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Integration of Asset Central Foundation with SAP EAM

THE BEST RUN SAP

Content

1 Purpose

This document describes the procedure(s) to configure the integration between Asset Central Foundation and SAP Enterprise Asset Management (SAP EAM) using SAP Mobile Add-on.

Asset central foundation names the technology foundation for content, processes, and integration supporting *SAP Asset Intelligence Network*, *SAP Predictive Asset Insights*, and *SAP Asset Strategy and Performance Management*. Customers get this as part of their *SAP Asset Intelligence Network*, *SAP Predictive Asset Insights*, and/or *SAP Asset Strategy and Performance Management* licensing.

As these configuration steps are customer-specific, they cannot be delivered by SAP, and must be completed by the customer. This document describes the general configuration steps to manually set up the configuration within the existing system landscape.

Key Features:

- Real time synchronization.
- Participate in network activities instantly from SAP ERP system.
- Workflow support in SAP ERP to process incoming shared data requests from asset network.
- Standard integration content with field and value mappings as business configuration.
- Manage data synchronization with data filters.
- Process high volumes with queue processing.
- Inbuilt conflict resolution (most recent change wins).
- Monitoring based on SAP Mobile Add-On administration and monitoring console.
- Custom integration enhancements through the SAP Mobile Add-On.

2 Change History

The change history is a record of the most important additions and major changes to the latest integration release that is H1 2021 made available for Asset Central Foundation 2205 release.

Functional Location Inbound Support	New functional location created in SAP Intelligent Asset Management (SAP IAM) can be synchronized to the SAP ERP system including hierarchy and dependent objects. For more information, see As Functional Location [page 31].
Integration Monitoring via SAP Cloud ALM for Equipment	Equipment logs can now be visualized in SAP Cloud ALM for enhanced integration and exception monitoring including SAP IAM specific events. For more information, see Integration with SAP Cloud ALM [page 60].
Functional Location Sharing Support	Based on the integration configuration, shared functional location in SAP Asset Intelligence Network can now be replicated to the SAP ERP system. For more information, see Handling of Shared Data [page 27].
Feature Availability	Asset central foundation integration features provided post year 2020 are not available out of the box for EHP5 and EHP6. The existing integration features till the year 2020 will continue to work.
Known Limitations and Restrictions	Known limitations and restrictions for Integration of asset central foundation can now be found in SAP Note 2859696 
Frequently Asked Questions	A list of frequently asked questions for Integration of asset central foundation can now be found in SAP Note 2859689 
Topic Enhancements	The following topics were enhanced for the 2205 release: • Prerequisites [page 7] • Handling of Shared Data [page 33] • As Functional Location [page 31] • Integration with SAP Cloud ALM [page 60]

3 Terminology

Important terms and terminology used in this document.

Terminology	Description
SAP IAM	SAP Intelligent Asset Management
SAP ERP	SAP Enterprise Resource Planning
SAP EAM	SAP Enterprise Asset Management
MDO	Mobile Data Object
CSRF	Cross-Site Request Forgery
SAP BTP	SAP Business Technology Platform
SAP AIN	SAP Asset Intelligence Network
SAP ASPM	SAP Asset Strategy and Performance Management

4 Preparation

4.1 Prerequisites

SAP Mobile Add-on is a prerequisite for all releases lower than SAP S/4 HANA 1909. The minimum requirement for using latest Asset Central Foundation integration features are as follows:

Release Version	Minimum Requirement
SAP S/4HANA: Mobile Add-on for S/4 1.0 SP11	SAP S/4HANA: 1610 FPS01
SAP ERP: Mobile Add-on for ERP 6.3 SP10	SAP ERP: ECC 6 EHP7 SP14
SAP S/4HANA 2021	S4CORE 106 FPS2

> **i Note**
>
> - New or existing customers using Asset Central Foundation integration for the releases mentioned above must ensure that they install or upgrade the SAP Mobile Add-on to the latest support package. If your software requirements are not listed in this topic, the latest update for your software is not yet available. For information about previous integration updates, see Prerequisites.
> - Customers in SAP S/4HANA 1909 releases such as FPS1, FPS2, SP03, SP04, and SP05 can get the latest integration features by following the installation details in the SAP Note 3151282.
> - Customers in SAP S/4HANA 2020 FPS0, FPS1, FPS2, and SP03 releases can get the latest integration features by following the installation details in the SAP Note 3151254.
> - Customers in SAP S/4HANA 2021 FPS0 and FPS1 releases can get the latest integration features by following the installation details in the SAP Note 3150235

- Mobile Add-On for SAP on premise systems support integration to the **SAP S/4HANA** system configuration, system administration, and monitoring. For more information, see:
  - Installing Mobile Add-on
  - Path to download Mobile Add-On for S/4HANA: https://support.sap.com → *Download Software* > *By Category* > *SAP Mobile Solutions* > *SAP S/4HANA, ADD-ON FOR MOBILE INTEGRATION* > *MOBILE ADD-ON FOR S/4HANA* > *MOBILE ADD-ON FOR S/4HANA 1.0*.
- Mobile Add-On for SAP on premise systems support integration to the **SAP ERP** system configuration, system administration, and monitoring. For more information, see:
  - Installing Mobile Add-on
  - Path to download Mobile Add-On for ERP: https://support.sap.com → *Download Software* > *By Category* > *SAP Mobile Solutions* > *MOBILE ADD-ON FOR ERP* > *MOBILE ADD-ON FOR ERP* > *MOBILE ADD-ON FOR ERP 6.3*.

> **i Note**
>
> The S4MISU and SMISU software components are not applicable for asset central foundation integration.

- SAP Cloud Connector serves as a link between SAP Cloud Platform applications and On-premise systems. For more information, see Cloud Connector.
- Customers who have installed Mobile Add-on for ERP 6.2 SP08 or above, that is, for SAP ERP EHP5 or EHP6 releases, the activation of business function **`/ACI/ACF_INTEGRATION_BUS_FUNC`** is mandatory. The business function can be activated using transaction **`SFW5`**.

4.1.1 Required Authorizations for the Mobile Add-On for SAP ERP ConfigPanel

To use the Mobile Add-On for SAP ERP ConfigPanel, the following minimum user authorizations are required:

Authorization Object	Authorization Attribute	Value
S_START	AUTHPGMID	R3TR
	AUTHOBJTYP	WDYA
	AUTHOBJNAM	/SYCLO/CORE_CONFIG_WB
	AUTHOBJNAM	/SYCLO/CORE_CONFIG_WB_DISP
S_ICF	ICF_FIELD	SERVICE
	ICF_VALUE	SYCLOADM

The Web Dynpro application `/SYCLO/CORE_CONFIG_WB_DISP` is the display only version of the ConfigPanel.

4.1.2 Required Authorizations for the Mobile Add-On for SAP ERP Administration & Monitoring Portal

To use the Mobile Add-On for SAP ERP Administration & Monitoring Portal, the following minimum user authorizations are required:

Authorization Object	Authorization Attribute	Value
S_START	AUTHPGMID	R3TR
	AUTHOBJTYP	WDYA

Authorization Object	Authorization Attribute	Value
	AUTHOBJNAM	/SYCLO/CORE_ADMIN_MONI_PORTAL
	AUTHOBJNAM	/SYCLO/CORE_CONFIG_WB_DISP
S_ICF	ICF_FIELD	SERVICE
	ICF_VALUE	SYCLOADM

4.1.3 Required Authorizations for Mobile Add-On for SAP ERP for System Utilities

The Mobile Add-On for SAP ERP generates certain data to support mobile application integration with SAP systems as well as for administration and monitoring purposes.

A set of system utility programs are provided to allow the purge of data generated by the Mobile Add-On for SAP ERP. Some of the utility programs are listed here:

- `/SYCLO/CORE_PURGE_UTILITY_PROG`: Allows the deletion of the mobile user record
- `/SYCLO/CORE_EXCH_PURGE_PROG`: Allows the deletion of the XChange table records
- `/SYCLO/CORE_PUSH_PURGE_PROG`: Allows the deletion of push instance records
- `/SYCLO/CORE_SYSSTAT_PURGE_PROG`: Allows the deletion of system statistic records
- `/MFND/CORE_CLNT_ST_PURGE_PROG`: Allows the deletion of client state records
- `/MFND/CORE_DEPOBJ_Q_PURGE_PROG`: Allows the deletion of dependent object queue records
- `/MFND/CORE_SVR_PAGE_PURGE_PROG`: Allows the deletion of server paging package records

The authorization object required to run the system utility programs is as follows:

Authorization Object	Authorization Attribute	Value
/SMFND/A01	/SMFND/APP	Relevant mobile application ID
	ACTVT	06

5 Set-up and Configuration

5.1 Activate Business Configuration Set

The following Business Configuration Sets must be activated for all the required configurations for SAP EAM and asset central foundation integration:

- **`/ACI/ASSET_CENTRAL_INTEGRATION`** by selecting *Do not overwrite default values* option
- **`/ACI/ASSET_CENT_INT_2011_PATCH_1`** by selecting *Overwrite All Data* option

To activate, use transaction code **`SCPR20`**.

> **i** Note
>
> Refer to the 2888351 for information on standard field and value mapping delivered as part of code and configuration.

5.2 Define Number Range Intervals

Context

The intervals for number range objects /SYCLO/C_2, /SMFND/IQ1, /SMFND/SY1 and /SMFND/DS1 must be defined.

Procedure

1. Start transaction **`SNRO`**.
2. Enter the number range for object */SYCLO/C_2*:
   - Interval 01, Value 0000000001 ~ 0099999999: Push instance record ID
   - Interval 02, Value 0100000000 ~ 0199999999: System statistic record ID
   - Interval 03, Value 0200000001 ~ 0299999999: Mobile transaction history record ID

- Interval 04, Value 0300000001 ~ 0399999999: Subscription queue record ID

3. Enter the number range for object */SMFND/SY1*.
   - Interval 01, Value 0000000001 ~ 0199999999: Object link record ID
4. Enter the number range for object */SMFND/IQ1*.
   - Interval 01, Value 0000000001 ~ 0199999999: Inbound transaction record ID
5. Enter the number range for object */SMFND/DS1*.
   - Interval 01, Value 0000000001 ~ 0999999999: Staging Data Store Data Segment Record No.

5.3 Enabling Authentication

5.3.1 Authorization in SAP S/4 HANA or SAP ERP

The SAP S/4HANA or SAP ERP system user should have authorization for the following transactions:

- **`STRUST`**: To upload a certificate
- **`SM59`**: To create an RFC destination
- **`OA2C_CONFIG`**: To configure OAuth 2.0 Client Configuration

5.3.2 Authorization in SAP Business Technology Platform

The SAP Business Technology Platform user should have the role *Organization Manager* in their space to access the client ID and client secret information.

The SAP Business Technology Platform user should have *Administrator* access to the global account for adding subaccount to the cloud connector.

5.3.3 OAuth 2.0 Client Credentials

Context

The Cloud Foundry (CF) landscape supports only the OAuth 2.0 client credentials flow of authentication. Execute the following activities to enable the authentication between SAP S/4HANA or SAP ERP system and asset central foundation are:

- Upload Root Certificate Authority (CA) of the SAP BTP Server Certificate to the SAP S/4HANA or SAP ERP System [page 13]
- Maintain asset central foundation system information in the SAP S/4HANA or SAP ERP system
- OAuth 2.0 Configuration [page 14]
  Information such as OAuth 2.0 Client ID, Client Secret, Token URL, and Application URL are mandatory to proceed with the configuration steps. Make sure that you have this information in hand. You can find the OAuth 2.0 credential details from the service key instance using navigation path Subaccount → Spaces → Service Instances → (select relevant service instance) → Service Keys → (select relevant service key).

> **i Note**
>
> To execute these steps, make sure the Service Instance is already created for the relevant product (For example, SAP Asset Intelligence Network, SAP Asset Strategy and Performance Management and so on).

Client Credentials	Parameters
Client ID	uaa.clientid
Client Secret	uaa.cleintsecret
Token URL	uaa.url+'oauth/token'
Application URL	endpoints.ain-service

> **i Note**
>
> The SAP ASPM client credential always takes a precedence.
>
> Customers who have one or more product license (SAP Asset Intelligence Network + SAP Predictive Asset Insights and SAP Asset Strategy and Performance Management) or (SAP Asset Intelligence Network + SAP Asset Strategy and Performance Management) or (SAP Predictive Asset Insights + SAP Asset Strategy and Performance Management) must request for SAP Asset Strategy and Performance Management client credential details and use them in the authentication configurations.
>
> Customers with product combination such as (SAP Asset Intelligence Network + SAP Predictive Asset Insights) or (SAP Asset Intelligence Network) must request for SAP Asset Intelligence Network client credential details and use them in the authentication configurations.
>
> Customers with only SAP Predictive Asset Insights must request for asset central client credential details and use them in the authentication configurations.

