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Integration Guide
SAP Asset Intelligence Network
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CONFIDENTIAL

Integration Guide for SAP Asset Intelligence Network

Typographic Conventions

Type Style	Description
Example	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options. Textual cross-references to other documents.
Example	Emphasized words or expressions.
`EXAMPLE`	Technical names of system objects. These include report names, program names, transaction codes, table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE.
`Example`	Output on the screen. This includes file and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
`Example`	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
`<Example>`	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
`EXAMPLE`	Keys on the keyboard, for example, `F2` or `ENTER`.

Document History

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1 SAP Asset Intelligence Network (AIN) Integration with SAP Enterprise Asset Management (EAM)

2 About this Document

Purpose

This integration guide is the starting point for the technical implementation of the SAP Asset Intelligence Network application. This document describes the concept of how the SAP Asset Intelligence Network (SAP AIN) is integrated with SAP Enterprise Asset Management (SAP EAM). You can find cross-scenario implementation information as well as scenario-specific information in this guide.

> **Note**
>
> The central starting point for the SAP Asset Intelligence Network application is the administration and operations guide, which you can find on the SAP User Assistance Content Platform at https://uacp2.hana.ondemand.com/viewer/p/SAP_ASSET_INTELLIGENCE_NETWORK.

This integration guide consists of the following main sections:

- Link SAP EAM object to AIN model
- Display SAP AIN model information in EAM side panel
- AIN Equipment Creation and Synchronization for EAM Objects
- Document Creation and Synchronization between EAM and AIN
- AIN Announcement processing in EAM

The integration information that is presented here serves as an example of how you can use the SAP Asset Intelligence Network application in your company. The scenarios are only intended as examples and do not necessarily run the way they are described here in your customer-specific system landscape. Ensure that you check your requirements and systems to determine how this can be used productively at your site. Furthermore, we recommend that you test these scenarios thoroughly in your test systems to ensure they are complete and free of errors before going live.

This integration guide primarily discusses the overall technical implementation of SAP Asset Intelligence Network and its associated components. However, additional software dependencies might exist without being mentioned explicitly in this document.

3 Prerequisites

3.1 Prerequisites for Integration between SAP AIN and SAP EAM

Component	Description
SAP ERP Central Component	• ERP EHP 6 and above • Not applicable for S/4 HANA releases
Roles in SAP Asset Intelligence Network	Group AIN_ORG_ADMIN has the following predefined roles: • AIN_ORG_ADMIN • AIN_ORG_DATA_EXPERT • AIN_ORG_DATA_READ

3.2 Important SAP Notes

You must read the following SAP Notes as it contains the most recent information as well as any necessary corrections.

Make sure that you have the up-to-date version of each SAP Note, which you can find on the SAP Service Marketplace at http://service.sap.com/notes.

SAP Note Number	Component	Title
2382303	CA-AIN-PM	AIN-EAM Integration Overview
2327152	CA-AIN-PM	Linking of EAM objects to AIN Models
2366582, 2417919	CA-AIN-PM	Display of AIN model information in EAM side panel
2405095	CA-AIN-PM	Common objects for AIN-EAM Release 2.0
2413805	CA-AIN-PM	AIN Equipment Creation and Synchronization for EAM Objects
2422598	CA-AIN-PM	Document Creation and Synchronization
2405074	CA-AIN-PM	AIN Announcement Processing in EAM
2382489	CA-AIN-PM	AIN Authentication Client Certificates

4 Authentication Between SAP ERP and SAP AIN

You use the client certificate for authentication between SAP AIN and SAP ERP systems.

You use the SSL certificate for authentication between the SAP AIN application on HCP and SAP ERP. For SAP AIN authentication, you use the entire certificate comparison mapping mode. This requires a keystore containing the ERP client certificate that will be uploaded into the HCP account. HCP supports multiple mapping modes that define how the received client certificate is interpreted.

This setup involves the following steps:

1. Upload root CA of the HCP server certificate in the ERP system
2. Map client certificates at HCP side
3. Manage keystore in HCP
4. Export client certificate from the ERP system
5. Maintain AIN system information in ERP

Prerequisites

- **Authorization in ERP**

  The ERP system user should have authorization for the following transactions:

  - **STRUST**: To upload a certificate
  - **SM59**: To create an RFC destination
- **Authorization in HCP**
  - The HCP user should have the admin role to perform HCP activities such as uploading the key store using console commands
  - See also: https://help.hana.ondemand.com/help/frameset.htm?0d7cf63b75a94f869895186a2d38db41.html
  - SAP Note **2382489**

5 Assumptions and Implementation Considerations

5.1 Authorization in SAP EAM

The code delivered by SAP does not check any authorizations. It is the sole responsibility of the customer or partner to have their own authorizations assigned to the program.

Note

You will find information on specific prerequisites and roles in the relevant sections.

6 Link SAP EAM Object to SAP AIN Model

6.1 Master Data Prerequisites

You must create classes and characteristics to be able to display details for the SAP AIN models linked to SAP EAM objects.

> Note
>
> If classification is already being used, then the ability to have multiple classes per EAM object must be allowed. For more information, refer to IMG node *Classification System* → *Maintain Object Types and Class Types.* The checkbox *Multiple classification* must be checked.

6.1.1 Characteristics and Classes

- Create a characteristic group for SAP_AIN and assign them to classes
- Define a class for both class types *002 Equipment* and *003 Functional Location.*

> Note
>
> See SAP Note **2327152**

6.2 Link EAM Objects to AIN Models

1. Execute program AIN_MODEL_MAPPER. This can be done from the transaction AIN_MAPPER or alternatively via SE38/SA38.

   The program allows mapping of either equipment or functional locations.
2. If choosing equipment (or functional locations) then the list of objects to be mapped should be limited using the selection options of:

- *Equipment Number /(Functional location)*
- *Maintenance plant*
- *Valid from Date*

3. The checkbox *Skip AIN Linked Objects* means that the program will exclude any object that already has a mapping to an AIN model.
4. The checkbox *Match based on Construction Type* means that the program will also select potential matches based on the construction type material.

- By default, the *Construction material type* is **HERS** but other material types, for example, a customer-specific type can be used.

The program attempts to determine potential AIN model matches for the EAM objects in AIN and then allows the user to select the best match and to create the link between the EAM object and the AIN model (by adding classification details to the EAM object).

6.2.1 Matching Logic

This program will utilize the following two matching methods:

- Match on construction type
- Match on EAM object manufacturer and model number

6.2.1.1 Match on Construction Type

If the checkbox *Match based on Construction Type* is selected, then the program will attempt to find a matching model in AIN based on the manufacturer part number and the vendor name from the construction material.

6.2.1.2 Match on EAM Object Manufacturer and Model No.

In this matching process, the manufacturer and model number from the EAM object is used. If there are no model details, then no attempt to match will occur. However, if the model is provided but the manufacturer is not, then an attempt to find a matching AIN model will occur.

6.2.2 Edit or Delete a Link Between EAM Object and AIN Model

The link can only be deleted by using the mapping program, since the classification information is used only to show the user to which AIN object the object is mapped.

Alternatively, if the mapping needs to be changed, the program can be run again, a different match chosen and a new link created. This will remove the existing match and classification details.

> **Note**
>
> If the link is deleted, it will also remove the link to the relevant document management system record for the model.

7 Display SAP AIN Model Information in SAP EAM Side Panel

The side panel can be used to display additional context-sensitive information for existing transactions in a separate screen area without modifying the corresponding transaction.

The delivered side panel will display information for linked AIN models.

Please refer to the below note for the implementation of this functionality.

- SAP Note **2382489**
- **SAP Note 2417919**

See also:

- http://scn.sap.com/community/erp/blog/2013/02/25/side-panel-for-sap-business-suite
- http://scn.sap.com/community/netweaver-business-client/blog/2013/11/21/nwbc-side-panel-demo-combining-a-sap-gui-transaction-with-an-html5-based-fpm-chart-guibb

7.1 Authorization in SAP AIN

The authentication user (RFC user) should have model read access in AIN so that the user can access the model search API from EAM.

7.2 Authorization in SAP EAM

The SAP EAM user should have the role *SAP_AIN_MODEL_DETAILS* (or equivalent) to view the side panel content from the NetWeaver business client (NWBC).

7.3 View SAP AIN Model Information in SAP EAM Side Panel

The AIN model side panel can be displayed in the following objects using the following:

Function	Transaction ID
Change equipment	**IE02**

Function	Transaction ID
Display equipment	**IE03**
Change functional location	**IL02**
Display functional location	**IL03**
Change Service notification	**IW52**
Display Service notification	**IW53**
Change Maintenance notification	**IW32**
Display Maintenance notification	**IW33**
Change work order	**IW32**
Display work order	**IW33**

Note

For visual enterprise (.vds) files the *Visual Enterprise Viewer* needs to be installed. The *Visual Enterprise Viewer* is available from the SAP Store.

8 AIN Equipment Creation and Synchronization for EAM Objects

The SAP EAM Equipment or Functional location that needs to be synchronized to SAP AIN can be performed using this application.

8.1 Setup and Configurations

8.1.1 Global Configuration Settings

The following SAP AIN integration general settings must be defined for the equipment creation or synchronization functions.

Execute transaction **SM30** and *Table/View Name* **AIN_V_GEN_CONFIG**

Setting	Value or Description
AIN_RFC_NAME	RFC as configured for the AIN destination system
AIN_FLP_URL	AIN Fiori Launchpad URL
AIN_ERP_SYSTEM_NAME	ERP system name as defined in the AIN Applications Setting, Systems section. Used to define the External ID for an AIN equipment record.
AIN_LEAN_EQUIPMENT	Value – “X” or “Blank” If set (“X”) then the user has the option of creating lean equipment records in AIN (Equipment records with no model). If not set (Blank) then user will not get this option.
AIN_SYNC_HIERARCHY	Value – “X” or “blank” Defines whether the AIN Equipment Component Hierarchy is to be synchronized with EAM.
AIN_HIERARCHY_MASTER	Value – “EAM” or “AIN” Defines whether the EAM or AIN is the master system for the synchronization of the component hierarchy.
AIN_EQUI_SOURCEBPROLE	Defines the source business partner role of the equipment Possible values are: 1 - For my operations 2 - For Service

Setting	Value or Description
	3 - For Customer From plant maintenance integration perspective, it's always treated as "For my operations".
AIN_EQUI_LIFECYCLE	Defines whether the AIN equipment is actual or planned. Possible Values are 1 - Planned 2 - Actual From plant maintenance integration perspective, it's always treated as Actual equipment.

8.1.2 Mapping Configuration

The mapping configuration defines the mapping between the SAP AIN equipment record and SAP EAM technical objects (Equipment and Functional Locations) for the AIN Equipment header information and the AIN Equipment attributes (for both Model and Equipment templates).

To execute this, use view cluster **AIN_VC_TMPL_MAP** via transaction code **AIN_EQUI_CONFIG**.

8.1.2.1 Equipment Header Mapping

You use this for:

- Mapping of the AIN Equipment object header fields to EAM object fields.
- Separate mapping for EAM equipment and EAM functional location object.

Master system for the mapping fields can be defined. This determines the flow of the value during synchronization.

