workspace, in the **Name of RFC to be protected** row, select .

d) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter the following RFC values.

/MIAPM/*	RFC_GET_FUNCTION_INTERFACE	SYSTEM_RESET_RFC_SERVER
CLAF_CLASSIFICATION_OF_OBJECTS	RFCPING	RFC_PING
DDIF_FIELDINFO_GET	SYSTEM_RESET_RFC_CONNECTION	

e) Select .

f) In the workspace, in the **Type of RFC object to be protected** row, select .

g) Select the **FUNC** check box, and then select .

6. Select to expand the **Basis: Administration** row to access the administration section.

7. Define table access.

a) In the **Table Access with Generic Standard Tools** row, select to expand the workspace.

b) In the **Activity** row, select .

c) In the **Define Values** window, select the **Display** check box, and then select .

d) In the **Table Name** row, select .

e) In the **Field values** pane, in the **Value Intrvl** section, enter the following table values in the **'From'** column.

/MIAPM/*	CRHD	JEST	PRPS	T353I_T	TGSBT
AFVV	CRTX	JSTO	QMEL	T356_P	TJ02
AFKO	CSKT	KLAH	QMFE	T356_T	TJ02T
AFRU	CVERS	KSML	QMMA	T357	TJ30

AFVC	EAPL	KSSK	QMUR	T357A_T	TJ30T
AFVV	EQBS	MAKT	QPCT	T357M_T	TKA01
AUSP	EQKT	MHIS	SWOR	T370C_T	TQ80
BGMKOBJ	EQUI	MHIO	T001	T370F_T	TQ80_T
CABN	EQUZ	MMPT	T001W	T370K_T	VIAUFKST
CABNT	IFLO	MPLA	T003P	T370U	VIQMEL
CAWN	IFLOS	OBJK	T006	TAPL	VIMPLA
CAWNT	IFLOT	PLAS	T006A	TCLA	VIMPOS
COBK	IFLOTX	PLKO	T024I	TCURC	T399G_T
COEP	ILOA	PLPO	T350	TCURR	T356_T
COVP	INOB	PMCO	T352B_T	T499S	TGSBT
CRHD	CRTX	TCN00	TCN01	TCURC	TCURT
T399I	T001W	T411	T411T	t003o	t003p
T351X	T351P	TCF10	TCF11	DRAW	DRAT
T399W	T024I	T351	T351T	T024E	CSSL
CSLT	T006	T006A	T412	T412T	T024A
T024		TQ80	TQ80_T	T023	T023T
T430	T430T	TDWA	TDWAT	TFACD	TFACT
T006D	T006T	T370B_T	T357M_T	t353i	t353i_t
t350i	T435	T435T	T399W_T	CSKA	CSKU

8. Select .
9. Define background processing.
   a) In the **Background Processing: Operations on Background Jobs** row, select to expand the workspace, and then, in the **Job operations** row, select .
   b) In the **Define Values** pane, select the **RELE** check box, and then select .
   c) In the workspace, in the **Summary of jobs for a group** row, select .
   d) In the **Field values** window, select **Full authorization**, and then select .
10. Define file access.
   a) In the **Authorization for file access** row, select to expand the workspace.
   b) In the **Activity** row, select .
   c) Select the **Delete**, **Read**, **Write**, **Read with filter**, and **Write with filter** check boxes, and then select .
   d) In the **Physical file name** row, select .
   e) In the **Field values** window, select **Full authorization**, and then select .
   f) In the **Program Name with Search Help** row, select .
   g) In the **Field values** window, select **Full authorization**, and then select .

11. In the **Plant Maintenance** row, select to expand the workspace to define the plant maintenance configuration.
12. Define notification types.
    a) In the **M/QM: Notification Types** row, select to expand the workspace. Then in the **Notification types** row, select .
    b) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter your notification types (for example, *M1* and *M2*).
13. **Optional:** If you are using SFTP or SCP to transfer files between APM and SAP, supply the following values to S_LOG_COM Assign Authority object.

Command	Value
COMMAND	ZSCP - the command defined in the SM69 transaction code that triggers the external command to transfer the file to the FTP server.
HOST	SAP host name, for example, *SAPPERDEV*
OPSYSTEM	Operating system of your SAP system, for example, Windows NT.

14. In the **Classification** row, select to define the classification configuration.
15. Define the class type authorizations.
    a) In the **Classification** row, select , and then, in the **Authorization for Class Types** row, select to expand the workspace.
    b) In the **Class Type** row, select .
    c) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter the class types used in the process (for example, *002* and *003*), and then select .
16. In the **Transaction codes** row of the workspace, select to define the transaction codes.
    a) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter the transaction codes *IW21*, *IW22*, and *IW23*.
17. Define the plant maintenance configuration.
    a) In the **PM: Order Type** row, select to expand the workspace.
    b) In the **Order type** row, select , and then select the order types you are using.
    Note: Each order type you use (for example, *PM01* and *PM02*), needs the same configuration.
    c) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter *.
    d) In the **PM: Authorization Group** row, select to expand the workspace, and then, in the **Technical object authorization** row, select , to add the authorization groups you are using.
    e) In the **Transaction codes** row select .
    f) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter the transaction codes *IW21*, *IW22*, *IW23*, *IW31*, *IW32*, and *IW33*.

g) In the **PM: Business Operation** row, select to expand the workspace. Then, in the **Business Transaction** row, select , and then add the Business Transaction that you are using.

h) In the **PM: Maintenance Planner Group** row, select to expand the workspace. Then, in the **Planner Group for Customer Set** row, select , and then add the Planner Groups that you are using.

i) In the workspace, in the **Maintenance Planning Plant** row, select to add the Maintenance Planning plants.

j) In the maintenance planning plant row you added in step 17.i on page 109, select .

k) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter the transaction codes *IW21*, *IW22*, *IW23*, *IW31*, *IW32*, and *IW33*.

l) In the **PM: Cost Centers** row, select to expand the workspace. Then, in the **Controlling Area** row select to add the Controlling Areas you are using.

18. In the workspace, in the **Cost Center** row, select to add the Cost Centers you are using.

    a) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter the transaction codes *IW21*, *IW22*, *IW23*, *IW31*, *IW32*, and *IW33*.

19. In the **Change Role Authorization** screen, select , and then select .

20. In the **Assign Profile Name for Generated Authorization Profile** window, select .

Results

The profile is created.

Assign Profile to APM Connect User

This procedure describes how to assign an SAP profile to the APM Connect user in SAP.

Before You Begin

You must have created a user profile for APM Connect in SAP.

Note: The values used for items such as the profile, system names, and userids are for example purposes only. Your values can be different.

Procedure

1. In SAP, run the transaction `SU01`.
2. In the **User Maintenance: Initial Screen** window, in the **User** box, enter a user name (for example, *APMCONNECT*), and then select to create a new user.

   Note: Select to edit an existing user.
3. Select the **Logon Data** tab, and then enter an initial password for the user.

   Important: You must log on manually to change the initial password before using the user and password combination in APM Connect.
4. In the **User Type** box, select **Dialog**.

5. Select the **Roles** tab, and then, in the **Role** column, enter the role *ZRM_APMCONNECT_AUTH_PROFILE*.
6. Select other tabs in the **User Maintenance: Initial Screen** window to enter any other required information to conform to SAP guidelines.
7. Select to save the user.

Next Steps

1. In AL11, create a directory on your file share with subdirectories `EQUIPMENT`, `FLOC`, `WORKHISTORY`, `TC`, and `STATICDATA`. The parent directory can have any name.
2. Grant `Read` and `Write` authorization to the created directories to the user you just created.
3. If you are using ASI, configure the ASI SAP permissions.

Identify Trigger Values for Creating Task Records

The Work Management Adapter allows you to create Inspection Task and Calibration Task records from SAP Maintenance Plans using Operations and Object Lists. This topic describes how to identify which values in an Operation or Object list will trigger the creation of which Task records in APM.

About This Task

The baseline product is configured such that:

- Operations with the control key ZMI2 will be used to create Calibration Task records.
- Operations with the control key ZMI1 will be used to create Inspection Task records.

Note: You are not required to use the default configuration. If you want to use values in different Operation fields to trigger the creation of APM Task records, you can do so.

Procedure

If you want to accept the baseline configuration complete the following:

a) Create the control keys ZMI1 and ZMI2.
b) In the context file, configure the Work Management parameters to enable trigger values.

Configure APM to Create Notifications from Recommendation Records

The SAP Interfaces feature allows you to create Recommendation records in APM that will be used to create SAP Notifications automatically.

About This Task

For a Recommendation record to generate an SAP Notification automatically, the Create Work Request field must exist on the Recommendation datasheet. This field is available on the baseline datasheets for the baseline Recommendation families from which you are allowed to create SAP Notifications.

If you want to generate SAP Notifications from Recommendation records that belong to customer-defined subfamilies of the root Recommendation family, in addition to implementing the correct rules (for an example of the rules that you will need to implement, you can look at

any active baseline Recommendation family), you will need to add the Create Work Request field to the desired datasheets for that family.

Tip: You can create multiple types of SAP Notifications (for example, M2) from Recommendation records. By default, APM creates M2 Notifications.

Procedure

If you want to create different Notification types, you will need to:

a) Add the Notification Type field to the datasheet.
b) Configure the Notification Type field to accept values other than M2.

Note: In the baseline SAP Interfaces product, this field is disabled. If desired, you could configure it to be enabled so that users can type a value directly in the Notification Type cell on the datasheet. You might also consider creating a Valid Values rule that provides a list of acceptable values so that users can select the desired value from the list.

Deploy and Configure the SAP Connector Files

As recommended, and by default, a RestFUL SAP web service call is used as an intermediary between SAP and APM, thereby avoiding RFC calls directly between APM and your SAP server. Complete these steps to deploy and configure the files necessary to enable this connection.

Procedure

1. On the APM Connect server, navigate to folder `<root:>\APMConnect\Config`.
2. Copy the file `connectServices.cfg` to folder `<root:>\APMConnect\Utilities\runtime\etc`.
3. Edit the file and provide these values for the listed parameters.

Parameter	Value
context	Default
IR_HOST	*IP address of the system containing the Intermediate Repository.*
IR_PORT	*Port number of the system containing the Intermediate Repository.*
IR_DATABASE	*The database that contains the Intermediate Repository.*
IR_SCHEMA	*The schema that defines the Intermediate Repository.*
IR_USERID	*The userid to access the Intermediate Repository.*
IR_PASSWORD	*The password associated with the userid that accesses the Intermediate Repository.*
LOG_REQUEST	`false`
LOG_RESPONSE	`false`

4. Save the file.
5. Access the APM Connect installation package, and then copy the file `connectorServices.jar`.
6. On your APM Connect server, navigate to `<root:>\APMConnect\Utilities\runtime\deploy`.
7. **Optional:** If you already have an existing `connectServices.jar` file, delete it before copying the new file into the directory.

Results

The Notification Management files are deployed and configured.

Configure Notification Priority

You can configure the priority value in APM to match the priority value in SAP by editing the MI_PRIORITY system code table.

Procedure

1. Determine the values in your EAM system that determine priority.
2. For each priority that exist in you EAM System, modify the MI_PRIORITY system table

Results

When priority values are transferred from a APM recommendation to an SAP Notification, the priority values will match.

Create an SAP EAM System Record

You must configure an EAM System record to establish a connection between any EAM system and APM.

Procedure

1. Create a new EAM System record.
2. In the **Datasheet ID** box, select **SAP**.

   Note: If your SAP system requires an RFC connection, select **SAP System for RCMO**.
3. In the **Name** box, enter the name of your system.
4. If this system is the system to and from which you want to send data by default, select the **Default EAM System?** check box.
5. In the **System Type** box, select **SAP**.

   If you are defining an SAP System for RCMO, the box is not available.
6. In the **User ID** box, enter a valid User ID.
7. In the **Password** box, select .
8. In the **Enter EAM System Password** window, in the **Password** box, enter the password that is associated with the specified user ID.
9. In the **Confirm Password** box, reenter the password.
10. Select **OK**.
11. In the **Connection String** box, modify the template connection string.
    a) Replace the text SAP_SERVER_IP with the IP address of the Server.
    b) Replace the text SAP_SYSTEM_NUMBER with the System number.
    c) Replace the text SAP_CLIENT_NUMBER with the Client number.
    d) Delete all angle brackets.
12. **Optional:** In the **ITS URL** box:
    a) Replace the text: *its_or_integrated_its_server_url* with the ITS Server information. To locate the ITS Server information:
       i. In SAP, run the following transaction: `SE80`.

          Note: If you do not have access to this transaction, contact your SAP BASIS team for assistance.

ii. In the toolbar, select **Utilities**, and then select **Settings**.

iii. In the window, select repeatedly until the **Internet Transaction Server** tab appears.

iv. Select the **Internet Transaction Server** tab.
The ITS Server information that you must enter in the **ITS URL** box in APM is `<Log><Path>`, where <Log> is the text in the **Log** section and <Path> is the text in the **Path** section.

b) Delete the angle brackets.

c) Enter: `webgui/!` at the end of the URL.
For example, the ITS URL that corresponds with the values in the image above is `http://myhost.com:8000/sap/bc/gui/sap/its/webgui/!`.

13. Select .
The EAM System record is saved.

14. Select , and then select **Test Connection**.
The connection parameters are verified, and the **System ID** box is populated with your EAM System Name.

Results

- An EAM system record is created for the EAM system that defines a connection with APM. The ID for this EAM record should now be used in the Name field of a Site Reference record.
- Linking an EAM system to an EAM System record enables the APM Connect Adapters to create Notifications against that EAM System.

Test the Connection Defined in an EAM System Record

Procedure

1. In the APM application, open the EAM System record whose connection information you want to test.

2. To access the **Associated Pages** menu, select , and then select **Test Connection**.
The connection is tested.

Create the Intermediate Repository Database

This topic describes how to set up a repository in preparation to run your first job.

Before You Begin

Important: If you are using both the Data Loaders and an EAM Adapter, you need only one Intermediate Repository Database.

- Before you can prepare and deploy the repository, you must import the CreateIntermediateRepository job.
- If you are using the Data Loaders and the EAM Adapters, you must deploy and run the CreateIntermediateRepository job for each set of adapters.
- For SAP adapters, you must first run the Static Data job.
- For multiple EAM systems, the context file parameter values for a specific type of system must be identical except for the value of CMMS_ID.

- For multiple EAM systems, the Intermediate Repository Connection parameters have the same values for all adapters connected to this APM system.

Important: Each time you run the CreateIntermediateRepository you recreate the APM database to the baseline settings, removing any previous configuration. When you run the addSourceSystem job, the job will add new source systems based on the CMMS_ID and the SOURCE_SYSTEM_TYPE. If the job is run an additional time with the same configuration, it will reset the control values of an existing source system.

Procedure

1. Log in to the APM Connect Administration Center web application.

   Note: The user logging in must have access to the Job Conductor by being designated the Operations Manager role. By default, users designated as administrators do not have Job Conductor permissions.
2. In the **Job Conductor** workspace, in the appropriate project, select the CreateIntermediateRepository job.
3. Select **Context parameters**.

   The **Context parameters** section appears.
4. Configure the following parameter.

Context Parameter	Description
CONFIG_FILE_PATH	The file path to context files for the jobs. **Important:** • You must change the default value to reflect the actual path to your configuration file. • CMMS_ID and SOURCE_SYSTEM_TYPE must be set in the context file.

5. Select **Run**.

   If you are configuring a single system, you have completed your configuration.

   The intermediate repository database is created for the project.

If you are configuring multiple EAM systems, perform the remaining steps in this topic.

6. In the **Job Conductor** workspace, in the appropriate project, select the addSourceSystem job.
7. Configure the following parameter.

Context Parameter	Description
CONFIG_FILE_PATH	The file path to context files for the jobs. **Important:** • You must change the default value to reflect the actual path to your configuration file. • CMMS_ID and SOURCE_SYSTEM_TYPE must be set in the context file.

8. Select **Run**.
9. Repeat steps 6 on page 114 through 8 on page 114 for all adapters.

Run the Static Data Job

The Static Data job populates the database with static site information. This topic describes how to run this job.

Procedure

1. Open and log in to the APM Connect Administration Center web application.

   Note: The user logging in must have access to the Job Conductor by being designated the Operations Manager role. By default, users designated admin do not have Job Conductor permissions.
2. Select **Job Conductor**.
3. In the **Job Conductor** workspace, select an appropriate project, and then select the CreateStaticData Job.
4. Select **Run**.
   The static data pull is enabled.

   You can now execute jobs.

Configure SAP Task and Confirmation Creation

In order to transfer data between SAP items and APM Task records and Event records for Inspection and Calibration, you will need to configure the datasheets used as the default datasheet.

Procedure

- Configure APM to Transfer Data Between SAP Items and Task Records

  1. Set the following baseline datasheets as the default datasheets on the Inspection and Calibration Task families:
     - Inspection Task for SAP Integration: Defined on the Inspection Task family.
     - Calibration Task for SAP Integration : Defined on the Calibration Task family.
- Configure APM to Create Confirmations from Calibration Event Records

  1. Set the following baseline datasheets as the default datasheets on the Calibration Event families:
     - Calibration, Analog: Defined on the Calibration, Analog family.
     - Calibration, Analyzer Multi-Component: Defined on the Calibration, Analyzer Multi-Component family.
     - Calibration, Analyzer Single Component: Defined on the Calibration, Analyzer Single Component family.
     - Calibration, Discrete: Defined on the Calibration, Discrete family.
     - Calibration, Functional Test: Defined on the Calibration, Functional Test family.
     - Calibration, Weight Scale: Defined on the Calibration, Weight Scale family.
- Configure APM to Create Confirmations from Inspection Event Records

  1. Set the following baseline datasheets as the default datasheets on the Inspection Event families:
     - Bundle Inspection SAP Integration: Defined on the Bundle Inspection family.
     - Bundle Sub-Inspection SAP Integration: Defined on the Bundle Sub-Inspection family.

- Visual Inspection SAP Integration: Defined on the Full Inspection family.
- General Inspection SAP Integration: Defined on the General Inspection family.
- Pressure Test Inspection SAP Integration: Defined on the Pressure Test Inspection family.
- Pressure Test Sub-Inspection SAP Integration: Defined on the Pressure Test Sub-Inspection family.

Add Entries to the /MIAPM/TASK_CNF Table

Procedure

1. In the SAP system, run the following transaction: `/n/MIAPM/MIPRO`.
   The Display IMG screen appears.
2. In the tree, expand **Configurations In SAP**.
3. Select **Maintain APM Parameters**.
   The **Meridium Configuration and Connection Parameters Management** window appears.
4. In the **APM Data Source** column, enter the APM data source(s) from which and to which you want to transfer data.
5. In the APM Application Server, enter your APM Application server(s).
6. Select .
   The **Meridium Configuration and Connection Parameters Management** window closes.
7. In the **Maintain Task Configuration Parameters** row, select .
   The **Task Configuration** screen appears.
8. In the APM Data Source list, select the APM data source for which you want to identify which Operation values will create which Task records.

   Note: When defining the data sources, you must maintain the value for the App Server field.
9. Select .
   The **Display View "Meridium Task Configuration Table": Overview** screen appears. The following example illustrates the baseline table in an SAP system whose Client number is 000. Notice that there are two rows: one for Calibration Task records and one for Inspection Task records. This example illustrates a configuration in which Operations with the control key ZMI2 are used to create Calibration Task records, and Operations with the control key ZMI1 are used to create Inspection Task records.
10. To specify criteria that will be used to trigger the creation of Calibration Task and Inspection Task records, modify the values in the existing rows, or build on top of the current functionality by adding new rows. This documentation assumes that you are familiar with your SAP data structure and that you know how to define the criteria to achieve the desired result.
11. Select .
    The criteria is saved.

Configure the Query Get Tasks for Work Order Generation

The query Get Tasks for Work Order Generation is used to determine which Task records to use to create Orders in SAP.

About This Task

The query contains the Task query source. For each record that is returned by the query, APM will create an Order in SAP. The baseline query is configured to transfer Task records

that meet specific criteria. If desired, you can modify the query to further limit the Task records that you want to transfer.

Procedure

1. Access the **Catalog** page.
2. In the left pane, select **Public**, then select **Meridium**, then select **Modules**, then select **SAP Integration Interfaces**, and then select **Queries**.
   A list of queries appears.
3. Select the **Get Tasks for Work Order Generation** query.
   The workspace appears.
4. Select **Design**.
5. Modify the query to meet at least the following requirements:
   - Contains the following column:
     - Field: ([Task].[Next Date]-[Task].[Call Horizon])
     - Alias: Expr
     - Criteria (>=(? :d :caption='Last Successful Execution Date': id=LAST_DATE) AND < Now())
   - Includes at least one field from the source family record.

Schedule Work Orders

Procedure

1. Access the **APM Connect** page.
   The **APM Connect Configuration** page appears.
2. Select **EAM Settings**.
   The **EAM Settings** page appears.
3. In the **Scheduling Properties** section, select **Edit Schedule**.

   Note: If there is a previously scheduled item, a schedule summary will be displayed next to the **Edit Schedule** button. If there is no scheduled item, Not scheduled appears next to the **Edit Schedule** button.
4. In the **Edit Schedule** window, select the **Recurrence** check box.
5. In the **Time Zone** box, select the appropriate time zone.
6. In the **Start** box, select to schedule the start date and time.
   a) Select one of the following as appropriate:
      - **The current date**: Select this option to use the current time and date as the starting point.
      - **Clear**: Select this option to clear the current selection.
      - **<Date>**: Select this option to use the selected date as the start date.
   b) Select , and then select the appropriate time.
   c) Select **Close**.
7. In the **Every** section, in the **Interval** box, enter the numeric value for how often you want the work order generation to occur.
8. In the **Every** section, in the **Units** box, select the interval unit (that is, minutes, hours, years, etc.).
9. In the **Every** section, in the **Begin** box, select one of the following:

- **From start time**: Select this option to start the recurrence from the previously selected start time.
- **After last occurrence**: Select this option to begin the generation after the last time the job ran.

10. In the **End** box, based on when you want the recurrence to end, select one of the following:
    - **Never**: If you select this option, the recurrence will not end.
    - **After**: If you select this option, you will enter a number of occurrences after which the generation will end.
    - **Time & Date**: Select this option to use the calendar to select a time and date when the generation will end.
11. Select **OK**.

    The schedule summary appears next to the **Edit Schedule** button. Additionally, the scheduled item can be viewed in the Scheduling feature in Operations Manager.

Identify Classifications to Extract

Before You Begin

Run the Static Data job.

Procedure

1. Access the APM application.
2. In the upper-right corner of the page, select and search for the CMMS Classification Type record representing the item whose classifications you want to extract (i.e., Equipment or Functional Location).
3. Select a record from the list.
4. Select the **Details** tab.
5. **Optional:** For each Classification whose Characteristics you want to extract, in the right column of the **Classification for Class Type** grid, select the **Extract From CMMS System** check box.
6. **Optional:** If you want to stop extracting all Characteristics for a Classification, clear the **Extract From CMMS System** check box for the Classification.
7. Select .

   The CMMS Classification records are saved.

Results

If you chose to stop extracting all Characteristics for a Classification:

- The **Extract From CMMS System** check box is cleared automatically in all CMMS Characteristic records that are linked to the CMMS Classification record.
- When you run the corresponding Characteristic extraction adapter, the Characteristics whose **Extract From CMMS System** check boxes were cleared automatically will not be extracted.

Identify Characteristics to Extract

Procedure

1. Open the CMMS Classification record representing the Classification whose Characteristics you want to extract. To do so, either:
   - Open the specific record in Record Manager.
   - Open the master CMMS Classification Type record to which it is linked, and then view the CMMS Classification record in the grid on the datasheet.
2. Select .
3. **Optional:** In the grid on the CMMS Classification datasheet, in the row for each Characteristic that you want to extract, select the **Extract From CMMS System** check box.
4. **Optional:** If you want to stop extracting a Characteristic, clear the **Extract From CMMS System** check box for the Characteristic.
5. Select .
   The CMMS Characteristic records are saved.
6. Commit the configuration by running the Static Data job.
   The Characteristics to extract have been identified.

First-time Deployment

Deploy the SAP Adapters for the First Time

The following outlines the steps that you must complete to deploy and configure this module for the first time.

About This Task

These instructions assume that you have completed the steps for deploying the basic APM system architecture.

These tasks may be completed by multiple people in your organization. We recommend, however, that the tasks be completed in the order in which they are listed.

Results

Task	Notes
Configure the Context File Directory for Multiple SAP Systems on page 76	This step is required.
Enable Multiple Cultures From a Single Source System on page 77	This step is required.
Install SAP Java Connector on page 77	This step is required.
Configure the Context File on page 78	This step is required.
Configure Context Parameters on page 89	This step is required.
Configure the Logging on page 90	This step is required.
Configure Site Reference Values on page 91	This step is required.
Mount a File Share on page 93	This step is required.

Task	Notes
Establish SFTP Transfer in a Windows SAP Server on page 97	This step is required.
Secure Data Transfer to a Linux SAP Server on page 97	This step is required.
Establish SFTP Transfer in a Linux SAP System on page 98	This step is required.
Establish Data Transfer via Web Services on page 99	This step is required.
Create File Share Folder Structure on page 100	This step is required.
Install the ABAP Base Service Pack Add-on on page 100	This step is required.
Verify ABAP Installation on page 102	This step is required.
Install the Dual ABAP Package on page 103	This step is required.
Uninstall the ABAP Base Service Pack Add-on on page 104	This step is required.
Create APM Connect User Profile in SAP on page 105	This step is required.
Assign Profile to APM Connect User on page 109	This step is required.
Identify Trigger Values for Creating Task Records on page 110	This step is required.
Configure APM to Create Notifications from Recommendation Records on page 110	This step is required.
Deploy and Configure the SAP Connector Files on page 111	This step is required.
Configure Notification Priority on page 112	This step is required.
Create an SAP EAM System Record on page 112	This step is required.
Test the Connection Defined in an EAM System Record on page 113	This step is required.
Create the Intermediate Repository Database on page 113	This step is required.
Run the Static Data Job on page 115	This step is required.
Configure SAP Task and Confirmation Creation on page 115	This step is required.
Add Entries to the /MIAPM/TASK_CNF Table on page 116	This step is required.
Configure the Query Get Tasks for Work Order Generation on page 116	This step is required.
Schedule Work Orders on page 117	This step is required.
Identify Classifications to Extract on page 118	This step is required.
Identify Characteristics to Extract on page 119	This step is required.

Configure the Context File Directory for Multiple SAP Systems

APM Connect allows you to extract data from multiple SAP Systems using the Master Job to extract from multiple systems. You must set up the appropriate directory structures.

About This Task

Additionally, jobs are automatically configured to run a full extraction or load per context file for each job cycle, allowing different configurations per SAP System.

Important: This step is required only if you are using multiple SAP Systems from which you plan on extracting data. If you are not using multiple SAP systems, you can skip this procedure and proceed to the next step, install the SAP Java connector, in the APM Connect Base First-Time Deployment Workflow.

Procedure

1. On the machine on which you installed APM Connect, navigate to the following location: `C:\APMConnect\Config\`.
2. Create a new folder for each SAP System using the following folder structure: `C:\APMConnect\Config\<SAP System Name>`.
3. In each SAP system folder, place a copy of the context file.
4. Label each copy of the context file using the following format: `SAP_<system name>_Contextfile.xml`.

   Important: You must label the context file with SAP_ at the beginning of the file name, or APM Connect will be unable to read the context file during the extraction.

   The directory structure is in place with the complete file path: `C:APMConnect\Config\<SAP system name>\SAP_<SAP system name>_Contextfile.xml`.For example, a configured directory will resemble the following: `C:\APMConnect\Config\Q-66\SAP_Q66_Contextfile.xml`.

Enable Multiple Cultures From a Single Source System

To enable data flow when there are multiple cultures configured for a single source system, you must complete the following steps.

Procedure

1. Create a context file for each culture originating from a specific source system.

   a) Assign a CMMS_ID and TARGET_CMMS_ID that indicates the culture.
   For example, consider a source system that supports both French and Spanish. Your CMMS_ID and TARGET_CMMS_ID for the two systems could resemble `SRC1_client_FR` and `SRC1_client_ES`.
2. Create the Intermediate Repository database for the first CMMS_ID you define.
3. For each additional CMMS_ID defined in Step 1.a on page 77, run the addSourceSystem job.
4. For each CMMS_ID defined in Step 1.a on page 77, create an EAM system record, using the CMMS_ID in the **System Name** field.
5. Select **Test Connection** for each EAM System record you created.

Results

You have configured APM Connect to support multiple cultures from a single source system.

Install SAP Java Connector

To facilitate data transfer, there must be a java connector between SAP and the APM Connect server. This topic describes how to establish the connection via the SAP Java Connector (SAP JCO), when SAP Java connector was not setup through the installation.

About This Task

Note: The APM Connect installer automatically places the files sapjco3.dll and sapjco.jar into the location C:\APMConnect\Utilities\runtime\lib. You must complete the remaining steps in this topic manually.

Procedure

1. Navigate to the location where you downloaded the SAP Java Connector package from the SAP marketplace, and copy the following files:
   - sapjco3.dll
   - sapjco3.jar

   Note:
   - If you are using a 64-bit machine, per the APM Connect system requirements, you must select the 64-bit installer.
   - You need to download the Connector version based on the JDK/JRE and Microsoft Visual Studio version on the APM Connect server.
     - The SAP Java Connector 3.1 requires a JDK/JRE 8, 11, or 17.
     - The SAP Java Connector 3.1 running on Windows operating systems requires the Microsoft Visual Studio 2013, C/C++ runtime libraries to be installed on the system.
2. Navigate to C:\APMConnect\Utilities\runtime\lib\wrapper, and then paste the copied files in that location.
3. Copy the file sapjco3.dll again.
4. Navigate C:\windows\system32, and then paste the copied file in that location.

Results

The Java Connecter is installed.

Configure the Context File

This topic describes how to access and configure parameters in these context files.

Before you can run a job in the APM Connect Administration Center, you must specify a set of connection parameters and corresponding values to establish a connection between APM Connect components, APM, and your EAM system. Each of these connections is used when running a job, and it is required. The connections are established via context files.

Tip: The SAP Adapters support connections between multiple SAP systems and multiple APM databases by using one context file for each SAP system or APM database.

Procedure

1. On the APM Connect server, access your context file. If you installed it in the default location, navigate to the following folder: C:\APMConnect\Config
2. Configure the context file for your type of deployment.

Important: Changes made to the context file will override changes made in the Context parameters section of APM Connect Administration Center.

To configure the context file, enter the appropriate values for each parameter into the context file according to the following table.