5.3.3.1 Upload Root Certificate Authority (CA) of the SAP BTP Server Certificate to the SAP S/4HANA or SAP ERP System

The Root Certificate Authority (CA) of the SAP BTP server certificate should be uploaded to the SAP S/4HANA or ERP system. The key steps are:

Context

1. Import or download the root CA of the SAP Business Technology Platform server certificate from the browser by launching the relevant application, such as SAP Asset Intelligence Network, SAP Predictive Asset Insights or SAP Asset Strategy and Performance Management.
2. The downloaded root CA certificate should be uploaded to the SAP S/4HANA or SAP ERP system using transaction code **STRUST** to the relevant PSEs (client standard and anonym).

> **i** Note
>
> Make sure that the certificate is uploaded to the SSL client anonym PSE as well.

5.3.3.2 Maintain Asset Central Foundation System Information in the SAP S/4HANA or SAP ERP System

Context

1. Create a new RFC destination for the CF tenant using transaction code **SM59** using the following details:
   - *Name*: AIN_CONNECTION_CF
   - *Connection Type*: G (HTTP Connection to External Server)
   - *Target Host*: Enter Java Application URL. For example, the SAP Asset Intelligence Network or SAP Asset Strategy and Performance Management or SAP Predictive Asset Insights tenant backend URL. Example: --------.hana.ondemand.com

     > **i** Note
     >
     > - You can find the application URL from the service key instance using navigation path Subaccount → Spaces → Service Instances → (select relevant service instance) → Service Keys → (select relevant service key) → endpoints.ain-service
     > - Make sure that the "https://" prefix is removed from the URL.

2. In the *Security Options* section, set SSL to *Active* and choose the relevant SSL certificate from the certificate list.

> **i** Note
>
> Make sure the ABAP application server connecting to SAP Cloud Platform supports TLS version 1.2 or higher. The 510007 has all the necessary information.

5.3.3.3 OAuth 2.0 Configuration

Context

The following configuration steps must be performed to set up the OAuth 2.0 client credentials authentication. This is applicable only for customers with **SAP BASIS release 752 and above.**

Procedure

1. Start transaction **`OA2C_CONFIG`** (OAuth 2.0 Clients).
2. To create an OAuth 2.0 client, choose *Create* button on the *Overview* screen and a popup with the configuration UI appears.
3. Choose the OAuth 2.0 client */ACI/INT_SERVICE*.
4. Enter the OAuth 2.0 Client ID and choose *OK*. For more information regarding the Client ID and Client credentials, refer to the Onboarding Guide for SAP Asset Intelligence Network, SAP Predictive Asset Insights or SAP Asset Strategy and Performance Management.
5. Provide the Client secret password of the SAP Asset Intelligence Network or SAP Asset Strategy and Performance Management account.
6. In the *Access Settings* section, choose *Selected Grant Type* as *Client Credentials*.
7. In the *Authorization Server Settings* section, adjust the *Authorization Endpoint* and *Token Endpoint* by providing the token endpoint of the SAP Asset Intelligence Network, SAP Predictive Asset Insights or SAP Asset Strategy and Performance Management account. The authorization endpoint may be the same as token endpoint (uaa.url+'oauth/token').
8. Save your changes.

> **i** Note
>
> - If proxy is enabled for outbound communication, make sure to also maintain the proxy details in the OAuth configuration.
> - To use an OAuth profile, users must have the following authorization.

Authorization Object	Authorization Attribute	Value
S_OA2C_USE	OA2C_PROF	/ACI/INT_SERVICE
	ACTVT	16

An alternate option is to disable the authorization check by choosing the *No authorization check* checkbox in the OAuth Profile /ACI/INT_SERVICE (applicable from SAP S/4 HANA 1709 and above).

5.3.3.4 OAuth 2.0 for Customers with Lower SAP_BASIS Release

Context

Customers with a lower SAP_BASIS release (less than 752) should follow the steps outlined below for the OAuth client credentials flow configurations.

Procedure

1. Create a new *RFC Destination* (for example, OAUTH_DESTINATION) and maintain the Client ID, Client secret, and token URL of the SAP AIN or SAP ASPM tenant.
2. Enter the *Connection Type* as HTTP Connection to External Server
3. Navigate to the *Technical Settings* tab and in the *Target System Settings* section, enter the *Host* as ******.eu10.hana.ondemand.com and the *Path Prefix* as /oauth/token.
4. Navigate to the *Logon & Security* tab and select *Basic authentication* button. In the field *User* enter the Client ID and in the field *Password* enter the Client Secret.

> **i Note**
>
> The maximum length of the User Name field in the RFC destination (transaction code SM59) is 32 characters and this is not sufficient to store the Client ID of Asset central foundation tenant. The maximum length of the User Name field is extended to 254 characters in specific support packages.
>
> The minimum SAP BASIS release to support asset central integration are as follows:

Basis Release	Support Package
SAP_BASIS 700	SAPKB70032
SAP_BASIS 701	SAPKB70117
SAP_BASIS 702	SAPKB70217

Basis Release	Support Package
SAP_BASIS 730	SAPKB73013
SAP_BASIS 731	SAPKB73114
SAP_BASIS 740	SAPKB74009

For more information about the support packages, see 2020611.

5. In addition, under Security Options, set SSL to Active and choose the relevant SSL certificate from the certificate list

5.4 Define Server Management Properties

Context

You use this procedure to maintain the asset central foundation integration properties. Run the transaction **`/N/SYCLO/ADMIN`** from your on-premise system. The web-dynpro application displays.

Procedure

1. Navigate to the *Administration* Tab and choose *Server Management* from the navigation bar.
2. Select *Mobile Application* from the dropdown and select *Asset Central Integration*.
3. Choose the *Create* button and provide the following details in *Basic Info* tab.
   - *Mobile Application*: **`Asset Central Integration`**
   - *Server Name*: For example, ACI_CLOUD
   - *Middeware Svr SerNo*: For example, SAP BTP
   - *System Component*: Select relevant option from the drop down
   - *RFC Destination*: Enter the name of the RFC destination created. For more information, see Maintain Asset Central Foundation System Information in the SAP S/4HANA or SAP ERP System [page 13].
   - *UI Host Name*: FLP Launchpad URL. For example, https://**********.sap.hana.ondemand.com. Caution: Make sure that all suffix after **.com** is removed.
4. Choose to the *Additional Properties* tab and *Add* the following details:

Property Group	Property Name	Property Value
AC_PROPERTY	EXTERNAL_SYSTEM_NAME	<External System Name>

Property Group	Property Name	Property Value
		The SAP ERP System Name as defined in the SAP Asset Intelligence Network *Applications Settings* → *Systems* section. For more information, see Configuring External Systems.
UI_URL_PATH	ANNOUNCEMENT	/cp.portal/site#ainannouncements-display&/PlannedMaintenanceList/
UI_URL_PATH	ASSESSMENT	/cp.portal/site#assessment-display&/assessmentDetails/
UI_URL_PATH	EQUIPMENT	/cp.portal/site#ainequipment-display&/
UI_URL_PATH	FUNLOC	/cp.portal/site#ainlocations-display&/
UI_URL_PATH	INDICATOR	/cp.portal/site#ainequipment-display&/indicatorDetails/
UI_URL_PATH	INSTRUCTION	/cp.portal/site#aininstructions-display&/
UI_URL_PATH	MODEL	/cp.portal/site#ainmodels-display&/
UI_URL_PATH	RECOMMENDATION	/cp.portal/site#pmr-display?&/recommendation/
URL_PATH	PATH_PREFIX	/ain or /aspm **i Note** /aspm: Customers with SAP Asset Strategy and Performance Management subscription uses this value. /ain: Customers with SAP Asset Intelligence Network subscription uses this value.
AUTHENTICATION	AUTH_TYPE	OAUTH
AUTHENTICATION	AUTH_OAUTH_PROFILE	/ACI/INT_SERVICE **i Note** This entry is only applicable for customers with SAP BASIS release 752 and above.

Property Group	Property Name	Property Value
AUTHENTICATION	AUTH_OAUTH_RFC	**i Note** This entry is only applicable for customers with lower SAP BASIS release (lesser than 752). Make sure the value matches with the RFC Destination created earlier. For more information see topic, OAuth 2.0 for Customers with Lower SAP_BASIS Release [page 15].

5. Save your entries.

5.5 Activate and Maintain Services

Context

You use this procedure to activate and maintain the asset central change notification OData Service to enable bi-directional synchronization between SAP EAM and asset central foundation. This step is mandatory for customers to enable inbound synchronization or replication from asset central foundation to SAP EAM.

Procedure

1. Logon to the on-premise system and execute transaction `/N/IWFND/MAINT_SERVICE`.
2. Choose the *Add Service* button on the toolbar.
3. On the *Filter* section find the System Alias and the Technical Service Name /ACI/ASSET_CENTRAL_CHANGE_NOTIF.
4. On selecting the Technical Service Name entry, the Select *Backend Services* tab popup appears.
5. Enter the details such as technical service required name, technical model name and package assignment.
6. Nagivate to the main screen and add this to the service using the *Add Service* button.
7. Search for the technical service and add the *System Alias*.
8. Select the valid *System Alias* and choose the *Customizing* button.
9. Navigate to *Change* to enable metadata default and save your entries.

> **i** Note
>
> - To check if the service is activated, execute the *SAP Gateway Client* button and choose Entity Sets. On the *EntitySet Name* pop-up screen, choose the AssetCentralChangeNotifications and execute the **ODATA** service. The result status should be 200. If you are receiving the result status as 200, then, your service is ready for the setup.
> - Make sure to define the default client for the OData Service /ACI/ASSET_CENTRAL_CHANGE_NOTIF using transaction **SICF** so that all the inbound calls are re-directed to the right client.
> - For more information, see Activate and Maintain Services.
> - Please make sure the SAP system has idempotent services configured. Settings for Idempotent Services.
> - Please make sure the SAP system has CSRF configured. For more information, see https://help.sap.com/saphelp_gateway20sp12/helpdata/en/e6/cae27d5e8d4996add4067280c8714e/frameset.htm

5.6 Configure Destination Service

Context

You use this procedure to maintain SAP S/4HANA or SAP ERP API destination details (asset central change notification OData Service) in asset central foundation.

Procedure

1. Navigate to the corresponding Asset Central SaaS tenant.
2. Choose *Destinations* and select *New Destination*.
3. Provide the Destination name and its details. For example:
    - *Name*: EAM_CONNECTION (Make sure that the Name is always prefixed with **EAM_**)
    - *Type*: HTTP
    - *Description*: Provide a short description
    - *URL*: API to access the SAP S/4 HANA system (For example http://**********/sap/opu/odata/ACI/ASSET_CENTRAL_CHANGE_NOTIF/AssetCentralChangeNotifications)

> **Note**
>
> When defining the Destination, always enter the URL as HTTP since the on-premise destinations only support HTTP connections.

- *Proxy Type*: On Premise
- *Authentication*: Basic Authentication
- *User*: Username to access the SAP EAM system

> **Note**
>
> A technical/communication user must be used for communication. This user must have the following key authorizations to access the SAP ERP service from IAM:
>
> | Authorization Object | Authorization Attribute | Value |
> |---|---|---|
> | S_SERVICE | SVR_TYPE | HT |
> | | SVR_NAME | * |
> | S_RFC | RFC_TYPE | FUGR |
> | | RFC_NAME | * |
> | | ACTVT | 16 |
>
> Customers can typically have application level authorizations defined as part of standard business suite administration, which controls access to different business process and data. The various accesses include privileges to create or update or read objects like equipment, functional location, work order, notification, documents and so on. In addition to authorizations mentioned above, application specific authorizations or roles must also be assigned to the technical/communication user.

- *Password*: Password to access the SAP EAM system

4. Save your entries.
5. Provide the same destination name as maintained in SAP BTP cockpit while configuring External Systems in SAP Intelligent Asset Management. For more information, see Configuring External Systems.

5.7 Set-up Cloud Connector

Procedure

1. Login to the *Cloud Connector*.
2. Create a connector for your SAAS tenant by adding the subaccount.
3. The system prompts you to login to your subaccount. Enter the Region, Subaccount, Login details and Description.