- Overwrite AIN => Yes. EAM acts as Master and the value flow is from EAM to AIN.
- Overwrite EAM => Yes. AIN acts as Master and the value flow is from AIN to EAM.

The Equipment Header mapping is a mandatory configuration to create AIN Equipment and below is the default Mapping configuration considering EAM as master. This can be changed by the operator accordingly.

Object Type	AIN Field Name	EAM Structure Name	EAM Field Name	Overwrite EAM	Overwrite AIN
Equipment	BUILDDATE	BAPI_ITOB	ACQDATE	No	Yes

Object Type	AIN Field Name	EAM Structure Name	EAM Field Name	Overwrite EAM	Overwrite AIN
Equipment	DESCRIPTION-SHORT	BAPI_ITOB	DESCRIPT	No	Yes
Equipment	INTERNALID	BAPI_ITOB_PARMS	EQUIPMENT	No	Yes
Equipment	SERIALNUMBER	BAPI_ITOB	MANSERNO	No	Yes
Functional Location	BUILDDATE	BAPI_ITOB	ACQDATE	No	Yes
Functional Location	DESCRIPTION-SHORT	BAPI_ITOB	DESCRIPT	No	Yes
Functional Location	INTERNALID	BAPI_ITOB_PARMS	FUNCLOC_INT	No	Yes
Functional Location	SERIALNUMBER	BAPI_ITOB	MANSERNO	No	Yes

The Equipment create public API from AIN is used to create an AIN equipment from EAM and the payload fields of the API should be mapped with the corresponding EAM BAPI structure fields.

The mapping is to the fields of the structures are as follows:

- 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.

  For more details of the fields supported please see the details of these structures.
- The BAPI's BAPI_EQUI_GETDETAIL and BAPI_FUNCLOC_GETDETAIL are used to fetch the EAM object information and the above-mentioned structures are part of these BAPI's.

Note:

Serial number is mandatory for creation of equipment in AIN from EAM objects. Mapping to the AIN *Serial No*. field is required and entry in the *EAM object* field is mandatory.

8.1.2.2 Model Templates

This section is used for mapping of AIN model templates to:

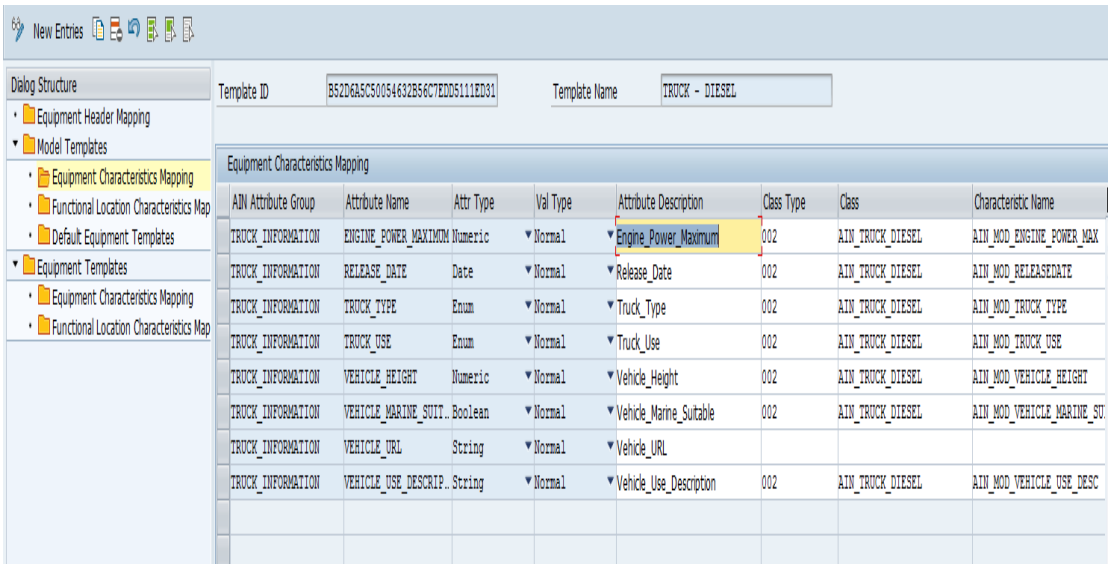
- EAM Equipment Characteristics
- EAM Functional Location characteristics
- Providing a default AIN equipment template for an AIN model template.

The AIN model templates can be imported using the program **AIN_TEMPLATES_PULL** (using transaction **SE38**). Alternatively, you can manually enter the entries for the template.

8.1.2.2.1 Equipment Characteristics Mapping

You use this for mapping of model template attributes to EAM equipment characteristics. Once the template is imported, you can define the mapping for the AIN attribute to the relevant EAM class and characteristic.

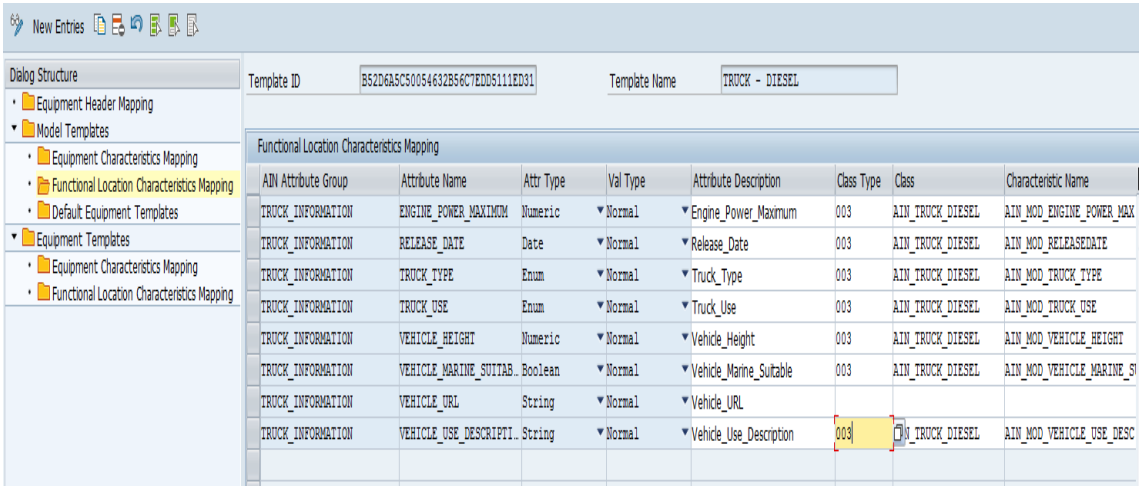
For more details on the considerations and limitations on the mapping of AIN attributes to EAM characteristics, see the AIN Attributes and EAM Characteristics Mapping section.



The mapping of a characteristic will cause the value in EAM to be overwritten from the model in AIN.

8.1.2.2.2 Functional Location Characteristics Mapping

You use this for mapping model template attributes to EAM functional location characteristics. Once the template is imported, the user can define the mapping for the AIN attribute to the relevant EAM classification and characteristics.

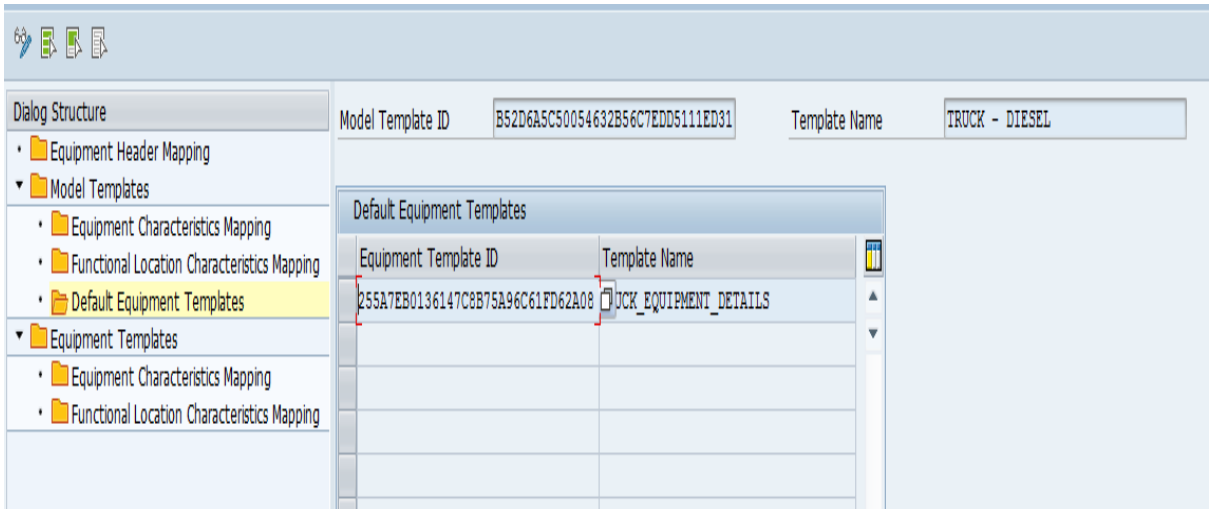


The mapping of a characteristic will cause the value in EAM to be overwritten from the model in AIN.

8.1.2.2.3 Default Equipment Template

This configuration allows the User to define a default AIN equipment template for an AIN model template. If no default equipment template is mapped, then, the user will need to select the relevant Equipment Template in AIN for the copied Equipment records.

The value help for the Equipment Template will display all AIN Equipment Templates, for which there has been a successful import.



8.1.2.3 Equipment Templates

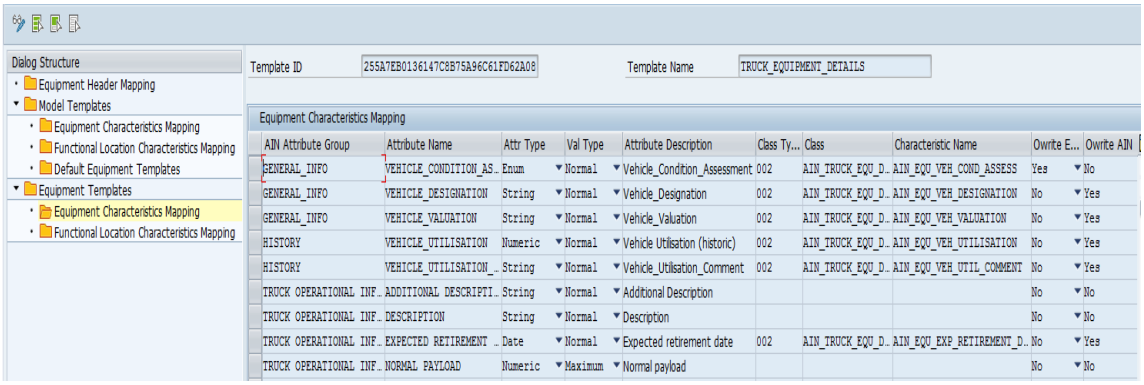
You use this for mapping of AIN equipment templates to:

- EAM Equipment Characteristics
- EAM Functional Location characteristics

The AIN equipment templates can be imported using the program “AIN_TEMPLATES_PULL” (using transaction SE38). Alternatively, the entries for the template can be manually entered.