Interface Mode Selection		
Parameters	**Description**	**Default or Recommended Value**
SAP_CLOUD_ENABLED	Determines whether the Adapter will be used in a cloud environment.	You must enter one of the following values: • true: Adapter will be run in the cloud. • false: Adapter will be run on premises.
LOAD_MERIDIUM_APM	Determines whether the data will be loaded into the Meridium database.	You must enter one of the following values: • true: Data will be loaded into the Meridium database. • false: Data will not be loaded into the Meridium database.
LOAD_DIGITAL_APM	Determines whether the data will be loaded into the Predix database.	You must enter one of the following values: • true: Data will be loaded into the Predix database. • false: Data will not be loaded into the Predix database.
CMMS_ID	The CMMS ID is used as the identifier for your SAP system, and is <SAP System ID>-<SAP Client ID>. For example, if your System ID is D03 and your Client ID is 001, then your CMMS ID would be DO3-001.	This value is required. Enter a unique value. **Note:** When supporting multiple cultures from a single source system, the value indicates the language of the culture.
TARGET_CMMS_ID	This parameter indicates the CMMS ID that receives data and matches the value of CMMS_ID.	This value is required only when enabling multiple cultures from a single source system. Enter a unique value. **Note:** When supporting multiple cultures from a single source system, the value indicates the language of the culture.
SOURCE_SYSTEM_TYPE	Identifies the type of system connecting with APM.	This value is required. You must enter one of the following values: • SAP: If the source system is SAP. • SAP-PI: If the source system is SAP-PI.

Intermediate Repository (IR) Connection		
Parameters	**Description**	**Default or Recommended Value**
IR_HOST	The IP address of the IR.	Enter the host name of the PostgresSQL server. If you installed APM Connect using the default settings, then the value is localhost.
IR_PORT	The port number of the IR.	Enter your PostgreSQL port. The default value is 5432.
IR_DATABASE	The database in which the IR data is stored.	Enter a name for the IR database. This value will be used to create the IR database.
IR_SCHEMA	The schema in which the IR database will be created.	The default value is public.

Intermediate Repository (IR) Connection		
Parameters	**Description**	**Default or Recommended Value**
IR_USERID	The IR user name.	Enter the user name for the PostgresSQL database. The default user name is postgres.
IR_PASSWORD	The IR system password.	Enter the password for the PostgresSQL database that was created during installation.

SAP Connection		
Parameters	**Description**	**Default or Recommended Value**
SAP_CLIENT	The SAP client from where the data is imported.	Enter a unique value.
SAP_HOST	The IP address or the host name of the SAP application server.	Enter a unique value.
SAP_LANGUAGE	The language in which the SAP system sends messages to APM Connect.	The default value is EN.
SAP_SYSTEM_NUMBER	The instance number of the SAP application server.	Enter a unique value.
SAP_USERID	The SAP system user ID.	Enter a unique value.
SAP_PASSWORD	The SAP system password.	Enter a unique value.
SAP_SYSTEM_TIMEZONE	The SAP Application Server Operating System time zone.	The default value is EST.
SAP_FILE_ENCODING	Determines the encoding of the source data.	The default value is UTF8. All the character encoding supported by the Java Virtual Machine (JVM) are correct.
EXTRACT_NUM_PARALLEL_JOB	Determines the maximum number of SAP background jobs allowed during extraction.	The recommended value is 10.
IR_LOAD_NUM_PARALLEL_JOBS	Determines the maximum number of SAP background jobs allowed during loading.	The recommended value is 10.

File System		
Parameters	**Description**	**Default or Recommended Value**
PLSAP_INPUT	The path of the directory you created, which SAP uses to place data files used by APM Connect.	Enter a unique value.
PLSAP_OUTPUT	The path of the directory used by APM Connect to search for the files created by SAP. This directory should be shared with the SAP server.	Enter a unique value.
IR_TALEND_OUTPUT	The temporary workspace used when moving files from SAP to APM Connect.	Enter your unique directory path.
SFTP_STAGING_DIR	The temporary storage location for files that are waiting to be loaded.	Enter your unique value (for example, C:\APMConnect\Staging).

File System		
Parameters	**Description**	**Default or Recommended Value**
LOG_BASE_DIR	The location where the EAM logs need to be generated. This location needs to be the share location where APM can reach for the EAM logs. For installation, it has to be some sub-folder within the share location setup for the Data Loaders.	Example: `C:\APMConnect\DataLoaderFiles\<DataSource>\EAMLogs\`
UNC_FILE_PATH	Provide the same location where the Log Files are created for the EAM interfaces. The file path must be in UNC format as the APM Application Server would need to access the generated logs.	Example: `\\<APMCShareFolderName>\<DataSource>\EAMLogs\` For more information, refer to the Create Data Loaders File Share section in the Set Permissions for APM Connect Directory topic.

Parameters	Description	Default or Recommended Value
APM Connection **Note:** The APM Connection Parameters are not required for a cloud deployment.		
APM_API_APP_SERVER	The APM API application server name.	Enter the name of your APM API server.
APM_API_USE_SSL	Specifies whether the APM API application uses SSL.	The valid values are: • true: The API application uses SSL. • false: The API application does not use SSL. The default value is false.
APM_APP_SERVER	The APM application server name.	Enter the name of your APM server.
APM_DATASOURCE	The APM data source to which the data will be exported.	Enter the name of your APM data source.
APM_USERID	The APM Framework user ID.	Enter a unique value.
APM_PASSWORD	The APM Framework password.	Enter a unique value.

Miscellaneous		
Parameters	**Description**	**Default or Recommended Value**
MANUAL_RUN	Determines how the date parameters will be treated.	You must enter one of the following values: • true: The dates specified in the context files will be used. Additionally, the dates of the last successful run stored in the database will not be updated. • false: The date range used during the extraction will be the date of the last successful record as stored in the database. Each time a job is run successfully, the database is updated with those dates and all the subsequent runs will use the dates from the last successful record.
MULTI_OBJECTS_ENABLED	Determines if different types of objects that are logically related to each other can be classified into a single class type. For example, you can use class type *023* to classify both materials and batches.	You must enter one of the following values: • true: Used if the SAP system is enabled to allow multiple objects. • false: Used if the SAP system is not enabled to allow multiple objects. This is the default value.
TECHNICAL_CHARACTERISTICS_ENABLED	Determines if the technical characteristics of Equipment or Functional Location will be extracted.	You must enter one of the following values: • true: If you are using Equipment or Functional Location Adapter. • false: If you are not using Equipment or Functional Location Adapter. This is the default value.
TARGET_CMMS_ID	Within a source system, this identifies a plant with unique culture settings. For example, if the default source system uses English with the identity of PLT-EN, but there is a plant attached to that source system that requires German, using the ID PLT-DE enables the successful transfer of data between APM and the target plant.	None.

Filter		
Parameters	**Description**	**Default or Recommended Value**
MAINT_PLANT	The ID(s) of the Maintenance Plant whose data you want to extract.	Plant values cannot exceed four characters.
LANGUAGE	The SAP code that represents the language of the description to transfer data into APM.	The value must be a single character.
CREATE_DATE_START	The date value that limits the data extracted to records created on or after the specified date.	Date must be entered in the following format: YYYYMMDD.

Filter		
Parameters	**Description**	**Default or Recommended Value**
CREATE_DATE_END	The date value that limits the data extracted to records created on or before the specified date.	Date must be entered in the following format: YYYYMMDD.
CHANGE_DATE_START	The date value that limits the data extracted to records changed on or after the specified date.	Date must be entered in the following format: YYYYMMDD.
CHANGE_DATE_END	The date value that limits the data extracted to records changed on or before the specified date.	Date must be entered in the following format: YYYYMMDD.

Equipment Filter Criteria		
Parameters	**Description**	**Default or Recommended Value**
EQUIPMENT_NO	The number that identifies the Equipment record that you want to extract.	Equipment number should not exceed 18 characters. You cannot exceed 500 Equipment numbers. For multiple Equipment records, separate the numbers using commas.
EQUIPMENT_CATEGORY	The ID of the Equipment category that limits the Equipment records extracted.	Equipment category ID must be a single character. For multiple Equipment categories, separate the IDs using commas.
EQUIPMENT_TYPE	The ID of the Equipment type that limits the Equipment records extracted.	Equipment type ID should not exceed 10 characters. For multiple Equipment types, separate the IDs using commas.
EQUIPMENT_CLASS	The ID of the Equipment classification that limits the Equipment records extracted.	Equipment classification ID should not exceed 18 characters. If an Equipment has multiple classifications, if you specify any one of those classifications, the Equipment record will be extracted. For multiple Equipment classifications, separate the IDs using commas.

Functional Location Filter Criteria		
Parameters	**Description**	**Default or Recommended Value**
FLOC_NO	The ID of the Functional Location that limits the Functional Location records extracted.	Functional Location ID should not exceed 40 characters. You cannot exceed 500 Functional Location numbers. For multiple Functional Locations, separate the IDs using commas.
FLOC_TYPE	The ID of the Functional Location type that limits the Functional Location records extracted.	Functional Location type ID should not exceed 10 characters. For multiple Functional Location types, separate the IDs using commas.

Functional Location Filter Criteria		
Parameters	**Description**	**Default or Recommended Value**
FLOC_CLASS	The ID of the Functional Location classification that limits the Functional Location records extracted.	Functional Location classification ID should not exceed 18 characters. For multiple Functional Location classifications, separate the IDs using commas.
FLOC_CATEGORY	The ID of the Functional Location category that limits the Functional Location records extracted.	Functional Location category ID must be a single character. For multiple Functional Location categories, separate the IDs using commas.

Planned Work Filter Criteria		
Parameters	**Description**	**Default or Recommended Value**
MAINTENANCE_PLAN	Maintenance Plan ID number that defines the Planned Work data that you want to extract.	The Maintenance Plan ID is 12 characters. If this filter is not specified, all Planned Work data is extracted.

Work History Filter Criteria		
Parameters	**Description**	**Default or Recommended Value**
NOTIFICATION_NO	The number that identifies the Notification record that you want to extract.	Notification number should not exceed 12 characters. For multiple Notification records, separate the numbers using commas.
WORK_ORDER_NO	The number that identifies the Work Order record that you want to extract.	Work Order number should not exceed 12 characters. For multiple Work Order records, separate the numbers using commas.
NOTIFICATION_TYPE	The Notification type that limits the Work Order records that you want to extract.	Notification type should not exceed two characters. For multiple Notification types, separate the Notification types using commas.
WORK_ORDER_TYPE	The ID of the Work Order type that limits the orders that you want to extract.	Work Order type should not exceed four characters. For multiple Work Order types, separate the IDs using commas.
WORK_ORDER_SYSTEM_STATUS	The Work Order systems status that limits the Work Orders that you want to extract.	Work Order system status should not exceed four characters.
WORK_ORDER_USER_STATUS	The Work Order user status that limits the Work Orders that you want to extract.	Work Order user status should not exceed four characters.
NOTIFICATION_SYSTEM_STATUS	The Notification system status that limits the notifications that you want to extract.	Notification system status should not exceed four characters.
NOTIFICATION_USER_STATUS	Notification user status that limits the notifications that you want to extract.	Notification user status should not exceed four characters.

Work History Filter Criteria		
Parameters	**Description**	**Default or Recommended Value**
CREATE_TIME_START	The time value that limits the data extracted to records created on or after the specified time.	Time must be in the following format: HHMMSS.
CREATE_TIME_END	The time value that limits the data extracted to records created on or before the specified time.	Time must be in the following format: HHMMSS.
CHANGE_TIME_START	The time value that limits the data extracted to records changed on or after the specified time.	Time must be in the following format: HHMMSS.
CHANGE_TIME_END	The time value that limits the data extracted to records changed on or before the specified time.	Time must be in the following format: HHMMSS.

Work Management		
Parameters	**Description**	**Default or Recommended Value**
MAINTENANCE_PLAN	The number that identifies the maintenance plan record.	The maintenance plan number must not exceed 12 characters.
INSPECTION_FAMILY	Determines the family to which the Inspection records are associated.	To use the default association, enter the value `MI_TASKINSP`.
INSPECTION_CONDITION	Determines the SAP control key used to identify trigger values for Inspection records.	The parameter requires the following specific syntax: *<SAP Table>-<SAP Field>* `EQ '`*<Key Value 1>,<Key Value 2>,<Key Value 3>, etc.*`'` To use the default configuration, enter the following value: `PLPO-STEUS EQ 'ZMI1'`.
CALIBRATION_FAMILY	Determines the family to which the Calibration records are associated.	To use the default configuration, enter the value `MI_TASKCALB`.
CALIBRATION_CONDITION	Determines the SAP control key used to identify trigger values for Calibration records.	The parameter requires the following specific syntax: *<SAP Table>-<SAP Field>* `EQ '`*<Key Value 1>,<Key Value 2>,<Key Value 3>, etc.*`'` To use the default configuration, enter the following value: `PLPO-STEUS EQ 'ZMI2'`.

Parameters	**Description**	**Default or Recommended Value**
Queue **Note:** The Queue parameters apply only to cloud deployment.		
QUEUE_HOST	The queue host name.	Enter your unique value, which was provided during installation.
QUEUE_HOST_1	An additional queue host name.	Enter your unique value, which was provided during installation.

Parameters	Description	Default or Recommended Value
QUEUE_HOST_2	An additional queue host name.	Enter your unique value, which was provided during installation.
QUEUE_PORT	The queue port.	Enter your unique value, which was provided during installation.
QUEUE_PORT_1	An additional queue port.	Enter your unique value, which was provided during installation.
QUEUE_PORT_2	An additional queue port.	Enter your unique value, which was provided during installation.
QUEUE_USER	The queue user name.	Enter your unique value, which was provided during installation.
QUEUE_PASSWORD	The queue password.	Enter your unique value, which was provided during installation.
CUSTOMER_NAME	The coded customer name.	Enter your unique value, which was provided during installation.
USE_SSL	Provides for encryption and authentication of the data and its transmission to the server.	Enter a unique value.
TRUSTSTORE_FILE	Location of the file with all the necessary keys and certificates for data transfer to the server using the active message queue.	Enter a unique value.
TRUSTSTORE_PASSWORD	Password of the trust store for APM Connect to retrieve the keys.	Enter a unique value.

Parameters	Description	Default or Recommended Value
SFTP SFTP Connection is supported only for the SAP Adapters, and configuration is required only if you are using FTP to transfer information between your systems. **Important:** If you are using an SAP System with the SAPFTP_SERVERS table, you must configure that table to activate SFTP servers according to the SAP Help system. You can refer to SAP OSS 1605054 for more details. Typically, this will apply to any SAP version later than ECC6 EHP5.		
PLSAP_FTP_HOST	The SFTP server host name.	Enter a unique value.
PLSAP_FTP_USERID	The SFTP server user name.	Enter a unique value.
PLSAP_FTP_PASSWORD	The SFTP server password.	Enter a unique value.
PLSAP_FTP_PORT	The SFTP server port.	If the default configuration was followed, enter one of the following values: • 22: For SFTP connection.
PLSAP_FTP_MODE	The mode by which files are copied.	Enter one of the following values: • SERVER: To use file shares. • SFTP: To use standard secure FTP. • WS for the Webservice Transfer.
PLSAP_FTP_SCAN_DIR	The remote SFTP directory used to scan for files.	Enter a unique value.
PLSAP_FTP_NUM_OF_RETRY	The number of times to scan the SFTP server for files.	10

Parameters	Description	Default or Recommended Value
PLSAP_FTP_SLEEP_TIME	The time in seconds between scans.	10
PLSAP_SFTP_SCP_COMMAND	The command name created when establishing the SFTP transfer in SAP.	Enter a unique value.

Parameters	Description	Default or Recommended Value
SFTP **Note:** The SFTP parameters apply only to cloud deployment.		
SFTP_HOST	The SFTP server host name.	Enter your unique value, which was provided during installation.
SFTP_USERID	The SFTP server user name.	Enter your unique value, which was provided during installation.
SFTP_PASSWORD	The SFTP server password.	Enter your unique value, which was provided during installation.
SFTP_PORT	The SFTP server port.	Enter your unique value, which was provided during installation.
SFTP_LANDING_DIR	The directory path where the shared files are stored.	Enter your unique value, which was provided during installation.
USE_SSH_KEY	Determines if SSH security configuration will be used by the adapters.	You must enter one of the following values: • true: SSH configuration will be used. • false: SSH configuration will not be used.
SSH_PRIVATE_KEY	The directory where the SSH key is stored.	Enter a unique value. The SSH key must be generated by the user in the openSSH format. This key can be stored in any directory on the APM Connect server, but it is recommended to store it in the following directory: `C:\APMConnect\Config`

Parameters	Description	Default or Recommended Value
Email Notification **Note:** The Email Notification parameters apply only to cloud deployment.		
EMAIL_FROM	The email address from which the notification email will be sent.	Enter a unique value.
EMAIL_TO	The email address(es) to which the email will be sent.	Enter a unique value.
FAILURE_DETAIL_REPORT_ENABLED	Indicates whether the failure detail report will be sent when a record fails to load.	You must enter one of the following values: • true: The failure detail report, detailing the records that failed to load into APM and the reason for failure, will be sent. • false: The failure detail report will not be sent.
FAILURE_DETAIL_REPORT_JRXML_FILE_PATH	Directory where the JasperReport file to generate the failure detail report in PDF will be delivered.	Enter a unique value.

Parameters	Description	Default or Recommended Value
LOAD_SUMMARY_REPORT_ENABLED	Indicates whether the load complete report will be loaded with each extraction.	You must enter one of the following values: • true: The load complete report, detailing the number of records that were extracted and successfully loaded into APM, will be sent. • false: The load complete report will not be sent.
LOAD_SUMMARY_REPORT_JRXML_FILE_PATH	Directory where the JasperReport file to generate the summary detail report in PDF will be delivered.	Enter a unique value.
REPORT_TARGET_DIR	Directory where the report file will be delivered.	Enter a unique value.
SMTP_HOST	The host for SMTP installation the APM Connect server.	Enter a unique value.
SMTP_PORT	The port for SMTP.	The default value is 25.

Guardrail		
Parameters	**Description**	**Default or Recommended Value**
EQUIPMENT_THRESHOLD	The maximum number of records that should be transferred from SAP to APM in a single run of the Equipment Adapter.	The default value is 100000.
FLOC_THRESHOLD	The maximum number of records that should be transferred from SAP to APM in a single run of the Function Location Adapter.	The default value is 100000.
WORKHISTORY_THRESHOLD	The maximum number of records that should be transferred from SAP to APM in a single run of the Work History Adapter.	The default value is 50000.
OVERRIDE_GUARDRAILS	Indicates whether the job will continue if the number of records exceeds the defined threshold.	The default value is Y, which means that the job will run regardless of the number of records included. A warning notification will also be sent to the email address specified in the EMAIL_TO parameter within the Email Notification Parameters section of this file. If you set this parameter to N, the job will be terminated when the number of records exceeds the defined threshold, and an error notification will be sent.

Parameters	Description	Default or Recommended Value
SAP PI **Note:** Enter the appropriate values for the following parameters into the context file only if you are deploying the SAP Adapters for Process Integration (SAP PI) (in which case the parameter SAP_USE_PI should have the value true).		
SAP_USE_PI	Determines whether the SAP PI connection will be used.	You must enter one of the following values: • true: SAP PI connection will be used. • false: SAP PI connection will not be used. This is the default value.

Parameters	Description	Default or Recommended Value
SAP_SYSTEM_ID	The system IDs of the SAP systems from which you want to extract data.	Enter a unique value.
SAP_PI_HOST	The SAP PI server host.	Enter a unique value. For example: • http://your.pi_system.com - when not using SSL. • https://your.pi_system.com - when using SSL.
SAP_PI_PORT	The SAP PI server port.	Enter a unique value.
SAP_PI_RECEIVER_PARTY	The receiver party configured in the SAP PI ID configurations.	This is optional and unique to the user.
SAP_PI_RECEIVER_SERVICE	The receiver service configured in the SAP PI ID configurations.	This is optional and unique to the user.
SAP_PI_SENDER_PARTY	The sender party configured in the SAP PI ID configurations.	This is optional and unique to the user.
SAP_PI_SENDER_SERVICE	The sender service configured in the SAP PI ID configurations.	If not specified, the default value is Meridium_APMConnect. The value must match what is in the communication channel in SAP.
SAP_PI_USERID	The SAP PI user ID.	Enter a unique value.
SAP_PI_PASSWORD	The SAP PI password.	Enter a unique value.
COMPRESS_TYPE	Determines if the files will be compressed and the method of compression that is used.	You must enter one of the following values: • None: Files are not compressed. **Note:** If you do not compress files, large extractions will take a long time. • SAPCAR: Files are compressed by SAP. This is the recommended value. If used, you must install the SAPCAR file on the APM Connect server. • ZIP: Files are compressed through a standard zip method.
COMPRESS_SAP_COMMAND_NAME	The value of the command name created.	You must enter one of the following values: • ZSAPCAR: The command name for SAP compression. • ZSZIP: The command name for standard compression.
FILE_MOVE_USE_PI	Determines if APM Connect should use SAP PI to extract and load data.	You must enter one of the following values: • true: SAP PI will move the data from SAP to APM Connect. • false: APM Connect will directly copy the data from SAP.

Parameters	Description	Default or Recommended Value
MAX_FILE_WAIT_SEC	Defines how long the PI Adapters will wait for the extraction to complete before the job times out.	The recommended value is `1000`.
SAP_PI_AAE	If you are using SAP 7.3 or above, you may use the Advanced Adapter Engine (AAE). This parameter allows this functionality to be used during extraction.	You must enter one of the following values: • true: If you are using AAE. • false: If you are not using AAE. This is the default value.

Configure Context Parameters

Procedure

1. In the APM Connect Administration Center, in the **Job Conductor** workspace, select the Job for which you would like to set parameters.
2. At the bottom of the **Job Conductor** workspace, select **Context parameters**.
   The **Context parameters** section appears.
3. In the **Context parameter** column, scroll down to the context parameter you would like to configure.
4. In the **Custom value** box, configure context parameters, and select the **Active** check boxes for the following:
   - **APM User_ID**: Enter your APM user name
   - **APM_PASSWORD**: Enter your APM password.
   - **IR_USERID**:Enter your intermediate repository user name.
   - **IR_PASSWORD**: Enter your intermediate repository password.
   - **SAP_USERID**: Enter you SAP System user name.
   - **SAP_PASSWORD**: Enter your SAP system password.
   - **CONFIG_FILE_PATH**: Enter the file path to the location where the context file is stored.
   - **LOG4j_FILE_PATH**: Enter the filed path to the location where the Log4j file is stored. If you installed APM Connect in the default location, then enter \APMConnect\Config \log4jproperties
   - **MANUAL_RUN**: Enter true or false to determine whether or not the dates recorded in the context file will be used during extraction.

     Note: If the MANUAL_RUN parameter is set to true, the dates specified in the context file will be used. Additionally, the dates of the last successful run stored in the database will not be updated. If set to false, the date range used during the extraction will be the date of the last successful run, as stored in the database. Each time a Job is run successfully, the database is updated with those dates, and all subsequent runs will use the dates from the last successful run.

   The context parameters are configured.
5. Repeat steps 1 on page 89-4 on page 89 for every imported Job you will run.
6. To configure the Master job to run, select the SAP_MASTER_INTERFACE Job.
7. At the bottom of the **Job Conductor** workspace, select **Context parameters**.

   The **Context parameters** section appears, displaying the following parameters:
   - **RUN_STATIC_DATA**:The Static Data Job
   - **RUN_EQUIPMENT**:The Equipment Job
   - **RUN_FLOC**:The Functional Location Job

- **RUN_WORKHISTORY**:The Work History Job
- **RUN_WORKMANAGEMENT**: The Work Management Job
- **RUN_PWORK**: The Planned Work Job.
- **MASTER_CONFIG_FILE_DIR**:The file path to context files for the jobs
- **SYSTEM_TO_RUN**: The source system from which you want to extract data
- **RUN_TC_EQUIPMENT**: The Equipment Technical Characteristic Job
- **RUN_TC_FLOC**:The Functional Location Technical Characteristics Job

8. For each extraction jobs you want to run, in the **Custom value** column enter true, and then select the **Active** check box.
9. In the **MASTER_CONFIG_FILE_DIR Custom value** box, enter the directory where the context file(s) is stored.
10. In the **SYSTEM_TO_RUN Custom value** box enter:
    - The name of the system directory from which you want to extract data.
    - * to extract from all systems.
11. Select **Enter**.

Results

The Jobs are configured to run.

Configure the Logging

Before You Begin

The **Talend Administration Center** is installed and deployed in the application server.

About This Task

This topic describes how to configure APMC Logs using **Talend Application Center** and log4j2.propertiles file.

Procedure

1. Log in to **Talend Administration Centre**.
2. In the **Job Logging Levels**, select the logging levels.
   The logging levels are saved.
3. Set the JVM parameter for the logs to a specific folder.
   The APMC logs are configured.

   Note: By default log files are located in the `C:\APMConnect\Logs`.To facilitate the download of the APMC Logs in the APM, the logs should be linked through APM reference document.

   Important: To customize the logs, the reference to log4j2.propertiles file is passed to the job by providing the `-Dlog4j.configurationFile={path to your custom log4j2 file}` as JVM parameter.

Configure Site Reference Values

To assign site references to records using values other than those in the baseline configuration, you must modify the **autojoin_control** table in the Intermediate Repository.

About This Task

Important: Site Reference records corresponding to the site references that you specify must exist in APM before you can transfer records.

Procedure

- Configure the Site Reference Value to Use an Indirect Site Reference Value
  1. Access a database browser tool, and then access your Intermediate Repository (PostgreSQL) database.
  2. Locate the **autojoin_control** table, and then locate the **site_reference** column.

     Tip: For details about what each column in the **autojoin_control** table contains, see About Site Filtering Configuration.
  3. Update the value in the **site_reference** column using the format `#FIELD_ID#`, where FIELD_ID represents the ID of the field from which you want to populate the site reference value.

     For example, if you want the site reference value to be the value in the SAP Maintenance Plant field of the corresponding Equipment or Functional Location.
     - Where the value `#MI_FNCLOC00_SAP_SYSTEM_C#` occurs, replace the value with `#MI_FNCLOC00_MAINT_PLNT_C#`
     - Where the value `#MI_EQUIPOO_SAP_SYSTEM_C#` occurs, replace the value with `#MI_EQUIP000_MAINT_PLANT_C#`

     When you import record into APM from your SAP System, its Site Reference Key will be the value in the field that you specified. In the example above, the Site Reference Key will be the SAP Maintenance Plant of the corresponding Equipment or Functional Location.
- Configure the Site Reference Value to be A Specific Site Name
  1. Access a database browser tool, and then access your Intermediate Repository (PostgreSQL) database.
  2. Locate the **autojoin_control** table, and then locate the **site_reference** column.

     Tip: For details about what each column in the **autojoin_control** table contains, see About Site Filtering Configuration.
  3. Where the value `#MI_EQUIPOO_SAP_SYSTEM_C#` occurs, replace the value with the Site name as defined in a APM Site Reference record.

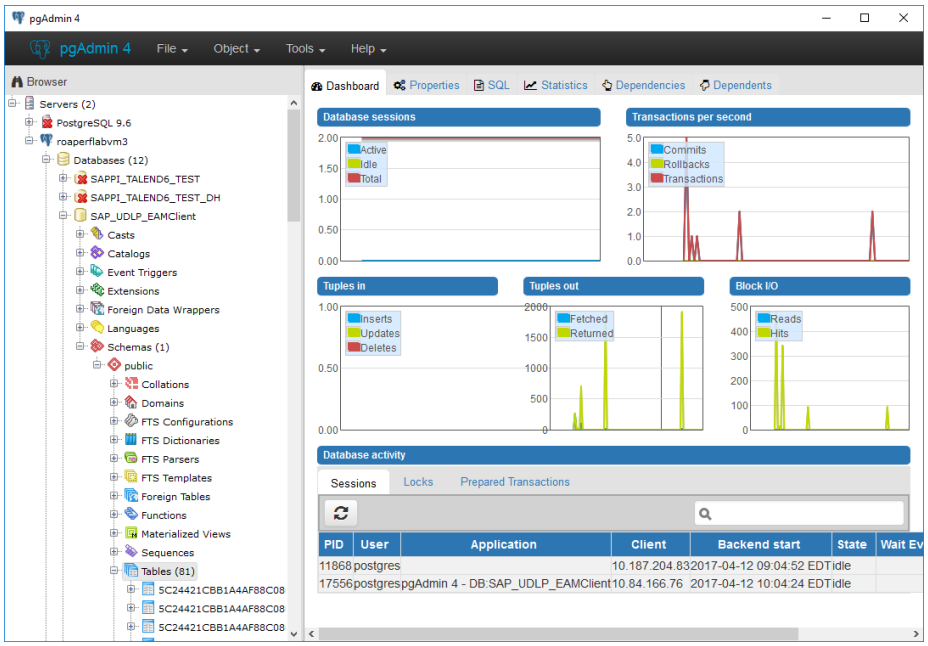
     When you import records into APM from your SAP System, its Site Reference Key will be the name of the Site as defined in the Site Reference record.

Configure MI_EQUIP000_CST_CNR_C as an Indirect Site Reference

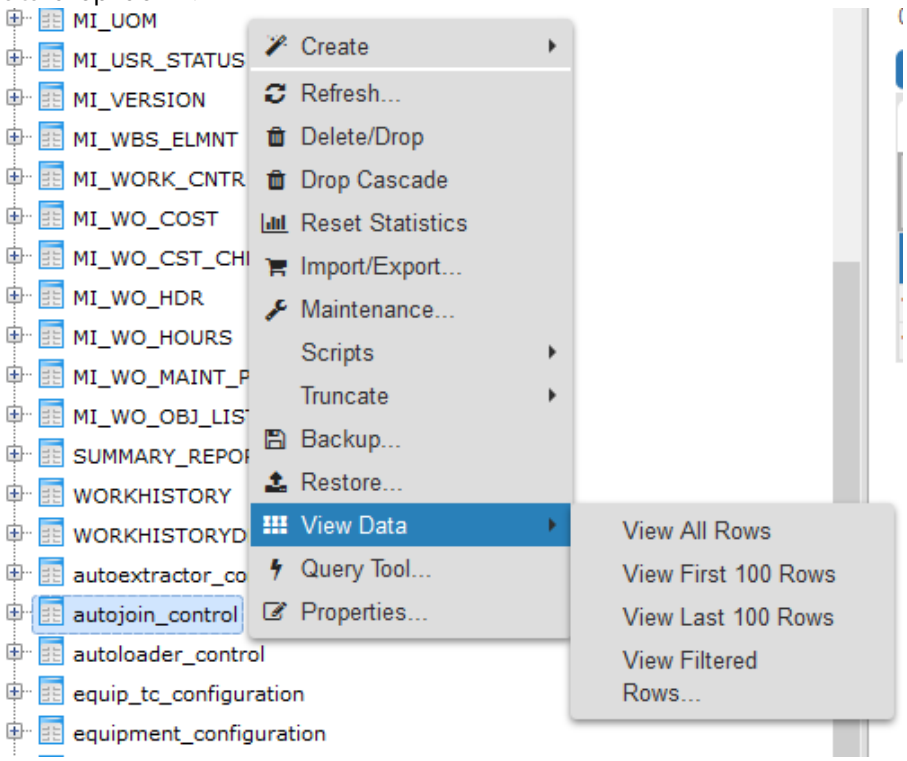
In this example, the database browser tool used in this example is pgAdmin4, the IR database name is SAP_UDLP_EAMClient. You can use the database browser of your choice.