4. Enter the *Port* details that are open for communication.
5. From the navigation panel, choose *Cloud To On-Premise* option and then select the *Subaccount* that you created.
6. Click *Add* for HTTP and HTTPS URL for the host that is open for communication.
7. Add relevant details in the *Resources Accessible* tab and enter the following:
8. Enter **`/sap/opu/odata`** as the endpoint in *URL Path* column and **`Path and all sub-paths`** in *Access Policy* column.

5.8 Integration Readiness Check

You use this function to check the readiness of outbound replication set-up. This check can be performed after completing the set-up and configuration steps.

To run the readiness check, execute the program **`/ACI/CORE_READINESS_CHECK_PROG`**.

6 Replication and Synchronization of Asset Data

The asset central foundation and SAP EAM integration supports Replication (→) and Synchronization (↔) of asset data and transactional data. A combination of both patterns is essential for the consistency of asset data.

The enhanced integration is based on events triggered for asset data changes in SAP ERP and asset central foundation. The events are triggered in real time and results in the orchestration of replication and synchronization processes.

- **Replication** (→): This pattern allows copying of selected data from the leading system to asset central foundation, subsequent changes to original data in the leading system are kept consistent.
- **Synchronization** (↔): This pattern allows distributed maintenance of data and establishes consistency among systems. Synchronization of asset master data can be achieved in multiple ways, from manual to completely automated.
- Replication and synchronization can be achieved using the following options:
  - **Initial Load**: Transfer high volumes of asset data from SAP ERP to asset central foundation by scheduling data agents (associated business objects in ERP)
  - **Real Time Sync**: Automatic synchronization of asset data in real time during the lifecycle of asset data between SAP ERP and asset central foundation.
  - **Lookup and Link**: Manually link existing asset master data in SAP ERP with related data in asset central foundation.

Synchronization and Replication of data is possible with the following methods:

- Transfer high volumes of asset data from SAP ERP to asset central foundation using standard initial load features.
- Automatic synchronization of newly created asset data in SAP ERP or asset central foundation.
- Manually link existing asset data in SAP ERP with asset data in asset central foundation.

6.1 ConfigPanel Overview

Synchronization object configurations are pre-delivered, and customers can enhance the configuration for specific needs. All the configuration activities relevant for asset central foundation integration using SAP Mobile Add-on are performed through the ConfigPanel. The ConfigPanel can be launched using transaction `/N/SYCLO/CONFIGPANEL`.

> **i Note**
>
> Changes you make through the ConfigPanel can significantly impact the behavior of the asset central foundation integration.

ConfigPanel has the following key features:

- **Exchange Object Configuration Settings**: Define change detection fields and change detection filter conditions. Every synchronization object will have pre-delivered exchange object configuration that can be modified based on specific needs.
  - *Change Detection Field Selection* Tab: Allows you to optimize the change detection process for asset central foundation integration. If the value change is detected for any of the selected field within the group, then, this will be considered for the asset central replication process. By default, all fields are initially checked.
  - *Change Detection Condition Filter* Tab: Allows you to restrict change detection based on data content. The data filter condition can be defined in the SAP range table format and the underlying SAP business object that qualifies the filter condition are only considered for the subsequent replication process.
- **Mobile Data Object Configuration Settings**: Mobile Data Object (MDO) represents sematic view of data and activity combination for a synchronization object. Every synchronization object will have a pre-delivered MDO configuration along with the default mapping and filter conditions that can be modified based on specific needs. They encapsulate the replication logic of asset central foundation integration. All the asset central foundation MDOs are of type synchronization MDO. Every MDO will have a data object handler which holds the business logic and the scope to perform the Fetch, Create, Update and Delete activities for a synchronization object.
  - *Data Filter* Tab: The key options available are:
    - **Synchronization Filter** is used to set data filters to manage the transfer of data (creation and delta synchronization).
    - **Field Property Mapping** is pre-delivered set of fields in ERP that are mapped to corresponding fields in asset central foundation. The field property mapping can be edited as part of the customization process.
    - **Value Mapping Configuration** is used to map the SAP EAM values with the asset central foundation values. A pre-delivered template with standard values is provided as reference for customers.

6.2 Replication Objects

6.2.1 Organizational Data

The Organization data like sales organization, sales office, sales group, distribution channel and division can be pushed from SAP S/4HANA or SAP ERP system to asset central foundation using the report program **`/ACI/ORG_STR_SYNC`**.

You can execute the report program using transaction code **`SE38`**.

6.2.2 Structure Indicator and Planning Data

The configuration data like Functional Location Structure Indicator, Maintenance Planning Plant, Planner Group, and Work Centre can be pushed from SAP S/4HANA to asset central foundation using the report program **/ACI/EAM_CONFIG_DATA_UPLOAD** .

You can execute the report program using transaction code **SE38**.

6.3 Synchronization Objects

Asset central foundation requires mandatory field information for data objects during asset data maintenance. The same fields are required during asset data replication and Synchronization processes which are implicit to the integration layer as mentioned below.

Data Object	Pattern	Mandatory Field List in asset central foundation	Mapped Field in SAP ERP or SAP S/4 HANA
Business Partner	Replication (→)	Name	Name
Characteristics	Replication (→)	Short Description	Description
		Data Type	Data Type
Class	Replication (→)	Short Description	Description
		Template Type	Class Type
Functional Location	Replication (→)	Short Description	Description
Equipment	Synchronization (↔)	Short Description	Description
		SourceBPRole	Equipment Category
		LifeCycle	Equipment System Status
Document	Synchronization (↔)	Document Category	DMS Type
Notification	Synchronization (↔)	Short Description	Description
		Priority	Notification Priority
		Type	Notification Type
		Status	Notification System Status
		Basic Start Date	Required Start Date
Work Order	Replication (→)	Short Description	Description
		Type	Work Order Type
		Status	Work Order System Status
		Basic Start Date	Basic Start Date
		Basic End Date	Basic End Date

Data Object	Pattern	Mandatory Field List in asset central foundation	Mapped Field in SAP ERP or SAP S/4 HANA
		Maint. Work Center	Work Centre

6.3.1 Equipment

The Equipment master data synchronization is bi-directional i.e., from SAP EAM to asset central foundation and vice versa. Synchronization of equipment header (for example, Equipment Number, Descripton, Manufacturer, Technical Identification Number, Unique Identifier, and so on), characteristic value, hierarchies and business partners are currently supported. Equipment replicated to asset central foundation is always created as lean equipment (Equipment without assignment to Model).

If equipment in asset central foundation is changed, and this does not have any link/ reference to any equipment in SAP ERP, then a new equipment gets created in SAP ERP and the external ID of the asset central foundation equipment gets updated.

> **i** Note
>
> Equipment created without external system assignment cannot be later synchronized with SAP ERP system.

The important configuration objects of Equipment synchronization object are as follows:

Exchange Object	• SACI_EQUIPMENT • SACI_EQ_CHARVALUE
Mobile Data Object ID	• SACI_EQUIPMENT_SYNC • SACI_CHARACTVALUE_SYNC

Data Filter for MDO

- SACI_EQUIPMENT_SYNC
  - **Synchronization Filter fields**: Company Code, Controlling Area, Cost Center, Distribution Channel, Division, Equipment Category, Equipment Number, Equipment Type, Maintenance Plant, Material, Manufacturer, Planner Group, Planning Plant, Sales Organization, System Status, User Status and Work Center.
  - **Field Property Mapping**: Standard property mappings configurations are pre-delivered for equipment. This can be edited based on specific needs. The standard EAM BAPIs are used to read and update data and the mapping is provided against the BAPI structure fields.
    - BAPI_ITOB_PARMS, BAPI_ITOB and BAPI_ITOB_EQ_ONLY for Equipment
    - BAPI_ITOB_PARMS, BAPI_ITOB and BAPI_ITOB_FL_ONLY for Functional Locations
  - **Value Mapping Configuration**: The EAM specific values can be mapped against the asset central foundation values for properties like:
    - Status: Mapped against asset central Equipment Lifecycle. Possible asset central values are 1 - Planned 2 - Fully Operational 3 - Sold 4 - Fully Operational / Standby 5 - Fully Operational / Redundant 6 - Partially Operational 7 - Partially Operational / Standby 8 - Partially Operational / Redundant 9 - Not Operational 10 - Disposed 11 - Retired

      > **i Note**
      >
      > Status mapping is considered only during outbound replication scenario (SAP EAM to asset central foundation). During inbound replication from asset central foundation to SAP EAM, equipment is always created in default/primary status.

    - Equipment Category: Mapped against Source Business Partner Role. Possible asset central values are 1 - For my operations. 2 - For Service. 3 - For Customer.
    - ABC Indicators: Mapped against the Risk and Criticality of asset central Equipment.
    - **Equipment Configuration**: System administrator must configure the required Equipment configuration for the below properties:
      - PUBLISH: Setting the value of this property to 'X" allows you to automatically publish the equipment in asset central foundation. Make sure the value for this

property is empty, if automatic publishing is not required.

- ALLOW_SHARED_DATA: This property controls the behavior of incoming shared equipment data into the SAP ERP system. Possible values are:
  - *A* - Automatic.
  - *R* - Review.
  - *N* - Not allowed.

> **i Note**
>
> If this property is not configured, incoming shared equipment data will not be considered for processing.

> **i Note**
>
> - Standard pre-delivered configurations will have mappings only for Equipment synchronization. For Functional Location to Equipment Mapping scenario the configurations must be maintained by the system administrator.
> - As part of subsequent dependencies, when a document is assigned to an equipment using the equipment master transaction, the document also gets replicated along with equipment to asset central foundation.
> - Initial load and Look-up and Link are supported for Equipment synchronization object.
> - Switch **`EAM_SFWS_SC1`** is required for the hierarchy synchronization and the switch is assigned to the business functions *LOG_EAM_CI_1*, *LOG_EAM_SIMPLICITY* and *LOG_EAM_TOHO*. Make sure that at least one business function is activated for the hierarchy sync process, preferably *LOG_EAM_CI_1* when all business functions are inactive.

6.3.1.1 Handling of Shared Data

Asset data and related content can be collaboratively exchanged over the SAP Asset Intelligence Network referred as “Shared data” and can also be synchronized with connected SAP ERP systems.

Shared data updates are pushed to the SAP ERP system when equipment is shared (or) revisions of shared equipment are published.

Shared data handling supports the replication of Equipment header, Characteristics value, Equipment structure and documents based on the sharing pattern. Processing of shared data in SAP ERP can be achieved in different modes such as Automatic, Review or Not Allowed mode. These modes are described as below and the configuration is defined in the Equipment Configuration settings under config panel. For more information about configuration, refer the Equipment [page 25] topic.

- Automatic: Use this to allow automatic creation and updates to shared asset data in backend ERP

- Review: Use this to review incoming shared data requests using workflow before allowing changes to asset data in ERP. Multiple shared data changes for an equipment are consolidated in a single workflow. Approve or Reject changes to equipment data in ERP with workflow support.
- Not Allowed: Use this to restrict incoming shared data requests

In case of multiple ERP setup, shared events will reach all the connected ERP systems. It is highly recommended to enable the Review option (workflow) so that the incoming objects can be reviewed before synchronizing.

Caution: If the Review option is **NOT** enabled, shared events may get synchronized with an incorrect ERP system.

> **i Note**
>
> - Shared data is not processed if there is no configuration.
> - Shared templates and attributes must be manually mapped with classification and characteristics for successful synchronization of characteristics value.

Equipment Structure and Document Sharing

You can share Equipment, Equipment structure and corresponding document over the SAP Asset Intelligence Network and these shared data can also be replicated in the SAP ERP system. To replicate/share the Equipment structure to the ERP system, user need to share the parent object along with its components. ERP user will receive a work item on the parent object for approval and on approving the parent object all the shared child objects of the parent gets replicated automatically and the hierarchy is built accordingly.

If the user also shares the document along with the parent object, document will also be replicated to the SAP ERP system and assigned to the equipment accordingly.

> **i Note**
>
> A shared object must be synchronized with only one connected SAP ERP system and in all other connected SAP ERP systems the workflow should be rejected manually. Synchronization fails if the shared asset central foundation Equipment is already linked to Equipment connected to any other SAP ERP system.

> **Example**
>
> A manufacturer can share equipment E1 with hierarchy (E1.1, E1.2) and documents (D1,D1.1,D1.2) assigned to E1,E1.1, E1.2 respectively with an operator. The operator receiving the shared data needs approval for E1 in SAP ERP to download all shared data including hierarchy and related documents.

Auto Match and Link

When shared data is processed in SAP ERP, system performs auto match with backend technical objects based on the value entered in the field “Operator’s Equipment ID” for a shared AC equipment.