8.1.2.3.1 Equipment Characteristics Mapping

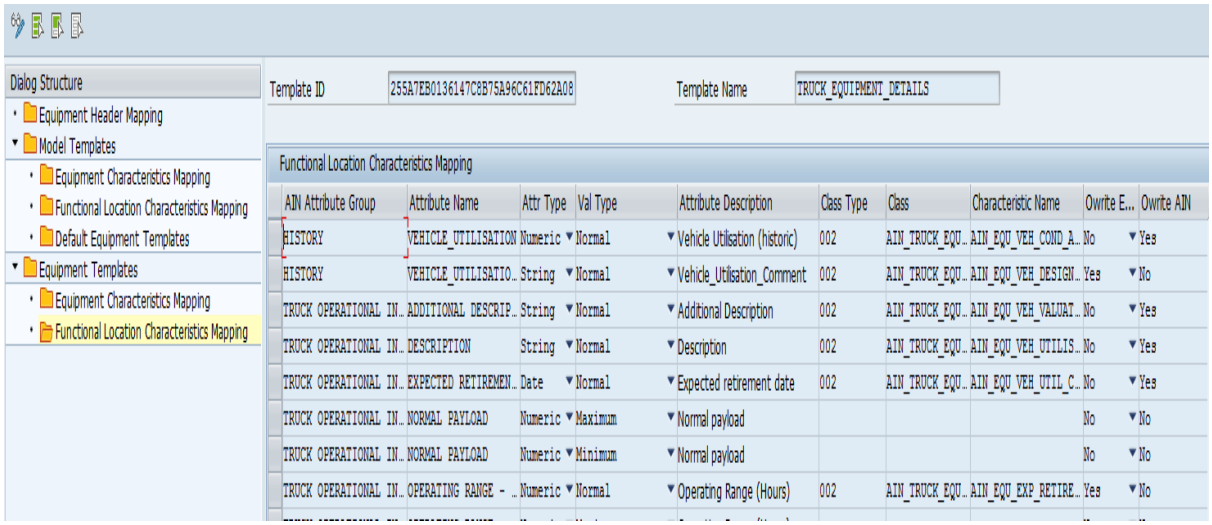
You use this for mapping AIN equipment template attributes to EAM equipment characteristics. Once the template is imported, the User can define the mapping for the AIN attribute to the relevant EAM class and characteristic.



The user can define whether the AIN or the EAM system is the master. If the AIN system is to be the master, then the setting “Owrite EAM” should be used or if the EAM system is to be the master, then the “Owrite AIN” should be used. This can be defined at each attribute independently. This means for some attribute values, the AIN system can be the master and for others the EAM system can be the master.

8.1.2.3.2 Functional Location Characteristics Mapping

You use this for mapping AIN Equipment template attributes to EAM functional location characteristics. Once the template is imported, the user can define the mapping for the AIN attribute to the relevant EAM classification and characteristics.

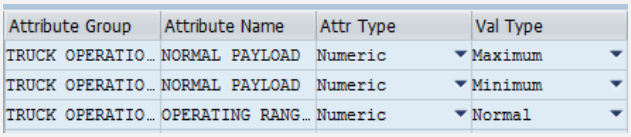


The user can define whether the AIN or the EAM system is the master. If the AIN system is to be the master, then the setting “Owrite EAM” should be used or if the EAM system is to be the master, then the “Owrite AIN” should be used. This can be defined at each attribute independently (i.e. For some attribute values, the AIN system can be the master and for others the EAM system can be the master).

8.1.3 Managing Differences Between the Two Systems

It is required to understand the differences between the mapping of AIN attributes to EAM Characteristics. The below table explains how these differences are handled.

AIN Attribute Type	Supported (Yes/No)	Comment
Boolean	Yes	Must be mapped to “characteristic with data type “Character format” with values “True” and “False”
Date	Yes	Supported.
Enum	Yes	With AIN Enum attributes, the values in the AIN attribute must also be in the EAM characteristic with the same characteristic value. Multiple values are supported if the EAM characteristic is also defined as allowing multiple values.
Numeric	Yes	For numeric attributes the ISO code is used in matching UOM at time of copying values between AIN/EAM. For the AIN numeric values that store multiple values such as:

AIN Attribute Type	Supported (Yes/No)	Comment
		Min/Max or Min/Max/Normal “x at y”  The mapping in EAM is to multiple characteristics (One per “value” to be stored. Example, Min/Max would require two characteristics). The “value type” field in the mapping is used to identify the specific AIN value as shown below.

ECC Characteristic Type	Supported (Yes/No)	Comment
Currency	Yes	Must be mapped to an AIN string attribute type (will be stored without the currency).
Character	Yes	In AIN string is 256 characters, in ECC Characteristics have a maximum of 30 characters. Hence the first 30 characters only will be supported in ECC.
Date	Yes	Supported
Time	No	Not supported as no equivalent AIN attribute type.
Numeric	Yes	For numeric attributes the ISO code is used in matching UOM at time of copying values between AIN/EAM.
Custom	No	Custom data types for characteristics are not supported.

Note

ISO Codes should be maintained for the UoMs in ERP system. Values are case sensitive.

8.2 Master Data Prerequisites

In addition to the creation of the necessary program elements, there are some prerequisite classes and characteristics that must be created. These are used to store details of the linked AIN model against the EAM objects. The following class and characteristics must be defined:

8.2.1 Characteristics

Characteristic	Description	Valid from	Data Type	Number of characters	Value Assignment	Case Sensitive
SAP_AIN_01	AIN: Model	01.04.2016	Character format	30	Single Value	Yes
SAP_AIN_02	AIN: Manufacturer	01.04.2016	Character format	30	Single Value	Yes
SAP_AIN_03	AIN: Equipment	01.04.2016	Character format	30	Single Value	Yes

Note

We recommend that a characteristic group of "SAP_AIN" be created and allocated to the characteristics to assist with management of the AIN characteristics.

8.2.2 Classes

For both class types **`002 Equipment`** and **`003 Functional Location`** a class must be defined as shown below.

Class name	Description	Valid from	Same Classification
ZSAP_AIN	SAP AIN class for linking EAM to AIN	01.04.2016	Do not check

For the class the flowing characteristics must be assigned:

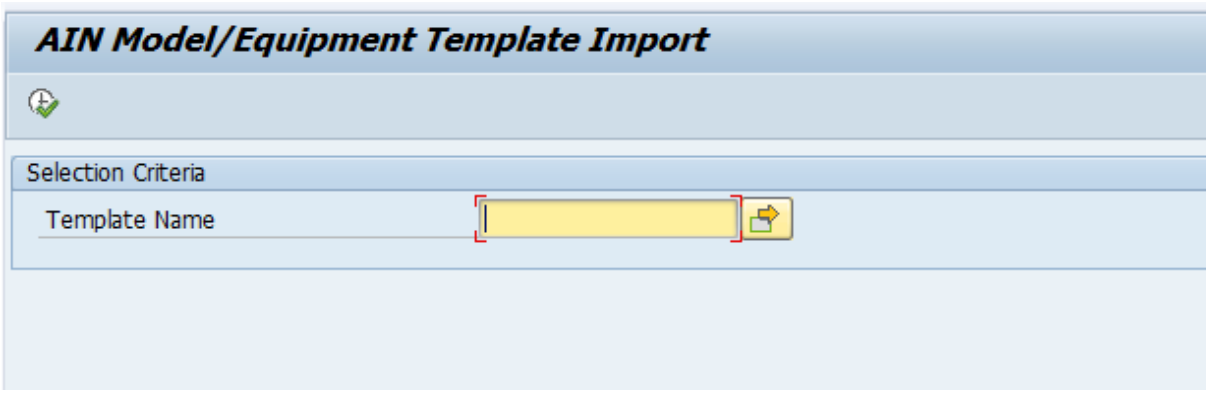
Characteristic	Description
SAP_AIN_01	AIN: Model
SAP_AIN_02	AIN: Manufacturer
SAP_AIN_03	AIN: Equipment

Note

We recommend that a class group of “SAP_AIN” be created and allocated to the classes to assist with management of the AIN classes.

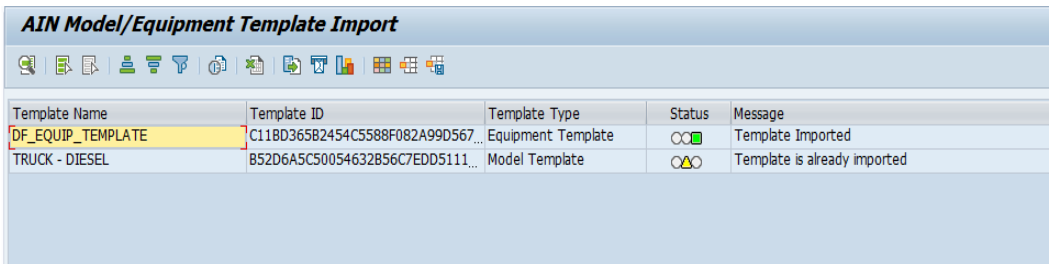
8.3 Import of AIN Model or Equipment Templates

Execute program **AIN_TEMPLATES_PULL** sing the transaction **SE38** or **SA38**. The program can be used to import the model and equipment templates from AIN to the EAM. The selection screen is shown below.



The complete template attribute information gets imported from AIN and the mapping entries for Equipment and Functional location gets created. You can map the AIN attribute and the EAM Characteristics for EAM Equipment and Functional Location individually using the configuration transaction **AIN_SYNC_CONFIG**. The mapping will be done during the creation and synchronization of AIN Equipment.

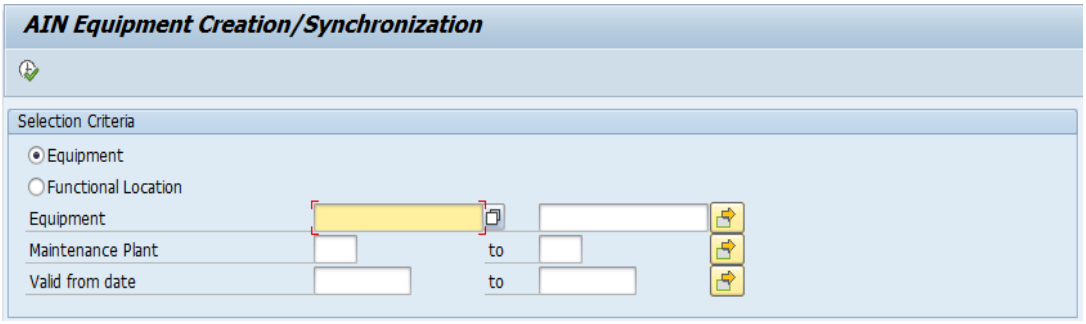
In execution, the program uses the AIN API’s to import the template information. As a result, the following import log screen will be presented to the user.