1. On your APM Connect server, open pgAdmin4.
   PgAdmin4 is open displaying your available servers.

2. Navigate the server tree to the appropriate IR database, access your tables.
   In this example, the path is `Servers(2)\roaperflabvm3\Databases\SAP_UDLP_EAMClient\Schemas(1)\public\Tables (81)`. The list of tables in your IR database are visible.



3. Locate the table **autojoin_control**, right click, and then select the **View Data** drop-down.



4. Select **View All Rows**.
   The Query -1 tab is populated with the autojoin table.

5. In each row, in the **site_reference** column, enter `#MI_EQUIP000_CST_CNR_C#`

   Tip: This example assumes that the existing values in the **site_reference**column correspond to values in the MI_EQUIP000 and MI_FNCLOC00 families. If they do not, you must also update the **apm_site_reference_family** column to the corresponding family.

   The value in the MI_EQUIP000_CST_CNR_C field will be used to populate the Site Reference Key in corresponding records.

Mount a File Share

This topic details the basic process for setting up a file share based on your operating systems.

Before You Begin

Important: The process can vary greatly between organizations based on network configurations. Additionally, this procedure should be completed by an administrator with the expertise to manage network configurations.

- Be sure that you understand the recommended configurations to enable file shares within the APM Connect architecture.
- You will need access to the Linux console and root privileges on your Linux server.
- You will need the APM Connect server service account user name and password.
- You should be a network administrator with working knowledge of your network configurations.

About This Task

To enable writing files between the servers within your APM Connect architecture, file shares need to be mounted. Generally, this process involves, creating a file share to be mounted, then mounting the file share, and then making the file share permanent.

Procedure

- Create a File Share on a Windows Server, and then Mount the Share to a Linux Server
  1. On your APM Connect server (i.e., the Windows server on which you want to create the share), create a new folder for file sharing.

     Note: This share can be anywhere on your APM Connect server and can have any name.
  2. Right-click on the new folder, and then select **Properties**.
     The **<Folder Name> Properties** window appears.
  3. Select the **Sharing** tab, and then select **Advanced Sharing**.
     The **Advanced Sharing** window appears.
  4. Select the **Share this folder** check box.
     The other fields on the window are enabled.
  5. Optionally, edit the name in the **Share name:** box. If you do not edit this name, the name will default to the folder name.
  6. Select **Permissions**.
     The **Permissions for <Folder Name>** window appears.
  7. Select **Add...**.
     The **Select, Users, Computers, Service Accounts, or Groups** window appears.

8. In the **Enter the object names to select (examples)** box, enter the name of your APM Connect service account user.

   Note: The user must have permission to read and write to the shared folder.
9. Select **OK**.
   The **Select, Users, Computers, Service Accounts, or Groups** window closes.
10. On the **Permissions for <Folder Name>** window, in the **Permissions for <Service User Name>** box, in the **Allow** column select the **Full Control** check box, the **Change** check box, and the **Read** check box.
11. Select **OK**.
    The **Permissions for <Folder Name>** window closes.
12. On the **Advanced Sharing** window, select **OK**.
    The **Advanced Sharing** window closes. Then, on the **<Folder Name> Properties** window, in the **Network File and Folder Sharing** section, the **Network Path:** subsection is populated.
13. Record the network path.
14. Access your SAP PI server or your SAP server (i.e., the Linux server to which you want to mount the share) via a Linux Command Line Editor tool (for example, Vim or Nano).
15. Determine an existing directory that will be used as the share, or create a new directory.
16. In that directory, to initiate the connection between your source and target share, execute a mount command. The command will likely require the APM Connect service account user, source of the file share folder you created on the APM Connect server, and target for the share on your Linux server.

    Tip: The exact mount command will vary based on the system that you are using. An example of a mount command is mount -t smbfs -o username=Administrator // recurring/c$ /mnt/recurring
17. To verify that the new mount is configured correctly, enter the command mount.

    The mount appears in the list of mounted shares.

    Tip: At this point, you should be able to write files from one share to another. To test, place a file in the source folder on the Windows machine, and then the file should appear in the target directory on the Linux machine.
18. On the Linux machine, navigate to the file /etc/fstab.

    Tip: Mounting the share into the /etc/fstab file makes the file share permanent meaning that upon reboot the file share is still be mounted. If you do not execute the mount in this location, once the machine is rebooted the mount will be disconnected.
19. Open the file to be edited using a data base editor (for example Vim or Nano).
20. Add a new line to the file defining the share, mount point, file system driver, and options.

    Tips:

    - The following is an example of the statement syntax: `//<Source Folder Name> / <Target Folder Name <Systems Type or Driver> username=username password=<password> 02`.
    - Additionally, the following is the same entry with sample values: `// APMConnectServer1/WindowsSharedFolder /opt/LinuxSharedFolder cifs –o username=APMConnectSeriveAccount1 password=APMConnect 0 2`
21. Close the file, and then return to the root directory.

22. To unmount the share created, execute the command umount (i.e., if the original mount directory was /opt/LinuxFileShare, then execute the command unmount /opt/LinuxFileShare).

    Tip: You must unmount the share from the original location for it to be mounted from the /etc/fstab file.
23. Execute the command mount.

    The original mount directory does not appear in the list of mounted shares, and the new share in the /etc/fstab folder can be mounted.
24. Execute the command mount –a.

    Tip: Executing the command will read the configuration from the /etc/fstab file, and then preform the mount operation based on the parameters in the file.
25. To verify that the share has been mounted, execute the command mount.

    The new mount point added to the /etc/fstab file appears in the list.

    At this point, you can place a file on the APM Connect server in the shared folder, and it will be transferred to the shared Linux folder.

- Create a File Share on a Linux Server, and then Mount the Share to a Linux Server
  1. Access your SAP Server (i.e., the Linux server to which you want to mount the share) via a Linux Command Line Editor tool (for example, Vim or Nano).
  2. Ensure that the nfs-kernel-server service is installed and running.

     Important: The name of this service can vary based on the Linux system.
  3. Create the directory that will be mounted to your SAP PI server or your SAP server.
  4. To grant the remote server permission to mount a local directory, locate the file /etc/exports.
  5. In that file, enter the directory you created in Step 3 on page 95, and then identify the server that can mount the directory.
     For example, if you wanted to create the directory /opt/PI_FileShare and grant all users permissions to mount that directory, then you would enter the following: /opt/PI_FileShare *(rw, sync, no_root_squash, not_subtree_check).

     Tip: You can find all of the export options and access control lists in the manual file accessed by executing the command man exports.
  6. Restart the service /etc/init.d/nfs-kernel-server.
  7. Access your SAP PI server or your SAP server (i.e., the Linux machine to which you want to mount the share).
  8. Create a directory to which files will be written from the share.
  9. Execute the mount command to mount the exported directory on to the SAP PI server or the SAP server.

     Tips:

     - The exact mount command will vary based on the system that you are using. An example of a mount command is mount example.hostname.com:/ubuntu/local/ubuntu.
     - For example, if your SAP server hostname is SAPServer1, your source directory is /opt/PI_FileShare, and your target directory is /opt/SAP_FileShare, you would enter the following: mount SAPServer1: /opt/PI_File_Share /opt/SAP_FileShare
  10. The directory created in step 3 on page 95 appears in the list of mounted directories.

      Tip: At this point, you should be able to write files from one share to another. To test, place a file in the source folder on the Windows machine, and then the file should appear in the target directory on the Linux machine

11. On the Linux machine on which the share will be mounted, navigate to the file /etc/fstab.

    Tip: Mounting the share into the /etc/fstab file makes the file share permanent, meaning that upon reboot the file share will still be mounted. If you do not execute the mount in this location, once the machine is rebooted the mount will be disconnected.
12. Open the file to be edited using a database editor (for example, Vim or Nano).
13. Add a new line to the file defining the share, mount point, file system driver, and options.

    Tips:

    - The following is an example of the statement syntax: <exporting server hostname>:<exported Folder Name> <Target Folder Name> <Systems Type or Driver> 0 2.
    - Additionally, the following is the same entry with sample values: APMConnectServer1.company.com:/exportedFolder /opt/mountpointFolder nfs 0 2
14. Close the file, and then return to the root directory.
15. To unmount the share in the directory created in step 8, execute the command umount.

    For example if the original mount directory was /opt/LinuxFileShare, then execute the command unmount /opt/LinuxFileShare.

    Tip: You must unmount the share from the original location for it to be mounted from the /etc/fstab file.
16. Execute the command mount –a.

    Tip: Executing the command will read the configuration from the /etc/fstab file, and then preform the mount operation based on the parameters in the file.
17. To verify that the share has been mounted, execute the command mount.

    The new mount point added to the /etc/fstab file appears in the list.

    At this point, you can place a file on the APM Connect server in the shared folder, and it will be transferred to the shared Linux folder.

Establish SFTP Transfer in a Windows SAP Server

If you use SFTP to transfer files between SAP, APM Connect, and APM, you must complete additional configuration in SAP. You must download a PuTTy file and set up command names in SAP to use the PuTTy file.

About This Task

Note: If you using SAP PI, then you can skip this procedure.

Procedure

1. On your SAP system, in a browser, navigate to the PuTTY website.
2. Download the following PuTTy file: `pscp.exe`.
3. Copy it into the PATH on your SAP system. The recommended directory is `%WINDIR%/System32`.
4. In SAP, run the transaction code SM69.
5. In the **External Operation System Commands** screen, select .
6. In the **Definition** section, in the **Operating system command** box, enter following systems command: `pscp`.

7. Select **Save**.

Results

The PuTTy file is on the SAP system, and the corresponding command names are set up.

Secure Data Transfer to a Linux SAP Server

To enable secure SFTP data transfer from a Linux SAP server, you must first set up SSH.

Before You Begin

- The remote SAP system must have a version of SSH installed, for example, OpenSSH.
- The computer you use to connect to the remote server must have a version of SSH installed.
- You must be able to transfer your public key to the remote system. Either, you must be able to log in to the remote system with an established account user ID and password or have an administrator on the remote system add the public key to the `~/.ssh/authorized_keys` file for your account.

Procedure

1. Log in to the computer you are using to access the remote system, and, on the command line, enter `ssh-keygen -t rsa`.
2. At the resulting prompt, enter a file name and a password for the generated key.
   Alternatively, you can press Enter to generate the key into a default file: `~/.ssh/id_rsa.pub`. The remainder of this procedure will reference the generated file as `~/.ssh/id_rsa.pub`.
3. Enter the command `SCP` or `SFTP` to copy the key file you created in step 2 on page 97 to your account on the remote system.
   For example, `scp ~/.ssh/id_rsa.pub username@remoteserver:.`
4. At the system prompt, enter your password.
   The system copies the key file to the account home directory on the remote system.
5. Log in to the remote system with your credentials.
6. **Optional:** If your account on the remote system does not contain a `~/.ssh/authorized_keys` file, create one.
   For example:

   ```
   mkdir -p ~/.ssh
   touch ~/.ssh/authorized_keys
   ```

7. On the remote system, on the command line, enter `cat ~/id_rsa.pub >> ~/.ssh/authorized_keys`.

   The content of the generated key file is copied into a new line in the `~/.ssh/authorized_keys` file. You can verify the contents of the file by entering `more ~/.ssh/authorized_keys`.

Results

A secure connection to your Linux SAP server is established.

Establish SFTP Transfer in a Linux SAP System

If you use SFTP to transfer files from a Linux SAP server, you must complete additional configuration in SAP and the SAP server operating system. This procedure describes how to create a shell script that SAP uses when transferring data to APM.

About This Task

Note: The shell script can have any name, but this procedure uses `MI_SCRIPT.SH` for clarity.

Procedure

1. In a text editor, create a file, for example, `MI_SCRIPT.SH`, with contents as shown in the following example.

```
#!/bin/bash
#The following 5 arguments listed are retrieved from SAP:
#$1    -sftp (constant)
#$2    -pw   (constant)
#$3    password (PLSAP_FTP_PASSWORD)
#$4    Source file (PLSAP_INPUT+<interface>+filename.*)
#$5    USER@HOST:

arg1=$4
arg1=${arg1/.csv.*/.csv}
arg1=${arg1/.dat.*/.dat}
arg1=${arg1/.dat.dat/.dat}
arg1=${arg1/.DAT.dat/.dat}
arg1=${arg1/.dat.DAT/.dat}

sftp $5 <<EOF
put $arg1
```

2. Copy the file `MI_SCRIPT.SH` into a directory on your SAP system.

   For simplicity, you should use the SAP home path.
3. In SAP, run the transaction code SM69.
4. In the **External Operation System Commands** screen, select .
5. In the **Definition** section, in the **Operating System Command** box, enter a value based on the following table.

Location of the Script	Value of Operating System Command
The script is in the SAP home path	`MI_SCRIPT`
Some other location	The full file path, for example, `/home/h8sadm/scripts/MI_SCRIPT.SH`

6. Select **Save**.

Results

The script file is on the SAP system, and the corresponding command names are set up.

Establish Data Transfer via Web Services

You can establish data transfer using Web Services by creating RFC Destination in SAP. If you use Web Services to transfer data between SAP and APM Connect, you must complete additional configuration steps in SAP.

About This Task

Procedure

1. In SAP, run the transaction code SM59.
2. In the **RFC Connections** screen, select **HTTP Connections to External Server**, and then select to create RFC Destination.
3. In the **RFC Destination** box, enter `APMCONNECT`.

   Note: To give a different name, job customizations can be done in the APM Connect server.
4. Select the **Technical Settings** tab, in the section that appears enter the values:
   - Target Host: Enter the server name where the EAMFileReciver service is deployed.
   - Service No.: Enter the port number of the EAMFileReciver service.
   - Path Prefix: Enter one of the following values:
     - If you are not using SAP PI/PO: `/services/EamFileReceiver`
     - If you are using SAP PI/PO:
       - For Advanced Adapter Engine (AAE): `/XISOAPAdapter/MessageServlet?senderParty=&senderService=GE_APM_SAP&receiverParty=&receiverService=&interface=EamFileReceiver_Out&interfaceNamespace=urn:ge.com:SAP:EamFileReceiver`
       - For non-Advanced Adapter Engine (AAE): `/sap/xi/engine?type=entry&Sender.Service=GE_APM_SAP&Interface=urn:ge.com:SAP:EamFileReceiver^EamFileReceiver_out`

   Note: `GE_APM_SAP` is the default Sender Service name in SAP PI. If you are using a different service name, update the Sender Service value accordingly.
5. In the **Logon & Security** tab, select one of the following:
   - Basic Authentication: Select if you are using SAP PI.
   - Do Not Use a User: Select if you are not using SAP PI.
6. Select **Save**.

Results

The RFC Destination is created in the SAP system.

Create File Share Folder Structure

Data files written by SAP are placed in a specific directory defined by the context parameter PLSAP_INPUT. This topic describes how to create the appropriate directory structure.

Procedure

1. Navigate to the folder into which your SAP system writes files.

   Note: This folder will be different for each customer, but will likely be labeled `PLSAP_INPUT`.
2. Create a new folder for each of the following:
   - EQUIPMENT\ARC
   - FLOC\ARC
   - PWORK\ARC

- TC_EQUI\ARC
- TC_IFLOT\ARC
- WMI\ARC
- WORKHISTORY\ARC

Results

The directory is created, and SAP will write files to the specified location.

Install the ABAP Base Service Pack Add-on

Before You Begin

- Determine the release and level of your current ABAP installation by completing the steps to verify the ABAP installation.
- If you need to support both APM V3.6.x and APM V4.3.x simultaneously, there are additional considerations as described in Install the Dual ABAP Package on page 103.

Procedure

1. On a machine from which you can access the SAP Server, navigate to the FTP site provided to you.
2. Determine how to proceed based on your ABAP release, level, and type of SAP system.
   - For ECC6, if your currently installed ABAP release is 400_600 and the level is 0000 and above, proceed directly to step 16 on page 102. Otherwise, proceed to the next step.
   - For S/4 Hana, if your currently installed ABAP release is 4XX_750 and the level is 0000 and above, proceed directly to Step 16 on page 102. Otherwise, proceed to the next step.
3. Depending on your SAP environment, navigate to the folder `\\SAP Interfaces ABAP Add-On\Service Pack Files\ECC6` or `\\SAP Interfaces ABAP Add-On\Service Pack Files\S/4 Hana`, and then select one of the following folders:
   - **Exchange Upgrade**: To upgrade the ABAP package when upgrading to a new SAP version.
   - **Install**: To install the ABAP Package for the first time.
   - **Upgrade**: To upgrade the ABAP package.
4. Copy the .pat files.

   The file names begin with either `D07` for ECC6 or `H4S` for S/4 Hana.
5. On the SAP Server, paste the copied file into the folder `\\usr\sap\trans\EPS\in`.
6. Log in to the SAP system as a user with:
   - SCTSIMPSGL and S_CTS_ADMIN authorizations.
   - SAP_ALL authorization.
7. Run the following transaction: SAINT.

   The **Add-On Installation Tool** screen appears.
8. In the page, select **Installation Package**, then select **Load packages**, and then select **From Application Server**.
9. Select **Yes**.

   The **SAINT: Uploading Packages from the File System** screen appears.

   Note: In an S/4 Hana environment, two files are uploaded and are displayed in the **SAINT: Uploading Packages from the File System** screen.

In the row corresponding to the .pat file that you copied previously, the Message Text column displays Uploaded successfully.

10. At the top of the screen, select .

    The **Add-On Installation Tool** screen appears again.
11. Select **Start**.
    A new grid appears. MIAPMINT appears in the list of add-on packages that can be installed.
12. Select the row containing the value MIAPMINT in the first column, and then select **Continue**.
    The **Support Package selection** screen appears.
13. Select **Continue**, and then select **Continue** again.

    Note:

    - During the installation, the **Add Modification Adjustment Transports to the Queue** window might appear. If it does, select **No**.
    - During the installation, the **Open data extraction requests** window might appear. If it does, select **Skip**, and then select **Yes**.

    An installation progress indicator appears.

    When the progress indicator disappears, a message appears, indicating that the add-on package will be installed.
14. Select .

    The status is updated to indicate that the add-on package will now be imported, and the installation process continues. When the installation process is complete, the status is updated to indicate that the add-on package was imported successfully.
15. Select **Finish**.
    The MIAPMINT add-on package appears in the list of installed add-on packages on the **Add-On Installation Tool** screen.
16. On the FTP site, navigate to the folder `\\SAP Interfaces ABAP Add-On\Support Package`.
17. Depending on your SAP environment, navigate to the `ECC6` folder or navigate to the `S/4 Hana` folder, and copy the .pat files.

    Note: For the Dual ABAP package, refer to Install the Dual ABAP Package.
18. On the SAP Server, paste the copied files into the folder `\\usr\sap\trans\EPS\in`.
19. Log in to the SAP system.
20. Run the following transaction: SPAM.
    The **Support Package Manager** screen appears.
21. Select **Menu**, then select **Support Package**, then select **Load Packages**, and then select **From Application Server**.
    A message appears, asking if you want to upload the package.
22. Select **Yes**.
    A summary screen appears, indicating that the package was uploaded successfully.
23. Select **Back**.
24. Select **Display/define**.
    The **Component Selection** window appears.
25. Select the MIAPMINT component.
26. When prompted, confirm that the patch will be imported into the queue, and then select .

27. Select **Menu**, then select **Support Package**, and then select .
    The **SPAM: Import: Queue** window appears.
28. In the **SPAM: Import: Queue** window, select .
    The import process begins. When it is complete, a message appears, indicating that the import process was successful.
29. Select **Continue**.
    Another message appears, indicating that the import process was successful.
30. Select .
31. Select **Menu**, then select **Support Package**, and then select .
    The installation is complete.

Verify ABAP Installation

Procedure

1. In SAP, in the **System** menu, select **Status...**.
   The **System: Status** window appears.
2. In the **SAP System data** subsection, select .
   The **System: Component information** window appears.
3. If you have deployed the ABAP Add-On package for the SAP Adapter, scroll down until you see the Software Component `MIAPMINT`.

   If you see the following values in the following columns, the Add-On was applied successfully:

   - Release:

     ECC6: `700_600`

     S/4 Hana: `700_750`
   - Level:

     ECC6: `0003`

     S/4 Hana: `0003`

   Note: If the level does not match, go back to the copy .pat files step of Install the ABAP Base Service Pack Add-on and rerun the installation steps.

Install the Dual ABAP Package

Use this procedure to provide SAP and SAP-PI data flows in situations that require access to both V3.6.x and V5.x (or later versions) APM at the same time.

Before You Begin

Important:

- This package is intended to support customers upgrading either all or part of their V3.x environment to V5.x (or later versions). This package should only be installed on a V3.x implementation with the most currently released V3.x ABAP package.
- The Dual ABAP package only supports ECC6 systems. When performing the installation, only use the information related to ECC6.

- If you are migrating V3.6 to V5.x (or later versions), you must have the latest ABAP package (at least V3.6.0 ABAP 0.7, 360_600 Level 10) before installing the Dual ABAP package.
- If you need to use SAP-PI Adapters on APM V3.6, install the adapters.
- If you need to use SAP-PI Adapters for both APM V3.6 and APM, obtain the software from:
  - For APM V3.6: `\SAP PI Package 3.6`.
  - For APM V5.x (or later versions): select the folder that reflects the correct SAP-PI level you need. For example, if you are using SAP-PI 7.5, you would select `\SAP PI 750`.

About This Task

Establishing an environment when you need to establish data flows from SAP or SAP-PI systems to APM V3.6.x and APM V5.x (or later versions) systems simultaneously requires you to use a different ABAP package than what you would use for a single version of APM.

This capability can be useful when you want:

- To test an SAP or SAP-PI system that you are migrating from APM to APM V5.x (or later versions).
- To connect an SAP or SAP-PI system to both a APM V3.6.x and APM V5.x (or later versions), simultaneously.

Procedure

1. In the APM Connect installation package, navigate to `\\SAP Interfaces ABAP Add-On \Service Pack Files\Dual Pack - V36 & V5`.
2. **Optional:** If you have previously installed the Dual ABAP package, start with the step that installs the support pack in Install the ABAP Base Service Pack Add-on on page 100.
3. Install the ABAP package as described in Install the ABAP Base Service Pack Add-on on page 100, using ECC6 as when you need to make choices.
4. Verify the package as described in Verify ABAP Installation on page 102.
   The release and level values should match these:

   Component:

   MIAPMINT

   Release:

   ECC6: 736

   Level:

   ECC6: 0000

Results

You have configured SAP or SAP-PI to use both APM V3.6.x and APM V5.x (or later versions).

Uninstall the ABAP Base Service Pack Add-on

This procedure describes how to uninstall the ABAP Base Service Pack Add-on.

Before You Begin

Note: The uninstall feature is available only with SAP spam version 0057 or later. To complete this procedure, you must use SAP client 000.

- Verify the release and level of your ABAP installation.

Procedure

1. Log in to the SAP server as a user with either SCTSIMPSGL and S_CTS_ADMIN authorizations or SAP_ALL authorization.
2. Enter `SAINT`.
   The **Add-On Installation Tool** screen appears.
3. Select **Installation Package** > **Load Packages** > **From Application Server**
4. Select **Yes**.

   In the **SAINT: Uploading Packages from the File System**, the **Message Text** column of the row corresponding to the `.pat` files that you originally copied displays `Uploaded successfully`.
5. In the **SAINT: Uploading Packages from the File System** window, select
6. In the **Add-On Installation Tool**, select **Uninstallable components**, then select **MIAPMINT** or **MIAPM**, and then select**Continue**.
7. In the **Start options** window, select **Default options**.
8. Select .
   The status is updated to indicate that the add-on package will now be imported and the uninstall process continues. When the process completes, the status is updated to show that the add-on package was removed successfully.
9. Select **Finish**.

Results

The add-on package is removed from the list of installed add-on packages in the **Add-On Installation Tool** screen.

Create APM Connect User Profile in SAP

To successfully transfer data between APM and SAP, you must create an APM Connect user for SAP. This topic describes the process of creating a user profile.

Before You Begin

- Review the APM Connect user profile requirements.
- You must have administrative rights to the SAP system.

Note: The values used for items such as the profile, system names, and userids are for example purposes only. Your values can be different.

About This Task

These steps must be performed in order on the SAP system. They create a profile that you will connect to the APM Connect user that communicates with SAP.

Procedure

1. In SAP, run the transaction `PFCG`.
2. In the **Role Maintenance** screen, in the **Role** box, enter your role name (for example, `ZRM_APMCONNECT_AUTH_PROFILE`), and then select **Single Role**.
3. In the **Display Roles** screen, select the **Authorizations** tab.
4. Define authorizations.
   a) In the **Maintain Authorization Data and Generate Profiles** section, in the **Change Authorization Data** row, select .

b) In the **Choose Template** window, select **do not select templates**.
c) In the **Change Role: Authorizations** window, select **Manually**.
d) In the **Manual selection of authorizations** pane, in the **Authorization Object** box, enter the following authorization object values.

Authorization Object	Description
C_TCLA_BKA	Authorization for Class Types
I_AUART	PM: Order Type
I_BEGRP	PM: Authorization Group
I_BETRVORG	PM: Business Operation
I_INGRP	PM: Maintenance Planner Group
I_KOSTL	PM: Cost Centers
I_QMEL	PM/QM: Notification Types
I_SWERK	PM: Maintenance Plant
I_WERK	PM: Maintenance Planning Plant
S_BTCH_JOB	Background Processing: Operations
S_DATASET	Authorization for File Access
S_LOG_COM	Required if file transfer is SFTP/SCP. For server mode this authorization is not required.
S_RFC	Authorization Check for RFC Access
S_TABU_NAM	Table Access with Generic Standard

e) Select .

5. Define RFC access.

a) In the **Cross-application Authorization Objects** row, select to expand the workspace, then select the **Authorization Check for RFC Access** row, then select the **Activity** row, and then select .
b) In the **Define Values** window, select the **Execute** box, and then select .
c) In the workspace, in the **Name of RFC to be protected** row, select .
d) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter the following RFC values.

/MIAPM/*	RFC_GET_FUNCTION_INTERFACE	SYSTEM_RESET_RFC_SERVER
CLAF_CLASSIFICATION_OF_OBJECTS	RFCPING	RFC_PING
DDIF_FIELDINFO_GET	SYSTEM_RESET_RFC_CONNECTION	

e) Select .
f) In the workspace, in the **Type of RFC object to be protected** row, select .
g) Select the **FUNC** check box, and then select .

6. Select to expand the **Basis: Administration** row to access the administration section.

7. Define table access.
   a) In the **Table Access with Generic Standard Tools** row, select to expand the workspace.
   b) In the **Activity** row, select .
   c) In the **Define Values** window, select the **Display** check box, and then select .
   d) In the **Table Name** row, select .
   e) In the **Field values** pane, in the **Value Intrvl** section, enter the following table values in the **'From'** column.

/MIAPM/*	CRHD	JEST	PRPS	T353I_T	TGSBT
AFVV	CRTX	JSTO	QMEL	T356_P	TJ02
AFKO	CSKT	KLAH	QMFE	T356_T	TJ02T
AFRU	CVERS	KSML	QMMA	T357	TJ30
AFVC	EAPL	KSSK	QMUR	T357A_T	TJ30T
AFVV	EQBS	MAKT	QPCT	T357M_T	TKA01
AUSP	EQKT	MHIS	SWOR	T370C_T	TQ80
BGMKOBJ	EQUI	MHIO	T001	T370F_T	TQ80_T
CABN	EQUZ	MMPT	T001W	T370K_T	VIAUFKST
CABNT	IFLO	MPLA	T003P	T370U	VIQMEL
CAWN	IFLOS	OBJK	T006	TAPL	VIMPLA
CAWNT	IFLOT	PLAS	T006A	TCLA	VIMPOS
COBK	IFLOTX	PLKO	T024I	TCURC	T399G_T
COEP	ILOA	PLPO	T350	TCURR	T356_T
COVP	INOB	PMCO	T352B_T	T499S	TGSBT
CRHD	CRTX	TCN00	TCN01	TCURC	TCURT
T399I	T001W	T411	T411T	t003o	t003p
T351X	T351P	TCF10	TCF11	DRAW	DRAT
T399W	T024I	T351	T351T	T024E	CSSL
CSLT	T006	T006A	T412	T412T	T024A
T024		TQ80	TQ80_T	T023	T023T
T430	T430T	TDWA	TDWAT	TFACD	TFACT
T006D	T006T	T370B_T	T357M_T	t353i	t353i_t
t350i	T435	T435T	T399W_T	CSKA	CSKU

8. Select .
9. Define background processing.
   a) In the **Background Processing: Operations on Background Jobs** row, select to expand the workspace, and then, in the **Job operations** row, select .
   b) In the **Define Values** pane, select the **RELE** check box, and then select .

c) In the workspace, in the **Summary of jobs for a group** row, select .

d) In the **Field values** window, select **Full authorization**, and then select .

10. Define file access.

a) In the **Authorization for file access** row, select to expand the workspace.

b) In the **Activity** row, select .

c) Select the **Delete**, **Read**, **Write**, **Read with filter**, and **Write with filter** check boxes, and then select .

d) In the **Physical file name** row, select .

e) In the **Field values** window, select **Full authorization**, and then select .

f) In the **Program Name with Search Help** row, select .

g) In the **Field values** window, select **Full authorization**, and then select .

11. In the **Plant Maintenance** row, select to expand the workspace to define the plant maintenance configuration.
12. Define notification types.

a) In the **M/QM: Notification Types** row, select to expand the workspace. Then in the **Notification types** row, select .

b) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter your notification types (for example, *M1* and *M2*).

13. **Optional:** If you are using SFTP or SCP to transfer files between APM and SAP, supply the following values to S_LOG_COM Assign Authority object.

Command	Value
COMMAND	ZSCP - the command defined in the SM69 transaction code that triggers the external command to transfer the file to the FTP server.
HOST	SAP host name, for example, *SAPPERDEV*
OPSYSTEM	Operating system of your SAP system, for example, Windows NT.

14. In the **Classification** row, select to define the classification configuration.
15. Define the class type authorizations.

a) In the **Classification** row, select , and then, in the **Authorization for Class Types** row, select to expand the workspace.

b) In the **Class Type** row, select .

c) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter the class types used in the process (for example, *002* and *003*), and then select .

16. In the **Transaction codes** row of the workspace, select to define the transaction codes.

a) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter the transaction codes *IW21*, *IW22*, and *IW23*.

17. Define the plant maintenance configuration.

a) In the **PM: Order Type** row, select to expand the workspace.

b) In the **Order type** row, select , and then select the order types you are using.

Note: Each order type you use (for example, *PM01* and *PM02*), needs the same configuration.

c) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter *.

d) In the **PM: Authorization Group** row, select to expand the workspace, and then, in the **Technical object authorization** row, select , to add the authorization groups you are using.

e) In the **Transaction codes** row select .

f) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter the transaction codes *IW21*, *IW22*, *IW23*, *IW31*, *IW32*, and *IW33*.

g) In the **PM: Business Operation** row, select to expand the workspace. Then, in the **Business Transaction** row, select , and then add the Business Transaction that you are using.

h) In the **PM: Maintenance Planner Group** row, select to expand the workspace. Then, in the **Planner Group for Customer Set** row, select , and then add the Planner Groups that you are using.

i) In the workspace, in the **Maintenance Planning Plant** row, select to add the Maintenance Planning plants.

j) In the maintenance planning plant row you added in step 17.i on page 109, select .

k) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter the transaction codes *IW21*, *IW22*, *IW23*, *IW31*, *IW32*, and *IW33*.

l) In the **PM: Cost Centers** row, select to expand the workspace. Then, in the **Controlling Area** row select to add the Controlling Areas you are using.