If a match is found, shared equipment will be linked with SAP ERP backend equipment and synchronized. Else, a new equipment will be created in the ERP backend.

External ID mapping is created during the synchronization activity.

Workflow

Workflow support provides visibility to incoming shared data requests in SAP ERP and helps to verify data accuracy, required preparation for incoming shared data.

- When Review mode is opted, incoming shared data requests enters a workflow process.
- Multiple shared data requests for an equipment are consolidated into a single workflow process.
- Workflow template WS 35100001 and standard task TS 35100013 are used to enable workflow approvals and process state transitions in the inbound transaction queue.
- Incoming shared data can be processed for standard business workflow Inbox or from Inbound transaction monitor.

Workflow Activation Steps

1. Execute transaction **SM30** and enter the Table/View name **SWFDVEVTY2**
2. Click New Entries and maintain the following values:
   - Object Category: **ABAP Class**
   - Object Type: **/ACI/CL_WF_INB_QUEUE_PROCESS**
   - Event: **WF_TRIGGER**
   - Receiver Type: **WS35100001**
   - Receiver Call: **Function Module**
   - Receiver Function Module: **SWW_WI_CREATE_VIA_EVENT_IBF**
   - Event Delivery: **Using tRFC (Default)**
   - Linkage Activated: Select this checkbox
   - Behaviour Upon Error Feedback: **System defaults**
   - Receiver Status: **No errors**

Agent Assignment Attribute for Standard Task

1. Access transaction **PFTC_CHG**.
2. On the *Task: Maintain* screen, make the following entries:

Field Name	User Action and Values
Task Type	Standard Task
Task	35100013

3. Choose *Change* and in the information dialog box, choose *Continue*.
4. On the *Standard Task: Change* screen, go to the menu bar and choose Start of the navigation path Additional Data - Next navigation step Agent Assignment - Next navigation step MaintainEnd of the navigation path.
5. On the *Standard Task: Maintain Agent Assignment* screen, choose Attributes.
6. On the *Task*: screen, choose **General Task** and *Continue*.

Related Information

Look-up and Link [page 57]

6.3.2 Functional Location

6.3.2.1 As Location

Functional Location creation process is unidirectional (SAP EAM to asset central foundation) while the synchronization is bi-directional. Synchronization of Functional Location header (for example, Functional Location ID, Description, Superior Functional Location and so on) characteristics values and hierarchies are currently supported.

> **i** Note
>
> Currently standard integration supports synchronization of Functional Location to Location in asset central foundation.

The important configuration objects of Functional Location synchronization object are as follows:

Exchange Object	SACI_FUNCTIONAL_LOCATION
Mobile Data Object ID	SACI_FUNCTIONAL_LOCATION_SYNC

Data Filter for MDO	• **Synchronization Filter fields**: Company Code, Controlling Area, Cost Center, Distribution Channel, Division, Functional Location Category, Functional Location, Maintenance Plant, Sales Organization, System Status and User Status.
	• **Value Mapping Configuration**: The EAM specific values can be mapped against the asset central foundation values for properties like:
	  • ABC Indicators: Mapped against the Risk and Criticality of asset central Location.
	• **Location Configuration**: System administrator must configure the required Location configuration for the below properties:
	  • PUBLISH: Setting the value of this property to 'X" allows you to automatically publish the location in asset central foundation. Make sure the value for this property is empty, if automatic publishing is not required.
	• **Object Identification**: If customers prefer to replicate functional location as Equipment in asset central foundation, they can configure the object identification filters. The filter fields are Location Category, Manufacturer Part Number, Manufacturer Serial Number, Model Number and Object Type. If any of the Location obeys this filter rule, during replication, will be represented as equipment in asset central foundation.

> **i Note**
>
> - For any special logic for the replication of Functional Location as Equipment in asset central foundation, implement the BADI **`/ACI/CORE_PM_FLOC_IDENT_BADI`** .
> - For Functional Location as Equipment scenario, Characteristics value synchronization is not supported.
> - Functional Location labeling system (also referred as Alternate Labeling) is not supported in standard integration.
> - Initial load and manual mapping are supported for Functional Location synchronization object.

6.3.2.2 As Functional Location

Prerequisite

- The Structure Indicator configuration for Functional Location need to be pushed to asset central foundation. Refer to the Structure Indicator and Planning Data [page 24].
- A new BC set (/ACI/ASSET_CENT_INT_2111_PATCH_1) activation is required.

The Functional Location master data synchronization is bidirectional that is, from SAP EAM to asset central foundation and vice versa. Synchronization of FLOC header (for example, FLOC Number, Description, Manufacturer and so on), characteristic value, hierarchies and business partners are currently supported. FLOC replicated to asset central foundation is always created as lean FLOC (FLOC without assignment to Model).

> **i Note**
>
> - FLOC (Functional Location) created without external system assignment cannot be later synchronized with the SAP ERP system.
> - Activation of the new BC set (/ACI/ASSET_CENT_INT_2111_PATCH_1) will automatically deactivate the existing Location integration, if it is already configured. You need to redo the new configuration manually.
> - To enable inbound synchronization of Functional Location from SAP IAM to SAP ERP, the new BC set (/ACI/ASSET_CENT_INT_2205_PATCH_1) must be activated after the /ACI/ ASSET_CENT_INT_2111_PATCH_1 BC set activation.

The important configuration objects of Functional Location synchronization object are as follows:

Exchange Object	• SACI_FUNCTIONAL_LOCATION
Mobile Data Object ID	• SACI_FUNC_LOC_SYNC

Data Filter for MDO

- SACI_FUNC_LOC_SYNC
  - **Synchronization Filter Fields:** Company Code, Controlling Area, Cost Center, Distribution Channel, Division, FLOC Category, FLOC Number, Maintenance Plant, Material, Manufacturer, Planner Group, Planning Plant, Sales Organization, System Status, User Status and Work Center.
  - **Field Property Mapping:** Standard property mappings configurations are pre-delivered for equipment. This can be edited based on specific needs. The standard EAM BAPIs are used to read and update data and the mapping is provided against the BAPI structure fields.
    - BAPI_ITOB_PARMS, BAPI_ITOB and BAPI_ITOB_FL_ONLY
  - **Value Mapping Configuration:** The EAM specific values can be mapped against the asset central foundation values for properties like:
    - Status: Mapped against asset central FLOC Lifecycle. Possible asset central values are 1 - Planned 2 - Fully Operational 6 - Partially Operational 9 - Not Operational 10 – Disposed Of 11 - Retired

      > **i Note**
      >
      > Status mapping is considered only during outbound replication scenario (SAP EAM to asset central foundation).

    - Functional Location Category: Mapped against Source Business Partner Role. Possible asset central values are 1 - For my operations. 2 - For Service. 3 - For Customer.
    - **FLOC Configuration:** System administrator must configure the required FLOC configuration for the below properties:
      - PUBLISH: Setting the value of this property to “X” allows you to automatically publish the Functional Location in asset central foundation. Make sure the value for this property is empty, if automatic publishing is not required.
      - ALLOW_SHARED_DATA: This property controls the behavior of incoming shared equipment data into the SAP ERP system. Possible values are:

- A - Automatic
- R - Review
- N - Not allowed

> **i Note**
>
> If this property is not configured, incoming shared equipment data will not be considered for processing.

> **i Note**
>
> - Standard pre-delivered configurations will have mappings only for Functional Location synchronization. For Functional Location to Equipment Mapping scenario the configurations must be maintained by the system administrator.
> - As part of subsequent dependencies, when a document is assigned to an FLOC using the FLOC master transaction, the document also gets replicated along with FLOC to asset central foundation.
> - Initial load and manual mapping are supported for Functional Location synchronization object.
> - Functional Location labelling system (also referred as Alternate Labelling) is not supported in standard integration.
> - Switch EAM_SFWS_SC1 is required for the hierarchy synchronization and the switch is assigned to the business functions LOG_EAM_CI_1, LOG_EAM_SIMPLICITY and LOG_EAM_TOHO. Make sure that at least one business function is activated for the hierarchy sync process, preferably LOG_EAM_CI_1 when all business functions are inactive.
> - For Location, the Risk & Criticality assessment (ABC Indicator) gets updated as part of the location header update.

6.3.2.2.1 Handling of Shared Data

Asset data and related content can be collaboratively exchanged over the SAP Asset Intelligence Network referred as “Shared data” and can also be synchronized with connected SAP ERP systems.

Shared data updates are pushed to the SAP ERP system when functional location is shared (or) revisions of shared functional location are published.

Shared data handling supports the replication of Functional Location header, Characteristics value, Functional Location structure and documents based on the sharing pattern. Processing of shared data in SAP ERP can be achieved in different modes such as Automatic, Review or Not Allowed mode. These modes are described as below and the configuration is defined in the Functional Location Configuration settings under config panel. For more information about configuration, refer the Functional Location [page 30] topic.

- Automatic: Use this to allow automatic creation and updates to shared asset data in backend ERP
- Review: Use this to review incoming shared data requests using workflow before allowing changes to asset data in ERP. Multiple shared data changes for an equipment are consolidated in a single workflow. Approve or Reject changes to equipment data in ERP with workflow support.

- Not Allowed: Use this to restrict incoming shared data requests

In case of multiple ERP setup, shared events will reach all the connected ERP systems. It is highly recommended to enable the Review option (workflow) so that the incoming objects can be reviewed before synchronizing.

Caution: If the Review option is **NOT** enabled, shared events may get synchronized with an incorrect ERP system.

> **i Note**
>
> - Shared data is not processed if there is no configuration.
> - Shared templates and attributes must be manually mapped with classification and characteristics for successful synchronization of characteristics value.

Functional Location Structure and Document Sharing

You can share Functional Location, Functional Location structure and corresponding document over the SAP Asset Intelligence Network and these shared data can also be replicated in the SAP ERP system. To replicate/ share the Functional Location structure to the ERP system, user need to share the parent object along with its components. ERP user will receive a work item on the parent object for approval and on approving the parent object all the shared child objects of the parent gets replicated automatically and the hierarchy is built accordingly.

If the user also shares the document along with the parent object, document will also be replicated to the SAP ERP system and assigned to the functional location accordingly.

> **i Note**
>
> A shared object must be synchronized with only one connected SAP ERP system and in all other connected SAP ERP systems the workflow should be rejected manually. Synchronization fails if the shared asset central foundation Functional Location is already linked to Functional Location connected to any other SAP ERP system.

> **Example**
>
> A manufacturer can share Functional Location F1 with hierarchy (F1.1, F1.2) and documents (D1,D1.1,D1.2) assigned to F1,F1.1, F1.2 respectively with an operator. The operator receiving the shared data needs approval for F1 in SAP ERP to download all shared data including hierarchy and related documents.

Workflow

> **i Note**
>
> You need not perform the workflow activity if it is already configured while handling share data for Equipment.

Workflow support provides visibility to incoming shared data requests in SAP ERP and helps to verify data accuracy, required preparation for incoming shared data.

- When Review mode is opted, incoming shared data requests enters a workflow process.
- Multiple shared data requests for an equipment are consolidated into a single workflow process.
- Workflow template WS 35100001 and standard task TS 35100013 are used to enable workflow approvals and process state transitions in the inbound transaction queue.

- Incoming shared data can be processed for standard business workflow Inbox or from Inbound transaction monitor.

Workflow Activation Steps

1. Execute transaction **SM30** and enter the Table/View name **SWFDVEVTY2**
2. Click New Entries and maintain the following values:
   - Object Category: **ABAP Class**
   - Object Type: **/ACI/CL_WF_INB_QUEUE_PROCESS**
   - Event: **WF_TRIGGER**
   - Receiver Type: **WS35100001**
   - Receiver Call: **Function Module**
   - Receiver Function Module: **SWW_WI_CREATE_VIA_EVENT_IBF**
   - Event Delivery: **Using tRFC (Default)**
   - Linkage Activated: Select this checkbox
   - Behaviour Upon Error Feedback: **System defaults**
   - Receiver Status: **No errors**

Agent Assignment Attribute for Standard Task

1. Access transaction **PFTC_CHG**.
2. On the *Task: Maintain* screen, make the following entries:

Field Name	User Action and Values
Task Type	Standard Task
Task	35100013

3. Choose *Change* and in the information dialog box, choose *Continue*.
4. On the *Standard Task: Change* screen, go to the menu bar and choose Start of the navigation path Additional Data - Next navigation step Agent Assignment - Next navigation step MaintainEnd of the navigation path.
5. On the *Standard Task: Maintain Agent Assignment* screen, choose Attributes.
6. On the *Task*: screen, choose **General Task** and *Continue*.