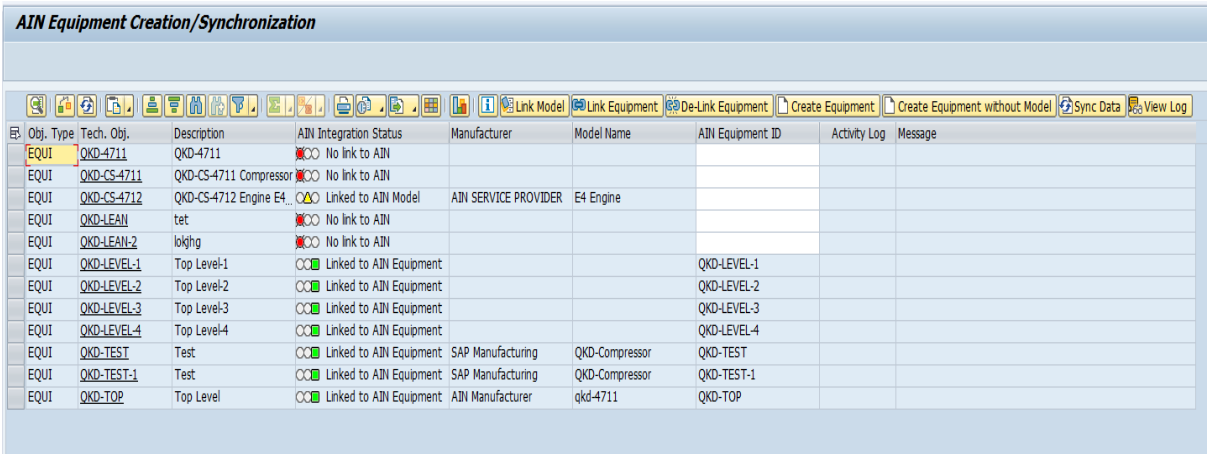
8.4 Equipment Creation and Synchronization

Execute the program **AIN_EQUIPMENT_MAPPER** using transaction **AIN_EQUI_SYNC**. Alternatively, you can use transaction **SE38** or **SA38**.

You use this program to create and synchronize the AIN Equipment based on EAM Equipment or Functional Location. The selection screen is shown below.



The program is designed to be run online and you can select either Equipment or Functional location. Both technical objects are always created as "Equipment" in AIN. The following screen is displayed once the selection screen is executed.



Obj. Type	Tech. Obj.	Description	AIN Integration Status	Manufacturer	Model Name	AIN Equipment ID	Activity Log	Message
EQUI	QKD-4711	QKD-4711	No link to AIN					
EQUI	QKD-CS-4711	QKD-CS-4711 Compressor	No link to AIN					
EQUI	QKD-CS-4712	QKD-CS-4712 Engine E4...	Linked to AIN Model	AIN SERVICE PROVIDER	E4 Engine			
EQUI	QKD-LEAN	tet	No link to AIN					
EQUI	QKD-LEAN-2	lokjhg	No link to AIN					
EQUI	QKD-LEVEL-1	Top Level-1	Linked to AIN Equipment			QKD-LEVEL-1		
EQUI	QKD-LEVEL-2	Top Level-2	Linked to AIN Equipment			QKD-LEVEL-2		
EQUI	QKD-LEVEL-3	Top Level-3	Linked to AIN Equipment			QKD-LEVEL-3		
EQUI	QKD-LEVEL-4	Top Level-4	Linked to AIN Equipment			QKD-LEVEL-4		
EQUI	QKD-TEST	Test	Linked to AIN Equipment	SAP Manufacturing	QKD-Compressor	QKD-TEST		
EQUI	QKD-TEST-1	Test	Linked to AIN Equipment	SAP Manufacturing	QKD-Compressor	QKD-TEST-1		
EQUI	QKD-TOP	Top Level	Linked to AIN Equipment	AIN Manufacturer	qkd-4711	QKD-TOP		

The below are options or buttons available in the Equipment Creation and Synchronization program.

Link Model

The *Link Model* button can be used to link the selected EAM technical object (Equipment or Functional location) to an AIN Model.

Link Equipment

The *Link Equipment* button can be used to link the selected EAM technical object to an existing AIN Equipment.

The following activities takes place during the linking process:

- AIN Equipment ID will be updated in the classification of the EAM technical object.
- EAM technical object ID will be set as External ID of the AIN Equipment.
- AIN model attributes will be copied to EAM technical object characteristics based on the Model template mapping configuration.
- EAM technical object characteristics will be copied to/from the AIN Equipment attributes based on the Equipment template mapping configuration.

Delink Equipment

The *Delink Equipment* button can be used to remove the link between the EAM technical object with an already transferred or linked AIN Equipment.

The following activities will happen during the delinking process:

- AIN Equipment ID will be removed from the classification of the EAM technical object.
- External ID of the AIN Equipment holding EAM technical object will be removed.

Create Equipment

The *Create Equipment* button can be used to create the equivalent AIN Equipment from the selected EAM technical objects. This will use the Equipment header mapping and Template mapping configurations to identify the source for the data during creation process.

The following activities takes place during the creation process:

- AIN Equipment is created based on the EAM technical object considering all the configurations.
- EAM technical object ID is set as External ID of the AIN Equipment.
- AIN model attributes are copied to EAM technical object characteristics based on the model template mapping configuration.
- EAM technical object characteristics are copied to the AIN equipment attributes based on the equipment template mapping configuration.
- Lean Equipment (equipment without link to model) creation is supported. The AIN Equipment is set to *Published*. The logging is enabled for the Equipment create action.

Synchronize Data

The *Sync data* button can be used to synchronize the data between the two systems for already linked / created Equipment based on the various mapping configurations. This button will also synchronize the Equipment hierarchy between the two systems, if the global configuration allows this.

The following activities takes place during the synchronization process:

- Equipment header information will be updated from AIN to EAM or EAM to AIN based on the header mapping configurations.
- AIN model attribute changes will be updated to EAM technical object characteristics based on the Model template mapping configuration.
- Equipment specific characteristics/attributes will be updated from AIN to EAM or EAM to AIN based on the Equipment template mapping configuration.
- Equipment Hierarchy gets synchronized from AIN to EAM or EAM to AIN based on the global configuration setting.

The AIN Equipment should be in *Published* state to run the synchronization process. The data between the two systems are compared and the update will happen only if change identified. A new revision of AIN Equipment created to update changes from EAM. The logging is enabled for the Equipment synchronization action.

View Log

The *View Log* button can be used to view the log of the Equipment creation and synchronization action. The SLG1 log is fetched for the selected EAM technical object **`AIN_INT`** and sub-object: **`EQUI`**

9 Document Creation and Synchronization

This allows you to replicate the relevant AIN model documents to the on premise system and the EAM Equipment documents to the AIN system.

AIN Model documents from AIN to EAM

The AIN model documents gets copied from AIN to EAM. A DMS record will be created for each AIN model, the documents stored against the DMS record and this DMS record will be linked to the relevant EAM objects.

EAM Equipment documents from EAM to AIN

The EAM Equipment documents gets copied from EAM to AIN. A new document will be created in AIN for each file and this will be linked to the relevant AIN Equipment.

9.1 Prerequisites and Required Configurations

The following configuration and master data setup is required for documents synchronization between AIN and EAM:

- Global Configuration Settings
- Mapping of DMS Doc Type to AIN Document Category
- Characteristics and class for the DMS records

9.1.1 Global Configuration Settings

The following AIN integration general settings must be defined using transaction **SM30** for the document creation or synchronization functionality to operate:

Table or View Name: **AIN_V_GEN_CONFIG**

Setting	Value/Description
AIN_MODEL_DMS_TYPE	DMS Document Type to be used for the AIN model documents DIR.
AIN_DMS_STORAGE_TYPE	Value – “DMS_C1_ST”. DMS storage category for storing the AIN model documents.

Setting	Value/Description
AIN_DEFAULT_LANGUAGE	Value – “en”. The default language will be used while creating a document in AIN.

9.1.1.1 DMS Document Type

A new document type can be created to store the AIN model documents or an existing type can be used. It is recommended to have a new document type as “AIN” so that the model documents can be stored in a separate doc type.

Define a new document type **AIN** under “Define document types” using IMG → *Document Management* → *Control Data*.

9.1.2 Mapping of DMS Doc Type and AIN Doc Category

The mapping between the DMS Doc type and the AIN Doc Category required for the document creation in AIN must be defined using transaction **SM30** and table or view name **AIN_V_DOC_CONFIG**

9.1.3 Characteristics and Class

The classes and characteristics that must be created as these are used to store details of the linked AIN model against the DMS objects.

The following class and characteristics must be defined:

9.1.3.1 Characteristics

The following characteristics must be defined. See also, SAP Note 2327152 Linking of EAM objects to AIN Models

Characteristic	Description	Valid From	Data Type	Number of characters	Value Assignment	Case Sensitive
SAP_AIN_01	AIN: Model	01.04.2016	Character format	30	Single Value	Yes

Characteristic	Description	Valid From	Data Type	Number of characters	Value Assignment	Case Sensitive
SAP_AIN_02	AIN: Manufacturer	01.04.2016	Character format	30	Single Value	Yes

Note

We recommend that a characteristic group of “SAP_AIN” be created and allocated to the characteristics to assist with management of the AIN characteristics.

9.1.3.2 Classes

For both class type **017 Documents** a class must be defined:

Class Name	Description	Valid from	Same Classification
ZSAP_AIN	SAP AIN class for linking DMS rec to AIN	01.04.2016	Do not check

Assign the following characteristics to the class:

Characteristic	Description
SAP_AIN_01	AIN: Model
SAP_AIN_02	AIN: Manufacturer

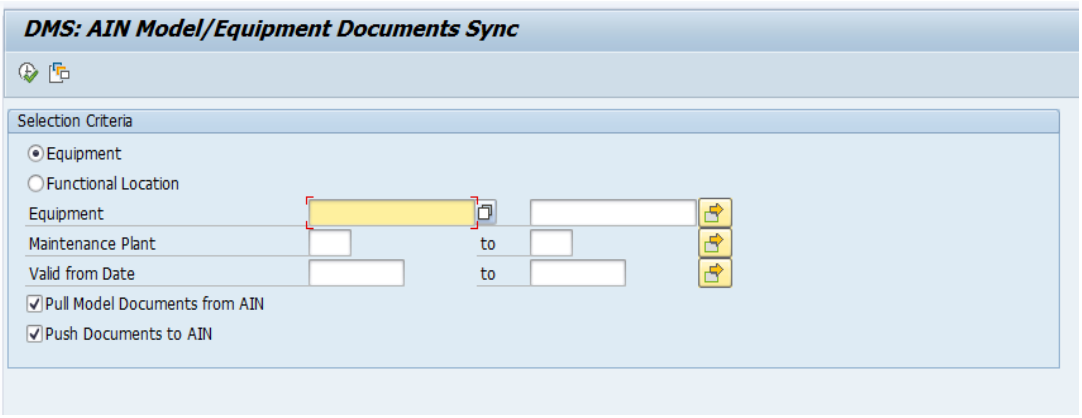
Note

We recommend that a class group of “SAP_AIN” be created and allocated to the classes to assist with management of the AIN classes.

9.2 Create and Synchronize Documents

The program to create or synchronize the documents can be executed using transaction **AIN_DMS** using transaction **SE38**, program **AIN_DMS_PULL**. The program copies document attachments from AIN to EAM or AIN to EAM.

The following selection screen is displayed.