18. In the workspace, in the **Cost Center** row, select to add the Cost Centers you are using.

    a) In the **Field values** window, in the **Value Intrvl** section, in the **'From'** column, enter the transaction codes *IW21*, *IW22*, *IW23*, *IW31*, *IW32*, and *IW33*.

19. In the **Change Role Authorization** screen, select , and then select .

20. In the **Assign Profile Name for Generated Authorization Profile** window, select .

Results

The profile is created.

Assign Profile to APM Connect User

This procedure describes how to assign an SAP profile to the APM Connect user in SAP.

Before You Begin

You must have created a user profile for APM Connect in SAP.

Note: The values used for items such as the profile, system names, and userids are for example purposes only. Your values can be different.

Procedure

1. In SAP, run the transaction `SU01`.
2. In the **User Maintenance: Initial Screen** window, in the **User** box, enter a user name (for example, *APMCONNECT*), and then select to create a new user.

   Note: Select to edit an existing user.
3. Select the **Logon Data** tab, and then enter an initial password for the user.

   Important: You must log on manually to change the initial password before using the user and password combination in APM Connect.
4. In the **User Type** box, select **Dialog**.
5. Select the **Roles** tab, and then, in the **Role** column, enter the role *ZRM_APMCONNECT_AUTH_PROFILE*.
6. Select other tabs in the **User Maintenance: Initial Screen** window to enter any other required information to conform to SAP guidelines.
7. Select to save the user.

Next Steps

1. In AL11, create a directory on your file share with subdirectories `EQUIPMENT`, `FLOC`, `WORKHISTORY`, `TC`, and `STATICDATA`. The parent directory can have any name.
2. Grant `Read` and `Write` authorization to the created directories to the user you just created.
3. If you are using ASI, configure the ASI SAP permissions.

Identify Trigger Values for Creating Task Records

The Work Management Adapter allows you to create Inspection Task and Calibration Task records from SAP Maintenance Plans using Operations and Object Lists. This topic describes how to identify which values in an Operation or Object list will trigger the creation of which Task records in APM.

About This Task

The baseline product is configured such that:

- Operations with the control key ZMI2 will be used to create Calibration Task records.
- Operations with the control key ZMI1 will be used to create Inspection Task records.

Note: You are not required to use the default configuration. If you want to use values in different Operation fields to trigger the creation of APM Task records, you can do so.

Procedure

If you want to accept the baseline configuration complete the following:

a) Create the control keys ZMI1 and ZMI2.
b) In the context file, configure the Work Management parameters to enable trigger values.

Configure APM to Create Notifications from Recommendation Records

The SAP Interfaces feature allows you to create Recommendation records in APM that will be used to create SAP Notifications automatically.

About This Task

For a Recommendation record to generate an SAP Notification automatically, the Create Work Request field must exist on the Recommendation datasheet. This field is available on the baseline datasheets for the baseline Recommendation families from which you are allowed to create SAP Notifications.

If you want to generate SAP Notifications from Recommendation records that belong to customer-defined subfamilies of the root Recommendation family, in addition to implementing the correct rules (for an example of the rules that you will need to implement, you can look at any active baseline Recommendation family), you will need to add the Create Work Request field to the desired datasheets for that family.

Tip: You can create multiple types of SAP Notifications (for example, M2) from Recommendation records. By default, APM creates M2 Notifications.

Procedure

If you want to create different Notification types, you will need to:

a) Add the Notification Type field to the datasheet.
b) Configure the Notification Type field to accept values other than M2.

Note: In the baseline SAP Interfaces product, this field is disabled. If desired, you could configure it to be enabled so that users can type a value directly in the Notification Type cell on the datasheet. You might also consider creating a Valid Values rule that provides a list of acceptable values so that users can select the desired value from the list.

Deploy and Configure the SAP Connector Files

As recommended, and by default, a RestFUL SAP web service call is used as an intermediary between SAP and APM, thereby avoiding RFC calls directly between APM and your SAP server. Complete these steps to deploy and configure the files necessary to enable this connection.

Procedure

1. On the APM Connect server, navigate to folder `<root:>\APMConnect\Config`.
2. Copy the file `connectServices.cfg` to folder `<root:>\APMConnect\Utilities\runtime\etc`.
3. Edit the file and provide these values for the listed parameters.

Parameter	Value
context	Default
IR_HOST	*IP address of the system containing the Intermediate Repository.*
IR_PORT	*Port number of the system containing the Intermediate Repository.*
IR_DATABASE	*The database that contains the Intermediate Repository.*
IR_SCHEMA	*The schema that defines the Intermediate Repository.*

Parameter	Value
IR_USERID	*The userid to access the Intermediate Repository.*
IR_PASSWORD	*The password associated with the userid that accesses the Intermediate Repository.*
LOG_REQUEST	`false`
LOG_RESPONSE	`false`

4. Save the file.
5. Access the APM Connect installation package, and then copy the file `connectorServices.jar`.
6. On your APM Connect server, navigate to `<root:>\APMConnect\Utilities\runtime\deploy`.
7. **Optional:** If you already have an existing `connectServices.jar` file, delete it before copying the new file into the directory.

Results

The Notification Management files are deployed and configured.

Configure Notification Priority

You can configure the priority value in APM to match the priority value in SAP by editing the MI_PRIORITY system code table.

Procedure

1. Determine the values in your EAM system that determine priority.
2. For each priority that exist in you EAM System, modify the MI_PRIORITY system table

Results

When priority values are transferred from a APM recommendation to an SAP Notification, the priority values will match.

Create an SAP EAM System Record

You must configure an EAM System record to establish a connection between any EAM system and APM.

Procedure

1. Create a new EAM System record.
2. In the **Datasheet ID** box, select **SAP**.

   Note: If your SAP system requires an RFC connection, select **SAP System for RCMO**.
3. In the **Name** box, enter the name of your system.
4. If this system is the system to and from which you want to send data by default, select the **Default EAM System?** check box.
5. In the **System Type** box, select **SAP**.

   If you are defining an SAP System for RCMO, the box is not available.
6. In the **User ID** box, enter a valid User ID.
7. In the **Password** box, select .

8. In the **Enter EAM System Password** window, in the **Password** box, enter the password that is associated with the specified user ID.
9. In the **Confirm Password** box, reenter the password.
10. Select **OK**.
11. In the **Connection String** box, modify the template connection string.
    a) Replace the text SAP_SERVER_IP with the IP address of the Server.
    b) Replace the text SAP_SYSTEM_NUMBER with the System number.
    c) Replace the text SAP_CLIENT_NUMBER with the Client number.
    d) Delete all angle brackets.
12. **Optional:** In the **ITS URL** box:
    a) Replace the text: *its_or_integrated_its_server_url* with the ITS Server information. To locate the ITS Server information:
        i. In SAP, run the following transaction: `SE80`.

        Note: If you do not have access to this transaction, contact your SAP BASIS team for assistance.
        ii. In the toolbar, select **Utilities**, and then select **Settings**.
        iii. In the window, select repeatedly until the **Internet Transaction Server** tab appears.
        iv. Select the **Internet Transaction Server** tab.
        The ITS Server information that you must enter in the **ITS URL** box in APM is `<Log><Path>`, where <Log> is the text in the **Log** section and <Path> is the text in the **Path** section.
    b) Delete the angle brackets.
    c) Enter: `webgui/!` at the end of the URL.
    For example, the ITS URL that corresponds with the values in the image above is `http://myhost.com:8000/sap/bc/gui/sap/its/webgui/!`.
13. Select .
    The EAM System record is saved.
14. Select , and then select **Test Connection**.
    The connection parameters are verified, and the **System ID** box is populated with your EAM System Name.

Results

- An EAM system record is created for the EAM system that defines a connection with APM. The ID for this EAM record should now be used in the Name field of a Site Reference record.
- Linking an EAM system to an EAM System record enables the APM Connect Adapters to create Notifications against that EAM System.

Test the Connection Defined in an EAM System Record

Procedure

1. In the APM application, open the EAM System record whose connection information you want to test.
2. To access the **Associated Pages** menu, select , and then select **Test Connection**.

The connection is tested.

Create the Intermediate Repository Database

This topic describes how to set up a repository in preparation to run your first job.

Before You Begin

Important: If you are using both the Data Loaders and an EAM Adapter, you need only one Intermediate Repository Database.

- Before you can prepare and deploy the repository, you must import the CreateIntermediateRepository job.
- If you are using the Data Loaders and the EAM Adapters, you must deploy and run the CreateIntermediateRepository job for each set of adapters.
- For SAP adapters, you must first run the Static Data job.
- For multiple EAM systems, the context file parameter values for a specific type of system must be identical except for the value of CMMS_ID.
- For multiple EAM systems, the Intermediate Repository Connection parameters have the same values for all adapters connected to this APM system.

Important: Each time you run the CreateIntermediateRepository you recreate the APM database to the baseline settings, removing any previous configuration. When you run the addSourceSystem job, the job will add new source systems based on the CMMS_ID and the SOURCE_SYSTEM_TYPE. If the job is run an additional time with the same configuration, it will reset the control values of an existing source system.

Procedure

1. Log in to the APM Connect Administration Center web application.

   Note: The user logging in must have access to the Job Conductor by being designated the Operations Manager role. By default, users designated as administrators do not have Job Conductor permissions.
2. In the **Job Conductor** workspace, in the appropriate project, select the CreateIntermediateRepository job.
3. Select **Context parameters**.

   The **Context parameters** section appears.
4. Configure the following parameter.

Context Parameter	Description
CONFIG_FILE_PATH	The file path to context files for the jobs. **Important:** • You must change the default value to reflect the actual path to your configuration file. • CMMS_ID and SOURCE_SYSTEM_TYPE must be set in the context file.

5. Select **Run**.

   If you are configuring a single system, you have completed your configuration.

   The intermediate repository database is created for the project.

If you are configuring multiple EAM systems, perform the remaining steps in this topic.

6. In the **Job Conductor** workspace, in the appropriate project, select the addSourceSystem job.

7. Configure the following parameter.

Context Parameter	Description
CONFIG_FILE_PATH	The file path to context files for the jobs. **Important:** • You must change the default value to reflect the actual path to your configuration file. • CMMS_ID and SOURCE_SYSTEM_TYPE must be set in the context file.

8. Select **Run**.
9. Repeat steps 6 on page 114 through 8 on page 114 for all adapters.

Run the Static Data Job

The Static Data job populates the database with static site information. This topic describes how to run this job.

Procedure

1. Open and log in to the APM Connect Administration Center web application.

   Note: The user logging in must have access to the Job Conductor by being designated the Operations Manager role. By default, users designated admin do not have Job Conductor permissions.
2. Select **Job Conductor**.
3. In the **Job Conductor** workspace, select an appropriate project, and then select the CreateStaticData Job.
4. Select **Run**.
   The static data pull is enabled.

   You can now execute jobs.

Configure SAP Task and Confirmation Creation

In order to transfer data between SAP items and APM Task records and Event records for Inspection and Calibration, you will need to configure the datasheets used as the default datasheet.

Procedure

- Configure APM to Transfer Data Between SAP Items and Task Records
  1. Set the following baseline datasheets as the default datasheets on the Inspection and Calibration Task families:
     - Inspection Task for SAP Integration: Defined on the Inspection Task family.
     - Calibration Task for SAP Integration : Defined on the Calibration Task family.
- Configure APM to Create Confirmations from Calibration Event Records
  1. Set the following baseline datasheets as the default datasheets on the Calibration Event families:
     - Calibration, Analog: Defined on the Calibration, Analog family.
     - Calibration, Analyzer Multi-Component: Defined on the Calibration, Analyzer Multi-Component family.
     - Calibration, Analyzer Single Component: Defined on the Calibration, Analyzer Single Component family.

    - Calibration, Discrete: Defined on the Calibration, Discrete family.
    - Calibration, Functional Test: Defined on the Calibration, Functional Test family.
    - Calibration, Weight Scale: Defined on the Calibration, Weight Scale family.
- Configure APM to Create Confirmations from Inspection Event Records

    1. Set the following baseline datasheets as the default datasheets on the Inspection Event families:
        - Bundle Inspection SAP Integration: Defined on the Bundle Inspection family.
        - Bundle Sub-Inspection SAP Integration: Defined on the Bundle Sub-Inspection family.
        - Visual Inspection SAP Integration: Defined on the Full Inspection family.
        - General Inspection SAP Integration: Defined on the General Inspection family.
        - Pressure Test Inspection SAP Integration: Defined on the Pressure Test Inspection family.
        - Pressure Test Sub-Inspection SAP Integration: Defined on the Pressure Test Sub-Inspection family.

Add Entries to the /MIAPM/TASK_CNF Table

Procedure

1. In the SAP system, run the following transaction: `/n/MIAPM/MIPRO`.
   The Display IMG screen appears.
2. In the tree, expand **Configurations In SAP**.
3. Select **Maintain APM Parameters**.
   The **Meridium Configuration and Connection Parameters Management** window appears.
4. In the **APM Data Source** column, enter the APM data source(s) from which and to which you want to transfer data.
5. In the APM Application Server, enter your APM Application server(s).
6. Select .
   The **Meridium Configuration and Connection Parameters Management** window closes.
7. In the **Maintain Task Configuration Parameters** row, select .
   The **Task Configuration** screen appears.
8. In the APM Data Source list, select the APM data source for which you want to identify which Operation values will create which Task records.

   Note: When defining the data sources, you must maintain the value for the App Server field.
9. Select .
   The **Display View "Meridium Task Configuration Table": Overview** screen appears. The following example illustrates the baseline table in an SAP system whose Client number is 000. Notice that there are two rows: one for Calibration Task records and one for Inspection Task records. This example illustrates a configuration in which Operations with the control key ZMI2 are used to create Calibration Task records, and Operations with the control key ZMI1 are used to create Inspection Task records.
10. To specify criteria that will be used to trigger the creation of Calibration Task and Inspection Task records, modify the values in the existing rows, or build on top of the current functionality by adding new rows. This documentation assumes that you are familiar with your SAP data structure and that you know how to define the criteria to achieve the desired result.
11. Select .

The criteria is saved.

Configure the Query Get Tasks for Work Order Generation

The query Get Tasks for Work Order Generation is used to determine which Task records to use to create Orders in SAP.

About This Task

The query contains the Task query source. For each record that is returned by the query, APM will create an Order in SAP. The baseline query is configured to transfer Task records that meet specific criteria. If desired, you can modify the query to further limit the Task records that you want to transfer.

Procedure

1. Access the **Catalog** page.
2. In the left pane, select **Public**, then select **Meridium**, then select **Modules**, then select **SAP Integration Interfaces**, and then select **Queries**.
   A list of queries appears.
3. Select the **Get Tasks for Work Order Generation** query.
   The workspace appears.
4. Select **Design**.
5. Modify the query to meet at least the following requirements:
   - Contains the following column:
     - Field: ([Task].[Next Date]-[Task].[Call Horizon])
     - Alias: Expr
     - Criteria (>=(? :d :caption='Last Successful Execution Date': id=LAST_DATE) AND < Now())
   - Includes at least one field from the source family record.

Schedule Work Orders

Procedure

1. Access the **APM Connect** page.
   The **APM Connect Configuration** page appears.
2. Select **EAM Settings**.
   The **EAM Settings** page appears.
3. In the **Scheduling Properties** section, select **Edit Schedule**.

   Note: If there is a previously scheduled item, a schedule summary will be displayed next to the **Edit Schedule** button. If there is no scheduled item, Not scheduled appears next to the **Edit Schedule** button.
4. In the **Edit Schedule** window, select the **Recurrence** check box.
5. In the **Time Zone** box, select the appropriate time zone.
6. In the **Start** box, select to schedule the start date and time.
   a) Select one of the following as appropriate:
      - **The current date**: Select this option to use the current time and date as the starting point.
      - **Clear**: Select this option to clear the current selection.
      - **<Date>**: Select this option to use the selected date as the start date.

b) Select , and then select the appropriate time.
c) Select **Close**.

7. In the **Every** section, in the **Interval** box, enter the numeric value for how often you want the work order generation to occur.
8. In the **Every** section, in the **Units** box, select the interval unit (that is, minutes, hours, years, etc.).
9. In the **Every** section, in the **Begin** box, select one of the following:
   - **From start time**: Select this option to start the recurrence from the previously selected start time.
   - **After last occurrence**: Select this option to begin the generation after the last time the job ran.
10. In the **End** box, based on when you want the recurrence to end, select one of the following:
    - **Never**: If you select this option, the recurrence will not end.
    - **After**: If you select this option, you will enter a number of occurrences after which the generation will end.
    - **Time & Date**: Select this option to use the calendar to select a time and date when the generation will end.
11. Select **OK**.

    The schedule summary appears next to the **Edit Schedule** button. Additionally, the scheduled item can be viewed in the Scheduling feature in Operations Manager.

Identify Classifications to Extract

Before You Begin

Run the Static Data job.

Procedure

1. Access the APM application.
2. In the upper-right corner of the page, select and search for the CMMS Classification Type record representing the item whose classifications you want to extract (i.e., Equipment or Functional Location).
3. Select a record from the list.
4. Select the **Details** tab.
5. **Optional:** For each Classification whose Characteristics you want to extract, in the right column of the **Classification for Class Type** grid, select the **Extract From CMMS System** check box.
6. **Optional:** If you want to stop extracting all Characteristics for a Classification, clear the **Extract From CMMS System** check box for the Classification.
7. Select .

   The CMMS Classification records are saved.

Results

If you chose to stop extracting all Characteristics for a Classification:

- The **Extract From CMMS System** check box is cleared automatically in all CMMS Characteristic records that are linked to the CMMS Classification record.

- When you run the corresponding Characteristic extraction adapter, the Characteristics whose **Extract From CMMS System** check boxes were cleared automatically will not be extracted.

Identify Characteristics to Extract

Procedure

1. Open the CMMS Classification record representing the Classification whose Characteristics you want to extract. To do so, either:
   - Open the specific record in Record Manager.
   - Open the master CMMS Classification Type record to which it is linked, and then view the CMMS Classification record in the grid on the datasheet.
2. Select .
3. **Optional:** In the grid on the CMMS Classification datasheet, in the row for each Characteristic that you want to extract, select the **Extract From CMMS System** check box.
4. **Optional:** If you want to stop extracting a Characteristic, clear the **Extract From CMMS System** check box for the Characteristic.
5. Select .
   The CMMS Characteristic records are saved.
6. Commit the configuration by running the Static Data job.
   The Characteristics to extract have been identified.

Upgrade

Upgrade SAP Adapters to SAP UDLP V3.1.0

The following tables outline the steps that you must complete to upgrade this module to SAP UDLP V3.1.0.

Before You Begin

These instructions assume that you have completed the steps for upgrading the basic SAP UDLP V3.1.0 system architecture.

About This Task

The steps that you must complete may vary depending on the version from which you are upgrading. Follow the workflow provided in the appropriate section.

Procedure

- Upgrade from EAM SAP V2.0.0 through SAP UDLP V3.1.0
  1. Complete the steps to deploy the SAP Adaptors for the first time.
- Upgrade from APM Connect V1.0.0 through V2.0.0
  1. Upgrade the APM Connect Base.
  2. Complete the steps to deploy the SAP Adaptors for the first time.

Chapter 12

Deployment and Upgrade: SAP PI

Topics:

- First-time Deployment

First-time Deployment

Deploy the SAP PI Adapters for the First Time

The following table outlines the steps that you must complete to deploy and configure this module for the first time. These instructions assume that you have completed the steps for deploying the basic APM system architecture.

About This Task

Important: You must deploy the SAP adapters before deploying the SAP PI adapters.

These tasks may be completed by multiple people in your organization. We recommend, however, that the tasks be completed in the order in which they are listed.

Results

Task	Notes
Create an SAP PI EAM System Record	This step is required.
Import the Design Objects on page 167	This step is required.
Import the Configuration Object on page 168	This step is required.
Modify the Baseline Communication Channels on page 169	This step is required.
Activate the RFCReceiver_SAP Object on page 171	This step is required.
Define the Command Name in SAP on page 172	This step is required.
Install the SAPCAR File on the APM Connect Server on page 173	This step is required.
Create SAP PI Directory Structure on page 173	This step is required.

Create a Maximoan SAPan SAP Pla ServiceMax EAM System Record

You must configure an EAM System record to establish a connection between any EAM system and APM.

Procedure

1. Create a new EAM System record.
2. In the **Datasheet ID** box, select **MaximoSAPSAP PIServiceMax**.

   Note: If your SAP system requires an RFC connection, select **SAP System for RCMO**.
3. In the **Name** box, enter the name of your system.
4. If this system is the system to and from which you want to send data by default, select the **Default EAM System?** check box.
5. In the **System Type** box, select **MaximoSAPSAP_PISERVICE_MAX**.

   If you are defining an SAP System for RCMO, the box is not available.
6. In the **User ID** box, enter a valid User ID.
7. In the **Password** box, select .

8. In the **Enter EAM System Password** window, in the **Password** box, enter the password that is associated with the specified user ID.
9. In the **Confirm Password** box, reenter the password.
10. Select **OK**.
11. In the **Connection String** box, modify the template connection string.
    a) Replace the text SAP_SERVER_IP with the IP address of the Server.
    b) Replace the text SAP_SYSTEM_NUMBER with the System number.
    c) Replace the text SAP_CLIENT_NUMBER with the Client number.
    d) Delete all angle brackets.
12. **Optional:** In the **ITS URL** box:
    a) Replace the text: *its_or_integrated_its_server_url* with the ITS Server information. To locate the ITS Server information:
        i. In SAP, run the following transaction: `SE80`.

        Note: If you do not have access to this transaction, contact your SAP BASIS team for assistance.
        ii. In the toolbar, select **Utilities**, and then select **Settings**.
        iii. In the window, select repeatedly until the **Internet Transaction Server** tab appears.
        iv. Select the **Internet Transaction Server** tab.
        The ITS Server information that you must enter in the **ITS URL** box in APM is `<Log><Path>`, where <Log> is the text in the **Log** section and <Path> is the text in the **Path** section.
    b) Delete the angle brackets.
    c) Enter: `webgui/!` at the end of the URL.
    For example, the ITS URL that corresponds with the values in the example above is `http://myhost.com:8000/sap/bc/gui/sap/its/webgui/!`.
13. In the **Web Service URL** box, enter the URL for the Maximo Web Services that will extract the data.
14. In the **Language** box, enter the code of the language for this connection (for example, EN).
15. In the **Service Request Family Name** box, enter the table name for the Service Request in Maximo (this value is usually MISR).
16. In the **Work Order Family Name** box, enter the table name for the Work Order in Maximo (this value is usually MIWO).
17. In the **WO or SR** box, enter the default notification type to be created. This value can either be WO or SR.
18. In the **Default Site ID** box, enter the Site under which the WO or SR should be created if it is not provided in the notification the system receives.
19. **Optional:** Select **Use Rest** to have the system use REST requests to create service requests or work orders.
20. In the **Connection String** box, replace the template connection string with the URL of the ServiceMax application endpoint, for example, `https://login.salesforce.com/services/oauth2/token`.
21. In the **Auth Client** box, enter the ID of the client.
22. In the **Auth Client Secret** box, select .
23. In the **Auth Client Secret** box, enter the secret associated with the specified user ID.
24. In the **Confirm Client Secret** box, reenter the client secret.

25. Select **OK**.
26. In the **SAP PI Host** box, enter the name of the SAP PI Host server.
27. In the **SAP PI Port** box, enter the port number associated with the SAP PI Host server.
28. In the **SAP PI Receiver Party** box, enter the receiver party configured in the SAP PI ID configurations.
29. In the **SAP PI Receiver Service** box, enter the receiver service configured in the SAP PI ID configurations.
30. In the **SAP PI Sender Party** box, enter the sender party configured in the SAP PI ID configurations.
31. In the **SAP PI Sender Service** box, enter the sender service configured in the SAP PI ID configurations.

    You must perform this step for every culture you have defined in your configuration. For example, if your source system supports English and German, you will have the English EAM record will be configured with `GE_APMCONNECT_EAM_EN` and the German EAM record will be configured with `GE_APMCONNECT_EAM_DE`.
32. **Optional:** Select the **SAP PI AAE** check box, to use the Advanced Adapter Engine (AAE).

    Note: This capability is only available with SAP PI 7.3 or later.
33. Select .
    The EAM System record is saved.
34. Select , and then select **Test Connection**.
    The connection parameters are verified, and the **System ID** box is populated with your EAM System Name.

Results

- An EAM system record is created for the EAM system that defines a connection with APM. The ID for this EAM record should now be used in the Name field of a Site Reference record.
- Linking an EAM system to an EAM System record enables the APM Connect Adapters to create Notifications against that EAM System.

Import the Design Objects

Procedure

1. Access the APM Connect installation package.
2. Navigate to the folder that corresponds to the version of SAP PI that you are using. For example, if you are using SAP PI version 7.3, navigate to `SAP PI 730`.
3. Copy the file `APMConnect_DesignObjects_BaseV4.tpz`.
4. Paste copied file
   - To use a server: on the SAP PI Server, paste the copied file to the folder `\usr\sap\<SID>\SYS\global\xi\repository_server\import`, where <SID> is the system ID of the SAP PI Server.
   - For a local machine: Paste the copied file anywhere on your local machine.
5. Log in to SAP as administrator.
   - If you are using a version prior to SAP PI 7.3, select **Integration Repository**.
   - If you are using SAP PI 7.3 or above, select **Enterprise Services Builder**.

   A login screen appears.

Depending on the SAP PI Server version you are using, the **Design: Integration Builder** window or the **Enterprise Services Builder** window appears.

6. On the **Tools** menu, select **Import design objects**.
   The **Choose Import Source** window appears.
7. Select **Client** if the file copied in step 4 on page 167 was pasted onto your local machine, or select **Server** if the file copied in Step 4 on page 167 was pasted into the folder `\usr\sap\<SID>\SYS\global\xi\repository_server\import` on the SAP PI Server.
8. Select the **Design Objects** folder.
9. Select the file `APMConnect_DesignObjects_BaseV4.tpz`, and then select **OK**.
   A confirmation window appears.
10. Select **Import**.
    The file is imported.
11. Select the file `APMConnect_DesignObjects_SupportPackV4.tpz`, and then select **OK**.
    A confirmation dialog box appears.
12. Select **Import**.
    The file is imported.
13. Select **Close**.
    The design objects are imported and appear in the **Objects** section.

Import the Configuration Object

For SAP PI to operate correctly with APM, you must import configuration objects SAP PI requires.

About This Task

Procedure

1. Access the APM Connect installation package.
2. Navigate to the folder that corresponds to the version of SAP PI that you are using. For example if you are using SAP PI version 7.3, navigate to `SAP PI 730`.
3. Copy the file `APMConnect_ConfigurationObjectsV4.tpz`.
4. Paste the copied files.
   - On an SAP PI Server: paste the copied file into the folder `\usr\sap\<SID>\SYS\global\xi\directory_server\import`, where <SID> is the system ID of the SAP PI Server.
   - On a local machine: paste the copied file anywhere on your local machine.
5. In a web browser, navigate to `http://<SAP PI Server>:<port number>/rep/start/index.jsp`, where <SAP PI Server> is the name of the SAP PI Server and <port number> is the port number of the specified SAP PI Server.
   The **SAP Exchange Infrastructure** window appears.
6. Select **Integration Directory**.
   A login screen appears, prompting you to log in to the Configuration: Integration Builder.
7. Log in as an administrator.
   The **Configuration: Integration Builder** window appears.
8. In the **Tools** menu, select **Import configuration objects**.
   The **Choose Import Source** window appears.
9. Select **Client** if the file copied in step 3 on page 168 was pasted onto your local machine, or select **Server** if the file copied in step 3 on page 168 was pasted into the folder `\usr\sap\<SID>\SYS\global\xi\directory_server\import` on the SAP PI Server.

10. Select the **Configuration Objects** folder.
11. Select the file `APMConnect_ConfigurationObjectsV4.tpz`, and then select **OK**.
    A confirmation window appears.
12. Select **Import**.
    The file is imported, and a confirmation message appears.
13. Select **Close**.
    The configuration object is imported, and the objects appear in the Configuration Integration Builder.
14. **Optional:** If you are enabling multiple cultures from a single source system, for each language supported, copy the objects in the Configuration Integration Builder, and then configure the interfaces to the communication channel for each specific culture.
    For example, after completing this step, the Spanish culture has a communication channel named GE_APMCONNECT_EAM_ES that has copies of all the interfaces configured.

Modify the Baseline Communication Channels

Use this procedure to configure the baseline SAP PI communication channels.

About This Task

notes:

- If the FILE_MOVE_USE_PI parameter is set to false in the context file, you can skip this procedure, except step 9 on page 171 if you are using SSL.
- These instructions describe using the SAP PI 7.3 configuration interface. Different versions may have minor differences in interface labels or steps.

The SAP PI adapters have the following baseline communication channels that you will need to modify:

- FileSender_SAP_Equipment
- FileSender_SAP_FLOC
- FileSender_SAP_PlannedWork
- FileSender_SAP_StaticData
- FileSender_SAP_TC_EQUI
- FileSender_SAP_TC_IFLOT
- FileSender_SAP_WMI
- FileSender_SAP_Workhistory
- FileReceiver_APMConnect_Equipment
- FileReceiver_APMConnect_FLOC
- FileReceiver_APMConnect_PlannedWork
- FileReceiver_APMConnect_StaticData
- FileReceiver_APMConnect_TC_EQUI
- FileReceiver_APMConnect_TC_IFLOT
- FileReceiver_APMConnect_WMI
- FileReceiver_APMConnect_Workhistory

Procedure

1. In a web browser, navigate to `http://<SAP PI Server>:<port number>/rep/start/index.jsp`, where <SAP PI Server> is the name of the SAP PI Server and <port number> is the port number of the specified SAP PI Server.
   The **SAP Exchange Infrastructure** window appears.

2. Select **Integration Directory**.
   A login screen appears, prompting you to log in to the Configuration: Integration Builder.
3. Log in as an administrator.
4. In the **Configuration: Integration Builder** window, in the **Scenarios** section, expand the **GE_APMConfigurations** row.
5. Expand the **Communication Channel** row.
   The row expands, and the following APM Connect Communication Channels appear:
   - FileReceiver_APMConnect_Equipment
   - FileReceiver_APMConnect_FLOC
   - FileReceiver_APMConnect_PlannedWork
   - FileReceiver_APMConnect_StaticData
   - FileReceiver_APMConnect_TC_EQUI
   - FileReceiver_APMConnect_TC_IFLOT
   - FileReceiver_APMConnect_WMI
   - FileReceiver_APMConnect_Workhistory
   - FileSender_SAP_Equipment
   - FileSender_SAP_FLOC
   - FileSender_SAP_PlannedWork
   - FileSender_SAP_StaticData
   - FileSender_SAP_TC_EQUI
   - FileSender_SAP_TC_IFLOT
   - FileSender_SAP_WMI
   - FileSender_SAP_Workhistory
6. Configure the FileReceiver communication channels by performing these steps for each channel, replacing *<interface>* with the appropriate interface name.
   a) Select **FileReceiver_APMConnect**.
      The **Display Communication Channel** screen appears.
   b) Select .
   c) In the **File Access Parameters** section, in the **Target Directory** column, enter the target directory file path, for example, `\\context\PLSAP_OUTPUT\<interface>\`.