6.3.3 Characteristics

Characteristics replication is unidirectional (SAP EAM to asset central foundation) and is replicated as Attributes in asset central foundation. Characteristics with multiple values are supported for the following data types: Numeric, Date, and Character.

Mapping between asset central foundation and SAP EAM data types:

SAP EAM	Asset Central Foundation	Supported Combination	Comment
Character	String	Single Value Single Value with Predefined values Multiple Values with Predefined values With Reference Table/Field	• Asset central foundation string is 256 characters. • ECC can have a maximum of 30 characters. • SAP S/4HANA can have a maximum of 70 characters
Date	Date	Single Value Single Value with Predefined values (Non range values) With Reference Table/Field	
Numeric	Numeric Flexible	Single Value Single Value with Predefined values (Non range values) With Reference Table/Field	The length of a numeric data type in asset central foundation is now 15 characters in alignment with SAP EAM.
Currency	Currency	Single Value With Reference Table/Field	

The important configuration objects of Characteristics synchronization object are as follows:

Exchange Object	SACI_CHARACTERISTICS
Mobile Data Object ID	SACI_CHARACTERISTICS_SYNC
Data Filter for MDO	Synchronization Filter fields: Data Type and Characteristic Group

> **i** Note
>
> During the create characteristics process, initial load and automatic replication are not supported for Characteristics and this will be replicated to asset central foundation along with Classification replication, by default. However, for characteristics that are already replicated, synchronization happens in real-time.

6.3.4 Classes

Individual or non-hierarchical class replication is unidirectional (SAP EAM to asset central foundation) and is replicated as Templates in asset central foundation (as 1:1 mapping between class and template). By default, an attribute group is created within Template in asset central foundation. Only classes assigned to characteristics will be considered for replication.

The important configuration objects of Classes synchronization object are as follows:

Exchange Object	SACI_CLASSIFICATION
Mobile Data Object ID	SACI_CLASSIFICATION_SYNC
Data Filter for MDO	• **Synchronization Filter fields**: Class Name, Class Number and Class Type. • **Value Mapping Configuration**: Class Type values are to be mapped to the asset central foundation Template Types and the standard mapping as follows: **Class Type** / **Template Type** *002* / 4 (Equipment Template) *003* / 5 (Location Template)/ 8 (Functional Location Template)

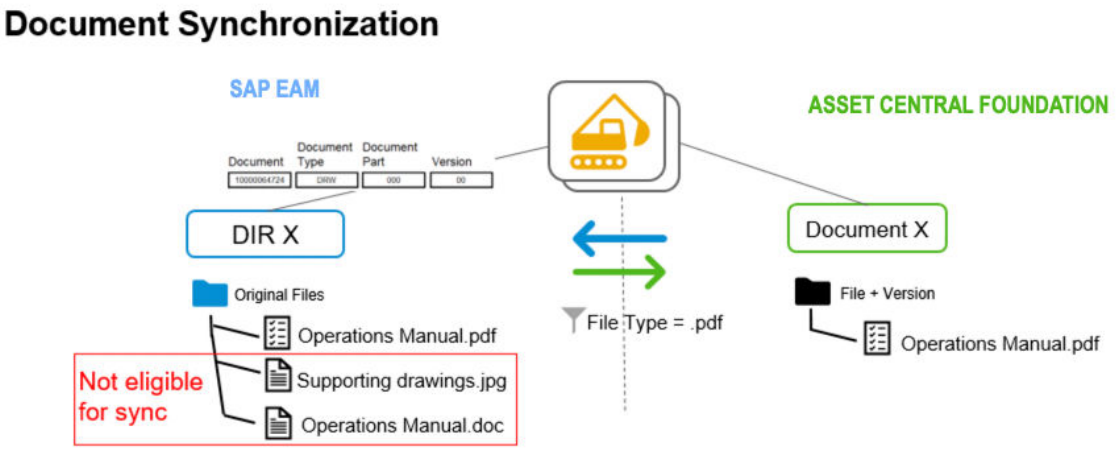
> **i** Note
>
> - Automatic replication first replicates all the associated characteristics that are directly assigned (without inheritance relationship) to asset central foundation and then replicates the Class.
> - Initial load and manual mapping are supported for Classes synchronization object.
> - Multiple ERP supports synchronization of Templates if they are assigned to already synchronized Equipment/ Location/Functional Location.

6.3.5 Document

Document synchronization is bi-directional (SAP EAM to asset central foundation and vice versa). Document synchronization process is enhanced with improved alignment and built-in best practice recommendation between Document Information Record (DIR), Original in DMS with Document and Files in asset central foundation.

A DIR is represented as a Document in asset central foundation and an Original in DIR as a file version under the Document. A file in asset central foundation can only be added in a specific language. Hence DIR Part to language mapping is a prerequisite for a successful document synchronization process.

As a best practice recommendation, only a single/first Original matching the filter criteria is considered for replication. Document Synchronization can be visualized using the block diagram below:



Synchronize Document with Multiple SAP ERP Systems

You need to execute migration report with the 2105 upgrade to ensure document synchronization is aligned with the latest multiple SAP ERP integration support. This report helps to update the external IDs of document in asset central foundation for already synchronized documents.

Migration program **`/ACI/CORE_DOC_MIGRATE_PROG`** must be executed before the latest migration report program **`/ACI/DOC_EXTERNALID_MIGRATE`**.

Understanding SAP EAM to asset central foundation Replication

- Creation of a DIR with Original in SAP EAM and assigned to equipment or functional location corresponds to creation of a document with file in asset central foundation.
- An Original in a DIR is synchronized as a File version in a specific language under AC Document. Since a DIR is always created with a part number in a specific version, Part number to language mapping configuration should be maintained before synchronizing documents.
- A DIR can exist in multiple parts and versions, Original in a DIR part version corresponds to a specific language version of a file under asset central Document.
- A single Original matching the filter criteria within a DIR part version is replicated to asset central foundation as a best practice recommendation. Additional Originals in the DIR is not replicated.
- Object assignments maintained for specific DIR part version should be replicated as object assignments to corresponding language versions of a file in AC.
- DIRs with valid object links is only considered for synchronization.

Understanding asset central foundation to SAP EAM Replication

- Creation of a Document file version in a specific language in asset central foundation corresponds to creation of a DIR with Original in SAP EAM independent of object assignments in primary status.
- Document Type and part number are derived based on configured mappings.
- Object assignments maintained for a Document should be replicated as object links for the latest DIR part version in SAP EAM.
- Additional language files under the asset central foundation document is replicated as DIR Originals under respective DIR part based on Part to Language mapping.

- Each document file version of the asset central foundation document is replicated as Originals under respective DIR part versions.
- Object assignments maintained for a language version of a file should be replicated to the specific DIR part version.

The important configuration objects of Document synchronization object are as follows:

Exchange Object	SACI_DOCUMENT
Mobile Data Object ID	SACI_DOCUMENT_SYNC_V2

Data Filter for MDO	• **Synchronization Filter fields**: Document Type, Document Part, Document Number, Document Version, Equipment Number and Functional Location.
	• **Value Mapping Configuration**:
	  • Part Language Mapping: DIR Parts are mapped to a Language which is essential for Document synchronization. Language ISO code is considered for the mapping.
	  • Value Mapping: Document Type values are to be mapped to the asset central foundation Document Category. SAP has pre-delivered template configuration that can be used for reference by system administrators to ease of mapping.
	• Possible asset central values are 1 - Identification; 2 - Technical Specification; 3 - Drawings / Plans; 4 - Components; 5 - Certificates; 6 - Assembly / Disassembly; 7 - Operation; 8 - General Safety; 9 - Inspection / Maintenance; 10 - Repair; 11 - Contract; 12 - Others; 13 - Firmware; 14 - Spare Parts
	• Document Configuration: System administrator must configure the required Document configuration for the below properties:
	  • DMS_STORAGE_CATEGORY: DMS storage category for storing the asset central foundation Documents.
	  • DMS_APP_URL: Documents of URL Type can be replicated from SAP EAM to asset central foundation. Maintain the DMS Application Type for the URL Doc Types (For example, URL).
	• File Type Configuration: Administrator must define the priority of the files so that the document synchronization process will pick the Appropriate original.

> **i Note**
>
> - Synchronization of Model Documents are not supported. Model Documents can be viewed in Documents section in the Asset Central tab.
> - Initial load is supported for Document synchronization object.
> - Document replication to asset central foundation only supports checked-in documents.
> - Document deletion related scenarios are not supported.

- During Document Synchronization process from SAP EAM to asset central foundation, to assign the document to equipment/location objects a new revision is created for objects that are in “Published” status. The revised asset central foundation equipment/location objects will not be set to “Published” status again due to parallel or simultaneous assignment scenario of documents.
- DIR Part to language mapping must be one to one with respect to a document type.
- During synchronization or replication of asset central foundation documents to SAP EAM, ensure to have unique workstation application for each file format in “Define workstation application” transaction `DC30`. These formats are case sensitive.

  > ✤ Example
  >
  > Documents with JPG file formats (*.jpg, *.jpeg, *.JPG, and *.JPEG) must be configured to a unique application like JPG.

- In multiple ERP setup, the asset central foundation documents will only be synchronized with the SAP ERP system at the back end if it is assigned to Equipment or Location object.

6.3.5.1 Migration to Enhanced Document Synchronization

Document synchronization process is enhanced with some best practice recommendation which allows customers to replicate and exchange documentation that is most relevant for external consumption. Customers already using the Document Synchronization process need to migrate to the enhanced approach using the migration program `/ACI/CORE_DOC_MIGRATE_PROG`.

Migration program adjusts the already replicated documents from SAP EAM to asset central foundation and vice versa (Outbound and Inbound). All the document synchronization specific configurations must be defined before execution of the migration program. The migration report can be executed in the simulation mode to understand the documents considered and how it will be adjusted. The Actual Run must be executed as a background job as it might take longer duration due to larger data volume.

Outbound Migration Process: The already replicated DIRs and Originals from the SAP EAM system to asset central foundation are adjusted based on the enhanced document synchronization process. The conditions impacting outbound migration are as listed below:

- A new document file is created in asset central foundation for all the already replicated DIRs based on the enhanced process and all the DIR object assignments of the old document in asset central foundation is unassigned and reassigned to the newly created document file.
- If the DIR in SAP EAM has multiple parts, acf document is created with additional files of different languages based on the Part to Language mapping maintained in the configuration.
- If the DIR in SAP EAM has multiple versions, acf document file is created with multiple versions accordingly.
- A DIR in SAP EAM will not be eligible for Outbound migration process if any of the following conditions are true:
  - The DIR does not have a valid file type based on the file priority configuration.
  - No valid Part to Language mapping exists for the DIR Part.
  - The DIRs not having any object assignment.
  - The DIR was created during inbound document synchronization earlier.

- The DIR was never replicated to asset central foundation.

> **i** Note
>
> In outbound migration, user has an option to provide a range of DIRs to run the migration for a limited set of data.

Inbound Migration process: The already replicated acf documents to SAP EAM are adjusted based on the enhanced document synchronization process. The conditions impacting inbound migration are as listed below:

- A new DIR is created in the SAP EAM for all the already acf documents based on the enhanced process and all the object assignments from the old DIRs are unassigned and reassigned to the newly created DIRs.
- If a document in asset central foundation has multiple files for the same language and version combination, only one file will be considered per language during migration based on the file type priority MDO configuration. A DIR is created based on the Part to Language mapping.
- If a document has multiple versions for a single language file, multiple DIRs are created with different versions.
- A document-file for a language and version in asset central foundation is not eligible for migration if:
  - No valid file type is maintained in the file priority configuration.
  - No valid Part to Language mapping exists.

6.3.6 Notification

Notification synchronization is bi-directional (SAP EAM to asset central foundation and vice versa).

The notifications having reference to equipment/functional location as reference object will be synchronized. Also, the reference object equipment/functional location should have an equivalent representation in the other system so that the notifications can be assigned accordingly.

Multiple ERP supports synchronization of Notifications if they are assigned to already synchronized Equipment/ Location/ Functional Location.

The important configuration objects of Notification synchronization object are as follows:

Exchange Object	SACI_NOTIFICATION
Mobile Data Object ID	SACI_NOTIFICATION_SYNC

Data Filter for MDO	• **Synchronization Filter fields**: Equipment Number, Functional Location, Maintenance Plant, Notification Number, Notification Type, Planner Group, Planning Plant and Priority.
	• **Value Mapping Configuration**: The EAM specific values can be mapped against the asset central foundation values for properties like:
	  • Notification Type: Possible asset central values are M1 – Maintenance, M2 – Breakdown.
	  • Priority: Possible asset central values are 5- Low, 10 – Medium, 15 – High, 20 – Very High, 25 – Emergency.
	  • Status: Possible asset central values are NEW – New, PBD – Published, CPT – Completed.
	• **Notification Configuration** : System administrator must configure the required Notification configuration. The following configuraion property has to be maintained :
	  • SYNCHED_TECHOBJ_ONLY: To prevent unnecessary inbound transaction queue generation, for notifications where the associated technical object is not synchronized with asset central foundation, the parameter *SYNCHED_TECHOBJ_ONLY* must be enabled with the value *X* in the Mobile Data Object (MDO) Configuration.