The program is designed to be run online and allows selection based on either equipment or functional locations. If choosing equipment (or functional locations) then the list of objects to be mapped should be limited using the selection options of:

- Equipment Number
- Maintenance Plant
- Valid From Date

The AIN public API's are used to read, write, assign and un-assign documents from/to AIN. The program has two options in the selection screen:

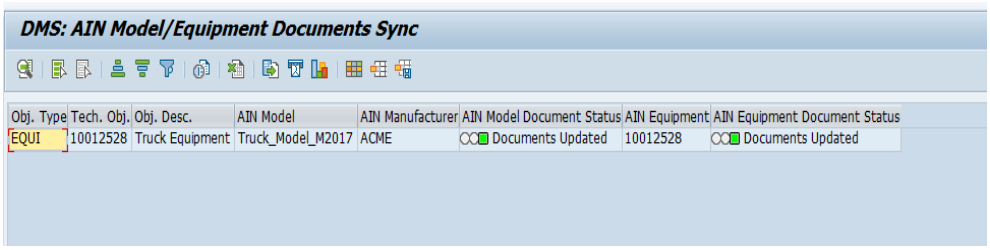
Pull Model Documents from AIN

The EAM technical object must have a link with the AIN Model. The program determines the documents attached to the latest published version of the linked model. It then creates a new DMS record or compare these to any that may have already been created and load the delta. This means it may create new documents, new versions of documents or removed documents. The DMS record will be then linked to the EAM object that is linked to that AIN model.

Push Documents to AIN

The EAM technical object must have a link with the AIN Equipment. The program will determine the documents attached to the EAM object and pushes it to AIN. It will also compare these to any of the existing AIN Equipment document that may have already been pushed (i.e. It may create new documents, update existing documents or removed documents).

The screenshot below shows successful synchronization of documents for object 10012528.



9.2.1 Execution of the Program in Background

Initially we recommend that the program be run in foreground. Once it has been correctly run it may be appropriate to run the program in background on a regular frequency. For example, once per week.

Depending on the number of assets linked to AIN models and the batch window of the system it may be appropriate to create a number of jobs to complete the updates.

10 AIN Announcement Processing in EAM

The Announcements from the AIN models are imported to EAM and the work items are created for the imported announcements based on the BRF+ ruleset. The BRF+ ruleset determines the number of work items to be created for an AIN Announcement and the position of the person to whom to send the work item (work item processor) based on the combination of:

- Announcement Type
- Manufacturer
- Plant

The AIN Model Announcements can only be imported or processed. A separate POWL application is available to view the AIN Announcement specific work items. The POWL application provides details of the affected models, equipment, functional location and the announcement documents.

The intention is that the processor can review the announcement work item and then decides as to what may be required. The processor can either create PM notifications or complete the work item with his comments. The PM notifications can be created from the AIN Announcement processing view and the permitted notification types can be configured. The Work Item can be completed once all notifications are completed.

10.1 Global Configuration Settings

The following AIN integration general settings must be defined using transaction **SM30** for the AIN Announcement Processing functionality to operate:

Table or View Name: **AIN_V_GEN_CONFIG**

Setting	Value/Description
AIN_ANNOUNCEMENT_DEFAULT	Default/fall back user to be sent Announcement work items in case of errors with BRF+ setup or where positions are not filled or persons do not have a valid User ID (in IT0105, subtype 0001).

10.1.1 Maintain PM Notification Type

The PM notifications types to be used for creation PM notification from Announcement processing must be maintained using transaction SM30 defined in table AIN_NOTIF_TYPES.

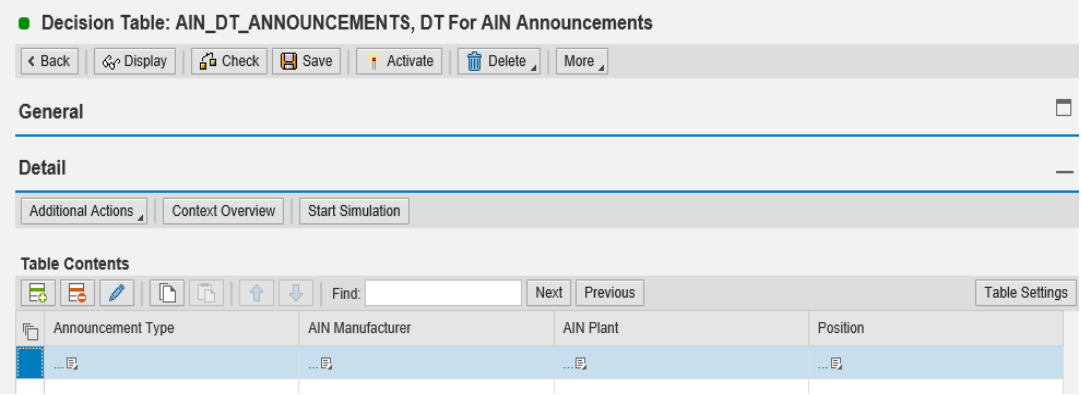
10.1.2 BRF+ Entries

The creation of the Announcement Processing work items is based on the extraction of relevant announcements from AIN and the utilization of a BRF+ ruleset to determine what work items to create and who to send them to. The BRF+ application AIN_ANNOUNCEMENTS_WI_RECIPIENT is the basis for this process. The BRF+ work set needs to have the relevant entries maintained for the organization.

The key points of the use of the work set are that it allows flexibility to determine whom to send an announcement processing work item based on:

- Type of the announcement (Service Bulletin or Recall)
- Manufacturer of the equipment (as identified for the model in AIN)
- Plant for the equipment for the model(s) included in the announcement
- Position to whom the work item is to be sent.

BRF+ decision table name **AIN_DT_ANNOUNCEMENTS**

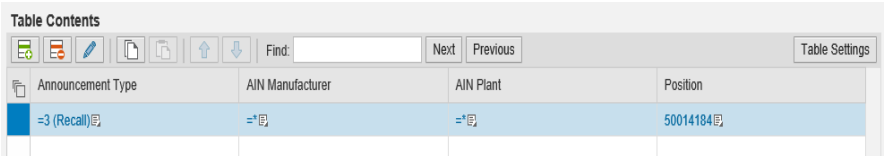


The entries in the table can be defined such as to allow for business requirements such as:

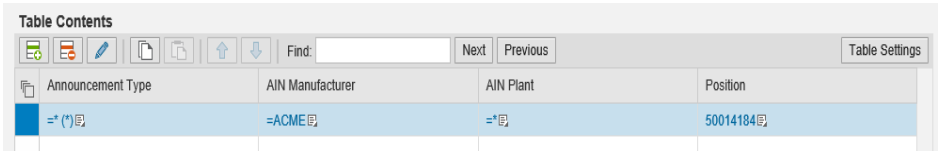
- All recall-type announcements must be sent to holder of position A or
- All announcements for a particular manufacturer must be sent to holder of position B or
- All announcement for equipment at plant X are to be sent to holder of position Y whilst at plant Z they are to go to the holder of position W.

10.1.2.1 Example Entries for the BRF+ Scenarios

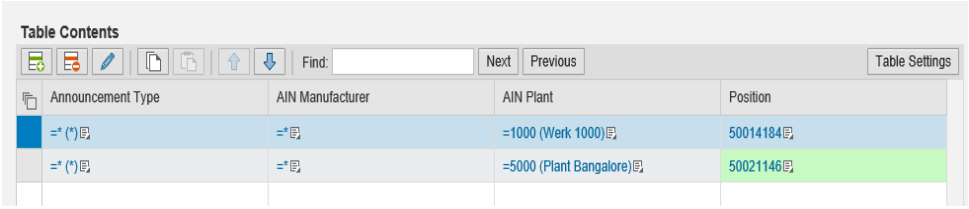
All recall-type announcements must be sent to holder of position A



All announcements for a particular manufacturer must be sent to holder of position B

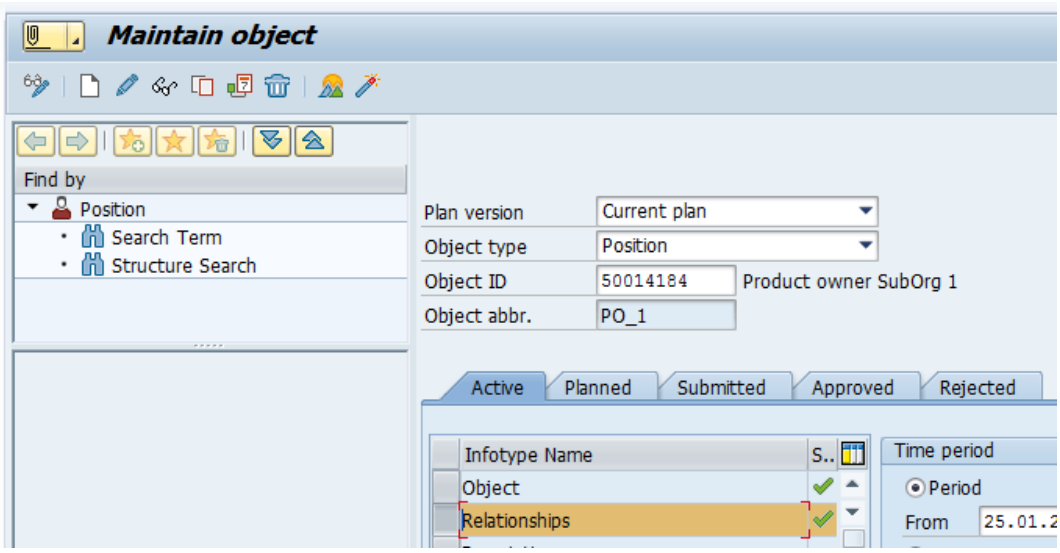


All announcement for equipment at plant X are to be sent to holder of position Y whilst at plant Z they are to go to the holder of position W.

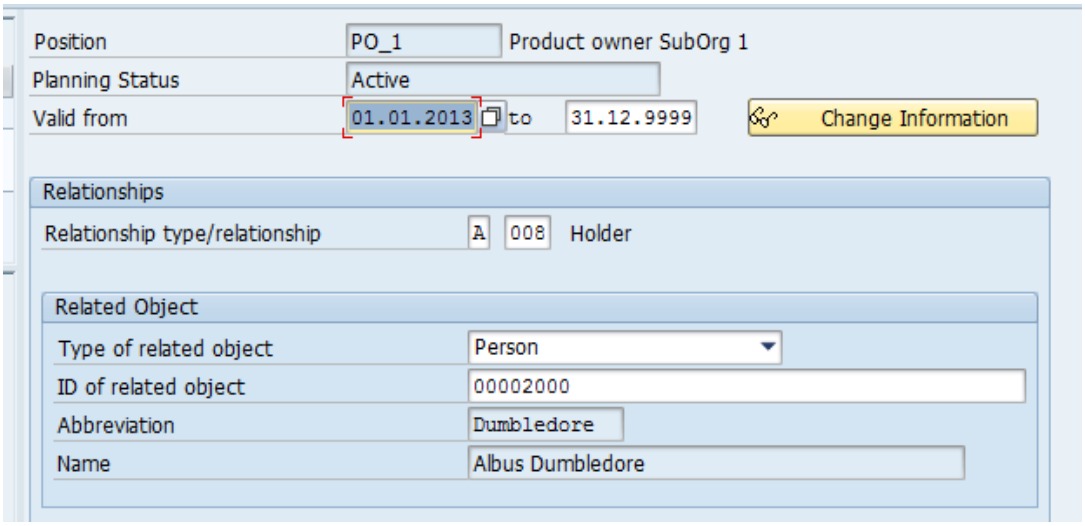


If the BRF+ entries are not maintained or if there is no valid entry found for a particular combination, then the default user (as defined in the General Settings section) will be used.