      Important: This path must match exactly the IR_TALEND_OUTPUT parameter in the context file.
   d) In the **File Name Scheme** column, enter `*.*`.
   e) In the **Processing Parameters** section, in the **File Construction Mode** box, enter the value `Create`.
   f) Select the **Overwrite Existing File** check box.
   g) In the **Write mode** box, select **Directly**.
   h) In the **Empty-Message Handling** section, select **Write Empty File**.
   i) In the **Advanced** section, in the **Adapter-Specific Message Attributes** subsection, select the following options:
      - Set Adapter-Specific Attributes
      - File Name
      - File Type
   j) Select .
7. Configure the FileSender communication channels by performing these steps for each channel, replacing *<interface>* with the appropriate interface name.

a) Select FileSender_APMConnect_*<interface>*.
The **Display Communication Channel** screen appears.
b) Select .
c) In the **File Access Parameters** section, in the **Source Directory** column, enter the endpoint of the share between your SAP server and your SAP PI server exactly as it is in the PLSAP_INPUT parameter in the context file and corresponding interface folder name, for example, `\\context.PLSAP_INPUT\<interface>\`.
d) Select .
e) In the **File Name Scheme** column, enter `*.*`.
f) In the **Processing Parameters** section, in the **Poll Interval** box, enter the recommended value of `10`.
g) In the **Processing Mode** box, select **Delete**.
h) In the **Quality of Service** box, select **Best Effort**.
i) In the **Empty-File Handling** box, select **Process Empty Files**.
j) In the **Advanced** section, complete the following steps:
- In the **Adapter-Specific Message Attributes** section, select the following options:
  - **Set Adapter-Specific Message Attributes**
  - **File Name**
  - **File Type**
- In the **Adapter Status** section, in the **Status** box, select **Active**.
- Select the **Advanced Mode** check box.
- In the **Additional Parameters** section, in the **Msecs to Wait Before Modification** box, enter the recommended value of `1000` or more.

8. Select .
9. **Optional:** If you are using SSL, configure the SOAP channel to use SSL.
a) In the **Communication Channel** row, select **SOAPSender_APMConnect**.
b) In the **Communication Channel** menu, select .
c) In the **General** section, in the **HTTP Security Level** box, select **HTTPS Without Client Authentication**.
d) In the **Communication Channel** menu, select .
10. Select **Activate**.

Results
The communication channels are configured.

Activate the RFCReceiver_SAP Object

Use this procedure to activate the RFCReceiver_SAP Object for SAP PI.

Procedure

1. In the Configuration: Integration Builder, select the **Change Lists** tab.
2. In the **Change Lists** section, select **| GE_APM_SAP | RFCReceiver_SAP**.

Note: The **Error Loading Adapter Metadata** window may appear. If it appears, select **Close**.

The communication channel details appear on the screen.

3. Select .
4. In the **Parameters** section, in the **Adapter Type** row, select .
   The **Choose Adapter Metadata** window appears.
5. Select the latest RFC Adapter from the list, and then select **Apply**.
   The communication channel details return to focus.
6. In the **Properties** section, confirm or enter values for the following parameters:
   - RFC Server Type: this parameter must be set to SAP System.
   - Application Server
   - System Number
   - Authentication Mode: this parameter must be set to Use Logon Data for SAP System.
   - Logon User
   - Logon Password
   - Logon Language
   - Logon Client

   Note: If you are enabling multiple cultures from a single source system, you must repeat this step for every culture you need, specifying the correct Logon Language.
7. Select .
8. In the **Change Lists** section, right-click on **PI <version number** > **Import**, and then select **Activate**.
   A confirmation message appears.
9. Select **Activate**.
   The object is activated.

Define the Command Name in SAP

If you are using a compression option in the context file, you need to define the command name for the compression type you are using. There are two types of compressions for APM Connect SAPCAR and ZIP. You can only use one type of compression.

About This Task

Notes:

- If you are not using a compression method during the extraction, then you can skip this procedure.
- It is recommended to use SAPCAR as your compression type.

Procedure

1. In SAP, run the transaction code `SM69`.
   The **External Operation System Commands** screen appears.
2. Select .
   The **Create an External Command** screen appears.
3. In the **Command** section, in the **Command Name** box, enter one of the following the command names:
   - **ZSAPCAR**: if you are using SAPCAR for compression.
   - **ZZIP**: if you are using ZIP for compression.
4. In the **Definition** section, in the **Operating system command** box, enter one of the following systems commands:

- `SAPCAR -cvf`: if you are using SAPCAR for compression.
- `ZIP -9 -j`: if you are using ZIP for compression.

5. Select **Save**.
   The Command Name is defined.

Install the SAPCAR File on the APM Connect Server

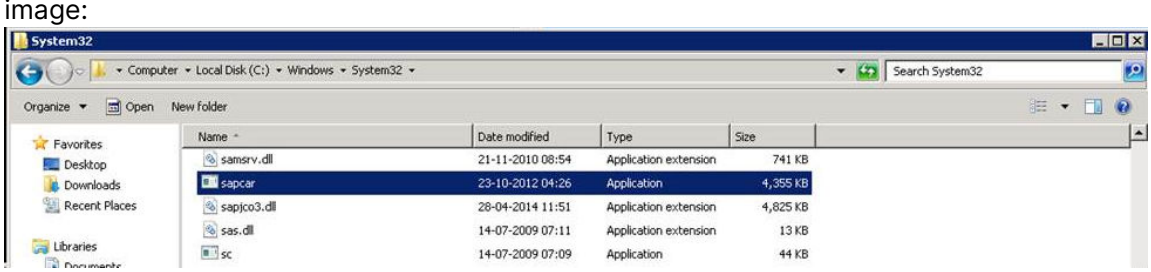
To use SAPCAR to compress files, you must install the file on the APM Connect Server.

About This Task

Note: If you are not using SAPCAR to compress files, then skip this procedure and proceed to the next procedure.

Procedure

1. On the SAP Server, copy the `SAPCAR.exe` file.
2. Access the APM Connect Server.
3. In the `windows\system32` directory, paste the `SAPCAR.exe` file, as shown in the following image:



Results

The SAPCAR file is installed.

Create SAP PI Directory Structure

You will need to set up a directory structure on your SAP server to facilitate transfers from SAP PI to APM Connect.

About This Task

The structure depends on the FILE_MOVE_USE_PI parameter and the COMPRESS_TYPE parameter usage in the context file.

Procedure

- On your SAP server, create one directory and subdirectory according to the following grid:

If FILE_MOVE_USE_PI is...	...and COMPRESS_TYPE is...	... create the following directory structure
false	NONE	`<root:>/<New Directory Name>`
false	ZIP or SAPCAR	`<root:><New Directory Name>/Compress`

If FILE_MOVE_USE_PI is...	...and COMPRESS_TYPE is...	... create the following directory structure
true	NONE	`<root:>/<New Directory Name>`
true	ZIP or SAPCAR	`<root:>/<New Directory Name>/Compress`
If you are running the adapters in FTP Mode		
true	NONE	`<root:>/<New Directory Name>/FTP`
true	ZIP or SAPCAR	`<root:>/<New Directory Name>/FTP/Compress`

Note: Each directory needs to be in a shared directory that APM Connect can access, and should be the base path value in PLSAP_INPUT parameter. Additionally, once the job is run, the compress directory will be programmatically added to the value PLSAP_INPUT in the context file.

The directories are created, and the SAP PI server and APM Connect server can extract files from the SAP sever.

Chapter 13

Reference

Topics:

- General Reference
- Family Field Descriptions
- SAP Adapter Mappings
- SAP PI Family Fields

General Reference

SAP Transactions-Quick Reference

The following table provides a list of SAP transactions and their functions.

This transaction:	...Lets you:
/n/MIAPM/MIPRO	View a list of APM-specific steps that can be performed in SAP.
/n/MIAPM/MANAGE_PARAMS	Access and manage the /MIAPM/PARAMS table.
/n/MIAPM/MANAGE_TSKCNF	Access the /MIAPM/TASK_CNF table.
SM37	Check the status of a background process.
IW43	Validate SAP Confirmations against that data in APM Confirmation records.

Requirements

SAP System Requirements

- SAP Backend System: The following versions are supported:
  - SAP ECC 6.0 (Enhancement Packs [EhP] 1 and above)
  - SAP S/4 HANA on-premises (1509, 1610, 1709, 1809, 1909, 2020, 2021)
- SAP Database: A database that contains the SAP data model and data.
- SAP Internet Transaction Server (ITS): Version 6.20 or higher.
- SAP Java Connector Files (SAP JCO) downloaded from the SAP marketplace, which contains the following files:
  - sapjco.dll
  - sapjco3.dll
  - sapjco3.jar

SAP PI System Requirements

- SAP Backend System: The following versions are supported:
  - SAP ECC 6.0 (Enhancement Packs [EhP] 1 and above)
  - SAP S/4 HANA on-premises (1509, 1610, 1709, 1809, 1909, 2020, 2021)
- SAP PI: An SAP PI system 7.00 and above, up to SAP PI/PO 7.50.

APM Connect User Profile Requirements

To successfully extract data from SAP, APM Connect needs authority objects, access to RFCs, and access to SAP Tables.

Authority Objects Required

APM Connect must have the authority objects listed.

Authorization Object	Description
C_TCLA_BKA	Authorization for Class Types
I_AUART	PM: Order Type
I_BEGRP	PM: Authorization Group
I_BETRVORG	PM: Business Operation
I_INGRP	PM: Maintenance Planner Group
I_KOSTL	PM: Cost Centers
I_QMEL	PM/QM: Notification Types
I_SWERK	PM: Maintenance Plant
I_WERK	PM: Maintenance Planning Plant
S_BTCH_JOB	Background Processing: Operations
S_DATASET	Authorization for File Access
S_LOG_COM	Required if file transfer is SFTP/SCP. For server mode this authorization is not required.
S_RFC	Authorization Check for RFC Access
S_TABU_NAM	Table Access with Generic Standard

RFCs Required

APM Connect must have access to the RFCs listed in the following table.

/MIAPM/*	RFC_GET_FUNCTION_INTERFACE	SYSTEM_RESET_RFC_SERVER
CLAF_CLASSIFICATION_OF_OBJECTS	RFCPING	RFC_PING
DDIF_FIELDINFO_GET	SYSTEM_RESET_RFC_CONNECTION	

SAP Tables Required

APM Connect must have access to the tables listed in the following table.

/MIAPM/*	CRHD	JEST	PRPS	T353I_T	TGSBT
AFVV	CRTX	JSTO	QMEL	T356_P	TJ02
AFKO	CSKT	KLAH	QMFE	T356_T	TJ02T
AFRU	CVERS	KSML	QMMA	T357	TJ30
AFVC	EAPL	KSSK	QMUR	T357A_T	TJ30T
AFVV	EQBS	MAKT	QPCT	T357M_T	TKA01
AUSP	EQKT	MHIS	SWOR	T370C_T	TQ80
BGMKOBJ	EQUI	MHIO	T001	T370F_T	TQ80_T

CABN	EQUZ	MMPT	T001W	T370K_T	VIAUFKST
CABNT	IFLO	MPLA	T003P	T370U	VIQMEL
CAWN	IFLOS	OBJK	T006	TAPL	VIMPLA
CAWNT	IFLOT	PLAS	T006A	TCLA	VIMPOS
COBK	IFLOTX	PLKO	T024I	TCURC	T399G_T
COEP	ILOA	PLPO	T350	TCURR	T356_T
COVP	INOB	PMCO	T352B_T	T499S	TGSBT
CRHD	CRTX	TCN00	TCN01	TCURC	TCURT
T399I	T001W	T411	T411T	t003o	t003p
T351X	T351P	TCF10	TCF11	DRAW	DRAT
T399W	T024I	T351	T351T	T024E	CSSL
CSLT	T006	T006A	T412	T412T	T024A
T024		TQ80	TQ80_T	T023	T023T
T430	T430T	TDWA	TDWAT	TFACD	TFACT
T006D	T006T	T370B_T	T357M_T	t353i	t353i_t
t350i	T435	T435T	T399W_T	CSKA	CSKU

SAP Interfaces Security Groups

The following table lists the baseline Security Groups available for users within this module, as well as the baseline Roles to which those Security Groups are assigned. In APM APM, Roles are assigned to Security Users through permission sets.

Important: Assigning a Security User to a Role grants that user the privileges associated with all of the Security Groups that are assigned to that Role. To avoid granting a Security User unintended privileges, before assigning a Security User to a Role, be sure to review all of the privileges associated with the Security Groups assigned to that Role. Also, be aware that additional Roles, as well as Security Groups assigned to existing Roles, can be added via Security Manager.

Security Group	Roles
MI SAP Interface Administrator	None
MI SAP Interface User	None

The baseline family-level privileges that exist for these Security Groups are summarized in the following table.

Family	MI SAP Interface Administrator	MI SAP Interface User
Entity Family		
Confirmation	View, Update, Insert, Delete	View, Update, Insert
Equipment	View, Update, Insert, Delete	View, Update, Insert

Family	MI SAP Interface Administrator	MI SAP Interface User
Functional Location	View, Update, Insert, Delete	View, Update, Insert
SAP System	View, Update, Insert, Delete	View
Site Reference	View	View
Work History	View, Update, Insert, Delete	View, Update, Insert
Work History Detail	View, Update, Insert, Delete	View, Update, Insert
Relationship Families		
Equipment Has Equipment	View, Update, Insert, Delete	View, Update, Insert, Delete
Functional Location Has Equipment	View, Update, Insert, Delete	View, Update, Insert, Delete
Functional Location Has Functional Location(s)	View, Update, Insert, Delete	View, Update, Insert, Delete
Has Confirmation	View, Update, Insert, Delete	View, Update, Insert, Delete
Has Event Detail	View, Update, Insert, Delete	View, Update, Insert, Delete
Has SAP System	View, Update, Insert, Delete	View, Update, Insert, Delete
Has Work History	View, Update, Insert, Delete	View, Update, Insert, Delete
User Assignment	View, Update, Insert, Delete	View, Update, Insert, Delete

About Site Filtering Configuration via the autojoin_control Table

Site Reference values are managed in the Intermediate Repository, specifically in the **autojoin_control** table as shown in the following image.

site_reference character varying	apm_site_reference_column character varying	apm_site_reference_family character varying	use_relationship_lookup character varying	default_site_reference character varying
#MI_FNCLOC00_SAP_SYSTEM_C#	MI_SITE_NAME	MI_FNCLOC00	0	*Global*
#MI_FNCLOC00_SAP_SYSTEM_C#	MI_SITE_NAME	<PRED_FAMILY_ID>	1	*Global*
#MI_EQUIP000_SAP_SYSTEM_C#	MI_SITE_NAME	MI_EQUIP000	1	*Global*

About the Baseline Site Reference Configuration

The baseline configuration of the SAP Adapters uses the SAP System to determine the site to which a record should be assigned. More specifically, the value in the **site_reference** column in the **autojoin_control** table is `#MI_FNCLOCOO_SAP_SYSTEM_C#` for Functional Location records and `#MI_EQUIPOO_SAP_SYSTEM_C#` for Equipment records.

Additionally, if SAP System value is null or empty on a record in SAP, once transferred into APM, it will be assign the site reference defined in the **defaut_site_reference** column in the **autojoin_control** table. The default value is `*Global*`.

If you want to use your SAP System as the site for all records transferred from SAP to APM then no additional configuration is needed. However, if necessary, you can configure different site reference values.

Important: A Site Reference record corresponding to your SAP System(s) must exist in APM before you can transfer records.

About the autojoin_control Table

You can specify site references using the **autojoin_control** table. The columns in this table are described in the following table.

Column	Description
AUTOJOIN_ID	Surrogate ID used to uniquely identify a row; i.e., the primary key.
BATCH_NAME	When a load is processed, queries defined in this table are run together in batches. All queries with the same BATCH_NAME are executed together.
TABLE_NAME	The name of the temporary table that will be created for this row. This name will be concatenated by the load UUID.
SQL_EXECUTION_ORDER	Within a batch, the value in this column defines the order in which the SQL statements will be executed. Lower numbers will be executed first.
SQL	The SQL SELECT statement to be executed. The results of this statement will be copied to the temporary table defined by the load UUID and the TABLE_NAME column. Columns defined in the SELECT statement should match exactly the column names in the APM family for which data is being loaded.
SITE_REFERENCE	This column specifies the value to use for the corresponding record's Site Reference Key. This can be a direct site reference (i.e., a specific site reference name) or it can contain an indirect site reference (i.e., a field that contains the site reference name to use). See Configure Site Reference Values for details. **Note:** The baseline value is `#MI_FNCLOCOO_SAP_SYSTEM_C#` for Functional Location records and `#MI_EQUIPOO_SAP_SYSTEM_C#` for Equipment records. This means the SAP System will determine to which site records are assigned.
APM_SITE_REFERENCE_COLUMN	The APM column used to store Site Reference values. Unless you have customized the APM database, this value should be `MI_SITE_NAME`.
APM_SITE_REFERENCE_FAMILY	The APM family to which the site reference will be applied. When the relationship is being built within the records of the same entity, the value is <PRED_FAMILY_ID>. Unless you have customized the APM database, you do not need to modify this value.

Column	Description
USE_RELATIONSHIP_LOOKUP	This column specifies whether the row is for an entity or relationship. If this row is populating a relationship, the value should be 1. If not, the value should be 0. This affects the way relationship references are defined in the resulting SQL statements.
DEFAULT_SITE_REFERENCE	If an indirect site reference is specified, this value defines the Site Reference Key that should be used if the value in the specified indirect site reference column is NULL. • Enter `*Global*` to assign the site as global • Enter the name of a site to assign records to that site.

About File Shares and APM Connect

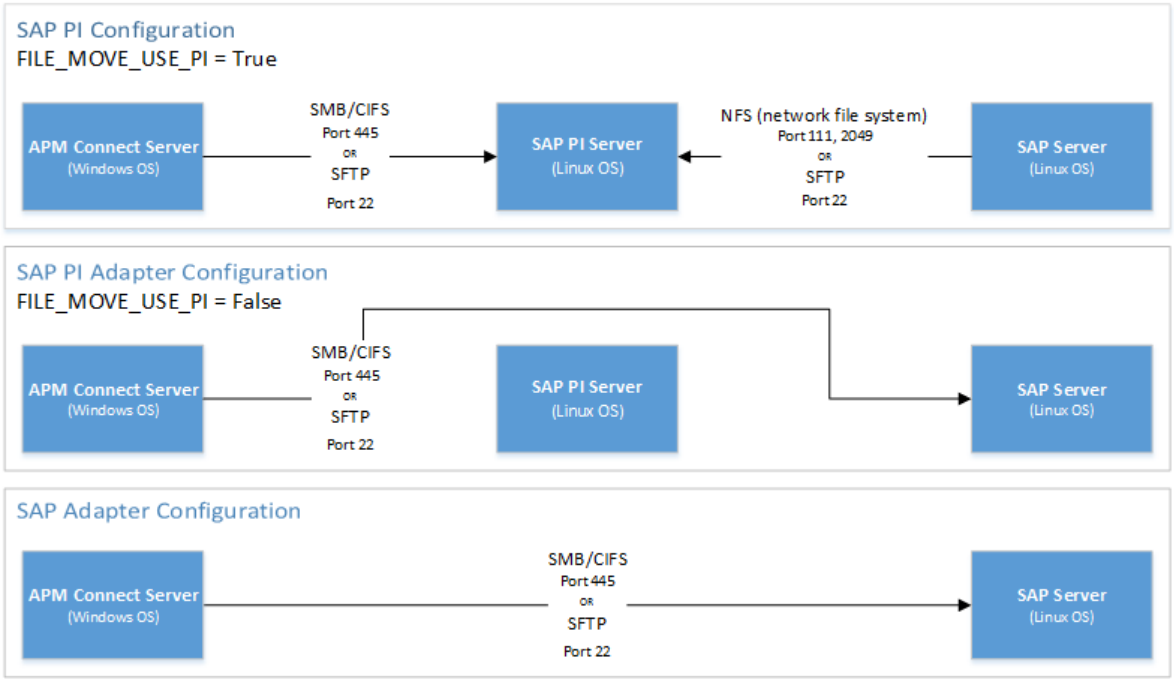
File shares mounted in the APM Connect architecture allow you to read and write files between servers within your architecture configuration.

File Mount Configurations

If you are using SAP PI, create a file share on your APM Connect server, and then mount it to your SAP PI server. Then, create a share on your SAP server, and then mount to your SAP PI Server. Similarly, if you are not using SAP PI, or you are bypassing your SAP PI server, you must create a file share on your APM Connect server, and then mount it to your SAP Server.

Note: The SAP PI Adapters determine if SAP PI server will be used via the FILE_MOVE_USE_PI parameter in the context file. If the parameter is true, then SAP PI will be used to copy files from your SAP server to your APM Connect server. If it is false, SAP PI will not be used to copy files from your SAP server to your APM Connect sever. In both configurations however, the SAP PI server will be used to proxy RFC calls.

Additionally, in the most common architecture, the APM Connect server is hosted on a Windows Sever with the SAP server and the SAP PI server hosed on a Linux server. The following diagrams details the recommended configurations.



User's Permissions for File Shares

When using a shared file system to facilitate data extraction from SAP to APM Connect, you will need to grant the service account user(s) the appropriate permissions to access both systems.

Note: Using active directory to manage the service account is recommended.

The volume to be mounted can be in three configurations: NAS/SAN, Windows, or Unix. Additionally, access control could be different for each configuration, as shown in the following table:

Tip: When the shares are created and permissions configured correctly, run the equipment job for a single equipment ID. This is a quick and easy way to check that permissions are set up correctly. After you run the job, a file will be created using the SAP service account, then opened and read by the APM Connect system.

Volume (Disk, Share, LUN)	Access Control
NAS/SAN	Vendor specific user mapping (i.e. NetApp), or active directory integrations.
Windows	Users/Groups permissions are defined in Active Directory.
Unix	Active Directory integration, or user maps (i.e. Samba or Config).

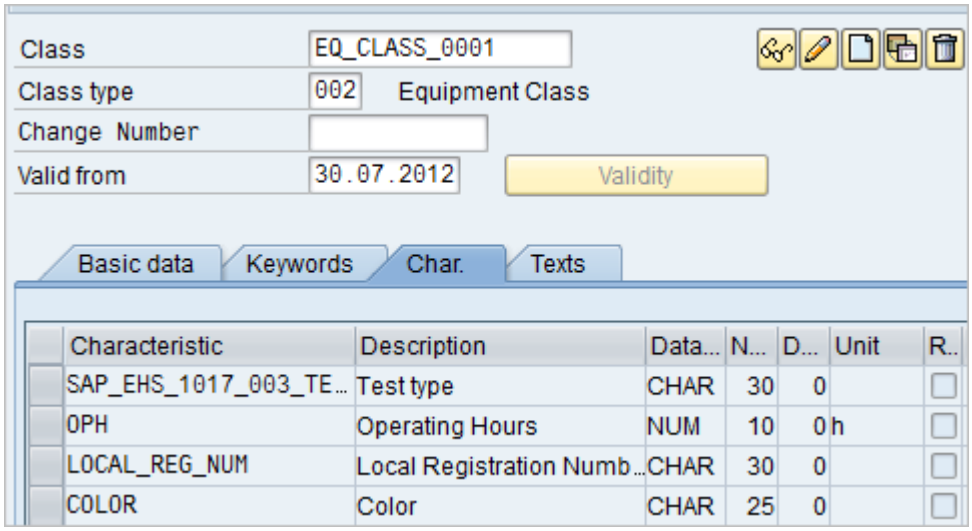
About Classification Hierarchies

In SAP, for any given class, multiple characteristics can be inherited from another class.

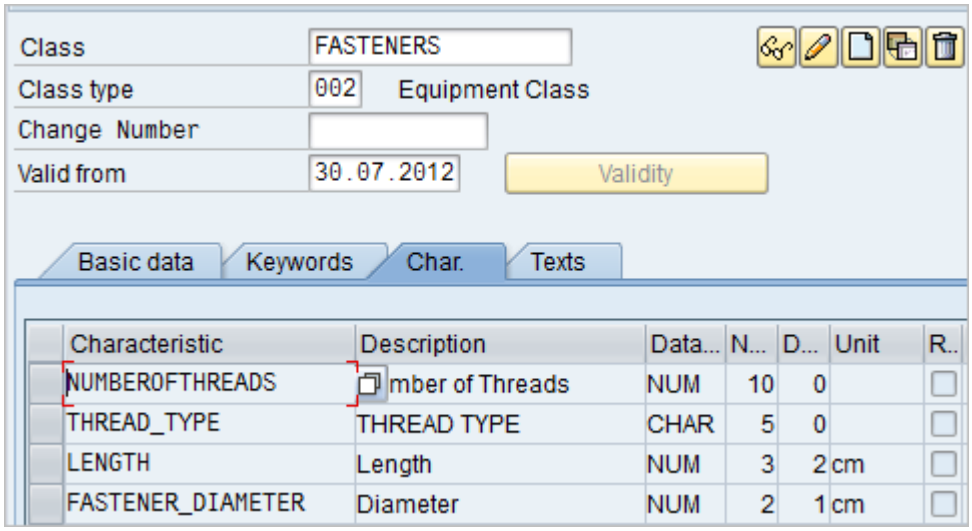
For example, consider the following SAP classes:

- EQ_CLASS_0001
- Fasteners
- Bolts
- Hexagonal Bolt

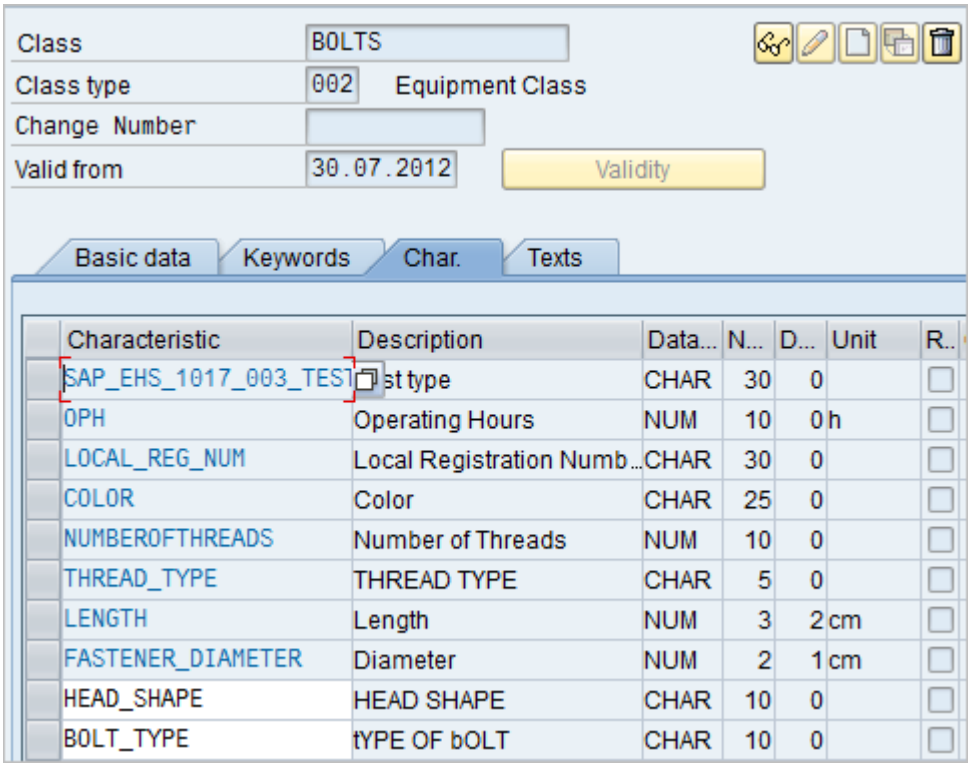
As shown in the following image, EQ_CLASS_0001 has four unique characteristics:



As shown in the following image, Fasteners also has four sets of unique characteristics:

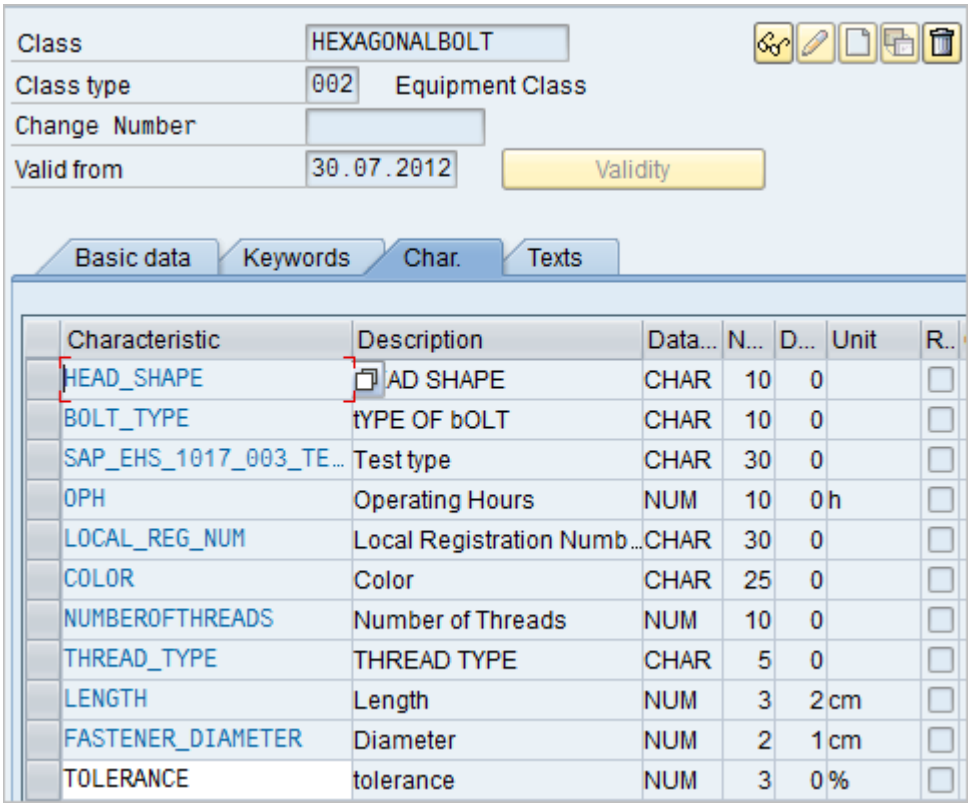


Bolts, however, inherits all of the characteristics from EQ_CLASS_0001 and FASTENERS. In addition, Bolts has two unique characteristics of its own: HEAD_SHAPE and BOLT_TYPE:



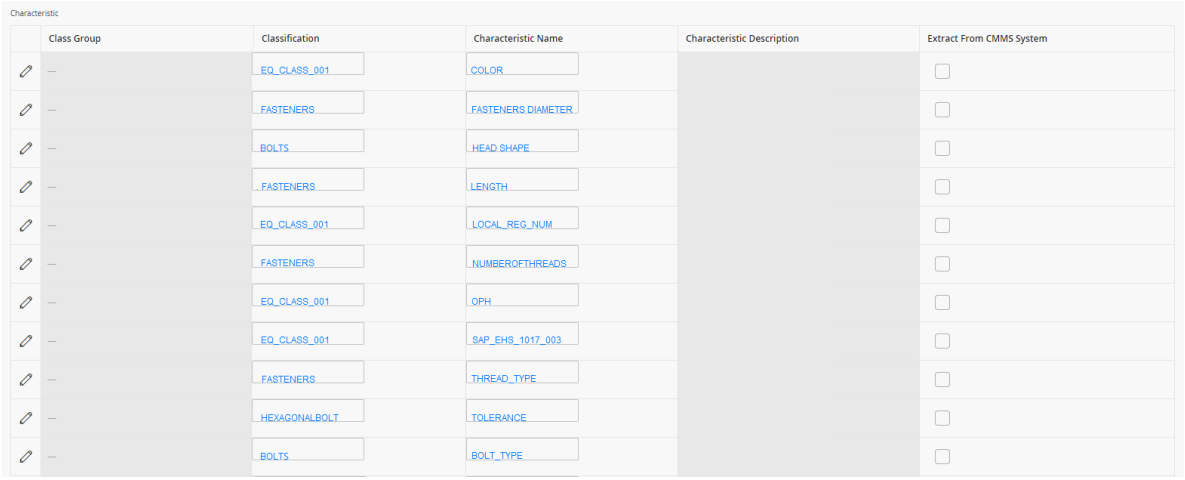
Characteristic	Description	Data...	N...	D...	Unit	R..
SAP_EHS_1017_003_TEST	st type	CHAR	30	0		
OPH	Operating Hours	NUM	10	0	h	
LOCAL_REG_NUM	Local Registration Numb...	CHAR	30	0		
COLOR	Color	CHAR	25	0		
NUMBEROFTHREADS	Number of Threads	NUM	10	0		
THREAD_TYPE	THREAD TYPE	CHAR	5	0		
LENGTH	Length	NUM	3	2	cm	
FASTENER_DIAMETER	Diameter	NUM	2	1	cm	
HEAD_SHAPE	HEAD SHAPE	CHAR	10	0		
BOLT_TYPE	tYPE OF bOLT	CHAR	10	0		

Finally, Hexagonal Bolt also inherits all of the characteristics from EQ_CLASS_0001, FASTENERS, and BOLTS. It also has one unique characteristic of its own: TOLERANCE:



Characteristic	Description	Data...	N...	D...	Unit	R..
HEAD_SHAPE	AD SHAPE	CHAR	10	0		
BOLT_TYPE	tYPE OF bOLT	CHAR	10	0		
SAP_EHS_1017_003_TE...	Test type	CHAR	30	0		
OPH	Operating Hours	NUM	10	0	h	
LOCAL_REG_NUM	Local Registration Numb...	CHAR	30	0		
COLOR	Color	CHAR	25	0		
NUMBEROFTHREADS	Number of Threads	NUM	10	0		
THREAD_TYPE	THREAD TYPE	CHAR	5	0		
LENGTH	Length	NUM	3	2	cm	
FASTENER_DIAMETER	Diameter	NUM	2	1	cm	
TOLERANCE	tolerance	NUM	3	0	%	

Using these SAP classes, in APM system, if you were to select the **Extract From CMMS System** check box for the HEXAGONALBOLT class, after selecting the **Synchronize Characteristics** link while viewing the HEXAGONALBOLT CMMS Classification record, the following CMMS Characteristic records would be created automatically:


Characteristic

	Class Group	Classification	Characteristic Name	Characteristic Description	Extract From CMMS System
		EQ_CLASS_001	COLOR		
		FASTENERS	FASTENERS DIAMETER		
		BOLTS	HEAD SHAPE		
		FASTENERS	LENGTH		
		EQ_CLASS_001	LOCAL_REG_NUM		
		FASTENERS	NUMBEROFTHREADS		
		EQ_CLASS_001	OPH		
		EQ_CLASS_001	SAP_EHS_1017_003		
		FASTENERS	THREAD_TYPE		
		HEXAGONALBOLT	TOLERANCE		
		BOLTS	BOLT_TYPE		

As you can see from the Classification column, some of the characteristics are inherited from other classes:

Specifically, you can see that:

- The following characteristics are inherited from the class EQ_CLASS_0001:
  - COLOR
  - LOCAL_REG_NUM
  - OPH
  - SAP_EHS_1017_003_TEST_TYPE
- The following characteristics are inherited from the class FASTENERS:
  - FASTENER_DIAMETER
  - LENGTH
  - NUMBEROFTHREADS
  - THREAD_TYPE
- The following characteristics are inherited from the class BOLTS:
  - HEAD_SHAPE
  - BOLT_TYPE
- The characteristic TOLERANCE is assigned directly to the class HEXAGONALBOLT (no highlighting).

If you selected the **Extract From CMMS System** check boxes for all of these characteristics, if you were to run the Equipment Characteristics Extraction Interface without filters, all of these characteristics would be extracted.

If, however, you were to filter the report to extract only characteristics belonging to the HEXAGONALBOLT class, only characteristics that are assigned directly at the HEXAGONALBOLT level would be extracted. In other words, because only TOLERANCE is assigned directly to HEXAGONALBOLT, only the TOLERANCE characteristic would be extracted.

About Extracting Characteristics

When you create CMMS Classification Type records using the CMMS System list, you must select the SAP system from which you want to extract characteristics belonging to that classification type.

Note: If you using SAP PI, Classification and Characteristic synchronization are not supported.

The **CMMS System** list displays the values in the Name field in all existing EAM System records. When you save the CMMS Classification Type record, the APM system finds the EAM System record whose Name field contains the selected value, and the value in the System ID field in that EAM System record is copied to the CMMS System ID field in the CMMS Classification Type record.

Then, when you create CMMS Classification or CMMS Characteristic records that are associated with that CMMS Classification Type record, the value in the CMMS System ID field in the CMMS Classification Type record is copied automatically to the CMMS System ID field in those records.

CMMS Characteristic records are created automatically and linked to the CMMS Classification record. Each CMMS Characteristic record is created from a characteristic that currently exists in the specified SAP system (using the CMMS System field in the CMMS Classification record). The CMMS Characteristic records are displayed in a grid on the CMMS Classification datasheet.

Note: The System ID field is available on the baseline EAM System datasheet, but the CMMS System ID field is not available on the baseline CMMS Classification Type, CMMS Classification, or CMMS Characteristic datasheets.

When you run the Equipment Characteristic Extraction Interface or the Functional Location Characteristic Extraction Interface, APM needs to determine which specific characteristics to extract from that system. To do so, it evaluates the CMMS Characteristic records that exist in your APM database. If it finds any CMMS Characteristic records whose CMMS System ID field value identifies the SAP system from which you are running the interface, it will extract only those characteristics from that SAP system (assuming that the **Extract from CMMS System** check box is selected in the CMMS Characteristic record).

About Site Filtering Configuration in the Context File

The EAM Adapters are used to populate the Site Reference on Equipment, Functional Location, and Work History records in APM.

Note: This site filtering configuration applies only to SAP PI deployment. If you are deploying the SAP Adapters, site filtering is handled by modifying the autojoin_control table.

Important:

- Site Reference records must exist in your APM system, before you can use the EAM Adapters to populate the Site Reference Key. Additionally, the site entered into the context file must match the exact value in the corresponding Site Reference record.
- The user who is running the EAM Adapters jobs must be assigned, in APM, to the site to which the records being loaded will be assigned. Additionally, the credentials for that user must be entered into the context file. If the user is not a member of the appropriate site, then the data load will fail, and an error message will appear.

The adapters populate the MI_SITE_KEY system field with the ENTY_KEY system field associated with the Site Reference value to be populated. On asset records, the Site

Reference is stored in the MI_SITE_KEY field, a system field in APM. The EAM Adapters use the Site Name (MI_SITE_NAME) to translate the value to the corresponding Site Reference Key and populate the MI_SITE_KEY field; therefore, you do not need to know the key to be able to populate the site reference. This functionality is important because this value can change from one database to another.

When records are loaded using the Equipment, Function Location, and Work History Adapters, the system will assign the Site Reference Key (MI_SITE_KEY) to the assets using the value designated in the applicable context file (that is, the file for SAP or for Maximo). The following parameters are used to designate the Site Reference Key value:

- SITE_REFERENCE_EQUIP: Used to populate the Site Reference Key on Equipment records being loaded into APM. The Site Reference Key determines the Site to which the Equipment record(s) will be assigned.
- SITE_REFERENCE_FLOC: Used to populate the Site Reference Key on Functional Location records loaded into APM. The Site Reference Key determines Site to which the Functional Location record(s) will be assigned.

  Note: The values entered into these parameters should match, because Equipment records are linked to Functional Location records. Therefore, they should have the same site.

These parameters accept two types of values to determine the site reference value.

1. Site Name: You can enter the site name directly as defined on the preexisting Site Reference record (i.e., Site 100).
2. Column Name: You can enter a column value between two pound symbols (#) to set the site reference. The following columns can be used:
   - SAP columns:
     - MI_EQUIP000_SAP_SYSTEM_C
     - MI_EQUIP000_MAINT_PLANT_C
     - MI_FNCLOC00_MAINT_PLNT_C
     - MI_FNCLOC00_SAP_SYSTEM_C

   For example, if you wanted to use your SAP maintenance plant field as your APM site reference, you would enter #MI_EQUIP000_MAINT_PLANT_C#.
3. Null: You can leave the value as null. The record will be a global record if a Site Reference value is not mapped in between the tags.
   If the assets being loaded into APM are global records, meaning they will not be filtered according to site, then the Site Reference parameters can be left blank. When records are loaded with a null values in their Site Reference parameters, those created asset records will be designated as Global.

After the adapters are run, records designated to be transferred into APM will be assigned to the site defined in the Site Reference parameters.

In addition to Equipment and Functional Location records loaded by the EAM adapters, Work History records and shell records are impacted by site reference functionality as detailed in the following table.

Action	Result
If the Work History Adapter is run after the Equipment or Functional Location Adapter...	The Work History records will inherit the Site Reference Key of their parent Functional Location or Equipment records.
If the Work History Adapter is run before the Equipment or Functional Location Adapter...	The Site Reference Key will be inherited from the shell record that will be created for Equipment and Functional Location.
If a shell record is created while loading data...	The Site Reference Key will be the value set in the context parameters.

Note: If you are using multiple SAP Systems, you must set up a context file for each system, and then designate the appropriate site(s) for each EAM Systems.

Family Field Descriptions

CMMS Characteristic

CMMS Characteristic records are used by the SAP Adapters to facilitate data extracts and loads to and from SAP.

This topic provides an alphabetical list and description of the fields that exist for the CMMS Characteristic. The information in the table reflects the baseline state and behavior of these fields.

This family is enabled for site filtering, which means that records in this family can be assigned to a specific site and will only be accessible to users who are assigned to the same site and have the appropriate license and family privileges. For more information, refer to the Sites section of the documentation.

Field	Data Type	Description	Behavior and Usage
Characteristic Description	Character	The description of the characteristic (as it is defined in the SAP system).	This field is disabled.
Characteristic Name	Character	The ID of the characteristic (as it is defined in the SAP system).	On the datasheet, the value in this field is formatted as a hyperlink, which you can select to open the CMMS Characteristic by itself, outside of the context of its master CMMS Classification record. This field is disabled.
Class Group	Character	The SAP class group to which this characteristic belongs.	The value in this field is set automatically, and this field is disabled.
Classification	Character	The classification to which this characteristic belongs.	On the datasheet, the value in this field is formatted as a hyperlink, which you can select to open the CMMS Classification record representing the classification to which this characteristic belongs. This field is disabled.

Field	Data Type	Description	Behavior and Usage
CMMS System ID	Character	The ID of the SAP System from which this characteristic will be extracted.	This field is populated automatically and used internally by the APM system. This field is not available on the baseline datasheets.
Extract From CMMS System	Boolean	A value that identifies whether or not this characteristic will be extracted.	On the datasheet, you can select this check box if you want to extract this characteristic.

CMMS Classification

CMMS Classification records are available on the baseline Classification Type Classifications master-detail datasheet, the table explains how these fields behave when you are viewing CMMS Classification records in the context of this master-detail record.

This topic provides an alphabetical list and description of the fields that exist for the CMMS Classification family. The information in the table reflects the baseline state and behavior of these fields.

This family is enabled for site filtering, which means that records in this family can be assigned to a specific site and will only be accessible to users who are assigned to the same site and have the appropriate license and family privileges. For more information, refer to the Sites section of the documentation.

Field	Data Type	Description	Behavior and Usage
Class Group	Character	The SAP class group to which this classification belongs.	The value in this field is set automatically, and this field is disabled.
Classification	Character	The ID of the classification (as it is defined in the SAP system).	On the datasheet, the value in this field is formatted as a hyperlink, which you can select to see all of the characteristics that belong to this classification. This field is disabled.
Classification Description	Character	The description of the classification (as it is defined in the SAP system).	This field is disabled.
CMMS System ID	Character	The value in the System ID field in the EAM System record whose Name field contains the value that is stored in the CMMS System field in this record.	This field is populated automatically and used internally by the APM system. This field is not available on the baseline datasheets.

Field	Data Type	Description	Behavior and Usage
Extract From CMMS System	Boolean	A value that identifies whether or not characteristics for this classification will be extracted from the SAP system.	On the datasheet, you can select this check box if you want to extract characteristics belonging to this classification.
Internal Classification Number	Character	This value is used internally by the APM system.	The value in this field is set automatically, and this field is disabled.

CMMS Classification Type Records

CMMS Classification Type records are used by the SAP Adapters to facilitate data extracts and loads to and from SAP.

This topic provides an alphabetical list and description of the fields that exist for the CMMS Classification Type family. The information in the table reflects the baseline state and behavior of these fields.

This family is enabled for site filtering, which means that records in this family can be assigned to a specific site and will only be accessible to users who are assigned to the same site and have the appropriate license and family privileges. For more information, refer to the Sites section of the documentation.

Field	Data Type	Description	Behavior and Usage
Classification Type	Character	The item whose characteristics will be extracted.	You can select either Equipment or Functional Location. This field is required.
Classification Type Code	Character	A code assigned to the item whose characteristics will be extracted.	This field is populated based on the selection of the Classification Type field. This value is used internally by the APM system.
CMMS System	Numeric	The SAP system from which characteristics will be extracted.	The field is read-only and populated with the value in the Name field in the EAM System record whose Default EAM System field contains the value True.
CMMS System ID	Character	The value in the System ID field in the EAM System record whose Name field contains the value that you selected in **CMMS System** list in this CMMS Classification Type record.	This field is populated automatically and used internally by the APM system. This field does not appear on the baseline datasheets.

EAM System

EAM System records are used to store information about your systems to facilitate data extractions and loads.

When you transfer data from APM to your EAM or service management system, the APM system uses EAM System records to determine which EAM system to use.

In addition, EAM System records are used by the Equipment Adapter and the Functional Location Adapter.

This topic provides an alphabetical list and description of the fields that exist for the EAM System family. The information in the table reflects the baseline state and behavior of these fields.

This family is not enabled for site filtering, which means that records in this family can be accessed by any user with the appropriate license and family privileges. For more information, refer to the Sites section of the documentation.

Field	Data Type	Description	Behavior and Usage
ASI Function Module Prefix	Character	ASI Function Module Prefix	The default value is '/MIAPM/'. Can be used during configurations to specify a custom set of function modules to be used instead of the product '/MIAPM/' function modules. **Note:** This field is not available on the datasheet.
Connection String	Character	The connection information for the system.	**Note:** The value of this field is for all systems that require a connection string, even though the template values contain the characters SAP. In new EAM System records, you need to delete all angle brackets and: • Replace the text SAP_SERVER_IP with the IP address of the server. • Replace the text SAP_SYSTEM_NUMBER with the system number. • Replace the text SAP_CLIENT_NUMBER with the client number. • For ServiceMax, enter the URL for the ServiceMax endpoint, for example, `https://login.salesforce.com/services/oauth2/token`.

Field	Data Type	Description	Behavior and Usage
Connection Type	Character	The type of connection that will be used to connect to the EAM system.	This field is available on the SAP System for RCMO datasheet, and is not enabled by default. The default and recommended value is RFC. This connection type uses a REST web service call as an intermediary between SAP and APM, thereby avoiding RFC calls directly between APM and your SAP server. **Note:** If necessary, you can modify the connection type to RFC Direct. Changing this value will bypass APM Connect and use a direct RFC connection when connecting your APM system and your SAP system. To modify this value, you must first enable editing on the datasheet.
Default EAM System?	Boolean	A value that indicates whether this system should be used by default when transferring data between your APM system and your system.	On the datasheet, you can select the check box to identify this system as the Default EAM System. The default EAM system is used when creating a notification from a General Recommendation when there is no technical object from which to obtain the EAM system for the creation of the notification.
ITS URL	Character	The URL to the ITS Server.	In new EAM System records, if this value is required, you will need to delete the angle brackets and replace the text **its_or_integrated_its_server_url** wit h the appropriate SAP ITS URL.
Name	Character	The name of the system.	You can enter any name, but we recommend that you enter a name in the format <SYSID>-<CLIENT>, where <SYSID> is the System ID of the system and <CLIENT> is the Client number. By doing so, the value in the Name field will match the value that will be populated automatically in the System ID field.
Password	Character	The password to the system.	The password that you enter will be encrypted and displayed as asterisks on the datasheet.

Field	Data Type	Description	Behavior and Usage
Reconnect Delay	Numeric	Specifies the delay in seconds between when a communication failure is encountered when connecting and when the system should try to connect again.	The default value is 0. Enter your unique value.
System ID	Character	The ID of the system.	This field is populated automatically after you test the connection to the system using the **Test Connection** link on the **Associated Pages** menu. Specifically, the System ID field is populated automatically with the name of the system, using the format <SYSID>-<CLIENT>, where <SYSID> is the System ID of the system and <CLIENT> is the Client number.
System Type	Character	EAM system type.	Enter the value SAP.
User ID	Character	The User ID of a user that can log in to the system.	None

Technical Characteristic

Technical Characteristics records are used to store information about your SAP Technical Characteristics to facilitate data extracts and loads to and from SAP.

This topic provides an alphabetical list and description of the fields that exist for the Technical Characteristic family and appear on the baseline EAM System datasheet. The information in the table reflects the baseline state and behavior of these fields.

This family is enabled for site filtering, which means that records in this family can be assigned to a specific site and will only be accessible to users who are assigned to the same site and have the appropriate license and family privileges. For more information, refer to the Sites section of the documentation.

Field	Data Type	Description	Behavior and Usage
Name	Character	The name of the characteristic.	None
Value	Character	The value assigned to the characteristic.	If multiple values are assigned to a characteristic in SAP, all of those values will be displayed in the Value field, separated by commas.

SAP Adapter Mappings

SAP Equipment Mappings

The following table explains the SAP fields that are used to populate the baseline Equipment fields when you extract SAP Equipments to create Equipment records in APM.

All the APM fields belong to the MI_EQUIP000 family.

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EQUIP000_CAT_PROF_C	Catalog Profile	EQUZ	RBNR	Catalog Profile
MI_EQUIP000_CAT_PROF_DESC_C	Catalog Profile Description	T352B_T	RBNRX	Catalog Profile Description
MI_EQUIP000_SAP_CATEG_C	Category	EQUI	EQTYP	SAP Category
MI_EQUIP000_SAP_CATEG_DESC_C	Category Description	T370U	TYPTX	SAP Category Description
MI_EQUIP000_CREATE_DATE_D **Note:** The time zone used for the value in the CMMS Creation Date field is the same as the SAP server time zone.	CMMS Creation Date	EQUI	ERDAT	SAP Creation Date
MI_EQUIP000_CHANGE_DATE_D **Note:** The time zone used for the value in the CMMS Last Changed Date field is the same as the SAP server time zone.	CMMS Last Changed Date	EQUI	AEDAT	SAP Last Changed Date
MI_EQUIP000_SAP_SYSTEM_C	CMMS System	<SY-SID> + <SY-MANDT>	Name of SAP R/3 System - R/3 System, client number from logon	
MI_EQUIP000_CONSTN_TYP_C	Construction Type	EQUZ	SUBMT	Construction Type
MI_EQUIP000_CONSTN_TYP_DESC_C	Construction Type Description	MAKT	MAKTX	Construction Type Description
MI_EQUIP000_CRITI_IND_C	Criticality Indicator	ILOA	ABCKZ	Criticality Indicator
MI_EQUIP000_CRITI_IND_DESC_C	Criticality Indicator Description	T370C_T	ABCTX	Criticality Indicator Description
MI_EQUIP000_EAM_REF_CREATE_DT_C	EAM Reference Creation Date	EQUI	ERDAT	SAP Creation Date

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EQUIP000_EAM_REF_CHANGE_DT_C	EAM Reference Last Changed Date	EQUI	AEDAT	SAP Last Changed Date
MI_EQUIP000_EAM_REF_PRCH_DT_C	EAM Reference Purchase Date	EQUI	ANSDT	Purchase Date
MI_EQUIP000_EAM_REF_VLD_FRM_DT_C	EAM Reference Valid From Date	EQUZ	DATAB	Valid From Date
MI_EQUIP000_EAM_REF_WRNTY_EXPR_DT_C	EAM Reference Warranty Expiration Date	BGMKOBJ	GWLEN	Warranty Expiration Date
MI_EQUIP000_EQUIP_ID_C	Equipment ID	EQUI	EQUNR	Equipment ID
MI_EQUIP000_EQUIP_LNG_DESC_T	Equipment Long Description	EQUI	Retrieved using FM READ_TEXT with ID=LTXT, OBJECT=EQUI	Equipment Long Description
MI_EQUIP000_SN_C	Equipment Serial Number	EQUI	SERGE	Serial Number
MI_EQUIP000_EQUIP_SHRT_DESC_C	Equipment Short Description	EQKT	EQKTX	Equipment Short Description
MI_EQUIP000_EQUIP_TECH_NBR_C	Equipment Technical Number	EQUZ	TIDNR	Equipment Technical Number
MI_EQUIP000_EQUIP_VNDR_C	Equipment Vendor	EQUI	ELIEF	Equipment Vendor
MI_EQUIP000_FNC_LOC_C	Functional Location	ILOA	TPLNR	Functional Location
MI_EQUIP000_FNC_LOC_DESC_C	Functional Location Description	IFLOTX	PLTXT	Functional Location Description
MI_EQUIP000_INV_NO_C	Inventory Number	EQUI	INVNR	Inventory Number
MI_EQUIP000_MAIN_WRK_CNR_C	Main Work Center	CRHD	ARBPL	Main Work Center
MI_EQUIP000_MAIN_WRK_CN_DESC_C	Main Work Center Description	CRTX	KTEXT	Main Work Center Description
MI_EQUIP000_MAINT_PLANT_C	Maintenance Plant	ILOA	SWERK	Maintenance Plant
MI_EQUIP000_MAINT_PLANT_DESC_C	Maintenance Plant Description	T001W	NAME1	Maintenance Plant Description

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EQUIP000_MFR_C	Manufacturer	EQUI	HERST	Manufacturer
MI_EQUIP000_MOD_NO_C	Model Number	EQUI	TYPBZ	Model Number
MI_EQUIP000_OBJ_TYP_C	Object Type	EQUI	EQART	Object Type
MI_EQUIP000_OBJ_TYP_DESC_C	Object Type Description	T370K_T	EARTX	Object Type Description
MI_EQUIP000_PRT_NO_C	Part Number	EQUZ	MAPAR	Part Number
MI_EQUIP000_PLANT_SECT_DESC_C	Person Responsible for Plant Section	T357	FING	Plant Section Description
MI_EQUIP000_PLANG_GRP_C	Planner Group	EQUZ	INGRP	Planner Group
MI_EQUIP000_PLANG_GRP_DESC_C	Planner Group Description	T024I	INNAM	Planner Group Description
MI_EQUIP000_PLNNG_PLNT_C	Planning Plant	EQUZ	IWERK	Planning Plant
MI_EQUIP000_PLNNG_PLNT_DESC_C	Planning Plant Description	T001W	NAME1	Planning Plant Description
MI_EQUIP000_PLANT_SECTION_C	Plant Section	ILOA	BEBER	Plant Section
MI_EQUIP000_PRCH_D **Note:** The time zone used for the value in the Purchase Date field is the same as the time zone of the user who created the Equipment.	Purchase Date	EQUI	ANSDT	Purchase Date
MI_EQUIP000_PO_NO_C	Purchase Order Number	EQBS	KDAUF	Purchase Order Number
MI_EQUIP000_SAP_CLASS_C	SAP Class	KLAH	CLASS	SAP Class
MI_EQUIP000_SAP_CLASS_DESC_C	SAP Class Description	SWOR	KSCHL	SAP Class Description
MI_EQUIP000_SZ_C	Size/Dimension	EQUI	GROES	Size/Dimension
MI_EQUIP000_SORT_FIELD_C	Sort Field	ILOA	EQFNR	Sort Field
MI_EQUIP000_SYS_ST_C	System Status	TJ02T	TXT04	System Status
MI_EQUIP000_TECH_DRW_NO_C	Technical Drawing Number	EQUI	HZEIN	Technical Drawing Number
MI_EQUIP000_VLD_FRM_DAT_D **Note:** The time zone used for the value in the Valid From Date field is the same as the time zone of the user who created the Equipment	Valid From Date	EQUZ	DATAB	Valid From Date

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EQUIP000_WRNTY_EXPR_D **Note:** The time zone used for the value in the Warranty Expiration Date field is the same as the time zone of the user who created the Equipment.	Warranty Expiration Date	BGMKOBJ	GWLEN	Date on which the warranty ends
MI_EQUIP000_WBS_ELMNT_C	WBS Element	ILOA	POST1	WBS Element
MI_EQUIP000_YR_CONSTRD_N	Year Constructed	EQUI	BAUJJ	Year Constructed

SAP Functional Location Mappings

The following table explains the SAP fields that are used to populate the baseline Functional Location fields when you extract SAP Functional Locations to create Functional Location records in APM.

All the APM fields belong to the MI_FNCLOC00 family.

APM Field ID	APM Field Caption	SAP Table	SAP Field	SAP Field Caption
MI_FNCLOC00_BUS_AREA_C	Business Area	ILOA	GSBER	Business Area
MI_FNCLOC00_BUS_AREA_D_C	Business Area Description	TGSBT	GTEXT	Business Area Description
MI_FNCLOC00_CAT_PROF_C	Catalog Profile	IFLOT	RBNR	Catalog Profile
MI_FNCLOC00_CAT_PROF_D_C	Catalog Profile Description	T352B_T	RBNRX	Catalog Profile Description
MI_FNCLOC00_CATEG_C	Category	IFLOT	FLTYP	Category
MI_FNCLOC00_CATEG_D_C	Category Description	T370F_T	TYPTX	Category Description
MI_FNCLOC00_CREATE_DATE_D **Note:** The time zone used for the value in the CMMS Creation Date field is the same as the SAP server time zone.	CMMS Creation Date	IFLOT	ERDAT	SAP Creation Date
MI_FNCLOC00_CHANGE_DATE_D **Note:** The time zone used for the value in the CMMS Last Changed Date field is the same as the SAP server time zone.	CMMS Last Changed Date	IFLOT	AEDAT	SAP Last Changed Date
MI_FNCLOC00_CO_AREA_C	CO Area	ILOA	KOKRS	Controlling Area
MI_FNCLOC00_CO_AREA_D_C	CO Area Description	TKA01	BEZEI	Controlling Area Description

APM Field ID	APM Field Caption	SAP Table	SAP Field	SAP Field Caption
MI_FNCLOC00_CO_CD_C	Company Code	ILOA	BUKRS	Company Code
MI_FNCLOC00_CO_CD_D_C	Company Code Description	T001	BUTXT	Company Code Description
MI_FNCLOC00_CONST_TYP_C	Construction Type	IFLOT	SUBMT	Constr Type Material of Object
MI_FNCLOC00_CONST_TYP_DESC_C	Construction Type Description	MAKT	MAKTX	Constr Type Material of Object Desc
MI_FNCLOC00_CST_CNR_C	Cost Center	ILOA	KOSTL	Cost Center
MI_FNCLOC00_CST_CNR_D_C	Cost Center Description	CSKT	KTEXT	Cost Center Description
MI_FNCLOC00_CRTCAL_IND_C	Criticality Indicator	ILOA	ABCKZ	ABC Indicator
MI_FNCLOC00_CRTCAL_IND_D_C	Criticality Indicator Description	T370C_T	ABCTX	ABC Indicator Description
MI_FNCLOC00_EAM_REF_CREATE_DT_C	EAM Reference Creation Date	IFLOT	ERDAT	SAP Creation Date
MI_FNCLOC00_EAM_REF_CREATE_DT_C	EAM Reference Last Changed Date	IFLOT	AEDAT	SAP Last Changed Date
MI_FNCLOC00_FNC_LOC_C	Functional Location	IFLOT	Computed from TPLNR using FM CONVERSION_EXIT_TPLNR_OUTPUT	FunctLocation
MI_FNCLOC00_FNC_LOC_DESC_C	Functional Location Description	IFLOTX	PLTXT	Description
MI_FNCLOC00_INTERNAL_ID_C	Functional Location Internal ID	IFLOT	TPLNR	FunctLocation
MI_FNCLOC00_FNC_LOC_LNG_DESC_C	Functional Location Long Description	IFLOT	Retrieved using FM READ_TEXT with ID=LTXT, OBJECT=IFLOT	Long Text
MI_FNCLOC00_INSTLD_ALWBL_C	Installation Allowed	IFLOT	IEQUI	Installation Allowed
MI_FNCLOC00_LOCAT_C	Location	ILOA	STORT	Location
MI_FNCLOC00_LOCAT_DESC_C	Location Description	T499S	KTEXT	Location Description

APM Field ID	APM Field Caption	SAP Table	SAP Field	SAP Field Caption
MI_FNCLOC00_MAINT_PLNT_C	Maintenance Plant	ILOA	SWERK	Maintenance Plant
MI_FNCLOC00_MAINT_PLNT_D_C	Maintenance Plant Description	T001W	NAME1	Maintenance Plant Description
MI_FNCLOC00_OBJ_TYP_C	Object Type	IFLO	EQART	Object Type
MI_FNCLOC00_OBJ_TYP_DESC_C	Object Type Description	T370K_T	EARTX	Object Type Description
MI_FNCLOC00_PLANNER_GROUP_C	Planner Group	IFLOT	INGRP	Planner Group
MI_FNCLOC00_PLANNER_GRP_DESC_C	Planner Group Description	T024I	INNAM	Planner Group Description
MI_FNCLOC00_PLNNG_PLNT_C	Planning Plant	IFLOT	IWERK	Planning Plant
MI_FNCLOC00_PLNNG_PLNT_D_C	Planning Plant Description	T001W	NAME1	Planning Plant Description
MI_FNCLOC00_PLNT_SECT_C	Plant Section	ILOA	BEBER	Plant Section
MI_FNCLOC00_PLNT_SECT_D_C	Plant Section Description	T357	FING	Plant Section Description
MI_FNCLOC00_ROOM_C	Room	ILOA	MSGRP	Room
MI_FNCLOC00_SAP_CLASS_C	SAP Class	KLAH	CLASS	Class
MI_FNCLOC00_SAP_CLASS_DESC_C	SAP Class Description	SWOR	KSCHL	Class Description
MI_FNCLOC00_SORT_FLD_C	Sort Field	ILOA	EQFNR	Sort Field
MI_FNCLOC00_STRUC_INDIC_C	Structure Indicator	IFLOT	TPLKZ	StrIndicator
MI_FNCLOC00_SUPR_FNC_LOC_C	Superior Function Location	IFLOT	TPLMA	SupFunctLoc
MI_FNCLOC00_SYS_STATUS_C	System Status	TJ02T	TXT04	System Status
MI_FNCLOC00_WRK_CNTR_C	Work Center	CRHD	ARBPL	Work Center
MI_FNCLOC00_WRK_CNTR_DESC_C	Work Center Description	CRTX	KTEXT	Work Center Description

Planned Work Mappings

The following table explains the SAP fields that are used to populate the baseline Planned Work fields.