> **i** Note
>
> - Initial load is supported for Notification synchronization object.
> - SAP S/4HANA Notification object can have reference to both Equipment and Functional Location or only to Functional Location. If reference is for both, Equipment assignment takes precedence over Functional Location during replication to asset central foundation and thus notification will be visible only on Equipment .

6.3.7 Work Order

Work Order synchronization is unidirectional (SAP EAM to asset central foundation).

The work order having reference to equipment/functional location as reference object will be replicated. Also, the reference object equipment/functional location should have an equivalent representation in the asset central foundation system so that the work order can be assigned accordingly.

Multiple ERP supports synchronization of Work Orders if they are assigned to already synchronized Equipment/ Location/ Functional Location.

The important configuration objects of Work Order synchronization object are as follows:

Exchange Object	SACI_WORKORDER
Mobile Data Object ID	SACI_WORKORDER_SYNC

Data Filter for MDO	• **Synchronization Filter fields**: Equipment, Functional Location, Maintenance Plant, Order Category, Work Order Number, Order Type, Planner Group, Planning Plant and Priority.
	• **Value Mapping Configuration**: The EAM specific values can be mapped against the asset central foundation values for properties like:
	  • Order Type: Possible asset central values are 1- Breakdown, 2 – Inspections, 3 – Installation, 4 – Planned, 5 – Disposal, 6 – Operations.
	  • Priority: Possible asset central values are 5- Low, 10 – Medium, 15 – High, 20 – Very High, 25 – Emergency.
	  • Status: Possible asset central values are New – New, PBD – Published, CPT – Completed, CSD – Closed.
	• **Work Order Configuration**: System administrator must configure the required Work Order configuration. The following configuraion property has to be maintained :
	  • SYNCHED_TECHOBJ_ONLY: To prevent unnecessary inbound transaction queue generation, for work orders where the associated technical object is not synchronized with asset central foundation, the parameter *SYNCHED_TECHOBJ_ONLY* must be enabled with the value *X* in the Mobile Data Object (MDO) Configuration.

> **i** Note
>
> - Initial load is supported for Work Order synchronization object.
> - SAP S/4HANA Work Order object can have reference to both Equipment and Functional Location or only to Functional Location. If reference is for both, Equipment assignment takes precedence over Functional Location during replication to asset central foundation thus Work Order will be visible only on Equipment..

6.3.8 Business Partner

Business Partner replication is unidirectional (SAP EAM to asset central foundation). Business Partner of type organizations are replicated as External Organizations and is represented in asset central foundation as:

S/4 HANA or SAP ERP BP Role Category	Asset central foundation BP Role
Customer	Sold-to Party; Ship-to-Party; Bill-to Party

S/4 HANA or SAP ERP BP Role Category	Asset central foundation BP Role
Vendor	Dealer/Supplier

Business Partner replication feature is enhanced by relaxing uniqueness checks on the Name and Web Url fields. This allows replication of SAP ERP Business Partners with the same name as external organizations. Make sure to implement the SAP note 2920434. For example, SAP ERP business partner organizations with same name ABC Pvt. Ltd (Germany) and ABC Pvt. Ltd (USA) can be created as separate external organizations.

The important configuration objects of Business Partner synchronization object are as follows:

Exchange Object	SACI_BUSINESS_PARTNER
Mobile Data Object ID	SACI_BUSINESS_PARTNER_SYNC
Data Filter for MDO	Synchronization Filter fields: Partner Number and Partner Role

> **i** Note
>
> - Initial load is supported for Business Partner synchronization object.
> - For business partner replication, the field *Name* must be filled mandatorily in SAP ERP or SAP S/4HANA system (within BP Master Data).
> - Business Partners with the same name can be.

6.3.9 Multiple ERP Connectivity

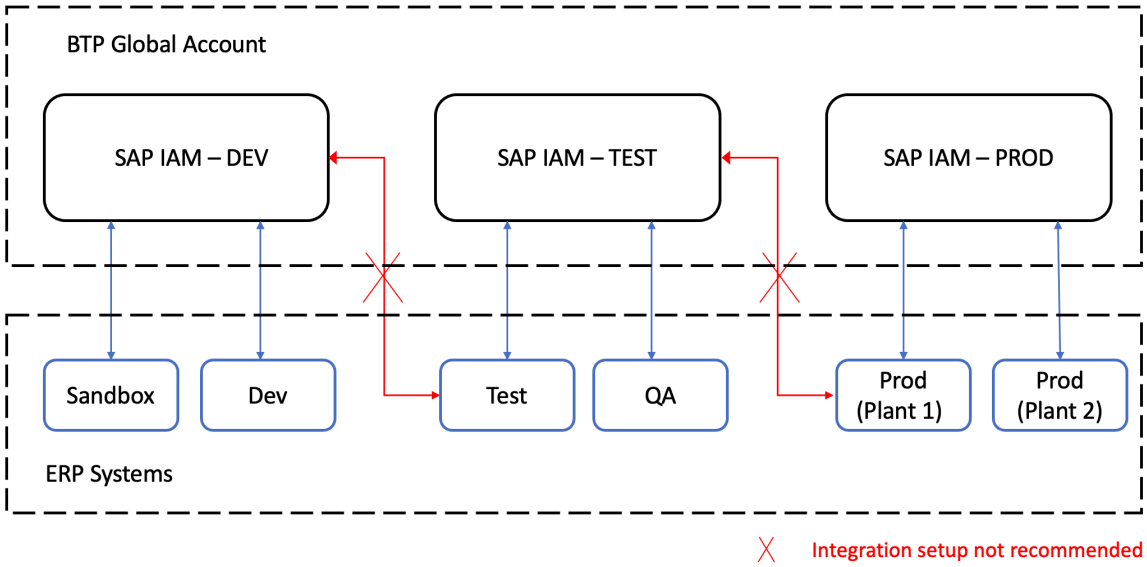
Multiple ERP connectivity enables you to synchronize asset data from multiple SAP ERP systems to the SAP Intelligent Asset Management (BTP) subaccount. You can connect upto 4 ERP sytems to the SAP Intelligent Asset Management subaccount.

- Supports synchronization of technical objects if they have same external number range setup in different SAP ERP systems connected to the same SAP Intelligent Asset Management subaccount.
- Routing of changes from one SAP ERP system to another SAP ERP system connected to the same SAP Intelligent Asset Management subaccount is not supported.

> **⚠** Caution
>
> While connecting an ERP system to the SAP Intelligent Asset Management subaccount you must ensure that the integration setup is aligned with the business processes. ERP systems that are already connected to a SAP Intelligent Asset Management subaccount must not be disconnected and reconnected to a different SAP Intelligent Asset Management subaccount.

Example

As visualized in the diagram below, an ERP production system must not be connected to a SAP Intelligent Asset Management Test system and vice versa.



> **i** Note
>
> - Any external systems of type *SAP ERP / S/4HANA* in asset central foundation that is not used in the current integration must be deleted.
> - Any *EAM_<any text>* destination name that is available in the SAP BTP cockpit and not used for the current integration must be deleted.
>
> These steps have to be performed for all the DEV, TEST, and PROD subaccounts in SAP Intelligent Asset Management.

Related Information

Configure Destination Service [page 19]
Configuring External Systems

6.3.10 Preventive Maintenance Review Process

In order to facilitate the preventive maintenance review process, replication of maintenance planning data from SAP S/4 HANA to asset central foundation is required. This replication is Uni-Directional (SAP S/4 HANA → asset central foundation) and is applicable only for the customers with SAP Asset Strategy and Performance Management (SAP ASPM) product license.

The preventive maintenance review contains the following three objects:

- Maintenance strategies and packages
- Task list and operations
- Maintenance plan and items

> **i** Note
>
> To replicate these objects to SAP ASPM, make sure you use the ASPM client credentials.

6.3.10.1 Maintenance Strategy

The Maintenance Strategy master data synchronization is uni-directional i.e., from SAP EAM to asset central foundation. Synchronization of Maintenance Strategy header and cycles are currently supported.

The report **`/ACI/MAIN_STRATEGIES_PACKAGES`** allows you to replicate strategies and packages.

> **i** Note
>
> Initial load is supported for Maintenance Strategy synchronization object.

6.3.10.2 Task List

The Task List master data synchronization is uni-directional i.e., from SAP EAM to asset central foundation. Synchronization of Task List header and operations are currently supported.

The important configuration objects of Task List synchronization object are as follows:

- **Exchange Object**
  - SACI_TASKLIST
- **Mobile Data Object ID**:
  - SACI_TASKLIST_SYNC
- **Data Filter for MDO**:
  - Synchronization Filter fields: Task List Type

> **i** Note
>
> - Initial load is supported for Task List synchronization object.
> - As part of standard integration, only task list of types General Task List, Equipment Task List, Functional Location Task List are replicated to asset central foundation.

6.3.10.3 Maintenance Plan

The Maintenance Plan master data synchronization is uni-directional i.e., from SAP EAM to asset central foundation. Synchronization of Maintenance Plan header and items are currently supported.

The important configuration objects of Maintenance Plan synchronization object are as follows:

- **Exchange Object**:
  - SACI_MPLAN
- **Mobile Data Object ID**:
  - SACI_MPLAN_SYNC
- **Data Filter for MDO**: Not Applicable

> **i** Note
>
> - Initial load is supported for Maintenance Plan synchronization object.

6.3.10.4 Review Recommendations in the SAP ERP System

Context

As part of the preventive maintenance activity, recommendations are created for equipment and location in SAP Asset Strategy and Performance Management. For more information about creating recommendations, refer to Application help for SAP Asset Strategy and Performance Management.

The Preventive Maintenance Review (PMR) application of SAP Asset Strategy and Performance Management is used to add implementation details for recommendations with the **Open** status. The user schedules the recommendation for implementation. The status of the scheduled recommendation changes to **Implementation in Progress**.

The scheduled recommendation with implementation details is available as a workflow item in SAP Enterprise Asset Management (SAP EAM). The recommendation fields in the workflow item appear as below:

- Description
- Type
- Sub Type
- Priority
- Classification
- Valid From
- Valid To
- Implementation Guidance
- Observation

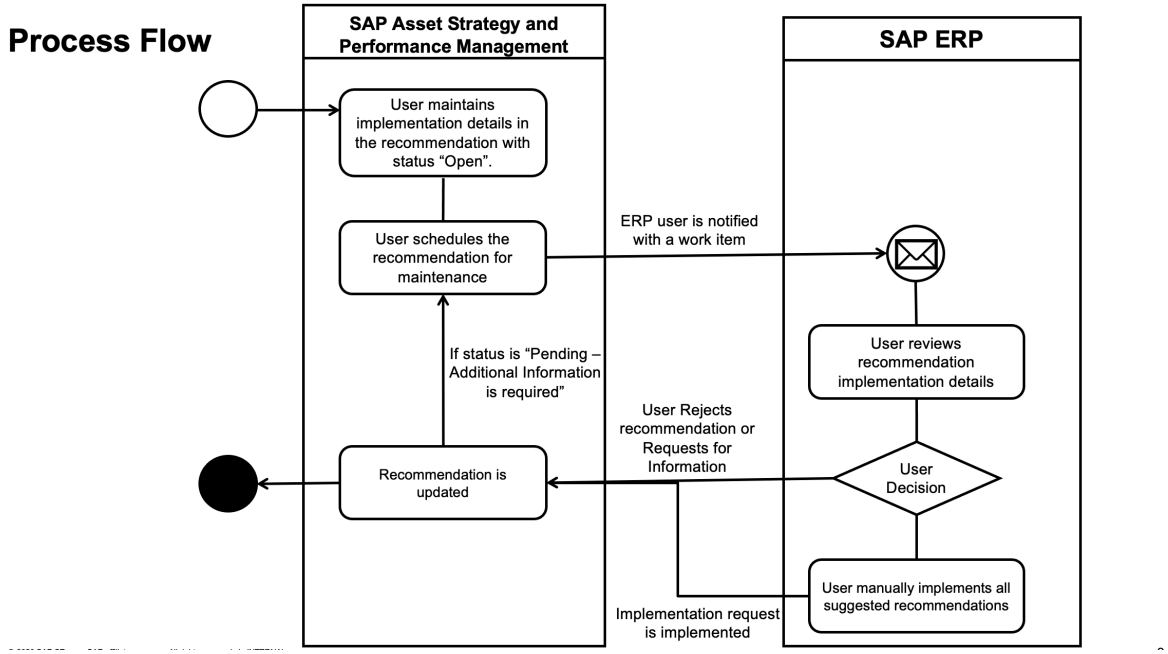
> **Note**
>
> The observation value in the workflow item can display only upto 70 characters.