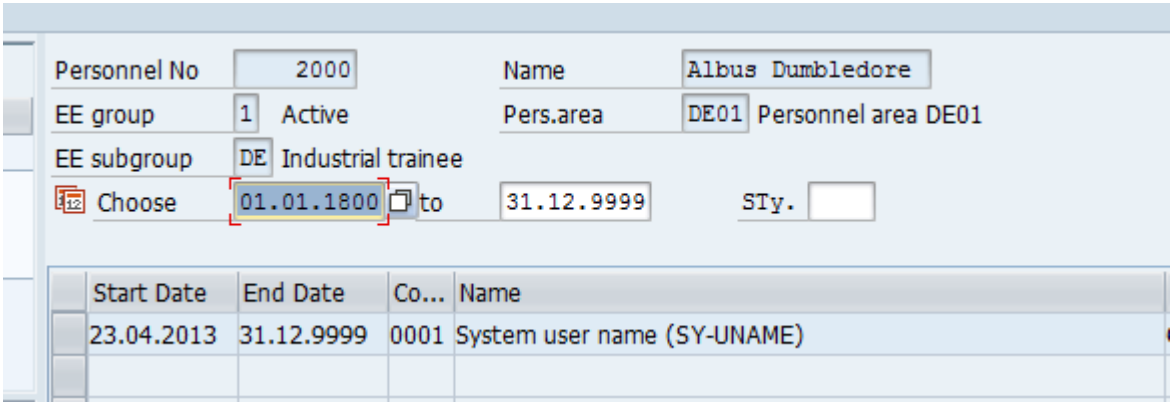
The User to send the work item is derived from the position based on the holder of the position and their Infotype 105 (Communication), subtype 0001 (System user name). If there is no holder of the position or the holder's personnel record does not have a user-id maintained, then the default user will be used instead.

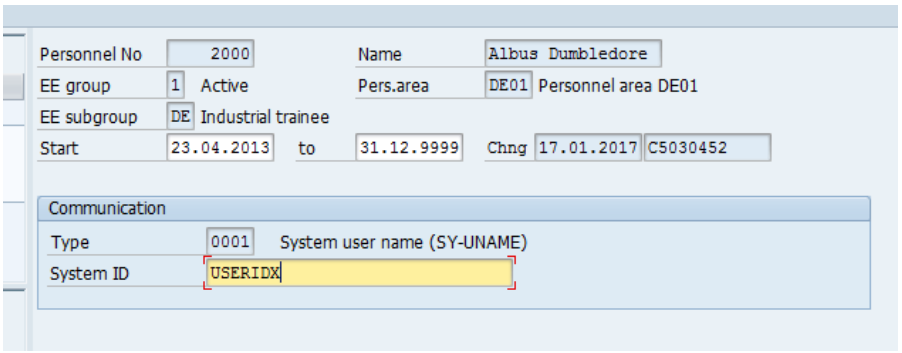


- Position 500014814;
- Holder of the position is Person 2000 (Albus Dumbledore)



- Employee Record – Infotype 105 (Communication)
- Sub-type 0001

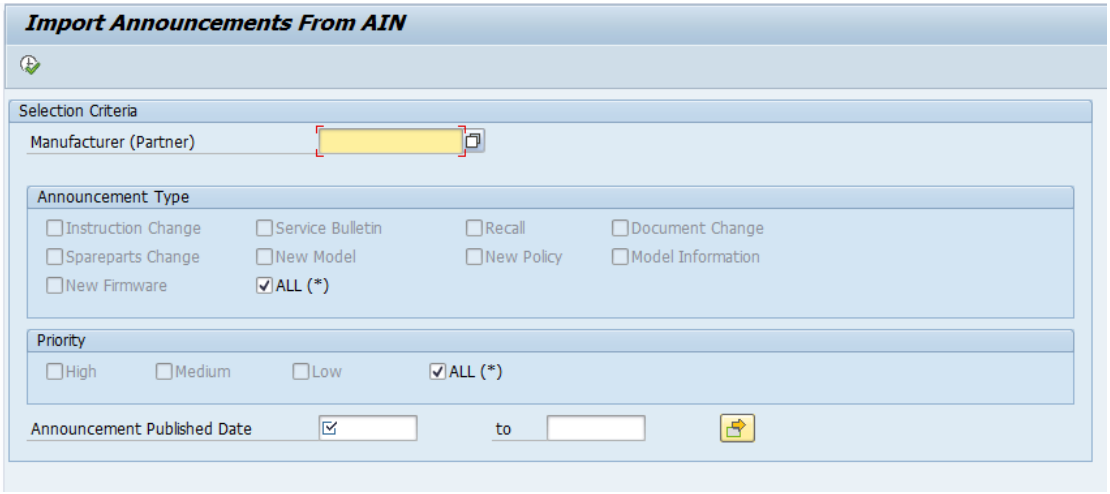




- Maintain the **`User ID`**.

10.2 Import Announcements from AIN

Execute the program **AIN_ANNOUNCEMENT_PULL** using transaction **AIN_ANN_PULL** or alternatively using transaction **SE38** or **SA38.** The program can be used to import the AIN model Announcements from AIN to the EAM. The selection screen is shown below.



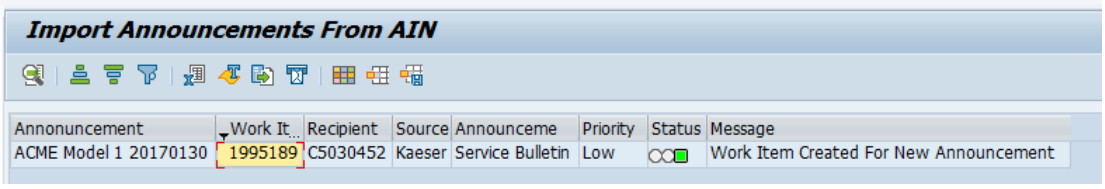
The work items are created for the imported announcements based on the BRF+ ruleset. The BRF+ ruleset is used to determine the number of work items to be created for an AIN Announcement and the position of the person to whom to send the work item (work item processor) based on the combination of:

- Announcement Type
- Manufacturer
- Plant

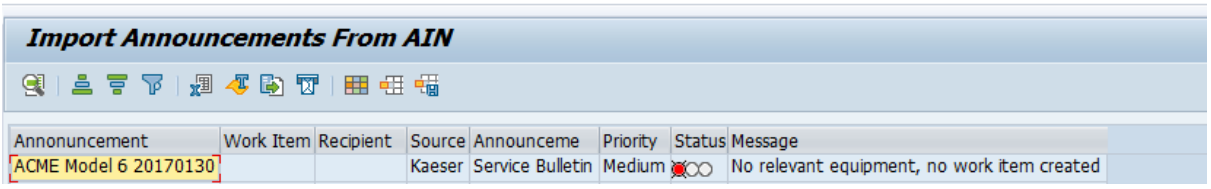
In execution, the program will use the AIN API's to import the Model Announcements. The following scenarios are catered for in the program logic:

- New Announcement
- Model(s) in announcement have EAM technical object(s) mapped

Result: New work item created

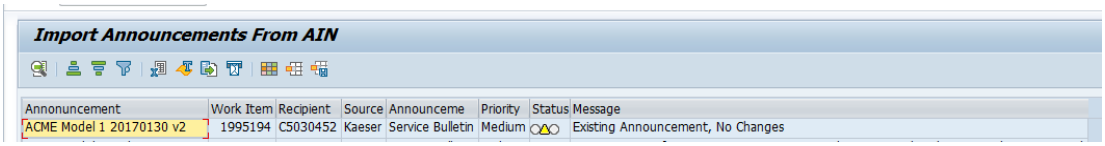


- Model(s) in announcement do not have EAM technical object(s) mapped.
- Result: No work item created



Import of existing Announcement

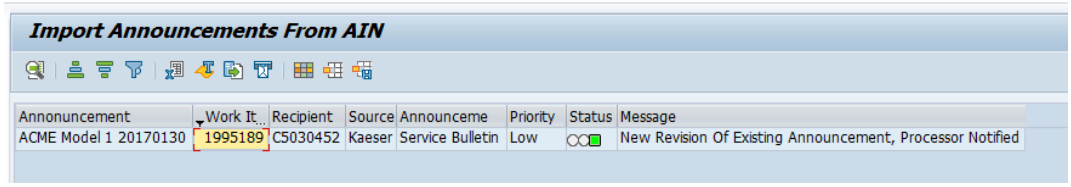
If an Announcement is re-imported, then if there are no changes (i.e. no revision to the announcement has been made) then no action will be taken.



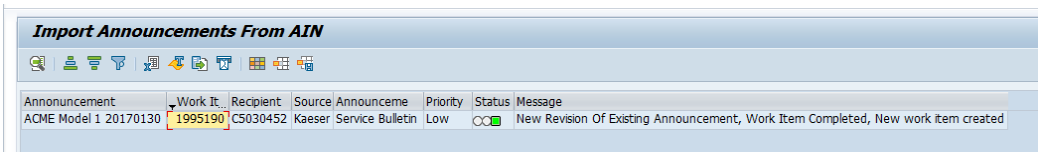
Revision to Announcement

Change only to Description/Priority/Documents

If the work item(s) are still in progress, then the Recipient will be notified of a change in the announcement via a message to their work inbox. They will then need to assess the impact of the change.



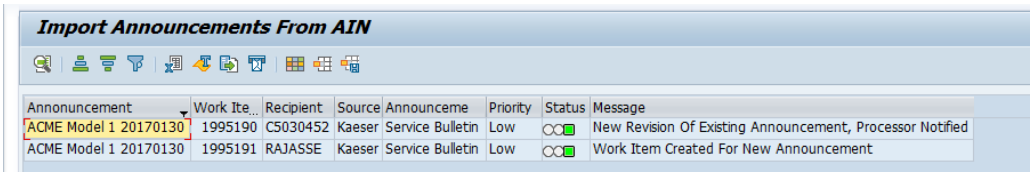
If the work item(s) are complete then a new work item will be created.



Addition of a Model(s)

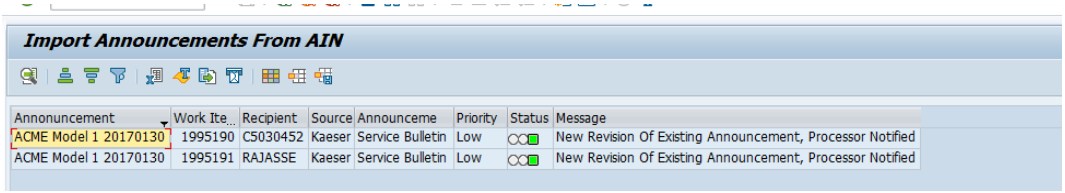
If the Model added does not have any impact on the work items that need to be created, then the Recipient will be notified of a change in the announcement via a message to their work inbox. They will then need to assess the impact of the change.