All the APM fields belong to the MI_EAM_PLAN family.

APM Field ID	APM Field Caption	EAM Table	EAM Field ID	EAM Field Caption	Mapping Formula
MI_EAM_PLAN_ACTION_ID_C	Action ID	MPOS	LTXT	Maintenance Item Long text	Set with the value of action ID obtained by parsing the first 100 characters of the Maintenance Long text field {"ActionID" :"Action Id value"}.
MI_EAM_PLAN_DELETE_C	Delete Flag	JEST/TJ02T	TXT04	Individual status of an object (short form)	If the status of the object is DLT or DLFL, this flag is set to X.
MI_EAM_PLAN_SYSTEM_ID_C	EAM System ID	None	SY-SID, SY-MANDT	SAP System	Concatenate SY-SID with SY-MANDT.
MI_EAM_PLAN_EQUIP_C	Equipment	VIMPOS	EQUNR	Equipment Number	Null
MI_EAM_PLAN_FUNC_LOC_C	Functional Location	VIMPOS	TPLNR	Functional Location	APM displays the functional location label (TPLNR).
MI_EAM_PLAN_ITM_CALL_DATE_D	Item Call Date	MHIS	HORDA	Call date **Note:** The time zone used for the value in the item call date field is the same as the time zone of the user who created the maintenance plan in SAP.	Null
MI_EAM_PLAN_ITM_CALLDT_EAMRF_C	Item Call Date (EAM Reference Char field)	MHIS	HORDA	Call date	Null
MI_EAM_ITEM_CHANGE_DT_D	Item Change Date	VIMPOS	AEDAT	Changed On **Note:** The time zone used for the value in the SAP Last Changed Date field is the same as the SAP server time zone.	Null
MI_EAM_ITEM_CHNG_DT_EAM_REF_C	Item Change Date (EAM Reference Char field)	VIMPOS	AEDAT	Changed On	Null

APM Field ID	APM Field Caption	EAM Table	EAM Field ID	EAM Field Caption	Mapping Formula
MI_EAM_PLAN_ITEM_CREATED_DT	Item Created Date	VIMPOS	ERSDT	Date of creation **Note:** The time zone used for the value in the SAP creation Date field is the same as the SAP server time zone.	Null
MI_EAM_ITEM_CRT_DT_EAM_REF_C	Item Created Date (EAM Reference Char field)	VIMPOS	ERSDT	Date of creation	Null
MI_EAM_PLAN_ITEM_DESC_C	Item Description	VIMPOS	PSTXT	Item Short Text	Null
MI_EAM_PLAN_ITEM_ID_C	Item ID	VIMPOS	WAPOS	Maintenance item	Null
MI_EAM_PLAN_ITM_LAST_DATE_D	Item Last Executed Date	MHIS	LRMDT	Date of last completion in maintenance plan **Note:** The time zone used for the value in the item call date field is the same as the time zone of the user who created the maintenance plan in SAP.	Null
MI_EAM_PLAN_ITM_LASTDT_EAMRF_C	Item Last Executed Date (EAM Reference Char field)	MHIS	LRMDT	Date of last completion in maintenance plan	Null
MI_EAM_PLAN_ITEM_LONG_TXT_T	Item Long Text	MPOS	LTXT	Maintenance Item Long text	Null
MI_EAM_PLAN_ITM_NEXT_DATE_D	Item Next Planned Date	MHIS	NPLDA	Next planned date **Note:** The time zone used for the value in the item call date field is the same as the time zone of the user who created the maintenance plan in SAP.	Null

APM Field ID	APM Field Caption	EAM Table	EAM Field ID	EAM Field Caption	Mapping Formula
MI_EAM_PLAN_ITM_NEXTDT_EAMRF_C	Item Next Planned Date (EAM Reference Char field)	MHIS	NPLDA	Next planned date	Null
MI_EAM_PLAN_ITM_OBJ_NUM_N	Item Sub Object Number	ROW ID	None	None	Line number of Maintenance items.
MI_EAM_PLAN_CALL_HORIZ_N	Plan Call Horizon	VIMPLA	HORIZ	Call horizon for maintenance plan calls	Null
MI_EAM_PLAN_CATEG_C	Plan Category	VIMPLA	MPTYP	Maintenance plan category	Null
MI_EAM_PLAN_CHANGE_DT_D	Plan Change Date	VIMPLA	AEDAT	Changed On **Note:** The time zone used for the value in the SAP Last Changed Date field is the same as the SAP server time zone.	Null
MI_EAM_PLAN_CHG_DT_EAM_REF_C	Plan Change Date (EAM Reference Char field)	VIMPLA	AEDAT	Changed On	Null
MI_EAM_PLAN_CREATED_DT_D	Plan Created Date	VIMPLA	ERSDT	Date of creation **Note:** The time zone used for the value in the SAP creation Date field is the same as the SAP server time zone.	Null
MI_EAM_PLAN_CREA_DT_EAM_REF_C	Plan Created Date (EAM Reference Char field)	VIMPLA	ERSDT	Date of creation	Null
MI_EAM_PLAN_DESC_C	Plan Description	VIMPLA	WPTXT	Maintenance Plan Text	Null
MI_EAM_PLAN_PLAN_ID_C	Plan ID	VIMPLA	WARPL	Maintenance Plan	Null
MI_EAM_PLAN_INACTIVE_C	Plan Inactive	JEST/TJ02T	TXT04	Individual status of an object (short form)	If the status of the object is DLT or DLFL, this flag is set to X.

APM Field ID	APM Field Caption	EAM Table	EAM Field ID	EAM Field Caption	Mapping Formula
MI_EAM_PLAN_INTERVAL_N	Plan Interval	MMPT	ZYKL1	Maintenance package cycle/offset	Null
MI_EAM_PLAN_INT_UNITS_C	Plan Interval Units	MMPT	ZEIEH	Unit for the performance of maintenance tasks	Null
MI_EAM_PLAN_LONG_TEXT_T	Plan Long Text	MPLA	LTXT	Maintenance Plan Long text	Null
MI_EAM_PLAN_START_DATE_D	Plan Start Date	VIMPLA	STADT	Start date **Note:** The time zone used for the value in the item call date field is the same as the time zone of the user who created the maintenance plan in SAP.	Null
MI_EAM_PLAN_STRATEGY_C	Plan Strategy	VIMPLA	STRAT	Maintenance strategy	Null
MI_EAM_PLAN_TL_CHANGE_DT_D	Task List Change Date	PLKO	AEDAT	Changed On **Note:** The time zone used for the value in the SAP Last Changed Date field is the same as the SAP server time zone.	Null
MI_EAM_TL_CHNG_DT_EAM_REF_C	Task List Change Date (EAM Reference Char field)	PLKO	AEDAT	Changed On	Null
MI_EAM_PLAN_TL_CRT_DT_D	Task List Created Date	PLKO	ANDAT	Date record created on **Note:** The time zone used for the value in the SAP creation Date field is the same as the SAP server time zone.	Null
MI_EAM_TL_CRT_DT_EAM_REF_C	Task List Created Date (EAM Reference Char field)	PLKO	ANDAT	Date record created on	Null

APM Field ID	APM Field Caption	EAM Table	EAM Field ID	EAM Field Caption	Mapping Formula
MI_EAM_PLAN_TL_DELETE_C	Task List Delete Flag	PLKO	LOEKZ	Deletion Indicator	Null
MI_EAM_PLAN_TASK_LIST_DESC_C	Task List Description	PLKO	KTEXT	Task list description	Null
MI_EAM_PLAN_TASK_LIST_ID_C	Task List ID	PLKO	PLNTY, PLNNR, PLNAL	Deletion Indicator	Concatenate PLNTY, PLNNR, and PLNAL.

Planned Work Details Mapping

The following table explains the SAP fields that are used to populate the baseline Planned Work Details fields.

All the APM fields belong to the MI_EAM_PLAN_DTL family.

APM Field ID	APM Field Caption	EAM Table	EAM Field ID	EAM Field Caption	Mapping Formula
MI_EAM_PLAN_DTL_ACTION_ID_C	Action ID	ROUTING	PLPO	Operation Long text	Set with the value of action ID obtained by parsing the first 100 characters of the Operation Long text field {"ActionID" :"Action Id value"}.
MI_EAM_PLAN_SYSTEM_ID_C	EAM System ID	None	SY-SID, SY-MANDT	SAP System	Concatenate SY-SID with SY-MANDT.
MI_EAM_OP_CHANGE_DT_D	Operation Change Date	PLPO	AEDAT	Changed On **Note:** The time zone used for the value in the SAP Last Changed Date field is the same as the SAP server time zone.	Null
MI_EAM_OP_CHNG_DT_EAM_REF_C	Operation Change Date (EAM Reference Char field)	PLPO	AEDAT	Changed On	Null
MI_EAM_PLAN_DTL_OP_CTRL_KY_C	Operation Control Key	PLPO	STEUS	Control key	Null

APM Field ID	APM Field Caption	EAM Table	EAM Field ID	EAM Field Caption	Mapping Formula
MI_EAM_PLAN_DTL_OP_CRT_DT	Operation Created Date	PLPO	ANDAT	Date record created on **Note:** The time zone used for the value in the SAP Last Changed Date field is the same as the SAP server time zone.	Null
MI_EAM_OP_CRT_DT_EAM_REF_C	Operation Created Date (EAM Reference Char field)	PLPO	ANDAT	Date record created on	Null
MI_EAM_PLAN_DTL_DELETE_C	Operation Delete Flag	PLPO	LOEKZ	Deletion Indicator	Null
MI_EAM_PLAN_DTL_OPER_DESC_C	Operation Description	PLPO	LTXA1, LTXA1	Operation short text	Concatenate LTXA1 with LTXA1.
MI_EAM_PLAN_DTL_OPER_ID_C	Operation ID	PLPO	VORNR	Operation/Activity Number	Null
MI_EAM_PLAN_DTL_OP_LNG_TXT_T	Operation Long Text	ROUTING	PLPO	Text for task list types - Long text	Null
MI_EAM_PLAN_TASK_LIST_ID_C	Task List ID	PLKO	PLNTY, PLNNR, PLNAL	Deletion Indicator	Concatenate PLNTY, PLNNR, and PLNAL.

SAP Work History Mappings

The following tables explain the SAP fields that are used to populate the baseline Work History fields when you extract Orders and Notifications from SAP.

The tables are divided into sections, depending on the source of the Work History records. The Work History records can be created from:

- Orders with Notifications
- Orders without associated Notifications
- Notifications without associated Orders

Values Mapped to Records That Were Created from Orders with Notifications

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_ORDR_PM_ACT_C **Note:** The value in the Activity Type field is associated with Order Preventive Maintenance.	Activity Type	VIAUFKST	ILART	Maintenance activity type
MI_EVWKHIST_ORDR_PM_ACT_DESC_C **Note:** The value in the Activity Type Description field is associated with Order Preventive Maintenance.	Activity Type Description	T353I_T	ILATX	Description of maintenance activity type
MI_EVWKHIST_ACT_LABOR_TIME_N **Note:** The value in the Actual Labor field is calculated as the sum of actual hours across all Operations that are associated with the Order (in the SAP user interface, this value is visible in the box in the **Act. Data** section of the Operation).	Actual Labor	AFVV	ISMNW	Actual work
MI_EVWKHIST_ASMBLY_C	Assembly	VIAUFKST	BAUTL	Assembly
MI_EVWKHIST_ASMBLY_DESC_C	Assembly Description	MAKT	MAKTX	Material description
MI_EVWKHIST_ASST_TECH_ID_C	Asset Tech ID	EQUZ	TIDNR	Technical identification number
MI_EVWKHIST_ASST_TYP_DESC_C	Equipment Type Description	T370K_T	EARTX	Text for Object Type
MI_EVWKHIST_BRKDN_IND_F	Breakdown Indicator	VIQMEL	MSAUS	Breakdown Indicator
MI_EVWKHIST_SAP_SYSTEM_C	CMMS System	SY-SYSID + “-” + SY-MANDT	N/A	Name of SAP R/3 System - R/3 System, client number from logon
MI_EVWKHIST_EAM_REF_START_DT_C	EAM Reference Event Start Date	VIQMEL	QMDAT, MZEIT	Date/Time of Notification

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_EAM_REF_MAINT_COMPL_DT_C	EAM Reference Maintenance Completion Date	VIAUFKST	GETRI, GEUZI	Actual finish date/ time
MI_EVWKHIST_EAM_REF_MAINT_START_DT_C	EAM Reference Maintenance Start Date	VIAUFKST	GSTRI, GSUZI	Actual start date/time
MI_EVWKHIST_EAM_REF_MECH_AVAIL_DT_C	EAM Reference Mechanically Available Date	VIQMEL	AUSBS, AUZTB	End of Malfunction (Date/Time)
MI_EVWKHIST_EAM_REF_MECH_UNAVL_DT_C	EAM Reference Mechanically Unavailable Date	VIQMEL	AUSVN, AUZTV	Start of Malfunction (Date/Time)
MI_EVWKHIST_EAM_REF_ORDR_CRT_DT_C	EAM Reference Order Creation Date	VIAUFKST	ERDAT, ERFZEIT	Created on Date/Time
MI_EVWKHIST_EAM_REF_ORDR_CHNG_DT_C	EAM Reference Order Last Change Date	VIAUFKST	AEDAT, AEZEIT	Change date/time for Order Master
MI_EVWKHIST_EAM_REF_RQST_CRT_DT_C	EAM Reference Request Creation Date	VIQMEL	ERDAT, ERZEIT	Date/Time on which the record was created
MI_EVWKHIST_EAM_REF_ORDR_CHNG_DT_C	EAM Reference Request Last Change Date	VIQMEL	AEDAT, AEZEIT	Date/Time of Last Change
MI_EVWKHIST_EAM_REF_SCHED_COMPL_DT_C	EAM Reference Scheduled Completion Date	VIAUFKST	GLTRS, GLUZS	Scheduled finish date/ time
MI_EVWKHIST_EAM_REF_SCHED_START_DT_C	EAM Reference Scheduled Start Date	VIAUFKST	GSTRS, GSUZS	Scheduled start date/ time
MI_EVWKHIST_EFFCT_CD_C	Effect Code	VIQMEL	AUSWK	Effect on Operation
MI_EVWKHIST_EFFCT_DESC_C	Effect Description	T357A_T	AUSWKT	Text - Effect on Operation
MI_EVWKHIST_ASST_CTGRY_DESC_C	Equipment Category Description	T370U	TYPTX	Equipment category description
MI_EVWKHIST_ASST_CL_DESC_C	Equipment Class Description	SWOR	KSCHL	Keywords

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVENT_ASST_ID_CHR	Equipment ID	VIAUFKST/OBJK	EQUNR	Equipment number
MI_EVENT_ASST_DESC_CHR	Equipment Short Description	EQKT	EQKTX	Description of technical object
MI_EVWKHIST_EST_LABOR_TIME_N **Note:** The value in the Estimated Labor field is calculated as the sum of planned hours across all Operations that are associated with the order (in the SAP Adapter, this value is visible in the **Work** box in the **Internal** section of the Operation.)	Estimated Labor	AFVV	ARBEI	Work involved in the activity
MI_EVWKHIST_EVENT_DATE_DESC_C **Note:** If the Notification is not assigned to a Work Order, the Event Date Description field is populated with the following static value: Order Actual Start Date. Otherwise, this field is populated with the following value: Notification Date.	Event Date Description	N/A	N/A	N/A
MI_EVENT_ID	Event ID	VIQMEL, VIAUFKST	QMNUM, AUFNR (Combination of WH-QMNUM-AUFNR)	Notification Number - Order Number
MI_EVENT_LNG_DSC_TX	Event Long Description	QMEL, AUFK	LTXT, KOPF	Notification long text - work Order long text
MI_EVENT_SHRT_DSC_CHR	Event Short Description	VIQMEL	QMTXT	Short Text
MI_EVENT_STRT_DT **Note:** The value in the Event Start Date field is the same as the time zone of the user who created the Notification.	Event Start Date	VIQMEL	QMDAT, MZEIT	Date/Time of Notification
MI_EVENT_TYP_CHR **Note:** The value in the Event Type field is populated with the following static value: Work History.	Event Type	N/A	N/A	N/A
MI_EVWKHIST_FAILR_MODE_CD_C	Failure Mode Code	VIQMEL	QMCOD	Coding

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_FAILR_MODE_DESC_C	Failure Mode Description	QPCT	KURZTEXT	Short Text for Code
MI_EVENT_LOC_ID_CHR	Location ID	VIQMEL/OBJK	TPLNR	Functional Location
MI_EVENT_LOC_SHRT_DESC_CHR	Location Short Description	IFLOTX	PLTXT	Description of functional location
MI_EVWKHIST_MAINT_COMPL_D **Note:** The value in the Maintenance Completion Date field is the same as the time zone of the user who created the Work Order.	Maintenance Completion Date	VIAUFKST	GETRI, GEUZI	Actual finish date/ time
MI_EVWKHIST_MAINT_CST_N	Maintenance Cost	PMCO	Σ(WRT00 - WRT16)	Sum of (Period value in ledger currency)
MI_EVWKHIST_MAINT_CST_UOM_C	Maintenance Cost UOM	PMCO	COCUR	Maintenanc e Cost UOM
MI_EVWKHIST_MAINT_START_D **Note:** The value in the Maintenance Start Date field is the same as the time zone of the user who created the Work Order.	Maintenance Start Date	VIAUFKST	GSTRI, GSUZI	Actual start date/time
MI_EVWKHIST_MECH_DWN_TIME_N	Mechanical Down Time	VIQMEL	AUSZT	Breakdown Duration
MI_EVWKHIST_MECH_AVAIL_D **Note:** The value in the Mechanically Available Date field is the same as the time zone of the user who created the Notification.	Mechanically Available Date	VIQMEL	AUSBS, AUZTB	End of Malfunction (Date/Time)
MI_EVWKHIST_MECH_UNAVL_D **Note:** The value in the Mechanically Unavailable Date field is the same as the time zone of the user who created the Notification.	Mechanically Unavailable Date	VIQMEL	AUSVN, AUZTV	Start of Malfunction (Date/Time)
MI_EVWKHIST_OBJECT_NUMBER_C	Object Number	VIAUFKST	AUFNR	Work Order Object number

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_ORDR_CALL_NBR_C	Order Call Number	VIAUFKST	ABNUM	Maintenance plan call number
MI_EVWKHIST_ORDR_CRT_DT_D **Note:** The value in the Order Creation Date field is the same as the SAP server time zone.	Order Creation Date	VIAUFKST	ERDAT, ERFZEIT	Created on Date/Time
MI_EVWKHIST_ORDR_DESC_C	Order Description	VIAUFKST	KTEXT	Short text
MI_EVWKHIST_ORDR_ID_C	Order ID	VIAUFKST	AUFNR	Order Number
MI_EVWKHIST_ORDR_CHNG_DT_D **Note:** The value in the Order Last Change Date field is the same as the SAP server time zone.	Order Last Change Date	VIAUFKST	AEDAT, AEZEIT	Change date/time for Order Master
MI_EVWKHIST_ORDR_MAINT_ITEM_C	Order Maintenance Item	VIAUFKST	WAPOS	Maintenance item
MI_EVWKHIST_ORDR_MAINT_PLAN_C	Order Maintenance Plan	VIAUFKST	WARPL	Maintenance plan
MI_EVWKHIST_ORDR_PRTY_C	Order Priority	VIAUFKST	PRIOK	Priority
MI_EVWKHIST_ORDR_PRTY_DESC_C	Order Priority Description	T356_T	PRIOKX	Priority Text
MI_EVWKHIST_ORDR_SYS_COND_C	Order System Condition	VIAUFKST	ANLZU	Overall condition of technical system
MI_EVWKHIST_ORDR_SYS_CND_DES_C	Order System Condition Description	T357M_T	ANLZUX	Text on Operating Condition
MI_EVWKHIST_ORDR_SYS_STAT_C	Order System Status	TJ02T	TXT04	Individual status of an object (short form)
MI_EVWKHIST_ORDR_TYP_CD_C	Order Type Code	VIAUFKST	AUART	Order Type
MI_EVWKHIST_ORDR_TYP_DESC_C	Order Type Description	T003P	TXT	Short Text
MI_EVWKHIST_ORDR_USER_STAT_C	Order User Status	TJ30T	TXT04	Individual status of an object (short form)

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_RQST_CRT_DT_D **Note:** The value in the Request Creation Date field is the same as the SAP server time zone.	Request Creation Date	VIQMEL	ERDAT, ERZEIT	Date/Time on which the record was created
MI_EVWKHIST_RQST_DESC_C	Request Description	VIQMEL	QMTXT	Short Text
MI_EVWKHIST_RQST_ID_C	Request ID	VIQMEL/OBJK	QMNUM/IHNUM	Notification Number
MI_EVWKHIST_RQST_CHNG_DT_D **Note:** The value in the Request Last Change Date field is the same as the SAP server time zone.	Request Last Change Date	VIQMEL	AEDAT, AEZEIT	Date/Time of Last Change
MI_EVWKHIST_RQST_PRTY_C	Request Priority	VIQMEL	PRIOK	Priority
MI_EVWKHIST_RQST_PRTY_DESC_C	Request Priority Description	T356_T	PRIOKX	Priority Text
MI_EVWKHIST_RQST_SYS_STAT_C	Request System Status	TJ02T	TXT04	Individual status of an object (short form)
MI_EVWKHIST_RQST_TYP_CD_C	Request Type Code	VIQMEL	QMART	Notification Type
MI_EVWKHIST_RQST_TYP_DESC_C	Request Type Description	TQ80_T	QMARTX	Notification Type Texts
MI_EVWKHIST_RQST_USER_STAT_C	Request User Status	TJ30T	TXT04	Individual status of an object (short form)
MI_EVENT_ASST_CTGRY_CHR	SAP Category	EQUI	EQTYP	Equipment category
MI_EVENT_ASST_CL_CHR	SAP Class	KLAH	CLASS	Class Number
MI_EVENT_ASST_TYP_CHR	SAP Type	EQUI	EQART	Type of Technical Object
MI_EVWKHIST_SCHED_COMPL_D **Note:** The value in the Scheduled Completion Date field is the same as the time zone of the user who created the Work Order.	Scheduled Completion Date	VIAUFKST	GLTRS, GLUZS	Scheduled finish date/ time

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_SCHED_START_D **Note:** The value in the Scheduled Start Date field is the same as the time zone of the user who created the Work Order.	Scheduled Start Date	VIAUFKST	GSTRS, GSUZS	Scheduled start date/ time
MI_EVWKHIST_SUB_OBJECT_NUM_C	Sub Object Number	VIAUFKST/OBJK	OBZAE	Object List Count

Values Mapped to Records That Were Created Without Notifications

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_ORDR_PM_ACT_C **Note:** The value in the Activity Type field is associated with Order Preventive Maintenance.	Activity Type	VIAUFKST	ILART	Maintenance activity type
MI_EVWKHIST_ORDR_PM_ACT_DESC_C **Note:** The value in the Activity Type Description field is associated with Order Preventive Maintenance.	Activity Type Description	T353I_T	ILATX	Description of maintenance activity type
MI_EVWKHIST_ACT_LABOR_TIME_N **Note:** The value in the Actual Labor field is calculated as the sum of actual hours across all Operations that are associated with the Order (in the SAP user interface, this value is visible in the **Actual work** box in the **Act. Data** section of the Operation).	Actual Labor	AFVV	ISMNW	Actual work
MI_EVWKHIST_ASMBLY_C	Assembly	VIAUFKST	BAUTL	Assembly
MI_EVWKHIST_ASMBLY_DESC_C	Assembly Description	MAKT	MAKTX	Material description
MI_EVWKHIST_ASST_TECH_ID_C	Asset Tech ID	EQUZ	TIDNR	Technical identification number
MI_EVWKHIST_SAP_SYSTEM_C	CMMS System	SY-SYSID + "-" + SY-MANDTSY	N/A	Name of SAP R/3 System - R/3 System, client number from logon
MI_EVWKHIST_EAM_REF_START_DT_C	EAM Reference Event Start Date	VIAUFKST/ VIQMEL	GSTRI, GSUZI / QMDAT/MZEIT	Date, Time of Work Order / Notification

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_EAM_REF_MAINT_START_DT_C	EAM Reference Maintenance Start Date	VIAUFKST	GSTRI, GSUZI	Actual start date/time
MI_EVWKHIST_EAM_REF_ORDR_CRT_DT_C	EAM Reference Order Creation Date	VIAUFKST	ERDAT, ERFZEIT	Date/Time on which the record was created
MI_EVWKHIST_EAM_REF_ORDR_CHNG_DT_C	EAM Reference Order Last Change Date	VIAUFKST	AEDAT, AEZEIT	Date/Time of Last Change
MI_EVWKHIST_ASST_CTGRY_DESC_C	Equipment Category Description	T370U	TYPTX	Equipment category description
MI_EVWKHIST_ASST_CL_DESC_C	Equipment Class Description	SWOR	KSCHL	Keywords
MI_EVENT_ASST_ID_CHR	Equipment ID	VIAUFKST/ OBJK	EQUNR	Equipment number
MI_EVENT_ASST_DESC_CHR	Equipment Short Description	EQKT	EQKTX	Description of technical object
MI_EVWKHIST_ASST_TYP_DESC_C	Equipment Type Description	T370K_T	EARTX	Text for Object Type
MI_EVWKHIST_EST_LABOR_TIME_N **Note:** The value in the Estimated Labor field is calculated as the sum of planned hours across all Operations that are associated with the order (in the SAP Adapter, this value is visible in the **Work** box in the **Internal** section of the Operation.)	Estimated Labor	AFVV	ARBEI	Work involved in the activity
MI_EVWKHIST_EVENT_DATE_DESC_C **Note:** If the Notification is not assigned to a Work Order, the Event Date Description field is populated with the following static value: Order Actual Start Date. Otherwise, this field is populated with the following value: Notification Date.	Event Date Description	N/A	N/A	N/A
MI_EVENT_ID	Event ID	VIAUFKST	AUFNR	Order Number

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVENT_LNG_DSC_TX	Event Long Description	AUFK	Retrieved by calling FM READ_TEXT with ID=LTXT, OBJECT=AUFK	Long Desc
MI_EVENT_SHRT_DSC_CHR	Event Short Description	VIAUFKST/ VIQMEL	KTEXT / QMTXT	Short text
MI_EVENT_STRT_DT **Note:** The value in the Event Start Date field is the same as the time zone of the user who created the Notification.	Event Start Date	VIAUFKST/ VIQMEL	GSTRI, GSUZI / QMDAT/MZEIT	Date, Time of Work Order / Notification
MI_EVENT_TYP_CHR **Note:** The value in the Event Type field is populated with the following static value: Work History.	Event Type	N/A	N/A	N/A
MI_EVENT_LOC_ID_CHR	Location ID	VIAUFKST/ OBJK	TPLNR	Functional Location
MI_EVENT_LOC_SHRT_DESC_CHR	Location Short Description	IFLOTX	PLTXT	Description of functional location
MI_EVWKHIST_MAINT_COMPL_D **Note:** The value in the Maintenance Completion Date field is the same as the time zone of the user who created the Work Order.	Maintenance Completion Date	VIAUFKST	GETRI, GEUZI	Actual finish date/time
MI_EVWKHIST_MAINT_CST_N	Maintenance Cost	PMCO	Σ(WRT00 - WRT16)	Sum of (Period value in ledger currency)
MI_EVWKHIST_MAINT_CST_UOM_C	Maintenance Cost UOM	PMCO	COCUR	Maintenance Cost UOM
MI_EVWKHIST_MAINT_START_D **Note:** The value in the Maintenance Start Date field is the same as the time zone of the user who created the Work Order.	Maintenance Start Date	VIAUFKST	GSTRI, GSUZI	Actual start date/time
MI_EVWKHIST_OBJECT_NUMBER_C	Object Number	VIAUFKST	AUFNR	Work Order Object number
MI_EVWKHIST_ORDR_CALL_NBR_C	Order Call Number	VIAUFKST	ABNUM	Maintenance plan call number

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_ORDR_CRT_DT_D **Note:** The value in the Order Creation Date field is the same as the SAP server time zone.	Order Creation Date	VIAUFKST	ERDAT, ERFZEIT	Date/Time on which the record was created
MI_EVWKHIST_ORDR_DESC_C	Order Description	VIAUFKST	KTEXT	Short text
MI_EVWKHIST_ORDR_ID_C	Order ID	VIAUFKST	AUFNR	Order Number
MI_EVWKHIST_ORDR_CHNG_DT_D **Note:** The value in the Order Last Change Date field is the same as the SAP server time zone.	Order Last Change Date	VIAUFKST	AEDAT, AEZEIT	Date/Time of Last Change
MI_EVWKHIST_ORDR_MAINT_ITEM_C	Order Maintenance Item	VIAUFKST	WAPOS	Maintenance item
MI_EVWKHIST_ORDR_MAINT_PLAN_C	Order Maintenance Plan	VIAUFKST	WARPL	Maintenance plan
MI_EVWKHIST_ORDR_PRTY_C	Order Priority	VIAUFKST	PRIOK	Priority
MI_EVWKHIST_ORDR_PRTY_DESC_C	Order Priority Description	T356_T	PRIOKX	Priority Text
MI_EVWKHIST_ORDR_SYS_COND_C	Order System Condition	VIAUFKST	ANLZU	Overall condition of technical system
MI_EVWKHIST_ORDR_SYS_CND_DES_C	Order System Condition Description	T357M_T	ANLZUX	Text on Operating Condition
MI_EVWKHIST_ORDR_SYS_STAT_C	Order System Status	TJ02T	TXT04	Individual status of an object (short form)
MI_EVWKHIST_ORDR_TYP_CD_C	Order Type Code	VIAUFKST	AUART	Order Type
MI_EVWKHIST_ORDR_TYP_DESC_C	Order Type Description	T003P	TXT	Short Text
MI_EVWKHIST_ORDR_USER_STAT_C	Order User Status	TJ30T	TXT04	Individual status of an object (short form)
MI_EVENT_ASST_CTGRY_CHR	SAP Category	EQUI	EQTYP	Equipment category