For more information, see the Recommendation topic in the *Application Help for SAP Asset Strategy and Performance Management*.

The workflow item is available for review in the SAP Business Workplace Inbox for users of the planner group assigned to the equipment or functional location. These users review the recommendation and choose the required actions as below:

- *Recommendation Implemented*: After performing the implementation tasks in the SAP ERP system, the user can choose the action with appropriate comments. The comments appear in the timeline view of the recommendation in SAP Asset Strategy and Performance Management.
- *Recommendation Rejected*: The suggested recommendation can be rejected and the reasons for it can be mentioned as comments. The comments appear in the timeline view of the recommendation in SAP Asset Strategy and Performance Management.
- *Request for Information*: This action allows the Maintenance Planner to request for more information from the Reliability Engineer before implementing the recommendation in the SAP ERP system. Once the recommendation is updated in SAP Asset Strategy and Performance Management, it can again be pushed to the SAP ERP system associated with the linked Equipment. The recommendation must be implemented manually.

The integration scenario can be visualized using the following block diagram :



To receive recommendations as a workflow item in the Inbox configured with the SAP ERP system, you have to perform the following steps:

Procedure

1. Activate business workflow.
   a. In the SAP ERP system, enter the transaction code **SM30**.

      The screen to enter a table or a view name appears.
   b. Enter the name **SWFDVEVTY2**.
   c. Choose *Maintain*.
   d. Choose *New Entries* and provide the following details for the corresponding fields:
      - Object Category: **ABAP Class**
      - Object Type: **/ACI/CL_WF_INB_QUEUE_RCMD**
      - Event: **RCMD_TRIGGER**
      - Receiver Type: **WS01800170**
      - Receiver Call: **Function Module**
      - Receiver Function Module: **SWW_WI_CREATE_VIA_EVENT_IBF**
      - Event Delivery: **Using tRFC** (Default)
      - Linkage Activated: Select the checkbox.
      - Behaviour Upon Error Feedback: **System defaults**
      - Receiver Status: **No errors**
2. Activate Agent Determination in Business Workflow.
   a. In the SAP ERP system, enter the transaction code **PFTC_CHG**.

      The *Maintain* screen appears.
   b. Choose *Task Type* as **Standard**.
   c. Enter *Task* as **1800227**.
   d. Choose *Change* and in the information dialog box, choose *Continue*.
   e. On the *Standard Task: Change* screen, go to the menu bar and choose Start of the navigation path Additional Data - Next navigation step Agent Assignment - Next navigation step MaintainEnd of the navigation path.
   f. On the *Standard Task: Maintain Agent Assignment* screen, choose *Attributes*.
   g. On the *Task*: screen, choose *General Task* and *Continue*.
3. Assign a user to an Organizational Unit.
   a. In the SAP ERP system, enter the transaction code **PPOC**

      The *Create root organizational object* screen appears.
   b. Choose Enter.

      The new organizational unit is created.
   c. Enter description for the organizational unit.
   d. Select the organizational unit.
   e. Choose the *Create* button.

The *Choose Relationship* screen appears.

f. Select *Position*.
g. Choose Enter.
h. Enter description for the position.
i. Choose Enter.
j. Select *Position*.
k. Choose the *Assign* button.

The *Choose Relationship* screen appears.

l. Choose the relationship as *User*.
m. In the search window, enter the ID of the SAP user who needs to be assigned.
n. In the *Entry Found* screen, select the listed user and enter.

The user is displayed under the *Position* node.

> **i Note**
>
> If the *Delimit Vacancy* screen appears, choose any one option.

o. Choose the *Column* Configuration.

The list of displayed columns appear.

p. Choose the *ID* column and enter.

The ID column is displayed.

q. Make a note of the ID of the Organizational unit.

4. Link Planning plant and Planner group.
   a. In the SAP ERP system, enter the transaction code **SM30**.
   b. Enter the Table/View detail **T7791**.
   c. Choose *Maintain*.
   d. Choose *Position*.
   e. Choose *OrgObj type as T024I* and enter.

   The *Assignment to SAP Organisational Object Type* screen appears.

   f. Choose *New Entries*.
   g. Enter the following details:
      - *OrgObj type: T024I*
      - *Object type: S*
      - *Eval.path bottom up: A008*
      - *Eval.path top down: B008*

      > **i Note**
      >
      > If the Object Type S is already available, maintain the values as mentioned in the step above.

   h. Choose *Save*.
   i. In a new session, enter the transaction code **PFOM**.
   j. Enter the ID of the Organizational unit that you have noted.
   k. In the *View* section, choose *Org. Object Type*.
   l. Enter the type **T024I**.

m. Choose the *Change* button.

   The Organizational Unit with Position and users appear.

n. Choose *Position*.

o. Choose the *Create* button.

   A popup window appears.

p. Enter the planning plant and planner group details.

> **i Note**
>
> The Planning Plant and the Planner Group must be maintained in the view *V_T024I* using transaction **SM30** before it is assigned.

7 Initial Load

You use the Initial load feature when you have legacy content(s) that needs to be migrated from SAP EAM to asset central foundation.

7.1 Initial Load: Order for Initial Master Data Creation

Initial load creates the selected object type in asset central foundation as bulk load. After the creation they are in a synchronization relationship with their SAP ERP object based on the configured settings. To have all data replicated to asset central foundation, a dedicated order must be followed.

> **i Note**
>
> However, the real-time synchronization works if the synchronization filters in the corresponding MDO is configured. Only performing an Initial Load does not enable the continuous synchronization.

The following order for initial master data replication must be followed to synchronize all data objects from SAP ERP to asset central foundation with all dependencies and links.

> **i Note**
>
> The initial load filters are harmonized with the synchronization object filters. To know about the initial load selection parameters, refer to the filter fields for the corresponding synchronization object.

Data Object	Prerequisites	Recommended Execution Mode
Business Partner	Only if partner information is maintained in the master data for Equipment in SAP EAM.	Asynchronous
Classification and Characteristics	Only if Class and Characteristics information is maintained in the master data for Equipment in SAP EAM.	Synchronous
Functional Location	No prerequisite information required.	Asynchronous
Functional Location Hierarchy	Functional Location initial load is a prerequisite.	Synchronous
Equipment	Sales Organizational Data is a prerequisite. For more information, see Organizational Data [page 23].	Asynchronous
Equipment Hierarchy	Equipment initial load is a prerequisite.	Synchronous
Documents	Equipment/Functional Location initial load is a prerequisite.	Asynchronous

Data Object	Prerequisites	Recommended Execution Mode
Notification	Equipment and Functional Location initial load is a prerequisite.	Asynchronous
Work Order	Equipment and Functional Location initial load is a prerequisite.	Asynchronous
Maintenance Strategy	No prerequisite information required.	Asynchronous
Task List	Maintenance Strategy initial load is a prerequisite.	Asynchronous
Maintenance Plan	Task List initial load is a prerequisite.	Asynchronous

> **i** Note
>
> - While uploading data using initial load, parallel upload of dependent data is not recommended since this may lead to data inconsistencies.
> - For any reason, if you could not execute initial load processes as mentioned above, asset data can be incomplete in asset central foundation. You can fix data incompleteness issues by first completing the mandatory prerequisite steps and execute initial load processes by using the *Reload* option provided in the data variants.
> - The execution mode can be defined in the *ConfigPanel* (using transaction **`/SYCLO/CONFIGPANEL`**) → *Transaction Management Setting* → *Inbound Transaction Queue Definition* → *SAP_ASSET_CENTRAL_INTEGRATION* → select the relevant transaction queue definition → *General Data* → *Transaction Processing* → *Checked In Transaction Processing Mode*.

7.2 Configure Schedule for Initial Load

Context

You use this to configure a schedule for initial load using transaction code **`/N/SYCLO/CONFIGPANEL`**

.

Procedure

1. Navigate to *Data Staging Settings* and choose *Data Store Definition*.
2. Select *Mobile Application* and select *SAP_Asset_Central_Integration*.
3. Select Data Store and choose *SACI_INITIAL_LOAD*.
4. Choose *Data Store Definition* and navigate to *Schedule* tab. All the pre-defined schedules are displayed in sequence.

5. Configure the schedule based on your needs.

   The *Data Agent Data Variant ID* should be defined, and the *Active* checkbox must be selected for the configured schedules.

Results

The Data Agent Data Variant ID created in this step needs to be used in the following step (Create Data Variant for Initial Load Create Data Variant for Initial Load [page 54]).

7.3 Create Data Variant for Initial Load

Context

You use this to create data variant for initial load using transaction code **`/N/SYCLO/ADMIN`**.

Procedure

1. Path: Choose the **`Monitoring`** tab and navigate to **`Data Store Loading Monitor`**.
2. Choose **`Mobile Application`** and select *Asset Central_Integration*. Choose *Search*.
3. Choose *Data Store ID* and select *SACI_INITIAL_LOAD*.
4. Select the *Data Variant Management* tab and select *Add Variant*.
5. Enter the Data Variant name as maintained in the previous step.
6. Maintain Data Variant Parameters.

   The table below provides details about the mandatory data variant parameters of the different data objects.

Data Object	Mandatory Data Variant Parameters
Business Partner	none
Class	Class Type, Class Number, Class Name
Functional Location	Functional Location Category, Maintenance Plant, Functional Location Number
Functional Location Hierarchy	Functional Location Category, Maintenance Plant, Functional Location Number

Data Object	Mandatory Data Variant Parameters
Equipment	Equipment Category, Maintenance Plant, Equipment Number
Equipment Hierarchy	Equipment Category, Maintenance Plant, Equipment Number
Documents	Document Type, Document Number, Equipment Number, Funcional Location Number
Notification	Notification Type, Notification Number, Equipment Number, Funcional Location Number
Work Order	Order Type, Order Category, Order Number, Maintenance Plant, Equipment Numer, Functional Location Number
Maintenance Strategy	Maintenance Strategy
Task List	Tasklist Type, Tasklist Group
Maintenance Plan	Maintenance Plan

> **i Note**
>
> For successful load replication, you must define at least one mandatory data variant parameter.

Results

> **i Note**
>
> - When you a create data variant for Functional Location data agent SACI_AGENT_FUNCTIONAL_LOCATION, where Functional Location is replicated as Equipment in asset central foundation, make sure you maintain the value for the parameter *DO_ID*. The value for DO_ID should be the Functional Location synchronization *Mobile Data Object ID* `SACI_FUNCTIONAL_LOCATION_SYNC`.
> - If the Data Agent ID is not appearing in the drop-down menu, refresh the web session.
> - When creating a Data Variant make sure that at least one selection filter is defined. If all the selection filters are empty, the relevant schedule will not be considered for the initial load replication.
> - When creating Data Variant for the Equipment data agent SACI_AGENT_EQUIPMENT or Functional Location data agent SACI_AGENT_FUNCTIONAL_LOCATION, make sure that the General Parameters SKIP_HIERARCHY_SYNC is set to True. The hierarchy synchronization is not applicable during header replication as we have a separate data agent for Hierarchy. In addition, you can also set the parameter SYNC_CHARACTERISTIC_VALUE to True, to run the characteristic value synchronization as part of header replication.
> - When creating Data Variant for the Equipment Hierarchy data agent SACI_AGENT_EQUIPMENT_HIERARCHY and the Functional Location Hierarchy data agent SACI_AGENT_FUNCTIONAL_LOCATION_HIERARCHY, make sure that the System Parameters FLAG_RELOAD is set as *True*.

7.4 Schedule Initial Load

Context

The initial load replication option has a master program **/SMFND/DSF_DRIVER_PROG** that needs to be scheduled as a background job with the required variant (using transaction **SM36** or **SE38**) . The key fields of the variant are:

- Mobile Application: SAP_ASSET_CENTRAL_INTEGRATION
- Data Store ID: SACI_INITIAL_LOAD

All the active schedules of the data store are processed in the defined sequence.

The authorization object required to run the migration program is as follows:

Authorization Object	Authorization Attribute	Value
/SMFND/A01	/SMFND/APP	SAP_ASSET_CENTRAL_INTEGRATION
	ACTVT	16

> ⚠ Caution
>
> During the initial load process, all the transaction queues are handled by the tRFCs and registered to the destination "NONE". If the destination is not registered in the transaction code **SMQS** (queue scheduler), then all the available work processes can be utilized, leading to any of the following:
>
> - Timeout issue or memory issue in the ERP system
> - Heavy load on asset central foundation system
>
> The destination "NONE"' should be registered in the transaction code **SMQS** (queue scheduler). Also, ensure to set the value *Max. Conn.* (Maximum Number of Connections) as per general recommendation (25% of total dialog work processes but should not exceed the threshold of 40 for an optimized load in the asset central foundation system). The field maximum number of connections determine the number of work processes that can be utilized during the initial load run. Refer to the SAP Notes 1403974, 1250813, 726148 for more details on work processes utilization and **SMQS**.

8 Look-up and Link

Look-up and Link allows you to link the SAP EAM object with an existing asset central foundation object. This option is available only for the objects Equipment, Functional Location or Location, Characteristics and Classification.

Synchronization Object	Program Name	Supported Options
Equipment	`/ACI/EQUIPMENT_MAPPER`	Propose, Link and De-link. **i Note** Use the propose option to find matching equipment in asset central foundation based on <Internal ID> and/or Serial Number, Equipment Tag Number and Operator Equip. ID. Use the search option to find the matching equipment in asset central foundation. You can search based on Equipment Name, Equipment Description, Operator Equipment ID, Equipment Tag Number and Serial Number. You can map the equipment with operators or manufacturers equipment so that duplicates are not created in asset central foundation.
Functional Location	`/ACI/FLOC_MAPPER`	Link and De-link Functional Location to Location
Functional Location	`/ACI/FUNC_LOC_MAPPER`	Link and De-link Functional Location to Functional Location. **i Note** Yon can link either the Location object or the Functional Location object and not both.
Characteristics	`/ACI/ATTRIBUTE_MAPPING`	Link and De-link.
Class	`/ACI/TEMPLATE_MAPPING`	Link and De-link.

> **i Note**
>
> - You can execute the above programs using transaction code **SE38**.
> - The successful linkage of objects between SAP EAM and asset central foundation is visible in every master data object within the <External IDs> tab of asset central foundation. The <External ID> is the SAP EAM object of that master data object.
> - Linking does not synchronize data but it allows synchronization for subsequent data changes.

9 Monitoring

9.1 Inbound Transaction Monitoring

You use this to monitor all replication and synchronization details of objects between SAP EAM and asset central foundation. In addition, you can view the error logs of synchronization.

1. Run transaction code **`/N/SYCLO/ADMIN`**.
2. Navigate to the *Monitoring* section.
3. Navigate to *Inbound Transaction Monitoring* and search for inbound transaction entries based on Mobile Application and other selection criteria.
4. You can navigate to transaction details from the search result section to view the details of the inbound transaction.
5. *Transaction Info* provides an overview of the transaction with its status and general object information.
6. View details about the reason for a displayed status and gather more insights in case of an Error using the *Status History* section in the *Transaction Status* tab.
7. If required, inbound transaction can be processed manually using the *Process Transaction* button when a transaction is found in status New, Ready, or Error.
8. If the review step is enabled for the shared data events, the transaction entry will be set to Review status. On approval, the transaction entry is set to Ready and can be processed further.

> **i** Note
>
> - The inbound transaction queues in the ERROR or NEW status can be reprocessed using the standard utility program **`/SMFND/IBQ_TRANS_PROC_PROG`**. The same utility report program can be scheduled periodically as a background job to automatically reprocess transaction queues.
> - Any entry registered in the inbound transaction queue as part of a change triggered from asset central foundation will have the prefix as *%LOCAL_* for the Object Key.
> - An inbound transaction entry can have the NEW status because of a dependent transaction queue entry which might be in the ERROR or the NEW status. The dependency entry can be identified in the *Dependency Info* section that appears in the *Transaction Info* tab.

9.2 Data Store Loading Monitor

Context

You use this to monitor the status of the initial load data store that is scheduled as a background job.

Procedure

1. Run transaction code /N/SYCLO/ADMIN.
2. Navigate to the *Monitoring* section.
3. Select *Data Store Loading Monitor.*
4. Search with criteria *Mobile Application* as `Asset Central Integration` as *Data Store Id* as `SACI_INITIAL_LOAD`
5. On the search result tab, select *Data Store ID* to navigate to *Loading Status* section.

Results

You can now view the initial load summary.

9.3 Integration with SAP Cloud ALM

Activate monitoring application by integrating with SAP Cloud ALM.

The supported monitoring application is:

- Integration & Exception Monitoring

> **i** Note
>
> SAP Note 3166562 is a prerequisite to enable SAP Cloud ALM integration.

SAP Cloud ALM for integration supports the following events:

- EQU_CREATE - Creation of Equipment from SAP IAM to SAP ERP
- EQU_HEADER_UPDATE - Synchronization of Equipment Header from SAP IAM to SAP ERP
- ASPM_RISK_UPDATE - Update of Risk & Criticality score from **SAP ASPM** to SAP ERP
- ASPM_FMEA_RCMD_UPDATE_IMPL - PMR recommendation to be sent from **SAP ASPM** to SAP ERP for review

- EQU_COMPONENT_UPDATE - Synchronization of Equipment component/hierarchy from SAP IAM to SAP ERP
- VALUE_UPDATE - Synchronization of Equipment characteristics value from SAP IAM to SAP ERP
- EQUIPMENT_HEADER_SHARE - Replicate shared Equipment from **SAP AIN** to SAP ERP

For more information, refer to Setup Integration and Exception Monitoring.

10 Asset Central Tab Configuration

A new tab Asset central is introduced for EAM object(s) such as Equipment, Functional Location and Notification to view the asset central information. The following sub-sections are offered and can be configured:

- Equipment
  - Model Header
  - Announcements
  - Instructions
  - Indicators
  - Documents
  - Checklists
- Functional Location: (SAP EAM Functional Location mapped to Asset Central Foundation Equipment)
  - Model Header
  - Announcements
  - Instructions
  - Indicators
  - Documents
  - Checklists
- Functional Location: (SAP EAM Functional Location mapped to Asset Central Foundation Location)
  - Announcements
  - Instructions
  - Indicators
  - Documents
- Notifications
  - Indicators

10.1 Important SAP Notes for Asset Central Tab Configuration

To get the *Asset Central* tab feature the following SAP Notes should be applied.

> **i** Note
>
> We recommend that you apply these notes in the given sequence.

SAP Note Number	Component	Description
2706498	PM-EQM-EQ	Asset Central Tab for Equipment Master
2700012	PM-EQM-FL	Asset Central Tab for Functional Location
2715896	PM-WOC-MN	Asset Central Tab for Notification

> **i** Note
>
> The integration features delivered as part of the above SAP Notes will be available only in English. The corresponding translations will be delivered as part of the standard support package.

10.2 Activate Function Switch from Asset Central Tab

Context

To enable the *Asset Central* tab in the Equipment, Functional Location and Notification, activate the function switch Asset Central Integration Features, by executing the following steps:

Procedure

1. Navigate to the **SPRO** transaction and choose *SAP reference IMG*.
2. Choose *Plant Maintenance and Customer Service* -> *System Enhancements and Data Transfer* -> *Activate Functions for Enterprise Asset Management.*
3. Navigate to the Maintenance table and add the Asset Central Integration Features as an entry.
4. Choose the *Active* checkbox.
5. Save your entries.

10.3 Configure Asset Central Tab for Equipment and Functional Location

Context

To display Asset Central tab for the Equipment and Functional location for certain categories, perform the following configurations:

Configure V_TITOBSUB View

The following configuration entries must be maintained.

- Transaction code: **SM30**
- Table/View Name: **V_TITOBSUB**

Sub Group	Internal Number	Program Name	Screen Number	Description
Screen group equipment data	380	/ACI/SAPLASSTC_DETAILS	1001	AC Header Information
Screen group equipment data	381	/ACI/SAPLASSTC_DETAILS	1002	AC Announcements
Screen group equipment data	382	/ACI/SAPLASSTC_DETAILS	1003	AC Instructions
Screen group equipment data	384	/ACI/SAPLASSTC_DETAILS	1005	AC Indicators
Screen group equipment data	385	/ACI/SAPLASSTC_DETAILS	1006	Assessments FMEA
Screen group equipment data	386	/ACI/SAPLASSTC_DETAILS	1007	Assessments Risk and Criticality
Screen group equipment data	387	/ACI/SAPLASSTC_DETAILS	1008	AC Documents
Screen group equipment data	388	/ACI/SAPLASSTC_DETAILS	1009	Checklists
Screen group functional location data	380	/ACI/SAPLASSTC_DETAILS	1001	AC Header Information
Screen group functional location data	381	/ACI/SAPLASSTC_DETAILS	1002	AC Announcements
Screen group functional location data	382	/ACI/SAPLASSTC_DETAILS	1003	AC Instructions
Screen group functional location data	384	/ACI/SAPLASSTC_DETAILS	1005	AC Indicators

Sub Group	Internal Number	Program Name	Screen Number	Description
Screen group functional location data	385	/ACI/SAPLASSTC_DETAILS	1006	Assessments FMEA
Screen group functional location data	386	/ACI/SAPLASSTC_DETAILS	1007	Assessments Risk and Criticality
Screen group functional location data	387	/ACI/SAPLASSTC_DETAILS	1008	AC Documents
Screen group functional location data	388	/ACI/SAPLASSTC_DETAILS	1009	Checklists

> **i Note**
>
> The above configuration entries may already exist with a different Function Group Name. For example, SAPLAIN_ASSTC_DETAILS. In such a case, make sure the function group name is changed as listed in the above table.

Configure View Profile

Procedure

1. Open SPRO transaction and choose the *SAP Reference IMG* button
2. Navigate *Plant Maintenance and Customer Service* > *Master Data in Plant Maintenance and Customer Service* > *Technical Objects* > *General Data* > *Set View Profiles for Technical Objects.*
3. Choose *Set View Profiles for Technical Objects*, then navigate to the below maintenance screen.
4. Select the *View Profile* of the equipment/Floc categories and double click on the *Activity and Layout of Views*,
5. Click *New Entries*, choose or add number **400** for the *Asset Central* tab.
6. Select the required Asset Central specific sub screens from the available columns.
7. Make sure the *Tab active* check box is selected.

> **i Note**
>
> If you are unable to find the Asset Central sub screens Serial Number or sub screen numbers (380 to 386) then, check the configuration settings from the maintenance table V_TAXITABS and V_TITOBSUB.

8. Repeat the above steps for other required View Profiles

10.4 Configure Asset Central Tab for Notification

Context

To display Asset Central tab for the Notification, perform the following configurations:

Configure V_TQSUB View

The following configuration entries must be maintained.

- Transaction code: **SM30**
- Table/View Name: **V_TQSUB**

Category	Number	Screen Number	Program Name	Name
01	860	1005	/ACI/SAPLASSTC_DETAILS_NT	AC Indicators

> **i** Note
>
> The above configuration entry may already exist with a different Function Group Name. For example, SAPLAIN_ASSTC_DETAILS_NT. In such a case, make sure the function group name is changed as listed in the above table.

Configure Notification Type

Procedure

1. Go to SPRO transaction and click on the *SAP Reference IMG* and choose *Plant Maintenance and Customer Service* > *Maintenance and Service Processing* > *Overview of Notification Type.*
2. Choose the *Notification Type* to be configured and select *Screen Structure for Extended View*.
3. On selecting the *Screen Structure for Extended View*, double click to maintain the *Asset Central* tab configuration.
4. Click on *New Entries* to add the Asset Central tab **10\TAB26**.
5. Make sure the tab check box is enabled and the Screen area 1 is assigned with Indicator sub screen **860**.
6. Save your entries.
7. Repeat the above steps for all the other required *Notification Types*.

11 Additional Information

This section includes information or links to frequently asked questions, known limitations and ticket components.

- **Known Limitations and Restrictions**
  - See 2859696
- **Frequently Asked Questions**
  - See 2859689
- **Important SAP Note**
  - See 2868205
    The Expert Search option can be used to list the latest integration relevant SAP Notes.
- **Ticket Components**

Product	Ticket Component
Asset central foundation integration with SAP EAM	CA-AIN-PM
SAP Asset Intelligence Network	SCM-AN-AIN
SAP Asset Strategy and Performance Management	IOT-ASM
SAP Predictive Asset Insights	IOT-PDM

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