If the Model added does have an impact on the work items to be created, then the new work item(s) will be created and the new recipient notified.



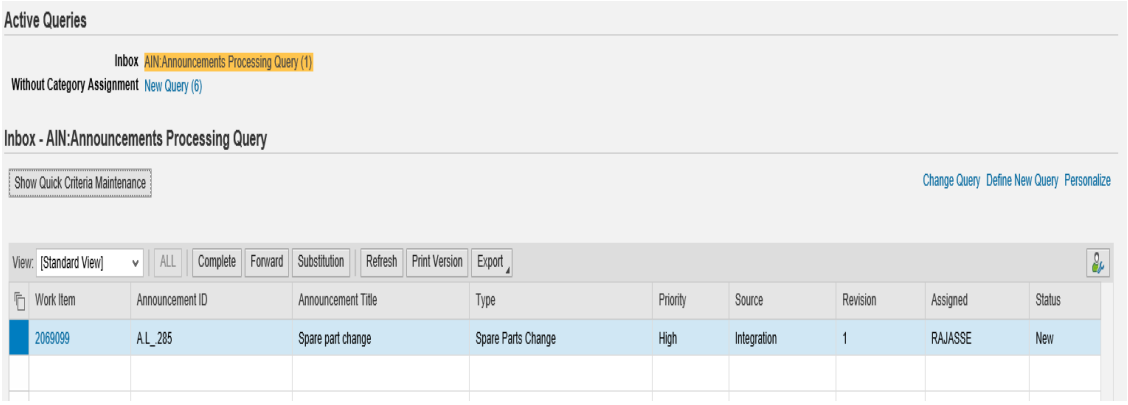
Removal of a Model(s)

If a model is removed and the work item(s) are still in progress, then the Recipient will be notified of a change in the announcement via a message to their work inbox. In the case of a work item being solely for the Model removed from the Announcement then the user will see that the work item now does not have any model included.

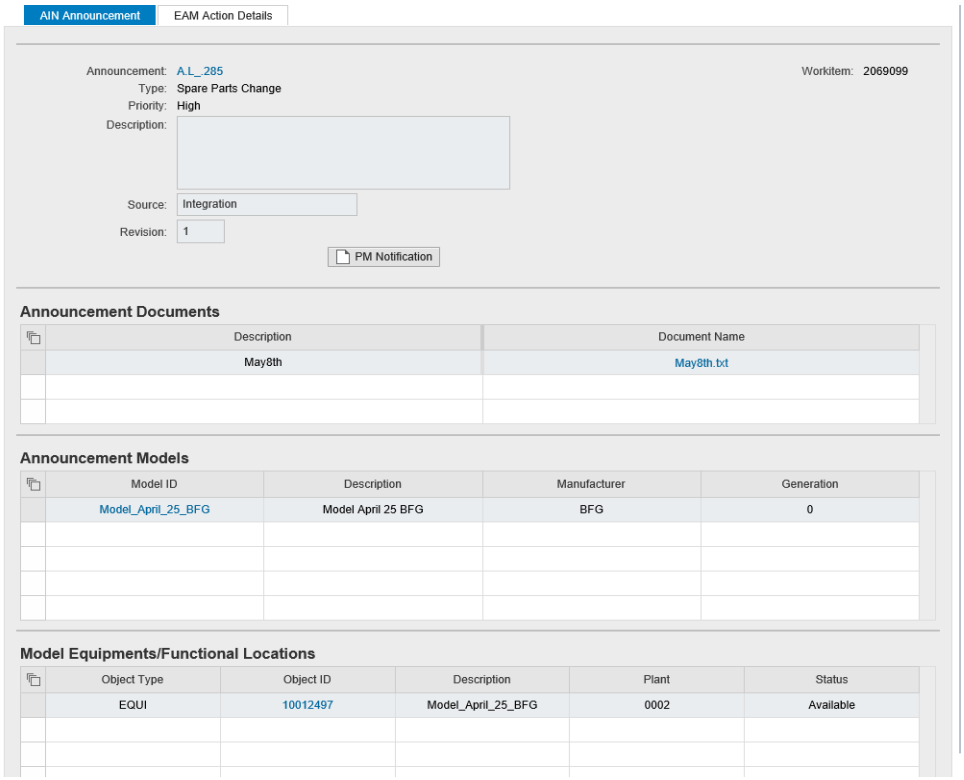


10.3 AIN Announcement Processing POWL

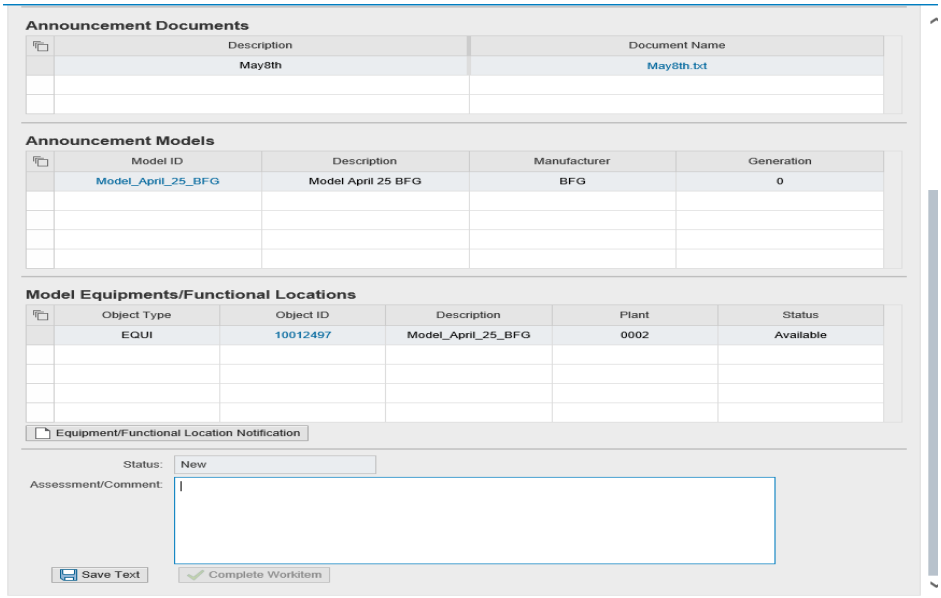
The work items created will be available in the workflow inbox of the relevant user as well as in the AIN Announcement Processing POWL.



From the POWL the user can then process the item (by clicking on the work item ID). The Announcement processing screen is shown below.

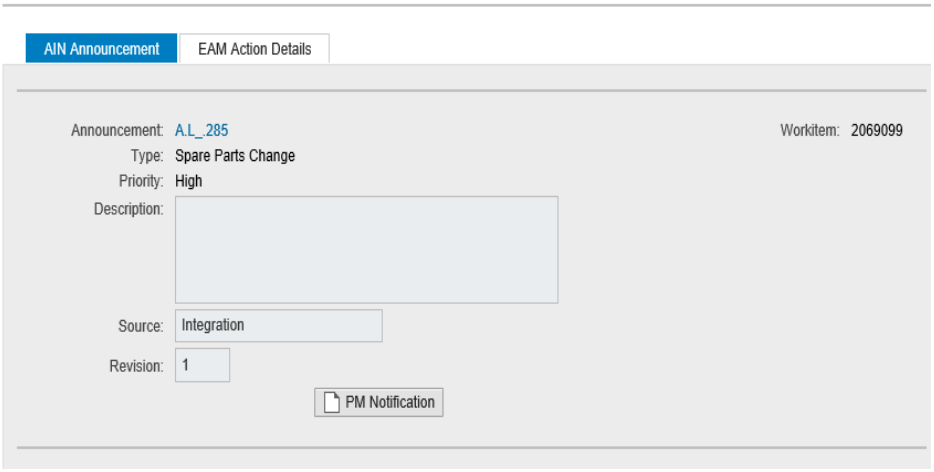


The intention is that the user reviews the change (including using link to the announcement in AIN) and then decides as to what may be required. A comment is then required in the Assessment/Comment field as shown below (Note: Work items cannot be closed without a comment).

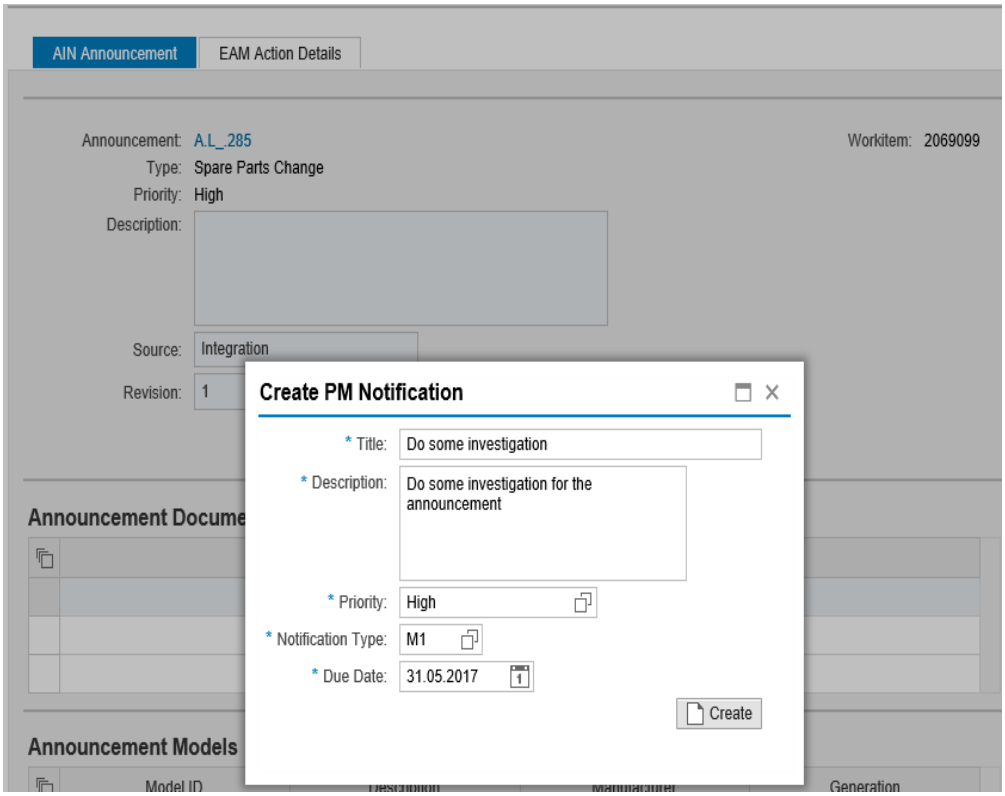


The assessment of the impact may mean that some EAM notification(s) are required.

The user can either create a notification without reference to an EAM object by using the “Create PM Notification” button.