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVENT_ASST_CL_CHR	SAP Class	KLAH	CLASS	Class Number
MI_EVENT_ASST_TYP_CHR	SAP Type	EQUI	EQART	Type of Technical Object
MI_EVWKHIST_SUB_OBJECT_NUM_C	Sub Object Number	VIAUFKST/ OBJK	OBZAE	Object List Count

Values Mapped to Records That Were Created from Notifications Without Associated Orders

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_ASMBLY_C	Assembly	VIQMEL	BAUTL	Assembly
MI_EVWKHIST_ASMBLY_DESC_C	Assembly Description	MAKT	MAKTX	Material description
MI_EVWKHIST_ASST_TECH_ID_C	Asset Tech ID	EQUZ	TIDNR	Technical identification number
MI_EVWKHIST_BRKDN_IND_F	Breakdown Indicator	VIQMEL	MSAUS	Breakdown Indicator
MI_EVWKHIST_SAP_SYSTEM_C	CMMS System	SY-SYSID + “-” + SY-MANDTSY	N/A	Name of SAP R/3 System - R/3 System, client number from logon
MI_EVWKHIST_EAM_REF_START_DT_C	EAM Reference Event Start Date	VIQMEL	QMDAT, MZEIT	Date/Time of Notification
MI_EVWKHIST_EAM_REF_MECH_AVAIL_DT_C	EAM Reference Mechanically Available Date	VIQMEL	AUSBS, AUZTB	End of Malfunction (Date/Time)
MI_EVWKHIST_EAM_REF_MECH_UNAVL_DT_C	EAM Reference Mechanically Unavailable Date	VIQMEL	AUSVN, AUZTV	Start of Malfunction (Date/Time)
MI_EVWKHIST_EAM_REF_RQST_CRT_DT_C	EAM Reference Request Creation Date	VIQMEL	ERDAT, ERZEIT	Date/Time on which the record was created

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_EAM_REF_RQST_CHNG_DT_C	EAM Reference Request Last Change Date	VIQMEL	AEDAT, AEZEIT	Date/Time of Last Change
MI_EVWKHIST_EFFCT_CD_C	Effect Code	VIQMEL	AUSWK	Effect on Operation
MI_EVWKHIST_EFFCT_DESC_C	Effect Description	T357A_T	AUSWKT	Text - Effect on Operation
MI_EVWKHIST_ASST_CTGRY_DESC_C	Equipment Category Description	T370U	TYPTX	Equipment category description
MI_EVWKHIST_ASST_CL_DESC_C	Equipment Class Description	SWOR	KSCHL	Keywords
MI_EVENT_ASST_ID_CHR	Equipment ID	VIQMEL	EQUNR	Equipment number
MI_EVENT_ASST_DESC_CHR	Equipment Short Description	EQKT	EQKTX	Description of technical object
MI_EVWKHIST_ASST_TYP_DESC_C	Equipment Type Description	T370K_T	EARTX	Text for Object Type
MI_EVWKHIST_EVENT_DATE_DESC_C **Note:** The value in the Event Date Description field is populated with the following static value: Notification Date.	Event Date Description	N/A	N/A	N/A
MI_EVENT_ID	Event ID	VIQMEL	QMNUM	Notification Number
MI_EVENT_LNG_DSC_TX	Event Long Description	QMEL	Retrieved by calling FM READ_TEXT with ID=LTXT, OBJECT=QMEL	Notification Long Desc
MI_EVENT_SHRT_DSC_CHR	Event Short Description	VIQMEL	QMTXT	Short Text
MI_EVENT_STRT_DT **Note:** The value in the Event Start Date field is the same as the time zone of the user who created the Notification.	Event Start Date	VIQMEL	QMDAT, MZEIT	Date/Time of Notification
MI_EVENT_TYP_CHR **Note:** The Event Type field is populated with the following static value: Work History.	Event Type	N/A	N/A	N/A

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_FAILR_MODE_CD_C	Failure Mode Code	VIQMEL	QMCOD	Coding
MI_EVWKHIST_FAILR_MODE_DESC_C	Failure Mode Description	QPCT	KURZTEXT	Short Text for Code
MI_EVENT_LOC_ID_CHR	Location ID	VIQMEL	TPLNR	Functional Location
MI_EVENT_LOC_SHRT_DESC_CHR	Location Short Description	IFLOTX	PLTXT	Description of functional location
MI_EVWKHIST_MECH_DWN_TIME_N	Mechanical Down Time	VIQMEL	AUSZT	Breakdown Duration
MI_EVWKHIST_MECH_AVAIL_D **Note:** The value in the Mechanically Available Date field is the same as the time zone of the user who created the Notification.	Mechanically Available Date	VIQMEL	AUSBS, AUZTB	End of Malfunction (Date/Time)
MI_EVWKHIST_MECH_UNAVL_D **Note:** The value in the Mechanically Unavailable Date field is the same as the time zone of the user who created the Notification.	Mechanically Unavailable Date	VIQMEL	AUSVN, AUZTV	Start of Malfunction (Date/Time)
MI_EVWKHIST_OBJECT_NUMBER_C	Object Number	VIAUFKST	AUFNR	Work Order Object number
MI_EVWKHIST_RQST_CRT_DT_D **Note:** The value in the Request Creation Date field is the same as the SAP server time zone.	Request Creation Date	VIQMEL	ERDAT, ERZEIT	Date/Time on which the record was created
MI_EVWKHIST_RQST_DESC_C	Request Description	VIQMEL	QMTXT	Short Text
MI_EVWKHIST_RQST_ID_C	Request ID	VIQMEL	QMNUM	Notification Number
MI_EVWKHIST_RQST_CHNG_DT_D **Note:** The value in the Request Last Change Date field is the same as the SAP server time zone.	Request Last Change Date	VIQMEL	AEDAT, AEZEIT	Date/Time of Last Change
MI_EVWKHIST_RQST_PRTY_C	Request Priority	VIQMEL	PRIOK	Priority
MI_EVWKHIST_RQST_PRTY_DESC_C	Request Priority Description	T356_T	PRIOKX	Priority Text
MI_EVWKHIST_RQST_SYS_STAT_C	Request System Status	TJ02T	TXT04	Individual status of an object (short form)

APM Field ID	APM Field Caption	SAP Table	SAP Field ID	SAP Field Caption
MI_EVWKHIST_RQST_TYP_CD_C	Request Type Code	VIQMEL	QMART	Notification Type
MI_EVWKHIST_RQST_TYP_DESC_C	Request Type Description	TQ80_T	QMARTX	Notification Type Texts
MI_EVWKHIST_RQST_USER_STAT_C	Request User Status	TJ30T	TXT04	Individual status of an object (short form)
MI_EVENT_ASST_CTGRY_CHR	SAP Category	EQUI	EQTYP	Equipment category
MI_EVENT_ASST_CL_CHR	SAP Class	KLAH	CLASS	Class Number
MI_EVENT_ASST_TYP_CHR	SAP Type	EQUI	EQART	Type of Technical Object
MI_EVWKHIST_SUB_OBJECT_NUM_C	Sub Object Number	VIAUFKST/ OBJK	OBZAE	Object List Count

SAP Work History Detail Mappings

The following table explains the SAP fields that are used to populate the baseline Work History Detail fields when you extract Orders and Notifications from SAP.

Note: If a Technical Object in the object list is associated with a Notification that has items, separate Work History Detail records will be created for each of those items. The Work History Detail records will be linked to the Work History record that was created using that Technical Object.

All the APM fields belong to the MI_DTWKHIST family.

APM Field ID	APM Field Caption	SAP Table	SAP Field	SAP Field Caption
MI_DTWKHIST_CAUSE_CD_C	Cause Code	QMUR	URCOD	Cause Code
MI_DTWKHIST_CAUSE_DESC_C	Cause Description	QPCT	KURZTEXT	Short Text for Code
MI_DTWKHIST_CREATE_DATE_D **Note:** The time zone used for the value in the CMMS Creation Date field is the same as the SAP server time zone.	CMMS Creation Date	VIAUFKS	ERDAT, ERZEIT	SAP Creation Date
MI_DTWKHIST_CHANGE_DATE_D **Note:** The time zone used for the value in the CMMS Last Changed Date field is the same as the SAP server time zone.	CMMS Last Changed Date	VIAUFKS	AEDAT, AEZEIT	SAP Last Changed Date
MI_DTWKHIST_CNDTN_CD_C	Condition Code	QMFE	FECOD	Problem
MI_DTWKHIST_CNDTN_DESC_C	Condition Description	QPCT	KURZTEXT	Short Text for Code

APM Field ID	APM Field Caption	SAP Table	SAP Field	SAP Field Caption
MI_DTWKHIST_DTL_NARTV_T	Detail Narrative	QMFE	LTXT	Long Text
MI_DTWKHIST_EAM_REF_CREATE_DT_C	EAM Reference Creation Date	VIAUFKS	ERDAT, ERZEIT	SAP Creation Date
MI_DTWKHIST_EAM_REF_CHANGE_DT_C	EAM Reference Last Changed Date	VIAUFKS	AEDAT, AEZEIT	SAP Last Changed Date
MI_DTWKHIST_ASST_CTGRY_C	Equipment Category	EQUI	EQTYP	Equipment category
MI_DTWKHIST_ASST_CTGRY_DESC_C	Equipment Category Description	T370U	TYPTX	Equipment category description
MI_DTWKHIST_ASST_CLASS_C	Equipment Class	KLAH	CLASS	Class Number
MI_DTWKHIST_ASST_CLASS_DESC_C	Equipment Class Description	SWOR	KSCHL	Keywords
MI_DTWKHIST_ASST_ID_C	Equipment ID	VIQMEL	EQUNR	Equipment number
MI_DTWKHIST_ASST_TYP_C	Equipment Type	EQUI	EQART	Type of Technical Object
MI_DTWKHIST_ASST_TYP_DESC_C	Equipment Type Description	T370K_T	EARTX	Text for Object Type
MI_DTWKHIST_LOC_ID_C	Location ID	VIQMEL	TPLNR	Functional Location
MI_DTWKHIST_MAINT_ITEM_CD_C	Maintainable Item Code	QMFE	OTEIL	Part of Object
MI_DTWKHIST_MAINT_ITEM_DESC_C	Maintainable Item Description	QPCT	KURZTEXT	Short Text for Code
MI_DTWKHIST_MAINT_ACTN_CD_C	Maintenance Action Code	QMMA	MNCOD	Activity Code
MI_DTWKHIST_MAINT_ACTN_DESC_C	Maintenance Action Description	QPCT	KURZTEXT	Short Text for Code
MI_DTWKHIST_MARKED_FOR_DEL_F	Marked for Deletion?	QMFE	KZLOESCH	Delete Data Record
MI_DTWKHIST_EVNT_DTL_DESC_C	Work History Detail Description	VIQMEL	QMTXT	Short Text
MI_DTWKHIST_EVNT_DTL_ID_C	Work History Detail ID	QMFE, VIQMEL	QMNUM, AUFNR, FENUM	Notification Number - Order Number
MI_DTWKHIST_WRK_HISTRY_ID_C	Work History ID	VIAUFKS	QMNUM	Notification Number

APM Field ID	APM Field Caption	SAP Table	SAP Field	SAP Field Caption
MI_DTWKHIST_ORDR_ID_C	Order ID	VIAUFKS	AUFNR	Order Number
MI_DTWKHIST_RQST_ID_C	Request ID	VIQMEL	QMNUM	Notification Number

SAP Technical Characteristics Mappings

The following table explains the SAP fields that are used to populate the baseline Technical Characteristic fields when you extract SAP characteristics to create Technical Characteristic records in APM.

APM Field Name	APM Field Name	SAP Table	SAP Field ID
Data Type	MI_TECHCHAR_TYPE_C	CABN	ATFOR
Length of Data Type	MI_TECHCHAR_NUM_CHARS_N	CABN	ANZST
Number of Decimal Places	MI_TECHCHAR_NUM_DEC_PLACES_N	CABN	ANZDZ
Description	MI_TECHCHAR_DESC_C	CABN	ATBEZ
Character Value	MI_TECHCHAR_CHAR_VALUE_C	AUSP	ATWRT/ATFLB/ATFLV
Numeric Value	MI_TECHCHAR_NUMERIC_VALUE_N	AUSP	ATWRT/ATFLB/ATFLV
Multiple Value Characteristic	MI_TECHCHAR_MULTI_VALUE_C	AUSP + TCURC T006	ATWRT/ATFLB/ATFLV + ISOCD MSEH6
CMMS System	MI_TECHCHAR_SAP_SYSTEM_C	None	<SY-SID> + <SY-MANDT>
Name	MI_TECHCHAR_NAME_C	CABN	ATNAM
Currency Value	MI_TECHCHAR_CURR_VALUE_N	AUSP	ATWRT/ATFLB/ATFLV
Equipment ID	MI_TECHCHAR_EQUIP_ID_C	EQUI	EQUNR
Functional Location ID	MI_TECHCHAR_FLOC_ID_C	IFLOT	TPLNR
Technical Characteristics ID	MI_TECHCHAR_ID_C	CABNT	ATINN
Unit of Measurement	MI_TECHCHAR_UOM_C	TCURC T006	ISOCD MSEH6
Restrictable Characteristic Indicator	MI_TECHCHAR_IS_RESTRICTABLE_F	CABN	ATGLA
Technical Characteristic Value Description	MI_TECHCHAR_VALUE_DESC_C	CABNT	ATBEZ
Interval Value	MI_TECHCHAR_INTERVAL_VALUE_C	AUSP + TCURC T006	ATWRT/ATFLB/ATFLV + ISOCD MSEH6

APM Field Name	APM Field Name	SAP Table	SAP Field ID
Class Number	MI_TECHCHAR_CLASS_NUMBER	KLAH	CLASS
Item Number	MI_TECHCHAR_ITEM_NUMBER	KSML	POSNR

SAP Work Management Mappings

The following table explains the SAP fields that are used to populate the baseline Work Management fields when you extract SAP characteristics to create Work Management records in APM.

All the APM fields belong to the MI_TASKCALB/MITASKINSP family.

APM Field ID	APM Field Caption	SAP Table	SAP Field	SAP Field Caption	Mapping Formula
MI_TASK_LAST_DATE_DT **Note:** The time zone used for the value in the Actual finish: Execution (date) field is the same as the time zone of the user who created the Work Management.	Last Date	AFVV	IEDD	Actual finish: Execution (date)	Null
MI_TASK_EAM_REF_LAST_DT_C	EAM Reference Last Date	AFVV	IEDD	Actual finish: Execution (date)	Null
MI_TASK_DESC_TX	Task Description	VIMPOS / PLKO	EQUNR / TPLNR	Equipment/ Functional Location	Concatenate EQUNR or TPLNR with - and PLPO.LTXA1 + PLPO.LTXA2
MI_TASK_TASK_LIST_GROUP_CNTR_C	Task List Group Counter	PLKO	PLNAL	Group Counter	PLNAL
MI_TASK_TASK_LIST_GROUP_C	Task List Group	PLKO	PLNNR	Key for Task List Group	PLNNR
MI_TASK_MAINT_PLAN_ITEM_NBR_C	Maintenance Item	MPOS	WAPOS	Maintenance item	WAPOS
MI_TASK_MAINT_PLAN_NBR_C	Maintenance Plan	MPLA	WARPL	Maintenance Plan	WARPL

APM Field ID	APM Field Caption	SAP Table	SAP Field	SAP Field Caption	Mapping Formula
MI_TASK_NEXT_DATE_DT **Note:** The time zone used for the value in the Next planned date field is the same as the time zone of the user who created the Work Management.	Next Date	MHIS	NPLDA	Next planned date	Null
MI_TASK_EAM_REF_NEXT_DT_C	EAM Reference Next Date	MHIS	NPLDA	Next planned date	Null
MI_TASK_DESIR_INTER_NBR	Desired Interval	Null	Null	Null	Null
MI_TASK_DESIR_INTER_UOM_C	Desired Interval UOM	Null	Null	Null	Null
MI_TASK_MIN_INTER_NBR	Min Interval	Null	Null	Null	Null
MI_TASK_MIN_INTER_UOM_C	Min Interval UOM	Null	Null	Null	Null
MI_TASK_MAX_INTER_NBR	Max Interval	Null	Null	Null	Null
MI_TASK_MAX_INTER_UOM_C	Max Interval UOM	Null	Null	Null	Null
MI_TASK_OPERATION_NBR_C	Operation Number	PLPO	VORNR	Operation/Activity Number	VORNR
MI_TASK_ID	Task	PLPO	LTXA1, LTXA2	Operation/Activity Number	Concatenate MPOS-EQUNR or MPOS-FLOC with MPLA-WARPL + MPOS-WAPOS + PLKO-PLNTY + PLKO-PLLNR + PLKO-PLNAL + PLPO-VORNR

APM Field ID	APM Field Caption	SAP Table	SAP Field	SAP Field Caption	Mapping Formula
MI_TASK_TASK_LIST_TYPE_C	Task List Type	PLKO	PLNTY	Task List Type	PLNTY
MI_TASK_CREATE_DATE_D **Note:** The time zone used for the value in the SAP Creation Date field is the same as the SAP server time zone.	Create Date	PLPO	ANDAT	SAP Creation Date	ANDAT
MI_TASK_EAM_REF_CREATE_DT_C	EAM Reference Creation Date	PLPO	ANDAT	SAP Creation Date	ANDAT
MI_TASK_MAINT_PLANT_C	Maintenance Plant	MPOS	SWERK	SAP Maintenance Plant	SWERK
MI_TASK_CHANGE_DATE_D **Note:** The time zone used for the value in the SAP Last Changed Date field is the same as the SAP server time zone.	Change Date	PLPO	AEDAT	SAP Last Changed Date	AEDAT
MI_TASK_EAM_REF_CHANGE_DT_C	EAM Reference Last Changed Date	PLPO	AEDAT	SAP Last Changed Date	AEDAT
MI_TASK_SAP_SYSTEM_C	SAP System	None	SY-SID, SY-MANDT	SAP System	Concatenate SY-SID with SY-MANDT
MI_TASK_WO_NUMBER_C	Work Order Number	MIHO	AUFNR	Order Number	Null

SAP Recommendation Mappings

The following tables explain the Recommendation fields that are used to populate SAP Notification fields when you use the Notification Management Adapter.

APM Field ID	APM Field Caption	SAP Table ID	SAP Field ID	BAPI Structure	BAPI Field	SAP Field Caption	Notes
MI_REC_ASSET_ID_CHR	Asset ID	VIQMEL	EQUNR	BAPI2080_NOTHDRI	EQUIPMENT	Equipment number	None
MI_REC_LOC_ID_CHR	Functional Location ID	VIQMEL	TPLNR	BAPI2080_NOTHDRI	FUNCT_LOC	Functional Location	None
MI_REC_NOTIF_TYPE_C	M2	VIQMEL	QMART	None	NOTIF_TYPE	Notification Type	By default, the Notification Type field in SAP is always populated with the value M2. You can, however, configure the APM system to create other notification types.
None	None	None	None	BAPI2080_NOTHDRI	REPORTEDBY	Name of Person Reporting Notification	The Reported By field is populated in SAP with the first twelve characters of the user ID of the Security User that was logged in to APM when the Notification was created.
MI_REC_LONG_DESCR_TX	Recommendation Description	None	None	None	None	Notification Long Text	The value in this field appears as a string.
MI_REC_SHORT_DESCR_CHR	Recommendation Headline	VIQMEL	QMTXT	BAPI2080_NOTHDRI	SHORT_TEXT	Short Text	None

The following fields are updated in the Recommendation record based on data from the created Notification.

APM Field ID	APM Field Caption	SAP Table ID	SAP Field ID	BAPI Structure	BAPI Field	SAP Field Caption	Notes
MI_REC_EAM_REF_CHANGE_DATE_C	EAM Reference Change Date	VIQMEL	AEDAT/ AEZEIT	None	None	Changed on Date/ Time	The value in this field appears as a string to match the date and time in SAP.
MI_REC_EAM_REF_CREATE_DATE_C	EAM Reference Creation Date	VIQMEL	ERDAT/ ERZEIT	None	None	Created on Date/ Time	The value in this field appears as a string to match the date and time in SAP.
MI_REC_WR_EQUIP_C	Work Request Equipment	VIQMEL	EQUNR	None	None	Equipment number	None
MI_REC_WR_LOC_C	Work Request Functional Location	VIQMEL	TPLNR	None	None	Functional Location	None
MI_REC_WK_REQ_REF_CHR	Work Request Reference	VIQMEL	QMNUM	None	None	Notification Number	None

SAP Task Value Mappings

When you use the Work Management Interface to create Orders from APM Task records, several values in the APM Task record are passed to the SAP Order and its associated Operations.

The following table explains the Task fields whose values are passed to the SAP Function Module /MIAPM/MAINTAIN_ORDER (which calls the SAP BAPI BAPI_ALM_ORDER_MAINTAIN).

APM Field Caption	BAPI Structure	SAP BAPI Field
Work Order Type	BAPI_ALM_ORDER_HEADERS_I	ORDER_TYPE
Task Description	BAPI_ALM_ORDER_HEADERS_I	SHORT_TEXT
Task List Type	None	TASKLIST_TYPE
Task List Group	None	TASKLIST_GROUP
Task List Group Counter	None	TASKLIST_GROUP_CTR
Task Details	None	IT_TEXT_LINES
Work Order Number	None	ORDER_NUMBER

APM Field Caption	BAPI Structure	SAP BAPI Field
The APM system maps a value from the Equipment record to which the Task record is linked, based upon the configuration of the query Get SAP ID for Equipment, which is stored in the Catalog folder \\Public\Meridium\Modules\SAP Integration Interfaces\Queries.	BAPI_ALM_ORDER_HEADERS_I	EQUIPMENT
The APM system maps a value from the Functional Location record to which the Task record is linked, based upon the configuration of the query Get SAP ID for Functional Location, which is stored in the Catalog folder \\Public\Meridium\Modules \SAP Integration Interfaces\Queries.	None	FUNCT_LOC
Work Order User Status	None	IV_USR_STATUS

After these values are passed to the SAP BAPI, the Function Module then sends additional data from the associated SAP Task List to the SAP Order, as described in the following table.

Task List Field	BAPI Structure	Order Field
WERKS	BAPI_ALM_ORDER_HEADERS_I	PLANT
ARBPL	BAPI_ALM_ORDER_HEADERS_I	MN_WK_CTR
None. The value 4 is always mapped.	BAPI_ALM_ORDER_HEADERS_I	SCHED_TYPE
IWERK	BAPI_ALM_ORDER_HEADERS_I	PLANPLANT

Also, for each Operation that belongs to the Task List, a corresponding Operation will belong to the Order. The following table identifies the values that are mapped from each Operation that is attached to the Task List to each Operation that is attached to the Order.

Task List Field	BAPI Structure	Order Field
ARPBL	BAPI_ALM_ORDER_OPERATION	WORK_CNTR
VORNR	BAPI_ALM_ORDER_OPERATION	ACTIVITY
STEUS	BAPI_ALM_ORDER_OPERATION	CONTROL_KEY
WERKS	BAPI_ALM_ORDER_OPERATION	PLANT
LTXA1	BAPI_ALM_ORDER_OPERATION	DESCRIPTION
TXTSP	BAPI_ALM_ORDER_OPERATION	LANGU
KTSCH	BAPI_ALM_ORDER_OPERATION	STANDARD_TEXT_KEY
LOANZ	BAPI_ALM_ORDER_OPERATION	NO_OF_TIME_TICKETS
LOART	BAPI_ALM_ORDER_OPERATION	WAGETYPE
QUALF	BAPI_ALM_ORDER_OPERATION	SUITABILITY
LOGRP	BAPI_ALM_ORDER_OPERATION	WAGEGROUP

Task List Field	BAPI Structure	Order Field
SORTL	BAPI_ALM_ORDER_OPERATION	SORT_FLD
LIFNR	BAPI_ALM_ORDER_OPERATION	VENDOR_NO
BMSCH	BAPI_ALM_ORDER_OPERATION	QUANTITY
MEINH	BAPI_ALM_ORDER_OPERATION	BASE_UOM
PREIS	BAPI_ALM_ORDER_OPERATION	PRICE
PEINH	BAPI_ALM_ORDER_OPERATION	PRICE_UNIT
SAKTO	BAPI_ALM_ORDER_OPERATION	COST_ELEMENT
WAERS	BAPI_ALM_ORDER_OPERATION	CURRENCY
INFNR	BAPI_ALM_ORDER_OPERATION	INFO_REC
EKORG	BAPI_ALM_ORDER_OPERATION	PURCH_ORG
EKGRP	BAPI_ALM_ORDER_OPERATION	PUR_GROUP
MATKL	BAPI_ALM_ORDER_OPERATION	MATL_GROUP
ANZZL	BAPI_ALM_ORDER_OPERATION	NUMBR_OF_CAPACITIES
PRZNT	BAPI_ALM_ORDER_OPERATION	PERCENT_OF_WORK
INDET	BAPI_ALM_ORDER_OPERATION	CALC_KEY
LARNT	BAPI_ALM_ORDER_OPERATION	ACTTYPE
ANLZU	BAPI_ALM_ORDER_OPERATION	SYSTCOND
ISTRU	BAPI_ALM_ORDER_OPERATION	ASSEMBLY
VERTN	BAPI_ALM_ORDER_OPERATION	INT_DISTR
PLIFZ	BAPI_ALM_ORDER_OPERATION	PLND_DELRY
DAUNO	BAPI_ALM_ORDER_OPERATION	DURATION_NORMAL
DAUNE	BAPI_ALM_ORDER_OPERATION	DURATION_NORMAL_UNIT
EINSA	BAPI_ALM_ORDER_OPERATION	CONSTRAINT_TYPE_START
EINSE	BAPI_ALM_ORDER_OPERATION	CONSTRAINT_TYPE_FINISH
ARBEI	BAPI_ALM_ORDER_OPERATION	WORK_ACTIVITY
ARBEH	BAPI_ALM_ORDER_OPERATION	UN_WORK
AUFKT	BAPI_ALM_ORDER_OPERATION	EXECFACTOR
SLWID	BAPI_ALM_ORDER_OPERATION	FIELD_KEY
USR00	BAPI_ALM_ORDER_OPERATION	USR00
USR01	BAPI_ALM_ORDER_OPERATION	USR01
USR02	BAPI_ALM_ORDER_OPERATION	USR02
USR03	BAPI_ALM_ORDER_OPERATION	USR03
USR04	BAPI_ALM_ORDER_OPERATION	USR04

Task List Field	BAPI Structure	Order Field
USR05	BAPI_ALM_ORDER_OPERATION	USR05
USE05	BAPI_ALM_ORDER_OPERATION	USE05
USR06	BAPI_ALM_ORDER_OPERATION	USR06
USE06	BAPI_ALM_ORDER_OPERATION	USE06
USR08	BAPI_ALM_ORDER_OPERATION	USR08
USR09	BAPI_ALM_ORDER_OPERATION	USR09
USR10	BAPI_ALM_ORDER_OPERATION	USR10
USR11	BAPI_ALM_ORDER_OPERATION	USR11

When you use the Work Management Interface to create Notification from APM Task records, several values in the APM Task record are passed to the SAP Notification. The following table provides a list of the Task fields whose values are passed to the SAP Function Module / MIAPM/CREATE_NOTIF (which calls SAP BAPI BAPI_ALM_NOTIF_CREATE).

APM Field Caption	BAPI Structure	SAP BAPI Field
Notification Type	None	NOTIF_TYPE
Task Description	NOTIFHEADER	SHORT_TEXT
Task Details	LONGTEXTS	TEXT_LINE
The APM system maps a value from the Equipment record to which the Task record is linked based on the configuration of the query Get SAP ID for Equipment, which is stored in the Catalog folder `\\Public\Meridium\Modules\SAP Integration Interfaces\Queries`.	NOTIFHEADER	EQUIPMENT
The APM system maps a value from the Functional Location record to which the Task record is linked based on the configuration of the query Get SAP ID for Functional Location, which is stored in the Catalog folder `\\Public\Meridium\Modules\SAP Integration Interfaces\Queries`.	NOTIFHEADER	FUNCT_LOC
Notification User Status	None	IV_USR_STATUS

SAP PI Family Fields

EAM System

EAM System records are used to store information about your systems to facilitate data extractions and loads.

When you transfer data from APM to your EAM or service management system, the APM system uses EAM System records to determine which EAM system to use.

In addition, EAM System records are used by the Equipment Adapter and the Functional Location Adapter.

This topic provides an alphabetical list and description of the fields that exist for the EAM System family. The information in the table reflects the baseline state and behavior of these fields.

This family is not enabled for site filtering, which means that records in this family can be accessed by any user with the appropriate license and family privileges. For more information, refer to the Sites section of the documentation.

Field	Data Type	Description	Behavior and Usage
Default EAM System?	Boolean	A value that indicates whether this system should be used by default when transferring data between your APM system and your system.	On the datasheet, you can select the check box to identify this system as the Default EAM System. The default EAM system is used when creating a notification from a General Recommendation when there is no technical object from which to obtain the EAM system for the creation of the notification.
Name	Character	The name of the system.	You can enter any name, but we recommend that you enter a name in the format <SYSID>-<CLIENT>, where <SYSID> is the System ID of the system and <CLIENT> is the Client number. By doing so, the value in the Name field will match the value that will be populated automatically in the System ID field.
Password	Character	The password to the system.	The password that you enter will be encrypted and displayed as asterisks on the datasheet.
Reconnect Delay	Numeric	Specifies the delay in seconds between when a communication failure is encountered when connecting and when the system should try to connect again.	The default value is 0. Enter your unique value.
SAP PI AAE	Boolean	If you are using SAP 7.3 or above, you may use the Advanced Adapter Engine (AAE). This parameter allows this functionality to be used during extraction.	You must enter one of the following values: • true: If you are using AAE. • false: If you are not using AAE. This is the default.
SAP PI Host	Character	The SAP PI server host.	Enter your unique value.
SAP PI Port	Character	The SAP PI server port.	Enter your unique value.

Field	Data Type	Description	Behavior and Usage
SAP PI Receiver Party	Character	The receiver determined in the communication channel section in SAP.	This field is optional. Enter your unique value.
SAP PI Receiver Service	Character	The receiver service determined in the communication channel section in SAP.	This field is optional. Enter your unique value.
SAP PI Sender Party	Character	The receiver sender determined in the communication channel section in SAP.	This field is optional. Enter your unique value.
SAP PI Sender Service	Character	The sender service determined in the communication channel in SAP.	The default value is GE_APMConnect.
System ID	Character	The ID of the system.	This field is populated automatically after you test the connection to the system using the **Test Connection** link on the **Associated Pages** menu. Specifically, the System ID field is populated automatically with the name of the system, using the format <SYSID>-<CLIENT>, where <SYSID> is the System ID of the system and <CLIENT> is the Client number.
System Type	Character	EAM system type.	Enter the value SAP_PI.
User ID	Character	The User ID of a user that can log in to the system.	None