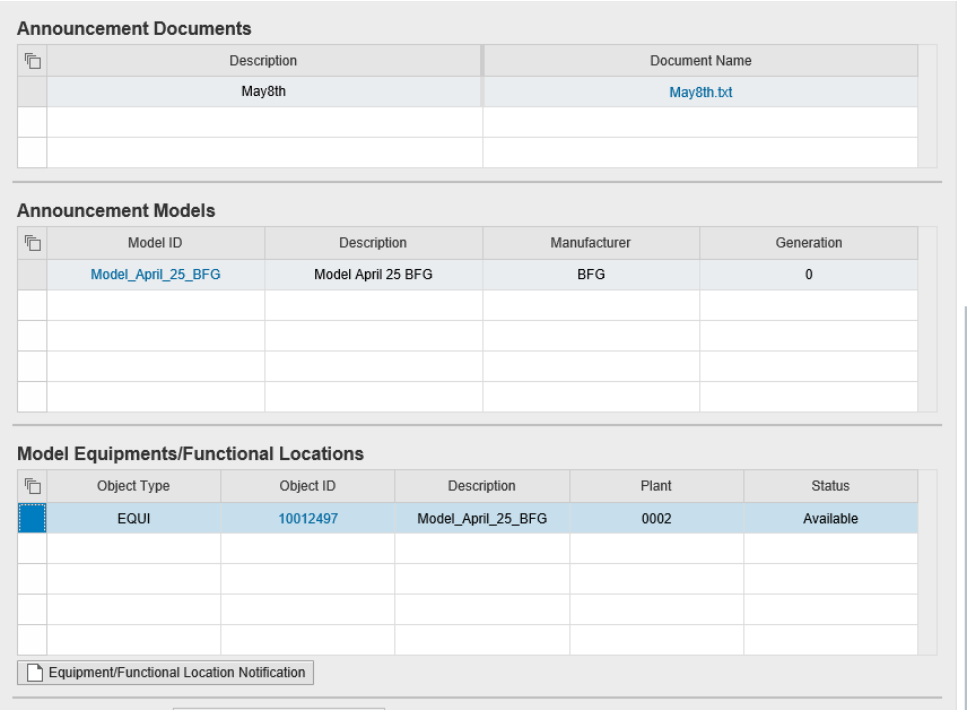
The intention here is that it may be that some broader action is required not specific to a particular item of equipment.



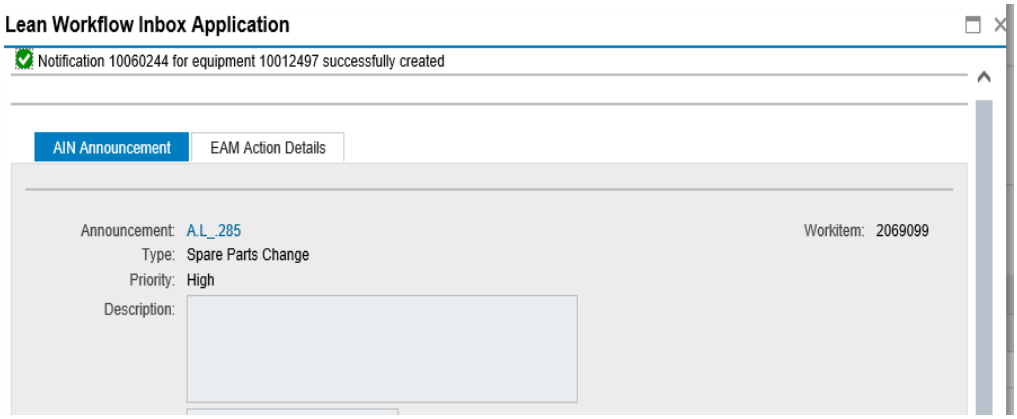
Note

The notification types available are based on an AIN integration config table.

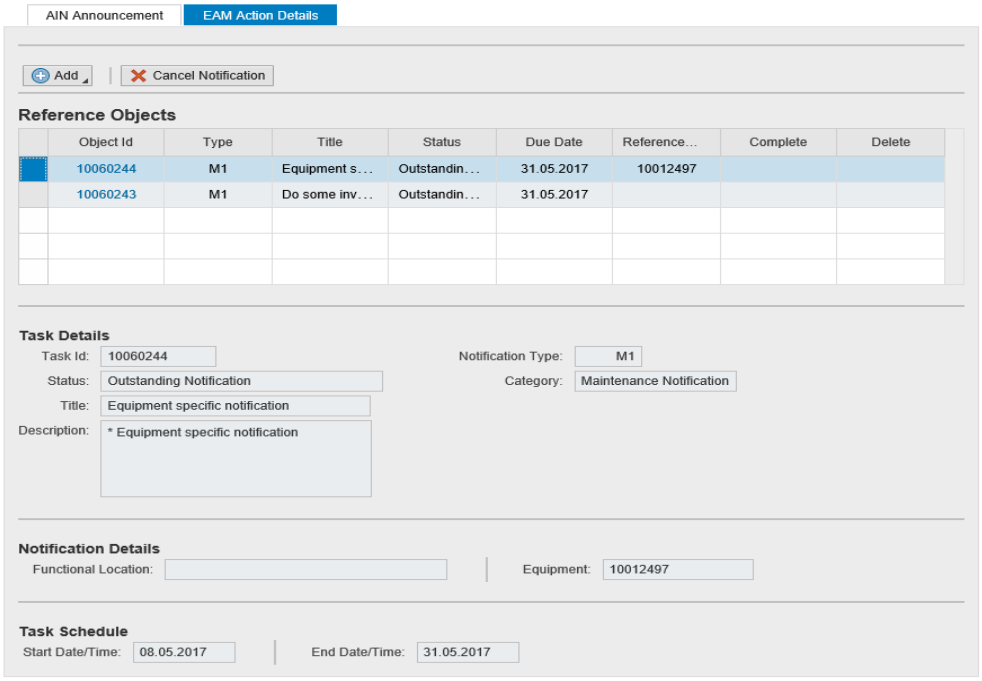
If more notifications are required, then the process can be repeated. If the user needs to create notifications for one or more of the affected equipment or Functional Locations, then they can simply select the object that they wish to create a notification for and then “Equipment/Functional location Notification”.



A separate notification will be created for each selected EAM object.



The notifications created can be seen on the “EAM Action Details” tab as shown below



Note

The user can also use the *Add* button option to create more notifications. If the created notification is not correct, then it can be cancelled using the *Cancel Notification* option.

10.4 Closing of Announcement Work Items

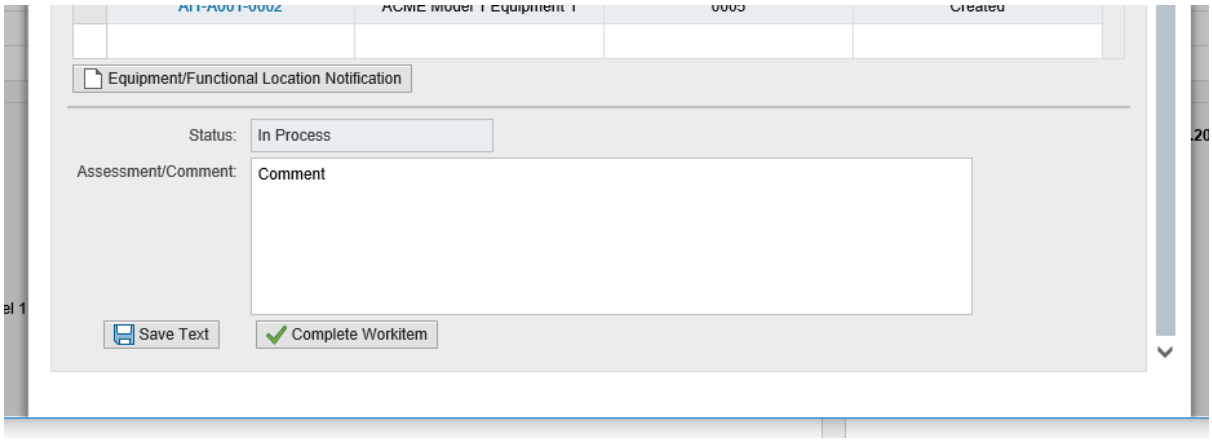
Announcement work items can only be closed if:

- A comment has been saved and
  - There are no outstanding notifications.
- Notifications are outstanding if they are:
  - Not completed or cancelled
  - Have Work Orders that that are not cancelled or completed (System status is not TECO, DLFL and CLSD)

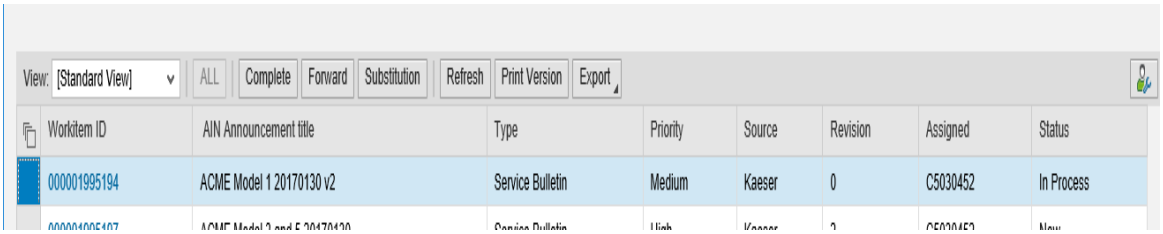
Work items can either be completed manually or using the transaction **AIN_ANN_COMP**.

10.4.1 Manually Complete a Work Item

From the work item itself ensure the criteria are met to allow the work item to be completed and then press the "Complete work item" button

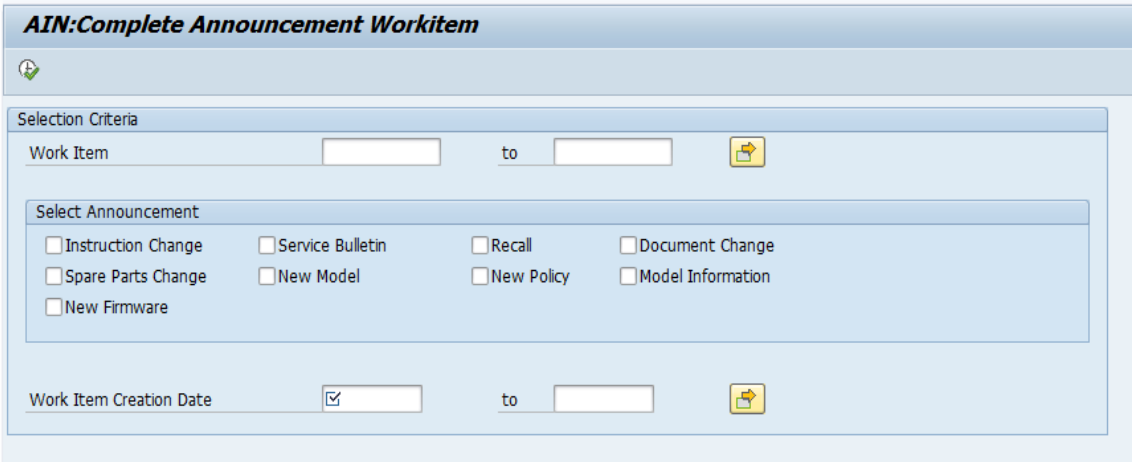


From the POWL select the work item and press the “Complete” button.



10.4.2 Automatically Complete a Work Item

Work items can be set to automatically complete using transaction **AIN_ANN_COMP**



Enter the appropriate selection criteria and execute. Any work items that can be closed will be closed and for others explanation of why they cannot be closed will be provided.

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Material Number: