SAP Manufacturing Execution

How-To Guide



How To Set Up and Use SAP MEINT

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37 When to Use Correlation 526
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1 Introduction

1.1 Purpose

Use this guide to integrate SAP ME with SAP ERP (SAPMEINT) by applying best practices to meet your business needs.

1.2 Scope

The SAPMEINT How-To Guide covers all aspects of SAP ME integration with SAP ERP.

This guide addresses the transfer of information in both directions – from SAP ERP to SAP ME and from SAP ME to SAP ERP. The guide includes information about business purposes, specific interfaces, sample steps for preparing and transferring information, data mapping between the systems, and troubleshooting aides.

2 MEINT Overview

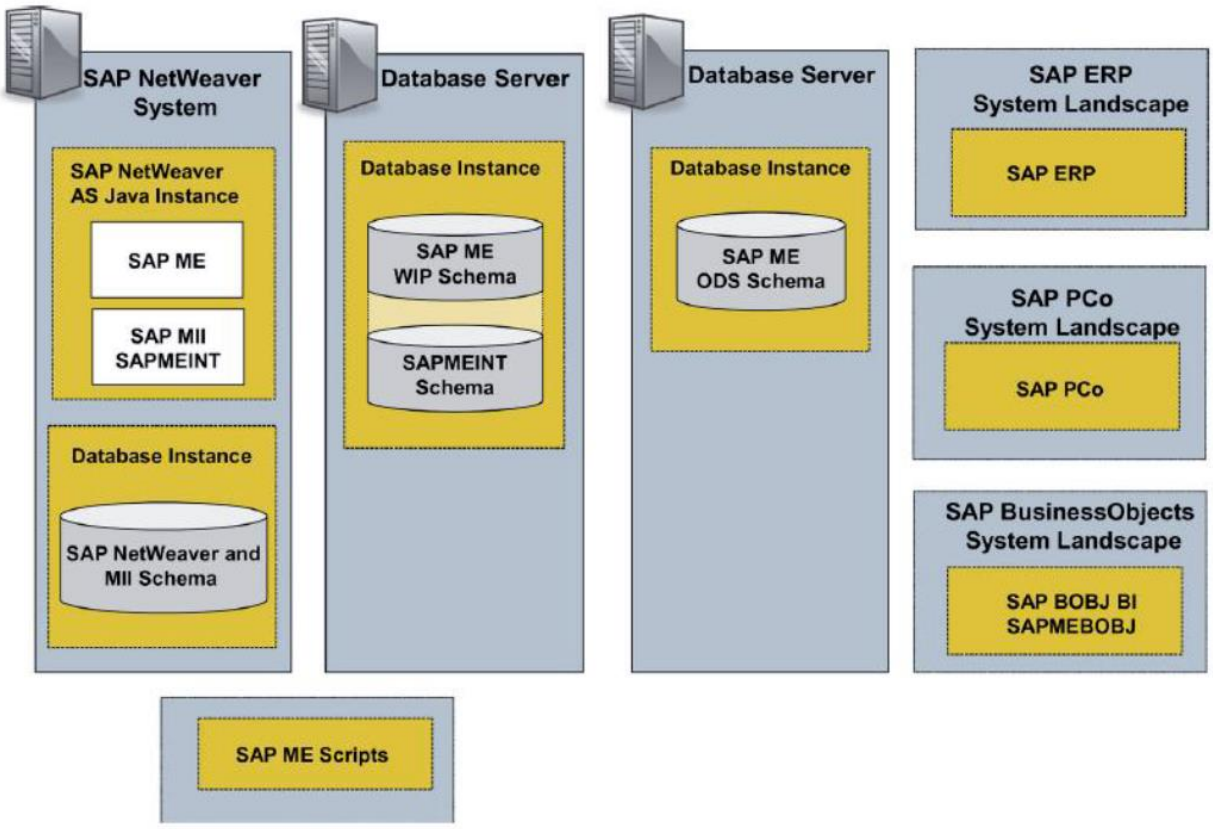
2.1 System Landscape and Architecture

The system landscape for integration consists of the following components:

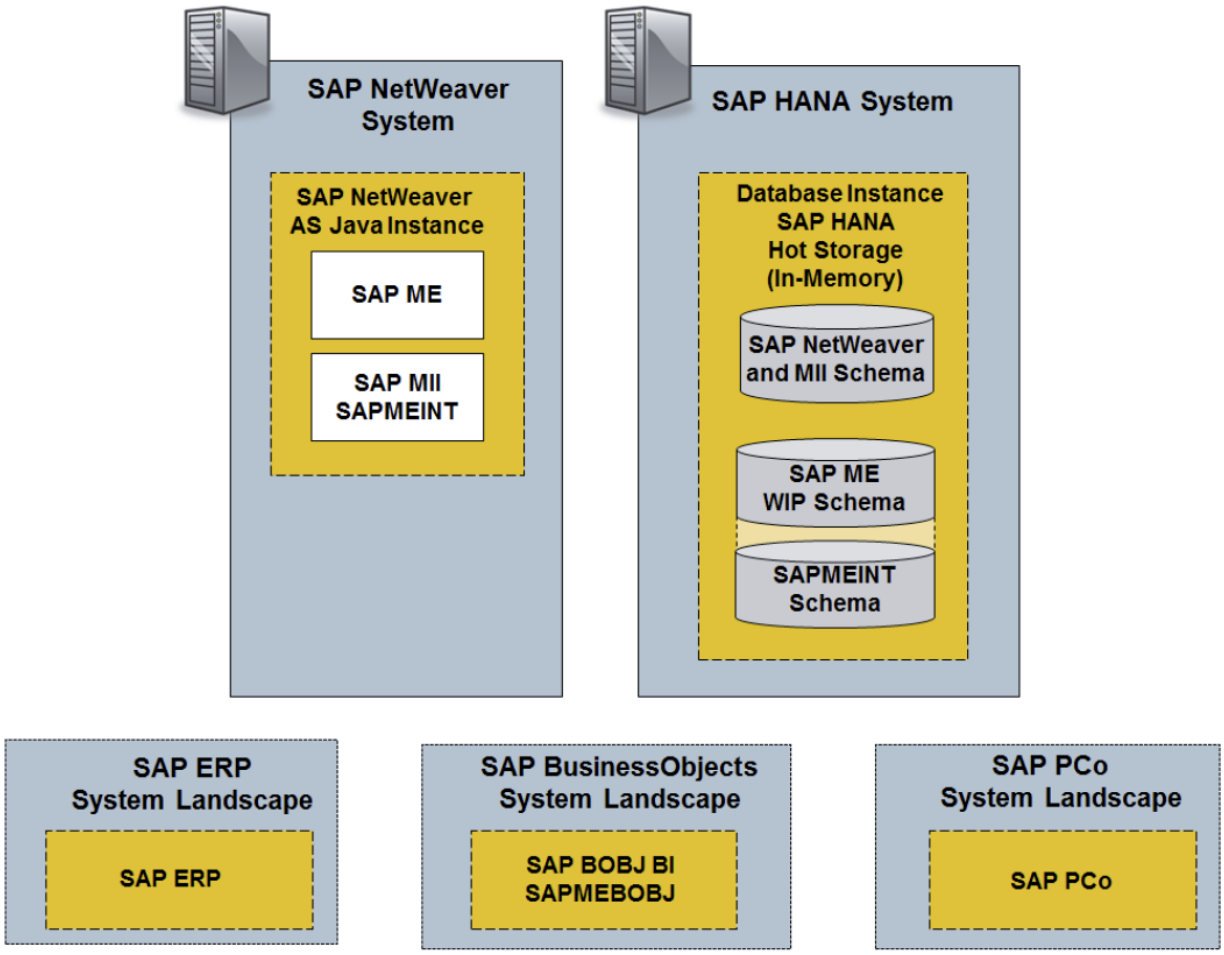
- SAP ERP Central Component (SAP ECC) 6.0 EHP6 or greater
- SAP Manufacturing Execution (SAP ME) 15.1
- SAP ME ERP Integration (SAPMEINT) 15.1
- SAP Manufacturing Integration and Intelligence (SAP MII) 15.1
- SAP NetWeaver 7.4 or SAP NetWeaver 7.5

For the latest component version and patch level requirements, see the SAP ME 15.1 Product Availability Matrix (PAM), available at support.sap.com/pam, and search for SAP MFG EXECUTION 15.1.

The following graphic shows the standard topology for an SAP ME system landscape:



The following graphic shows the standard topology for SAP ME on an SAP HANA system landscape:



2.2 Description and Applicability

Use the MEINT component to integrate the SAP Manufacturing Execution (SAP ME) system directly into your existing SAP ERP application, giving manufacturing staff a clear overview of production operations and improving analytical capability for the management team.

SAP ERP is the system of record for master data and SAP ME is the system of record for all WIP data.

You can integrate the following master data:

SAP ERP	SAP ME
Material	Material
Material with classification	Material with custom data
BOM	BOM
BOM with phantom components	BOM with phantom components
BOM with co-products	BOM with co-products
BOM with by-products	BOM with by-products
BOM with alternate components	BOM with alternate components

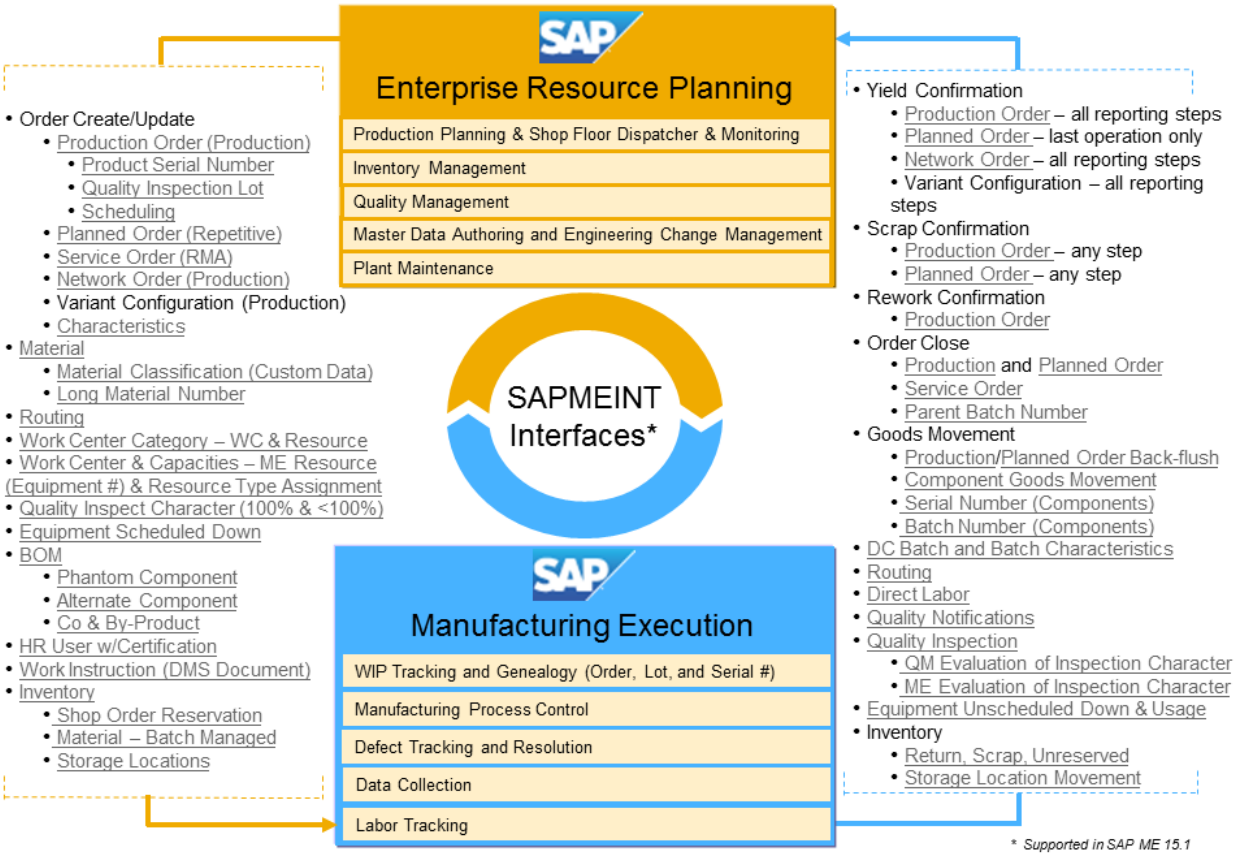
BOM with assembly operations	BOM with assembly operations
BOM with reference designators	BOM with reference designators
Work center	Resource or work center
Work center with individual capacities and assigned equipment number and resource types	Work center with resources and assigned equipment number and resource types
Routing (standard and rate)	Routing with operations
Routing with allocated components	Routing and BOM with assembly operations
Routing with document info record	Routing with work instruction
Personnel with qualification	User with certification

You can integrate the following transaction data:

SAP ERP	SAP ME
Production order	Production shop order
Production order with BOM	Production shop order with BOM
Production order with a storage location assignment	Production shop order with storage location assignment
Production order with routing	Production shop order with routing
Production order with serial numbers	Production shop order with SFC numbers
Production order with document info record	Production shop order with work instruction
Production order with quality inspection lot	Production shop order with quality inspection lot
Production order with batch number	Production shop order with batch number
Production order with schedule information (SFDM)	Production shop order with schedule information (SFDM)
Production order with work center assignment on routing step and operation (SFDM)	Production shop order with work center assignment on routing step and operation (SFDM)
Production order with characteristics for variant-configured product	Production shop order with characteristic list for variant-configured product
Planned order	Repetitive shop order
Planned order with BOM	Repetitive shop order with BOM
Planned order with a storage location assignment	Repetitive shop order with storage location assignment
Planned order with routing	Repetitive shop order with routing
Service order	RMA shop order
Inventory	Floor stock (Inventory ID)
Quality notification	Nonconformance
Equipment scheduled maintenance order (PM)	Tool / resource scheduled downtime
Equipment PM notification	Tool / resource unscheduled downtime
Measurement document	Tool / resource usage
Confirmation	Completion
Consumption	Component assembling
Scrap	Scrap
Activity confirmation for production order	Approved direct labor records (only collected work time)

Quality inspection results	Data collection for quality inspection
Batch and batch characteristic data	Data collection for batch number

The following figure provides a high-level overview of MEINT showing the types of information transferred between the systems:



3 Material Integration

3.1 Overview

This section of the MEINT 15.1 How-To Guide describes how to transfer material master data from SAP ERP to create or update the corresponding material record in SAP ME (see Material on the SAP Help Portal at http://help.sap.com).

3.1.1 Business Purpose

Before production or planned orders can be created in SAP ME, the material to manufacture must first exist in SAP ERP. The material integration process ensures that a material created in SAP ERP and transferred to SAP ME can be created and released.

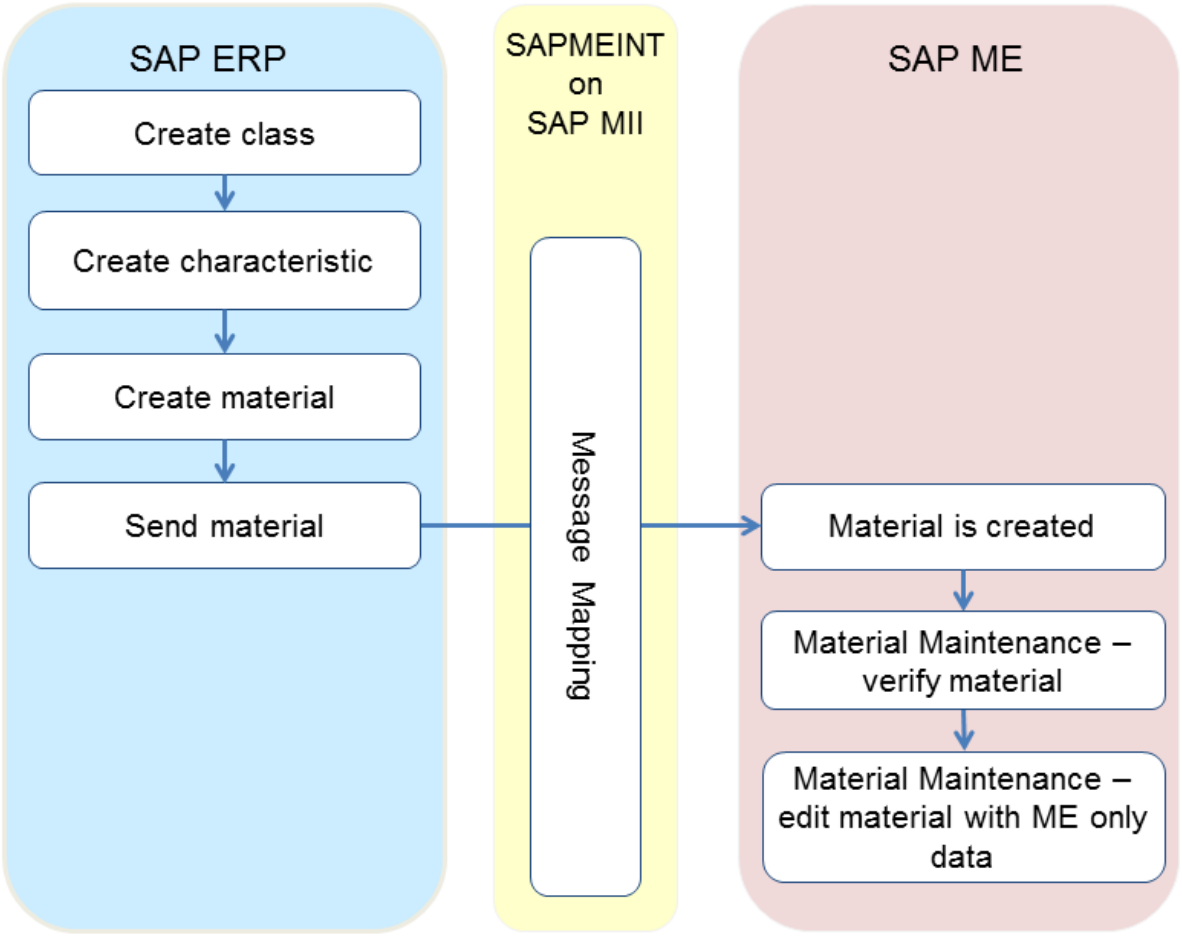
In some cases, specific material properties may be required to manufacture the material. This information is stored as classification data in SAP ERP and associated to the material master record. This classification data must be maintained in SAP ERP and associated with the material, then the material and associated class data can be transferred to SAP ME as part of the material transfer.

Transferring the material from SAP ERP to SAP ME ensures consistent data so that inventory and WIP numbers are accurate between SAP ERP and SAP ME during production.

Integration information and constraints include the following:

- The material master is used by all components in the SAP ERP Logistics system.
- The data contained in the material master is required for the following functions in SAP ERP to facilitate the integration:
    - In Inventory Management, for goods movement postings and physical inventory
    - In Production Planning and Control, for material requirements planning and scheduling
- The SAP ERP base unit of measure of the material is used in the SAP ME material, inventory ID, bill of materials (BOM), and production shop order records and then reported back to SAP ERP in confirmations.
- Material classification data can be transferred (see Configuring Material Classification Data section of this guide).
- The SAP ERP discontinuation concept is not supported.
- The language of the material description value matches the SAP ERP plant language. If the description in the SAP ERP plant language is not available, SAPMEINT uses the value in the first available language.

3.1.2 Process Flow Graphic



3.2 Configuring a Material Master

3.2.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to create and transfer material master data from SAP ERP to create or update the corresponding material record in SAP ME.

For more information about sending material master IDocs to SAP ME, see Transfer of Material on the SAP Help Portal at http://help.sap.com.

3.2.2 Prerequisites

3.2.2.1 SAP ERP

- You have set up ALE communication to create and transmit a *MATMAS03* or *MATMAS05* IDoc (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have defined the DRF Replication Model to replicate *MATMAS03* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System*

> *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

3.2.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings for the *Material* category in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

3.2.3 Procedural Steps

1. Create a material master record in SAP ERP (see Creating a Material Master Record on the SAP Help Portal at http://help.sap.com).
2. Send material master record to SAP ME.

   We recommend to use *Execute Data Replication* transaction (transaction code – *DRFOUT*).

   Make sure that you have created and activated a replication model with the outbound implementation for the material (*194_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

   Note: You can send a material using the *Send Material* (*BD10*) transaction.
3. Optional: Verify *MATMAS03* or *MATMAS05* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding material record in SAP ME (see Material Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

3.2.4 Alternates / Best Practices and Tips

3.2.5 Examples

3.2.5.1 Creating a Material Master

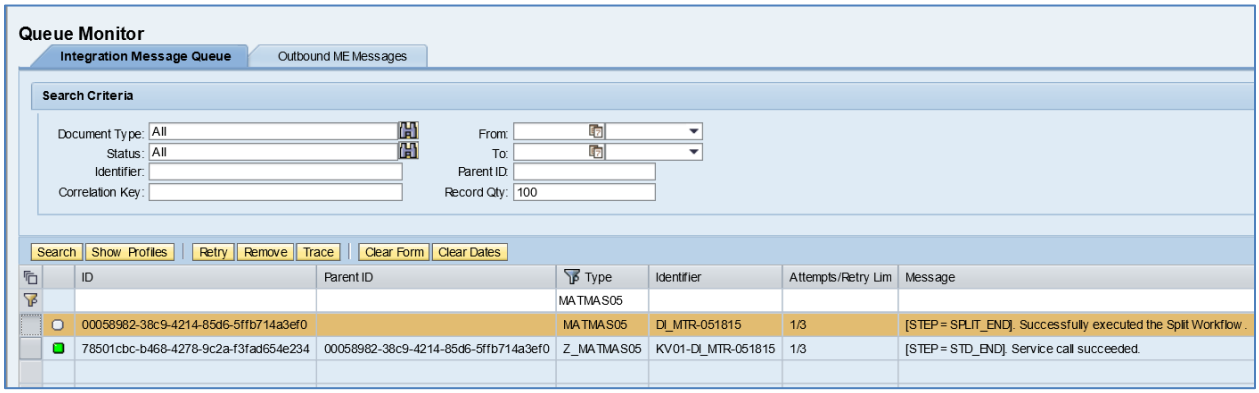
1. In SAP ERP, create a material master record (see Creating a Material Master Record on the SAP Help Portal at http://help.sap.com).

   Note that Material Type in SAP ME depends on the Procurement Type selected in SAP ERP during the material master creation:

In-house production – *Manufactured*
External procurement – *Purchased*
Both procurement types – *Manufactured/Purchased*.

2. Send material master record to SAP ME.
3. Optional: Verify *MATMAS03* or *MATMAS05* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



4. Verify results in SAP ME.

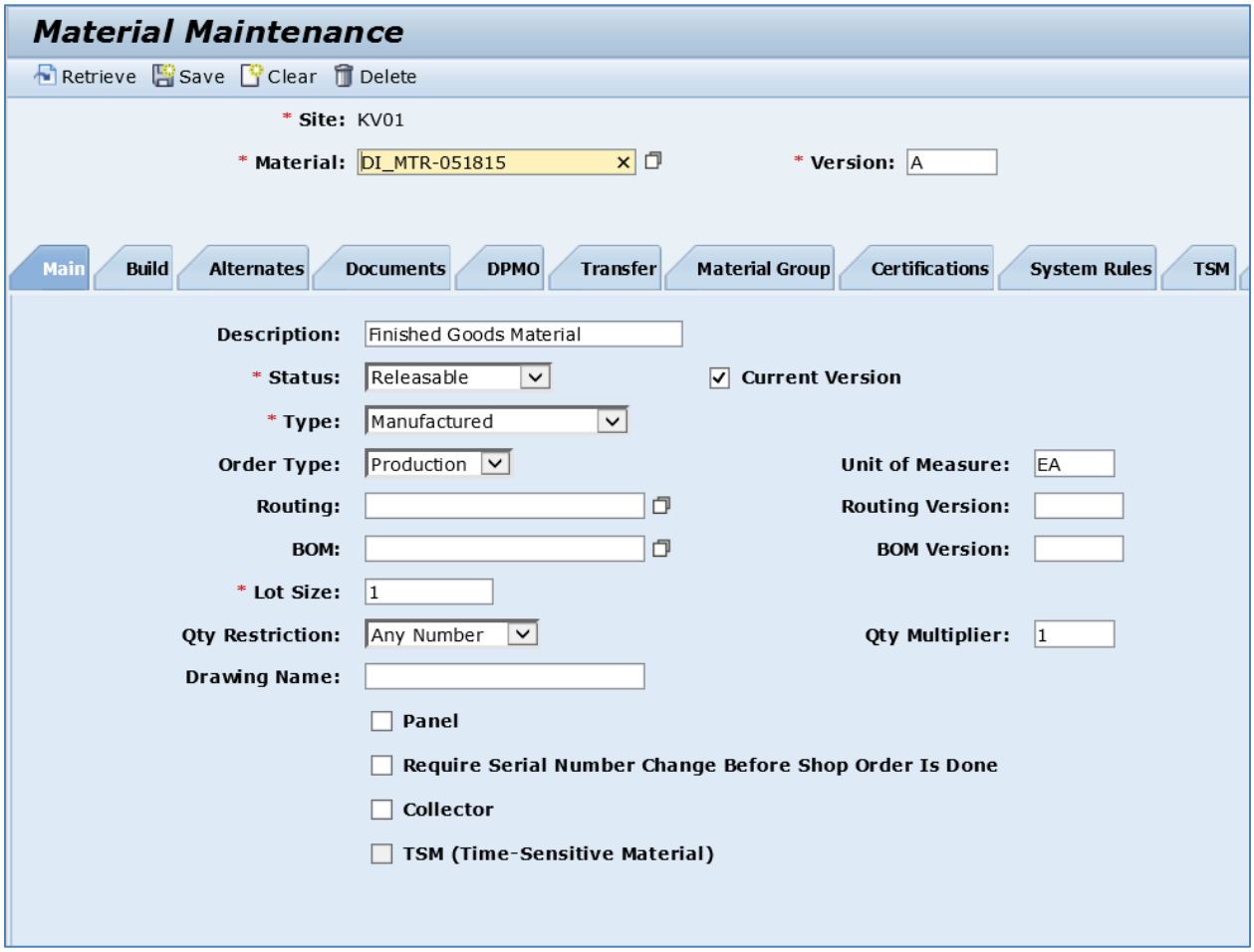
Run *Material Maintenance* and retrieve the transferred material record.

On the *Main* tab, verify the following field values:

- *Site: Plant* value
- *Material: Material number*
- *Version:* `A`
- *Description: Material master description*
- *Status:* `Releasable`
- *Current Version:* `True`
- *Type:* depends on the *Procurement Type* of the transferred material:

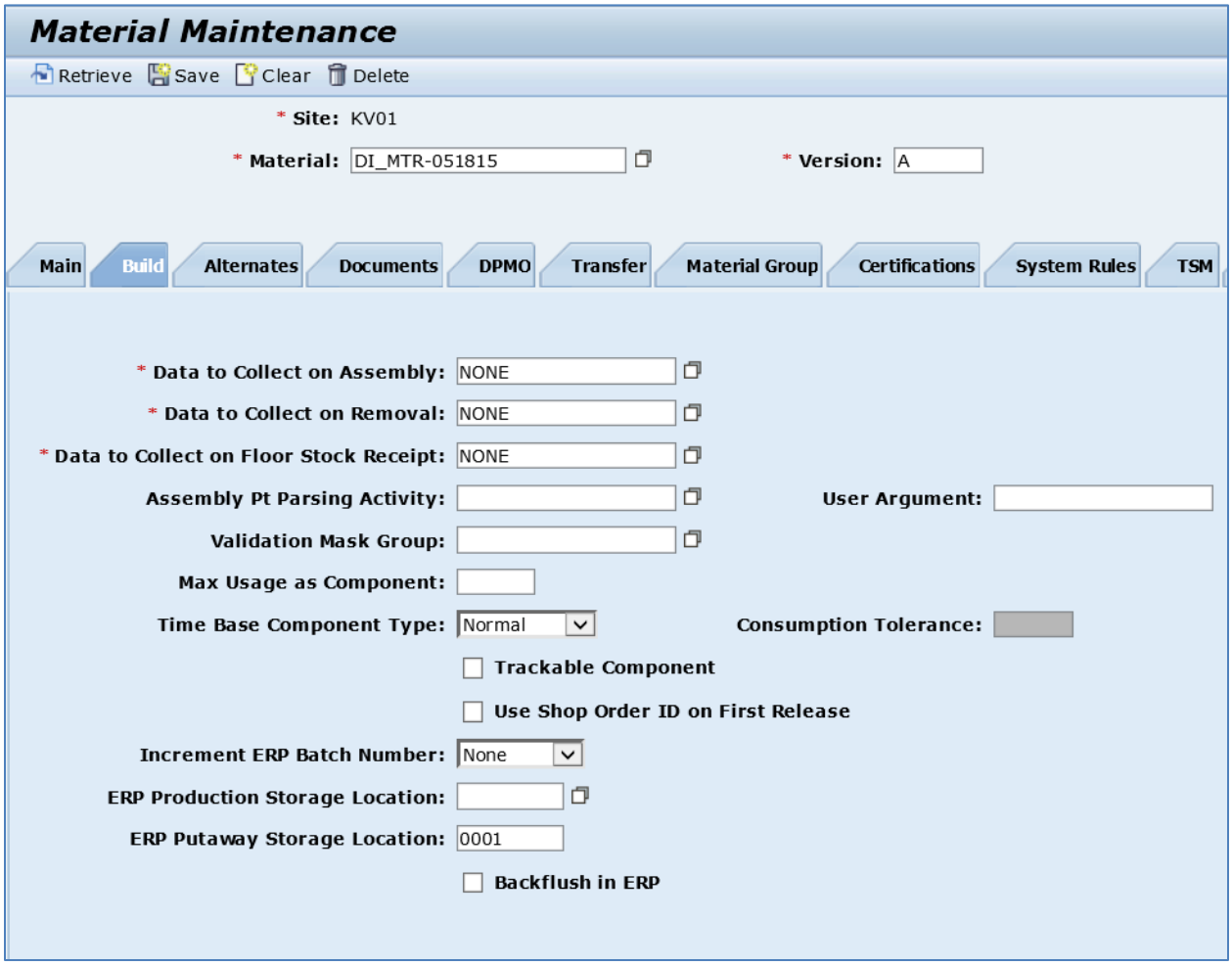
  In-house production – *Manufactured*
  External procurement – *Purchased*
  Both procurement types – *Manufactured/Purchased*
- *Unit of Measure:* `EA` (corresponds to *Base Unit of Measure* from *Basic Data 1* tab).
- *Routing:* BLANK
- *BOM:* BLANK
- *Lot Size:* `1`
- *Qty Restriction:* `Any Number`
- *Qty Multiplier:* `1`

- Remaining fields are BLANK or deselected.



On the *Build* tab, verify the following field values:

- *Data to Collect on Assembly:* `NONE`
- *Data to Collect on Removal*: `NONE`
- *Data to Collect on Floor Stock Receipt*: `NONE`
- *Time Base Component Type*: `Normal`
- *Increment ERP Batch Number*: `None`. For more information, see the Configuring Batch Managed Material section of this guide.
- *ERP Putaway Storage Location:* Corresponds to the *Storage Location* defined in ERP and equals `0001`. For more information, see the Storage Location Integration section of this guide.
- *Backflush in ERP*: Deselected. For more information, see the Configuring Backflushed Material section of this guide.
- Remaining fields are BLANK or deselected.



3.3 Configuring Material Classification Data

3.3.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer material classification data from SAP ERP to create or update the corresponding material record in SAP ME.

The purpose of material classification is to send additional information with the material master during the material transfer. You enter this additional information in the *Custom Data* fields in *Material Maintenance* in SAP ME.

You can create custom fields that correspond to the ERP characteristics in SAP ME *Custom Data Maintenance* prior to the material transfer.

For more information about sending material master classification data to SAP ME, see Transfer of Material Classification Data on the SAP Help Portal at http://help.sap.com.

3.3.2 Prerequisites

3.3.2.1 SAP ERP

- You have set up ALE communication to create and transmit *MATMAS03* or *MATMAS05* IDoc (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *CLFMAS* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).

3.3.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings for the *Material* category in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

3.3.3 Procedural Steps

1. Create classification data for class type *001* in the Cross-Application module (see Creating, Changing, and Displaying Classes on the SAP Help Portal at http://help.sap.com).
2. Create a material master record with classification data in SAP ERP (see Classifying a Material on the SAP Help Portal at http://help.sap.com).
3. In SAP ME, run the *Custom Data Maintenance* activity. Retrieve the *Material* category, click *Insert New*, and enter the following:
   - *Sequence:* Enter unique sequence or leave the default value.
   - *Data Field:* Enter the name of the characteristic that you have created in SAP ERP.
   - *Field Label:* Enter a field label that will display in *Material Maintenance*.
   - *Required:* If selected, indicates that this field must be collected. Leave deselected.
4. Send Material Classification Data to SAP ME.

   We recommend to use *Execute Data Replication* transaction (transaction code – *DRFOUT*).

   Make sure that you have created and activated a replication model with the outbound implementation for the material (*194_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

   Note: You can send a material using the *Send Material* (*BD10*) transaction. In this case make sure that the *Send material in full* checkbox is selected.

5. Optional: Verify *MATMAS03* (or *MATMAS05*) and *CLFMAS* IDocs were received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is

processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

6. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding material record in SAP ME (see Material Maintenance on the SAP Help Portal at http://help.sap.com).

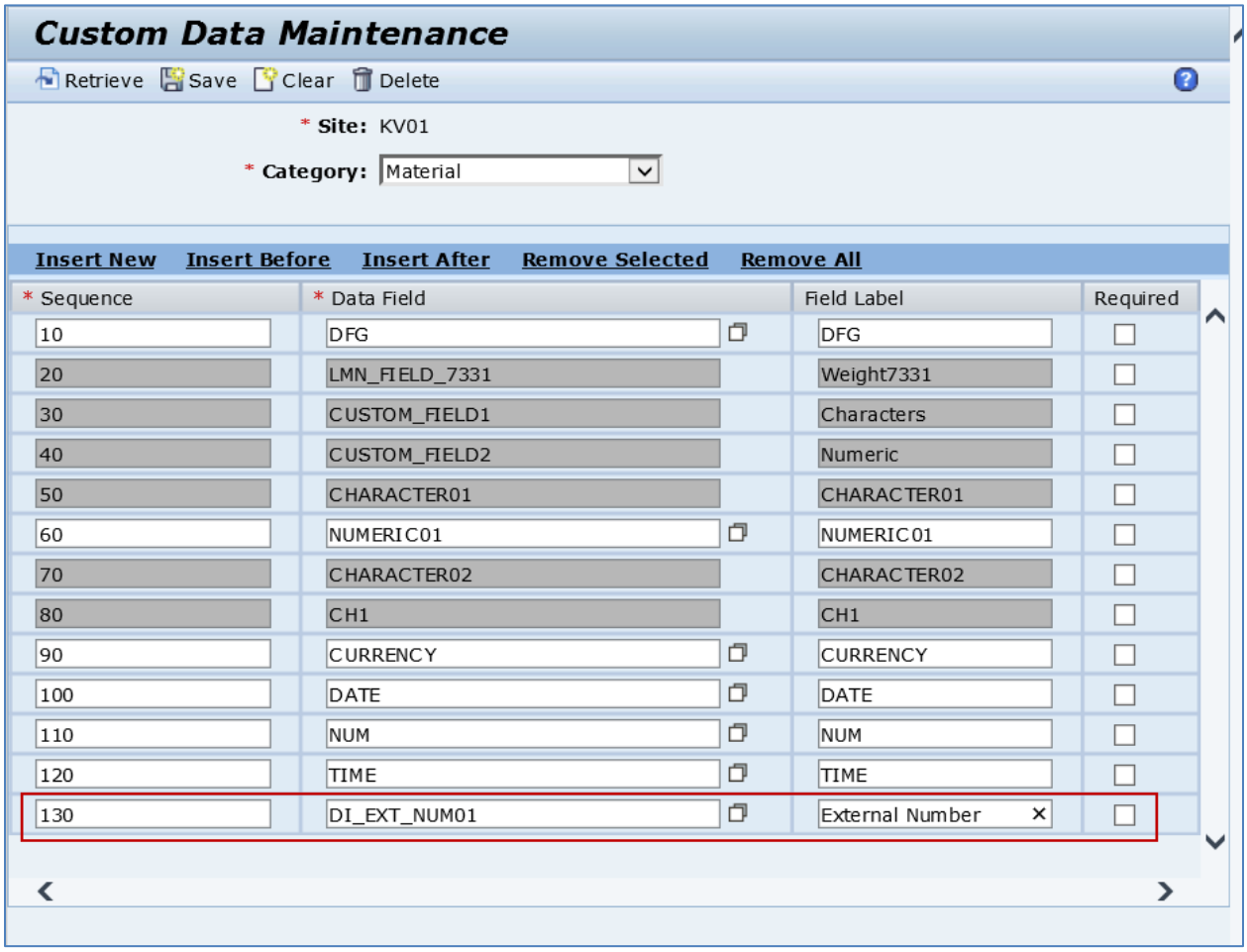
For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

3.3.4 Alternates / Best Practices and Tips

3.3.5 Examples

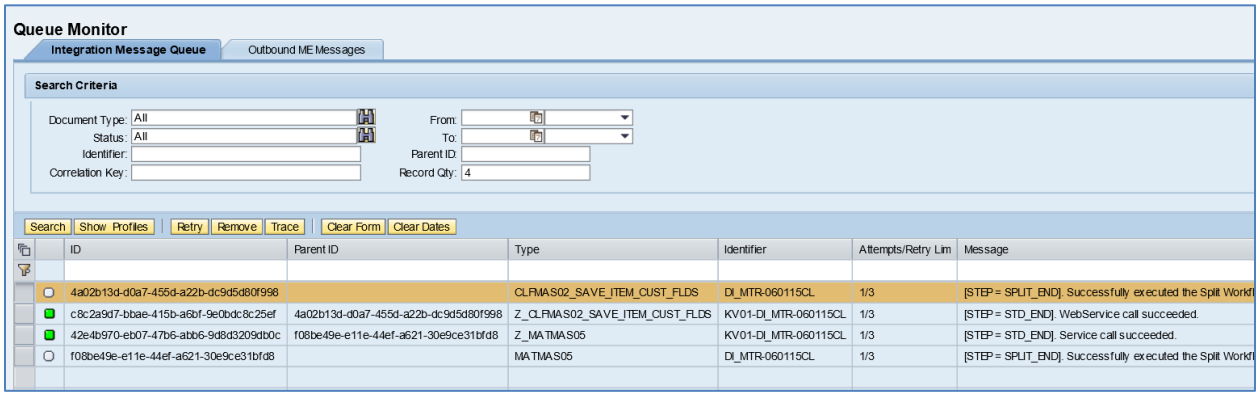
3.3.5.1 Creating a Material with Classification Data

1. Create classification data for class type *001* in the Cross-Application module (see Creating, Changing, and Displaying Classes on the SAP Help Portal at http://help.sap.com).
2. Create a material master record with classification data in SAP ERP (see Classifying a Material on the SAP Help Portal at http://help.sap.com).
3. When new material is created, run SAP ME and open the *Custom Data Maintenance* activity. Retrieve the *Material* category, click *Insert New*, and enter the following:
   - *Sequence:* Enter unique sequence or leave the default value.
   - *Data Field:* Enter the name of the characteristic that you have created in SAP ERP.
   - *Field Label:* Enter a field label that will display in *Material Maintenance*.
   - *Required:* If selected, indicates that this field must be collected. Leave deselected.



4. Click *Save*.
5. Send material classification data to SAP ME.
6. Optional: Using *Queue Monitor*, verify that IDocs were received in SAP MII.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

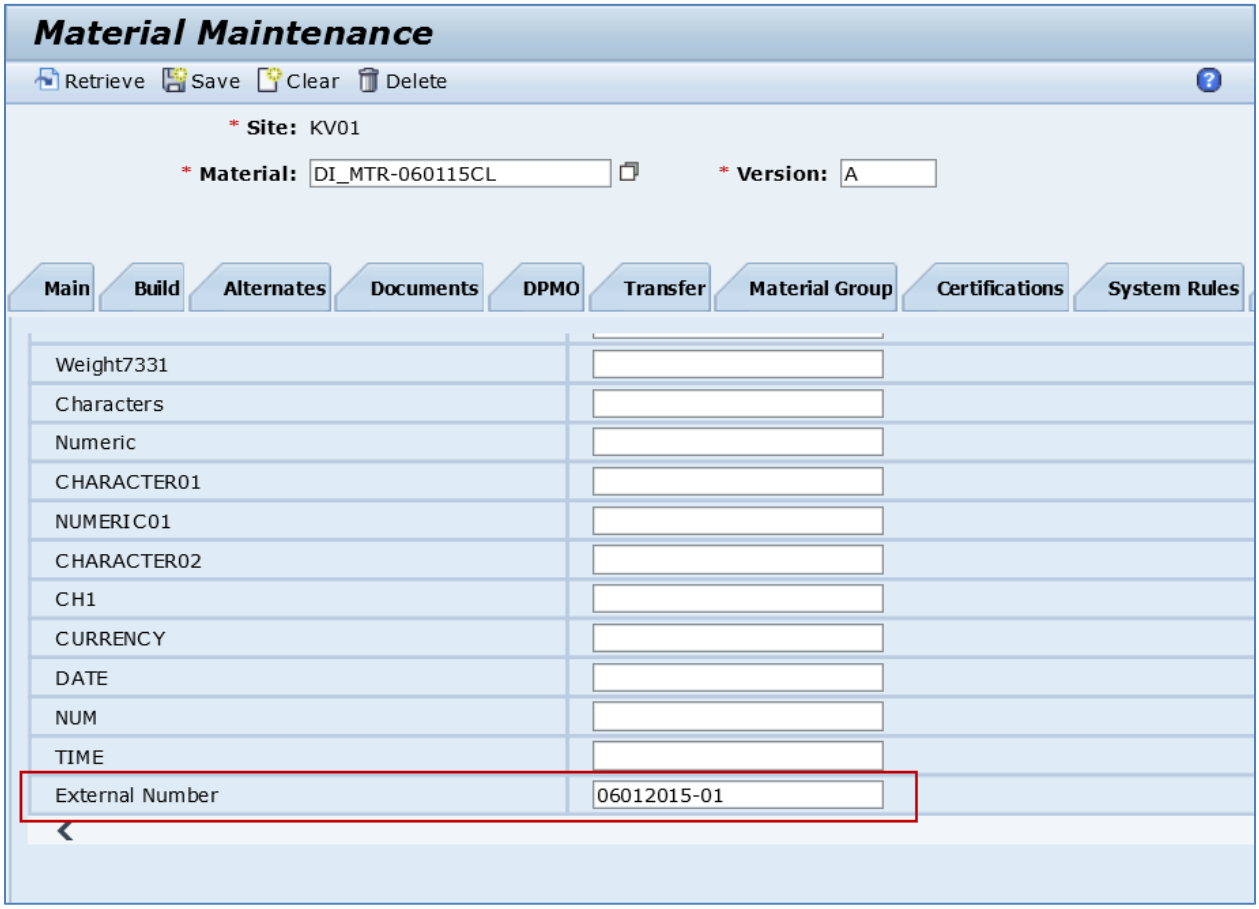


7. Verify results in SAP ME.

Run *Material Maintenance* and retrieve the transferred material record.

On the *Custom Data* tab, verify the following field values:

- *Data Field:* External Number (the field that you created in *Custom Data Maintenance*).
- *Data Attribute:* Contains the value transferred from SAP ERP.



3.4 Configuring a Long Material Number

3.4.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a long material number record from SAP ERP to create or update the corresponding material record in SAP ME.

The standard SAP ERP material number field uses the domain MATNR that has an input, output, and database length of 18 characters.

The long material number (MATNR_EXTERNAL) is the normal 18-character material number plus 22 additional characters. This enables customers for whom 18 characters are not sufficient to use 40-character material numbers.

For more information about sending long material number IDocs to SAP ME, see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com.

3.4.2 Prerequisites

3.4.2.1 SAP ERP

- You have set up ALE communication to create and transmit *MATMAS05* IDoc (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have defined the DRF Replication Model to replicate *MATMAS05* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.
- You have activated the following business functions:
  - DIMP_SDUD: Discrete Industries — Mill Products
  - MGV_LAMA: Long Material Number
- You have run the ENLM (*Enable Long Material Number*) report.
- You have implemented SAP Notes 1795373 and 1871674 or applied the corresponding support packages.

3.4.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings for the *Material* category in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

3.4.3 Procedural Steps

1. Create a material master record in SAP ERP with a name that contains more than 18 characters (see Creating a Material Master Record on the SAP Help Portal at http://help.sap.com).
2. Send material master record to SAP ME.

   We recommend to use *Execute Data Replication* transaction (transaction code – *DRFOUT*).

   Make sure that you have created and activated a replication model with the outbound implementation for the material (*194_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

   Note: You can send a material using the *Send Material* (*BD10*) transaction.
3. Optional: Verify *MATMAS05* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding material record in SAP ME (see Material Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

3.4.4 Alternates / Best Practices and Tips

The following SAPMEINT integration points support the long material number:

- Inbound using IDocs:
  - Transfer of Material using the IDoc MATMAS05 (see Material Transfer on the SAP Help Portal at http://help.sap.com)
  - Transfer of BOM (see Transfer of Bill of Material (BOM) on the SAP Help Portal at http://help.sap.com)
  - Transfer of Routing (see Transfer of Routing from SAP ERP to SAP ME on the SAP Help Portal at http://help.sap.com)
  - Transfer of Production Order (see Transfer of Production Order on the SAP Help Portal at http://help.sap.com)
  - Transfer of Planned Order (see Transfer of Planned Order on the SAP Help Portal at http://help.sap.com)
  - Transfer of Floor Stock Data (see Transfer of Floor Stock Data on the SAP Help Portal at http://help.sap.com)
  - Transfer of Service (RMA) Order (see Transfer of Service (RMA) Order on the SAP Help Portal at http://help.sap.com)
- Outbound using BAPIs:
  - Transfer of Routing (see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com)
  - Transfer of Production Yield Confirmation (see Transfer of Production Yield Confirmation on the SAP Help Portal at http://help.sap.com)
  - Transfer of Scrap Confirmation for Production Order (see Transfer of Scrap Confirmation for Production Order on the SAP Help Portal at http://help.sap.com)
  - Transfer of Planned Order Confirmation (see Transfer of Planned Order Confirmation on the SAP Help Portal at http://help.sap.com)
  - Transfer of Scrap Confirmation for Planned Order (see Transfer of Scrap Confirmation for Planned Order on the SAP Help Portal at http://help.sap.com)
  - Transfer of Floor Stock Storage Location Movements (see Transfer of Floor Stock Storage Location Movements on the SAP Help Portal at http://help.sap.com)

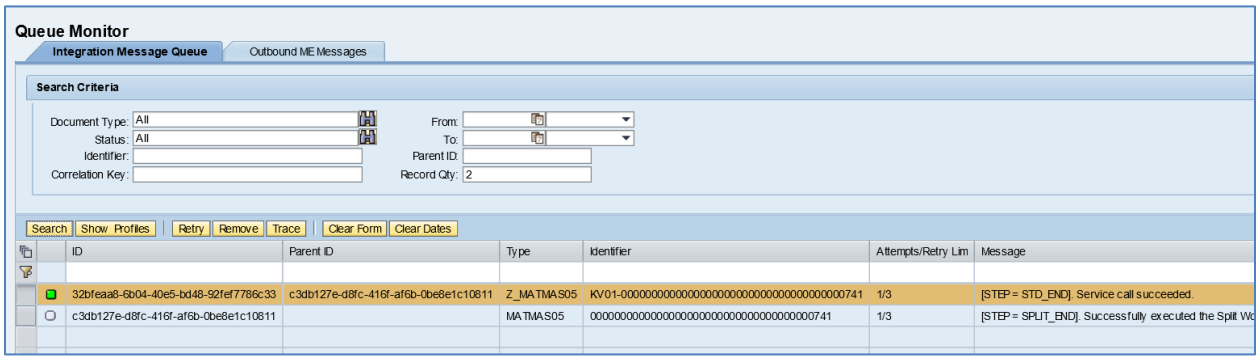
- Transfer of Nonconformance Data to Quality Notification (see Transfer of Nonconformance Data to Quality Notification on the SAP Help Portal at http://help.sap.com)

3.4.5 Examples

3.4.5.1 Creating a Long Material Number

1. Create a material master record in SAP ERP with a name containing more than 18 characters (see Creating a Material Master Record on the SAP Help Portal at http://help.sap.com).
2. Send material with long number to SAP ME.
3. Optional: Verify *MATMAS05* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

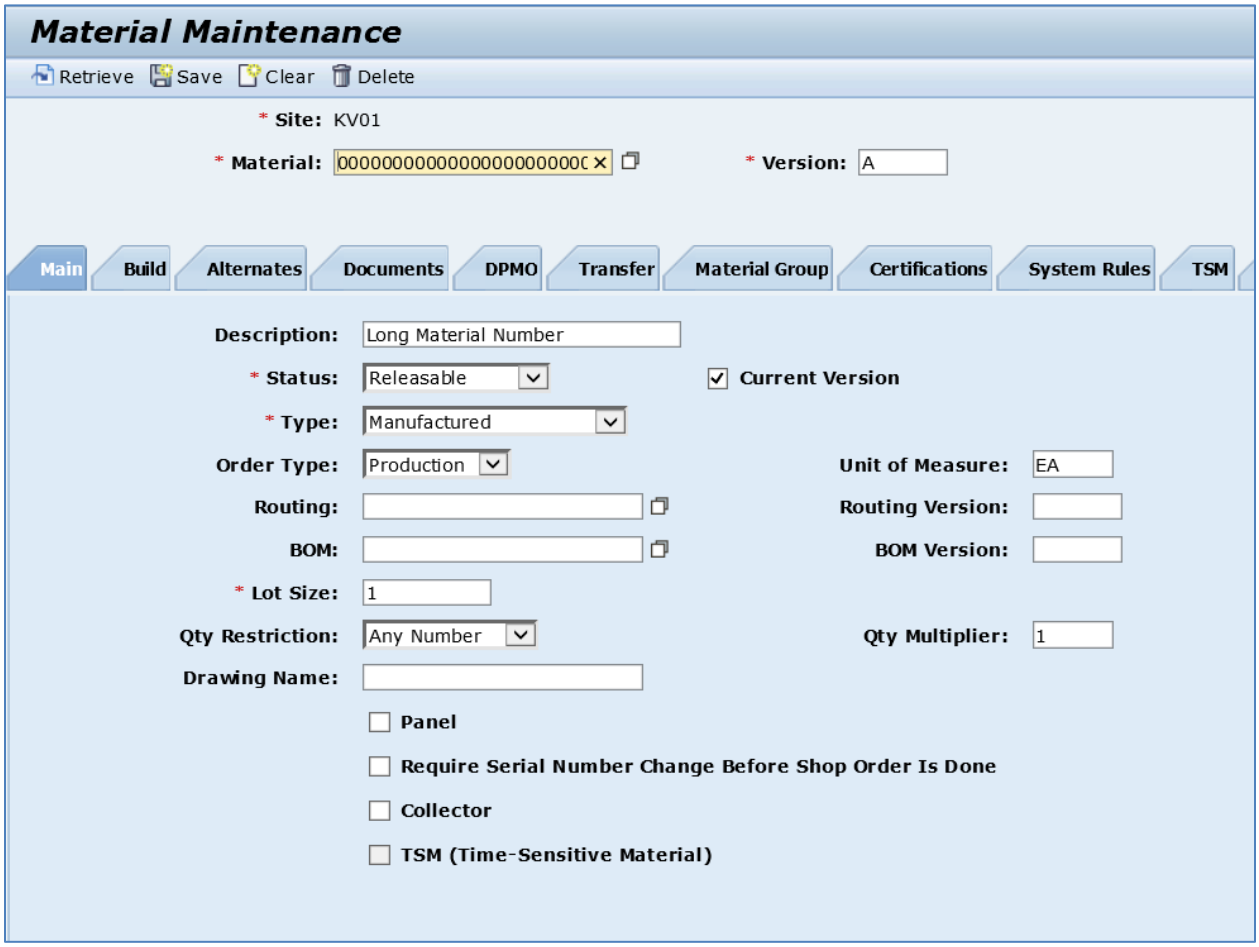


4. Verify results in SAP ME.

Run *Material Maintenance* and retrieve the transferred material record.

On the *Main* tab, verify the following field values:

- *Material: Material number* - contains leading zeroes if material number was generated automatically.
- *Version:* `A`
- *Description: Material master description.*



3.5 Configuring a Batch Managed Material

3.5.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a batch-managed material master record from SAP ERP to create or update the corresponding material record in SAP ME.

In production, you cannot guarantee that material features are exactly alike. For example, you cannot guarantee that a certain color will always have the same shade. You cannot avoid minor differences between production lots. You will want to uniquely identify the individual production lots of the same material and manage them separately in inventory.

Materials that require such precise identification, for example, pharmaceutical products, are identified and managed in stock not only according to the material number but also according to the batch number.

A batch is a quantity of the material produced during a given production run. A batch represents a homogeneous unit with unique specifications. A batch is a subset of the total quantity of a material held in stock. The subset is managed from all other subsets of the same material.

3.5.2 Prerequisites

3.5.2.1 SAP ERP

- You have set up ALE communication to create and transmit *MATMAS03* or *MATMAS05* IDoc (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have defined the DRF Replication Model to replicate *MATMAS03* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.
- You have configured Batch Management.

This configuration is required only for batch and batch characteristic data integration.

1. In Customizing for *Logistics - General*, choose *Batch Management > Specify Batch Level and Activate Status Management > Batch level*.
2. On the *Define Batch Level* screen, select *Batch unique at material level*.
3. Save your entries.
4. In Customizing for *Logistics - General*, choose *Batch Management > Creation of New Batches > Define Batch Creation for Production Order / Process Order*.
5. On the *Change View "Production Scheduling Profile for Batch Handling"* screen, select an entry and click the *Details* icon.
6. Set *Auto Batch Creation* to *No automatic batch creation in production/process order*.
7. Set *Batch Classification* to *No branching to batch classification*.
8. Save your entries.
9. In Customizing for *Logistics - General*, choose *Batch Management > Creation of New Batches > Define Batch Creation for Goods Movements*.
10. On the *Change View "Definition of initial data creation for batch per mvmnt"* screen, set *101* (Goods receipt for purchase order or order) and *261* (Goods issue for an order) types to *Automatic / manual without check.*
11. Save your entries.
12. In Customizing for *Logistics - General*, choose *Batch Management > Batch Where-Used List > Make Settings for Batch Where-Used List*.
13. On the *Change View "Batch Where-Used List": Overview* screen, select the *BaWU sychron.postng* checkbox for specific plants to use batch where-used analyses.

    Note that you must activate the plant here to define the use and automatic creation of batch where-used records.
14. Save your entries.

3.5.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings for the *Material* category in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

3.5.3 Procedural Steps

1. Create a batch-managed material record in SAP ERP (see Examples section).
2. Send material master record to SAP ME.

   We recommend to use *Execute Data Replication* transaction (transaction code – *DRFOUT*).

   Make sure that you have created and activated a replication model with the outbound implementation for the material (*194_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

   Note: You can send a material using the *Send Material* (*BD10*) transaction.
3. Optional: Verify *MATMAS03* or *MATMAS05* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding material record in SAP ME (see Material Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

3.5.4 Alternates / Best Practices and Tips

You cannot change the *Batch Management* indicator if stocks exist in the current period or in the previous period. The previous period is checked because stocks can be posted to this period when goods movements are entered.

3.5.5 Examples

3.5.5.1 Creating a Finished Batch Managed Material

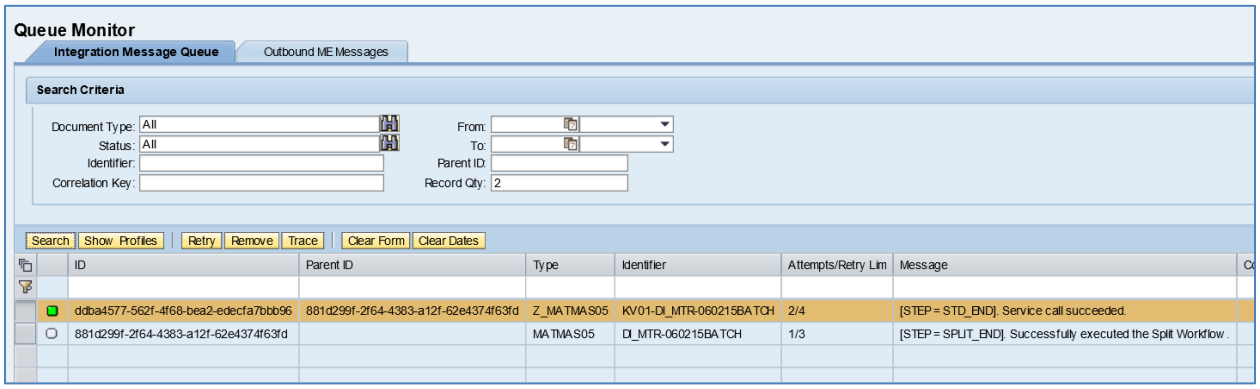
1. Create a finished goods material master record in SAP ERP (see Creating a Material Master Record on the SAP Help Portal at http://help.sap.com).

   Make sure that *Batch Management* checkbox is selected on the *Work Scheduling* tab.

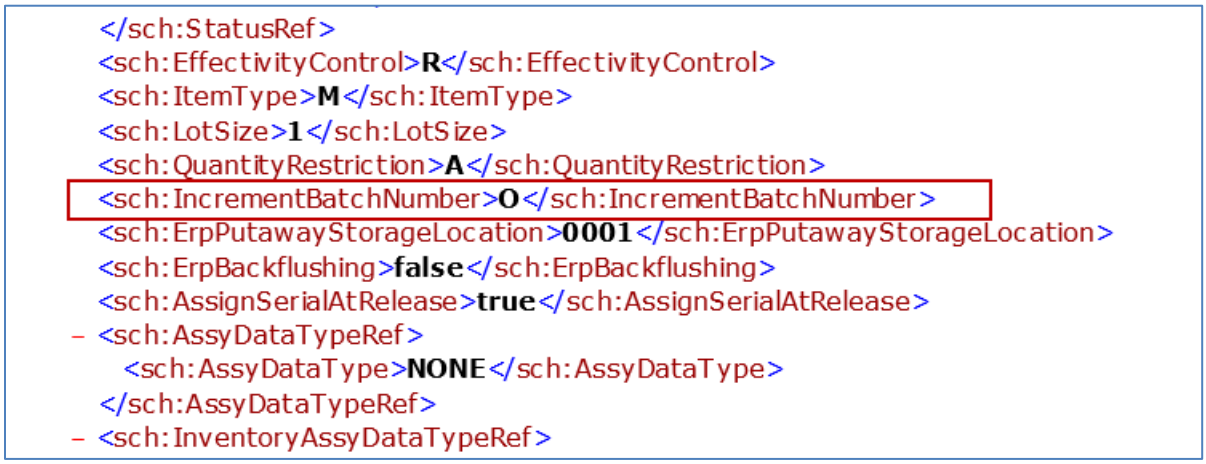
Note: On the *Plant data / stor. 1* tab, the *Batch management* field is set to the value you selected on the *Work Scheduling* tab.

2. Send material master record to SAP ME.
3. Optional: Verify *MATMAS03* or *MATMAS05* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



In *Queue Monitor*, select a record with the *Z_MATMAS03* (or *Z_MATMAS05*) type, and click the *Trace* button. On the *Document Trace* dialog box that appears, expand the Request row, select the content row and click the *View* button. The *IncrementBatchNumber* tag has a O value.

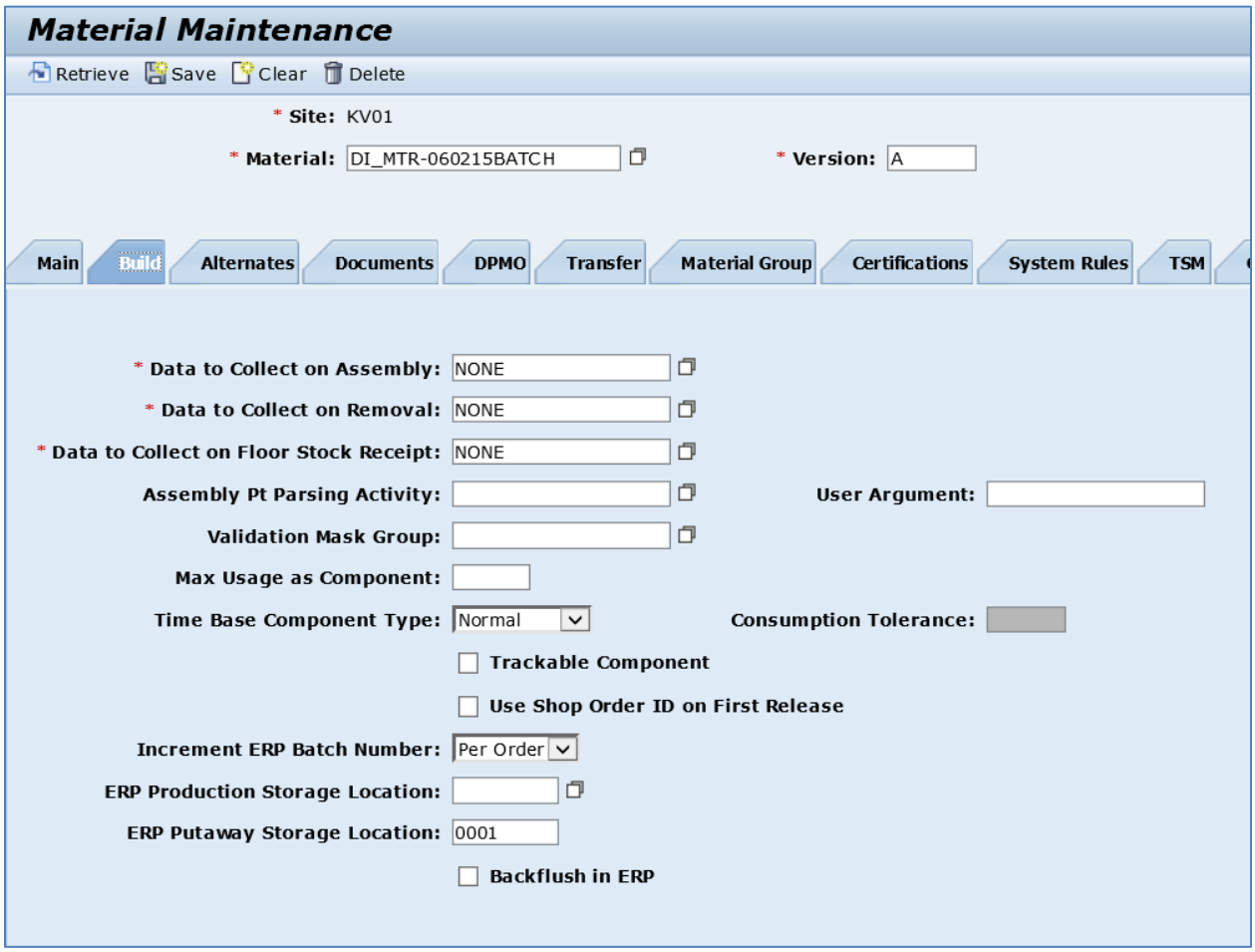


4. Verify results in SAP ME.

Run *Material Maintenance* and retrieve the transferred material record.

On the *Build* tab, verify the following field values:

- *Increment ERP Batch Number*: `Per Order` (Creates a new batch number for each new shop order).



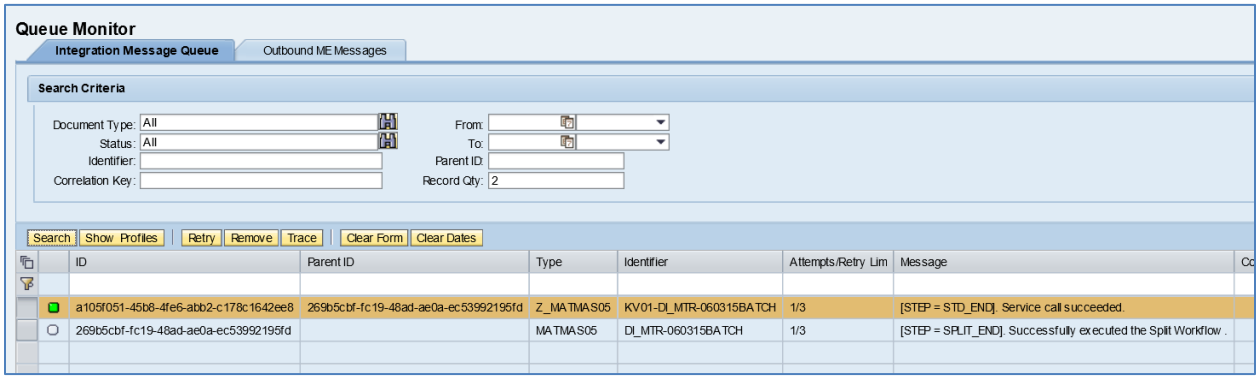
3.5.5.2 Creating a Raw Batch Managed Material

1. Create a raw material master record in SAP ERP (see Creating a Material Master Record on the SAP Help Portal at http://help.sap.com).

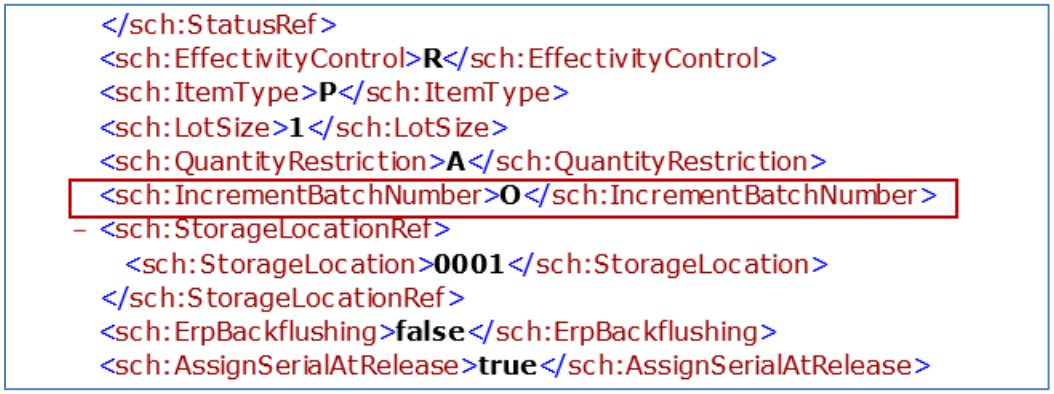
   Make sure that *Batch Management* checkbox is selected on the *Purchasing* tab.

2. Send material master record to SAP ME.

3. Optional: Verify *MATMAS03* or *MATMAS05* IDoc was received in SAP MII using *Queue Monitor*.



In *Queue Monitor*, select a record with the *Z_MATMAS03* (or *Z_MATMAS05*) type, and click the *Trace* button. On the *Document Trace* dialog box that appears, expand the Request row, select the content row, and click the *View* button. The *IncrementBatchNumber* tag has a O value.

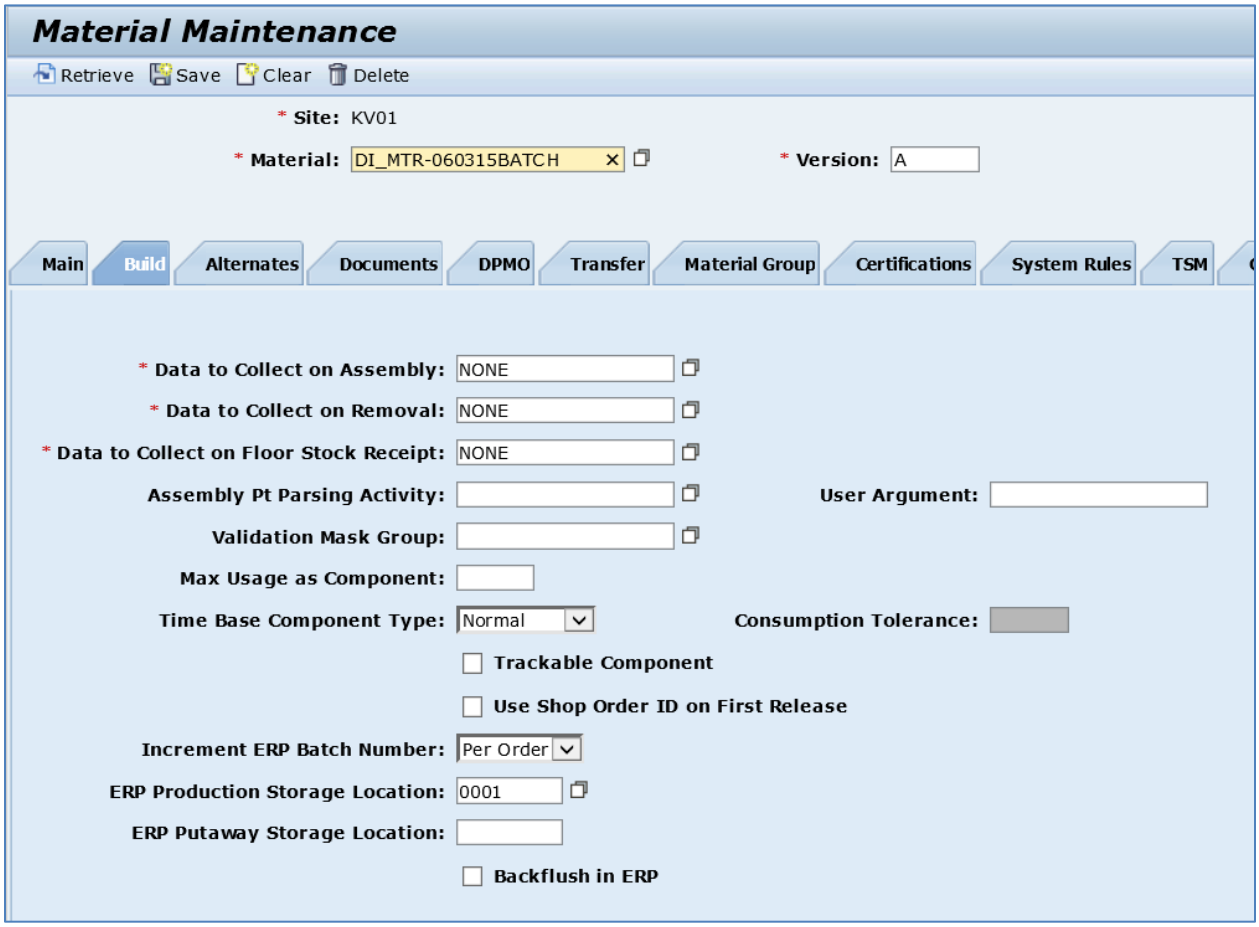


4. Verify results in SAP ME.

Run *Material Maintenance* and retrieve the transferred material record.

On the *Build* tab, verify the following field values:

- *Increment ERP Batch Number*: `Per Order` (Creates a new batch number for each new shop order).



3.6 Configuring a Backflushed Material

3.6.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a backflushed material from SAP ERP to create or update the corresponding material record in SAP ME.

A goods issue has to be posted for every material that is withdrawn during order processing. By backflushing, goods issue posting is carried out at a later date, that is, when the phase to which the relevant material component is assigned is confirmed.

3.6.2 Prerequisites

3.6.2.1 SAP ERP

- You have set up ALE communication to create and transmit *MATMAS03* or *MATMAS05* IDoc (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have defined the DRF Replication Model to replicate *MATMAS03* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System*

> *Basic Settings for MES Integration*). For more information about SAP ERP versions supporting DRF, see SAP Note 1793291.

3.6.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings for the *Material* category in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

3.6.3 Procedural Steps

1. Create backflushed material record in SAP ERP (see Examples section).
2. Send material master record to SAP ME.

   We recommend to use *Execute Data Replication* transaction (transaction code – *DRFOUT*).

   Make sure that you have created and activated a replication model with the outbound implementation for the material (*194_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

   Note: You can send a material using the *Send Material* (*BD10*) transaction.
3. Optional: Verify *MATMAS03* or *MATMAS05* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding material record in SAP ME (see Material Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

3.6.4 Alternates / Best Practices and Tips

3.6.5 Examples

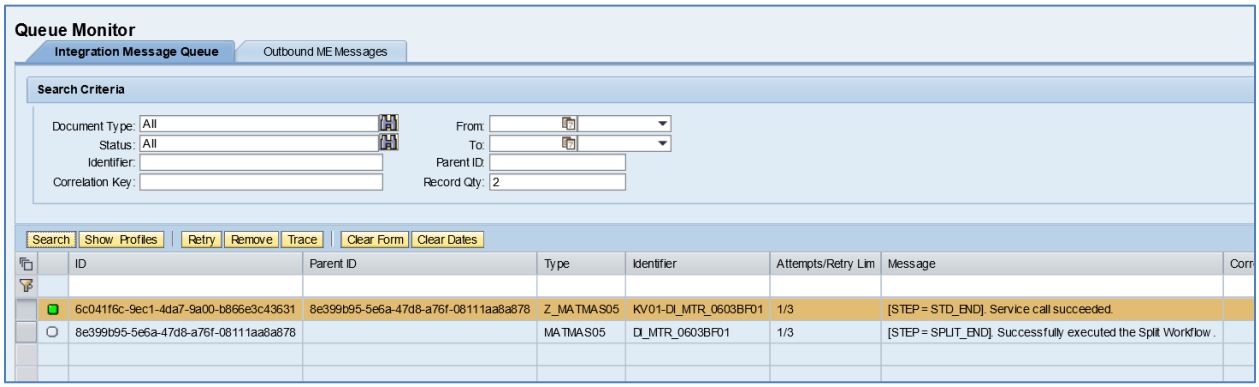
3.6.5.1 Creating a Backflushed Material

1. Create a finished goods material master record in SAP ERP (see Creating a Material Master Record on the SAP Help Portal at http://help.sap.com).

   Make sure that *Backflush* field is set to `1` (Always backflush) on the *MRP 2* tab.
2. Send material master record to SAP ME.

3. Optional: Verify *MATMAS03* or *MATMAS05* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *Z_MATMAS03* (or *Z_MATMAS05*), click *Trace*, choose Request row, and click *View*. The *ErpBackflushing* tag has a `true` value. This indicates that the *Backflush in ERP* field must be set to `True` in SAP ME.

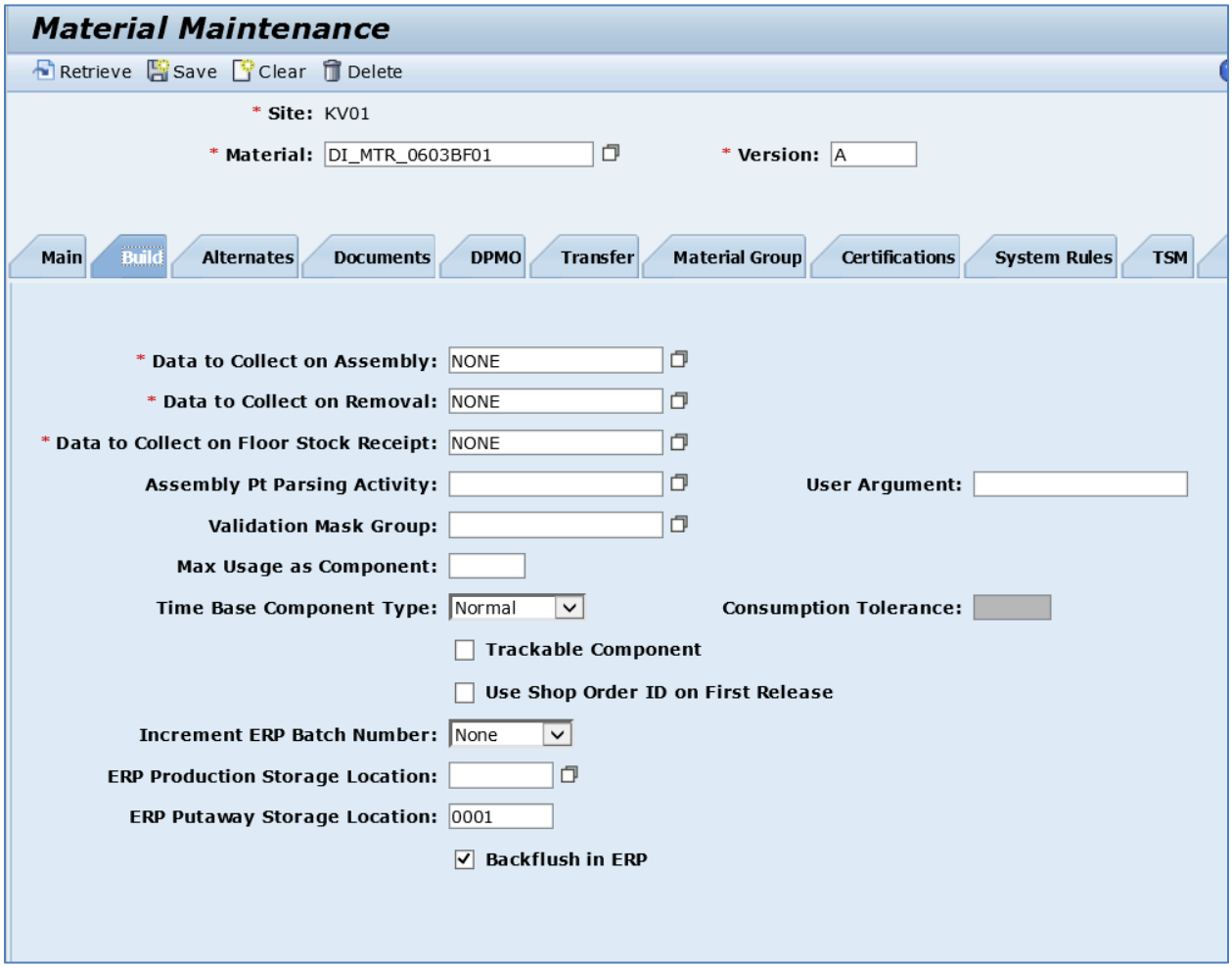
```
</sch:StatusRef>
<sch:EffectivityControl>R</sch:EffectivityControl>
<sch:ItemType>M</sch:ItemType>
<sch:LotSize>1</sch:LotSize>
<sch:QuantityRestriction>A</sch:QuantityRestriction>
<sch:IncrementBatchNumber>N</sch:IncrementBatchNumber>
<sch:ErpPutawayStorageLocation>0001</sch:ErpPutawayStorageLocation>
<sch:ErpBackflushing>true</sch:ErpBackflushing>
<sch:AssignSerialAtRelease>true</sch:AssignSerialAtRelease>
- <sch:AssyDataTypeRef>
    <sch:AssyDataType>NONE</sch:AssyDataType>
  </sch:AssyDataTypeRef>
- <sch:InventoryAssyDataTypeRef>
    <sch:AssyDataType>NONE</sch:AssyDataType>
  </sch:InventoryAssyDataTypeRef>
```

4. Verify results in SAP ME.

Run *Material Maintenance* and retrieve the transferred material record.

On the *Build* tab, verify the following field values:

- *Backflush in ERP*: True



3.7 Configuring a Material with an Assigned Storage Location

3.7.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a material master record with an assigned storage location from SAP ERP to create or update the corresponding material record in SAP ME.

Storage Location is an organizational unit allowing the differentiation of material stocks within a plant. All data referring to a particular storage location is stored at the storage location level. This applies mainly to storage location stocks.

3.7.2 Prerequisites

3.7.2.1 SAP ERP

- You have set up ALE communication to create and transmit *MATMAS03* or *MATMAS05* IDoc (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).

- You have defined the DRF Replication Model to replicate *MATMAS03* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

3.7.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings for the *Material* category in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

3.7.3 Procedural Steps

1. Create a material master record with assigned storage location in SAP ERP (see the Examples section below).
2. Send material master record to SAP ME.

   We recommend to use *Execute Data Replication* transaction (transaction code – *DRFOUT*).

   Make sure that you have created and activated a replication model with the outbound implementation for the material (*194_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

   Note: You can send a material using the *Send Material* (*BD10*) transaction.
3. Optional: Verify *MATMAS03* or *MATMAS05* IDoc received in SAP MII.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding material record in SAP ME (see Material Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

3.7.4 Alternates / Best Practices and Tips

3.7.5 Examples

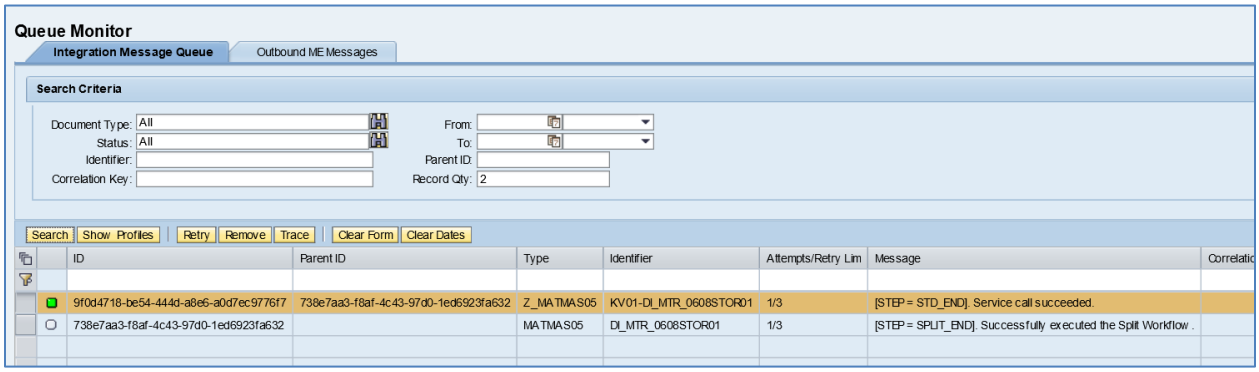
3.7.5.1 Creating a Material with an Assigned Storage Location

1. Create a finished or raw material master record in SAP ERP (see Creating a Material Master Record on the SAP Help Portal at http://help.sap.com).

Make sure that you have entered a location from which to issue material to production or to which to receive material from production. Use *Prod. stor. location* field on the *MRP 2* tab for this purpose.

2. Send material master record to SAP ME.
3. Optional: Verify *MATMAS03* or *MATMAS05* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



In *Queue Monitor*, select a record with the *Z_MATMAS03* (or *Z_MATMAS05*) type, and click the *Trace* button. On the *Document Trace* dialog box that appears, expand the Request row, select the content row and click the *View* button. The *ErpPutawayStorageLocation* tag has the `0001` value.

```
- <sch:StatusRef>
    <sch:Status>201</sch:Status>
  </sch:StatusRef>
  <sch:EffectivityControl>R</sch:EffectivityControl>
  <sch:ItemType>M</sch:ItemType>
  <sch:LotSize>1</sch:LotSize>
  <sch:QuantityRestriction>A</sch:QuantityRestriction>
  <sch:IncrementBatchNumber>N</sch:IncrementBatchNumber>
  <sch:ErpPutawayStorageLocation>0001</sch:ErpPutawayStorageLocation>
  <sch:ErpBackflushing>false</sch:ErpBackflushing>
  <sch:AssignSerialAtRelease>true</sch:AssignSerialAtRelease>
- <sch:AssyDataTypeRef>
    <sch:AssyDataType>NONE</sch:AssyDataType>
  </sch:AssyDataTypeRef>
- <sch:InventoryAssyDataTypeRef>
    <sch:AssyDataType>NONE</sch:AssyDataType>
  </sch:InventoryAssyDataTypeRef>
- <sch:RemovalAssyDataTypeRef>
```

4. Verify results in SAP ME.

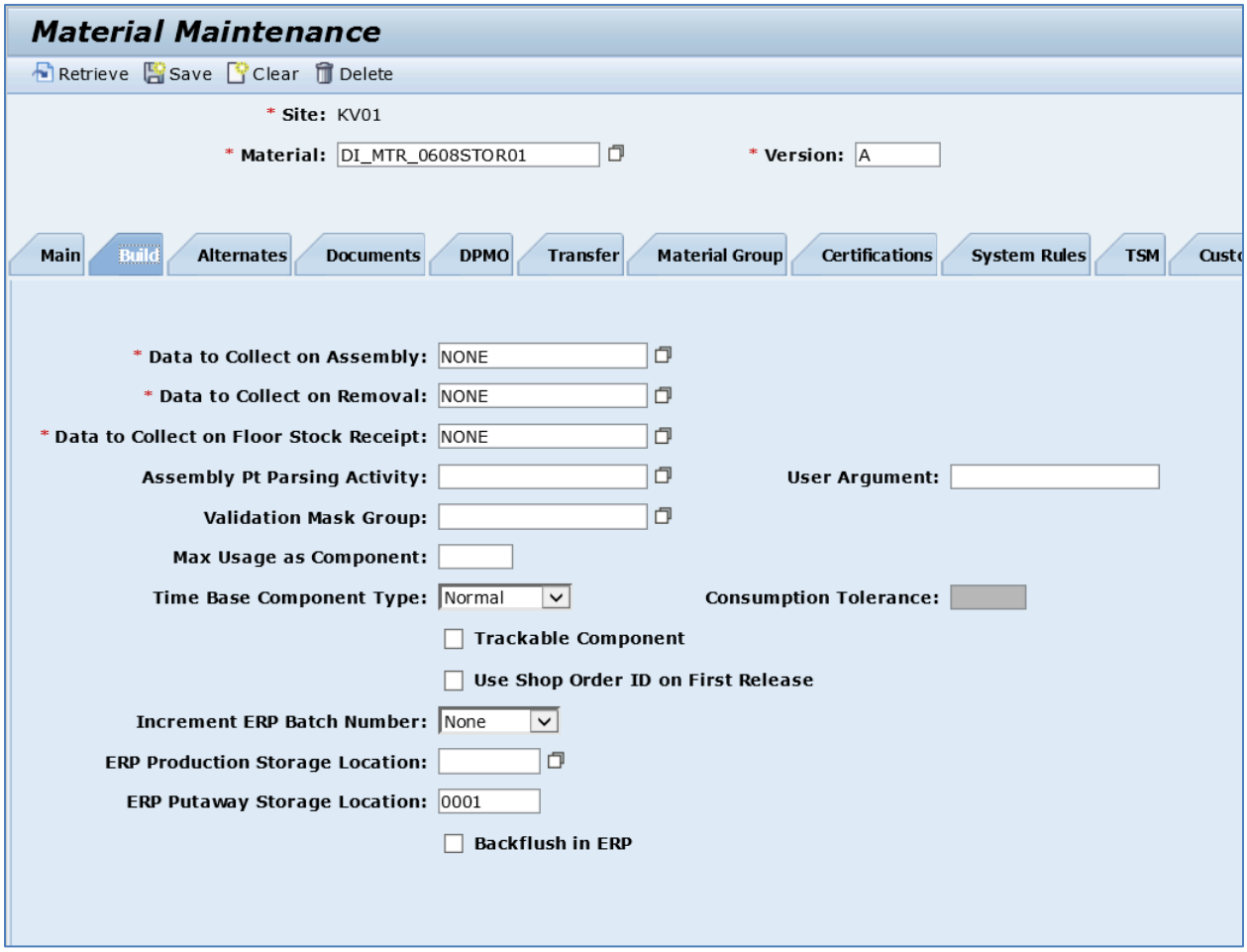
Run *Material Maintenance* and retrieve the transferred material record.

On the *Build* tab, verify the following field values:

- *ERP Putaway Storage Location*: `0001`

ERP Putaway Storage Location field is populated when the material type is *Manufactured*. If the material type is *Purchased*, the *ERP Production Storage Location* field is populated.

If the material type is *Manufactured/Purchased*, both *ERP Putaway Storage Location* and *ERP Production Storage Location* fields are populated).



4 Bill of Material Integration

4.1 Overview

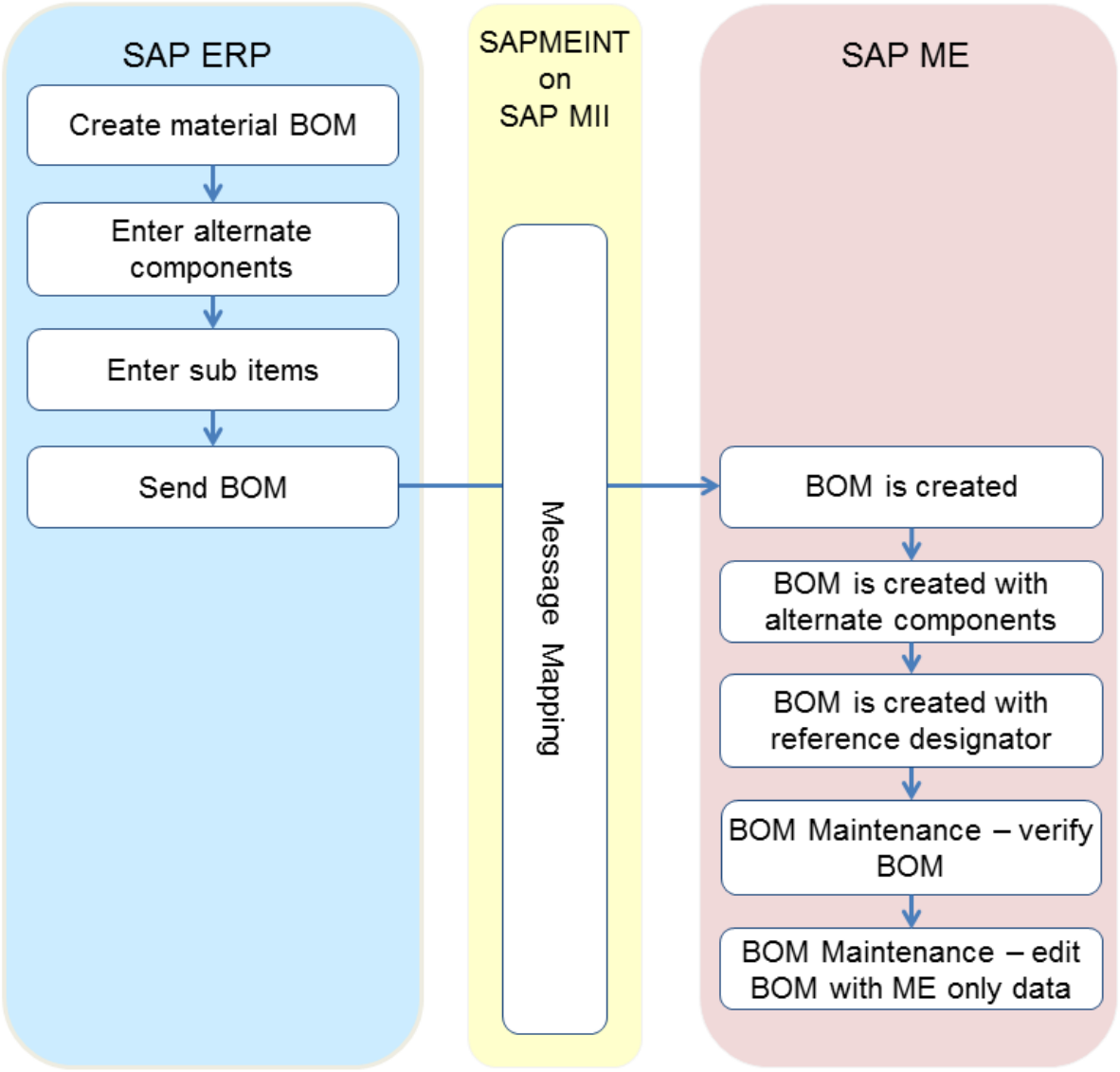
This function lets you transfer BOM master data from SAP ERP to create or update the corresponding BOM Master type record in SAP ME (see Bill of Material (BOM) on the SAP Help Portal at http://help.sap.com).

4.1.1 Business Purpose

The basic bill of material (BOM) in SAP ERP contains a list of all the components belonging to the assembly. This structured list of components can be transferred to SAP ME to ensure that all of the components are tracked during the manufacturing process. To avoid mistakes such as the double entry of BOM data, use the BOM transfer functionality between SAP ERP and SAP ME.

Each BOM is transferred as a single level BOM, so any subassembly BOMs need to be transferred over separately. Keep this in mind as the structure of the BOM in SAP ERP may not match the structure of the BOM that manufacturing would like. Review the structure of the BOM in SAP ERP to see if you need to make any adjustments to the BOM structure.

4.1.2 Process Flow Graphic



4.2 Configuring a Bill of Material (BOM)

4.2.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer BOM master data from SAP ERP to create or update the corresponding BOM Master type record in SAP ME.

For more information about sending bill of material IDocs to SAP ME, see Transfer of Bill of Material (BOM) on the SAP Help Portal at http://help.sap.com.

4.2.2 Prerequisites

4.2.2.1 SAP ERP

- You have set up ALE communication to create and transmit *BOMMAT* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have transferred materials to SAP ME (see Material Transfer on the SAP Help Portal at http://help.sap.com).

4.2.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings for the BOM category in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

4.2.3 Procedural Steps

1. Create a bill of material master record in SAP ERP (see Steps in Creating a Simple Material BOM on the SAP Help Portal at http://help.sap.com).
2. Send BOM master record to SAP ME.

   We recommend to use *Material BOM Distribution* transaction (transaction code – *BD30*).

   Note: Bill of Material can also be transferred to SAP ME with the LOIPRO IDoc.
3. Optional: Verify *BOMMAT* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding BOM record in SAP ME (see BOM Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

4.2.4 Alternates / Best Practices and Tips

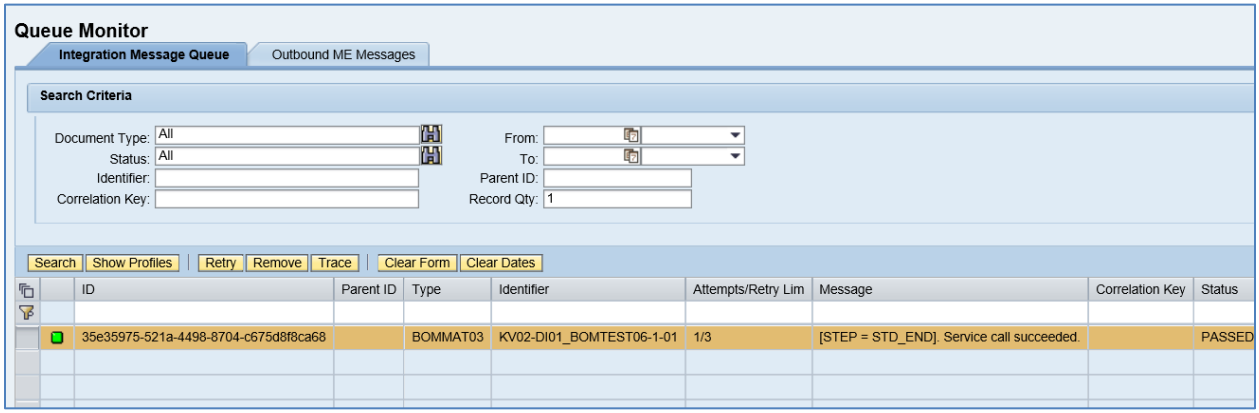
4.2.5 Examples

4.2.5.1 Creating a Material BOM

1. In SAP ERP, create a bill of material master record (see Steps in Creating a Simple Material BOM on the SAP Help Portal at http://help.sap.com).

2. Send bill of material to SAP ME.
3. Optional: Verify *BOMMAT* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



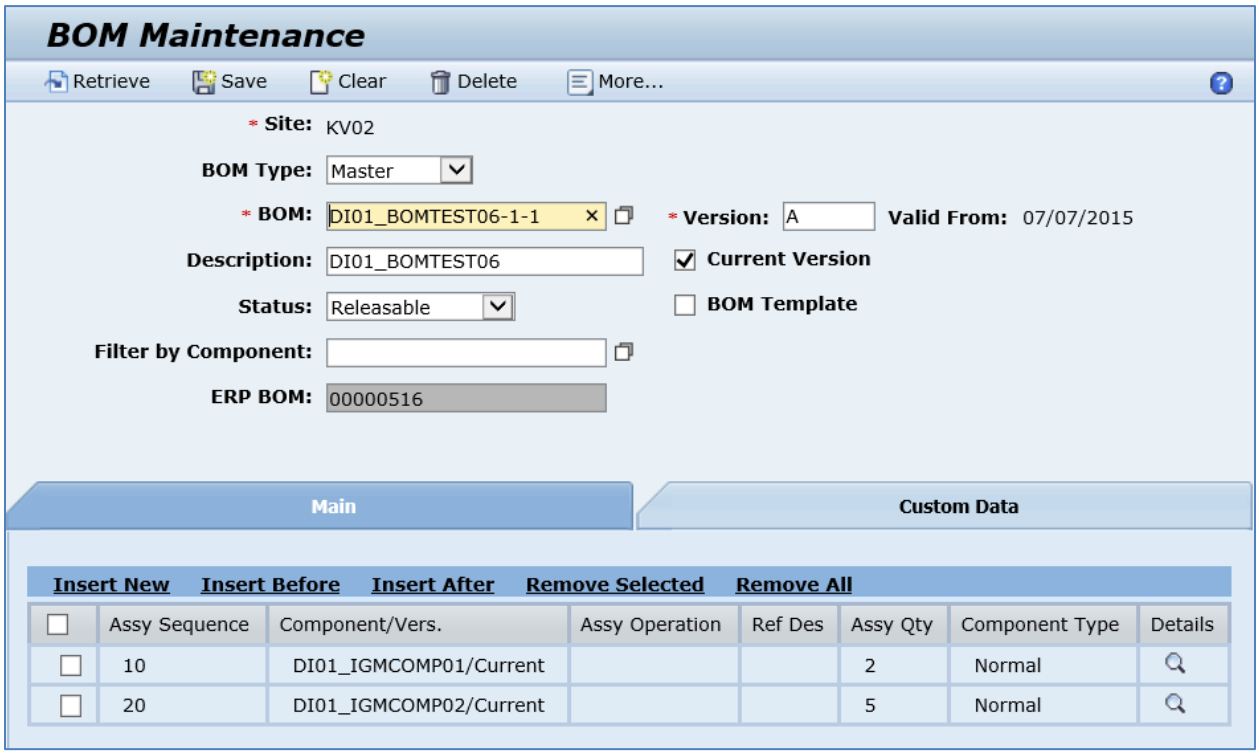
4. Verify results in ME.

Run *BOM Maintenance* and retrieve the transferred bill of material record.

On the *Main* tab, verify the following field values:

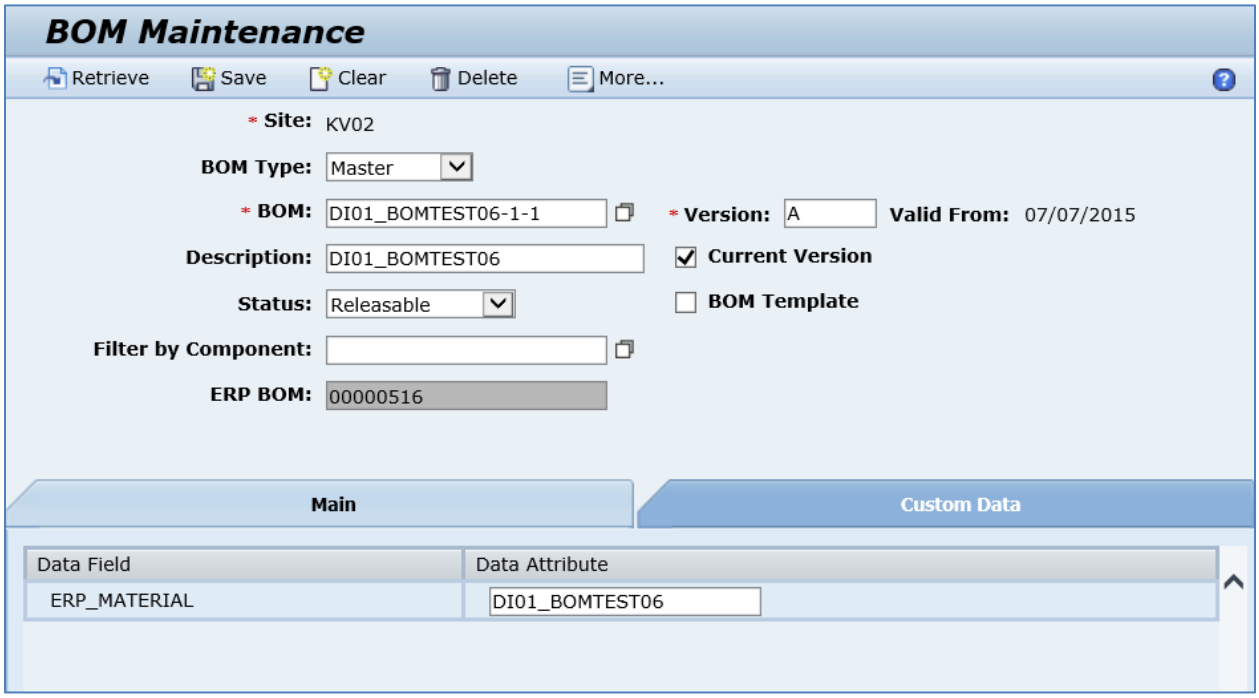
- *Site: Plant* value.
- *BOM Type:* Master.
- *BOM:* BOM name has the following structure: *Material Number (MATNR) + "-" + BOM Usage (STLAN) + "-" + Alternative BOM (STLAL)* (for example, DI01_BOMTEST06-1-1).
- *Version:* A.
- *Valid From*: Date on which the BOM was last changed.
- *Description*: *Plant_Material Number*.
- *Current Version*: Selected.
- *Status*: Releasable (SAP ERP BOM status is mapped to SAP ME BOM status as follows: 01 Active = Releasable; 02 Inactive = New; 03 Active with history reqmt = Releasable).
- *BOM Template:* Deselected.
- *ERP BOM*: Contains a key that uniquely identifies a bill of material in SAP ERP.
- *Assy Sequence:* BOM component sequence number from ERP (10 and 20).
- *Component/Vers.:* Material that was added to ERP BOM as components. Version is set to Current.
- *Assy Operation:* BLANK. Not included in the BOM IDoc; filled in upon the receipt of an order IDoc.
- Assy Qty: Also called *Normalized Quantity for component* and calculated as *Component Quantity / Base Quantity.* In this example Assy Qty = 2 and 5 (2/1 and 5/1).

- *Component Type:* Normal.
- Other fields are BLANK by default or deselected.



On the *Custom Data* tab, verify the following field values:

- *Data Field:* ERP_MATERIAL.
- *Data Attribute:* Plant Material Number.



4.3 Configuring a Bill of Material with Assembly Operations

4.3.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer BOM master data with assigned assembly operations from SAP ERP to create or update the corresponding BOM Master type record in SAP ME.

The production processes for a product are described without reference to an order in routings. A routing contains the operations required in production, and the production resources or tools, material components, and test equipment required to produce the product.

When describing the production resources/tools used to produce a material, the work scheduler is supported by the assignment of BOM items to operations.

This assignment means that the BOM items or materials are not reserved until the start point of the operation. If you do not assign items to specific operations, the system automatically assigns all material components in a BOM to the first operation when the order is opened. This means that they are all made available at the start point of the first operation.

4.3.2 Prerequisites

4.3.2.1 SAP ERP

- You have created materials and routings in SAP ERP.
- You have transferred materials to SAP ME (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a*

Manufacturing Execution System > Basic Settings for MES Integration). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

4.3.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

4.3.3 Procedural Steps

1. Create a bill of material with allocated components in SAP ERP (see Examples section).
2. Sending a BOM master record to SAP ME within a production order.

   Note: BOM with component allocation can be sent to SAP ME within Production Order only.

   For more information about transferring a bill of material within a production order, see the Configuring Production Order with BOM and Routing sections of this guide.
3. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding BOM record in SAP ME (see BOM Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

4.3.4 Alternates / Best Practices and Tips

Note: The only way to transfer BOM with component allocation is when it is sent within Production Order (LOIPRO IDoc). BD30 transaction does not support this function.

Note: If a component is not explicitly assigned to a specific operation, it is automatically allocated to the first step of the routing.

4.3.4.1 Component Allocation using Routing Maintenance

Component allocation can be done during the creation or modifying of the routing.

For more information about creating a routing, see the Configuring a Standard Routing with Allocated Components section of this guide.

1. Access the transaction via: *Logistics* > *Production* > *Master Data* > *Routings* > *Routings* > *Standard Routings* > *Change*

   or transaction code – *CA02*

2. On the *Change Routing: Initial Screen*, enter information required to retrieve routing (such as *Material*, *Plant*). Press `Enter`.

3. Click the *CompAlloc* button to assign BOM components to a specific operation in the routing.

4. On the *Routing Change: Material Component Overview* screen, select one or more components to assign and click the *New Assignment* button.

5. On the *New Assignment* screen, enter the operation number for the component and sequence number or click *Oper./act. list* button to select operation from the list.

6. Press `Enter` and assign a component.

7. Save the routing using the *Save* button.

For more information, see an example in the Configuring a Standard Routing with Allocated Components section of this guide.

4.3.5 Examples

4.3.5.1 Creating a Material BOM with Component Allocation Using BOM Maintenance

1. In SAP ERP, create a bill of material master record (see Steps in Creating a Simple Material BOM on the SAP Help Portal at http://help.sap.com).

   Make sure that the following minimum configuration is done:

   Select a component you want to assign and choose *Extras* > *Operation Assignment*.

   - If no routing exists for the material, you see a dialog box in which you can decide whether to create a routing.
   - If you want to create a routing, confirm the query. You see the *Create routing: Header Details* screen.
   - Enter the header data you require for your routing.
   - To enter operations, choose *Goto* > *Operation overview* (or click the *Operations* button).
   - Define the work centers for processing.
   - Confirm your entries. You may see specific detail screens for the work center, on which you must enter various data.
   - If your data is correct, you return to the *Operation Overview*.
   - If a routing exists, you see the *Operation Overview*.
   - If the selected BOM item has not yet been allocated to an operation, the *Allocation exists* indicator (at the end of a line containing an operation) is not selected for any operation.

Select the operation to which you want to allocate your material component.

Click *Edit > New Assignment*.

The system allocates the operation you selected to the item you selected and selects the *Allocation exists* indicator at the end of a line containing the operation.

Once you have allocated the item to an operation, return to the Material item overview by choosing Back. You can allocate another item to an operation or enter other BOM data.

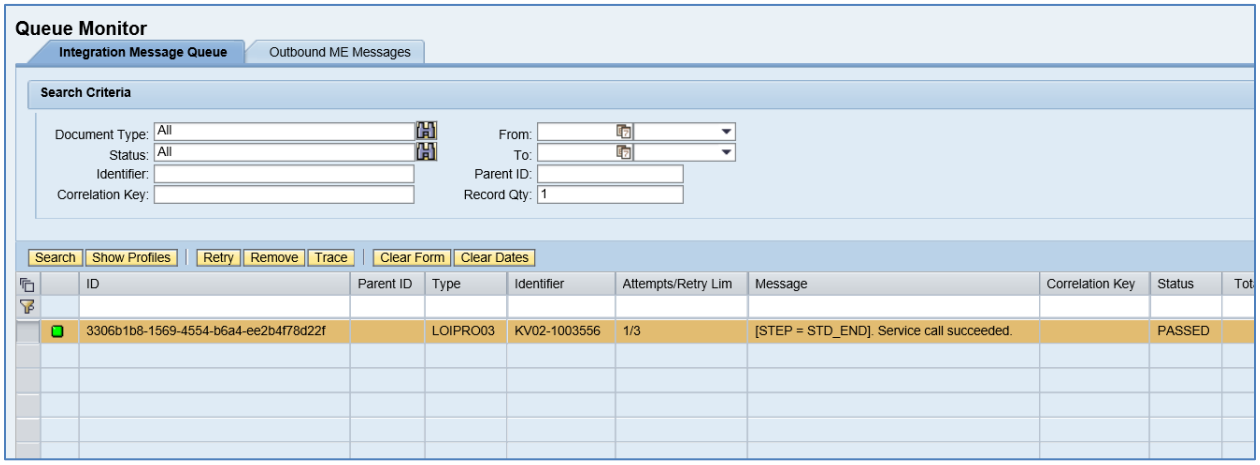
2. Send the BOM master record to SAP ME within a production order.

   Note: BOMs with component allocation can only be sent to SAP ME within production orders.

   For more information about transferring a bill of material within a production order, see the Configuring Production Order with BOM and Routing sections of this guide.

3. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



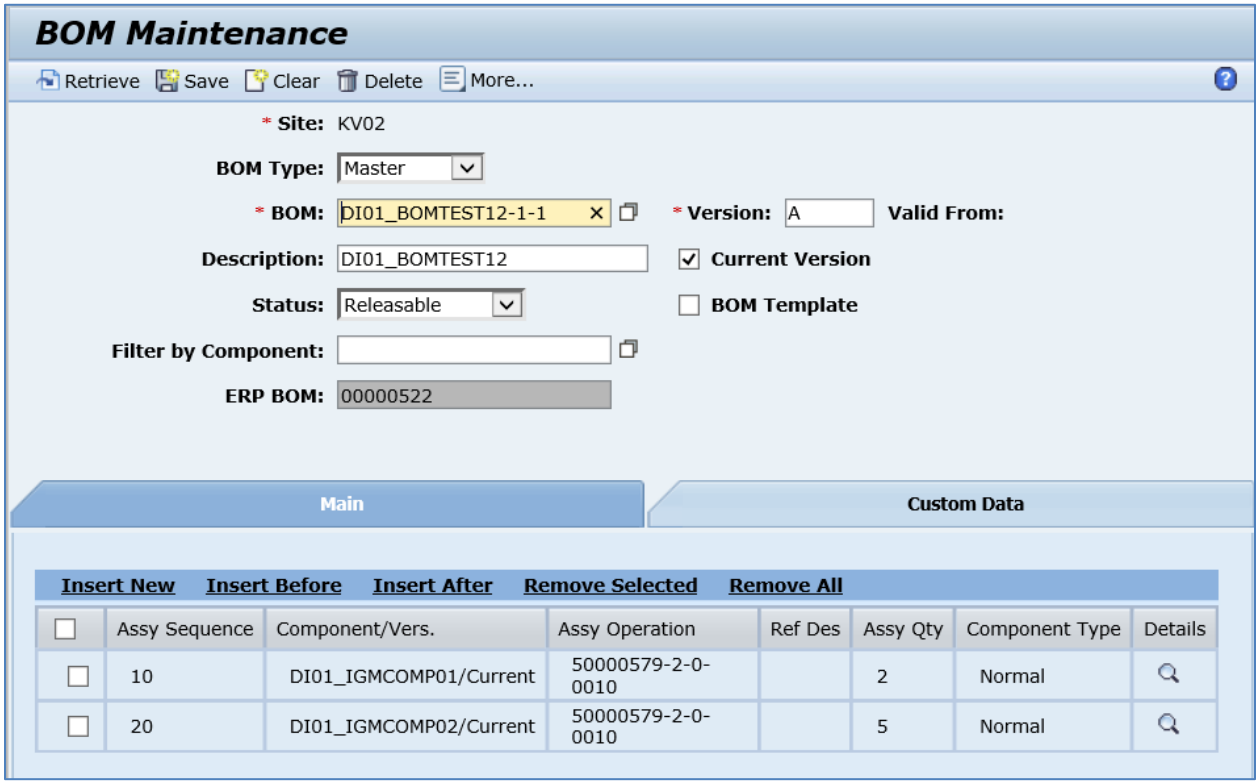
4. Verify results in SAP ME.

Run *BOM Maintenance* and retrieve the transferred bill of material record.

On the *Main* tab, verify the following field values:

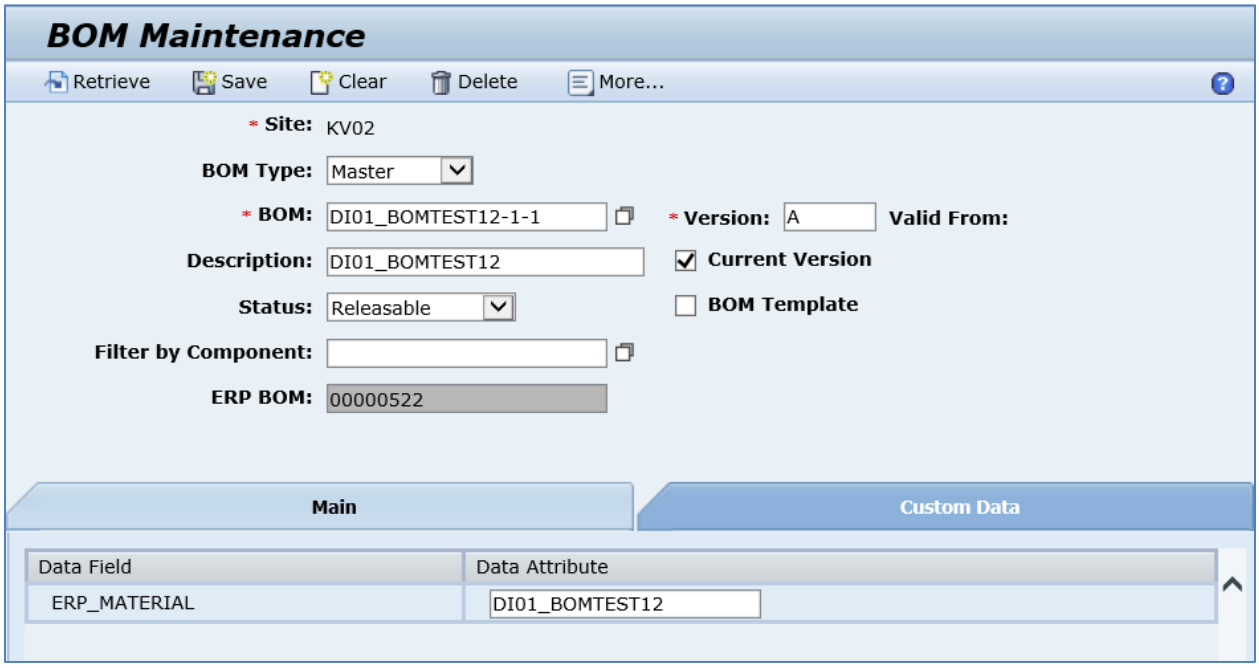
- *Site: Plant* value.
- *BOM Type:* Master.
- *BOM:* BOM name has the following structure: *Material Number (MATNR) + "-" + BOM Usage (STLAN) + "-" + Alternative BOM (STLAL)* (for example, DI01_BOMTEST06-1-1).
- *Version:* A.
- *Valid From*: Date on which the BOM was last changed.
- *Description*: *Plant_Material Number*.
- *Current Version*: Selected.

- *Status*: Releasable (SAP ERP BOM status is mapped to SAP ME BOM status as follows: 01 Active = Releasable; 02 Inactive = New; 03 Active with history reqmt = Releasable).
- *BOM Template:* Deselected.
- *ERP BOM*: Contains key that uniquely identifies a bill of material in SAP ERP.
- *Assy Sequence: BOM Item Number* (10 and 20).
- *Component/Vers.:* Material that was added to ERP BOM as components. Version is set to Current.
- *Assy Operation:* Operation to which this component is allocated. (Operation number consists of Key for Task List Group-Group Counter-Sequence-Operation. Version of the assembly operation defaults to # and not present in the GUI).
- Assy Qty: This Quantity is also called *Normalized Quantity for component* and calculated as *Component Quantity / Base Quantity*. In this example Assy Qty = 2 and 5 (2/1 and 5/1). For more information, see the SAPMEINT Message Processing Logic section of this guide.
- *Component Type:* Normal.
- Other fields are BLANK by default or deselected.



On the *Custom Data* tab, verify the following field values:

- *Data Field:* ERP_MATERIAL.
- *Data Attribute:* Plant_Material Number.



4.4 Configuring a Bill of Material with Reference Designators

4.4.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer BOM master data with reference designators from SAP ERP to create or update the corresponding BOM record of the Master type in SAP ME.

A reference designator is a physical location of a component on a printed circuit board.

Reference designators specify where operators or machines must load components onto assemblies. For example, reference designators can tell an operator that you want the same component, such as a specific resistor model, loaded in four different places on a specific board. They are short combinations of letters and numbers, such as P2, VR1, D4, V1, and C5. These designators are printed directly on the circuit board.

4.4.2 Prerequisites

4.4.2.1 SAP ERP

- In Customizing for *Bill of Material* (*Logistics - General > Product Lifecycle Management (PLM) > Basic Data > Bill of Material > Item Data > Define Item Categories*), you can define whether subitems are supported for each individual item category. In the standard system, for example, subitems are supported for the following item categories: Stock item, Non-stock item, Variable-size item, PM structure element.
- You have set up ALE communication to create and transmit *BOMMAT* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).

- You have transferred materials to SAP ME (see Material Transfer on the SAP Help Portal at http://help.sap.com).

4.4.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings for the BOM category in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

4.4.3 Procedural Steps

1. Create a bill of material with entered subitems in SAP ERP (see Examples section).
2. Send BOM master record to SAP ME.

   We recommend to use *Material BOM Distribution* transaction (transaction code – *BD30*).
3. Optional: Verify *BOMMAT* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding BOM record in SAP ME (see BOM Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

4.4.4 Alternates / Best Practices and Tips

4.4.5 Examples

4.4.5.1 Creating a Material BOM with Reference Designators

1. Create a bill of material master record in SAP ERP (see Steps in Creating a Simple Material BOM on the SAP Help Portal at http://help.sap.com).

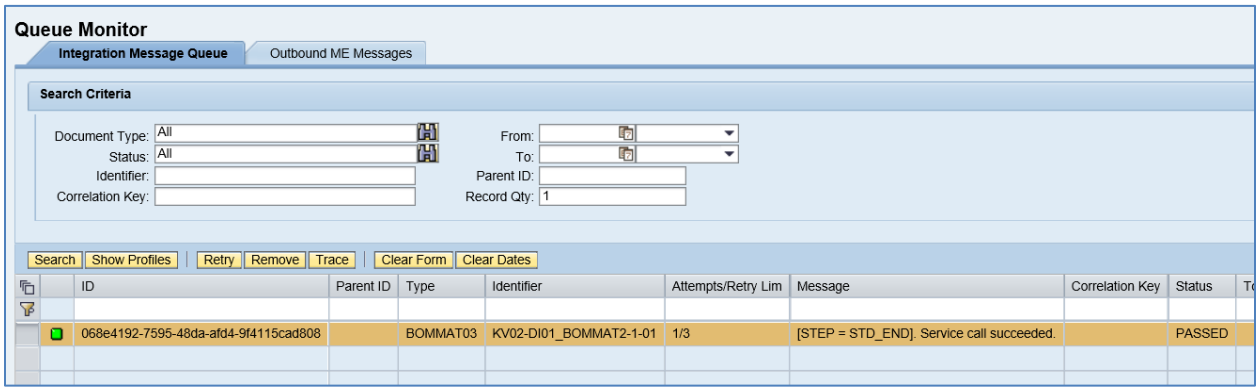
   Make sure that the following data is entered on the *Create Material BOM: Sub-Items* screen:

   - *SItm:* Number used to uniquely identify a subitem within a BOM item and define its position in the sequence of subitems. Leave the default value.
   - *Installation Point:* Installation point for partial quantity of a BOM item. Enter value that identifies reference designator.

- *Sub-item qty:* Gives the quantity of the subitem for an item. The sum of all subitem quantities is the item quantity. Enter correct quantity of the component that has to be installed to the specified reference designator.

1. Send bill of material to SAP ME.
2. Optional: Verify *BOMMAT* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

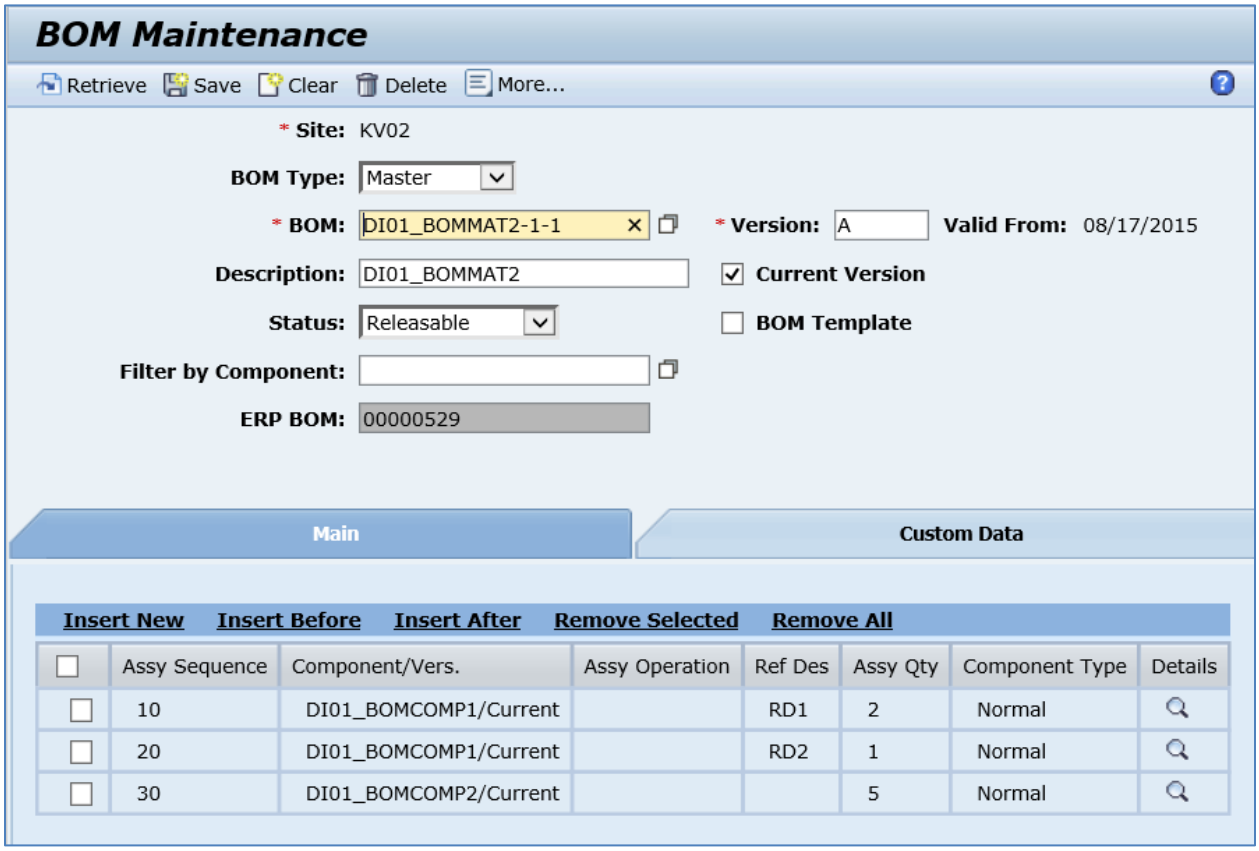


3. Verify results in SAP ME.

Run *BOM Maintenance* and retrieve the transferred bill of material record.

On the *Main* tab, verify the following field values:

- *Ref Des:* Contains values from *Installation Point* fields.
- Assy Qty: The value that was entered to *Sub-item qty* field in ERP. (Note that this Quantity is *Normalized Quantity for subitem* and calculated as *Sub-item qty / Base Quantity*. In this example Sub-item qty = 2 and 1 (2/1 and 1/1).



4.5 Configuring a Bill of Material with Alternate Components

4.5.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer BOM master data with alternative components from SAP ERP to create or update the corresponding BOM record of the Master type in SAP ME.

If you would like to use one or several alternative components in an assembly, you can enter these components in the bill of material and combine them by grouping the alternative items.

These alternative items can then be taken into account when exploding the BOM during the planning run.

4.5.2 Prerequisites

4.5.2.1 SAP ERP

- You have created materials and routings in SAP ERP.
- You have transferred materials to SAP ME (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a*

Manufacturing Execution System > Basic Settings for MES Integration). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

4.5.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

4.5.3 Procedural Steps

1. Create a bill of material with alternate components in SAP ERP (see Examples section).
2. Send BOM master record to SAP ME.
3. Optional: Verify *BOMMAT* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding BOM record in SAP ME (see BOM Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

4.5.4 Alternates / Best Practices and Tips

4.5.5 Examples

4.5.5.1 Creating a Material BOM with alternate components

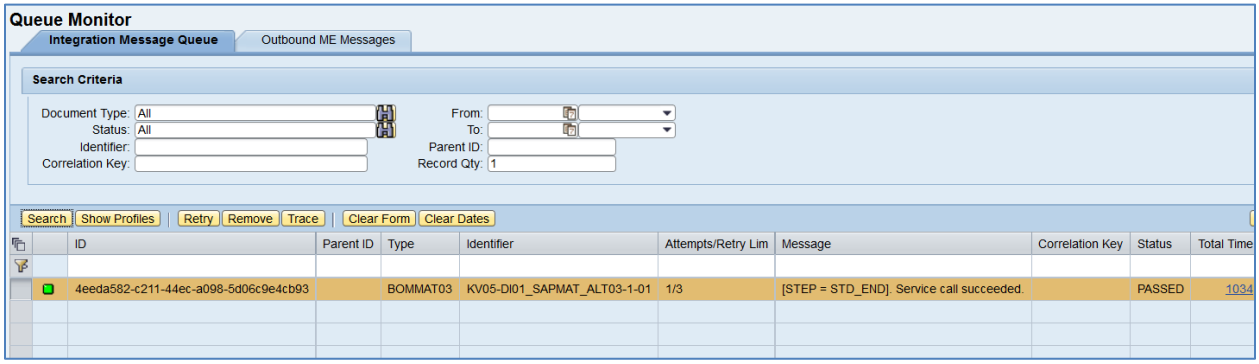
1. Create a bill of material master record in SAP ERP (see Steps in Creating a Simple Material BOM on the SAP Help Portal at http://help.sap.com).

   Make sure that the following data is entered on the *Alternative Item Data* screen:

   - *Priority:* With respect to withdrawal postings, the ranking order determines which material components from the alternative item group should be taken into account. Start with 1 and enter consecutively for other alternates.
   - *Strategy:* Defines how items in an alternative group are selected for withdrawal postings. Enter 1 for *According to usage probability* option.
   - *Usage prob.:* Percentage probability that a material will be used in the assembly. Only used if Strategy is 1. Enter 100 for your primary component. Leave this field BLANK for the rest of the components from the same alternative group.

1. Send bill of material to SAP ME.
2. Optional: Verify *BOMMAT* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



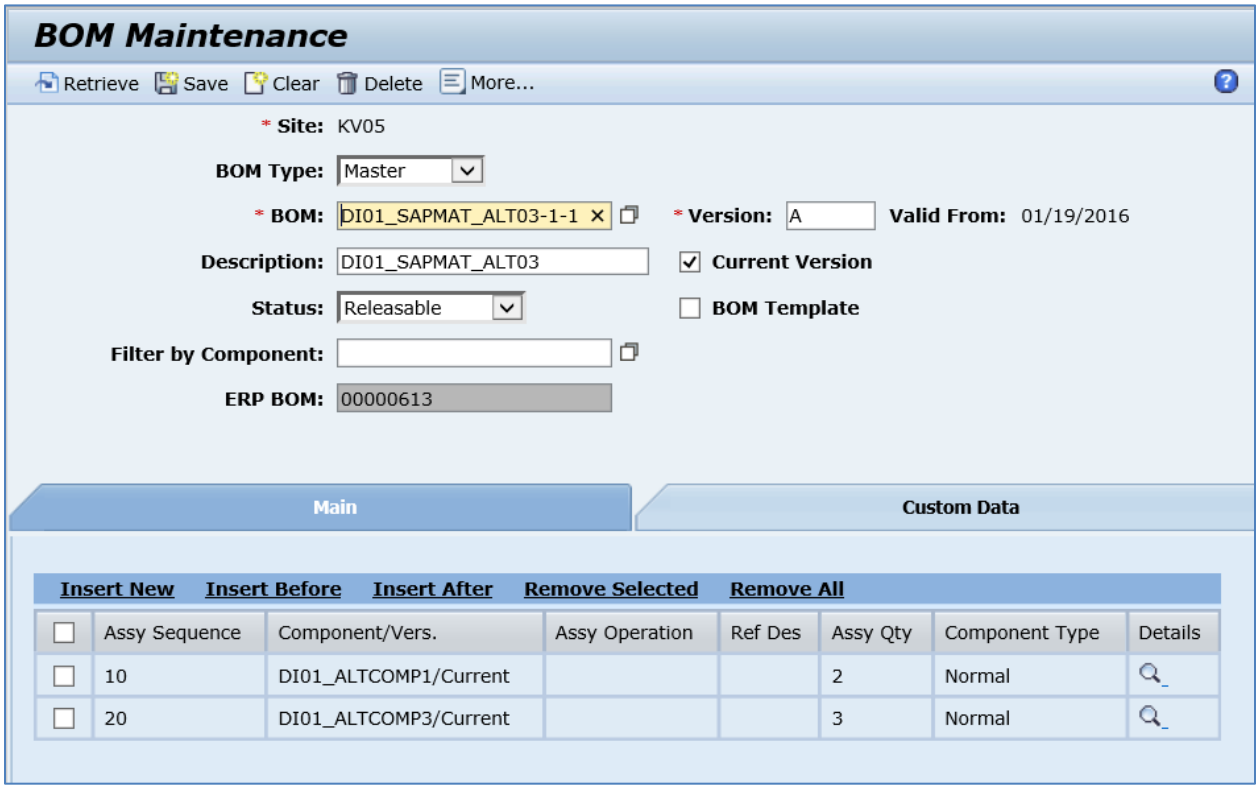
3. Verify results in SAP ME.

Run *BOM Maintenance* and retrieve the transferred bill of material record.

On the *Main* tab, verify the following field values:

- *Component/Vers.:* Only component with the highest priority (1) is present among BOM components. Other components from the same Alternate Group are added to the bill of material as alternate components and can be found on the *Alternates* tab on the *Component Details* screen.

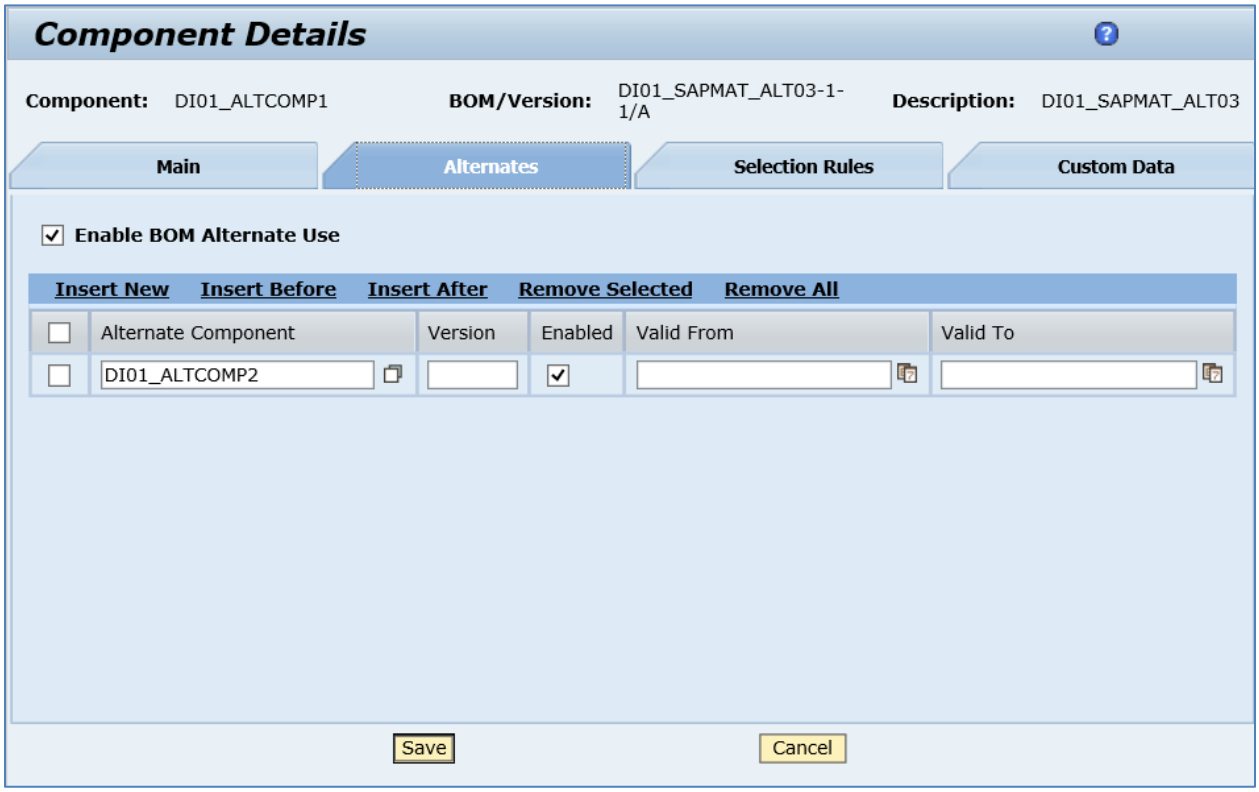
  Note: Usage Probability can be taken into account to calculate Assy Qty of the main component from the alternate group. This happens only if bill of material record is transferred to SAP ME within a production order IDoc.



Click *Details* icon for the main component from the alternate group.

On the *Alternate* tab, verify the following field values:

- *Alternate Component:* Contains all other components from the same alternate group.
- *Enabled:* Selected.



4.6 Configuring a Bill of Material with Phantom Components

4.6.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a BOM with Phantom Assembly from SAP ERP to create or update the corresponding BOM record of the Master type in SAP ME.

Phantom assemblies are *logical groupings* of components, and they are *fictitious assemblies* that never get produced. Their components are integrated with the higher-level product.

Use phantom assemblies to:

- Logically group and create a ‘nomenclature’
- Simplify the BOM structure for a complex in-house product containing thousands of materials as BOM components.

Note: The difference between a phantom assembly and a real assembly is that the phantom assembly will not be produced and therefore does not need a routing. This means:

- There are no planned orders / production orders for phantom assemblies.
- There are no stocks for phantom assemblies.

4.6.2 Prerequisites

4.6.2.1 SAP ERP

- In Customizing for *Production*, choose *Basic Data* > *Material Requirements Planning* > *Master Data* > *Define Special Procurement Type* (or use transaction *OMD9*). Define special procurement type *50 - Phantom Assembly* for your plant.
- You have created materials and routings in SAP ERP.
- You have transferred materials to SAP ME (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

4.6.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

4.6.3 Procedural Steps

1. Create a bill of material master record with Phantom Assemblies in SAP ERP (see Examples section).
2. Send the BOM master record to SAP ME within a production order.

   Note: BOMs with phantom assemblies can only be sent to SAP ME within production orders.

   For more information about transferring a bill of material within a production order, see the Configuring Production Order with BOM and Routing sections of this guide.
3. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding BOM record in SAP ME (see BOM Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

4.6.4 Alternates / Best Practices and Tips

4.6.4.1 Adding an Existing Phantom Component to a Bill of Material

You can add a phantom component to a bill of material during Material Master creation. To do this:

1. Create a phantom component.

   Make sure that the following data is entered on the *MRP 2* tab:

   - *Procurement type:* `E` for Manufactured material.
   - *Special procurement:* `50` for Phantom Assembly.

2. Create a bill of material for a finished material that is treated as a top-assembly. Use steps described in the Creating a Material BOM section of this guide.
3. Add the phantom component from Step 1.

4.6.5 Examples

4.6.5.1 Creating a BOM with Phantom Assemblies

1. Create a bill of material for a finished material that will be used as a phantom component in a BOM of a higher-level assembly. Use steps described in the Creating a Material BOM section of this guide.
2. Create a bill of material for another finished material that is treated as a top-assembly.
3. Select the item that is going to be treated as a phantom component. Make sure that the following data is entered on the *Create Material BOM: Item: All data* screen:

   - *Special procurement:* Enter 50 for Phantom Assembly.

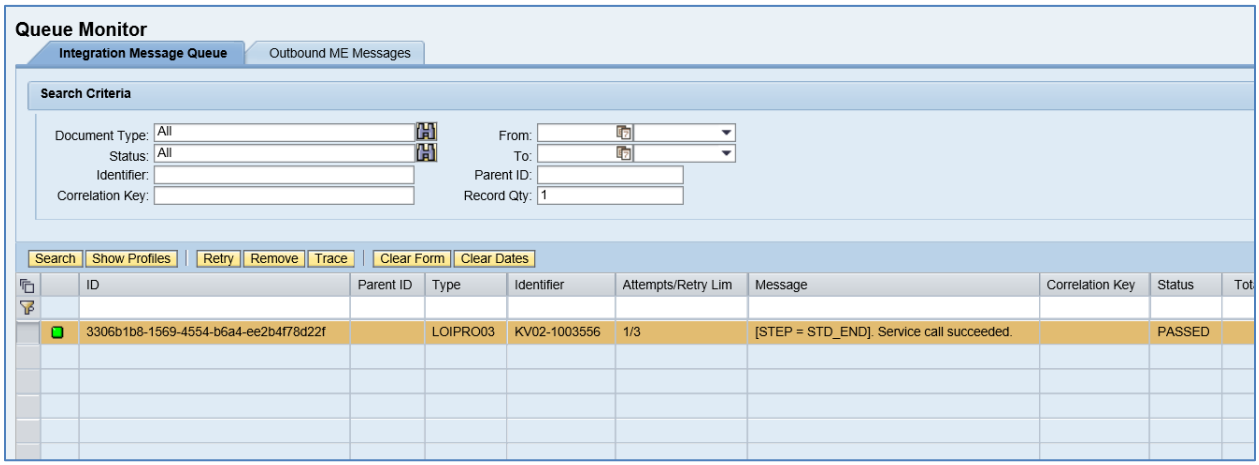
4. Send the BOM master record to SAP ME within a production order.

   Note: BOMs with phantom assemblies can only be sent to SAP ME within production orders.

   For more information about transferring a bill of material within a production order, see the Configuring Production Order with BOM and Routing sections of this guide.

5. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

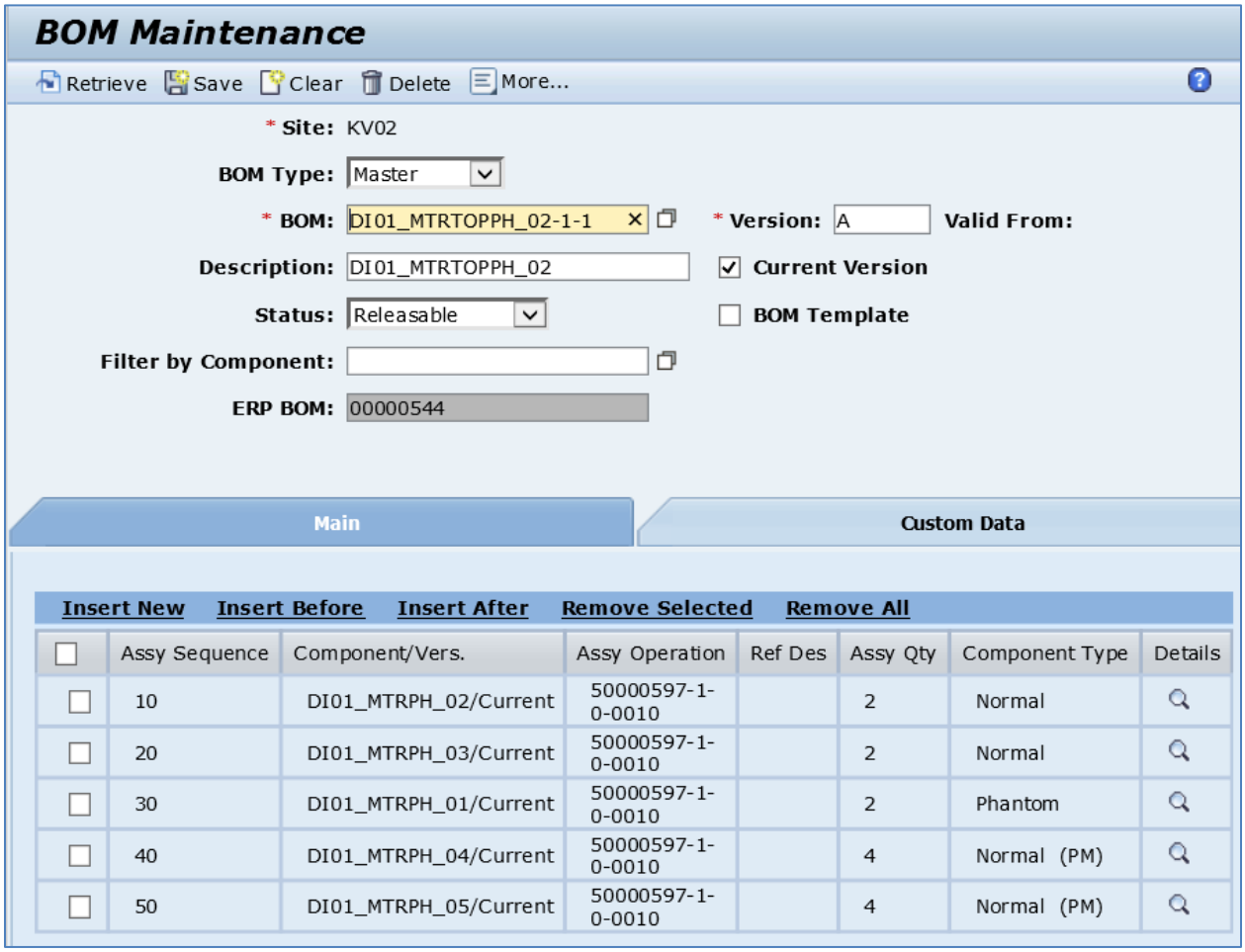


6. Verify results in SAP ME.

Run *BOM Maintenance* and retrieve the transferred bill of material record.

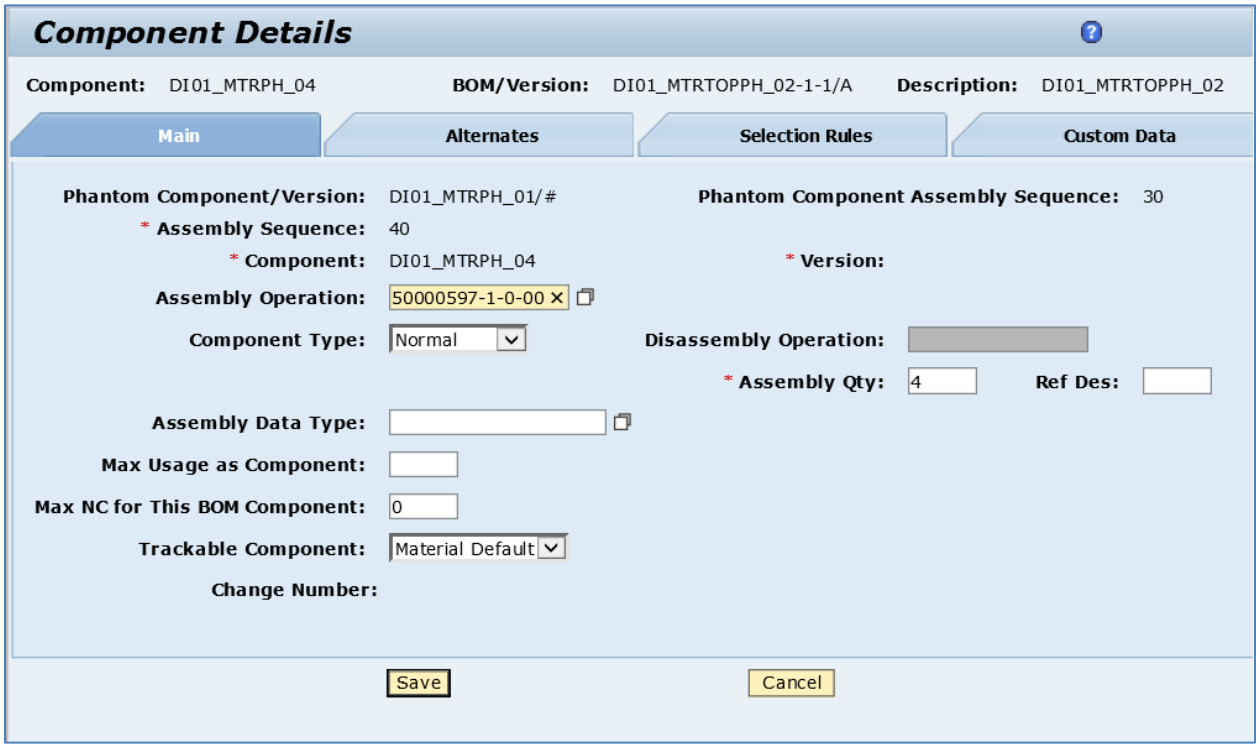
On the *Main* tab, verify the following field values:

- *Component Type: Phantom* for the component that has the special procurement type 50. Components, which are members of the Phantom item BOM, have Component Type *Normal (PM)*.
- Assy Qty: For the members of the Phantom item BOM (Normal (PM) components), the required quantity is calculated as *Assy Qty* of this component * *Assy Qty* of the Phantom Component.



Check *Details* of the Normal (PM) Component:

- *Phantom Component Assembly Sequence:* Indicates affiliation of the selected component to the Phantom item BOM. Value means sequence of the Phantom Component.



4.7 Configuring a Bill of Material with Co-Product Components

4.7.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer BOM master data with Co-Product Components from SAP ERP to create or update the corresponding BOM record of the Master type in SAP ME.

Co-product is a product that is produced in addition to the main product range. This holds significant financial value. Co-products are desirable products because they can be used in other production processes or even sold as standalone offerings.

Main product and co-product that are manufactured together can be produced using one process order, but with separate settlement. The system automatically creates a separate order item for each of the co-products.

4.7.2 Prerequisites

4.7.2.1 SAP ERP

- You have created materials and routings in SAP ERP.
- You have transferred materials to SAP ME (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

4.7.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

4.7.3 Procedural Steps

1. Create a bill of material with co-product components in SAP ERP (see the Examples section).
2. Send the BOM master record to SAP ME within a production order.

   Note: BOMs with co-product assemblies can only be sent to SAP ME within production orders.

   For more information about transferring a bill of material within a production order, see the Configuring Production Order with BOM and Routing sections of this guide.
3. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding BOM record in SAP ME (see BOM Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, seethe Field Mappings section of this guide.

4.7.4 Alternates / Best Practices and Tips

4.7.5 Examples

4.7.5.1 Creating a BOM with Co-Product Components

1. In SAP ERP, create a Co-Product Material.

   Make sure that *Co-product* checkbox is selected on the *MRP2* tab.
2. In SAP ERP, create a bill of material master record (see Steps in Creating a Simple Material BOM on the SAP Help Portal at http://help.sap.com).

   Make sure that the following data is entered on the *Create Material BOM: General Item Overview* screen:

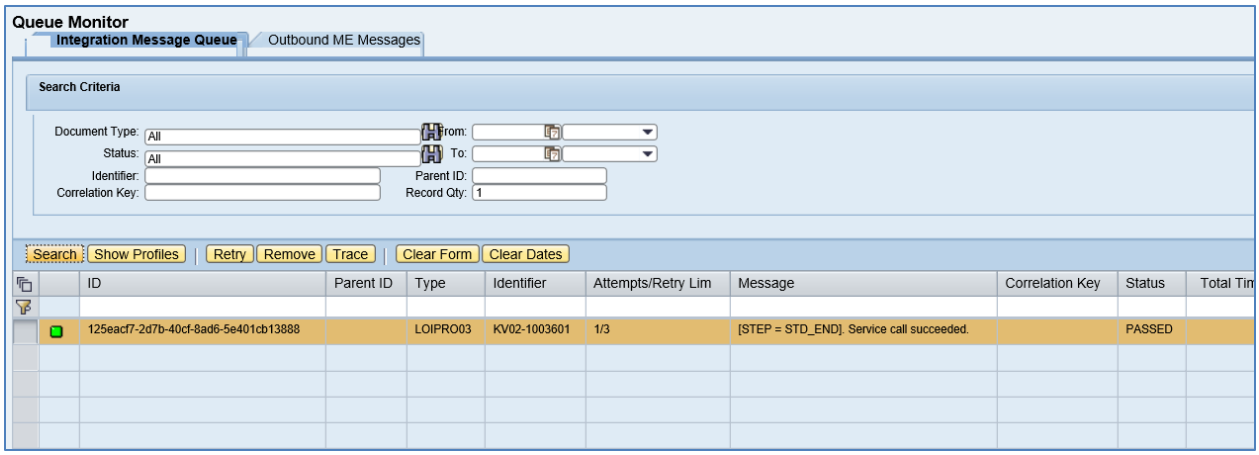
   - *Quantity:* To indicate that component is a co-product, enter negative quantity.

3. Select the co-product item. Make sure that *Co-product* checkbox is selected on the *Create Material BOM: Item: All data* screen.
4. Send the BOM master record to SAP ME within a production order.

   Note: BOMs with co-product assemblies can only be sent to SAP ME within production orders.

   For more information about transferring a bill of material within a production order, see the Configuring Production Order with BOM and Routing sections of this guide.
5. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

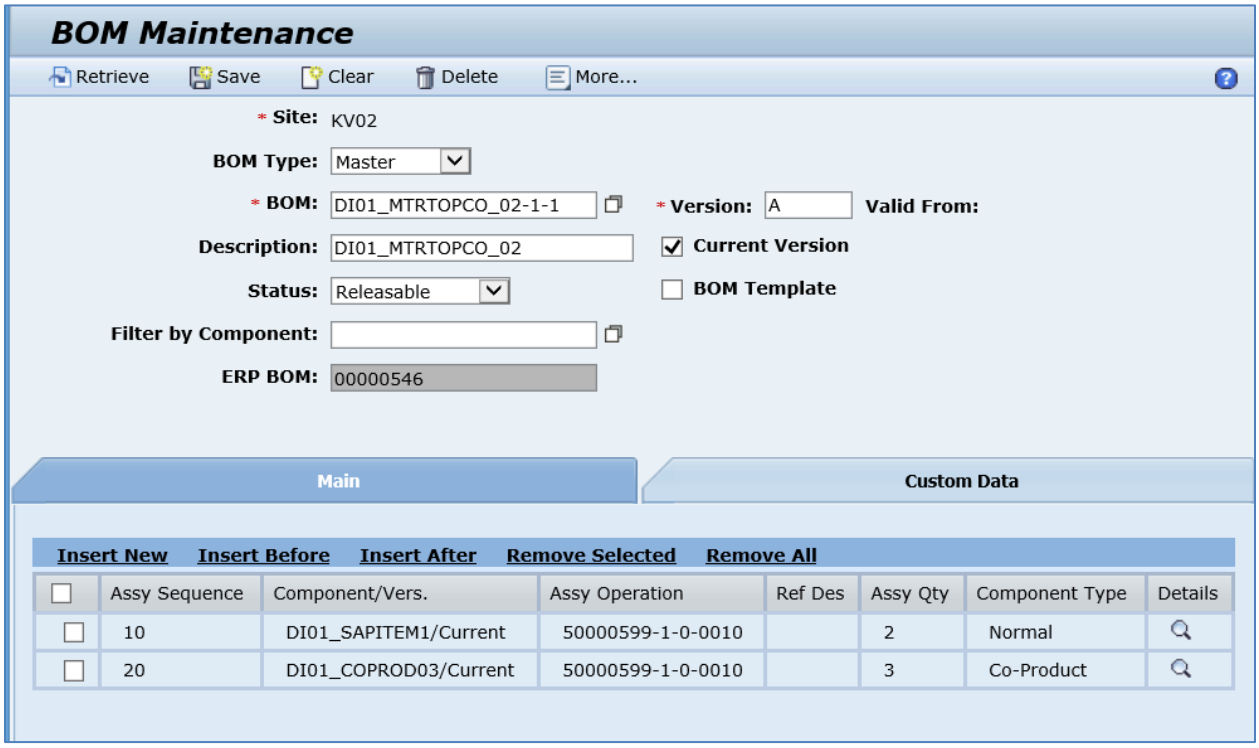


6. Verify results in ME.

Run *BOM Maintenance* and retrieve the transferred bill of material record.

On the *Main* tab, verify the following field values:

- *Component Type:* Co-Product for the component that was marked as a co-product material in ERP.
- *Assy Qty:* Quantity of the component.



4.8 Configuring a Bill of Material with By-Product Components

4.8.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer BOM master data with By-Product Components from SAP ERP to create or update the corresponding BOM record of the Master type in SAP ME.

A by-product is a secondary product derived from a manufacturing process or chemical reaction. It is not the primary product or service being produced. In the context of production, a by-product can be defined as the 'output from a joint production process that is minor in quantity or net realizable value (NVR) when compared to the main products'.

4.8.2 Prerequisites

4.8.2.1 SAP ERP

- You have created materials and routings in SAP ERP.
- You have transferred materials to SAP ME (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

4.8.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

4.8.3 Procedural Steps

1. Create a bill of material with by-product components in SAP ERP (see Examples section).
2. Send the BOM master record to SAP ME within a production order.

   Note: BOMs with by-product assemblies can only be sent to SAP ME within production orders.

   For more information about transferring a bill of material within a production order, see the Configuring Production Order with BOM and Routing sections of this guide.
3. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding BOM record in SAP ME (see BOM Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

4.8.4 Alternates / Best Practices and Tips

4.8.5 Examples

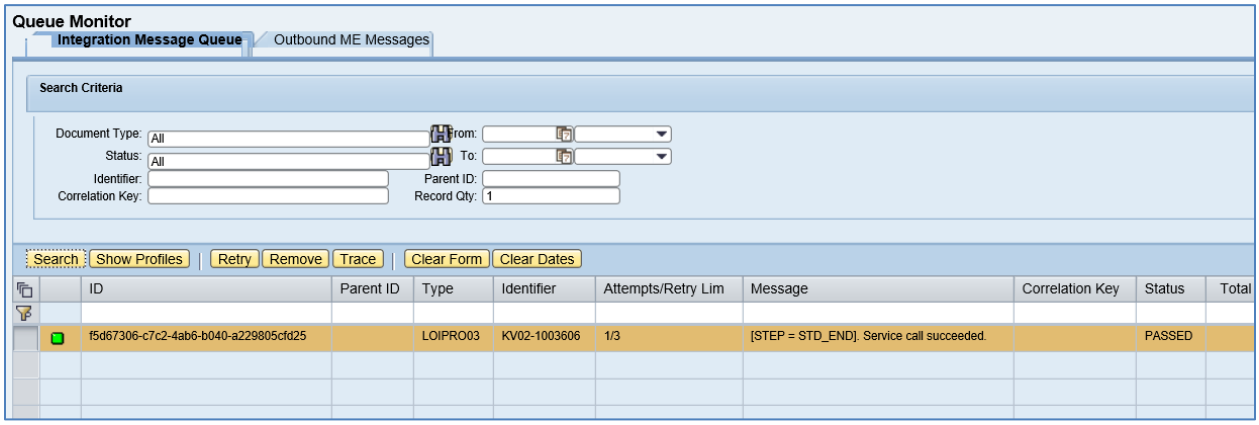
4.8.5.1 Creating a BOM with By-Product Components

1. Create a bill of material master record in SAP ERP (see Steps in Creating a Simple Material BOM on the SAP Help Portal at http://help.sap.com).

   Make sure that the negative quantity is entered to the *Quantity* field to indicate that component is a by-product
2. Sending a BOM master record to SAP ME within a production order.

   Note: BOMs with by-product assemblies can only be sent to SAP ME within production orders.
3. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

For more information, see the SAPMEINT Message Processing Logic section of this guide.

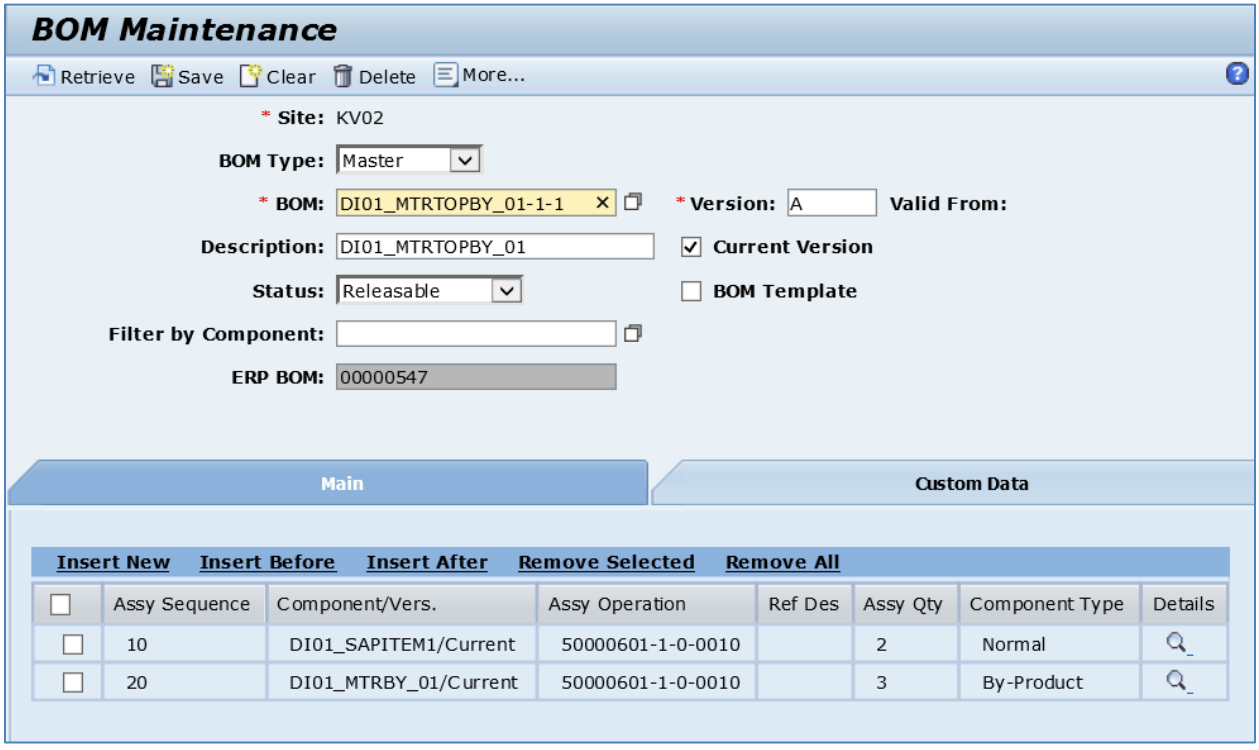


4. Verify results in ME.

Run *BOM Maintenance* and retrieve the transferred bill of material record.

On the *Main* tab, verify the following field values:

- *Component Type:* Is set to By-Product for the component that had negative quantity in ERP.
- *Assy Qty:* Quantity of the component.



4.9 Configuring a Shop Order-Specific Bill of Material

4.9.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer BOM master data within a production order for make-to-order production.

In this case, SAPMEINT creates a shop order-specific BOM for use with this production shop order.

For more information about Make-to-Order processing, see Make-to-Order Processing in ERP on the SAP Help Portal at http://help.sap.com.

4.9.2 Procedural Steps

For more information about the steps required to create a shop order-specific bill of material, see the Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing) section of this guide.

5 Work Center Integration

5.1 Overview

This section of the MEINT 15.1 How-To Guide describes how to transfer work center master data from SAP ERP to create or update the corresponding work center record in SAP ME (see Work Center on the SAP Help Portal at http://help.sap.com).

5.1.1 Business purpose

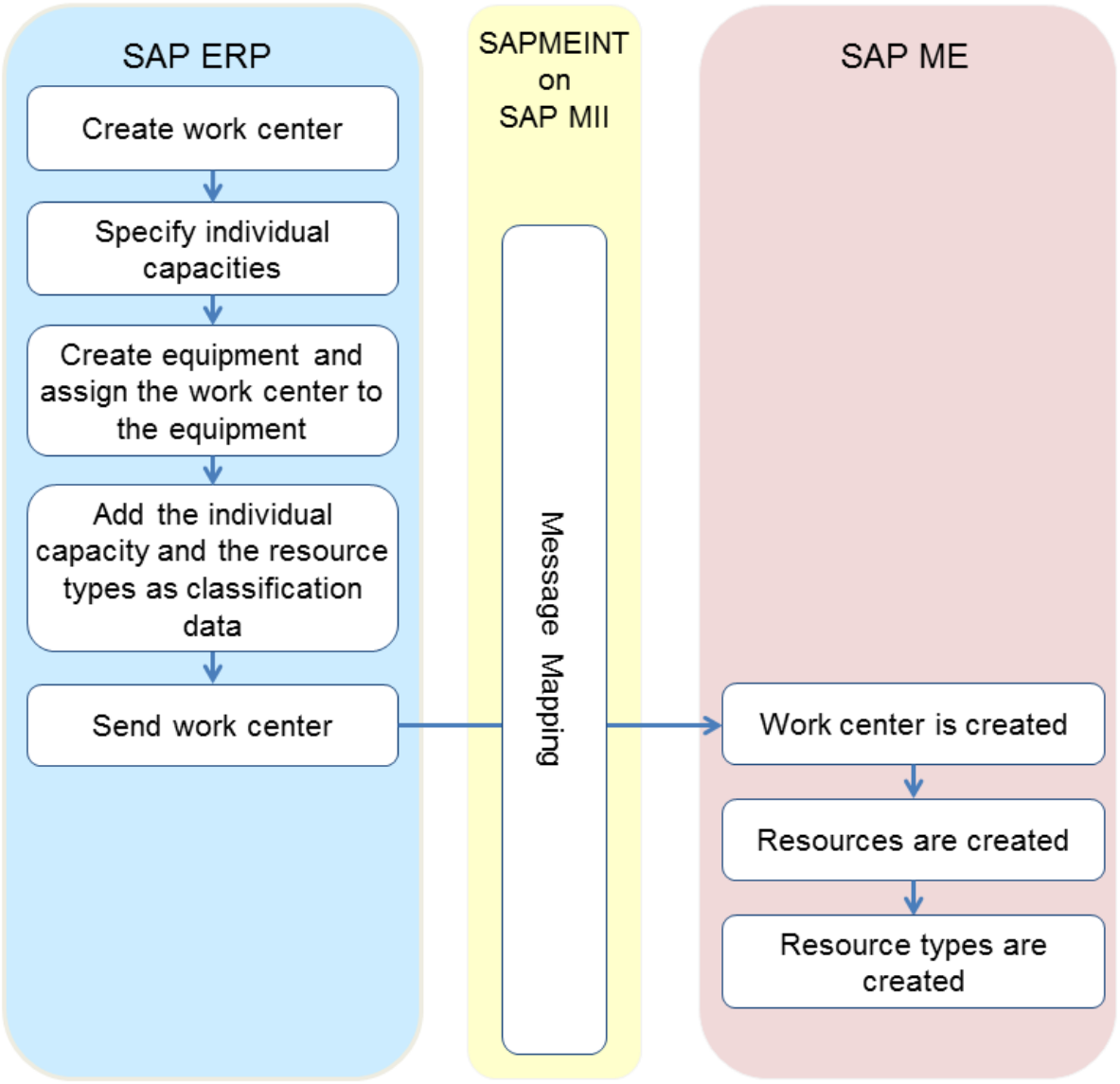
A work center is an area at a site at which inventory is manufactured or processed. Work centers are used to divide the portions of a routing along functional work lines.

A work center in SAP ERP can represent either a work center or a resource in SAP ME, depending on how the work center is configured. Configuring the work center in SAP ERP allows for capacity planning to take place. To keep the number of resources and work centers in SAP ME consistent with the capacity that is defined as available in SAP ERP, you can transfer the defined production work centers.

Integration information and conditions include:

- Operations are carried out at a work center in SAP ERP.
- The data stored in the work center is used in SAP ERP for the following:
    - Routings
      Work centers are assigned to operations in task lists. If default values are changed in a work center, the changes are effective in the task list in case a reference indicator has been set for the default value.
    - Work center hierarchies
      Work centers can be arranged in hierarchies. Hierarchies are used in capacity planning to cumulate available capacities and capacity requirements in a hierarchy work center.
    - Assignments to objects in the Human Resource Management System
      A Logistics work center can be assigned to an organizational unit or a work center in the Human Resource Management System (HRMS).
      Assignments to other HR objects, for example employees or qualifications, can be maintained via the HR work center.

5.1.2 Process Flow Graphic



5.2 Configuring a Work Center

5.2.1 Business Purpose / Description

Once the customer has established a list of equipment on the manufacturing floor and divided it up into logical work centers, these objects need to be entered into SAP ERP as work centers. The created work centers will form the structure of available resources for capacity planning to take place. It is important to ensure that the work centers created in the system will model the equipment available on the manufacturing floor.

For more information about sending Work Center IDocs to SAP ME, see Transfer of Work Center with Individual Capacities on the SAP Help Portal at http://help.sap.com.

5.2.2 Prerequisites

5.2.2.1 SAP ERP

- You have set up ALE communication to create and transmit LOIWCS IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have defined the DRF Replication Model to replicate LOIWCS03 IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.
- You have verified that all work centers have the same activity types arranged in the same sequence.

5.2.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules on the SAP Help Portal at http://help.sap.com).
- You have verified settings for the *Resource* and *Work Center* categories in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

5.2.3 Procedural Steps

1. Create a work center master record in SAP ERP (see Creating, Changing and Displaying Work Centers on the SAP Help Portal at http://help.sap.com).
2. Send work center master record to SAP ME.

   We recommend to use *Execute Data Replication* transaction (transaction code – *DRFOUT*).

   Make sure that you have created and activated a replication model with the outbound implementation for the work center (*493_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

   Note: You cannot transfer new IDoc versions for the *LOIWCS* message using the *POIM* transaction.

   The new IDoc versions contain additional fields that are required for the integration with SAP ME 6.0 and higher. These fields are not supplied when you use *POIT* and *POIM* transactions to distribute the documents even if the LOG_PP_MES_INT_02 business function is activated. Use the current IDoc versions (LOIPRO01, LOIWCS02, LOIROU02, and LOIPLO01) if you want to use the *POIT* and *POIM* transactions to send data.

   See SAP Note 1793291.
3. Optional: Verify *LOIWCS03* or higher IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is

processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding material record in SAP ME (see Work Center Maintenance and Resource Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

5.2.4 Alternates / Best Practices and Tips

5.2.4.1 ERP Work Center to SAP ME Resource

If you transfer work centers of the 9000 and 9100 categories from SAP ERP using the LOIWCS02 IDoc, they appear in SAP ME as work centers and resources.

To enable replication of LOIWCS02 IDocs, define DRF Replication Model (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*).

To create required work center categories, go to Customizing for *Production* > *Basic Data* > *Work Center* > *General Data* > *Define Work Center Category*. For more information, see Configuration of Work Centers on the SAP Help Portal at http://help.sap.com.

If you want to create a work center in SAP ME, create the work center of category 9000 in SAP ERP. When you transfer this ERP work center to SAP ME, SAPMEINT creates the work center in SAP ME.

If you are intended to create a resource in SAP ME, create the work center of category 9100 in SAP ERP. When you transfer this ERP work center to SAP ME, SAPMEINT creates the resource in SAP ME.

For more information about transferring work centers of 9000 and 9100 categories, see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com.

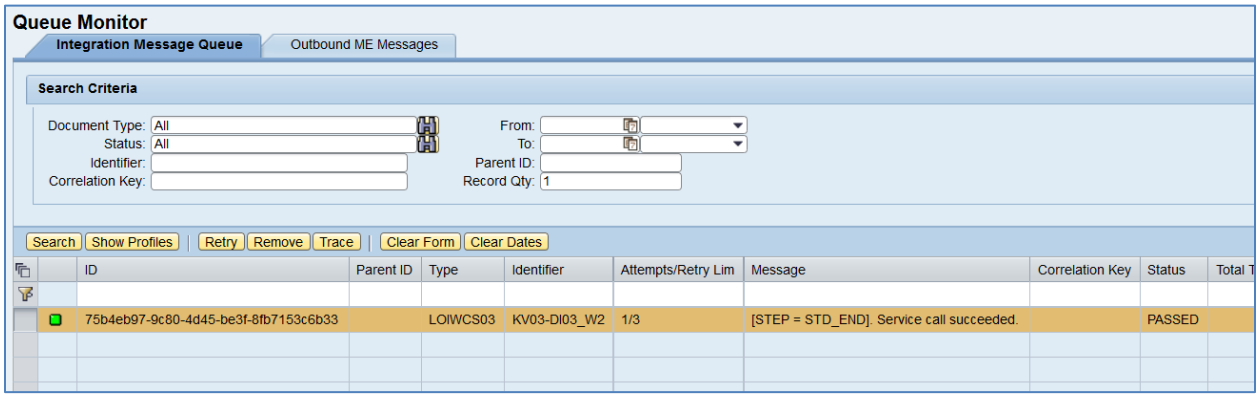
5.2.5 Examples

5.2.5.1 Creating a Work Center Master Record

1. Create a work center master record in SAP ERP (see Creating, Changing and Displaying Work Centers on the SAP Help Portal at http://help.sap.com).
2. Send work center to SAP ME.

3. Optional: Verify *LOIWCS03* or higher IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

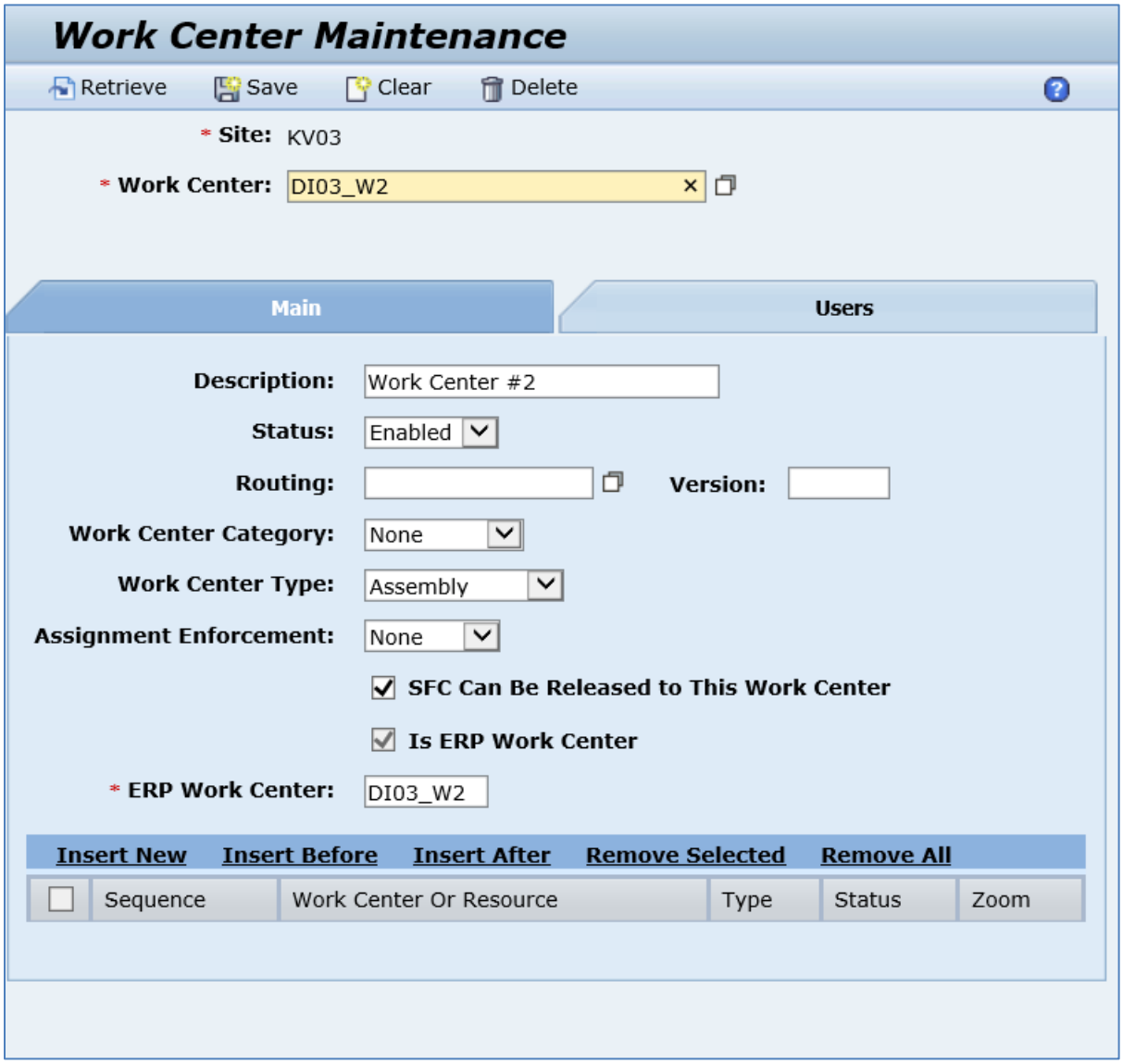


4. Verify results in SAP ME.

Run *Work Center Maintenance* and retrieve the transferred material record.

On the *Main* tab, verify the following field values:

- *Site: Plant* value.
- *Work Center: Work center* name specified in SAP ERP.
- *Description: Description* of the work center.
- *Status:* Enabled.
- *Work Center Category:* None.
- *Work Center Type:* Assembly.
- *Assignment Enforcement:* None.
- *SFC Can Be Released to This Work Center:* Selected.
- *Is ERP Work Center:* Selected.
- *ERP Work Center: erpInternalID* of work center.
- Other fields are BLANK by default or deselected.



5.3 Configuring a Work Center with Individual Capacities

5.3.1 Business Purpose / Description

This function lets you transfer a work center of any category including data on individual capacities from SAP ERP to create or update the corresponding work center with nested resources in SAP ME (see Work Center and Resource on the SAP Help Portal at http://help.sap.com).

For more information about sending work center with nested individual capacities IDocs to SAP ME, see Transfer of Work Center with Individual Capacities on the SAP Help Portal at http://help.sap.com.

5.3.2 Prerequisites

5.3.2.1 SAP ERP

- You have set up ALE communication to create and transmit LOIWCS IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have defined the DRF Replication Model to replicate LOIWCS03 IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.
- You have verified that all work centers have the same activity types arranged in the same sequence.

5.3.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules on the SAP Help Portal at http://help.sap.com).
- You have verified settings for the *Resource* and *Work Center* categories in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

5.3.3 Procedural Steps

1. Create a work center master record and specify individual capacities of the *Machine* (001) capacity category in SAP ERP (see Examples section).
2. Send work center master record to SAP ME.

   We recommend to use *Execute Data Replication* transaction (transaction code – *DRFOUT*).

   Make sure that you have created and activated a replication model with the outbound implementation for the work center (*493_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

   Note: You cannot transfer new IDoc versions for the *LOIWCS* message using the *POIM* transaction.

   The new IDoc versions contain additional fields that are required for the integration with SAP ME 6.0 and higher. These fields are not supplied when you use *POIT* and *POIM* transactions to distribute the documents even if the LOG_PP_MES_INT_02 business function is activated. Use the current IDoc versions (LOIPRO01, LOIWCS02, LOIROU02, and LOIPLO01) if you want to use the *POIT* and *POIM* transactions to send data.

   See SAP Note 1793291.
3. Optional: Verify *LOIWCS03* or higher IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is

processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding work center and resource records in SAP ME (see Work Center Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

5.3.4 Alternates / Best Practices and Tips

5.3.4.1 Sending an Update of a Work Center with Individual Capacities

1. Update of Individual Capacity is carried out according to the settings in.
2. If individual capacity is removed from work center in SAP ERP and the updated work center record is transferred to SAP ME, then:
   - Corresponding SAP ME resource is removed from work center members but still present in the system.
   - The status of the resource changes to *Pending* if there are SFCs in work on this resource. The status is set to *Disabled* if there are no SFCs in work or when the last SFC is completed on this resource.
3. If update of the work center contains the individual capacity that was removed before, then:
   - The resource in SAP ME is updated according to settings in *ERP Field Maintenance*.
   - erpInternalID of the resource is updated. **Note**: This field is not visible and it is available only in the database. Check the *Capacity ID* field in the Field Mappings section of this guide.
   - The resource is assigned to the work center.
   - The status of the resource is set to *Enabled*.
4. Resources that are created in SAP ME and assigned to SAP ERP authored work center are not affected by work center updates.

5.3.5 Examples

5.3.5.1 Creating a Work Center with Individual Capacities

1. Create a work center master record in SAP ERP (see Creating, Changing and Displaying Work Centers on the SAP Help Portal at http://help.sap.com).

   Make sure that the following minimum configuration is done:

   On the *Create Work Center: Default Values* screen, enter the following:

   - *Control Key:* Determines which business transactions should be executed for the object that belongs to the task list or order. Enter a value.
   - *Setup:* Unit of measure for the standard value. Enter, for example, MIN.

- *Machine:* Unit of measure for the standard value. Enter, for example, MIN.
- *Labor:* Unit of measure for the standard value. Enter, for example, MIN.

On the *Create Work Center: Capacity Overview* screen, enter the following:

- *Capacity Category:* Identifies the type of capacity. Enter 001 for work center with capacity.
- *Setup Formula:* Key pointing to actual formula for setup. Select desired formula, for example, SAP005.
- *Processing Formula:* Formula used to determine the capacity requirements for setup. Select desired formula, for example, SAP006.

On the *Create Work Center: Capacity Header* screen, enter the following:

- *Capacity description:* Enter a description.
- *Capacity planner grp:* Person or group responsible. Select from the dropdown list.
- *Base unit of meas.:* UOM in which available capacity is maintained (usually in hours). Select from available values.
- *Start:* Beginning of shift or availability start. Enter start time. Required for capacity availability calculation.
- *Finish:* End of shift or availability end. Enter ending time. Required for capacity availability calculation.
- *Length of breaks:* Total break time per shift / availability time period. Enter where applicable.
- *Capacity Utilization:* Actual capacity compared to theoretical capacity expressed as a %. Enter actual availability %.
- *No. of indiv. cap.:* Number of machines or people making up work center capacity. Enter number of machines or people.
- *Relevant to finite scheduling:* Identifies Work Center capacities to be used in calculating available capacity during finite scheduling. Select it.
- *Can be used by several operations:* Allows multiple operations to use this capacity. If not set, only 1 operation will access this capacity, even if partially consumed. Leave un-selected if only one operation is expected to use this capacity at a time.
- *Overload %:* Used to define % of over scheduling allowed. Leave blank unless over scheduling is desired.
- *Long Term Planning:* Allows this work center to be used for capacity during long term planning. Should be selected unless a specific business need determines otherwise. Selected by default.

Choose *Goto > Individual Capacities*. On the *Create Work Center Capacity: Assignment of Individual Capacities* screen, enter the following:

- *Capacity:* Enter name of an individual capacity assigned to the capacity.
- *Short text:* Enter description of the individual capacity if needed.

On the *Create Work Center: Scheduling* screen, enter the following:

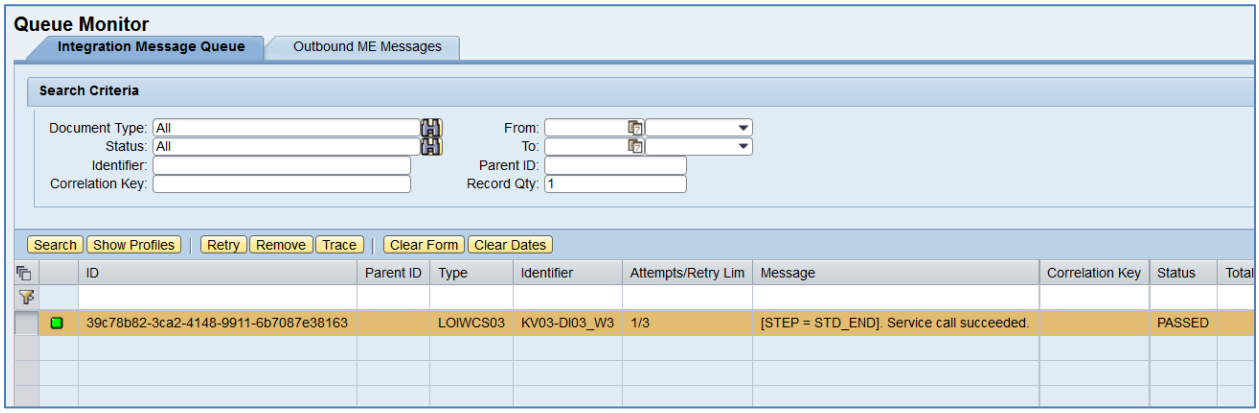
- *Capacity Category:* By default, it is set to the same value that was selected on Create Work Center: Capacity Overview screen – 001.
- *Duration of Setup:* Key in scheduling pointing to actual formula for setup, similar to formula key used when defining capacities. Select desired formula, for example, SAP001.
- *Processing formula:* Formula used in scheduling to determine operation processing time. Select desired formula, for example, SAP002.

On the *Create Work Center: Cost Center Assignment* screen, enter the following:

- *Start date:* Identifies the beginning of a validity period. Defaults to today's date. Can be changed.
- *End date:* Identifies the end of the validity period. Defaults to 12/31/9999. Can be changed.
- *Cost Center:* Key that identifies the cost center. Click the dropdown list to select.

2. Send work center to SAP ME.
3. Optional: Verify *LOIWCS03* or higher IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

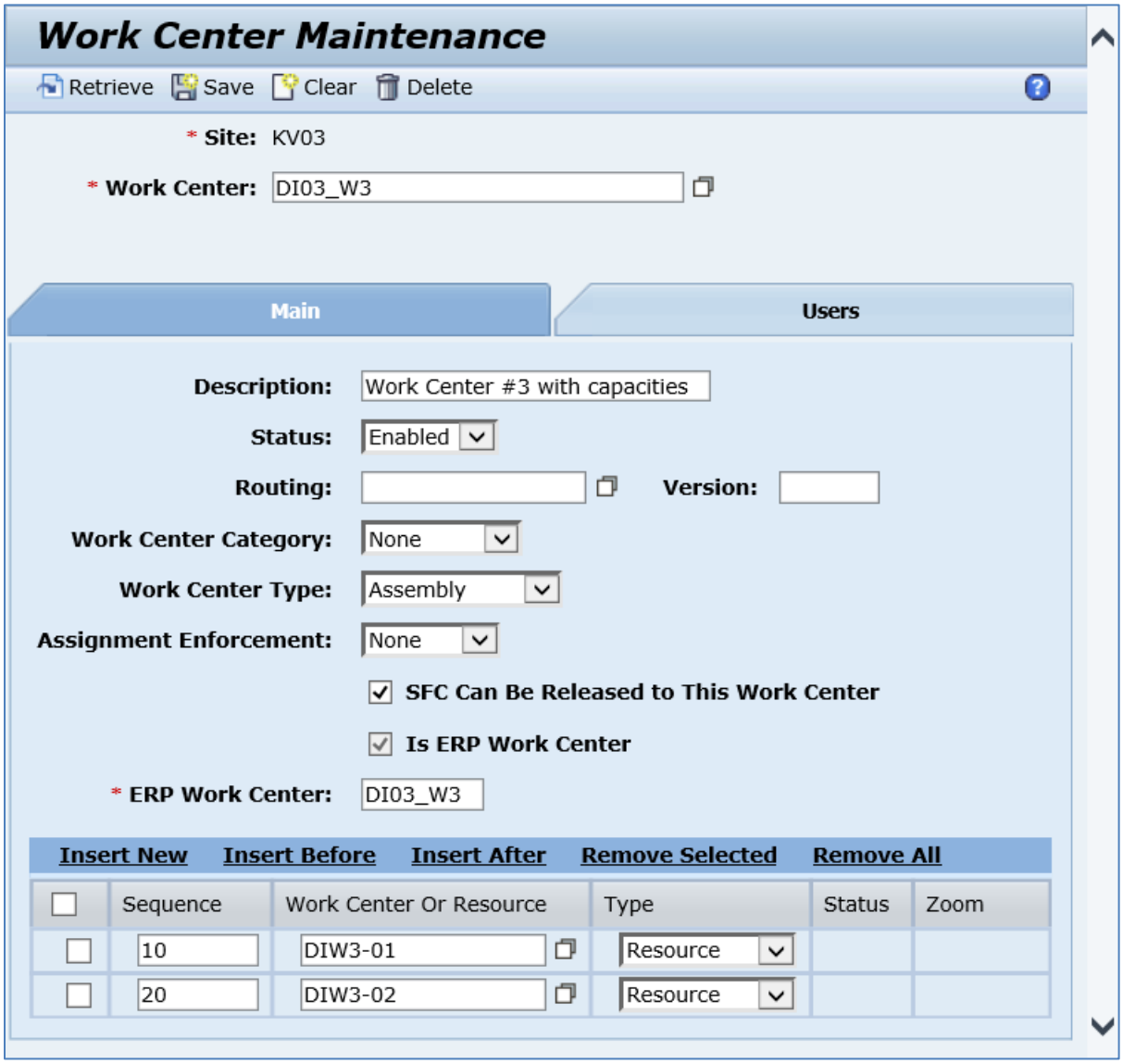


4. Verify results in SAP ME.

Run *Work Center Maintenance* and retrieve the transferred work center record.

On the *Main* tab, verify the following field values:

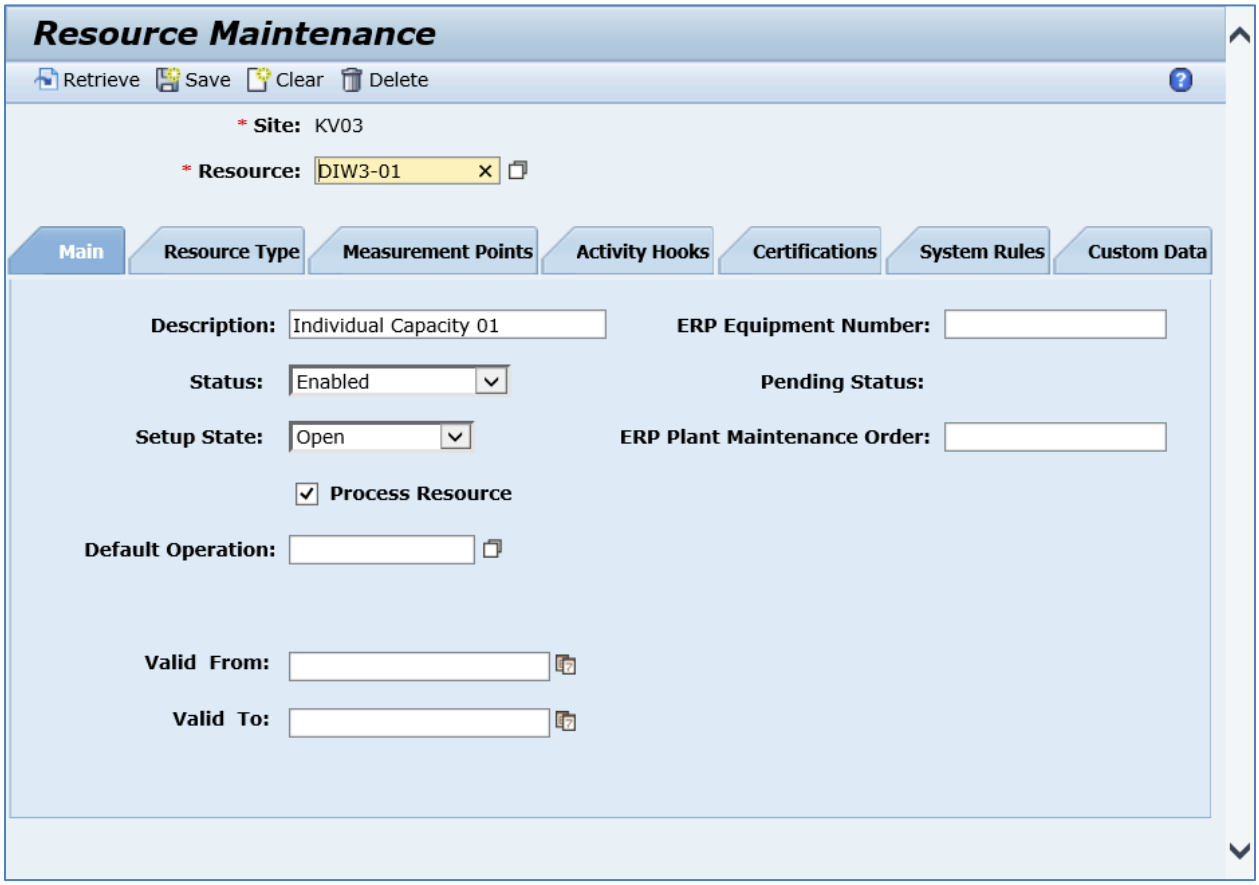
- *Site: Plant* value.
- *Work Center: Work center* name specified in SAP ERP.
- *Sequence:* Sequence of the nested work center or resource.
- *Work Center Or Resource:* The name of individual capacity defined in SAP ERP.
- *Type:* Resource.
- Other fields are BLANK by default or deselected.



Run *Resource Maintenance* and retrieve just created resource record.

On the *Main* tab, verify the following field values:

- *Site: Plant* value.
- *Resource:* Individual capacity.
- *Description:* Individual capacity short description.
- *Status:* Enabled.
- *Setup State:* Open.
- *Process Resource:* Selected.
- Other fields are BLANK by default or deselected.



5.4 Configuring a Work Center with Individual Capacities and Assigned Equipment Number and Resource Types

5.4.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a work center of any category including data on individual capacities, equipment number, and resource types from SAP ERP to create or update the corresponding work center with nested resources in SAP ME (see Work Center and Resource on the SAP Help Portal at http://help.sap.com).

For more information about sending a work center with nested individual capacities IDocs to SAP ME, see Transfer of Work Center with Individual Capacities on the SAP Help Portal at http://help.sap.com.

5.4.2 Prerequisites

5.4.2.1 SAP ERP

- You have set up ALE communication to create and transmit LOIWCS IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).

- You have defined the DRF Replication Model to replicate LOIWCS03 IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.
- You have verified that all work centers have the same activity types arranged in the same sequence.
- To establish the relationship between individual capacities and equipment, you have created the following characteristics (transaction *CT04*):
  - MES_CAPACITY_CATEGORY
  - MES_INDIVIDUAL_CAPACITY
  - MES_RESOURCE_TYPE_1
  - MES_RESOURCE_TYPE_2
  - MES_RESOURCE_TYPE_3

  You have created the following classes (transaction *CL02*):
  - MES_CAPACITY_ALLOC

    with assigned characteristics MES_CAPACITY_CATEGORY and MES_INDIVIDUAL_CAPACITY
  - MES_RESTYPE_ALLOC

    with assigned characteristics MES_RESOURCE_TYPE_1, MES_RESOURCE_TYPE_2, and MES_RESOURCE_TYPE_3

  For more information, see the *COMES_CAPA_ALLOC* report documentation by choosing the *i* button in transaction *COMES_CAPA_ALLOC*.

5.4.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules on the SAP Help Portal at http://help.sap.com).
- You have verified settings for the *Resource* and *Work Center* categories in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

5.4.3 Procedural Steps

1. Create a work center master record and specify individual capacities of the *Machine* (001) capacity category in SAP ERP (see Examples section).
2. Create equipment (transaction *IE01*) and assign the work center to the equipment.
3. Add the individual capacity and, optionally, the resource types as classification data to the equipment.
4. Send work center master record to SAP ME.

   We recommend to use *Execute Data Replication* transaction (transaction code – *DRFOUT*).

Make sure that you have created and activated a replication model with the outbound implementation for the work center (*493_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

Note: You cannot transfer new IDoc versions for the *LOIWCS* message using the *POIM* transaction.

The new IDoc versions contain additional fields that are required for the integration with SAP ME 6.0 and higher. These fields are not supplied when you use *POIT* and *POIM* transactions to distribute the documents even if the LOG_PP_MES_INT_02 business function is activated. Use the current IDoc versions (LOIPRO01, LOIWCS02, LOIROU02, and LOIPLO01) if you want to use the *POIT* and *POIM* transactions to send data.

See SAP Note 1793291.

5. Optional: Verify *LOIWCS03* or higher IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

6. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding work center, resource, and resource type records in SAP ME (see Work Center Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

5.4.4 Alternates / Best Practices and Tips

5.4.5 Examples

5.4.5.1 Creating a Work Center with Individual Capacities and Assigned Equipment Number and Resource Types

1. Create a Work Center with Individual Capacities.
2. In SAP ERP, access the transaction using:

SAP Menu – *Cross-Application Components* > *Classification System* > *Master Data* > *Classes*

or transaction code – *CL02*

3. Check if the following classes exist in the system:

   MES_CAPACITY_ALLOC

   MES_RESTYPE_ALLOC

4. If these classes are not created yet, do the following to create them:

Class: MES_CAPACITY_ALLOC

Class type: 002 (Equipment Class)

Choose *Class* > *Create.*

Description: Assignment of Individual Capacities

Status: Released

Open *Char.* tab. Add two Characteristics: MES_CAPACITY_CATEGORY (CHAR 3) and MES_INDIVIDUAL_CAPACITY (CHAR 8).

If these characteristics do not exist, then create them:

MES_CAPACITY_CATEGORY

Characteristics: MES_CAPACITY_CATEGORY

On the *Basic data* tab, enter the following:

Description: Capacity Category

Status: Released

Data Type: Character Format

Number of Chars: 3

Value Assignment: Single Value

On the *Descriptions* tab:

Language: EN, *Description:* Capacity Category

On the *Values* tab:

Char. Value: 001, *Description:* Machine

002 – Person

008 – Processing unit

011 – Warehouse

012 – Warehouse+proc. unit

Click *Save*.

MES_INDIVIDUAL_CAPACITY

Characteristics: MES_INDIVIDUAL_CAPACITY

On the *Basic data* tab:

Description: Individual Capacity

Status: Released

Data Type: Character Format

Number of Chars: 8

Value Assignment: Single Value

On the *Descriptions* tab:

Language: EN, *Description:* Individual Capacity

Click *Save*.

On the *Create Class* screen, click *Save*.

MES_RESTYPE_ALLOC

Class: MES_RESTYPE_ALLOC

Class Type: 002

Description: Assignment of Resource Types

Status: Released

Open *Char*. tab. Add the following Characteristics: MES_RESOURCE_TYPE_1, MES_RESOURCE_TYPE_2, MES_RESOURCE_TYPE_3 (each with data type CHAR16).

If these characteristics do not exist, create them:

MES_RESOURCE_TYPE_1

Characteristics: MES_RESOURCE_TYPE_1

On the *Basic data* tab, enter the following:

Description: ME Resource Type 1

Status: Released

Data Type: Character Format

Number of Chars: 16

Value Assignment: Single Value

On the *Descriptions* tab:

Language: EN, *Description:* ME Resource Type 1

Click *Save*.

MES_RESOURCE_TYPE_2

Characteristics: MES_RESOURCE_TYPE_2

On the *Basic* data tab:

Description: ME Resource Type 2

Status: Released

Data Type: Character Format

Number of Chars: 16

Value Assignment: Single Value

On the *Descriptions* tab:

Language: EN, *Description:* ME Resource Type 2

Click *Save*.

MES_RESOURCE_TYPE_3

Characteristics: MES_RESOURCE_TYPE_3

On the *Basic data* tab:

Description: ME Resource Type 3

Status: Released

Data Type: Character Format

Number of Chars: 16

Value Assignment: Single Value

On the *Descriptions* tab:

Language: EN, *Description:* ME Resource Type 3

Click *Save*.

On the *Create Class* screen, click *Save*.

5. Create a piece of equipment master record in SAP ERP (see Creating a Piece of Equipment on the SAP Help Portal at http://help.sap.com).

   Make sure that the following minimum configuration is done:

   On the *Create Equipment: Initial Screen*, enter the following:

   - *Equip. Cat.:* Key for distinguishing individual technical objects according to their use. Use M (Machines).

   On the *Create Equipment: Location* screen, enter the following:

   - *Work Center:* Key for identifying the work center that is used for capacity planning. Enter a work center with individual capacities that was created in previous steps.

   Click the *Class overview* icon. In *Class Type* browse select *Equipment Class* (002).

   On the *Create Equipment: Classification* screen, enter the following:

   - *Class:* Browse for the two classes that were previously created: MES_CAPACITY_ALLOC and MES_RESTYPE_ALLOC.

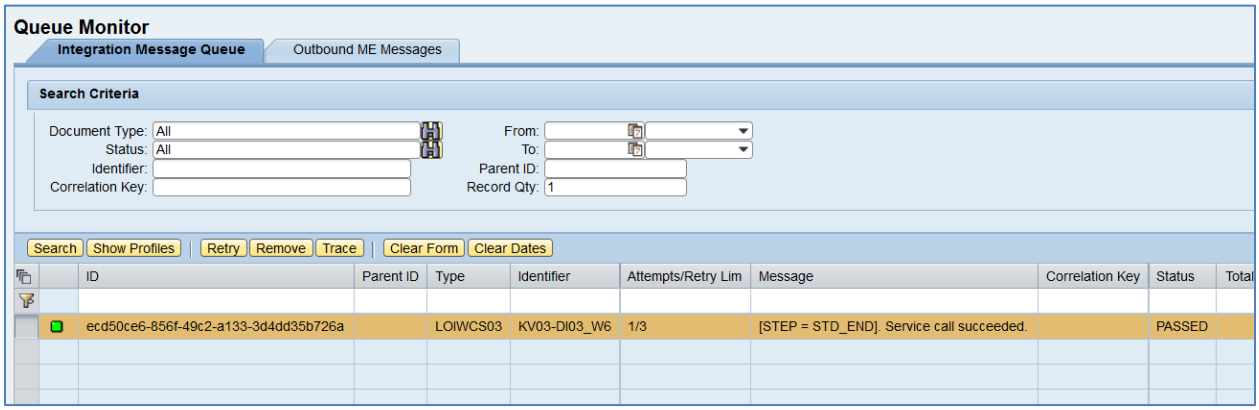
   Fill displayed characteristics fields as follows:

   - *Resource Type 1:* Enter name for Resource Type.
   - *Resource Type 2:* Enter name for Resource Type.
   - *Resource Type 3:* Enter name for Resource Type.
   - *Capacity Category:* Enter 001.
   - *Individual Capacity:* Enter the name of the individual capacity that is assigned to the work center that was previously created.

5. Send work center to SAP ME.

6. Optional: Verify *LOIWCS03* or higher IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

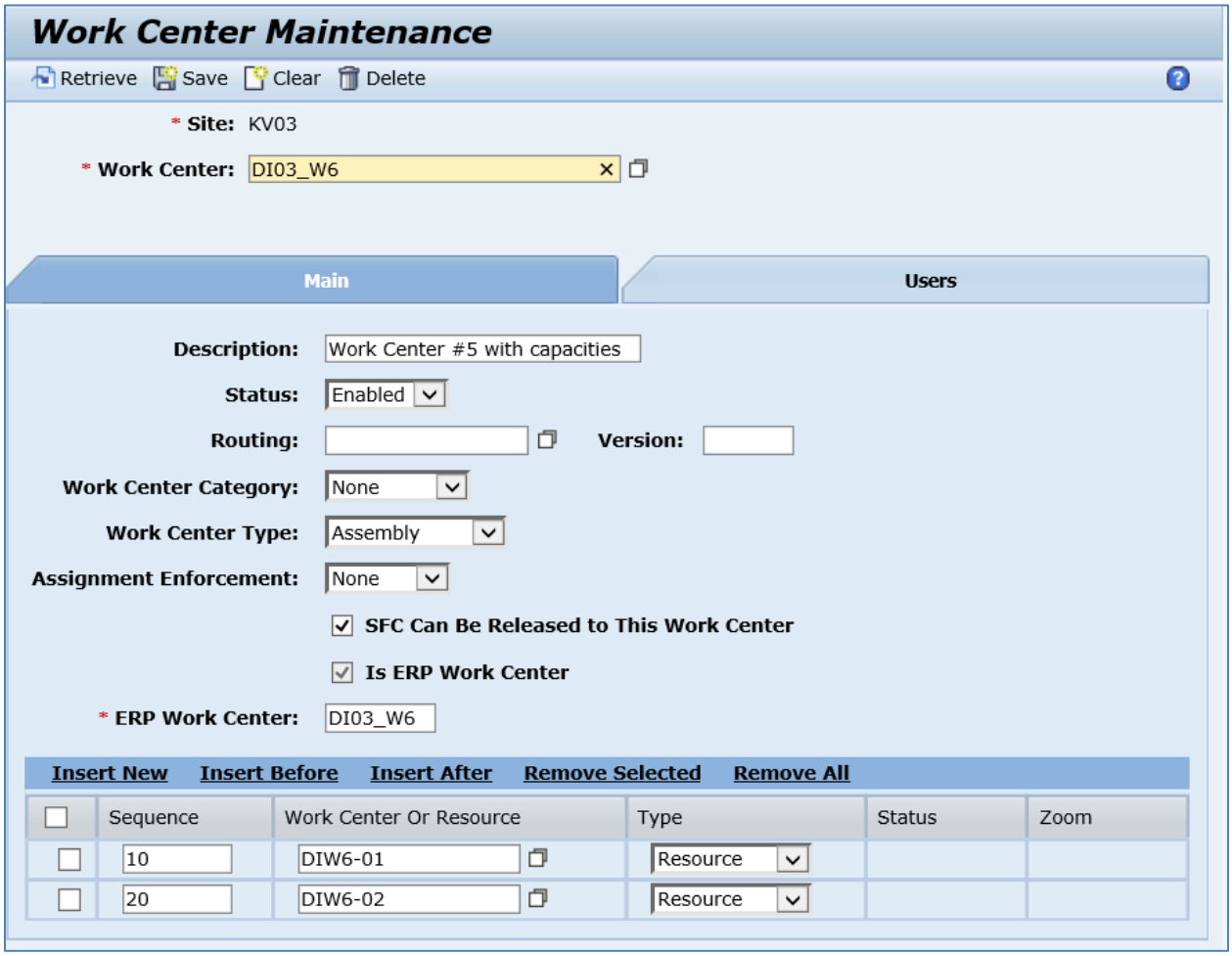


7. Verify results in SAP ME.

Run *Work Center Maintenance* and retrieve the transferred work center record.

On the *Main* tab, verify the following field values:

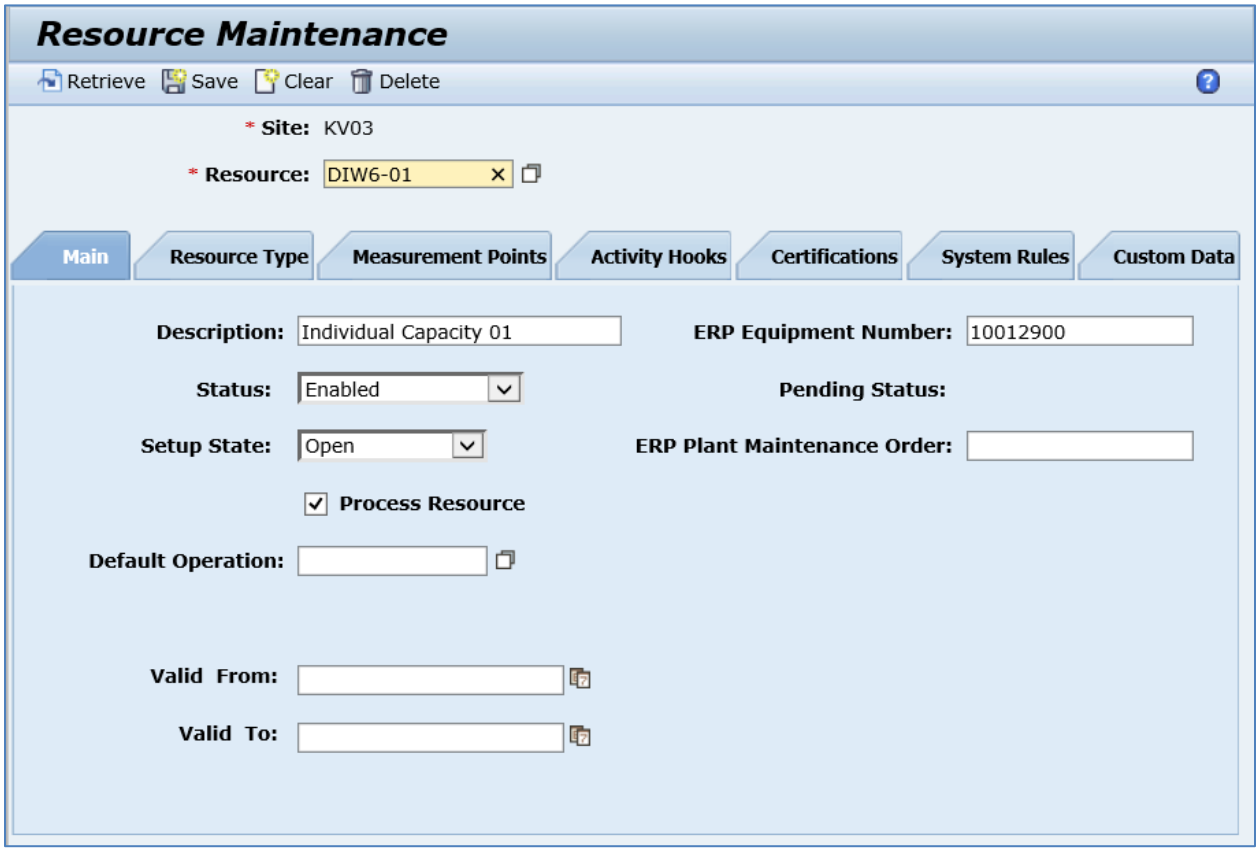
- *Site: Plant* value.
- *Work Center: Work center* name specified in SAP ERP.
- *Sequence:* Sequence of the nested work center or resource.
- *Work Center Or Resource:* The name of individual capacity defined in SAP ERP.
- *Type:* Resource.
- Other fields are BLANK by default or deselected.



Run *Resource Maintenance* and retrieve just created resource record.

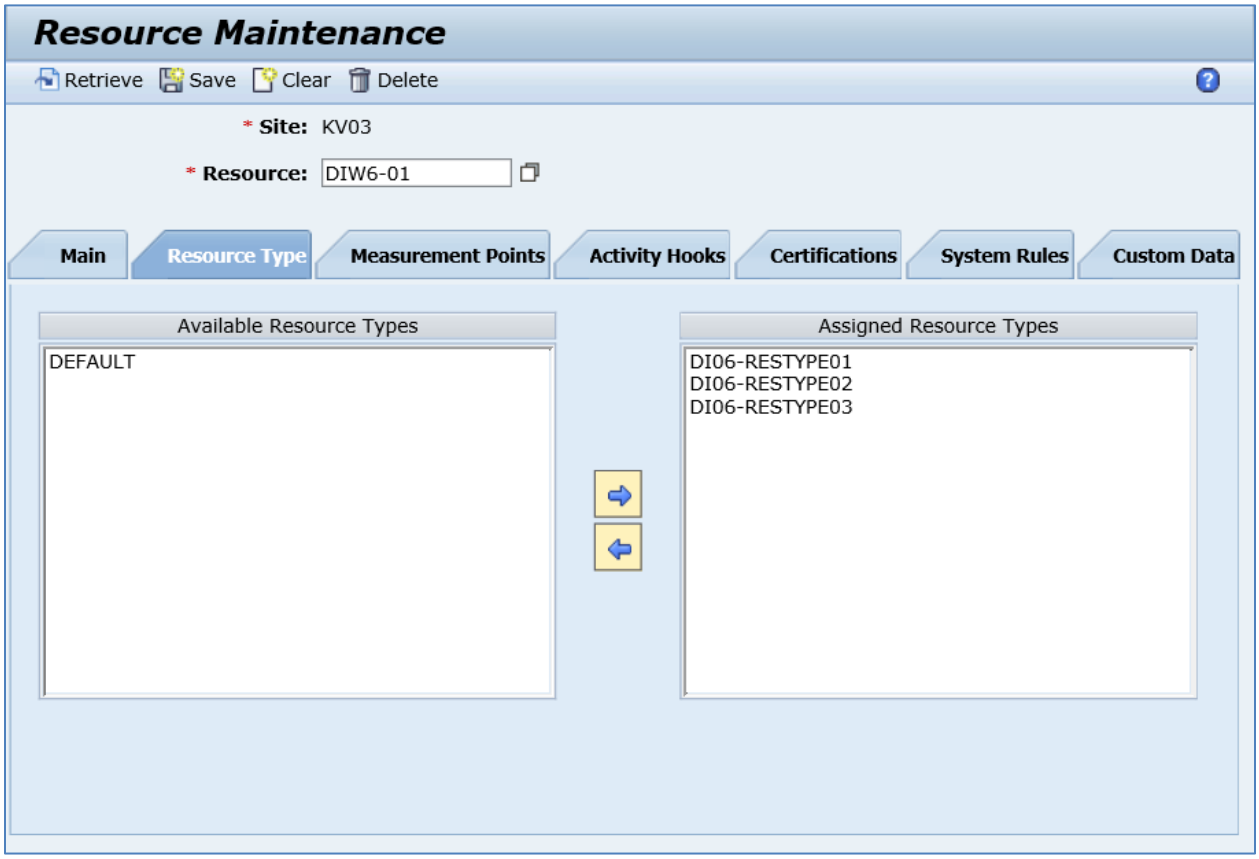
On the *Main* tab, verify the following field values:

- *Site: Plant* value.
- *Resource:* Individual capacity.
- *Description:* Individual capacity short description.
- *Status:* Enabled.
- *Setup State:* Open.
- *Process Resource:* Selected.
- *ERP Equipment Number: Equipment* that was created in SAP ERP.
- Other fields are BLANK by default or deselected.



On the *Resource Type* tab, verify the following field values:

- *Assigned Resource Types:* List of resource types that were assigned to Equipment in SAP ERP.


Resource Maintenance
Retrieve
Save
Clear
Delete
* Site: KV03
* Resource: DIW6-01
Main
Resource Type
Measurement Points
Activity Hooks
Certifications
System Rules
Custom Data
Available Resource Types
DEFAULT
Assigned Resource Types
DI06-RESTYPE01
DI06-RESTYPE02
DI06-RESTYPE03

6 Routing Integration

6.1 Overview

This function lets you transfer a routing data from SAP ERP to create or update corresponding routing and operation records in SAP ME (see Routing and Operation on the SAP Help Portal at http://help.sap.com).

6.1.1 Business Purpose

In SAP ERP, the routing for the material determines the key pieces of inventory-related information such as the consumption points in the manufacturing process for certain components, and the final confirmation step when the manufactured material can be put into the finished goods inventory.

- The routing is a description of which operations (process steps) have to be carried out and in which order to produce a material (product). Therefore, routings are used as a template for production orders and planned orders (repetitive manufacturing) as well as a basis for product costing.
- The data stored in the routing serves as a basis for production planning activities in SAP ERP such as the following:
    - In Materials Management to plan the usage of materials and external operations
    - In Production Planning and Control to plan the usage of work centers
    - In Quality Management to plan quality inspections for production activities
- SAPMEINT creates two SAP ME objects:
    - Operation

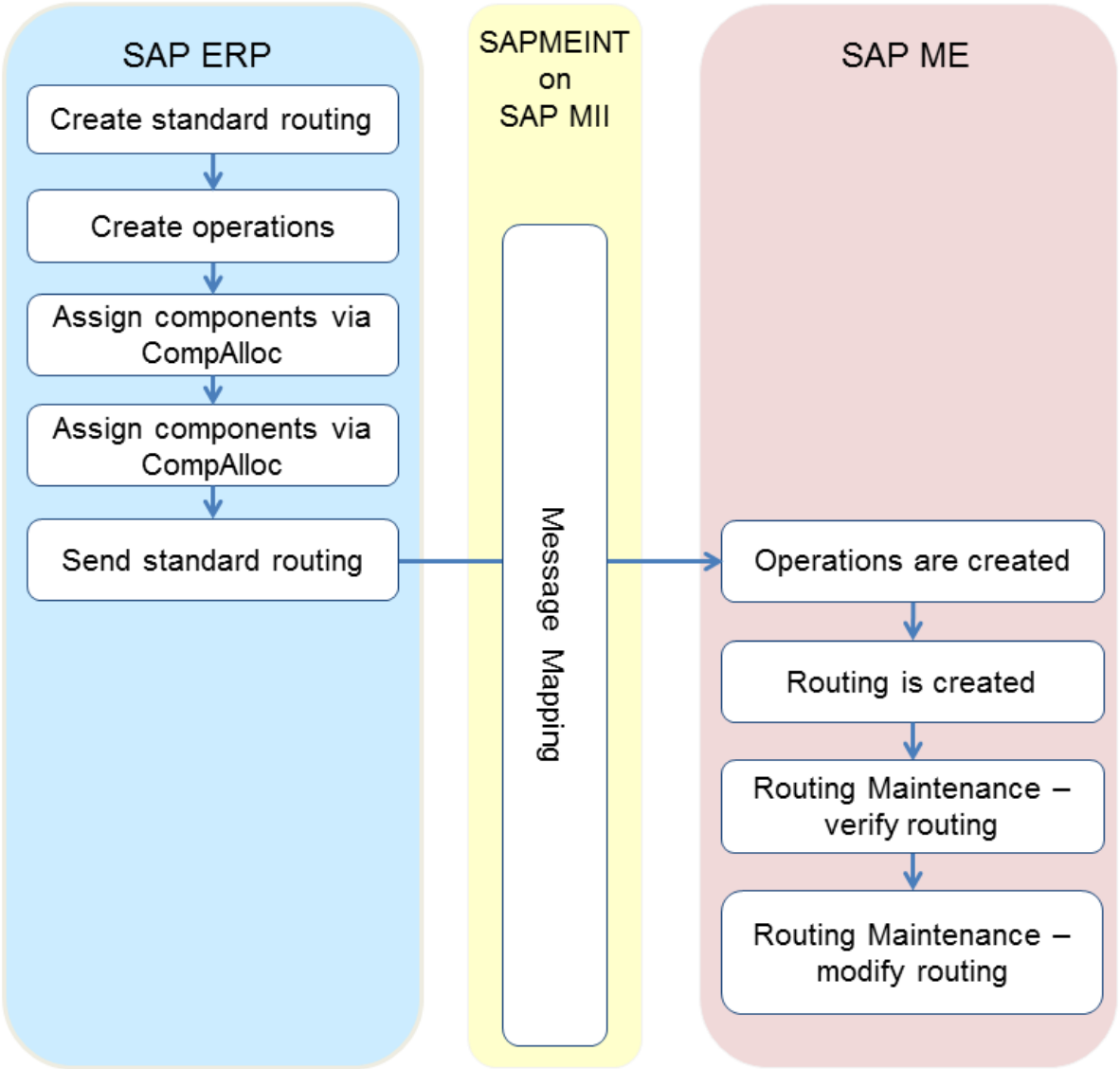
      Description of SAP ME operation is populated with SAP ERP *operation short text*.
    - Routing
        - SAP ME defaults the first routing to version A and increments an additional integer value for subsequent updates. For example: A-01, A-02.

          A new routing version is created when you add new operations or change the following in SAP ERP:
            - Operation number
            - Operation control key
            - Operation short text
        - The last new routing successfully created in SAP ME from receipt of the SAP ERP LOIROU IDoc is set to Releasable and marked as the current version of that routing.
        - The last ERP operation is flagged as a reporting step in SAP ME using the data field IS_LAST_REPORTING_STEP in the routing step.

- SAPMEINT automatically selects the *Block SFCs Until Inspection Finished* checkbox in *Routing Maintenance* at the last SAP ERP operation. For more information, see Integration of Quality Inspection Lot on the SAP Help Portal at http://help.sap.com or the Integration of Quality Inspection Lot section of this guide.

- SAPMEINT does not support the following:
  - Multiple Group Counters
  - Additional Sequences
  - ERP milestone operations
  - Inspection characteristics

6.1.2 Process Flow Graphic



6.2 Configuring a Standard Routing in SAP ERP

6.2.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer routing data from SAP ERP to create or update corresponding routing and operation records in SAP ME.

For more information about sending the routing IDocs to SAP ME, see Transfer of Routing from SAP ERP to SAP ME on the SAP Help Portal at http://help.sap.com.

6.2.2 Prerequisites

6.2.2.1 SAP ERP

- You have created work centers with plant and production-relevant data in the Logistics module (see Creating, Changing and Displaying Work Centers on the SAP Help Portal at http://help.sap.com). You have transferred work centers to SAP ME (see Transfer of Work Center with Individual Capacities on the SAP Help Portal at http://help.sap.com).
- You have transferred materials to SAP ME (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIROU* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have defined the DRF Replication Model to replicate *LOIROU03* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

6.2.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings for the *Operation* and *Routing* categories in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

6.2.3 Procedural Steps

1. Create a routing master record in SAP ERP (see Creating a Routing on the SAP Help Portal at http://help.sap.com).
2. Send routing master record to SAP ME.

   We recommend to use *Execute Data Replication* transaction (transaction code – *DRFOUT*).

   Make sure that you have created and activated a replication model with the outbound implementation for the routing (*223_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

Note: You cannot transfer new IDoc versions for the message *LOIROU* using the *POIM* transaction.

New IDoc versions contain additional fields that are required for the integration with SAP ME 6.0 and higher. These fields are not supplied when you use the *POIT* and *POIM* transactions to distribute the documents, even if the LOG_PP_MES_INT_02 business function is activated. Use the current IDoc versions LOIPRO01, LOIWCS02, LOIROU02, and LOIPLO01 if you want to use the *POIT* and *POIM* transactions to send data.

See SAP Note 1793291.

3. Optional: Verify *LOIROU* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding routing record in SAP ME (see Routing Maintenance and Operation Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

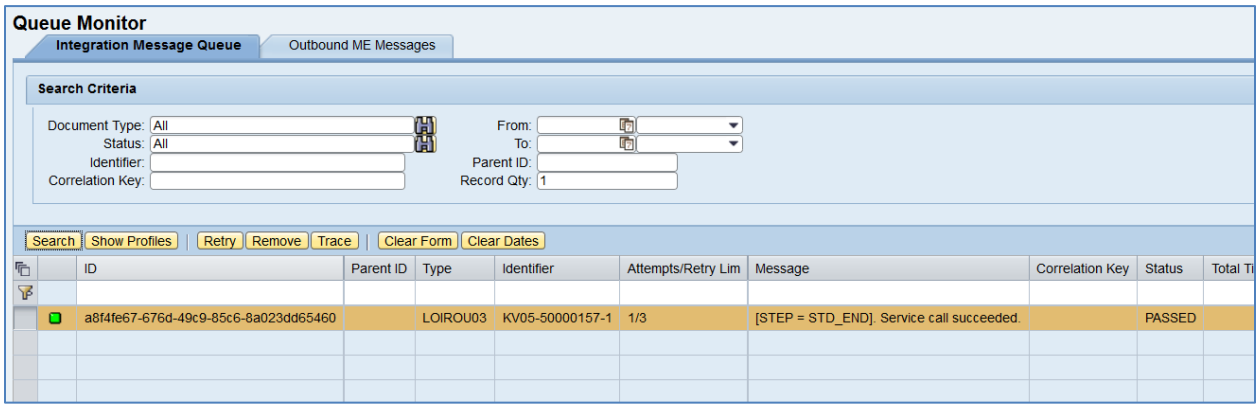
6.2.4 Alternates / Best Practices and Tips

6.2.5 Examples

6.2.5.1 Creating a Standard Routing Master Record

1. Create a routing master record in SAP ERP (see Creating a Routing on the SAP Help Portal at http://help.sap.com).
2. Send Routing to SAP ME.
3. Optional: Verify *LOIROU* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

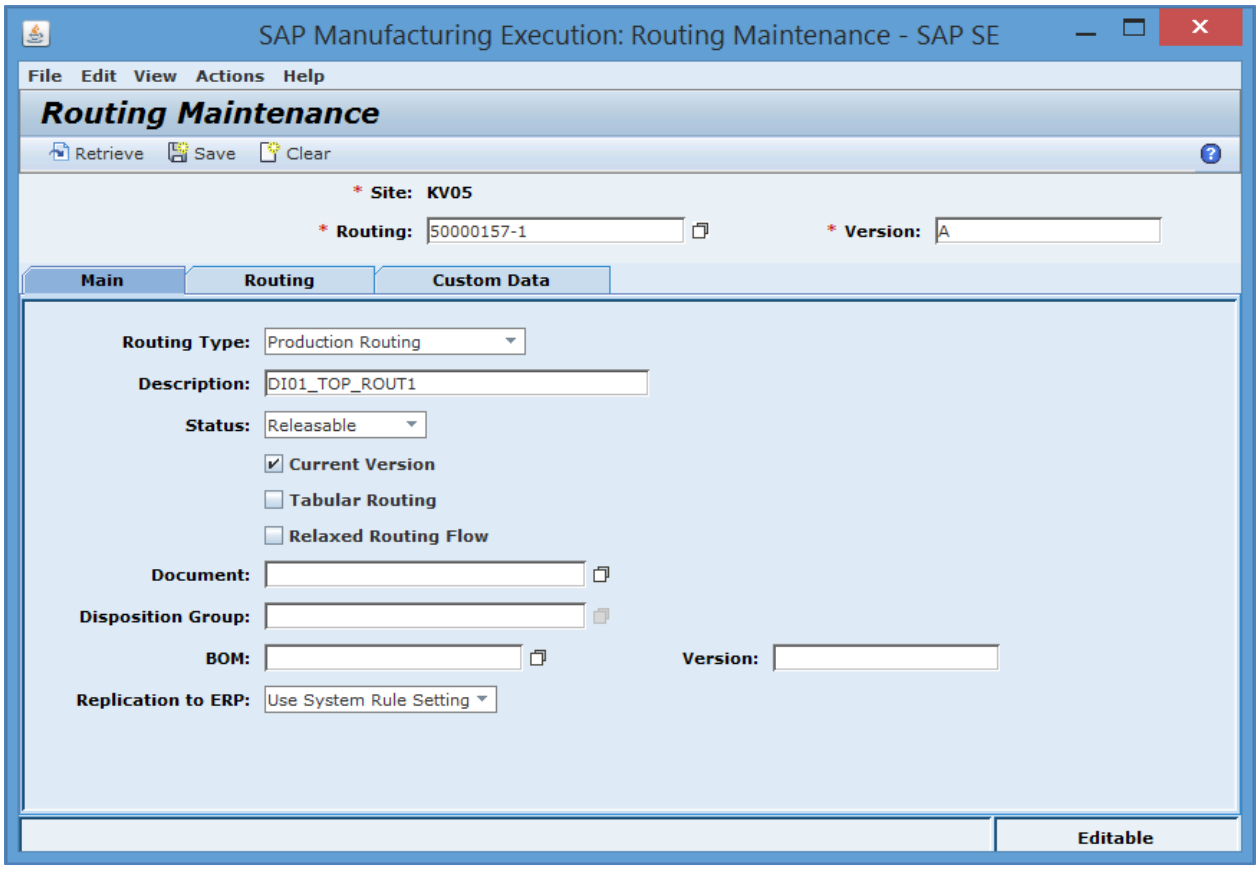


4. Verify results in SAP ME.

Run *Routing Maintenance* and retrieve the transferred routing record.

On the *Main* tab, verify the following field values:

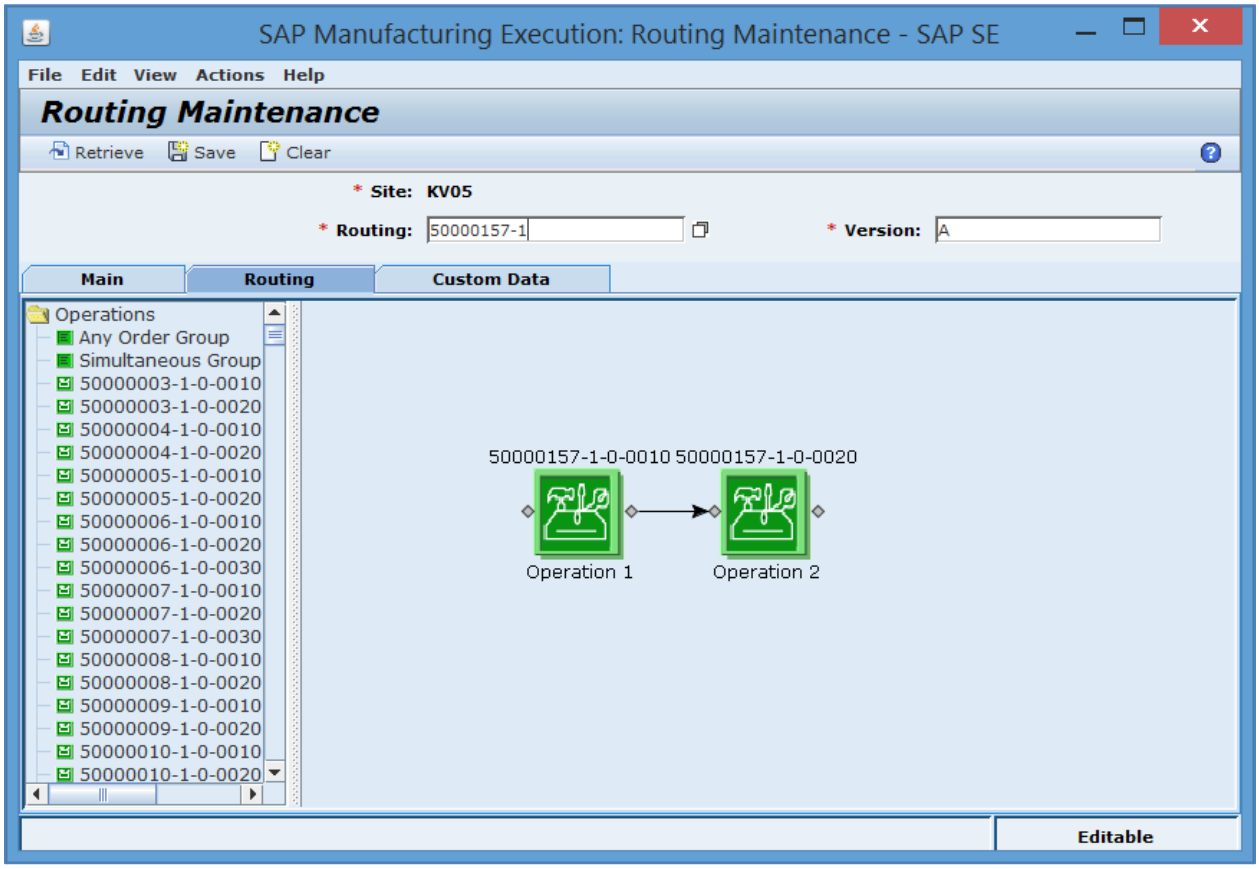
- *Site: Plant* value.
- *Routing:* Routing name structure: Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL) (for example, 50000157-1).
- *Version:* A for a new record and increments as needed for updated records.
- *Routing Type:* Production routing (type *U*).
- *Description: Material Number*.
- *Status:* Releasable.
- *Current Version:* Selected.
- Other fields are BLANK by default or set to deselected.



On the *Routing* tab, verify that the number of routing steps corresponds to the number of operations created in SAP ME. The following fields are displayed for each step:

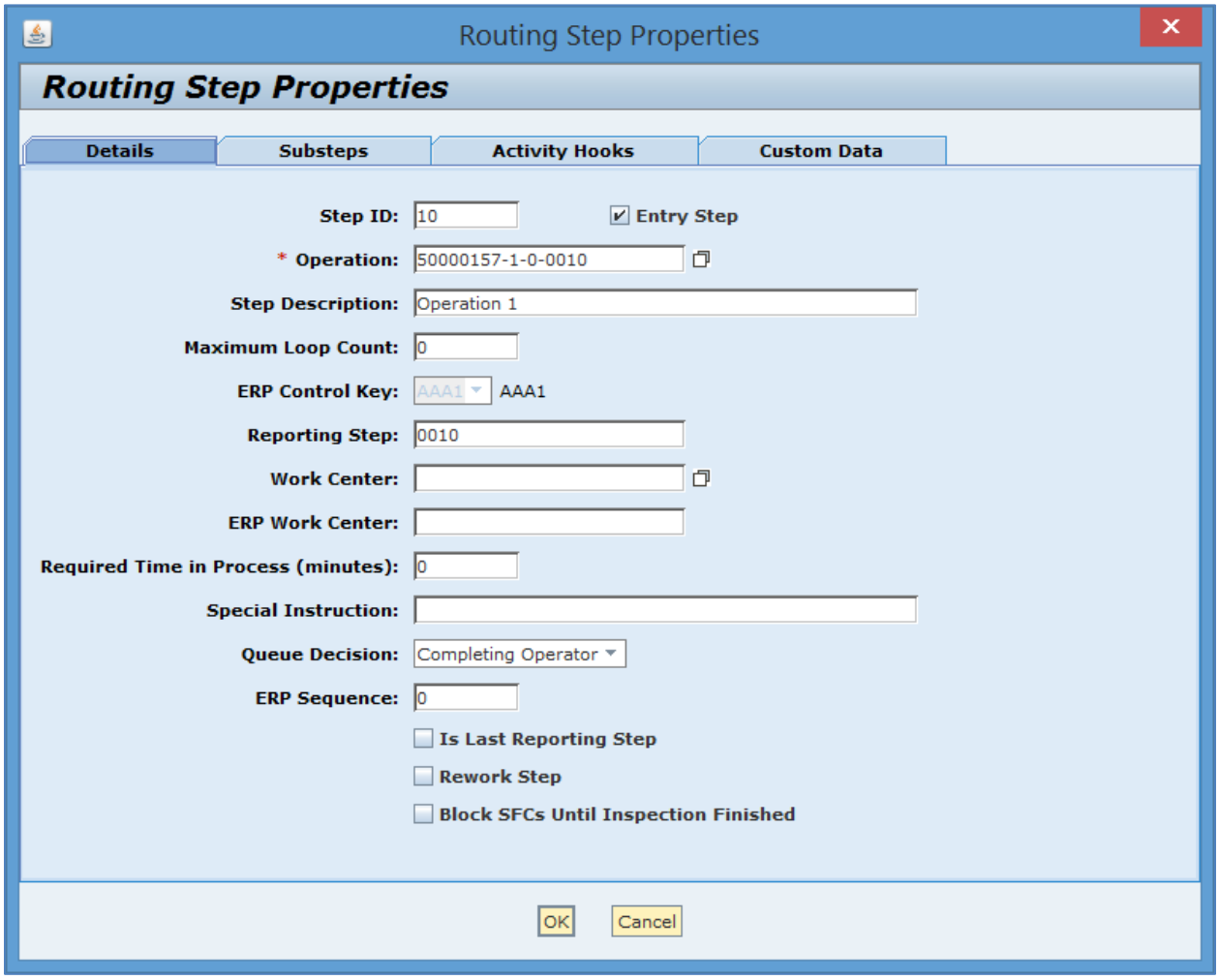
- *Operation:* Name of the operation has the following structure: Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL) + "-" + Sequence (PLNFL) + "-" + Operation (VORNR) (for example, 50000157-1-0-0010).

- *Step Description: Operation Short Text*.



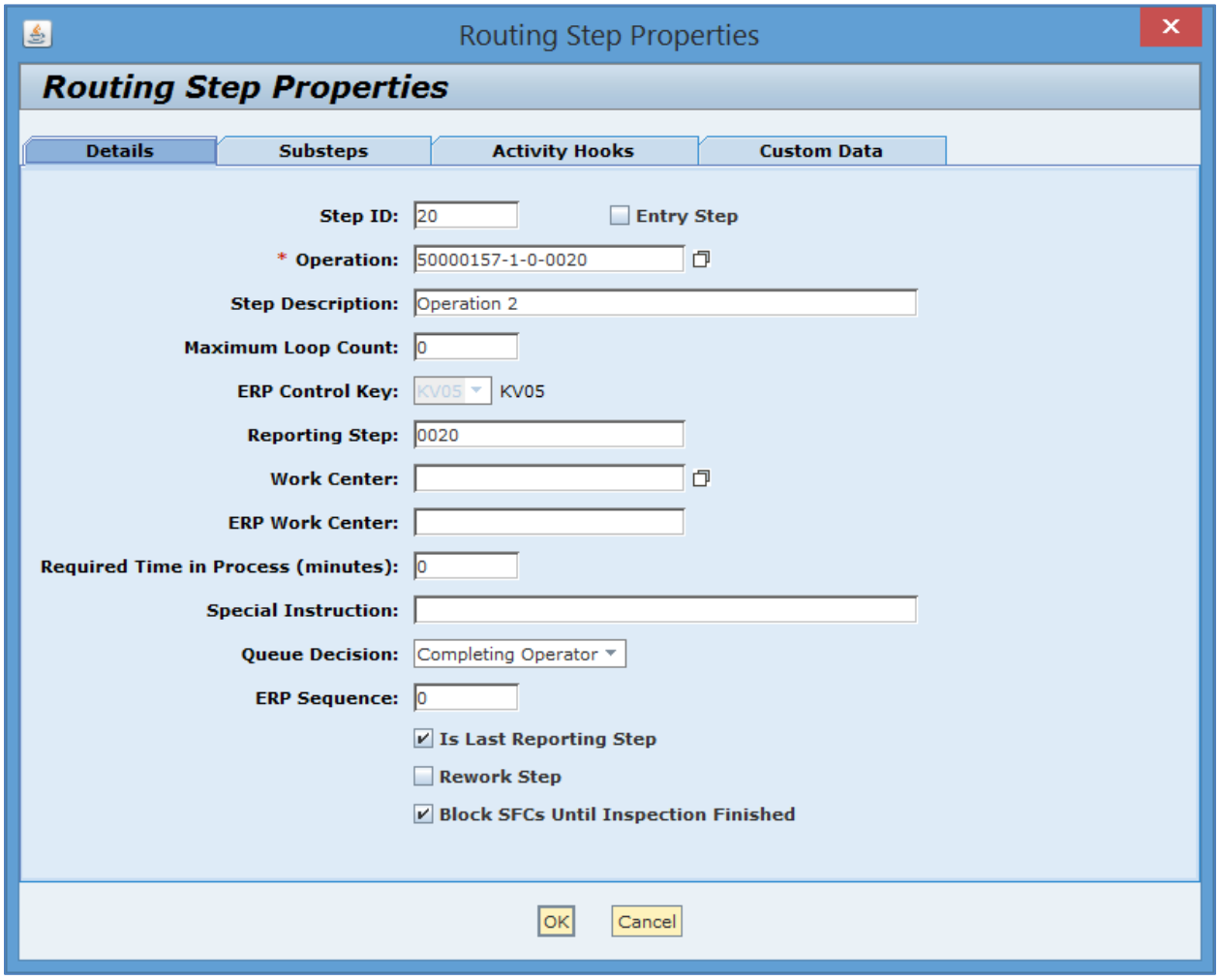
Open the *Routing Step Properties* screen for the first routing step. Verify the following field values:

- *Step ID:* For the entry routing step defaults to 10.
- *Entry Step:* For the entry step with step ID 10 is set to True.
- *Operation:* Name of the operation has the following structure: Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL) + "-" + Sequence (PLNFL) + "-" + Operation (VORNR) (for example, 50000157-1-0-0010).
- *Step Description: Operation Short Text*.
- *Maximum Loop Count:* 0.
- *ERP Control Key: Control Key* received from SAP ERP.
- *Reporting Step: Operation* number in SAP ERP.
- *Required Time in Process (minutes):* 0.
- *Queue Decision:* Completing Operator.
- *ERP Sequence:* 0 (Only a zero sequence routing is supported).
- Other fields are BLANK by default or deselected.



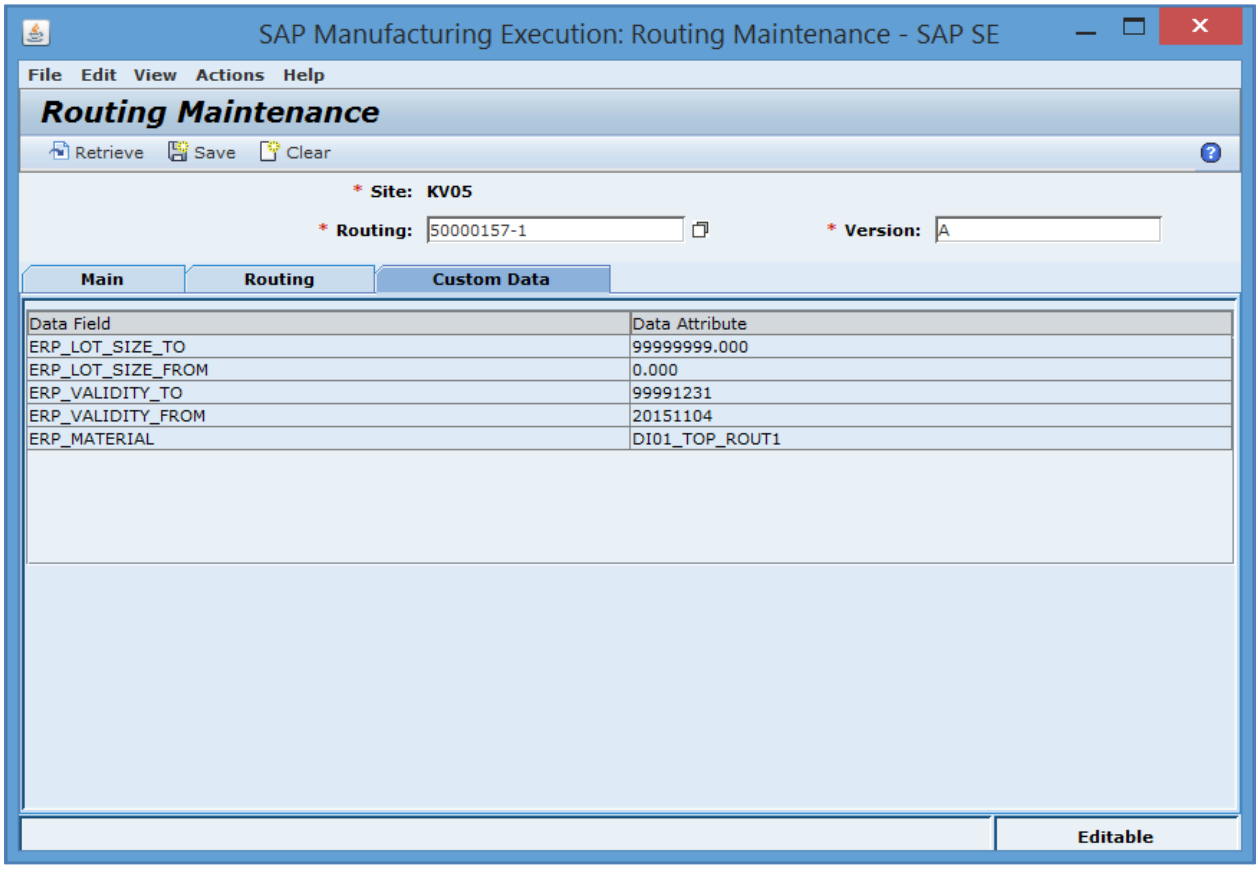
Close the *Routing Step Properties* screen and open it for the last routing step. Verify the following field values:

- *Entry Step:* Deselected.
- *Is Last Reporting Step:* Selected.
- *Block SFCs Until Inspection Finished:* Selected.



Close the *Routing Step Properties* screen. On the *Custom Data* tab, verify the following field values:

- *ERP_LOT_SIZE_TO:* The *To Lot Size* SAP ERP field.
- *ERP_LOT_SIZE_FROM:* The *From Lot Size.*
- *ERP_VALIDITY_TO:* The *Valid To Date.*
- *ERP_VALIDITY_FROM:* The *Valid From Date.*
- *ERP_MATERIAL:* The *Material Number*.



6.2.6 Missing / Not Supported

SAPMEINT does not support the following:

- Multiple Group Counters
- Additional Sequences
- ERP milestone operations
- Inspection characteristics

6.3 Configuring a Standard Routing with Inspection Characteristics

6.3.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a routing with quality inspection lot from SAP ERP to create or update corresponding routing and operation records in SAP ME.

6.3.2 Prerequisites

6.3.2.1 SAP ERP

- You have created work centers with plant and production-relevant data in the Logistics module (see Creating, Changing and Displaying Work Centers on the SAP Help Portal

at http://help.sap.com). You have transferred work centers to SAP ME (see Transfer of Work Center with Individual Capacities on the SAP Help Portal at http://help.sap.com).

- You have assigned and activated *Inspection Type* 03 (in-process inspection for production order) for the material on the Quality Management View of transaction MM01 or MM02.
- You have transferred materials to SAP ME.
- You have created Sampling Procedure (transaction *QDV1*) (see the Creating Sampling Procedures section of this guide).
- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.
- In Customizing for *Quality Management*, you have done the following:
  - Click *Basic Settings* and execute *Maintain Setting at Plant Level*.
  - Click the plant record and then the *Details* icon.
  - On the *Results Recording* tab, in the *Results Recording* area, deselect *Summ. recording for n=1*.

  Note: If the *Summ. recording for n=1* checkbox is selected, an error message displays in SAPMEINT and the production shop order is not created.

6.3.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

6.3.3 Procedural Steps

1. Create a routing master record with inspection characteristics in SAP ERP (see Examples section).
2. Send Routing to SAP ME.

   Note: Inspection characteristics can only be sent to SAP ME within the production order.

   For more information about transferring inspection characteristics to SAP ME, see the Configuring Production Order with Quality Inspection Lot section of this guide.
3. Optional: Verify *LOIROU* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to

troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding routing record in SAP ME (see Routing Maintenance and Operation Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

6.3.4 Alternates / Best Practices and Tips

6.3.4.1 Creating a Sampling Procedure

1. In the SAP menu, choose *Logistics* > *Quality Management* > *Quality Planning* > *Basic Data* > *Sample* > *Sampling Procedure* > *Create* (transaction *QDV1*).
2. On the *Create Sampling Procedure: Initial Screen*, enter an identifier for the sampling procedure and click the *Sampling procedure* icon.
3. On the *Create Sampling Procedure: Assignments* screen, enter the following:
   - *Description:* Enter a description.
   - *Sampling type:* The sampling type specifies how the sample is determined that is, 100% sample, sample with a fixed size. For 100% quality inspection, select *100% inspection*; for less than 100% inspection select *Percentage sample*.
   - *Valuation mode:* The valuation mode defines the rules for accepting or rejecting a characteristic or a sample. If this sampling procedure is used to create quantitative inspection characteristic, select *Mean value within tolerance range.* For qualitative inspection characteristics, use *Attributive inspection nonconf. units.*
   - *Inspection points:* Select *Without insp. points.*
   - Other fields are BLANK by default or deselected.
4. Click *Continue* (F5).
5. On the *Create Sampling Procedure: Special Conditions* screen, enter the following:
   - *Description:* Enter a description.
   - *Special indicator:* Leave *No stage change* checkbox with its default value.
   - *Multiple Samples:* Leave *No multiple samples* selected.
6. Click *Continue* (F5).
7. On the *Percentage Sample* screen, enter the following:
   - *Size as % of lot:* Percentage rate for calculating the sample size. Enter required value.
8. Click *Save*.

For more information about creating sampling procedures in SAP ERP, see Creating a Sampling Procedure on the SAP Help Portal at http://help.sap.com.

6.3.5 Examples

6.3.5.1 Creating a Standard Routing with Inspection Characteristics

1. Create a routing master record in SAP ERP (see Creating a Routing on the SAP Help Portal at http://help.sap.com).

   Make sure that the following minimum configuration is done:

   On the *Create Routing: Characteristic Overview* screen, enter the following:

   - *Characteristic Type:* Select the checkbox for QN column.

     Note: QL checkbox can be selected as well to create alternative inspection characteristic that can only take the values "Accepted" or "Rejected".

   Quantitative Characteristic

   If you set this indicator, it causes the characteristic to be treated as a quantitative characteristic. You define the control indicators that are relevant for the inspection characteristic. A quantitative characteristic is subject to measurement inspections. You can define tolerance limits and a target value for a quantitative characteristic.

   Qualitative Characteristic

   If you set this indicator, it causes the characteristic to be treated as a qualitative characteristic. You define the control indicators that are relevant for the inspection characteristic.

   If you additionally set Characteristic Attribute indicator, the inspection characteristic is marked as an attributive characteristic, whose allowed values are defined as a selected set from catalog 1 (characteristic attributes). Inspection results are recorded as codes from inspection catalogs with the valuation OK or not OK. You do not define tolerance limits or a target value. Accordingly, you cannot, for example, record measured values during results confirmation.

   If you do not set this indicator, the inspection characteristic is marked as an alternative characteristic, that can only take the values "Accepted" or "Rejected".

   - *Short text insp. char:* Enter the inspection characteristic name.

   On the *Edit Characteristic Control Indicators* screen, enter the following:

   - In *Type:*
     - Select Lower Spec Limit.
     - Select Upper Spec Limit.
     - Select Target Value (optional).
   - In *Sample*, select Sampling procedure.
   - In *Results confirmation:*
     - Select Required Characteristic for at least one characteristic.

- Select Single result.
- Select Defects recording if a characteristic is critical and needs automatic defects recording in SAP ERP.

On the second screen of the *Edit Characteristic Control Indicators*, enter the following:

- In *Insp Scope,* select Fixed Scope.
- In *Miscellaneous,* select Record measured vals.

On the *Create Routing: Quantitative Char Data* screen, enter the following:

- *Target Value:* Enter required value.

Value of a quantitative characteristic, from which the actual value of the inspection characteristic should deviate as little as possible.

- *Lower spec. lmt:* Enter required value.

Lower limiting value for the actual value of an inspection characteristic.

Individual measured values that lie below this specification limit, or value classes whose class limits are below this specification limit, are valuated as "not OK" or "R" (rejected).

- *Upper Limit:* Enter required value.

Upper limit value for the actual value of an inspection characteristic.

Individual measured values that lie above this specification limit, or value classes whose class limits are above this limiting value, are valuated as "not OK" or "R" (rejected).

On the *Create Routing: Dynamic Modification* screen, enter the following:

- *Sampling procedure:* Choose sampling procedure that corresponds to the type of inspection characteristic. All other fields are populated automatically.

  The procedure by which the sample size for an inspection is determined.

2. Send Routing to SAP ME.

   Note: Inspection characteristics can only be sent to SAP ME within the production order.

   For more information about transferring inspection characteristics to SAP ME, see the Configuring Production Order with Quality Inspection Lot sections of this guide.

6.4 Configuring a Standard Routing with Allocated Components

6.4.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer routing data with allocated components from SAP ERP to create or update corresponding routing and operation records in SAP ME.

6.4.2 Prerequisites

6.4.2.1 SAP ERP

- You have created work centers with plant and production-relevant data in the Logistics module (see Creating, Changing and Displaying Work Centers on the SAP Help Portal at http://help.sap.com). You have transferred work centers to SAP ME (see Transfer of Work Center with Individual Capacities on the SAP Help Portal at http://help.sap.com).
- You have transferred materials to SAP ME (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have created bill of material (see Transfer of Bill of Material (BOM) on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIROU* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

6.4.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

6.4.3 Procedural Steps

1. Create a routing master record with allocated components in SAP ERP (see Examples section).
2. Send Routing to SAP ME.

   Note: Component allocation can be sent to SAP ME within Production Order only.

   For more information about transferring a routing within a production order, see the Configuring Production Order with BOM and Routing sections of this guide.
3. Optional: Verify *LOIROU* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding routing record in SAP ME (see Routing Maintenance and Operation Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

6.4.4 Alternates / Best Practices and Tips

Note: The only way to transfer component allocation information is to send it within Production Order (LOIPRO IDoc).

6.4.4.1 Component Allocation using Bill of Material Maintenance

Component allocation can be done during the creation or modifying of the bill of material.

For more about creating bill of material see the Configuring Bill of Material with Assembly Operation section of this guide.

6.4.5 Examples

6.4.5.1 Creating a Standard Routing with Allocated Components

1. Create a routing master record in SAP ERP (see Creating a Routing on the SAP Help Portal at http://help.sap.com).

   Make sure that the following minimum configuration is done:

   On the *Material Component Overview* screen, select the item to be assigned to an operation. Click the *New Assignment* icon.

   On the *New Assignment* screen, enter information as specified or click *Oper./act. list* icon to select an operation from the list.

   - *Oper./Act.:* Operation number. Enter the operation number for the component.
   - *Sequence:* Sequence of operations. Enter sequence number. Leave as 0 if only one sequence exists.

   On the *Choose Operation* screen, select an operation to which component will be assigned.

2. Send Routing to SAP ME.

   Note: Component allocation can be sent to SAP ME within Production Order only.

   For more information about transferring a routing within a production order, see the Configuring Production Order with BOM and Routing sections of this guide.

6.5 Configuring a Routing with Document Info Records

6.5.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer document info records attached to routing operations in SAP ERP to create work instructions without defined attachment points in SAP ME (see Work Instruction on the SAP Help Portal at http://help.sap.com).

For more information, see Transfer of Routing from SAP ERP to SAP ME on the SAP Help Portal at http://help.sap.com.

You can use this function with SAP ERP 6.0 EHP 6 or higher.

6.5.2 Prerequisites

6.5.2.1 SAP ERP

- You have created work centers with plant and production-relevant data in the Logistics module (see Creating, Changing and Displaying Work Centers on the SAP Help Portal at http://help.sap.com). You have transferred work centers to SAP ME (see Transfer of Work Center with Individual Capacities on the SAP Help Portal at http://help.sap.com).
- You have transferred materials to SAP ME.
- You have set up ALE communication to create and transmit *LOIROU* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.
- You have created and released a document info record of the type *PRT* or *Non-PRT* (transaction *CV01N*) in SAP ERP (see Creating Document Master section of this guide).

6.5.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

6.5.3 Procedural Steps

1. Create a routing manually (transaction *CA01*) or update an existing routing master record (transaction *CA02*) in SAP ERP.
2. Attach one or more document info records to routing operations.
3. Send the routing containing document info records to SAP ME.

   We recommend to use *Execute Data Replication* transaction (transaction code – *DRFOUT*).

   Make sure that you have created and activated a replication model with the outbound implementation for the routing (*223_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

   Note: You cannot transfer new IDoc versions for the message *LOIROU* using the *POIM* transaction.

New IDoc versions contain additional fields that are required for the integration with SAP ME 6.0 and higher. These fields are not supplied when you use the *POIT* and *POIM* transactions to distribute the documents, even if the LOG_PP_MES_INT_02 business function is activated. Use the current IDoc versions LOIPRO01, LOIWCS02, LOIROU02, and LOIPLO01 if you want to use the *POIT* and *POIM* transactions to send data.

See SAP Note 1793291.

4. Optional: Verify *LOIROU* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

5. Verify results in SAP ME.

SAPMEINT creates or updates the following records in SAP ME (see Examples section):

- Routing
- Operations
- Work instructions

Note: This function does not attach work instructions to routing operations in SAP ME. Work instructions are associated with routing operations only when transferred with the production shop order (see Transfer of Production Order with Document Info Records on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

6.5.4 Alternates / Best Practices and Tips

6.5.5 Examples

6.5.5.1 Creating a Standard Routing with Document Info Records

1. Create a routing master record in SAP ERP (see Creating a Routing on the SAP Help Portal at http://help.sap.com).

   Make sure that the following minimum configuration is done:

   On the *Create Routing: Operation Overview* screen, select operations and click *PRT* icon.

   On the *Create Routing: New PRTs* screen, enter the following:

   - *Material:* Enter a material number.
   - Leave all other fields with their default values.

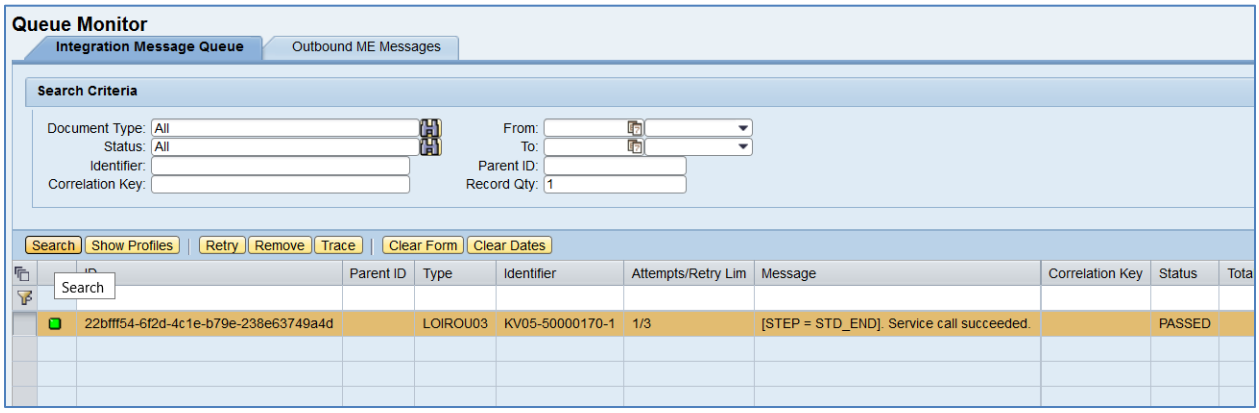
   Click the *Document* icon.

   On the *Create Routing: Header Details* screen, enter the following:

- *Item:* Number that specifies the sequence in which the production resources/tools allocated to the operation or activity are sorted. Leave this field with its default value.
- *Document:* Main part of the document key, used to identify the document. Select a document from the dropdown list or enter a document master number.
- *Document Type:* Used to categorize documents. Enter document type or select from the dropdown list.
- *Document part:* Section of a document. Enter document part or select from the dropdown list.
- *Document version:* Identifies the version of a document. Enter document version or select from the dropdown list.
- *Quantity:* Number required. Enter 1.
- *Unit:* Unit of measure. Leave this field with its default value or enter EA.
- *Control key:* Determines how PRT is handled in the routing or order. Leave this field with its default value (Value = 1).

2. Send Routing to SAP ME.
3. Optional: Verify *LOIROU* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



4. Verify results in SAP ME.

Run *Routing Maintenance* and retrieve the transferred routing record.

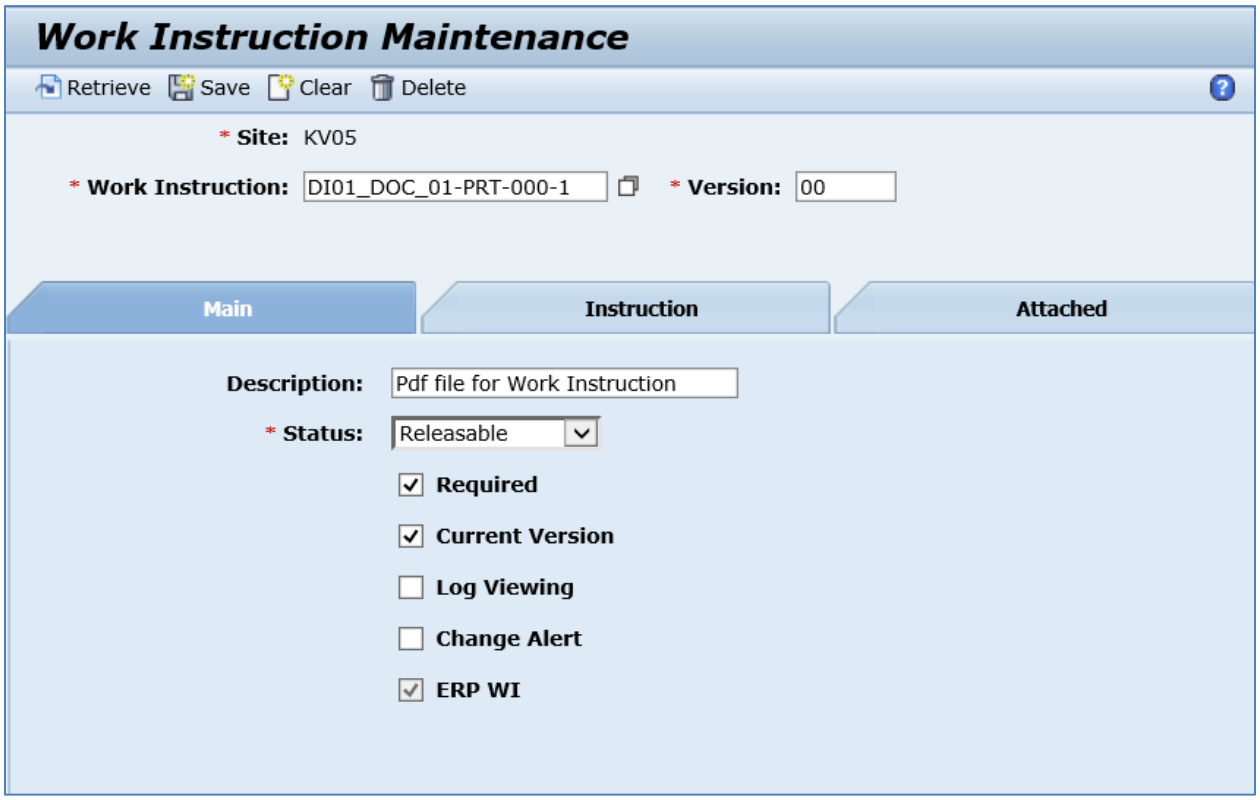
For more information about transferred routings, see the Configuring a Standard Routing in SAP ERP section of this guide.

Run *Work Instruction Maintenance.* Locate and retrieve the work instruction that contains the name of the master document that was assigned to the production order in SAP ERP. Name of the Work Instruction "Document Number + '-' + Document Type + '-' + Part + '-' + Original".

On the *Main* tab, verify the following field values:

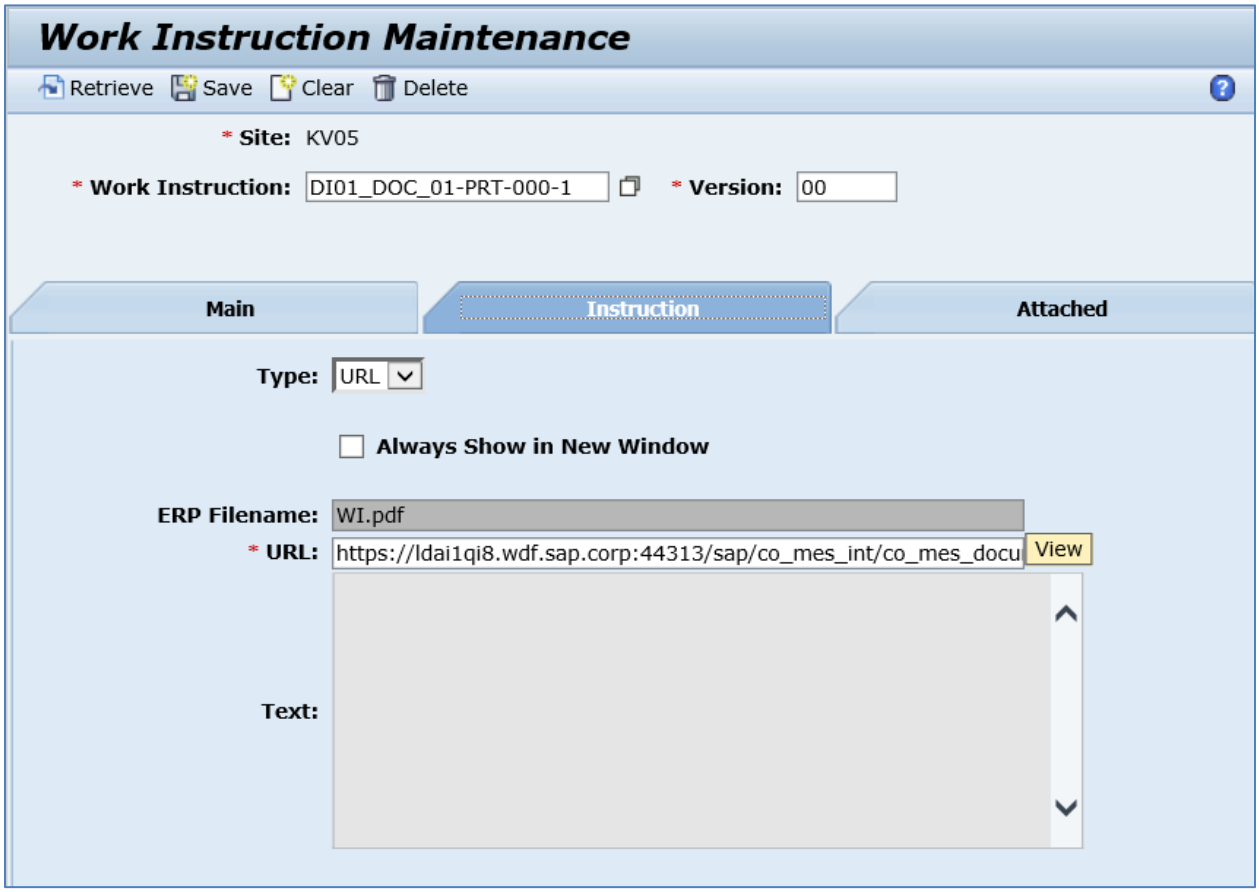
- *Site: Plant* value.
- *Work Instruction:* "Document Number + '-' + Document Type + '-' + Part + '-' + Original".

- *Version:* Document Version of the document master in SAP ERP.
- *Description:* Description of the document master in SAP ERP.
- *Status:* Releasable.
- *Required:* Selected.
- *Current Version:* Selected.
- *Log Viewing:* Deselected.
- *Change Alert:* Deselected.
- *ERP WI:* Selected.



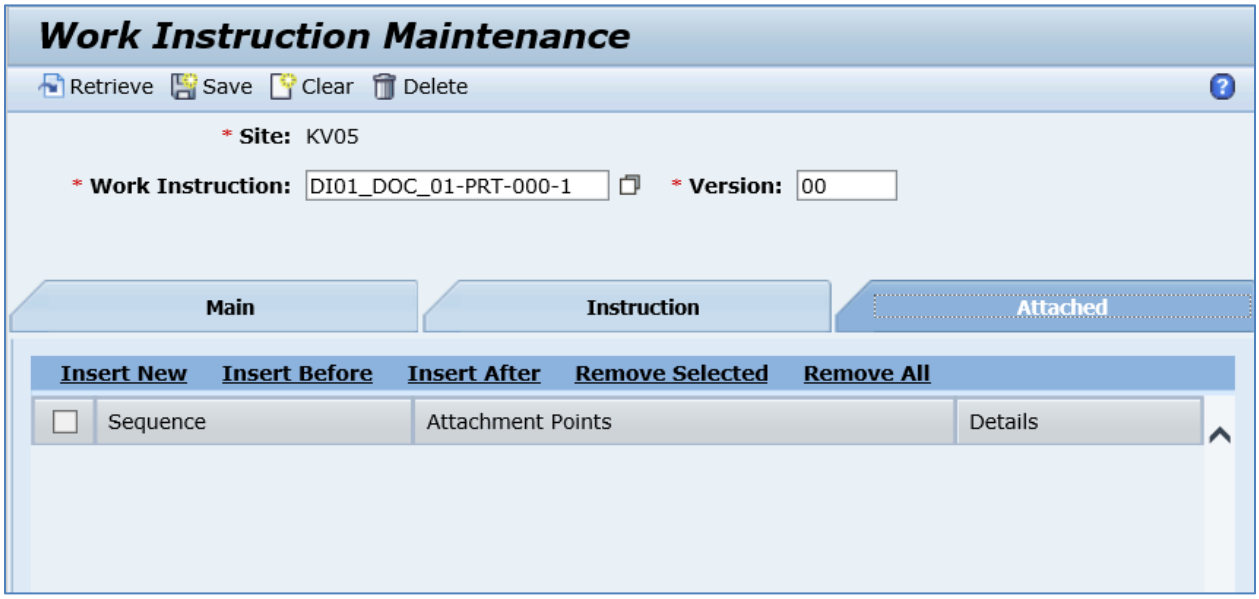
On the *Instruction* tab, verify the following field values:

- *Type:* URL.
- *Always Show In New Window:* Deselected.
- *URL:* URL to the original document master.



On the *Attached* tab, verify that no attachment point was created.

Note: This function does not attach work instructions to routing operations in SAP ME. Work instructions are associated with routing operations only when transferred with the production shop order (see Transfer of Production Order with Document Info Records on the SAP Help Portal at http://help.sap.com).



6.6 Transferring a Standard Routing from SAP ME to SAP ERP

6.6.1 Business Purpose / Description

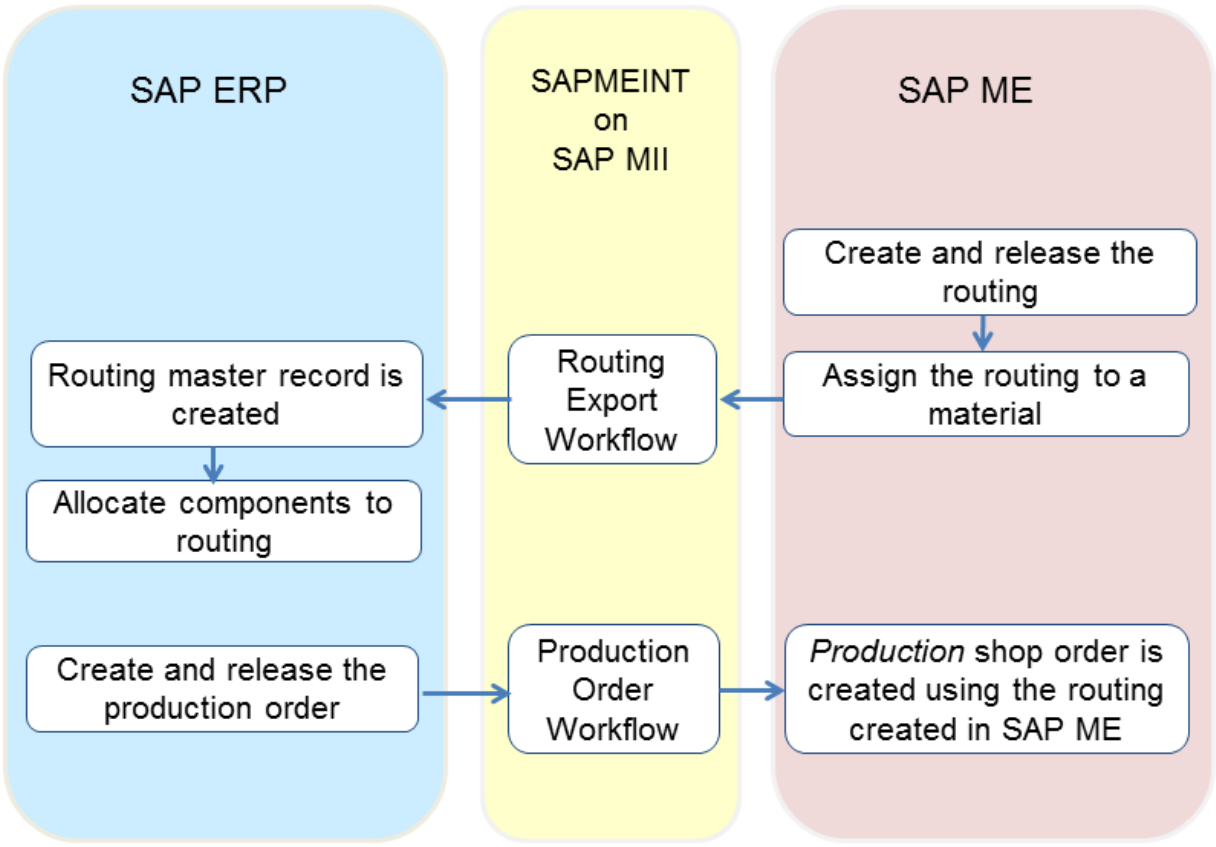
This section of the MEINT 15.1 How-To Guide describes how to create the routing in SAP ME with the details required for production and only transfer to ERP the operations that are relevant to planning, inventory management, and cost accounting.

You can create and change routings directly in SAP ME and then transfer this data to ERP. In the SAP ERP system, routings are then created and updated automatically. You can use these routings in the production order or in repetitive manufacturing in the planned order.

The routings contain the information as to which original routing in SAP ME they refer. This information is also referenced in the production order and the planned order and passed on to SAP ME when these documents are sent. SAP ME can use the reference information in the IDoc to determine the assigned routing.

For more information about sending the routing IDocs to SAP ERP, see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com.

6.6.2 Process Flow Graphic



6.6.3 Prerequisites

6.6.3.1 SAP ERP

- You have sent material master records from SAP ERP to SAP ME.
- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIPRO03* IDocs for production order and *LOIPLO02* IDocs for planned order (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have reviewed and implemented the following SAP Notes:
  - 1670267 — Creating ERP routings from SAP Manufacturing Execution
  - 1679204 — Distributing production orders that contain SAP ME routings
  - 1673737 — Planned order distribution: Operation data and component assignment

6.6.3.2 SAP ME

- You have defined control key in Control Key Maintenance that defines ERP reporting steps for a routing.
- You have set the following SAP ME system rules as follows:
  - *ERP Integration Active* to *true*
  - *Enable Replication of ME Routing to ERP* to *Yes* or *Yes with Change Management*

    Note

    When the *Enable Replication of ME Routing to ERP* system rule is set to *Yes* or *Yes, with Change Management*, the *Is Last Reporting Step* checkbox is selected automatically for the last routing step with defined ERP-related settings. This configuration overridesany manual setting of the *Is Last Reporting Step* checkbox.
  - *Ignore Routing Update* to *true*

6.6.4 Procedural Steps

1. Create and release a routing in SAP ME.
   - Select Effective Start Date for routing (see Routing Maintenance on the SAP Help Portal at http://help.sap.com).
   - Identify the ERP reporting step by selecting ERP Control Key, ERP Work Center, and Reporting Step. If the user does not enter a reporting step ID, the system automatically generates it for the routing steps that contain an ERP control key (see Routing Step Properties on the SAP Help Portal at http://help.sap.com).
2. Choose the status as Releasable or Frozen, select Current Version, and save the routing.
3. Assign the routing to a material (see Material Maintenance on the SAP Help Portal at http://help.sap.com).
   - Enter a planned routing in *Material Maintenance* to assign the routing to a material. If you do not enter the routing version field, the material is implicitly assigned to the current version of the routing.
   - The assigned routing is transferred to SAP ERP upon saving the material.
4. Optional: Verify *routingExportRequest* outbound message in SAP MII.

   After the outbound message has been sent, check the message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the message is processed without any user interaction and the outbound message is sent to SAP ERP automatically.

   A green light signifies that the outbound message was sent successfully to SAP MII.
5. SAPMEINT creates the corresponding routing master record or a new version of the existing routing record in SAP ERP.

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

6.6.5 Alternates / Best Practices and Tips

6.6.6 Examples

6.6.6.1 Transferring a Standard Routing from SAP ME to SAP ERP

1. In SAP ERP, create a material and transfer it to SAP ME.

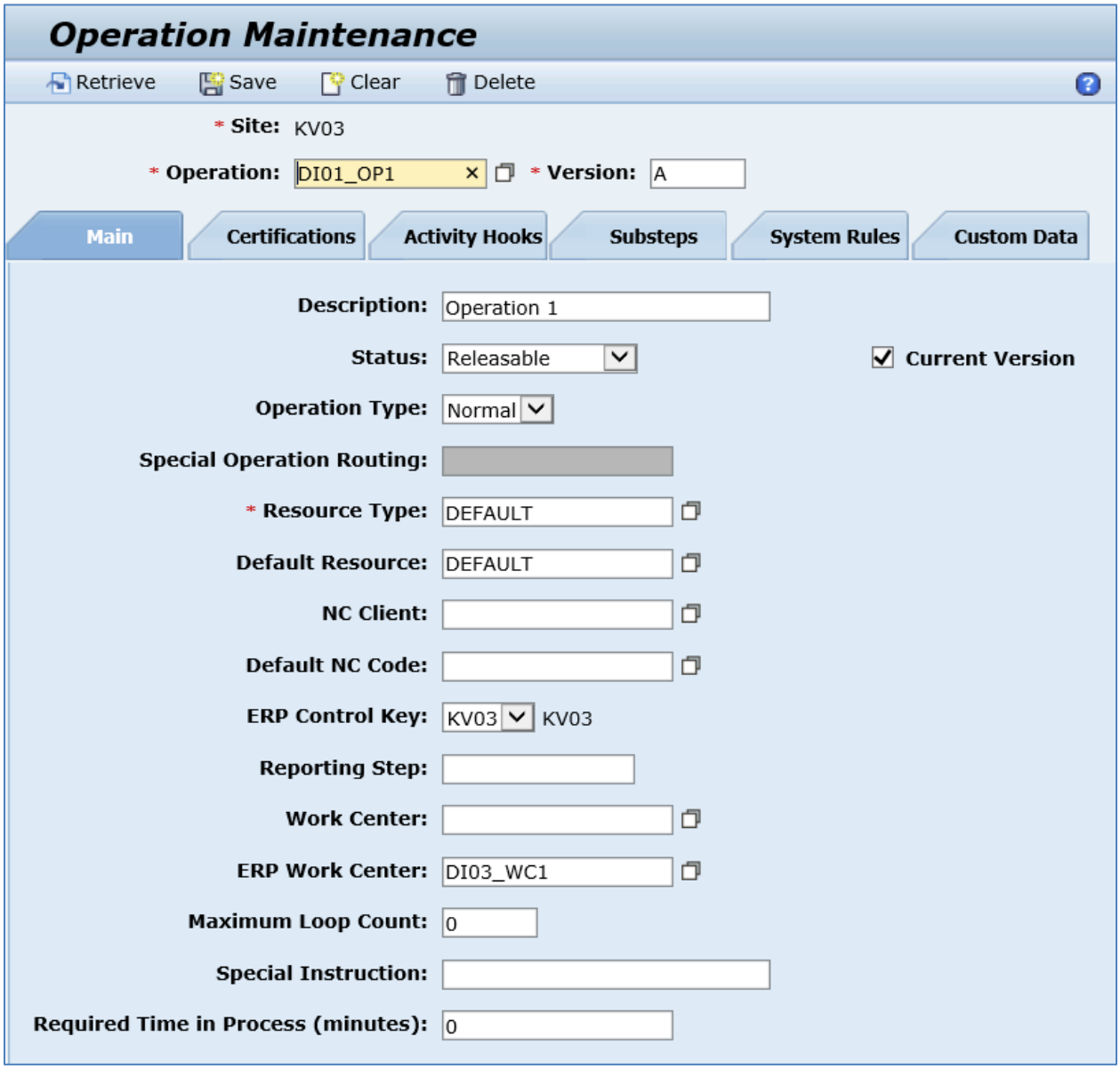
For more information about creating and sending a material master record from SAP ERP to SAP ME, see the Configuring Material Master section of this guide.

2. In SAP ERP, create a work center and transfer it to SAP ME.

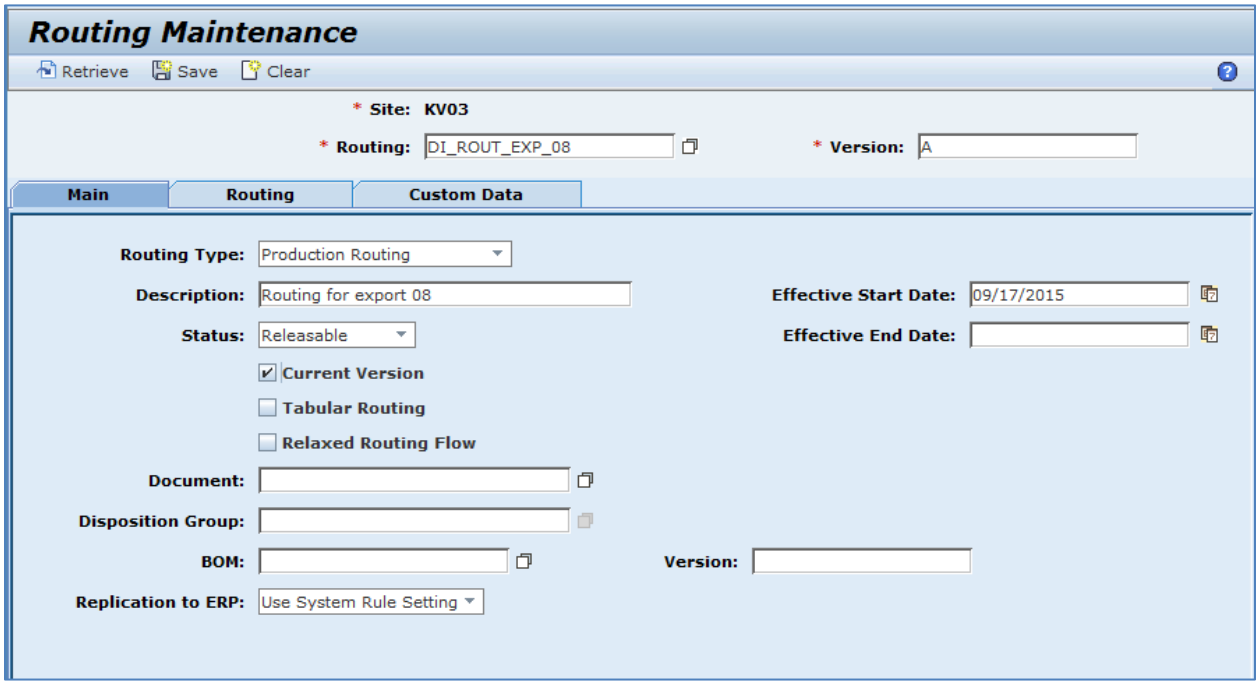
For more information about creating and sending a work center record from SAP ERP to SAP ME, see the Configuring Work Center section of this guide.

3. In SAP ME, run *Operation Maintenance* and create new operation. Enter the following:

- *Operation:* Enter unique name of the operation.
- *Version:* Provide the version for this operation.
- *Description:* Enter a description.
- *Status:* Releasable.
- *Current Version:* True.
- *Operation Type:* Normal.
- *Resource Type:* Select a resource type.
- *ERP Control Key:* Select an available ERP control key from the dropdown list.
- *ERP Work Center:* The work center used to export the routing from SAP ME to SAP ERP. Browse for available work center. Make sure that work center record with the same name exists in SAP ERP.
- Leave all other fields with their default values.



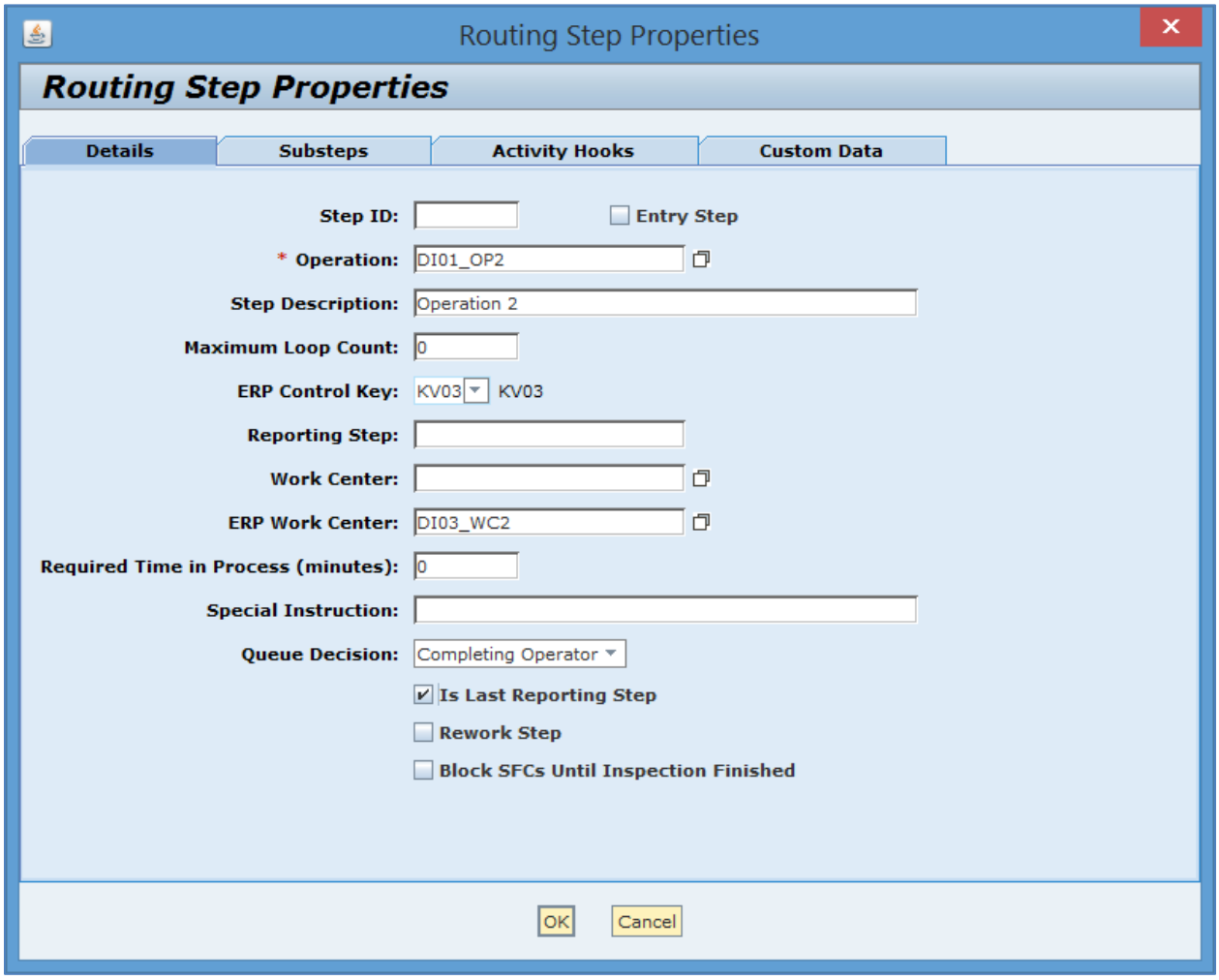
4. In SAP ME, run *Routing Maintenance* and create a new routing. Enter the following:
   - *Routing:* Enter unique name of the routing.
   - *Version:* Provide the version for this routing.
   - *Routing Type:* Production routing.
   - *Description:* Enter a description.
   - *Status:* Releasable (status *Frozen* can be selected as well).
   - *Current Version:* True.
   - *Effective Start Date:* The validity start date of the routing. Provide start date.
   - Leave all other fields with their default values.



5. On the *Routing* tab drag and drop operations that were previously created. Select the last operation and open its properties. Select the *Is Last Reporting Step* checkbox (otherwise this is done automatically when the routing is saved).

Note: You identify the ERP reporting step by selecting ERP Control Key, ERP Work Center, and Reporting Step. If the user does not enter a reporting step ID, the system automatically generates it for the routing steps that contain an ERP control key (see Routing Step Properties on the SAP Help Portal at http://help.sap.com).

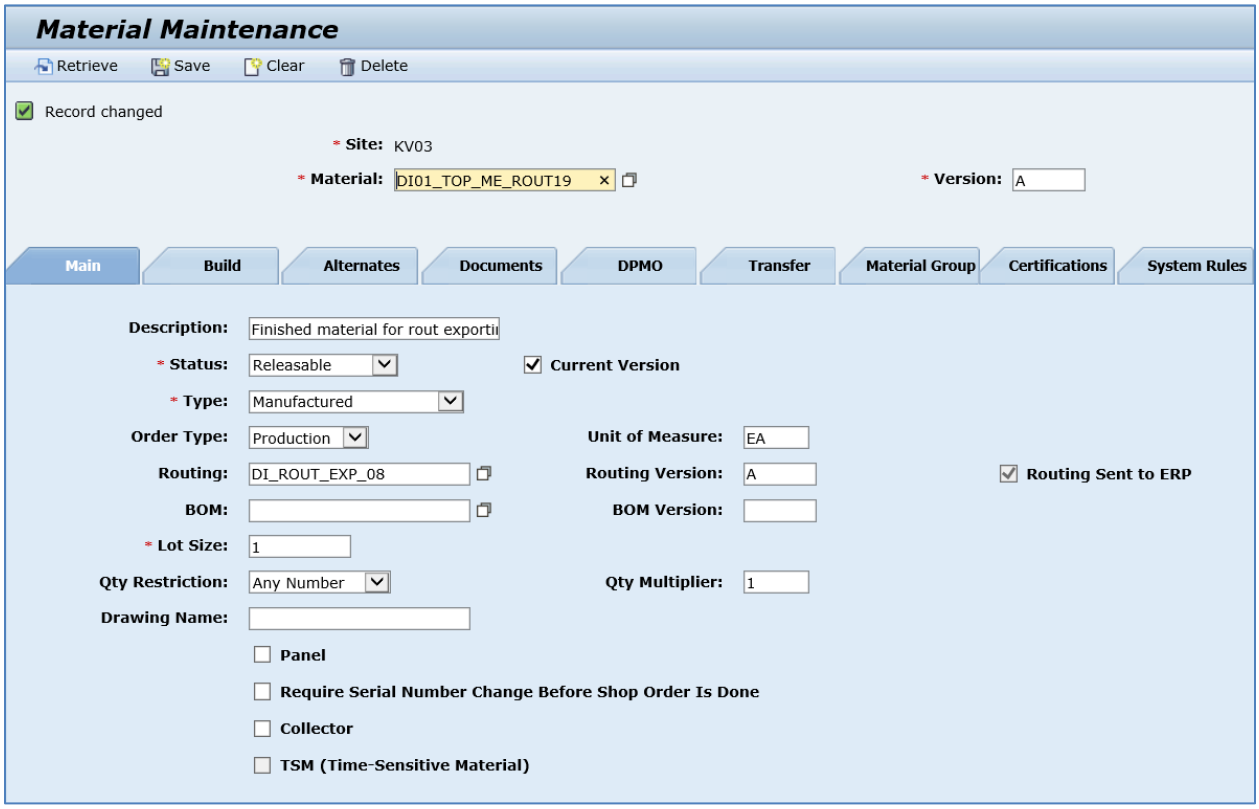
When the routing is sent to the SAP ERP system, only the steps of the ME routing marked as reporting steps are transferred.



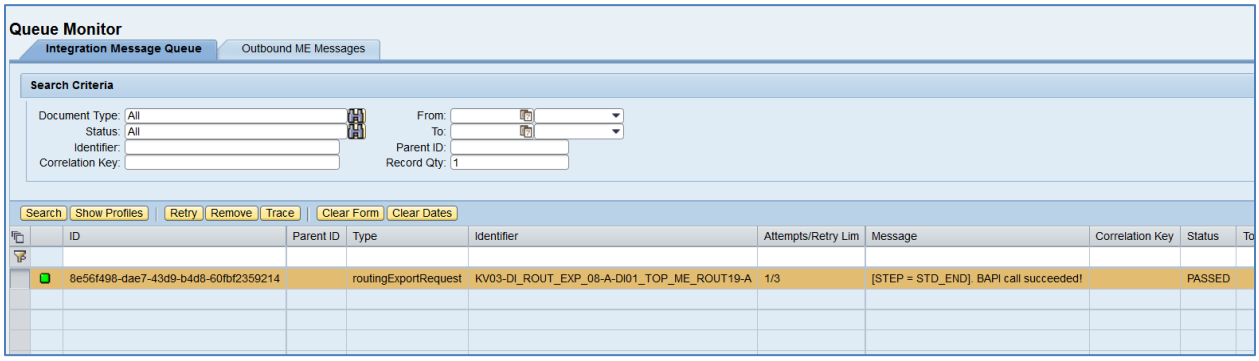
6. Close *Routing Step Properties* screen and select *Save* to save the new routing.
7. In SAP ME, run *Material Maintenance* and retrieve the material record that was received from SAP ERP.

   Browse for the routing record that was just created and click *Save*. The assigned routing is transferred to SAP ERP upon saving the material.

   Make sure that the *Routing Sent to ERP* checkbox is selected.



8. Optional: Verify *routingExportRequest* outbound message in SAP MII.



9. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

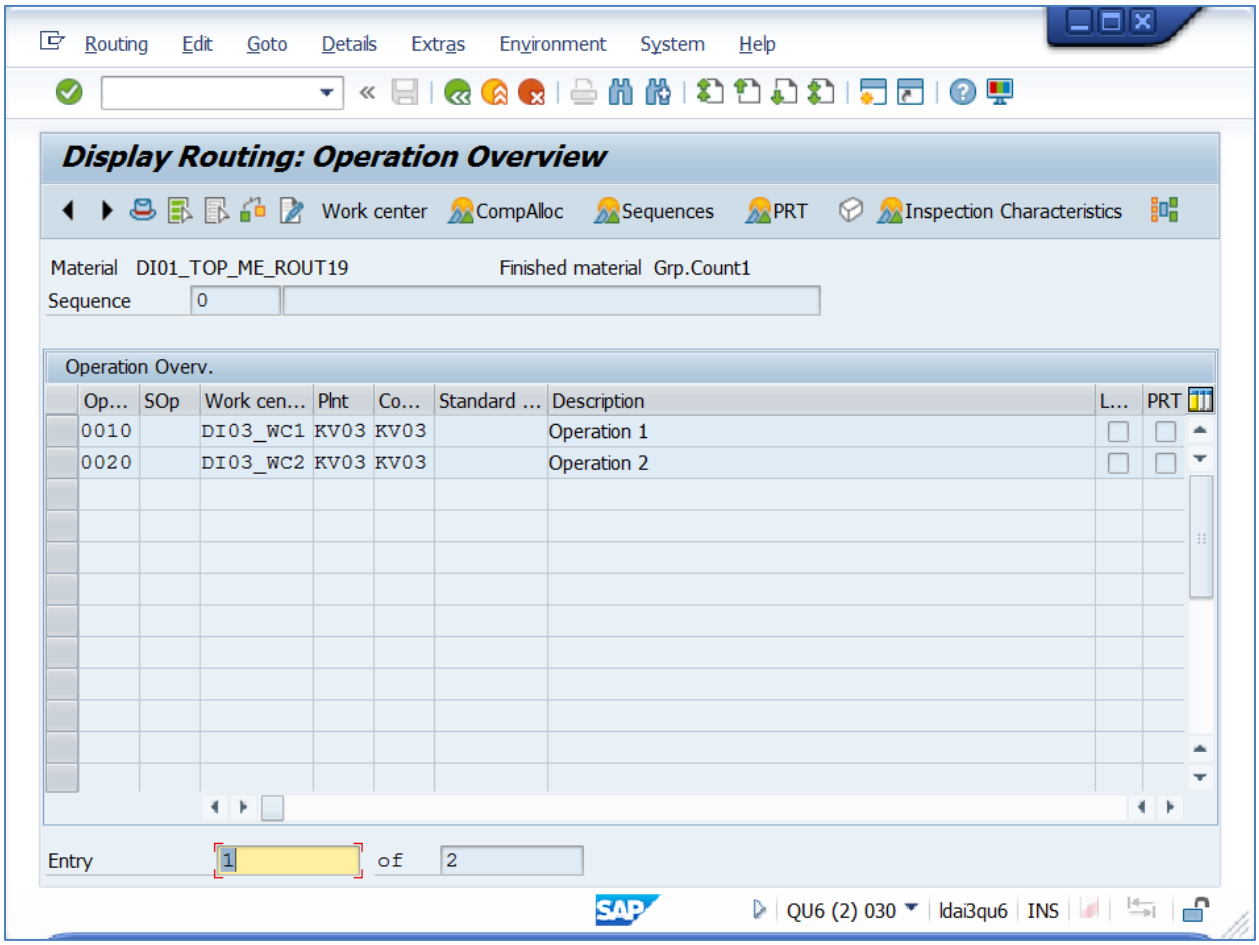
SAP Menu – *Logistics > Production > Master Data > Routings > Routings > Standard Routings > Display*

or transaction code – *CA03*

10. Provide the name of the material and plant and press `Enter`. Verify the following field values:

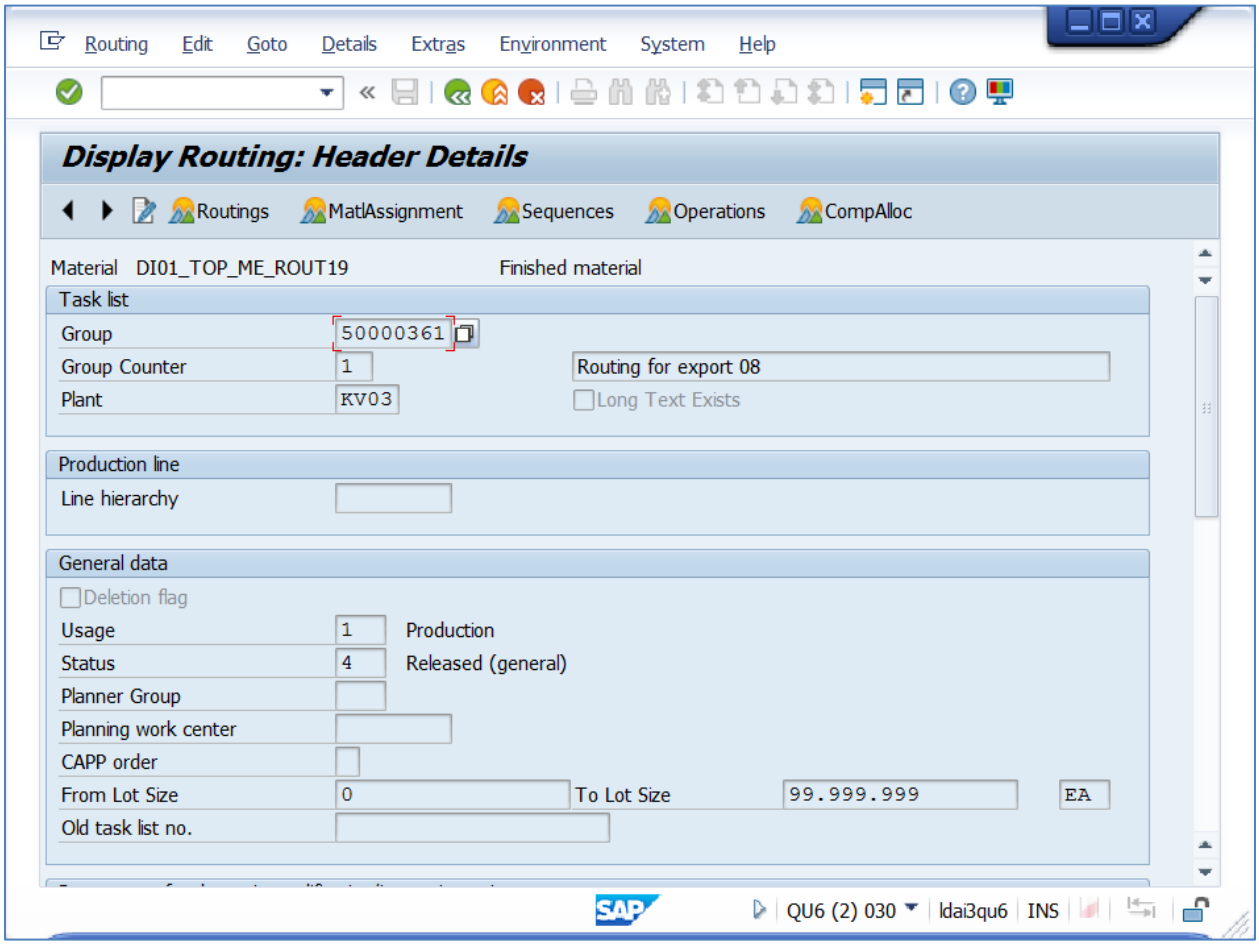
- *Operat.:* Sequence of the operation. Corresponds to reporting step number.
- *Work center:* Corresponds to ERP Work Center.

- *Plnt:* Corresponds to SAP ME *Site*.
- *Control key:* Control key received from SAP ME.
- *Description:* Corresponds to *Description* of operation in SAP ME.
- *Base Quantity:* 1.
- *Unit of Meas. for Op.:* EA.
- *Production Site:* Corresponds to SAP ME *Site*.
- *Operation (SAP ME):* Corresponds to the *Operation* name.
- *Version:* Corresponds to *Version* of operation.
- *Step ID:* Corresponds to *Step ID* of operation in SAP ME.

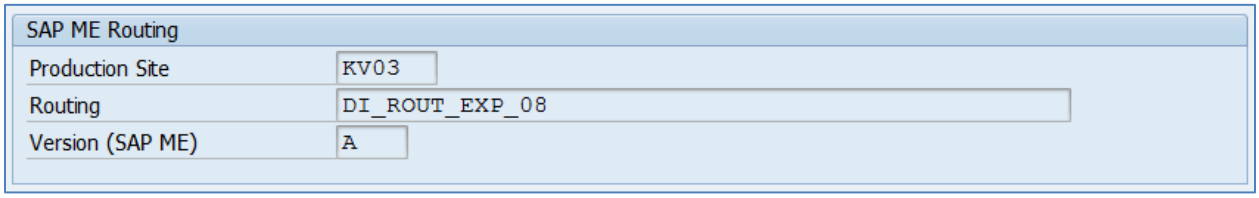


11. Click the *Header* icon. *Display Routing: Header Details* screen displays. Verify the following field values:
    - *Group:* New Group ID is created.
    - *Group Counter:* 1.
    - *Plant:* Corresponds to SAP ME *Site*.

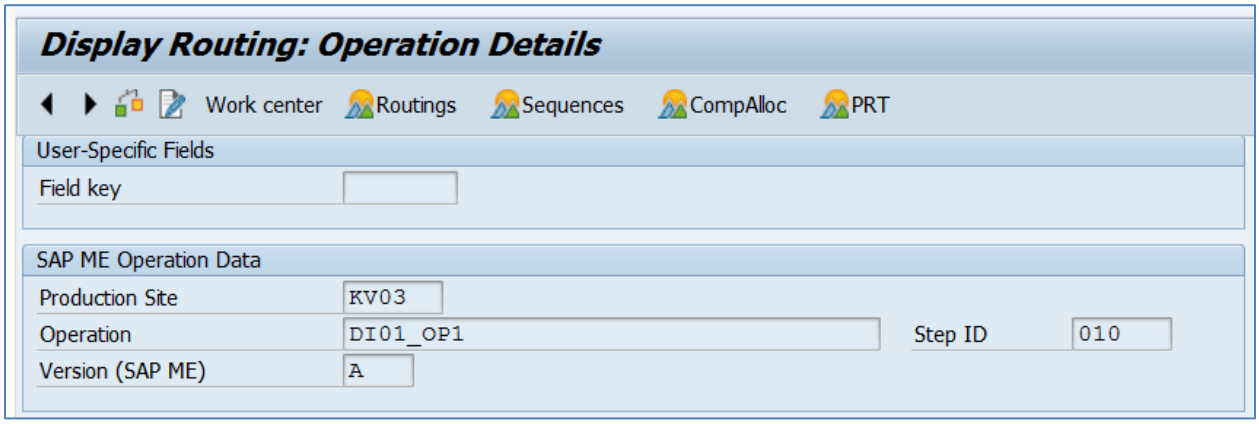
- *Description:* Corresponds to *Description* of the routing in SAP ME.
- *Usage:* 1.
- *Status:* 4.
- *From Lot Size:* 0.
- *To Lot Size:* 99999999.



12. Scroll down to the *SAP ME Routing* section and verify the following field values:
    - *Production Site:* Corresponds to SAP ME *Site*.
    - *Routing:* Corresponds to *Routing* name in SAP ME.
    - *Version (SAP ME):* Corresponds to the *Version* of the routing.



13. Click the *Operations* icon. Select an operation and enter operation details. On the *Display Routing: Operation Details* screen, verify the following field values:
    - *Production Site:* Corresponds to SAP ME *Site*.
    - *Operation:* Corresponds to *Operation* name.
    - *Step ID:* Corresponds to *Step ID* of operation in SAP ME.
    - *Version (SAP ME):* Corresponds to *Version* of operation.



SAPMEINT creates the corresponding routing master record or a new version of the existing routing record in SAP ERP.

User Actions in SAP ME	**System Actions when the system rule *Enable Replication of ME Routing to ERP* is set to:**	
	Yes with Change Management	***Yes***
You assign a material to the routing and save the record. For example: *Routing/Version*: R1/A *Material/Version*: M1/A *Material Assignment*: M1/A – R1 (version is not entered)	SAP ME creates a change number and transfers routing R1/A with material M1/A to SAP ERP. SAP ERP creates a new group with a group counter for the routing. For example, *Group*: 50001 *Group Counter*: 01 *Change Number*: 500000000100 Material M1/A is assigned to group 50001 with group counter 01. Since you have not entered the routing version field, the material is assigned to the current version of the routing.	SAP ME transfers routing R1/A with material M1/A to SAP ERP. SAP ERP creates a new group with a group counter for the routing. For example, *Group*: 50001 *Group Counter*: 01 Material M1/A is assigned to group 50001 with group counter 01. SAP ME does not create a change number.
You assign another material to the same routing and save the record. For example,	SAP ME creates a change number and transfers routing R1/A with material M2/A to SAP ERP. SAP ERP creates a new group with a group counter for the routing.	SAP ME transfers routing R1/A with material M2/A to SAP ERP. SAP ERP creates a new group with the same group counter for the routing.

User Actions in SAP ME	**System Actions when the system rule *Enable Replication of ME Routing to ERP* is set to:**	
	Yes with Change Management	***Yes***
Routing/Version: R1/A *Material/Version*: M2/A *Material Assignment*: M2/A – R1/A	For example, *Group*: 50002 *Group Counter*: 01 *Change Number*: 500000000101 Material M2/A is assigned to group 50002 with group counter 01. A new group is created for every material assignment.	For example, *Group*: 50002 *Group Counter*: 01 Material M2/A is assigned to group 50002 with group counter 01. A new group is created for every material assignment.
You create and release a new version of the routing For example, *Routing/Version*: R1/B *Material/Version*: M1/A *Material Assignment*: M1/A – R1/(version is not entered)	SAP ME creates a new change number and transfers the new version of routing R1/B with material M1/A to SAP ERP. SAP ERP updates the same group counter for the new version of routing. For example, *Group*: 50001 *Group Counter*: 01 *Change Number*: 500000000102 Material M1/A is assigned to group 50001 with group counter 01 Since you have not entered the routing version field for the material M1/A, the new current version of routing R1/B is automatically assigned and exported to SAP ERP. However, since material M2/A is explicitly associated with routing R1/A, no export is triggered for material M2/A, even though there is a new routing version, R1/B. When change number is used, the same group counter is updated.	SAP ME transfers the routing R1/B with material M1/A to SAP ERP. SAP ERP creates a new group counter for the new version of routing. For example, *Group*: 50001 *Group Counter*: 02 Material M1/A is assigned to group 50001 with group counter 02. SAP ME does not create a change number and SAP ERP increments the group counter for the new version of the routing. Since you have not entered the routing version field for the material M1/A, the new current version of routing R1/B is automatically assigned and exported to SAP ERP. However, since material M2/A is explicitly associated with routing R1/A, no export is triggered for material M2/A, even though there is a new routing version, R1/B. When change number is used, the same group counter is updated.
You assign another material to the new version of the routing and save the record. For example, *Routing/Version*: R1/B *Material/Version*: M3/A	SAP ME creates a new change number and transfers routing R1/B with material M3/A to SAP ERP. SAP ERP creates a new group with a group counter for the routing. For example, *Group*: 50003	SAP ME transfers routing R1/B with material M3/A to SAP ERP. SAP ERP creates a new group with the same group counter. For example, *Group*: 50003 *Group Counter*: 01

User Actions in SAP ME	System Actions when the system rule *Enable Replication of ME Routing to ERP* is set to:	
	Yes with Change Management	***Yes***
Material Assignment: M3/A – R1/B	*Group Counter*: 01 *Change Number*: 500000000103 Material M3/A is assigned to group 50003 with group counter 01.	Material M3/A is assigned to group 50003 with group counter 01.

Note that for every unique combination of routing and material, a new group is created in SAP ERP.

Note: If there are already 99 alternative routings for a routing, archive the older alternatives to make group counters available again.

14. Allocate a component to the routing in SAP ERP (see Allocating a Component to an Operation on the SAP Help Portal at http://help.sap.com or the Configuring a Standard Routing with Allocated Components section of this guide).

15. Create and release a production order in SAP ERP using the routing exported from SAP ME (see Configuring Production Order section of this guide).

    When you create a production order, the routing is referenced in the order as before. The ME IDs are displayed in the order header on the *Master Data* tab and in the operation on the *Reference Data* tab.

    The system transfers the order data to the SAP ME using IDoc LOIPRO03 according to the filter criteria you set in the DRF. For more information, see Production Order Integration on the SAP Help Portal at http://help.sap.com.

    If within repetitive manufacturing you integrate planned orders with SAP ME, the appropriate routing for the planned order is determined when the IDoc LOIPLO02 is sent and its ME reference data is written to the IDoc (see Planned Order Integration on the SAP Help Portal at http://help.sap.com).

16. SAPMEINT creates the production shop order based on the data received from SAP ERP and the routing created in SAP ME.

    - The routing and routing version that have been exported from SAP ME will be updated as the planned routing for the shop order.
    - If a BOM is not available, it will be created and updated as the planned BOM for the shop order.

More Information

You can use the Business Add-In *CO_MES_INT_ROUTING_INBOUND* to influence the attributes of the routing that is to be created or to supplement it with your own data. The BAdI is called from an SAP ME system when routings are replicated. You can continue using the BAdI if you want to implement a system behavior that differs from the logic described above when you create and change routings.

For more information, see the IMG under *Production > Integration with a Manufacturing Execution System > System Modifications > Business Add-In for Creating Routings from SAP ME*.

7 Resource Integration

Resource integration is covered in the Configuring Work Center with Individual Capacities section of this guide.

8 Production Order Integration

8.1 Overview

This function lets you transfer a production order data from SAP ERP to SAP ME to create or update the corresponding production shop order record in SAP ME (see Shop Order on the SAP Help Portal at http://help.sap.com).

This function supports long material numbers (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com).

8.1.1 Business purpose

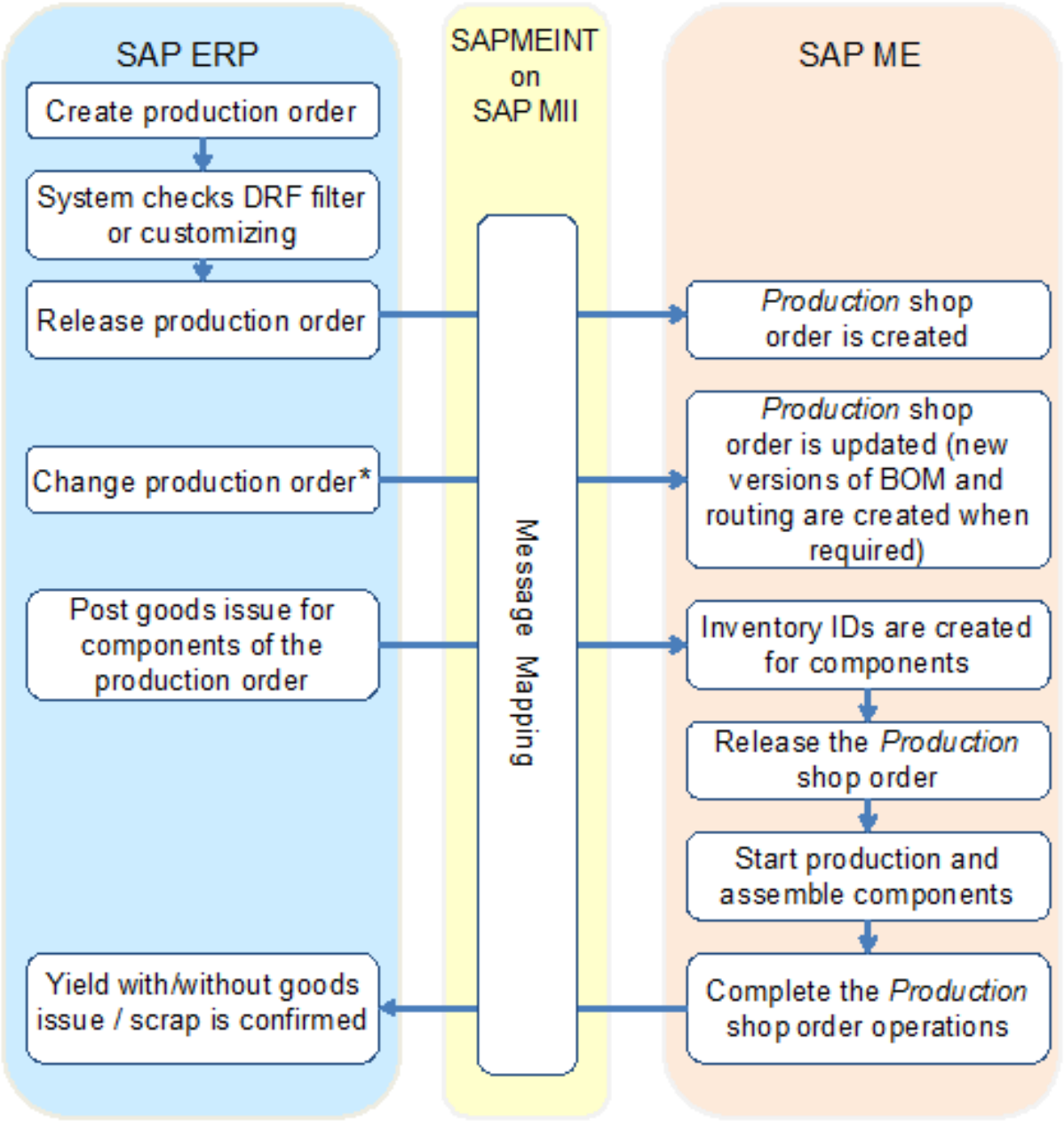
Order integration between SAP ERP and SAP ME system provides the control point from Production Planning to the Shop Order. The transfer of the order and integration of the order confirmations are critical to maintain order level data synchronization between the two systems.

The Production Order, typically converted from a planned order output of an MRP run in SAP ERP and used to launch discrete production, is transmitted to the ME system for release as a production shop order (see Shop Order Release on the SAP Help Portal at http://help.sap.com).

The shop order in SAP ME communicates to SAP ERP the confirmation of yield and scrap as production is carried out on the shop floor. If components have been assembled, they will also be included in the confirmation so they can be issued to the order in SAP ERP.

See also Transfer of Production Order: Integration Details on the SAP Help Portal at http://help.sap.com.

8.1.2 Process Flow Graphic



* Changing production orders after distribution requires activation of business function LOG_PP_MES_INT_02.

8.2 Configuring a Production Order

8.2.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer production order data from SAP ERP to SAP ME to create or update the corresponding production shop order record in SAP ME.

For more information about sending production order IDocs to SAP ME, see Configuring Production Order on the SAP Help Portal at http://help.sap.com.

8.2.2 Prerequisites

8.2.2.1 SAP ERP

- You have transferred the material master records for the produced material and all the components (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have created a BOM and a routing for the produced material (see Steps in Creating a Simple Material BOM and Creating a Routing on the SAP Help Portal at http://help.sap.com).
- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

  Note: LOIPRO03 is required if routings are transferred from SAP ME to SAP ERP (see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com and the document attached to SAP Note 1793291).
- You have defined unique ISO codes for every unit of measure.

8.2.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).
- You have optionally imported BOM and routing master data from SAP ERP (see Transfer of Bill of Material (BOM) and Transfer of Routing on the SAP Help Portal at http://help.sap.com).

  BOM and routing masters that are sent from SAP ERP to SAP ME prior to the production order download allow additional manual configurations to take place inside

of SAP ME. This prerequisite is optional because the BOM and routing master can be created in SAP ME directly from the production order download.

- You have optionally set up default values for new material, BOM, and routing master data imported from SAP ERP in *Default Value Maintenance* (see Material Table, BOM Table, and Routing Table on the SAP Help Portal at http://help.sap.com). This is a prerequisite only if your business process requires it, otherwise it can be skipped.

8.2.3 Procedural Steps

1. Create or update a production order manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see Creating a Production Order on the SAP Help Portal at http://help.sap.com).
2. SAP ERP 6.05 and later with activated business function (BF) LOG_PP_MES_INT_02 distributes production orders automatically upon release based on Data Replication Framework (DRF) filter settings (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com). Changes to the order are distributed immediately after the initial distribution. See SAP Note 1555198.

   Note:

   SAP ERP 6.05 with activated BF LOG_PP_MES_INT_01 (configuration type B) distributes production orders automatically one time upon release based on customizing settings.

   If you use SAP ERP 6.00 – 6.04 (configuration type A), you transfer the production order using the transaction POIT after creating or changing the order.

   Note: Transaction POIT supports only the IDoc base types LOIPRO01. The additional fields and segments of the IDoc types LOIPRO02, LOIPRO03, and LOIPRO04 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.
3. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the production shop order based on the data received from SAP ERP (see Shop Order Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

8.2.4 Alternates / Best Practices and Tips

8.2.4.1 Updating a Released Production Order

When you have activated only the LOG_PP_MES_INT_01 business function, a distributed production order can be changed only with restrictions because the order is distributed only once to SAP ME. As a standard, the production order is protected against MES-relevant changes, for example, against quantities, dates, components, and so on. The sample implementations in the classes CL_EX_CO_MES_INT_FCODE and CL_EX_CO_MES_INT_FIELDS and CL_EX_CO_MES_INT_FIELDS are an indicator for the specific restrictions. After the statement "when if_co_mes_const=>c_distributed" in the respective only method of the class, you find a list of the functions or fields that are inactive due to the distribution.

After you activate the LOG_PP_MES_INT_02 business function, these restrictions are less strict because subsequent changes have been sent to SAP ME. The existing restrictions still act on the maxim that you must be able to process the production order without problems in any case even if the subsequent changes no longer reach SAP ME or can no longer be implemented by it. For this reason, you cannot for example reduce the order quantity if the set transfer tolerance is 0 because otherwise an error occurs due to the transfer when confirming the original order quantity. It is assumed that the change of the order quantity may not have reached ME on time. A list of inactive functions and fields are contained in the above-mentioned classes under the statement "when if_co_mes_const=>c_distributed_ch".

If you want to remove the restrictions fully or partially, you can implement the BAdIs that are located in IMG under the node *Production > Integration with a Manufacturing Execution System > Integrate Production Orders with a Manufacturing Execution System*. For the two BAdIs "BAdI: Control of Functions of Distributed Production Orders" and "BAdI: Field Control for Distributed Production Orders", example implementations are available and you can use them as a template for your actual implementation. When you remove the comment of individual lines and use the provided macros, you can easily implement the requirements. In this context, see SAP Note 1957404, which provides important corrections for the implementation of the BAdIs.

When you want to remove all restrictions, you can implement SAP Note 1808760.

In SAP ME, verify that the following reason codes are assigned to the corresponding message types:

- ERP-Order-Change (message type ERP_ORDER_CHANGE)
- ERP-SFC-Change (message type ERP_SFC_CHANGE)

When you update a production order in SAP ERP and send it to SAP ME, SAPMEINT places the corresponding production shop order and all its Active SFC numbers on Immediate Hold and applies the following reason codes:

- ERP-Order-Change
- ERP-SFC-Change

Two messages (one for the shop order and one that contains the list of SFC numbers that are on hold) appear on SAP ME Message Board to notify the operator.

The operator can release the shop order and SFC numbers from hold using SFC Release Hold and execute Change Production for SFC numbers that require changes.

8.2.4.2 Sending an Order Update to SAP ME

If you want to redistribute an already distributed production order to the SAP ME, you can make a change to the order. When the production order is updated in SAP ERP, the new data is transferred to SAP ME.

SAP ERP production orders contain the material and quantity to be produced, as well as the production order BOM and routing.

Unlike SAP ERP productions orders, SAP ME shop orders do not contain components and operations but reference the production order BOM and routing.

You can disable the mapping of the production order BOM and routing in SAP ME by setting the *Ignore BOM Update* and *Ignore Routing Update* rules to *true* in *System Rule Maintenance* (see ERP Integration Rules on the SAP Help Portal at http://help.sap.com). When set to *true*, each setting causes the production order download to SAP ME to look for an existing BOM or routing by name only (not its contents). This is effective if the corresponding Master BOM or routing has been enhanced in SAP ME beyond what is provided in the SAP ERP production order integration.

When the mapping of the production order BOM is disabled, SAP ME does not correlate production order components according to the quantity of the finished material.

Ignore BOM Update	true: Ignores an update to the BOM record specified in the SAP ERP order false (default): Accepts an update to the BOM record specified in the SAP ERP order Can override at: site
Ignore Routing Update	true: Ignores an update to the routing record specified in the SAP ERP order false (default): Accepts an update to the routing record specified in the SAP ERP order Can override at: site

If mapping is enabled and system rules *Ignore BOM Update* and *Ignore Routing Update* are set to *false* then existing BOM and routing records are updated in SAP ME according to the *Update Indicator* field setting in *ERP Field Maintenance*.

For more information about how an object updated in SAP ERP is handled in SAP ME, see the SAPMEINT Change Management section of this guide or SAPMEINT Change Management on the SAP Help Portal at http://help.sap.com.

If the shop order has been already released in SAP ME and if the production has already started (SFC numbers are Active), BOM and routing will not be updated automatically.

Note: SAP ERP 6.05 with activated business function LOG_PP_MES_INT_02 does not allow changes to the BOM or the routing after distribution. For more information about SAP ERP versions supporting DRF, see SAP Note 1793291.

Note: The following field values can be updated manually in SAP ME using Change Production (see Changing Production on the SAP Help Portal at http://help.sap.com):

- BOM
- Routing
- Shop Order for the SFC numbers of the shop order

Note: If you change the production order after distribution, the changed order is automatically sent to SAP ME again. You can control which changes allow after the first distribution.

This function is available when the Z_PP_MES_INT_02 business function is activated.

For information about functions activating, see SAP Note 1555198.

8.2.4.3 Unit of Measure

SAP ERP always transfers quantities in base units of measure (UOM) to SAP ME, regardless of the UOM used in ERP. Note that the ERP Unit of Measure is reflected by its ISO code in SAP ME and may be displayed with a different abbreviation from the corresponding SAP ME UOM.

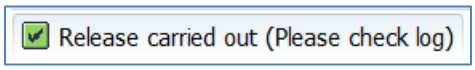
8.2.4.4 Order status change

- When SAP ME receives a request to cancel a production shop order, the status of the SFC numbers changes to Deleted and the shop order status changes to Closed.
- When SAP ME receives a request to reopen a canceled shop order, the status of the SFC numbers changes to In Queue and the shop order status changes to Releasable.
- When SAP ME receives a request to place a hold on an existing production shop order, the status of the shop order changes to Hold.
- When SAP ME receives a request to release the hold on an existing production shop order, the system releases each SFC number from its hold status and changes the status of the shop order to Releasable.

8.2.5 Examples

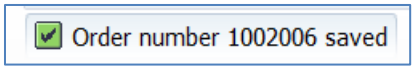
8.2.5.1 Creating a Production Order

1. Create or update a production order manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see Creating a Production Order on the SAP Help Portal at http://help.sap.com).
2. Click the *Release Order* icon (Order can be released later using transaction *CO02*).
3. View the system message:



4. Click *Save* to save the order.

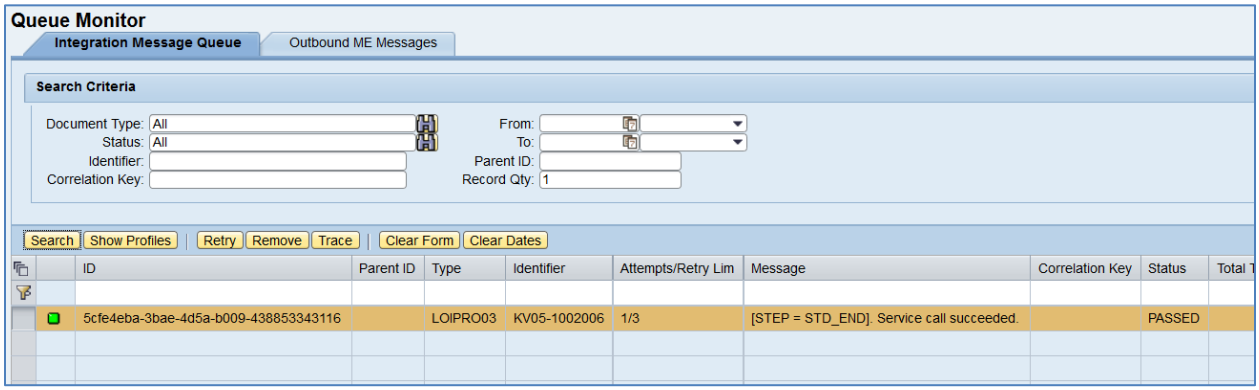
The following success message displays at the bottom of the screen:



Note: If an order has the status of CRTD (created), it cannot be executed (goods issue, receipt, completion) until the status changes to REL (released).

5. Optional: Using *Queue Monitor*, verify that IDocs were received in SAP MII.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



6. Verify results in SAP ME.

Run *Shop Order Maintenance* and retrieve the transferred shop order record.

On the *Main* tab, verify the following field values:

- *Site: Plant* value.
- *Shop Order: Order Number*.
- *Status:* Releasable unless STAT equals:
  - I0012 - Delivered
  - I0045 - Technically completed
  - I0076 - Deletion Flag

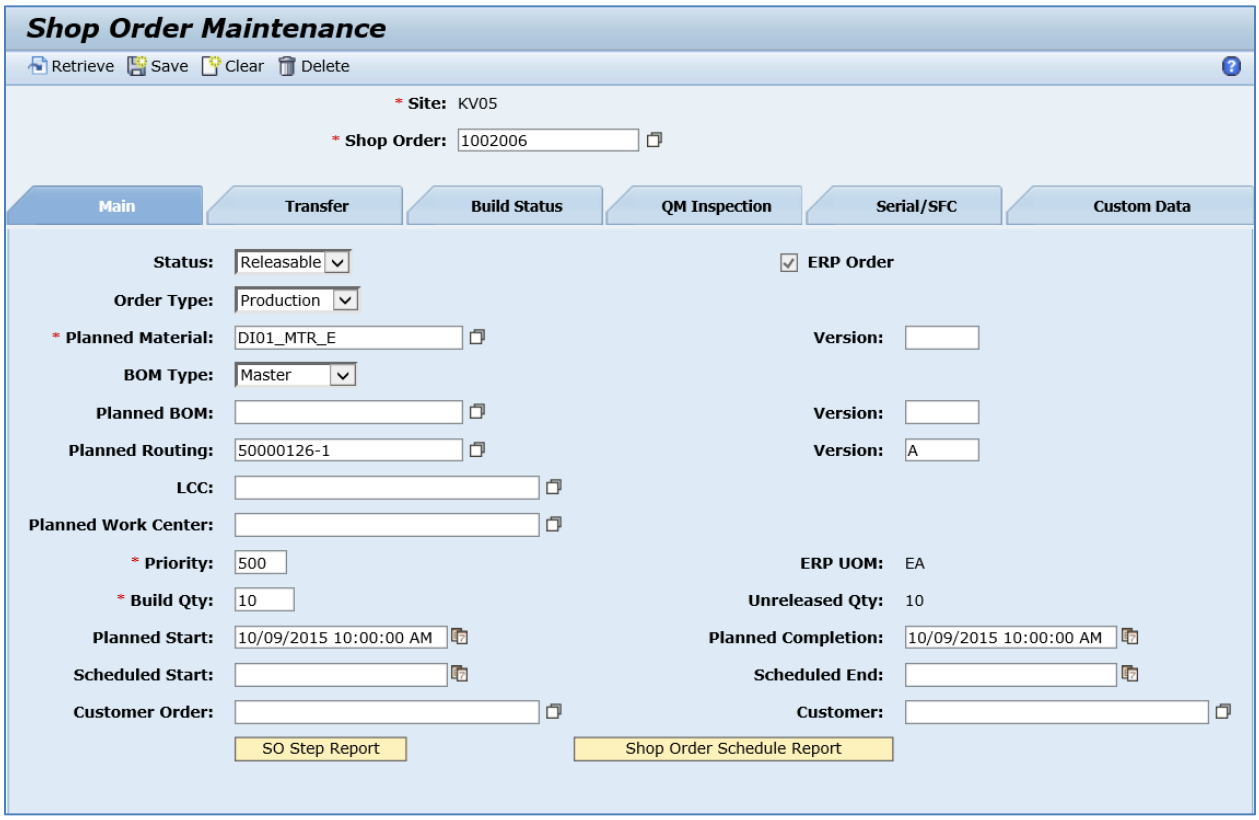
  If so, the Status is set to Closed.
- *Order Type:* Production.
- *ERP Order:* Selected.
- *Planned Material: Material Number*.
- *Version:* Current.
- *Planned BOM:* BLANK unless bill of material is transferred from SAP ERP within production order.
- *Planned BOM Version:* Current.

  For more information about transferring a bill of material within a production order, see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) or Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing) sections of this guide.
- *Planned Routing:* Routing that is received within production order. Routing name structure: Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL).

- *Planned Routing Version:* A.

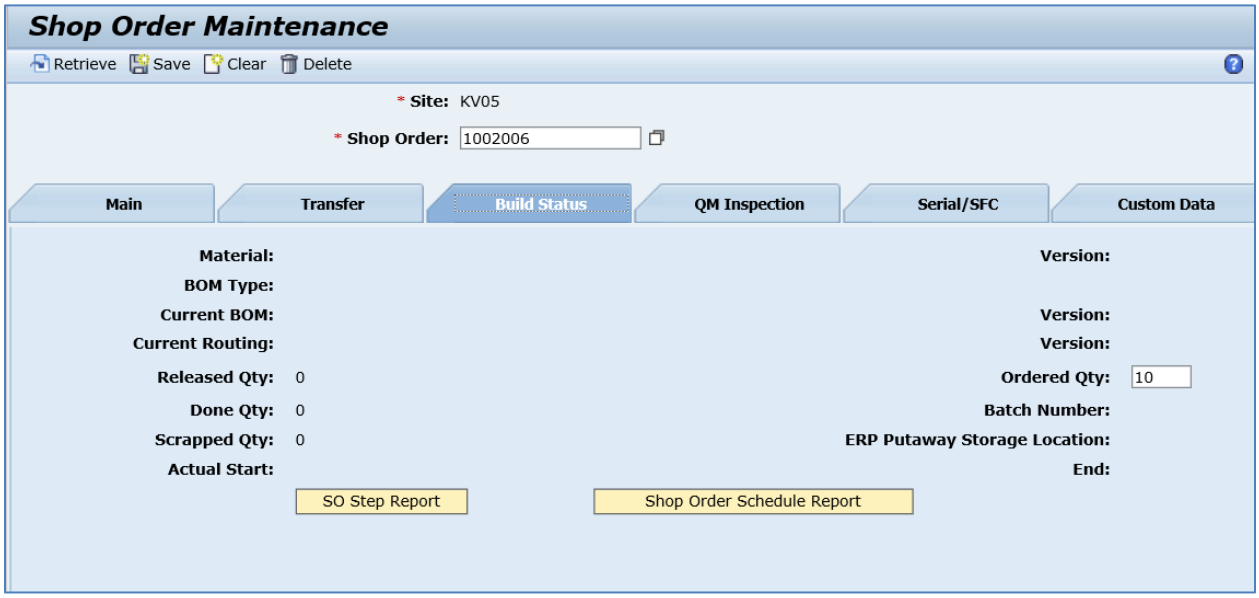
  For more information about transferring a routing within a production order, see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) or Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing) sections of this guide.

- *ERP UOM:* This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing.
- *Priority:* 500.
- *Build Qty:* Base Quantity of order.
- *Planned Start: Scheduled start date + Scheduled start time*. If Scheduled start time was left blank, defaults to 23:59:59.
- *Planned Completion: Scheduled finish date + Scheduled finish time*. If Scheduled finish time was left blank, defaults to 23:59:59.
- Other fields are BLANK by default or deselected.



On the *Build Status* tab, verify the following field values:

- *Ordered Qty:* Base Quantity of order.



Note: You can release the order on its creation. It can be done using the *ShopOrderReleaseInfo* field. This is an API field only.

<sch:ShopOrderReleaseInfo>

<sch:Release>all</sch:Release>

</sch:ShopOrderReleaseInfo>

Possible values for the Release tag:
all: whole quantity of the production shop order is released;
a positive whole number: the specified quantity of the production shop order is released.

8.2.6 Missing / Not Supported

- SAP ERP milestone operations are not supported.
- All operations must have the base unit of measure of the output material.
- BOM base quantity must be equal to the SFC quantity if BOM update is ignored.
- SAP ME does not support a different unit of measure at the operation level.
- SAP ERP allows creating a production order without a routing. In this special case, SAP ERP generates an operation automatically. This function is not supported in SAP ME.
- You cannot delete a production order in SAP ERP. You can delete a production shop order that is received from SAP ERP in SAP ME (see Deleting Production Shop Orders in SAP ME on the SAP Help Portal at http://help.sap.com).
- SAP ME does not create work center automatically when it is received along with production order from SAP ERP.
- Fractional order build quantities are not supported for manufactured products.

8.3 Configuring a Production Order with a Storage Location Assignment

8.3.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer production order data with assigned storage location from SAP ERP to SAP ME to create or update the corresponding production shop order record in SAP ME.

A storage location is an organizational unit allowing the differentiation of material stocks within a plant. All data referring to a particular storage location is stored at storage location level. This applies mainly to storage location stocks.

8.3.2 Prerequisites

8.3.2.1 SAP ERP

- You have transferred the material master records with assigned storage location for the produced material and all the components (see Material Transfer on the SAP Help Portal at http://help.sap.com).

  For more information about creating a material master record with assigned storage location, see the Configuring Material with Assigned Storage Location section of this guide.

- You have created a BOM and a routing for the produced material (see Steps in Creating a Simple Material BOM and Creating a Routing on the SAP Help Portal at http://help.sap.com).

- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).

- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).

- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

  Note: LOIPRO03 is required if routings are transferred from SAP ME to SAP ERP (see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com and the document attached to SAP Note 1793291).

- You have defined unique ISO codes for every unit of measure.

8.3.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).

- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

- You have optionally imported BOM and routing master data from SAP ERP (see Transfer of Bill of Material (BOM) and Transfer of Routing on the SAP Help Portal at http://help.sap.com).

  BOM and routing masters that are sent from SAP ERP to SAP ME prior to the production order download allow additional manual configurations to take place inside of SAP ME. This prerequisite is optional because the BOM and routing master can be created in SAP ME directly from the production order download.

- You have optionally set up default values for new material, BOM, and routing master data imported from SAP ERP in *Default Value Maintenance* (see Material Table, BOM Table, and Routing Table on the SAP Help Portal at http://help.sap.com). This is a prerequisite only if your business process requires it, otherwise it can be skipped.

8.3.3 Procedural Steps

1. Create or update a production order with assigned storage location manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see Examples section).
2. SAP ERP 6.05 and later with activated business function (BF) LOG_PP_MES_INT_02 distributes production orders automatically upon release based on Data Replication Framework (DRF) filter settings (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com). Changes to the order are distributed immediately after the initial distribution. See SAP Note 1555198.

   Note:

   SAP ERP 6.05 with activated BF LOG_PP_MES_INT_01 (configuration type B) distributes production orders automatically one time upon release based on customizing settings.

   If you use SAP ERP 6.00 – 6.04 (configuration type A), you transfer the production order using the transaction POIT after creating or changing the order.

   Note: Transaction POIT supports only the IDoc base types LOIPRO01. The additional fields and segments of the IDoc types LOIPRO02, LOIPRO03, and LOIPRO04 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.
3. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the production shop order containing storage location assignment based on the data received from SAP ERP (see Shop Order Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

8.3.4 Alternates / Best Practices and Tips

8.3.5 Examples

8.3.5.1 Creating a Production Order with a Storage Location Assignment

1. Create or update a production order manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see Creating a Production Order on the SAP Help Portal at http://help.sap.com).

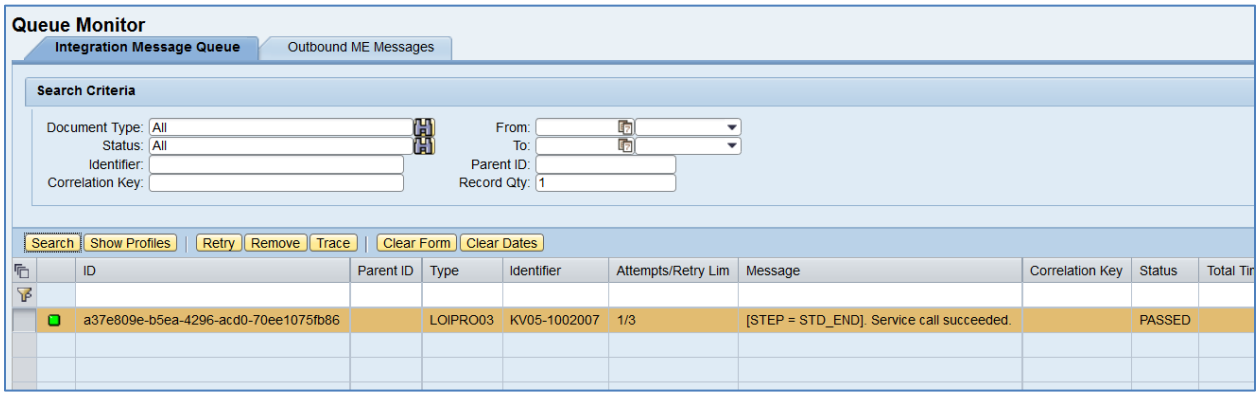
   Make sure that the following data is entered on the *Production order Create: Header* screen under the *Goods Receipt* tab:

   - *Stor. Location:* Storage Location of finished good. Enter value to override default.

Note: If the order has the status of CRTD (created), it cannot be executed (goods issue, receipt, completion) until the status changes to REL (released).

2. Click the *Release Order* icon (Order can be released later using transaction *CO02*).
3. Optional: Using *Queue Monitor*, verify that IDocs were received in SAP MII.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



4. Verify results in SAP ME.

Run *Shop Order Maintenance* and retrieve the transferred shop order record.

On the *Main* tab, verify the following field values:

- *Site: Plant* value.
- *Shop Order: Order Number.*
- *Status:* Releasable unless STAT equals:
  - I0012 - Delivered

  - I0045 - Technically completed
  - I0076 - Deletion Flag

  If so, the Status is set to Closed.

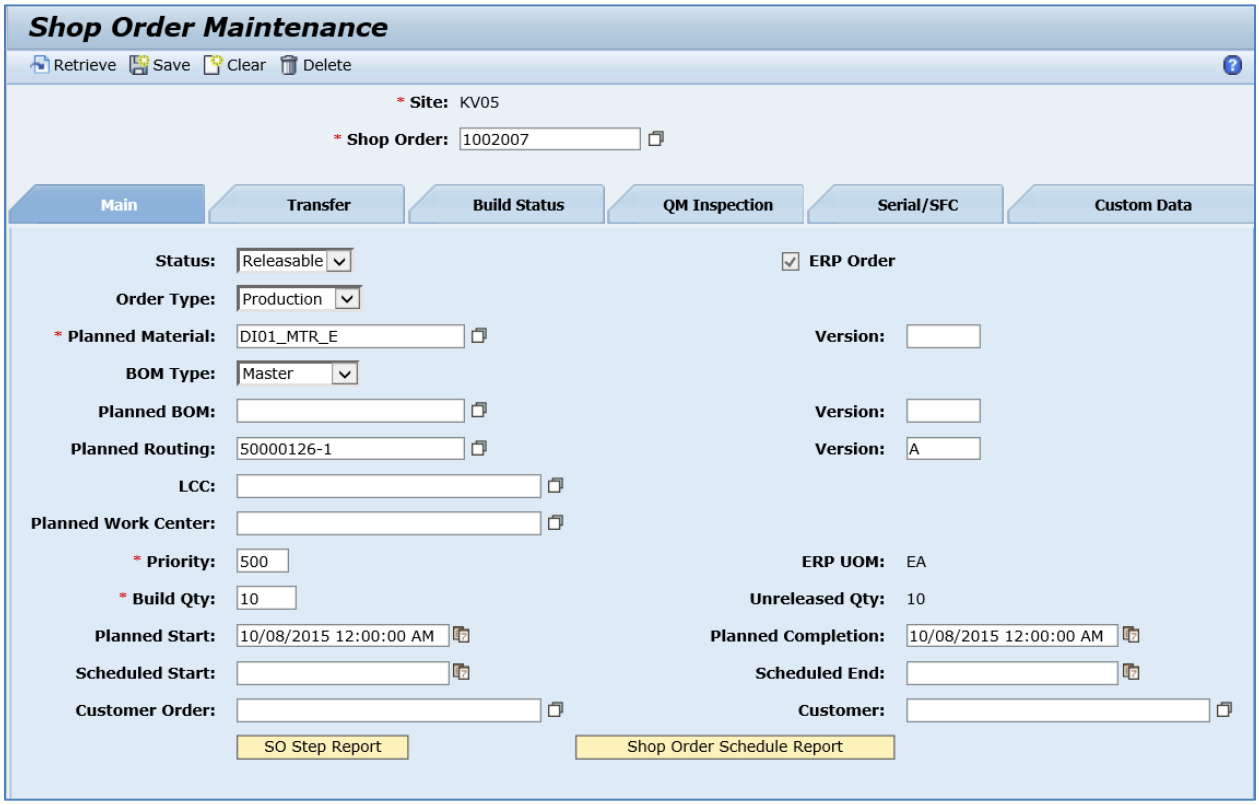
- *Order Type:* Production.
- *ERP Order:* Selected.
- *Planned Material: Material Number*.
- *Version:* Current.
- *Planned BOM:* BLANK unless bill of material is transferred from SAP ERP within production order.
- *Planned BOM Version:* Current.

  For more information about transferring a bill of material within a production order, see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) or Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing) sections of this guide.

- *Planned Routing:* Routing that is received within production order. Routing name structure: Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL).
- *Planned Routing Version:* A.

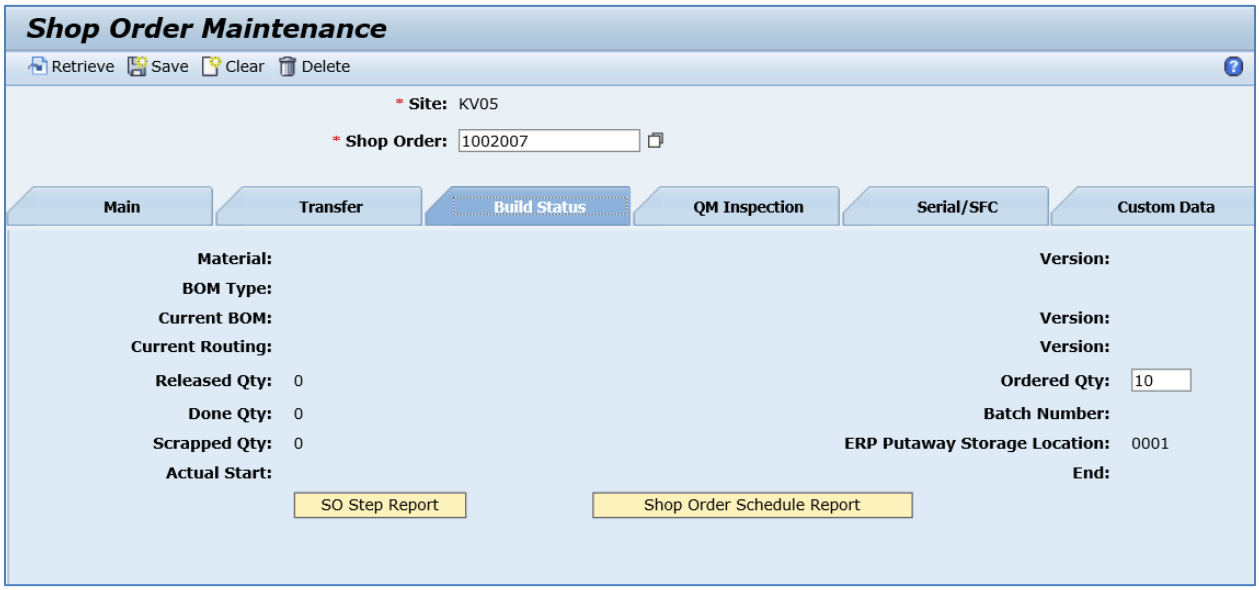
  For more information about transferring a routing within a production order, see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) or Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing) sections of this guide.

- *ERP UOM:* This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing.
- *Priority:* 500.
- *Build Qty:* Base Quantity of order.
- *Planned Start: Scheduled start date + Scheduled start time*. If Scheduled start time was left blank, defaults to 00:00:01.
- *Planned Completion: Scheduled finish date + Scheduled finish time*. If Scheduled finish time was left blank, defaults to 23:59:59.
- Other fields are BLANK by default or deselected.



On the *Build Status* tab, verify the following field values:

- *Ordered Qty:* Base Quantity of order.
- *ERP Putaway Storage Locations: Stor. Location* value received from SAP ERP.



Note: You can release an order on its creation. It can be done using the *ShopOrderReleaseInfo* field. This is an API field only.

<sch:ShopOrderReleaseInfo>

<sch:Release>all</sch:Release>

</sch:ShopOrderReleaseInfo>

Possible values for the Release tag:
all: whole quantity of the production shop order is released;
a positive whole number: the specified quantity of the production shop order is released.

8.4 Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing)

8.4.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a production order with BOM and routing from SAP ERP to create or update the corresponding BOM with defined assembly operations assigned to the production shop order in SAP ME (see Transfer of Production Order with BOM and Routing on the SAP Help Portal at http://help.sap.com).

Make-to-stock manufacturing is a manufacturing process in which you manufacture products for stock based on demand forecasts. If no sales order is attached to the production shop order, the order is used for make-to-stock manufacturing. The system reuses the existing standard BOM and routing if they match the BOM and routing in the production shop order. Otherwise, the system creates a new standard BOM and routing or a new version of the existing BOM and routing.

- You can download the complete phantom hierarchy including the phantom components and the phantom members from SAP ERP to SAP ME.
- You can transfer co-products and by-products defined for the BOM in SAP ERP to SAP ME with a production order (see Co- and By-Products on the SAP Help Portal at http://help.sap.com).
- You can transfer alternate components defined for BOM in SAP ERP to SAP ME with a production order. Among the components in an alternate group, the component with the highest priority becomes the primary component and the other components become alternate components (see Alternative Items on the SAP Help Portal at http://help.sap.com).

8.4.2 Prerequisites

8.4.2.1 SAP ERP

- This function works only with SAP ERP 6.05 or later with activated business function LOG_PP_MES_INT_02 (configuration type C and D).
- You have transferred the material master records for the produced material and all the components (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have created a BOM and a routing for the produced material (see Steps in Creating a Simple Material BOM and Creating a Routing on the SAP Help Portal at http://help.sap.com).

- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

  Note: LOIPRO03 is required if routings are transferred from SAP ME to SAP ERP (see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com and the document attached to SAP Note 1793291).
- You have defined unique ISO codes for every unit of measure.

8.4.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

8.4.3 Procedural Steps

1. Create or update a production order containing BOM and routing master data in SAP ERP (see Examples section).
2. SAP ERP 6.05 and later with activated business function (BF) LOG_PP_MES_INT_02 distributes production orders automatically upon release based on Data Replication Framework (DRF) filter settings (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com). Changes to the order are distributed immediately after the initial distribution. See SAP Note 1555198.

   Note: SAP ERP 6.05 with activated BF LOG_PP_MES_INT_01 (configuration type B) distributes production orders automatically one time upon release based on customizing settings.

   If you use SAP ERP 6.00 – 6.04 (configuration type A), you transfer the production order using the transaction POIT after creating or changing the order.

   Note: Transaction POIT supports only the IDoc base types LOIPRO01. The additional fields and segments of the IDoc types LOIPRO02, LOIPRO03, and LOIPRO04 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.
3. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to

troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

During the import of production order data to SAP ME, SAPMEINT does the following:

- Determines the current version of material in SAP ME and uses this version as the version for the shop order.
- Compares the production order components with the current version of the Master BOM (see Bill of Material (BOM) on the SAP Help Portal at http://help.sap.com).
- If the following attributes of the ERP production order components differ from those in the Master BOM, creates a new version of BOM.
    - Material Number
    - Quantity
    - Components assigned to Operations

  For more information, see Transfer of Production Order with BOM and Routing and SAPMEINT Change Management on the SAP Help Portal at http://help.sap.com.
- Compares the production order operations with the operations in the current master routing of the material (see Routing on the SAP Help Portal at http://help.sap.com).

  If the following attributes of the ERP production order operations differ from those in of the master routing, creates a new version of routing.
    - Operation
    - Operation Text (Description)

  For more information, see Transfer of Production Order with BOM and Routing and SAPMEINT Change Management on the SAP Help Portal at http://help.sap.com.

4. Verify results in SAP ME.

SAPMEINT creates or updates the production shop order, BOM and routing records in SAP ME based on the data received from SAP ERP (see Shop Order Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

8.4.4 Alternates / Best Practices and Tips

8.4.4.1 Determination of Manufacturing Type

SAPMEINT determines the manufacturing type of a production order by looking at the LOIPRO IDoc, specifically the KDAUF and KDPOS field values in the E1AFKOL segment.

- A blank or missing KDAUF field combined with a KDPOS field that contains all zeroes represents make-to-stock manufacturing.

- KDAUF and KDPOS fields containing the production order number and the item number of the sales order represent make-to-order or variant configured manufacturing.

8.4.4.2 Sending an Order Update to SAP ME

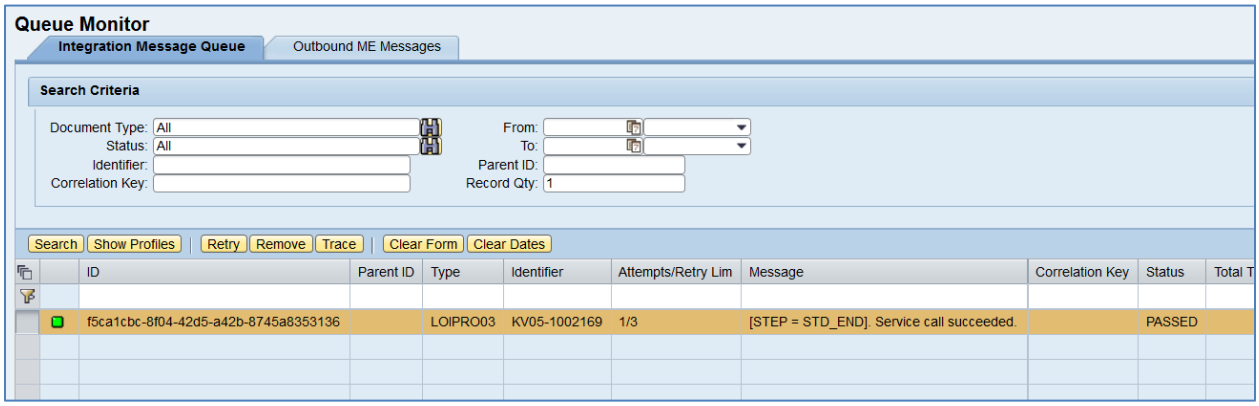
For more information about sending an order update to SAP ME, see the Sending an Order Update to SAP ME section of this guide.

8.4.5 Examples

8.4.5.1 Creating a Production Order with a BOM and Routing (Make-to-Stock Manufacturing)

1. Create a finished material and transfer it to SAP ME (see Configuring a Material Master section of this guide for more details).
2. Define a routing record in SAP ERP. It is not necessary to transfer it to SAP ME (see Configuring a Standard Routing from SAP ERP to SAP ME section of this guide for more details).
3. Define a BOM record in SAP ERP. It is not necessary to transfer it to SAP ME (see Configuring a Bill of Material (BOM) section of this guide for more details).
4. Transfer work center records that were used during creation of routing from SAP ERP to SAP ME (see Configuring a Work Center section of this guide).
5. Create and release a production order containing BOM and routing master data in SAP ERP (see Configuring a Production Order section of this guide to find steps to create and release a production order in SAP ERP).
6. Optional: Using *Queue Monitor*, verify that IDocs were received in SAP MII.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



7. Verify results in SAP ME.

Run *Shop Order Maintenance* and retrieve the transferred shop order record.

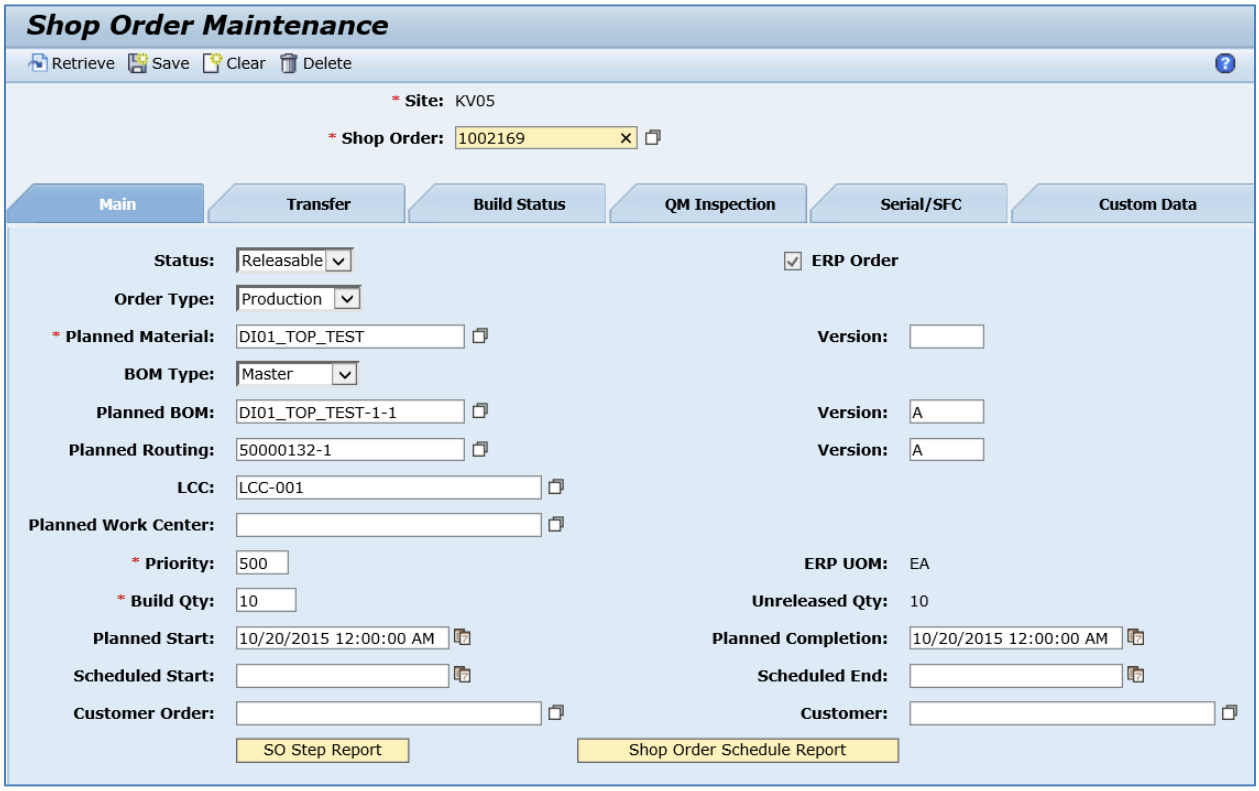
On the *Main* tab, verify the following field values:

- *Site: Plant* value.
- *Shop Order: Order Number*.
- *Status:* Releasable unless STAT equals:

  - I0012 - Delivered
  - I0045 - Technically completed
  - I0076 - Deletion Flag

  If so, the Status is set to Closed.

- *Order Type:* Production.
- *ERP Order:* Selected.
- *Planned Material: Material Number*.
- *Version:* Current.
- *Planned BOM:* Bill of material that is received within production order. Key for the BOM is Material Number (MATNR or MATNR_EXTERNAL) + "-" + BOM Usage (STLAN) + "-" + Alternative BOM (STLAL).
- *Planned BOM Version:* Current.
- *Planned Routing:* Routing that is received within production order. Routing name structure: Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL).
- *Planned Routing Version:* A.
- *ERP UOM:* This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing.
- *Priority:* 500.
- *Build Qty:* Base Quantity of order.
- *Planned Start: Scheduled start date + Scheduled start time*. If Scheduled start time was left blank, defaults to 00:00:01.
- *Planned Completion: Scheduled finish date + Scheduled finish time*. If Scheduled finish time was left blank, defaults to 23:59:59.
- Other fields are BLANK by default or deselected.



For more information about BOMs and routings that are received from SAP ERP, see the Configuring a Bill of Material (BOM) and Configuring a Standard Routing in SAP ERP sections of this guide.

Note: *Valid From* value for BOM is not transferred within a production order. It is available in BOMMAT IDoc only.

8.5 Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing)

8.5.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a production order with a BOM and routing from SAP ERP to create or update the corresponding BOM with defined assembly operations assigned to the production shop order in SAP ME (see Transfer of Production Order with BOM and Routing on the SAP Help Portal at http://help.sap.com).

Make-to-order or variant configured manufacturing is a manufacturing process in which you manufacture product only after a customer order is received. If a sales order is attached to the production shop order, the order is used for make-to-order manufacturing. The system creates a shop order-specific BOM and routing for this production shop order.

- You can download the complete phantom hierarchy including the phantom components and the phantom members from SAP ERP to SAP ME.

- You can transfer co-products and by-products defined for the BOM in SAP ERP to SAP ME with production order (see Co- and By-Products on the SAP Help Portal at http://help.sap.com).
- You can transfer alternate components defined for BOM in SAP ERP to SAP ME with production order. Among the components in an alternate group, the component with highest priority becomes the primary component and the other components become alternate components (see Alternative Items on the SAP Help Portal at http://help.sap.com).

8.5.2 Prerequisites

8.5.2.1 SAP ERP

- This function works only with SAP ERP 6.05 or later with activated business function LOG_PP_MES_INT_02 (configuration type C and D).
- You have transferred the material master records for the produced material and all the components.

  Make sure that the *Strategy group* is set to `20` on the *MRP 3* tab.
- You have created a BOM and a routing for the produced material (see Steps in Creating a Simple Material BOM and Creating a Routing on the SAP Help Portal at http://help.sap.com).
- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

  Note: LOIPRO03 is required if routings are transferred from SAP ME to SAP ERP (see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com and the document attached to SAP Note 1793291).
- You have defined unique ISO codes for every unit of measure.

8.5.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

8.5.3 Procedural Steps

1. Create a sales order with a make-to-order material (see Examples section).
2. *Optional:* Using MD04 transaction check the sales order in Stock Requirement List.
3. MRP Run – Single Item Planning (transaction *MD03*).
4. Individual Conversion of Planned Order to Production Order (transaction *CO40*).
5. Release a production order (transaction *CO02*).
6. SAP ERP 6.05 and later with activated business function (BF) LOG_PP_MES_INT_02 distributes production orders automatically upon release based on Data Replication Framework (DRF) filter settings (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com). Changes to the order are distributed immediately after the initial distribution. See SAP Note 1555198.

   Note:

   SAP ERP 6.05 with activated BF LOG_PP_MES_INT_01 (configuration type B) distributes production orders automatically one time upon release based on customizing settings.

   If you use SAP ERP 6.00 – 6.04 (configuration type A), you transfer the production order using the transaction POIT after creating or changing the order.

   Note: Transaction POIT supports only the IDoc base types LOIPRO01. The additional fields and segments of the IDoc types LOIPRO02, LOIPRO03, and LOIPRO04 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.
7. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

During the import of production order data to SAP ME, SAPMEINT creates a shop order-specific BOM and routing for use with this production shop order.

8. Verify results in SAP ME.

SAPMEINT creates or updates the production shop order, BOM and routing records in SAP ME based on the data received from SAP ERP (see Shop Order Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

8.5.4 Alternates / Best Practices and Tips

8.5.4.1 Determination of Manufacturing Type

SAPMEINT determines the manufacturing type of a production order by looking at the LOIPRO IDoc, specifically the KDAUF and KDPOS field values in the E1AFKOL segment.

- A blank or missing KDAUF field combined with a KDPOS field that contains all zeroes represents make-to-stock manufacturing.
- KDAUF and KDPOS fields containing the production order number and the item number of the sales order represent make-to-order or variant configured manufacturing.

8.5.4.2 Sending an Order Update to SAP ME

For more information about sending an order update to SAP ME, see the Sending an Order Update to SAP ME section of this guide.

8.5.5 Examples

8.5.5.1 Creating a Production Order with BOM and Routing (Make-to-Order Manufacturing)

1. Create and transfer the material master records for the produced material and all the components.
2. Create a BOM for the produced material (see Configuring a Bill of Material (BOM) section of this guide).
3. Create a routing for the produced material (see Configuring a Standard Routing in SAP ERP section of this guide).
4. Create a sales order with a make-to-order material. In SAP ERP, access the transaction using:

SAP Menus – *Logistics* > *Sales and distribution* > *Sales* > *Order* > *Create*

or transaction code – *VA01*

5. *Optional:* Check the Sales Order in Stock Requirement List. In SAP ERP, access the transaction using:

SAP Menus – *Logistics* > *Materials Management* > *Material Requirements Planning (MRP)* > *MRP* > *Evaluations* > *Stock/Reqmts List*

or transaction code – *MD04*

On the *Stock/Requirements List* screen, observe created Sales Order as Customer Order (CusOrd).

6. MRP Run – Single Item Planning. In SAP ERP, access the transaction using:

SAP Menus – *Logistics* > *Materials Management* > *Material Requirements Planning (MRP)* > *MRP* > *Planning* > *Single-Item, Single-Level*

or transaction code – *MD03*

On the *Planning Result: Individual Lines* screen, note the number of the planned order (PldOrd).

7. Individual conversion of planned order to production order. In SAP ERP, access the transaction using:

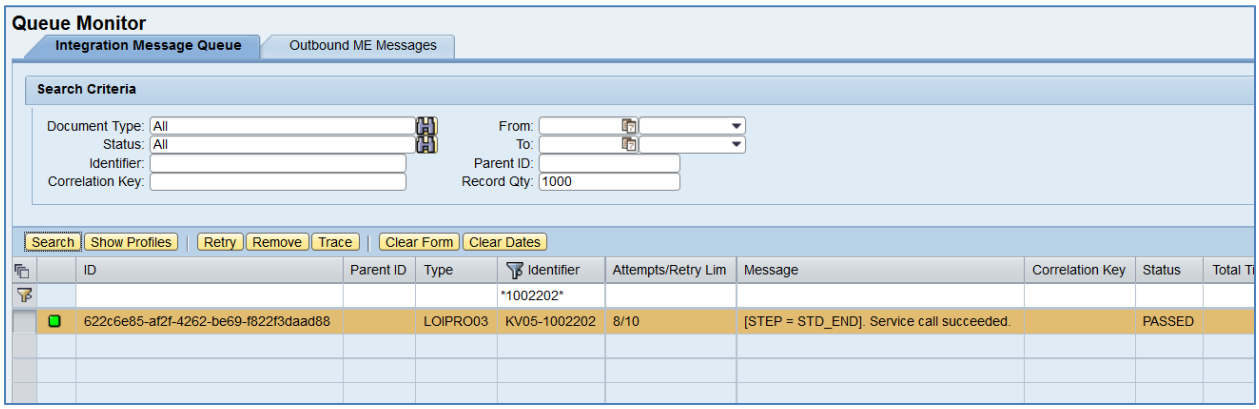
SAP Menu – *Logistics* > *Production* > *Shop Floor Control* > *Order* > *Create* > *From Planned Order*

or transaction code – *CO40*

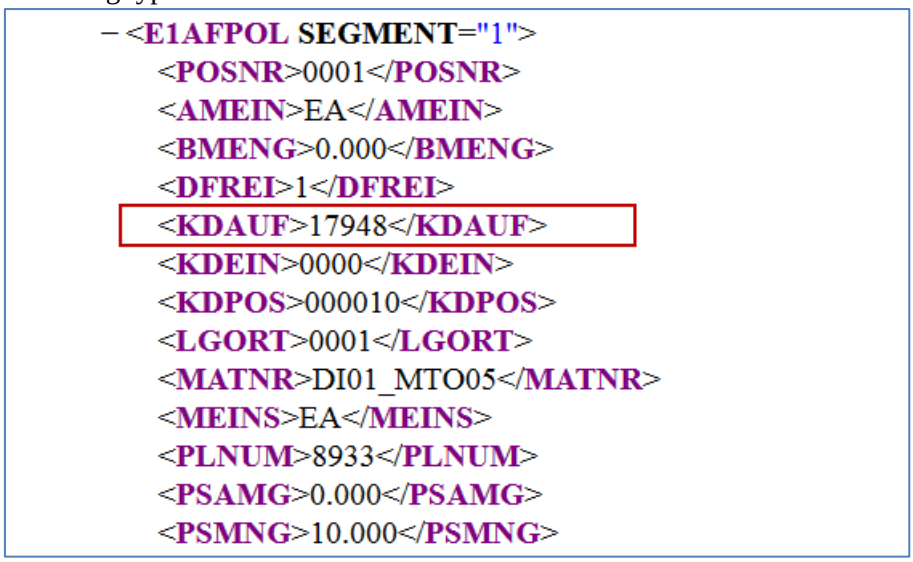
Release and save the order.

8. Optional: Using *Queue Monitor*, verify that IDocs were received in SAP MII.

For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *LOIPRO03*, click *Trace*, choose Original Document row, and click *View*. The *KDAUF* tag value matches the sales order created in SAP ERP. This indicates that the manufacturing type is make-to-order.



9. Verify results in SAP ME.

Run *Shop Order Maintenance* and retrieve the transferred shop order record.

On the *Main* tab, verify the following field values:

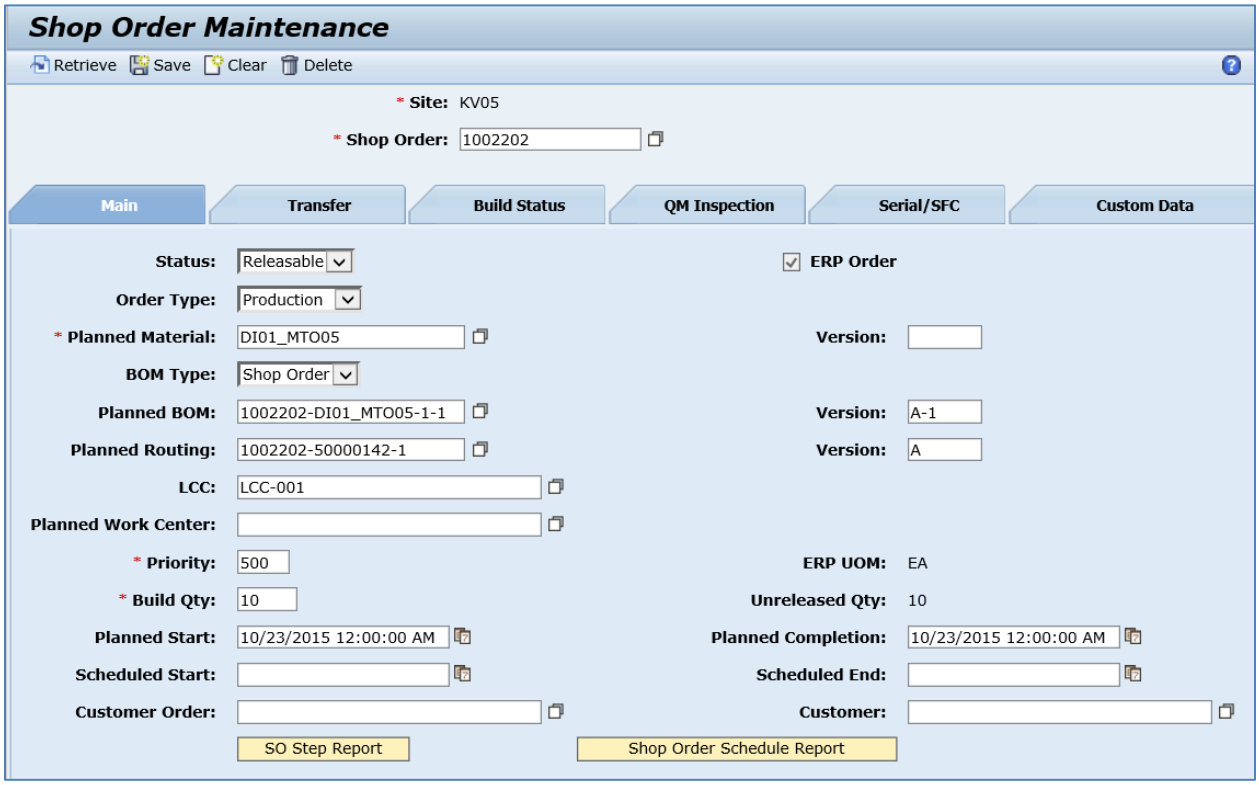
- *Site: Plant* value.

- *Shop Order: Order Number.*
- *Status:* Releasable unless STAT equals:
  - I0012 - Delivered
  - I0045 - Technically completed
  - I0076 - Deletion Flag

  If so, the Status is set to Closed.
- *Order Type:* Production.
- *ERP Order:* Selected.
- *Planned Material: Material Number*.
- *Version:* Current.
- *Planned BOM:* Bill of material that is received within production order. Key for the BOM is Order Number (AUFNR) + "-" + Material Number (MATNR or MATNR_EXTERNAL) + "-" + BOM Usage (STLAN) + "-" + Alternative BOM (STLAL).

  Planned BOM present in the shop order is a Shop-Order specific type BOM (type H in a database).
- *Planned BOM Version:* A-1.
- *Planned Routing:* Routing that is received within production order. Routing name structure: Key for routing is Order Number (AUFNR) + "-" + Task List Group (PLNNR) + "-" + Group Counter (PLNAL).

  Planned routing present in the shop order is a Shop-Order specific type routing (type H in a database).
- *Planned Routing Version:* A.
- *ERP UOM:* This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing.
- *Priority:* 500.
- *Build Qty:* Base Quantity of order.
- *Planned Start: Scheduled start date + Scheduled start time*. If Scheduled start time was left blank, defaults to 00:00:01.
- *Planned Completion: Scheduled finish date + Scheduled finish time*. If Scheduled finish time was left blank, defaults to 23:59:59.
- Other fields are BLANK by default or deselected.



For more information about BOMs and routings that are received from SAP ERP, see the Configuring a Bill of Material (BOM) and Configuring a Standard Routing in SAP ERP sections of this guide.

Note: The *Valid From* value for the BOM is not transferred within the production order. It is available in BOMMAT IDoc only.

8.6 Configuring a Production Order with Serial Numbers

8.6.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer serial numbers assigned to a production order from SAP ERP to SAP ME to create corresponding SFC numbers assigned to the production shop order in SAP ME (see Transfer of Production Order with Serial Numbers on the SAP Help Portal at http://help.sap.com).

- In SAP ERP, serial numbers are unique at the material level. In SAP ME SFC numbers are unique at the system level.
- In SAP ERP production order, you can define serial numbers for the product to be produced.
- These serial numbers within the production order are distributed automatically to SAP ME. You can view them on the Serial Numbers tab of Shop Order Maintenance.
- When a production order with serial numbers is imported from SAP ERP, SAPMEINT creates the corresponding production shop order and SFC numbers using the

numbering pattern of <Material Number>-<Serial Number>. These SFC numbers are used when you release the production shop order in SAP ME.

- The number of transferred serial numbers equals the Quantity value of the production order (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Integrate Production Order with a Manufacturing Execution System > Check Serial Numbers in MES Production Orders*).

8.6.2 Prerequisites

8.6.2.1 SAP ERP

- You have maintained a serial number profile for the header material so that a production order can contain serial numbers (in Customizing for *Logistics*, select *Materials Management > Material Master > Material Change > Work Scheduling*).
- You have transferred the material master records for the produced material and all the components (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have created a BOM and a routing for the produced material (see Steps in Creating a Simple Material BOM and Creating a Routing on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.
- This function works with SAP ERP 6.05 and higher with activated business function LOG_PP_MES_INT_02. For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

  Note: LOIPRO03 is required if routings are transferred from SAP ME to SAP ERP (see Transfer of Routing from SAP ME to SAP ERP and the document attached to SAP Note 1793291).
- You have defined unique ISO codes for every unit of measure.

8.6.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).
- You have optionally imported BOM and routing master data from SAP ERP (see Transfer of Bill of Material (BOM) and Transfer of Routing on the SAP Help Portal at http://help.sap.com).

BOM and routing masters that are sent from SAP ERP to SAP ME prior to the production order download allow additional manual configurations to take place inside of SAP ME. This prerequisite is optional because the BOM and routing master can be created in SAP ME directly from the production order download.

- You have optionally set up default values for new material, BOM, and routing master data imported from SAP ERP in *Default Value Maintenance* (see Material Table, BOM Table, and Routing Table on the SAP Help Portal at http://help.sap.com). This is a prerequisite only if your business process requires it, otherwise it can be skipped.

8.6.3 Procedural Steps

1. Create or update a production order containing serial numbers manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see Examples section).

2. SAP ERP 6.05 and later with activated business function (BF) LOG_PP_MES_INT_02 distributes production orders automatically upon release based on Data Replication Framework (DRF) filter settings (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com). Changes to the order are distributed immediately after the initial distribution. See SAP Note 1555198.

Note: SAP ERP 6.05 with activated BF LOG_PP_MES_INT_01 (configuration type B) distributes production orders automatically one time upon release based on customizing settings.

If you use SAP ERP 6.00 – 6.04 (configuration type A), you transfer the production order using the transaction POIT after creating or changing the order.

Note: Transaction POIT supports only the IDoc base types LOIPRO01. The additional fields and segments of the IDoc types LOIPRO02, LOIPRO03, and LOIPRO04 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.

3. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the production shop order with SFC numbers based on the data received from SAP ERP (see Shop Order Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

8.6.4 Alternates / Best Practices and Tips

8.6.5 Examples

8.6.5.1 Creating a Production Order with Serial Numbers

1. Create and transfer the material master records with serial number profile.

   Make sure that the following data is entered on the *Work Scheduling* tab:

   - *Serial no. profile:* Identifies the type of serialization to be used. Browse for available serial number profiles.
   - *SerLevel:* Level on which the serial number must be unique – used in combination with serial number profile field. Blank – the combination of material and serial number is unique. 1 - the serial number and equipment number are kept synchronous.

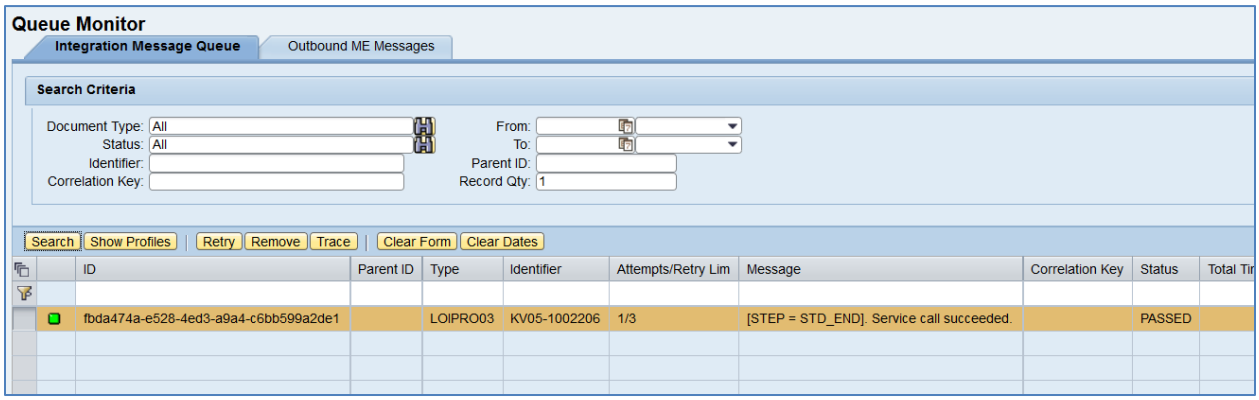
   Note: On the *Plant data / stor. 2* tab, the *Serial no. profile* and *SerLevel* fields have the same values that you defined on the *Work Scheduling* tab.

2. Create or update a production order manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see Creating a Production Order on the SAP Help Portal at http://help.sap.com).

   On the *Maintain Serial Numbers* screen, you can define serial numbers manually. To let the system generate serial numbers, click the *Create serial number automatically* button.

3. Optional: Using *Queue Monitor*, verify that IDocs were received in SAP MII.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



4. Verify results in SAP ME.

Run *Shop Order Maintenance* and retrieve the transferred shop order record.

On the *Main* tab, verify the following field values:

- *Site: Plant* value.
- *Shop Order: Order Number.*
- *Status:* Releasable unless STAT equals:
  - I0012 - Delivered

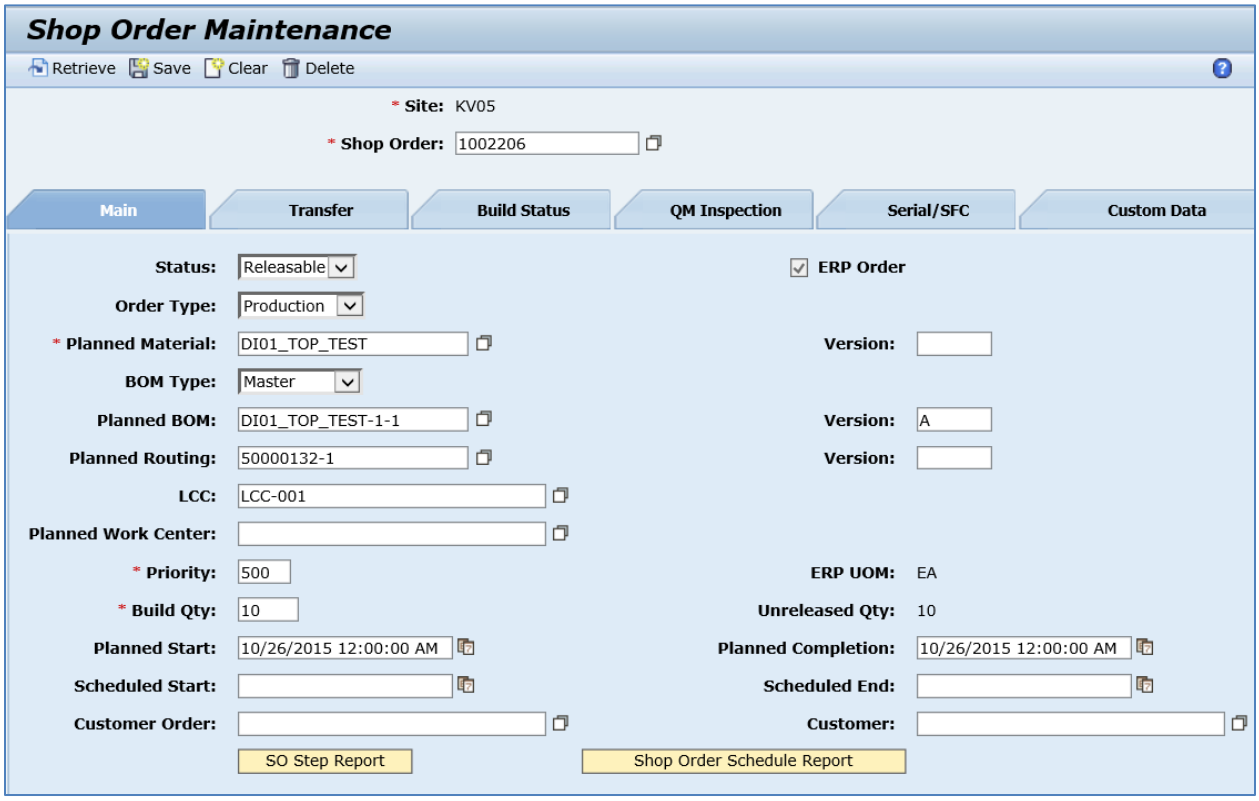
- I0045 - Technically completed
- I0076 - Deletion Flag

If so, the Status is set to Closed.

- *Order Type:* Production.
- *ERP Order:* Selected.
- *Planned Material: Material Number*.
- *Version:* Current.
- *Planned BOM:* Bill of material that is received within production order. Key for the BOM is Material Number (MATNR or MATNR_EXTERNAL) + "-" + BOM Usage (STLAN) + "-" + Alternative BOM (STLAL).
- *Planned BOM Version:* Current.

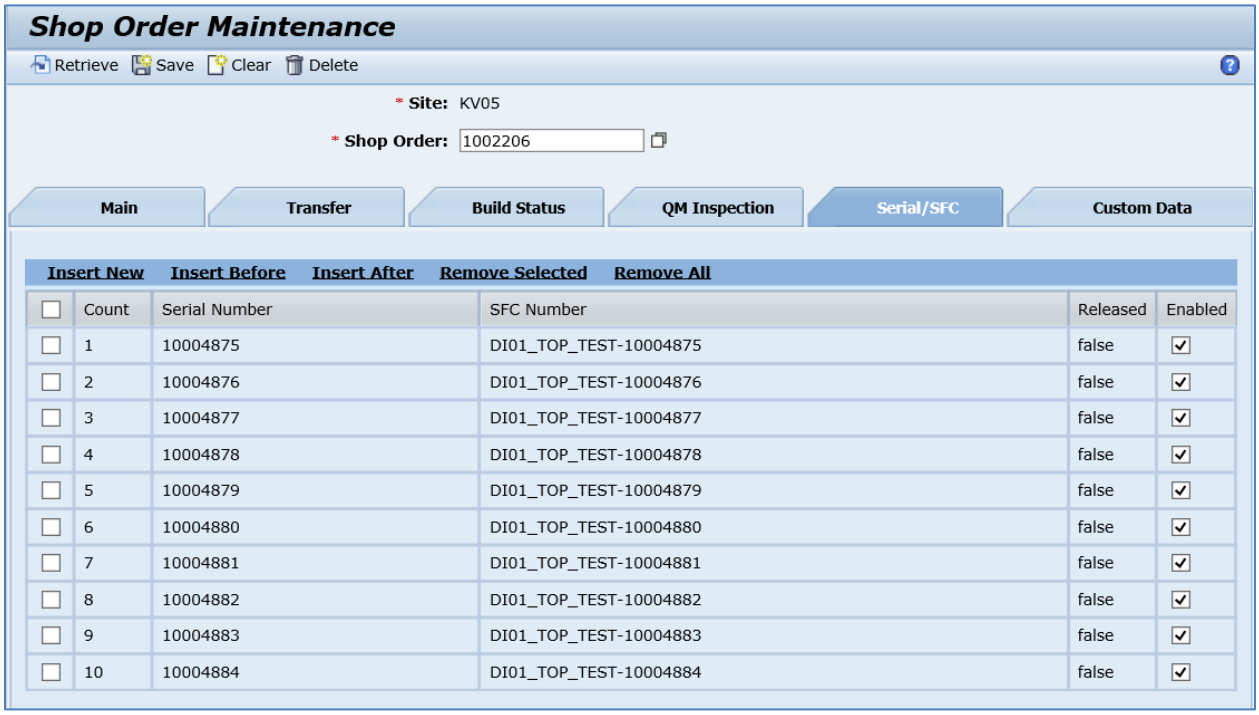
  For more information about transferring a bill of material within a production order, see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) or Configuring a Production Order with BOM and Routing (Make-to-Order Manufacturing) sections of this guide.
- *Planned Routing:* Routing that is received within production order. Routing name structure: Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL).
- *Planned Routing Version:* A.

  For more information about transferring a routing within the production order, see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) or Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing) sections of this guide.
- *ERP UOM:* This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing.
- *Priority:* 500.
- *Build Qty:* Base Quantity of order.
- *Planned Start: Scheduled start date + Scheduled start time*. If Scheduled start time was left blank, defaults to 00:00:01.
- *Planned Completion: Scheduled finish date + Scheduled finish time*. If Scheduled finish time was left blank, defaults to 23:59:59.
- Other fields are BLANK by default or deselected.



On the *Serial/SFC* tab, verify the following field values:

- *Count:* The sequence number for the row in the table.
- *Serial Number:* Serial number belonging to this shop order. If the value was transferred from SAP ERP, it is read only. Note that for non-ERP shop orders, a serial number can be edited only if no SFC number has been released for it.
- *SFC Number:* SFC number belonging to this shop order. If the value was transferred from an external system, it is read only. Note that you cannot remove a row containing a released SFC number.
- *Released:* If true, indicates that this SFC number or serial number has been released for production or corrective action.
- *Enabled:* If selected, you can use this number to release corresponding SFC numbers.



	Count	Serial Number	SFC Number	Released	Enabled
☐	1	10004875	DI01_TOP_TEST-10004875	false	☑
☐	2	10004876	DI01_TOP_TEST-10004876	false	☑
☐	3	10004877	DI01_TOP_TEST-10004877	false	☑
☐	4	10004878	DI01_TOP_TEST-10004878	false	☑
☐	5	10004879	DI01_TOP_TEST-10004879	false	☑
☐	6	10004880	DI01_TOP_TEST-10004880	false	☑
☐	7	10004881	DI01_TOP_TEST-10004881	false	☑
☐	8	10004882	DI01_TOP_TEST-10004882	false	☑
☐	9	10004883	DI01_TOP_TEST-10004883	false	☑
☐	10	10004884	DI01_TOP_TEST-10004884	false	☑

8.7 Configuring a Production Order with a Batch Number

8.7.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer production order data with a batch number from SAP ERP to SAP ME to create or update the corresponding production shop order record in SAP ME (see Transfer of Production Order with Batch Number on the SAP Help Portal at http://help.sap.com).

Certain material features cannot always be guaranteed to be exactly alike in production. For example, you cannot guarantee that a certain color will always have the same shade. Minor differences between production lots cannot be avoided. You need to be able to uniquely identify the individual production lots of the same material and manage them separately in inventory.

Materials that require such precise identification, for example pharmaceutical products, are identified and managed in stock not only according to the material number but also according to the batch number.

A batch is a quantity of the material produced during a given production run. A batch represents a homogeneous unit with unique specifications. A Batch is a subset of the total quantity of a material held in stock. The subset is managed from all other subsets of the same material.

8.7.2 Prerequisites

8.7.2.1 SAP ERP

- You have transferred the batch managed material master records for the produced material and all the components (see Material Transfer on the SAP Help Portal at http://help.sap.com).

  For more information about creating batch managed material master record, see the Configuring Batch Managed Material section of this guide.

- You have created a BOM and a routing for the produced material (see Steps in Creating a Simple Material BOM and Creating a Routing on the SAP Help Portal at http://help.sap.com).

- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).

- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).

- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

  Note: LOIPRO03 is required if routings are transferred from SAP ME to SAP ERP (see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com and the document attached to SAP Note 1793291).

- You have defined unique ISO codes for every unit of measure.

8.7.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).

- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

- You have optionally imported BOM and routing master data from SAP ERP (see Transfer of Bill of Material (BOM) and Transfer of Routing on the SAP Help Portal at http://help.sap.com).

  BOM and routing masters that are sent from SAP ERP to SAP ME prior to the production order download allow additional manual configurations to take place inside of SAP ME. This prerequisite is optional because the BOM and routing master can be created in SAP ME directly from the production order download.

- You have optionally set up default values for new material, BOM, and routing master data imported from SAP ERP in *Default Value Maintenance* (see Material Table, BOM Table, and Routing Table on the SAP Help Portal at http://help.sap.com). This is a prerequisite only if your business process requires it, otherwise it can be skipped.

8.7.3 Procedural Steps

1. Create a batch-managed material record in SAP ERP (see Configuring a Batch Managed Material section of this guide).
2. Create or update a production order with defined batch number manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see Examples section).
3. SAP ERP 6.05 and later with activated business function (BF) LOG_PP_MES_INT_02 distributes production orders automatically upon release based on Data Replication Framework (DRF) filter settings (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com). Changes to the order are distributed immediately after the initial distribution. See SAP Note 1555198.

   Note: SAP ERP 6.05 with activated BF LOG_PP_MES_INT_01 (configuration type B) distributes production orders automatically one time upon release based on customizing settings.

   If you use SAP ERP 6.00 – 6.04 (configuration type A), you transfer the production order using the transaction POIT after creating or changing the order.

   Note: Transaction POIT supports only the IDoc base types LOIPRO01. The additional fields and segments of the IDoc types LOIPRO02, LOIPRO03, and LOIPRO04 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.
4. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

5. Verify results in SAP ME.

SAPMEINT creates or updates the production shop order containing batch number based on the data received from SAP ERP (see Shop Order Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

8.7.4 Alternates / Best Practices and Tips

8.7.5 Examples

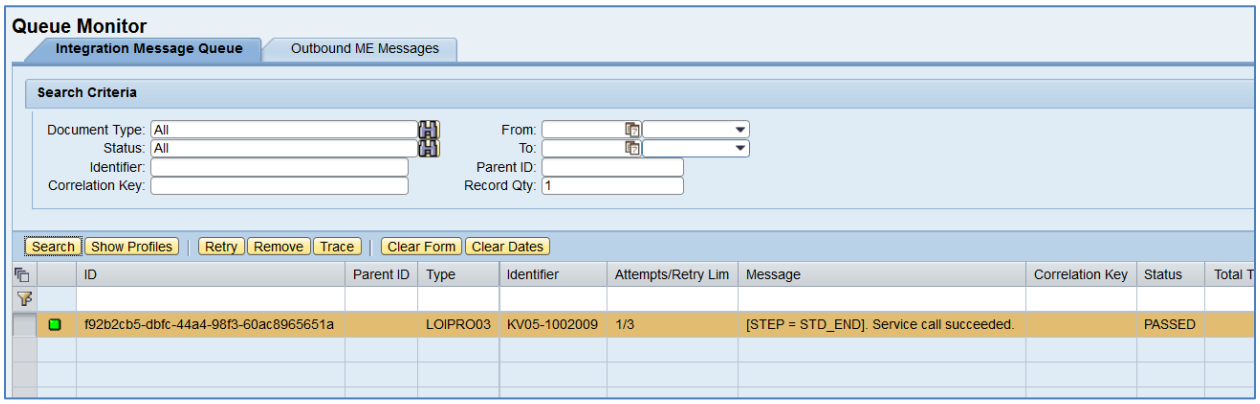
8.7.5.1 Creating a Production Order with a Batch Number

1. Create or update a production order manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see Creating a Production Order on the SAP Help Portal at http://help.sap.com).

   Make sure that the *Batch* value has been specified on the *Production order Create: Header* screen under screen under the *Goods Receipt* tab.

2. Optional: Using *Queue Monitor*, verify that IDocs were received in SAP MII.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



3. Verify results in SAP ME.

Run *Shop Order Maintenance* and retrieve the transferred shop order record.

On the *Main* tab, verify the following field values:

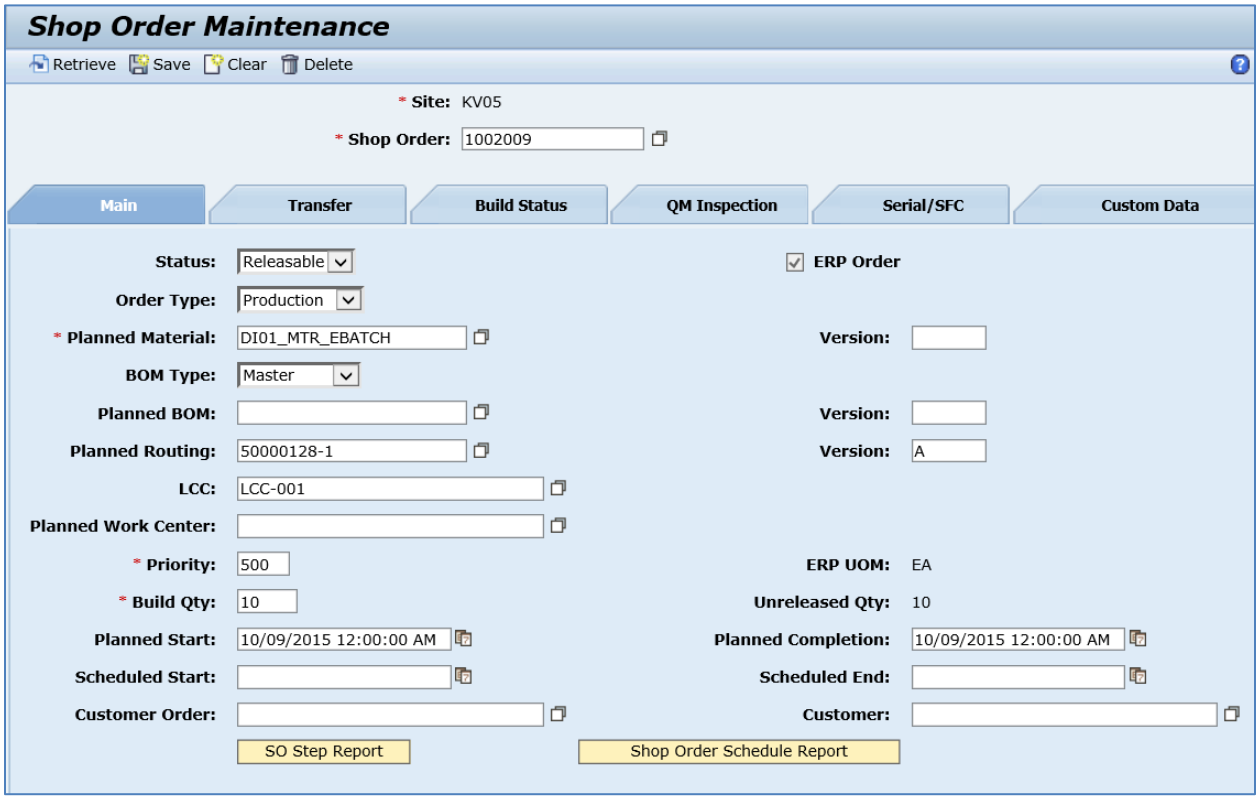
- *Site: Plant* value.
- *Shop Order: Order Number*.
- *Status:* Releasable unless STAT equals:
  - I0012 - Delivered
  - I0045 - Technically completed
  - I0076 - Deletion Flag

  If so, the Status is set to Closed.
- *Order Type:* Production.
- *ERP Order:* Selected.
- *Planned Material: Material Number*.
- *Version:* Current.

- *Planned BOM:* BLANK unless bill of material is transferred from SAP ERP within production order.
- *Planned BOM Version:* Current.

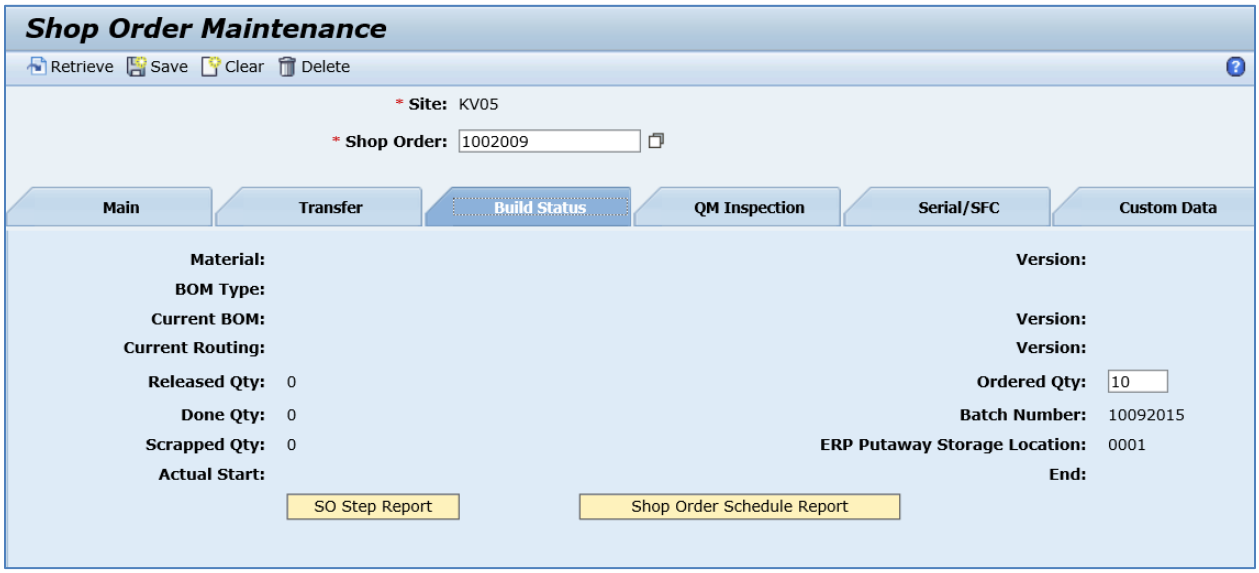
  For more information about transferring a bill of material within a production order, see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) or Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing) sections of this guide.
- *Planned Routing:* Routing that is received within production order. Routing name structure: Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL).
- *Planned Routing Version:* A.

  For more information about transferring a routing within a production order, see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) or Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing) sections of this guide.
- *ERP UOM:* This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing.
- *Priority:* 500.
- *Build Qty:* Base Quantity of order.
- *Planned Start: Scheduled start date + Scheduled start time*. If Scheduled start time was left blank, defaults to 00:00:01.
- *Planned Completion: Scheduled finish date + Scheduled finish time*. If Scheduled finish time was left blank, defaults to 23:59:59.
- Other fields are BLANK by default or deselected.



On the *Build Status* tab, verify the following field values:

- *Ordered Qty:* Base Quantity of order.
- *Batch Number: Batch* value received from SAP ERP.



Note: You can release the order on its creation. You can do this using the *ShopOrderReleaseInfo* field. This is an API field only.

<sch:ShopOrderReleaseInfo>

<sch:Release>all</sch:Release>

</sch:ShopOrderReleaseInfo>

Possible values for the Release tag:
all: whole quantity of the production shop order is released;
a positive whole number: the specified quantity of the production shop order is released.

8.8 Configuring a Production Order with SFDM Scheduling Information

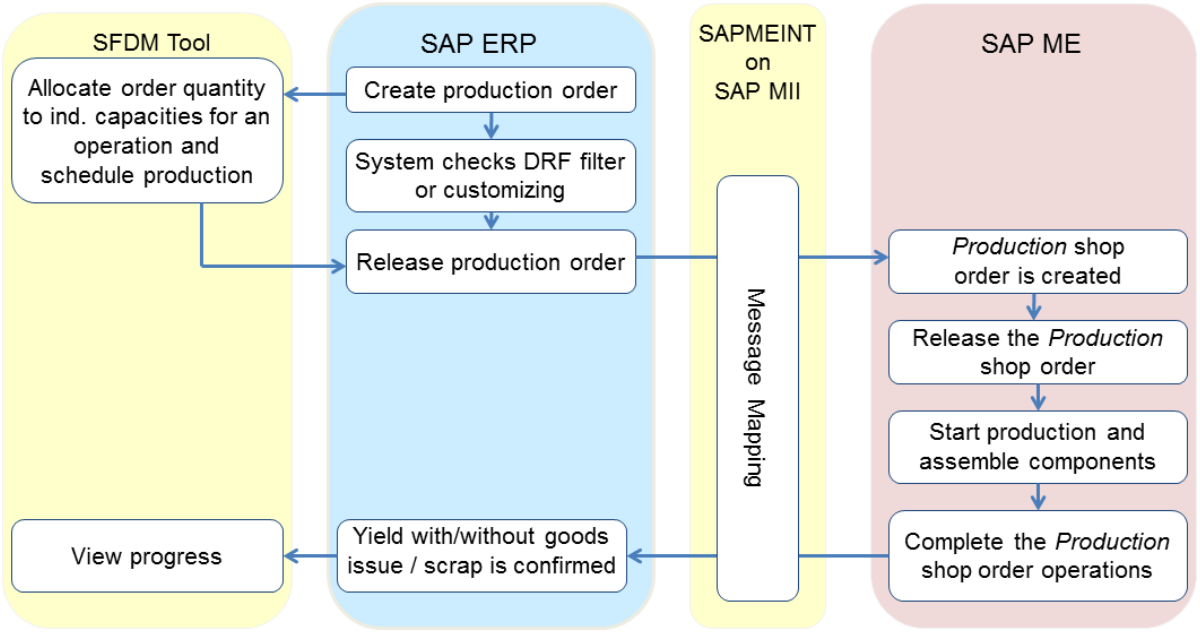
8.8.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a production order with scheduling information from SAP ERP integrated with SAP Shop Floor Dispatching and Monitoring Tool (SFDM) to create or update the corresponding production shop order with quantity splits associated with resources at a specific routing step in SAP ME (see Transfer of Production Order with SFDM Scheduling Information on the SAP Help Portal at http://help.sap.com).

The production order is used by production planning in SAP ERP to define which material is to be processed, at which location, and at what time, and how much work is required. When *Shop Floor Dispatching and Monitoring Tool for SAP ERP* (*SFDM*) is in use, it also plans the resources to be used.

With *SFDM*, you can control and monitor short-term planning on your shop floor. Typical users are production supervisors, foremen, or shift managers.

The release of the production shop order in SAP ME triggers production on the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).



8.8.2 Prerequisites

8.8.2.1 SAP ERP

- You have transferred the material master records for the produced material and all the components (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have created a BOM and a routing for the produced material (see Steps in Creating a Simple Material BOM and Creating a Routing on the SAP Help Portal at http://help.sap.com).
- You have transferred the work centers with individual capacities (see Transfer of Work Center with Individual Capacities on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

  Note: LOIPRO03 is required if routings are transferred from SAP ME to SAP ERP (see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com and the document attached to SAP Note 1793291).
- You have defined unique ISO codes for every unit of measure.
- You have configured SAP ERP to communicate with SAP Shop Floor Dispatching and Monitoring Tool (SFDM) (see http://help.sap.com > SAP Business Suite > SAP Manufacturing > SAP Shop Floor Dispatching and Monitoring Tool).

8.8.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).
- You have imported work center and resources from SAP ERP (see Transfer of Work Center with Individual Capacities on the SAP Help Portal at http://help.sap.com).
- You have optionally imported BOM and routing master data from SAP ERP (see Transfer of Bill of Material (BOM) and Transfer of Routing on the SAP Help Portal at http://help.sap.com).

  BOM and routing masters that are sent from SAP ERP to SAP ME prior to the production order download allow additional manual configurations to take place inside of SAP ME. This prerequisite is optional because the BOM and routing master can be created in SAP ME directly from the production order download.
- You have optionally set up default values for new material, BOM, and routing master data imported from SAP ERP in *Default Value Maintenance* (see Material Table, BOM

Table, and Routing Table on the SAP Help Portal at http://help.sap.com). This is a prerequisite only if your business process requires it, otherwise it can be skipped.

8.8.3 Procedural Steps

1. Create or update a production order manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see the Examples section).
2. Allocate the production order quantity to specific resources for an operation in SFDM to schedule production. This generates a unique split ID for each resource assigned to an operation.
3. Send the production order with scheduling information from SAP ERP to SAP ME.
4. SAP ERP 6.05 and later with activated business function (BF) LOG_PP_MES_INT_02 distributes production orders automatically upon release based on the Data Replication Framework (DRF) filter settings (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com). Changes to the order are distributed immediately after the initial distribution. See SAP Note 1555198.

   Note:

   SAP ERP 6.05 with activated BF LOG_PP_MES_INT_01 (configuration type B) distributes production orders automatically one time upon release based on customizing settings.

   If you use SAP ERP 6.00 – 6.04 (configuration type A), you transfer the production order using the transaction POIT after creating or changing the order.

   Note: Transaction POIT supports only the IDoc base types LOIPRO01. The additional fields and segments of the IDoc types LOIPRO02, LOIPRO03, and LOIPRO04 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.
5. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

6. Verify results in SAP ME.

SAPMEINT creates or updates the production shop order containing scheduling information based on the data received from SAP ERP (see Shop Order Maintenance on the SAP Help Portal at http://help.sap.com).

When the shop order is released in SAP ME, shop floor operators can see information about shop order planned quantity for a scheduled resource at an operation along with the planned operation start and end time in the POD Work List (see POD Work List on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

8.8.4 Alternates / Best Practices and Tips

8.8.4.1 Displaying Scheduling Information in the POD

When the shop order is released in SAP ME, shop floor operators can see information about shop order planned quantity for a scheduled resource at an operation along with the planned operation start and end time in the POD Work List.

To ensure this, two new work lists (SFD_SFC_ACTIVE and SFD_SFC_TASK) have been created and they are available in the Worklist category of *List Maintenance*.

SFD_SFC_ACTIVE list by default has the following fields: SFC (SFC), ITEM (Material), QTY (Qty), PRIORITY (Priority), START_DATE_TIME (Operation Start), SHOP_ORDER (Shop Order), STATUS (Status), COMPLETE_PENDING (Complete Pending), OPER_SCHEDULE_START_DATE (Operation Schedule Start Time), OPER_SCHEDULE_END_DATE (Operation Schedule End Time), RESOURCE_SCHEDULE (Planned Resource), RESOURCE (Resource).

Fields are sorted first by the OPER_SCHEDULE_START_DATE column, then by RESOURCE_SCHEDULE, and then by SFC.

SFD_SFC_TASK list by default has the following fields: SFC (SFC), ITEM (Material), QTY (Qty), PRIORITY (Priority), DATE_QUEUE (Date Queued), SHOP_ORDER (Shop Order), STATUS (Status), OPER_SCHEDULE_START_DATE (Operation Schedule Start Time), OPER_SCHEDULE_END_DATE (Operation Schedule End Time), RESOURCE_SCHEDULE (Planned Resource).

Fields are sorted first by the OPER_SCHEDULE_START_DATE column, then by RESOURCE_SCHEDULE and then by SFC.

SFC numbers with scheduling information are placed at the top of SFD_SFC_ACTIVE and SFD_SFC_TASK lists.

SFC numbers are distributed between splits dynamically according to the order of their release.

If an SFC number is started on a non-planned resource, then redistribution takes place and the SFC number from the other split can replace the one that has been started.

For example, SFC number from Split 2 is started on the resource that is used to process Split 1. If Split 1 is not completed and still contains SFC numbers that are not processed, then SFCs that are started are automatically included in Split 1 and replace some of the existing SFCs there. The *Planned Resource* field displays a resource that is allocated to process Split 1. If Split 1 is already done, then the *Planned Resource* field displays a resource that is allocated to process Split 2.

If Split 1 is done and the SFC from the Split 2 is completed on the resource that is allocated to process Split 1, then the SFC from the next split is automatically moved to Split 2.

8.8.4.2 Automatic Work Center Assignment

A work center that is received within a production order can be automatically assigned to a SAP ME operation and routing step.

Note: This is only possible if the ERP work center has been preliminarily transferred to SAP ME and if the production order IDoc contains a section with scheduling information.

The received ERP work center value is used to populate both *Work Center* and *ERP Work Center* fields in *Operation Maintenance* and on the *Routing Step Details* screen in *Routing Maintenance*.

The external ID of the work center (*ARBPL* field) is used to find the corresponding SAP ME work center. If LOIPRO IDoc does not contain an external ID of the work center, its internal ID (*ARBID* field) is used instead.

8.8.5 Examples

8.8.5.1 Creating a Production Order with SFDM Scheduling Information

1. Create and transfer a work center with individual capacities from SAP ERP to SAP ME (see Configuring a Work Center with Individual Capacities section of this guide).
2. Create a routing for the produced material (see Configuring a Standard Routing in SAP ERP section of this guide).

Note: *Standard Values* must be provided for each operation that will be used for production planning.

3. Create or update a production order manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see Creating a Production Order on the SAP Help Portal at http://help.sap.com).

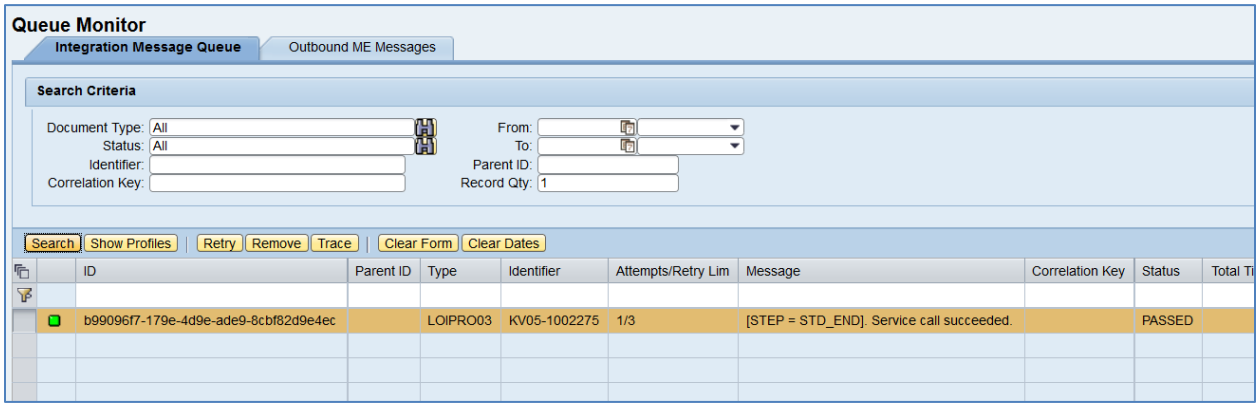
   On the *Production Order Create: Operation Overview* screen, select an operation row and enter operation details (*Operation* > *Operation Details*).

   Specify splits on the *Cap. Rqmt Assignment* tab.

Note: Shop Floor Dispatcher and Monitoring tool (SFDM) can also be used to allocate the production order quantity to specific resources for an operation to schedule production. This generates a unique split ID for each resource assigned to an operation.

4. Optional: Using *Queue Monitor*, verify that IDocs were received in SAP MII.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



5. Verify results in SAP ME.

Run *Shop Order Maintenance* and retrieve the transferred shop order record.

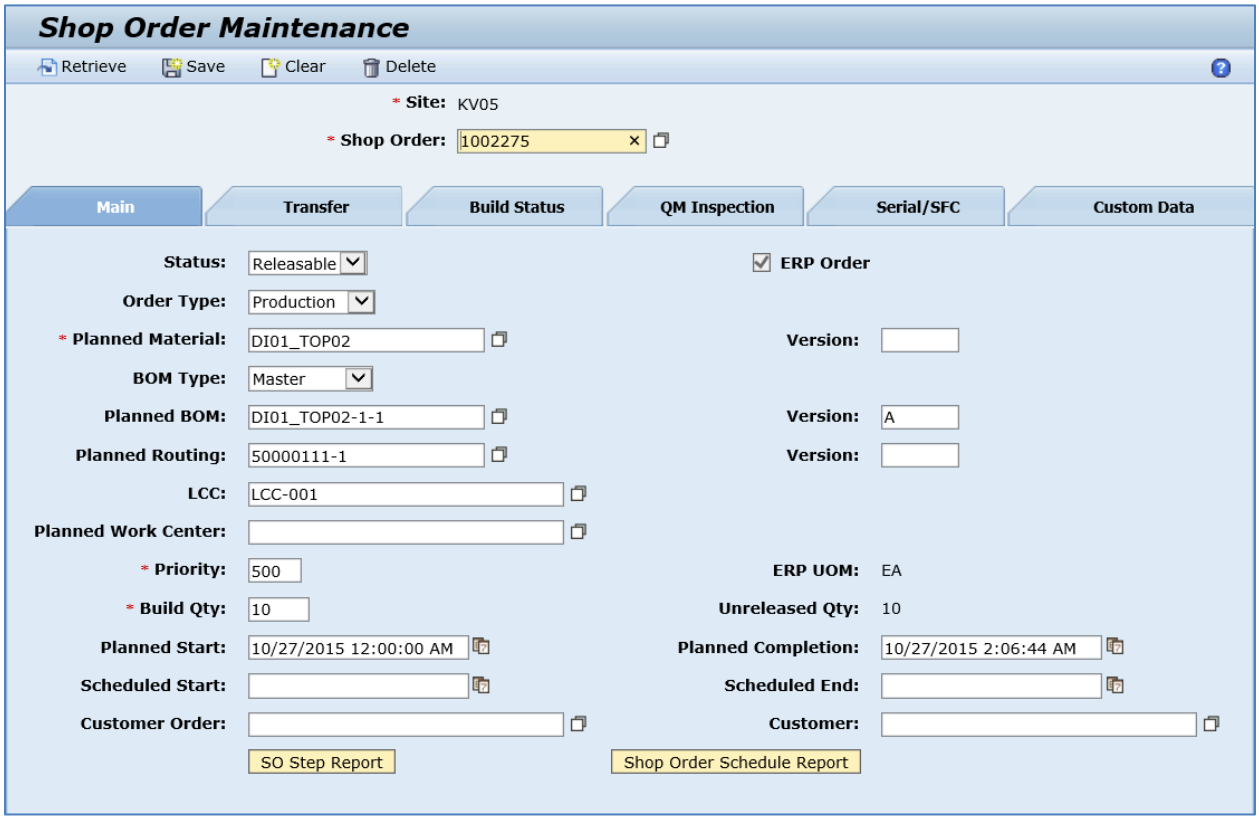
On the *Main* tab, verify the following field values:

- *Site: Plant* value.
- *Shop Order: Order Number.*
- *Status:* Releasable unless STAT equals:
    - I0012 - Delivered
    - I0045 - Technically completed
    - I0076 - Deletion Flag

  If so, the Status is set to Closed.
- *Order Type:* Production.
- *ERP Order:* Selected.
- *Planned Material: Material Number*.
- *Version:* Current.
- *Planned BOM:* Bill of material that is received within production order. Key for the BOM is Material Number (MATNR or MATNR_EXTERNAL) + "-" + BOM Usage (STLAN) + "-" + Alternative BOM (STLAL).
- *Planned BOM Version:* Current.

  For more information about transferring a bill of material within a production order, see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) or Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing) sections of this guide.
- *Planned Routing:* Routing that is received within production order. Routing name structure: Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL).
- *Planned Routing Version:* A.

  For more information about transferring a routing within a production order, see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) or Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing) sections of this guide.
- *ERP UOM:* This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing.
- *Priority:* 500.
- *Build Qty:* Base Quantity of order.
- *Planned Start: Scheduled start date + Scheduled start time*. If Scheduled start time was left blank, defaults to 00:00:01.
- *Planned Completion: Scheduled finish date + Scheduled finish time*. If Scheduled finish time was left blank, defaults to 23:59:59.
- Other fields are BLANK by default or deselected.

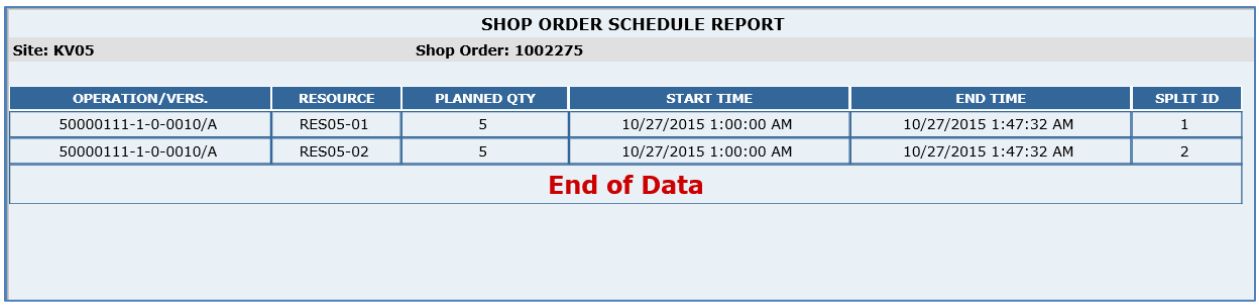


6. Click the *Shop Order Schedule Report* button. You use this report to obtain scheduling details for the production shop order.

You can search this report using shop order parameters.

You can obtain the start date and end date of the operations to be performed at a resource for a production shop order quantity split ID:

- *Operation / Version:* Operation.
- *Resource:* The *Individual Capacity* ID and ME Resource.
- *Planned Quantity:* Operation Quantity to be processed on this resource.
- *Start Time:* Scheduled earliest start date / time.
- *End Time:* Scheduled earliest finish date / time.
- *Split ID:* Split Number.



SHOP ORDER SCHEDULE REPORT

Site: KV05 Shop Order: 1002275

OPERATION/VERS.	RESOURCE	PLANNED QTY	START TIME	END TIME	SPLIT ID
50000111-1-0-0010/A	RES05-01	5	10/27/2015 1:00:00 AM	10/27/2015 1:47:32 AM	1
50000111-1-0-0010/A	RES05-02	5	10/27/2015 1:00:00 AM	10/27/2015 1:47:32 AM	2

End of Data

8.9 Configuring a Production Order with a Quality Inspection Lot

8.9.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer production order data with a quality inspection lot from SAP ERP to SAP ME to create or update the corresponding production shop order with quality inspection information in SAP ME (see Transfer of Production Order with Quality Inspection Lot on the SAP Help Portal at http://help.sap.com).

8.9.2 Prerequisites

8.9.2.1 SAP ERP

- In Customizing for *Quality Management*, you have done the following:
  - Click *Basic Settings* and execute *Maintain Setting at Plant Level*.
  - Click the plant record and then the *Details* icon.
  - On the *Results Recording* tab, in the *Results Recording* area, deselect *Summ. recording for n=1*.

  Note: If the *Summ. recording for n=1* checkbox is selected, an error message displays in SAPMEINT and the production shop order is not created.
- You have assigned and activated *Inspection Type* 03 (in-process inspection for production order) for the material on the *Quality Management View* of transaction MM01 or MM02.
- You have transferred materials to SAP ME.
- You have assigned inspection characteristics to relevant operations on the routing (see Configuring a Standard Routing with Inspection Characteristics section of this guide).

  Note: The inspection characteristic of type 02 (Qualitative) and classed inspection characteristics are not supported. The inspection characteristic for planned orders is not supported.
- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

  Note: LOIPRO03 is required if routings are transferred from SAP ME to SAP ERP (see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com and the document attached to SAP Note 1793291).
- You have defined unique ISO codes for every unit of measure.

8.9.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).
- You have optionally imported BOM and routing master data from SAP ERP (see Transfer of Bill of Material (BOM) and Transfer of Routing on the SAP Help Portal at http://help.sap.com).

  BOM and routing masters that are sent from SAP ERP to SAP ME prior to the production order download allow additional manual configurations to take place inside of SAP ME. This prerequisite is optional because the BOM and routing master can be created in SAP ME directly from the production order download.
- You have optionally set up default values for new material, BOM, and routing master data imported from SAP ERP in *Default Value Maintenance* (see Material Table, BOM Table, and Routing Table on the SAP Help Portal at http://help.sap.com). This is a prerequisite only if your business process requires it, otherwise it can be skipped.

8.9.3 Procedural Steps

1. Create or update a production order containing inspection characteristics manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see the Examples section).

   An inspection lot of inspection origin 03 is automatically created and assigned to the production order on release.

2. SAP ERP 6.05 and later with activated business function (BF) LOG_PP_MES_INT_02 distributes production orders automatically upon release based on Data Replication Framework (DRF) filter settings (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com). Changes to the order are distributed immediately after the initial distribution. See SAP Note 1555198.

   Note:

   SAP ERP 6.05 with activated BF LOG_PP_MES_INT_01 (configuration type B) distributes production orders automatically one time upon release based on customizing settings.

   If you use SAP ERP 6.00 – 6.04 (configuration type A), you transfer the production order using the transaction POIT after creating or changing the order.

   Note: Transaction POIT supports only the IDoc base types LOIPRO01. The additional fields and segments of the IDoc types LOIPRO02, LOIPRO03, and LOIPRO04 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.

3. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

When the production order is sent to SAP ME, SAPMEINT creates the following records in SAP ME:

- Production shop order with quality inspection data (see *QM Inspection* in Shop Order Maintenance on the SAP Help Portal at http://help.sap.com)
- Routing with operations. The last reporting step has *Block SFCs Until Inspection Finished* selected (see Routing Step Properties on the SAP Help Portal at http://help.sap.com)
- One or more DC groups attached to the shop order, routing, and routing steps (see Data Collection Maintenance on the SAP Help Portal at http://help.sap.com)

4. Verify results in SAP ME.

SAPMEINT creates or updates the production shop order, BOM, routing, and DC groups in SAP ME based on the data received from SAP ERP (see Shop Order Maintenance on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

8.9.4 Alternates / Best Practices and Tips

8.9.5 Examples

8.9.5.1 Creating a Production Order with Quality Inspection Lot

1. Create and transfer the material master records for the produced material and all the components.
2. Create a BOM for the produced material (see Configuring a Bill of Material (BOM) section of this guide).
3. Create a routing with quality characteristics for the produced material (see Configuring a Standard Routing with Inspection Characteristics section of this guide).
4. Create or update a production order manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see Creating a Production Order on the SAP Help Portal at http://help.sap.com).
5. Verify created *Inspection Lot*. In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Production* > *Shop Floor Control* > *Order* > *Display*

or transaction code – *CO03*

On the *Production order Display: Header* screen under the *Assignment* tab, double-click the *Inspection Lot* number.

On the *Insp. Lot Quantities* tab, view the inspection lot size and the sample calculation.

On the *Insp. Specifications* tab, view the inspection specifications.

Note: The inspection specification is the master routing for the material.

Select the *Disp. TaskList* icon to view the operation overview.

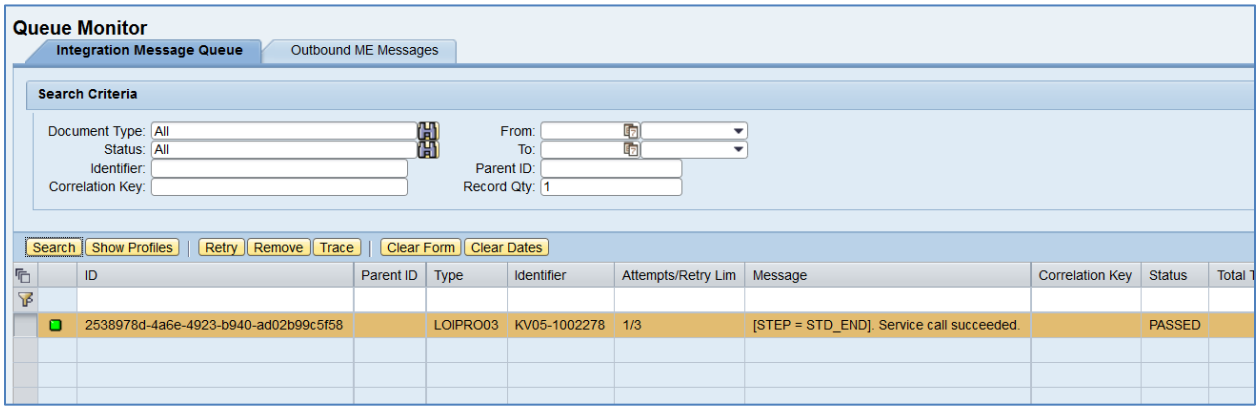
Highlight the inspection operation and click the *Inspection Characteristics* icon to view inspection characteristic requirements.

Note: The inspection characteristic was copied from the inspection operation in the master routing for the material.

If all steps are correct, the inspection setup is complete for the material.

6. Optional: Verify IDocs were received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



7. Verify results in SAP ME.

Run *Shop Order Maintenance* and retrieve the transferred shop order record.

On the *Main* tab, verify the following field values:

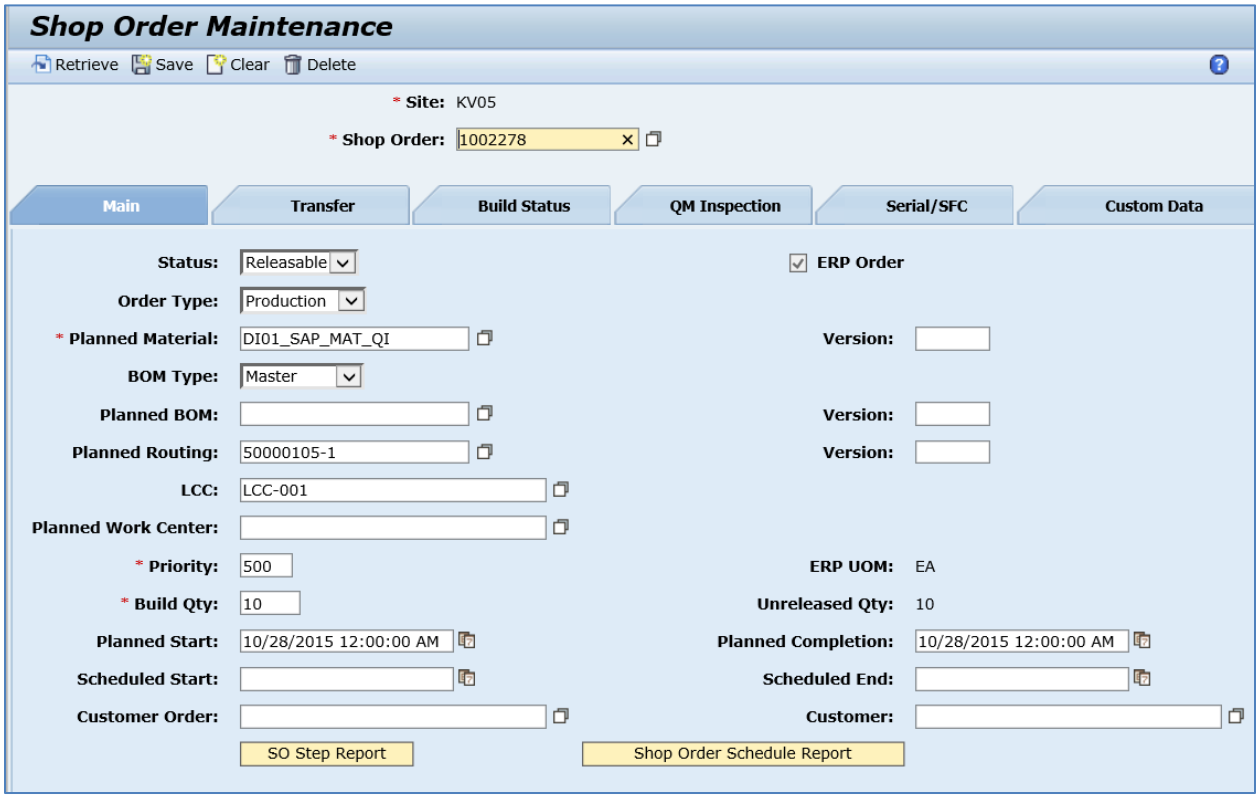
- *Site: Plant* value.
- *Shop Order: Order Number*.
- *Status:* Releasable unless STAT equals:
  - I0012 - Delivered
  - I0045 - Technically completed
  - I0076 - Deletion Flag

  If so, the Status is set to Closed.
- *Order Type:* Production.
- *ERP Order:* Selected.
- *Planned Material: Material Number*.
- *Version:* Current.

- *Planned BOM:* BLANK unless bill of material is transferred from SAP ERP within production order.
- *Planned BOM Version:* Current.

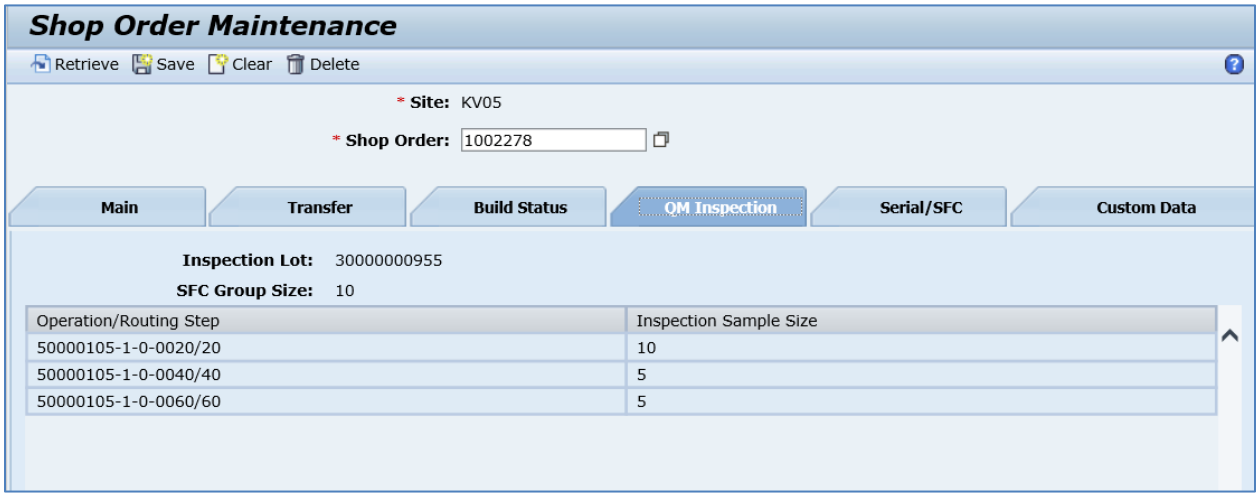
  For more information about transferring a bill of material within a production order, see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) or Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing) sections of this guide.
- *Planned Routing:* Routing that is received within production order. Routing name structure: Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL).
- *Planned Routing Version:* A.

  For more information about transferring a routing within a production order, see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) or Configuring a Production Order with a BOM and Routing (Make-to-Order Manufacturing) sections of this guide.
- *ERP UOM:* This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing.
- *Priority:* 500.
- *Build Qty:* Base Quantity of order.
- *Planned Start: Scheduled start date + Scheduled start time*. If Scheduled start time was left blank, defaults to 00:00:01.
- *Planned Completion: Scheduled finish date + Scheduled finish time*. If Scheduled finish time was left blank, defaults to 23:59:59.
- Other fields are BLANK by default or deselected.



On the *Quality Inspection* tab, verify the following field values:

- *Inspection Lot:* The unique identifier of the request to a plant to inspect a specific quantity of material or one or more pieces of equipment or functional locations. Matches the *Inspection Lot* created in SAP ERP.
- *SFC Group Size:* The total quantity of SFC numbers (total number of pieces) in sampling group. In case of integrated quality inspection, this size equals the quantity of order.
- *Operation/Routing Step:* The operation or routing step at which the sampling is performed.
- *Inspection Sample Size:* The quantity of pieces in the SFC group to be inspected.



Run *Data Collection Maintenance.* Separate DC groups are created for each inspection step. The name of the DC group is "Production Order (AUFNR) + '-' + 10-based counter".

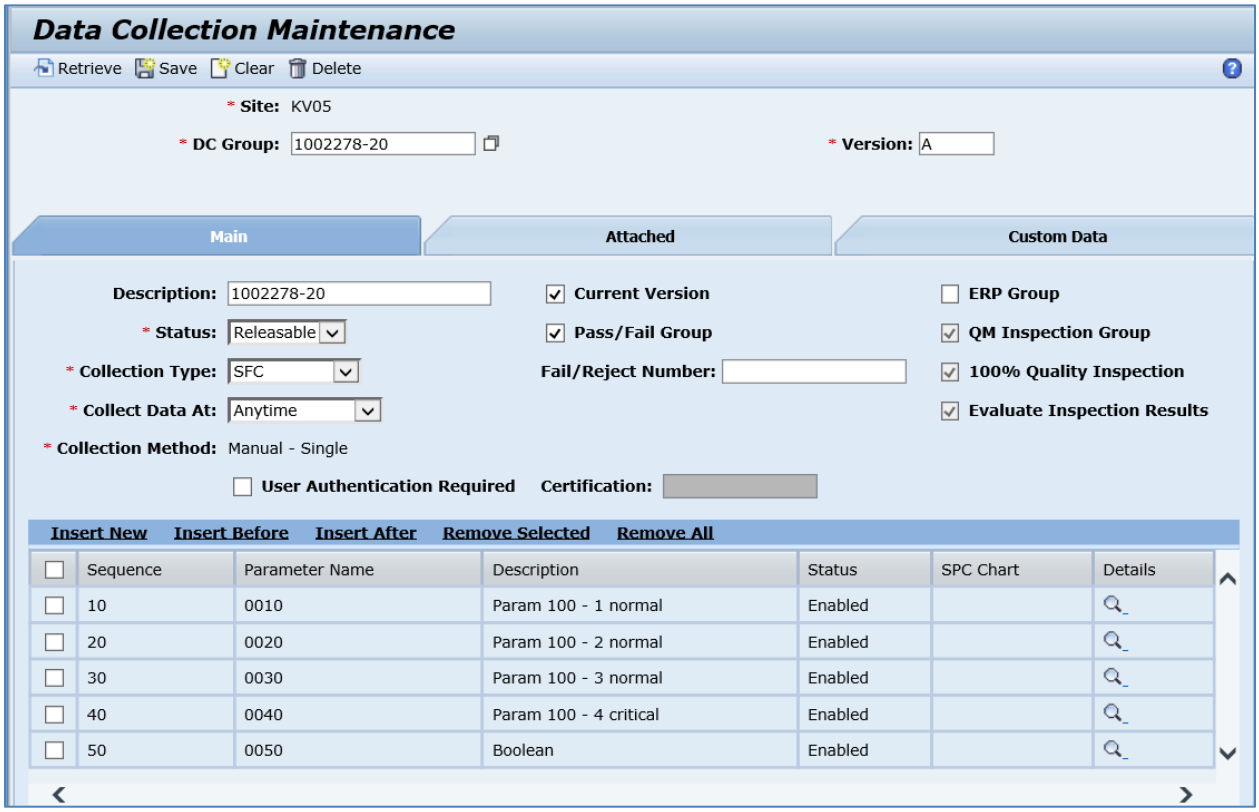
On the *Main* tab, verify the following field values:

- *Site: Plant* value.
- *DC Group:* "Production Order (AUFNR) + '-' + 10-based counter".
- *Version:* A.
- *Description:* The Short Text for the Inspection Characteristic.
- *Status:* Releasable.
- *Collection Type:* SFC.
- *Collect Data At:* Anytime.
- *Collection Method:* Manual – Single.
- *Current Version:* Selected.
- *Pass/Fail Group:* If selected, this DC group is a pass/fail group. Automatically set to True if 100% Quality Inspection checkbox is selected.

  If you select this checkbox, the system selects and disables the *Override Min/Max* checkbox on the *Main* tab of the *Parameter Detail* screen.
- *Fail/Reject Number:* BLANK.
- *ERP Group:* Deselected.
- *QM Inspection Group:* Selected, which indicates that this DC group is used for quality inspection.
- *100% Quality Inspection:* Automatically selected when the Required Number of SFCs value for each data parameter in this DC group equals the Build Qty value of the production shop order.

  Sampling procedure for all inspection characteristics of this operation equals either *100%* or *ALLITEMS* in SAP ERP.

- *Evaluate Inspection Results:* If selected, the data collected for this DC group is evaluated in SAP ME. This checkbox is automatically selected along with *100% Quality Inspection checkbox.*
- *User Authentication Required:* Defaulted to False.
- *Certification:* BLANK and disabled.



Click the *Details* icon to open *Parameter Details* screen.

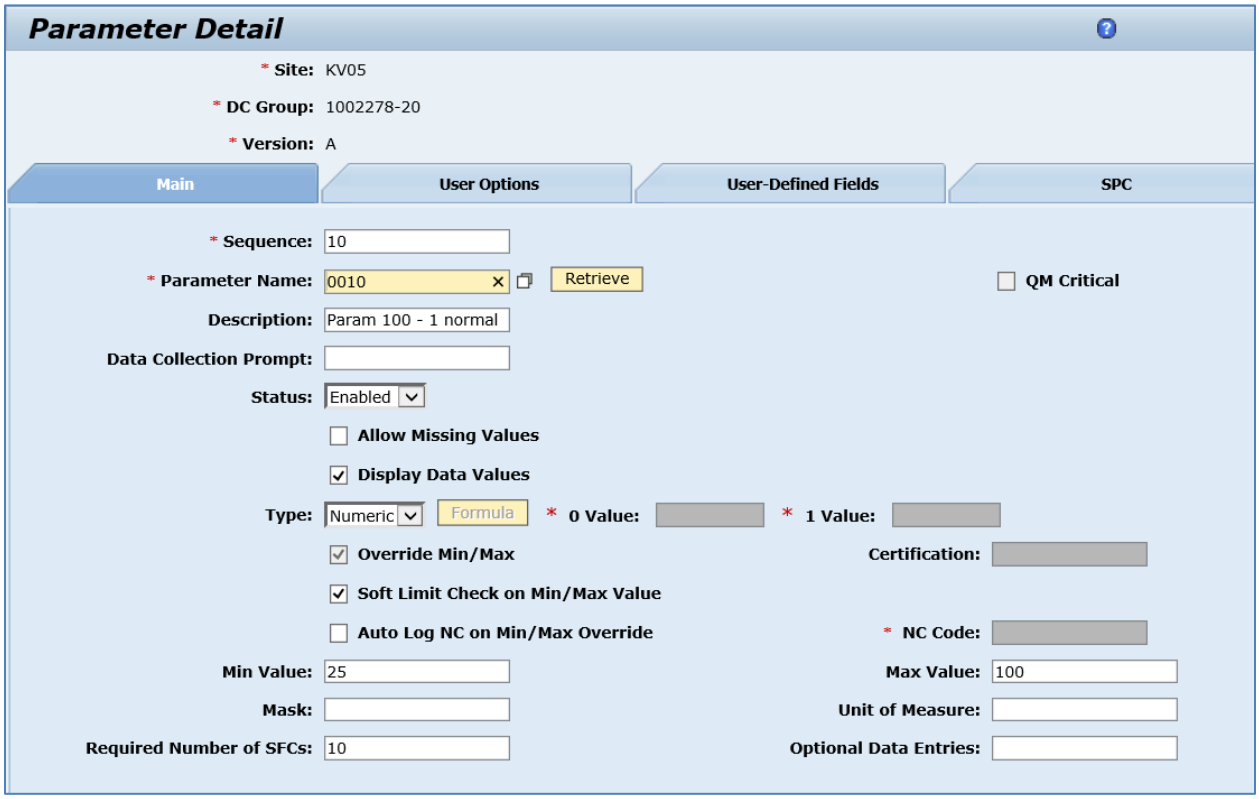
On the *Main* tab, verify the following field values:

- *Sequence:* The order in which data is collected when there are multiple data parameters to collect.
- *Parameter Name:* The name of the information for which you are collecting data. Matches the *Insp. Lot Charac. No.* field in SAP ERP.
- *Description:* Describes this data collection parameter. The *Short Text* for the *Inspection Characteristic* field.
- *Data Collection Prompt:* The prompt that the production operator will see when collecting data. Blank by default.
- *Status:* Enabled. Allows the parameter to be used.
- *QM Critical:* The *Defects Recording* field in SAP ERP.
- *Allow Missing Values:* Allows an operator to save the collected data for the DC group by entering a special character in place of missing values. Defaults to False.

- *Display Data Values:* If selected, the Type, Mask, Min Value, Max Value, and Unit of Measure field values appear in the DC Parameter list of the DC plugin. Defaults to True.
- *Type:* The type of the collected information. The *Characteristic Type* that is received from SAP ERP:
    - *CHAR_TYPE='01':* Type=Numeric, Soft Limit Check on Min/Max Value=true
    - *CHAR_TYPE='02':* Type=Text
    - *CHAR_TYPE='03':* Type=Boolean, 0 Value='REJECT', 1 Value='ACCEPT'
    - *CHAR_TYPE='04':* Type=Numeric, Soft Limit Check on Min/Max Value=true

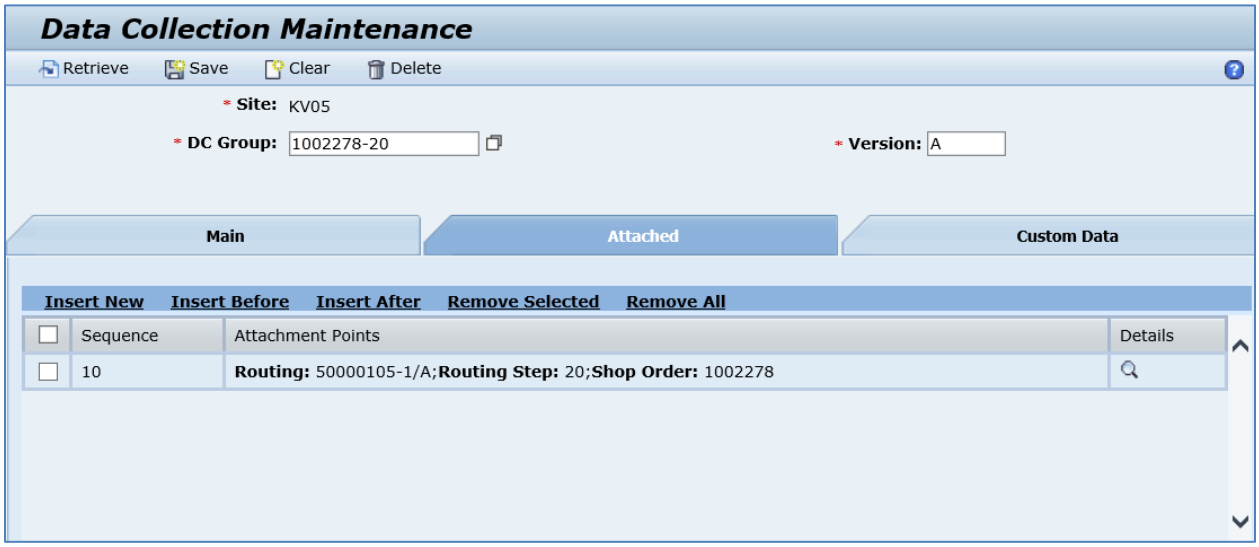
      Note: If the type of the collected information is Boolean, then the valid choices are 0 Value - REJECT and 1 Value – ACCEPT fields.
- *Override Min/Max:* If selected, allows operators to save values that are beyond the range of the values defined in the Min Value and Max Value fields. Defaults to True.
- *Certification:* Specifies that the defined certification is required to override the minimum or maximum value in the data collection field. Disabled by default.
- *Soft Limit Check on Min/Max Value:* If selected, allows operators to save values that are beyond the range of the values defined in the Min Value and Max Value fields. Automatically selected for all data parameters of DC groups that are used for quality inspection.

  Note: this checkbox is enabled only for the Numeric and Formula parameter types.
- *Min Value:* The minimum value that an operator can save during the data collection. The *Lower Tolerance Limit* field.
- *Max Value:* The maximum value that an operator can save during the data collection. The *Upper Tolerance Limit* field.
- *Mask:* The metacharacter string of the mask. Blank by default.
- *Unit of Measure:* The unit of measure for this data parameter. The *Unit of Measurement* field.
- *Required Number of SFCs:* The quantity of SFC numbers that must be inspected against this parameter. The *Sample Size to Be Inspected* in QM Subsystem.
- *Optional Data Entries:* The number of optional entries that can be collected for this data parameter. Blank by default.



Close *Parameter Details* and open *Attached* tab. Verify the following field values:

- *Sequence:* Sequence of the attachment point.
- *Attachment Points:* By default DC group is attached to the routing, routing step and shop order:
    - *Routing:* Key of a *Routing* from an ME System or Key for Task List Group (PLNNR) + '-' + Group Counter (PLNAL).
    - *Routing Step:* Key of a Step in a Routing. MES_STEPID when routings are hosted in SAP ME or auto generated sequence.
    - *Shop Order:* Order Number (AUFNR).



8.10 Configuring a Production Order with Document Info Records

8.10.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer document info records attached to a production order in SAP ERP to create a production shop order and work instructions attached to the shop order operations in SAP ME (see Work Instruction on the SAP Help Portal at http://help.sap.com).

You can use this function with SAP ERP 6.0 EHP 6 or higher.

Documents from document management that you have assigned to the order header or to the operations directly or that you have defined as a production resource/tool at operation level are communicated to SAP ME with the IDoc. Before distributing the order, the system checks whether the assigned documents were released. A URL that is part of the respective IDoc segments and that provides an Internet Communication Framework (ICF) service of the ERP system can be used to access the originals linked to the documents. In this way, documents that are in the vault in document management can also be retrieved.

Data transmission occurs by means of a secure connection (https port). Activate the service for structuring and reading a URL for this purpose. To do so, choose transaction *SICF*, browse for DEFAULT_HOST in *Virtual Host* field and click *Execute* icon. Expand *default_host* > *sap* > *co_mes_int* > *co_mes_document*. Select the service and click *Activate* in the *Service/Host* menu.

Note: If you want to allow several users to access an original via the URL, ensure that the original is located in the SAP vault or in a network directory and it is not stored locally.

See SAP Note 1555198 or Production Order on the SAP Help Portal at http://help.sap.com.

8.10.2 Prerequisites

8.10.2.1 SAP ERP

- You have transferred the material master records for the produced material and all the components (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have created a BOM and a routing for the produced material (see Steps in Creating a Simple Material BOM and Creating a Routing on the SAP Help Portal at http://help.sap.com).
- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

  Note: LOIPRO03 is required if routings are transferred from SAP ME to SAP ERP (see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com and the document attached to SAP Note 1793291).
- You have defined unique ISO codes for every unit of measure.
- You have created and released a document info record of the type *PRT* or *Non-PRT* (transaction *CV01N*) in SAP ERP (see Creating Document Master section of this guide).

8.10.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).
- You have optionally imported BOM and routing master data from SAP ERP (see Transfer of Bill of Material (BOM) and Transfer of Routing on the SAP Help Portal at http://help.sap.com).

  BOM and routing masters that are sent from SAP ERP to SAP ME prior to the production order download allow additional manual configurations to take place inside of SAP ME. This prerequisite is optional because the BOM and routing master can be created in SAP ME directly from the production order download.
- You have optionally set up default values for new material, BOM, and routing master data imported from SAP ERP in *Default Value Maintenance* (see Material Table, BOM Table, and Routing Table on the SAP Help Portal at http://help.sap.com). This is a prerequisite only if your business process requires it, otherwise it can be skipped.

8.10.3 Procedural Steps

1. Create or update a production order manually (transaction *CO01* and *CO02*) or automatically by converting a planned order.
2. Attach one or more document info records to a production order header by entering the document type.

   Note: The document info record must be of the Non-PRT type if attached to the production order header.

   Alternatively, you can attach one or more document info records to an operation of a production order by entering the operation and document type.
3. Release and save the production order after attaching the document info records.
4. SAP ERP 6.05 and later with activated business function (BF) LOG_PP_MES_INT_02 distributes production orders automatically upon release based on Data Replication Framework (DRF) filter settings (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com). Changes to the order are distributed immediately after the initial distribution. See SAP Note 1555198.

   Note:

   SAP ERP 6.05 with activated BF LOG_PP_MES_INT_01 (configuration type B) distributes production orders automatically one time upon release based on customizing settings.

   If you use SAP ERP 6.00 – 6.04 (configuration type A), you transfer the production order using the transaction POIT after creating or changing the order.

   Note: Transaction POIT supports only the IDoc base types LOIPRO01. The additional fields and segments of the IDoc types LOIPRO02, LOIPRO03, and LOIPRO04 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.
5. Optional: Verify *LOIPRO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

When the production order is sent to SAP ME, SAPMEINT creates the following records in SAP ME:

- Production shop order with operations and attachment points for the work instructions
- Routing
- Operations

- Work instructions

6. Verify results in SAP ME.

SAPMEINT creates or updates the production shop order, BOM, routing, and work instructions in SAP ME based on the data received from SAP ERP (see the Examples section).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

8.10.4 Alternates / Best Practices and Tips

8.10.5 Examples

8.10.5.1 Creating a Production Order with Document Info Records

1. Create or update a production order manually (transaction *CO01* and *CO02*) or automatically by converting a planned order (see Creating a Production Order on the SAP Help Portal at http://help.sap.com).

   Make sure that the following data is entered on the *Production Order Create: Document Links* screen:

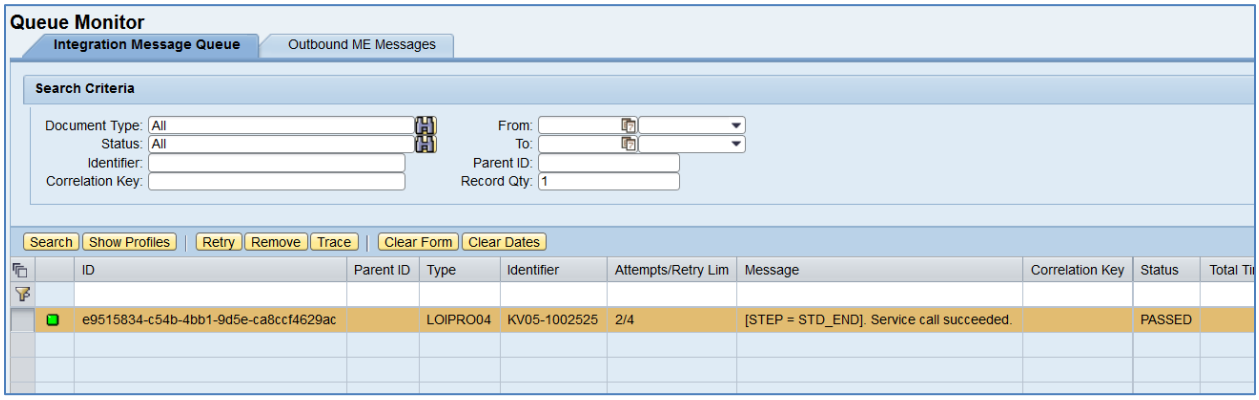
   - *Type:* Select the non-PRT document type that was used during document creation. Select DRF.

     Note: Documents should only be of non-PRT types while attaching to Production Order header or operation.

   - Document: Select a name of the document.
   - *Oper./Act.:* Optional: Select the operation from the list of available operations.

2. Optional: Verify IDocs exist in SAP MII.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

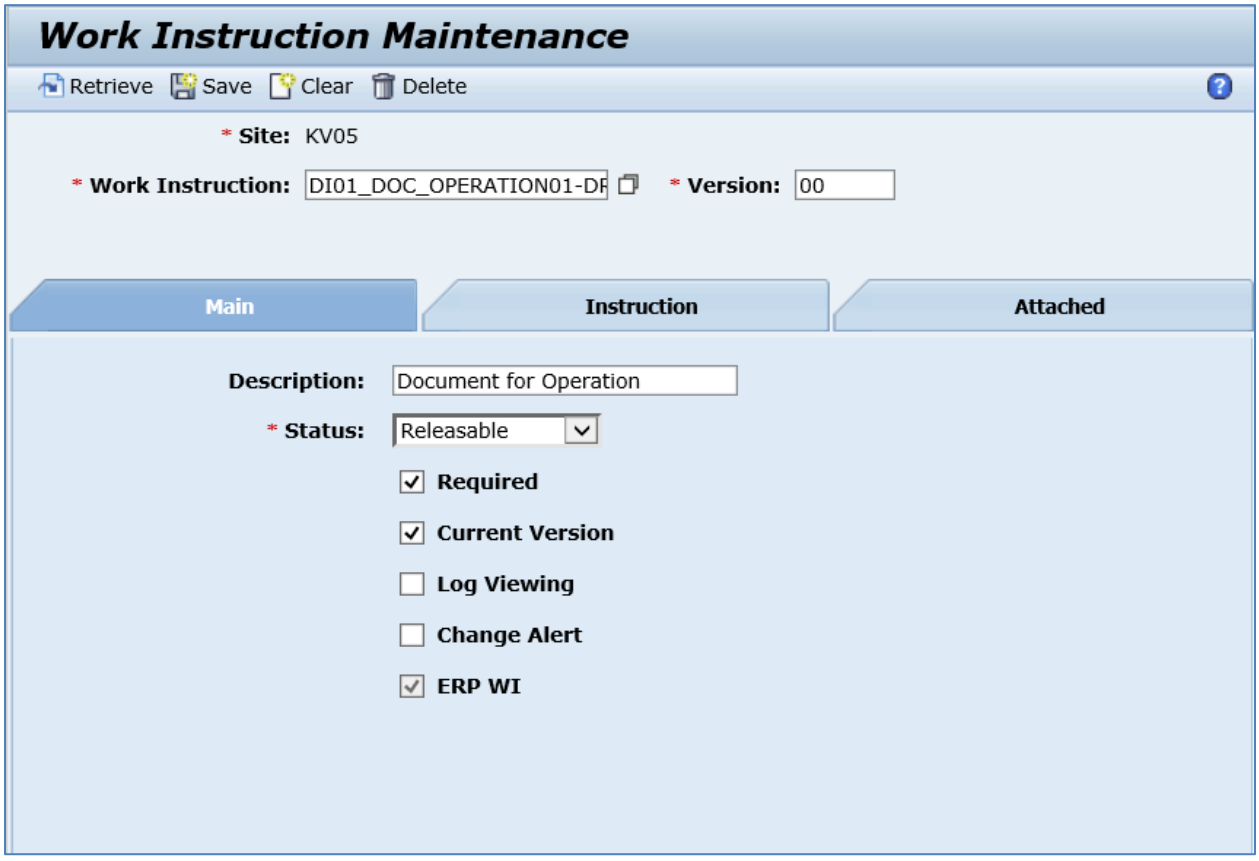


3. Verify results in SAP ME.

Run *Shop Order Maintenance* and retrieve the transferred shop order record.

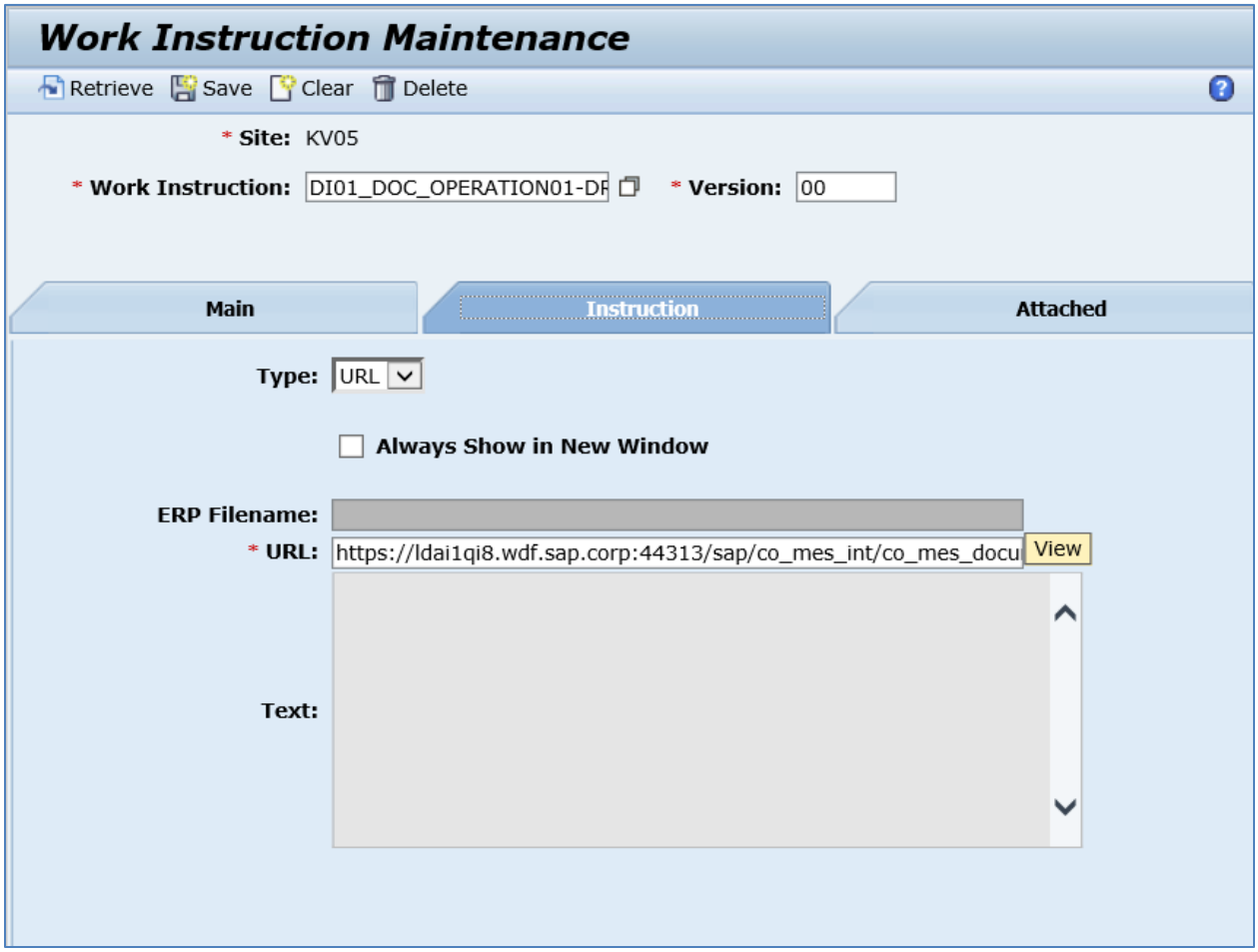
For more information about transferred production shop order, see the Configuring Production Order sections of this guide.

4. Run *Work Instruction Maintenance*. Find and retrieve the work instruction that contains the name of the master document that was assigned to production order in SAP ERP. Name of the Work Instruction "Document Number + '-' + Document Type + '-' + Part + '-' + Original".
5. On the *Main* tab, verify the following field values:
   - *Site: Plant* value.
   - *Work Instruction:* "Document Number + '-' + Document Type + '-' + Part + '-' + Original".
   - *Version: Document Version* of the document master in SAP ERP.
   - *Description: Description* of the document master in SAP ERP.
   - *Status:* Releasable.
   - *Required:* Selected.
   - *Current Version:* Selected.
   - *Log Viewing:* Deselected.
   - *Change Alert:* Deselected.
   - *ERP WI:* Selected.

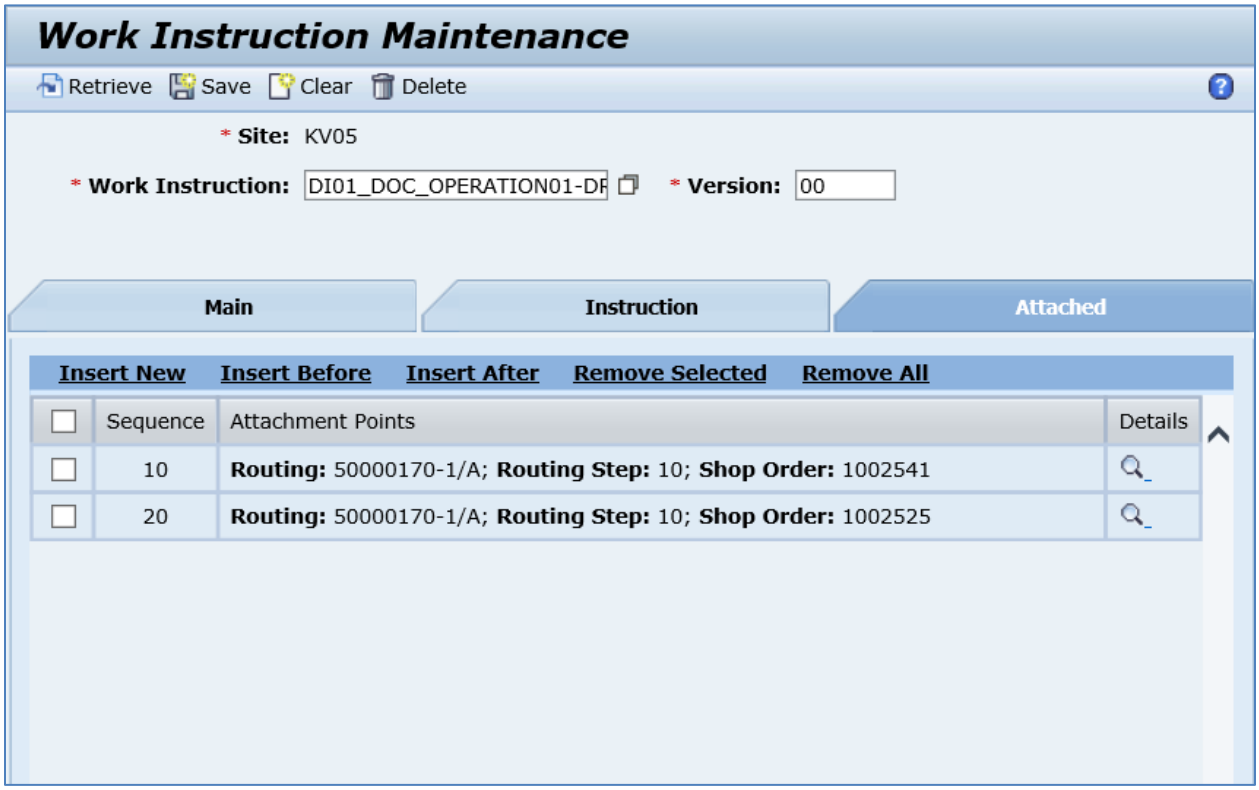


6. On the *Instruction* tab, verify the following field values:

- *Type:* URL.
- *Always Show In New Window:* Deselected.
- *URL:* URL to the original document master.



7. On the *Attached* tab, verify the following field values:
   - *Sequence:* The order in which the work instruction is triggered at the corresponding attachment point. Separate attachment point is created each time when new production order is transferred to SAP ME.
   - *Attachment Points:* By default the work instruction is attached to the production order, routing, and routing step if it is defined in SAP ERP.


Work Instruction Maintenance
Retrieve
Save
Clear
Delete
* Site: KV05
* Work Instruction: DI01_DOC_OPERATION01-DF
* Version: 00
Main
Instruction
Attached
Insert New
Insert Before
Insert After
Remove Selected
Remove All
Sequence
Attachment Points
Details
10
Routing: 50000170-1/A; Routing Step: 10; Shop Order: 1002541
20
Routing: 50000170-1/A; Routing Step: 10; Shop Order: 1002525

9 Planned Order Integration

9.1 Overview

You can use this process to transfer planned order data for repetitive manufacturing between SAP ERP and SAP ME (see Shop Order on the SAP Help Portal at http://help.sap.com).

This function supports long material numbers (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com).

9.1.1 Business purpose

Order integration between SAP ERP and the SAP ME systems provides the control point from production planning to the shop order. The transfer of the order and integration of the order confirmations are critical to maintain order level data synchronization between the two systems. The *planned order*, typically the output of an MRP run in SAP ERP and used to launch repetitive production, is one type of order that is transmitted to the SAP ME system for release as a *repetitive shop order*. The repetitive shop order in SAP ME communicates to SAP ERP the confirmation of yield and scrap as units are processed on the shop floor.

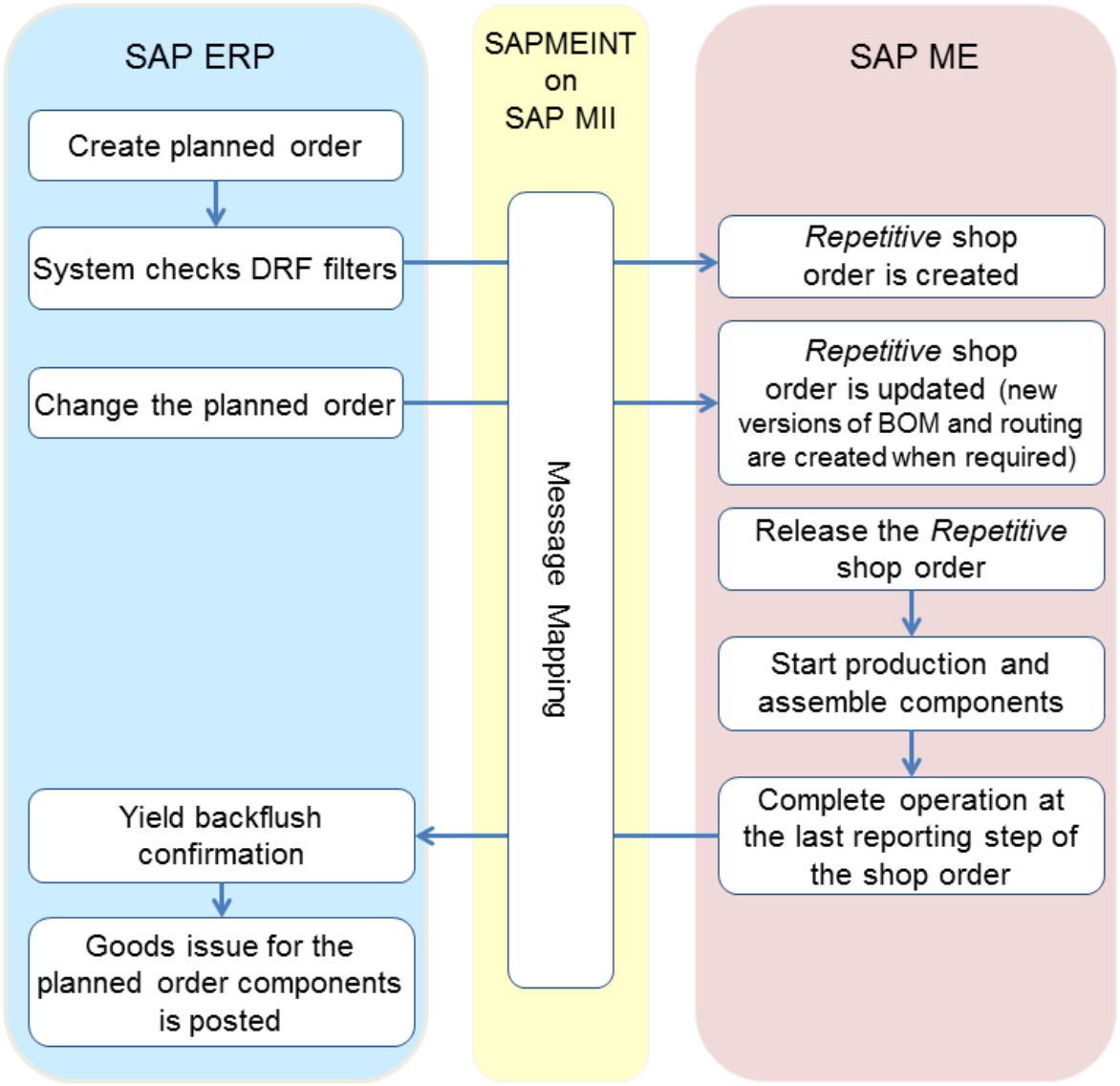
Planned orders for repetitive manufacturing are used in higher volume production where less reporting is required to the SAP ERP system. Rate routing and cost collectors are used in SAP ERP for planned orders, and thus individual routing step completion is not reported, as it is with production orders.

Backflushing of component materials is commonly used on planned orders to automatically consume component materials upon the confirmed completion of the planned order material that has been assembled in ME.

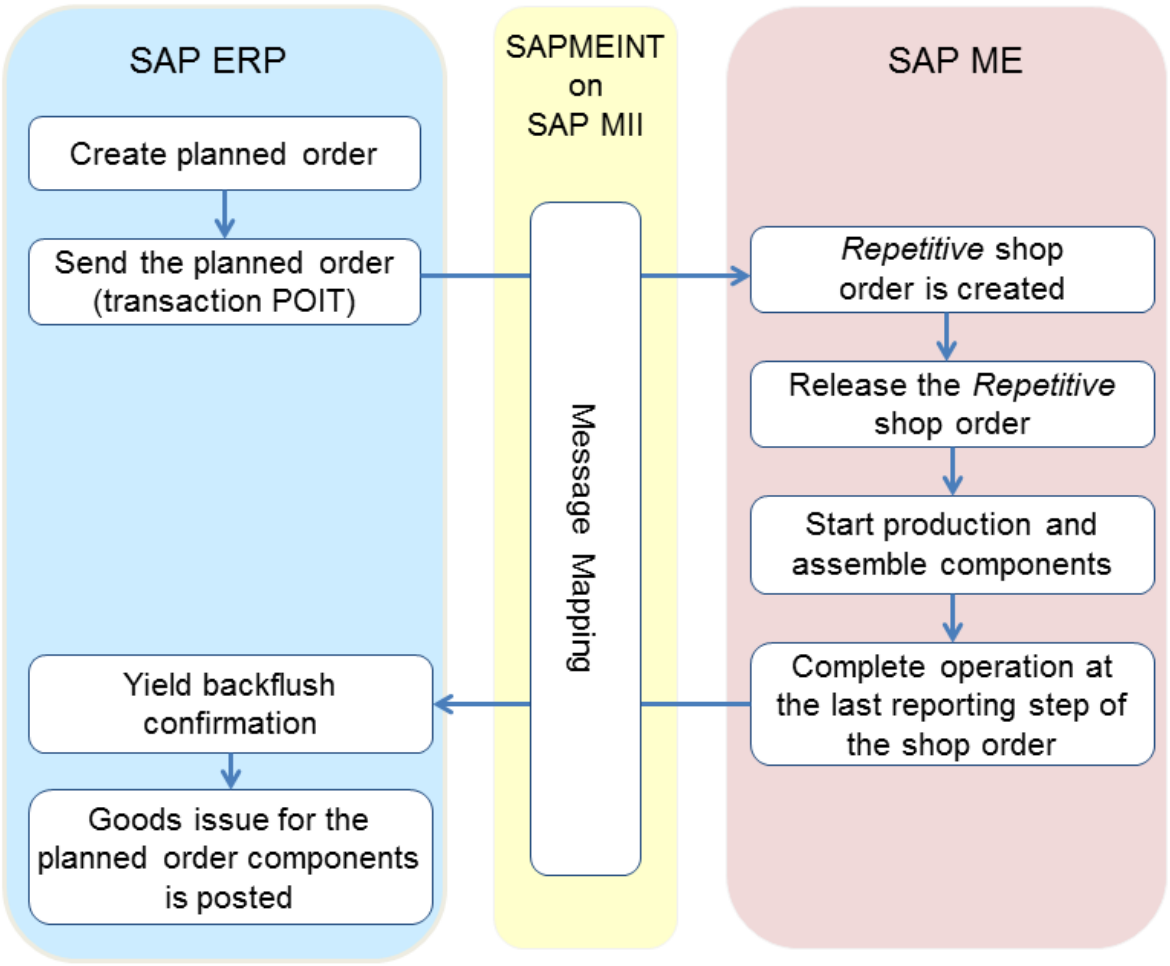
See also Integration of Planned Orders: Integration Details on the SAP Help Portal at http://help.sap.com.

9.1.2 Process Flow Graphic

Distribution of Planned Orders Using DRF



Distribution of Planned Orders Using Transaction POIT



9.2 Configuring a Planned Order

9.2.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer planned order data from SAP ERP to SAP ME to create a corresponding repetitive shop order record in SAP ME.

For more information about sending production order IDocs to SAP ME, see Transfer of Planned Order on the SAP Help Portal at http://help.sap.com.

9.2.2 Prerequisites

9.2.2.1 SAP ERP

- You have created a material master with a production version for the finished product and maintained the settings relevant to repetitive manufacturing in the Logistics module.

Note: It is not necessary to create BOM record.

- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have created a product cost collector in the Controlling module (*Logistics* > *Production* > *Repetitive Manufacturing* > *Master Data* > *Product Cost Collector* > *Process Product Cost Collector*).
- If you use DRF, you have done the following:
    - Verified that all checkboxes in the *General* screen area of the REM profile are deselected and the *Reduce planned orders assigned to version* checkbox in the *Planned Order Reduction* screen area is selected
    - Maintained Data Replication Framework (DRF) filter settings (transaction code *DRFF*)
    - Set up a periodic job for the *RDRF_MESSAGE_OUT* report that is started for the transaction code *DRFOUT*, for example, for daily execution so that planned orders for which opening date becomes today's date are distributed immediately
    - Verified that the opening date is smaller or equal to the actual date
- If you do not use DRF, you have verified that the *GI backflush at GR posting* checkbox in the *General* screen area of the REM profile is selected and the *Reduce planned orders assigned to version* checkbox in the *Planned Order Reduction* screen area is deselected.
- You have set up ALE communication to create and transmit *LOIPLO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have defined the DRF Replication Model to replicate *LOIPLO02* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.
- You have defined unique ISO codes for every unit of measure.

9.2.2.2 SAP ME

- You have imported material master data from SAP ERP (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have optionally set up default values for new material, BOM, and routing master data imported from SAP ERP in Default Value Maintenance (see Material Table, BOM Table, and Routing and Child Tables on the SAP Help Portal at http://help.sap.com). This is a prerequisite only if your business process requires it, otherwise it can be skipped.

9.2.3 Procedural Steps

1. Create or update a planned order in SAP ERP manually (see the Examples section or Create Planned Order Manually on the SAP Help Portal at http://help.sap.com) or automatically through MRP (see Planning Execution on the SAP Help Portal at http://help.sap.com).
2. If DRF is not used, you send the planned order to SAP ME (see Procedure: Select Transaction Data on the SAP Help Portal at http://help.sap.com).

   Note: SAP ERP 6.05 with activated business function LOG_PP_MES_INT_02 distributes planned orders automatically upon release based on customizing and filter settings (see Integration of Planned Orders (Repetitive Manufacturing) on the SAP Help Portal at http://help.sap.com). See SAP Note 1555198.

   Note: *Execute Data Replication* transaction (transaction code – *DRFOUT*) can be used to transfer planned orders.

   Make sure that you have created and activated a replication model with the outbound implementation for the planned order (*92_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

   Note: The POIT transaction supports only the IDoc base types LOIPLO01. The additional fields and segments of the IDoc types LOIPLO02 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same SAP ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.
3. Optional: Verify *LOIPLO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding shop order record of the Repetitive type in SAP ME (see Shop Order Maintenance on the SAP Help Portal at http://help.sap.com).

If you do not use DRF, the update is possible only through Enhanced Planned Order (see Enhanced Planned Order on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

9.2.4 Alternates / Best Practices and Tips

9.2.4.1 Updating a Released Planned Order

For more information about updating a released planned order, see the Updating a Released Production Order section of this guide.

9.2.4.2 Sending an Order Update to SAP ME

If you want to redistribute an already distributed planned order to the SAP ME, you can change the order. When the planned order is updated in SAP ERP, the new data is transferred to SAP ME.

SAP ERP planned orders contain the material and quantity to be produced, as well as the order BOM and routing.

Unlike SAP ERP planned orders, SAP ME shop orders do not contain components and operations but reference the order BOM and routing.

You can disable the mapping of the order BOM and routing in SAP ME by setting the *Ignore BOM Update* and *Ignore Routing Update* rules to *true* in *System Rule Maintenance* (see ERP Integration Rules on the SAP Help Portal at http://help.sap.com). When set to *true*, each setting causes the planned order download to SAP ME to look for an existing BOM or routing by name only (not its contents). This is effective if the corresponding Master BOM or routing has been enhanced in SAP ME beyond what is provided in the SAP ERP planned order integration.

When the mapping of the planned order BOM is disabled, SAP ME does not correlate planned order components according to the quantity of the finished material.

Ignore BOM Update	true: Ignores an update to the BOM record specified in the SAP ERP order false (default): Accepts an update to the BOM record specified in the SAP ERP order Can override at: site
Ignore Routing Update	true: Ignores an update to the routing record specified in the SAP ERP order false (default): Accepts an update to the routing record specified in the SAP ERP order Can override at: site

If mapping is enabled and system rules *Ignore BOM Update* and *Ignore Routing Update* are set to *false*, then existing BOM and routing records are updated in SAP ME according to the *Update Indicator* field setting in *ERP Field Maintenance*.

For more information about how an object updated in SAP ERP is handled in SAP ME, see the SAPMEINT Change Management section of this guide or SAPMEINT Change Management on the SAP Help Portal at http://help.sap.com.

If the shop order has been already released in SAP ME and if the production has already started (SFC numbers are Active), then BOM and routing are not updated automatically.

Note: SAP ERP 6.05 with activated business function LOG_PP_MES_INT_02 does not allow changes to the BOM or the routing after distribution. For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

Note: The following field values can be updated manually in SAP ME via Change Production (see Changing Production on the SAP Help Portal at http://help.sap.com):

- BOM

- Routing
- Shop Order for the SFC numbers of the shop order

Note: If you change the planned order after distribution, the changed order is automatically sent to SAP ME again. You can control which changes are to be allowed after the first distribution.

This function is available when business function Z_PP_MES_INT_02 is activated.

For information about functions activating, see SAP Note 1555198.

9.2.4.3 Unit of Measure

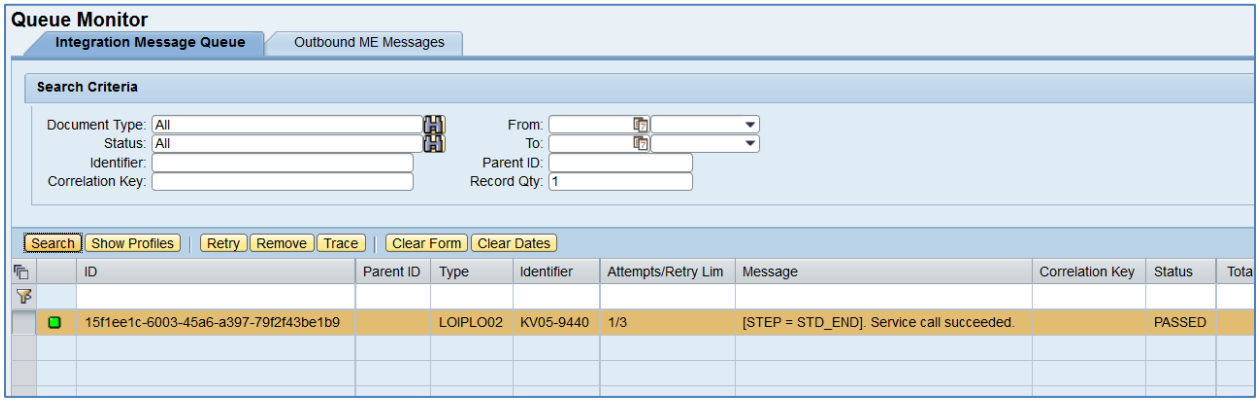
SAP ERP always transfers quantities in base units of measure (UOM) to SAP ME, regardless of the UOM used in ERP. Note that the ERP Unit of Measure is reflected by its ISO code in SAP ME and may be displayed with a different abbreviation from the corresponding SAP ME UOM.

9.2.5 Examples

9.2.5.1 Creating a Planned Order with a BOM and Routing (Make-to-Stock Manufacturing)

1. Create or update a planned order in SAP ERP manually (transaction MD11 and MD12) or automatically through MRP (see Create Planned Order Manually and Planning Execution on the SAP Help Portal at http://help.sap.com).
2. Optional: Verify IDocs exist in SAP MII.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



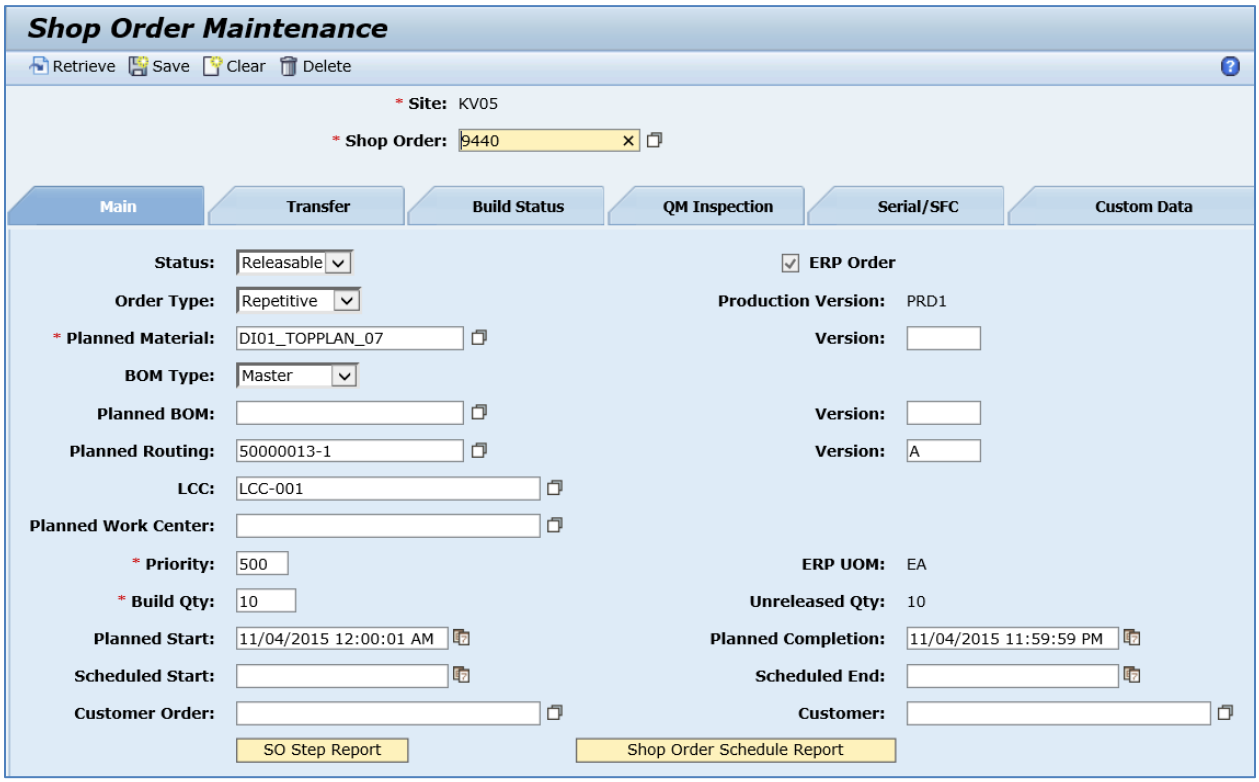
3. Verify results in SAP ME.

Run *Shop Order Maintenance* and retrieve the transferred shop order record.

On the *Main* tab, verify the following field values:

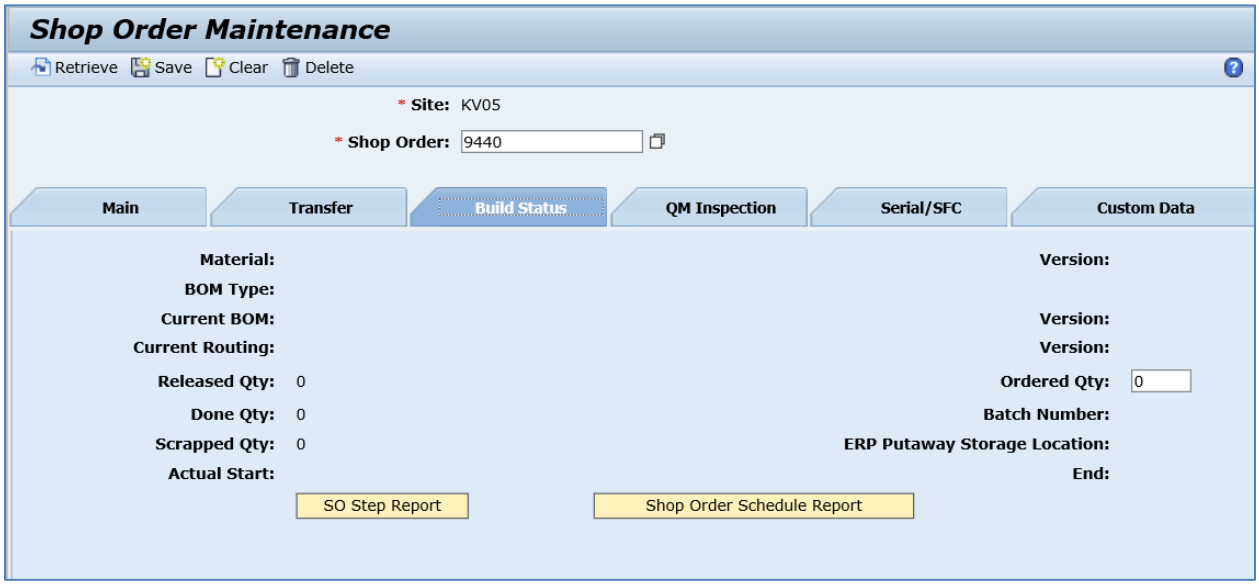
- *Site: Planning Plant* value.
- *Shop Order: Planned Order Number.*
- *Status:* Releasable.
- *Order Type:* Repetitive.
- *ERP Order:* Selected.

- *Planned Material: Material Number*.
- *Version:* Defaults to # (blank in the GUI).
- *Planned BOM:* BLANK unless bill of material is transferred from SAP ERP within production order.
- *Planned BOM Version:* Current.
- *Planned Routing:* Routing that is received within production order. Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL).
- *Planned Routing Version:* Current Version of SAP ME Routing.
- *ERP UOM:* This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing.
- *Priority:* If no value is given in SAP ERP, defaults to 500. If the value in SAP ERP is from 0-9, then the value in SAP ME is value *100.
- *Build Qty:* Total planned order quantity (GSMNG). Reducing Build Qty is allowed only for unreleased quantities.
- *Planned Start:* Order start date in planned order (PSTTR)
- *Planned Completion:* Order finish date in the planned order (PEDTR)
- Other fields are BLANK by default or deselected.



On the *Build Status* tab, verify the following field values:

- *Ordered Qty:* Base Quantity of order. Defaults to 0.



For more information about BOMs and routings that are received from SAP ERP, see the Configuring a Bill of Material (BOM) and Configuring a Standard Routing from SAP ERP to SAP ME sections of this guide.

9.2.6 Missing / Not Supported

- Capacity consumption is not transferred from SAP ERP to SAP ME. Therefore, it is not possible to transfer data such as operation dates.
- Repetitive manufacturing in SAP ERP has a feature called “action handler” that can trigger various actions in SAP ERP for certain events. SAP ME does not call the action handler.
- Repetitive manufacturing in SAP ERP supports asynchronous backflushing. Asynchronous backflushing improves response times and allows processing of a higher number of production confirmations. This feature can be switched on in customizing for repetitive manufacturing in the section Separate Backflushing Processes. If this feature is switched on, the production confirmation only posts goods receipt and reduces capacities. Backflushing material components, calculating actual costs, posting production activities, and so on, are recorded in a work list and processed asynchronously by a background job. Asynchronous backflushing always backflushes planned component quantities. One advantage of an MES system is the ability to accurately record actual component consumption. This advantage is lost with asynchronous backflushing. If you experience performance problems, rather than using asynchronous backflushing, it is preferable to reduce the number of confirmations by collecting them in SAP ME and sending the collected confirmations to SAP ERP.
- SAP ERP trigger points are not supported.

9.3 Configuring a Planned Order with a Storage Location Assignment

9.3.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer planned order data with an assigned storage location from SAP ERP to SAP ME to create a corresponding repetitive shop order record in SAP ME.

Storage Location – an organizational unit allowing the differentiation of material stocks within a plant. All data referring to a particular storage location is stored at storage location level. This applies mainly to storage location stocks.

9.3.2 Prerequisites

9.3.2.1 SAP ERP

- You have created a material master with a production version and assigned storage location for the finished product, and maintained the settings relevant to repetitive manufacturing in the Logistics module (see Creating Production Versions in the Material Master Record on the SAP Help Portal at http://help.sap.com).

  For more information about creating a material master record with assigned storage location, see the Configuring Material with assigned Storage Location section of this guide.
- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have created a product cost collector in the Controlling module (*Logistics* > *Production* > *Repetitive Manufacturing* > *Master Data* > *Product Cost Collector* > *Process Product Cost Collector*).
- If you use DRF, you have done the following:
  - Verified that all checkboxes in the *General* screen area of the REM profile are deselected and the *Reduce planned orders assigned to version* checkbox in the *Planned Order Reduction* screen area is selected.
  - Maintained Data Replication Framework (DRF) filter settings (transaction code *DRFF*).
  - Set up a periodic job for the *RDRF_MESSAGE_OUT* report that is started for the transaction code *DRFOUT*, for example, for daily execution so that planned orders for which opening date becomes today's date are distributed immediately.
  - Verified that the opening date is smaller or equal to the actual date.
- If you do not use DRF, you have verified that the *GI backflush at GR posting* checkbox in the *General* screen area of the REM profile is selected and the *Reduce planned orders assigned to version* checkbox in the *Planned Order Reduction* screen area is deselected.

- You have set up ALE communication to create and transmit *LOIPLO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have defined the DRF Replication Model to replicate *LOIPLO02* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.
- You have defined unique ISO codes for every unit of measure.

9.3.2.2 SAP ME

- You have imported material master data from SAP ERP (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have imported BOM and routing master data from SAP ERP (see Transfer of Bill of Material (BOM) and Transfer of Routing on the SAP Help Portal at http://help.sap.com).
- You have optionally set up default values for a new material, BOM, and routing master data imported from SAP ERP in Default Value Maintenance (see Material Table, BOM Table, and Routing and Child Tables on the SAP Help Portal at http://help.sap.com). This is a prerequisite only if your business process requires it, otherwise it can be skipped.

9.3.3 Procedural Steps

1. Create or update a planned order with assigned storage location in SAP ERP manually (see the Examples section or Create Planned Order Manually on the SAP Help Portal at http://help.sap.com) or automatically through MRP (see Planning Execution on the SAP Help Portal at http://help.sap.com).
2. If DRF is not used, you send the planned order to SAP ME (see Procedure: Select Transaction Data on the SAP Help Portal at http://help.sap.com).

   Note: SAP ERP 6.05 with activated business function LOG_PP_MES_INT_02 distributes planned orders automatically upon release based on customizing and filter settings (see Integration of Planned Orders (Repetitive Manufacturing) on the SAP Help Portal at http://help.sap.com). See SAP Note 1555198.

   Note: *Execute Data Replication* transaction (transaction code – *DRFOUT*) can be used to transfer planned orders.

   Make sure that you have created and activated a replication model with the outbound implementation for the planned order (*92_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

   Note: The POIT transaction supports only the IDoc base types LOIPLO01. The additional fields and segments of the IDoc types LOIPLO02 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same SAP ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.
3. Optional: Verify *LOIPLO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding shop order record of the Repetitive type with assigned storage location in SAP ME (see Shop Order Maintenance on the SAP Help Portal at http://help.sap.com).

If you do not use DRF, the update is possible only through Enhanced Planned Order (see Enhanced Planned Order on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

9.3.4 Alternates / Best Practices and Tips

9.3.5 Examples

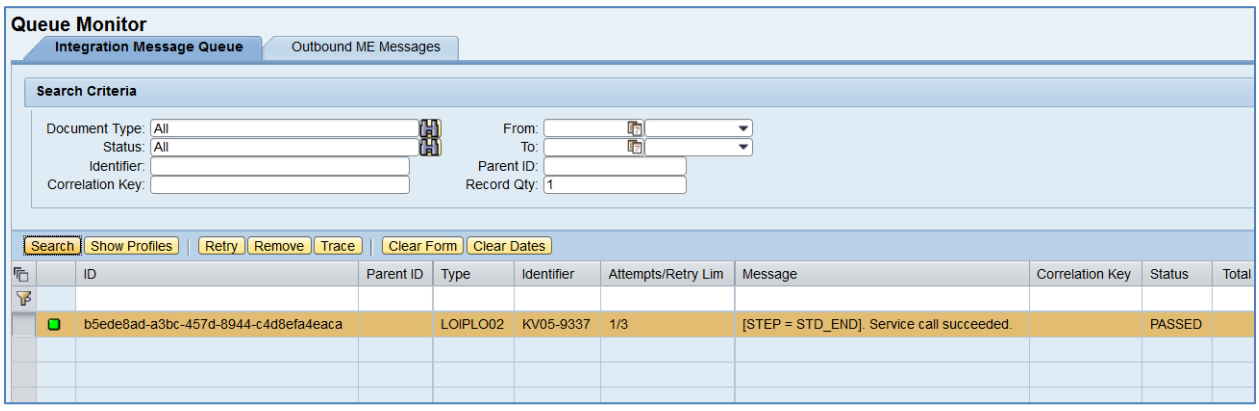
9.3.5.1 Creating a Planned Order with a Storage Location Assignment

1. Create or update a planned order in SAP ERP manually (transaction MD11 and MD12) or automatically through MRP (see Create Planned Order Manually and Planning Execution on the SAP Help Portal at http://help.sap.com).

   Make sure that *Storage Location* field is populated on the *Create Planned Order: Stock Order* screen.

2. Optional: Verify IDocs exist in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

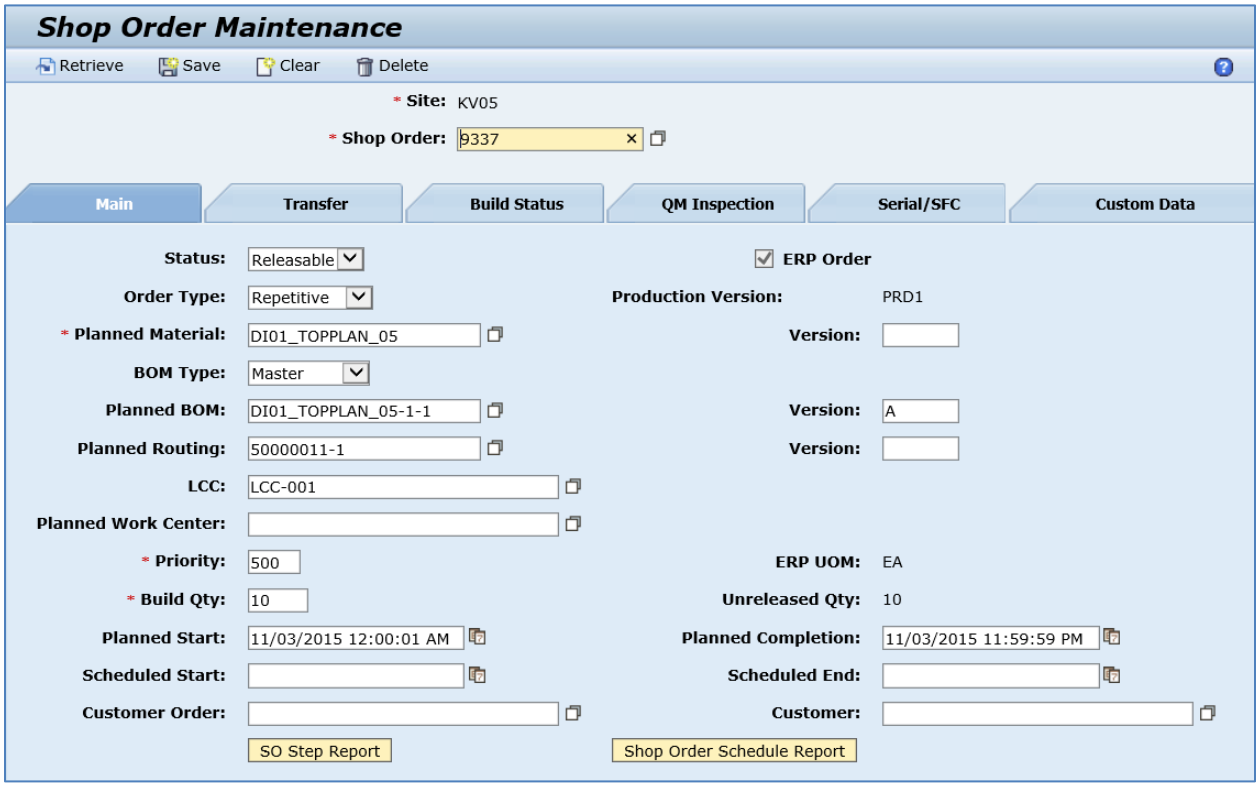


3. Verify results in SAP ME.

Run Shop Order Maintenance and retrieve the transferred shop order record.

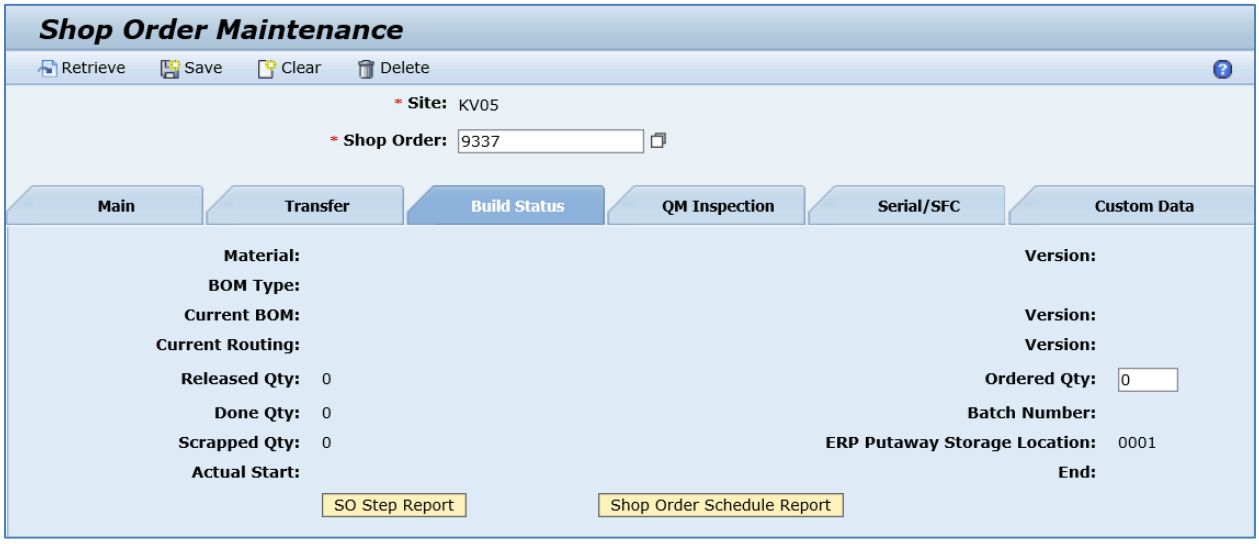
On the *Main* tab, verify the following field values:

- *Site: Planning Plant* value.
- *Shop Order: Planned Order Number.*
- *Status:* Releasable.
- *Order Type:* Repetitive.
- *ERP Order:* Selected.
- *Planned Material: Material Number*.
- *Version:* Defaults to # (blank in the GUI).
- *Planned BOM:* Bill of material that is received within planned order. Key for the BOM is Material Number (MATNR or MATNR_EXTERNAL) + "-" + BOM Usage (STLAN) + "-" + Alternative BOM (STLAL).
- *Planned BOM Version:* Current Version of SAP ME BOM.
- *Planned Routing:* Routing that is received within production order. Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL).
- *Planned Routing Version:* Current Version of SAP ME Routing.
- *ERP UOM:* This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing.
- *Priority:* If no value is given in SAP ERP, defaults to 500. If the value in SAP ERP is from 0-9, then the value in SAP ME is value *100.
- *Build Qty:* Total planned order quantity (GSMNG). Reducing Build Qty is allowed only for unreleased quantities.
- *Planned Start:* Order start date in planned order (PSTTR)
- *Planned Completion:* Order finish date in the planned order (PEDTR)
- Other fields are BLANK by default or deselected.



On the *Build Status* tab, verify the following field values:

- *Ordered Qty:* Base Quantity of order. Defaults to 0.
- *ERP Putaway Storage Locations: Storage Location* value received from SAP ERP.



See the Configuring a Bill of Material (BOM) and Configuring a Standard Routing in SAP ERP sections of this guide for more information about BOMs and routings that are received from SAP ERP.

9.4 Configuring a Planned Order with a BOM and Routing (Make-to-Stock Manufacturing)

9.4.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a planned order with a BOM and routing from SAP ERP to create the corresponding BOM with defined assembly operations assigned to the repetitive shop order in SAP ME.

Make-to-stock manufacturing is a manufacturing process in which you manufacture products for stock based on demand forecasts. If no sales order is attached to the repetitive shop order, the order is used for make-to-stock manufacturing. The system reuses the existing standard BOM if it matches the BOM in the repetitive shop order. Otherwise, the system creates a new standard BOM or a new version of the existing BOM.

- You can download the complete phantom hierarchy including the phantom components and the phantom members from SAP ERP to SAP ME.
- You can transfer by-products defined for the BOM in SAP ERP to SAP ME with a planned order (see Co- and By-Products on the SAP Help Portal at http://help.sap.com).
- You can transfer alternate components defined for the BOM in SAP ERP to SAP ME with a planned order. Among the components in an alternate group, the component with highest priority becomes the primary component and the other components become alternate components (see Alternative Items on the SAP Help Portal at http://help.sap.com).

For more information about sending production order IDocs to SAP ME, see Integration of Planned Orders (Repetitive Manufacturing) on the SAP Help Portal at http://help.sap.com.

9.4.2 Prerequisites

9.4.2.1 SAP ERP

- You have created a material master with a production version for the finished product and maintained the settings relevant to repetitive manufacturing in the Logistics module.
- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have created a product cost collector in the Controlling module (*Logistics* > *Production* > *Repetitive Manufacturing* > *Master Data* > *Product Cost Collector* > *Process Product Cost Collector*).
- If you use DRF, you have done the following:
  - Verified that all checkboxes in the *General* screen area of the REM profile are deselected and the *Reduce planned orders assigned to version* checkbox in the *Planned Order Reduction* screen area is selected.
  - Maintained Data Replication Framework (DRF) filter settings (transaction code *DRFF*).

- Set up a periodic job for the *RDRF_MESSAGE_OUT* report that is started for the transaction code *DRFOUT*, for example, for daily execution so that planned orders for which opening date becomes today's date are distributed immediately.
- Verified that the opening date is smaller or equal to the actual date.

- If you do not use DRF, you have verified that the *GI backflush at GR posting* checkbox in the *General* screen area of the REM profile is selected and the *Reduce planned orders assigned to version* checkbox in the *Planned Order Reduction* screen area is deselected.
- You have set up ALE communication to create and transmit *LOIPLO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have defined the DRF Replication Model to replicate *LOIPLO02* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.
- You have defined unique ISO codes for every unit of measure.

9.4.2.2 SAP ME

- You have imported material master data from SAP ERP (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have optionally set up default values for new material, BOM, and routing master data imported from SAP ERP in Default Value Maintenance (see Material Table, BOM Table, and Routing and Child Tables on the SAP Help Portal at http://help.sap.com). This is a prerequisite only if your business process requires it, otherwise it can be skipped.

9.4.3 Procedural Steps

1. Create or update a planned order in SAP ERP manually (see the Examples section or Create Planned Order Manually on the SAP Help Portal at http://help.sap.com) or automatically through MRP (see Planning Execution on the SAP Help Portal at http://help.sap.com).
2. If DRF is not used, send the planned order to SAP ME (see Procedure: Select Transaction Data on the SAP Help Portal at http://help.sap.com).

   Note: SAP ERP 6.05 with activated business function LOG_PP_MES_INT_02 distributes planned orders automatically upon release based on customizing and filter settings (see Integration of Planned Orders (Repetitive Manufacturing) on the SAP Help Portal at http://help.sap.com). See SAP Note 1555198.

   Note: *Execute Data Replication* transaction (transaction code – *DRFOUT*) can be used to transfer planned orders.

   Make sure that you have created and activated a replication model with the outbound implementation for the planned order (*92_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

Note: The POIT transaction supports only the IDoc base types LOIPLO01. The additional fields and segments of the IDoc types LOIPLO02 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same SAP ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.

3. Optional: Verify *LOIPLO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates or updates the corresponding shop order record of the Repetitive type, BOM and routing records in SAP ME (see Shop Order Maintenance on the SAP Help Portal at http://help.sap.com).

If you do not use DRF, the update is possible only through Enhanced Planned Order (see Enhanced Planned Order on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

9.4.4 Alternates / Best Practices and Tips

9.4.4.1 Determination of manufacturing type

SAPMEINT determines the manufacturing type of a planned order by looking at the LOIPLO IDoc, specifically the KDAUF and KDPOS field values in the E1PLAFL segment.

- A blank or missing KDAUF field combined with a KDPOS field that contains all zeroes represents make-to-stock manufacturing.
- KDAUF and KDPOS fields containing the production order number and the item number of the sales order represent make-to-order or variant configured manufacturing.

9.4.4.2 Sending an Order Update to SAP ME

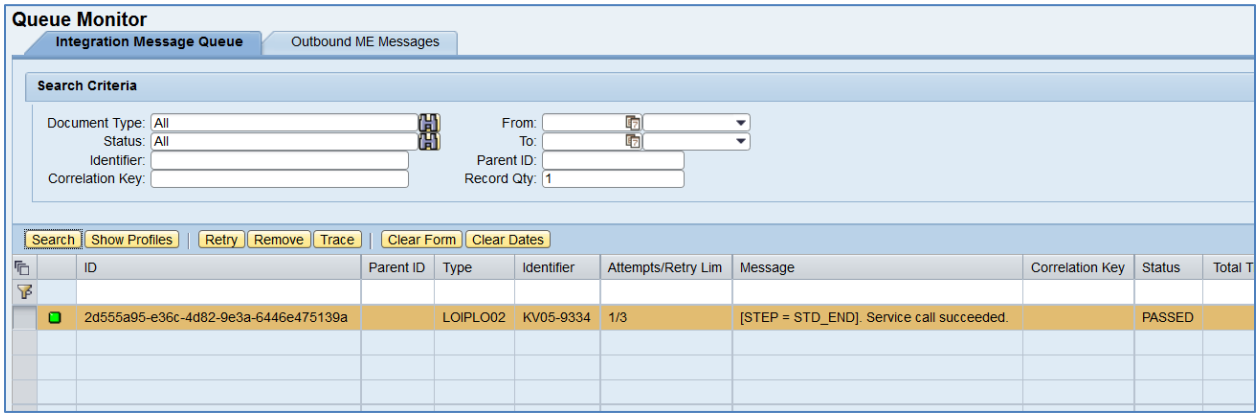
For more information about sending an order update to SAP ME, see the Sending an Order Update to SAP ME section of this guide.

9.4.5 Examples

9.4.5.1 Creating a Planned Order with a BOM and Routing (Make-to-Stock Manufacturing)

1. Create or update a planned order in SAP ERP manually (transaction MD11 and MD12) or automatically through MRP (see Create Planned Order Manually and Planning Execution on the SAP Help Portal at http://help.sap.com).
2. Optional: Verify IDocs exist in SAP MII using *Queue Monitor*.

For more information, see the SAPMEINT Message Processing Logic section of this guide.



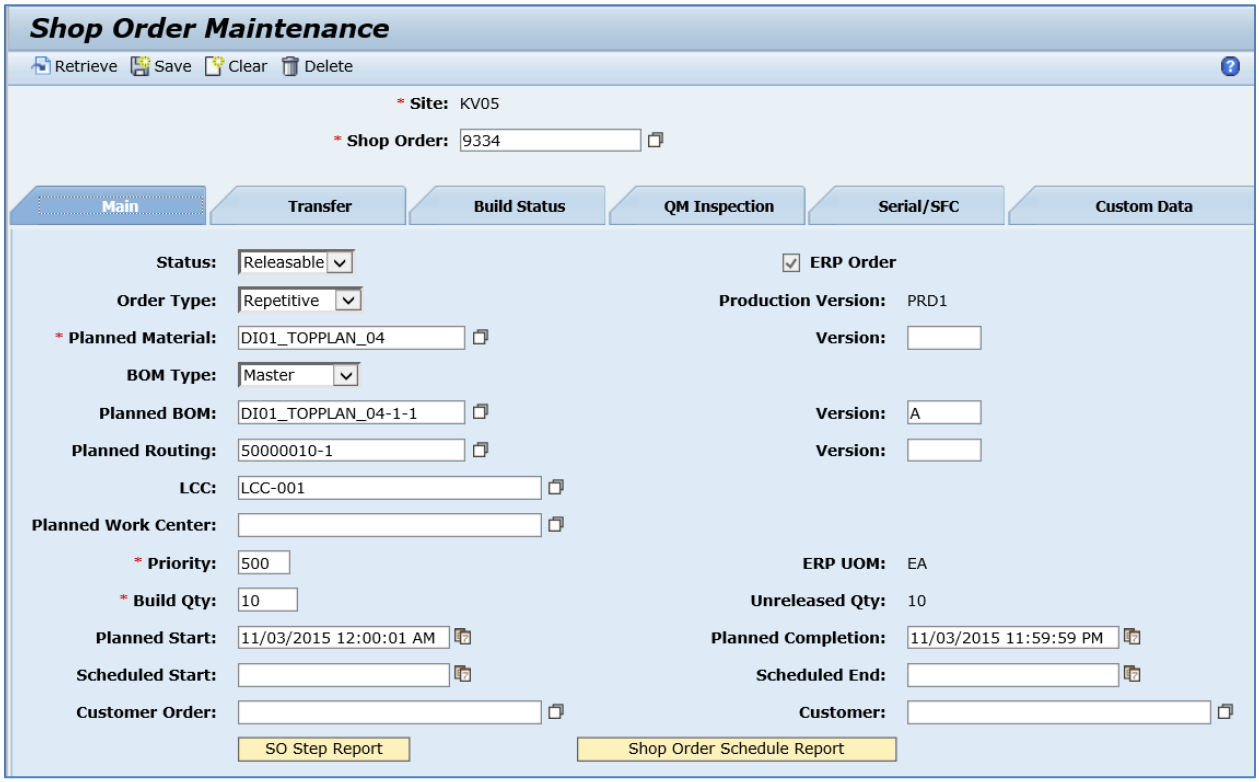
3. Verify results in SAP ME.

Run *Shop Order Maintenance* and retrieve the transferred shop order record.

On the *Main* tab, verify the following field values:

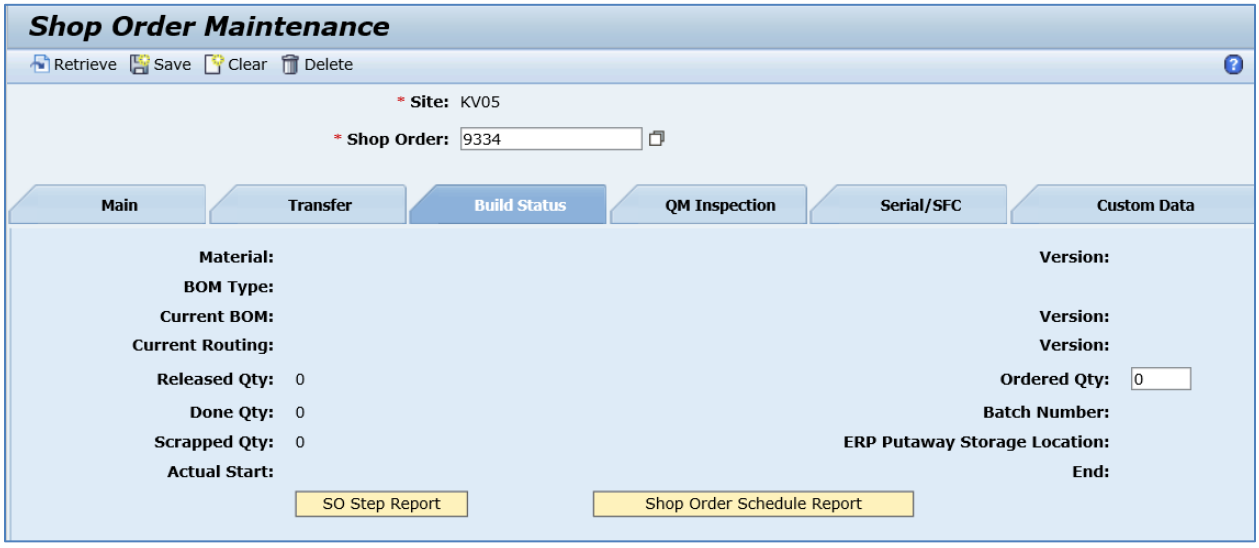
- *Site: Planning Plant* value.
- *Shop Order: Planned Order Number.*
- *Status:* Releasable.
- *Order Type:* Repetitive.
- *ERP Order:* Selected.
- *Planned Material: Material Number*.
- *Version:* Defaults to # (blank in the GUI).
- *Planned BOM:* Bill of material that is received within planned order. Key for the BOM is Material Number (MATNR or MATNR_EXTERNAL) + "-" + BOM Usage (STLAN) + "-" + Alternative BOM (STLAL).
- *Planned BOM Version:* Current Version of SAP ME BOM.
- *Planned Routing:* Routing that is received within production order. Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL).
- *Planned Routing Version:* Current Version of SAP ME Routing.
- *ERP UOM:* This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing.
- *Priority:* If no value is given in SAP ERP, defaults to 500. If the value in SAP ERP is from 0-9, then the value in SAP ME is value *100.
- *Build Qty:* Total planned order quantity (GSMNG). Reducing Build Qty is allowed only for unreleased quantities.
- *Planned Start:* Order start date in planned order (PSTTR)
- *Planned Completion:* Order finish date in the planned order (PEDTR)

- Other fields are BLANK by default or deselected.



On the *Build Status* tab, verify the following field values:

- *Ordered Qty:* Base Quantity of order. Defaults to 0.



For more information about BOMs and routings that are received from SAP ERP, see the Configuring a Bill of Material (BOM) and Configuring a Standard Routing in SAP ERP sections of this guide.

9.5 Configuring a Planned Order with a BOM and Routing (Make-to-Order Manufacturing)

9.5.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a planned order with a BOM and routing from SAP ERP to create the corresponding BOM with defined assembly operations assigned to the repetitive shop order in SAP ME.

Make-to-order manufacturing is a manufacturing process in which you manufacture product only after a customer order is received. If a sales order is attached to the repetitive shop order, the order is used for make-to-order manufacturing. The system reuses the existing standard BOM if it matches the BOM in the repetitive shop order. Otherwise, the system creates a shop order BOM for the specific repetitive shop order.

- You can download the complete phantom hierarchy including the phantom components and the phantom members from SAP ERP to SAP ME.
- You can transfer by-products defined for the BOM in SAP ERP to SAP ME with the planned order (see Co- and By-Products on the SAP Help Portal at http://help.sap.com).
- You can transfer alternate components defined for the BOM in SAP ERP to SAP ME with the planned order. Among the components in an alternate group, the component with the highest priority becomes the primary component and the other components become alternate components (see Alternative Items on the SAP Help Portal at http://help.sap.com).

For more information about sending production order IDocs to SAP ME, see Integration of Planned Orders (Repetitive Manufacturing) on the SAP Help Portal at http://help.sap.com.

9.5.2 Prerequisites

9.5.2.1 SAP ERP

- This function works only with SAP ERP 6.05 or later with activated business function LOG_PP_MES_INT_02 (configuration type C and D).
- You have created a make-to-order material master with a production version for the finished product and maintained the settings relevant to repetitive manufacturing in the Logistics module.

  Make sure that the *Strategy group* is set to `20` on the *MRP 3* tab.
- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have created a product cost collector in the Controlling module (*Logistics* > *Production* > *Repetitive Manufacturing* > *Master Data* > *Product Cost Collector* > *Process Product Cost Collector*).
- If you use DRF, you have done the following:

- Verified that all checkboxes in the *General* screen area of the REM profile are deselected and the *Reduce planned orders assigned to version* checkbox in the *Planned Order Reduction* screen area is selected.
- Maintained Data Replication Framework (DRF) filter settings (transaction code *DRFF*).
- Set up a periodic job for the *RDRF_MESSAGE_OUT* report that is started for the transaction code *DRFOUT*, for example, for daily execution so that planned orders for which opening date becomes today's date are distributed immediately.
- Verified that the opening date is smaller or equal to the actual date.

- If you do not use DRF, you have verified that the *GI backflush at GR posting* checkbox in the *General* screen area of the REM profile is selected and the *Reduce planned orders assigned to version* checkbox in the *Planned Order Reduction* screen area is deselected.
- You have set up ALE communication to create and transmit *LOIPLO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have defined the DRF Replication Model to replicate *LOIPLO02* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.
- You have defined unique ISO codes for every unit of measure.

9.5.2.2 SAP ME

- You have imported material master data from SAP ERP (see Material Transfer on the SAP Help Portal at http://help.sap.com).
- You have optionally set up default values for a new material, BOM, and routing master data imported from SAP ERP in Default Value Maintenance (see Material Table, BOM Table, and Routing and Child Tables on the SAP Help Portal at http://help.sap.com). This is a prerequisite only if your business process requires it, otherwise it can be skipped.

9.5.3 Procedural Steps

1. Create a sales order with a make-to-order material with assigned production versions (see Examples section).
2. *Optional:* Using MD04 transaction check the sales order in the Stock Requirement List.
3. MRP Run – Single Item Planning (transaction *MD03*).
4. Schedule the planned order (transaction *MD04*).
5. If DRF is not used, send the planned order to SAP ME (see Procedure: Select Transaction Data on the SAP Help Portal at http://help.sap.com).

   Note: SAP ERP 6.05 with activated business function LOG_PP_MES_INT_02 distributes planned orders automatically upon release based on customizing and filter settings

(see Integration of Planned Orders (Repetitive Manufacturing) on the SAP Help Portal at http://help.sap.com). See SAP Note 1555198.

Note: *Execute Data Replication* transaction (transaction code – *DRFOUT*) can be used to transfer planned orders.

Make sure that you have created and activated a replication model with the outbound implementation for the planned order (*92_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.

Note: The POIT transaction supports only the IDoc base types LOIPLO01. The additional fields and segments of the IDoc types LOIPLO02 are not supplied when distributing using transaction POIT. The system issues an error message when you try to use the transaction POIT for the distribution of documents to the same SAP ME for which you have already set up the relevant DRF replication models. See SAP Note 1793291.

6. Optional: Verify *LOIPLO* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

7. Verify results in SAP ME.

During the import of planned order data to SAP ME, SAPMEINT creates a shop order-specific BOM and routing for use with this repetitive shop order.

If you do not use DRF, the update is possible only through Enhanced Planned Order (see Enhanced Planned Order on the SAP Help Portal at http://help.sap.com).

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

9.5.4 Alternates / Best Practices and Tips

9.5.4.1 Determination of manufacturing type

SAPMEINT determines the manufacturing type of a planned order by looking at the LOIPLO IDoc, specifically the KDAUF and KDPOS field values in the E1PLAFL segment.

- A blank or missing KDAUF field combined with a KDPOS field that contains all zeroes represents make-to-stock manufacturing.
- KDAUF and KDPOS fields containing the production order number and the item number of the sales order represent make-to-order or variant configured manufacturing.

9.5.4.2 Sending an Order Update to SAP ME

For more information about sending an order update to SAP ME, see the Sending an Order Update to SAP ME section of this guide.

9.5.5 Examples

9.5.5.1 Creating a Planned Order with a BOM and Routing (Make-to-Order Manufacturing)

1. Create and transfer the material master records for the produced material and all the components.
2. Create a BOM for the produced material (see Configuring a Bill of Material (BOM) section of this guide).
3. Create a routing for the produced material (see Configuring a Standard Routing in SAP ERP section of this guide).
4. Create a sales order with make-to-order material. In SAP ERP, access the transaction using:

SAP Menus – *Logistics* > *Sales and distribution* > *Sales* > *Order* > *Create*

or transaction code – *VA01*

5. *Optional:* Check the Sales Order in Stock Requirement List. In SAP ERP, access the transaction using:

SAP Menus – *Logistics* > *Materials Management* > *Material Requirements Planning (MRP)* > *MRP* > *Evaluations* > *Stock/Reqmts List*

or transaction code – *MD04*

On the *Stock/Requirements List* screen, observe created Sales Order as Customer Order (CusOrd).

6. MRP Run – Single Item Planning. In SAP ERP, access the transaction using:

SAP Menus – *Logistics* > *Materials Management* > *Material Requirements Planning (MRP)* > *MRP* > *Planning* > *Single-Item, Single-Level*

or transaction code – *MD03*

On the *Planning Result: Individual Lines* screen, note the number of the planned order (PldOrd).

7. Schedule the planned order:

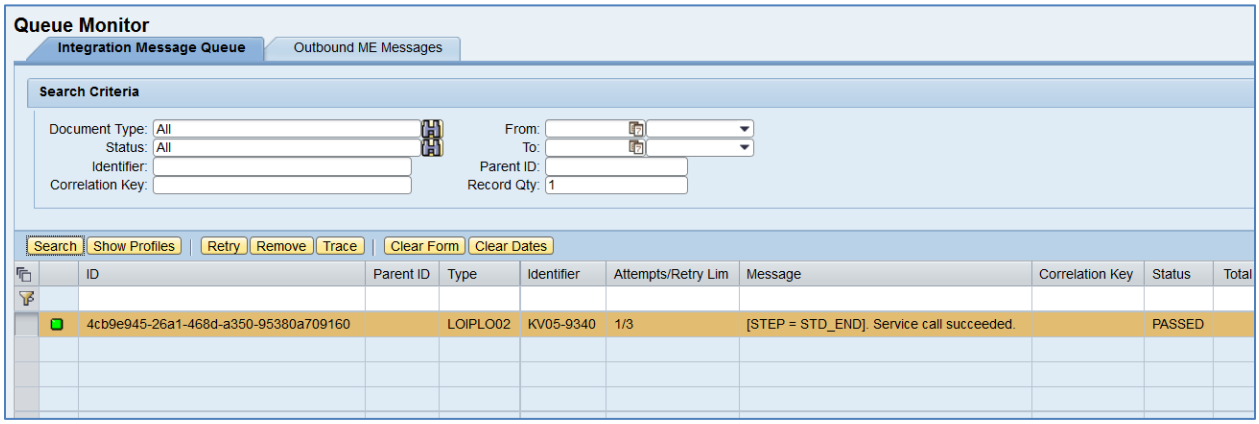
SAP Menus – *Logistics* > *Production* > *MRP* > *Planned Order* > *Change*

or transaction code – *MD12*

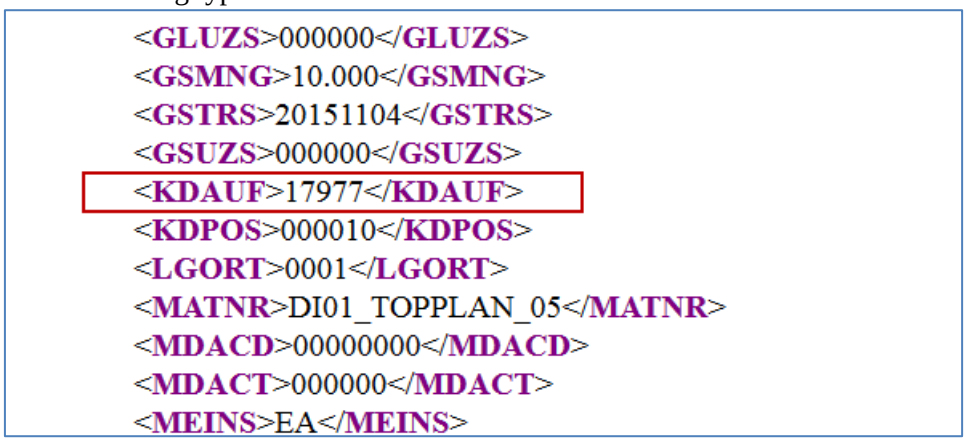
Enter planned order number. On the *Create Planned Order: Stock Order* screen, populate required fields. Click the *Schedule Planned Order* icon (*Shift+F6*). Click *Save* to save the order.

8. Optional: Verify IDocs exist in SAP MII using *Queue Monitor*.

For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *LOIPLO02* record, click *Trace*, select the Original Document row and click *View*. The *KDAUF* tag value matches the sales order that was created in SAP ERP. This indicates that the manufacturing type is make-to-order.



9. Verify results in SAP ME.

Run *Shop Order Maintenance* and retrieve the transferred shop order record.

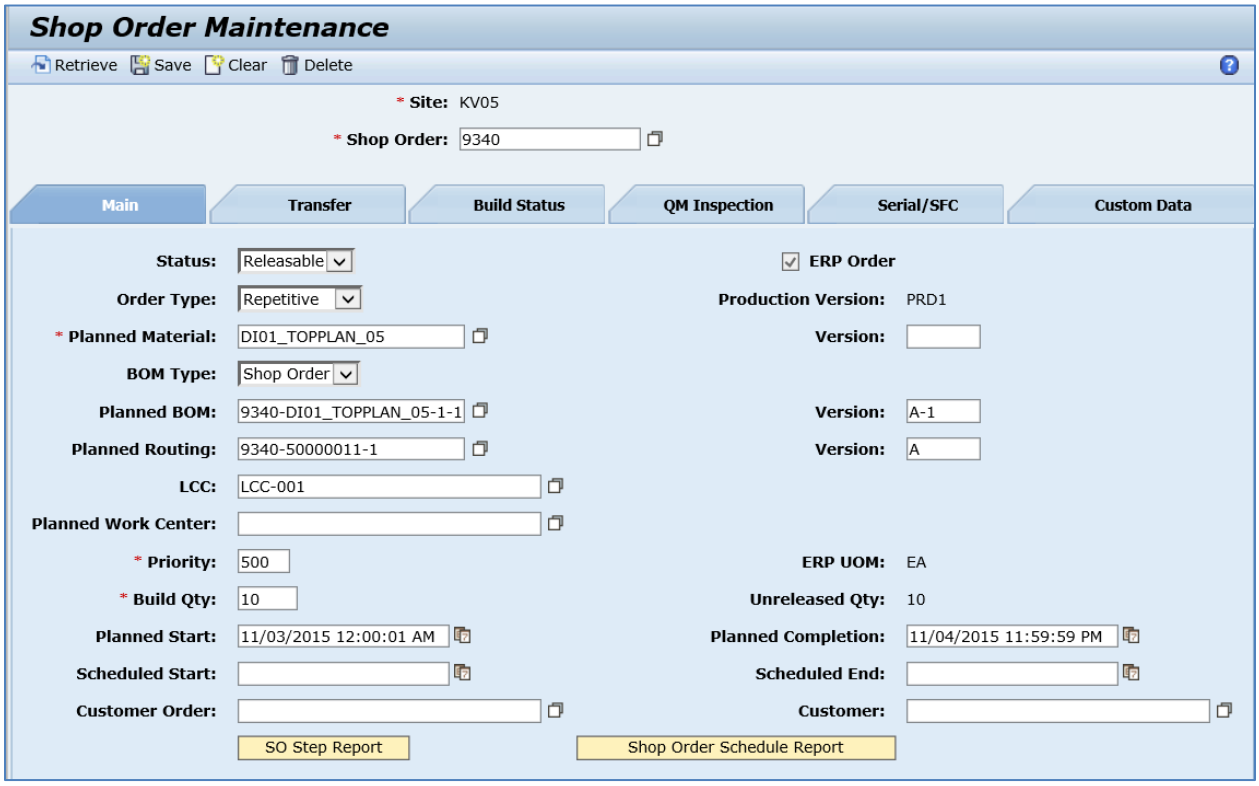
On the *Main* tab, verify the following field values:

- *Site: Planning Plant* value.
- *Shop Order: Planned Order Number.*
- *Status:* Releasable.
- *Order Type:* Repetitive.
- *ERP Order:* Selected.
- *Planned Material: Material Number*.
- *Version:* Defaults to # (blank in the GUI).
- *Planned BOM:* Bill of material that is received within planned order. Key for the BOM is Order Number (AUFNR) + "-" + Material Number (MATNR or MATNR_EXTERNAL) + "-" + BOM Usage (STLAN) + "-" + Alternative BOM (STLAL).

Planned BOM present in the shop order is a Shop-Order specific type BOM (type H in a database).

- *Planned BOM Version:* A-1.
- *Planned Routing:* Routing that is received within production order. Routing name structure: Order Number (AUFNR) + "-" + Key for Task List Group (PLNNR) + "-" + Group Counter (PLNAL).

  Planned routing present in the shop order is a Shop-Order specific type routing (type H in a database).
- *Planned Routing Version:* A.
- *ERP UOM:* This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing.
- *Priority:* If no value is given in SAP ERP, defaults to 500. If the value in SAP ERP is from 0-9, then the value in SAP ME is value *100.
- *Build Qty:* Total planned order quantity (GSMNG). Reducing Build Qty is allowed only for unreleased quantities.
- *Planned Start:* Order start date in planned order (PSTTR)
- *Planned Completion:* Order finish date in the planned order (PEDTR)
- Other fields are BLANK by default or deselected.



For more information about BOMs and routings that are received from SAP ERP, see the Configuring a Bill of Material (BOM) and Configuring a Standard Routing in SAP ERP sections of this guide.

10 Service / RMA Order Integration

10.1 Overview

This function lets you transfer a service order data from SAP ERP to SAP ME to create the corresponding RMA shop order in SAP ME (see Shop Order on the SAP Help Portal at http://help.sap.com).

This function supports long material numbers (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com).

See also Integration of Service (RMA) Orders on the SAP Help Portal at http://help.sap.com.

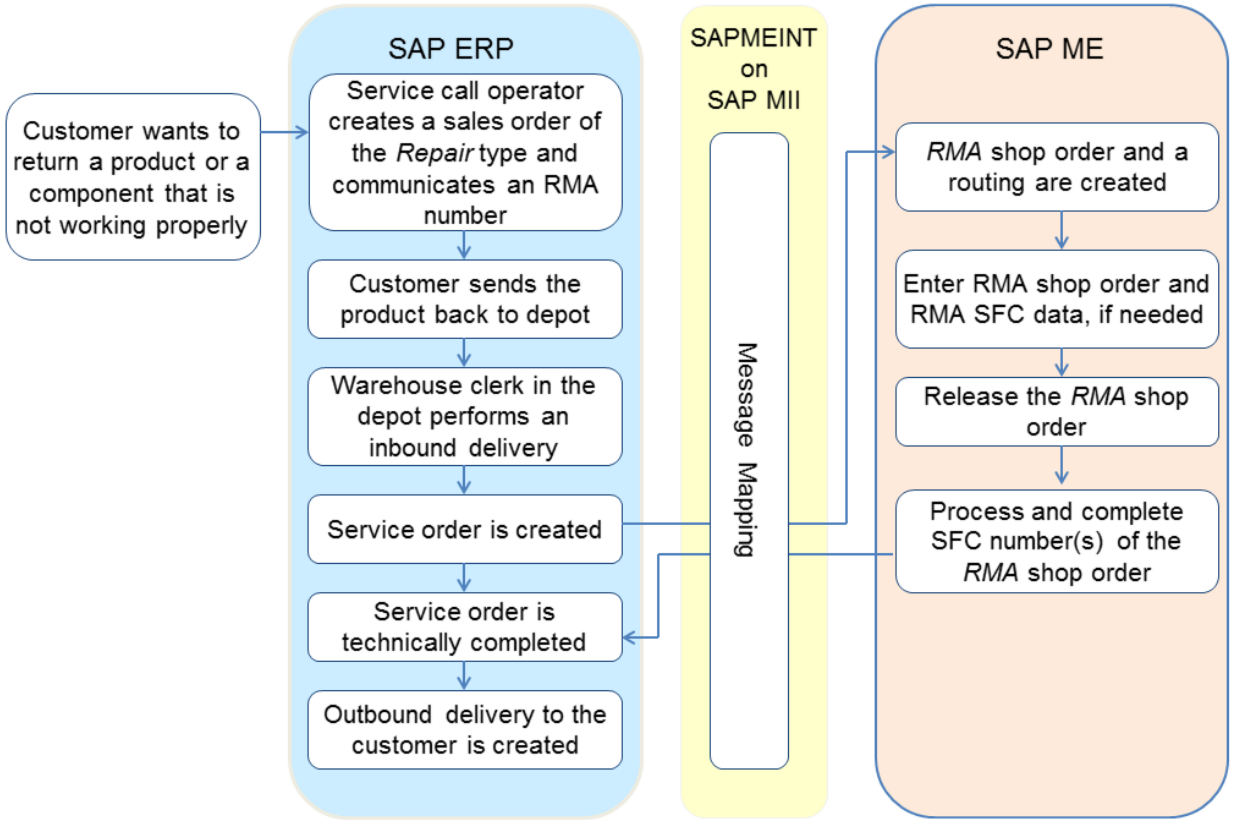
10.1.1 Business Purpose

The customer repair order is used by sales in SAP ERP for recording all the business processes that are involved in processing faulty goods that a customer sends in for repair.

When you enter the service product and serviceable material in the repair request item, the system creates a return order item automatically for the serviceable material. This is triggered by the goods receipt of the serviceable material.

The RMA shop order is used in SAP ME to authorize the return of manufactured material from a customer to a supplier for a corrective action. A material may be returned for repair, re-configuration, or disposition in some other manner and may be finished goods, subassemblies, or components.

10.1.2 Process Flow Graphic



10.2 Configuring a Service (RMA) Order

10.2.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer service order data from SAP ERP to SAP ME to create the corresponding RMA (Return Material Authorization) shop order in SAP ME.

For more information about sending service order IDocs to SAP ME, see Transfer of Service (RMA) Order on the SAP Help Portal at http://help.sap.com.

10.2.2 Prerequisites

10.2.2.1 SAP ERP

- You have created a service product and service object.
- You have created a user status profile and have assigned the profile to the service order type (see User Status on the SAP Help Portal at http://help.sap.com).

10.2.2.2 SAP ME

- You have verified system rule settings (see ERP Integration Rules and SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- You have verified settings in *ERP Field Maintenance* (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

10.2.3 Procedural Steps

1. A service order is automatically created from a customer return in SAP ERP (see Actions for Managing Repairs Processing on the SAP Help Portal at http://help.sap.com and the Configuring Service (RMA) Order section of this guide).
2. Send service order to SAP ME.

   We recommend to use *Execute Data Replication* transaction (transaction code – *DRFOUT*).

   Make sure that you have created and activated a replication model with the outbound implementation for the plant maintenance order (*468_1*). For more information about setting up data replication, see the Data Replication Setup section of this guide.
3. Optional: Verify *IORDER* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

4. Verify results in SAP ME.

SAPMEINT creates the RMA shop order and a routing for this shop order in SAP ME (see Transfer of Service (RMA) Order on the SAP Help Portal at http://help.sap.com).

If an SFC number exists for this product in the site where it is being returned, SAP ME unarchives the SFC number and all of its data (see Archiving on the SAP Help Portal at http://help.sap.com). If the SFC number was packed, the system removes it from the container (see Container and Packing Report on the SAP Help Portal at http://help.sap.com).

If the SFC number does not exist, SAP ME creates it.

For more information about data that is transferred using IDocs, see the Field Mappings section of this guide.

10.2.4 Alternates / Best Practices and Tips

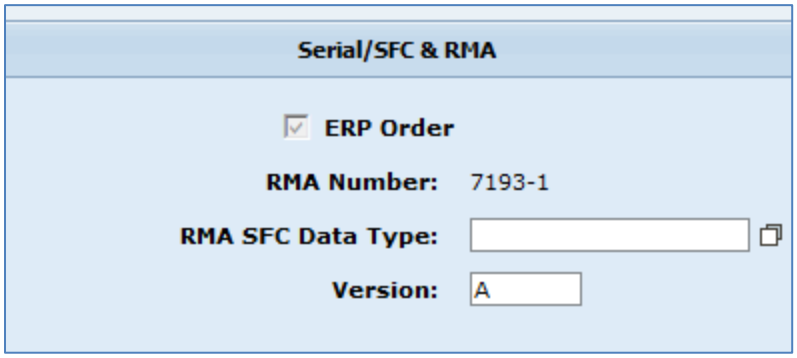
10.2.4.1 RMA Number

- *RMA Number* field is available in the *Shop Order Maintenance* and *Shop Order Release* activities. It displays only if type of the shop order is RMA.
- *RMA Number* field is always read-only in *Shop Order Release* activity.

- In the *Shop Order Maintenance* activity, *RMA Number* field is read-only if it is received from SAP ERP.
- If the RMA number value is not received in the service order, the RMA number is automatically generated by SAP ME using settings defined in *Next Number Maintenance* (*Number Type* = RMA Number; by default it will look like RMA01).
- If the RMA number is received from SAP ERP and already exists in SAP ME, the RMA number is appended with a -1, -2, and so on.

  Note: The suffix is added to the RMA number only if it already exists in SAP ME (for example, RMA shop order with the same RMA number has been manually created in SAP ME) or when the service order contains more than one material. In this case, SAP ME receives two orders with the same RMA numbers. The first order is created using the original RMA number, and during the creation of the second order, the system checks the uniqueness of the transferred RMA number, and because it already exists in the system, the suffix is appended.

  Note: If on appending of the suffix the RMA number becomes too long for the *RMA Number* field, then an error message appears: Shop order <shop order> already attached to RMA number <RMA number> (Message 15936).



- If the RMA shop order originated in SAP ME, the *RMA Number* field will be editable unless the RMA order is released.

  Note: If a user tries to save an RMA shop order with an RMA number that already exists in the system, then an error message appears: Shop order <RMA Order> already attached to RMA number <RMA Number> (Message 15936)
- If the RMA shop order originated in SAP ME and the user leaves the *RMA Number* field blank, then new RMA number value is automatically generated on order save. *Next Number Maintenance* settings are used to generate a new RMA number.

10.2.4.2 Serial/SFC & RMA tab behavior

- If the order type is RMA, then the *Serial/SFC* tab in Shop Order Maintenance changes its label to *Serial/SFC & RMA*.
- Received serial numbers are displayed in the table which is located on the *Serial/SFC & RMA* tab. The following columns display in the table: Count, Serial Number, Original SFC Number, SFC Number, Released, Enabled, Details.

- *Serial Number:* Displays Serial Numbers that are received from SAP ERP within the service order or manually entered in SAP ME. If value is received from SAP ERP, then this field is read-only, otherwise it is editable;
- *Original SFC Number:* If production unit with a serial number has been produced on the SAP ME site where the repair order is being received, then the corresponding SFC number has been generated to track the production process. This SFC number is stored in SHOP_ORDER_SFC_PLAN table and displayed in *Original SFC Number* column. This column is always read-only;
- *SFC Number:* Displays the SFC number value received from the external system or manually entered in SAP ME for the following reasons:
  - The user wants to add the existing SFC number to the RMA shop order;
  - The user wants to define a name for a new SFC number that will be created during the release of the RMA order. Next Number settings are ignored in this case.
  - The user wants to relabel an existing SFC number upon release of the RMA shop order. The name of the existing SFC number must be present in the *Original SFC Number* field.

  If the SFC number value is received from the external system then the *SFC Number* field is read-only, otherwise it is editable. The only exception is when the *RMA_SFC_RELABEL* activity rule (activity *DM510*) is set to NO and the Original SFC Number is found.

  If the original SFC number is not found, the *SFC Number* field is always editable no matter what the current state of the *RMA_SFC_RELABEL* activity rule is. The behavior of the *SFC Number* field is described in the following table:

Original SFC Number is found	Y	Y	N	N
RMA_SFC_RELABEL = YES	Y	N	Y	N
SFC Number field is editable	Y	N	Y	Y

- When the service order with serial numbers is received from SAP ERP, a query is made to the SHOP_ORDER_SFC_PLAN table to check if the serial number has been previously used on this SAP ME site. If yes, then the system locates the last created shop order with this serial number and displays the corresponding SFC number in the *Original SFC Number* field. The system searches for the original SFC number by combination of *Planned Material* and *Serial Number*.

  Note: If the original SFC number is found and the *SFC Number* field is blank, then the original SFC is added to the RMA order on its release and a new SFC number is not created.

- If the original SFC number is not found by serial number, a value from the *SFC Number* field is used by the system to make a query to the SFC table. If the SFC

number is found there, it displays in the *Original SFC Number* field as well. The search is performed in both WIP and ODS databases.

- Only SFC numbers in the *Done* status can be added to the RMA shop order. This check is performed when the order is saved. If the status of the SFC is not *Done*, then the following error message appears: “SFC <SFC Number> must have status "Done" (Message 15937)”.
- User can manually add and remove rows with serial numbers and SFC numbers. Proper controls are always available and it does not depend on the source of RMA order. Any quantity of rows can be added.
- Rows with released SFC numbers are disabled and you cannot delete or edit them.
- It is prohibited to manually insert serial numbers if the lot size of the Planned material is greater than 1. The following error message displays in this case: “SFC/Serial Numbers cannot be specified for a Shop Order for a Material with a Lot Size greater than 1 (Message 13845)”. The same error message displays in the MEINT Queue Monitor when attempting to create an RMA shop order with serial numbers if the lot size of the Planned material is greater than 1.
- You cannot use the same SFC number more than once in the same order, otherwise the following error message appears: “The SFC <SFC Number> is not unique for this shop order; enter a unique SFC number (Message 13849)”.

10.2.4.3 Data Collection

- If the RMA Shop Order data type is defined on the Main tab of Shop Order activity, then corresponding data fields are displayed on the Serial/SFC & RMA tab.

  The user can collect new data or change existing data. Collecting and editing of the RMA Shop Order data is allowed even if the order has been released.
- RMA SFC data can be collected on Serial/SFC & RMA tab for every SFC number. The *Details* icon is used to open the *RMA SFC Details* screen. Editing of the RMA SFC data is allowed even if the order has been released.
- RMA Shop Order and SFC data can be automatically collected upon creation of the RMA shop order if it is received from the external system.

10.2.4.4 RMA Shop Order Release

- The *Shop Order Release* activity can be used to release the RMA shop order.
- Released SFC numbers are added to the RMA shop order. Change production occurs to change their current routings and BOMs to the routing and BOM that are defined in the RMA shop order. If an SFC number exists for this product in the site where it is being returned, SAP ME unarchives the SFC number and all of its data. If the SFC number was packed, the system removes it from the container.
- If the service order contains serial numbers, original SFC numbers are found and new SFC numbers are not defined in the *SFC Number* field, instead, original SFC numbers are added to RMA shop order on release. The SFC is placed in queue on the first operation of the RMA routing and its status is set to In Queue.

- During the release of the RMA shop order, the system verifies the status of SFC numbers that are being added to the order. If the status is not *Done*, the following error message appears: “SFC <SFC Number> must have status "Done" (Message 15937)”.
- If the original SFC number is not found but the *SFC Number* field is populated (SFC number value can be received from an external system or manually entered by the user), a new SFC will be created on RMA shop order release using the value provided to the *SFC Number* field.
- If the original SFC number is not found and the *SFC Number* field is blank, a new SFC number is created using Next Number settings to generate the format of the SFC number based upon the Shop Order Material. The *SFC Number* field will be populated with a new SFC that has been generated.
- If the original SFC number is found and the *SFC Number* value is defined, this value can be used as a new name for the original SFC number. A relabel occurs during the release of the RMA shop order. To enable it, set the RMA_SFC_RELABEL activity rule of the DM510 (Shop Order Release) activity to YES.

  If the activity rule is set to NO, the *SFC Number* field is disabled for editing. The only exception is when the original SFC number is not found. In this case, the *SFC Number* field will be enabled even if the RMA_SFC_RELABEL rule is set to NO. This allows users to manually insert an SFC number that has to be added to the RMA shop order.

  If the original SFC number cannot be relabeled, the following error message appears: “ID <SFC Number> has been used as an SFC, shop order, process lot, or RMA number (Message 13082)”.
- It is prohibited to release an RMA shop order if Serial Numbers are defined and the Lot Size of the Planned Material is not equal to 1. The following error message displays in this case: “SFC/Serial Numbers cannot be specified for a Shop Order for a Material with a Lot Size greater than 1 (Message 13845)”.
- If an RMA shop order is received from SAP ERP, then it is not allowed to release more SFC numbers than are defined in the Build Qty field. The following error message displays in this case: “Not enough quantity is available to release shop order <SHOP ORDER> (Message 13043)”.

  If the order is manually created in SAP ME, you can release any quantity of SFC numbers even if they exceed the Build Qty of the order.

  Release behavior can be described as follows:

Serial Number is received from ERP	Y	Y	Y	Y	Y	N	N	N
Original SFC is found	Y	Y	N	N	N	-	-	-
New SFC Number is received or entered manually	Y	N	Y	Y	N	Y	Y	N
New SFC Number is found in the SFC table	-	-	Y	N	-	Y	N	-

Original SFC is added to RMA Order (no relabel) - depends on rule	X	X						
Original SFC is added to RMA Order (relabel) - depends on rule	X							
SFC Number from SFC table is added to RMA Order			X			X		
New SFC is created using value from the SFC Number field				X			X	
New SFC is created using Next Number					X			X

10.2.4.5 Backwards Compatibility

- To support the old way of generating SFC numbers, the user is provided with a special XSLT file that can be set manually in SAP MII:

  SAPMEINT Configuration > *Workflow Configuration* > *IORDER01 Message Type* > set *Customer Request XSLT Address* to WEB://Visiprise/XSLT/Inbound/ServiceOrder/ServiceOrderRequest_BC.xslt

  This XSLT file generates SFC numbers for each Serial Number that is received from SAP ERP using the following schema:

  MATERIAL_NAME-SERIAL_NUMBER

- There is a new flag in XSLT that forces the RMA Order to be released automatically.

  This flag can be found in the Web service:

  ```
  <me:ShopOrderReleaseInfo>
    <me:Release>3</me:Release>
  </me:ShopOrderReleaseInfo>
  ```

  Value can be set to “all” meaning that the whole quantity of the order has to be released, or to a specific number of SFCs that need to be released.

10.2.5 Examples

10.2.5.1 Creating a Service (RMA) Order

1. Create repair / service order. In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Customer Service* > *Service Processing* > *Order* > *Customer Repair* > *Create*

or transaction code – *VA01*

Make sure that the following minimum configuration is done:

On the *Create Sales Order: Initial Screen*, enter the following:

- *Order type:* Determines the type of order to be processed. Enter RAS.
- *Sales Organization:* Unit responsible for the sale of products. Enter, for example, 0001 (or it can be copied from the customer master record).
- *Distribution channel:* The way in which products reach a customer. Enter, for example, 01 (or it can be copied from the customer master record).
- *Division:* A way of grouping materials. Enter, for example, 01 (or it can be copied from the customer master record).
- *Sales office:* Location responsible for the sale of products. Leave blank.
- *Sales group:* Group of sales people. Leave blank.

On the *Create Repairs/Service: Overview* screen, under the *Sales* tab, enter the following:

- *Sold-to party:* Customer who orders goods. Enter customer number.
- *Ship-to party:* The party who receives delivery of the goods. Enter customer number.
- *PO Number:* Number used to uniquely identify a business document. Enter RMA number (If no entry is made the system automatically enters the document number in this field when saving the document).
- *PO date:* Date the RMA is issued. Enter date.
- *Material:* Identifies the service product material. Enter the number of the service product.
- *Order quantity:* Number of items to be returned. Enter the number 1.
- *ServiceableMat:* Serviceable material. Enter the material number for items being returned for repair.
- *Serv. matl qty:* Quantity. Enter quantity being returned.

2. Create returns delivery. In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Customer Service* > *Service Processing* > *Order* > *Customer Repair* > *Returns Delivery*

or transaction code – *VRRE*

Make sure that the following minimum configuration is done:

On the *Create Returns Delivery for Repair Order* screen, enter the following:

- *Repair Request:* Sales order number. Enter the return sales order number.
- *Delivery type:* Identifies the delivery type for processing. Enter LR.
- *Shipping Point/Receiving Pt:* Physical location that goods are received. Enter receiving point.

On the *Return Delivery Create – Overview: Quantities* screen, verify the data transferred from the Return Order.

If serial numbers are required for any material, select the item and go to *Item* > *Serial Numbers*. On the *Maintain Serial Numbers* screen, enter the serial numbers.

3. Change outbound delivery. In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Customer Service* > *Service Processing* > *Order* > *Customer Repair* > *Shipping* > *Post Goods Issue* > *Outbound Delivery Single Document*

or transaction code – *VL02N*

Make sure that the following minimum configuration is done:

On the *Change Outbound Delivery* screen, enter the following:

- *Outbound Delivery:* Enter Return Delivery number that was created in previous transaction (populates automatically).

On the *Return Delivery Change: Overview* screen, enter the following:

- *SLoc:* Enter Storage Location number if required.

To change or verify the serial numbers of serviceable items being received, select *Extras* > *Serial Numbers*.

On the *Maintain Serial Numbers* screen, verify and select the serial numbers, or change and select the serial numbers to be received.

Click the *Post Goods Receipt* icon.

4. Change service / repair order. In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Customer Service* > *Service Processing* > *Order* > *Customer Repair* > *Change*

or transaction code – *VA02*

Make sure that the following minimum configuration is done:

On the *Change Sales Order: Initial Screen*, enter the following:

- *Order:* Enter the Return order number.

On the *Change Repairs / Service ##: Overview* screen, select a populated item in the *Main items* table and click the *Repairs* icon.

On the *Change Repair Request ##: Item Data* screen, click the *green back arrow*.

Click *Yes* in the following dialog box.

Press `Enter` to bypass any information messages that appear.

Click the *All* icon in the dialog box.

Click *Save* when *Change Repairs / Service ##: Overview* screen displays.

5. *Optional:* Check the number of the created service order.

Note: Service order is created when the sales order has been saved.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Customer Service* > *Service Processing* > *Order* > *Customer Repair* > *Display*

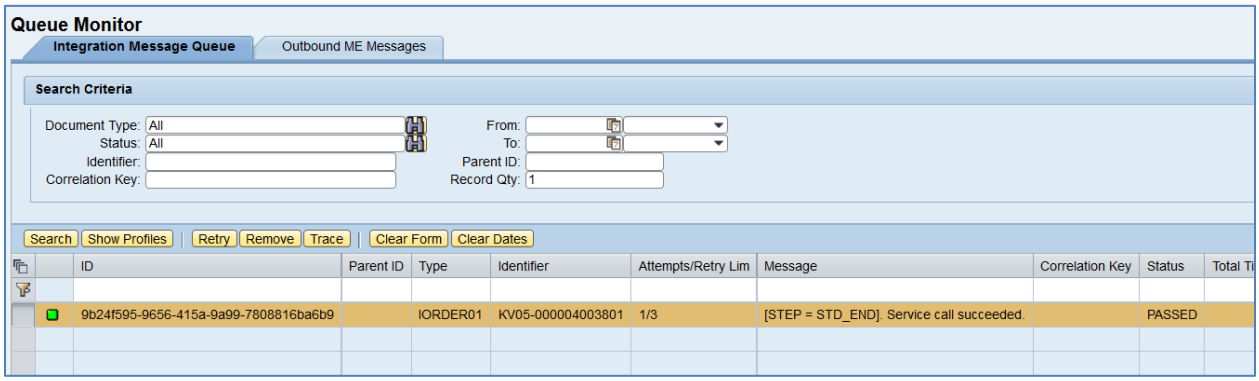
or transaction code – *VA03*

On the *Display Repairs / Service ##: Overview* screen, select populated item in *Main items* table and click the *Repairs* icon.

On the *Display Repair Request ##: Item Data* screen, click the *SM Order* icon to view the service order details.

6. Optional: Verify IDocs exist in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



7. Verify results in SAP ME.

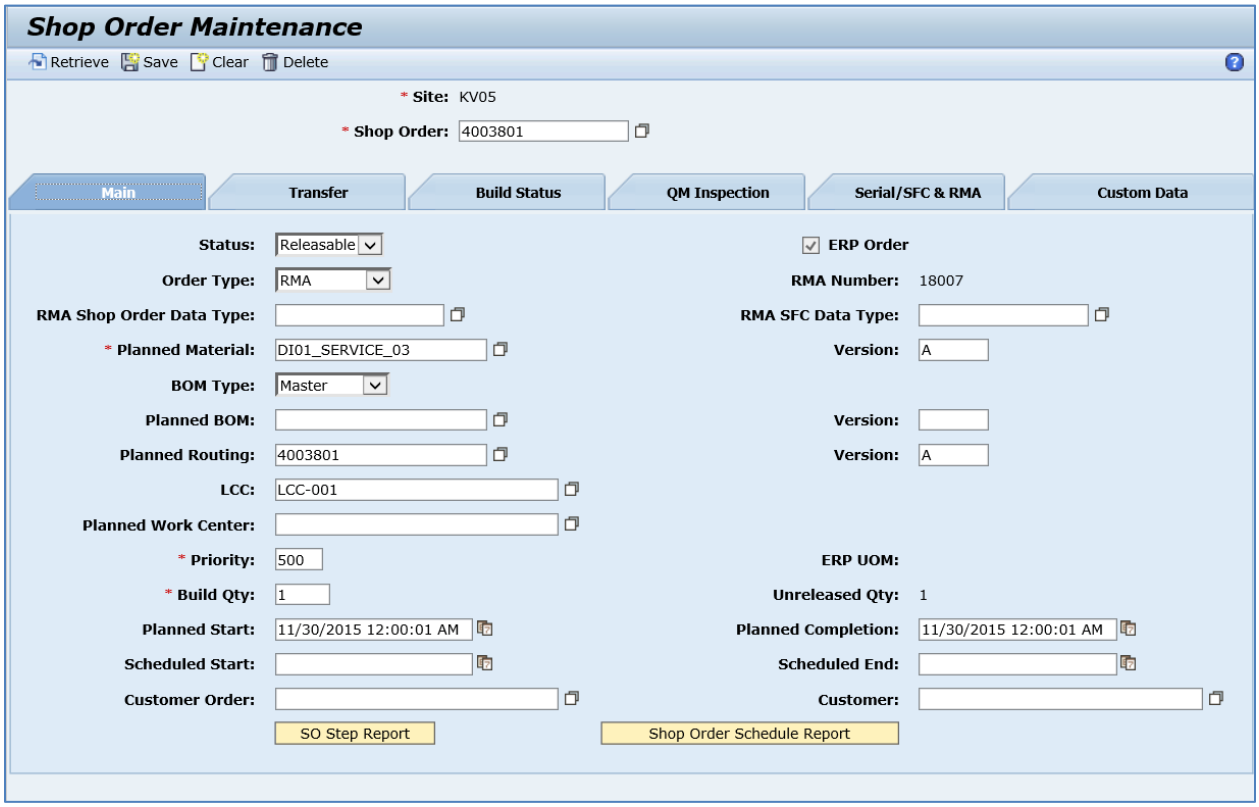
Run *Shop Order Maintenance* and retrieve the transferred shop order record.

On the *Main* tab, verify the following field values:

- *Site: Plant* value.
- *Shop Order: Service Order Number.*
- *Status:* Releasable unless STAT equals:
  - I0012 - Delivered
  - I0045 - Technically completed
  - I0076 - Deletion Flag

  If so, the Status is set to Closed.
- *Order Type:* RMA.
- *ERP Order:* Selected.
- *RMA Number: Purchasing Number.*
- *Planned Material: Material Number*.
- *Version:* Current.
- *Planned BOM:* BLANK.
- *Planned BOM Version:* BLANK.
- *Planned Routing:* Routing that is received within service order. Name of the routing is equal to *Order Number* (*AUFNR*). Routing has Shop Order Specific type.
- *Planned Routing Version:* A.

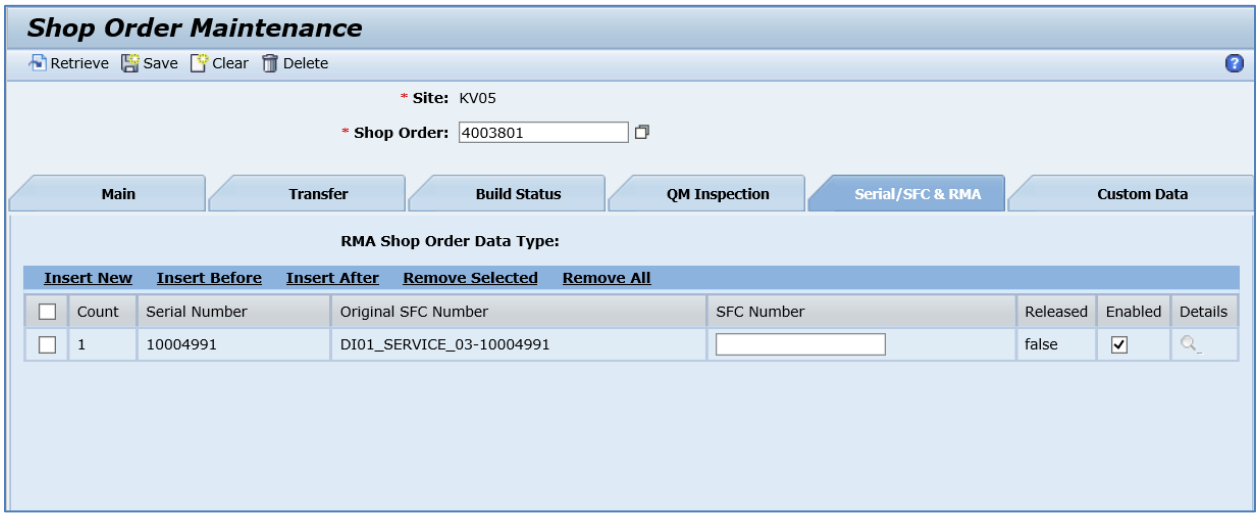
- *Priority:* 500.
- *Build Qty:* Requirements Quantity of order.
- *Planned Start: Scheduled start date*.
- *Planned Completion: Scheduled finish date*.
- Other fields are BLANK by default or deselected.



On the *Serial/SFC & RMA* tab, verify the following field values:

- *Count:* The sequence number for the row in the table.
- *Serial Number:* Serial number belonging to this shop order. If the value was transferred from SAP ERP, it is read only. Note that for non-ERP shop orders, a serial number can be edited only if no SFC number has been released for it.
- *Original SFC Number:* if production unit with a serial number has been produced on the SAP ME site where repair order is being received, then corresponding SFC number has been generated to track the production process. This SFC number is stored in SHOP_ORDER_SFC_PLAN table and displayed in *Original SFC Number* column. This column is always read-only.
- *SFC Number:* SFC number belonging to this shop order. If the value was transferred from an external system, it is read only. Note that you cannot remove a row containing a released SFC number.

- *Released:* If true, indicates that this SFC number or serial number has been released for production or corrective action.
- *Enabled:* If selected, you can use this number to release corresponding SFC numbers.



11 Floor Stock Integration

11.1 Overview

This function enables the transfer of floor stock data between SAP ERP to SAP ME to support the following scenarios:

- Floor Stock Replenishment (movement type 311)
- Production Order-Specific Consumption (movement type 261)
- Transfer of Floor Stock Return and Scrap Data
- Transfer of Floor Stock Storage Location Movements

11.2 Floor Stock Replenishment (movement type 311)

11.2.1 Business Purpose / Description

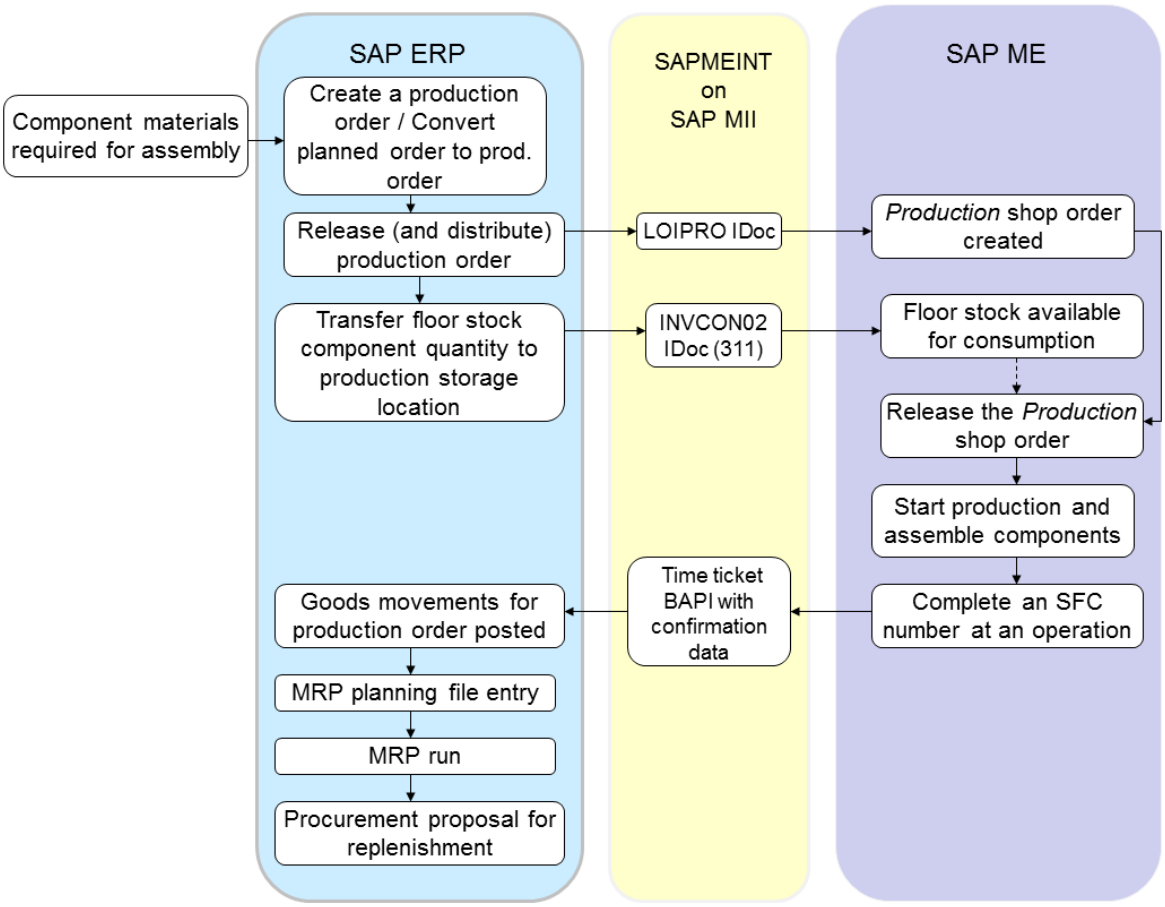
The process of floor stock receipt without reservation (goods movement type *311*) in SAP ME assumes that the goods are moved from a warehouse location to a production location for use during the production process (see Goods Movement on the SAP Help Portal at http://help.sap.com). These quantities are recorded and sent to SAP ERP during the production confirmation for consumption against the production order.

- When you post a transfer of unrestricted-use stock from a central (issuing) storage location to a floor stock (receiving) storage location in SAP ERP with the goods movement type *311* (transaction *MIGO*), the stock data is transferred from SAP ERP to SAP ME using the *INVCON* IDoc (see Integration of Production Orders and Transfer of Floor Stock Data: Integration Details on the SAP Help Portal at http://help.sap.com).
- SAPMEINT performs floor stock receipt for the specified components.

When yield / scrap collaboration is triggered, SAP ME sends a confirmation to SAP ERP reporting consumed components.

See also Transfer of Floor Stock Return and Scrap Data on the SAP Help Portal at http://help.sap.com.

11.2.2 Process Flow Graphic



11.2.3 Prerequisites

11.2.3.1 SAP ERP

- You have created production storage locations for floor stock materials.
- You have set up ALE communication to create and transmit *INVCON* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- If you use SAP ERP 6.05 (with activated business functions *LOG_PP_MES_INT_01* and *LOG_PP_MES_INT_02*) or later, you have maintained integration of goods movements (see SAP Note 1555198).
- You have set up a filter for the goods movement type *311* (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have created a BOM for the finished good material on the production order.

11.2.3.2 SAP ME

- You have created and configured a data type for floor stock integration (see SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- For materials to be received into floor stock and assembled, you have specified the following on the Build tab of *Material Maintenance* after the material is transferred to SAP ME (see Material Transfer on the SAP Help Portal at http://help.sap.com):
  - *Data to Collect on Assembly*: *INV* or *INV_SFC*
  - *Data to Collect on Floor Stock Receipt*: *ERP_INV_RCPT_DATA*
- You have created a storage location matching the SAP ERP *Receiving Storage Location* in *Storage Location Maintenance* (see Storage Location Maintenance on the SAP Help Portal at http://help.sap.com).
- You have defined a numbering pattern for the number type floor stock receipt (see Next Number Maintenance on the SAP Help Portal at http://help.sap.com).

11.2.4 Procedural Steps

1. Create a raw material master record and transfer it to SAP ME (see Configuring a Material Master section of this guide).
2. Receive component quantity required for assembly in SAP ERP (*MIGO* transaction).
3. Transfer the floor stock component quantity to the production storage location (*MIGO* transaction).
4. Optional: Verify *INVCON* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

5. Verify results in SAP ME.

SAPMEINT creates an inventory ID record in SAP ME.

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

11.2.5 Alternates / Best Practices and Tips

- SAP ERP is the system of record for inventory management; SAP ME is the system of record for floor stock management.
- A transfer posting in SAP ERP is comparable to floor stock receipt in SAP ME.
- For inventory ID records created in SAP ME through the integration, the database field *ERP_INVENTORY* is equal to true (see Inventory ID on the SAP Help Portal at http://help.sap.com).

- Floor storage location exists in both SAP ERP (*LGORT*) and SAP ME (*Storage Location*); the Receiving Storage Location (*UMLGO*) exists only in SAP ERP.
- This function supports long material numbers (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com).

A stock transfer from storage location to storage location takes place within a plant. It is posted without a value, because the transferred material is managed in the same plant and therefore has the same valuation data as before.

This is entered using a one-step procedure.

This stock transfer procedure reduces the corresponding stock type at the issuing storage location and increases the same stock type at the receiving storage location. At plant level, the stock level does not change, except that the stock is distributed differently among the storage locations in the plant.

Movement type 311 is used for the transfer posting of unrestricted use stocks from one storage location to another.

11.2.5.1 Creating a Cross System Business Area for Inventory IDocs

This configuration is required for inventory (floor stock) data integration.

1. In Customizing for *SAP NetWeaver*, choose > *Application Server* > *IDoc Interface/Application Link Enabling (ALE)* > *Modelling and Implementing Business Processes* > *Global Organizational Units* > *Cross-System Business Areas* > *Choose Activity*.
2. Click the *Cross system business areas* activity.
3. On the *Change View "Cross-System Business Areas": Overview* screen, click the *New Entries* icon.
4. On the *New Entries: Overview of Added Entries* screen, enter the following data:

Field Name	Description	User Action and Values	Comments
X-sys. business area	Globally unique business area	Enter the key for business area	Typically given the same name as the financial business area
Description	Business area description	Enter a short description	

5. Save your entries.
6. Return to the *Choose Activity* screen and click the *Assign Business Area to Cross-System Business Area* activity.
7. On the *Change View "Assign Business Area to Cross-System Business Area* screen, enter the following data:

Field Name	Description	User Action and Values	Comments
X-SysBusAr	Globally unique business area	Enter the key for business area created in previous step	Typically designated the same name as the financial business area

8. Save your entries.

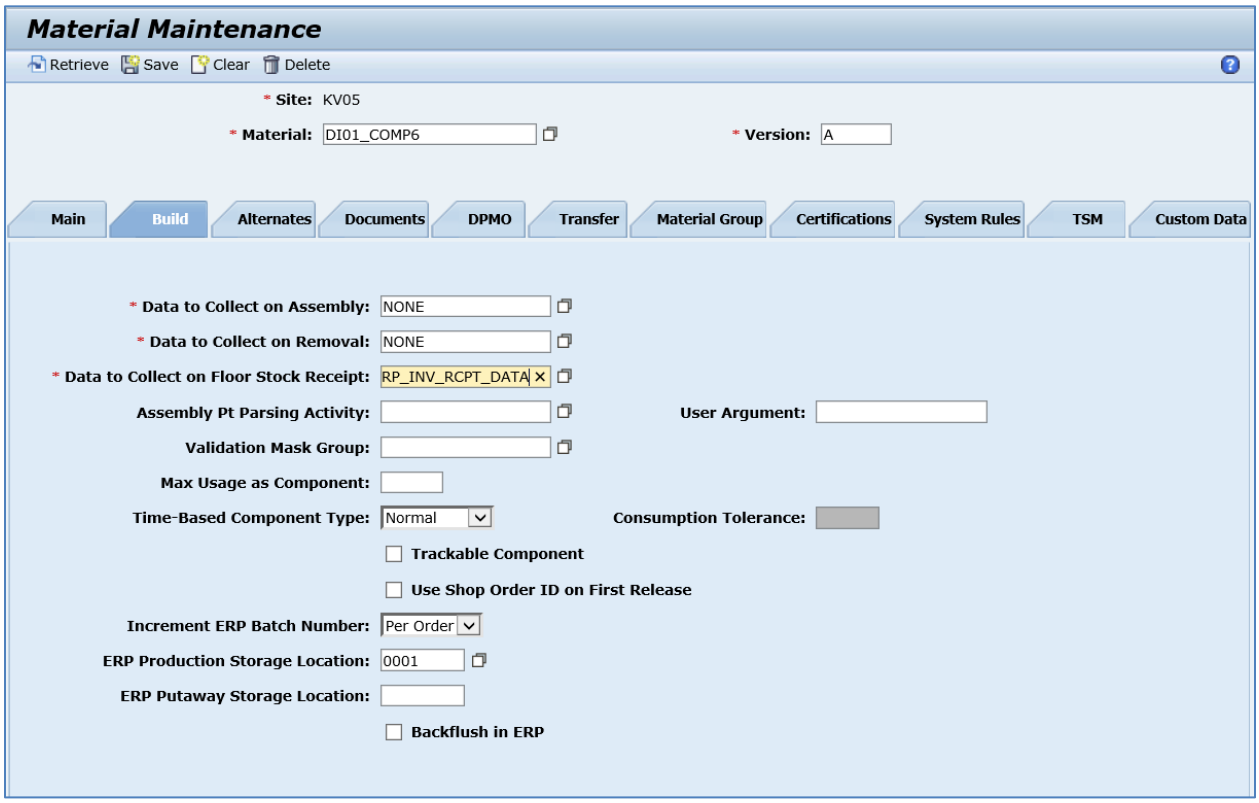
11.2.6 Examples

11.2.6.1 Floor Stock Replenishment (Movement Type 311)

1. Create a raw material and transfer it to SAP ME (see Configuring Material Master section of this guide).
2. In SAP ME, run *Material Maintenance* and retrieve the transferred material record.

On the *Build* tab, enter the following:

- *Data to Collect on Floor Stock Receipt:* ERP_INV_RCPT_DATA.



3. Post Goods Receipt for your raw material.

   In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Materials Management* > *Inventory Management* > *Goods Movement* > *Goods Issue*

or transaction code – *MIGO*

Make sure that the following minimum configuration is done:

On the *Transfer Posting Others* screen, enter or select the following:

- *Executable Action:* Goods Receipt.
- *Reference Document:* Other.
- *Init.entry of stBal.:* 561.
- *Material (Material Tab):* Enter a material number.

On the *Quantity* tab, enter the following:

- *Qty in unit of Entry:* Enter quantity. For example, 100.

On the *Where* tab, enter the following:

- *Movement Type:* 561.
- *Plant:* Enter Plant.
- *Storage Location:* Enter non-production Storage Location.

If batch management or other information is required, the fields appear and are available for data entry.

If the material is serial-number managed, the system prompts for a serial number to be entered.

Make sure that *Item OK* checkbox is selected, click the *Check* and then *Post* buttons.

4. Check stock overview.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Materials Management* > *Inventory Management* > *Environment* > *Stock* > *Stock Overview*

or transaction code – *MMBE*

On the *Stock Overview: Basic List* screen, verify that the correct quantity displays in the *Unrestricted Use* column.

5. Perform transfer posting.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Materials Management* > *Inventory Management* > *Goods Movement* > *Goods Issue*

or transaction code – *MIGO*

Make sure that the following minimum configuration is done:

On the *Transfer Posting Other* screen, enter the following:

- *Executable Action:* Transfer Posting.
- *Reference Document:* Select Other.
- *Init.entry of stBal.:* Enter 311.

From section:

- *Material:* Material number.
- *Plant:* Plant name.
- *Stor. Loc.:* Enter storage location (the *From* location).
- *Batch:* Enter if required.

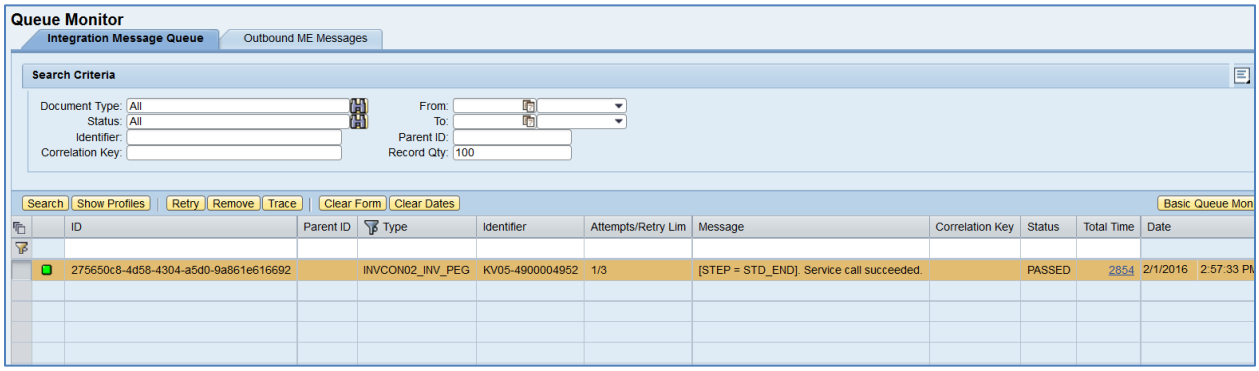
Dest section:

- *Stor. Loc.:* Enter storage location (the *To* location).
- *Batch:* Enter if required.
- *Qty in UnE:* Enter quantity to be transferred.

Click the *Check* and then *Post* buttons.

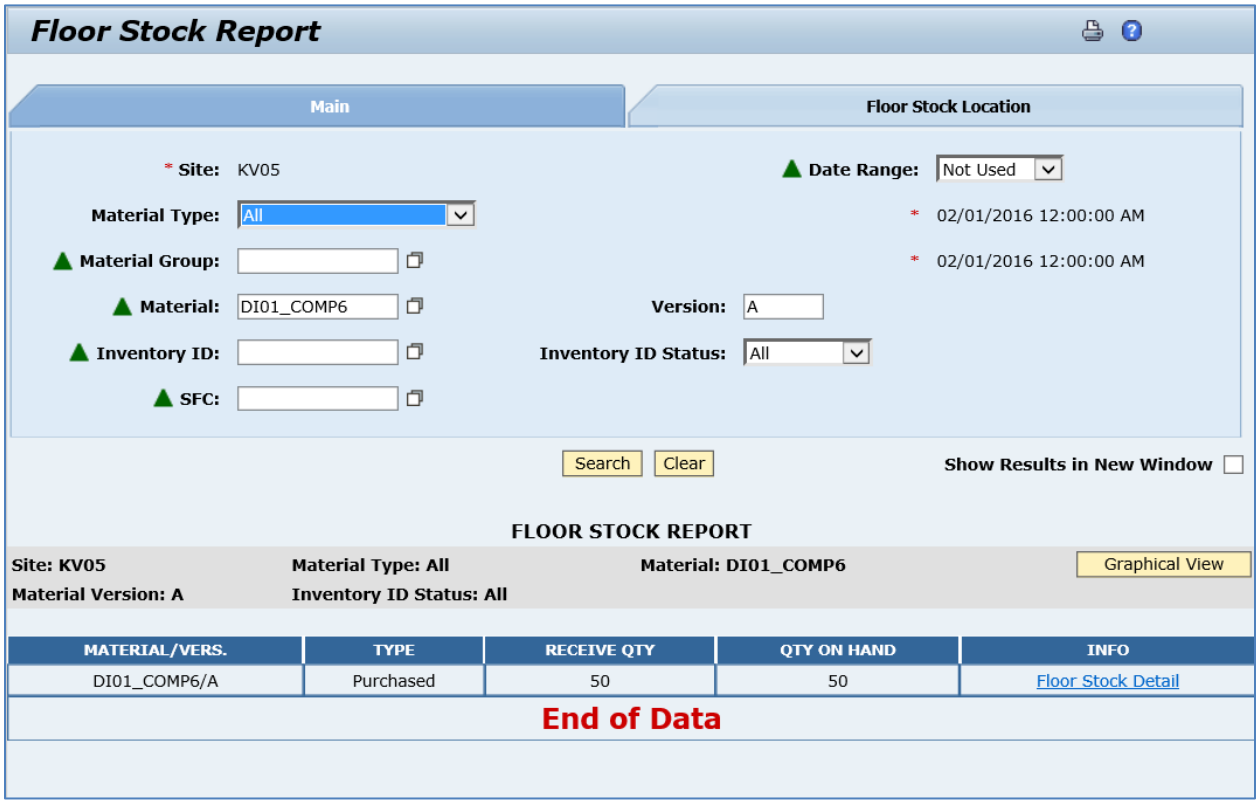
6. Check stock overview. Verify that the correct material quantity has moved to another storage location.
7. Optional: Verify *INVCON02_INV_PEG* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

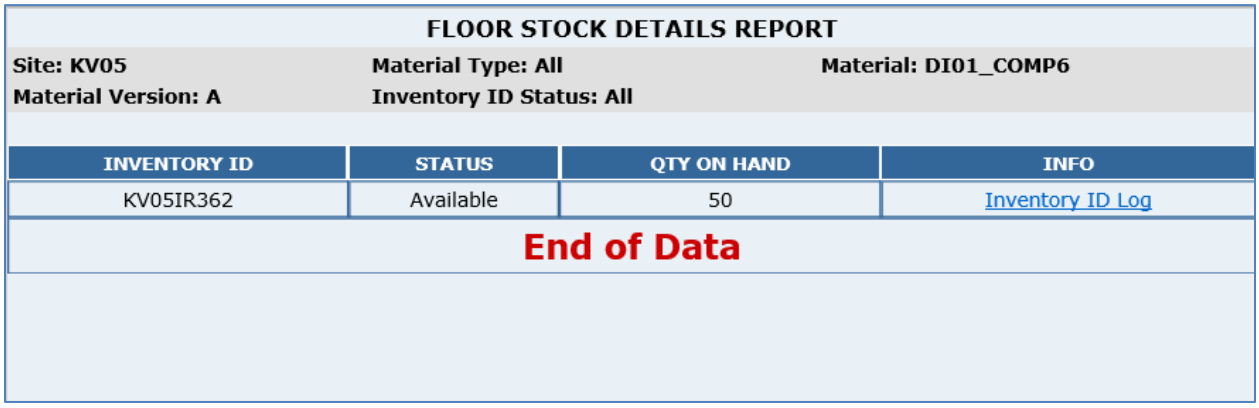


8. Verify results in SAP ME.

Run *Floor Stock Report*, and search by your material. Verify that the correct quantity has been transferred to SAP ME.



Click the *Floor Stock Detail* link in the *Info* column to see name of received inventory.



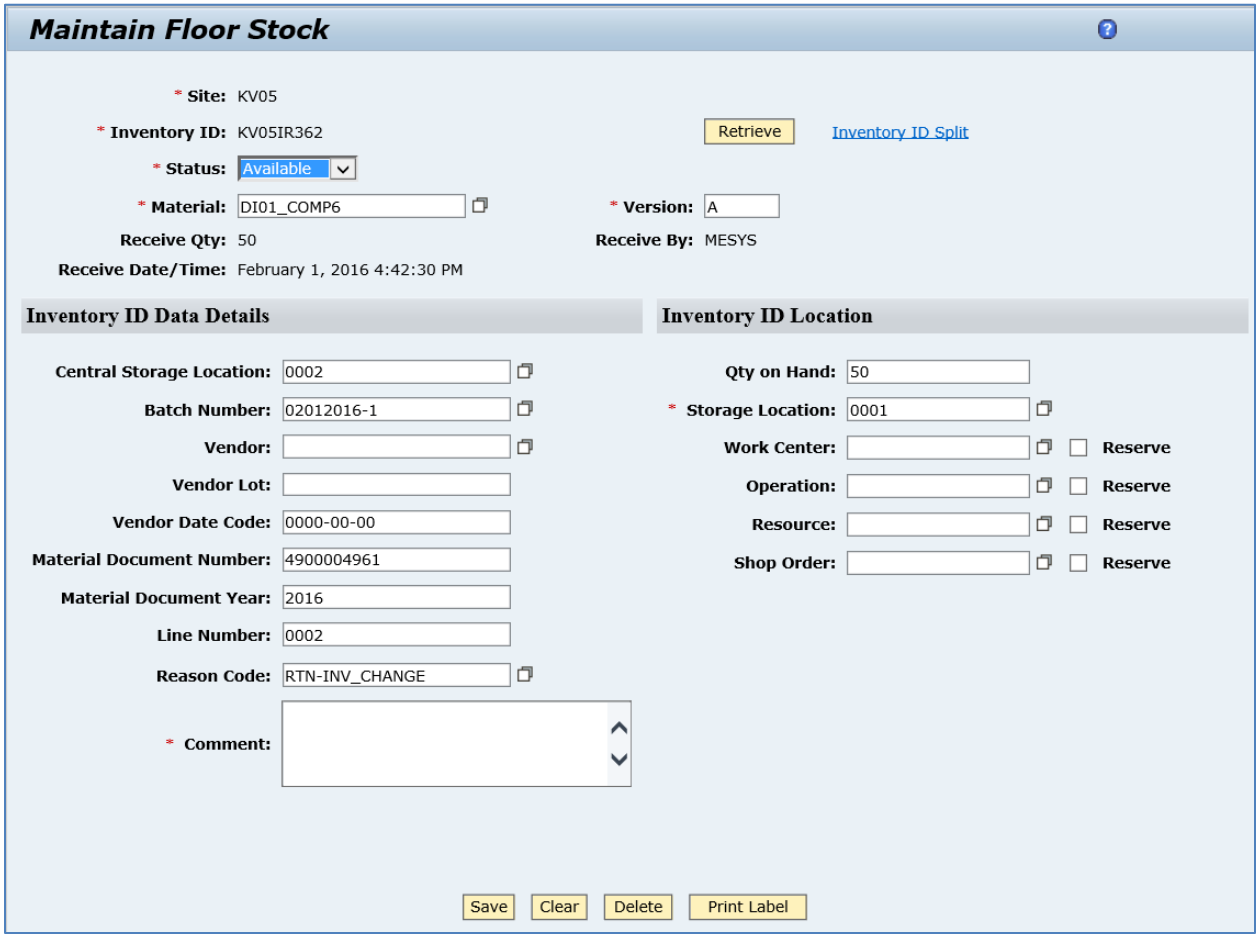
Run *Maintain Floor Stock*, and retrieve received inventory. Verify that all fields are filled with the correct values:

Inventory ID Data Details

- *Central Storage Location:* Source storage location.
- *Batch Number:* The received *Batch Number*.
- *Vendor: Vendor Account Number* (must be defined in SAP ERP and assigned to batch number using *MSC2N* transaction. Make sure that Vendor with the same name exists in SAP ME).

- *Vendor Lot: Vendor Batch Number* (must be defined in SAP ERP and assigned to batch number using *MSC2N* transaction).
- *Vendor Date Code: Production Date.*
- *Material Document Number:* Material document number that is created in SAP ERP.
- *Material Document Year: Material Document Year* from the Material Document.
- *Line Number:* Item in Material Document.

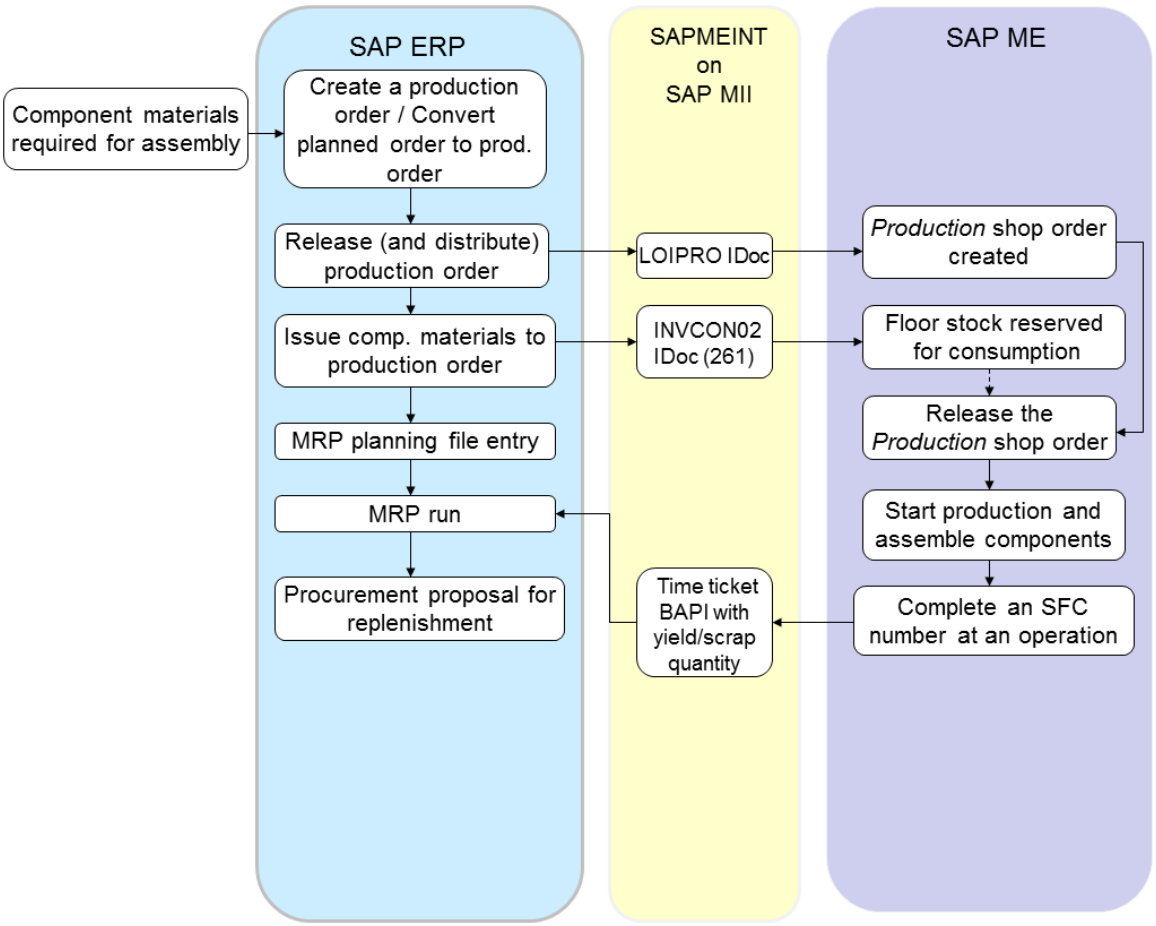
  Inventory ID Location
- *Quantity On Hand:* The *Quantity* received from SAP ERP.
- *Storage Location:* The production storage location.



11.3 Production Order-Specific Consumption (movement type 261)

11.3.1 Business Purpose / Description

11.3.2 Process Flow Graphic



11.3.3 Prerequisites

11.3.3.1 SAP ERP

- You have created production storage locations for floor stock materials.
- You have set up ALE communication to create and transmit *INVCON* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- If you use SAP ERP 6.05 (with activated business functions *LOG_PP_MES_INT_01* and *LOG_PP_MES_INT_02*) or later, you have maintained integration of goods movements (see SAP Note 1555198).

- You have set up a filter for the goods movement type *261* (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have created a BOM for the finished good material on the production order.

11.3.3.2 SAP ME

- You have created and configured a data type for floor stock integration (see SAP ME Configuration for SAP ME ERP Integration on the SAP Help Portal at http://help.sap.com).
- For materials to be received into floor stock and assembled, you have specified the following on the Build tab of *Material Maintenance* after the material is transferred to SAP ME (see Material Transfer on the SAP Help Portal at http://help.sap.com):
  - *Data to Collect on Assembly*: *INV* or *INV_SFC*
  - *Data to Collect on Floor Stock Receipt*: *ERP_INV_RCPT_DATA*
- You have created a storage location matching the SAP ERP *Receiving Storage Location* in *Storage Location Maintenance* (see Storage Location Maintenance on the SAP Help Portal at http://help.sap.com).
- For the production order specific consumption scenario, you have created or imported shop order data for the pegging of components to occur (see Integration of Production Orders on the SAP Help Portal at http://help.sap.com).
- You have defined a numbering pattern for the number type floor stock receipt (see Next Number Maintenance on the SAP Help Portal at http://help.sap.com).

11.3.4 Procedural Steps

1. Create a raw material master record and transfer it to SAP ME (see Configuring a Material Master section of this guide).
2. Receive component quantity required for assembly in SAP ERP (*MIGO* transaction).
3. Create and release production order (see Configuring a Production Order section of this guide).
4. Issue component materials to production order (*MIGO* transaction).
5. Optional: Verify *INVCON* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message processed properly. This step is optional and only necessary if you want to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent to SAP MII successfully.

6. Verify results in SAP ME.

SAPMEINT creates an inventory ID record in SAP ME with a reservation to the production shop order.

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

11.3.5 Alternates / Best Practices and Tips

- SAP ERP is the system of record for inventory management; SAP ME is the system of record for floor stock management.
- A transfer posting in SAP ERP is comparable to floor stock receipt in SAP ME.
- For inventory ID records created in SAP ME through the integration, the *ERP_INVENTORY* database field is equal to true (see Inventory ID on the SAP Help Portal at http://help.sap.com).
- Floor storage location exists in both SAP ERP (*LGORT*) and SAP ME (*Storage Location*); the Receiving Storage Location (*UMLGO*) exists only in SAP ERP.
- This function supports long material numbers (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com).

11.3.5.1 Creating a Cross System Business Area for Inventory IDocs

For more information, see Creating a Cross System Business Area for Inventory IDocs section of this guide.

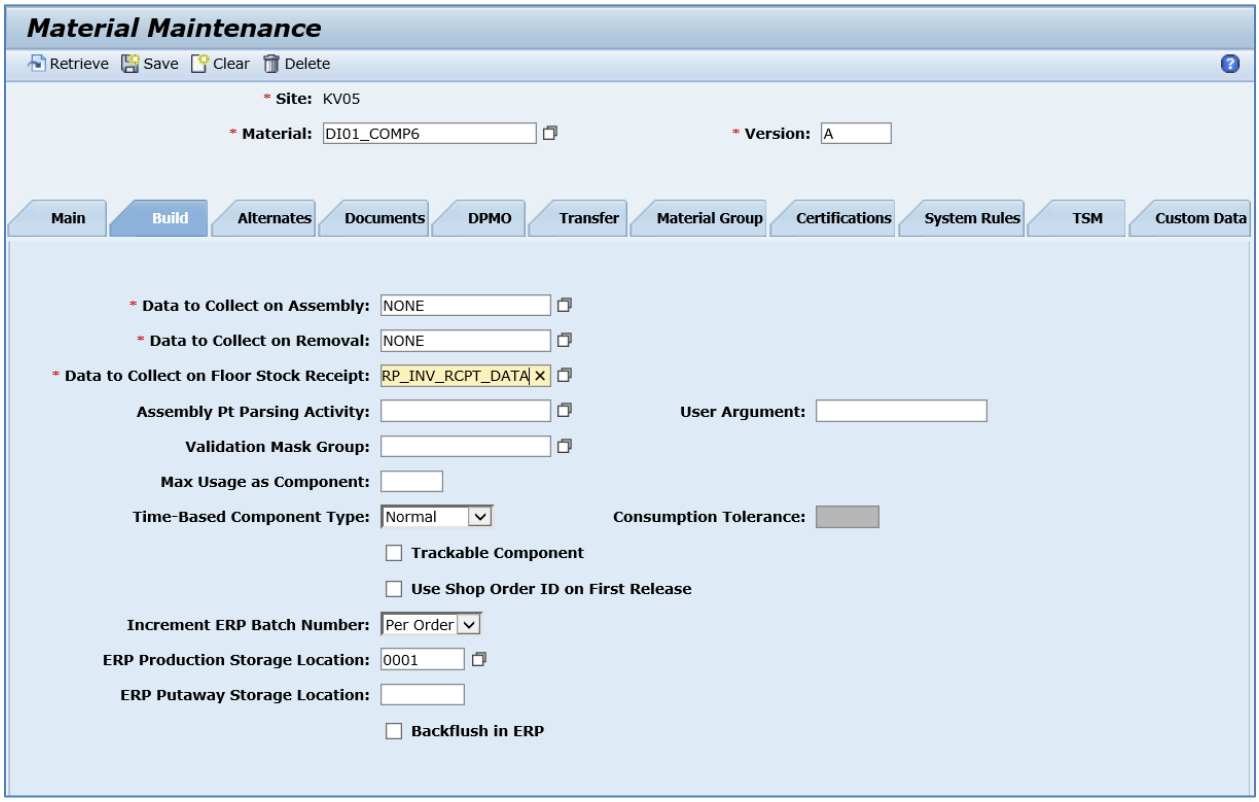
11.3.6 Examples

11.3.6.1 Production Order-Specific Consumption (Movement Type 261)

1. Create a raw material and transfer it to SAP ME (see the Configuring a Material Master section of this guide).
2. In SAP ME, run *Material Maintenance* and retrieve the transferred material record.

On the *Build* tab, enter the following:

- *Data to Collect on Floor Stock Receipt:* ERP_INV_RCPT_DATA.



3. Post Goods Receipt for your raw material.

   In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Materials Management* > *Inventory Management* > *Goods Movement* > *Goods Issue*

or transaction code – *MIGO*

Make sure that the following minimum configuration is done:

On the *Transfer Posting Others* screen, enter or select the following:

- *Executable Action:* Goods Receipt.
- *Reference Document:* Other.
- *Init.entry of stBal.:* 561.
- *Material (Material Tab):* Enter a material number.

On the *Quantity* tab, enter the following:

- *Qty in unit of Entry:* Enter quantity. For example, 100.

On the *Where* tab, enter the following:

- *Movement Type:* 561.
- *Plant:* Plant name.
- *Storage Location:* Enter a non-production storage location.

If batch management or other information is required, the fields appear and are available for data entry.

If the material is serial-number managed, the system prompts for a serial number to be entered.

Verify that the *Item OK* checkbox is selected, click the *Check* and then *Post* buttons.

4. Check stock overview.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Materials Management* > *Inventory Management* > *Environment* > *Stock* > *Stock Overview*

or transaction code – *MMBE*

On the *Stock Overview: Basic List* screen, verify that the correct quantity displays in *Unrestricted Use*.

5. Create and release the production order for your top assembly material (see Configuring a Production Order section of this guide).
6. Perform goods issue.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Materials Management* > *Inventory Management* > *Goods Movement* > *Goods Issue*

or transaction code – *MIGO*

Make sure that the following minimum configuration is done:

On the *Transfer Posting Others* screen, enter the following:

- *Executable Action:* Goods Issue.
- *Reference Document:* Select Order.
- *GI for order:* Enter 261.

On the *Where* tab, make sure that the correct (non-production) storage location is selected.

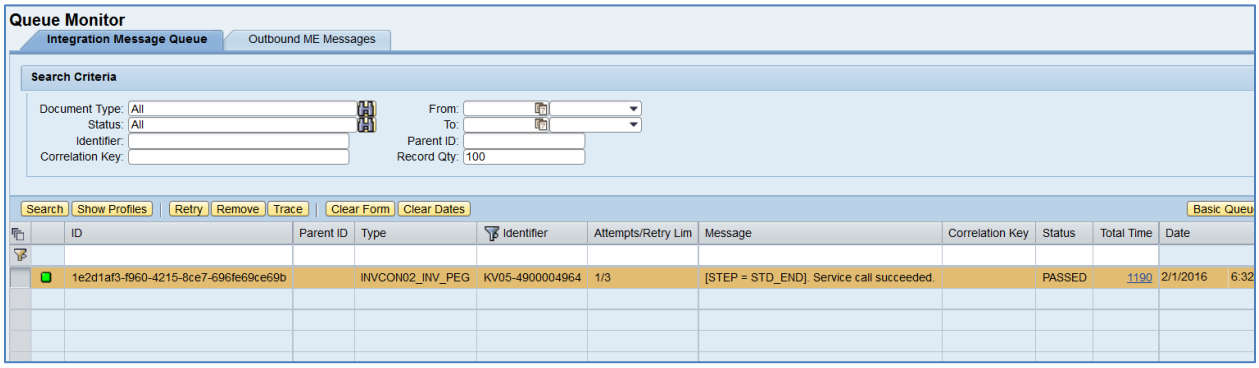
If batch management or other information is required, the fields appear and are available for data entry.

If the material is serial-number managed, the system prompts for a serial number to be entered.

Select the *Item OK* checkbox. Click *Check* and then *Post* buttons.

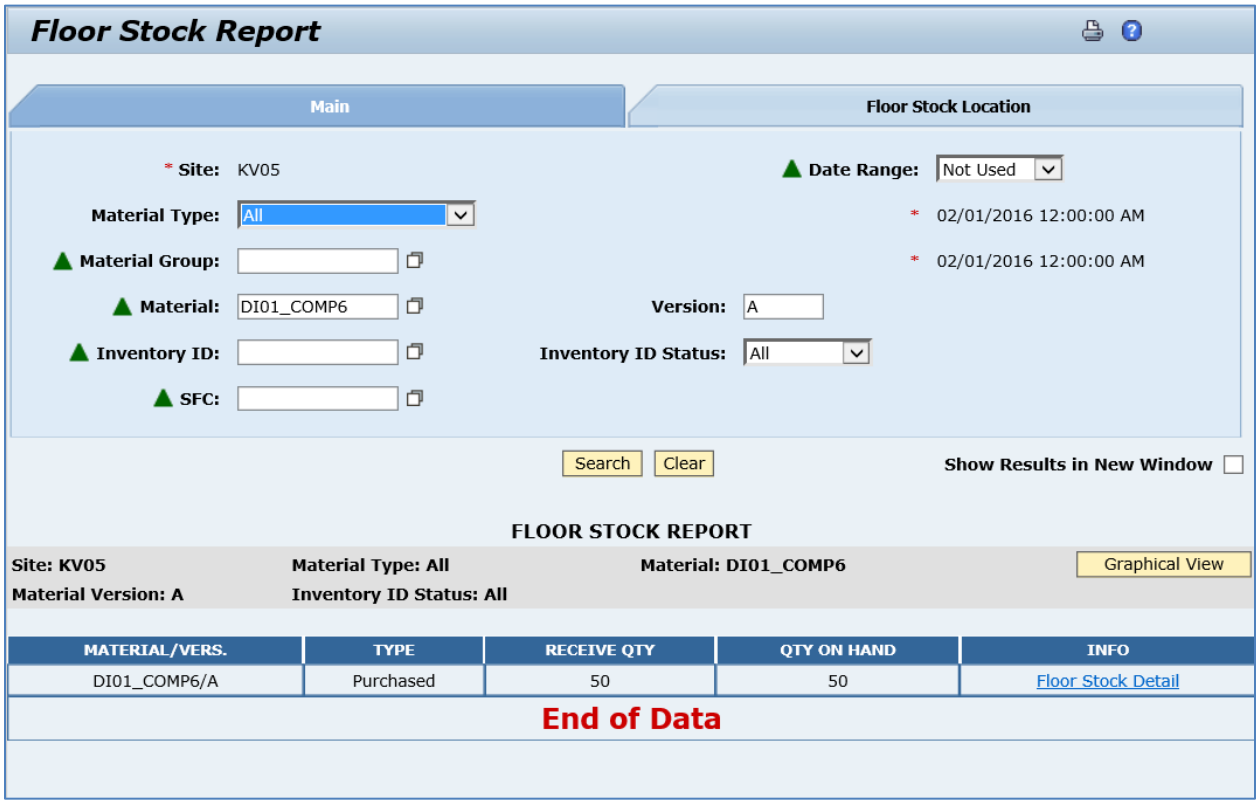
7. Check stock overview. Verify that the unrestricted stock has decreased for the assembled quantity.
8. Optional: Verify *INVCON02_INV_PEG* message was received in SAP MII using *Queue Monitor*.

For more information, see the SAPMEINT Message Processing Logic section of this guide.

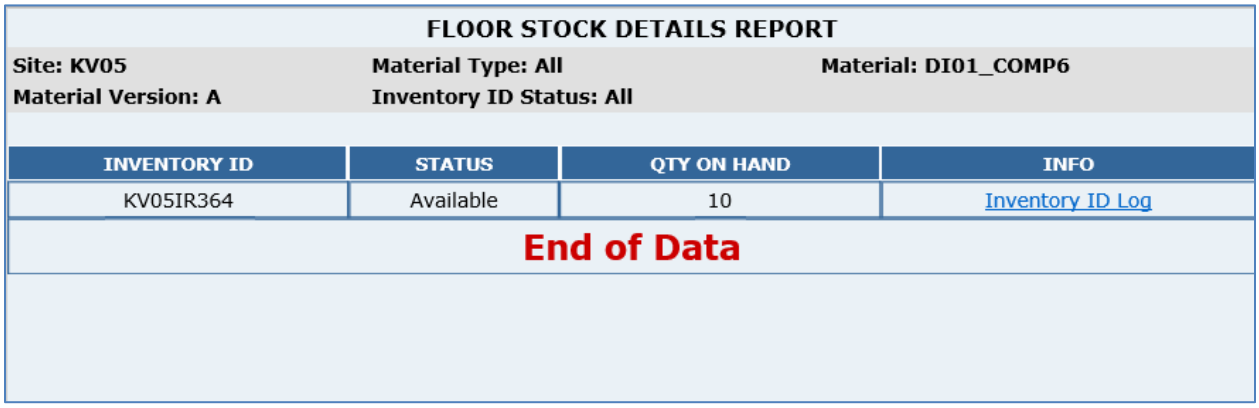


9. Verify results in SAP ME.

Run *Floor Stock Report*, and search by your material. Verify that the correct quantity has been transferred to SAP ME.



Click the *Floor Stock Detail* link in the *Info* column to see the name of the received inventory.



FLOOR STOCK DETAILS REPORT

Site: KV05 Material Type: All Material: DI01_COMP6
Material Version: A Inventory ID Status: All

INVENTORY ID	STATUS	QTY ON HAND	INFO
KV05IR364	Available	10	Inventory ID Log

End of Data

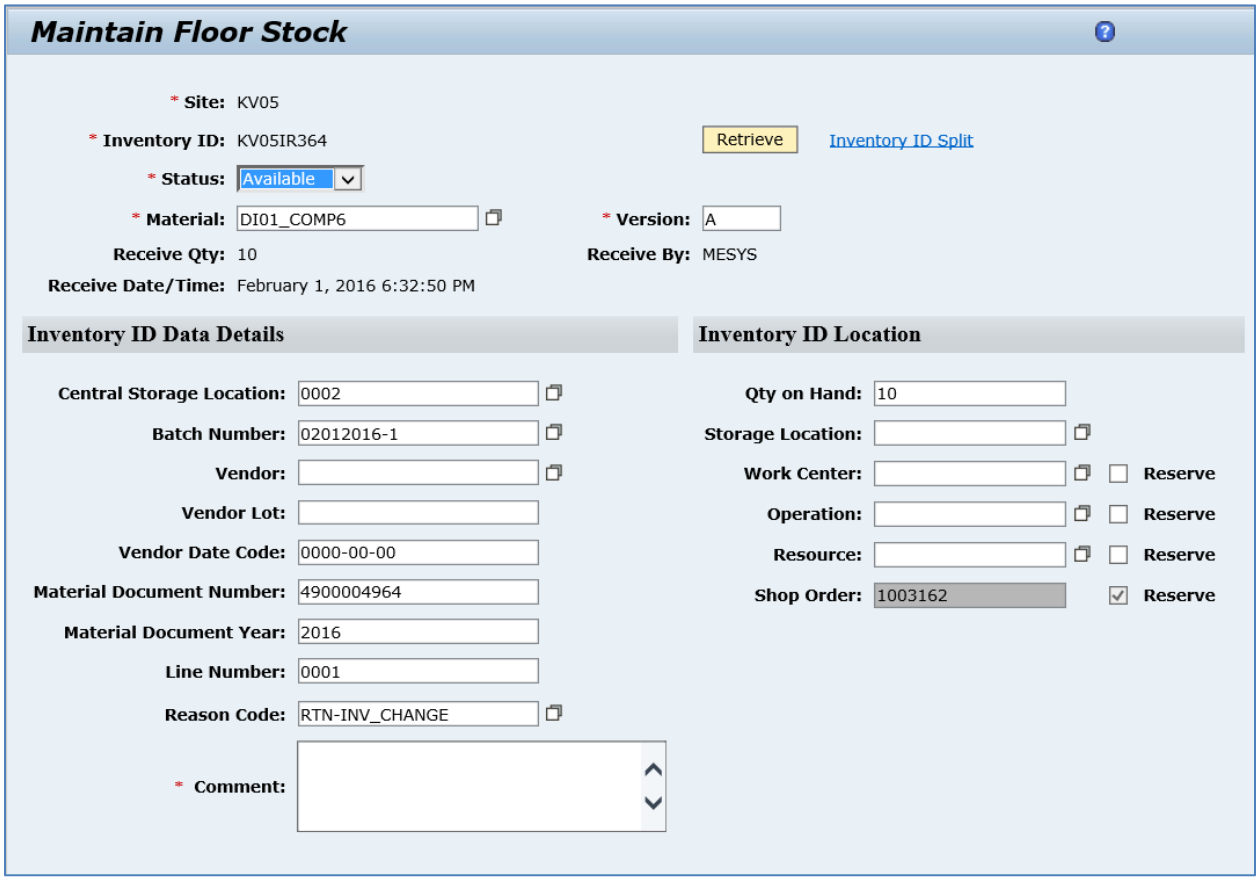
Run *Maintain Floor Stock*, and retrieve received inventory. Verify that all fields are filled with the correct values:

Inventory ID Data Details

- *Central Storage Location:* Source storage location.
- *Batch Number:* The received *Batch Number*.
- *Vendor: Vendor Account Number* (must be defined in SAP ERP and assigned to batch number using *MSC2N* transaction. Make sure that Vendor with the same name exists in SAP ME).
- *Vendor Lot: Vendor Batch Number* (must be defined in SAP ERP and assigned to batch number using *MSC2N* transaction).
- *Vendor Date Code: Production Date.*
- *Material Document Number:* Material document number that is created in SAP ERP.
- *Material Document Year: Material Document Year* from the Material Document.
- *Line Number:* Item in Material Document.

Inventory ID Location

- *Quantity On Hand:* The *Quantity* received from SAP ERP.
- *Storage Location:* The production storage location.
- *Shop Order:* Shop order for which this Inventory ID has been reserved.



11.4 Transferring a Floor Stock Return and Scrap Data

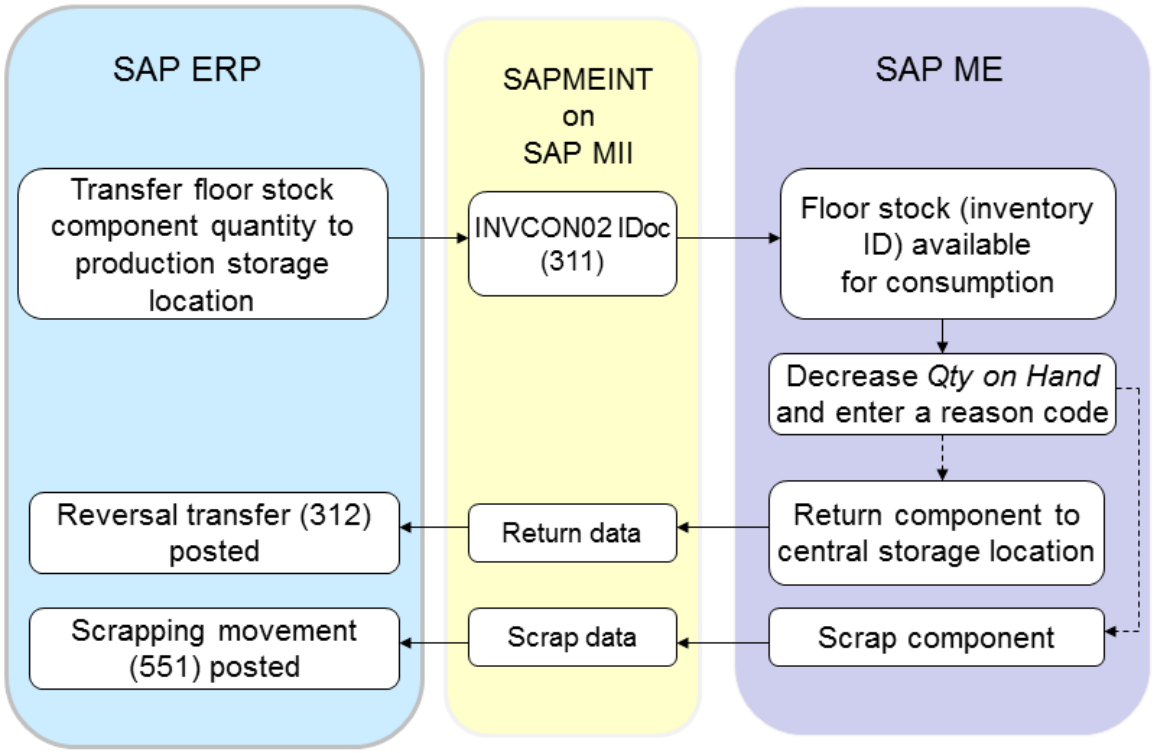
11.4.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a floor stock return and scrap data from SAP ME to SAP ERP to support the following scenarios:

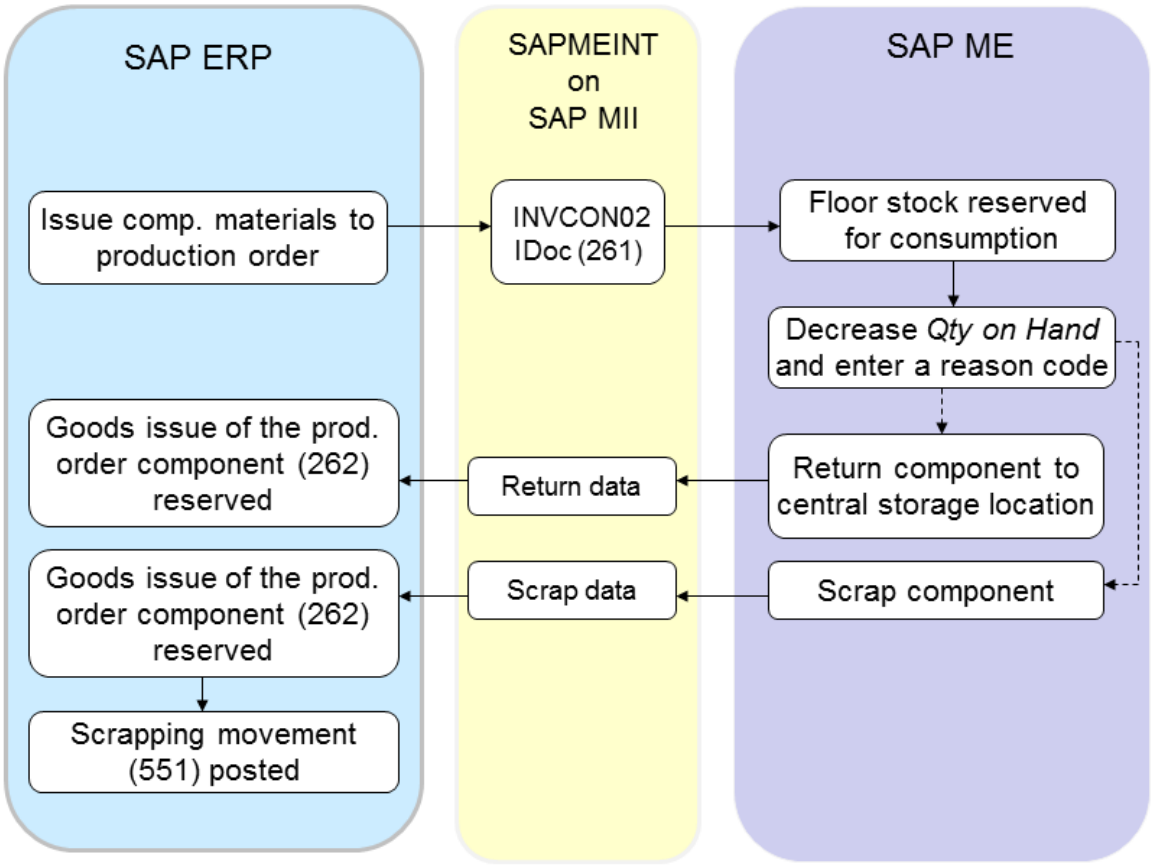
- Shop Order-Independent Floor Stock
- Production Order-Specific Floor Stock

11.4.2 Process Flow Graphic

11.4.2.1 Shop Order-Independent Floor Stock



11.4.2.2 Production Order-Specific Floor Stock



11.4.3 Prerequisites

11.4.3.1 SAP ME

- You have received floor stock data from SAP ERP (see Transfer of Floor Stock Data on the SAP Help Portal at http://help.sap.com).
- You have reviewed activity rule settings for the *Maintain Floor Stock* activity in *Activity Maintenance* (see Maintain Floor Stock on the SAP Help Portal at http://help.sap.com).
- You have verified that reason codes that begin with the correct prefix have been created in *Reason Code Maintenance* (see Reason Code Maintenance on the SAP Help Portal at http://help.sap.com):
  - *RTN*- for return to floor stock (goods movement type *262* or *312*)
  - *SCR*- for component scrap (goods movement type *551*)
- You have verified that the *COST_CENTER* custom data field for the *Reason Code* category has been created in *Custom Data Maintenance* (see Custom Data Maintenance

on the SAP Help Portal at http://help.sap.com). For each reason code, set the *COST_CENTER* value to the desired SAP ERP cost center for floor stock returned from SAP ME.

11.4.3.2 SAP ERP

You have created a cost center for reporting material scrap quantities.

11.4.4 Procedural Steps

1. When you decrease the value of the *Qty on Hand* field for an inventory ID, enter a reason code and click *Save* in the SAP ME *Maintain Floor Stock* activity.
2. SAPMEINT sends a *maintainInventoryRequest* message to SAP ERP to post the corresponding goods movements.
3. Optional: Verify *maintainInventoryRequest* message was received in SAP MII using *Queue Monitor*.
4. Verify results in SAP ERP.

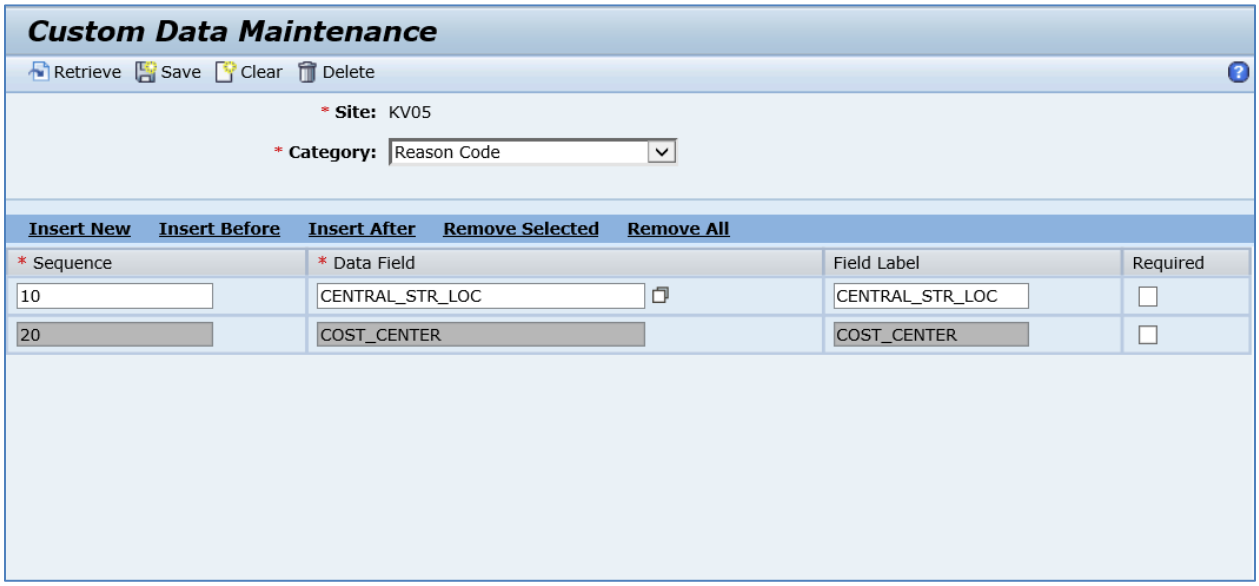
   If the reason code has the prefix *RTN-*, the component quantity is returned to SAP ERP Central Stores. If the reason code has the prefix *SCR-*, the component quantity is scrapped.

   For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

11.4.5 Alternates / Best Practices and Tips

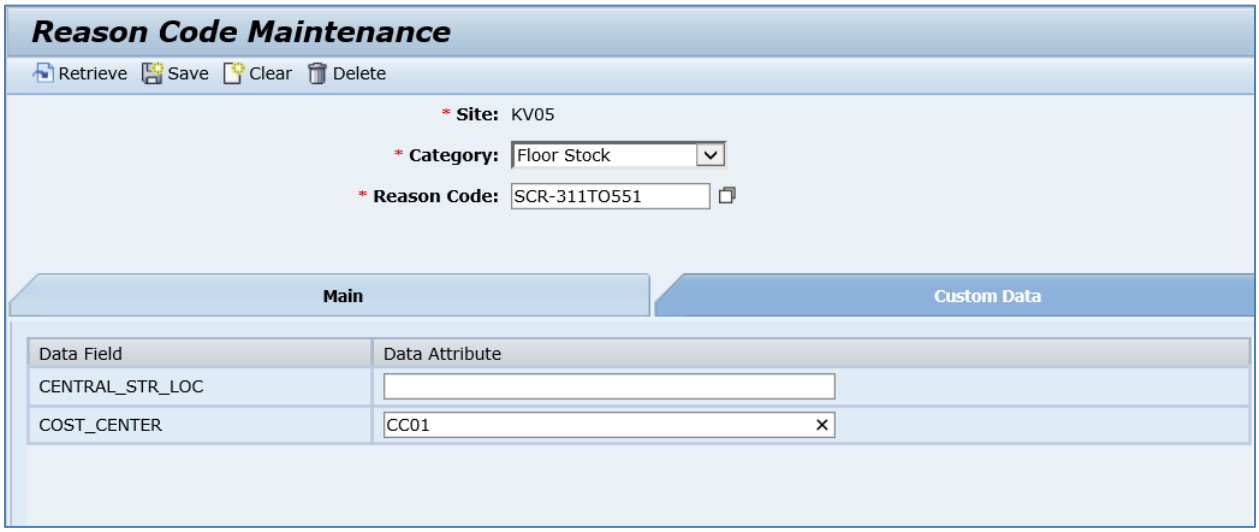
11.4.5.1 Define Reason Codes

1. In SAP ME, open the *Custom Data Maintenance* activity, select the *Reason Code* category and click *Retrieve*.
2. Click the *Insert New* link and browse for the *COST_CENTER* data field.



3. Click *Save*.

4. Run the *Reason Code Maintenance* activity, and select the *Floor Stock* category. Create a new reason code, start the code name with RTN- (for returns), or SCR- (for scraps).
5. On the *Custom Data* tab, enter a value in the *COST_CENTER* field.



6. Click *Save*.

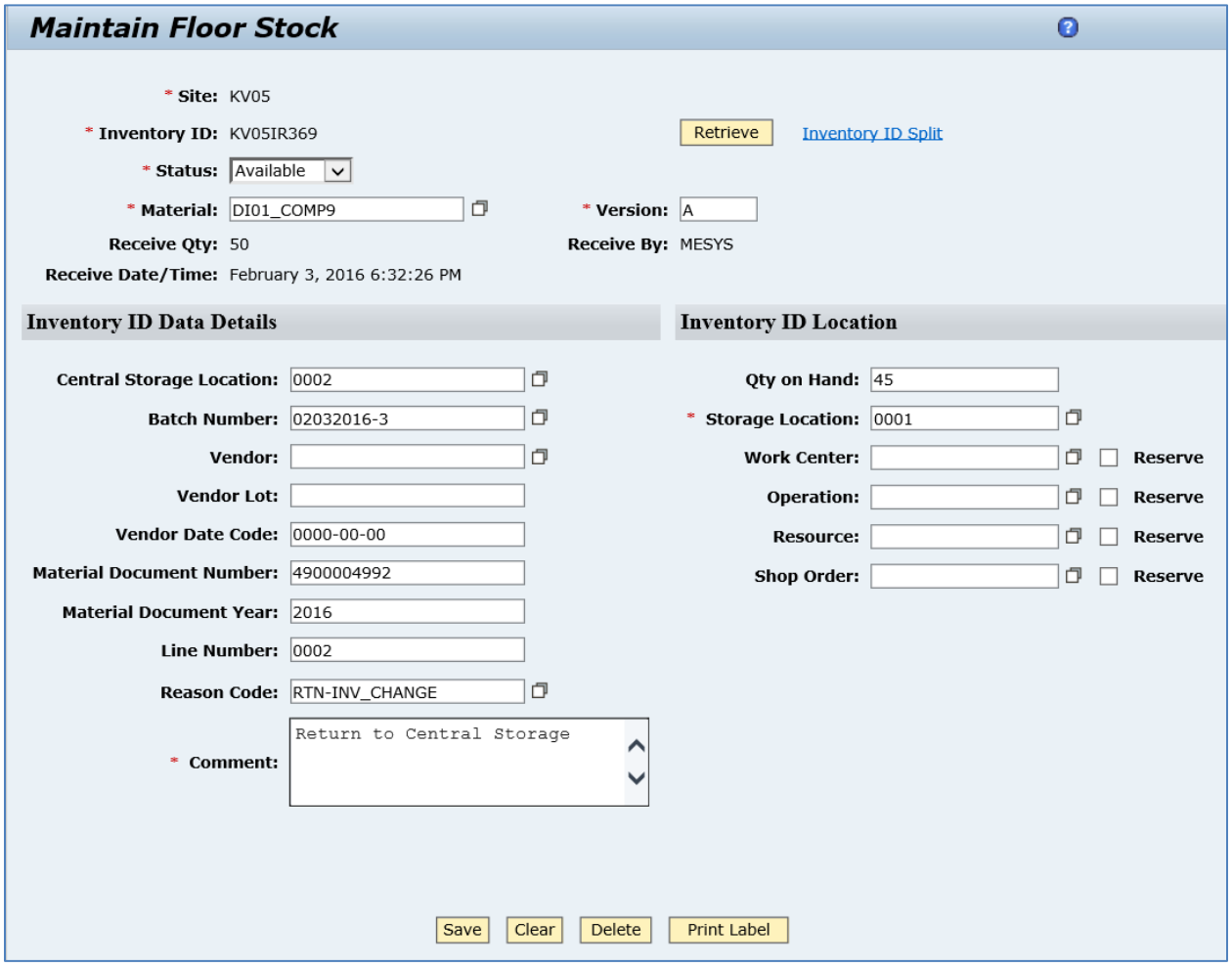
11.4.6 Examples

11.4.6.1 Return and Scrap of Shop Order-Independent Floor Stock

1. In SAP ERP, perform goods movement from the central storage location to a production storage location without reservation (goods movement type 311).

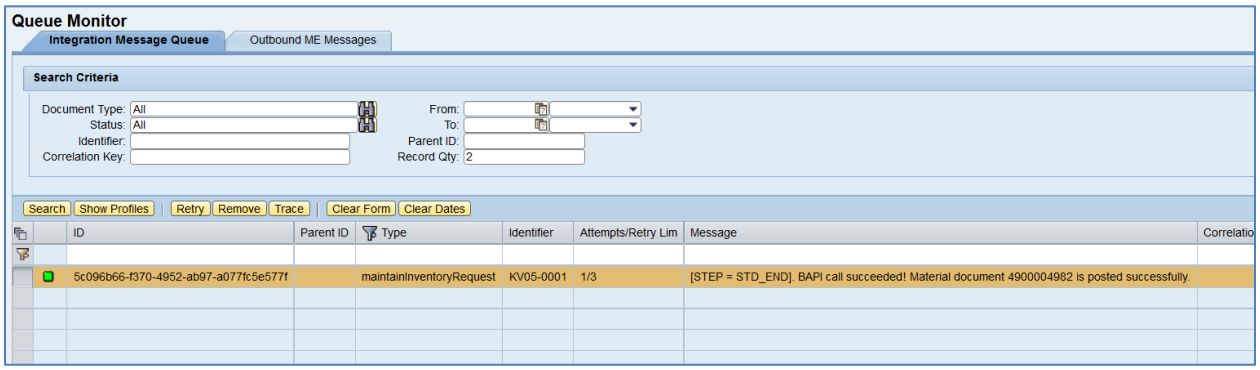
   See the Floor Stock Replenishment (movement type 311) section of this guide.
2. *Optional:* Check stock overview.
3. In SAP ME, find the Inventory ID for the component material in the *Floor Stock Report*.
4. In SAP ME, open the *Maintain Floor Stock* activity, and retrieve received inventory. Enter the following:
   - *Qty on Hand:* Enter new decreased quantity on hand (For example, if you have 50 and want to reduce quantity by 5, enter 45).
   - *Reason Code:* Enter the reason code that starts with RTN- (for returns).

     See Define Reason Codes section of this guide for more information about reason code setup.
   - *Comment:* Enter a required comment.



5. Click *Save*.
6. Optional: Verify *maintainInventoryRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *maintainInventoryRequest* type, click *Trace*, choose Request row, and click *View*.

Since RTN- reason code has been used, *maintainInventoryRequest* contains 312 goods movement type. This means that the material has to be returned to the Central Storage Location.

<GOODSMVT_ITEM>

<item>

<MATERIAL>DI01_COMP9**</MATERIAL**

><PLANT>KV05**</PLANT>**

<STGE_LOC>0002**</STGE_LOC>**

<BATCH>02032016-3**</BATCH>**

<ENTRY_QNT>5**</ENTRY_QNT>**

<MOVE_MAT>DI01_COMP9**</MOVE_MAT>**

<MOVE_PLANT>KV05**</MOVE_PLANT>**

<MOVE_STLOC>0001**</MOVE_STLOC>**

<MOVE_TYPE>312**</MOVE_TYPE>**

</item>

</GOODSMVT_ITEM>

7. Check stock overview again.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Materials Management* > *Inventory Management* > *Environment* > *Stock* > *Stock Overview*

or transaction code – *MMBE*

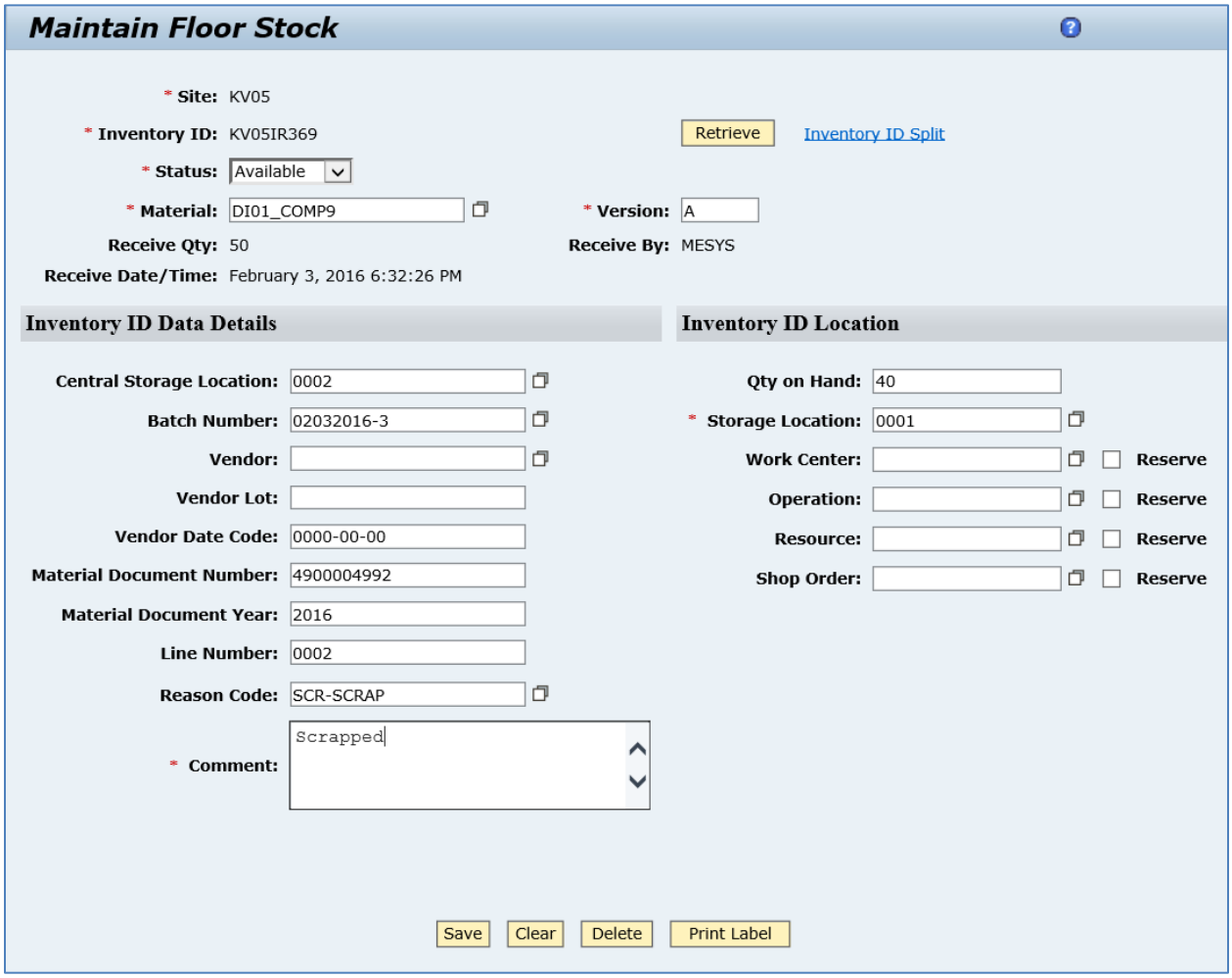
On the *Stock Overview: Basic List* screen, verify that:

- The Central storage location quantity has increased by the quantity returned
- The production storage location has decreased by the quantity returned.

8. In SAP ME, open the *Maintain Floor Stock* activity, and retrieve received inventory. Enter the following:

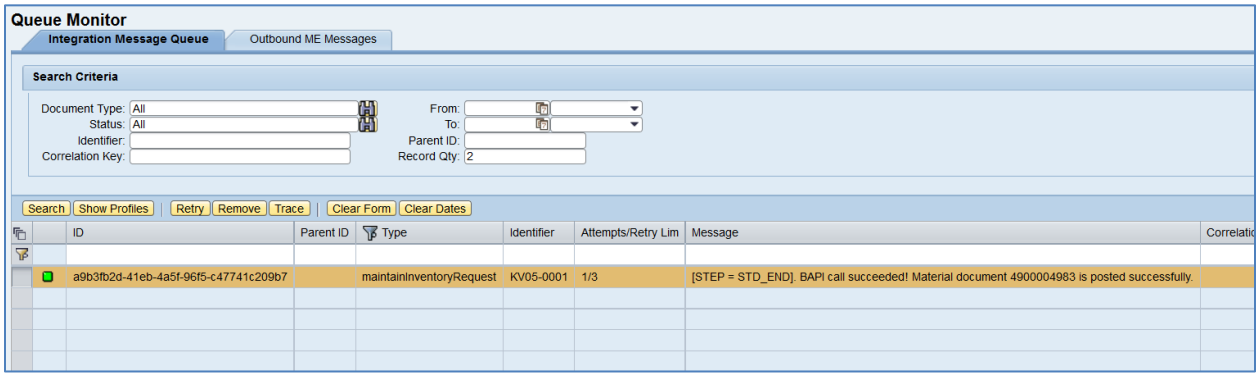
- *Qty on Hand:* Enter new decreased quantity on hand (For example, if you have 45 and want to reduce quantity by 5, enter 40).
- *Reason Code:* Enter the reason code that starts with SCR- (for scraps).

  See the Define Reason Codes section of this guide for more information about reason code setup.
- *Comment:* Enter a required comment.



9. Click *Save*.
10. Optional: Verify *maintainInventoryRequest* message was received in SAP MII using *Queue Monitor*.

    For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *maintainInventoryRequest*, click *Trace*, choose Request row, and click *View*.

Since SCR- reason code has been used, *maintainInventoryRequest* contains 551 goods movement type. This means that quantity of the component has to be decreased in the production storage location.

<GOODSMVT_ITEM>

<item>

<MATERIAL>DI01_COMP9**</MATERIAL>**

<PLANT>KV05**</PLANT>**

<STGE_LOC>0001**</STGE_LOC>**

<BATCH>02032016-3**</BATCH>**

<ENTRY_QNT>5**</ENTRY_QNT>**

<COSTCENTER>CC01**</COSTCENTER>**

<MOVE_TYPE>551**</MOVE_TYPE>**

</item>

</GOODSMVT_ITEM>

11. Check stock overview again.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics > Materials Management > Inventory Management > Environment > Stock > Stock Overview*

or transaction code – *MMBE*

On the *Stock Overview: Basic List* screen, verify that the production storage location has decreased by the quantity scrapped.

11.4.6.2 Return and scrap of Production Order-Specific Floor Stock

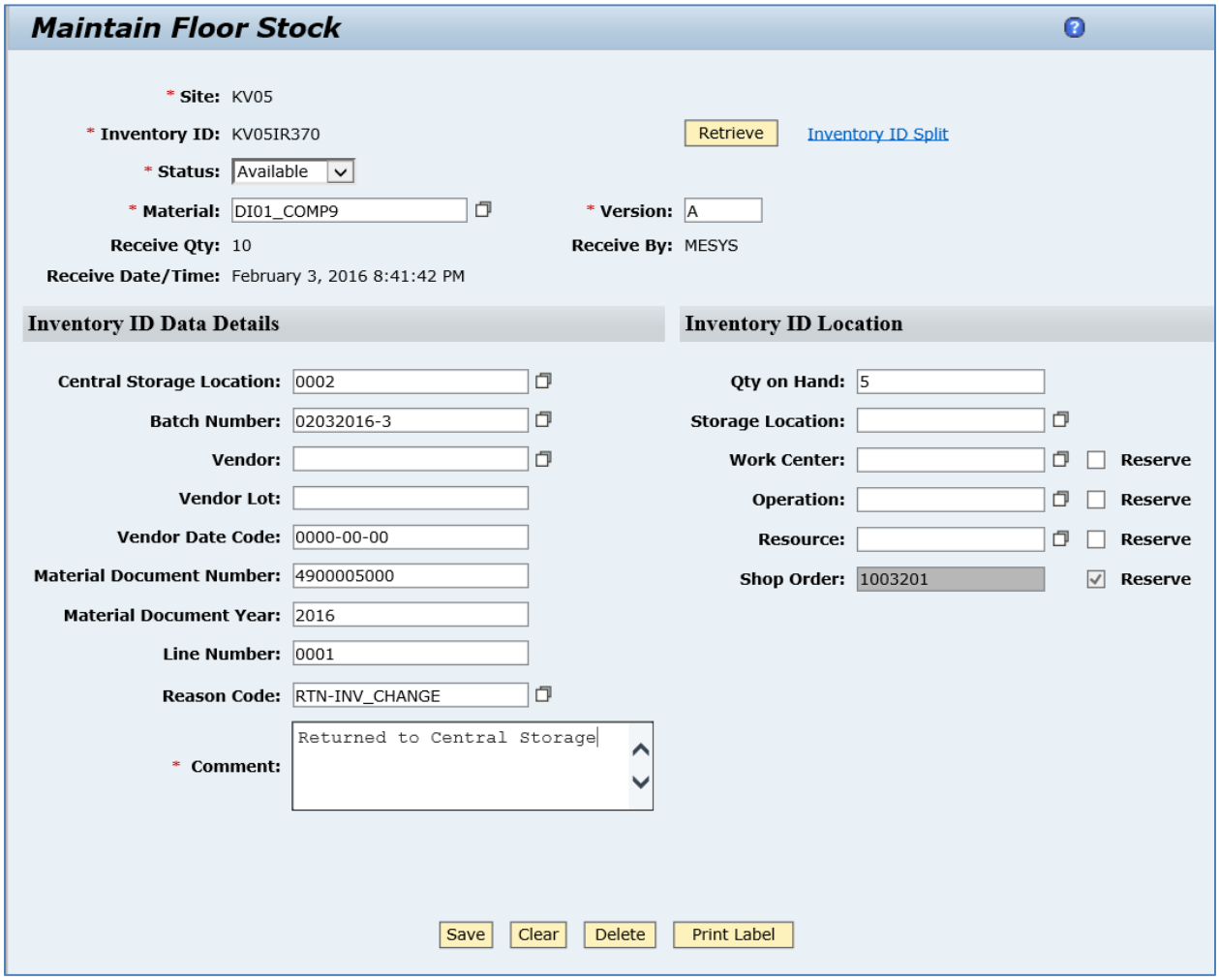
1. In SAP ERP, perform Production Order-Specific Consumption (movement type 261).

   See Production Order-Specific Consumption (movement type 261) section of this guide.

2. *Optional:* Check stock overview.
3. In SAP ME, find the Inventory ID for the component material in the *Floor Stock Report*.
4. In SAP ME, open the *Maintain Floor Stock* activity, and retrieve received inventory. Enter the following:

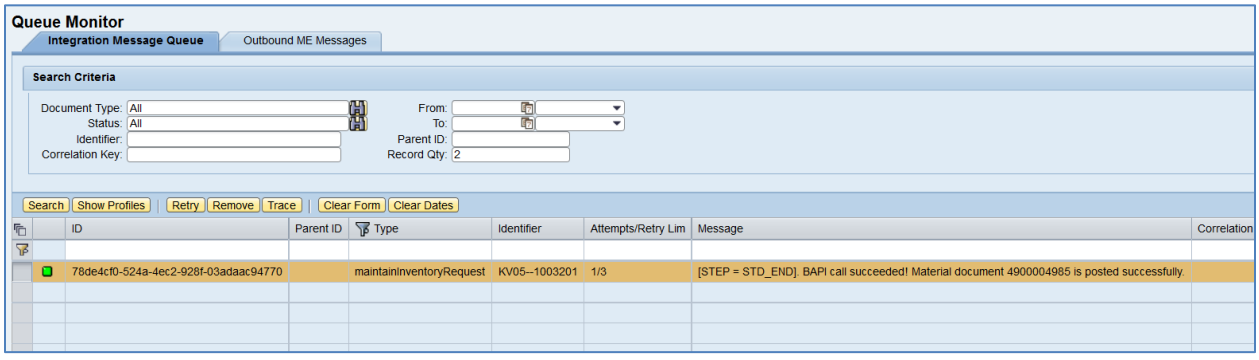
   - *Qty on Hand:* Enter new decreased quantity on hand (For example, if you have 10 and want to reduce quantity by 5, enter 5).
   - *Reason Code:* Enter the reason code that starts with RTN- (for returns).

     See the Define Reason Codes section of this guide for more information about reason code setup.
   - *Comment:* Enter a required comment.



5. Click *Save*.
6. Optional: Verify *maintainInventoryRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *maintainInventoryRequest*, click *Trace*, choose Request row, and click *View*.

Since RTN- reason code has been used, *maintainInventoryRequest* contains the *262* goods movement type. This means that the material has to be returned to the Central Storage Location. Quantity in the production Storage Location is not changed.

<GOODSMVT_ITEM>

<item>

<MATERIAL>DI01_COMP9**</MATERIAL>**

<PLANT>KV05**</PLANT>**

<STGE_LOC>0002**</STGE_LOC>**

<BATCH>02032016-3**</BATCH>**

<ENTRY_QNT>5**</ENTRY_QNT>**

<ORDERID>000001003201**</ORDERID>**

<MOVE_TYPE>262**</MOVE_TYPE>**

</item>

</GOODSMVT_ITEM>

7. Check stock overview again.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Materials Management* > *Inventory Management* > *Environment* > *Stock* > *Stock Overview*

or transaction code – *MMBE*

On the *Stock Overview: Basic List* screen, verify that:

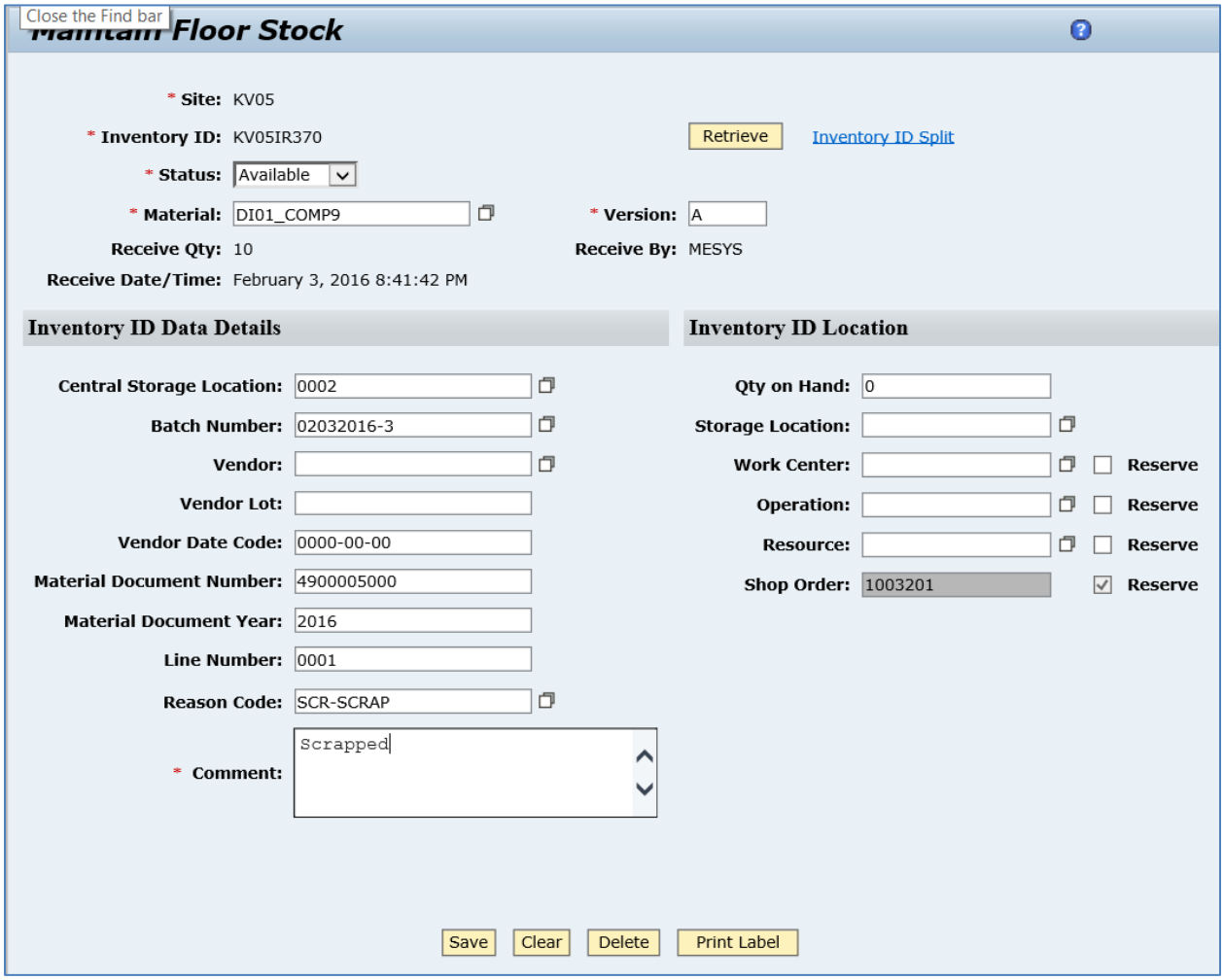
- The Central storage location has been increased by the quantity returned.
- The production storage location quantity has not changed.

8. In SAP ME, open the *Maintain Floor Stock* activity, and retrieve received inventory. Enter the following:

- *Qty on Hand:* Enter new decreased quantity on hand (For example, if you have 5 and want to reduce quantity by 5, enter 0).
- *Reason Code:* Enter the reason code that starts with SCR- (for scraps).

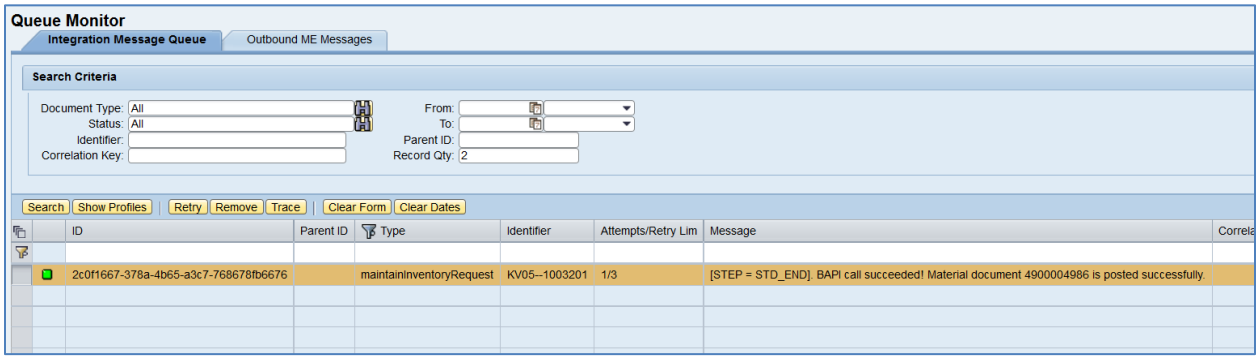
  See Define Reason Codes section of this guide for more information about reason code setup.

- *Comment:* Enter a required comment.



9. Click *Save*.
10. Optional: Verify *maintainInventoryRequest* message was received in SAP MII using *Queue Monitor*.

    For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *maintainInventoryRequest*, click *Trace*, choose Request row, and click *View*.

Since SCR- reason code has been used, *maintainInventoryRequest* contains *262* and *551* goods movement types. This means that quantity of the component remains unchanged in both central and production storage locations.

<GOODSMVT_ITEM>

<item>

<MATERIAL>DI01_COMP9**</MATERIAL>**

<PLANT>KV05**</PLANT>**

<STGE_LOC>0002**</STGE_LOC>**

<BATCH>02032016-3**</BATCH>**

<ENTRY_QNT>5**</ENTRY_QNT>**

<ORDERID>000001003201**</ORDERID>**

<MOVE_TYPE>262**</MOVE_TYPE>**

</item>

<item>

<MATERIAL>DI01_COMP9**</MATERIAL>**

<PLANT>KV05**</PLANT>**

<STGE_LOC>0002**</STGE_LOC>**

<BATCH>02032016-3**</BATCH>**

<ENTRY_QNT>5**</ENTRY_QNT>**

<COSTCENTER>CC01**</COSTCENTER>**

<MOVE_TYPE>551**</MOVE_TYPE>**

</item>

</GOODSMVT_ITEM>

11. Check stock overview again.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Materials Management* > *Inventory Management* > *Environment* > *Stock* > *Stock Overview*

or transaction code – *MMBE*

On the *Stock Overview: Basic List* screen, verify that the quantity has not changed in both central and production storage locations.

11.5 Transferring Floor Stock Storage Location Movements

11.5.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer storage location data to SAP ERP when floor stock is moved from one storage location to another location in SAP

ME. This transfer keeps storage location quantities synchronized between SAP ME and SAP ERP.

Note: Messages are sent to SAP ERP only for floor stock that has been sent to SAP ME through a *Transfer Posting* with movement type *311*. No messages are sent for the floor stock that has been sent to SAP ME through a Goods Issue goods movement type *261* because this stock is not visible in SAP ERP any longer (see Transfer of Floor Stock Data: Integration Details on the SAP Help Portal at http://help.sap.com).

11.5.2 Prerequisites

11.5.2.1 SAP ME

- You have received floor stock data from SAP ERP when stock was moved from a central storage location to a floor stock storage location in SAP ERP.
- You have reviewed activity rule settings for the *Maintain Floor Stock* activity in *Activity Maintenance* (see Maintain Floor Stock on the SAP Help Portal at http://help.sap.com).

11.5.2.2 SAP ERP

11.5.3 Procedural Steps

1. In the SAP ME *Maintain Floor Stock* activity, do one of the following (see Transferring Inventory IDs on the SAP Help Portal at http://help.sap.com):
   - Move the entire quantity of an inventory ID to another storage location (see Inventory ID on the SAP Help Portal at http://help.sap.com)
   - Split an inventory ID and place the split the inventory ID in another storage location (*Qty on Hand* for the parent inventory ID is reduced)
2. The system triggers the collaboration action *COLLABORATION_STOR_LOC_MOVE*.
3. Verify results in SAP ERP.

   SAPMEINT sends a goods movement with type *311* for the split inventory ID quantity placed in the new storage location to update the stock in the corresponding floor stock storage location in SAP ERP.

   For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

11.5.4 Alternates / Best Practices and Tips

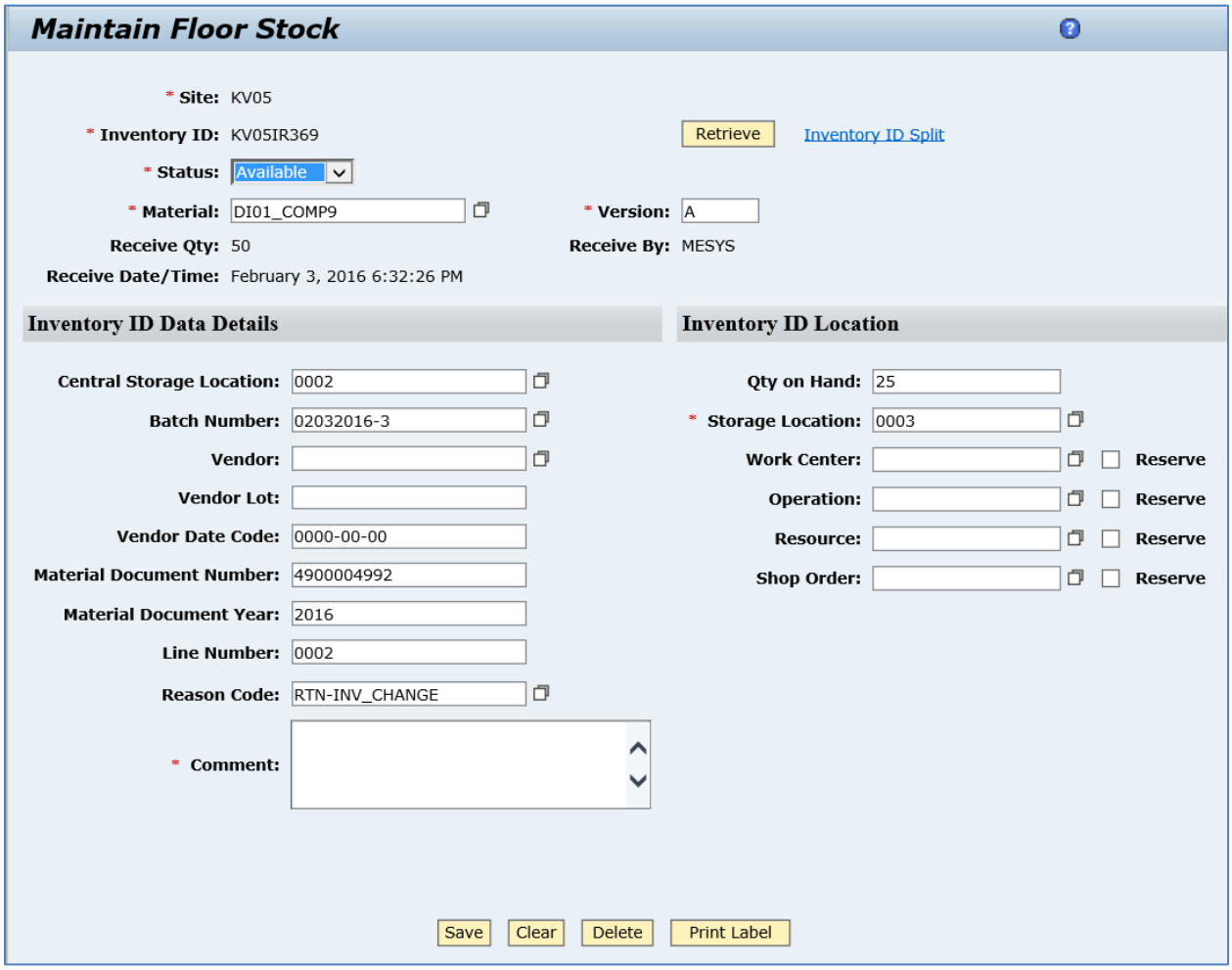
11.5.5 Examples

11.5.5.1 Move Floor Stock to another Storage Location

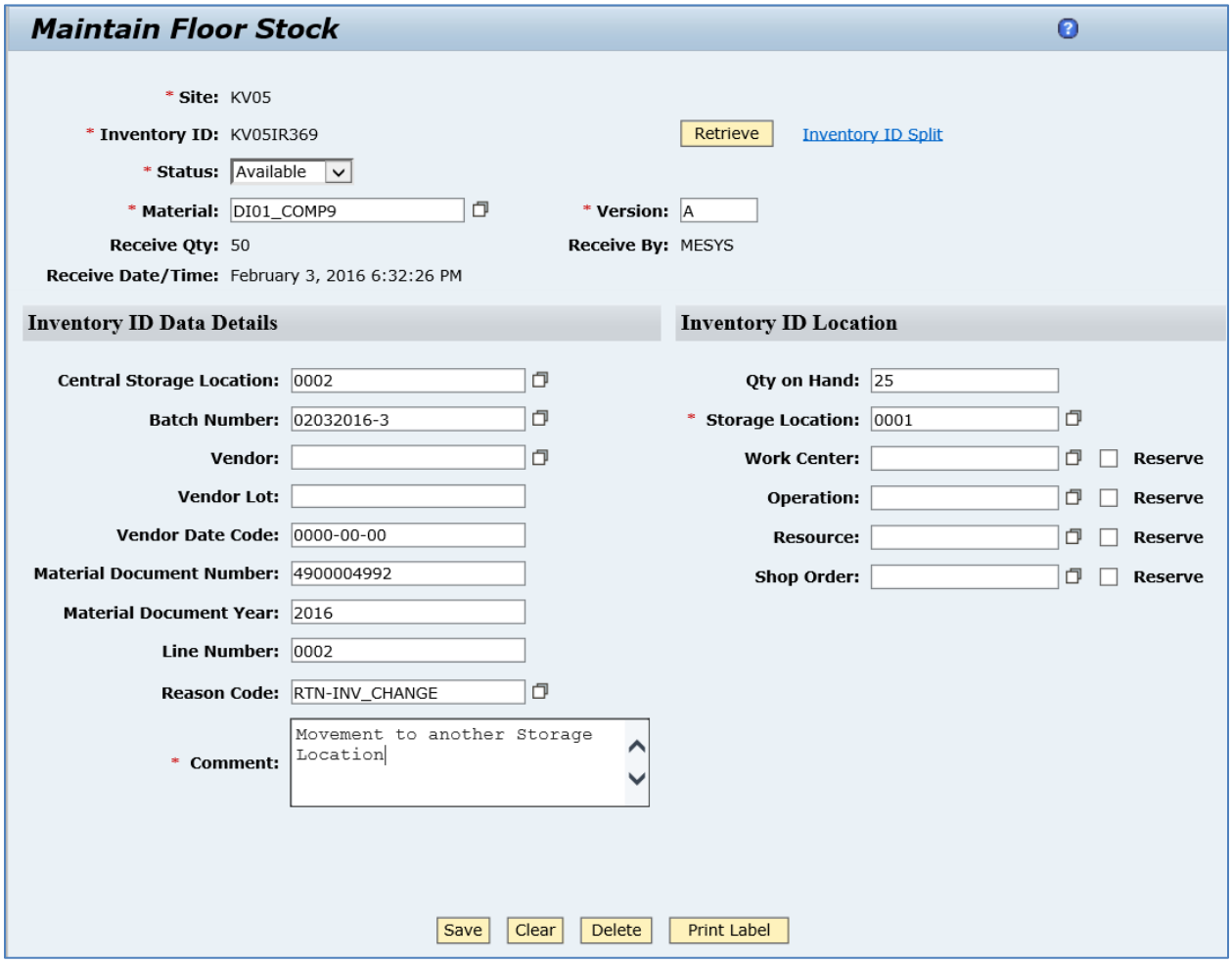
1. In SAP ERP, perform goods movement from the central storage location to a production storage location without reservation (goods movement type *311*).

   See the Floor Stock Replenishment (movement type 311) section of this guide.
2. Check stock overview.

3. In SAP ME, find the Inventory ID for the component material in *Floor Stock Report*.
4. In SAP ME, open the *Maintain Floor Stock* activity, and retrieve received inventory. Note its current storage location (0003):

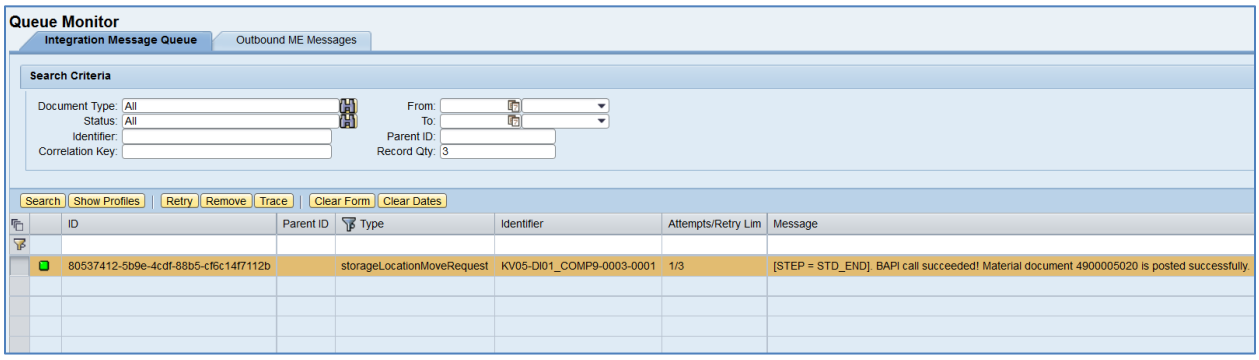


5. Change current storage location. Enter a comment.



6. Click *Save*.
7. Optional: Verify *storageLocationMoveRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *storageLocationMoveRequest*, click *Trace*, choose Request row, and click *View*.

<GOODSMVT_ITEM>

<item>

<MATERIAL>DI01_COMP9**</MATERIAL>**

<PLANT>KV05**</PLANT>**

<STGE_LOC>0003**</STGE_LOC>**

<BATCH>02032016-3**</BATCH>**

<ENTRY_QNT>25**</ENTRY_QNT>**

<MOVE_MAT>DI01_COMP9**</MOVE_MAT>**

<MOVE_PLANT>KV05**</MOVE_PLANT>**

<MOVE_STLOC>0001**</MOVE_STLOC>**

<MOVE_TYPE>311**</MOVE_TYPE>**

</item>

</GOODSMVT_ITEM>

8. Check stock overview again.

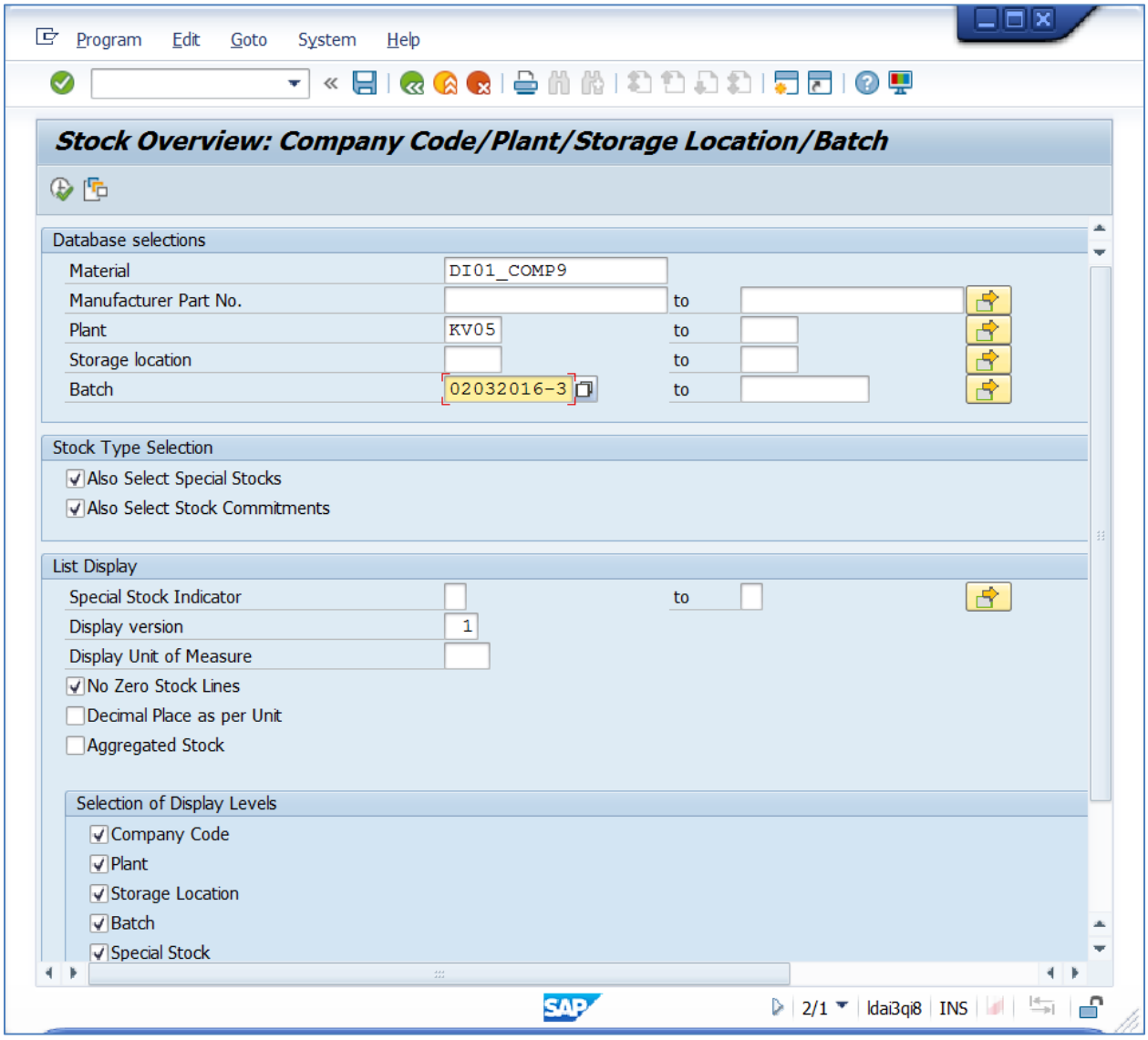
In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Materials Management* > *Inventory Management* > *Environment* > *Stock* > *Stock Overview*

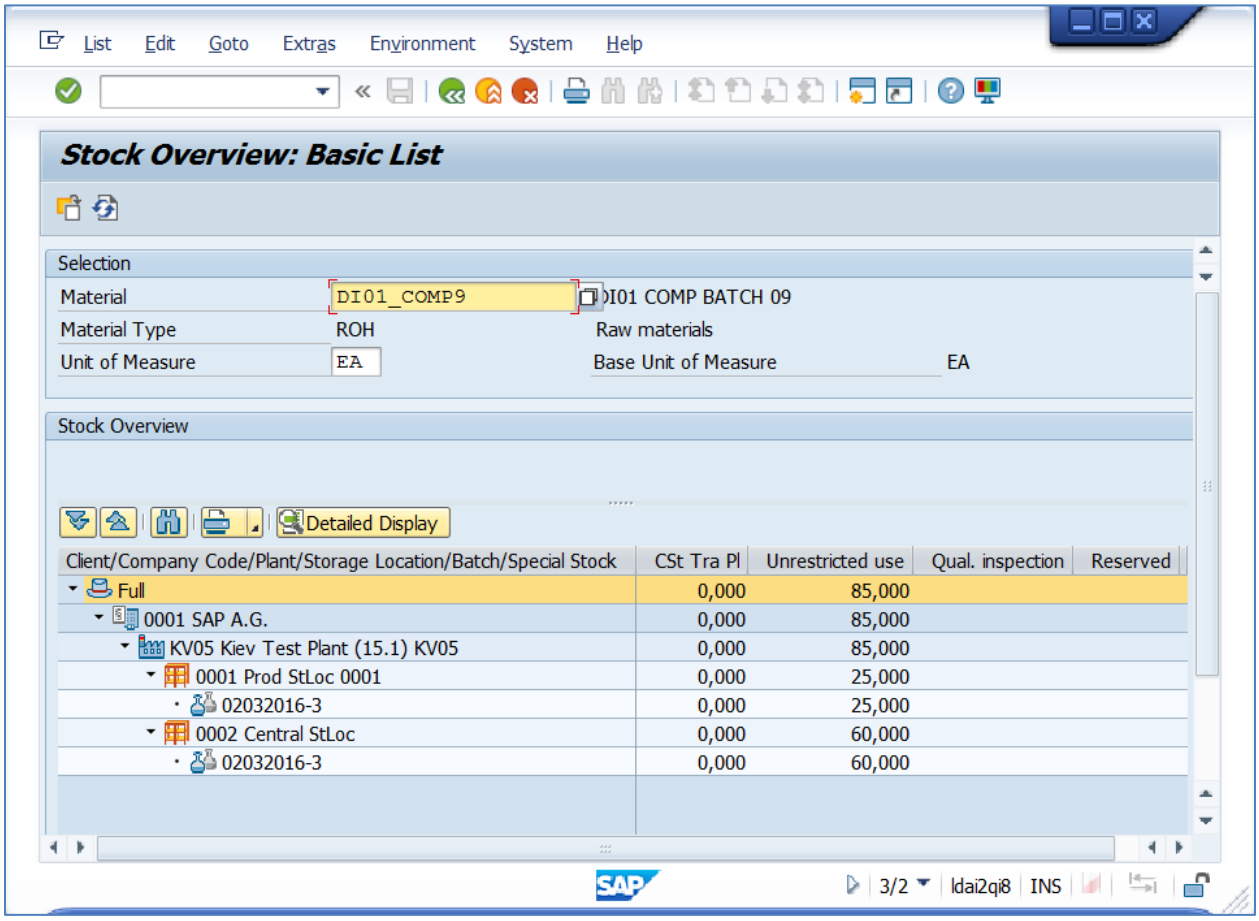
or transaction code – *MMBE*

On the *Stock Overview: Company Code/Plant/Storage Location/Batch* screen, enter some of the following parameters:

- *Material:* Material number.
- *Plant:* Plant name.
- *Batch:* Enter Batch number to narrow search results.



9. Click the *Execute* icon.
10. On the *Stock Overview: Basic List* screen, verify that the correct quantity of the component has been moved to the new storage location.


List Edit Goto Extras Environment System Help
Stock Overview: Basic List
Selection
Material DI01_COMP9 DI01 COMP BATCH 09
Material Type ROH Raw materials
Unit of Measure EA Base Unit of Measure EA
Stock Overview
Detailed Display
Client/Company Code/Plant/Storage Location/Batch/Special Stock
CSt Tra Pl
Unrestricted use
Qual. inspection
Reserved
Full 0,000 85,000
0001 SAP A.G. 0,000 85,000
KV05 Kiev Test Plant (15.1) KV05 0,000 85,000
0001 Prod StLoc 0001 0,000 25,000
02032016-3 0,000 25,000
0002 Central StLoc 0,000 60,000
02032016-3 0,000 60,000
3/2 ldai2qi8 INS

12 Personnel (HR) Master Data Integration

12.1 Configuring Personnel (HR) Master Data with Qualifications

12.1.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer personnel (HR) master data with qualifications from SAP ERP to SAP ME to create or update the corresponding user and certification records in SAP ME (see User and Certification on the SAP Help Portal at http://help.sap.com).

The data required for an employee is entered in various infotypes. Infotypes group together the employee data according to related subject matter, making it easy to retrieve and process the data.

In the *Personal Data* infotype (*0002*), you enter the employee name and birth data. You can add information on marital status and religion if necessary.

Some employee data, such as the employee name or payroll data, must be stored in the system. For this reason, infotypes contain required entry fields. You cannot complete data entry until you have entered data in all required fields of an infotype.

In the *Qualifications* infotype (*0024*), employee qualification data is stored. In addition, proficiency ratings can be entered for each. The proficiency indicates the quality of the skills and knowledge associated with a qualification.

Each personnel action contains the infotypes that you must maintain to perform the task at hand. The infotypes are retrieved in succession so that you can maintain them. This ensures that you enter all of the information required for each personnel action type.

The integration supports only the *Qualifications* (infotype *0024*) (see Qualifications (Infotype 0024) on the SAP Help Portal at http://help.sap.com).

Note: The integration does not support the transfer of employee qualifications for concurrent employment/global employment maintained in *PA-PD-QR* to SAP ME.

The data stored in the personnel (HR) master record is used in SAP ERP to create a history of all changes and developments pertaining to an employee during the period that the employee works at a company.

The user records in SAP ME contain information about people who can access the system.

The certification records in SAP ME are used to define a level of expertise for an operator to perform work at an operation, resource, or customer order, or on a material.

12.1.2 Prerequisites

12.1.2.1 SAP ERP

- You have created employee qualifications in Customizing for *Personnel Management* under *Personnel Administration* > *Employee Qualifications* > *Create qualifications*.
- You have created an HR master record with qualifications (*Infotype 0024*) for production employees (*SAP Menu* > *Human Resources* > *Personnel Management* > *Administration* > *HR Master Data* > *Maintain* (transaction *PA30*)).

- You have assigned production employees to the relevant organization unit.
- You have set up ALE communication to create and transmit *HRMD_A06* IDocs (see Customizing for ALE for Communication with SAP ME and Distributed HR Master Data Procedure on the SAP Help Portal at http://help.sap.com).

12.1.2.2 SAP ME

12.1.3 Procedural Steps

1. Create an HR master record in SAP ERP.

   Note: Qualifications are optional.

2. Send the record to SAP ME using transaction *PFAL* (see Distributed HR Master Data Procedure on the SAP Help Portal at http://help.sap.com).

3. Optional: Verify *HRMD_A06* IDoc was received in SAP MII using *Queue Monitor*.

After the IDoc has been sent, check the inbound message queue in SAPMEINT to see if the message has been processed properly. This step is optional if you need to troubleshoot an issue or view the data in SAP MII. If the process runs as expected, the IDoc is processed without any user interaction and the import message is sent to SAP ME automatically.

A green light signifies that the IDoc has been sent successfully to SAP MII.

4. Verify results in SAP ME.

SAPMEINT does the following:

- Creates or updates the corresponding user record in SAP NetWeaver User Management Engine (UME)
- Creates or updates the corresponding user and certification records in SAP ME (see User Maintenance, Certification Maintenance, and User Certification Assignment Maintenance on the SAP Help Portal at http://help.sap.com)

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

12.1.4 Alternates / Best Practices and Tips

- The transaction code PA30 is a generic path to the action menu. Select the appropriate action type on the *Personnel Action* screen. Your selections determine what infotypes are displayed.
- An action is a set of infotypes that have been logically grouped together.

In *Personnel Administration*, the object manager is used to find employees whose data you want to display or edit. The object manager is connected to the following transactions:

- *Display HR Master Data* (*PA20*)
- *Maintain HR Master Data* (*PA30*)
- *Personnel Actions* (*PA40*)

Infotype 0000

- Actions are stored in the *Actions* infotype, Infotype *0000*. Enter a reason for each action a reason. This infotype also defines the employment status of an employee that determines the further processing of the employee data. The status is automatically maintained when the action is carried out.

Infotype 0001

- Infotype *0001* is a crucial infotype in SAP-HR. It defines further processing of the employee time and payroll data. So it is essential to integrate the new hire in the right Enterprise structure, Personnel structure, and Organizational structure.
- You can create Organizational Assignment in the Hiring Personnel Action only. To change the Organizational Assignment, delimit the existing org assignment.

Infotype 0002

- You can use this infotype to enter the employee personal information.
- If you use a Title, the system verifies the correct relationship but does not change it automatically. However, it does not let you assign MISS to MALE.
- Do not use the title suffix for part of the name such as Jr., Sr., III, II, and so on. Include those designations in the Last Name field, for example, Smith, Jr. Separate them from the last name by a space. You can put a hyphen to separate them but never put a comma.
- Make sure that you click the correct gender (MALE or FEMALE). The system leaves the default as undeclared unless otherwise specified.

12.1.5 Examples

12.1.5.1 Transferring Personnel (HR) Master Data with Qualifications to a User with Certifications

1. In SAP ERP, create an HR master record.

   Access the transaction using:

   SAP Menu > *Human Resources* > *Personnel Management* > *Administration* > *HR Master Data* > *Maintain*

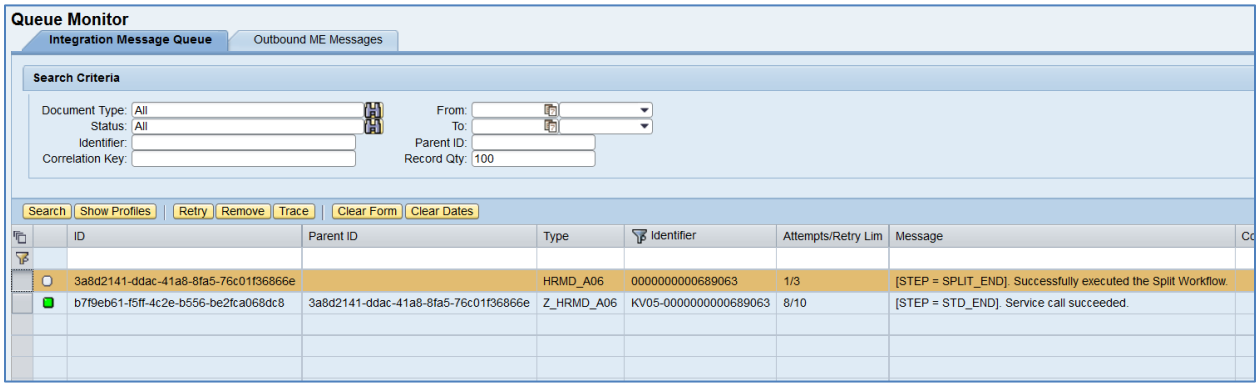
   or transaction code – *PA30*

2. To create Employee Qualifications, enter 0024 to *Infotyp* field or select Qualifications from the dropdown list.

   Repeat the process for each Employee Qualification held by the employee.

3. Send HR Master data to SAP ME.
4. Optional: Verify the *HRMD_A06* IDoc was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



5. Verify results in SAP ME.

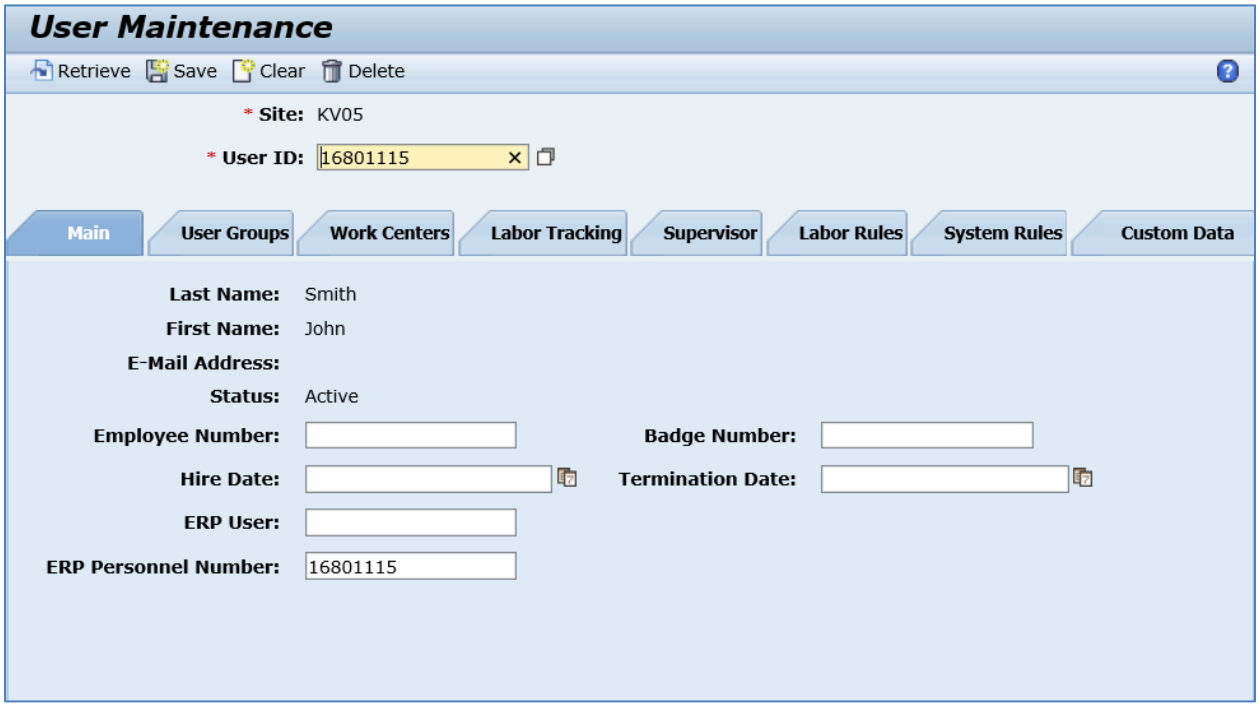
Run *User Maintenance* and retrieve the transferred user record.

On the *Main* tab, verify the following field values:

- *Site: Plant* value.
- *User ID: Personnel Number* in SAP ERP.
- *Last Name: Last Name* of ERP User.
- *First Name: First Name* of ERP User.
- *Status: Employment status* of ERP User. If equal to 3, then it is set to Active, otherwise it is set to Inactive.
- *ERP Personnel Number: Personnel Number* of ERP User.
- Other fields are BLANK by default or deselected.

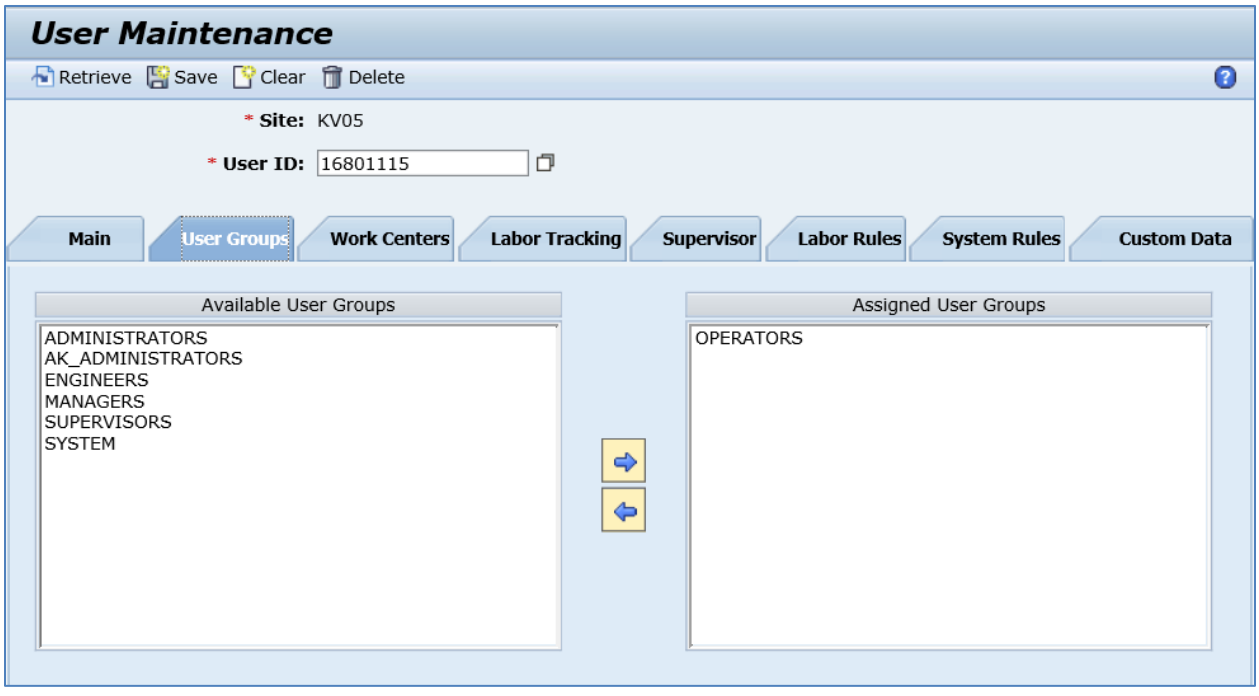
Note: The password is hard-coded to SAP1234 when a record is created. You can change it in *SAP NetWeaver Administrator > Identity Management: Overview*.

The *Password Expired* is set to True. The system will ask you to change a password on the first logon.



On the *User Groups* tab, verify the following field values:

- *Assigned User Groups:* OPERATORS user group is assigned by default.

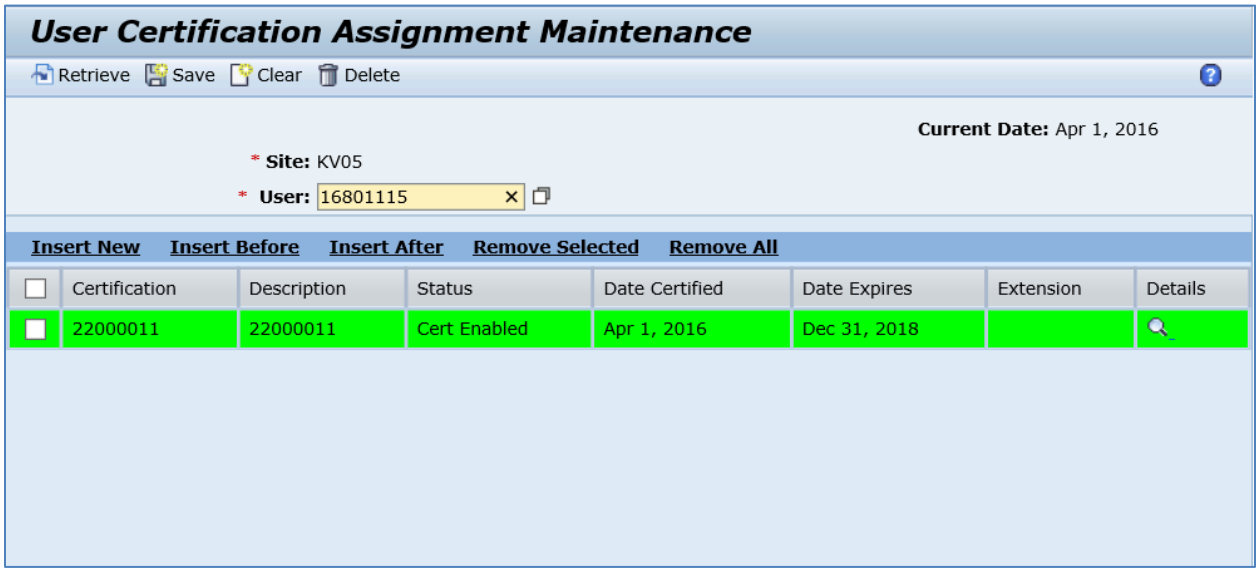


Run *User Certification Assignment Maintenance* and retrieve the transferred user.

On the *Main* tab, verify the following field values:

- *Certification: Qualification key*.

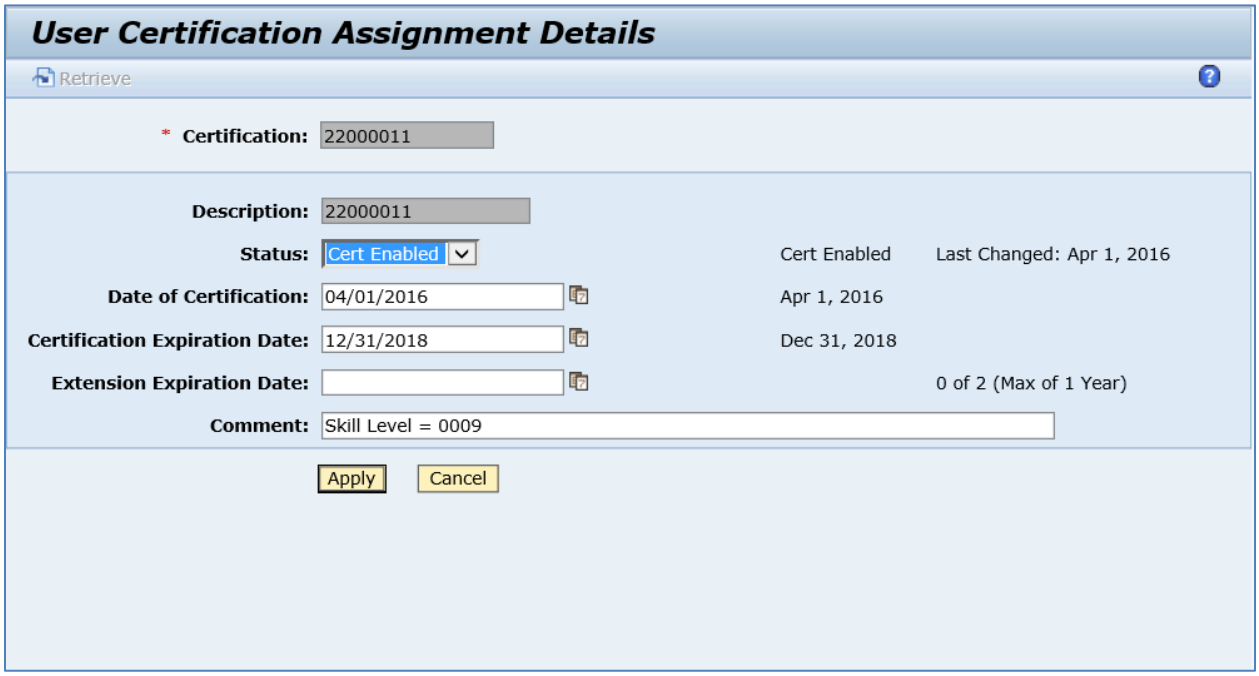
- *Description: Qualification key.*
- *Status:* Cert Enabled.
- *Date Certified: Start Date.*
- *Date Expires: End Date.*
- Other fields are BLANK by default or deselected.



Click *Details.*

On the *User Certification Assignment Details* screen, verify the following field values:

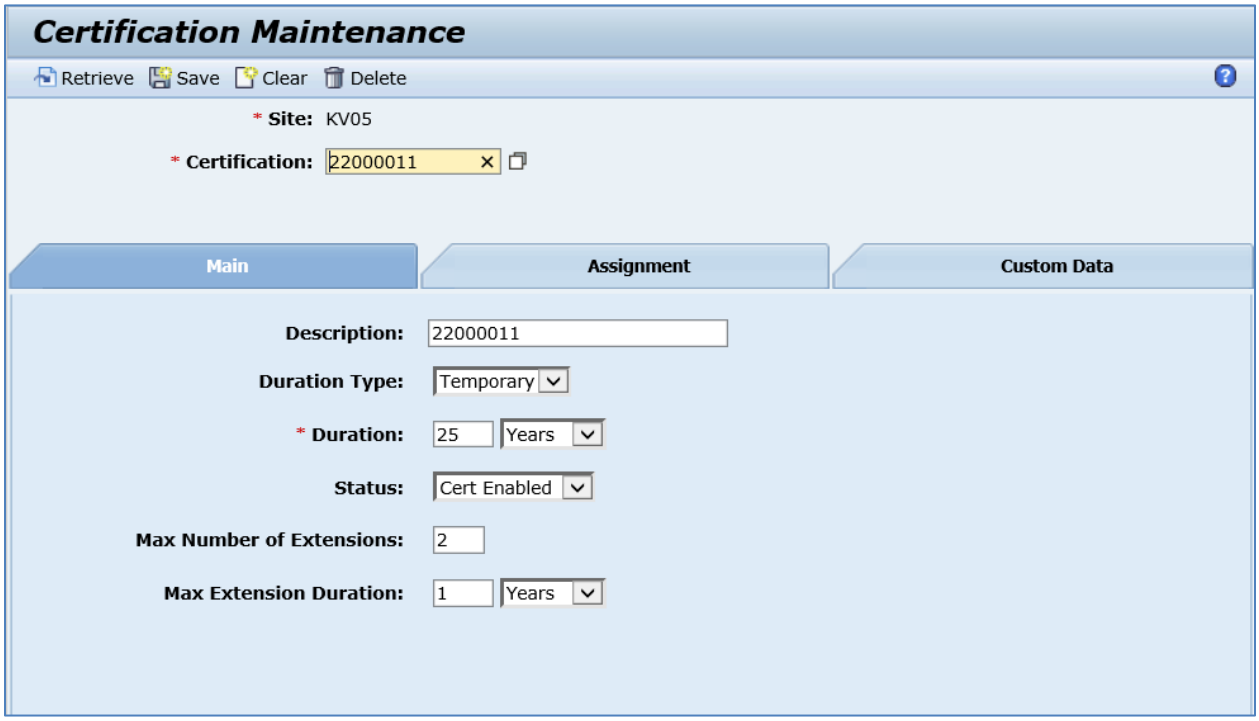
- *Comment: Proficiency of a Qualification/Requirement.* In the HR component, this is the *Skill Level*. During import, it is stored in the *Comment* field with the following text: Skill Level = <value from 0-9>



Run *Certification Maintenance* and retrieve a certification record created in *User Certification Assignment Maintenance*.

On the *Main* tab, verify the following field values:

- *Site: Plant* value.
- *Certification: Qualification key.*
- *Description: Qualification key.*
- *Duration Type:* Temporary.
- *Duration:* 25 Years.
- *Status:* Cert Enabled.
- *Max Numbers of Extensions:* 2.
- *Max Extension Duration:* 1 Year.


Certification Maintenance
Retrieve
Save
Clear
Delete
* Site: KV05
* Certification: 22000011
Main
Assignment
Custom Data
Description: 22000011
Duration Type: Temporary
* Duration: 25 Years
Status: Cert Enabled
Max Number of Extensions: 2
Max Extension Duration: 1 Years

13 Work Instruction (DMS Document) Integration

13.1 Overview

This function lets you transfer the document info records attached to a production order or to routing operations in SAP ERP to create work instructions in SAP ME.

13.2 Configuring a Production Order with Document Info Records

For more information about transferring document info records attached to the production order, see the Configuring Production Order with Document Info Records section of this guide.

13.3 Configuring a Routing with Document Info Records

For more information about transferring document info records attached to the routing operations, see the Configuring Routing with Document Info Records section of this guide.

14 Production Order Status Confirmation

14.1 Overview

This function lets you transfer the results of the production from SAP ME back to the production order in SAP ERP for reporting steps to keep the status of the systems aligned (see Transfer of Production Yield Confirmation on the SAP Help Portal at http://help.sap.com).

14.1.1 Business purpose

A confirmation documents the processing status of orders, operations, sub-operations and individual capacities. It is an instrument for controlling orders.

With a confirmation you specify:

- The quantity in an operation that was produced as yield, scrap and the quantity to be reworked
- How much work was actually done
- Which work center was used for the operation
- Who carried out the operation

Exact confirmation shortly after completion of an operation is essential for realistic production planning and control.

14.2 Production Yield Confirmation on Operation Complete

14.2.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a production yield confirmation message to SAP ERP. The message is triggered when the SFC number belonging to the production shop order completes an operation marked as the SAP ERP reporting step.

Note: An SFC number can be re-processed at an operation that the SFC number has already completed. For more information, see Repeated Operation Confirmation on the SAP Help Portal at http://help.sap.com.

This function supports long material numbers (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com).

For more information about reporting of consumed components, see the Transfer of Goods Movement within Yield/Scrap Confirmation section of this guide.

14.2.2 Prerequisites

14.2.2.1 SAP ME

- You have imported the production order data from SAP ERP.
- You have released the production shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- You have verified that routings contain at least one ERP reporting step.

  We recommend that the last routing operation is marked as an ERP reporting step to ensure that all consumed components are reported to SAP ERP.
- You have verified that collaboration links and directives are configured (see Configuring SAP ME Outbound Collaboration on the SAP Help Portal at http://help.sap.com).

14.2.2.2 SAP ERP

- You have verified that the control keys of the operations do not allow Auto Goods Receipt and that they allow confirmations (see Control Key on the SAP Help Portal at http://help.sap.com and SAP Note 1502536).
- You have verified that all work centers have the same activity types arranged in the same sequence.
- You have verified that operations are not marked as milestone operations.
- You have verified that operation sequence is not checked (see *Logistics* > *Production* > *Shop Floor Control* > *Operations* > *Confirmation* > *Define Confirmation Parameters* (transaction *OPK4*)).
- To view scheduling information in the SAP Shop Floor Dispatching and Monitoring Tool, you have configured SAP ERP to communicate with SFDM. See also: Transfer of Production Order with SFDM Scheduling Information on the SAP Help Portal at http://help.sap.com.

14.2.3 Procedural Steps

1. Complete an SFC number belonging to the production shop order at the ERP reporting step.
2. SAP ME triggers a collaboration event.
3. SAPMEINT sends the *yieldConfirmationRequest* message to update the processing status of the production order and operations in SAP ERP.

In SAP ERP, you can see the status of the production order on the *Display Production Order Confirmation: Details* screen (transaction *CO14*).

If the production shop order contains scheduling information transferred from the SFDM, then the confirmation message also contains quantity split IDs and capacity category. For more information, see Transfer of Production Yield Confirmation: Integration Details on the SAP Help Portal at http://help.sap.com.

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

14.2.4 Alternates / Best Practices and Tips

14.2.4.1 Regular Reporting Step Yield Confirmation

On a regular reporting step SAP ME sends an ERP yield confirmation per SFC number / reporting step with the following information:

- *Plant:* SAP ME Site.
- *Production Order:* Production Shop Order number.
- *Operation:* Operation name.
- *Yield* (Quantity): Quantity that has been completed.
- *Base Unit of Measure:* Units of Measure of the produced material.
- *Capacity Category:* Capacity Category of the resource that was used to complete the SFC number (see Configuring a Production Order with SFDM Scheduling Information section of this guide for more details).
- *Split:* Yield of a split that was processed by a capacity when an operation is split (see Configuring a Production Order with SFDM Scheduling Information section of this guide for more details).
- *Components:* Assembled components (see Transferring a Goods Movement within Yield/Scrap Confirmation section of this guide for more details).

14.2.4.2 Last Reporting Step Yield Confirmation

When the last reporting step is completed in SAP ME, SAPMEINT additionally sends the goods receipt of the produced material and reports the following:

- *Batch Number for shop order:* Batch number that can be received from SAP ERP or created in SAP ME.

  Note: If a production shop order contains a batch number that was defined in SAP ERP and the BATCH_NUMBER data collection parameter was entered for the planned material of this shop order, SAPMEINT sends the BATCH_NUMBER value and batch characteristics. For more information, see Transfer of Batch and Batch Characteristic Data and Transfer of Production Order with Batch Number on the SAP Help Portal at http://help.sap.com. Also see the Transferring Batch and Batch Characteristic Data section of this guide.

- *Base Unit of Measure:* Units of Measure of the produced material.

- *Storage Location:* Storage Location of the produced material.

  Note: When the main assembly reaches the *Done* status, the storage location value is included in the Yield Confirmation. It is obtained from the *ERP Putaway Storage Location* field in *Shop Order Maintenance* or from the same field in *Material Maintenance* if it cannot be found in the shop order.

- *Serial Number:* Serial Number of the main assembly that is received from SAP ERP within the production order.

  Note:

  - Overproduction is possible only if the production order was updated in SAP ERP and new serial numbers were used.
  - Production quantity can increase only if the production order was updated in SAP ERP and new serial numbers were used.
  - In SAP ME, set the production shop order status to *Done*. The COLLABORATION_SHOPORDER_COMPLETE action is triggered. Then, unused serial numbers can be deactivated in SAP ERP.

- *101 Goods Movement:* Goods receipt for purchase order. Reported quantity becomes available in the *Select View(s)* stock and can be used as an assembly component in further production process (see Examples section).

14.2.4.3 Production Yield and Scheduling Information (SFDM)

If a production shop order contains scheduling information transferred from SFDM, then the confirmation message contains the following data:

- Split ID
- Capacity Category

  Note that only category 001 (Machine) is supported.

- Confirmed Quantity

If an SFC number is completed on a resource from the list of planned resources associated to a Split ID:

- The Confirmed Quantity of the corresponding Split ID is increased and this Split ID is included in the confirmation message.
- The Confirmed Quantity can exceed the Planned Quantity. If the Confirmed Quantity is equal to or greater than the Planned Quantity, then SAP ME assumes that this Split ID is fulfilled and it no longer displays in the POD Work List.

If an SFC number is completed on a non-planned resource and all Split IDs of the shop order have associated planned resources, then the Confirmed Quantity is increased for the last Split ID by Planned Start Time and this Split ID is included in the confirmation message.

If an SFC number is completed on a non-planned resource and not all Split IDs of the shop order have associated planned resources:

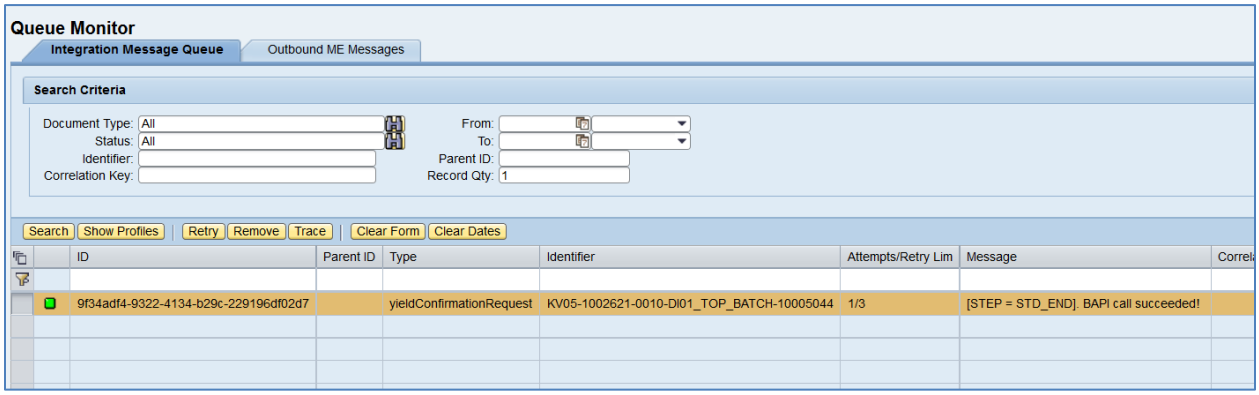
- The Confirmed Quantity is increased for the last Split ID that does not have associated planned resources by Planned Start Time and this Split ID is included in the confirmation message.
- The Confirmed Quantity can exceed the Planned Quantity.

14.2.5 Examples

14.2.5.1 Yield Confirmation on the regular reporting step

1. In SAP ME, open the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.
2. Run the *Production Operator Dashboard*, and start and complete the SFC on the regular reporting step (*Is Last Reporting Step* checkbox is not selected in *Step Properties*).
3. Optional: Verify the outbound *yieldConfirmationRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *yieldConfirmationRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

<CO_MES_PRODORDCONF_CREATE_TT>

<INPUT>

<IS_TIMETICKETS>

<PLANT>KV05**</PLANT>**

<ORDERID>000001002621**</ORDERID>**

<OPERATION>0010**</OPERATION>**

<YIELD>1**</YIELD>**

<BATCH>000108**</BATCH>**

<FIN_CONF>1**</FIN_CONF>**

<CLEAR_RES>X**</CLEAR_RES>**

<CONF_ID>16-35de3766:1516707b52c:-427f**</CONF_ID>**

<CONF_QUAN_UNIT_ISO>EA</CONF_QUAN_UNIT_ISO>

<CAPA_CATEGORY>001</CAPA_CATEGORY>

<SPLIT>1</SPLIT>

</IS_TIMETICKETS>

<TABLES/>

</INPUT>

</CO_MES_PRODORDCONF_CREATE_TT>

Note: Even though the BATCH field is present, it is not mapped and it is not passed to SAP ERP.

4. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Production* > *Shop Floor Control* > *Confirmation* > *Display*

or transaction code – *CO14*

On the *Display Production Order Confirmation: Operation Overview* screen, verify confirmed yield quantity for the operation in the *Quantity* field.

Select the Confirmation row and click the *Details* (*Shift+F2*) button. On the *Confirmation of Production Order Display: Details* screen, check the following information:

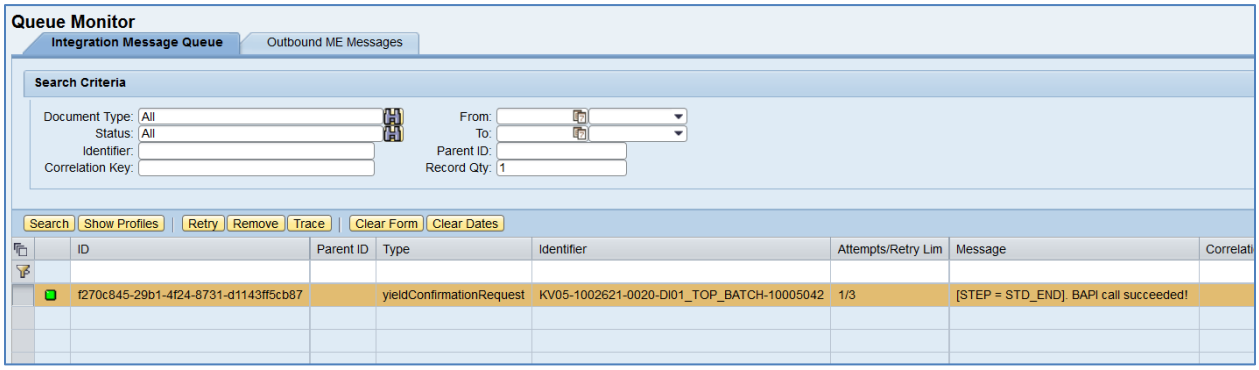
- *Confirmation:* Completion confirmation number for the operation. Number used to identify an operation in the confirmation.
- *Order:* Order Number.
- *Material:* Number of the material that is to be produced with this order.
- *Operation:* Operation/Activity Number. Determines in which order the operations of a sequence are carried out.
- *Sequence:* Key that identifies a sequence of operations within a routing.
- *Capacity Cat.:* Capacity category. Always 001 if it is reported from SAP ME.
- *Split:* Split number. Determined by the resource that was used to process the SFC number in SAP ME.
- *Work Center:* Work center that is used to perform operation.
- *Plant:* SAP ERP Plant.
- *Status:* System Status. Key displaying the current status of an object.
- *Yield:* Yield that was confirmed for the operation.

14.2.5.2 Yield Confirmation on the last reporting step

1. In SAP ME, open the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.

2. Run the *Production Operator Dashboard*, and start and complete the SFC on the last reporting step (*Is Last Reporting Step* checkbox is selected in *Step Properties*).
3. Optional: Verify the outbound *yieldConfirmationRequest* was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *yieldConfirmationRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

```
<CO_MES_PRODORDCONF_CREATE_TT>
    <INPUT>
        <IS_TIMETICKETS>
          <PLANT>KV05</PLANT>
          <ORDERID>000001002621</ORDERID>
          <OPERATION>0020</OPERATION>
          <YIELD>1</YIELD>
          <BATCH>000108</BATCH>
          <FIN_CONF>1</FIN_CONF>
          <CLEAR_RES>X</CLEAR_RES>
          <CONF_ID>37-35de3766:1516707b52c:-3efb</CONF_ID>
          <CONF_QUAN_UNIT_ISO>EA</CONF_QUAN_UNIT_ISO>
        </IS_TIMETICKETS>
        <TABLES>
          <IT_GOODSMOVEMENTS>
              <item>
                  <MATERIAL>DI01_TOP_BATCH</MATERIAL>
                  <PLANT>KV05</PLANT>
                  <STGE_LOC>0001</STGE_LOC>
                  <BATCH>000108</BATCH>
```

```
<MOVE_TYPE>101</MOVE_TYPE>
<ENTRY_QNT>1</ENTRY_QNT>
<ENTRY_UOM_ISO>EA</ENTRY_UOM_ISO>
<MVT_IND>F</MVT_IND>
<ORDERID>000001002621</ORDERID>
<CONF_ID>37-35de3766:1516707b52c:-3efb</CONF_ID>
</item>
</IT_GOODSMOVEMENTS>
<IT_GOODSMVT_SERIALNUMBER>
<item>
<MATDOC_ITM>1</MATDOC_ITM>
<SERIALNO>10005042</SERIALNO>
<UII/>
</item>
</IT_GOODSMVT_SERIALNUMBER>
</TABLES>
</INPUT>
</CO_MES_PRODORDCONF_CREATE_TT>
```

4. Verify results in SAP ERP using *Display Production Order Confirmation* (see Yield Confirmation on the regular reporting step example).
5. Review SAP ERP *Production Order Display*.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Production* > *Shop Floor Control* > *Order* > *Display*

or transaction code – *CO03*

On the *Production order Display: Header* screen, the *Delivered* field displays information about quantity delivered to stock.

6. Check stock overview.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Materials Management* > *Inventory Management* > *Environment* > *Stock* > *Stock Overview*

or transaction code – *MMBE*

On the *Stock Overview: Basic List* screen, the amount of the material for which 101 Goods Movement has been posted appears.

14.2.6 Missing / Not Supported

- To ensure data consistency between SAP ME and the ERP system, the system prevents direct entry of quantity confirmations for distributed production orders. Direct confirmation of production quantities and scrap for distributed orders is carried out only using the MES. You can still enter other data such as working times for distributed production orders. Once confirmation has taken place, it can no longer be reversed.

  When confirming production orders with an MES, you can now also specify the batch characteristics for batch-managed materials and the serial numbers for serialized materials.

- SAP ME does not support the ERP concept of different unit of measure at the operation level.

- Nested routings are not supported when the *Done and Close* button in SAP ME *Pack/Unpack* is used.

- SAPMEINT sends confirmations to SAP ERP only for closed containers of the Material pack level. Containers of the Container or Process Lot pack level are not processed (see Container Maintenance on the SAP Help Portal at http://help.sap.com).

14.3 Production Yield Confirmation on Container Close

14.3.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a production yield confirmation message to SAP ERP. The message is triggered when a top level SFC number belonging to the production shop order was packed into a container and the container has been closed using Pack/Unpack (see Container on the SAP Help Portal at http://help.sap.com).

This function supports long material numbers (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com).

14.3.2 Prerequisites

14.3.2.1 SAP ME

- You have imported the production order data from SAP ERP.
- You have released the production shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- You have verified that routings contain at least one ERP reporting step.

  We recommend that the last routing operation is marked as the ERP reporting step to ensure that all consumed components are reported to SAP ERP.

- For container close, you have created Material pack level containers in *Container Maintenance* and set the following activity rules for PK020 (Pack/Unpack) in *Activity Maintenance* (see Pack/Unpack on the SAP Help Portal at http://help.sap.com):
  - ERP_ITEM_FILTER
  - ERP_OPERATION

- ERP_REPORTING_STEP
- ERP_SEQUENCE

  Note that SAPMEINT supports only SAP ERP routings with the sequence of zero (ERP_SEQUENCE=0).

- You have verified that collaboration links and directives are configured (see Configuring SAP ME Outbound Collaboration on the SAP Help Portal at http://help.sap.com).

  To send a yield confirmation on container close, you have assigned the ERP_CONTAINER_CLOSED_CONFIRMATIOIN directive to the COLLABORATION_ERP_CONTAINER_CLOSED_CNFRM trigger action in *Collaboration Link Maintenance*.

14.3.2.2 SAP ERP

- You have verified that the control keys of the operations do not allow Auto Goods Receipt and that they allow confirmations (see Control Key on the SAP Help Portal at http://help.sap.com and SAP Note 1502536).
- You have verified that all work centers have the same activity types arranged in the same sequence.
- You have verified that operations are not marked as milestone operations.
- You have verified that operation sequence is not checked (see *Logistics* > *Production* > *Shop Floor Control* > *Operations* > *Confirmation* > *Define Confirmation Parameters* (transaction *OPK4*)).
- To view scheduling information in the SAP Shop Floor Dispatching and Monitoring Tool, you have configured SAP ERP to communicate with SFDM. See also: Transfer of Production Order with SFDM Scheduling Information on the SAP Help Portal at http://help.sap.com.

14.3.3 Procedural Steps

1. Pack a top level SFC number for the production shop order into a container and close it using Pack/Unpack.
2. SAP ME triggers a collaboration event.
3. SAPMEINT sends the *yieldConfirmationRequest* message to update the processing status of the production order and operations in SAP ERP.

   In SAP ERP, you can see the status of the production order on the *Display Production Order Confirmation: Details* screen (transaction *CO14*).

   If the production shop order contains scheduling information transferred from the SFDM, then the confirmation message also contains quantity split IDs and capacity category. For more information, see Transfer of Production Yield Confirmation: Integration Details on the SAP Help Portal at http://help.sap.com.

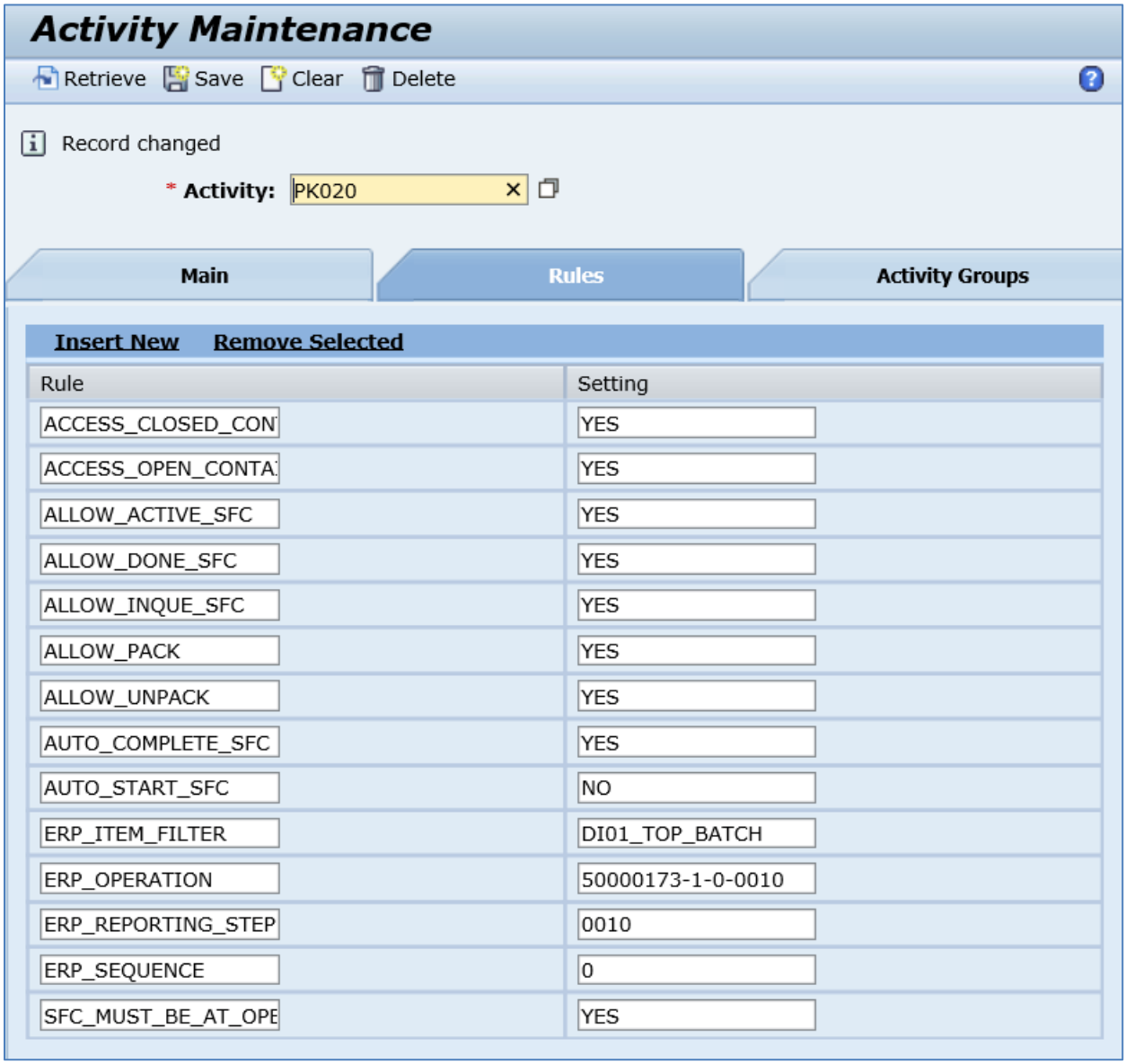
For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

14.3.4 Alternates / Best Practices and Tips

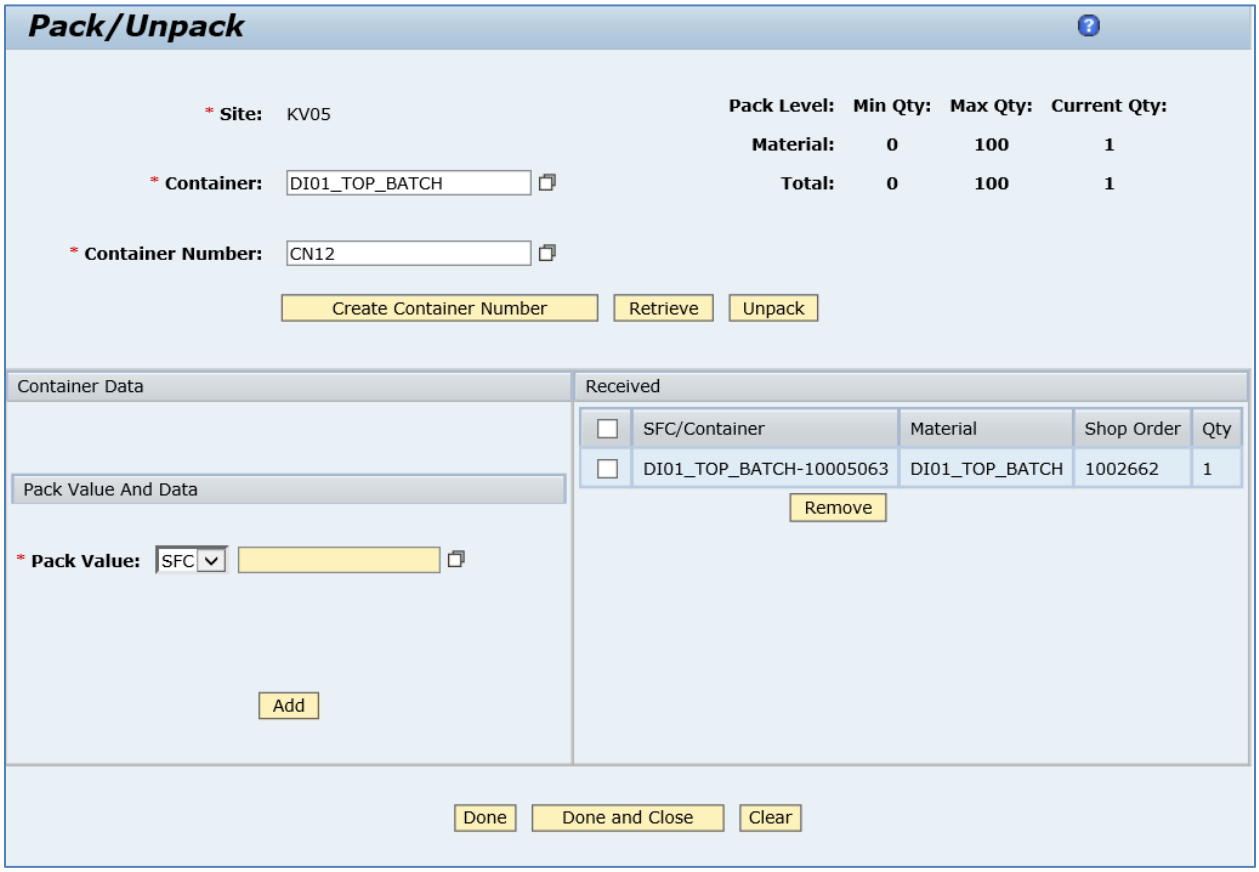
14.3.5 Examples

14.3.5.1 Transfer Production Yield Confirmation on Container Close

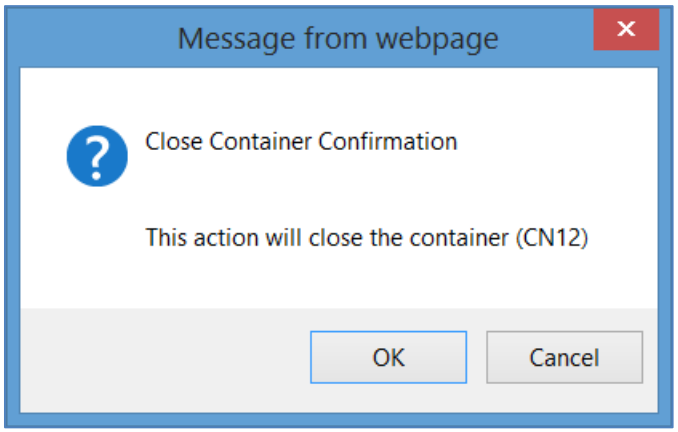
1. In SAP ME, run *Activity Maintenance* and retrieve the PK020 (Pack/Unpack) activity. Enter the following:
   - *ERP_ITEM_FILTER:* Material name (* can be used as well).
   - *ERP_OPERATION:* Operation name as it called in SAP ME. For example, ASSY (the operation where you perform assembly).
   - *ERP_REPORTING_STEP:* Reporting Step (can be found in Step Properties in Routing Maintenance). For example, 0010,0020 (use your actual reporting step values).
   - *ERP_SEQUENCE:* Key that identifies a sequence of operations within a routing. Leave blank or set to 0.



2. In SAP ME, run the *Pack/Unpack* activity. Add SFC number to the container.

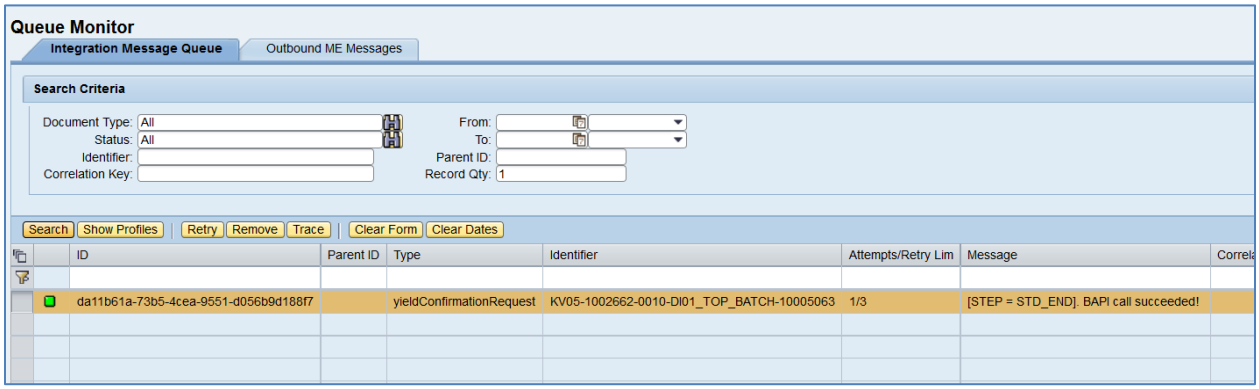


3. Click the *Done and Close* button. Click *OK* in the confirmation dialog box.



4. Optional: Verify the outbound *yieldConfirmationRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



For more information about reviewing confirmed data in SAP ERP, see the Production Yield Confirmation on operation complete section of this guide.

Note: If the last reporting step is used in the *PK020* activity rule settings, the confirmation message contains the following additional information:

- Batch Number for shop order
- Base Unit of Measure
- Storage Location
- Serial Number
- 101 Goods Movement

14.4 Scrap Confirmation for a Production Order

14.4.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer scrap data for the production shop order to SAP ERP when an SFC number is scrapped during production in SAP ME.

When an SFC number is scrapped, SAPMEINT reports consumption of the components for this SFC number with goods issue of the movement type 261.

If components were reserved for this shop order in SAP ERP, SAPMEINT does not report consumption of these components to SAP ERP.

This function supports long material numbers (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com).

For more information about reporting of consumed components, see the Transferring a Goods Movement within Yield/Scrap Confirmation section of this guide.

14.4.2 Prerequisites

14.4.2.1 SAP ME

- You have imported the production order data from SAP ERP.

- You have released the production shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- You have verified that routings contain at least one ERP reporting step.

  We recommend that the last routing operation is marked as the ERP reporting step to ensure that all consumed components are reported to SAP ERP.
- You have verified that collaboration links and directives are configured (see Configuring SAP ME Outbound Collaboration on the SAP Help Portal at http://help.sap.com).

14.4.2.2 SAP ERP

- You have verified that all work centers have the same activity types arranged in the same sequence.
- You have verified that operation sequence is not checked (see *Logistics* > *Production* > *Shop Floor Control* > *Operations* > *Confirmation* > *Define Confirmation Parameters* (transaction *OPK4*)).

14.4.3 Procedural Steps

1. Scrap an SFC number belonging to the production shop order in SAP ME using *Log NC* and choose the Scrap disposition function, or use the Scrap option in the *SFC Scrap/Delete* activity (see Disposition Functions and SFC Scrap/Delete on the SAP Help Portal at http://help.sap.com), or use the Scrap step.
2. SAP ME triggers a collaboration event.
3. SAPMEINT sends the *scrapConfirmationRequest* message with the following information to SAP ERP to report the quantity of scrapped finished goods and component quantities consumed:
   - *Plant:* SAP ME Site.
   - *Production Order:* Production shop order number.
   - *Operation:* Operation name.
   - *Quantity:* Quantity that has been scrapped.
   - *Base Unit of Measure:* Units of measure of the produced material.
   - *Capacity Category:* Capacity Category of the resource that was used to complete SFC number (see Configuring a Production Order with SFDM Scheduling Information section of this guide for more details).
   - *Split:* Yield of a split that was processed by a capacity when an operation is split (see Configuring a Production Order with SFDM Scheduling Information section of this guide for more details).
   - *Components:* Assembled components (see Transferring a Goods Movement within Yield/Scrap Confirmation section of this guide for more details).

     Note: SAPMEINT does not send a serial number for a scrapped SFC number to SAP ERP.

Note: If an SFC is scrapped on the non-reporting step, SAP ME tries to find a reporting step in the routing by checking future steps and uses this reporting step.

In SAP ERP, you can see the status of the production order on the *Display Production Order Confirmation: Details* screen (transaction *CO14*).

If the production shop order contains scheduling information transferred from the SFDM, then the confirmation message also contains quantity split IDs and capacity category. For more information, see Transfer of Production Yield Confirmation: Integration Details on the SAP Help Portal at http://help.sap.com.

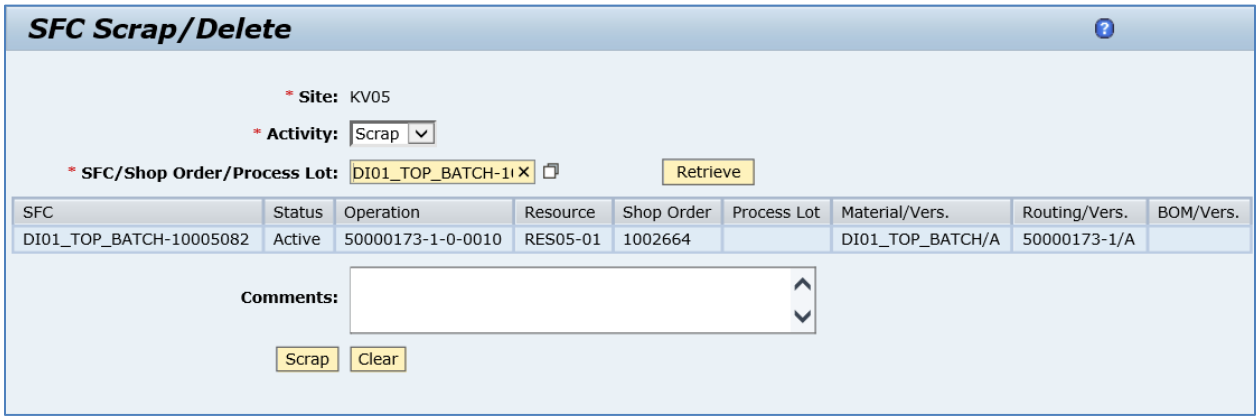
For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

14.4.4 Alternates / Best Practices and Tips

14.4.5 Examples

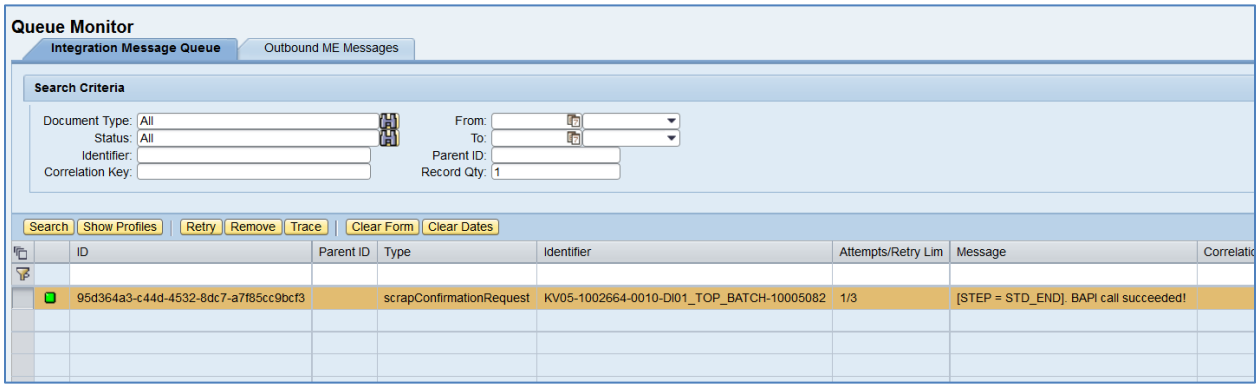
14.4.5.1 Scrap using SFC Scrap/Delete activity.

1. In SAP ME, run the *SFC Scrap/Delete* activity. Retrieve the SFC number you want to scrap and set the *Activity* dropdown list to Scrap.



2. Click the *Scrap* button.
3. Optional: Verify the outbound *scrapConfirmationRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *scrapConfirmationRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

<CO_MES_PRODORDCONF_CREATE_TT>

<INPUT>

<IS_TIMETICKETS>

<PLANT>KV05**</PLANT>**

<ORDERID>000001002663**</ORDERID>**

<OPERATION>0010**</OPERATION>**

<SCRAP>1**</SCRAP>**

<BATCH>000111**</BATCH>**

<FIN_CONF>1**</FIN_CONF>**

<CLEAR_RES>X**</CLEAR_RES>**

<CONF_ID>84-35de3766:1516707b52c:-24af**</CONF_ID>**

<CONF_QUAN_UNIT_ISO>EA**</CONF_QUAN_UNIT_ISO>**

<CAPA_CATEGORY>001**</CAPA_CATEGORY>**

<SPLIT>1**</SPLIT>**

</IS_TIMETICKETS>

<TABLES/>

</INPUT>

</CO_MES_PRODORDCONF_CREATE_TT>

Note: Event though the BATCH field is present, it is not mapped and it is not passed to SAP ERP.

4. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Production* > *Shop Floor Control* > *Confirmation* > *Display*

or transaction code – *CO14*

On the *Display Production Order Confirmation: Operation Overview* screen, verify confirmed scrap quantity for the operation in the *Scrap* field.

Select Confirmation row and choose *Details* (*Shift+F2*) button. On the *Confirmation of Production Order Display: Details* screen, check the following information:

- *Confirmation:* Completion confirmation number for the operation. Number used to identify an operation in the confirmation.
- *Order:* Order Number.
- *Material:* Number of the material that is to be produced with this order.
- *Operation:* Operation/Activity Number. Determines in which order the operations of a sequence are carried out.
- *Sequence:* Key that identifies a sequence of operations within a routing.
- *Capacity Cat.:* Capacity category. Always 001 if it is reported from SAP ME.
- *Split:* Split number. Determined by resource that was used to process SFC number in SAP ME.
- *Work Center:* Work center that is used to perform operation.
- *Plant:* SAP ERP Plant.
- *Status:* System Status. Key displaying the current status of an object.
- *Scrap:* Scrap that was confirmed for this operation.

14.4.6 Missing / Not Supported

- SAP ME is the system of record for WIP. If you update a production order directly in SAP ERP by recording scrap quantity movements, SAPMEINT does not update the corresponding shop order in SAP ME.
- Deletion of an SFC number in SAP ME is not reported to SAP ERP.
- Return of components to floor stock for a scrapped SFC number in SAP ME is not reported to SAP ERP.
- SAPMEINT does not send a serial number for a scrapped SFC number to SAP ERP.

14.5 Transferring a Goods Movement within Yield/Scrap Confirmation

14.5.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a goods movement to SAP ERP within a production yield confirmation, planned order confirmation, scrap confirmation for production and planned orders, and container close messages.

Note: An SFC number can be re-processed at an operation that this SFC number has already completed. For more information, see Repeated Operation Confirmation on the SAP Help Portal at http://help.sap.com.

This function supports long material numbers (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com).

14.5.2 Prerequisites

14.5.2.1 SAP ME

- You have imported the production order with BOM and routing data from SAP ERP.
- You have released the production shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- You have received floor stock from SAP ERP.
- You have verified that routings contain at least one ERP reporting step.

  We recommend that the last routing operation is marked as the ERP reporting step to ensure that all consumed components are reported to SAP ERP.
- You have verified that collaboration links and directives are configured (see Configuring SAP ME Outbound Collaboration on the SAP Help Portal at http://help.sap.com).

14.5.2.2 SAP ERP

- You have verified that the control keys of the operations do not allow Auto Goods Receipt and that they allow confirmations (see Control Key on the SAP Help Portal at http://help.sap.com and SAP Note 1502536).
- You have verified that all work centers have the same activity types arranged in the same sequence.
- You have verified that operations are not marked as milestone operations.
- You have verified that the operation sequence is not checked (see *Logistics* > *Production* > *Shop Floor Control* > *Operations* > *Confirmation* > *Define Confirmation Parameters* (transaction *OPK4*)).

14.5.3 Procedural Steps

1. Assemble a discrete component (by choosing *Add* in the *Assembly Point* or *As-Built Configuration* plugin, or when a component is assembled using the *Auto Assemble Component* hook point activity) or a time-based component.
2. Complete an SFC number belonging to the production shop order at the ERP reporting step, scrap it, or pack it in the container and close it.
3. SAP ME triggers a collaboration event.
4. SAPMEINT sends a confirmation message that contains a goods movement section with the goods movement type *261* (goods issue for an order) for the assembled component to SAP ERP.

   Goods movement section contains:

   - Components

     The *ERP Yield Confirmation DA* Plug-In configured for the *ERP_YIELD_CONFIRMATION* collaboration directive supports the following data acquisition parameters:

- components

  Valid values:

  - *all:* Reports all the components to SAP ERP irrespective of the Backflush in ERP setting on the *Build* tab of *Material Maintenance*.
  - *none:* Does not report any components to SAP ERP.
  - *noneIfBackflushed* (default): Does not report any components to SAP ERP if at least one of them has Backflush in ERP selected on the *Build* tab of *Material Maintenance*.
  - *onlyNonBackflushed:* reports only components that have Backflush in ERP deselected on the *Build* tab of *Material Maintenance*.

- timebasedComponents

  Valid values:

  - *true* (default)*:* time-based components are included in the yield confirmation.
  - *false:* time-based components are not included in the yield confirmation.

- tbCompsOnlyFromLoadedSlots

  Valid values:

  - *true:* Executes optimized code when retrieving the assembled time-based component information. Retrieves only components loaded on the time-based resource and does not account for the converted time-based records stored in the SFC_ASSY database table.
  - *false (default):* Does not execute the optimized code.

  Note that this parameter does not affect the way discrete assembly records are retrieved. Discrete components are reported to SAP ERP no matter what parameter setting is used.

Multiple parameters are delimited by a semicolon (;):

components=onlyNonBackflushed;tbCompsOnlyFromLoadedSlots=true

Note: These parameters are also available for the following plugins:

- ERP Scrap Confirmation DA Plug-In (*ERP_SCRAP_CONFIRMATION* collaboration directive);
- ERP Yield Backflushing DA Plug-In (*ERP_YIELD_BACKFLUSHING*, *ERP_CONTAINER_CLOSED_BACKFLUSHING* collaboration directives);
- ERP Scrap Backflushing DA Plug-In (*ERP_SCRAP_BACKFLUSHING* collaboration directive);
- ERP Container Close Conf. DA Plug-In (*ERP_CONTAINER_CLOSED_CONFIRMATION* collaboration directive);

Goods movement is not triggered for phantom components. Goods movement is triggered for components that are members of a phantom component.

Goods movement is not triggered for co-products and by-products.

Goods movement is not triggered for floor stock pegged to a shop order.

Goods movement is triggered for non-BOM components.

- Batch Number for each component assembled onto the SFC number

  Batch Number of the assembled component can be obtained from the following:

  - BATCH_NUMBER data field
  - Inventory ID Data (for raw components received from SAP ERP)
  - Shop order of subassembly (for finished components received from SAP ERP)

  If during assembling the batch number is not entered in the BATCH_NUMBER data field, the system gets it from the Inventory ID data or from the shop order of the subassembly and includes it in the confirmation message.

- Serial Number for component

  Only if SAP ERP 6.05 (business functions *LOG_PP_MES_INT_01* and *LOG_PP_MES_INT_02* are activated) or later is used.

  Serial number of the assembled component can be obtained from the following:

  - ERP_SERIAL_NUMBER data field
  - Shop order of subassembly (for finished components received from SAP ERP)

  If during assembling the serial number is not entered to the ERP_SERIAL_NUMBER data field, the system gets it from the shop order of the subassembly and includes it in the confirmation message.

- Storage Location of the inventory ID or from the material master maintained in SAP ME

  Populated from the SAP ERP material master (Prod. Stor. Location on the MRP 2 tab) during the material transfer.

Note: Goods movement section is included in the following messages:

- yieldConfirmationRequest
- scrapConfirmationRequest
- yieldBackflushingRequest
- scrapBackflushingRequest

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

14.5.4 Alternates / Best Practices and Tips

14.5.4.1 Transferring a Batch Number for a Component

The batch number of the component is included in the yield confirmation in the following scenarios:

- When it is entered in the BATCH_NUMBER data field.
- When the inventory ID is provided and this inventory has been built in SAP ME so that the batch number can be found in the shop order of subassembly.
- When the inventory ID is provided and the batch number was collected during inventory receipt.

14.5.4.2 Transferring of the Storage Location for a Component

To include the storage location in the yield confirmation, SAP ME does the following:

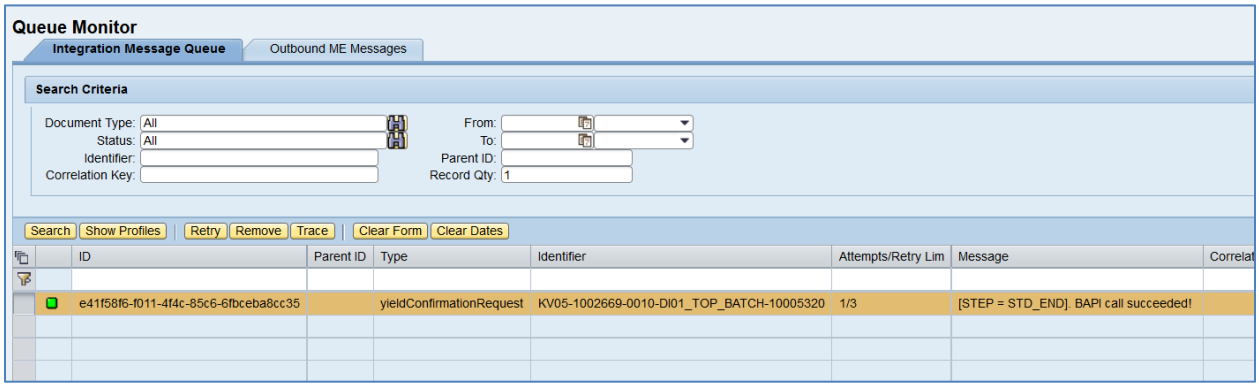
- Checks to see if the storage location value was collected during inventory receipt.
- If no storage location is found for the inventory ID, then the storage location value is obtained from the *ERP Production Storage Location* field of *Material Maintenance*.

14.5.5 Examples

14.5.5.1 Transferring a Goods Movement within Yield Confirmation

1. Create and transfer a production order with a BOM and a routing from SAP ERP to SAP ME (see Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) section of this guide).
2. Transfer goods from a warehouse location to a production location for use during the production process (goods movement type *311*) (see the Floor Stock Replenishment section of this guide).
3. Check stock overview. Verify that the Reserved quantity is equal to the quantity of the component that is required to produce the order.
4. In SAP ME, open the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.
5. Run the *Production Operator Dashboard*, start the SFC and assemble all the components. Complete SFC on the regular reporting step.
6. Optional: Verify the outbound *yieldConfirmationRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *yieldConfirmationRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

```
<TABLES>
    <IT_GOODSMOVEMENTS>
        <item>
          <MATERIAL>DI01_COMP_REG02</MATERIAL>
          <PLANT>KV05</PLANT>
          <STGE_LOC>0001</STGE_LOC>
          <BATCH>0000000152</BATCH>
          <MOVE_TYPE>261</MOVE_TYPE>
          <ENTRY_QNT>1</ENTRY_QNT>
          <ORDERID>000001002669</ORDERID>
          <CONF_ID>10-177e5ae3:1517bb628a8:-2532</CONF_ID>
          <ACTIVITY>0010</ACTIVITY>
        </item>
    </IT_GOODSMOVEMENTS>
    <IT_GOODSMVT_SERIALNUMBER>
        <item>
          <MATDOC_ITM>1</MATDOC_ITM>
          <SERIALNO>10005300</SERIALNO>
          <UII/>
        </item>
    </IT_GOODSMVT_SERIALNUMBER>
</TABLES>
```

7. Check stock overview. Verify that:
    - The Reserved quantity has decreased by the quantity assembled.

- The quantity in the *Unrestricted use* column for the production storage location has decreased by the quantity assembled.

8. Verify results in SAP ERP using *Display Production Order Confirmation* (transaction *CO14*).

14.5.6 Missing / Not Supported

- Goods movement is not triggered for phantom components. Goods movement is triggered for components that are members of a phantom component.
- Goods movement is not triggered for co-products and by-products.
- Goods movement is not triggered for floor stock pegged to a shop order.

14.6 Transferring a Goods Movement Independent of Yield Confirmation

14.6.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a goods movement to SAP ERP upon assembly of discrete components of a top assembly in SAP ME.

Note: This function does not support time-based, backflushed components, or when a component is assembled using the Auto Assemble Component hook point activity.

14.6.2 Prerequisites

14.6.2.1 SAP ME

- In *Collaboration Link Maintenance*, you have verified that the *ERP_COMPONENT_ADD* directive is assigned to the *COLLABORATION_SFC_COMPONENT_ADD* link.
- You have imported the production order data from SAP ERP.
- You have received floor stock from SAP ERP.
- You have released the production shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).

14.6.2.2 SAP ERP

- You have verified that the component materials are not marked as backflushed (the *Backflush* checkbox on the *MRP 2* tab of the *MM01/MM02* transaction).

14.6.3 Procedural Steps

1. Click *Add* in the *Assembly Point* (*Assemble Components*) or *As-Built Configuration* plugin to indicate that you have assembled a discrete component.
2. SAP ME triggers a collaboration action (*COLLABORATION_SFC_COMPONENT_ADD*).
3. SAPMEINT sends the *componentAddRequest* message with the goods movement type *261* (goods issue for an order) for the assembled component to SAP ERP.

Note that this component is not included in production yield confirmation (see Transfer of Production Yield Confirmation on the SAP Help Portal at http://help.sap.com).

For more information about reporting of consumed components, see the Transferring a Goods Movement within Yield/Scrap Confirmation section of this guide.

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

14.6.4 Alternates / Best Practices and Tips

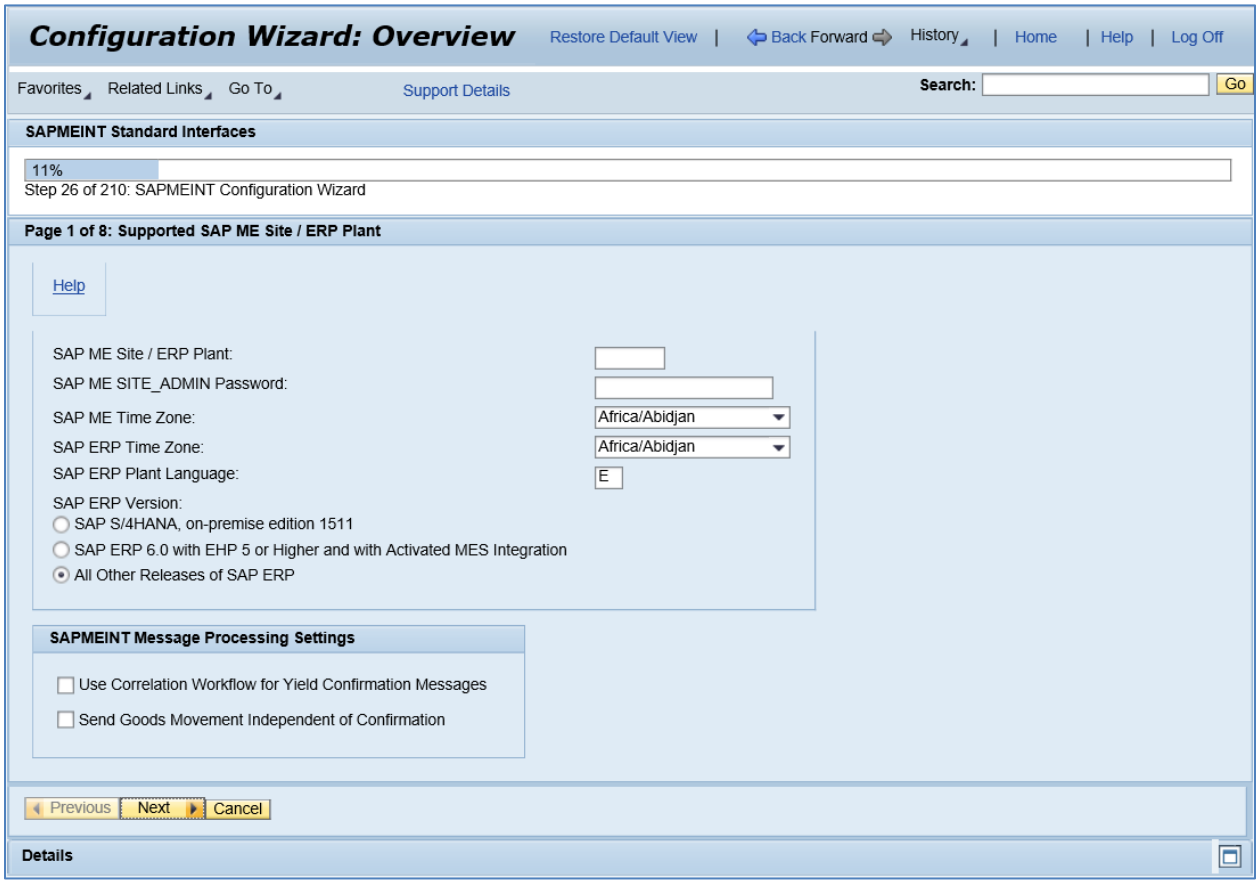
Note: The *componentAddRequest* message can be triggered even if assembly took place on a non-reporting step. In this case, the next reporting step is used and included in the *componentAddRequest* message.

See Transferring a Goods Movement within Yield/Scrap Confirmation subsection in the SAPMEINT Message Processing Logic section of this guide for more information.

14.6.4.1 Enabling of Independent Goods Movement

You can enable Goods Movement Independent of Yield Confirmation by selecting *Send Goods Movement Independent of Confirmation* checkbox while you are running SAPMEINT Standard Interface or SAPMEINT Migration CTC wizard.

Running of CTC with an unselected checkbox will unlink the *ERP_COMPONENT_ADD* collaboration directive from the *COLLABORATION_SFC_COMPONENT_ADD* Collaboration Trigger Action.

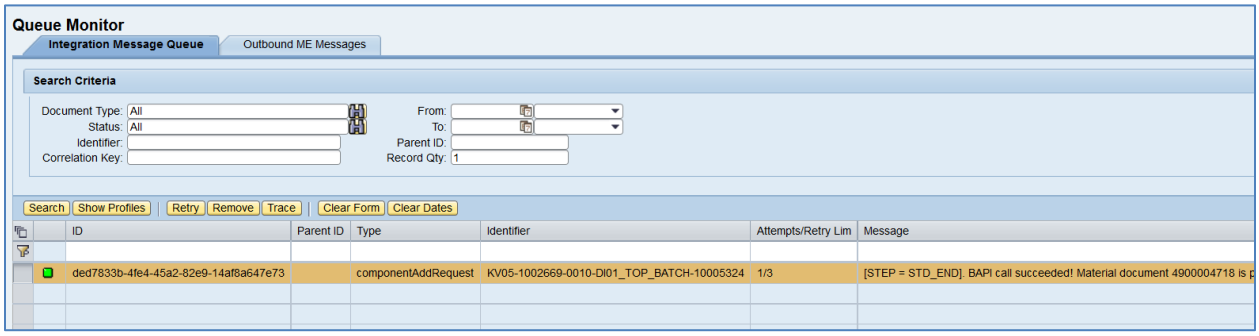


14.6.5 Examples

14.6.5.1 Transferring a Goods Movement Independent of Yield Confirmation

1. Create and transfer a production order with a BOM and a routing from SAP ERP to SAP ME (see the Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) section of this guide).
2. Transfer goods from a warehouse location to a production location for use during the production process (goods movement type *311*) (see the Floor Stock Replenishment section of this guide).
3. In SAP ME, open the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.
4. Run the *Production Operator Dashboard*, start the SFC and assemble all the components.
5. Optional: Verify the outbound *componentAddRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



6. Select the *componentAddRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

<MB_MES_GOODSMVT_CREATE>

<INPUT>

<DETERMINE_RESERVATIONS>X**</DETERMINE_RESERVATIONS>**

<GOODSMVT_CODE>

<GM_CODE>03**</GM_CODE>**

</GOODSMVT_CODE>

<GOODSMVT_HEADER>

<PSTNG_DATE>2015-12-08T18:42:30.446Z**</PSTNG_DATE>**

<DOC_DATE>2015-12-08T18:42:30.446Z**</DOC_DATE>**

</GOODSMVT_HEADER>

</INPUT>

<TABLES>

<GOODSMVT_ITEM>

<item>

<MATERIAL>DI01_COMP_REG02**</MATERIAL>**

<PLANT>KV05**</PLANT>**

<STGE_LOC>0001**</STGE_LOC>**

<BATCH>0000000152**</BATCH>**

<ENTRY_QNT>1**</ENTRY_QNT>**

<ORDERID>000001002669**</ORDERID>**

<MOVE_TYPE>261**</MOVE_TYPE>**

<ACTIVITY>0010**</ACTIVITY>**

</item>

</GOODSMVT_ITEM>

<GOODSMVT_SERIALNUMBER>

```
<item>
    <MATDOC_ITM>1</MATDOC_ITM>
    <SERIALNO>10005313</SERIALNO>
    <UII/>
</item>
</GOODSMVT_SERIALNUMBER>
</TABLES>
</MB_MES_GOODSMVT_CREATE>
```

7. Check stock overview. Verify that:
   - The Reserved quantity has decreased by the quantity assembled.
   - The quantity in the *Unrestricted use* column for the production storage location has decreased by the quantity assembled.

14.6.6 Missing / Not Supported

This function does not support time-based, backflushed components, or when a component is assembled using the Auto Assemble Component hook point activity.

14.7 Correlated Production Yield Confirmation on Operation Complete

14.7.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to configure SAPMEINT to correlate a number of production yield confirmation messages on SAPMEINT side and send one aggregated production yield confirmation to SAP ERP.

14.7.2 Prerequisites

14.7.2.1 SAP ME

- You have enabled correlation of yield confirmations by selecting *Use Correlation Workflow for Yield Confirmation Messages* checkbox while you are running SAPMEINT Standard Interface or SAPMEINT Migration CTC wizard (see Enabling of Correlation Workflow for Yield Confirmation Messages section of this guide).
- You have imported the production order with BOM data from SAP ERP.
- You have released the production shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- You have received floor stock from SAP ERP.
- You have verified that routings contain at least one ERP reporting step.

  We recommend that the last routing operation is marked as the ERP reporting step to ensure that all consumed components are reported to SAP ERP.

- You have verified that collaboration links and directives are configured (see Configuring SAP ME Outbound Collaboration on the SAP Help Portal at http://help.sap.com).

14.7.2.2 SAP ERP

- You have verified that the control keys of the operations do not allow Auto Goods Receipt and that they allow confirmations (see Control Key on the SAP Help Portal at http://help.sap.com and SAP Note 1502536).
- You have verified that all work centers have the same activity types arranged in the same sequence.
- You have verified that operations are not marked as milestone operations.
- You have verified that operation sequence is not checked (see *Logistics* > *Production* > *Shop Floor Control* > *Operations* > *Confirmation* > *Define Confirmation Parameters* (transaction *OPK4*)).

14.7.3 Procedural Steps

1. Assemble a discrete component (by choosing *Add* in the *Assembly Point* or *As-Built Configuration* plugin, or when a component is assembled using the *Auto Assemble Component* hook point activity) or time-based component.
2. Complete an SFC number belonging to the production shop order at the ERP reporting step.
3. SAP ME triggers a collaboration event and a *yieldConfirmationCorrelationRequest* message for that SFC number is sent to SAPMEINT. This message does not contain component information.
4. When the number of the *yieldConfirmationCorrelationRequest* messages with the same correlation key reaches the *numberOfDocuments* parameter value (or when *waitTimeInSec* parameter value is reached), SAPMEINT queries SAP ME for component information, generates a *CorrelatedYieldConfirmationRequest*, and sends the correlated production yield confirmation to SAP ERP.
5. When you complete the last SFC number at the last ERP reporting step, a collaboration action is triggered and a *productionOderCompleteCorrelationRequest* message is sent to SAPMEINT. When *waitTimeInSec* parameter value is reached for this message, SAPMEINT generates a *CorrelatedProductionOrderCompleteRequest* and sends the correlated production order complete confirmation to SAP ERP.

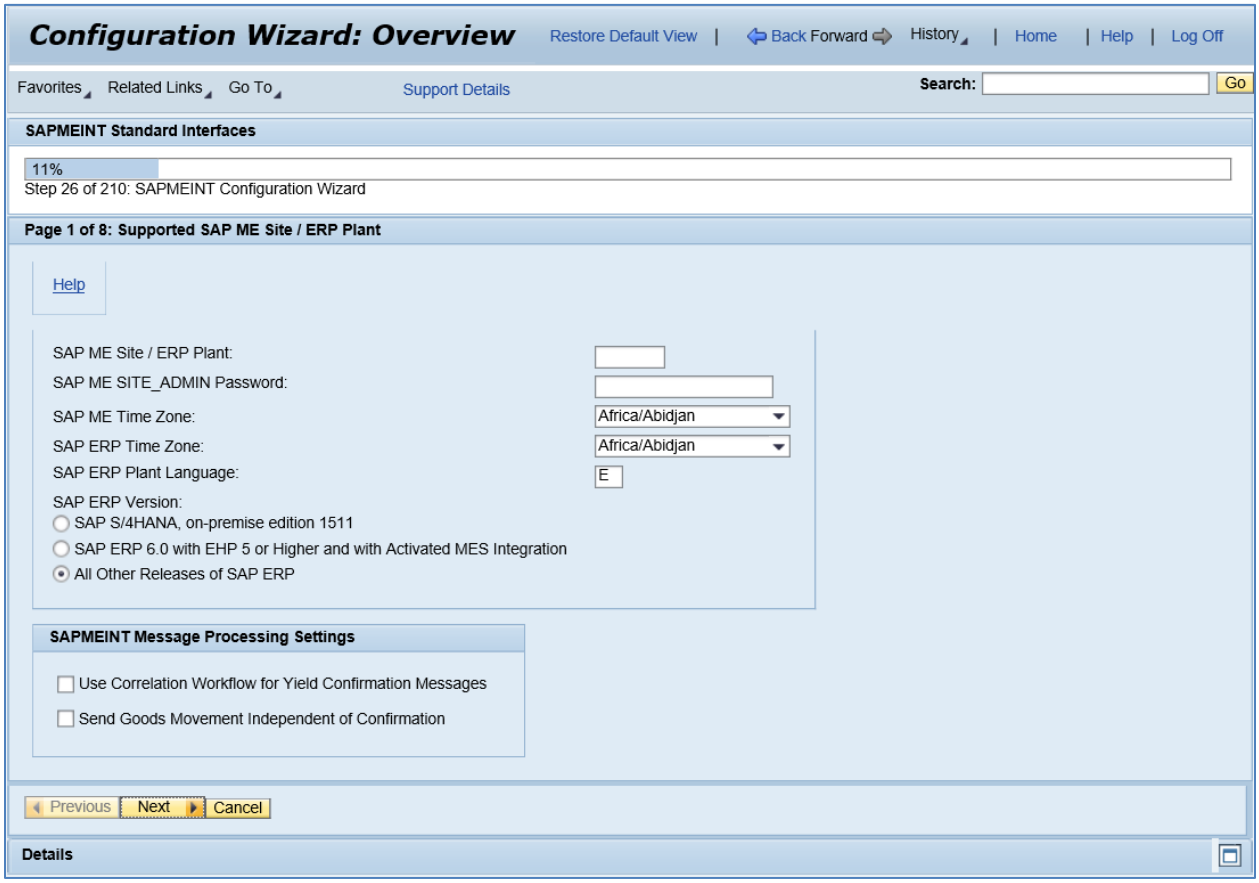
For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

14.7.4 Alternates / Best Practices and Tips

14.7.4.1 Enabling of Correlation Workflow for Yield Confirmation Messages

You can enable correlation of Yield Confirmations by selecting *Use Correlation Workflow for Yield Confirmation Messages* checkbox while you are running SAPMEINT Standard Interface or SAPMEINT Migration CTC wizard.

Running of CTC with an unselected checkbox returns a normal way of sending of production yield confirmation messages.



In *Collaboration Directive Maintenance*, you can verify parameter values of the *ERP_YIELD_CONFIRMATION* directive:

- Data Acquisition parameter: *components=none*.
- Transport parameter: *messageName=yieldConfirmationCorrelationRequest*.

14.7.4.2 Correlation key for yield confirmation

Correlation key is a set of parameters that are used to group *yieldConfirmationCorrelationRequest* messages.

A correlation key for yield confirmation is a combination of the following parameters delimited by a colon:

- Site
- Shop order
- Reporting step
- Batch number
- Capacity category

- Split ID
- Rework (true or false)

Example: ConfirmationYield:ABC1:1001486:10::001:1:false

You can change parameters of the correlation key that is used to group *yieldConfirmationCorrelationRequest* messages.

1. On the *SAPMEINT Workflow Configuration* screen, select the *yieldConfirmationCorrelationRequest* message type.
2. In the Type Details area, click *Modify*.
3. Copy the default value of the *Get Correlation Key Transaction Parameters* field and paste it into the *Partner Get Correlation Key Transaction Parameters* field or into the *Customer Get Correlation Key Transaction Parameters* field.

   By default, the correlation key consists of the following parameters:

   - *site:* /*/ns1:site
   - *shop order:* /*/ns1:orderNumber
   - *reporting step:* /*/ns1:stepId
   - *batch number:* /*/ns1:batchData/ns1:batchNumber
   - *capacity category:* /*/ns1:erpCapacityCategory
   - *split ID:* /*/ns1:splitId
   - *rework (true or false):* /*/ns1:rework

   The parameters are separated by a comma.
4. Change the value of the *Partner Get Correlation Key Transaction Parameters* field or the *Customer Get Correlation Key Transaction Parameters* field as needed:

   You can use any number of standard XPath expressions from the original *yieldConfirmationCorrelationRequest* document in any order. Separate the parameters by a comma.
5. Copy the value of the *Get Correlation Key Transaction* field and paste it into the *Partner Get Correlation Key Transaction* field or into the *Customer Get Correlation Key Transaction* field.
6. Save your entries.

14.7.4.3 Correlation key for components

Components are grouped by the following parameters:

- Material
- Reporting step
- Storage location
- Batch number

14.7.4.4 Retention period settings

SAPMEINT_CORRELATION_RETENTION_PERIOD defines the retention period in minutes for a message when a message is waiting for more documents to be arrived and correlated. Default value is 10.

Recommendation:

Align *yieldConfirmationCorrelation*, *productionOderCompleteCorrelation*, and the *SAPMEINT_CORRELATION_RETENTION_PERIOD* global parameter.

Use the following dependency: *SAPMEINT_CORRELATION_RETENTION_PERIOD* < the *waitTimeInSec* parameter of *yieldConfirmationCorrelation* < the *waitTimeInSec* parameter of *productionOderCompleteCorrelation*.

14.7.4.5 Configuring yieldConfirmationCorrelationRequest

In *SAPMEINT Workflow Configuration*, you can modify *Merge Validation Transaction Parameters* of the *yieldConfirmationCorrelationRequest* workflow to specify how many yield confirmation messages (*numberOfDocuments*) must be correlated in SAPMEINT before a correlated yield confirmation is sent to SAP ERP. You can also specify how long a *yieldConfirmationCorrelationRequest* message must stay in SAPMEINT waiting for *yieldConfirmationCorrelationRequest* messages with the same correlation key (*waitTimeInSec*) before a correlated production yield confirmation is sent to SAP ERP. SAPMEINT sends a correlated production yield confirmation to SAP ERP when one of these conditions is met.

The *yieldConfirmationCorrelationRequest* workflow contains the following parameters:

- Merge Validation Transaction Parameters:

  numberOfDocuments: Number of documents that triggers correlation (defaults to 20).

  waitTimeInSec: Timeout that triggers correlation (defaults to 300).

- Merge Transaction Parameters:

  newDocType=CorrelatedYieldConfirmationRequest;namespace="http://sap.com/xi/ME/erpcon";aggregate=true;componentsOptionType=onlyNonBackflushed;includeTimebasedComponents=true;

  newDocType: Name of a standard workflow message that is created after aggregating the correlation messages.

  namespace: Namespace of a new document.

  aggregate: Defines whether components have to be aggregated as well (if *False*, then components are not aggregated and sent as a list of consumed components).

  componentsOptionType: Defines types of the components that must be included to *CorrelatedYieldConfirmationRequest* message. Possible values:

  - none
  - all
  - noneIfBackflushed
  - onlyNonBackflushed (default)

includeTimebasedComponents: Defines whether timebased components must be included to *CorrelatedYieldConfirmationRequest* message. Possible values:

- *true* (default)*:* time-based components are included in the yield confirmation.
- *false:* time-based components are not included in the yield confirmation.

14.7.5 Examples

14.7.5.1 Correlate Production Yield Confirmations on operation complete

1. In SAP MII access the transaction via:

Menu – *SAP ME ERP Integration* > *SAPMEINT Configuration* > *Workflow Configuration*

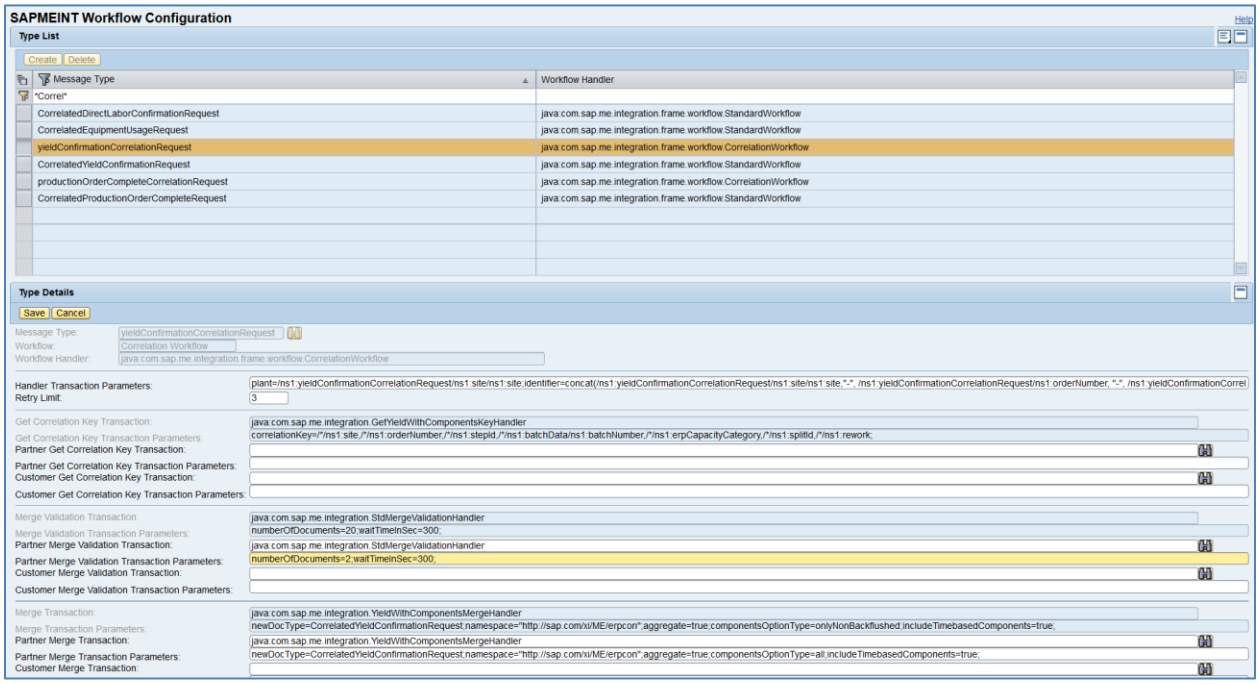
Locate the *yieldConfirmationCorrelationRequest* message and check its settings:

- *numberOfDocuments:* Number of documents that triggers correlation.
- *waitTimeInSec:* Timeout that triggers correlation.

To change these parameters:

- In the Type Details area, click *Modify*.
- Copy the default value of the *Merge Validation Transaction Parameters* field and paste it into the *Partner Merge Validation Transaction Parameters* field or into the *Customer Merge Validation Transaction Parameters* field.
- Change the value of the *Partner Merge Validation Transaction Parameters* field or the *Customer Merge Validation Transaction Parameters* field as needed:

  For example, numberOfDocuments=2;waitTimeInSec=300;
- Copy the value of the *Merge Validation Transaction* field and paste it into the *Partner Merge Validation Transaction* field or into the *Customer Merge Validation Transaction* field.
- Save your entries.

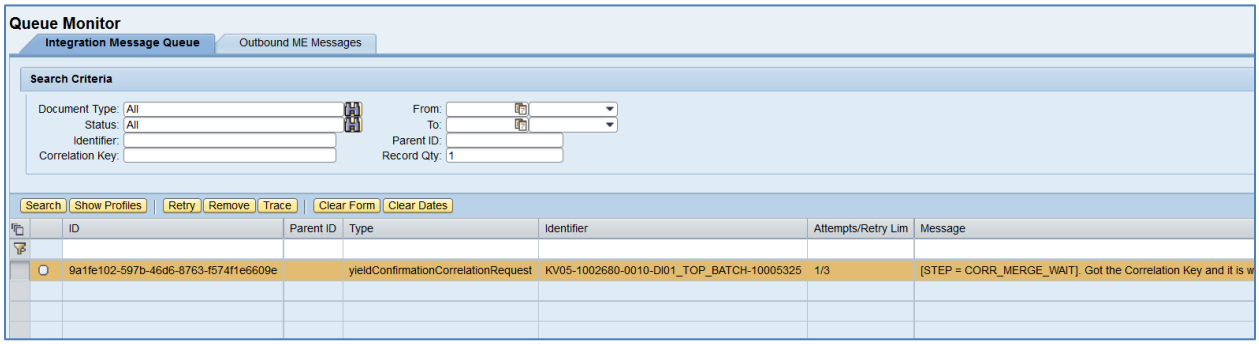


2. Create and transfer a production order with a BOM and a routing from SAP ERP to SAP ME (see Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) section of this guide).
3. Transfer goods from a warehouse location to a production location for use during the production process (goods movement type *311*) (see the Floor Stock Replenishment section of this guide).
4. In SAP ME, open the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.
5. Run the *Production Operator Dashboard*, start the SFC and assemble all the components. Complete SFC on the regular reporting step.
6. Verify the outbound messages were received in SAP MII:

   One correlation message appeared in the Queue Monitor.

   - *Type:* yieldConfirmationCorrelationRequest
   - *Identifier:* KV05-1002680-0010-DI01_TOP_BATCH-10005325
   - *Message:* [STEP = CORR_MERGE_WAIT]. Got the Correlation Key and it is waiting.
   - *Correlation Key:* ConfirmationYield:KV05:1002680:10:000118:::false
   - *Status:* IN_CORRELATION

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

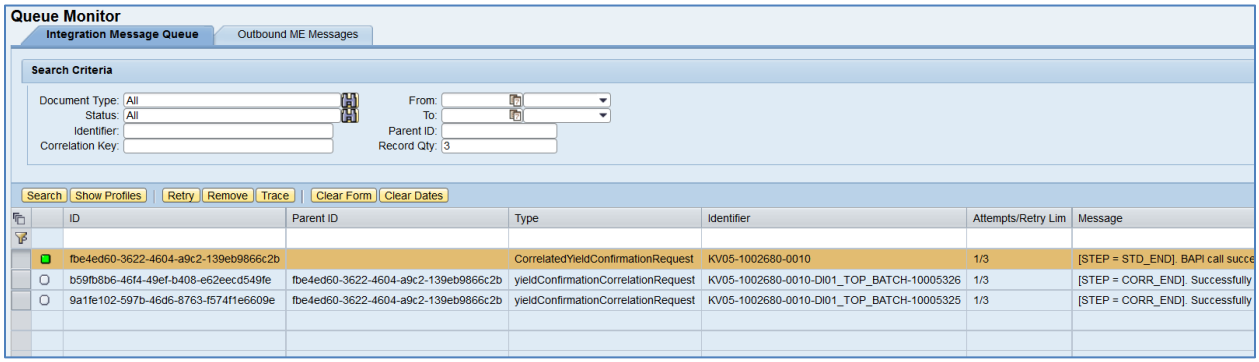


7. Return to the *Production Operator Dashboard*, start another SFC and assemble all the components. Complete SFC on the same regular reporting step.

8. Verify the outbound messages were received in SAP MII:

   One more correlation message appeared in the Queue Monitor. Because the *numberOfDocuments* parameter is met, these two correlation messages are aggregated into one standard *CorrelatedYieldConfirmationRequest* message.

   Status of both correlation messages changes to CORRELATED.



Select the *CorrelatedYieldConfirmationRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

<CO_MES_PRODORDCONF_CREATE_TT>

<INPUT>

<IS_TIMETICKETS>

<PLANT>KV05</PLANT>

<ORDERID>000001002680</ORDERID>

<OPERATION>0010</OPERATION>

<YIELD>2</YIELD>

<BATCH>000118</BATCH>

<FIN_CONF>1</FIN_CONF>

<CLEAR_RES>X</CLEAR_RES>

<CONF_ID>1415763c67:151864885c8:-69b2</CONF_ID>

```
            <CONF_QUAN_UNIT_ISO>EA</CONF_QUAN_UNIT_ISO>
        </IS_TIMETICKETS>
        <TABLES>
            <IT_GOODSMOVEMENTS>
                <item>
                    <MATERIAL>DI01_COMP_REG02</MATERIAL>
                    <PLANT>KV05</PLANT>
                    <STGE_LOC>0001</STGE_LOC>
                    <BATCH>0000000152</BATCH>
                    <MOVE_TYPE>261</MOVE_TYPE>
                    <ENTRY_QNT>2</ENTRY_QNT>
                    <ORDERID>000001002680</ORDERID>
                    <CONF_ID>1415763c67:151864885c8:-
                    69b2</CONF_ID>
                    <ACTIVITY>0010</ACTIVITY>
                </item>
            </IT_GOODSMOVEMENTS>
            <IT_GOODSMVT_SERIALNUMBER>
                <item>
                    <MATDOC_ITM>1</MATDOC_ITM>
                    <SERIALNO>10005314</SERIALNO>
                    <UII/>
                </item>
                <item>
                    <MATDOC_ITM>1</MATDOC_ITM>
                    <SERIALNO>10005315</SERIALNO>
                    <UII/>
                </item>
            </IT_GOODSMVT_SERIALNUMBER>
        </TABLES>
    </INPUT>
</CO_MES_PRODORDCONF_CREATE_TT>
```

14.8 Repeated Operation Confirmation

14.8.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a special notification to SAP ERP reporting that repeated confirmation has taken place in SAP ME. The notification is included in the production yield and scrap confirmation messages.

When you complete an SFC number at an operation that is marked as an ERP reporting step for the second or subsequent times, SAPMEINT sends a production yield confirmation with the *IV_2ND_TIME_CONFIRMATION* tag to notify SAP ERP about the rework but does not increase production yield quantity for that operation.

In SAP ERP, the completed quantity of the SFC number displays in the *Rework (ME)* field for this operation on the *Display Production Order Confirmation: Details* screen (transaction *CO14*).

14.8.2 Prerequisites

14.8.2.1 SAP ME

- You have imported the production order with BOM data from SAP ERP.
- You have released the production shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- You have received floor stock from SAP ERP.
- You have verified that routings contain at least one ERP reporting step.

  We recommend that the last routing operation is marked as the ERP reporting step to ensure that all consumed components are reported to SAP ERP.
- You have verified that collaboration links and directives are configured (see Configuring SAP ME Outbound Collaboration on the SAP Help Portal at http://help.sap.com).

14.8.2.2 SAP ERP

- You have verified that the control keys of the operations do not allow Auto Goods Receipt and that they allow confirmations (see Control Key on the SAP Help Portal at http://help.sap.com and SAP Note 1502536).
- You have verified that all work centers have the same activity types arranged in the same sequence.
- You have verified that operations are not marked as milestone operations.
- You have verified that operation sequence is not checked (see *Logistics* > *Production* > *Shop Floor Control* > *Operations* > *Confirmation* > *Define Confirmation Parameters* (transaction *OPK4*)).

14.8.3 Procedural Steps

1. Assemble a discrete component (by choosing *Add* in the *Assembly Point* or *As-Built Configuration* plugin, or when a component is assembled using the *Auto Assemble Component* hook point activity) or time-based component.
2. Complete an SFC number belonging to the production shop order at the ERP reporting step.

   Note: SAPMEINT sends the *yieldConfirmationRequest* message.
3. Complete the same SFC number at the same operation for the second time.

   Note: For example, you can complete the SFC at the same operation when:

   - An SFC number was dispositioned to the previous operation of a production routing for rework (see Disposition Functions on the SAP Help Portal at http://help.sap.com).
   - As SFC number was moved to the previous operation of a production routing from a disposition routing for rework (see Routing on the SAP Help Portal at http://help.sap.com).
   - An SFC number was moved to the previous operation of a production routing using the Place in Queue action in SFC Step Status (see SFC Step Status on the SAP Help Portal at http://help.sap.com).
   - An SFC number was moved to the previous operation of a production routing using Change Production (see Change Production on the SAP Help Portal at http://help.sap.com).
4. SAP ME triggers a collaboration event.
5. SAPMEINT sends a *yieldConfirmationRequest* confirmation message with goods movement and *IV_2ND_TIME_CONFIRMATION* tag.

   In SAP ERP, you can see the status of the production order on the *Display Production Order Confirmation: Details* screen (transaction *CO14*).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

14.8.4 Alternates / Best Practices and Tips

14.8.4.1 Repeated Yield Confirmation on Reporting Step

Yield confirmation message always contains actual step on which SFC number is completed for second or more time.

Example:

0010 – reporting step

0020 – reporting step

- SFC number is completed on step 0010.
- SFC number is started on step 0020 and NC code is logged, which moves SFC number back to step 0010 (yield confirmation message is not triggered from step 0020).

- SFC number is completed on step 0010: yield of main assembly is reported to step 0010.

14.8.4.2 Repeated Scrap on Reporting Step

Scrap Confirmation message is always sent irrespectively of whether step is marked as reporting or not.

When you scrap a quantity of an SFC number at an operation that has been already confirmed, SAPMEINT sends a scrap confirmation to SAP ERP from the next unconfirmed reporting step.

Note: The repeated scrap confirmation at the last reporting step is not supported.

Example:

0010 – reporting step

0020 – reporting step

- SFC number is completed on step 0010.
- SFC number is started on step 0020 and NC code is logged, which moves SFC number back to step 0010 (yield confirmation message is not triggered from step 0020).
- SFC number is scrapped on step 0010: scrap of main assembly is reported to step 0020.

14.8.4.3 Goods Movements on Reporting Step

When repeated confirmation is triggered in SAP ME, it contains the next operation ID (*ACTIVITY* tag *IT_GOODSMOVEMENTS* section) for the assembled components:

- Actual step ID on which components are assembled if this step is marked as a reporting step.

  Example:

  0010 – reporting step

  0020 – reporting step

  - SFC number is completed on step 0010.
  - Components are assembled on step 0020 and NC code is logged which moves SFC number back to step 0010 (yield confirmation message is not triggered from step 0020).
  - SFC number is completed on step 0010: yield of main assembly is reported to step 0010, consumed components are reported to step 0020.

- Next routing step that is marked as reporting step if components are assembled on non-reporting step

  Example:

  0010 – reporting step

  0020 – non-reporting step

  0030 – reporting step

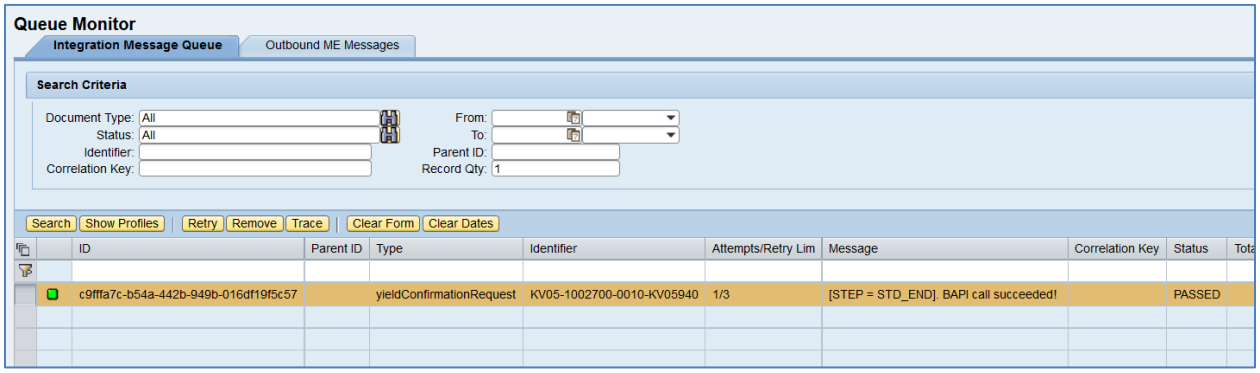
- SFC number is completed on step 0010.
- Components are assembled on step 0020 and NC code is logged which moves SFC number back to step 0010.
- SFC number is completed on step 0010: yield of main assembly is reported to step 0010, consumed components are reported to step 0030.

14.8.5 Examples

14.8.5.1 Repeated Yield Confirmation on the reporting step

1. Create and transfer production order with a BOM and a routing from SAP ERP to SAP ME (see Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) section of this guide).
2. Transfer goods from a warehouse location to a production location for use during the production process (goods movement type *311*) (see Floor Stock Replenishment section of this guide).
3. In SAP ME, open the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.
4. Run the *Production Operator Dashboard*, and start and complete SFC on the first step of the routing.
5. Start the SFC on the second step of the routing and assemble all the components. Log NC code with disposition on the first step of the routing (note that Yield Confirmation message is not sent).
6. Start and complete SFC on the first step of the routing.
7. Optional: Verify the outbound *yieldConfirmationRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *yieldConfirmationRequest*, click *Trace*, choose *Request* > *Content* and click *View*. The following data is reported to SAP ERP:

<CO_MES_PRODORDCONF_CREATE_TT>

<INPUT>

<IS_TIMETICKETS>

<PLANT>KV05</PLANT>
<ORDERID>000001002700</ORDERID>
<OPERATION>0010</OPERATION>
<YIELD>1</YIELD>
<BATCH/>
<FIN_CONF>1</FIN_CONF>
<CLEAR_RES>X</CLEAR_RES>
<CONF_ID>23-42a2cd4b:1518b8cb2b9:-60e9</CONF_ID>
<CONF_QUAN_UNIT_ISO>EA</CONF_QUAN_UNIT_ISO>
</IS_TIMETICKETS>
<IV_2ND_TIME_CONFIRMATION>X</IV_2ND_TIME_CONFIRMATION>
<TABLES>
<IT_GOODSMOVEMENTS>
<item>
<MATERIAL>DI01_COMP1</MATERIAL>
<PLANT>KV05</PLANT>
<STGE_LOC>0001</STGE_LOC>
<BATCH/>
<MOVE_TYPE>261</MOVE_TYPE>
<ENTRY_QNT>1</ENTRY_QNT>
<ORDERID>000001002700</ORDERID>
<CONF_ID>23-42a2cd4b:1518b8cb2b9:-60e9</CONF_ID>
<ACTIVITY>0020</ACTIVITY>
</item>
</IT_GOODSMOVEMENTS>
<IT_GOODSMVT_SERIALNUMBER/>
</TABLES>
</INPUT>
</CO_MES_PRODORDCONF_CREATE_TT>

8. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics > Production > Shop Floor Control > Confirmation > Display*

or transaction code – *CO14*

On the *Display Production Order Confirmation: Operation Overview* screen, verify value in the *Quantity* field. In the header, there is a total quantity that is planned for this operation. In each row, Confirmed quantity: Yield that was confirmed for this operation. For repeated confirmation this quantity will be equal to zero.

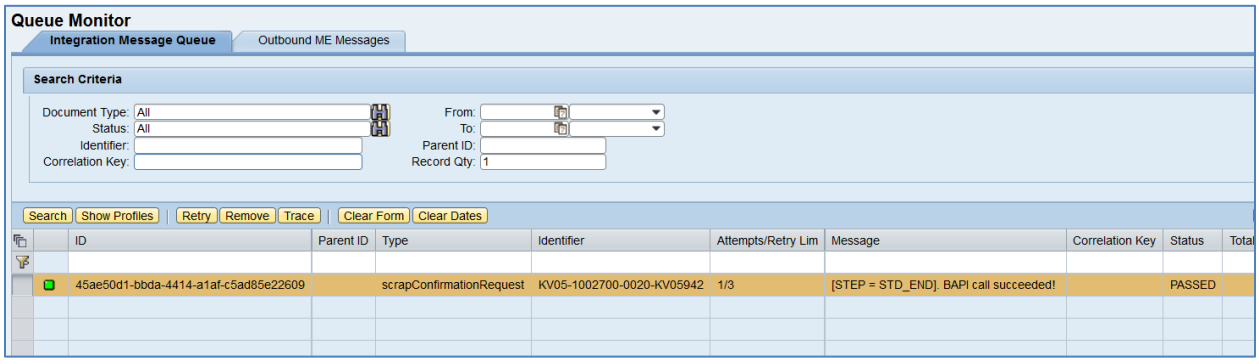
Select Confirmation row and click *Details* (*Shift+F2*) button. On the *Confirmation of Production Order Display: Details* screen, check the following information:

- *Yield:* Yield that was confirmed for the operation. If rework, yield = zero.
- *Rework (ME):* Rework quantity confirmed from SAP ME after an operation is repeated. Equals the quantity that has been reported.

14.8.5.2 Scrapping on already Confirmed Reporting Step

1. Create and transfer a production order with BOM and a routing from SAP ERP to SAP ME (see Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) section of this guide).
2. Transfer goods from a warehouse location to a production location for use during the production process (goods movement type *311*) (see Floor Stock Replenishment section of this guide).
3. In SAP ME, open the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.
4. Run the *Production Operator Dashboard*, and start and complete the SFC on the first step of the routing.
5. Start the SFC on the second step of the routing and assemble all the components. Log an NC code with a disposition on the first step of the routing (note that Yield Confirmation message is not sent).
6. Start the SFC on the first step of the routing and log NC code with disposition function SCRAP (or use SFC Scrap/Delete activity).
7. Optional: Verify the outbound *scrapConfirmationRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *scrapConfirmationRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

<CO_MES_PRODORDCONF_CREATE_TT>

```
<INPUT>
    <IS_TIMETICKETS>
      <PLANT>KV05</PLANT>
      <ORDERID>000001002700</ORDERID>
      <OPERATION>0020</OPERATION>
      <SCRAP>1</SCRAP>
      <BATCH/>
      <FIN_CONF>1</FIN_CONF>
      <CLEAR_RES>X</CLEAR_RES>
      <CONF_ID>30-42a2cd4b:1518b8cb2b9:-574b</CONF_ID>
      <CONF_QUAN_UNIT_ISO>EA</CONF_QUAN_UNIT_ISO>
    </IS_TIMETICKETS>
    <TABLES>
      <IT_GOODSMOVEMENTS>
          <item>
              <MATERIAL>DI01_COMP1</MATERIAL>
              <PLANT>KV05</PLANT>
              <STGE_LOC>0001</STGE_LOC>
              <BATCH/>
              <MOVE_TYPE>261</MOVE_TYPE>
              <ENTRY_QNT>1</ENTRY_QNT>
              <ORDERID>000001002700</ORDERID>
              <CONF_ID>30-42a2cd4b:1518b8cb2b9:-574b</CONF_ID>
              <ACTIVITY>0020</ACTIVITY>
          </item>
      </IT_GOODSMOVEMENTS>
    </TABLES>
</INPUT>
</CO_MES_PRODORDCONF_CREATE_TT>
```

8. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics > Production > Shop Floor Control > Confirmation > Display*

or transaction code – *CO14*

On the *Display Production Order Confirmation: Operation Overview* screen, verify that one confirmation appeared at the second operation with scrap quantity = 1.

Select Scrap Confirmation row and click the *Details* (*Shift+F2*) button. On the *Confirmation of Production Order Display: Details* screen, verify the following information:

- *Scrap:* Scrap that was confirmed for this operation.
- *Rework (ME):* Rework quantity confirmed from SAP ME after an operation is repeated. Set to zero since scrap is always confirmed at the next unconfirmed step.

14.9 Production Order Complete

14.9.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a production order complete confirmation message to SAP ERP.

The message is triggered when one of the following occurs in SAP ME:

- All SFC numbers belonging to a production shop order are completed at the operation marked as the last ERP reporting step (the *Is Last Reporting Step* checkbox in *Routing Step Properties*) and the status of the order changes to Done.
- Status of the production shop order changes to Closed.

14.9.2 Prerequisites

14.9.2.1 SAP ME

- You have imported the production order data from SAP ERP.
- You have released the production shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- You have verified that routings contain at least one ERP reporting step.

  We recommend that the last routing operation is marked as the ERP reporting step to ensure that all consumed components are reported to SAP ERP.
- You have verified that collaboration links and directives are configured (see Configuring SAP ME Outbound Collaboration on the SAP Help Portal at http://help.sap.com).

14.9.2.2 SAP ERP

- You have verified that the control keys of the operations do not allow Auto Goods Receipt and that they allow confirmations (see Control Key on the SAP Help Portal at http://help.sap.com and SAP Note 1502536).
- You have verified that all work centers have the same activity types arranged in the same sequence.
- You have verified that operations are not marked as milestone operations.

- You have verified that operation sequence is not checked (see *Logistics* > *Production* > *Shop Floor Control* > *Operations* > *Confirmation* > *Define Confirmation Parameters* (transaction *OPK4*)).
- To view scheduling information in SAP Shop Floor Dispatching and Monitoring Tool, you have configured SAP ERP to communicate with SFDM. See also: Transfer of Production Order with SFDM Scheduling Information on the SAP Help Portal at http://help.sap.com.

14.9.3 Procedural Steps

1. Change the status of the production shop order to *Done* (this can be done manually or by completing all SFC numbers belonging to the order at the operation marked as the last ERP reporting step) or *Closed*.
2. SAP ME triggers a collaboration event.
3. SAPMEINT sends the *productionOrderCompleteRequest* message to update the processing status of the production order in SAP ERP.

   In SAP ERP, you can see the status of the production order on the *Display Production Order Confirmation: Details* screen (transaction *CO14*).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide

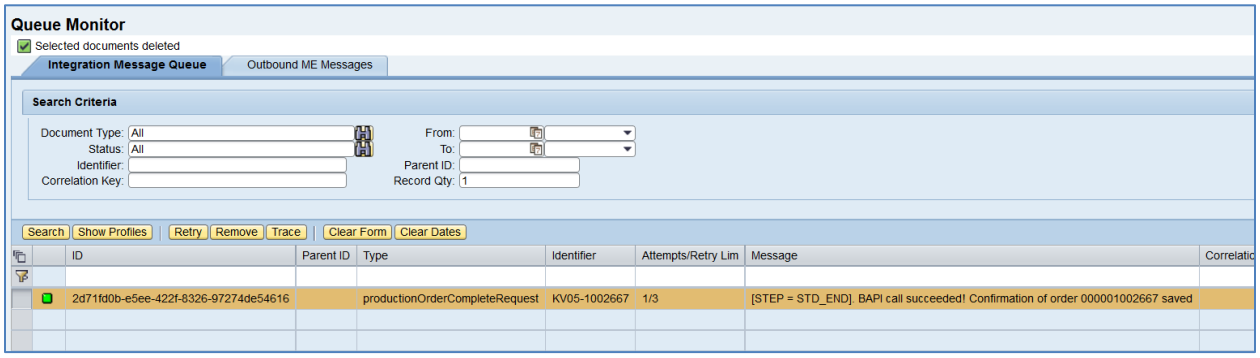
14.9.4 Alternates / Best Practices and Tips

14.9.5 Examples

14.9.5.1 Change Production Order Status to Done

1. In SAP ME, open the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.
2. Run the *Production Operator Dashboard*, and start and complete all SFC numbers belonging to the production shop order on the last ERP reporting step (*Is Last Reporting Step* checkbox is marked in *Step Properties*).
3. Optional: Verify the outbound *productionOrderCompleteRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *productionOrderCompleteRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

<BAPI_PRODORDCONF_CREATE_TT>
<TABLES>
<TIMETICKETS>
<item>
<PLANT>KV05</PLANT>
<ORDERID>000001002665</ORDERID>
<OPERATION>0010</OPERATION>
<YIELD>0</YIELD>
<FIN_CONF>X</FIN_CONF>
<CLEAR_RES>X</CLEAR_RES>
</item>
<item>
<PLANT>KV05</PLANT>
<ORDERID>000001002665</ORDERID>
<OPERATION>0020</OPERATION>
<YIELD>0</YIELD>
<FIN_CONF>X</FIN_CONF>
<CLEAR_RES>X</CLEAR_RES>
</item>
</TIMETICKETS>
</TABLES>
</BAPI_PRODORDCONF_CREATE_TT>

4. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Production* > *Shop Floor Control* > *Confirmation* > *Display*

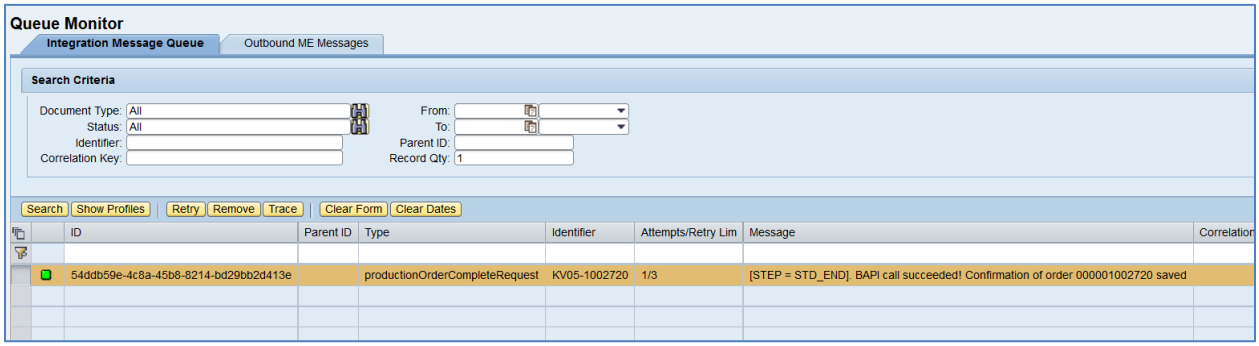
or transaction code – *CO14*

On the *Display Production Order Confirmation: Operation Overview* screen, each confirmation is present in a separate row. The last confirmation row with zero quantity indicates that the *productionOrderCompleteRequest* message was received from SAP ME.

The status of the order displays as *Confirmed* (*CNF*).

14.9.5.2 Changing Production Order Status to Closed

1. In SAP ME, open the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.
2. Run *Shop Order Maintenance* and change the status of the order to Closed. Save changes.
3. Optional: Verify the outbound *productionOrderCompleteRequest* message was received in SAP MII using *Queue Monitor*.



Select the *productionOrderCompleteRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

```
<BAPI_PRODORDCONF_CREATE_TT>
    <TABLES>
        <TIMETICKETS>
          <item>
                <PLANT>KV05</PLANT>
                <ORDERID>000001002720</ORDERID>
                <OPERATION>0010</OPERATION>
                <YIELD>0</YIELD>
                <FIN_CONF>X</FIN_CONF>
                <CLEAR_RES>X</CLEAR_RES>
          </item>
          <item>
                <PLANT>KV05</PLANT>
                <ORDERID>000001002720</ORDERID>
                <OPERATION>0020</OPERATION>
                <YIELD>0</YIELD>
                <FIN_CONF>X</FIN_CONF>
                <CLEAR_RES>X</CLEAR_RES>
          </item>
```

</TIMETICKETS>

</TABLES>

</BAPI_PRODORDCONF_CREATE_TT>

4. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Production* > *Shop Floor Control* > *Confirmation* > *Display*

or transaction code – *CO14*

On the *Display Production Order Confirmation: Operation Overview* screen, each confirmation is present in a separate row. Last confirmation row with zero quantity means that *productionOrderCompleteRequest* message was received from SAP ME.

Status of the order changes to *Confirmed* (*CNF*).

14.10 Transferring Batch and Batch Characteristic Data

14.10.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer to SAP ERP batch and batch characteristic information for an SFC number that has been collected in SAP ME.

For more information, see Transfer of Batch and Batch Characteristic Data and Transfer of Production Order with Batch Number on the SAP Help Portal at http://help.sap.com.

- Batch Management is integrated in all applications in SAP ERP and is mainly used for defect tracing, callback activities, and regression requirements.
- SAP ERP is the destination system for the batch and batch characteristic information.
- SAP ME is the system of record for the data collections that are sent to SAP ERP batch and batch characteristics with assigned values.
- As a member of a shop order, each SFC number must have only one ERP Group (see Data Collection Maintenance on the SAP Help Portal at http://help.sap.com). If multiple ERP groups are incorrectly collected for a single SFC number, the system sends only the first one found.

14.10.2 Prerequisites

14.10.2.1 SAP ME

- In *Data Collection Maintenance*, you have created a DC group specified as an *ERP Group*, using the following naming conventions:
  - The DC group name must match the *Classification* name that is defined in SAP ERP.
  - One data parameter in the DC group is named *BATCH_NUMBER*. The other data parameters within this DC group must match the batch characteristic names in SAP ERP.
- You have created an attachment for this DC group.

- You have received a production order from SAP ERP (see Transfer of Production Order on the SAP Help Portal at http://help.sap.com).
- You have released this production order.

14.10.2.2 SAP ERP

- You have activated Batch Management.
- You have created batch classes and characteristics.
- You have assigned batch classes to materials that are designated as batch-managed items.

14.10.3Procedural Steps

1. Enter a value for the BATCH_NUMBER data parameter and for batch characteristics for the planned material (SFC number).
2. Complete this SFC number at the last ERP reporting step.
3. SAP ME triggers a collaboration action.
4. SAPMEINT sends a production yield confirmation containing the batch number and associated batch characteristic values to SAP ERP to create the batch master and update the batch where-used list (see Transfer of Production Yield Confirmation on the SAP Help Portal at http://help.sap.com).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

14.10.4Alternates / Best Practices and Tips

14.10.4.1 Using a Production Shop Order Batch Number

If a BATCH_NUMBER data parameter has not been collected for a planned material, then SAPMEINT will send a production shop order batch number. The production shop order batch number can be received from SAP ERP or be generated in SAP ME by the *CREATE_BATCH* hook and available in Shop Order Maintenance.

1. Create a batch-managed material.
2. Create a production order with batch number.
3. Complete an SFC number belonging to the production shop order at the last ERP reporting step (the *Is Last Reporting Step* checkbox in *Routing Step Properties*).
4. SAP ME triggers a collaboration action.
5. SAPMEINT sends a production yield confirmation containing the batch number value to SAP ERP to create the batch master and update the batch where-used list (see Transfer of Production Yield Confirmation on the SAP Help Portal at http://help.sap.com).

14.10.4.2 ERP Settings to Receive Batch Characteristics

1. In SAP ERP, access the transaction using:

In Customizing for *Materials Management > Inventory Management and Physical Inventory > Movement Types > Copy, Change Movement Types*

or transaction code – *OMJJ*

2. On the *Field Selection* screen, select *Movement type* item.
3. On the *Determine Work Area: Entry* screen, enter *101* Movement type.
4. On the *Change View "Movement Type": Details* screen, enter *1* to *Classif.batches* field.

14.10.5Examples

14.10.5.1 Transferring Batch and Batch Characteristic Data

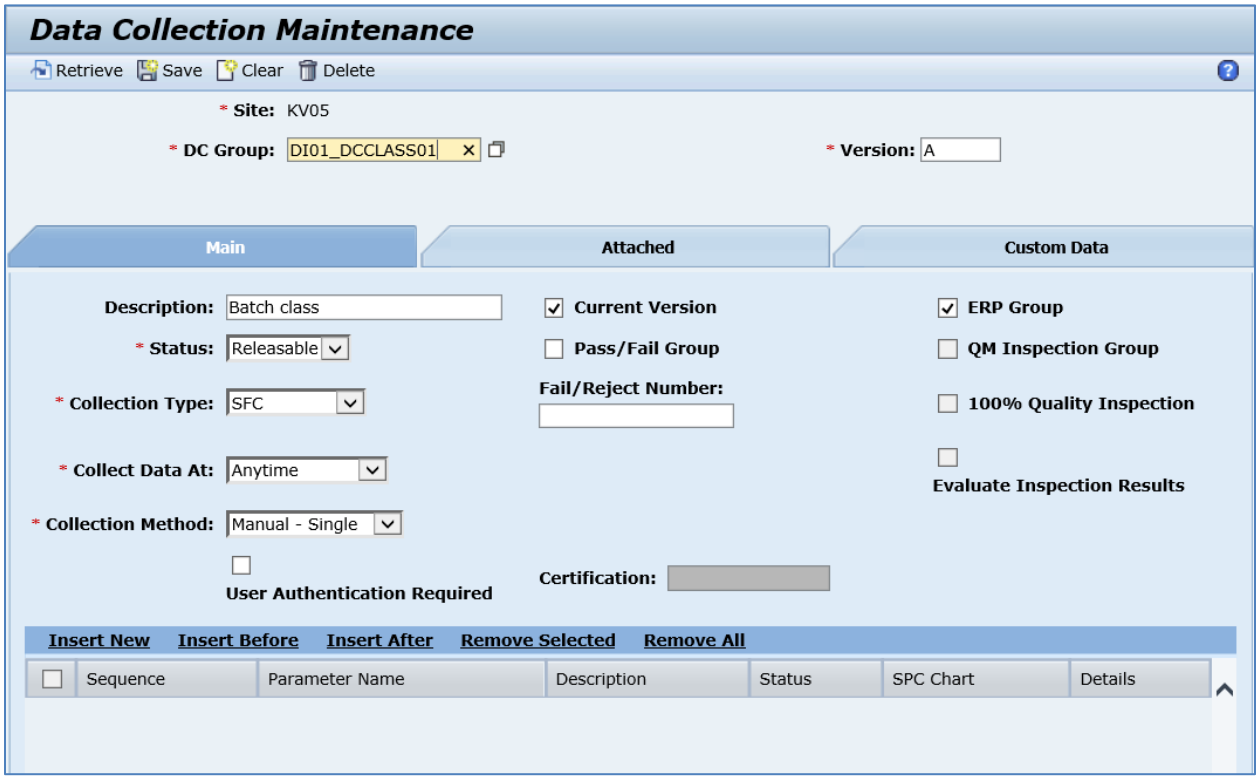
1. In SAP ERP, create Class of class type *023* (*Batch*).

Note that characteristics must have the following settings:

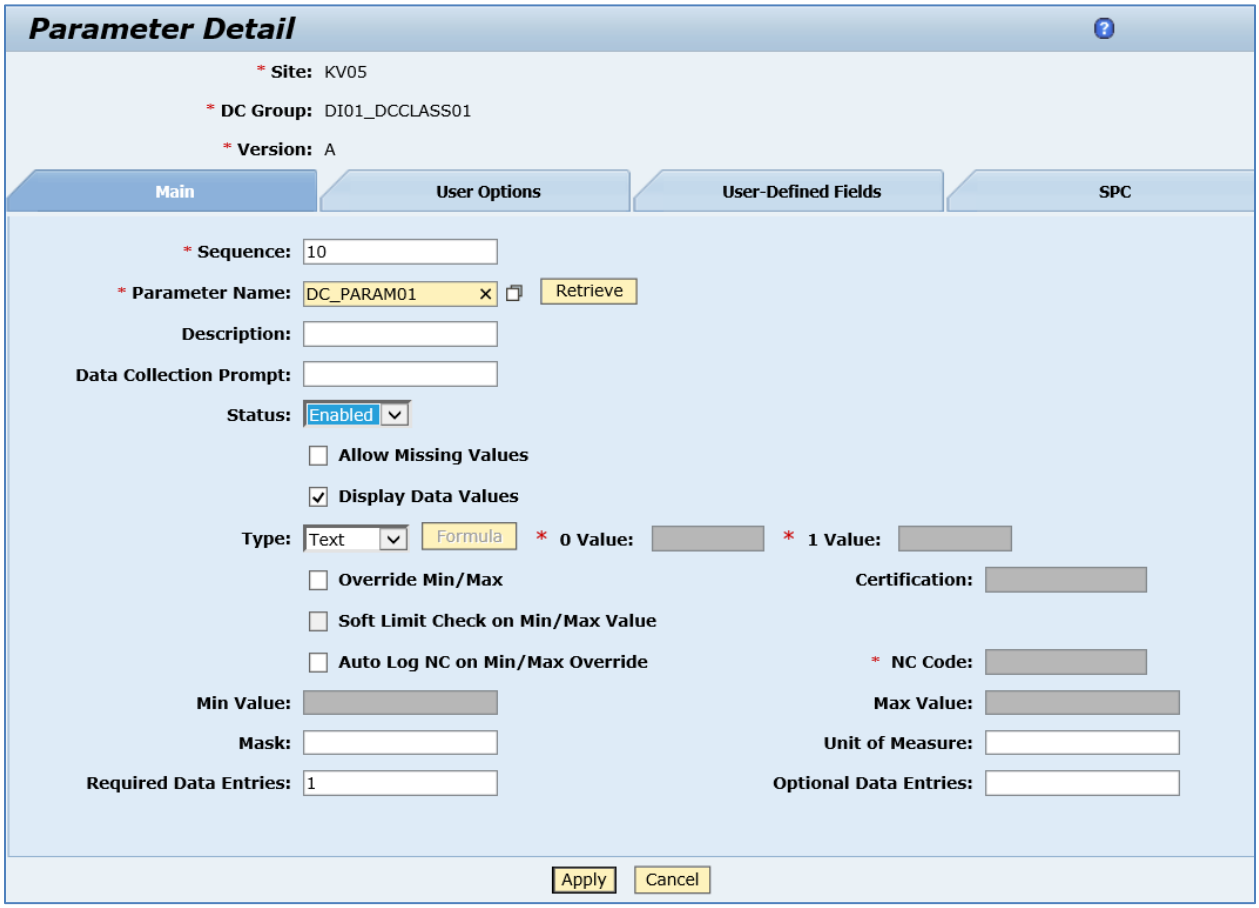
- *Status: Released*.
- *Data Type: Character Format* (SAP ME only accepts values from characteristics of the *Character Format* type, so that values from other data type fields are not saved when the material master is transferred to SAP ME).
- *Number of Chars: 30* (cannot exceed 30 characters).
- *Value Assignment: Single-value*.

2. Create a Batch Managed Material (see Configuring Batch Managed Material section of this guide).
3. Attach Classification Data to the Material.

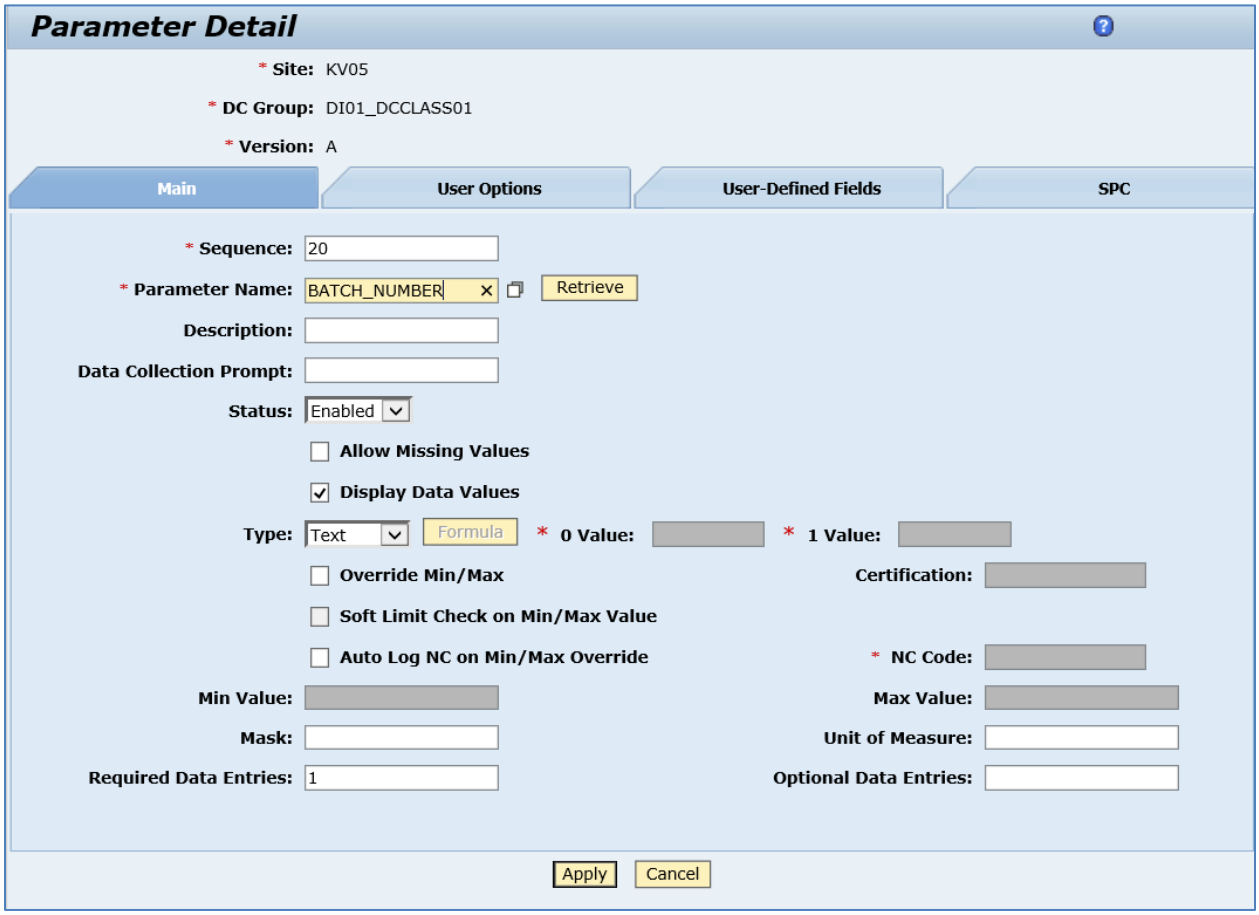
   Note: Use Class Type *023*.
4. In SAP ME, run *Data Collection Maintenance*. On the *Main* tab, enter the following:
   - *DC Group:* Must exactly match to Class name previously created.
   - *Version:* A.
   - *Description:* Provide a description.
   - *Current Version:* Selected.
   - *ERP Group:* Selected.
   - *Status:* Releasable.
   - *Collection Type:* SFC.
   - *Collect Data At:* Anytime.
   - *Collection Method:* Manual – Single.
   - Leave all other fields with their default values.



5. Click *Insert New*.
6. On the *Parameter Detail* screen, enter the following:
   - *Sequence:* Provide a unique sequence for this parameter (For example, 10).
   - *Parameter Name:* Must exactly match the Characteristic name created previously.
   - *Type:* Text.
   - Leave all other fields with their default values.

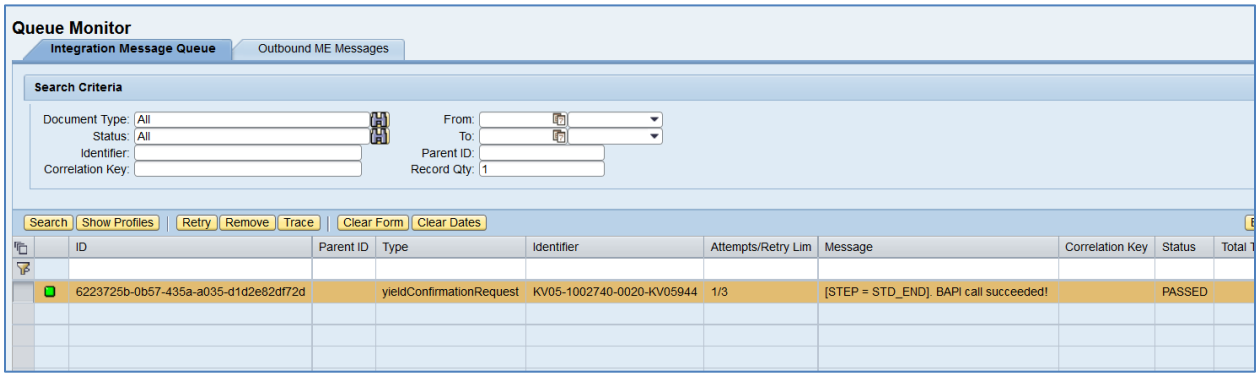


7. Click *Apply*.
8. Click *Insert New*.
9. On the *Parameter Detail* screen, enter the following:
   - *Sequence:* Provide a unique sequence for this parameter (For example, 20).
   - *Parameter Name:* Must have name BATCH_NUMBER.
   - *Type:* Text.
   - Leave all other fields with their default values.



10. Click *Apply*.
11. Open the *Attached* tab and attach DC Group to your material and a step on the routing (usually the Last Reporting Step).
12. Click *Save*.
13. In SAP ME, open the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.
14. Run the *Production Operator Dashboard*, and start and complete the SFC on the regular reporting steps until it moves to the last reporting step.
15. Start the SFC on the last reporting step. Click the *DC Collect* button.
16. Enter BATCH_NUMBER value and batch characteristics if they exist. Save.
17. Complete the SFC.
18. Optional: Verify the outbound *yieldConfirmationRequest* message was received in SAP MII using *Queue Monitor*.

    For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *yieldConfirmationRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

```
<CO_MES_PRODORDCONF_CREATE_TT>
    <INPUT>
        <IS_TIMETICKETS>
          <PLANT>KV05</PLANT>
          <ORDERID>000001002740</ORDERID>
          <OPERATION>0020</OPERATION>
          <YIELD>1</YIELD>
          <BATCH>12112015-01</BATCH>
          <FIN_CONF>1</FIN_CONF>
          <CLEAR_RES>X</CLEAR_RES>
          <CONF_ID>6-42a2cd4b:1518b8cb2b9:-186d</CONF_ID>
          <CONF_QUAN_UNIT_ISO>EA</CONF_QUAN_UNIT_ISO>
        </IS_TIMETICKETS>
        <TABLES>
          <IT_CHARACTERISTICS_BATCH>
                <item>
                      <CHAR_NAME>DC_PARAM01</CHAR_NAME>
                      <CHAR_VALUE>0010</CHAR_VALUE>
                </item>
          </IT_CHARACTERISTICS_BATCH>
          <IT_GOODSMOVEMENTS>
                <item>
                      <MATERIAL>DI01_TOP06</MATERIAL>
                      <PLANT>KV05</PLANT>
```

```
                    <STGE_LOC>0001</STGE_LOC>
                    <BATCH>12112015</BATCH>
                    <MOVE_TYPE>101</MOVE_TYPE>
                    <ENTRY_QNT>1</ENTRY_QNT>
                    <ENTRY_UOM_ISO>EA</ENTRY_UOM_ISO>
                    <MVT_IND>F</MVT_IND>
                    <ORDERID>000001002740</ORDERID>
                    <CONF_ID>6-42a2cd4b:1518b8cb2b9:-186d</CONF_ID>
                </item>
            </IT_GOODSMOVEMENTS>
            <IT_LINK_GM_CHAR_BATCH>
                <item>
                    <INDEX_GOODSMVT>1</INDEX_GOODSMVT>
                    <INDEX_CHAR_BATCH>1</INDEX_CHAR_BATCH>
                </item>
            </IT_LINK_GM_CHAR_BATCH>
            <IT_GOODSMVT_SERIALNUMBER>
                <item>
                    <MATDOC_ITM>1</MATDOC_ITM>
                    <SERIALNO>KV05944</SERIALNO>
                    <UII/>
                </item>
            </IT_GOODSMVT_SERIALNUMBER>
        </TABLES>
    </INPUT>
</CO_MES_PRODORDCONF_CREATE_TT>
```

19. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Materials Management* > *Material Master* > *Batch* > *Display*

or transaction code – *MSC3N*

On the *Display Batch* screen, *Classification* tab, check the batch characteristic value transferred from SAP ME.

15 Planned Order Status Confirmation

15.1 Overview

This function lets you transfer a confirmation message from SAP ME to SAP ERP.

15.1.1 Business Purpose

Repetitive manufacturing in SAP ERP supports confirmations of the finished product at the time of goods receipt or at reporting points. Since SAP ME does not know the reporting points, an integrated scenario supports only confirmations of the finished product at the time of goods receipt.

Planned order confirmation is an integral part of repetitive manufacturing. It is linked directly to product cost controlling through the product cost collector.

In final or partial confirmation, the following processes occur in SAP ERP:

- Posting goods receipts, quantities, batch number and characteristics for finished products
- Posting goods issues for the components
- Reducing planned orders or run schedule quantities
- Posting production costs to product cost collector

SAP ME is the system of record for WIP.

SAP ME totals the quantities of shop orders with identical plant, material, production versions, and batches that are packed in a container when it is closed and sends this consolidated information to SAP ERP.

Nested routings are not supported when the *Done and Close* button in SAP ME *Pack/Unpack* is used.

SAPMEINT sends confirmations to SAP ERP only for closed containers of the Material pack level. Containers of the Container or Process Lot pack level are not processed (see Container Maintenance on the SAP Help Portal at http://help.sap.com).

SAP ME does not support the concept of trigger points.

15.2 Yield Backflushed Confirmation on Operation Complete

15.2.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a confirmation message from SAP ME to SAP ERP. The message is triggered when an SFC number belonging to a repetitive shop order originally created in SAP ERP is completed at an operation that is marked as the last ERP reporting step (the *Is Last Reporting Step* checkbox in Routing Step Properties on the SAP Help Portal at http://help.sap.com).

The function also reports batch numbers of time-based components consumed in SAP ME (see Time-Based Genealogy on the SAP Help Portal at http://help.sap.com).

15.2.2 Prerequisites

15.2.2.1 SAP ME

- You have imported the planned order data from SAP ERP (see Configuring a Planned Order section of this guide).
- You have released the repetitive shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- You have verified that the last ERP reporting step is defined and other custom data fields are populated (see Routing Step Properties on the SAP Help Portal at http://help.sap.com).

15.2.2.2 SAP ERP

- You have created the following master data:
  - A material with a production version.
  - In the material master, you select the *Repetitive Manufacturing* checkbox and choose a repetitive manufacturing profile that allows make-to-stock production.
  - A product cost collector (for make-to-stock production) (See *Logistics* > *Production* > *Repetitive Manufacturing* > *Master Data* > *Product Cost Collector* > *Process Product Cost Collector*)

  Recommendation: Set up the REM profile as described in Maintaining Repetitive Manufacturing (REM) Profile for the Planned Order Integration (see Other Customizing Activities in SAP ERP on the SAP Help Portal at http://help.sap.com).

15.2.3 Procedural Steps

1. Complete the SFC number for the repetitive shop order at the last ERP reporting step.
2. SAP ME triggers a collaboration action.
3. SAPMEINT sends the *yieldBackflushingRequest* message to carry out a confirmation for make-to-stock or make-to-order production in SAP ERP.

   The following information is sent to SAP ERP to report the quantity of produced finished goods:

   - *Material:* Number of the material produced with this order.
   - *Plant:* SAP ME Site.
   - *Planned Order:* Repetitive shop order number.
   - *Production Version:* Key that determines the various production techniques according to which a material can be manufactured.
   - *Backflushed Quantity:* Quantity completed.
   - *Components:* Assembled components.

Note: By default components are not included in the *yieldBackflushingRequest*. This section of XSLT is commented out and must be enabled manually if including the assembled components information in the *yieldBackflushingRequest* is required.

In SAP ERP, you can see the new material document on the *Material Document List* screen (transaction *MB51*).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

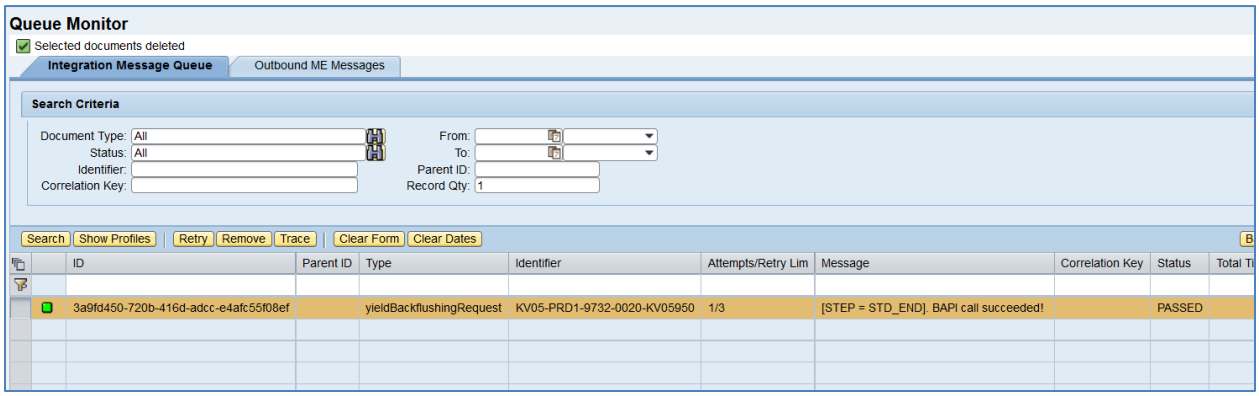
15.2.4 Alternates / Best Practices and Tips

15.2.5 Examples

15.2.5.1 Yield Backflushing on the Last Reporting Step

1. In SAP ME, open the *Shop Order Release* activity and release the *repetitive shop order* received from SAP ERP.
2. Run the *Production Operator Dashboard*, and start and complete the SFC on the last reporting step (*Is Last Reporting Step* checkbox is selected in *Step Properties*).
3. Optional: Verify the outbound *yieldBackflushingRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *yieldBackflushingRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

<BAPI_REPMANCONF1_CREATE_MTS>

<INPUT>

<BFLUSHDATAGEN>

<MATERIALNR>DI01_TOPPLAN_07**</MATERIALNR>**

<PRODPLANT>KV05**</PRODPLANT>**

<PLANPLANT>KV05**</PLANPLANT>**

<PRODVERSION>PRD1**</PRODVERSION>**

<BATCH/>

<BACKFLQUANT>1</BACKFLQUANT>

<POSTDATE>2015-12-14T14:50:04.669Z</POSTDATE>

<DOCDATE>2015-12-14T14:50:04.669Z</DOCDATE>

<PLANORDER>0000009732</PLANORDER>

</BFLUSHDATAGEN>

<BFLUSHFLAGS>

<BCKFLTYPE>01</BCKFLTYPE>

</BFLUSHFLAGS>

</INPUT>

<TABLES/>

</BAPI_REPMANCONF1_CREATE_MTS>

4. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics > Production > Repetitive Manufacturing > Environment > Material Document for Material*

or transaction code – *MB51*

Check reported quantity (131=Done SFCs from a Planned Order).

15.2.6 Missing / Not Supported

SAPMEINT supports confirmations only on the finished item level and not on other reporting steps.

15.3 Yield Backflushed Confirmation on Container Close

15.3.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a confirmation message from SAP ME to SAP ERP. The message is triggered when a top level SFC number of the repetitive shop order was packed into a container and the container has been closed using Pack/Unpack (see Container on the SAP Help Portal at http://help.sap.com).

The function also reports batch numbers of time-based components consumed in SAP ME (see Time-Based Genealogy on the SAP Help Portal at http://help.sap.com).

15.3.2 Prerequisites

15.3.2.1 SAP ME

- You have imported the planned order data from SAP ERP (see Configuring Planned Order section of this guide).
- You have released the repetitive shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).

- You have verified that the last ERP reporting step is defined and other custom data fields are populated (see Routing Step Properties on the SAP Help Portal at http://help.sap.com).
- For container close, you have created Material pack level containers in *Container Maintenance* and set the following activity rules for PK020 (Pack/Unpack) in *Activity Maintenance* (see Pack/Unpack on the SAP Help Portal at http://help.sap.com):
  - ERP_ITEM_FILTER
  - ERP_OPERATION
  - ERP_REPORTING_STEP
  - ERP_SEQUENCE

    Note that SAPMEINT supports only SAP ERP routings with the sequence of zero (ERP_SEQUENCE=0).
  - You have verified that collaboration links and directives are configured (see Configuring SAP ME Outbound Collaboration on the SAP Help Portal at http://help.sap.com).

    To send a yield backflushing on container close, you have assigned the ERP_CONTAINER_CLOSED_BACKFLUSHING directive to the COLLABORATION_ERP_CONTAINER_CLOSED_BCKFL trigger action in *Collaboration Link Maintenance*.

15.3.2.2 SAP ERP

- You have created the following master data:
  - A material with a production version.
  - In the material master, you select the *Repetitive Manufacturing* checkbox and choose a repetitive manufacturing profile that allows make-to-stock production.
  - A product cost collector (for make-to-stock production) (See *Logistics* > *Production* > *Repetitive Manufacturing* > *Master Data* > *Product Cost Collector* > *Process Product Cost Collector*)

Recommendation: Set up the REM profile as described in Maintaining Repetitive Manufacturing (REM) Profile for the Planned Order Integration (see Other Customizing Activities in SAP ERP on the SAP Help Portal at http://help.sap.com).

15.3.3 Procedural Steps

1. Pack a top level SFC number of the repetitive shop order into a container and close it using Pack/Unpack.
2. SAP ME triggers a collaboration event.
3. SAPMEINT sends the *yieldBackflushingRequest* message to carry out a confirmation for make-to-stock or make-to-order production in SAP ERP.

   In SAP ERP, you can see the status on the *Material Document List* screen (transaction *MB51*).

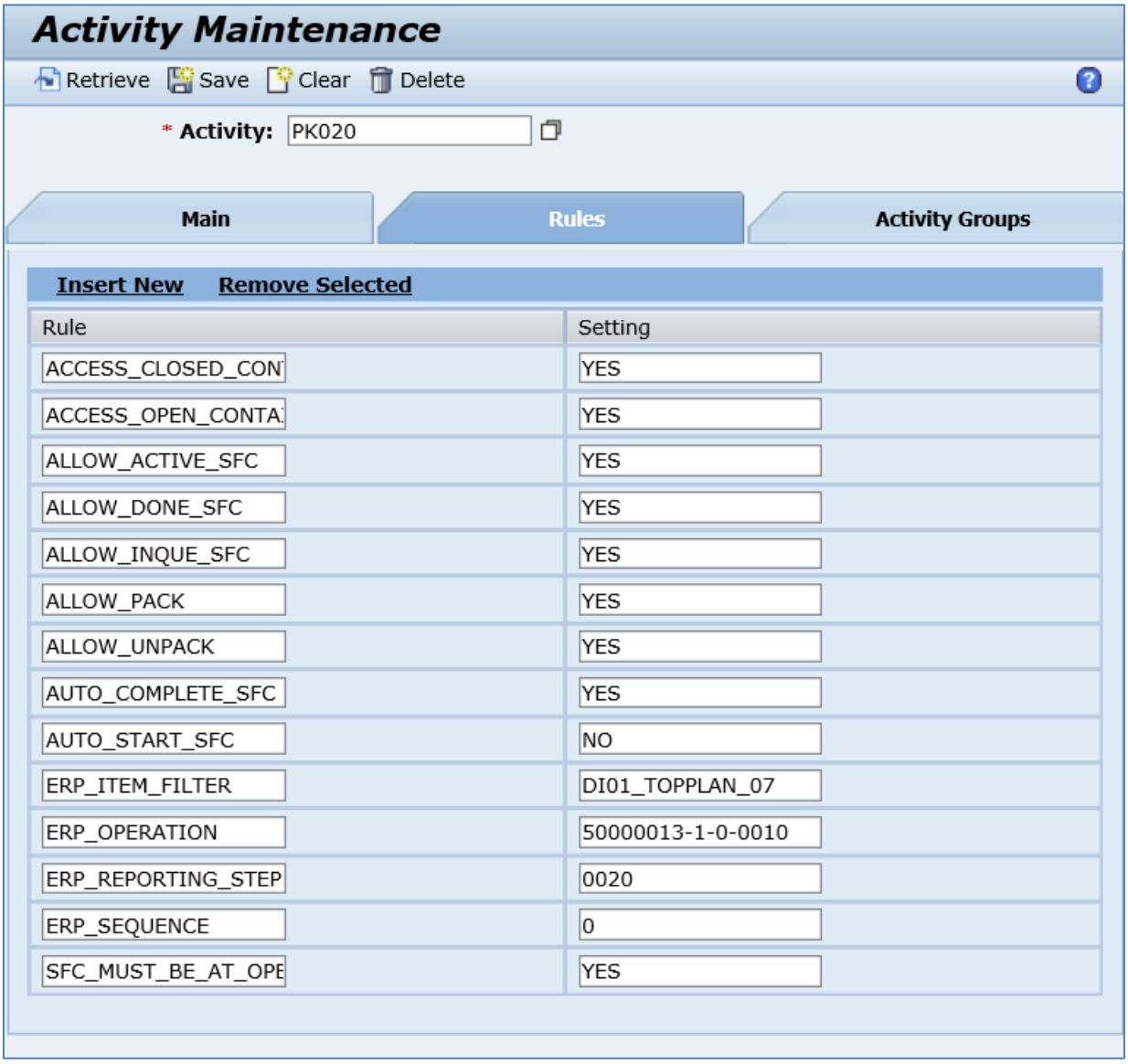
For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

15.3.4 Alternates / Best Practices and Tips

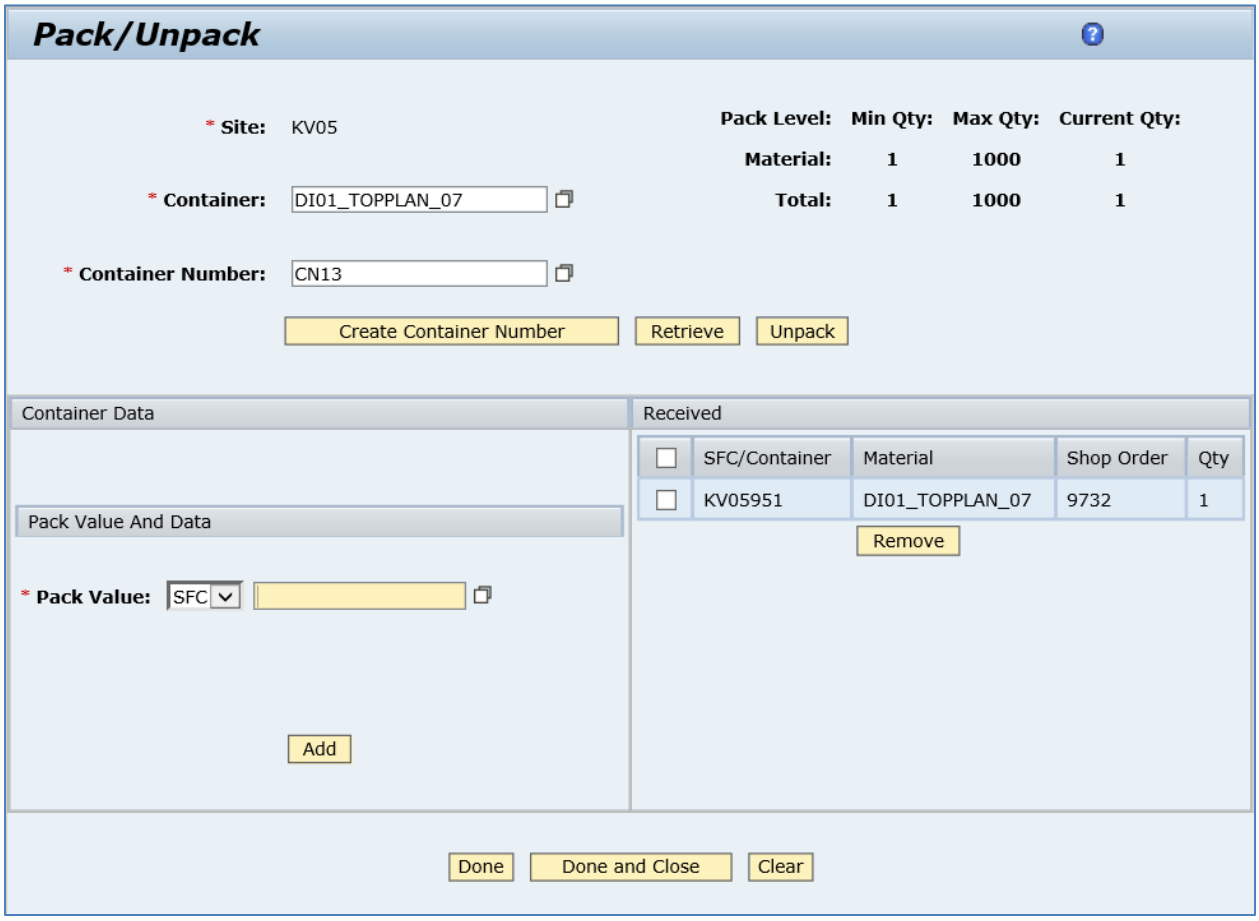
15.3.5 Examples

15.3.5.1 Transfer Yield Backflushing Confirmation on container close

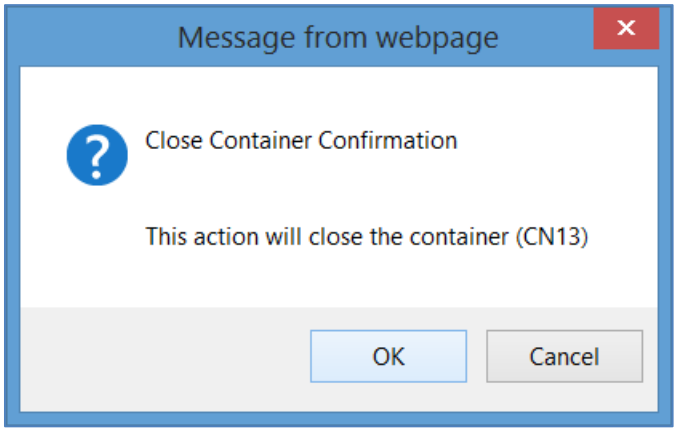
1. In SAP ME, run Activity Maintenance and retrieve PK020 activity. Enter the following:
   - *ERP_ITEM_FILTER:* Material name (* can be used as well).
   - *ERP_OPERATION:* Operation name used in SAP ME. For example, ASSY (the operation where you perform assembly).
   - *ERP_REPORTING_STEP:* Reporting Step (can be found in *Step Properties* in *Routing Maintenance*). For example, 0010,0020 (use your actual reporting step values).
   - *ERP_SEQUENCE:* Key that identifies a sequence of operations within a routing. Leave blank or set to 0.



2. In SAP ME, run the *Pack/Unpack* activity. Add the SFC number to the container.

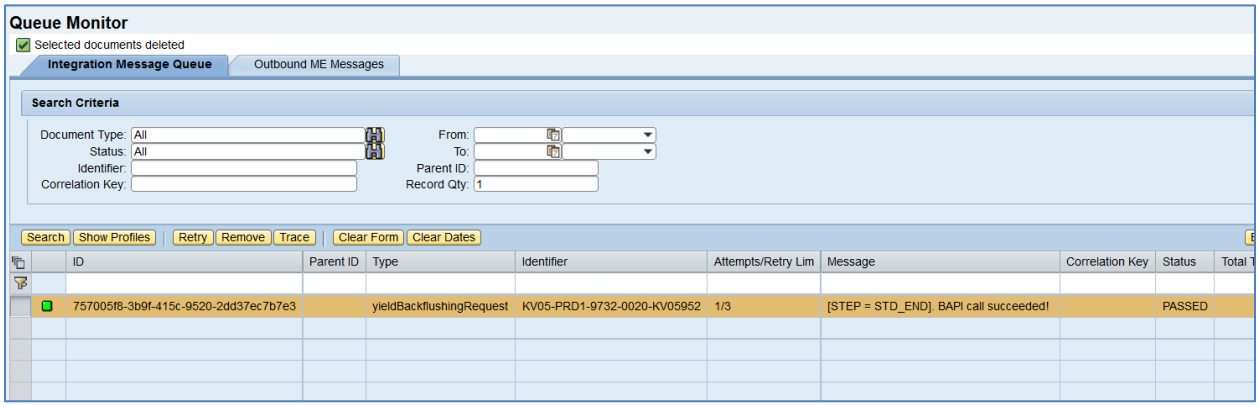


3. Click the *Done and Close* button. Click the *Ok* button in the confirmation dialog box.



4. Optional: Verify the outbound *yieldBackflushingRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



For more information about reviewing confirmed data in SAP ERP, see the Yield Backflushed Confirmation on Operation Complete section of this guide.

15.4 Scrap Confirmation for a Planned Order

15.4.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer scrap data for a repetitive shop order to SAP ERP when you enter scrap data for an SFC number during production in SAP ME.

This function supports long material numbers (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com).

15.4.2 Prerequisites

15.4.2.1 SAP ME

- You have imported the planned order data from SAP ERP (see Configuring a Planned Order section of this guide).
- You have released the repetitive shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- You have verified that the last ERP reporting step is defined and other custom data fields are populated (see Routing Step Properties on the SAP Help Portal at http://help.sap.com).

15.4.2.2 SAP ERP

- You have created the following master data:
  - A material with a production version
  - In the material master, you select the *Repetitive Manufacturing* checkbox and choose a repetitive manufacturing profile that allows make-to-stock production.
  - A product cost collector (for make-to-stock production) (See *Logistics* > *Production* > *Repetitive Manufacturing* > *Master Data* > *Product Cost Collector* > *Process Product Cost Collector*)

Recommendation: Set up the REM profile as described in Maintaining Repetitive Manufacturing (REM) Profile for the Planned Order Integration (see Other Customizing Activities in SAP ERP on the SAP Help Portal at http://help.sap.com).

15.4.3 Procedural Steps

1. Scrap an SFC number belonging to the planned shop order in SAP ME using Log NC and choose the Scrap disposition function, or use the Scrap activity in SFC Scrap/Delete (see Disposition Functions and SFC Scrap/Delete on the SAP Help Portal at http://help.sap.com), or use Scrap step.
2. SAP ME triggers a collaboration event.
3. SAPMEINT sends a *scrapBackflushingRequest* message with the following information to SAP ERP to report the quantity of scrapped finished goods and component quantities consumed:
   - *Material:* Number of the material produced with this order.
   - *Plant:* SAP ME Site.
   - *Planned Order:* Repetitive shop order number.
   - *Production Version:* Key that determines the various production techniques according to which a material can be manufactured.
   - *Scrapped Quantity:* Quantity scrapped.
   - *Components:* Assembled components.

     Note: By default components are not included in the *scrapBackflushingRequest*. This section of XSLT is commented out and must be enabled manually if including the assembled components information in the *scrapBackflushingRequest* is required.

   In SAP ERP, you can see the new material document on the *Material Document List* screen (transaction *MB51*).

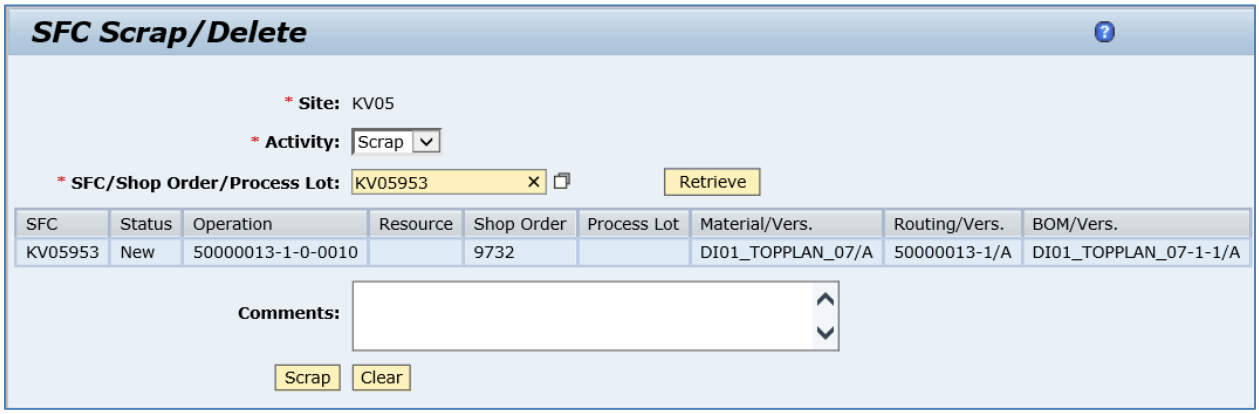
For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

15.4.4 Alternates / Best Practices and Tips

15.4.5 Examples

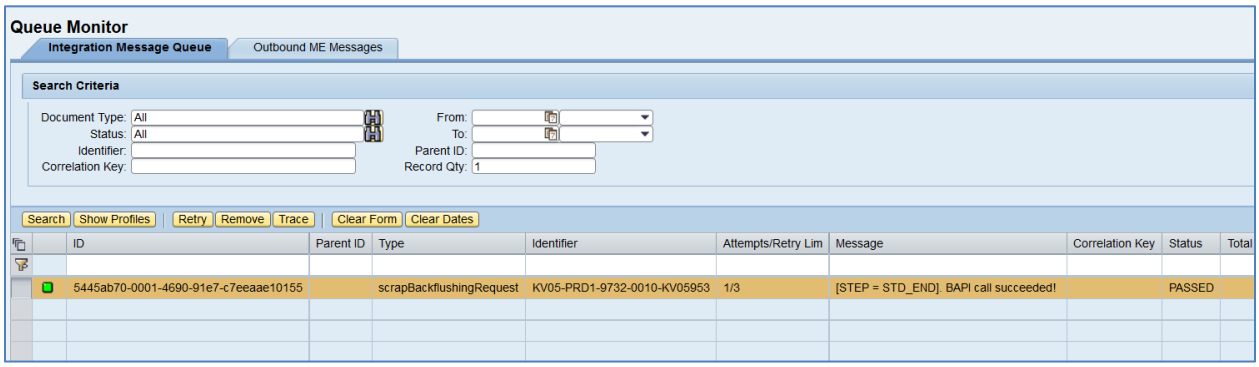
15.4.5.1 Scrapping Using SFC Scrap/Delete Activity

1. In SAP ME, run the *SFC Scrap/Delete* activity. Retrieve the SFC number you want to scrap and set the Activity dropdown list to Scrap.



2. Click the *Scrap* button.
3. Optional: Verify the outbound *scrapBackflushingRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *scrapBackflushingRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

<BAPI_REPMANCONF1_CREATE_MTS>

<INPUT>

<BFLUSHDATAGEN>

<MATERIALNR>DI01_TOPPLAN_07**</MATERIALNR>**

<PRODPLANT>KV05**</PRODPLANT>**

<PLANPLANT>KV05**</PLANPLANT>**

<PRODVERSION>PRD1**</PRODVERSION>**

<BATCH/>

<SCRAPQUANT>1**</SCRAPQUANT>**

<POSTDATE>2015-12-15T11:15:15.789Z**</POSTDATE>**

<DOCDATE>2015-12-15T11:15:15.789Z**</DOCDATE>**

<PLANORDER>0000009732**</PLANORDER>**

```
</BFLUSHDATAGEN>
<BFLUSHFLAGS>
  <BCKFLTYPE>01</BCKFLTYPE>
</BFLUSHFLAGS>
</INPUT>
<TABLES/>
</BAPI_REPMANCONF1_CREATE_MTS>
```

Note: Even though the BATCH field is present, it is not mapped and it is not passed to SAP ERP.

4. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Production* > *Repetitive Manufacturing* > *Evaluations* > *Display Data Entry Documents*

or transaction code – *MF12*

On the *Display Document Log Information* screen, each confirmation is present in a separate row.

Processing type BS means:

- *B:* Backflush (Goods receipt, goods issue and activity backflush).
- *S:* Scrap at reporting point on assembly level.

15.4.6 Missing / Not Supported

- SAP ME is the system of record for WIP. If the *LOG_PP_MES_INT_01* and *LOG_PP_MES_INT_02* business functions are not activated in SAP ERP, and you update a planned order directly in SAP ERP by recording scrap quantity movements, SAPMEINT does not update the corresponding shop order in SAP ME (see SAPMEINT: SAP ERP Configuration on the SAP Help Portal at http://help.sap.com).
- If a scrap movement takes place for a component within a planned order that has not come from SAP ERP, the component does not contain a production version. If the parent assembly is also a component, the system continues to search higher in the as-built data to find a corresponding production version to use.
- SAP ME does not support SAP ERP trigger points.
- SAPMEINT does not support the following:
  - Scrapping of component SFC numbers or removal of assembled components
  - The following options of the SAP ME *Scrap* routing other step (see Other Routing Step Properties on the SAP Help Portal at http://help.sap.com):
    - Scrap SFC Only
    - Scrap SFC and Return Components to Floor Stock

- The Delete activity in SAP ME *SFC Scrap/Delete* (see SFC Scrap/Delete on the SAP Help Portal at http://help.sap.com)

15.5 Planned Order Completion Confirmation

15.5.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer a planned order complete confirmation message to SAP ERP.

The message is triggered when the status of the planned shop order changes to Done or Closed.

15.5.2 Prerequisites

15.5.2.1 SAP ME

- You have imported the planned order data from SAP ERP (see Configuring a Planned Order section of this guide).
- You have released the repetitive shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- You have verified that the last ERP reporting step is defined and other custom data fields are populated (see Routing Step Properties on the SAP Help Portal at http://help.sap.com).

15.5.2.2 SAP ERP

- You have created the following master data:
  - A material with a production version.
  - In the material master, you select the *Repetitive Manufacturing* checkbox and choose a repetitive manufacturing profile that allows make-to-stock production.
  - A product cost collector (for make-to-stock production) (See *Logistics > Production > Repetitive Manufacturing > Master Data > Product Cost Collector > Process Product Cost Collector*)

Recommendation: Set up the REM profile as described in Maintaining Repetitive Manufacturing (REM) Profile for the Planned Order Integration (see Other Customizing Activities in SAP ERP on the SAP Help Portal at http://help.sap.com).

15.5.3 Procedural Steps

1. Change the status of the planned shop order to *Done* or *Closed*.
2. SAP ME triggers a collaboration event.
3. SAPMEINT sends the *plannedOrderCompleteRequest* message to update the processing status of the production order in SAP ERP.

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

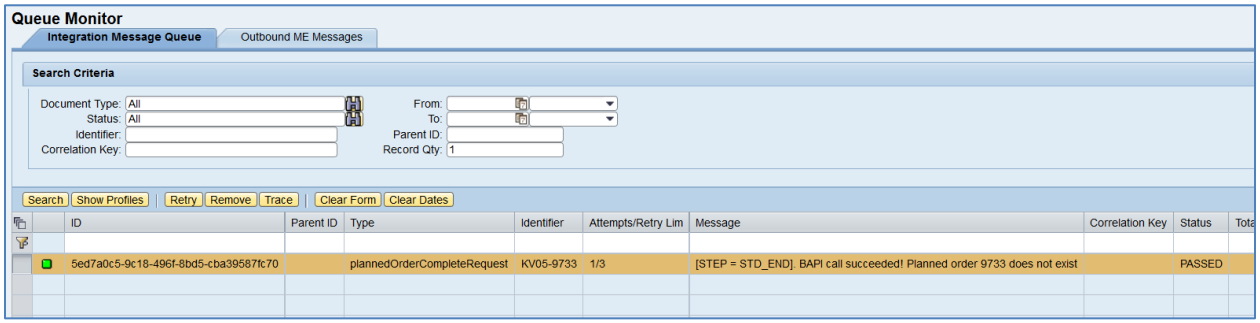
15.5.4 Alternates / Best Practices and Tips

15.5.5 Examples

15.5.5.1 Change Planned Order Status to Closed

1. In SAP ME, open the *Shop Order Release* activity and release the *repetitive shop order* received from SAP ERP.
2. Run the *Shop Order Maintenance* activity and change the status of the order to Closed. Save changes.
3. Optional: Verify the outbound *plannedOrderCompleteRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *plannedOrderCompleteRequest*, click *Trace*, choose *Request* > *Content* and click *View*. The following data is reported to SAP ERP:

<BAPI_PLANNEDORDER_DELETE>

<INPUT>

<PLANNEDORDER>0000009733**</PLANNEDORDER>**

</INPUT>

</BAPI_PLANNEDORDER_DELETE>

16 RMA Order Status Confirmation

16.1 Overview

This function lets you transfer results of the RMA order processing from SAP ME to SAP ERP (see Transfer of Completion Data for Service Order on the SAP Help Portal at http://help.sap.com).

16.1.1 Business Purpose

The RMA shop order is used in SAP ME to authorize the return of manufactured material from a customer to a supplier for a corrective action. A material may be returned for repair, re-configuration, or disposition in some other manner and may be finished goods, subassemblies, or components.

The customer repair order is used by Sales in SAP ERP for recording all the business processes that are involved in processing faulty goods that a customer sends in for repair.

When you enter the service product and serviceable material in the repair request item, the system creates a return order item automatically for the serviceable material. This is triggered by the goods receipt of the serviceable material.

16.2 RMA Order Completion Confirmation

16.2.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer order completion data for RMA shop orders from SAP ME to SAP ERP through SAP MII as technical completes for service orders.

The message is triggered when the status of the RMA shop order changes to *Done* or *Closed*.

16.2.2 Prerequisites

16.2.2.1 SAP ME

- You have imported the RMA service shop order data from SAP ERP.
- You have completed the RMA shop order on the shop floor.

16.2.2.2 SAP ERP

- You have created a settlement rule for the order.
- You have cleared all the existing reservations for the order.
- You have cleared all outstanding capacities for the order.

16.2.3 Procedural Steps

1. Change the status of the RMA shop order to *Done* (this can be done manually or by completing all SFC numbers belonging to the order at the operation marked as the last ERP reporting step) or *Closed*.

2. SAP ME triggers a collaboration event.
3. SAPMEINT sends the *rmaOrderCompleteRequest* message to change the order status to *Technically Completed* in SAP ERP.

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

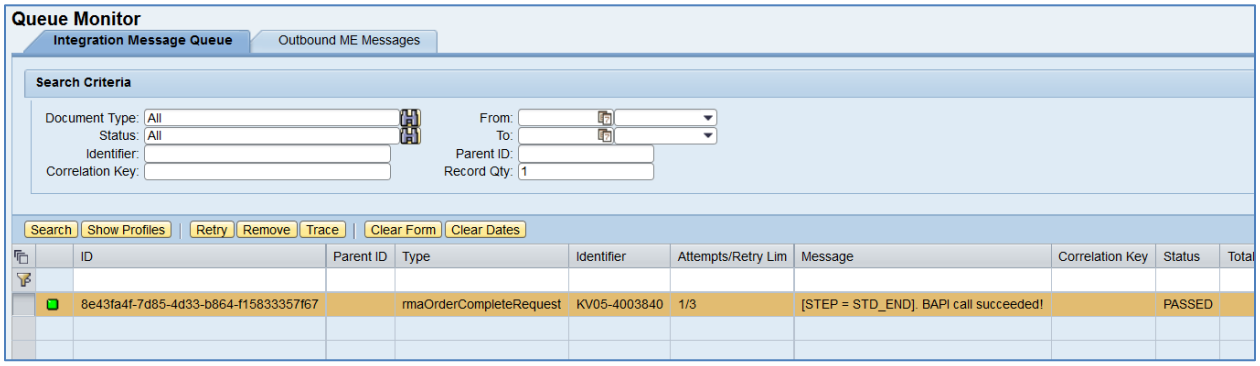
16.2.4 Alternates / Best Practices and Tips

16.2.5 Examples

16.2.5.1 Change RMA order status to Done

1. In SAP ME, open the *Shop Order Release* activity and release the *RMA Shop Order* received from SAP ERP.
2. Run the *Production Operator Dashboard*, and start and complete all SFC numbers belonging to the RMA shop order on the last ERP reporting step (*Is Last Reporting Step* checkbox is selected in *Step Properties*).
3. Optional: Verify the outbound *rmaOrderCompleteRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select a record with the *rmaOrderCompleteRequest* type, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

```
<BAPI_ALM_ORDER_MAINTAIN>
    <TABLES>
        <IT_METHODS>
          <item>
                <REFNUMBER>000000</REFNUMBER>
                <OBJECTTYPE>HEADER</OBJECTTYPE>
                <METHOD>TECHNICALCOMPLETE</METHOD>
                <OBJECTKEY>000004003840</OBJECTKEY>
          </item>
```

```
            <item>
                <REFNUMBER>000000</REFNUMBER>
                <OBJECTTYPE/>
                <METHOD>SAVE</METHOD>
                <OBJECTKEY>000004003840</OBJECTKEY>
            </item>
        </IT_METHODS>
    </TABLES>
</BAPI_ALM_ORDER_MAINTAIN>
```

17 Integration of Labor Records

17.1 Overview

You can use this process to transfer the labor records from SAP ME to SAP ERP.

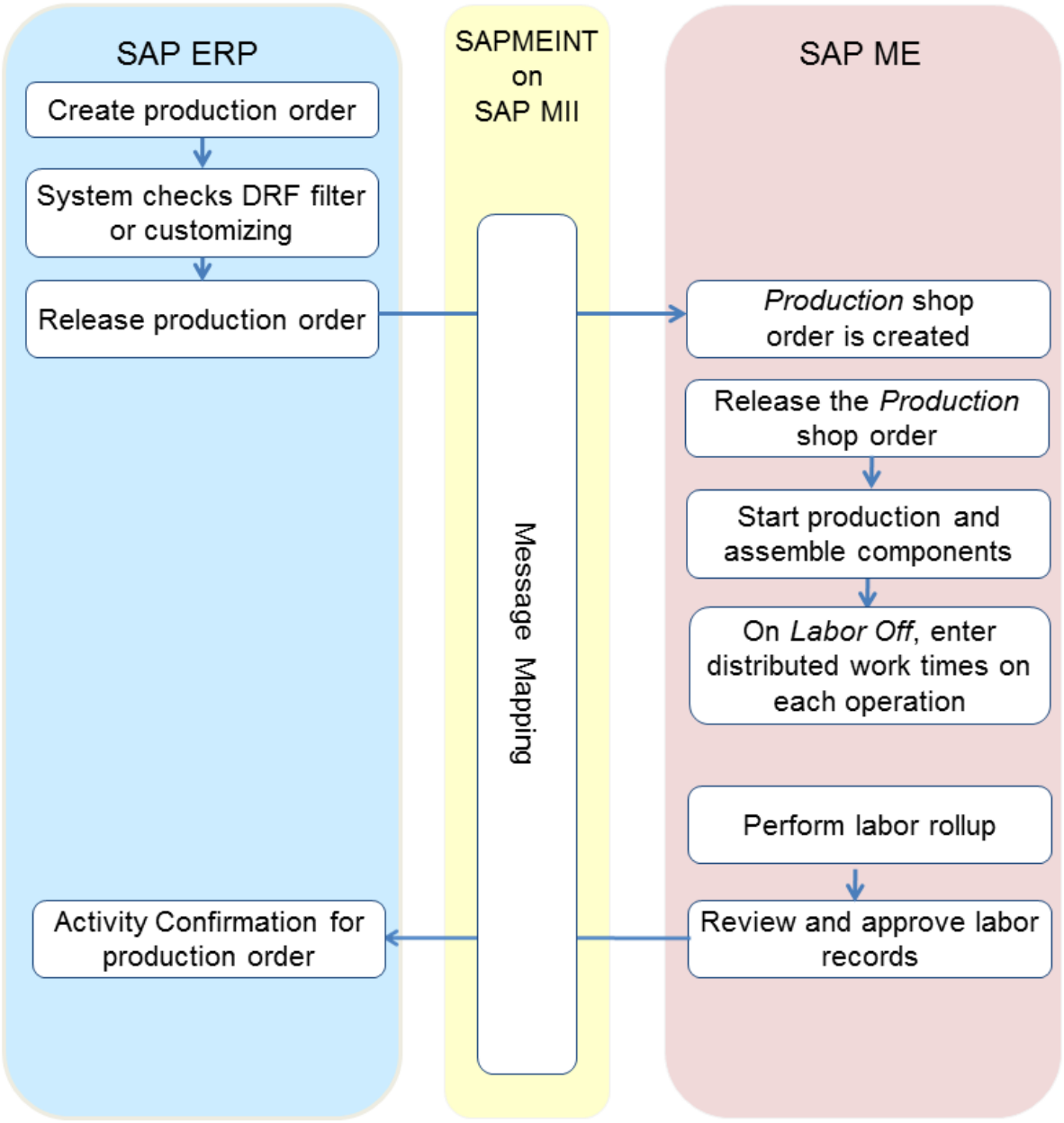
For more information about labor integration, see the Integration of Labor Records on the SAP Help Portal at http://help.sap.com.

17.2 Transferring Direct Labor Records

17.2.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer direct labor records from SAP ME to SAP ERP. For more information about direct labor, see Labor Charge Code on the SAP Help Portal at http://help.sap.com.

17.2.2 Process Flow Graphic



17.2.3 Prerequisites

17.2.3.1 SAP ERP

- You have transferred the material master records for the output material and all the components (see Configuring Material Master section of this guide).

- You have created a BOM and a routing for the output material (see Configuring a Bill of Material (BOM) and Configuring a Standard Routing in SAP ERP sections of this guide).
- You have defined a *Standard Value Key* for the work center (transaction code *CR01*).
- You have defined a work center at the routing steps of the routing that is associated with the material (transaction code *CA01*).
- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have defined the DRF Replication Model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

17.2.3.2 SAP ME

- The *Enable Labor Tracking* system rule is set to true in *System Rule Maintenance* (see Miscellaneous Rules on the SAP Help Portal at http://help.sap.com).
- You have defined standard value key activities for collecting distributed times in *Standard Value Key Maintenance* (see Standard Value Key Maintenance on the SAP Help Portal at http://help.sap.com).

  Note that the sequence of activities for the *Standard Value Key* defined in SAP ME and SAP ERP must be the same.
- You have assigned the standard value key to a routing step where users are to collect their distributed work times in the *Scheduling Standards Maintenance* activity (see Scheduling Standards Maintenance on the SAP Help Portal at http://help.sap.com).

  Note that the ERP standards defined at the *Material-Routing* level override those defined at the *Routing* level.
- You have set up Labor Tracking (see Setting Up Labor Tracking on the SAP Help Portal at http://help.sap.com).

17.2.4 Procedural Steps

1. In SAP ME, enter values for the *Standard Value Key* activities during *production shop order* execution in the *Production Operator Dashboard* (POD) on *Labor Off*. As a result, you can record the actual time that you spent at each routing step for the activities configured in *Scheduling Standard Maintenance*.
2. Run the *ODSLaborRollup* script or schedule to run it periodically. For more information, see Determining Labor Rules on the SAP Help Portal at http://help.sap.com.
3. The supervisor reviews and approves the rolled-up labor records in *Supervisor Time Edit* (see Supervisor Time Edit and Approval on the SAP Help Portal at http://help.sap.com).

   Note that you can transfer direct labor records for a combination of the shop order and the reporting step to SAP ERP only if all of the following conditions are met:

- The production order is imported from SAP ERP
- The routing step (operation) has a reporting step
- The routing step has a standard value key attached to it in *Scheduling Standard Maintenance*

4. SAPMEINT correlates the direct labor records based on the user, the production shop order, and the operation records in SAP ME.
5. SAPMEINT sends an activity confirmation for the production order to SAP ERP.

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

17.2.5 Alternates / Best Practices and Tips

17.2.6 Examples

17.2.6.1 Transferring Direct Labor Records

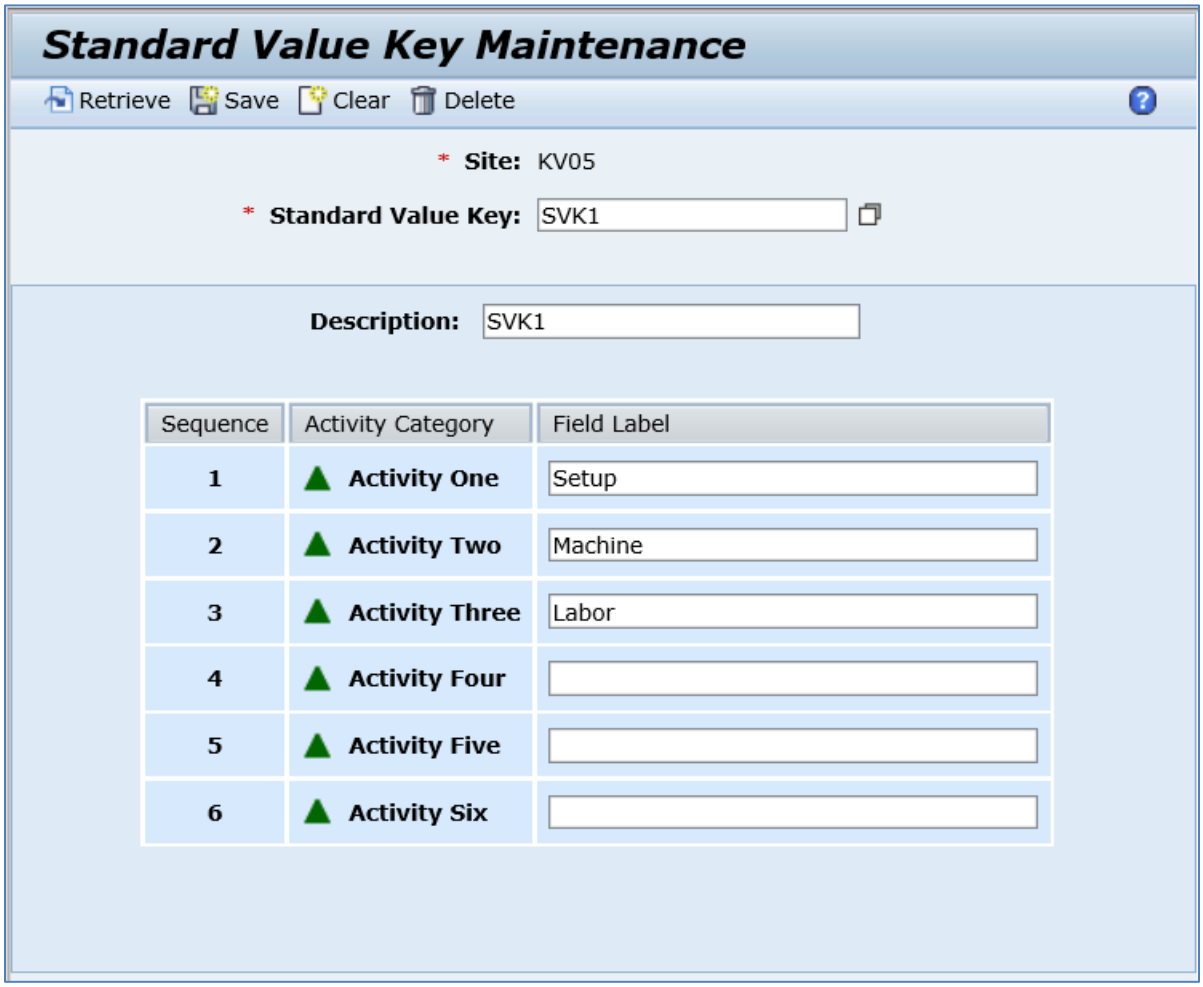
1. Create and transfer a production order with a BOM and a routing from SAP ERP to SAP ME (see Configuring a Production Order with a BOM and Routing (Make-to-Stock Manufacturing) section of this guide).

   Note: Define Standard Value Key planned values during routing creation. These values can be observed during order creation:

   - On the *Production order Create: Header* screen, click *Operation Overview* button
   - On the *Production Order Create: Operation Overview* screen, select operation and click *Operation Details* (*F7*)
   - Click the *StandardVals* tab and enter *Standard Values*

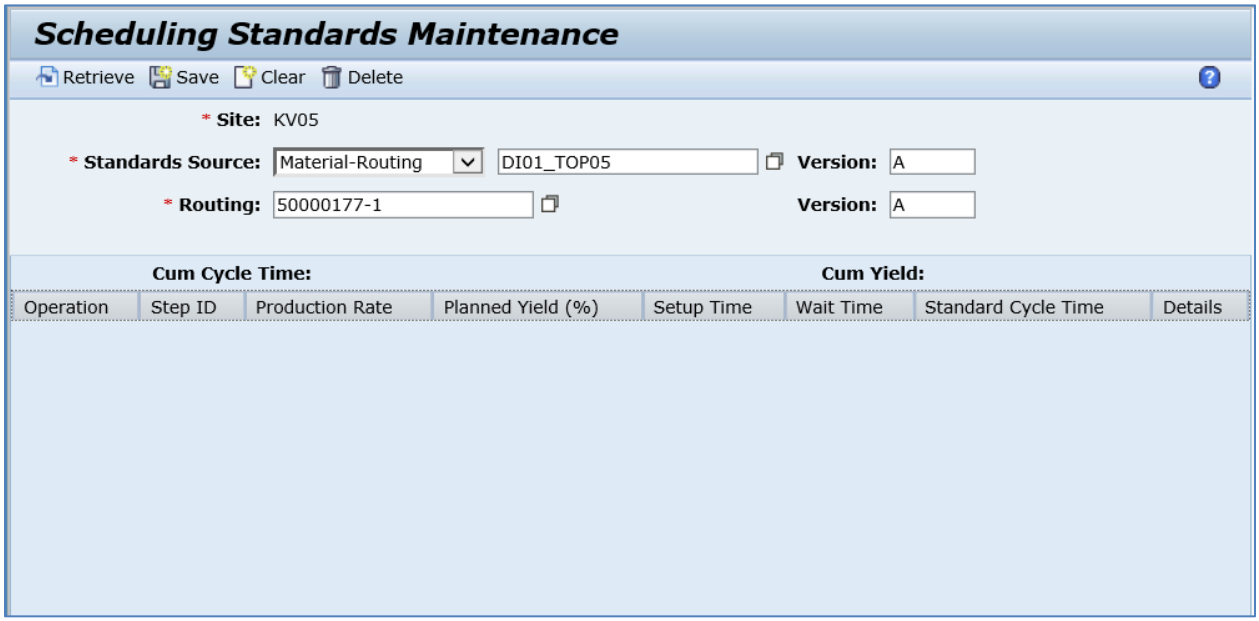
   Note: The *Standard Value Key* has to be defined for the work center first.

2. In SAP ME, run *Standard Value Key Maintenance* and define activities as they are defined in SAP ERP:

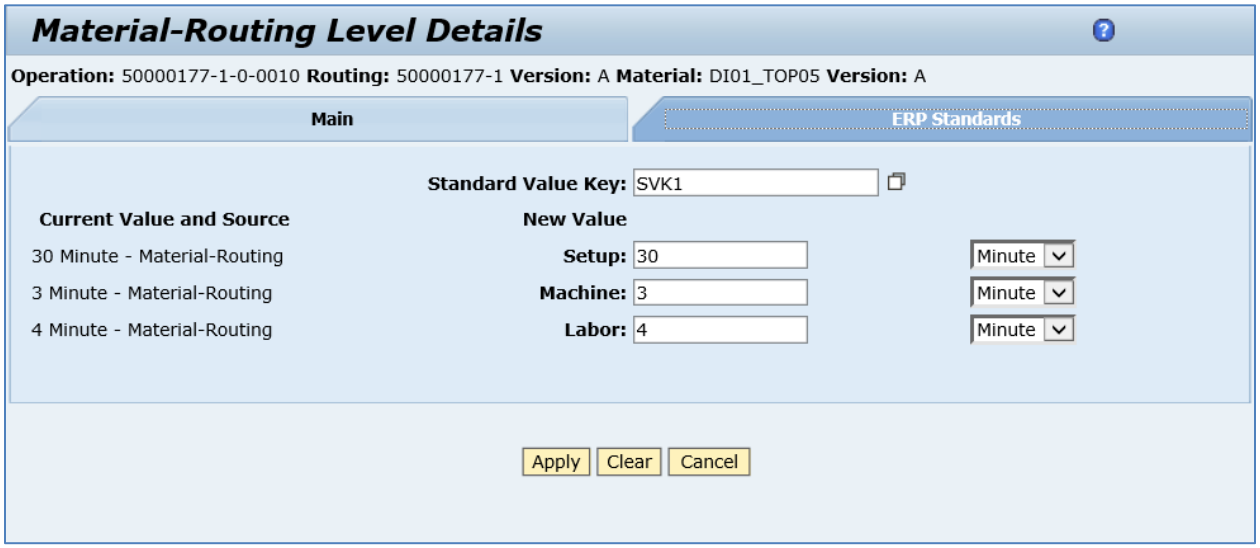


3. In SAP ME, run *Scheduling Standards Maintenance* and define standard values:

   On the *Scheduling Standards Maintenance* screen, in the *Standards Source* field, select *Routing* or *Material-Routing*. Enter values in the required fields.

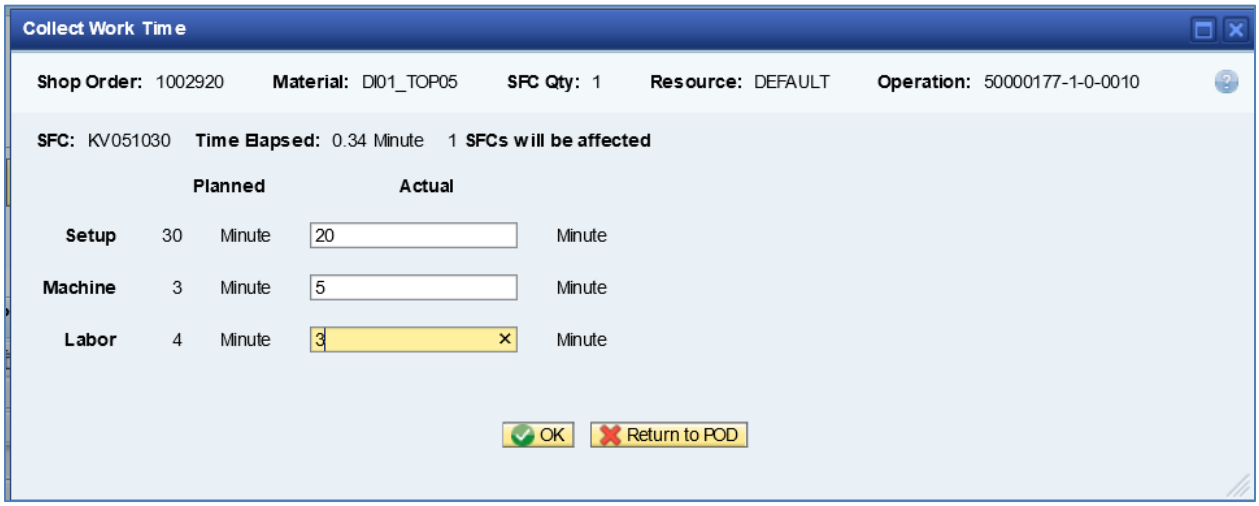


4. Click *Retrieve*.
5. Click *Details* in the Operation row of the table.
6. *On the ERP Standards* tab, browse and select your *Standard Value Key*.
7. Define Standard Values and Units of Measure.



8. *Click Apply*.
9. Click *Save*.
10. In SAP ME, open the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.
11. Run the *Production Operator Dashboard*, start the SFC number, and click *Labor On* (see Tracking Labor Time in the POD on the SAP Help Portal at http://help.sap.com).

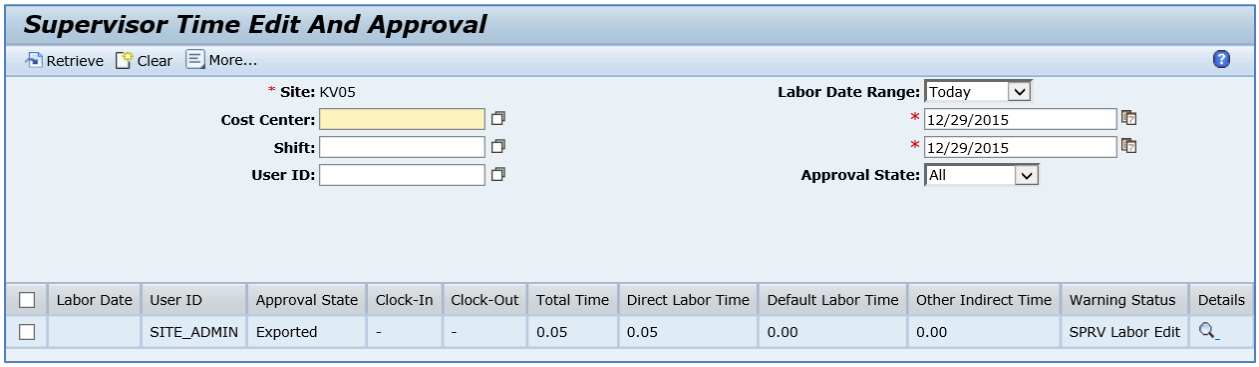
12. Click *Labor Off* button (make sure that Labor Off is defined and assigned in *POD Maintenance* on the *Buttons* and *Layout* tabs).
13. Enter values for the *Standard Value Key* fields.



14. Click *OK*.
15. Run the ODSLaborRollup script.
16. In SAP ME, run the *Supervisor Time Edit And Approval* activity, and review and approve the rolled-up labor records.

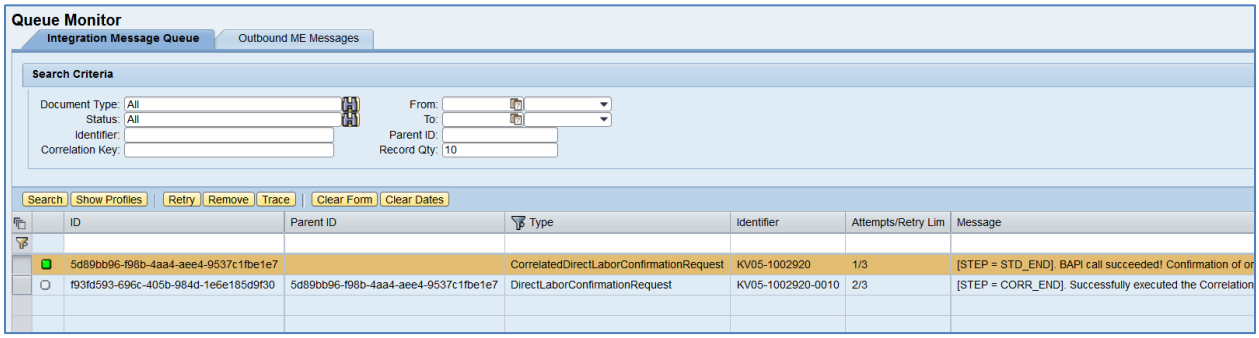


17. Click *OK*. When the record is transferred to SAP ERP, its status changes to *Exported*.



18. Optional: Verify the outbound messages (*DirectLaborConfirmationRequest* and *CorrelatedDirectLaborConfirmationRequest*) was received in SAP MII using *Queue Monitor*.

    For more information, see the SAPMEINT Message Processing Logic section of this guide.



When the number of the *DirectLaborConfirmationRequest* messages with the same correlation key reaches the *numberOfDocuments* parameter value (or when *waitTimeInSec* parameter value is reached), SAPMEINT generates a *CorrelatedDirectLaborConfirmationRequest*, and sends the correlated confirmation request to SAP ERP.

19. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Production* > *Shop Floor Control* > *Confirmation* > *Display*

or transaction code – *CO14*

On the *Display Production Order Confirmation: Operation Overview* screen, each confirmation is present in a separate row. A row with zero Yield and Scrap quantities is a record that contains reported labor time.

You can find reported direct labor information on the *Confirmation of Production Order Display: Details* screen.

18 Equipment and Tools Integration

18.1 Overview

You can use this process to transfer equipment status and usage data between SAP ERP and SAP ME.

For more information about equipment integration, see Integration of Equipment on the SAP Help Portal at http://help.sap.com.

18.2 Transferring Tool Usage Data

18.2.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer SAP ME tool number usage data to SAP ERP when SFC numbers are started at an 'ERP reporting step' in the POD or from a machine interface in SAP ME (see Tool Number on the SAP Help Portal at http://help.sap.com).

Tools that are used to represent the wear and tear of an object, consumption, or the reduction of an object's useful life are described as counters in SAP ERP.

In *Plant Maintenance*, counters are assigned to technical objects (equipment, production resources/tools).

Counter readings are taken at particular intervals and in particular measurement units. Counter readings describe a status at a particular point in time, and represent the transaction data for counters in SAP ERP. They are documented in the form of measurement documents. Counters are a special form of measuring point because over the course of time, counter readings continuously rise or fall.

18.2.2 Prerequisites

18.2.2.1 SAP ERP

- You have created technical objects in PM/CS (equipment and production resources/tools).
- You have created the master records for measuring points and counters and assigned them to a technical object.

18.2.2.2 SAP ME

- You have defined one or more measurement points for tool numbers on the *Measurement Points* tab of *Tool Number Maintenance*.
- In *Collaboration Link Maintenance*, you have verified that the *ERP_EQUIPMENT_USAGE* directive is assigned to the *COLLABORATION_ERP_EQUIPMENT_USAGE* link.

18.2.3 Procedural Steps

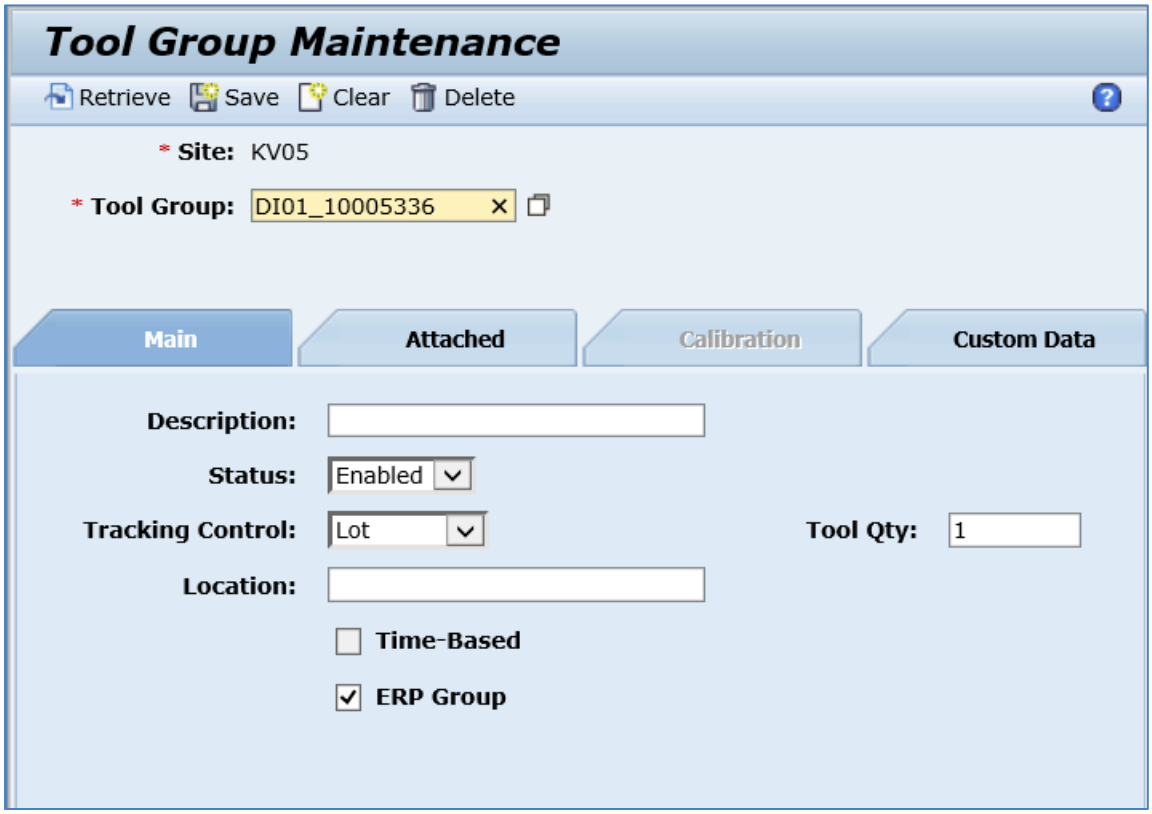
1. Run the *Production Operator Dashboard*, select the SFC number and log the Tool Number. Note that tool usage is reported upon the SFC number start. The SFC number must not be started or the tool usage will be reported the next time the SFC is started on the ERP reporting step.
2. Start an SFC number at an 'ERP reporting step' operation in the POD or from a machine interface in SAP ME.
3. The system triggers the *COLLABORATION_ERP_EQUIPMENT_USAGE* collaboration action.
4. SAPMEINT sends the *equipmentUsageRequest* message to SAP ERP.
5. The data transferred to SAP ERP after a measurement has been taken at a measuring point or a counter results in a measurement document. The measurement document records the result of a measurement or counter reading being entered in the system.

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

18.2.4 Alternates / Best Practices and Tips

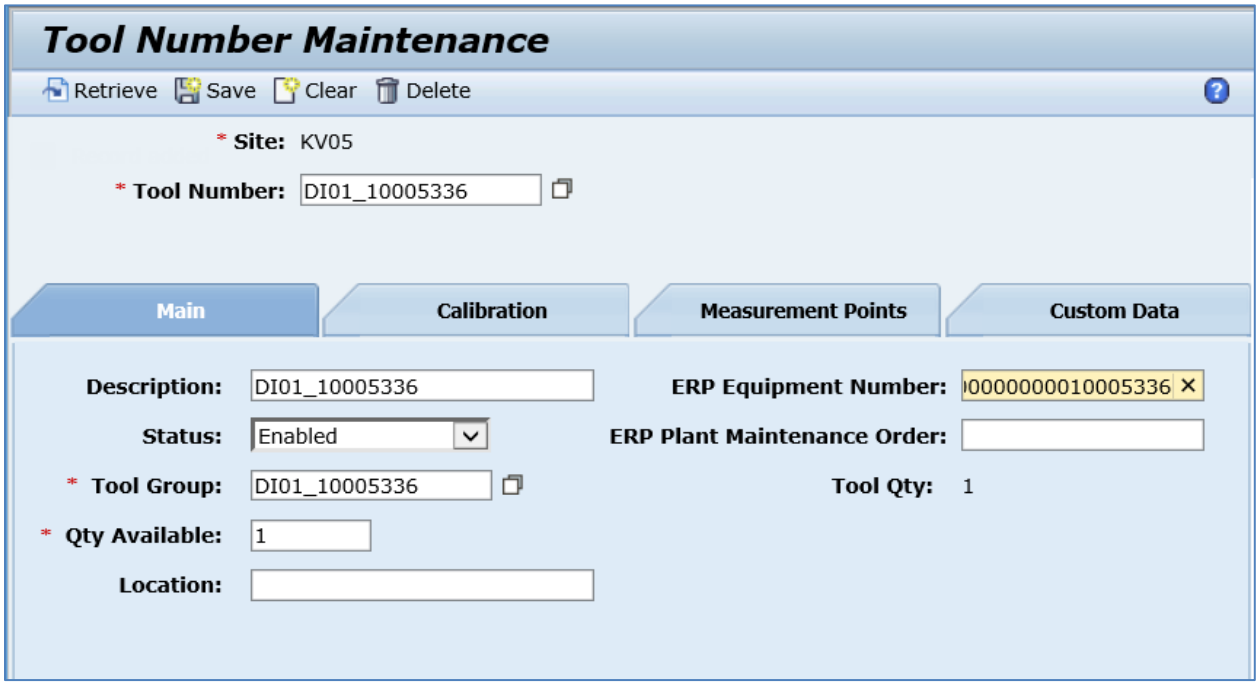
18.2.4.1 Creating Tool Number in SAP ME

1. In SAP ME access the *Tool Group Maintenance* activity. Enter the following:
   - *Tool Group:* Name for your Tool Group.
   - *Description:* Enter description.
   - *Status:* Enabled.
   - *Tracking Control:* Lot.
   - *Tool Qty:* Enter tool quantity. For example, 1.
   - *ERP Group:* Selected.

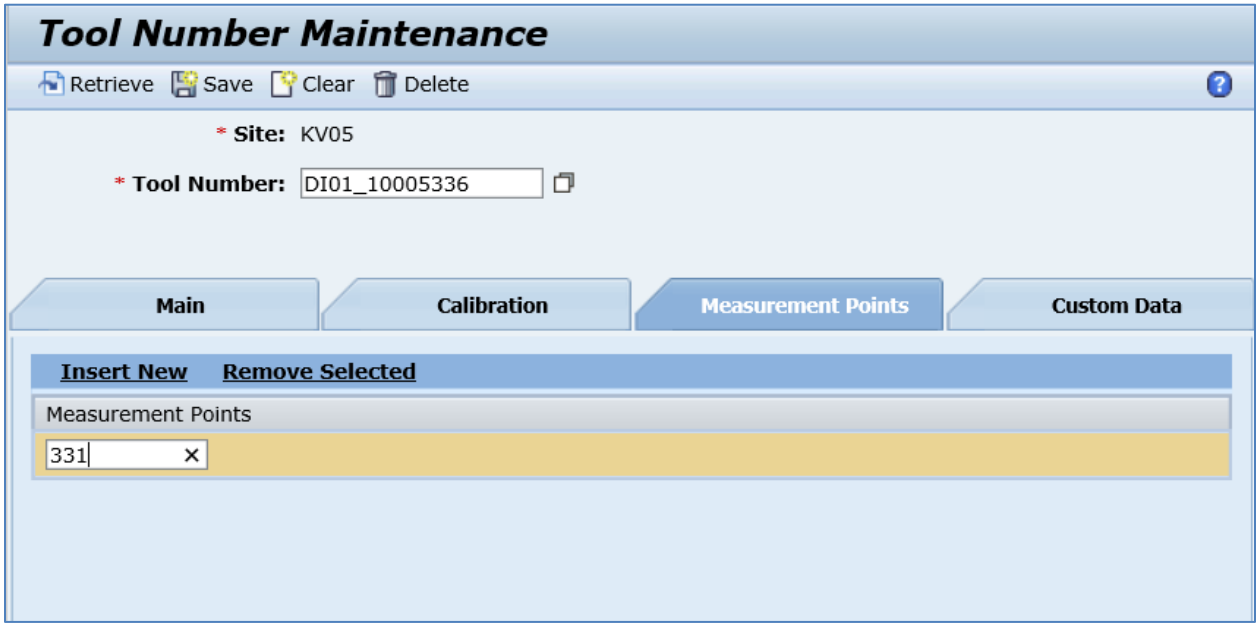


2. Create an attachment point for the Tool Group.
3. Click *Save*.
4. In SAP ME access the *Tool Number Maintenance* activity. Enter the following:
   - *Tool Number:* Name for Tool Number.
   - *Status:* Enabled.
   - *Tool Group:* ERP Tool Group.
   - *Qty Available:* Available quantity for this tool number, for example, 1.
   - *ERP Equipment Number:* Enter *Equipment Number* created in SAP ERP with 10 leading zeroes (For example, 000000000010000337).

     Note: Equipment number associated with the tool number has to be of type *P*.



5. On the *Measurement Points* tab, select *Insert New* and enter the following:
   - *Measurement Points:* Enter *Measuring Point* created in SAP ERP for this equipment number (For example, 331)



6. Click *Save*.

18.2.4.2 Time-Based Tool Logging

1. In SAP ERP create *Equipment number* of type *P*.
2. Create *Measurement Point* for *Equipment number*.

3. In SAP ME, create *Tool Group* assigned to ERP material / operation. The Tool Group has to be marked as an *ERP Group* and be a *Time-Based Group* (see Creating Tool Number in SAP ME section of this guide).
4. In SAP ME, create the *Tool Number*, assign it to the ME *Tool Group* and set its status to *Productive* (see the Creating Tool Number in SAP ME section of this guide).
5. In SAP ME, run *Resource Setup* and retrieve a resource that you want to use on the operation. Insert new rows to assign *Planned Material*/*Shop Order* and *Tool Number*.
6. In SAP ME, run *Operation* or *Resource Maintenance* and assign the *TB_TOOL_TO_DISCRETE* hook at the *PRE_START* level.
7. Import the production order data from SAP ERP. Release production shop order in SAP ME.
8. In SAP ME, run *Production Operator Dashboard*, select operation and resource. Browse for the SFC number and start it.
9. The system triggers the *COLLABORATION_ERP_EQUIPMENT_USAGE* collaboration action.
10. SAPMEINT sends the *equipmentUsageRequest* message to SAP ERP.
11. The data transferred to SAP ERP after a measurement has been taken at a measuring point or a counter results in a measurement document. The measurement document records the result of a measurement or counter reading being entered in the system:
    - In SAP ERP, access transaction *IK17*
    - Enter the *Equipment Number* in the *Equipment* field.
    - Click the *Execute* icon.

      The *Measurement Document List* appears. Ensure that the documents shown in Queue Monitor are listed.

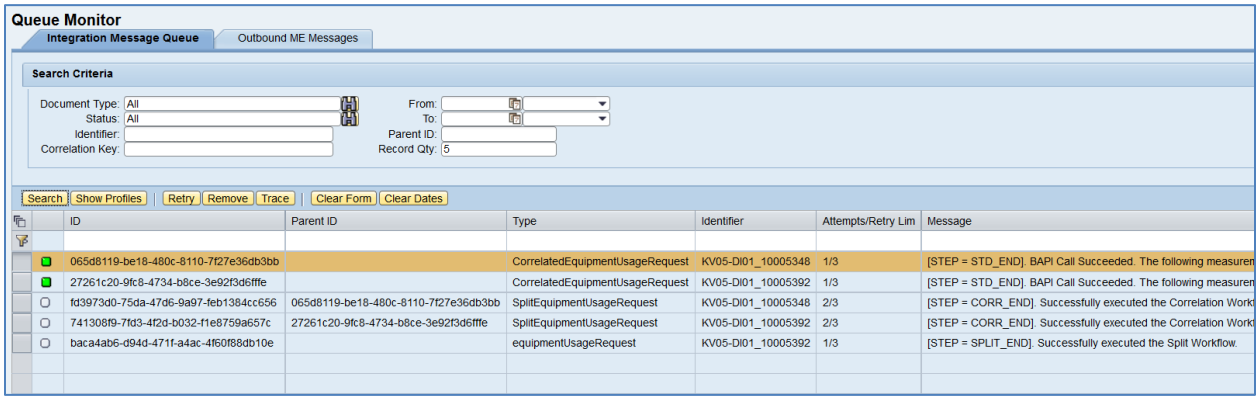
18.2.5 Examples

18.2.5.1 Transferring Tool Usage Data

1. In SAP ME, access the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.
2. Run the *Production Operator Dashboard*, select the Operation and Resource. Browse for the SFC number and select the *Tool List* button to open the Tool List and Log Tool Entry plugins.
3. In the *Log Tool Entry* plugin, browse for the Tool Number that has the ERP Measurement Point assigned (make sure that the status of this Tool Number is *Enabled*).

   Note: Equipment number associated with the tool number has to be of type *P*.
4. Click *Save* to log the Tool Number.
5. Start the SFC number.
6. Optional: Verify the outbound messages were received in SAP MII using *Queue Monitor*.

For more information, see the SAPMEINT Message Processing Logic section of this guide.



The *equipmentUsageRequest* message is processed by the split workflow. As a result, new messages with the *SplitEquipmentUsageRequest* type appear in MII Queue Monitor in the *IN_CORRELATION* status. They are processed by the correlation workflow.

When the *waitTimeInSec* parameter value is reached, SAPMEINT generates a *CorrelatedEquipmentUsageRequest* and sends the correlated equipment usage request to SAP ERP.

7. Verify results in SAP ERP.

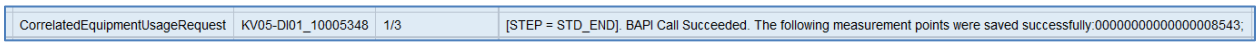
In SAP ERP access the transaction via:

SAP Menu – *Logistics > Plant Maintenance > Management of Technical Objects > Equipment > Measurement Documents > List Editing > Display*

or transaction code – *IK17*

On the *Display Measurement Documents: Measurement Document Selection* screen, enter the following:

- *Equipment:* Number by which a piece of equipment can be clearly identified. Enter Equipment Number.
- *Measurement document:* The number of the document for the measurement reading or counter reading entered. This value is optional and can be found in MEINT Queue Monitor.



On the *Display Measurement Document: General Data* screen, ensure that the documents shown in Queue Monitor are listed.

18.3 Transferring Resource Usage Data

18.3.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer SAP ME resource usage data to SAP ERP when SFC numbers are started at an 'ERP reporting step' in the POD or from a machine interface in SAP ME (see Resource on the SAP Help Portal at http://help.sap.com).

18.3.2 Prerequisites

18.3.2.1 SAP ERP

- You have created technical objects in PM/CS (equipment and production resources/tools).
- You have created the master records for measuring points and counters and assigned them to a technical object.

18.3.2.2 SAP ME

- You have defined one or more measurement points for tool numbers on the *Measurement Points* tab of *Tool Number Maintenance*.
- In *Collaboration Link Maintenance*, you have verified that the *ERP_EQUIPMENT_USAGE* directive is assigned to the *COLLABORATION_ERP_EQUIPMENT_USAGE* link.

18.3.3 Procedural Steps

1. Start an SFC number at an 'ERP reporting step' operation in the POD or from a machine interface in SAP ME.
2. The system triggers the *COLLABORATION_ERP_EQUIPMENT_USAGE* collaboration action.
3. SAPMEINT sends the *equipmentUsageRequest* message to SAP ERP.
4. The data transferred to SAP ERP after a measurement has been taken at a measuring point or a counter results in a measurement document. The measurement document records the result of a measurement or counter reading being entered in the system.

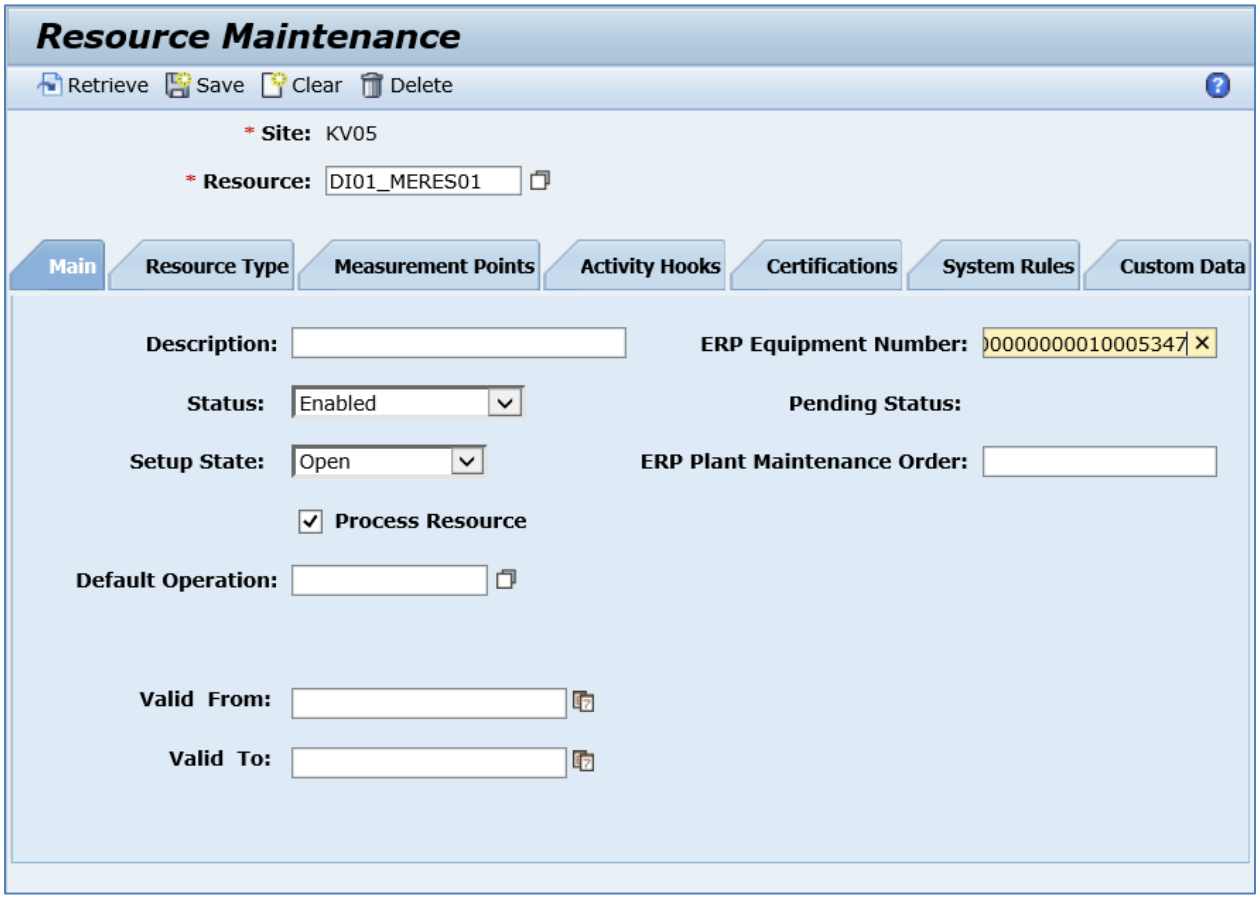
For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

18.3.4 Alternates / Best Practices and Tips

18.3.4.1 Creating Resource in SAP ME

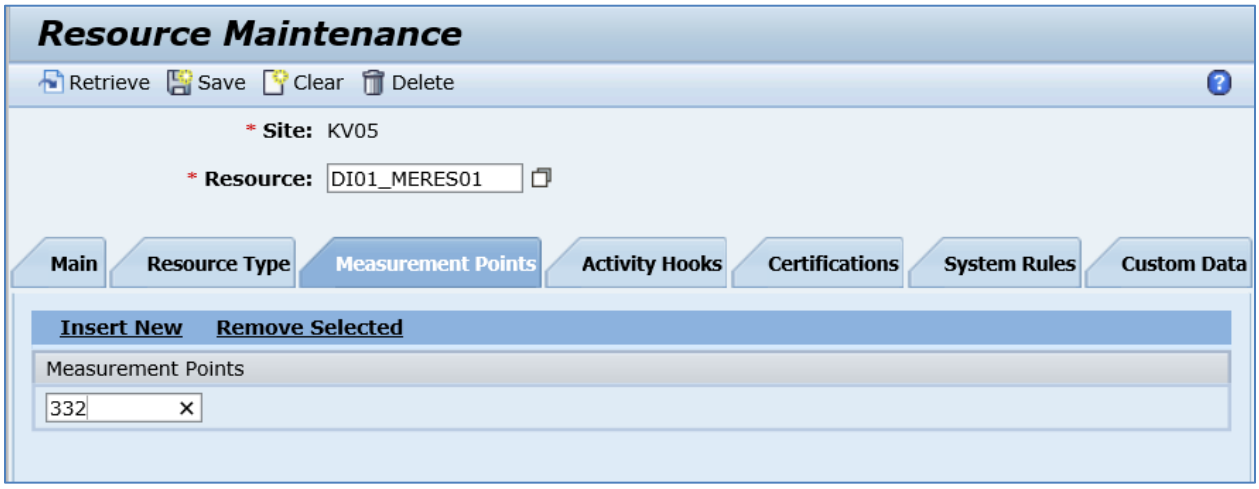
1. In SAP ME access the *Resource Maintenance* activity. Enter the following:
   - *Resource:* Name for your Resource.
   - *Description:* Enter description.
   - *Status:* Enabled.
   - *Setup State:* Open.
   - *Process Resource:* Selected.
   - *ERP Equipment Number:* Enter *Equipment Number* created in SAP ERP with 10 leading zeroes (For example, 000000000010000337).

     Note: Equipment number associated with the resource has to be of type *M*.



2. On the *Measurement Points* tab, select *Insert New* and enter the following:

   - *Measurement Points:* Enter *Measuring Point* created in SAP ERP for this equipment number (For example, 331)



3. Click *Save*.

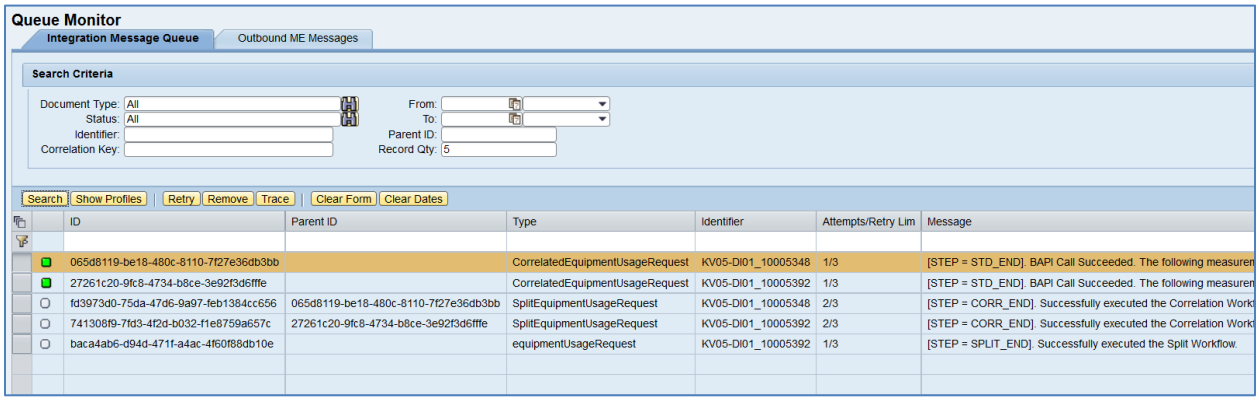
Note: Assign Resource to a Resource Type.

18.3.5 Examples

18.3.5.1 Transferring Resource Usage Data

1. In SAP ME access the *Shop Order Release* activity and release the *production shop order* received from SAP ERP.
2. Run the *Production Operator Dashboard*, select Operation and Resource with assigned Equipment Number. Browse for the SFC number and start it.
3. Optional: Verify the outbound messages were received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



The *equipmentUsageRequest* message is processed by the split workflow. As a result, new messages with the *SplitEquipmentUsageRequest* type appear in MII Queue Monitor in the *IN_CORRELATION* status. They are processed by the correlation workflow.

When *waitTimeInSec* parameter value is reached, SAPMEINT generates a *CorrelatedEquipmentUsageRequest* and sends the correlated equipment usage request to SAP ERP.

4. Verify results in SAP ERP.

In SAP ERP access the transaction via:

SAP Menu – *Logistics > Plant Maintenance > Management of Technical Objects > Equipment > Measurement Documents > List Editing > Display*

or transaction code – *IK17*

On the *Display Measurement Documents: Measurement Document Selection* screen, enter the following:

- *Equipment:* Number by which a piece of equipment can be identified..
- *Measurement document:* Number of the document for the measurement reading or counter reading entered. This value is optional and can be found in the MEINT Queue Monitor.



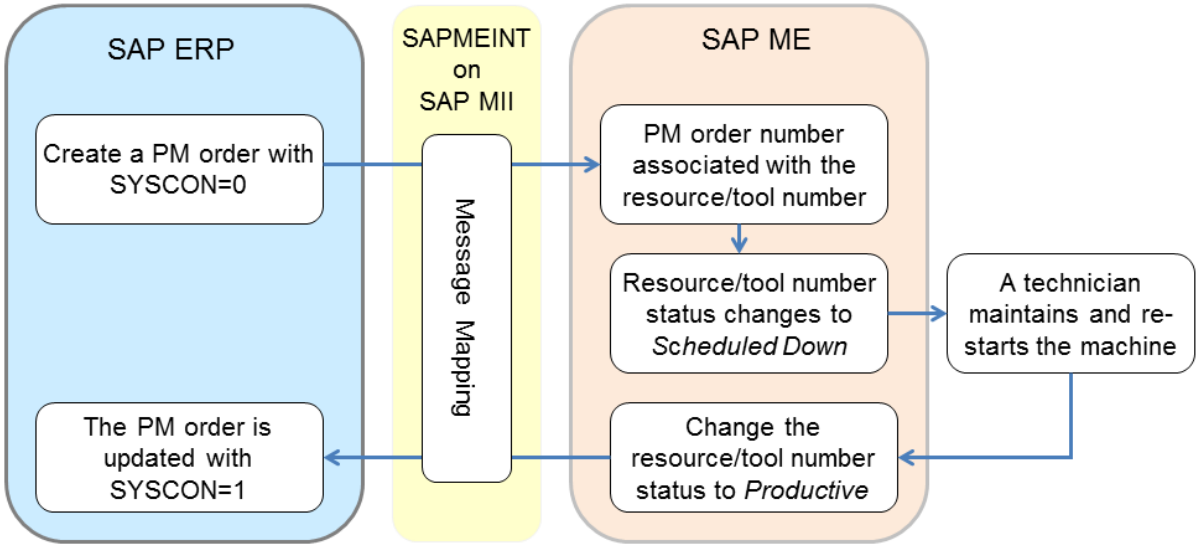
On the *Display Measurement Document: General Data* screen, ensure that the documents shown in Queue Monitor are listed.

18.4 Transfer Equipment Scheduled Downtime

18.4.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer notifications for the status changes of a resource or tool number to *Scheduled Down* from SAP ERP to SAP ME (see Resource and Tool Number on the SAP Help Portal at http://help.sap.com).

18.4.2 Process Flow Graphic



18.4.3 Prerequisites

18.4.3.1 SAP ERP

- You have created a user status profile for object types PP/PM: order header and PP/PM operation in Customizing (see Creating User Status Profile for Maintenance Orders section of this guide).
- You have assigned the user status profile to the corresponding order type in Customizing for *Plant Maintenance and Customer Service* under *Master Data in Plant Maintenance and Customer Service* (see Creating User Status Profile for Maintenance Orders section of this guide).
- You have verified that the Plant Maintenance order created based on notification from the maintenance department has a planning indicator of *Planned order* in Customizing for *Plant Maintenance and Customer Service*, under *Maintenance and Service Processing > Maintenance and Service Orders > Functions and Settings for Order Types > Define Default Value for Planning Indicator for Each Order Type*.
- You have set up ALE communication to create and transmit the *IORDER01* IDoc (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com) for a plant maintenance order.

18.4.3.2 SAP ME

- You have manually defined resources and tool numbers; *ERP Equipment Number* value must match the corresponding *Equipment Number* value in SAP ERP (see Resource Maintenance and Tool Number Maintenance on the SAP Help Portal at http://help.sap.com. See also Transferring Tool Usage Data and Transferring Resource Usage Data sections of this guide).
- Current status of the Tool Number / Resource is Productive.

18.4.4 Procedural Steps

1. In SAP ERP, create a scheduled maintenance order based on a maintenance plan with the planning indicator *Planned order* and the system indicator *Machine not in operation* (*SYSCON=0*) which reduces the capacity of the machine in SAP ERP.
2. SAP ERP 6.05 and later with activated business function (BF) LOG_PP_MES_INT_02 distributes maintenance orders automatically upon release based on Data Replication Framework (DRF) filter settings (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com).
3. SAPMEINT associates the PM order number with the resource or tool number.
4. SAP ME changes the status of the resource or tool number to *Scheduled Down*.
5. If the resource or tool is in use, the status first changes to pending, then to *Scheduled Down*, when it becomes idle.
6. A maintenance technician maintains and restarts the machine.
7. SAP ME operator changes the status of the resource or tool number to *Productive* using *Change Equipment Status* (see Change Equipment Status on the SAP Help Portal at http://help.sap.com).
8. SAPMEINT sends the following updates to the PM order in SAP ERP:
   - Changes the user status to *PROD*
   - Changes the system condition to *In Operation* (*SYSCON=1*), which increases the capacity of the machine in SAP ERP

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

18.4.5 Alternates / Best Practices and Tips

- *Scheduled Down* status always comes from SAP ERP via *Plant Maintenance Order*.
- When sending Outbound Equipment Status Change messages, always use the *Change Equipment Status* activity in SAP ME.
- When you have the resource in a *Scheduled Down* status, put the resource into a *Productive* status before you set it to *Unscheduled Down*.
- After setting the resource to *Unscheduled Down* status, reset it to the *Productive* status.
- At this point, you can go back and forth between *Productive* and *Unscheduled Down* outbound messages.

- Before sending another Plant Maintenance Order, set the status back to *Productive*.

18.4.5.1 Creating User Status Profile for Maintenance Orders

This configuration is required for equipment data integration.

1. In Customizing for *Plant Maintenance and Customer Service*, choose *Maintenance and Service Processing* > *Maintenance and Service Orders* > *General Data* > *User Status for Orders* > *Define Status Profile* > *Define User Status Profile for Orders*.
2. On the *Change Status Profile: Overview* screen, click the *New Entry* icon.
3. On the *New Entry* screen, enter the following data:

Field Name	Description	User Action and Values
Status Profile		Enter **ZMAINT**
Text		Enter **SAPMEINT maint order**
Maintenance Language		Enter the abbreviation for your language. For example, **en** for English.

4. Click *Continue*.
5. On the *Change Status Profile: Overview* screen, select new profile and click the *Details* icon.
6. On the *Change Status Profile: User Status* screen, enter the following data:

Status N	Status	Short Text	Long	Init. St.	Lowest	Highest	Posit.	Priority
1	NEW	New order	Deselected	Selected	1	2	1	1
2	SENT	Sent to MES	Deselected	Deselected	2	4	1	1
3	COMP	Completed	Deselected	Deselected	2	4	1	1
4	PROD	Production up	Deselected	Deselected	2	4	1	1

7. Click *Object Types*.
8. On the *Change Status Profile: Allowed Object Types* screen, enter the following data:

Field Name	Description	User Action and Values	Comments
X	Selection checkbox	Select the following: *Maintenance order* *PP/PM: operation* *PP/PM: order header*	
Obj type	Description of object	None	

9. Click *User Status*.
10. On the *Change Status Profile: Allowed Object Types* screen, enter the following data:

Status N	Status	Short Text	Long	Init. st.	Lowest	Highest	Posit.	Priority
1	NEW	New order	Deselected	Selected	1	2	1	1
2	SENT	Sent to MES	Deselected	Deselected	2	4	1	1
3	COMP	Completed	Deselected	Deselected	2	4	1	1
4	PROD	Production up	Deselected	Deselected	2	4	1	1

11. Save your entries.
12. Return to the *Choose Activity* screen and click the *Assign User Status to Order Types* activity.
13. On the *Change View "Status Profile f. MaintOrders": Overview screen*, enter the following data:

Field Name	Description	User Action and Values
StatProf		Enter **ZMAINT** for PM01order type
OpStatPr		Enter **ZMAINT** for PM01order type

14. Save your entries.

18.4.6 Examples

18.4.6.1 Transfer Tool Scheduled Downtime

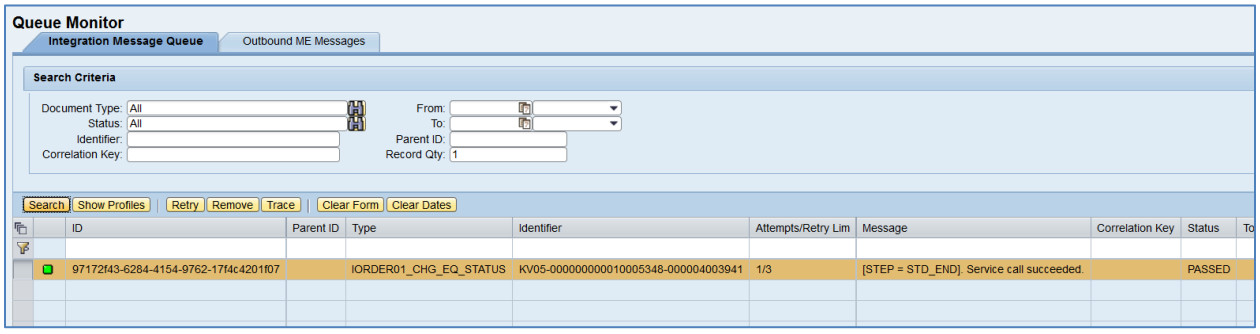
1. In SAP ERP, create Maintenance Order. Access the transaction using:

SAP Menu – *Logistics > Plant Maintenance > Maintenance Processing > Order > Create (General)*

or transaction code – *IW31*

2. Optional: Verify inbound *IORDER01_CHG_EQ_STATUS* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.

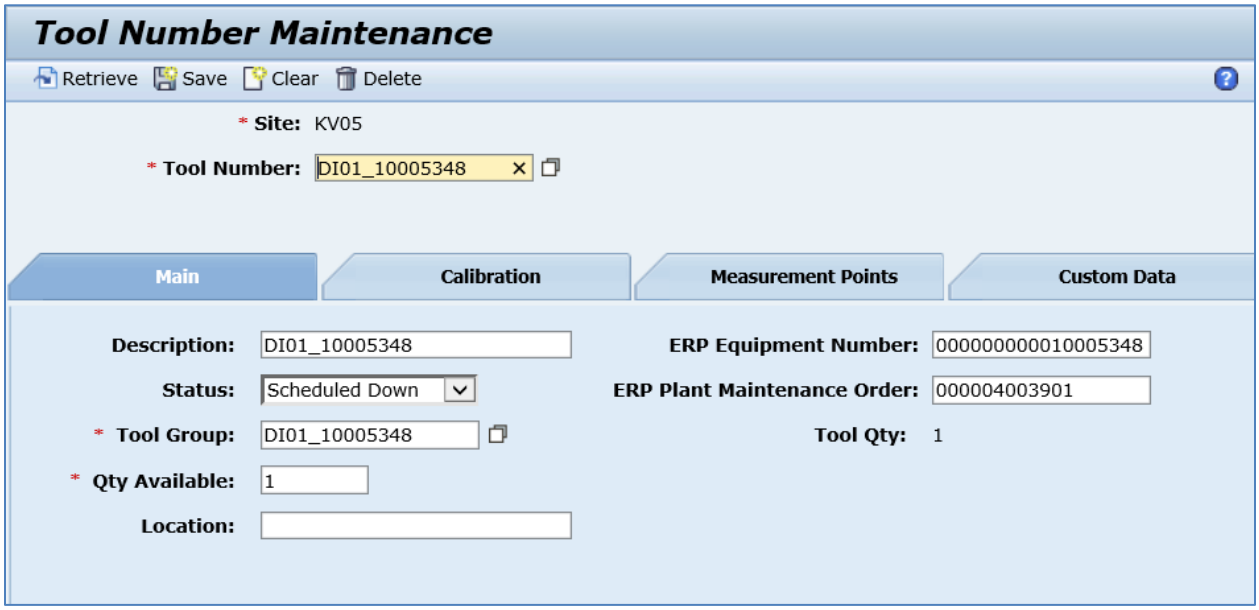


3. Verify results in SAP ME.

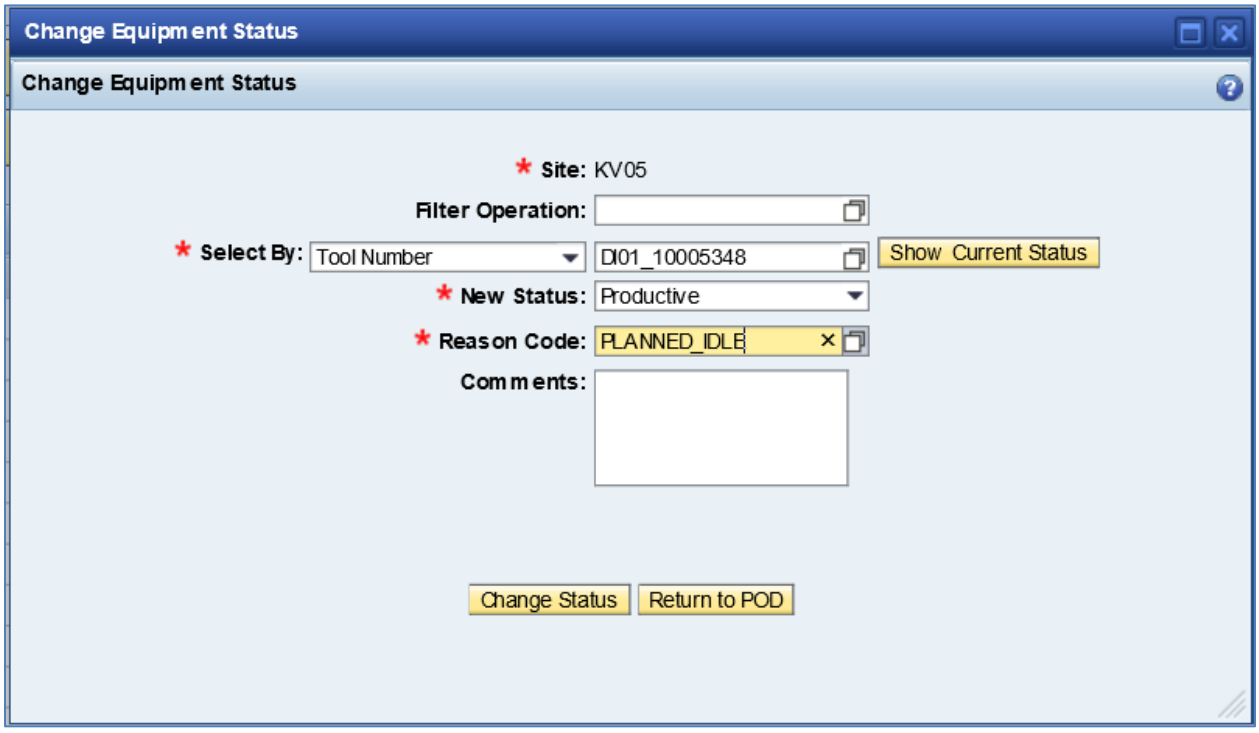
Run *Tool Number Maintenance*, and retrieve the Tool Number whose status has just been changed.

On the *Main* tab, verify the following field values:

- *Status:* Scheduled Down: This tool is closed for scheduled maintenance (preventive maintenance).
- *ERP Plant Maintenance Order:* The Plant Maintenance (PM) order created and transferred for this tool from SAP ERP.



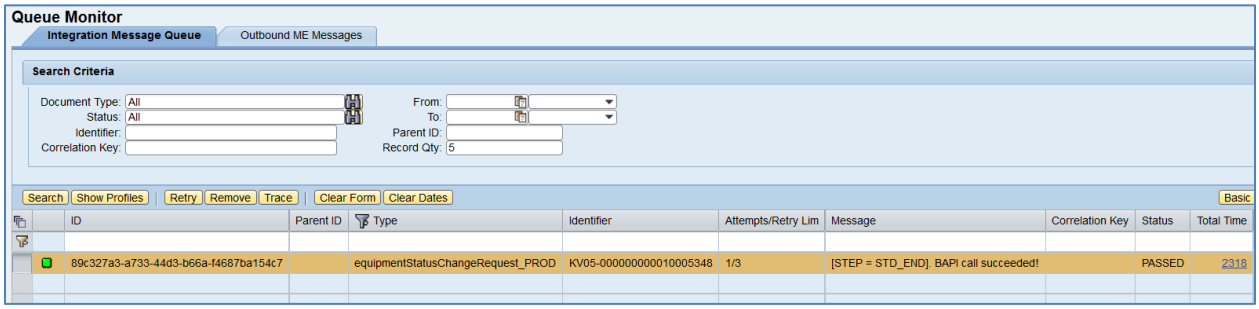
4. Run the *Production Operator Dashboard*, click the *Change Equipment Status* activity (*Activities* > *Change Equipment Status*).
5. On the *Change Equipment Status* screen, enter the following:
   - *Select By:* Select Tool Number. Browse for the Tool Number whose status has been changed to Scheduled Down.
   - *New Status:* The status to be assigned to the equipment. Select Productive.
   - *Reason Code:* The reason code to be assigned to the change of status. Select a Reason code if needed. Reason codes are defined in *Reason Code Maintenance*.
   - *Comments:* User comments regarding the change of status. Enter a comment if needed.



6. Click *Change Status*.

SAP ME sends a status change notice to the Plant Maintenance order using SAP MII.

7. Optional: Verify the outbound *equipmentStatusChangeRequest_PROD* message was received in SAP MII using *Queue Monitor*.



8. Verify results in SAP ERP.

In SAP ERP access the transaction via:

SAP Menu – *Logistics* > *Plant Maintenance* > *Maintenance Processing* > *Order* > *Display*

or transaction code – *IW33*

On the *Display Order: Initial Screen*, enter the order number and press `Enter`. Check the following:

- *Status:* Order Status changes to PROD (value next to the blue “i” icon).
- SystCond.: 1.

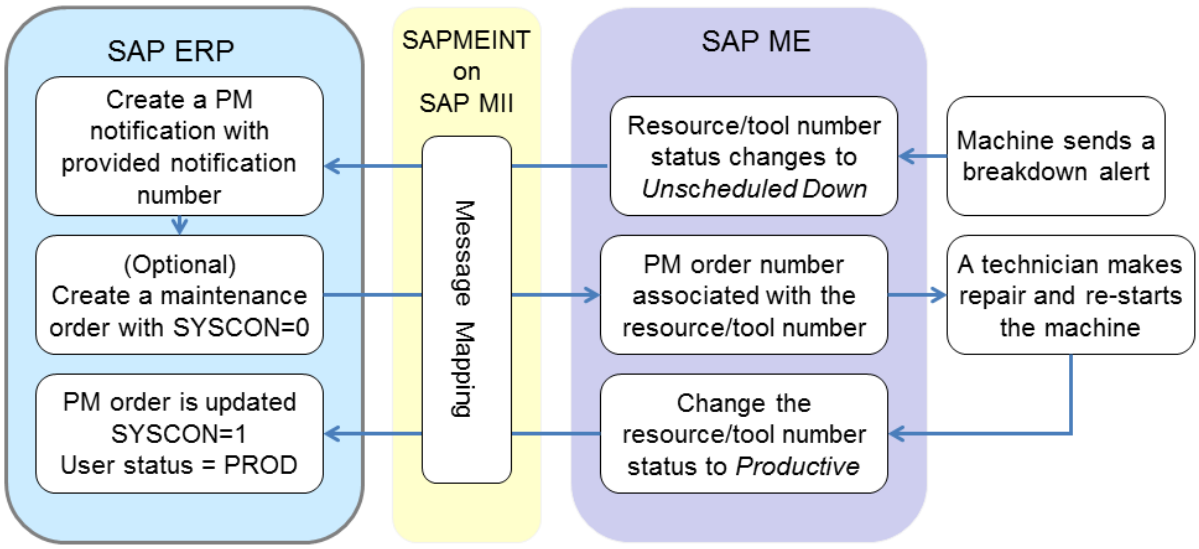
18.5 Transfer Equipment Unscheduled Downtime

18.5.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer notifications for the status changes of a resource or tool number for unplanned downtime from SAP ME to SAP ERP (see Resource and Tool Number on the SAP Help Portal at http://help.sap.com).

- SAP ME is the system of record when a resource or tool number experiences an unplanned status change.
- SAP MII is used as the connector between SAP ME Change Equipment Status and the SAP ERP Plant Maintenance module.

18.5.2 Process Flow Graphic



18.5.3 Prerequisites

18.5.3.1 SAP ERP

- You have created a user status profile for maintenance orders (see Creating User Status Profile for Maintenance Orders section of this guide).
- You have assigned the user status profile to the corresponding order type in Customizing for *Plant Maintenance and Customer Service* under *Master Data in Plant Maintenance and Customer Service* (see Creating User Status Profile for Maintenance Orders section of this guide).
- You have verified that the Plant Maintenance order created based on notification from the maintenance department has a planning indicator of *Immediate order* or *Unplanned order* in Customizing for *Plant Maintenance and Customer Service*, under *Maintenance and Service Processing > Maintenance and Service Orders > Functions*

and Settings for Order Types > Define Default Value for Planning Indicator for Each Order Type.

18.5.3.2 SAP ME

- You have reviewed ERP integration rule settings in *System Rule Maintenance* (see ERP Integration Rules on the SAP Help Portal at http://help.sap.com).
- You have verified that collaboration links and directives are configured (see Configuring SAP ME Outbound Collaboration on the SAP Help Portal at http://help.sap.com).
- You have manually defined resources and tool numbers. *ERP Equipment Number* value must match the corresponding Equipment Number value in SAP ERP (see Resource Maintenance and Tool Number Maintenance on the SAP Help Portal at http://help.sap.com).

18.5.4 Procedural Steps

1. SAP ME receives an alert when a tool or resource on the shop floor experiences unscheduled downtime.
2. SAP ME changes the status of the resource or tool number to *Unscheduled Down*.
3. SAPMEINT sends the *equipmentStatusChangeRequest_UNSCH_DOWN* message to SAP ERP to create a Plant Maintenance (PM) notification.
4. A PM worker reviews the notification and manually creates a PM order with reference to the notification, the planning indicator *Immediate order* or *Unplanned order*, and the system indicator *Machine not in operation* (*SYSCON=0*) which reduces the capacity of the machine in SAP ERP.
5. SAP ERP 6.05 and later with activated business function (BF) LOG_PP_MES_INT_02 distributes maintenance orders automatically upon release based on Data Replication Framework (DRF) filter settings (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com).
6. SAPMEINT associates the PM order number with the resource or tool number.
7. A maintenance technician repairs and restarts the machine.
8. SAP ME operator changes the status of the resource or tool number to *Productive* using *Change Equipment Status* (see Change Equipment Status on the SAP Help Portal at http://help.sap.com).
9. SAPMEINT sends the following updates to the PM order in SAP ERP:
   - Changes the user status to *PROD*
   - Changes the system condition to *In Operation* (*SYSCON=1*), which increases the capacity of the machine in SAP ERP

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

18.5.5 Alternates / Best Practices and Tips

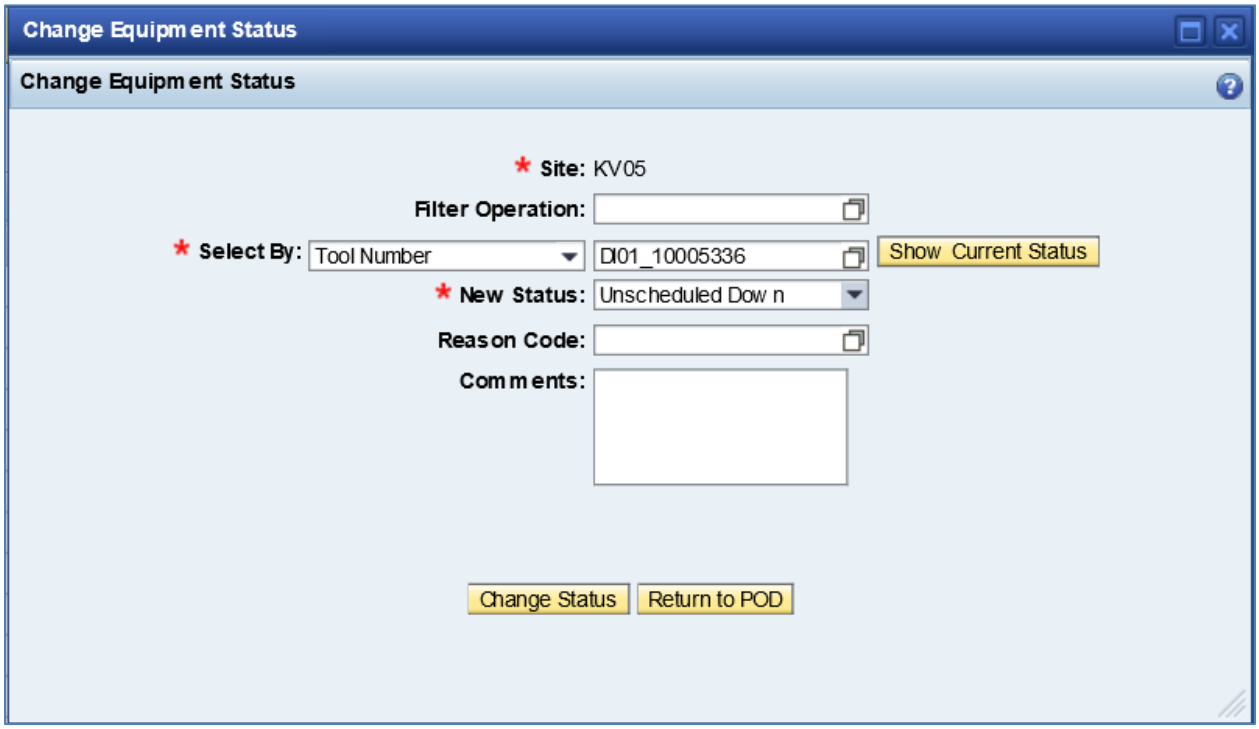
- *Scheduled Down* status always comes from SAP ERP via *Plant Maintenance Order*.
- When sending Outbound Equipment Status Change messages, always use the *Change Equipment Status* activity in SAP ME.
- When you have the resource in the *Scheduled Down* status, put the resource into a *Productive* status before you set it to *Unscheduled Down*.
- After setting the resource to *Unscheduled Down* status, reset it to the *Productive* status.
- At this point, you can go back and forth between *Productive* and *Unscheduled Down* outbound messages.
- Before sending another Plant Maintenance Order, set the status back to *Productive* status.

18.5.6 Examples

18.5.6.1 Transfer Tool Unscheduled Downtime

1. Run the *Production Operator Dashboard*, click the *Change Equipment Status* activity (*Activities > Change Equipment Status*).
2. On the *Change Equipment Status* screen, enter the following:
   - *Select By:* Select Tool Number. Browse for the Tool Number whose status has to be changed to Unscheduled Down.
   - *New Status:* The status to be assigned to the equipment. Select Unscheduled Down.

     Note: Click *Show Current Status* to make sure that current status of this Tool Number is *Productive*.
   - *Reason Code:* The reason code to be assigned to the change of status. Select a Reason code if needed. Reason codes are defined in *Reason Code Maintenance*.
   - *Comments:* User comments regarding the change of status. Enter a comment if needed.

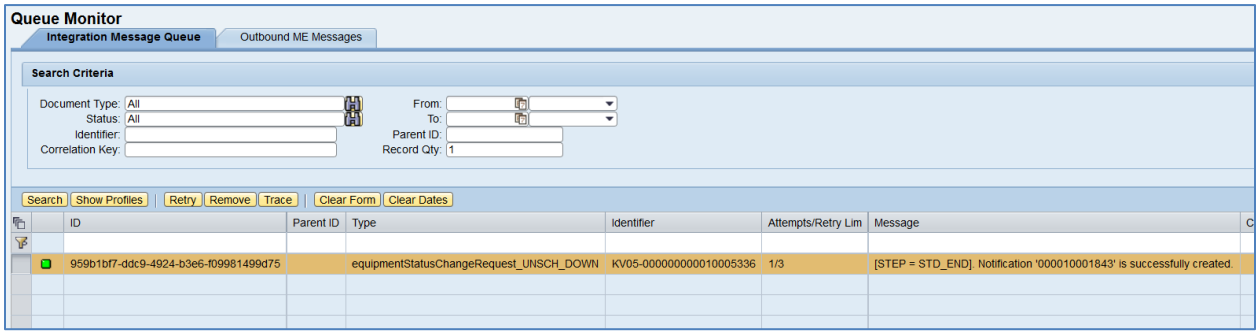


3. Click *Change Status*.

SAP ME sends a status change notice to Plant Maintenance via MII.

4. Optional: Verify the outbound *equipmentStatusChangeRequest_UNSCH_DOWN* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



5. Verify results in SAP ERP.

In SAP ERP access the transaction via:

SAP Menu – *Logistics* > *Plant Maintenance* > *Maintenance Processing* > *Notification* > *Display*

or transaction code – *IW23*

On the *Display PM Notification: Initial Screen*, enter the number that identifies the notification. Found in the Queue Monitor *Message* field and entered without leading zeroes.

On the *Display PM Notification: Malfunction Report* screen, verify the following field values:

- *Notification:* Number that identifies the notification. Found in Queue Monitor *Message* field and entered without leading zeroes.
- *Equipment Number:* Corresponds to the Equipment Number that is created in SAP ERP and linked to the Tool Number in SAP ME.
- *Breakdown:* Indicator that informs you when a machine has broken down. Select this checkbox.

19 Quality Notification Integration

19.1 Transferring Nonconformance Data to Quality Notification

19.1.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to transfer nonconformance (NC) data from SAP ME to SAP ERP as a quality notification (QN) when a user or machine logs an NC code for an exception on the shop floor, such as product defect, process variation, or low yield when processing a production shop order originated from SAP ERP (see NC Code and Integration of Production Orders on the SAP Help Portal at http://help.sap.com).

This may happen any time and may not be related to a planned inspection.

- Only SAP ME NC codes marked as ERP_QN_CODE are sent in the notification to SAP ERP.
- Only NC codes logged against a production shop order that was imported from SAP ERP are sent to SAP ERP.
- When a production shop order has a batch number, a quality notification is created per shop order/batch combination.
- Batch master records are created only for top level materials that are designated as batch-managed materials in SAP ERP.
- This function supports long material numbers (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com).

For more information about nonconformance integration, see Transfer of Nonconformance Data to Quality Notification on the SAP Help Portal at http://help.sap.com.

19.1.2 Prerequisites

19.1.2.1 SAP ERP

- You have created or updated the *Quality Management Partner Determination* as follows:
  - On the *Maintain: Partner Determination* screen (transaction *VOP2*), select *Quality Management* and click *Change Partner*.
  - On the *Change View "Partner Determination Procedures": Overview* screen, click *Procedure Assignment*.
  - Select *Alloc.PartnDetermProc to NotifType* and click the green *Checkmark*.
  - Switch to edit mode.
  - Find *F3* (*Material-Rel. Defect*) in the *NoTyp* (Notification Type) column. Enter *Q3* or change the field value to *Q3* in the *PartnDetProc* (Partner Determination Procedure) column.
  - Save your entries.
- You have created a catalog (any number), a code group, and a code in SAP ERP QM.

- You have created user master records to be used with the mandatory partner type *KU* (*User Responsible*).

19.1.2.2 SAP ME

- In *User Maintenance*, you have entered a value in the *ERP User* field. This value must be in all capital letters.
- In *NC Code Maintenance*, on the *Main* tab, you have selected the *ERP QN Code* checkbox and you have mapped this to the catalog, code group, and QN code that you created in the SAP ERP transaction *QS41* or *QS42*.
- If you want to send additional data to SAP ERP (QM) to be stored in the *Item Long Text* field in QM, you have created or reviewed the NC data type configuration and assigned this data type to the NC codes (see NC Data Type, Data Field Definition and Assignment, and NC Code Maintenance on the SAP Help Portal at http://help.sap.com).

  You can configure additional NC data fields (*SFC*, *Material*, *Operation*, *Resource*, *WC*, *Comments*) within an NC data type:

  - In SAP ERP, on the *Change Notification: Initial Screen* (transaction *QM02*), enter a notification.
  - On the *Items* tab, click *Create/View* in the table *Item Long Text* column. The values of these fields are displayed in the *Item Long Text* field on this tab.
- If a top level material is batch-managed in SAP ERP, you have done the following:
  - In *Next Number Maintenance*, set up the numbering pattern for a batch number for all materials (*) or for specific materials.
  - In *Material Maintenance*, on the *Build* tab, select a value from the *Increment ERP Batch Number* dropdown list.
  - Assign the *CREATE_BATCH* hook point activity to the last SAP ERP reporting step of the routing (see Create Shop Order Batch Number on the SAP Help Portal at http://help.sap.com).

19.1.2.3 SAPMEINT on SAP MII

In *SAPMEINT Workflow Configuration*, you have verified workflow parameters of the *QualityNotification/QualityNotificationBAPIHandler* (see SAPMEINT Workflow Configuration on the SAP Help Portal at http://help.sap.com).

For more information, see SAP Note 1763332.

19.1.3 Procedural Steps

1. When a shop floor operator logs an NC code that is marked as *ERP_QN_CODE* in SAP ME, the system triggers a collaboration action.
2. SAPMEINT sends a *qualityNotificationRequest* QN message to SAP ERP to do the following:
   - Notify the process owners

- Initiate a containment action
- Alert an operator and a quality engineer
- Create or update the quality notification in SAP ERP

3. SAP ERP initiates a CAPA (8D) report to rectify the quality exception captured by SAP ME.

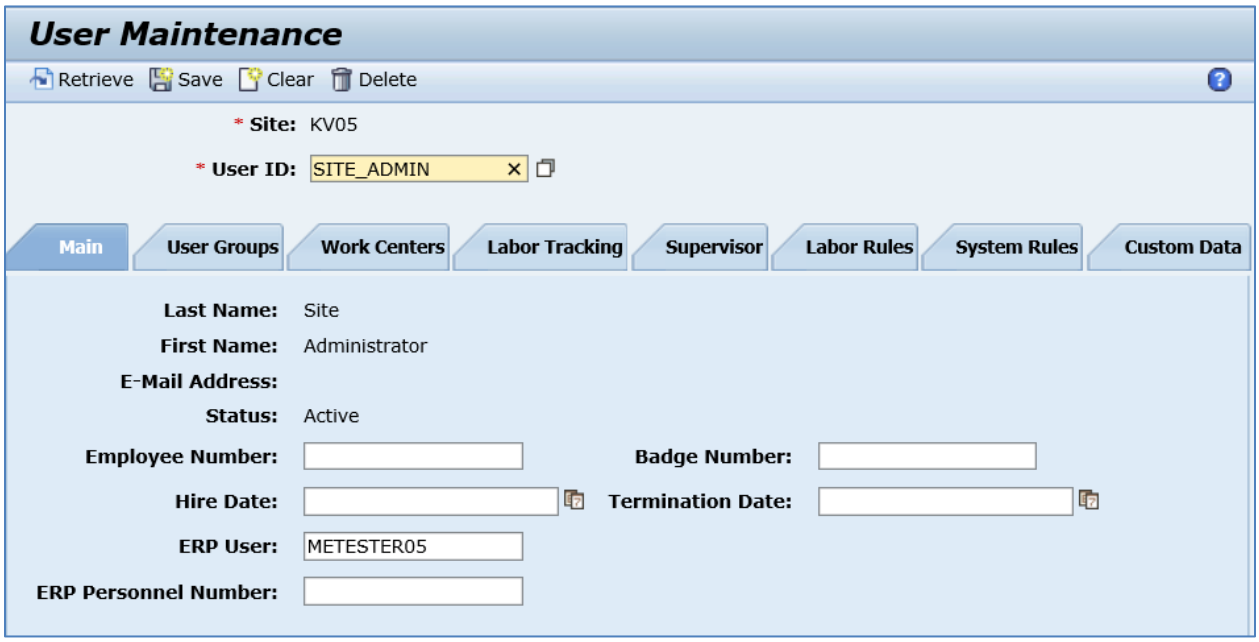
For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

19.1.4 Alternates / Best Practices and Tips

19.1.5 Examples

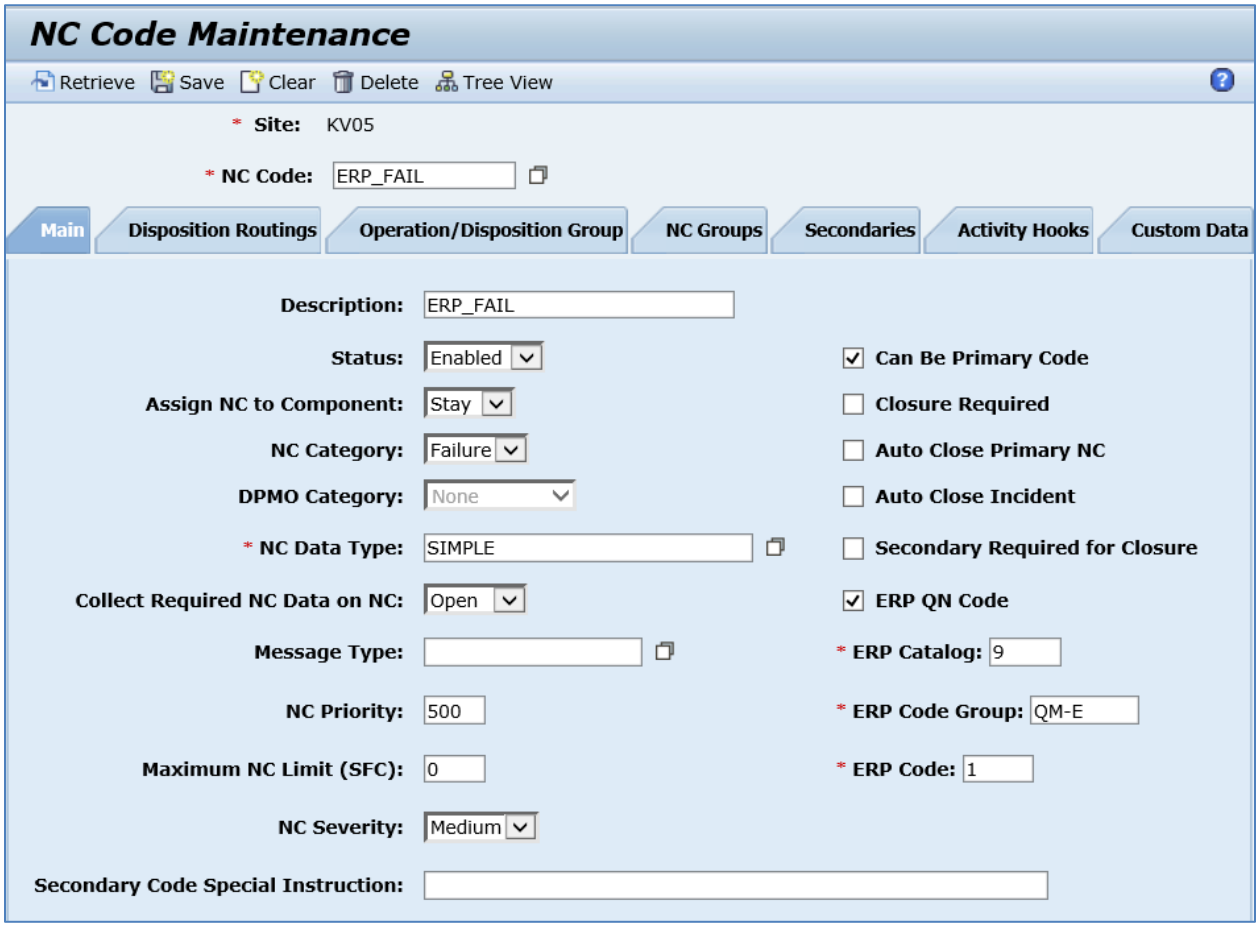
19.1.5.1 Transferring Nonconformance Data to Quality Notification

1. In SAP ME, access the *User Maintenance* activity and make sure that the ERP user has been assigned to your SAP ME user. The value must be entered in the *ERP User* field and be in all capital letters.



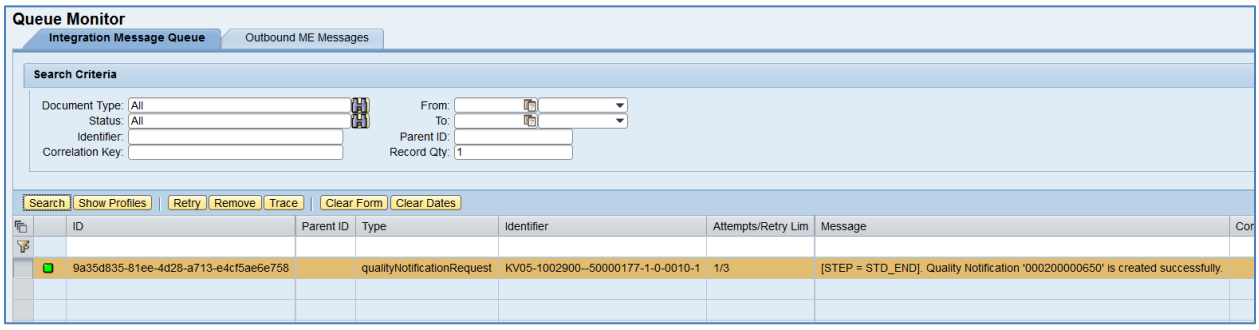
2. In SAP ERP, make sure that you have created a catalog (any number), a code group, and a code.
3. In SAP ME, open the *NC Code Maintenance* activity. Create a new NC Code. Enter the following:
   - *ERP QN Code:* If selected, triggers a quality notification to SAP ERP; and makes the *ERP Catalog*, *ERP Code Group*, and *ERP Code* fields mandatory.
   - *ERP Catalog:* The catalog type for the logged NC code. Enter 9.
   - *ERP Code Group:* The code group for the logged NC code. Enter QM-E.

- *ERP Code:* Quality notification (QN) code in ERP for the logged NC code. Enter 1.



4. Click *Save*.
5. Run the *Production Operator Dashboard*, start the SFC, and click *Log NC*.
6. Log the NC code created in Step 3 (marked as *ERP_QN_CODE*).
7. Optional: Verify the outbound *qualityNotificationRequest* message was received in SAP MII using *Queue Monitor*. When the message is processed successfully, the *Message* column contains a string with Notification number.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



8. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

SAP Menu – *Logistics* > *Quality Management* > *Quality Notification* > *Display*

or transaction code – *QM03*

On the *Display Notification: Initial Screen*, enter the number that identifies the notification. Enter notification number found in SAPMEINT Queue Monitor.

On the *Reference Object* tab of the *Display Notification: Material-Rel. Defect* screen, verify the following:

- *Material:* Identifies defective material.
- *Serial number:* Specifies the serial number of a serialized material. If the material is serial-number managed, the number displays here.
- *Batch:* Specifies the batch of the material. If the material is batch-managed, the batch number displays here. The *Batch* field displays under the plant.
- *Plant for mat.:* The plant where the defect occurred.

On the *Subject* tab of the *Display Notification: Material-Rel. Defect* screen, verify the following:

- *Coding:* Catalog group and code. Catalog group displays in the first field, code displays in the second field.
- *Description:* Short text for notification.
- *Long text:* Field with additional text.
- *Complaint qty:* Specifies the complaint quantity.
- *Priority:* Indicates the importance of the notification. Possible values are 1, 2, 3 or 4:
  - 1 – very high
  - 2 – high
  - 3 – medium
  - 4 – low

On the *Items* tab of the *Display Notification: Material-Rel. Defect* screen, scroll to the row with the logged NC code until you see *Item long text* column. Click the *Display Text* icon in the *Item long text* column.

On the *Display Long text on item* screen, verify the data received from SAP ME. If data was collected during the logging of an NC code, that information also displays here.

Click menu *Goto* > *Reported By…*

On the *Report by* screen, verify data for notification creation info.

19.1.6 Missing / Not Supported

Quality Notification Integration is supported for Production Orders only.

20 Integration of Quality Inspection Lot

20.1 Overview

This function lets you collect and transfer quality inspection results between SAP ME and SAP ERP (see Integration of Quality Inspection Lot on the SAP Help Portal at http://help.sap.com).

20.1.1 Business purpose

Providing the quality inspection results allows you to detect possible process problems and identify nonconforming product as early as possible to prevent excess rework or scrap cost.

SAP ME provides two types of quality inspection:

- 100% Quality Inspection (Inspection Sample Size equals the Build Qty of the production shop order and evaluation of collected data takes place inside SAP ME)
- Less than 100% Quality Inspection (The Inspection Sample Size is less than the Build Qty of the production shop order and evaluation is performed in SAP ERP)

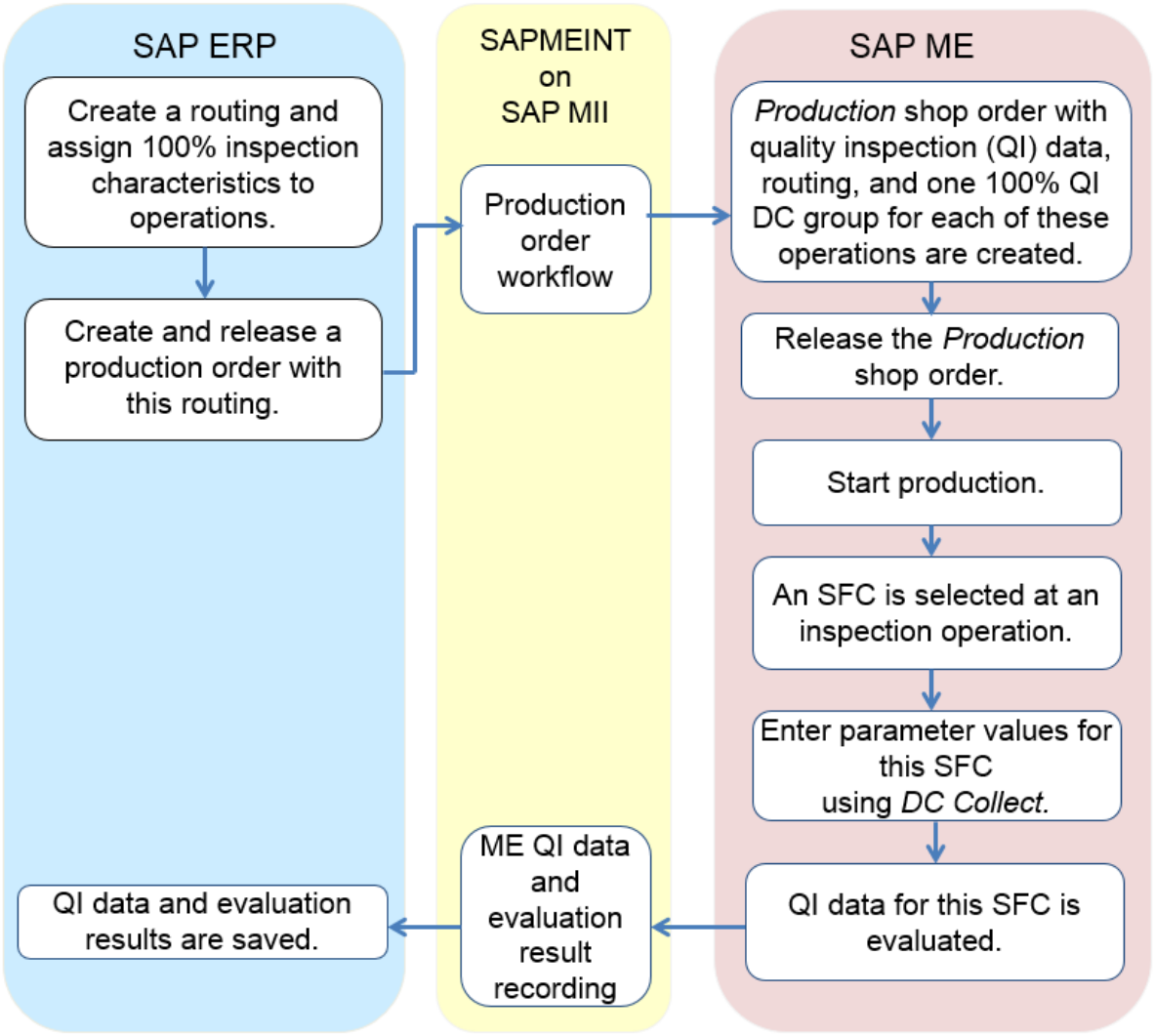
A sample-based approach to in-process inspection balances the risk to quality against the costs of performing inspections.

20.2 100% Quality Inspection

20.2.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to collect and transfer quality inspection results from SAP ME to SAP ERP for each SFC belonging to the production shop order. Evaluation of collected data takes place in SAP ME.

20.2.2 Process Flow Graphic



20.2.3 Prerequisites

20.2.3.1 SAP ERP

- In Customizing for *Quality Management*, you have done the following:
  - Click *Basic Settings* and execute *Maintain Setting at Plant Level*.
  - Click the plant record and then the *Details* icon.
  - On the *Results Recording* tab, in the *Results Recording* area, deselect *Summ. recording for n=1*.

Note: If the *Summ. recording for n=1* checkbox is selected, an error message displays in SAPMEINT and the production shop order is not created.

- You have assigned and activated *Inspection Type* 03 (in-process inspection for production order) for the material on the *Quality Management View* of transaction *MM01* or *MM02*.
- You have transferred materials to SAP ME.
- You have assigned inspection characteristics with the Sampling procedure = *100%* or *ALLITEMS* to relevant operations of the routing (see Configuring a Standard Routing with Inspection Characteristics section of this guide).

  Note: 100% Quality Inspection requires that all inspection characteristics have assigned Sampling Procedure *100%* or *ALLITEMS* within the same routing step.

  The inspection characteristic of type *02* (*Qualitative*) and classed inspection characteristics are not supported.

  The inspection characteristic for planned orders is not supported.
- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

  Note: LOIPRO03 is required if routings are transferred from SAP ME to SAP ERP (see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com and the document attached to SAP Note 1793291).
- You have defined unique ISO codes for every unit of measure.

20.2.3.2 SAP ME

- You have imported the production order with Quality Inspection Lot data from SAP ERP (see Configuring a Production Order with Quality Inspection Lot section of this guide).
- You have released the production shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- In *Service Extension Maintenance*, you have enabled the *QI_ERP_EXT* and *SAPMEINT_DB_TRANS* service extensions for the *proccessInspectionGroup* method of the *InspectionService* service (see Service Extension Maintenance on the SAP Help Portal at http://help.sap.com).

  Note: Please make sure that the Asyncronous checkbox is not selected.
- In *POD Maintenance*, you have created a POD button that has the *PR510* (*Complete*) and *QM030* (*Sample Inspection Lot*) activities assigned to it. In this topic, we refer to this button as the *Sample Inspection Lot*.

- We recommend that you configure the *Sample Inspection Lot* (*QM030*) POD plugin to open as a popup.
- In *POD Maintenance*, you have verified that your POD Work List contains the *Info* column to display the *Data Collection* (DC) icon for sample SFC numbers.
- We recommend that you configure the *Log NC* (*NC_DATA_ENTRY*) POD plugin to open as a popup.

20.2.4 Procedural Steps

1. Start and complete operations until you reach the inspection operation.
2. At the inspection operation to which the *100% Quality Inspection* DC group is attached, select one or more SFC numbers and click *Start*.
3. Select one or more SFC numbers and click the *Sample Inspection Lot* POD button. SAP ME opens the *Sample Inspection Lot* plugin (see Sample Inspection Lot on the SAP Help Portal at http://help.sap.com).
4. Click *OK* in the *Sample Inspection Lot* (*QM030*), the SFC numbers remain in the *Active* status at the current operation.
5. Enter parameter values using *DC Collect*.
6. When you click *Save* in the *Data Collection Entry*, SAP ME evaluates each parametric value collected for this SFC number. If any critical inspection characteristic fails, this sample is rejected. If there are no failed critical inspection characteristics, the system compares the number of passed and failed normal characteristics. If the number of passed normal characteristics is greater than the number of failed characteristics, this sample is accepted.

   Note:

   - Boolean parameters are also supported. A Boolean parameter is considered *Accepted* if the "*1 Value*" is saved, otherwise it is considered as *Rejected*;
   - The evaluation process is triggered only when all parameters are collected and saved (you can leave some fields blank and return to data collection later);

   If the inspection result for this SFC number is *Sample Accepted*, you can complete this SFC number at this operation.

   If the inspection result for this SFC number is *Sample Rejected*, the SFC number remains at this operation. SAP ME automatically opens the *Log NC* plugin and allows you to log an NC code against this SFC number.

   Note: You can change the *DC500 AUTO_NC_100QI* rule setting to *YES*. In this case, SAP ME will automatically log the *QM_INSP_REJECT* NC code against an SFC number that has the Sample Rejected inspection result, disposition this SFC number to the *INSPECTION_REJECTED* routing, and place it on hold. For more information, see Data Collection Entry on the SAP Help Portal at http://help.sap.com.
7. SAPMEINT sends the parameter values and quality inspection result for this SFC number to SAP ERP (QM) using the *qualityInspectionMeEvalResultRecording* message.

In SAP ERP, you can view the result for each characteristic in the *Valuation* column on the *Record Results: Characteristic Overview* screen (transaction *QE51N*).

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

20.2.5 Alternates / Best Practices and Tips

20.2.5.1 Repeated Quality Inspection

In the manufacturing process, you may have to inspect an SFC number multiple times. For example, when a sample SFC number is dispositioned from an inspection operation and then returned back to the inspection operation (see Disposition Functions on the SAP Help Portal at http://help.sap.com).

Note: This function supports only 100% quality inspection.

When you enter data for a sample SFC number for the second or subsequent times, SAPMEINT sends the collected data and the evaluation results to SAP ERP.

Note: You cannot add a sample SFC number to the same SFC group again. Starting the *Sample Inspection Lot* (*QM030*) plugin for repeated quality inspection is not required. Select an SFC number and click *DC Collect* to enter parameter values.

In SAP ERP, on the *Record Results: Characteristic Overview* screen (transaction *QE51N*), the existing values that were collected for this SFC number are marked as *Invalid*.

- In SAP ERP, you have set up a routing for correct repeating reporting of the collected data by setting the *Ext. numbering* field on the *Header Detail* screen to *Unique external numbering possible* or *Unique external numbering required* (transaction *CA01*).
- In SAP ME, In *System Rule Maintenance*, you have set the *Allow Multiple Data Collection* system rule to *true* (see Miscellaneous Rules on the SAP Help Portal at http://help.sap.com).

20.2.5.2 Block Rejected Samples

QM_INSP_REJECT NC code can be automatically logged against an SFC number that has the *Sample Rejected* inspection result. The SFC number will be dispositioned to the *INSPECTION_REJECTED* routing and placed on hold.

To enable this function, change the *DC500 AUTO_NC_100QI* rule setting to *YES*.

20.2.5.3 Do not Display Sample Inspection Lot Plugin for 100% Quality Inspection

For 100% Quality Inspection, you can mark the SFC number as a sample without opening a *Sample Inspection Lot* plugin.

To enable this, set the *QM030* activity rule *DISPLAY_PLUGIN_100QI* to *No*. The system adds a selected SFC number to an SFC group and marks the SFC number as a sample in the background. The SFC number stays in the *In Queue* status on the same routing step.

By default, the *DISPLAY_PLUGIN_100QI* activity rule is set to *YES* and the *Sample Inspection Lot* POD plugin displays when the user clicks a POD button with *QM030* assigned.

Note: This rule applies to 100% quality inspection.

20.2.5.4 Block Sample SFC Number if Data is not Collected

You can prevent completion of an SFC number for which data has not been collected at the inspection step.

To enable this function, select the *Block SFCs Until Inspection Finished* checkbox in *Step Properties*. By default, this checkbox is selected at the last reporting step on the routing.

This checkbox is read-only and visible only if the *ERP Integration Active* system rule is set to *true*.

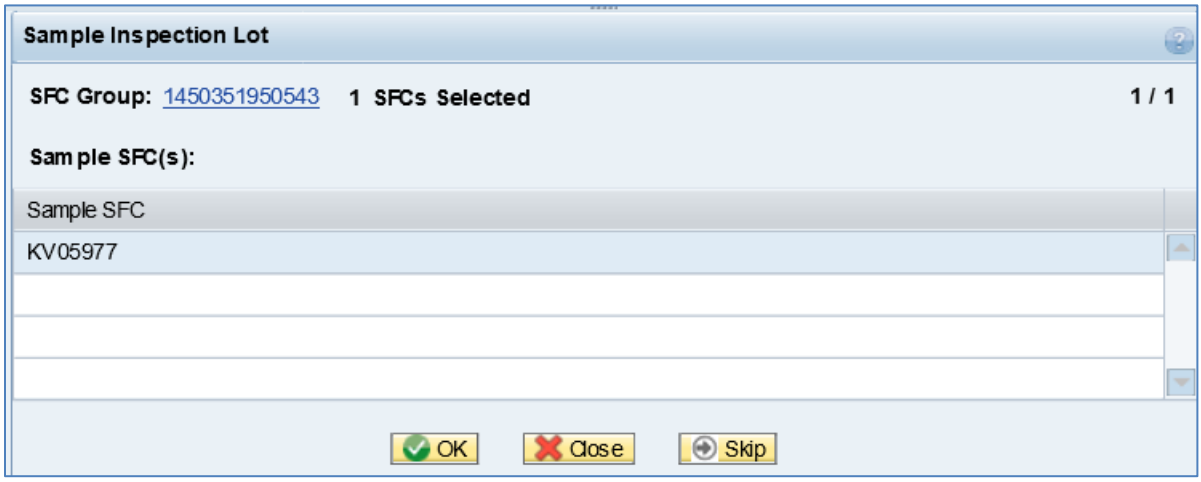
20.2.6 Examples

20.2.6.1 100% Quality Inspection

1. In SAP ME access the *Shop Order Release* activity and release the *production shop order* with Quality Inspection Lot received from SAP ERP.
2. Start and complete operations until you reach the inspection operation.
3. At the inspection operation at which the 100% Quality Inspection DC group is attached, select one or more SFC numbers and click *Start*.
4. Click the *Sample Inspection Lot* POD button. SAP ME opens the *Sample Inspection Lot* plugin:
   - *SFC Group:* The unique identifier of the group of SFC numbers selected for quality inspection. Click the identifier link to open the *SFC Group Detail* screen and view members of this group.
   - *Sample SFC:* Indicates the SFC number to be inspected.
   - *OK:* Marks selected SFC numbers as sample SFC numbers, changes the status of these SFC numbers to Active and closes the Sample Inspection Lot plugin.
   - *Close:* Closes the Sample Inspection Lot plugin. SFC numbers selected for quality inspection remain in the *Complete Pending* status at this operation.
   - *Skip:* Allows you to skip inspection of the selected SFC numbers at this operation.

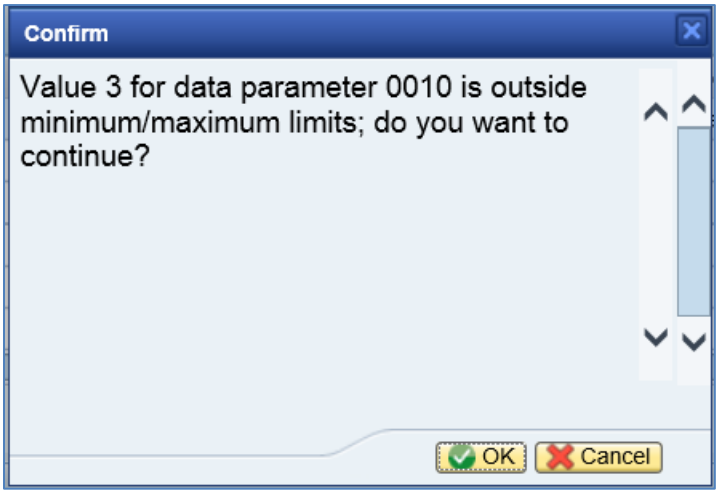
     For 100% quality inspection, the system completes the selected SFC number at this operation.

     Note: The *Skip* button displays only if the *ALLOW_SKIP* activity rule is set to *YES*.



5. Click *OK* in the *Sample Inspection Lot* (*QM030*). The SFC numbers remain in the *Active* status at the current operation.
6. Enter all parameter values using the *DC Collect*.

   Note: If the entered value is outside the minimum and maximum values, the confirmation message appears.



7. Click *Save* in the *Data Collection Entry*.

SAP ME evaluates each parametric value collected for this SFC number. If any critical inspection characteristic fails, this sample is rejected. If there are no failed critical inspection characteristics, the system compares the number of passed and failed normal characteristics. If the number of passed normal characteristics is greater than the number of failed characteristics, this sample is accepted.

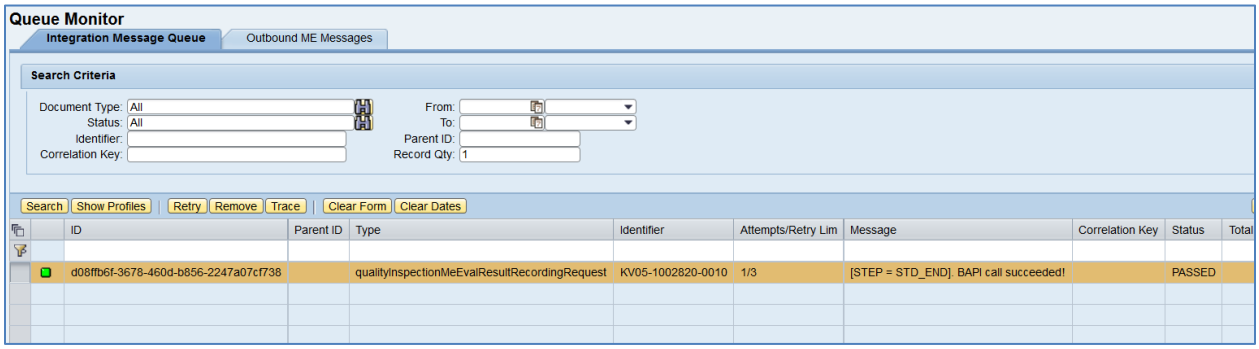
If the inspection result for this SFC number is *Sample Accepted*, you can complete this SFC number at this operation.

If the inspection result for this SFC number is *Sample Rejected*, the SFC number remains at this operation. SAP ME automatically opens the *Log NC* plugin and allows you to log an NC code against this SFC number.

Note: You can change the *DC500 AUTO_NC_100QI* rule setting to *YES*. If SAP ME automatically logs the *QM_INSP_REJECT* NC code against an SFC number that has the *Sample Rejected* inspection result, disposition this SFC number to the *INSPECTION_REJECTED* routing, and place it on hold.

8. Optional: Verify the outbound *qualityInspectionMeEvalResultRecordingRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *qualityInspectionMeEvalResultRecordingRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

BAPI_INSPOPER_RECORDRESULTS>

<INPUT>

<INSPLOT>30000001350**</INSPLOT>**

<INSPOPER>0010**</INSPOPER>**

</INPUT>

<TABLES>

<SINGLE_RESULTS>

<item>

<INSPLOT>30000001350**</INSPLOT>**

<INSPOPER>0010**</INSPOPER>**

<INSPCHAR>0010**</INSPCHAR>**

<EXT_NO>0000000000000000JI**</EXT_NO>**

<INSP_DATE>2015-12-17**</INSP_DATE>**

<INSP_TIME>17:02:33**</INSP_TIME>**

<INSPECTOR>METESTER05**</INSPECTOR>**

<RES_VALUE>30**</RES_VALUE>**

<RES_VALUAT>A**</RES_VALUAT>**

</item>

</SINGLE_RESULTS>

<CHAR_RESULTS/>

</TABLES>

</BAPI_INSPOPER_RECORDRESULTS>

- *<RES_VALUE> tag:* Contains actual value that has been collected in SAP ME.
- *<RES_VALUAT> tag:* Contains result of the evaluation. *A* – Accepted, *R* – Rejected.

12. Verify results in SAP ERP.

In SAP ERP access the transaction via:

SAP Menu – *Logistics* > *Quality Management* > *Quality Inspection* > *Inspection Result* > *Results Recording*

or transaction code – *QE51N*

On the *Result Recording: Characteristic Overview* screen, verify the following field values:

- *Short text for the inspection charac.:* Name of the inspection characteristic.
- *Specifications:* Minimum and maximum limits.
- *Inspect:* Predefined sample size that is inspected for an inspection characteristic or a partial sample. If 100% Quality Inspection this value is equal to the production shop order build size.
- *Inspect:* Number of sample units that have been inspected for a characteristic or a partial sample.
- *Result:* Field for summarized results or single results.
- *Original Value:* Original value that was actually entered during results recording.
- *Valuation:* In this field, the valuation for the characteristic, partial sample, or single value displays as an icon. The following valuations are possible:
  - Accepted
  - Rejected
  - Valuation unsuccessful

20.2.7 Missing / Not Supported

- A shop order can contain only one QM Inspection Group DC group at a routing step.
- Parametric data must be stored in the WIP database. The system rule *Store Data Collection Results in ODS* must be set to *false*.
- Non-serialized SFC numbers are not supported.

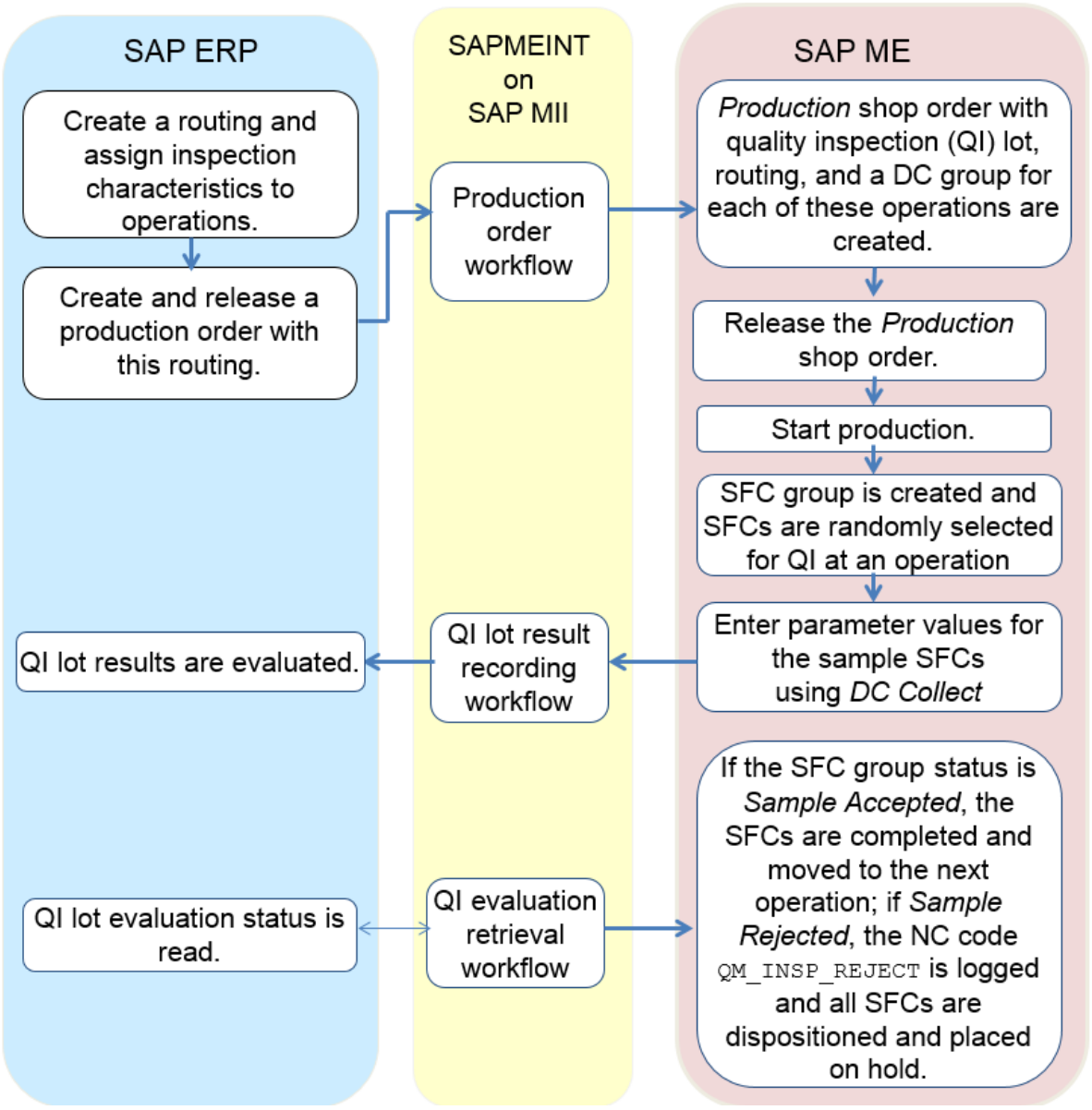
20.3 Less than 100% Quality Inspection (BLOCK_ORDER=YES)

20.3.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to collect and transfer quality inspection results from SAP ME to SAP ERP and receive the valuation status for all inspection characteristics from SAP ERP.

SFC numbers belonging to the production shop order cannot be completed at an inspection operation until parameter values are entered for sample SFCs and quality inspection evaluation results are received from SAP ERP (QM). Sample SFC numbers are randomly selected for quality inspection when the SFC group size is achieved.

20.3.2 Process Flow Graphic



20.3.3 Prerequisites

20.3.3.1 SAP ERP

- In Customizing for *Quality Management*, you have done the following:
  - Click *Basic Settings* and execute *Maintain Setting at Plant Level*.
  - Click the plant record and then the *Details* icon.
  - On the *Results Recording* tab, in the *Results Recording* area, deselect *Summ. recording for n=1*.

  Note: If the *Summ. recording for n=1* checkbox is selected, an error message displays in SAPMEINT and the production shop order is not created.
- You have assigned and activated *Inspection Type* 03 (in-process inspection for production order) for the material on the *Quality Management View* of transaction *MM01* or *MM02*.
- You have transferred materials to SAP ME.
- You have assigned inspection characteristics with the Sampling procedure to relevant operations on the routing. The Inspection Sample Size must be less than the Build Qty of the production shop order (see Configuring a Standard Routing with Inspection Characteristics section of this guide).

  Note:

  The inspection characteristic of type *02* (*Qualitative*) and classed inspection characteristics are not supported.

  The inspection characteristic for planned orders is not supported.
- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System > Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

  Note: LOIPRO03 is required if routings are transferred from SAP ME to SAP ERP (see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com and the document attached to SAP Note 1793291).
- You have defined unique ISO codes for every unit of measure.

20.3.3.2 SAP ME

- You have imported the production order with Quality Inspection Lot data from SAP ERP (see Configuring a Production Order with Quality Inspection Lot section of this guide).

- You have released the production shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- In *Service Extension Maintenance*, you have enabled the *QI_ERP_EXT* and *SAPMEINT_DB_TRANS* service extensions for the *proccessInspectionGroup* method of the *InspectionService* service (see Service Extension Maintenance on the SAP Help Portal at http://help.sap.com).
- In *POD Maintenance*, you have created a POD button that has the *PR510* (*Complete*) and *QM030* (*Sample Inspection Lot*) activities assigned to it. In this topic, we refer to this button as the *Sample Inspection Lot*.

  Note: Please make sure that the Asyncronous checkbox is not selected.
- We recommend that you configure the *Sample Inspection Lot* (*QM030*) POD plugin to open as a popup.
- In *POD Maintenance*, you have verified that your POD Work List contains the *Info* column to display the *Data Collection* (DC) icon for sample SFC numbers.
- We recommend that you configure the *Log NC* (*NC_DATA_ENTRY*) POD plugin to open as a popup.
- The *QM030* activity rule *BLOCK_ORDER* is set to *YES*.

20.3.4 Procedural Steps

1. Start and complete operations until you reach the inspection operation.
2. At the inspection operation at which the *QM Inspection Group* DC group is attached, select one or more SFC numbers and click *Start*.

   Note: Use a *Process* resource to receive a response from SAP ERP with evaluation results (see Resource on the SAP Help Portal at http://help.sap.com).
3. Select one or more SFC numbers and click the *Sample Inspection Lot* POD button. SAP ME adds these SFC numbers to an SFC group and changes their status to *Complete Pending*. When the SFC group is full, the system opens the *Sample Inspection Lot* (*QM030*) plugin.
4. Click *OK* in the *Sample Inspection Lot* (*QM030*) plugin. The system marks randomly selected SFC numbers as sample SFC numbers and closes the plugin. The status of the sample SFC numbers at the current operation changes to *Active*.
5. Enter parameter values for sample SFC numbers using *DC Collect*.
6. When parameter values for all sample SFC numbers are collected, SAPMEINT sends the quality inspection results for each SFC number to SAP ERP (QM) for evaluation using the *qualityInspectionResultRecordingRequest* message.
7. SAP ERP (QM) evaluates the results of the quality inspection. Each inspection characteristic is either accepted or rejected.

   You can view a result for each characteristic in the *Valuation* column on the *Record Results: Characteristic Overview* screen (transaction *QE51N*).

8. SAPMEINT automatically retrieves a quality inspection evaluation status for each characteristic and sends this data to SAP ME using the *readErpQualityInspectionResultRequest* message.
9. Based on the received valuation status, SAP ME accepts or rejects the SFC group:
    - If any critical inspection characteristic fails, the sample is rejected.
    - If there are no failed critical inspection characteristics, the system compares the number of passed and failed normal characteristics. If the number of passed normal characteristics is greater than the number of failed characteristics, the sample is accepted.
    - The system compares the number of accepted and rejected samples. If the number of accepted samples is greater than the number of rejected samples, the SFC group is accepted.
10. If the overall status of the SFC group is *Sample Accepted*, the system completes these SFC numbers at this operation. If the overall status is *Sample Rejected*, SAP ME automatically logs the *QM_INSP_REJECT* NC code against all SFC numbers of this shop order, dispositions these SFC numbers to the *INSPECTION_REJECTED* routing and places them on hold.

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

20.3.5 Alternates / Best Practices and Tips

20.3.6 Examples

20.3.6.1 Less than 100% Quality Inspection (BLOCK_ORDER=YES)

1. In SAP ME access the *Shop Order Release* activity and release the *production shop order* with Quality Inspection Lot received from SAP ERP.
2. Start and complete operations until you reach the inspection operation.
3. At the inspection operation at which the QM Inspection DC group is attached, select one or more SFC numbers and click *Start*.
4. Select one or more SFC numbers and click the *Sample Inspection Lot* POD button. SAP ME adds these SFC numbers to an SFC group. When the SFC group is full, the system opens the *Sample Inspection Lot* plugin that contains the following fields:
    - *SFC Group:* The unique identifier of the group of SFC numbers selected for quality inspection. Click the identifier link to open the *SFC Group Detail* screen and view the members of this group.
    - *Sample SFC:* Indicates the SFC number to be inspected.
    - *OK:* Marks selected SFC numbers as sample SFC numbers, changes the status of these SFC numbers to *Active* and closes the *Sample Inspection Lot* plugin.
    - *Close:* Closes the *Sample Inspection Lot* plugin. SFC numbers selected for quality inspection remain in the *Complete Pending* status at this operation.

- *Skip:* Allows you to skip inspection of the selected SFC numbers at this operation.

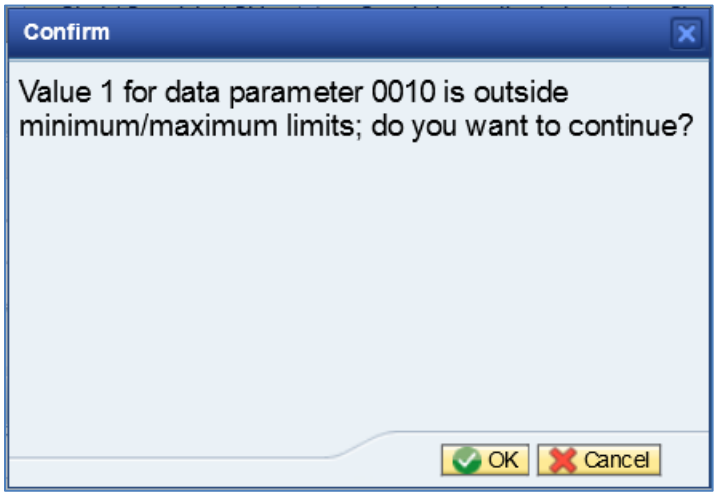
  For non–100% quality inspection, the system completes the selected SFC numbers at this operation. If the *BLOCK_ORDER* activity rule is set to *YES*, the system changes the status of the SFC group to *Sample Skipped*.

  Note: The *Skip* button displays only if the *ALLOW_SKIP* activity rule is set to *YES*.



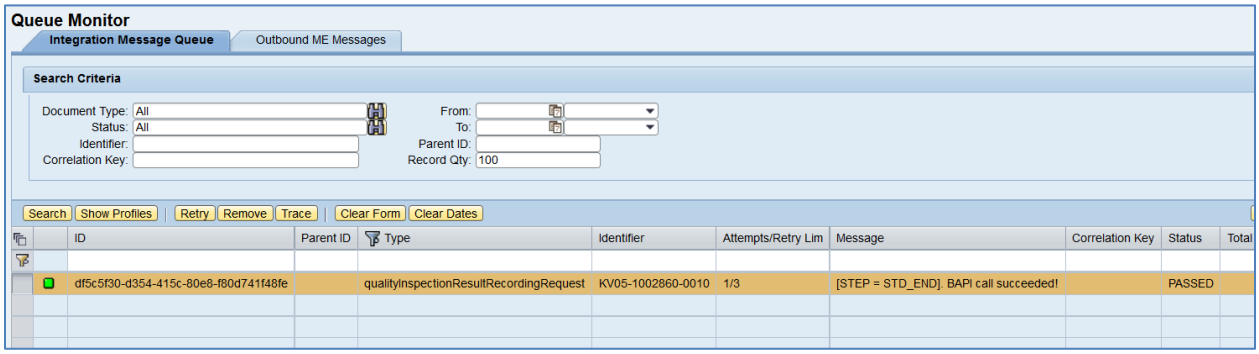
5. Click *OK* in the *Sample Inspection Lot* (*QM030*) plugin. The system marks randomly selected SFC numbers as sample SFC numbers and closes the plugin. The status of the sample SFC numbers at the current operation changes to *Active*.
6. Enter parameter values for all sample SFC numbers using *DC Collect*.

   Note: If the entered value is outside the minimum and maximum values, the confirmation message appears.



7. Click *Save* in the *Data Collection Entry*.
8. Optional: Verify the outbound *qualityInspectionResultRecordingRequest* message was received in SAP MII using *Queue Monitor*.

   For more information, see the SAPMEINT Message Processing Logic section of this guide.



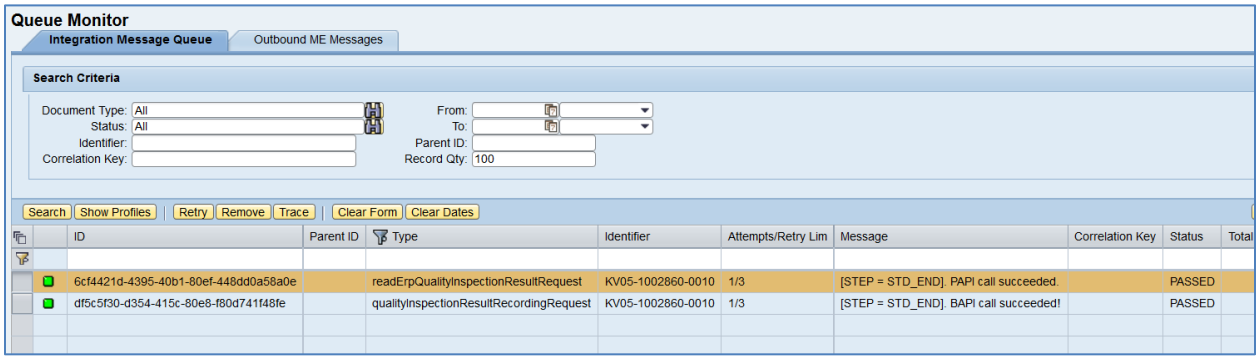
Select the *qualityInspectionResultRecordingRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

```
<BAPI_INSPOPER_RECORDRESULTS>
    <INPUT>
        <INSPLOT>30000001450</INSPLOT>
        <INSPOPER>0010</INSPOPER>
    </INPUT>
    <TABLES>
        <SINGLE_RESULTS>
          <item>
                <INSPLOT>30000001450</INSPLOT>
                <INSPOPER>0010</INSPOPER>
                <INSPCHAR>0010</INSPCHAR>
                <EXT_NO>0000000000000000JT</EXT_NO>
                <INSP_DATE>2015-12-21</INSP_DATE>
                <INSP_TIME>14:06:48</INSP_TIME>
                <INSPECTOR>METESTER05</INSPECTOR>
                <RES_VALUE>35</RES_VALUE>
          </item>
          <item>
                <INSPLOT>30000001450</INSPLOT>
                <INSPOPER>0010</INSPOPER>
                <INSPCHAR>0010</INSPCHAR>
                <EXT_NO>0000000000000000JL</EXT_NO>
                <INSP_DATE>2015-12-21</INSP_DATE>
                <INSP_TIME>14:06:15</INSP_TIME>
```

```
            <INSPECTOR>METESTER05</INSPECTOR>
            <RES_VALUE>50</RES_VALUE>
        </item>
    </SINGLE_RESULTS>
    <CHAR_RESULTS>
        <item>
            <INSPLOT>30000001450</INSPLOT>
            <INSPOPER>0010</INSPOPER>
            <INSPCHAR>0010</INSPCHAR>
            <CLOSED>X</CLOSED>
        </item>
    </CHAR_RESULTS>
</TABLES>
</BAPI_INSPOPER_RECORDRESULTS>
```

- *<RES_VALUE> tag:* Contains actual value that has been collected in SAP ME.

When the *qualityInspectionResultRecordingRequest* message is processed and has the *PASSED* status, SAPMEINT automatically retrieves a quality inspection evaluation status for each characteristic and sends this data to SAP ME using the *readErpQualityInspectionResultRequest* message.



Select the *readErpQualityInspectionResultRequest*, click *Trace*, choose *Response* > *Content*, and click *View*. Locate the *SINGLE_RESULTS* section that contains the results of evaluation:

```
…
<SINGLE_RESULTS>
    <item>
        <INSPLOT>030000001450</INSPLOT>
        <INSPOPER>0010</INSPOPER>
        <INSPCHAR>0010</INSPCHAR>
```

<INSPSAMPLE>000000</INSPSAMPLE>
<RES_NO>0001</RES_NO>
<EXT_NO>0000000000000000JL</EXT_NO>
<LAST_RES/>
<INSP_DATE>2015-12-21</INSP_DATE>
<INSP_TIME>14:06:15</INSP_TIME>
<RES_VALUE>50,0</RES_VALUE>
<RES_ATTR/>
<RES_INVAL/>
<RES_VALUAT>A</RES_VALUAT>
<ERR_CLASS/>
<DEFECTS>0</DEFECTS>
<INSPECTOR>METESTER05</INSPECTOR>
<ADD_INFO1/>
<ADD_INFO2>0000</ADD_INFO2>
<REMARK/>
<CODE1/>
<CODE_GRP1/>
<CODE2/>
<CODE_GRP2/>
<CODE3/>
<CODE_GRP3/>
<CODE4/>
<CODE_GRP4/>
<CODE5/>
<CODE_GRP5/>
<ORIGINAL_INPUT>50</ORIGINAL_INPUT>
<INPPROC_READY/>
<DIFF_DEC_PLACES>0</DIFF_DEC_PLACES>

</item>

…

- *<RES_VALUAT> tag:* Contains result of the evaluation. *A* – Accepted, *R* – Rejected.

Based on the received valuation status, SAP ME accepts or rejects the SFC group:

- If any critical inspection characteristic fails, the sample is rejected.
- If there are no failed critical inspection characteristics, the system compares the number of passed and failed normal characteristics. If the number of passed normal characteristics is greater than the number of failed characteristics, the sample is accepted.
- The system compares the number of accepted and rejected samples. If the number of accepted samples is greater than the number of rejected samples, the SFC group is accepted.

If the overall status of the SFC group is Sample Accepted, the system completes these SFC numbers at this operation. If the overall status is Sample Rejected, SAP ME automatically logs the *QM_INSP_REJECT* NC code against all SFC numbers of this shop order, dispositions these SFC numbers to the *INSPECTION_REJECTED* routing and places them on hold.

9. Verify results in SAP ERP.

In SAP ERP access the transaction via:

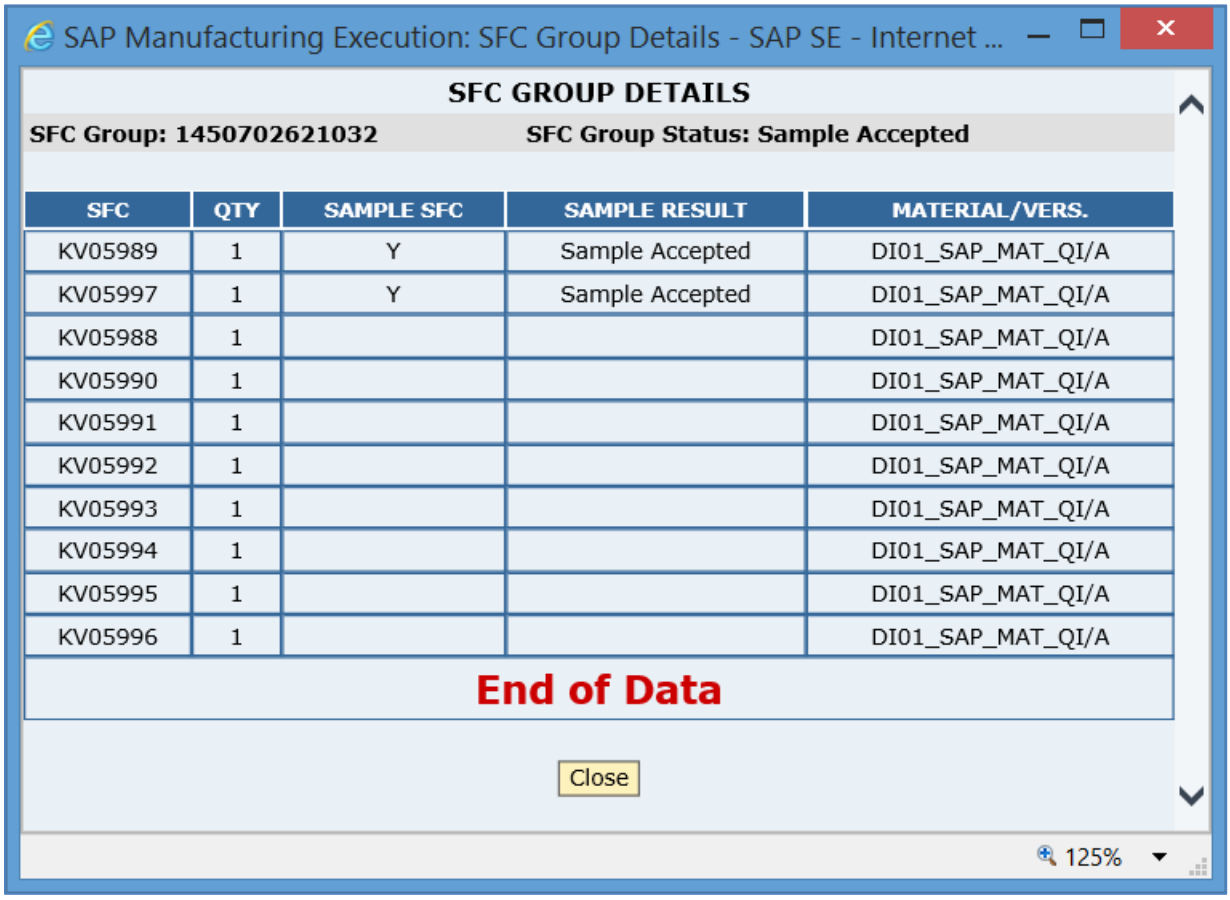
SAP Menu – *Logistics* > *Quality Management* > *Quality Inspection* > *Inspection Result* > *Results Recording*

or transaction code – *QE51N*

On the *Result Recording: Characteristic Overview* screen, verify the following field values:

- *Short text for the inspection charac.:* Name of the inspection characteristic.
- *Specifications:* Minimum and maximum limits.
- *Inspect:* Predefined sample size that has to be inspected for an inspection characteristic or a partial sample.
- *Inspect:* Number of sample units that have been inspected for a characteristic or a partial sample.
- *Result:* Field for summarized results or single results.
- *Original Value:* Original value that was actually entered during results recording.
- *Valuation:* In this field, the valuation for the characteristic, partial sample, or single value displays as an icon. The following valuations are possible:
    - Accepted
    - Rejected
    - Valuation unsuccessful

10. Verify results in SAP ME. Run the *SFC Group Report*, and retrieve the SFC Group by filtering on fields on the main screen.



20.3.7 Missing / Not Supported

- A shop order can contain only one QM Inspection Group DC group at a routing step.
- Parametric data must be stored in the WIP database. The system rule *Store Data Collection Results in ODS* must be set to *false*.
- Non-serialized SFC numbers are not supported.

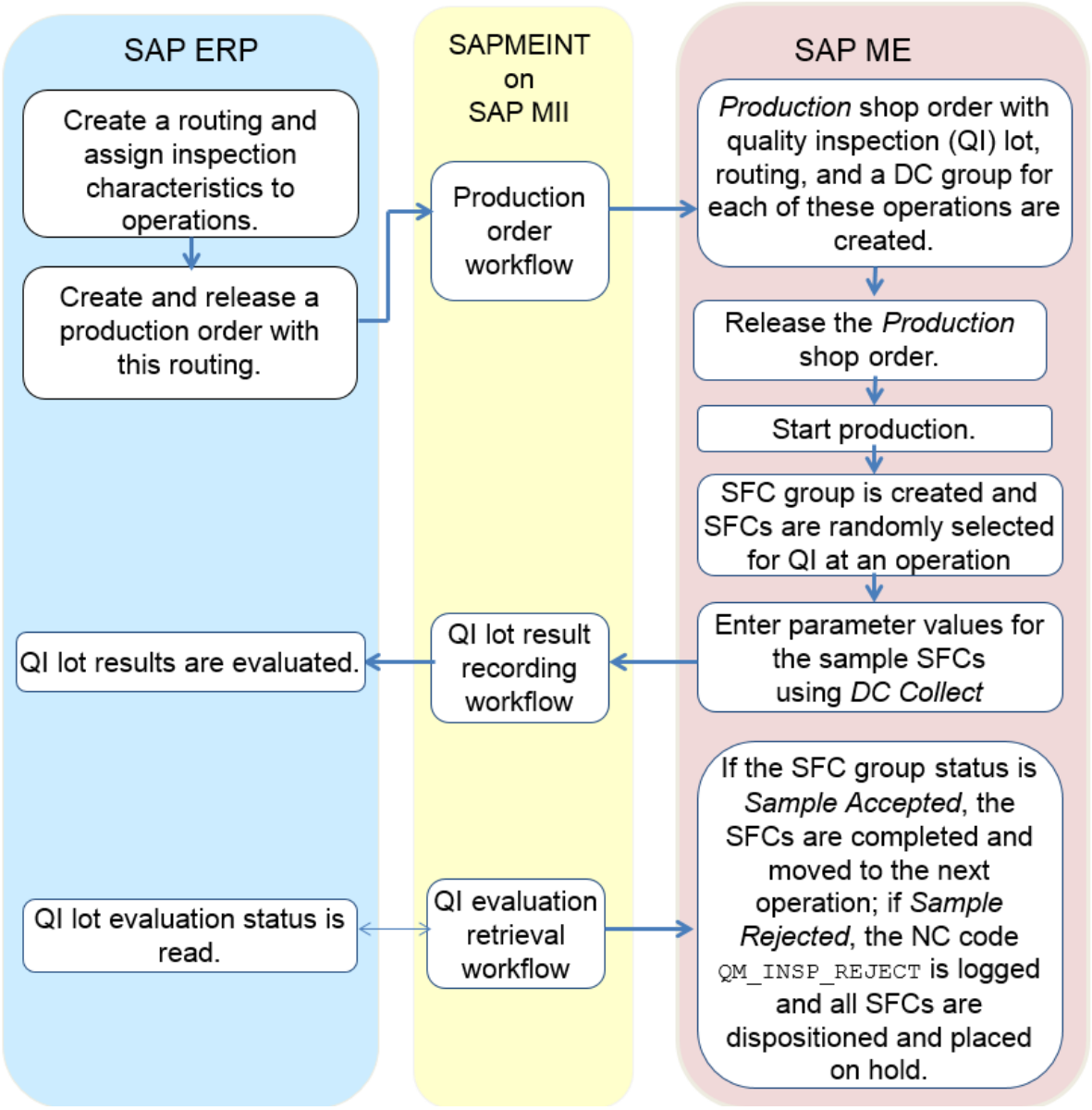
20.4 Less than 100% Quality Inspection (BLOCK_ORDER=NO)

20.4.1 Business Purpose / Description

This section of the MEINT 15.1 How-To Guide describes how to collect and transfer quality inspection results from SAP ME to SAP ERP and receive the valuation status for all inspection characteristics from SAP ERP.

Parameter values for sample SFC numbers can be entered at this inspection operation or at an operation that has *Block SFCs Until Inspection Finished* checkbox selected (see Routing Step Properties on the SAP Help Portal at http://help.sap.com). All SFC numbers of the shop order can be completed at this inspection operation regardless of whether the SFC group size is achieved. Evaluation of all sample SFC numbers in SAP ERP (QM) is triggered at an operation that has the *Block SFCs Until Inspection Finished* checkbox selected.

20.4.2 Process Flow Graphic



20.4.3 Prerequisites

20.4.3.1 SAP ERP

- In Customizing for *Quality Management*, you have done the following:
  - Click *Basic Settings* and execute *Maintain Setting at Plant Level*.
  - Click the plant record and then the *Details* icon.
  - On the *Results Recording* tab, in the *Results Recording* area, deselect *Summ. recording for n=1*.

Note: If the *Summ. recording for n=1* checkbox is selected, an error message displays in SAPMEINT and the production shop order is not created.

- You have assigned and activated *Inspection Type* 03 (in-process inspection for production order) for the material on the *Quality Management View* of transaction *MM01* or *MM02*.
- You have transferred materials to SAP ME.
- You have assigned inspection characteristics with the Sampling procedure to relevant operations on the routing. The Inspection Sample Size must be less than the Build Qty of the production shop order (see Configuring a Standard Routing with Inspection Characteristics section of this guide).

  Note: The inspection characteristic of type *02* (*Qualitative*) and classed inspection characteristics are not supported. The inspection characteristic for planned orders is not supported.
- You have created and sent work centers to SAP ME (see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com).
- You have set up ALE communication to create and transmit *LOIPRO* IDocs (see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com).
- You have also defined the Data Replication Framework (DRF) replication model to replicate *LOIPRO* IDocs (in Customizing for *Production*, select *Integration with a Manufacturing Execution System* > *Basic Settings for MES Integration*). For information about the SAP ERP versions supporting DRF, see SAP Note 1793291.

  Note: LOIPRO03 is required if routings are transferred from SAP ME to SAP ERP (see Transfer of Routing from SAP ME to SAP ERP on the SAP Help Portal at http://help.sap.com and the document attached to SAP Note 1793291).
- You have defined unique ISO codes for every unit of measure.

20.4.3.2 SAP ME

- You have imported the production order with Quality Inspection Lot data from SAP ERP (see Configuring a Production Order with Quality Inspection Lot section of this guide).
- You have released the production shop order to the shop floor (see Shop Order Release on the SAP Help Portal at http://help.sap.com).
- In *Service Extension Maintenance*, you have enabled the *QI_ERP_EXT* and *SAPMEINT_DB_TRANS* service extensions for the *proccessInspectionGroup* method of the *InspectionService* service (see Service Extension Maintenance on the SAP Help Portal at http://help.sap.com).

  Note: Please make sure that the Asyncronous checkbox is not selected.
- In *POD Maintenance*, you have created a POD button that has the *PR510* (*Complete*) and *QM030* (*Sample Inspection Lot*) activities assigned to it. In this topic, we refer to this button as the *Sample Inspection Lot*.

- We recommend that you configure the *Sample Inspection Lot* (*QM030*) POD plugin to open as a popup.
- In *POD Maintenance*, you have verified that your POD Work List contains the *Info* column to display the *Data Collection* (DC) icon for sample SFC numbers.
- We recommend that you configure the *Log NC* (*NC_DATA_ENTRY*) POD plugin to open as a popup.
- The *QM030* activity rule *BLOCK_ORDER* is set to *NO*.

20.4.4 Procedural Steps

1. Start and complete operations until you reach the inspection operation.
2. At the inspection operation at which the *QM Inspection Group* DC group is attached, select one or more SFC numbers and click *Start*.

   Note: Use a *Process* resource to receive a response from SAP ERP with evaluation results (see Resource on the SAP Help Portal at http://help.sap.com).
3. Select one or more SFC numbers and click the *Sample Inspection Lot* POD button.

   The system displays the randomly-selected SFC numbers in the *Sample Inspection Lot* (*QM030*) POD plugin and completes the other SFC numbers at this operation.
4. Click *OK* in the *Sample Inspection Lot* (*QM030*) plugin. The system marks randomly-selected SFC numbers as sample SFC numbers and closes the plugin.
5. Enter parameter values for sample SFC numbers using *DC Collect*.

   Note: You can complete the sample SFC numbers at this inspection operation without entering parameter values. In this case you enter parameter values at the operation with the *Block SFCs Until Inspection Finished* checkbox selected. If the SFC group size was not achieved at this inspection operation, it is achieved at the operation with the *Block SFCs Until Inspection Finished* checkbox selected.
6. Complete the SFC numbers at this operation.
7. At the operation that has the *Block SFCs Until Inspection Finished* checkbox selected, start the SFC numbers.
8. At this operation, select one or more SFC numbers and click the *Sample Inspection Lot* POD button.

   If there are sample SFC numbers for which inspection data was not collected, the system changes the status of non-sample SFC numbers and sample SFC numbers for which data was collected to *Complete Pending*.

   The system displays a message stating that the quality inspection of sample SFC numbers is required. The *DC* icon displays in the *Info* column for these sample SFC numbers.

   If the SFC group size was not achieved at the inspection operation, the system opens the *Sample Inspection Lot* plugin and marks randomly selected SFC numbers as sample SFC numbers to achieve the SFC group size.
9. Select sample SFC numbers for which the quality inspection data was not collected at the inspection operation and click *DC Collect* to enter parameter values.

10. When parameter values for all sample SFC numbers are collected, SAPMEINT sends the quality inspection results for each SFC number to SAP ERP (QM) for evaluation using the *qualityInspectionResultRecordingRequest* message.
11. SAP ERP (QM) evaluates results of the quality inspection. Each inspection characteristic is either accepted or rejected.

    You can view the result for each characteristic in the *Valuation* column on the *Record Results: Characteristic Overview* screen (transaction *QE51N*).
12. SAPMEINT automatically retrieves the quality inspection evaluation status for each characteristic and sends this data to SAP ME using the *readErpQualityInspectionResultRequest* message.
13. Based on the received valuation status, SAP ME accepts or rejects the SFC group:
    - If any critical inspection characteristic fails, the sample is rejected.
    - If there are no failed critical characteristics, the system compares the number of passed and failed normal characteristics. If the number of passed normal characteristics is greater than the number of failed characteristics, the sample is accepted.
    - The system compares the number of accepted and rejected samples. If the number of accepted samples is greater than the number of rejected samples, the SFC group is accepted.
14. If the overall status of the SFC group is *Sample Accepted*, the system completes these SFC numbers at this operation. If the overall status is *Sample Rejected*, SAP ME automatically logs the *QM_INSP_REJECT* NC code against all the SFC numbers of this shop order, dispositions these SFC numbers to the *INSPECTION_REJECTED* routing and places them on hold.

For more information about data transferred using IDocs and the fields in SAP ERP that map to fields in SAP ME, see the Field Mappings section of this guide.

20.4.5 Alternates / Best Practices and Tips

20.4.6 Examples

20.4.6.1 Less than 100% Quality Inspection (BLOCK_ORDER=NO)

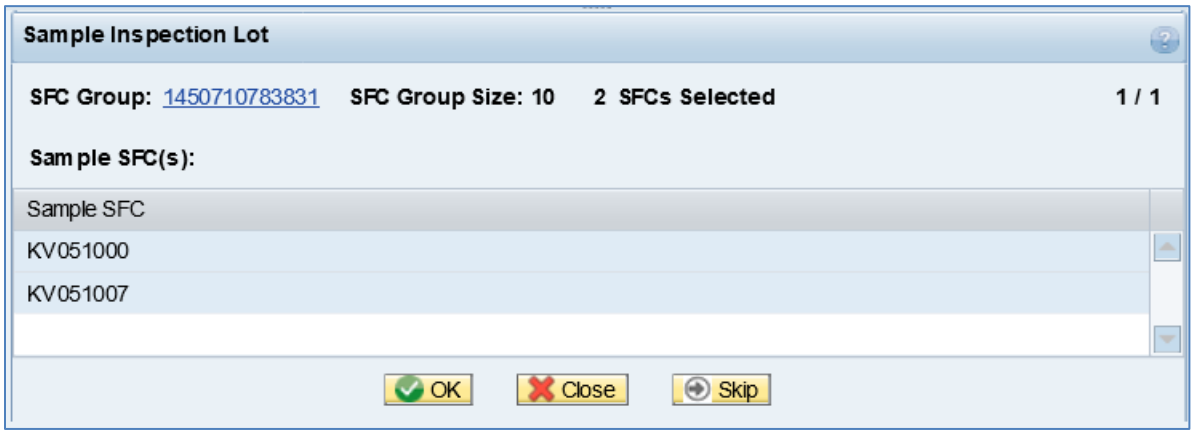
1. In SAP ME access the *Shop Order Release* activity and release the *production shop order* with Quality Inspection Lot received from SAP ERP.
2. Start and complete operations until you reach the inspection operation.
3. At the inspection operation to which the *QM Inspection Group* DC group is attached, select one or more SFC numbers and click *Start*.
4. Select one or more SFC numbers and click the *Sample Inspection Lot* POD button.

   The system displays the randomly selected SFC numbers in the *Sample Inspection Lot* (*QM030*) POD plugin and completes the other SFC numbers at this operation:
   - *SFC Group:* The unique identifier of the group of SFC numbers selected for quality inspection. Click the identifier link to open the *SFC Group Detail* screen and view members of this group.

- *Sample SFC:* Indicates the SFC number to be inspected.
- *OK:* Marks selected SFC numbers as sample SFC numbers, changes the status of these SFC numbers to *Active* and closes the Sample Inspection Lot plugin.
- *Close:* Closes the Sample Inspection Lot plugin. SFC numbers selected for quality inspection remain in the *Complete Pending* status at this operation.
- *Skip:* Allows you to skip inspection of the selected SFC numbers at this operation.

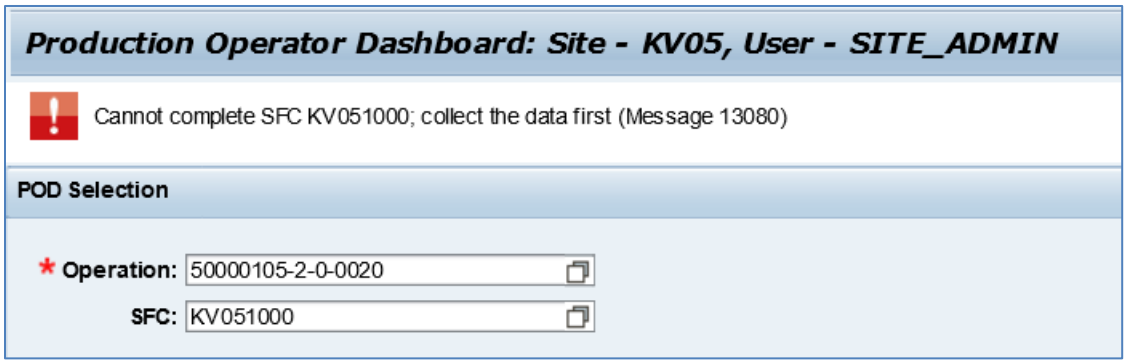
  For non–100% quality inspection, the system completes the selected SFC numbers at this operation. If the *BLOCK_ORDER* activity rule is set to *YES*, the system changes the status of the SFC group to *Sample Skipped*.

  Note: The *Skip* button displays only if the *ALLOW_SKIP* activity rule is set to *YES*.



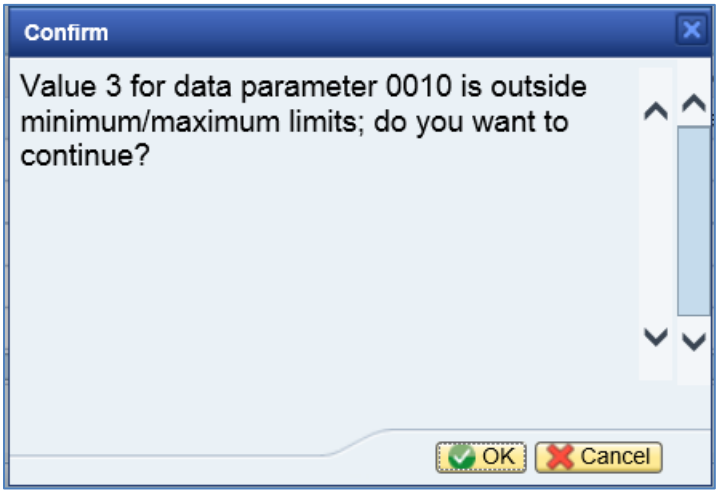
5. Click *OK* in the *Sample Inspection Lot* plugin. The system marks the randomly-selected SFC numbers as sample SFC numbers and closes the plugin.
6. Complete the sample SFC numbers at this operation.
7. At the operation that has the *Block SFCs Until Inspection Finished* checkbox selected, start this sample SFC number.
8. Try to complete the sample SFC number. An error message displays because inspection parameters are not collected:

   "Cannot complete SFC <>; collect the data first (Message 13080)



9. Enter parameter values for the sample SFC numbers using *DC Collect*.

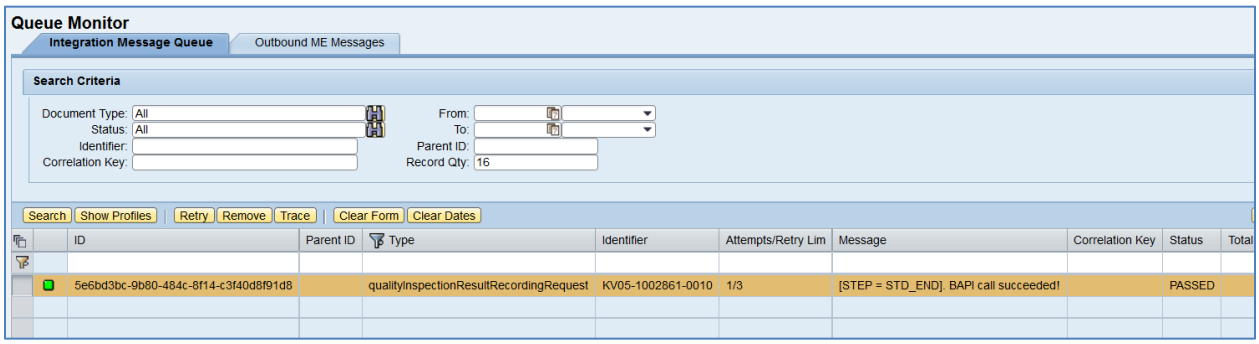
Note: If the entered value is outside the minimum and maximum values, the confirmation message appears.



10. Click *Save* in *Data Collection Entry*.
11. Start and complete all SFC numbers from the production shop order at the operation that has the *Block SFCs Until Inspection Finished* checkbox selected.

    If the SFC group size was not achieved at the inspection operation, the system opens the *Sample Inspection Lot* plugin and marks randomly-selected SFC numbers as sample SFC numbers to achieve the SFC group size. Enter parameter values for these samples.
12. If parameter values for all sample SFC numbers are collected, SAPMEINT sends the quality inspection results for each SFC number to SAP ERP (QM) for evaluation using the *qualityInspectionResultRecordingRequest* message.
13. Optional: Verify the outbound *qualityInspectionResultRecordingRequest* message was received in SAP MII using *Queue Monitor*.

    For more information, see the SAPMEINT Message Processing Logic section of this guide.



Select the *qualityInspectionResultRecordingRequest*, click *Trace*, choose *Request* > *Content*, and click *View*. The following data is reported to SAP ERP:

<BAPI_INSPOPER_RECORDRESULTS>

<INPUT>

<INSPLOT>30000001451</INSPLOT>

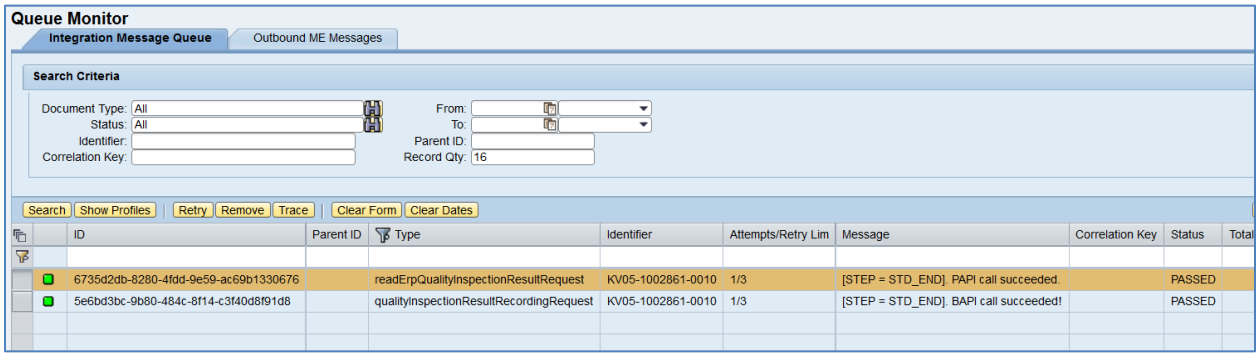
```
        <INSPOPER>0010</INSPOPER>
</INPUT>
<TABLES>
        <SINGLE_RESULTS>
          <item>
                <INSPLOT>30000001451</INSPLOT>
                <INSPOPER>0010</INSPOPER>
                <INSPCHAR>0010</INSPCHAR>
                <EXT_NO>0000000000000000K1</EXT_NO>
                <INSP_DATE>2015-12-21</INSP_DATE>
                <INSP_TIME>16:57:52</INSP_TIME>
                <INSPECTOR>METESTER05</INSPECTOR>
                <RES_VALUE>37</RES_VALUE>
          </item>
          <item>
                <INSPLOT>30000001451</INSPLOT>
                <INSPOPER>0010</INSPOPER>
                <INSPCHAR>0010</INSPCHAR>
                <EXT_NO>0000000000000000JU</EXT_NO>
                <INSP_DATE>2015-12-21</INSP_DATE>
                <INSP_TIME>16:57:08</INSP_TIME>
                <INSPECTOR>METESTER05</INSPECTOR>
                <RES_VALUE>55</RES_VALUE>
          </item>
        </SINGLE_RESULTS>
        <CHAR_RESULTS>
          <item>
                <INSPLOT>30000001451</INSPLOT>
                <INSPOPER>0010</INSPOPER>
                <INSPCHAR>0010</INSPCHAR>
                <CLOSED>X</CLOSED>
          </item>
        </CHAR_RESULTS>
```

</TABLES>

</BAPI_INSPOPER_RECORDRESULTS>

- *<RES_VALUE> tag:* Contains actual value that has been collected in SAP ME.

When the *qualityInspectionResultRecordingRequest* message is processed and has the *PASSED* status, SAPMEINT automatically retrieves a quality inspection evaluation status for each characteristic and sends this data to SAP ME using the *readErpQualityInspectionResultRequest* message.



Select the *readErpQualityInspectionResultRequest*, click *Trace*, choose *Response > Content*, and click *View*. Locate the *SINGLE_RESULTS* section that contains the results of evaluation:

…

<SINGLE_RESULTS>

<item>

<INSPLOT>030000001451</INSPLOT>

<INSPOPER>0010</INSPOPER>

<INSPCHAR>0010</INSPCHAR>

<INSPSAMPLE>000000</INSPSAMPLE>

<RES_NO>0001</RES_NO>

<EXT_NO>00000000000000000JU</EXT_NO>

<LAST_RES/><INSP_DATE>2015-12-21</INSP_DATE>

<INSP_TIME>16:57:08</INSP_TIME>

<RES_VALUE>55,0</RES_VALUE>

<RES_ATTR/>

<RES_INVAL/>

<RES_VALUAT>A</RES_VALUAT>

<ERR_CLASS/>

<DEFECTS>0</DEFECTS>

<INSPECTOR>METESTER05</INSPECTOR>

<ADD_INFO1/>

<ADD_INFO2>0000</ADD_INFO2>

<REMARK/>

<CODE1/>

<CODE_GRP1/>

<CODE2/>

<CODE_GRP2/>

<CODE3/>

<CODE_GRP3/>

<CODE4/>

<CODE_GRP4/>

<CODE5/>

<CODE_GRP5/>

<ORIGINAL_INPUT>55</ORIGINAL_INPUT>

<INPPROC_READY/>

<DIFF_DEC_PLACES>0</DIFF_DEC_PLACES>

</item>

…

- *<RES_VALUAT> tag:* Contains result of the evaluation. *A* – Accepted, *R* – Rejected.

Based on the received valuation status, SAP ME accepts or rejects the SFC group:

- If any critical inspection characteristic fails, the sample is rejected.
- If there are no failed critical inspection characteristics, the system compares the number of passed and failed normal characteristics. If the number of passed normal characteristics is greater than the number of failed characteristics, the sample is accepted.
- The system compares the number of accepted and rejected samples. If the number of accepted samples is greater than the number of rejected samples, the SFC group is accepted.

If the overall status of the SFC group is Sample Accepted, the system completes these SFC numbers at this operation. If the overall status is Sample Rejected, SAP ME automatically logs the *QM_INSP_REJECT* NC code against all SFC numbers of this shop order, dispositions these SFC numbers to the *INSPECTION_REJECTED* routing and places them on hold.

14. Verify results in SAP ERP.

In SAP ERP, access the transaction using:

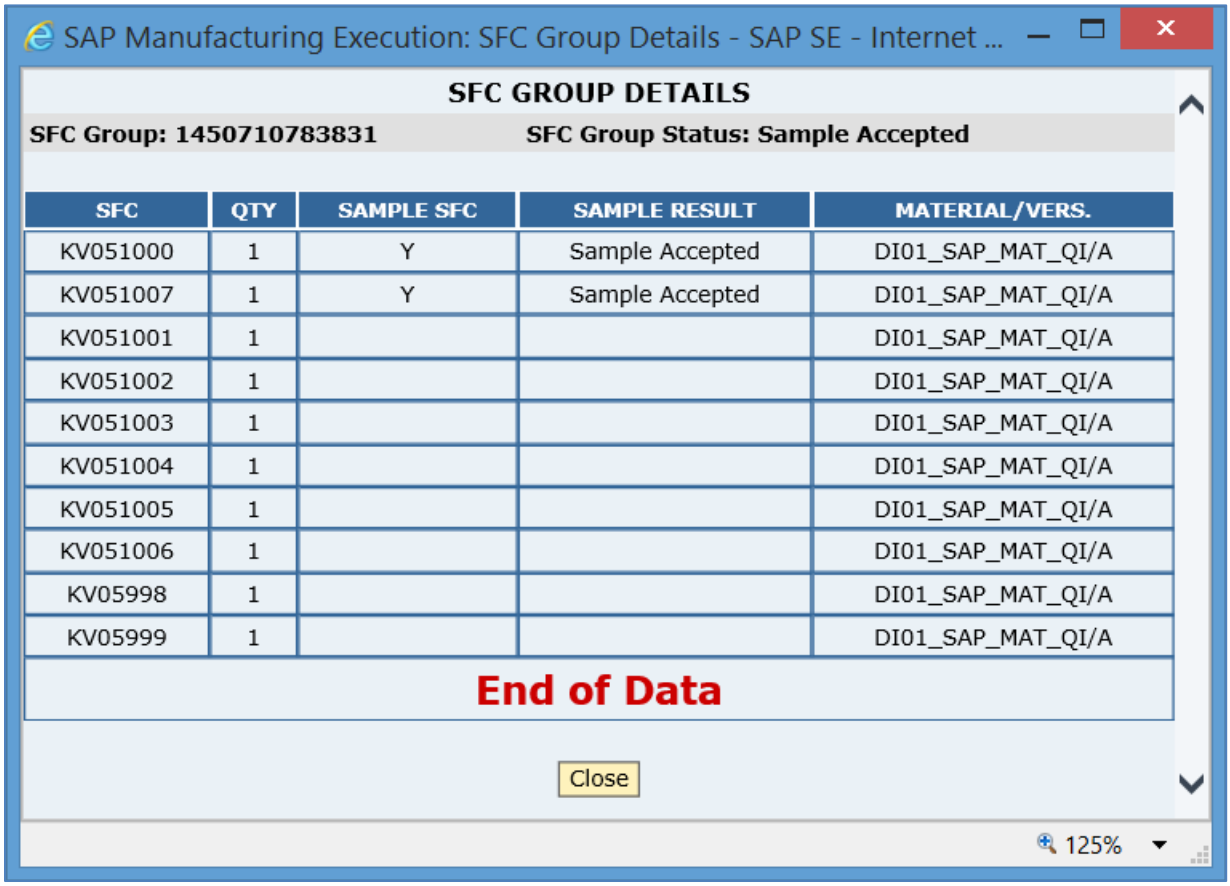
SAP Menu – *Logistics* > *Quality Management* > *Quality Inspection* > *Inspection Result* > *Results Recording*

or transaction code – *QE51N*

On the *Result Recording: Characteristic Overview* screen, verify the following field values:

- *Short text for the inspection charac.:* Name of the inspection characteristic.
- *Specifications:* Minimum and maximum limits.
- *Inspect:* Predefined sample size that is inspected for an inspection characteristic or a partial sample. For 100% Quality Inspection this value is equal to the production shop order build size.
- *Inspect:* Number of sample units that have been inspected for a characteristic or a partial sample.
- *Result:* Field for summarized results or single results.
- *Original Value:* Original value that was actually entered during results recording.
- *Valuation:* In this field, the valuation for the characteristic, partial sample, or single value displays as an icon. The following valuations are possible:
    - Accepted
    - Rejected
    - Valuation unsuccessful

15. Verify results in SAP ME. Run the *SFC Group Report*, and retrieve the SFC Group by filtering on fields on the main screen.



20.4.7 Missing / Not Supported

- For less than 100% quality inspection (BLOCK_ORDER=NO), if the SFC numbers from the SFC group were scrapped, deleted, or have an Invalid status, then the SFC group is not full and it is not evaluated. These SFC numbers remain in the *Complete Pending* state, so the operator cannot complete them at this routing step.
- A shop order can contain only one QM Inspection Group DC group at a routing step.
- Parametric data must be stored in the WIP database. The system rule *Store Data Collection Results in ODS* must be set to *false*.
- Non-serialized SFC numbers are not supported.

21 Field Mapping

21.1 Material

Data is transferred from SAP ERP to SAP ME using the *MATMAS03* IDoc.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

For more information about Field Mappings, see SAP Note 2226006.

SAP ERP	SAP ME	Comment
Plant (WERKS)	*Site*	
Material Number (MATNR)	*Material*	
Version (REVLV)	*Version*	
Material Description (MAKTX)	*Description*	In SAP ERP, the *Description* for the material can be defined in several languages. SAPMEINT uses the description that matches the SAP ERP plant language that is stored in the Supported SAP ME Plants table. If the description for the specified language cannot be found in the received IDoc, SAPMEINT uses the first available description.
Unit of measure (MEINS)	*Unit of Measure*	
Procurement Type (BESKZ)	*Material Type*	E - *Manufactured* F - *Purchased* Otherwise, set the material type to *Manufactured*/*Purchased.*
Batch Management Requirement Indicator (XCHPF)	*Increment Batch Number*	If equal to X, set to *Per Order*, otherwise set to *None.*
	Current Version	Selected
	Effectivity Control	*R*
	Status	*Releasable*
	Lot Size	1.0 when the record is created; this field is ignored on a record update. If someone manually changes it, an update does not reset it back to 1.0.
	Qty Restriction	*Any Number*
	Backflushing in ERP	If selected, backflush indicator (RGEKZ) value is 1.

SAP ERP	SAP ME	Comment
Storage Location (LGPRO)	*ERP Production Storage Location* Or *ERP Putaway Storage Location*	The length of *ERP Production Storage Location* value should be less than or equal to 4. When the BESKZ value equals E, the LGPRO value is stored in the *ERP Putaway Storagle Location* field. If the BESKZ value is not equal to E, the LGPRO value is stored in the *ERP Production Storage Location* field.
	Data to Collect on Assembly	*NONE*
	Data to Collect on Removal	*NONE*
	Data to Collect on Floor Stock Receipt	*NONE*

21.2 Material Classification

Data is transferred from SAP ERP to SAP ME using the *CLFMAS02* IDoc.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Key of object to be classified (OBJEK)	*Material*	BAPI_MATERIAL_GETLIST BAPI is called for long material name and is mapped from MATERIAL_EXTERNAL field.
Plant (WERKS)	*Site*	
	Version	Defaults to #
Characteristic name (ATNAM)	*Characteristic*	Must match SAP ME material custom data field name.
Characteristic value (ATWRT)	*Characteristic value*	
	Site	All plants from *Supported SAP ME Plants.*

21.3 Long Material Number (LMN)

Data is transferred from SAP ERP to SAP ME using the *MATMAS05* IDoc.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Plant (WERKS)	*Site*	
Material Number (MATNR or MATNR_EXTERNAL)	*Material*	When ERP is configured to use long material numbers, the value is obtained from the MATNR_EXTERNAL field, otherwise from the MATNR field.
Version (REVLV)	*Version*	
Material Description (MAKTX)	*Description*	In SAP ERP, the *Description* for the material can be defined in several languages. SAPMEINT uses the description that matches the SAP ERP plant language that is stored in the Supported SAP ME Plants table. If the description for the specified language cannot be found in the received IDoc, SAPMEINT uses the first available description.
Unit of measure (MEINS)	*Unit of Measure*	
Procurement Type (BESKZ)	*Material Type*	E - *Manufactured* F - *Purchased* Otherwise set the material type to *Manufactured* or *Purchased.*
Batch Management Requirement Indicator (XCHPF)	*Increment Batch Number*	If equal to X, set to *Per Order*, otherwise set to *None.*
	Current Version	Selected
	Effectivity Control	*R*
	Status	*Releasable*
	Lot Size	1.0 when the record is created; this field is ignored on a record update. If someone manually changes it, an update does not reset it back to 1.0.
	Qty Restriction	*Any Number*
	Backflushing in ERP	If selected, backflush indicator (RGEKZ) value is 1.
Storage Location (LGPRO)	*ERP Production Storage Location* Or *ERP Putaway Storage Location*	The length of the *ERP Production Storage Location* value should be less than or equal to 4. When the BESKZ value equals E, the LGPRO value is stored in the *ERP Putaway Storagle Location* field. If the BESKZ value is not equal to E, the LGPRO value is stored in the *ERP Production Storage Location* field.

SAP ERP	SAP ME	Comment
	Data to Collect on Assembly	*NONE*
	Data to Collect on Removal	*NONE*
	Data to Collect on Floor Stock Receipt	*NONE*

21.4 Bill of Material (BOM)

Data is transferred from SAP ERP to SAP ME using the *BOMMAT03* IDoc.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Plant (WERKS)	*Site*	
Material Number (MATNR or MATNR_EXTERNAL), *BOM Usage* (STLAN), *Alternative BOM* (STLAL)	*BOM*	*Material Number* (MATNR) + "-" + *BOM Usage* (STLAN) + "-" + *Alternative BOM* (STLAL)
Bill of material ZTEXT or MATNR or MATNR_EXTERNAL)	*Description*	
	Status	SAP ERP BOM status is mapped to SAP ME BOM status as follows: • 01 Active-*Releasable* • 02 Inactive-*New* • 03 Active with history reqmt- *Releasable*
	Effectivity Control	*R*
	Current Version	Selected
Bill of material (STLNR)	*ERP BOM*	
BOM Component (IDNRK)	*Component*	Saves the component as *Primary* or *Alternate* based on the ALPOS value in the IDoc Primary components and their lists of alternates have the same ALPGR value. The record in the ALPGR group with the lowest ALPRF is the primary component. All others are alternates.

SAP ERP	SAP ME	Comment
*BOM Item Number (*POSNR*)*	*Sequence*	
	BOM Component Type	*N*
	Assembled as Required	Deselected
	Test Part	Deselected
	Trackable Component	Material default
	Component Version	Set to #; Blank in the GUI
Alternate BOM Component (IDNRK)	*Alternate Component*	
	Alternate Component Substitute	Selected
	Alternate Component Version	Set to #; Blank in the GUI
Normalized Quantity for component. i.e. Component Quantity / Base Quantity (MENGE_C / BMENG_C)	*Quantity*	
Installation Point for Subitem (EBORT)	*Ref Des*	
	Ref Des Sequence	*10*
Normalized Quantity for subitem i.e. Sub Item Quantity / Base Quantity (UPMNG/BMENG_C)	*Ref Des Quantity*	
	Assembly Operation	Not included in the BOM IDoc; filled in upon the receipt of an order IDoc
	Enabled	Selected
*Material Number (*MATNR or MATNR_EXTERNAL*)*	Custom data field: ERP_MATERIAL	

21.5 SAP ERP Work Center with Individual Capacities to SAP ME Work Center with Resources

Data is transferred from SAP ERP to SAP ME using the *LOIWCS03* IDoc.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Plant (E1CRHDL/WERKS)	*Site*	
Work Center (E1CRHDL/ARBPL)	*Work Center*	

SAP ERP	SAP ME	Comment
Work Center (E1CRHDL/ARBPL)	*ERP Work Center*	
	Status of work center	*Enabled*
	Work Center Category	*None*
	Work Center Type	*Assembly*
	Assignment Enforcement	*None*
	SFC Can Be Released to This Work Center	Selected
Object ID of the work center (E1CRHDL/OBJID)	erpInternalID of work center	SAP ME database field
Short Description (E1CRHDL/E1CRTXL/KTEXT)	*Description* of the work center	
Individual capacity/resource		
Capacity Category (E1CRCAL/E1KAKOL/E1KAKOIL/KAPAR)		Only category 001 (*Machine*) is supported
Work Center Individual Capacity (E1CRCAL/E1KAKOL/E1KAKOIL/NAME)	*Resource*	
Capacity Short Text (E1CRCAL/E1KAKOL/E1KAKOIL/E1KAKTL2/KTEXT)	*Description* of the resource	
Capacity ID (E1CRCAL/E1KAKOL/E1KAKOIL/KAPID)	erpInternalID of resource	SAP ME database field
	Status	*Enabled*
	Setup State of resource	*Open*
	Process Resource	Selected

21.6 Routing with Operations

Data is transferred from SAP ERP to SAP ME using the *LOIROU02* or *LOIROU03* (SAP ERP EhP05 and above) IDoc.

In contrast to *LOIROU02*, *LOIROU03* supports long material numbers (LMN) and mapping of work instructions.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Plant (WERKS)	*Site*	

SAP ERP	SAP ME	Comment
Key for Task List Group (PLNNR); *Group Counter* (PLNAL) Or /E1AFREF/MES_ROUTINGID	*Routing*	PLNNR + "-" + PLNAL /E1AFREF/MES_ROUTINGID if the routing was created in SAP ME and then sent to SAP ERP
	Version	*A* for a new record and increments as necessary for updated records.
	Router Type	*U*
Material Number (MATNR or MATNR_EXTERNAL)	*Description*	
	Status	*Releasable*
	ERP Sequence	*0*
	Effectivity Control	*R*
	Current Version	Selected
Key for Task List Group (PLNNR);*Group Counter* (PLNAL)	*Entry Routing*	
	Entry Routing Type	*U*
	Entry Routing Step ID	*10*
Key for Task List Group (PLNNR); *Group Counter* (PLNAL); Sequence (PLNFL); *Operation* (VORNR)	*Operation*	PLNNR + "-" + PLNAL + "-" + PLNFL + "-" + VORNR
Operation (VORNR)	*Reporting Step*	Operation
	Rework	Deselected
Control Key (STEUS)	Custom data field: CONTROL_KEY	Control key specifying how an operation or suboperation is to be processed
Sequence (FLAGAT)	Data field: ERP_SEQUENCE	0. Only a zero sequence routing is supported
Material Number (MATNR or MATNR_EXTERNAL)	Custom data field: ERP_MATERIAL	
Valid From Date (DATUV)	Custom data field: ERP_VALIDITY_FROM	
Valid To Date (DATUB)	Custom data field: ERP_VALIDITY_TO	
From Lot Size (LOSVN)	Custom data field: ERP_LOT_SIZE_FROM	
To Lot Size (LOSBS)	Custom data field: ERP_LOT_SIZE_TO	
Key for Task List Group (PLNNR), *Group Counter* (PLNAL), *Sequence* (PLNFL), *Operation* (VORNR)	*Operation*	
	Operation Version	A
Operation Short Text (LTXA1)	*Operation Description*	

SAP ERP	SAP ME	Comment
	Operation Resource Type	DEFAULT
	Operation Status	201(Releasable)
	Maximum Loop Count	1
	Operation Type	N (Normal)
Fields relevant for SAP ERP EhP05 and above		
Operation Short Text (LTXA1)	*Description*	Routing step description
Operation Short Text (LTXA1)	*Description*	Operation description
Work Instructions		
Document number (DOKNR) *Document Type* (DOKAR) *Document Part* (DOKTL) *Application number* (ORIGINAL)	*Work Instruction*	DOKNR + '-' + DOKAR + '-' +DOKTL + '-' + ORIGINAL
Document Version (DOKVR)	*Version*	
	Status	*Releasable*
	Required	Selected
	Current Version	Selected
	Log Viewing	Deselected
	Change alert	Deselected
	ERP WI	Selected if the document info record has been sent from ERP
	Type	*URL*
	Always Show In New Window	Deselected
Original of document (FILENAME)	*ERP Filename*	
ME Integration: URL for Accessing ERP Objects (URL)	*URL*	
Short description of the original (DESCRIPTION) or *Description of the production resource/tool* (FHKTX)	*Description*	

21.7 Routing Export

Data is transferred from SAP ME to SAP ERP when the routing is authored in SAP ME by calling the BAPI *CO_MES_ROUTING_CREATE_PUSH*.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Change Number (IV_CHANGE_NO)		If change management is set to true in SAP ME then a change number is generated from SAP

SAP ERP	SAP ME	Comment
		ERP (CHANGE_NO) by using the CCAP_ECN_MAINTAIN BAPI.
Key date (IV_KEY_DATE)	*Effective Start Date*	
Task List Header (IS_TASK)		
Usage (TASK_LIST_USAGE)		1 for *Production Routing*
Plant (PLANT)	*Site*	
Status (TASK_LIST_STATUS)		4 (*Released*)
Unit of Measure (TASK_MEASURE_UNIT)	*Unit of Measure*	
MES_ROUTINGID	*Version*	
From Lot Size (LOT_SIZE_FROM)		0
To Lot Size (LOT_SIZE_TO)		99999999
Task List Operations (IT_OPERATIONS)		
Operation or Activity Number (ACTIVITY)	*Reporting Step*	
Control key (CONTROL_KEY)	*ERP Control Key*	
Work center (WORK_CNTR)	*Work Center*	
Work center (WORK_CNTR)	*ERP Work Center*	
Operation short text (DESCRIPTION)	*Description*	
Unit of measure for activity (OPERATION_MEASURE_UNIT)	*Unit of Measure*	
MES_OPERID	*Operation Version*	
MES_STEPID	*Step ID*	
Base Quantity (BASE_QUANTITY)		1
Material Assignments (IT_MATERIAL_TASK_ALLOCATIONS)		
MAINTAIN_MODE		C (*Create*)
Material (MATERIAL or MATERIAL_EXTERNAL)	*Material*	When the material name is longer than 18 characters, it is mapped to MATERIAL_EXTERNAL field

A change number is generated from SAP ERP by using the BAPI *CCAP_ECN_MAINTAIN*.

SAP ERP	SAP ME	Comment
Change Header (CHANGE_HEADER)		
Change Number Status (STATUS)		'01' *(Active)*
Valid From (VALID_FROM)	*Effective Start Date*	
Change Number Description (DESCRIPT)	*Routing Description*	
Routing Object (OBJECT_TLIST)		
Object Type Active (ACTIVE)		Defaults to X. Indicates that the change number having this object type can be used to process objects. For example, routing.

21.8 Production Order to *Production* Shop Order

Data is transferred from SAP ERP to SAP ME using the IDoc *LOIPRO01*, *LOIPRO02*, *LOIPRO03* or *LOIPRO04* (used with SAP SAP ERP EhP 05 and above).

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Plant (WERKS)	*Site*	
Order Number (AUFNR)	*Shop Order*	
	Order Type	*Production*
Status (STAT)	*Status*	Last STAT segment in E1JSTKL; defaults to Releasable unless STAT equals: I0012 - Delivered I0045 - Technically completed I0076 - Deletion Flag If so, the Status is set to *Closed.*
	Priority	*500*
Material Number (MATNR or MATNR_EXTERNAL)	*Planned Material*	
Base Quantity (BMENGE)	*Build Qty*	
Base Quantity (BMENGE)	*Ordered Qty*	
Scheduled start date (GSTRS), *Scheduled start time* (GSUZS)	*Planned Start*	GSTRS + GSUZS If GSUZS left blank, defaults to 00:00:01

SAP ERP	SAP ME	Comment
Scheduled finish date (GLTRS), *Scheduled finish time* (GLUZS)	*Planned End*	GLTRS + GLUZS If GLUZS left blank, defaults to 23:59:59
	AllowInqueueSfcOnSoClose	API field only; defaults to true
	ShopOrderReleaseInfo	API field only <sch:ShopOrderReleaseInfo> <sch:Release>all</sch:Release> </sch:ShopOrderReleaseInfo> Possible values for the Release tag: all: whole quantity of the production shop order is released; a positive whole number: the specified quantity of the production shop order is released.
Base unit of measure (BMEINS)	Custom data field: ERP_UOM	This unit is converted in the IDoc in the ISO unit of measure defined in SAP ERP Customizing
	Database table column: SHOP_ORDER.ERP_ORDER	Set to true by default (not present in the GUI)
Storage location (LGORT)	*ERP Putaway Storage Location*	
Batch (CHARG)	*Batch Number*	
Material Number (MATNR or MATNR_EXTERNAL), *BOM Usage* (STLAN), *Alternative BOM* (STLAL)	*Planned BOM*	*Material Number* (MATNR or MATNR_EXTERNAL) + '-' + *BOM Usage* (STLAN) + '-' + *Alternative BOM* (STLAL)
	Planned BOM Version	*Current*
	BOM Effectivity Control	*R*
	BOM Current Version	Selected
Bill of material (STLNR)	*ERP_BOM*	
	BOM Description	*Material Number* (MATNR or MATNR_EXTERNAL)
	Status	BOM status; set to *Releasable*
Order Material Number (MATNR or MATNR_EXTERNAL)	Custom data field in BOM: ERP_MATERIAL	
If there is an alternate group for BOM components, then the component with Priority 1 must be passed as a BOM component in SAP ME, regardless of *Usage*	*BOM Component Qty*	

SAP ERP	SAP ME	Comment
Prob. The quantity of this component must be calculated as NOMNG divided by the order quantity (BMENGE). All other components of this alternate group must be passed as alternate components of the BOM component in SAP ME, regardless of *Usage Prob*. In all the other cases, the quantity is calculated as component quantity (BDMNG) divided by order quantity (BMENGE).		
BOM Component Material Number (MATNR or MATNR_EXTERNAL)	*BOM Component*	Only ERP components that populate the MATNR field are supported
	BOM Component Version	Defaults to # (blank in the GUI)
	BOM Component Type	• *Normal* • *Test* • *Co-product* • *By-product* • *Phantom*
	Enabled	Selected
	Phantom Component Assembly Sequence	Assembly sequence of the parent phantom component
Material Number (MATNR or MATNR_EXTERNAL)	*Alternate Component*	
	Enabled	Selected
	Assemble as Required	Defaults to *false* (not present in the GUI)
	Test Part	Deselected
	Trackable Component	*Material Default*
Key for Task List Group (PLNNR), *Group Counter* (PLNAL), *Sequence* (PLNFL), *Operation* (VORNR)	*BOM Component Assembly Operation*	*Key for Task List Group* (PLNNR) + "-" + *Group Counter* (PLNAL) + "-" + *Sequence* (PLNFL) + "-" + *Operation* (VORNR)
	BOM Component Assembly Operation Version	Version of the assembly operation; Defaults to # (not present in the GUI)

SAP ERP	SAP ME	Comment
Key for Task List Group (PLNNR), *Group Counter* (PLNAL) Or E1AFKOL/E1AFFLL/ E1AFVOL/E1AFREF/ MES_ROUTINGID	*Planned Routing*	*Key for Task List Group* (PLNNR) + "-" + *Group Counter* (PLNAL) E1AFKOL/E1AFFLL/E1AFVOL/ E1AFREF/MES_ROUTINGID if routing was initially created in SAP ME and then sent to SAP ERP
	Planned Routing Version	A
	Routing Effectivity Control	R
Material Number (MATNR or MATNR_EXTERNAL)	*Routing Description*	
	Current Version	Selected
	Status	*Releasable*
	Routing Type	*Production Routing*
Operation (VORNR)	*Reporting Step*	
	Rework	Deselected
Key for Task List Group (PLNNR), *Group Counter* (PLNAL), *Sequence* (PLNFL), *Operation* (VORNR)	*Operation*	
	Operation Version	*A*
Operation Short Text (LTXA1)	*Operation Description*	
	Operation Resource Type	*DEFAULT*
	Operation Status	*201* (Releasable)
	Maximum Loop Count	*1*
	Operation Type	*N* (Normal)
Control Key (STEUS)	Custom data field: CONTROL_KEY	Key specifying how an operation or suboperation is to be processed
Sequence (RSPOS)	Data field: SEQUENCE	Sequence is calculated as RSPOS*10
	Data field: IS_LAST_REPORTING_ STEP	If selected, this is the last ERP routing step
Material Number (MATNR or MATNR_EXTERNAL)	Custom data field: ERP_MATERIAL	
Fields relevant for SAP SAP ERP EhP05 and above using the LOIPRO03 ***IDoc***		
Material Number-BOM Explosion Number (MATNR-E1AFKOL/E1AFPOL/ E1AFSER/SERNR)	*SFC Number* (Sfc)	
BOM Explosion Number	*Serial Number* (SerialNumber)	

SAP ERP	SAP ME	Comment
(E1AFKOL/E1AFPOL/ E1AFSER/SERNR)		
Operation Short Text (LTXA1)	*Description*	Description of Routing Step
Operation Short Text (LTXA1)	*Description*	Operation description
Shop Order Schedule List		
KAPNAME	*Resource*	*Shop Order Schedule Report*
Capacity ID (/E1AFKOL/E1AFFLL / E1AFVOL/E1KBEDL/ KAPID)	erpInternalID of resource	SAP ME database field
Split Number (SPLIT)	*Split ID*	*Shop Order Schedule Report*
Operation Quantity (MGVRG)	*Planned Quantity*	*Shop Order Schedule Report*
Earliest start / date (FSTAD) *Earliest start / time* (FSTAU)	*Start Time*	*Shop Order Schedule Report*
Earliest finish / date (FENDD) *Earliest finish/ time* (FENDU)	*End Time*	*Shop Order Schedule Report*
Data Collection		
Order Number (AUFNR)	*DC Group*	AUFNR + '-' + 10-based counter
DC Group Parameter list		
Insp. Lot Charac. No. (INSPCHAR)	*Parameter Name*	
Short Text for the Inspection Characteristic (CHAR_DESCR)	*Description*	
Unit of Measurement (MEAS_UNIT)	*Unit Of Measure*	
Sample Size to Be Inspected in QM Subsystem (SCOPE)	*Required Data Entries*	
Characteristic Type (CHAR_TYPE)	*Parameter Type*	CHAR_TYPE='01': *Type=Numeric, Soft Limit Check on Min/Max Value=true* CHAR_TYPE='02': *Type=Text* CHAR_TYPE='03': *Type=Boolean, 0 Value='REJECT', 1 Value='ACCEPT'* CHAR_TYPE='04': *Type=Numeric, Soft Limit Check on Min/Max Value=true*

SAP ERP	SAP ME	Comment
Lower Tolerance Limit (LW_TOL_LMT)	*Min Value*	When CHAR_TYPE='01'
Upper Tolerance Limit (UP_TOL_LMT)	*Max Value*	When CHAR_TYPE='01'
Single Results (SINGLE_RES)	meint:SingleResource	
Defects Recording Automatically Called Up (FEHLREC)		If FEHLREC='X', *QM Critical=true*
DC Group Attachments list		
Order Number (AUFNR)	*Shop Order*	
Key of a Routing from an ME System (MES_ROUTINGID) *or Key for Task List Group* (PLNNR) + '-' + *Group Counter* (PLNAL)	*Routing*	
Key of a Step in a Routing (MES_STEPID)	*Routing Step*	MES_STEPID when routings are hosted in SAP ME or auto generated sequence
Work Instructions		
Document number (DOKNR) *Document Type* (DOKAR) *Document Part* (DOKTL) *Application number* (ORIGINAL)	*Work Instruction*	DOKNR + '-' + DOKAR + '-' +DOKTL + '-' + ORIGINAL
Document Version (DOKVR)	*Version*	
	Status	*Releasable*
	Required	Selected
	Current Version	Selected
	Log Viewing	Deselected
	Change alert	Deselected
	ERP WI	Selected if the document info record has been sent from ERP
	Type	*URL*
	Always Show In New Window	Deselected
Original of document (FILENAME)	*ERP Filename*	
ME Integration: URL for Accessing ERP Objects (URL)	*URL*	

SAP ERP	SAP ME	Comment
Short description of the original (DESCRIPTION) *or Document description* (DKTXT)	*Description*	
Work Instruction Attachments		
	Apply this to current version (#) of this work instruction	Deselected
Order Number (AUFNR)	*Shop Order*	
Key of a Routing from an ME System (MES_ROUTINGID) *or Key for Task List Group* (PLNNR) + '-' + *Group Counter* (PLNAL)	*Routing*	
Key of a Step in a Routing (MES_STEPID)	*Routing Step*	MES_STEPID when routings are hosted in SAP ME or auto generated sequence

21.9 Planned Order to *Repetitive* Shop Order

Data is transferred from SAP ERP to SAP ME using the *LOIPLO01* IDoc.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Planning Plant (PLWRK)	*Site*	
Planned Order Number (PLNUM)	*Shop Order*	
	Status	Shop order status; defaults to *Releasable*
	Type	Shop order type; defaults to *Repetitive*
Material Number (MATNR or MATNR_EXTERNAL)	*Planned Material*	
	Version	Planned material version; defaults to # (blank in the GUI)
Material Number (MATNR or MATNR_EXTERNAL),	*Planned BOM*	*Material Number* (MATNR or MATNR_EXTERNAL) + "-" + *BOM Usage* (STLAN) + "-" + *Alternative BOM* (STLAL)

SAP ERP	SAP ME	Comment
BOM Usage (STLAN), *Alternative BOM* (STLAL)		
	Version	Planned BOM version *Current Version* of SAP ME BOM.
Key for Task List Group (PLNNR), *Group Counter* (PLNAL)	*Planned Routing*	*Key for Task List Group* (PLNNR) + "-" + *Group Counter* (PLNAL)
	Version	Planned routing version; defaults to # (blank in the GUI)
	Routing Type	*Production Routing*
	Priority	If no value is given in SAP ERP, defaults to 500. If the value in SAP ERP is from 0-9, then the value in SAP ME is value *100
Total planned order quantity (GSMNG)	*Quantity To Build*	Reducing *Build Qty* is allowed only for unreleased quantities.
Order start date in planned order (PSTTR)	*Planned Start*	
Order finish date in the planned order (PEDTR)	*Planned End*	
Production Version (VERID)	*Production Version*	
Common unit of measure for all order items (MEINS)	*Erp UOM*	
	Database table column: SHOP_ORDER.ERP_ORDER	Set to *true* by default (not present in the GUI)
Fields relevant for SAP ECC EhP05 and above (LOIPLO02)		
Material Number (MATNR or MATNR_EXTERNAL), *BOM Usage* (STLAN), *Alternative BOM* (STALT)	*Planned BOM*	*Material Number* (MATNR or MATNR_EXTERNAL) + "-" + *BOM Usage* (STLAN) + "-" + *Alternative BOM* (STALT)
Total planned order quantity (GSMNG + CNFQTY)	*Quantity To Build*	

SAP ERP	SAP ME	Comment
	BOM Component Type	• *Normal* • *Test* • *Co-product* • *By-product* • *Phantom*
	Phantom Component Assembly Sequence	Assembly sequence of the parent phantom component
Material Number (MATNR or MATNR_EXTERNAL)	*Alternate Component*	
	Enabled	Selected

21.10 Service Order to *RMA* Shop Order

Data is transferred from SAP ERP to SAP ME using the *IORDER01* IDoc with Order Type = *SM03*.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Plant (WERKS)	*Site*	
Order Number (AUFNR)	*Shop Order*	
	Status	Shop order status *Releasable*
	Type	Shop order type *RMA*
	AllowInqueueSfcOnSoClose	API field only; defaults to false
	Database table column: SHOP_ORDER.ERP_ORDER	Set to *true* by default (not present in the GUI)
Purchasing Number (PURCH_NO_C)	*RMA Number*	Retrieved via BAPI BAPI_ALM_ORDER_GET_DETAIL
Material Number (MATNR or MATNR_EXTERNAL)'-'*Serial Number* (SERIALNO)	*SFC Number*	

SAP ERP	SAP ME	Comment
Material Number (MATNR or MATNR_EXTERNAL)	*Planned Material*	
	Priority	500
Requirements Quantity (BDMNG)	*Build Qty*	
Scheduled start (GSTRS)	*Planned Start*	
Scheduled finish (GLTRS)	*Planned End*	
Order Number (AUFNR)	*Planned Routing*	AUFNR
	Routing Type	*Production Routing*
Material Number (MATNR or MATNR_EXTERNAL)	*Routing Description*	
	Routing Status	*201*
	Routing Effectivity Control	*R*
Key for Task List Group (PLNNR);*Group Counter* (PLNAL)	*Entry Routing*	
	Entry Routing Type	*H*
	Entry Routing Step ID	*10*
	Current Version	Selected
	Status	Routing status; defaults to *Releasable*
Order Number (AUFNR), *Operation* (VORNR)	*Operation*	AUFNR + '-' + VORNR
Control Key (STEUS)	*ERP Control Key*	Key specifying how an operation or suboperation is to be processed
Sequence (FLAGAT)	Data field: SEQUENCE	Only the value of zero is supported
	Data field: IS_LAST_REPORTING_STEP	If selected, this is the last ERP routing step
Material Number (MATNR or MATNR_EXTERNAL)	Custom data field: ERP_MATERIAL	

21.11 Inventory to Floor Stock

Data is transferred from SAP ERP to SAP ME using the *INVCON* IDoc with *BWART = 311* and *SHKZG = S* or *BWART = 261*.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Plant (WERKS)	*Site*	
Order Number (AUFNR)	*Shop Order*	Read-only field on *Maintain Floor Stock*; Production order; only 261 movement type; *Reserve* checkbox is set to true
Material Number (MATNR or MATNR_EXTERNAL)	*Material*	
	Version	Material version; defaults to # (blank in the GUI)
Quantity (MENGE)	*Quantity On Hand*	
	ShopOrderLocRes	Defaults to *true*
	ShopOrderSetByErp	Defaults to *true*
	ERP Inventory	Selected
Movement Type (BWART)	*Movement Type*	261 — *Goods issue to a production order* or 311 — *Transfer posting storage location (one-step)*
	Sequence	*1*
Receiving Storage Location (UMLGO)	CENTRAL_STORAGE_LOCATION	*Floor Stock Receipt* field For movement type 311 only; *Reserve* checkbox is set to false
Debit/Credit indicator (SHKZG)		For movement type 311 only: SHKZG=S This value is repeated in multiple segments. Use the E1ICIT0 segment.
Vendor Account Number (VENDOR_NO)	*Vendor* (VENDOR)	From BAPI_BATCH_GET_DETAIL
Vendor Batch Number (VENDRBATCH)	*Vendor Lot* (VENDOR_LOT)	From BAPI_BATCH_GET_DETAIL
Production Date (PROD_DATE)	*Vendor Date Code* (VENDOR_DATE_CODE)	From BAPI_BATCH_GET_DETAIL
Batch Number (CHARG)	*Batch Number* (BATCH_NUMBER)	
Storage Location (LGORT)	*Storage Location*	*Maintain Floor Stock* field

SAP ERP	SAP ME	Comment
Characteristic Name and Value (ATNAM and ATWRT)	*Characteristic Name and Value*	From Z_VB_BATCH_VALUES_FOR_OUTPUT

21.12 Inventory Return and Scrap

Data is transferred from SAP ME to SAP ERP.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Plant (PLANT)	*Site*	
Plant (MOVE_PLANT)	*Site*	
Material Number (MATERIAL or MATERIAL_EXTERNAL)	*Material (*item*)*	
ENTRY_QNT	*Quantity (*quantity*)*	
Storage Location (STGE_LOC)	centralStorageLocation or floorStorageLocation	If movement type is 551, then floorStorageLocation, otherwise centralStorageLocation.
Material Number (MOVE_MAT)	*Material (*item*)*	
MOVE_STLOC	*Floor Storage Location* (floorStorageLocation)	Receiving storage location
Batch Number (BATCH)	*Batch Number* (batchNumber)	
Order Number (ORDERID)	*Shop Order* for pegged inventory (shopOrder)	
EXTENSIONIN/item/ STRUCTURE		MKPF-MES_INVENTORY_ID
EXTENSIONIN/item/ VALUEPART1	*Inventory ID* (inventoryId)	
MOVE_TYPE	*Reason Code* (reasonCode)	Starts with ($reasonCode,'RTN-')
COSTCENTER	*Cost Center* (costCenter)	
*Goods Movement Code (*GM_CODE*)*		*06* for movement type *262*, *04* for *312*, *03* for *551*
PSTNG_DATE	*Date Time* (dateTime)	
DOC_DATE	*Date Time* (dateTime)	

21.13 Floor Stock Movement Across Storage Locations

Data is transferred from SAP ME to SAP ERP by calling the *BAPI_GOODSMVT_CREATE* BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
GM_CODE		*04*
PSTNG_DATE	*Date Time*	
DOC_DATE	*Date Time*	
MATERIAL (or MATERIAL_EXTERNAL)	*Item*	
PLANT	*Site*	
STGE_LOC	*From Storage Location*	
BATCH	*Batch Number*	
ENTRY_QNT	*Quantity*	
MOVE_MAT (or MOVE_MAT_EXTERNAL)	*Item*	
MOVE_PLANT	*Site*	
MOVE_STLOC	*Storage Location*	
MOVE_TYPE		*311*
EXTENSIONIN/item/ STRUCTURE		MKPF-MES_INVENTORY_ID
EXTENSIONIN/item/ VALUEPART1	*Inventory ID*	

21.14 Personnel with Qualifications to User with Certifications

Data is transferred from SAP ERP to SAP ME using the *HRMD_A06* IDoc.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

For more information about Field Mappings, see SAP Note 2226006.

User		
SAP ERP	**SAP ME**	**Comment**
Personnel Area (WERKS)	*Site*	The same as plant; only WERKS segments where the IDoc create date (CREDAT) is between BEGDA and ENDDA
Personnel Number (PERNR)	*User ID*	
Last Name (NACHN)	*Last Name*	

User		
SAP ERP	**SAP ME**	**Comment**
First Name (VORNA)	*First Name*	
Employment status (STAT2)	*Status*	If equal to 3, set to *Active*, otherwise set to *Inactive*.
	Password	It is hard-coded to SAP1234 when the record is created.
	Password Expired	Selected
Certification		
SAP ERP	**SAP ME**	**Comment**
Qualification key (QUALI)	*Certification Code*	
	Status	*Cert Enabled*
Personnel Number (PERNR)	*User ID*	
End Date (ENDDA)	*Certification Expiration Date*	
Start Date (BEGDA)	*Certification Start Date*	
Proficiency of a Qualification/Requirement (AUSPR)	*Comment* (in *User Certification Assignment Maintenance*)	In the HR component, this is the *Skill Level*. During import, it is stored in the *Comment* field with the following text: Skill Level = <value from 0-9>
	Role	SAP_ME_USER

21.15 Production Yield Confirmation

(yieldConfirmationRequest or CorrelatedYieldConfirmationRequest)

Data is transferred from SAP ME to SAP ERP using the *BAPI_PRODORDCONF_CREATE_TT* or *CO_MES_PRODORDCONF_CREATE_TT* (for SAP ERP 6.0 with EHP 5 or Higher and with Activated MES Integration) BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
	SFC Number (SFC_BO)	
Plant (PLANT)	*Site* (site)	
Movement Type (MOVE_TYPE)		101 for parent material receipt, 261 for component confirmation
Order Number (ORDERID)	*Shop Order*	Shop order is determined from SFC_BO

SAP ERP	SAP ME	Comment
Yield to Be Confirmed (YIELD)	*Quantity*	SFC quantity / quantity completed (normally 1 except for non-serialized SFC number)
Activity Number (OPERATION)	Custom data field: REPORTING_STEP	SAP ERP operation number related to the process sequence number (routing reporting step)
Batch Number (BATCH)	*Batch Number*	
FIN_CONF		1
CLEAR_RES		X
CONF_QUAN_UNIT_ISO	unitOfMeasure	
Capacity Category (CAPA_CATEGORY)	erpCapacityCategory	
*Split Number (*SPLIT)	*Split ID* (splitId)	
IV_PROPOSE_BACKFLUSH		X when 'components' parameter in Collaboration Directive is set to onlyNonBackflushed
IV_2ND_TIME_CONFIRMATION (only for CO_MES_PRODORDCONF_CREATE_TT)		X for repeated operation confirmation
GOODSMOVEMENTS segment		
PLANT	*Site*	
MOVE_TYPE		The type of goods movement; 261 for *Goods Issue*; 101 for *Goods Receipt*
MATERIAL or MATERIAL_EXTERNAL	*Material*	
STGE_LOC	storageLocation	*Floor Stock Storage Location* available for the selected inventory ID. If not available, the value is defined in *ERP Production Storage Location* field in *Material Maintenance*.
BATCH	batchNumber	
ENTRY_QNT	Quantity	
ENTRY_UOM_ISO	unitOfMeasure	
ORDERID	orderNumber	
Movement Indicator (MVT_IND)		F for the movement type 101
IT_GOODSMVT_SERIALNUMBER segment (relevant for SAP ECC EhP05 and above)		

SAP ERP	SAP ME	Comment
Serial Number (SERIALNO)	*Serial Number* (SERIALNO)	Serial number (or SFC number) of the main assembly is sent from the last reporting step (the movement type 101).

21.16 Production Scrap Confirmation

Data is transferred from SAP ME to SAP ERP using the *BAPI_PRODORDCONF_CREATE_TT* or *CO_MES_PRODORDCONF_CREATE_TT* BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
	SFC Number (SFC_BO)	
Plant (PLANT)	*Site*	
Movement Type (MOVE_TYPE)		261.
Order Number (ORDERID)	*Shop Order*	Shop order is determined from SFC_BO
Yield to Be Confirmed (SCRAP)	*Quantity*	SFC quantity / quantity completed (normally 1 except for non-serialized SFC number)
Activity Number (OPERATION)	Custom data field: REPORTING_STEP	SAP ERP operation number related to the process sequence number (routing reporting step)
	Operation	
Batch Number (BATCH)	*Batch Number*	
FIN_CONF		*1*
CLEAR_RES		*X*
CONF_QUAN_UNIT_ISO	unitOfMeasure	
Capacity Category (CAPA_CATEGORY)	erpCapacityCategory	
*Split Number (*SPLIT)	*Split ID* (splitId)	
Component section		
MOVE_TYPE		The type of goods movement; 261 for *Goods Issue*
MATERIAL or MATERIAL_EXTERNAL	item	
PLANT	*Site*	
STGE_LOC	*Storage Location*	
BATCH	batchNumber	

SAP ERP	SAP ME	Comment
ENTRY_QNT	*Quantity*	
Fields relevant for SAP ECC EhP05 and above		
CO_MES_PRODORDCONF_CREATE_TT		BAPI name is changed from BAPI_PRODORDCONF_CREATE_TT to CO_MES_PRODORDCONF_CREATE_TT
INDEX_CONFIRM		Field removed in EHP05
INDEX_GOODSMOV		Field removed in EHP05
CONF_ID	messageID	
ACTIVITY	reportingStep	

21.17 Independent Components Consumption

Data is transferred from SAP ME to SAP ERP using the *MB_MES_GOODSMVT_CREATE* BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
DETERMINE_RESERVATIONS		Always set to X
GM_CODE		Always set to 03
PSTNG_DATE	*Date Time* (dateTime)	
DOC_DATE	*Date Time* (dateTime)	
Storage Location (STGE_LOC)	Storage location	*Floor Stock Storage Location* available for the selected Inventory ID. If not available, the value is defined in *ERP Production Storage Location* field in *Material Maintenance*.
Batch Number (BATCH)	*Batch Number* (batchNumber)	
Order Number (ORDERID)	*Shop Order* for pegged inventory (shopOrder)	
MOVE_TYPE		261
COSTCENTER	*Cost Center* (costCenter)	
ACTIVITY	*Reporting Step*	Reporting step of a routing step where component was assembled

SAP ERP	SAP ME	Comment
GOODSMVT_SERIALNUMBER *segment*		
SERIALNO		ERP_SERIAL_NUMBER field collected during assembly

21.18 Production Order Complete

Data is transferred from SAP ME to SAP ERP by calling the *BAPI_PORDORDCONF_CREATE_TT* BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
*Plant (*PLANT*)*	*Site*	
*Order Id (*ORDERID*)*	*Order Number*	
*Operation (*OPERATION*)*	*Operation*	
*Yield (*YIELD*)*		*0*
FIN_CONF		*X*
CLEAR_RES		*X*

21.19 Planned Order Yield Confirmation

Data is transferred from SAP ME to SAP ERP using the *BAPI_REPMANCONF1_CREATE_MTS BAPI*.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Backflushing Type (BCKFLTYPE)		*Final Backflush* (01)
Plant (PRODPLANT)	*Site* (site)	
PLANPLANT	*Site* (site)	
Quantity in unit of entry (BACKFLQUANT)	*Quantity*	
Material Number (MATERIALNR or MATERIALNR_EXTERNAL)	*Material* (item)	
Production Version (PRODVERSION)	*Production Version* (ProductionVersion)	

Receiving batch (BATCH)	*Batch* (batchNumber)	
Posing date (POSTDSTE)	(dateTime)	Timestamp when the message was generated
Document date (DOCDATE)	(dateTime)	Timestamp when the message was generated
Fields relevant for SAP ECC EhP05 and above		
CHAR_NAME	(name)	
CHAR_VALUE	(value)	
PLANORDER	(orderNumber)	

21.20 Planned Order Scrap Confirmation

Data is transferred from SAP ME to SAP ERP using the *BAPI_REPMANCONF1_CREATE_MTS* BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Backflushing Type (BCKFLTYPE)		*Final Backflush* (01)
Plant (PRODPLANT)	*Site* (site)	
PLANPLANT	*Site* (site)	
Quantity in unit of entry (SCRAPQUANT)	*Quantity*	
Material Number (MATERIALNR or MATERIALNR_EXTERNAL)	*Material* (item)	
Production Version (PRODVERSION)	*Production Version* (ProductionVersion)	
Receiving batch (BATCH)	*Batch* (batchNumber)	
Posing date (POSTDSTE)	(dateTime)	Time stamp when the message was generated
Document date (DOCDATE)	(dateTime)	Time stamp when the message was generated
Fields relevant for SAP ECC EhP05 and above		
Planned Order (PLANORDER)	(orderNumber)	

21.21 Planned Order Complete

Data is transferred from SAP ME to SAP ERP by calling the *BAPI_PLANNEDORDER_DELETE* BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Planned Order (PLANNEDORDER)	*Order Number*	

21.22 *RMA* Order Complete

Data is transferred from SAP ME to SAP ERP by calling *BAPI_ALM_ORDER_MAINTAIN* BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
REFNUMBER		000000
OBJECTTYPE		HEADER
METHOD		TECHNICALCOMPLETE and SAVE for different IT_METHODS
OBJECTKEY	*Order Number*	

21.23 Direct Labor

Direct labor records are transferred from SAP ME to SAP ERP by calling the *BAPI_PRODORCONF_CREATE_TT* BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Order ID(ORDER_ID)	*Order Number*	
Operation (VORNR)	*Reporting Step*	
Personnel Number (PERS_NO)	*ERP Personnel Number*	
PLANT	*Site*	

SAP ERP	SAP ME	Comment
CONF_ACTIVITY1 to CONF_ACTIVITY6	*Activity One* to *Activity Six*	
CONF_ACTI_UNIT1_ISO to CONF_ACTI_UNIT6_ISO	*Unit of Measure*	The *Unit of Measure* (UoM) used here is defined in *Scheduling Standard Maintenance*. For example, minute, hour, or second.

21.24 Equipment Usage

Data is transferred from SAP ME to SAP ERP using the *MEASUREM_DOCUM_RFC_SINGLE_001* BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Measuring Point (MEASUREMENT_POINT)	*Measurement Point*	
Notification Type (NOTIFICATION_TYPE)		Notification type = M2
Recorded Value (RECORDED_VALUE)		Recorded value = 1
Commit Work (COMMIT_WORK)		Commit work = X
Wait After Commit (WAIT_AFTER_COMMIT)		Wait after commit = X
Prepare Update (PREPARE_UPDATE)		Prepare update = X
Reading Date (READING_DATE)	*Date Time*	Date is extracted from dateTime before ‘T’
Reading Time (READING_TIME)	*Date Time*	Time is extracted from dateTime after ‘T’
Difference Reading (DIFFERENCE_READING)		Difference reading = X
Origin Indicator (ORIGIN_INDICATOR)		Origin indicator = A

21.25 Maintenance Order for Equipment Scheduled Downtime

Data is transferred from SAP ERP to SAP ME using the *IORDER01* IDoc with Maintenance order planning indicator (*PLKNZ*) = ‘1’.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Plant (WERKS)	*Site*	
Equipment Number (EQUNR)	*ERP Equipment Number*	Web service field that maps to resource or tool number data field EQUIPMENT_NUMBER
Status (USTXT)	*Status*	Status to be changed to; defaults to *Scheduled Down*
	User	Defaults to SITE_ADMIN
	Comment	If MSAUS equals to "X" set to *Unscheduled Down from ERP*, else set to *Scheduled Down from ERP*
	Immediate	Set to *false*
Equipment Number (EQUNR)	EQUIPMENT_NUMBER	Data field in resource or tool number
Order Number (AUFNR)	PLANT_MAINTENCE_ORDER	Data field in resource or tool number

21.26 Equipment Scheduled Downtime

Data is transferred from SAP ME to SAP ERP by calling the *BAPI_ALM_ORDER_MAINTAIN* BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
REFNUMBER		000001
OBJECTTYPE		USERSTATUS and HEADER for different IT_METHODS
METHOD		CHANGE and SAVE for different IT_METHODS
OBJECTKEY	*ERP Plant Maintenance Order*	
USER_ST_TEXT		PROD
LANGU		EN
CHANGE_EVENT		01

ORDERID	*ERP Plant Maintenance Order*	
SYSTCOND		1 for IT_HEADER and X for IT_HEADER_UP

21.27 Equipment Unscheduled Downtime

Data is transferred from SAP ME to SAP ERP by calling BAPI *BAPI_ALM_NOTIF_CREATE*.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Plant (PLANPLANT)	*Site*	
Equipment Number (EQUIPMENT)	*ERP Equipment Number*	
Short Text (SHORT_TEXT)	*Comment*	
BREAKDOWN		*X*
Notification Type (NOTIF_TYPE)		*M2*

21.28 Nonconformance Data to Quality Notification

Data is transferred from SAP ME to SAP ERP using the *qualityNotificationRequest* message.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Create Batch (BAPI_BATCH_CREATE)		
Plant	*ME Site*	
Batch	*SFC Batch*	
Material (MATERIAL or MATERIAL_EXT)	*Material*	
Create Notification (BAPI_QUALNOT_CREATE) ***and*** ***Update Notification*** (BAPI_QUALNOT_ADD_DATA)		
EXTERNAL_NUMBER		Notification number
Notification Type (NOTIF_TYPE)	NOTIF_TYPE	Default selected during MEINTCTC execution. The default value can be seen in *Service Transaction*

SAP ERP	SAP ME	Comment
		Parameter for the workflow *qualityNotificationRequest*
Notification Header (NOTIFHEADER)		
Plant for Material (MATERIAL_PLANT)	*Site*	
Description (SHORT_TEXT)		Problem Complaint from SAP ME
Problem Catalogue (CATALOGUE)	CATALOGUE	Default selected during MEINTCTC execution. The default value can be seen in *Service Transaction Parameter* for the workflow *qualityNotificationRequest*
Notification Type (NOTIF_TYPE)	NOTIF_TYPE	Default selected during MEINTCTC execution. The default value can be seen in *Service Transaction* Parameter for the workflow *qualityNotificationRequest*
Code group (CODE_GROUP)	CODE_GROUP	Default selected during MEINTCTC execution. The default value can be seen in *Service Transaction Parameter* for the workflow *qualityNotificationRequest*
Coding (CODE)	HEADER_CODE	Default selected during SAPMEINTCTC execution. The default value can be seen in *Service Transaction Parameter* for the workflow *qualityNotificationRequest*
Priority (PRIORITY)	PRIORITY	Default selected during SAPMEINTCTC execution. The default value can be seen in *Service Transaction Parameter* for the workflow *qualityNotificationRequest*
Reported by (REPORTEDBY)	*ME User*	Last name of the user logging the NC code
Material (MATERIAL or MATERIAL_EXTERNAL)	*Material*	Material against which NC code is logged
Batch Number (BATCH)	*Batch Number*	
Production Order (PROD_ORDER)	*Shop Order*	Shop order of the SFC number if the shop order is an *ERP Order*

SAP ERP	SAP ME	Comment
Complaint Quantity (QUANT_COMPLAINT)	*Complaint Quantity*	Number of SFCs that have ERP NCs logged against them per shop order
Notification Date (NOTIF_DATE)	*dateTime*	Date of NC Log
Notification Time (NOTIFTIME)	*dateTime*	Time of NC Log
Notification Partner (NOTIFPARTNR)		
PARTN_ROLE	*Notification Partner Type*	KU
PARTNER		Valid SAP ERP user; the name that the user logs into SAP ERP with, not the *HR User ID*. The ERP_USER is a field in *User Maintenance*.
Notification Item (NOTITEM)		
Text (DESCRIPT)	*NC Code Description*	
	ERP_QN_CODE	
Problem Catalogue (D_CAT_TYP)	ERP_CATALOG	Catalog Type - Problem
Code group (D_CODEGRP)	ERP_CODE_GROUP	Code Group – Problem
Defect type (D_CODE)	ERP_CODE	The QN code logged - problem or damage code in SAP ERP
	NC Code	
Number of defects (QUAN_DEFECTS)	*Defect Qty*	
Assembly (ASSEMBLY or ASSEMBLY_EXTERNAL)	*Component*	SAP ERP material number. If no component is selected, the parent assembly number is used
Long Text (LONGTEXTS)		
Object Type (OBJTYPE)		QMFE
LONGTEXTS	*SFC*: < SFC number>; *Material*: <Material>; *Operation:* <Operation>; *Resource:* <Resource>;*WC:* <Work Center>;*Comments:* <Comments>	
Unmapped fields (see also SAP Note 1933920)		
	Database field INCIDENT_NUMBER_BO	The Incident ID associated with that nonconformance incident
	Database field REPORTING_CENTER_BO	The reporting center for the routing step.

SAP ERP	SAP ME	Comment
	Database field ROOT_CAUSE_OPER_BO	The Root Cause Operation ID associated with this NC Data obj.
	Database field REF_DES	The reference designator (location) for the component with which the NC was associated.
	Database field COMP_CONTEXT_GBO	The component ID used (can be InventoryBO or SFCBO).
	Database field IDENTIFIER	The ID for the component as entered by the user.
	Database field FAILURE_ID	The Failure ID returned for the NC. Normally returned from a tester.
	Database field LOCATION	The location at which the NC has been logged. No multiple locations supported.
	Database field ASSEMBLY_INCIDENT_NUM	Captures the vertical reference number that associates NC records for components in an assembly.
	Database field BATCH_INCIDENT_NUM	Captures the horizontal reference number that associates all SFCs that are being nonconformed in the current NC session.

21.29 Quality Inspection Result Recording (100% Quality Inspection)

Quality inspection result records are transferred from SAP ME to SAP ERP by calling the *BAPI_INSPOPER_RECORDRESULTS* BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Inspection Lot (INSPLOT)	*Inspection Lot ID*	
Operation (INSPOPER)	*Operation/Routing*	

SAP ERP	SAP ME	Comment
Characteristic (INSPCHAR)	*Parameter Name*	*Inspection Characteristic Number (DC Group Parameter Sequence Number)*
Inspection Unit Number (EXT_NO)		Internally generated unique ID for SFC.
Start Date (INSP_DATE)	*Date/Time*	Date when data collection is performed
Inspection Start time (INSP_TIME)	*Date/Time*	Time when data collection is performed
Inspector (INSPECTOR)		ERP User of the ME User who collected data for the characteristics.
LAST_RES		True for last reading for a characteristic; otherwise false
Inspection Description (REMARK)	*Comments*	
Original Value (RES_VALUE)	*Value*	For *Characteristic Type* 01
Valuation (RES_VALUAT)	*Value*	Single parameter evaluation result: A (for *Accepted*) or R (for *Rejected*)
Characteristic Defects (DEFECTS)	*Value*	For *Characteristic Type* 04; Number of defects
CLOSED		*true*

21.30 Quality Inspection Result Recording

Quality inspection result records are transferred from SAP ME to SAP ERP by calling the *BAPI_INSPOPER_RECORDRESULTS* BAPI.

The table below contains field names in SAP ERP and their corresponding field names in SAP ME.

See SAP Note 2226006 for more information about Field Mappings.

SAP ERP	SAP ME	Comment
Inspection Lot (INSPLOT)	*Inspection Lot ID*	
Operation (INSPOPER)	*Operation/Routing*	
Characteristic (INSPCHAR)	*Parameter Name*	*Inspection Characteristic Number (DC Group Parameter Sequence Number)*
Inspection Unit Number (EXT_NO)		Internally generated unique ID for SFC.

SAP ERP	SAP ME	Comment
Start Date (INSP_DATE)	*Date/Time*	Date when data collection is performed.
Inspection Start time (INSP_TIME)	*Date/Time*	Time when data collection is performed.
Inspector (INSPECTOR)		ERP User of the ME User who collected data for the characteristics.
LAST_RES		True for last reading for a characteristic; otherwise false
Inspection Description (REMARK)	*Comments*	
Original Value (RES_VALUE)	*Value*	For *Characteristic Type* 01
Valuation (RES_VALUAT)	*Value*	For *Characteristic Type 03;* A (for *Accepted*) or R (for *Rejected*)
Characteristic Defects (DEFECTS)	*Value*	For *Characteristic Type* 04; Number of defects
CLOSED		*true*

22 SAPMEINT Message Processing Logic

22.1 Material

A material can be transferred using *MATMAS03* or *MATMAS05* IDocs. The difference between *MATMAS03* and *MATMAS05* is that *MATMAS05* supports DIMP LAMA long material names.

In SAP ERP, a material may contain multiple plant data. SAPMEINT must create this material in the corresponding sites in SAP ME. The Split workflow splits the *MATMAS03* or *MATMAS05* IDoc into multiple IDocs (with the type *Z_MATMAS03* or *Z_MATMAS05*) so that all the split documents are processed by the Standard workflow.

MATMAS03

Workflow	MATMAS03
Workflow type	Split Workflow
Identifier	Material Number (MATNR)

The Split workflow uses data from Supported SAP ME Plants and does the split only for plants/sites referenced there. If the material in SAP ERP is defined for a plant that is not listed in Supported SAP ME Plants, then this material is ignored during the split. The *Z_MATMAS* IDoc contains material data for a single site.

Once the split is done, new split messages with type *Z_MATMAS03* or *Z_MATMAS05* with a status of QUEUED appear in the SAPMEINT *Queue Monitor*. The status of the *MATMAS* message changes to SPLIT_DONE.

If multiple *Z_MATMAS* messages are created, they are processed independently.

MATMAS03 has the following preconfigured plugins:

Pre XSLT Transaction:

Visiprise/ERPShopFloorIntegration/frame/workflow/EnrichMessageWithSuppPlantData. Inserts into message information from Supported Plants information.

MATMAS05

Workflow	MATMAS05
Workflow type	Split Workflow
Identifier	Material Number (MATNR)

The same as *MATMAS03* but also supports DIMP LAMA long material names.

Z_MATMAS03

Workflow	Z_MATMAS03
Workflow type	Standard Workflow
Identifier	Plant (WERKS)-Material Number (MATNR)

Creates a material in SAP ME.

Z_MATMAS05

Workflow	Z_MATMAS05
Workflow type	Standard Workflow
Identifier	Plant (WERKS)-Material Number (MATNR)

Creates a material in SAP ME.

An existing material record is updated in SAP ME according to the *Update Indicator* field setting in *ERP Field Maintenance*.

For more information about how an object updated in SAP ERP is handled in SAP ME, see the SAPMEINT Change Management section of this guide or SAPMEINT Change Management on the SAP Help Portal at http://help.sap.com.

22.2 Material Classification

The processing logic for *CLFMAS02* is similar to the *MATMAS03* / *MATMAS05* processing logic.

For more information about the processing logic that applies to the *MATMAS* type of IDocs, see the Material subsection in the SAPMEINT Message Processing Logic section of this guide.

The *CLFMAS02* IDoc may contain information for multiple plants, which requires the Split workflow to process this type of message. After the split, the *Z_CLFMAS02_SAVE_ITEM_CUST_FLDS* messages are created.

CLFMAS02

Workflow	CLFMAS02_SAVE_ITEM_CUST_FLDS
Workflow type	Split Workflow
Identifier	Plant (WERKS)-Key of object to be classified (OBJEK)

CLFMAS02_SAVE_ITEM_CUST_FLDS has the following preconfigured plugins:

Pre XSLT Transaction

Visiprise/ERPShopFloorIntegration/frame/workflow/EnrichMessageWithSuppPlantData. This plugin inserts information from the *Supported Plants* table into the message.

Z_CLFMAS02_SAVE_ITEM_CUST_FLDS

Workflow	Z_CLFMAS02_SAVE_ITEM_CUST_FLDS
Workflow type	Standard Workflow
Identifier	Plant (WERKS)-Key of object to be classified (OBJEK)

Z_CLFMAS02_SAVE_ITEM_CUST_FLDS has the following preconfigured plugins:

Pre XSLT Transaction

Visiprise/ERPShopFloorIntegration/workflow/MaterialCustomData/CLFMAS_LMN_Enrichment. This plugin calls the *BAPI_MATERIAL_GETLIST* BAPI to obtain the long material name used if the DIMP LAMA business function is activated.

As a result of this workflow, material custom data is updated.

22.3 Long Material Number (LMN)

The *MATMAS05* IDoc is processed the same as *MATMAS03*, with the only difference being that the material name is obtained from the MATNR_EXTERNAL field.

For more information about the processing logic that applies to the *MATMAS* type of IDocs, see the Material subsection in the SAPMEINT Message Processing Logic section of this guide.

```
<MTPOS_MARA>NORM</MTPOS_MARA>
<GEWTO_NEW>0.0</GEWTO_NEW>
<VOLTO_NEW>0.0</VOLTO_NEW>
<SLED_BBD>B</SLED_BBD>
<ANP>000000000</ANP>
- <E1MARA1>
<MATNR_EXTERNAL>00000000000000000000000000000000000000741</MATNR_EXTERNAL>
<MATNR_GUID>FA163E36A1671ED582A740168B95153A</MATNR_GUID>
<MAXC>0.000</MAXC>
<MAXC_TOL>0.0</MAXC_TOL>
<MAXL>0.000</MAXL>
<MAXB>0.000</MAXB>
<MAXH>0.000</MAXH>
<QQTIME>0</QQTIME>
<MEDIUM>/</MEDIUM>
```

22.4 Bill of Material (BOM)

BOMMAT03

Workflow	BOMMAT03
Workflow type	Standard Workflow
Identifier	Plant (WERKS)-Material Number (MATNR*)-BOM Usage (STLAN)-Alternative BOM (STLAL) * For DIMP LAMA system MATNR_EXT is used instead of MATNR in identifier.

The BOMMAT03 IDoc is processed by the Standard workflow. (For more information about the standard workflow confirmation, see the Standard Workflow Message Type Details on the SAP Help Portal at http://help.sap.com.)

The Identifier for *BOMMAT* messages is "Plant (WERKS)-Material Number (MATNR)-BOM Usage (STLAN)-Alternative BOM (STLAL)".

All logic on converting IDoc to be used in SAP ME is located in the XSLT file. Field mapping document shows how IDoc fields are mapped to SAP ME fields in XSLT.

The Assembly Qty of the BOM component in SAP ME *BOM Maintenance* is calculated as a base quantity of SAP ERP BOM component divided by the base quantity in SAP ERP BOM header (*MENGE_C* / *BMENG_C*). The Unit of Measure of the BOM components is obtained from the SAP ERP material master.

Note: Usage Probability can be taken into account to calculate Assy Qty of the main component from the alternate group. This happens only if bill of material record is transferred to SAP ME within a production order IDoc. For more information, see the Production Order to Production Shop Order subsection in the SAPMEINT Message Processing Logic section of this guide.

In SAP ERP, you can define the header material of a BOM with a unit of measure different from the base unit of measure. SAP ME takes the quantity in the base unit of measure from the BOM header to normalize the BOM item quantities.

Since the *BOMMAT* IDoc does not contain component allocation information, the Master BOM created in SAP ME does not contain assigned Assembly Operations.

In SAP ME, BOM has a Custom field *ERP_MATERIAL* and this field is populated with *MATNR* or *MATNR_EXTERNAL* value. SAP ME associates this Material with BOM by populating the BOM field in *Material Maintenance*.

When a BOM is changed in ERP and the IDoc with updates is delivered to SAP ME, the current version of the BOM can be updated or a new version can be created in accordance to settings in activity.

BOMMAT05

Workflow	BOMMAT05
Workflow type	Standard Workflow
Identifier	Plant (WERKS)-Material Number (MATNR*)-BOM Usage (STLAN)-Alternative BOM (STLAL) * For DIMP LAMA system MATNR_EXT is used instead of MATNR in identifier. For S/4 HANA MATNR_LONG field is used.

BOMMAT05 has the same functionality as *BOMMAT03* and is used for integration with SAP S/4HANA, on-premise edition 1511.

An existing BOM record is updated in SAP ME ME according to the *Update Indicator* field setting in *ERP Field Maintenance*.

For more information about how an object updated in SAP ERP is handled in SAP ME, see the SAPMEINT Change Management section of this guide or SAPMEINT Change Management on the SAP Help Portal at http://help.sap.com.

22.5 Work Center

LOIWCS02

SAPMEINT supports the transfer of Work Centers using *LOIWCS02* for the *9000* and *9100* categories:

Category	Workflow	ME object
9000	LOIWCS02_ME_WC	Work Center
9100	LOIWCS02_ME_RES	Resource

SAPMEINT discriminator contains logic that uses an appropriate workflow based on Work Center category. Work Center category is read from ERP in Visiprise/ERPShopFloorIntegration/frame/common/GetWorkCenterCategory transaction called from discriminator (calls RFC_READ_TABLE to read VERWE from CRHD for the given ARBPL and WERKS).

LOIWCS02_ME_WC

Workflow	LOIWCS02_ME_WC
Workflow type	Standard Workflow
Identifier	Plant (WERKS)-Work Center (ARBPL)

As a result of this workflow, the work center is created in SAP ME.

LOIWCS02_ME_RES

Workflow	LOIWCS02_ME_RES
Workflow type	Standard Workflow

Identifier	Plant (WERKS)-Work Center (ARBPL)

As a result of this workflow, the resource is created in SAP ME.

LOIWCS02_ME_RES workflow has the following preconfigured plugins:

Pre XSLT Transaction:

Visiprise/ERPShopFloorIntegration/workflow/Resource/ResourceTypeEnrichment. This SAP MII transaction calls *BAPI_OBJCL_GETDETAIL* BAPI to obtain the Resource Types configured in SAP ERP using Classification. IDoc XML is enriched with the Resource Types information before calling XSLT.

LOIWCS03

Workflow	LOIWCS03
Workflow type	Standard Workflow
Identifier	Plant (WERKS)-Work Center (ARBPL)

As a result of this workflow, the work center with assigned resources is created in SAP ME.

When *LOIWCS03* is sent from SAP ERP with the work center update, it is possible that the work center has been changed in SAP ME by adding SAP ME resources to it. In this case, resources created and assigned in SAP ME are merged with resources received from SAP ERP.

An existing work center record is updated in SAP ME according to the *Update Indicator* field setting in *ERP Field Maintenance*.

For more information about how an object updated in SAP ERP is handled in SAP ME, see the SAPMEINT Change Management section of this guide or SAPMEINT Change Management on the SAP Help Portal at http://help.sap.com.

22.6 Routing with Operations

LOIROU02

Workflow	LOIROU02
Workflow type	Standard Workflow
Identifier	Plant (WERKS)-Key for Task List Group (PLNNR)-Group Counter (PLNAL)

SAPMEINT creates two SAP ME objects:

ME object	Used features
Operation	Description of SAP ME operation is populated with SAP ERP operation short text.
Routing	

SAP ME defaults the first routing to version A and increments an additional integer value for subsequent updates. For example: A-01, A-02. Routing updates are processed in SAP ME according to settings in *ERP Field Maintenance*.

A new routing version is created when you add new operations or change the following in SAP ERP:

- Operation number
- Operation control key

- Operation short text

During routing creation, the following custom fields are populated in *Routing Maintenance* in SAP ME:

- ERP_MATERIAL
- ERP_VALIDITY_FROM
- ERP_VALIDITY_TO
- ERP_LOT_SIZE_FROM
- ERP_LOT_SIZE_TO

If a routing is enriched in SAP ME with ME steps, then these steps are merged in the routing update coming from SAP ERP.

The last new routing successfully created in SAP ME from *LOIROU02* is set to *Releasable* and marked as the current version of that routing.

The last ERP operation is flagged as a reporting step in SAP ME using the data field *IS_LAST_REPORTING_STEP* in the routing step. *yieldConfirmation* sent from this step contains *101* goods movement for manufactured Planned Material. Also on this step *yieldConfirmation* contains data collected for *ERP DC* groups and mapped to Batch characteristics.

Apart from the routing, SAP ME also creates operations contained in the routing. Operations are automatically assigned to the *DEFAULT* resource type.

LOIROU03

Workflow	LOIROU03
Workflow type	Standard Workflow
Identifier	Plant (WERKS)-Key for Task List Group (PLNNR)-Group Counter (PLNAL)

In addition to *LOIROU02*, *LOIROU03* creates Work Instructions. Work Instructions created from *LOIROU03* do not have attachment points by default.

An existing routing record is updated in SAP ME according to the *Update Indicator* field setting in *ERP Field Maintenance*.

For more information about how an object updated in SAP ERP is handled in SAP ME, see the SAPMEINT Change Management section of this guide or SAPMEINT Change Management on the SAP Help Portal at http://help.sap.com.

22.7 Production Order to *Production* Shop Order

LOIPRO02

Workflow *LOIPRO02* IDoc has the same plugins as *LOIPRO03* but it does not support the following features:

- Routing mastered in ME
- ERP Batch number
- Shop Order schedule

- Work Center reference on Routing step
- Work Center reference on Operation

LOIPRO03

Workflow	LOIPRO03
Workflow type	Standard Workflow
Identifier	Plant (WERKS)-Order Number (AUFNR)

LOIPRO03 workflow has the following plugins:

Pre XSLT Transaction
java:com.sap.me.integration.actions.workflow.inbound.productionorder.ProductionOrderPreXSLT. Java-based plugin that deletes information related to Quality Inspection from IDoc. When parameter *downloadQI* is set to *false* then plugin removes *PRUEFLOS* and *E1QAMVL* tags from received IDoc.

Post XSLT Transaction
java:com.sap.me.integration.actions.workflow.inbound.OrderDateEnrichment. Java-based plugin that converts planned start and planned complete date to GMT-0 time zone. This plugin uses information from *Supported SAP ME Plants* about SAP ERP server time zone.

If a production order is *make-to-order*, BOM and routing created in SAP ME are order-specific, otherwise they are created as *Master* BOM and routing.

If the order has to be released automatically after it is created in SAP ME, uncomment the following tag:

```
<sch:ShopOrderReleaseInfo>
    <sch:Release>all</sch:Release>
</sch:ShopOrderReleaseInfo>
```

Production order is a complex object and it is transformed to the following objects in SAP ME:

ME object	Used features
Shop Order	**Serial/SFC list** If Serial numbers are present in IDoc, then they are mapped to SFC names and later used during order release
	QM Inspection lot list If QM is set up in SAP ERP, then corresponding Inspection Lot list is created in SAP ME and connected to operation/routing step combination
	Shop Order schedule
BOM	**Assembly operation** Assembly operations are sent in production order and are not sent in BOMMAT IDoc
	Alternate components When components are combined into alternate group, then component with ranking order 1 is used as a BOM component and others are created as its alternates.
	Phantom components
	Co-product
	By-product

ME object	Used features
Routing	When SAP ME masters routings, then just a reference to the routing object is sent to SAP ME
Operation	Operation contains a reference to a work center
DC group (for QM)	If QM is set up, then corresponding DC groups are created and attached to a combination of shop order/routing/routing step
Work Instruction	Work Instruction contains a link to a work instruction document and is attached to either a shop order or shop order/BOM component or shop order/routing/routing step

If a production order is sent with status (I0012, I0045, I0076) which is mapped to status 'Closed' in SAP ME, then the BOM is not sent to ME.

ME BOM components are created when the *BDMNG* or *NOMNG* field is not zero.

LOIPRO04

Workflow *LOIPRO04* IDoc has the same plugins as *LOIPRO03* and in addition it supports Shop Order characteristics.

22.8 Planned Order to *Repetitive* Shop Order

LOIPLO02

Workflow	LOIPLO02
Workflow type	Standard Workflow
Identifier	Plant (WERKS)-Planned order number (PLNUM)

LOIPLO02 has the following preconfigured plugins:

Post XSLT Transaction
com.sap.me.integration.actions.workflow.inbound.OrderDateEnrichment – Java plugin that converts order dates from SAP ERP time zone to GMT-0. Information about SAP ERP time zone is obtained from SAPMEINT Supported plants.

If planned order is *make-to-order*, then BOM and Routing created in SAP ME are order-specific, otherwise they are created as Master BOM and Routing.

Planned order is a complex object and it is transformed to the following objects in SAP ME:

ME object	Used features
Shop Order	Shop Order with Repetitive order type
BOM	**Assembly operation** Assembly operations are sent in planned order and are not sent in BOMMAT IDoc
	Alternate components When components are combined into alternate group, then component with ranking order 1 is used as a BOM component and others are created as its alternates.
	Phantom components
	Co-product
	By-product
Routing	When SAP ME master routing, then just a reference to routing object is sent to SAP ME

Operation	Routing operations

LOIPLO01

Unlike *LOIPLO02*, *LOIPLO01* does not support the following features:

- Routing
- Operation
- BOM Assembly operation

22.9 Service Order to *RMA* Shop Order

IORDER01

Workflow	IORDER01
Workflow type	Standard Workflow
Identifier	*Plant (WERKS)-Order Number(AUFNR)*

IORDER01 has the following preconfigured plugins:

Pre XSLT Transaction
Visiprise/ERPShopFloorIntegration/workflow/ServiceOrder/RMAShopOrderEnrichment. This MII transaction calls *BAPI_ALM_ORDER_GET_DETAIL* BAPI to obtain the RMA number and Serial numbers assigned to the order. BAPI response is injected into *IORDER01* IDoc xml and is passed to XSLT.

Post XSLT Transaction
com.sap.me.integration.actions.workflow.inbound.OrderDateEnrichment is a java plugin that converts order dates from SAP ERP time zone to GMT-0. Information about SAP ERP time zone is obtained from SAPMEINT Supported plants.

As a result of workflow execution, RMA Shop Order and Routing records are created in SAP ME.

22.10 Inventory to Floor Stock

INVCON02_INV_PEG

Workflow	INVCON02_INV_PEG
Workflow type	Standard Workflow
Identifier	Plant(WERKS)- Material Document Number (MBLNR)

INVCON02_INV_PEG is responsible for processing *261* and *311* goods movements. Floor stock is created in SAP ME based on goods movement type: pegged (*261*) - reserved for consumption for a particular shop order, or not pegged (*311*) - floor stock receipt without reservation.

INVCON02_INV_PEG workflow has the following plugin:

Pre XSLT Transaction:

Visiprise/ERPShopFloorIntegration/workflow/InventoryReceiptWithPegging/BatchCharsEnrichment. This plugin fetches batch characteristics data from SAP ERP. It calls the following BAPIs: *BAPI_GOODSMVT_GETDETAIL*, *Z_VB_BATCH_VALUES_FOR_OUTPUT*,

BAPI_BATCH_GET_DETAIL. Batch characteristics data is attached to the incoming IDoc and later used by XSLT.

INVCON03_INV_PEG

Workflow	INVCON03_INV_PEG
Workflow type	Standard Workflow
Identifier	Plant(WERKS)- Material Document Number (MBLNR)

INVCON03_INV_PEG has the same plugins and logic as *INVCON02_INV_PEG* and is used for S/4HANA on-premise edition 1511 integration.

22.11 Inventory Return and Scrap

maintainInventoryRequest

Workflow	maintainInventoryRequest
Workflow type	Standard Workflow
Identifier	Site-Floor Storage Location-Shop Order

This workflow calls *BAPI_GOODSMVT_CREATE* and based on Reason code and reservation of the Inventory ID to shop order (pegging) uses *312*, *262* or *551* Goods movement code.

22.12 Floor Stock Movement Across Storage Locations

maintainInventoryRequest

Workflow	maintainInventoryRequest
Workflow type	Standard Workflow
Identifier	Site-Material-From Floor Storage Location-To Floor Storage Location

This workflow calls *BAPI_GOODSMVT_CREATE* and uses *311* Goods movement code to move inventories from one Storage location to another.

22.13 Personnel with Qualifications to User with Certifications

SAP users are sent to SAP ME using the *HRMD_A06* IDoc. This IDoc is processed by the *Split* workflow and enqueues the *Z_HRMD_A06* messages in *Queue Monitor*. Each *Z_HRMD_A06* message contains a single user for a particular SAP ME site. The *HRMD_A06* IDoc is split based on the plant. The *Z_HRMD_A06* messages are created for those users for whom the following is valid: EGDA < CREDAT <= ENDDA.

HRMD_A06

Workflow	HRMD_A06
Workflow type	Split Workflow
Identifier	Document Number (DOCNUM)

The *HRMD_A06* IDoc has the following preconfigured plugin:

Pre XSLT Transaction
Visiprise/ERPShopFloorIntegration/frame/workflow/EnrichMessageWithSuppPlantData
Inserts information from Supported Plants into the message.

Z_HRMD_A06

Workflow	Z_HRMD_A06

Workflow type	Standard Workflow
Identifier	Plant (WERKS)- Document Number (DOCNUM)

Creates a user in SAP ME.

22.14 Production Yield Confirmation

yieldConfirmationRequest

Workflow	yieldConfirmationRequest
Workflow type	Standard Workflow
Identifier	Site-Shop Order-Step ID-SFC

Response XSLT recognizes error responses with codes 469 and 341 and classifies them as SYS_ERROR, so the message gets the RETRY status automatically.

yieldConfirmationRequest has the following preconfigured plugins:

Fail Handler Transaction
Visiprise/ERPShopFloorIntegration/workflow/Confirmation/SAPMEAlarmConfirmationYield FailureHandler with parameters SAPME_EVENT_TYPE=ERP_ERROR. This plugin creates an AlarmRequest_sync message in SAPMEINT Queue Monitor that sends alarm messages to SAP ME.

Depending on the SAP ERP Version that the user chose in the SAPMEINT Standard Interfaces CTC, *yieldConfirmationRequest* can use different XSLT:

SAP ERP 6.0 with EHP 5 or Higher and with Activated MES Integration (or SAP S/4HANA, on-premise edition 1511):

WEB://Visiprise/XSLT/Outbound/Confirmation/ECC60EHP5/YieldConfirmation/YieldConfirmationRequest.xslt. Creates a message to call CO_MES_PRODORDCONF_CREATE_TT BAPI and includes the following features:

- Yield quantity
- Split Id
- Repeated Operation confirmation (rework quantity)
- Reporting backflushed and regular components on the same step
- Batch characteristics (on last reporting step)
- Goods movement (for main assembly and for components)
- Serial numbers (for main assembly and for components)

All Other Releases of SAP ERP:

WEB://Visiprise/XSLT/Outbound/Confirmation//YieldConfirmation/YieldConfirmationRequest.xslt and is used for old systems (older than EHP 5). Creates a message to call BAPI_PRODORDCONF_CREATE_TT BAPI and includes the following features:

- Yield quantity
- Goods movement (for main assembly and for components)

22.15 Production Scrap Confirmation

scrapConfirmationRequest

Workflow	scrapConfirmationRequest
Workflow type	Standard Workflow
Identifier	Site-Shop Order-Step ID-SFC

Response XSLT recognizes error responses with codes 469 and 341 and classifies them as SYS_ERROR so the message gets the RETRY status automatically.

scrapConfirmationRequest has the following preconfigured plugins:

Fail Handler Transaction:

Visiprise/ERPShopFloorIntegration/workflow/Confirmation/SAPMEAlarmConfirmationScrapFailureHandler with parameters SAPME_EVENT_TYPE=ERP_ERROR. This plugin creates an AlarmRequest_sync message in the SAPMEINT Queue Monitor that sends an alarm message to SAP ME.

Depending on SAP ERP version which user chose in SAPMEINT Standard Interfaces CTC, *scrapConfirmationRequest* can use different XSLT:

SAP ERP 6.0 with EHP 5 or Higher and with Activated MES Integration (or SAP S/4HANA, on-premise edition 1511):

WEB://Visiprise/XSLT/Outbound/Confirmation/ECC60EHP5/ScrapConfirmation/ScrapConfirmationRequest.xslt. Creates a message to call CO_MES_PRODORDCONF_CREATE_TT BAPI and includes the following features:

- Scrap quantity
- Split ID
- Goods movement for components

All Other Releases of SAP ERP:
WEB://Visiprise/XSLT/Outbound/Confirmation/ScrapConfirmation/ScrapConfirmationRequest.xslt and is used for old systems (older than EHP 5). Creates a message to call BAPI_PRODORDCONF_CREATE_TT BAPI and includes the following features:

- Scrap quantity
- Goods movement for components

If the SFC is scrapped on a non-reporting step, SAP ME tries to find a reporting step in the routing by checking future steps and uses this reporting step.

22.16 Transferring a Goods Movement within Yield/Scrap Confirmation

For more information, see the Production Yield Confirmation subsection in the SAPMEINT Message Processing Logic section of this guide.

yieldConfirmationRequest / scrapConfirmationRequest

When a corresponding collaboration directive is triggered in SAP ME, then SAP ME collects information about assembled components and sends all the components that have not been reported to SAP ERP yet.

If some of the components are assembled on a non-reporting step, SAP ME uses a step where yield or scrap is reported. Since yield confirmation can be sent only from the reporting step, this reporting step is used. Scrap confirmation can be sent from non-reporting step. In this case, the system looks for the next reporting step in the routing.

For assembled components, goods movement type *261* is used.

If used floor stock is pegged to the order, SAP ME does not report these components because it will cause double consumption.

Assembled components are sent according to the options in *Collaboration Directive Maintenance*:

The ERP Yield Confirmation DA Plug-In configured for the *ERP_YIELD_CONFIRMATION* collaboration directive support the following data acquisition parameters:

- components

  Valid values:

  - *all:* Reports all the components to SAP ERP irrespective of the *Backflush in ERP* checkbox setting on the *Build* tab of *Material Maintenance*.
  - *none:* Does not report any components to SAP ERP.
  - *noneIfBackflushed* (default): Does not report any components to SAP ERP if at least one of them has the *Backflush in ERP* checkbox selected on the *Build* tab of *Material Maintenance*.
  - *onlyNonBackflushed:* Reports only components that have the *Backflush in ERP* checkbox deselected on the *Build* tab of *Material Maintenance*.

- timebasedComponents

  Valid values:

  - *true* (default)*:* time-based components are included in the yield confirmation.
  - *false:* time-based components are not included in the yield confirmation.

- tbCompsOnlyFromLoadedSlots

  Valid values:

  - *true:* Executes optimized code when retrieving the assembled time-based component information. Retrieves only components loaded on the time-based resource and does not account for the converted time-based records stored in the SFC_ASSY database table.
  - *false (default):* Does not execute the optimized code.

  Note that this parameter does not affect the way discrete assembly records are retrieved. Discrete components are reported to SAP ERP no matter what parameter setting is used.

Multiple parameters are delimited by a semicolon (;):

components=onlyNonBackflushed;tbCompsOnlyFromLoadedSlots=true

After an assembled component is sent to SAP ERP, it is marked as sent in SAP ME database and it is not sent any more. If the assembled component is reported using the *addComponentRequest* message, it is not sent to SAP ERP anymore, because it is already marked as sent.

22.17 Independent Components Consumption

addComponentRequest

Workflow	componentAddRequest
Workflow type	Standard Workflow
Identifier	Site-Shop Order-Step ID-SFC

This message is sent right after assembly is done in SAP ME, whereas within *yieldConfirmationRequest* message assembled components are sent only after operation is complete. It calls *MB_MES_GOODSMVT_CREATE* BAPI on SAP ERP side and sends the same components information as *yieldConfirmationRequest*.

The *componentAddRequest* message is sent even from a non-reporting step. In this case, the system searches for the next reporting step in the routing and reports the component consumption to this reporting step.

For more information, see the Transferring a Goods Movement within Yield/Scrap Confirmation subsection in the SAPMEINT Message Processing Logic section of this guide.

22.18 Correlated Production Yield Confirmation on Operation Complete

yieldConfirmationCorrelationRequest

Workflow	yieldConfirmationCorrelationRequest
Workflow type	Correlation Workflow
Identifier	Site-Shop Order-Step ID-SFC

yieldConfirmationCorrelationRequest can be used in order to decrease number of *yieldConfirmationRequest* messages sent to SAP ERP. After processing of *yieldConfirmationCorrelationRequest*, *CorrelatedYieldConfirmationRequest* is created. *CorrelatedYieldConfirmationRequest* contains aggregated yield quantities for main product and aggregated quantities of consumed components.

yieldConfirmationCorrelationRequest workflow has the following plugins:

Get Correlation Key Transaction

java:com.sap.me.integration.GetYieldWithComponentsKeyHandler. Java-based plugin responsible for calculating of correlation key. Later, messages with the same correlation key are aggregated, and summarized message is sent to SAP ERP. This plugin has the following parameter: *correlationKey* – a set of coma separated xpath expressions that compose a correlation key.

Merge Validation Transaction

java:com.sap.me.integration.StdMergeValidationHandler. This plugin determines whether correlation must be performed. This plugin uses two conditions for this:

- numberOfDocuments: Number of documents with the same correlation key that must be aggregated together
- waitTimeInSec: Timeout between creation of document in the queue and aggregation

Merge Transaction

java:com.sap.me.integration.YieldWithComponentsMergeHandler. Plug-in merges messages with the same correlation key. This plugin aggregates yield quantity for main product as well as quantities for components. It has the following parameters:

- newDocType: New document root element name
- namespace: New document namespace
- aggregate: Aggregates components flag
- componentsOptionType: Option that tells how to handle components (the same as in collaboration directive)
- includeTimebasedComponents: Includes timebased components flag

CorrelatedYieldConfirmationRequest

Workflow	CorrelatedYieldConfirmationRequest
Workflow type	Standard Workflow
Identifier	Site-Shop Order-Step ID

Standard workflow which process correlated message created by merge transaction in *yieldConfirmationCorrelationRequest*. It has the same XSLT, plugins and parameters as *yieldConfirmationRequest*.

22.19 Production Order Complete

productionOrderCompleteRequest

Workflow	productionOrderCompleteRequest
Workflow type	Standard Workflow
Identifier	Site-Shop Order

productionOrderCompleteRequest has the following preconfigured plugins:

Pre XSLT Transaction:

Visiprise/ERPShopFloorIntegration/workflow/ProductionOrderComplete/OperationEnrichment calls *BAPI_PRODORD_GET_DETAIL* to retrieve reporting steps of the order.

XSLT creates a message to call a *BAPI_PRODORDCONF_CREATE_TT* where for the all reporting steps the following flags are sent:

<FIN_CONF>X</FIN_CONF>

<CLEAR_RES>X</CLEAR_RES>

When correlation is used and SAP ME is configured to send *yieldConfirmationCorrelationRequest*, then *productionOrderCorrelationRequest* should be used for production order complete in order to keep the order of the messages correct (order complete should be sent to SAP ERP after last yield or scrap confirmation).

22.20 Planned Order Yield Confirmation

yieldBackflushingRequest

Workflow	yieldBackflushingRequest
Workflow type	Standard Workflow
Identifier	Site-Shop Order-Step ID-SFC

yieldBackflushingRequest has the following preconfigured plugins:

Fail Handler Transaction:

Visiprise/ERPShopFloorIntegration/workflow/Backflushing/SAPMEAlarmBackflushingYieldFailureHandler with parameters SAPME_EVENT_TYPE=ERP_ERROR. This plugin creates an AlarmRequest_sync message in the SAPMEINT Queue Monitor that sends an alarm message to SAP ME.

Depending on the SAP ERP Version the user chose in the SAPMEINT Standard Interfaces CTC, the *yieldBackflushingRequest* can use different XSLT:

SAP ERP 6.0 with EHP 5 or Higher and with Activated MES Integration (or SAP S/4HANA, on-premise edition 1511):

WEB://Visiprise/XSLT/Outbound/Backflushing/ECC60EHP5/YieldBackflushing/YieldBackflushingRequest.xslt. Creates a message to call *BAPI_REPMANCONF1_CREATE_MTS* BAPI and includes the following features:

- Backflush quantity
- Batch characteristics (on last reporting step)

All Other Releases of SAP ERP:

WEB://Visiprise/XSLT/Outbound/Backflushing/YieldBackflushing/YieldBackflushingRequest.xslt is used for old systems (older than EHP 5). Creates a message to call *BAPI_REPMANCONF1_CREATE_MTS* BAPI and includes the following features:

- Backflush quantity

SAP ME also sends assembled components information to SAPMEINT but they are not mapped in XSLT. To send goods movements for components, uncomment the corresponding section in XSLT.

Assembled components are sent according to the options in *Collaboration Directive Maintenance*:

The ERP Yield Confirmation DA Plug-In configured for the *ERP_YIELD_BACKFLUSHING* collaboration directive supports the following data acquisition parameters:

- components

  Valid values:

  - *all:* reports all the components to SAP ERP irrespective of the *Backflush in ERP* checkbox setting on the *Build* tab of *Material Maintenance*.
  - *none:* does not report any components to SAP ERP.

- *noneIfBackflushed* (default)*:* does not report any components to SAP ERP if at least one of them has the *Backflush in ERP* checkbox selected on the *Build* tab of *Material Maintenance*.
- *onlyNonBackflushed:* reports only components that have the *Backflush in ERP* checkbox deselected on the *Build* tab of *Material Maintenance*.

- timebasedComponents

  Valid values:

  - *true* (default)*:* time-based components are included in the yield confirmation.
  - *false:* time-based components are not included in the yield confirmation.

- tbCompsOnlyFromLoadedSlots

  Valid values:

  - *true:* Executes optimized code when retrieving the assembled time-based component information. Retrieves only components loaded on the time-based resource and does not account for the converted time-based records stored in the SFC_ASSY database table.
  - *false (default):* Does not execute the optimized code.

  Note that this parameter does not affect the way discrete assembly records are retrieved. Discrete components are reported to SAP ERP no matter what parameter setting is used.

Multiple parameters are delimited by a semicolon (;):

components=onlyNonBackflushed;tbCompsOnlyFromLoadedSlots=true

22.21 Planned Order Scrap Confirmation

scrapBackflushingRequest

Workflow	scrapBackflushingRequest
Workflow type	Standard Workflow
Identifier	Site-Shop Order-Step ID-SFC

scrapBackflushingRequest has the following preconfigured plugins:

Fail Handler Transaction:

Visiprise/ERPShopFloorIntegration/workflow/Backflushing/SAPMEAlarmBackflushingScrapFailureHandler with parameters SAPME_EVENT_TYPE=ERP_ERROR. This plugin creates an AlarmRequest_sync message in the SAPMEINT Queue Monitor that sends an alarm message to SAP ME.

Depending on the SAP ERP Version that the user chose in the SAPMEINT Standard Interfaces CTC, the *yieldBackflushingRequest* can use different XSLT:

SAP ERP 6.0 with EHP 5 or Higher and with Activated MES Integration (or SAP S/4HANA, on-premise edition 1511):

WEB://Visiprise/XSLT/Outbound/Backflushing/ECC60EHP5/ScrapBackflushing/ScrapBackflushingRequest.xslt. Creates a message to call *BAPI_REPMANCONF1_CREATE_MTS* BAPI with a scrap quantity.

All Other Releases of SAP ERP:

WEB://Visiprise/XSLT/Outbound/Backflushing/YieldBackflushing/YieldBackflushingRequest.xslt and is used for old systems (older than EHP 5). Creates a message to call *BAPI_REPMANCONF1_CREATE_MTS* BAPI with a scrap quantity.

SAP ME also sends to SAPMEINT assembled components information but they are not mapped in XSLT. To send goods movements for components, uncomment the corresponding section in XSLT.

22.22 Planned Order Complete

plannedOrderCompleteRequest

Workflow	plannedOrderCompleteRequest
Workflow type	Standard Workflow
Identifier	Site-Shop Order

plannedOrderCompleteRequest calls *BAPI_PLANNEDORDER_DELETE* on SAP ERP side.

22.23 *RMA* Order Complete

rmaOrderCompleteRequest

Workflow	rmaOrderCompleteRequest
Workflow type	Standard Workflow
Identifier	Site-Shop Order

rmaOrderCompleteRequest calls *BAPI_ALM_ORDER_MAINTAIN* on SAP ERP side.

22.24 Direct Labor

DirectLaborConfirmationRequest

Workflow	DirectLaborConfirmationRequest
Workflow type	Correlation Workflow
Identifier	Site-Shop Order-Step ID

After processing of *DirectLaborConfirmationRequest*, *CorrelatedDirectLaborConfirmationRequest* is created.

CorrelatedDirectLaborConfirmationRequest contains concatenated *DirectLaborConfirmationRequest*.

The *DirectLaborConfirmationRequest* workflow has the following plugins:

Get Correlation Key Transaction:

Visiprise/ERPShopFloorIntegration/workflow/Labor/GetDirectLaborConfirmationKeyHandler. This plugin is responsible for calculating the correlation key. Later, messages with the same correlation key are aggregated, and a summarized message is sent to SAP ERP. The correlation key for the *DirectLaborConfirmationRequest* is Site-Shop Order.

Merge Validation Transaction:

Visiprise/ERPShopFloorIntegration/frame/workflow/CorrelationWorkflow/StdMergeValidationHandler. This plugin determines whether correlation must be performed. The plugin uses two conditions:

- numberOfDocuments – number of documents with the same correlation key that must be aggregated together
- waitTimeInSec – timeout between creation of document in the queue and aggregation

Merge Transaction:

Visiprise/ERPShopFloorIntegration/frame/workflow/CorrelationWorkflow/StdMergeHandler. This plugin merges messages with the same correlation key. This plugin combines correlated documents together in a new XML. It has the following parameters:

- newDocType – new document root element name
- namespace – new document namespace

CorrelatedDirectLaborConfirmationRequest

Workflow	CorrelatedDirectLaborConfirmationRequest
Workflow type	Standard Workflow
Identifier	Site-Shop Order

Standard workflow processes a correlated message created by the merge transaction in *DirectLaborConfirmationRequest* workflow. XSLT creates a message to call *BAPI_PRODORDCONF_CREATE_TT* and send elapsed time for all the activities by order and person.

22.25 Equipment Usage

Equipment usage information is processed in several stages. SAP ME triggers *equipmentUsageRequest* messages that are processed by the Split workflow. *equipmentUsageRequest* may contain information about Resource and all logged Tools. The *equipmentUsageRequest* is divided into the *SplitEquipmentUsageRequest* messages that contain usage of a single Tool or Resource.

Further *SplitEquipmentUsageRequest* messages are processed by the Correlation workflow where usages for the same Tool or Resource are summarized. As a result, the *CorrelatedEquipmentUsageRequest* is created and processed by the Standard workflow.

equipmentUsageRequest

Workflow	equipmentUsageRequest
Workflow type	Split Workflow
Identifier	Site-Resource

SplitEquipmentUsageRequest

Workflow	SplitEquipmentUsageRequest
Workflow type	Correlation Workflow
Identifier	Site-Resource (or Tool number)

The *SplitEquipmentUsageRequest* workflow has the following plugins:

Get Correlation Key Transaction:

Visiprise/ERPShopFloorIntegration/workflow/EquipmentUsage/GetEquipmentUsageKeyHandler. This plugin is responsible for calculating the correlation key. The correlation key consists of a combination of Plant and Tool or Resource name.

Merge Validation Transaction:

Visiprise/ERPShopFloorIntegration/frame/workflow/CorrelationWorkflow/StdMergeValidationHandler. This plugin determines whether correlation must be performed. This plugin uses two conditions:

- numberOfDocuments – number of documents with the same correlation key that must be aggregated together
- waitTimeInSec – timeout between creation of document in the queue and aggregation

Merge Transaction:

Visiprise/ERPShopFloorIntegration/workflow/EquipmentUsage/EquipmentUsageMergeHandler. This Plugin merges messages with the same correlation key. This plugin summarizes usages of the same SAP ME Tools or Resources. It has the following parameters:

- newDocType – new document root element name
- namespace – new document namespace

SplitEquipmentUsageRequest

Workflow	SplitEquipmentUsageRequest
Workflow type	Standard Workflow
Identifier	Site-Resource (or Tool number)

SplitEquipmentUsageRequest has the following preconfigured plugins:

Pre XSLT Transaction:

Visiprise/ERPShopFloorIntegration/workflow/EquipmentUsage/AdjustReadingDateTime. This plugin converts the date/time to the SAP ERP time zone.

22.26 Equipment Scheduled Downtime

IORDER01_CHG_EQ_STATUS

Workflow	IORDER01_CHG_EQ_STATUS
Workflow type	Standard Workflow
Identifier	Plant (WERKS)-Equipment Number (EQUNR)-Order Number(AUFNR)

equipmentStatusChangeRequest_PROD

Workflow	equipmentStatusChangeRequest_PROD
Workflow type	Standard Workflow
Identifier	Site-Equipment Number

As a result *BAPI_ALM_ORDER_MAINTAIN* BAPI is called.

22.27 Equipment Unscheduled Downtime

equipmentStatusChangeRequest_PROD

Workflow	equipmentStatusChangeRequest_PROD

Workflow type	Standard Workflow
Identifier	Site-Equipment Number

As a result *BAPI_ALM_ORDER_MAINTAIN* BAPI is called.

equipmentStatusChangeRequest_UNSCH_DOWN

Workflow	equipmentStatusChangeRequest_UNSCH_DOWN
Workflow type	Standard Workflow
Identifier	Site-Equipment Number

As a result *BAPI_ALM_NOTIF_CREATE* BAPI is called.

22.28 Nonconformance Data to Quality Notification

Quality Notification

Workflow	qualityNotificationRequest
Workflow type	Standard Workflow
Identifier	Site-Shop Order-Batch Number-Operation-NC Code

Implementation of *qualityNotificationRequest* does not use XSLT and all the processing logic is located in MII transactions.

The *qualityNotificationRequest* has the following service transaction: Visiprise/ERPShopFloorIntegration/workflow/QualityNotification/QualityNotificationBAPIHandler that has the following parameters:

- CATALOGUE
- CODE_GROUP
- HEADER_CODE
- NOTIF_TYPE
- PRIORITY

For information about parameters, see the Nonconformance Data to Quality Notification subsection in the Field Mapping section of this guide.

Service transaction *QualityNotificationBAPIHandler* calls *RFC_READ_TABLE* and checks if there is already a QN created for the given production order. If it exists, then the QN object is updated with new item by calling *BAPI_QUALNOT_MODIFY_DATA* and *BAPI_QUALNOT_ADD_DATA*. Otherwise new QN object is created by calling *BAPI_QUALNOT_CREATE*.

Because the workflow is implemented as an MII transaction it does not show request and response XMLs in the SAPMEINT Queue Monitor. To check which request and response messages have been sent to SAP ERP, set the com.sap.xmii.bls.executables.actions.logging.LoggingActions Tracing Location in *NWA Logs and Traces* to Debug.

22.29 Quality Inspection Result Recording (100% Quality Inspection)

qualityInspectionMeEvalResultRecordingRequest

Workflow	qualityInspectionMeEvalResultRecordingRequest

Workflow type	Standard Workflow
Identifier	Plant-Shop Order-Step ID

The *qualityInspectionMeEvalResultRecordingRequest and qualityInspectionResultRecordingRequest* messages are triggered from the *Service Extension* and not from the Collaboration framework.

Activity *QI_ERP_EXT* is configured as an extension on the *InspectionService.processInspectionGroup*, and depending on Quality Inspection setup, triggers the *qualityInspectionMeEvalResultRecordingRequest* or *qualityInspectionResultRecordingRequest* message.

22.30 Quality Inspection Result Recording

qualityInspectionResultRecordingRequest

Workflow	qualityInspectionResultRecordingRequest
Workflow type	Standard Workflow
Identifier	Plant-Shop Order-Step ID

The *qualityInspectionResultRecordingRequest* sends data collected during quality inspection in SAP ME to SAP ERP. It creates in the SAPMEINT Queue Monitor a new *readErpQualityInspectionResultRequest* to read ERP Quality Inspection results and send them to SAP ME.

The *qualityInspectionResultRecordingRequest* workflow has the following plugins:

Pass Handler Transaction

Visiprise/ERPShopFloorIntegration/workflow/QualityInspection/QualityInspectionService. This plugin creates the *readErpQualityInspectionResultRequest* message and queues it in the SAPMEINT Queue Monitor. This message reads ERP Quality Inspection results and calls the corresponding API in SAP ME.

readErpQualityInspectionResultRequest

Workflow	readErpQualityInspectionResultRequest
Workflow type	Standard Workflow
Identifier	Plant-Shop Order-Step ID

Service Transaction

Visiprise/ERPShopFloorIntegration/workflow/QualityInspection/ReadErpQualityInspectionResult calls the *BAPI_INSPORDER_GETDETAIL* BAPI to obtain ERP Quality Inspection results and then calls the InspectionServce.updateQualityInspectionDecision PAPI in SAP ME to store data in the ME database.

23 SAPMEINT Change Management

An object that is updated in SAP ERP must also be updated in SAP ME. The *Update Indicator* field setting in *ERP Field Maintenance* determines how an object is updated in SAP ME (see ERP Field Maintenance on the SAP Help Portal at http://help.sap.com).

You can select one of the following *Update Indicator* field options:

- *Restricted*

  If set to *Restricted*, the field update in the incoming object message from SAP ERP fails to reach SAP ME. An error message displays in SAPMEINT Queue Monitor (see Queue Monitor on the SAP Help Portal at http://help.sap.com).

- *Upversion*

  If set to *Upversion*, the field update in the incoming object message from SAP ERP is created as a new version for the object.

- *Update*

  If set to *Update*, the field update in the incoming object message from SAP ERP is updated for the corresponding object in SAP ME.

Not all fields in SAP ERP are mapped to fields in SAP ME. Any fields not mapped between SAP ERP and SAP ME do not appear in *ERP Field Maintenance*.

Custom fields do not appear in *ERP Field Maintenance*. A change made to a custom field in SAP ERP is merged with the existing custom field value in SAP ME, only if a change was also made to at least one standard field and an object update is sent.

The following are the pre-shipped entries for the object categories:

- *BOM*

Field Name	Description	Update Indicator	Read-only
bomComponentList	BOM Components	*Upversion*	Yes
description	Description	*Update*	No
erpBom	ERP BOM	*Restricted*	Yes

- *BOM Component*

Field Name	Description	Update Indicator	Read-only
alternateComponentList	Alternate Component List	*Upversion*	Yes
bomComponentType	BOM Component Type	*Upversion*	Yes
bomOperation	BOM Component Operation	*Upversion*	Yes
bomRefDesList	BOM Ref Des List	*Upversion*	No
orderItemNumber	Order Material Number	*Upversion*	Yes
parentSequence	Parent Sequence Number	*Upversion*	Yes
quantity	Quantity	*Upversion*	Yes

Note that only the Upversion option is allowed for the BOM Component category.

- *BOM Component Alternate*

Field Name	Description	Update Indicator	Read-only
itemRef	Alternate Component	*Upversion*	Yes

Note that only the Upversion option is allowed for the BOM Component Alternate category.

- *BOM Component Operation*

Field Name	Description	Update Indicator	Read-only
operationRef	Assembly Operation	*Upversion*	Yes

Note that only the Upversion option is allowed for the BOM Component Operation category.

- *Material*

Field Name	Description	Update Indicator	Read-only
description	Material Description	*Update*	No
erpBackflushing	Backflush in ERP	*Update*	Yes
erpPutawayStorageLocation	ERP Putaway Storage Location	*Update*	Yes
incrementBatchNumber	Increment Batch Number	*Update*	No
itemType	Material Type	*Update*	Yes
storageLocationRef	ERP Production Storage Location	*Update*	Yes
unitOfMeasure	Unit of Measure	*Update*	No

Note that only the Update option is allowed for the *Material* category.

- *Operation*

Field Name	Description	Update Indicator	Read-only
controlKeyRef	Control Key	*Update*	Yes
Description	Description	*Update*	No
erpWorkCenterRef	ERP Work Center	*Update*	Yes
reportingCenterRef	Reporting Work Center	*Update*	Yes
reportingStep	Reporting Step	*Update*	Yes
resourceTypeRef	Resource Type	*Update*	Yes

Note that only the Update option is allowed for the Operation category.

- *Resource*

Field Name	Description	Update Indicator	Read-only
description	Description	*Update*	No
erpCapacityCategory	ERP Capacity Category	*Update*	Yes
erpInternalID	ERP Internal ID	*Update*	Yes

Note that only the Update option is allowed for the Resource category.

- *Routing*

Field Name	Description	Update Indicator	Read-only
currentRevision	Current Version	*Update*	No
description	Description	*Update*	No
routerStepList	Routing Steps	*Upversion*	Yes
routerType	Routing Type	*Restricted*	Yes
statusRef	Status	*Update*	No

- *Routing Step*

Field Name	Description	Update Indicator	Read-only
controlKeyRef	Control Key	*Update*	Yes
description	Description Step	*Update*	No
erpSequence	ERP Sequence	*Upversion*	Yes
erpWorkCenterRef	ERP Work Center	*Upversion*	Yes
isLastReportingStep	Is Last Reporting	*Upversion*	Yes
reportingCenterRef	Reporting Work Center	*Update*	Yes
reportingStep	Reporting Step	*Upversion*	Yes
routerComp	Routing Component	*Update*	Yes
routerOperationList	Routing Operations	*Upversion*	Yes

Field Name	Description	Update Indicator	Read-only
stepId	Step ID	*Upversion*	Yes

- *Shop Order*

Field Name	Description	Update Indicator	Read-only
erpPutawayStorageLocation	ERP Putaway Storage Location	*Update*	Yes
erpUnitOfMeasure	ERP Unit of Measure	*Update*	Yes
inspectionGroupSize	Inspection Group Size	*Update*	Yes
inspectionLot	Inspection Lot	*Update*	Yes
plannedBOMRef	Planned BOM	*Update*	Yes
plannedCompleteDate	Planned Complete Date	*Update*	No
plannedItemRef	Planned Material	*Restricted*	Yes
plannedRouterRef	Planned Routing	*Update*	Yes
plannedStartDate	Planned Start Date	*Update*	No
quantityOrdered	Quantity Ordered	*Update*	Yes
quantityToBuild	Quantity to Build	*Update*	Yes
shopOrderInspectionLotList	Shop Order Inspection Lot List	*Update*	Yes
shopOrderSFCPlanList	Shop Order SFC Plans	*Update*	Yes
shopOrderTypeRef	Shop Order Type	*Restricted*	Yes

- *Work Center*

Field Name	Description	Update Indicator	Read-only
description	Description	*Update*	No
erpCapacityCategory	ERP Capacity Category	*Update*	Yes
erpInternalID	ERP Internal ID	*Update*	Yes
erpWorkCenter	Signifies if it is ERP Work Center	*Update*	Yes
erpWorkCenterName	ERP Work Center	*Update*	Yes

Note that only the Update option is allowed for the Work Center category.

24 MEINT Document Discriminator Logic

The message discriminator is responsible for determining message type. Based on passed xml it returns a string with the workflow type. Message discriminator logic is located in an MEINT java class. The default name for most of the messages is a local name of the root xml node. But some of the messages are handled individually. Please see below the custom logic which exists at the moment in the discriminator:

IDOC or ME message	Condition	Workflow name
INVCON02 INVCON03	BWART=101	INVCON02_GR INVCON03_GR
INVCON02 INVCON03	BWART=261 or 311	INVCON02_INV_PEG INVCON03_INV_PEG
IORDER01	SERVICE=X	IORDER01
IORDER01	SERVICE!=X	IORDER01_CHG_EQ_STATUS
CLFMAS02	KLART=001	CLFMAS02_SAVE_ITEM_CUST_FLDS
CLFMAS02	KLART=300	CLFMAS02_SAVE_ITEM_CHARACTERISTIC
LOIWCS02	CRHD.VERWE=9000	LOIWCS02_ME_WC
LOIWCS02	CRHD.VERWE=9100	LOIWCS02_ME_RES
equipmentStatusChangeRequest	status=1	equipmentStatusChangeRequest_PROD
equipmentStatusChangeRequest	status=5	equipmentStatusChangeRequest_UNSCH_DOWN
shopOrderCompleteCorrelationRequest	orderType=PRODUCTION or REWORK	productionOrderCompleteCorrelationRequest
shopOrderCompleteCorrelationRequest	orderType=REPETITIVE	plannedOrderCompleteRequest
shopOrderCompleteCorrelationRequest	orderType=RMA	rmaOrderCompleteRequest
shopOrderCompleteRequest	orderType=PRODUCTION or REWORK	productionOrderCompleteRequest
shopOrderCompleteRequest	orderType=REPETITIVE	plannedOrderCompleteRequest
shopOrderCompleteRequest	orderType=RMA	rmaOrderCompleteRequest
BAPI_OBJCL_CHANGE		BatchCharsPosting

It can be customized by a custom discriminator. The custom discriminator is specified in MEINT Global Configuration as SAPMEINT_PartnerMessageDiscriminatorTxn or

SAPMEINT_CustomerMessageDiscriminatorTxn parameter. If the custom discriminator is specified, it is the first to be used. However, if it returns an empty value, then the base discriminator is invoked. The custom discriminator can only be used after an MII transaction has been submitted. To create the custom discriminator, use an MII transaction with the required input and output parameters Visiprise\ERPShopFloorIntegration\frame\discriminators\IMessageDiscriminator.trx

25 Integration Functions and ERP Configuration Types

In order to support a particular function in the integration between SAP ERP and SAP ME, an ERP configuration type is used to specify the Support Packages and SAP Notes that must be implemented in your ERP system. You can see the possible configuration types in SAP Note 1793291.

Integration Functions	ME Releases	Minimum Required ERP Configuration Type	Required IDoc Types
Basic integration functionality: - Distribution of production orders with transaction POIT - Distribution of routings and work centers with transaction POIM - Basic confirmation functions	5.2 6.0 6.1 15.0 15.1	A	LOIPRO01 LOIPLO01 LOIWCS02 LOIROU02
Distribution of production orders automatically upon release based on customizing settings, no change management	5.2 6.0 6.1 15.0 15.1	B	LOIPRO01 LOIPLO01 LOIWCS02 LOIROU02
Enhanced integration functionality: - Data Replication Framework (DRF) controls distribution of production orders, planned orders, routings, work centers, and goods movements - Confirmation of batches, batch characteristics, and serial numbers - Confirmation of planned orders	6.0 6.1 15.0 15.1	C	LOIPRO02 LOIPLO01 LOIWCS02 LOIROU02
Late order changes after release are distributed and processed in ME	6.0.4 6.1 15.0 15.1	C	LOIPRO02
Routings can be replicated from SAP ME to ERP	6.1 15.0 15.1	D	LOIPRO03 LOIPLO02
Distribution of production orders with work instructions (DMS integration)	6.1 15.0 15.1	C	LOIPRO02
Direct labor confirmation for production orders	6.1 15.0 15.1	A	N/A
Inspection lot integration for production orders (100% quality inspection and less than 100% quality inspection)	6.1.4 15.0 15.1	C	LOIPRO02
Change management in ME for master data from ERP	6.1 15.0 15.1	A	MATMAS03 BOMMAT03
Change management in ME for routings from ERP	6.1 15.0 15.1	A	LOIROU02

Integration Functions	ME Releases	Minimum Required ERP Configuration Type	Required IDoc Types
Automatically create master data BOM for make-to-stock production orders and planned orders	6.1 15.0 15.1	D	LOIPRO03 LOIPLO02
Integration for phantom parts and co- and by products in production orders	6.1 15.0 15.1	C	LOIPRO02
Support for alternate components in production orders	6.1 15.0 15.1	C	LOIPRO02
Integration with the Shop Floor Dispatcher and Monitoring tool (SFDM), work center hierarchy	6.1.4 15.0 15.1	F	LOIWCS03
Transfer of production orders with scheduling information	6.1.4 15.0 15.1	F	LOIPRO03
Repeated operation confirmation	6.1.4 15.0 15.1	F	N/A
Integration of service orders	15.0 15.1	A	N/A
Long material number support	6.1.4 15.0 15.1	G	LOIPRO02/03 LOIPLO01/02 LOIWCS02/03 LOIROU02 MATMAS05
DRF controls distribution of materials	5.2 6.0 6.1 15.0 15.1	E	MATMAS03/05
DRF controls distribution of plant maintenance orders and equipment	6.0 6.1 15.0 15.1	E	IORDER01 EQUIPMENT_CREATE02
Joint confirmation of regular and backflush components	6.1.4.6 15.0 15.1	H	N/A
Transfer of goods movements independent of yield confirmations	15.0.3 15.1	I	N/A
Transfer of production orders with batch information for the finished product	15.0.3 15.1	J	LOIPRO03
Transfer of characteristics for a production order with a variant-configured product	15.1	K	LOIPRO04
Long material number support with S/4HANA	15.1.1	L	LOIPRO03/04 LOIPLO02 LOIWCS03 LOIROU03 INVCON03 MATMAS05

26 Supported Versions of IDocs

No.	Business Object	Integration	IDocs Basic Types in SAP ERP 6.0		SAP S/4HANA, on-premise edition 1511
			Below EhP5	EhP5 or Above	
Integration of Master Data					
1.	Material Master				
		Transfer of Material Master Data	MATMAS03	MATMAS03	MATMAS05
		Transfer of Long Material Number	Not Supported	MATMAS05	MATMAS05
		Transfer of Material Classification Data	CLFMAS02	CLFMAS02	CLFMAS02
2.	Routing Master				
		Transfer of Routing Master Data	LOIROU02	LOIROU03	LOIROU03
		Transfer of Routing with Document Info Records (Work Instruction)	Not Supported	LOIROU03	LOIROU03
3.	BOM Master				
		Transfer of BOM Master Data	BOMMAT03	BOMMAT03	BOMMAT05
4.	Personnel (HR) Master Data				
		Transfer of Personnel (HR) Master Data with Qualifications to User with Certifications	HRMD_A06	HRMD_A06	HRMD_A06
5.	Work Center				
		Transfer of Work Center to Resource/Work Center	LOIWCS02	LOIWCS02; LOIWCS03	LOIWCS02; LOIWCS03
		Transfer of Work Center of any type to create ME Work Center	Not Supported	LOIWCS03	LOIWCS03
		Transfer of Work center with individual capacities and assigned equipment number and resource types (with resources and assigned equipment number and resource types)	Not Supported	LOIWCS03	LOIWCS03
Integration of Transaction Data					
1.	Planned Order				
		Transfer of Planned Order	LOIPLO01	LOIPLO01; LOIPLO02	LOIPLO01; LOIPLO02
		Transfer of Planned Order with BOM	Not Supported	LOIPLO02	LOIPLO02

No.	Business Object	Integration	IDocs Basic Types in SAP ERP 6.0		SAP S/4HANA, on-premise edition 1511
			Below EhP5	EhP5 or Above	
		Transfer of Planned Order with Routing (created in SAP ERP)	Not Supported	LOIPLO02	LOIPLO02
		Transfer of Planned Order with Phantom Components	Not Supported	LOIPLO02	LOIPLO02
		Transfer of Planned Order with By-Products	Not Supported	LOIPLO02	LOIPLO02
		Transfer of Planned Order with Alternate Components	Not Supported	LOIPLO02	LOIPLO02
		Transfer of Planned Order with Routing (created in SAP ME)	Not Supported	LOIPLO02	LOIPLO02
		Transfer of Planned order with a storage location assignment	Not Supported	LOIPLO02	LOIPLO02
2.	Production Order				
		Transfer of Production Order	LOIPRO01	LOIPRO02; LOIPRO03; LOIPRO04	LOIPRO02; LOIPRO03; LOIPRO04
		Transfer of Production Order with BOM	LOIPRO01	LOIPRO02; LOIPRO03; LOIPRO04	LOIPRO02; LOIPRO03; LOIPRO04
		Transfer of Production Order with Routing (created in SAP ERP)	LOIPRO01	LOIPRO02; LOIPRO03; LOIPRO04	LOIPRO02; LOIPRO03; LOIPRO04
		Transfer of Production Order with Phantom Components	Not Supported	LOIPRO02; LOIPRO03; LOIPRO04	LOIPRO02; LOIPRO03; LOIPRO04
		Transfer of Production Order with Co-Products	Not Supported	LOIPRO02; LOIPRO03; LOIPRO04	LOIPRO02; LOIPRO03; LOIPRO04
		Transfer of Production Order with By-Products	Not Supported	LOIPRO02; LOIPRO03; LOIPRO04	LOIPRO02; LOIPRO03; LOIPRO04
		Transfer of Production Order with Alternate Components	Not Supported	LOIPRO02; LOIPRO03; LOIPRO04	LOIPRO02; LOIPRO03; LOIPRO04
		Transfer of Production Order with Routing (created in SAP ME)	Not Supported	LOIPRO03 (SP09 onwards for EhP5 and SP05 onwards for EhP6); LOIPRO04	LOIPRO03 (SP09 onwards for EhP5 and SP05 onwards for EhP6); LOIPRO04

No.	Business Object	Integration	IDocs Basic Types in SAP ERP 6.0		SAP S/4HANA, on-premise edition 1511
			Below EhP5	EhP5 or Above	
		Transfer of Production Order with Document Info Records	Not Supported	LOIPRO02; LOIPRO03; LOIPRO04	LOIPRO02; LOIPRO03; LOIPRO04
		Transfer of Production Order with Quality Inspection Lot	Not Supported	LOIPRO02; LOIPRO03; LOIPRO04	LOIPRO02; LOIPRO03; LOIPRO04
		Transfer of Production Order with Batch Number	Not Supported	LOIPRO03; LOIPRO04	LOIPRO03; LOIPRO04
		Transfer of Production Order with Schedule information (SFDM)	Not Supported	LOIPRO03; LOIPRO04	LOIPRO03; LOIPRO04
		Transfer of Production Order with Work Center assignment on Routing step and Operation (SFDM)	Not Supported	LOIPRO03; LOIPRO04	LOIPRO03; LOIPRO04
		Transfer of Production Order with characteristics for variant-configured product	Not Supported	LOIPRO04	LOIPRO04
		Transfer of Production Order with allocated components (with assembly operations)	Not Supported	LOIPRO02/03/04	LOIPRO02/03/04
3.	Floor Stock Data				
		Transfer of Floor Stock Data	INVCON02	INVCON02	INVCON03
4.	Service RMA Order				
		Transfer of Service (RMA) Order	IORDER01	IORDER01	IORDER01
5.	Equipment Usage				
		Transfer of Equipment Scheduled Downtime Data	IORDER01	IORDER01	IORDER01

27 Data Distribution Depending on SAP ERP Configuration

Some SAPMEINT functions behave differently depending on the SAP ERP version used for the integration with SAP ME. For information about supported SAP ERP versions, see SAP Note 1793291.

SAPMEINT Business Object / SAP ERP Version	**6.00 – 6.04**	**6.05 and later with activated BF LOG_PP_MES_INT_01**	**6.05 and later with activated BF LOG_PP_MES_INT_02**	**6.06 and later with activated business function LOG_PP_MES_INT_03**
Material	Data distribution using the transaction POIM; see Material Transfer on the SAP Help Portal at http://help.sap.com			Automatic data distribution controlled by SAP ERP Data Replication Framework (DRF) filters (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com)
Routing	Data distribution using the transaction POIM; see Transfer of Routing on the SAP Help Portal at http://help.sap.com		Automatic data distribution controlled by SAP ERP DRF filters	
BOM	Data distribution using the transaction POIM, BD30, or BD21 with message type BOMMAT (the latter does not support multiple BOMs); see Transfer of Bill of Material (BOM) on the SAP Help Portal at http://help.sap.com			
Work Center	Data distribution using the transaction POIM; see Transfer of Work Center to Resource/Work Center on the SAP Help Portal at http://help.sap.com		Automatic data distribution controlled by SAP ERP DRF filters	
Production order	Data distribution using the transaction POIT	Automatic data distribution upon release, controlled by SAP ERP Customizing settings	Automatic data distribution upon release, controlled by SAP ERP Customizing settings or the Data Replication Framework (DRF) filters (see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com and SAP Note 1555198)	
Planned order	Data distribution using the transaction POIT		Automatic data distribution controlled by DRF filters	
Inventory	Data distribution using the transaction MIGO (movement type 311 or 261)		Automatic data distribution controlled by DRF filters	
Plant maintenance order	Data distribution using the transaction IORD			Automatic data distribution controlled by DRF filters

For more information about the integration of master and transactional data, see Integration of Master Data and Integration of Transaction Data on the SAP Help Portal at http://help.sap.com.

28 Troubleshooting and Monitoring

28.1 SAPMEINT Configuration Diagnostic Tool

You can use this activity to troubleshoot configuration issues related to the system setup required for integration between SAP ME and SAP ERP.

28.1.1 Prerequisites

You have configured SAP ME ERP Integration (SAPMEINT).

28.1.2 Levels

You can view and edit the SAPMEINT configurations at the following levels:

- System Level (see Configuration Categories for System Level on the SAP Help Portal at http://help.sap.com)
- Plant Level (see Configuration Categories for Plant Level on the SAP Help Portal at http://help.sap.com)

28.1.3 Fields

The following table describes fields requiring explanation:

Field	Description
Verify Plant Configuration	Verifies all the configuration categories for a specific plant in an asynchronous mode and if any changes are found, updates the status
Refresh	On the left pane, refreshes the *List of Plants* and updates the status. On the right pane, refreshes the *Configuration Category for System Level or Plant Level* and updates the status.
Status	Displays the configuration status • Green: no errors were found • Red: one or more errors were found • Yellow: there are warnings • Gray: verification failed
Edit	Opens a screen, where you can edit the configuration category. For some configuration categories, there is a multi-navigation option for the *Edit* button that opens the appropriate screen. For more information, see Editing Configuration Properties on the SAP Help Portal at http://help.sap.com.
Verify Configurations	Verifies a specific configuration category for a specific plant. You can select one or more configuration categories and verify them by choosing *Verify Configurations*. For more information, see Verifying Configuration Categories on the SAP Help Portal at http://help.sap.com. If one or more configuration categories are selected, the verification takes place asynchronously in the background. After the verification completes, the system automatically updates the status of the configuration and the error log.
Show Log	Opens the *Log* screen with the *Configuration Category*, *Message Type*, *Message Text*, and *Verification Date* details. You can select one or more configuration categories and view the log details by choosing *Show Log*.

Note: The *Verify Plant Configuration*, *Edit*, *Verify Configurations*, and *Show Log* fields are unavailable until you select a configuration category.

28.2 Queue Monitor

You use this activity to monitor and diagnose messages exchanged between SAP ERP and SAP ME.

On the *Outbound ME Messages* tab, you can obtain information about collaboration messages sent from SAP ME that have not yet been moved from the *Outbound ME Messages* queue into the *Integration Message Queue* for processing by SAPMEINT For more information, see Verifying Configuration Categories on the SAP Help Portal at http://help.sap.com.

To view child records for messages, click the *Advanced Queue Monitor* button on the right.

To view all records or resize the table, use the *Option* menu on the right.

Example:

- You have sent a material message from SAP ERP to SAP ME.
- In SAP ME, you determine the record was not received.
- In *Queue Monitor*, you filter by the *Document Type MATMAS03* and see that the status of your message is *SPLIT_DONE*, which indicates partial success.
- You filter by the *Document Type Z_MATMAS03* and see that the status of your message is *FAILED*. The text in the *Message* column indicates that you have created the material incorrectly in the ERP system.
- You return to the SAP ERP system, correct the material, and resend the message.

The *Queue Monitor* now displays a new set of *MATMAS03* and *Z_MATMAS03* messages with the statuses *SPLIT_DONE* and *PASSED*. The material record now displays in SAP ME.

Example:

- You have sent an inventory message from SAP ERP to SAP ME using the *MIGO* transaction and the *311* movement type.
- In SAP ME, you determine the floor stock record was not received.
- In *Queue Monitor*, you filter by the *Document Type INVCON02_INV_PEG* and the date and hour in which you sent the message. The text in the *Message* column in the search results indicates that you have not previously sent the material for this inventory to SAP ME.
- You return to the SAP ERP system, send the material message, and determine in *Queue Monitor* that the material message processed successfully.
- In *Queue Monitor*, you filter again for your original inventory message, select it in the search results by choosing the row, and click the *Retry* button once.
- The message processes with the *PASSED* status and the floor stock is received in SAP ME.

28.2.1 Fields

The following table describes fields requiring explanation:

Field	Description
Document Type	The type of workflow that is used to dispatch messages for processing. Use to filter messages in the search results. For more information, see Configuration of SAPMEINT Standard Interfaces on the SAP Help Portal at http://help.sap.com.
Identifier	Identifies the objects for which the message was sent based on settings in SAPMEINT Workflow Configuration (see Modifying the Identifier Parameter on the SAP Help Portal at http://help.sap.com). By default, displays the following values: • Material — *Plant* (WERKS)-*Material Number* (MATNR) The split workflow does not display WERKS. • BOM — *Plant* (WERKS)-*Material Number* (MATNR)-*BOM Usage* (STLAN)-*Alternative BOM* (STLAL) • Routing — *Plant* (WERKS) -*Key for Task List Group* (PLNNR) *Group Counter* (PLNAL) • Production order — *Plant* (WERKS)-*Order Number* (AUFNR) • Planned order — *Plant* (WERKS)-*Planned order number* (PLNUM) • Classification — *Plant* (WERKS)-*Key of object to be classified* (OBJEK) The split workflow does not display WERKS. • Floor stock — *Plant* (WERKS)-*Material Number* (MATNR) - *Material Document Number* (MBLNR)-*Line Number* (ZEILE) • Service order — *Plant* (WERKS)-*Order Number* (AUFNR) • Work center — *Plant* (WERKS)-*Work Center*(ARBPL) • User — *Document Number* (DOCNUM) • Equipment status change — *Plant* (WERKS)-*Equipment Number* (EQUNR)-*Order Number* (AUFNR) • Document — *Plant* (WERKS) -*Document Number* (DOKNR)-*Document Type* (DOKTL)-*Document Type* (DOKAR) • Production order yield confirmation — *Site-Shop Order-Step ID-SFC* • Production order scrap confirmation — *Site-Shop Order-Step ID-SFC* • Planned order yield confirmation —*Site-Production Version-Shop Order-Step ID-SFC* • Planned order scrap confirmation — *Site-Production Version-Shop Order-Step ID-SFC* • Service order complete — *Site-Shop Order* • Quality notification — *Site-Shop Order-Batch Number-Operation-NC Code* • Equipment status change (*Production* and *Unscheduled Down*) *Site-Equipment Number* • Equipment usage — *Site-Message ID* • Maintain floor stock — *Site-Floor Storage Location* or *Shop Order*
Parent ID	The ID assigned to related messages during the split or correlation workflow (see Split Workflow Message Type Details and Correlation Workflow Message Type Details on the SAP Help Portal at http://help.sap.com). The split workflow splits a single message into multiple messages. For example, the MATMAS03 IDoc that comes from SAP ERP may contain multiple plant data.

Field	Description
	SAPMEINT creates this material in the corresponding sites in SAP ME using many SAP ME API calls. The split workflow splits the MATMAS03 IDoc into multiple IDocs (with the type Z_MATMAS03) so that all the split documents are processed by the standard workflow. The correlation workflow finds correlated messages and merges them into a single message based on a correlation key. And after that sets the Parent ID in all correlated messages.
Type	Displays rows matching the *Document Type* that you have selected in the filtering field. If you select *All*, the table displays all processed document types.
Correlation Key	The key assigned to correlated messages during the correlation workflow. See also: Changing the Correlation Key and Transfer of Correlated Production Yield Confirmation on the SAP Help Portal at http://help.sap.com.
Show Profiles	Displays the profiling trend results for all records matching the search criteria in *Queue Monitor* (see Profiling and Profiling Trend on the SAP Help Portal at http://help.sap.com).
Total Time	The total processing time in milliseconds associated with the message in the row. The link displays the *Profile Details* screen for the row. On the *Profile Details* screen, you can view the total processing time in milliseconds associated with the selected message. Note: If no profiling was performed on the message, the cell is blank (see Profiling on the SAP Help Portal at http://help.sap.com).
Retry	Allows you to select and re-process a message with the FAILED status in the search results, after correcting the cause of the failure. Click *Retry* only once, unless the message displays with the FAILED status again.
Remove	Deletes the selected message from the search results and removes the record from the database
Trace	Use to diagnose a selected message with the FAILED status in the search results. On the *Document Trace* screen that displays after clicking *Trace*, you can select and view the *Original Document*, the *Request*, or the *Response*, depending on the workflow specifications.
Clear Form	Returns *Queue Monitor* to its default state without removing records from the database
Clear Dates	Removes the dates you have entered in the *From* and *To* fields

28.3 Profiling

Profiling is a diagnostic tool within *Queue Monitor* that captures timing characteristics for the steps involved in processing an SAPMEINT message and stores the timing records in the *SAPMEINT_PROFILE* database table. This data provides information about total processing times, step times, and timing trends (see Queue Monitor on the SAP Help Portal at http://help.sap.com).

Whenever you experience a performance issue in SAP ME ERP integration, you can use this function to diagnose where the problem is.

Caution: There is a moderate loss of performance with Profiling. Therefore, enable this function only when you want to analyze such an issue.

28.3.1 Prerequisites

- In SAP MII, on the *Global Configuration* screen under *SAP ME ERP Integration* > *SAPMEINT Configuration*, you have set the *SAPMEINT_IS_PROFILING_ENABLED* property to TRUE or a specific step ID (see SAPMEINT Processing Steps and Step IDs and Global Configuration on the SAP Help Portal at http://help.sap.com).
- In SAP MII, on the *Schedule Editor* screen under *SAP ME ERP Integration* > *MII Configuration*, you have stopped the *QueueMessageCleaner* job.

Note: To preserve database space, when you are finished using Profiling, return the cleaner to its original state. Once a message is removed, it is no longer available for Profiling.

Example:

Your system transfers 1000 BOMs with 10000 components each from SAP ERP to SAP ME per day.

During the week of August 16, you notice that transfers are processing too slowly. You turn off the cleaning dispatcher, turn on Profiling, and wait until an adequate sampling of messages is processed. This amount of time depends on your rate of transfer. In this case, two hours or less may be sufficient.

Filtering for the *Document Type BOMMAT03* and the week of August 16 in *Queue Monitor*, you can view the *Profiling Trends* for total processing, workflow processing, or a specific step within the workflow to pinpoint where the slowdown is occurring.

For any selected *BOMMAT03* row in *Queue Monitor*, you can also view the milliseconds consumed for each step in the workflow, and pie charts displaying these numbers.

In addition, in SAP MII, on the *Workflow Configuration* screen under *SAP ME ERP Integration* > *SAPMEINT Configuration* you can determine which transaction or XSLT is consuming the time. From the milliseconds consumed on that step, you may be able to determine if there is a network, ERP, or code problem.

Technology consultants can then work to improve the system or the processing time within the transaction or XSLT.

28.4 Profiling Trend

On this screen, you can analyze the general trend of SAPMEINT message processing duration.

To view the profiling trend for a workflow step, select one of the checkboxes under *Plot Selection Criteria*.

Profiled messages are listed in the *Tabular View*. To view details for a message, click the *Message ID* link.

28.4.1 Chart

In the resulting chart, the x-axis represents the individual messages from the search criteria in *Queue Monitor*, sorted by the date received.

The y-axis represents the processing time included in the selected checkbox on this screen.

The chart also shows the minimum, maximum, and average values.

Select one of the *Plot Selection Criteria* checkboxes to display plot points on the chart in *Graphical View*. Each checkbox corresponds to general message processing or a step within the message workflow.

Note: To view message workflow values, choose *SAP ME ERP Integration* > *SAPMEINT Configuration* > *Workflow Configuration*. To view the profiling trend for a workflow step in the chart, select one of the checkboxes on the left. To update the chart manually, choose *Auto Update* and then *Update Chart*.

28.5 ECC Data Is Not Received in ME

This section specifies steps to check if ECC data is not received in SAP ME in the corresponding order.

1. Check whether message is present in SAPMEINT *Queue Monitor*

The first step is to check whether a message is present in *MEINT Queue Monitor*. For more information, see Checking Messages in MEINT Queue Monitor on the SAP Help Portal at http://help.sap.com.

2. If the message is not shown *SAPMEINT Queue Monitor*, check *MII Message Monitor*

If the message is present in MII Message Monitor on the SAP Help Portal at http://help.sap.com and is absent in *SAPMEINT Queue Monitor*, then probable reason is that Processing rule is not set correctly.

3. If message is not present in *MII Message Monitor*, check SAP ERP

If the message is not present in MII Monitor, follow the instructions in SAP Note 1473183. Even though the note was written for SAP ME 5.2, it is still applicable for SAP ME 6.x. In addition, if any modifications of the Resource adapter were done in SAP NetWeaver Administrator and SAP NetWeaver was not restarted, do the Update in SAP MII for this Resource adapter.

28.6 Related Notes

SAP Note 1473183 - SAPMEINT 5.2: Configuring MII listener issues

SAP Note 1498757 - SAP ME 5.2 Survival Guide

SAP Note 1996682 - Starting order of applications is not guaranteed by SAP MII and SAP ME

SAP Note 1473184 - SAPMEINT 5.2: Confirmation error Plant XYZ is not supported

29 Data Replication Setup for MES Processes

29.1 Overview

29.1.1 Business Purpose / Description

To distribute your business objects, such as a planned order or a production order, use the Data Replication Framework (DRF). In doing so, you can use general Framework functions including a comprehensive filter concept, change pointer management, and error evaluation. The DRF enables you to send master and transaction data to a Manufacturing Execution System (MES) via IDoc. Using a replication model and the assigned outbound implementations, you can specify exactly which data you want to replicate.

This section provides you with an overview of the necessary settings for the integration of a SAP ERP system and a Manufacturing Execution system (MES).

For more information about distributing different business objects, see DRF Integration for MES Processes on the SAP Help Portal at http://help.sap.com.

29.1.2 Overall Information

The Customizing activities for data replication enable you to specify how data is replicated to one or more target systems. For example, you can specify the filters for selecting data to be transferred.

The Customizing activities are grouped as follows:

- *Define Custom Settings for Data Replication*

In this node, you define communication-relevant settings for business systems involved in data replication, create your own replication models, and define business object settings.

- *Enhance Default Settings for Outbound Implementations*

In this node, you reference existing outbound implementations or define your own ones. Each replication model you define can consist of one or more outbound implementations.

Do not change or copy any aspect of the outbound implementations we deliver. This restriction is the result of strict dependencies between filter objects and outbound implementations. If you want to implement your own outbound implementations or any element contained within them (for example a service operation), first implement the appropriate class, and then create your own outbound implementation using the customer name space.

Follow the sequence of the customizing activities.

Each Outbound Implementation is assigned:

- Parameters
- Filter objects
- Business objects
- Service operations
- Outbound interface models

In the subnode *Define Business Objects and Object Identifiers*, you define business objects, assign filter objects to them, define appropriate object identifiers, and associate key structures with the business objects.

- *Enterprise Services > Service Mapping*

In this node you:

  - Define package groups that consist of one or more packages and assign a package group to a mapping
  - Verify that the mapping is correctly customized.

- *Business Add-Ins (BAdIs)*

In this node you implement BAdIs

  - BAdI: Definition of Language-Dependent Texts

    Change the default system behavior for transferring texts in various languages.
  - BAdI: Prepare Data for Download File

    Format the file for downloading data from the FIN-MDM system.
  - BAdI: Prepare Upload Data

    Upload master data, language-dependent texts, and hierarchies to MDGF.
  - BAdI: Creation of MDG Change Pointers from ALE Change Pointers

    Create Master Data Governance change pointers from ALE change pointers for selected message types.

29.2 Setting Up DRF Integration for MES Processes

29.2.1 Prerequisites

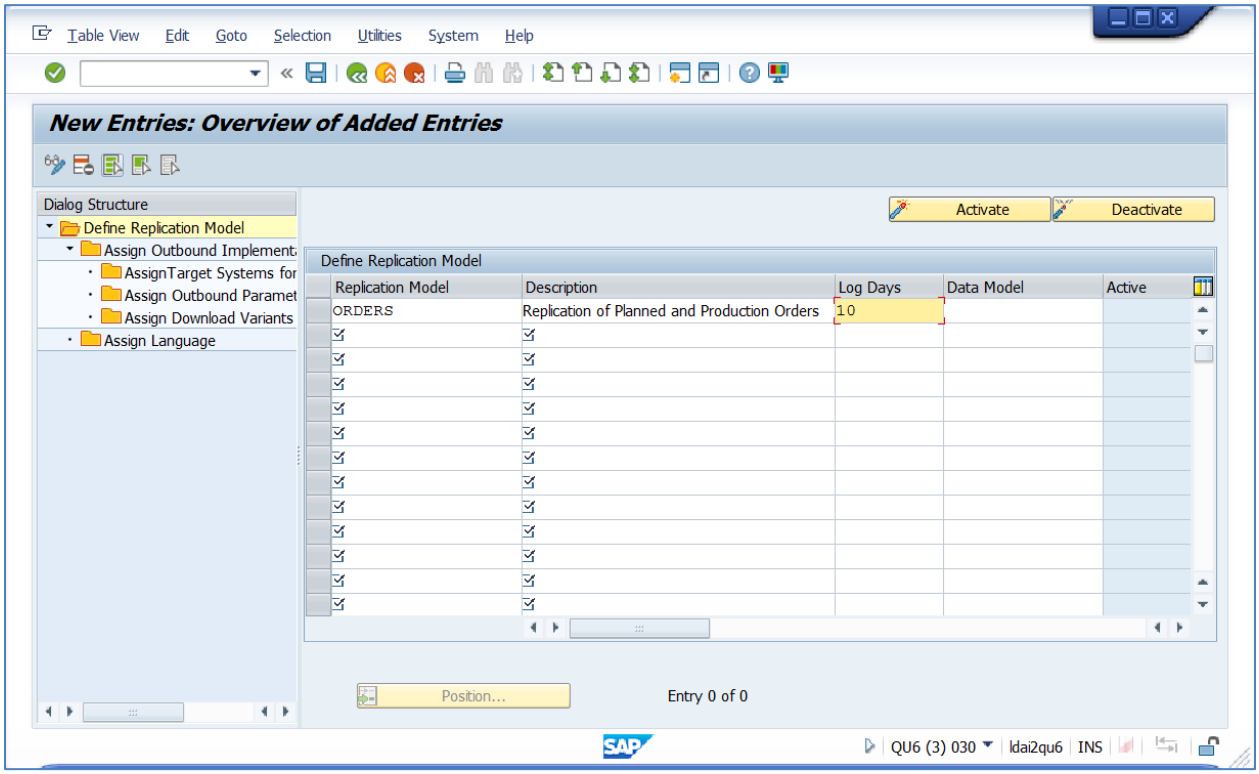
29.2.1.1 SAP ERP

- To be able to use DRF integration, activate the BC Set *CA_MDP_DRF_01*. For more information, see Customizing for *Cross-Application Components under > Processes and Tools for Enterprise Applications > Master Data Governance > General Settings > Data Replication > Overall Information*.
- In addition, in Customizing for *Cross-Application Components*, select > *Processes and Tools for Enterprise Applications > Master Data Governance > General Settings > Data Replication > Define Custom Settings for Data Replication*.
- You have activated the business function LOG_PP_MES_INT_02.

29.2.2 Procedural Steps

1. In Customizing for *Cross-Application Components*, choose > *Processes and Tools for Enterprise Applications > Master Data Governance > Central Governance > General Settings > Data Replication > Define Custom Settings for Data Replication*.

2. In the Customizing transaction *Define Technical Setting for Business Systems*, define the logical system or the RFC destination. > *Define Technical Settings* > *Define Technical Settings for Business Systems.*
3. In the Customizing transaction *Define Replication Models*, specify what the replication model is to contain (for example, master data such as material or transactional data such as planned order or production order). By doing so, you specify which outbound implementation is to be sent and to which business system this object is sent. You can specify a different destination system (for example, SAP Manufacturing Execution) for each outbound implementation that contains the business object, the filter object, and the business logic.
4. Click the *New Entries* icon.
5. On the *New Entries: Overview of Added Entries* screen, enter the following:
   - *Replication Model:* Defines how data is replicated between systems. Enter name for Replication Model.
   - *Description:* Enter description of Replication Model.
   - *Log Days:* Indicates the number of days after which an application log expires. Enter number of days.



6. Select row with new replication model.
7. Go to *Assign Outbound Implementation*. Click the *New Entries* icon.
8. On the *New Entries: Overview of Added Entries* screen, enter the following:
   - *Outbound Implementation:* Select available Outbound Implementation.

Defines how business object data is transmitted using a replication model. This means, for example, which data from a business object is relevant to be transmitted, which class retrieves and sends the data, and which communication channel (such as service operation, or RFC) is used for the transmission itself.

You can assign one or more outbound implementations to a replication model. That is, for the same replication model, various data can be transferred using different means, depending on the attributes of the outbound implementations that are assigned to that replication model.

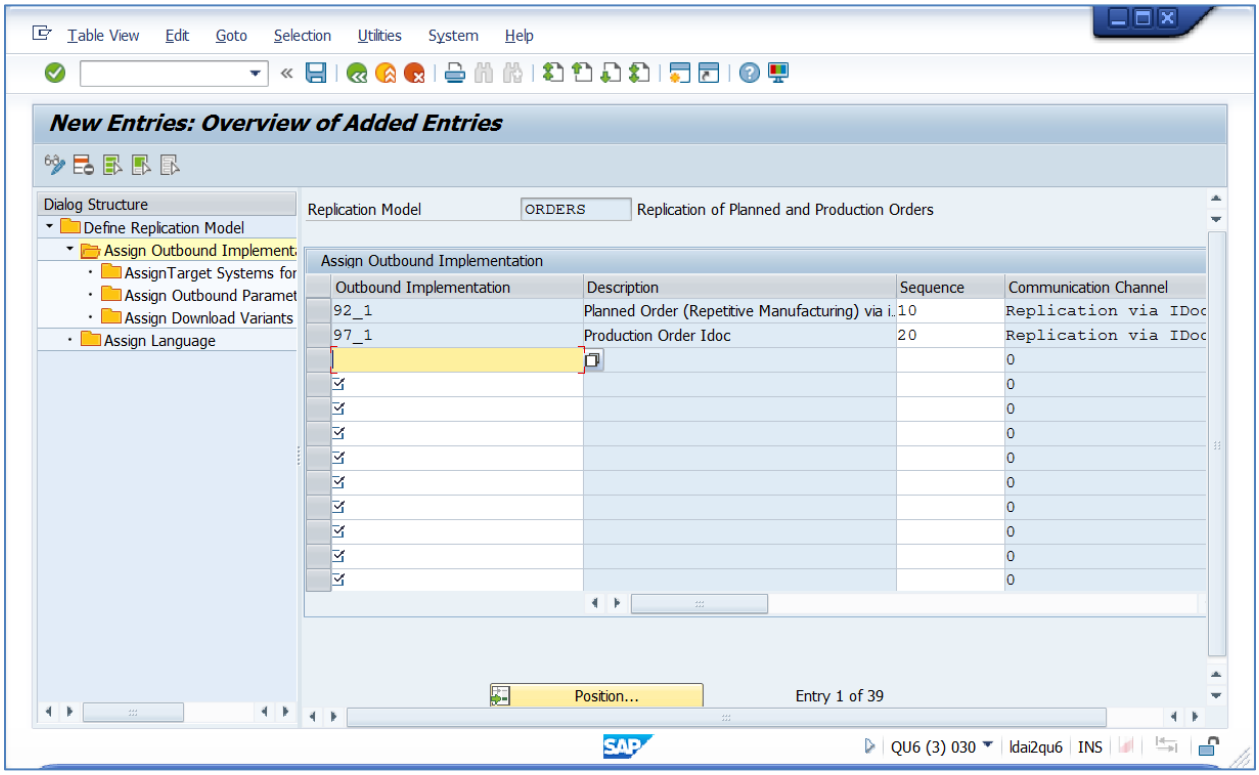
- *Sequence:* Enter sequence.

  Indicates the sequence in which the outbound implementations are performed within a replication model. This determines the order in which filters should be executed for a replication model.

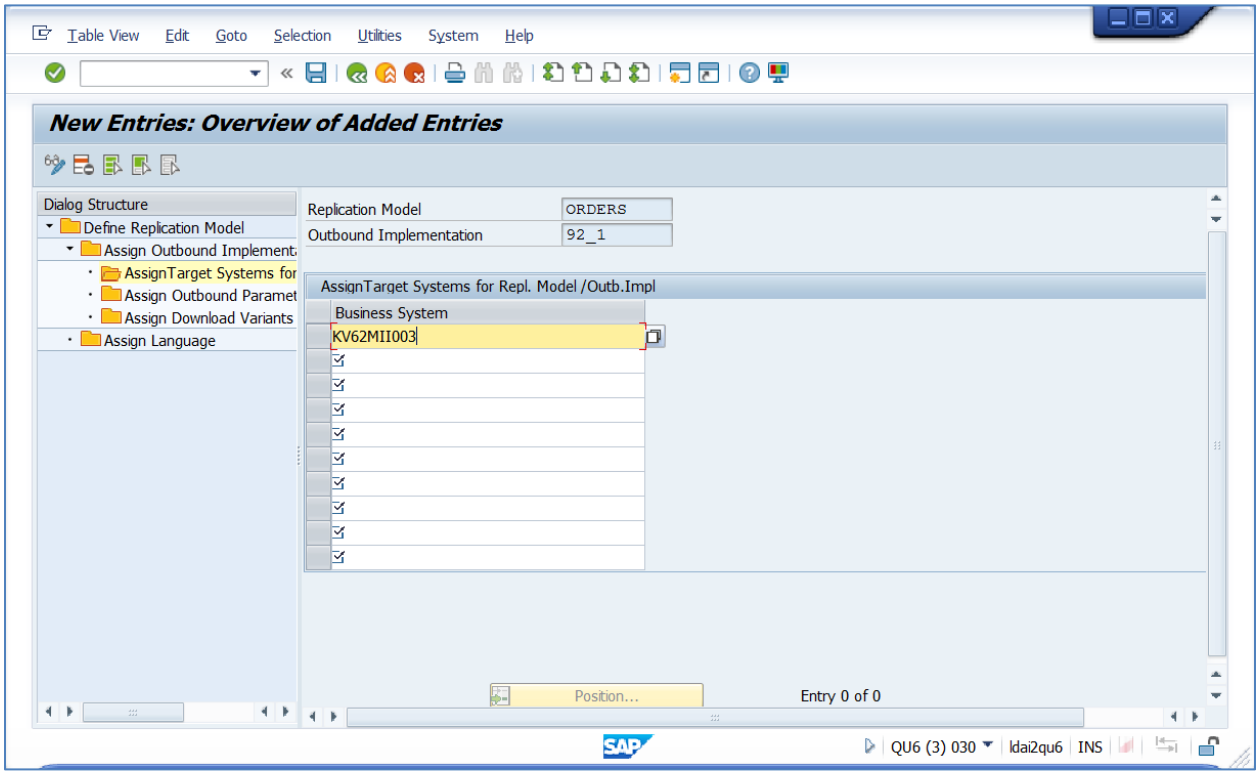
The following filter objects are supplied for an MES integration:

Business object	**Outbound implementation**	**Filter object**	**Message Type**
Planned order	92_1	92_1	LOIPLO
Production order	97_1	97_1	LOIPRO
Maintenance order	468_1	468_1	IORDER
Material	194_1	194_2	MATMAS
Equipment	183_1	183_1	EQUIPMENT_CREATE
Goods movements	467_1	467_1	INVCON
Work center	493_1	493_1	LOIWCS
Routing	223_1	223_1	LOIROU

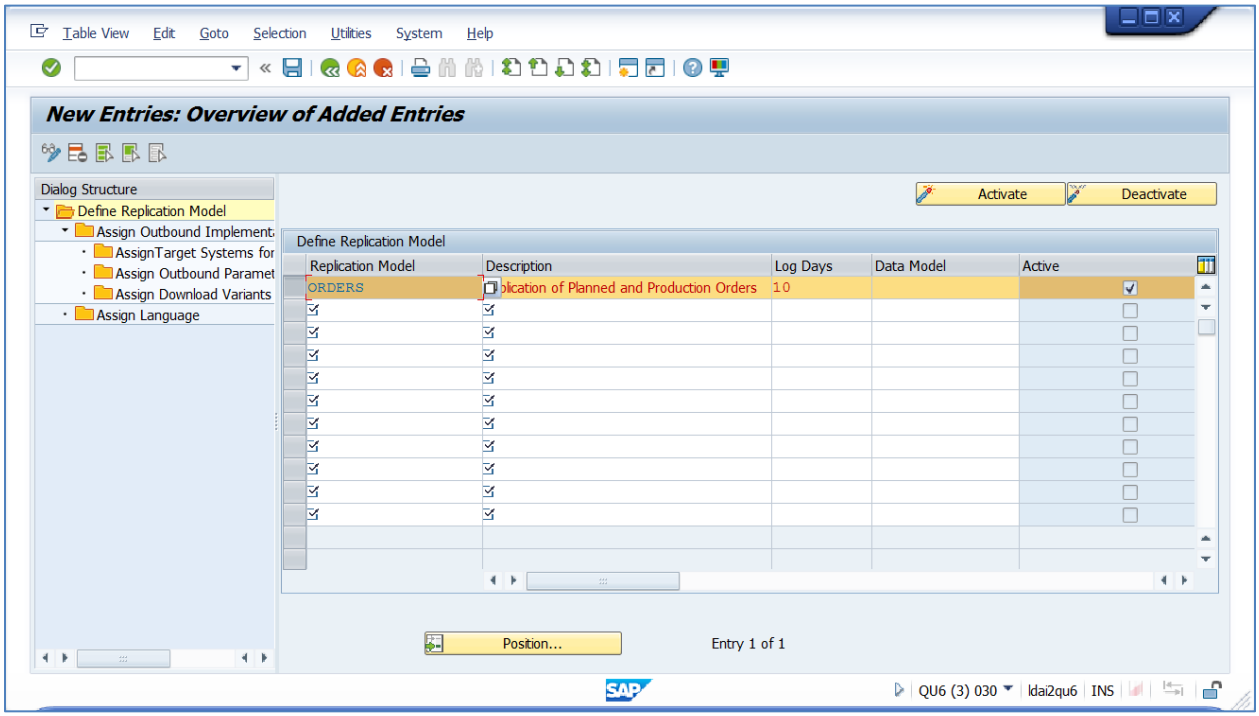
9. Press `Enter`.



10. Select row with Outbound Implementation and click *Assign Target System for Repl. Model / Outb. Impl*.
11. Click the *New Entries* icon.
12. On the *Change View "Assign Target System for Repl. Model / Outb. Impl.": Overview* screen, enter the following:
    - *Business System:* Specifies the logical name of a business system. Select available business system.



13. Assign Outbound Parameters if needed.
14. Return to the *New Entries: Overview of Added Entries* screen. Save your Replication Model and then activate it.



15. Call up the transaction *Define Filter Criteria (DRFF)* and refine your filter concept by defining further criteria. For more information, see Use of Data Replication Filters on the SAP Help Portal at http://help.sap.com.

Note: If no filter criteria are defined for a replication model, all business objects in the replication model that are relevant for distribution are sent to the MES. This can lead to performance problems, particularly for objects distributed automatically during the course of the transaction. For this reason, ensure that you specify the filter criteria after the DRF replication model has been activated.

30 Useful Links

1. Description of the business function LOG_PP_MES_INT_01

Shipped originally with ERP 6.05 and comprises some enhancements of the distribution of production orders.

See Integration of Production Orders with an MES on the SAP Help Portal at http://help.sap.com.

2. Description of the business function LOG_PP_MES_INT_02

This business function was developed in SAP ERP 6.06 originally, but later downported to SAP ERP 6.05 SP05.

See Integration of Production Processes with an MES on the SAP Help Portal at http://help.sap.com.

This business function vcontains the main part of the improved integration, like distribution of master data, planned orders and production orders to an MES using the Data Replication Framework.

Technically, the business function is already available in ERP 6.05 SP04. Customers can activate the solution by following the implementation steps described in note 1555198.

3. Description of the business function LOG_PP_MES_INT_03

This business function was also developed in SAP ERP 6.06 and contains the parts that have not been downported to SAP ERP 6.05.

See Integration of Production Processes with an MES 2 on the SAP Help Portal at http://help.sap.com.

The business function contains the distribution of plant maintenance orders, equipment and of material master to an MES.

4. Description of the business functions LOG_PP_CI_1

This business function contains the parts of LOG_PP_MES_INT_02 that are of interest for a standard PP customer, namely the confirmation of co-products through the standard BAPI interface.

See Improvements in Manufacturing on the SAP Help Portal at http://help.sap.com.

5. ERP-MES Integration (PP-MES)

This application help centrally describes all enhancements for the MES-ERP integration. It is available in ERP 6.06 only.

See ERP-MES Integration (PP-MES) on the SAP Help Portal at http://help.sap.com.

6. SAP ME-ERP Integration (SAPMEINT)

This application help describes the improved integration from the perspective of SAP ME.

See SAP ME ERP Integration (SAPMEINT) on the SAP Help Portal at http://help.sap.com.

7. Application Link Enabling (ALE)

This help document gives an overview about IDocs

See Overview IDoc on the SAP Help Portal at http://help.sap.com.

Often customers cannot work with the standard IDoc types. They need additional fields. You can do this by extending the IDoc and by implementing BAdIs to populate these additional fields:

See Extending an IDoc Type - IDoc Interface/ALE on the SAP Help Portal at http://help.sap.com.

Additional enhancements are required in SAPMEINT (adaptations of the XSLT documents).

8. Shop Floor Dispatching and Monitoring Tool (SFDM)

See Shop Floor Dispatching and Monitoring Tool on the SAP Help Portal at http://help.sap.com.

9. Important SAP Notes Link

1891811 - Enhancement of filter criteria for distribution

1885169 - Message CO_MES_INT004 when confirming distributed orders

1781836 - Canceling confirmation of distributed production orders

1826542 - Help for error analysis: production order not distributed

1808760 - Remove restrictions for distributed production orders

1793291 - FAQ about the improved integration of ERP with an SAP ME

1711187 - Use of transaction POIT with activated DRF

1615655 - Planned order is not distributed to MES (CO_MES_INT 026)

1596013 - Debugging the integration of SAP ME and ERP 6.05

1584023 - Problems with sending IDocs after SAPKH60504

1573547 - Service user authorization roles for SAP ME integration

2016712 - Processing of confirmations from SAP MES using inbound queues

1869254 - Linking individual capacities and equipment

1996682 - Starting order of applications is not guaranteed by SAP MII and SAP ME

2011330 - SAPMEINT 15.0 SP03 Field Mapping

2226006 - SAPMEINT 15.1 Field Mapping

2009033 - Revision of the guide "Basic Settings for MES Integration"

31 Parallel Processing

SAPMEINT 6.0 does not support parallel processing. It queues the messages and processes them in the order they arrive in SAPMEINT. This causes performance issues when customers want to process high volumes of messages, since the messages are processed in a single thread.

To process the messages in multiple threads and gain performance, implement Parallel Processing.

Note: This is applicable only for SAPMEINT 6.0, since this feature is already available in SAPMEINT 6.1 or higher versions. If you use version 6.1 and higher, skip first two bullets and start from the third one to enable parallel processing.

Solution

To enable parallel processing in SAPMEINT, proceed as follows:

- Execute the following database scripts on the SAPMEINT schema:
  - ALTER TABLE SAPMEINT_MESSAGE_QUEUE ADD IS_SYNC_PROC numeric(38, 0)
  - CREATE INDEX MEINT_MESSAGE_QUEUE_IS_SYNC ON SAPMEINT_MESSAGE_QUEUE(IS_SYNC_PROC)
- Add a new *Global Configuration* with the following Name and Value in SAPMEINT *Global Configuration* by navigating to *SAP ME ERP Integration* > *SAPMEINT Configuration* > *Global Configuration*:
  - Name: SAPMEINT_IS_SYNC_ALLOWED
  - Value: true
- Configure the *Message Processing Rule* (*Message Services* > *Message Processing Rules*) for the message type that needs the parallel processing with the following settings (if there is a message processing rule already configured for this message type, delete it).
  - *Name:* <Specify a name for this processing rule>
  - *Description:* <Specify description text for this processing rule>
  - *Message Listener:* <Specify the message listener to be used for this message type>
  - *Message Type:* IDOC
  - *Message Name:* <Specify the message type which needs parallel processing>
  - *Processing Type:* transaction
  - *Transaction:* Visiprise/ERPShopFloorIntegration/services/SynchronousMessageProcessor
  - *Persist Transaction:* On Error
  - *Log Level:* Error
  - *Parameters:* select the parameter 'document' and save the processing rule.

Note: Because most message types are dependent on other messages, SAPMEINT processes the messages sequentially in the order they arrive. Because of these possible dependencies, use this feature very carefully, otherwise this may cause data inconsistency issues.

See SAP Note 1855705.

32 Multiple Queuing

Before 6.0 SP04 Patch 2, SAPMEINT does not support multiple queues for the messages to be stored and processed in separate threads. Instead, it queues the messages and processes them in the order they arrive in SAPMEINT in a single thread. This causes performance issues when customers want to process high volumes of messages.

To process the messages in multiple threads and gain performance, implement multiple queing.

Note: The feature has been implemented in SAPMEINT 6.0 SP04 Patch 2 or higher versions and in SAPMEINTCTC 6.0 SP04 Patch 1 or higher.

Solution

With this feature, customers can define multiple queues in SAPMEINT and define a separate scheduler for each queue. Each queue can contain messages from different message/document types. The user-defined name of the queue (set via *procType*) for a particular document type could be configured in its workflow. For example, customers can define a queue for inbound messages and another queue for outbound messages:

- Run SAPMEINT Migration CTC from the previous version of SAPMEINT for one of the SAP ME Plants configured.

  Note: Run SAPMEINT Migration CTC only if migration from earliest versions is required.

- Go to *SAP ME ERP Integration* > *SAPMEINT Configuration* > *Workflow Configurations* and edit workflow configurations for all inbound messages and change the Workflow Handler Parameters to include the value *procType=I*. Make sure that this parameter is appended to the existing parameter with a semicolon. For example, the workflow handler for LOIPRO02 would look like this:

  - plant=/LOIPRO02/IDOC/E1AFKOL/WERKS;identifier=concat(/LOIPRO02/IDOC/E1AFKOL/WERKS,"-", /LOIPRO02/IDOC/E1AFKOL/AUFNR);procType=I

- Repeat the step above for outbound messages using the value *procType=O*.

- Go to *SAP ME ERP Integration* > *SAP MII Configuration* > *Schedule Editor* and disable the existing scheduler '*MessageDispatcher*'.

- Define a new scheduler for the Inbound messages using the MII transaction 'Visiprise/ERPShopFloorIntegration/frame/dispatchers/simpleDispatcher/SimpleMessageDispatcher' with *procType* parameter specified with the value *I*.

- Define a new scheduler for the Outbound messages for the MII transaction 'Visiprise/ERPShopFloorIntegration/frame/dispatchers/simpleDispatcher/SimpleMessageDispatcher' with *procType* parameter specified with the value *O*.

Note: If no *procType* is specified in the MII scheduler, the scheduler processes all the messages regardless of *procType*.

Note: Ensure that each queue (unique *procType*) is processed by only one MII scheduler. Otherwise data inconsistency issues and failures may arise.

Note: Because most message types are dependent on other messages, SAPMEINT processes the messages sequentially in the order they arrive. Because of these possible dependencies, use this feature carefully, otherwise this may cause data inconsistency issues.

See SAP Note 2000811.

33 Plant Mapping

For more information about plant mapping, see the Multiple Plants Configuration section of this guide.

34 Comparison Logic

When an object (for example, BOM or routing) is updated in SAP ERP, and then transferred to SAP ME, any discrepancies between existing and received objects is handled in one of the following ways:

- SAP ME creates a new version of the existing object
- SAP ME updates the existing object
- SAP ME is unable to update the existing object and throws an error

Rules that define the action taken when a particular field is changed are stored in ERP Field Maintenance in the *Update Indicator* field.

You can select one of the following *Update Indicator* field options:

- *Restricted*

If set to *Restricted* for a field, the field update in the incoming object message from SAP ERP fails to reach SAP ME. An error message displays in SAPMEINT Queue Monitor (see Queue Monitor on the SAP Help Portal at http://help.sap.com).

- *Upversion*

If set to *Upversion* for a field, the field update in the incoming object message from SAP ERP is created as a new version for the object.

- *Update*

If set to *Update* for a field, the field update in the incoming object message from SAP ERP is updated for the corresponding object in SAP ME.

Any fields that exist in SAP ERP, but are not included in the list of fields in *ERP Field Maintenance*, cannot trigger an update or upversion in SAP ME.

For more information about how an object updated in SAP ERP is handled in SAP ME, see the SAPMEINT Change Management section of this guide or SAPMEINT Change Management on the SAP Help Portal at http://help.sap.com.

35 Tips and Tricks

This section provides general guidelines, solutions, and recommendations for the issues in the SAP ERP and SAP ME integration.

1. *SAPMEINT installation*
   - Ensure that SAP MII is deployed and running in SAP NetWeaver by checking the status of SAP MII application (xapps~xmii~ear). This step is covered in the Installation Guide.
   - SCN Troubleshooting Wiki page against MEINT CTC errors: https://wiki.scn.sap.com/wiki/x/t4PzEg;
2. *SAPMEINT upgrade to a higher version*
   - When you install a new version of MEINT, ensure that correct new version of MEINT CTC is installed as well
   - Make sure that SAP MII is running
3. *Processing high volume of inbound messages (IDocs)*
   - SAP Note 2000811 'Support for Multiple Queues in SAPMEINT' is often needed. However, it is a consultant task to define what queues should be created and consultant should implement it;
   - SAP Note 1855705 'Parallel Processing in SAPMEINT' mentions the important parameter to check or implement;
   - SAP Note 2156351 'Material Master load in SAP ME takes much too long' is an important fix about the handling of material groups;
   - SAP Note 2016712 'Processing of confirmations from SAP MES using inbound queues' provides a function that enables the writing of confirmations for a production order to a queue for asynchronous processing (inbound queue using queued remote function call/qRFC) instead of these confirmations being processed immediately;
   - SCN Troubleshooting Wiki page against inbound issues: https://wiki.scn.sap.com/wiki/x/6YPzEg;
4. *Processing high volume of outbound messages (ME confirmations)*
   - SAP Note 2000811 'Support for Multiple Queues in SAPMEINT' is often needed. However, it is a consultant task to define what queues should be created and consultant should implement it;
   - SAP Note 1855705 'Parallel Processing in SAPMEINT' mentions the important parameter to check/implement;
   - SAP Note 2003366 'Setting up correlation workflow for yieldConfirmation with components';
   - SCN Troubleshooting Wiki page against outbound collaboration: https://wiki.scn.sap.com/wiki/x/cYXzEg;
5. *Processing master data updates ()*

- In many cases regarding master data updates, it is important to check whether Audit Logging is turned on;
- SAP Note 2226006 'SAPMEINT 15.1 Field Mapping' helps to verify whether a field is mapped or not;
- SAP Note 2011330 'SAPMEINT 15.0 SP03 Field Mapping' helps verify whether a field is mapped or not;
- SAP Note 1763332 'SAPMEINT 6.1 Field Mappings and supported IDocs' helps verify whether a field is mapped or not;
- SAP Note 1583890 'SAP ME ERP Integration 6.0 Field Mappings' helps verify whether a field is mapped or not;

6. *SAPMEINT customization:*
    a. *XSLT customization*
        i. *Adding new fields*
        ii. *Custom data usage*

- SCN Blog on this topic should answer most questions: http://scn.sap.com/community/manufacturing/blog/2016/01/04/how-to-integrate-additional-custom-fields-for-me-objects;
    - *Custom pre/post- XSLT plugins*
    - *Custom pass/fail handlers*
    - *Custom workflows*
- Ticket 0000977960 2014, which concerns the upgrade of customized workflows, describes a known limitation at the moment and needs a core change to SAPMEINT;
    - *Custom discriminator*
- SCN Document about Discriminator Logic http://scn.sap.com/docs/DOC-69668;

7. *Correlation of yield confirmations*

- SAP Note 2041780 'Correlation workflow for productionOrderCompleteRequest message' contains important instructions;
- SAP Note 2003366 'Setting up correlation workflow for yieldConfirmation with components' contains important instructions;

8. *Calling MII transactions from ME*

- SAP Note 1908404 'Call MII Transactions from ME Extension, Hook, or POD Plugin' is the main note about how to configure MII transaction to be called from an extension. The attached document also describes limitations that customers may not know;
- SAP Note 2237715 'NullPointerException: while trying to invoke the method java.sql.Connection.prepareStatement' is quite a common error faced by customers;

9. *Calling ME PAPI from MII*

- SAP Note 2237715 'NullPointerException: while trying to invoke the method java.sql.Connection.prepareStatement' is quite a common error faced by customers;

10. *Other*

    a. *10.1. Known issue of component co-location:*

    - SAP Note 1688669 API calls to SAP ME from SAP MII fail if SAP ME restarted;
    - Note 1996682 Starting order of applications is not guaranteed by SAP MII and SAP ME;
    - SAP Note 2077427 Enable MII application to start after ME application in integrated scenarios;

    b. *10.2. Troubleshooting failures of integration-related production activities in SAP ME.*

    - Customers can intervene in the execution process of integration-related production activities by setting up service extensions for those activities. It is difficult to tell if a failure at an extended activity is caused by the custom extension or by the activity itself. To check if the execution process is intervened, examine the Java error stack trace for the calls of the com.sap.me.integration.impl.MIITransactionService.executeMIITransaction() or com.sap.me.integration.impl.MIITransactionExtension.execute() methods.

36 Important Configuration

36.1 SAPMEINT: SAP ERP Configuration

This section describes how to configure SAP ERP for SAP ME ERP integration.

The required configuration depends on the version of SAP ERP you have connected to SAP ME and the business functions you have activated. The following business functions support the integration with SAP ME:

- *LOG_PP_MES_INT_01* (available as of ERP 6.00 Enhancement Package 5)

  For more information, see Integration of Production Orders with an MES in SAP Library for SAP ERP on the SAP Help Portal at http://help.sap.com.

- *LOG_PP_MES_INT_02* (available as of ERP 6.00 Enhancement Package 5)

  For more information, see Integration of Production Processes with an MES in SAP Library for SAP ERP on the SAP Help Portal at http://help.sap.com.

- LOG_PP_MES_INT_03 (available as of ERP 6.00 Enhancement Package 6)

  For more information, see Integration of Production Processes with an MES 2 in SAP Library for SAP ERP on the SAP Help Portal at http://help.sap.com.

When *LOG_PP_MES_INT_02* or *LOG_PP_MES_INT_03* is activated, some data is distributed by means of the Data Replication Framework (DRF). See Customizing for *Production > Integration with a Manufacturing Execution System*.

Some advanced functions of the integration between SAP ERP and SAP ME require the implementation of support packages or additional notes in SAP ERP. Sections 2 and 3 of the SAP note 1793291 provide an overview on these requirements.

For more information, see Customizing for ALE for Communication with SAP ME, Other Customizing Activities in SAP ERP on the SAP Help Portal at http://help.sap.com, and SAP Note 1573547 *Authorization Roles for Service User in SAP ME Integration*.

36.2 Customizing for ALE for Communication with SAP ME

36.2.1 Prerequisites

- You have created a plant in SAP ERP.
- You have configured the SAP MII *Message Listener*.
- You have authorizations included in the following single roles in SAP ERP to maintain ALE settings:
  - *SAP_IDOC_IMPLEMENTATION*
  - *SAP_WPS_ADMIN* with additional object *B_ALE_LSYS*
  - *SAP_AUDITOR_SA_BC*

36.2.2 Activities

Maintaining a Logical System

1. In Customizing for *Logistics - General*, choose *Supply Chain Planning Interfaces (SCPI) > Production Optimization Interface (POI) > ALE settings for POI > Maintain logical system*.
2. On the *Change View "Logical Systems": Overview* screen, click *New Entries*.
3. Enter the following data:

Field	Description	User Action and Values	Comments
Log.System	System in which applications run integrated on a shared data basis	Enter the name of the RFC destination previously created	Limit name to CHAR 10 to facilitate naming conventions of related objects
Name	Short meaningful description of the logical system	Enter a short meaningful description	

4. Save your entries.

Defining RFC Destination

1. In Customizing for *Logistics - General*, choose *Supply Chain Planning Interfaces (SCPI) > Production Optimization Interface (POI) > ALE settings for POI > Define RFC Destination*.
2. On the *Configuration of RFC Connections* screen, select the *TCP/IP connections* node and click the *Create* icon.
3. On the *RFC Destination* screen, enter the following data:

Field	Description	User Action and Values	Comments
RFC Destination	Standard name of an RFC destination	Enter a meaningful name that identifies both the SAP MII *Message Listener* and SAP ERP	You enter the RFC destination name several times. We recommend that you keep it simple and memorable. We also recommend that the *RFC Destination*, *Program ID*, and SAP MII *Message Listener* have the same name. The name must be all uppercase as some fields are case sensitive. This ensures consistency throughout the process.
Connection Type	Type of RFC connection	Enter *T*	Type T destinations are connections to external programs that use the RFC API to receive *Remote Function Calls*.
Description 1	Short description of the RFC destination	Enter a short meaningful description (Optional)	

4. Press `Enter`.
5. On the *Technical Settings* tab on the *RFC Destination* screen, enter the following data:

Field	Description	User Action and Values	Comments
Activation Type	Radio buttons	Select *Registered Server Program*	Using the registering feature of the SAP gateway, RFC server programs can be started before; register at this SAP gateway and then wait for RFC call requests.
Registered Server Program Program ID	Identification of a registered RFC server program	Enter the same name as the *RFC Destination*	We recommend that you use both the name of the RFC server program and the host name of the RFC server program. The *Program ID* you enter here corresponds to the *Message Listener* in SAP MII and must therefore have the same name.
Gateway Options Gateway Host	Gateway host name	Enter the SAP system application server	For example, *sapprod.visiprise.com*
Gateway Service	Gateway service	Enter *sapgw<SAP system number>*	You can find out the name of the gateway service by logging on the application server you previously defined and starting the transaction SMGW. The name of the gateway server can be looked up in the menu *Goto > Parameters > Display*

6. On the *Unicode* tab on the *RFC Destination* screen, choose *Unicode* as a *Communication Type with Target System*.
7. Save your entries.
8. Optional: If you configured the SAP MII *IDoc Listener*, test the RFC connection.

Defining a Logical Port

1. In Customizing for Logistics - General, choose *Supply Chain Planning Interfaces (SCPI) > Production Optimization Interface (POI) > ALE settings for POI > Define port*.
2. On the *Ports in IDoc processing* screen, select the *Transactional RFC* node and click the *Create* icon.
3. In the *Ports in IDoc processing* dialog, select the *own port name* and enter a descriptive port name. We recommend that you use the same name as that of the RFC connection previously created.
4. Click the *Enter* icon.
5. On the *Ports in IDoc processing* screen, enter the following data:

Field	Description	User Action and Values
Description	Short description of the port	Enter a short meaningful description
Version	Enables system select appropriate control record	Select *IDoc record types SAP Release 4.x*
RFC destination	Standard name of an RFC destination	Enter the name of the RFC destination previously created

6. Save your entries.

Maintaining a Partner Profile

1. In Customizing for *Logistics - General*, choose *Supply Chain Planning Interfaces (SCPI)* > *Production Optimization Interface (POI)* > *ALE settings for POI* > *Maintain partner profile.*
2. On the *Partner profiles* screen, create a new profile for *Partner Type LS.*
3. Enter the following data:

Field	Description	User Action and Values	Comments
Partner no.	Uniquely identifies a vendor, customer, or a logical system	Enter the logical system previously created	
Ty.	Classifies the recipient of error notifications	Enter *C* (Job)	
Agent	Specifies the job (person or group of people) to be notified if processing errors occur	Use matchcode search to select the job number responsible for error handling	Job key is internally generated when creating agents

4. Save your entries.
5. Under the *Outbound Parameters* table, click the *Create Outbound Parameter* icon.
6. On the *Partner profiles: Outbound parameters* screen, enter the following data for each message type:

Field	Description	User Action and Values	Comments
Message Type	Uniquely assigned to SAP ERP document types	Enter the following: *MATMAS* *CLFMAS* *BOMMAT* *LOIPRO* *LOIROU* *LOIPLO* *INVCON* *IORDER* *HRMD_A* *LOIWCS*	
Receiver port	Specifies how the IDocs are transferred to the EDI subsystem	Enter the logical system previously created	
Output Mode	Output is started immediately for each individual IDoc The external subsystem is not started from SAP ERP.	Select *Transfer IDoc Immed.* and *Do not start subsystem*	

	To fetch the data, it must become active itself.		
IDoc Type Basic type	Can be used without additional coding for data communication	Enter the following: *MATMAS03* or *MATMAS05* (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com) *CLFMAS02* *BOMMAT03* or *BOMMAT05* *LOIPRO03* or *LOIPRO04* (see Transfer of Production Order for Configurable Product on the SAP Help Portal at http://help.sap.com) *LOIROU02* or *LOIROU03* *LOIPLO01* *INVCON02* or *INVCON03* *IORDER01* *HRMD_A06* *LOIWCS02* or *LOIWCS03* (see Transfer of Work Center with Individual Capacities on the SAP Help Portal at http://help.sap.com) For more information about required IDocs, see the document attached to SAP Note 1793291.	Each basic type corresponds to the list of message types above.
Cancel Processing After Syntax Error	If selected, the IDoc Interface terminates the processing in the event that a syntax error is found	Select the checkbox	

7. Save your entries.
8. Repeat steps 5 – 7 for each listed basic type.

Maintaining a Customer Distribution Model

1. In Customizing for *Logistics - General*, choose *Supply Chain Planning Interfaces (SCPI) > Production Optimization Interface (POI) > ALE settings for POI > Maintain customer distribution model directly*.
2. On the *Change Distribution Model* screen, click *Create model view*.
3. On the *Create Model View* screen, enter the following data:

Field	Description	User Action and Values
Short text	Short description of view of distribution model	Enter a short meaningful description
Technical name	View of ALE model	Enter a technical name
Start date	Identifies the start of a validity period	Enter the start date of the validity period
End Date	Identifies the end of the validity period	Enter the end date of the validity period

4. Click the *Enter* icon.
5. On the *Change Distribution Model* screen, select the distribution model previously created and click *Add message type*.
6. On the *Add Message Type* screen, enter the following data:

Field	Description	User Action and Values	Comments
Model view	View of distribution model	Enter the name of the previously created distribution model	
Sender	Name of the logical source system for exchanging messages	Enter the name of the system sending the IDocs	This is the logical system name for the SAP client.
Receiver	Name of the logical target system for exchanging messages	Enter the name of the logical system previously created	
Message Type	Identifies different IDoc types	Enter the message type: *MATMAS* *CLFMAS* *BOMMAT* *LOIPRO* *LOIROU* *LOIPLO* *INVCON* *IORDER* *HRMD_A* *LOIWCS* *DOCMAS*	Each message type is added separately following the same steps.

7. Click the *Enter* icon.
8. Repeat steps 5 – 7 to add each message type to the distribution model as listed above.
9. Save your entries.

Setting Up a Movement Type/Plant Filter for the Supported Business Processes

This configuration is required to ensure that material IDocs from only specified plants with the movement types *261* (Goods issue to a production order) or *311* (Transfer posting storage location (one step)) are sent to SAP ME if the *LOG_PP_MES_INT_01* and *LOG_PP_MES_INT_02* business functions are not activated in SAP ERP (see SAPMEINT: SAP ERP Configuration on the SAP Help Portal at http://help.sap.com). If these business functions are activated in SAP ERP, the corresponding filters are maintained in transaction DRFF of the Data Replication Framework (DRF) and filtering on ALE level is not required.

1. On the *Change View "ALE Object Type": Overview* screen (transaction *BD95*) create a new entry:

Parameter	Value
ALE Object Type	BWART
Table Name	MSEG
Field Name	BWART

2. Save your entries.

3. On the *Change View "Assignment of Object Type to Message": Overview* screen (transaction *BD59*), assign the *BWART* field to the *INVCON* message type.
4. Save your entries.
5. On the *Change Distribution Model* screen (transaction *BD64*, edit mode), select the distribution model that you want to change and navigate to the INVCON message.
6. Double-click *No filter set* and then click *Create filter group*.
7. On the *Filter Changed* screen, expand the subtree and double-click *Movement Type* and add the following movement types by inserting new rows:
   - *261*
   - *311*
8. Save your entries.
9. On the *Filter Changed* screen, double-click *Plant* and add your plants (sites) you want to send the inventory documents.
10. Save your entries.

36.3 Configuration of SAPMEINT Standard Interfaces

The following documentation describes where to verify and modify the values SAPMEINTCTC creates for the SAPMEINT standard interfaces.

The SAPMEINT standard interfaces are installed and configured using the SAPMEINTCTC configuration wizard. For more information, see *SAP ME Installation Guide* available at http://service.sap.com/instguides > *SAP Business Suite Applications* > *SAP Manufacturing* > *SAP Manufacturing Execution 15.1*.

Recommendation:

If the SAPMEINTCTC template was interrupted for any reason, resolve the root cause issue and re-execute the CTC wizard according to the *Installation Guide*.

If you notice any incorrect configurations, re-execute the SAPMEINTCTC wizard with the correct values according to the *Installation Guide*. Only advanced users may need to edit the values entered by SAPMEINTCTC.

36.3.1 Configuring Data Sources in SAP NetWeaver Java AS

SAPMEINTCTC creates two data sources, SAPMEINT and SAPMEWIP. These data sources are used by the SAPMEINT interfaces.

Data Source	Data Source Alias	Description
SAPMEINT	*jts/SAPMEINT*	Used to do CRUD operations on SAPMEINT database
SAPMEWIP	*jts/SAPMEWIP*	Used to read data from SAP ME WIP database

To modify the data source configurations, proceed as follows:

1. Log on to SAP NetWeaver Administrator using the following URL: *http://<AP Java host>:<HTTP port>/nwa*.
2. Choose *Configuration Management* > *Infrastructure* > *Application Resources*.

3. Search for *SAPMEINT* or *SAPMEWIP* as the *Resource Name*.
4. Select the desired data source and make the necessary modifications on the following data source properties:

A data source for the MS SQL Server database is configured as follows:

Parameters	
Field	**Example Value**
Driver Name	SAPMEINT_SQL
SQL Engine	Vendor SQL
Isolation level	Default
JDBC Version	2.0 (with XA support)
Object Factory	
DataSource Type	ConnectionPool data source
CPDS Class Name	com.microsoft.sqlserver.jdbc.SQLServerConnectionPoolDataSource

Connection Pooling Parameters	
Field	**Example Value**
Initial Connections	10
Maximum Connections	25
Maximum Time to Wait for Connection	120

Additional Properties	
Field	**Example Value**
URL	Default instance: jdbc:sqlserver://PROTEUS:1433 Name instance: jdbc:sqlserver://PROTEUS\SAPME:1433
Password	******
User	qa_nwsapme61wip
Database Name	SAPMEWIP
Server Name	PROTEUS

A data source for the Oracle database is configured as follows:

Parameters	
Field	**Example Value**
Driver Name	SAPMEINT_ORA_10_2
SQL Engine	Vendor SQL
Isolation Level	Default
JDBC Version	2.0 (with XA support)
Object Factory	
Data Source Type	ConnectionPool Data source
CPDS Class Name	oracle.jdbc.pool.OracleConnectionPoolDataSource

Connection Pooling Parameters	
Field	**Example Value**
Initial Connections	10
Maximum Connections	25
Maximum Time to Wait for Connection	120

Additional Properties	
Field	**Example Value**
URL	jdbc:oracle:thin:@ PROTEUS:1527:SAPME
Password	******
User	qa_nwsapme61wip
Server Name	PROTEUS

A data source for the SAP HANA database is configured as follows:

Parameters	
Field	**Example Value**
Driver Name	VMJDBC
SQL Engine	Native SQL
Isolation level	Default
JDBC Version	1x (without XA support)
Driver Class Name	com.sap.db.jdbc.Driver
Driver Class Name	jdbc:sap:lddbmfb.wdf.sap.corp:30215?currentschema=SAPMEWIP
User Name	user
Password	******
Verify Password	******

Connection Pooling Parameters	
Field	**Example Value**
Initial Connections	10
Maximum Connections	25
Maximum Time to Wait for Connection	120

Additional Properties	
Field	**Example Value**
currentschema	SAPMEWIP

After creating the data sources, make sure that the SAPMEWIP and SAPMEINT data sources are running and in a *Fully Available* state.

36.3.2 Configuring SAPMEWIP Data Server in SAP MII

1. In the SAP MII main menu, choose *Data Services* > *Data Servers*.
2. Select *Data Source* and choose *SAPMEWIP*.
3. Make the desired modifications:

Field	Value
Name	SAPMEWIP

Connector	Datasource
Connector Type	SQL
Data Source	jdbc/jts/SAPMEWIP
Enabled	Selected
Date Prefix	'
Date Suffix	'
Days Retention	7
Description	SAPMEWIP
Internal Date Format	MM/dd/yyyy HH:mm:ss
Max. Retry Count	5
Retry Interval	60000
Server Package	com.sap.xmii.Illuminator.connectors.IDBC

Note: If the database is Oracle or SAP HANA, use the following parameter values:

- *Date Prefix:* TO_DATE('
- *Date Suffix:* ','MM/DD/YYYY HH24:MI:SS')

4. Save your entries.
5. Click *Status* to verify connectivity to the SAPMEWIP.

The status must be *Running*.

36.3.3 Configuring SAPMEINT Data Server in SAP MII

Note: You can use one database to store both SAP ME and SAPMEINT data if needed. For more information, see SAP Note 1409811 *SAP ME System Landscape Recommendations*.

1. On the SAP MII main menu, choose *Data Services* > *Data Servers*.
2. Select *Data Source* and choose *SAPMEINT*.
3. Make the desired changes:

Field	**Value**
Name	SAPMEINT
Connector	Datasource
Connector Type	SQL
Data Source	jdbc/jts/SAPMEINT
Enabled	Selected
Date Prefix	'
Date Suffix	'
Days Retention	7
Description	SAPMEINT
Init. Command	
Internal Date Format	MM-dd-yyyy HH:mm:ss
Max. Retry Count	5
Retry Interval	60000
Server Package	com.sap.xmii.Illuminator.connectors.IDBC

Note: If the database is Oracle or SAP HANA, use the following parameter values:

- *Date Prefix:* TO_DATE('

- *Date Suffix:* ','MM/DD/YYYY HH24:MI:SS')

4. Save your entries.
5. Click *Status* to verify connectivity to the SAPMEINT.

The status must be *Running*.

36.3.4 Configuring MESYS User in SAP NetWeaver

SAPMEINTCTC creates the MESYS user in SAP NetWeaver where SAPMEINT and SAP ME are deployed. In the case of a clustered environment, SAPMEINTCTC creates the MESYS user in both instances of SAP NetWeaver.

This user is used for any SAP ME API calls. For more information about configuring a user in SAP NetWeaver, see Identity Management on the SAP Help Portal at http://help.sap.com.

36.3.5 Configuring Credentials in SAP MII

36.3.5.1 Credential for SAP ME API Calls

SAPMEINTCTC creates the credential *SAPMEINT_ME_AUTH* in SAP MII. To modify the password for the credential, proceed as follows:

1. On the SAP MII main menu, choose *Security Services* > *Credential Stores*.
2. Click the credential *SAPMEINT_ME_AUTH*.
3. Enter a new password for the *MESYS* NetWeaver user.
4. Confirm the password.
5. Save your entries.

Note: Make sure that the password for the *MESYS* user is also changed in SAP NetWeaver server where SAP ME is deployed.

Recommendation: Do not change the user name (MESYS) for this credential.

36.3.5.2 Credential for BAPI Calls to SAP ERP

SAPMEINTCTC creates the credential *SAPMEINT_ALE* in SAP MII. To modify this credential, proceed as follows:

1. On the SAP MII main menu, choose *Security Services* > *Credential Stores*.
2. Click the credential *SAPMEINT_ALE*.
3. Enter the desired user name.
4. Enter a new password for the user.
5. Confirm the password.
6. Save your entries.

36.3.6 Configuring Role_SAPMEINT Role in SAP NetWeaver

SAPMEINTCTC creates the role *Role_SAPMEINT* in SAP NetWeaver where SAP MII and SAPMEINT are deployed and running.

For more information about configuring roles, see Administration of Users and Roles on the SAP Help Portal at http://help.sap.com.

36.3.7 Configuring SAP ERP ALE

Configure SAP ERP to send IDocs to the SAP MII server. This involves the following procedures:

1. Creating a logical system for the SAP MII server within SAP ERP
2. Creating a TCP/IP RFC destination to the SAP MII server
3. Testing the connectivity of the RFC destination to the SAP MII server
4. Creating a port
5. Creating a partner profile configured for the following IDoc types:
   - MATMAS03 or MATMAS05 (see Transfer of Long Material Number on the SAP Help Portal at http://help.sap.com)
   - CLFMAS02
   - BOMMAT03
   - LOIROU02 or LOIROU03 (see SAP Note 1793291)
   - LOIPRO01 or LOIPRO02 (see SAP Note 1793291)
   - LOIPLO01
   - INVCON02
   - IORDER01
   - HRMD_A06
   - LOIWCS02 or LOIWCS03 (see Transfer of Work Center with Individual Capacities on the SAP Help Portal at http://help.sap.com)
6. Creating a distribution model

For more information, see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com.

36.3.8 Configuring Message Listener

SAPMEINTCTC creates the message (IDoc) listener in SAP NetWeaver to receive notifications of IDocs from the SAP ERP server and download the IDoc. To change the *Message Listener* configuration, proceed as follows:

1. Log on to SAP NetWeaver Administrator using the following URL: *http://<host>:<port>/nwa*.
2. Choose *Configuration Management* > *Infrastructure* > *Application Resources*.
3. Select *Resource Adapters* from the dropdown list.
4. Select the resource configured by SAPMEINTCTC, such as *XMIIIDOC01*, that you want to modify in the table.

5. Click the *Properties* tab.
6. Edit the properties to match your SAP ERP server.
7. Save your entries.

Example

Field	Example Value
Program ID	XMII_RHEA
Max. Reader Thread Count	1
SAP Client	210
User Name	ALE_USER — a valid SAP ERP user to perform ALE communication
Password	******
Language	EN
Server Name	sapdev.sap.com
Port Number	03
Binding Key	XMIIIDOC — use the default value

For more information, see Customizing for ALE for Communication with SAP ME on the SAP Help Portal at http://help.sap.com.

After configuring the resource, make sure that the configuration works by doing the following:

1. Verify that the resource is running and in a *Fully Available* state.
2. In the SAP MII menu, expand *Message Services* and choose *Message Listener*.
3. Select the message listener configured by SAPMEINTCTC, such as *XMIIIDOC01* and click *Update*.

Note: If there are correct values in the *SAP Server*, *SAP Client*, and *Message Name* fields, do not click *Update*.

4. Click *Status*.

The following message appears: *Server Connected*.

36.3.9 Configuring the Processing Rule

SAPMEINTCTC creates a processing rule for all incoming messages in SAP MII *Message Services*. The *<Name of the IDoc Listener>_ALL_MESSAGES* processing rule specifies how incoming IDocs are processed by SAP MII.

We do not recommend that you change this processing rule. To view the details of the rule, proceed as follows:

1. In the SAP MII main menu, expand *Message Services* and choose *Processing Rule Editor*.
2. Select the *<Name of the IDoc Listener>_ALL_MESSAGES* processing rule.
3. View the settings.

SAPMEINTCTC configures this processing rule with the following values:

Field	Value
Name	<Name of the IDoc Listener>_ALL_MESSAGES
Description	<Name of the IDoc Listener>_ALL_MESSAGES

Message Listener	Name of the IDoc Listener
Message Type	IDOC
Message Name	*
Processing Type	Category
Category	SAPMEINT_INBOUND_QUEUE
Category Description	SAPMEINT_INBOUND_QUEUE

36.3.10 Configuring the SAP ERP Server Connection

SAPMEINTCTC configures the SAP ERP server connection in SAP MII to make BAPI calls to SAP ERP. SAPMEINTCTC creates the SAP ERP server connection with the following naming convention <*Name of the IDoc Listener*>*_SAP_JCO*, where <*Name of the IDoc Listener*> is the IDoc Listener configured by SAPMEINTCTC. To modify the configuration, proceed as follows:

1. On the SAP MII main menu, expand *Data Services* and choose *Connections*.
2. Click *Connect Type JCO*.
3. Click *New*.
4. Select the desired SAP ERP server.

You can modify the following properties:

Field	**Value**
Description	<Name of the IDoc Listener>_SAP_JCO
Server	<Your SAP ERP server host name>
Client	<Your SAP ERP client for production>
System	<Your SAP ERP system number>
Pool Size	<Pool size for your JCo resource>
Language	EN

5. Save your entries.

36.3.11 Configuring SAPMEINT Workflow

To configure the SAPMEINT workflow, log on as the user with the Role_SAPMEINT role assigned.

36.3.11.1 SAPMEINT Global Configuration

SAPMEINTCTC configures SAPMEINT *Global Configuration* properties with the values provided during the SAPMEINTCTC configuration process. To change this configuration, proceed as follows:

1. In the *SAP MII Dashboard* menu, choose *SAP ME ERP Integration* > *Administration* > *Global Configuration*.

You can change the following global configuration properties:

Property	**Description**	**Example Value**
SAPMEINT_PartnerMessageDiscriminatorTxn	See Note below	SAPMEINTCTC defaults an empty value for this parameter.

SAPMEINT_CustomerMessageDiscriminatorTxn	See Note below	SAPMEINTCTC defaults an empty value for this parameter.
SAPMEINT_CORRELATION_RETENTION_PERIOD	Defines a period in minutes for a message that is waiting for the next processing if correlation conditions have not been met.	10
SAPMEINT_RETRY_RETENTION_PERIOD	Defines the retention period in minutes for a message to be retried after a system error	30
SAPMEINT_OEE_Max_Buckets	The number of times to display the buckets in the OEE Report	12
SAPMEINT_ME_User	SAP ME user	MESYS
SAPMEINT_ME_Application_Context	The Web context root for SAP ME application	/manufacturing
SAPMEINT_ME_Port	Server port on which SAP ME listens for all HTTP requests	50000
SAPMEINT_DB_Vendor	Database vendor for the SAPMEINT data source	*ORACLE, SQLSERVER*
SAPMEINT_ME_Host	Host name of SAP ME server	vmserv1, vmserv.acme.com
SAPMEINT_IS_PROFILING_ENABLED	Controls whether Profiling is active (TRUE) or inactive (FALSE).	TRUE

Note:

The Message Discriminator transaction is responsible for building a valid identifier *typeId* (*DOC_TYPE*) for each incoming message to SAPMEINT. SAPMEINT uses this typeId to determine the workflow associated with the message.

SAPMEINT comes with pre-built standard discrimination logic to determine the *typeId* of a message.

If you want to customize this logic, you can configure your discrimination logic using the following *Global Configuration* properties:

- *SAPMEINT_CustomerMessageDiscriminatorTxn*
- *SAPMEINT_PartnerMessageDiscriminatorTxn*

The SAPMEINT system checks if *SAPMEINT_CustomerMessageDiscriminatorTxn* has been configured; if it has been configured, it executes it; otherwise it executes the transaction defined in *SAPMEINT_PartnerMessageDiscriminatorTxn* if it has been configured.

If the value for the output parameter *type* of these transactions is not empty, SAPMEINT uses this value as the *typeId* for the message. If the value returned from these transactions is empty, the standard SAPMEINT discrimination logic executes and tries to find the *typeId* of the message.

2. Save your entries.

36.3.11.2 Workflow Parameters

SAPMEINTCTC configures SAPMEINT workflows with default values. These default values work for most of the scenarios. If you want to change any of the workflow parameters, proceed as follows:

1. In the *SAP MII Dashboard* menu, choose *SAP ME ERP Integration* > *SAPMEINT Configuration* > *Workflow Configuration.*
2. Retrieve the workflow parameter for the desired interface by choosing the *Type ID*.
3. Make the necessary modifications.
4. Save your entries.

36.3.12 Configuring the SAP MII Schedulers

SAPMEINTCTC configures the SAP MII Schedulers to process queued messages in SAPMEINT. To modify this configuration, proceed as follows:

1. In the SAP MII main menu, choose *System Management* > *Scheduler*.
2. Select the desired scheduler.
3. Change the desired properties.

InboundMessageEnqueuer Properties	
Field	**Value**
Name	InboundMessageEnqueuer
Description	Dispatcher for queued inbound SAPMEINT messages
Enabled	Selected
Transaction	Visiprise/ERPShopFloorIntegration/InboundEnqueuer/InboundEnqueuer
User	A valid SAP MII user who has permission to run the *Scheduler*
Password	The password for the SAP MII user
Parameters	*deleteAfterEnqueuing* Deletes messages after queuing them in the SAPMEINT message queue. SAPMEINTCTC defaults a value of true for this parameter *messageName* The name of the inbound message to queue. Use * for all inbound messages. SAPMEINTCTC defaults a value of * for this parameter *numberOfMessages* The number of queued messages to be processed for this scheduler task run. SAPMEINTCTC defaults a value of 200 for this parameter. *serverName* The name of the message listener. SAPMEINTCTC defaults a value of XMIIIDOC01 for this parameter.

Pattern	Your pattern

MessageDispatcher Properties	
Field	**Value**
Name	MessageDispatcher
Description	Dispatcher for queued SAPMEINT messages
Enabled	Selected
Transaction	Visiprise/ERPShopFloorIntegration/frame/dispatchers/simpleDispatcher/SimpleMessageDispatcher
User	A valid SAP MII user who has permission to run the *Scheduler*
Password	The password for the SAP MII user
Parameters	numberOfMessages The number of queued messages to be processed for this scheduler task run. SAPMEINTCTC defaults this parameter with a value of 50.
Pattern	Your pattern

MessageEnqueuer Properties	
Field	**Value**
Name	MessageEnqueuer
Description	Dispatcher to enquire SAP ME outbound messages from the *Outbound ME Messages* queue into the *Integration Message Queue* for processing by the *Message Dispatcher* scheduler job
Enabled	Selected
Transaction	Visiprise/ERPShopFloorIntegration/SAPMEMessageEnqueuer/SAPMEMessageEnqueuingDispatcher
User	A valid SAP MII user who has permission to run the *Scheduler*
Password	The password for the SAP MII user
Parameters	*deleteAfterQueuing* Controls if the queued message is deleted after being processed; SAPMEINTCTC defaults a value of true for this parameter *numberOfMessagaes* The number of queued messages to be processed for this scheduler task run. SAPMEINTCTC defaults a value of 200 for this parameter.
Pattern	Your pattern

QueueMessageCleaner Properties	
Field	**Value**
Name	QueueMessageCleaner
Description	Dispatcher to delete the old SAPMEINT messages
Enabled	Selected
Transaction	Visiprise/ERPShopFloorIntegration/MessagePurging/MessageCleaner
User	A valid SAP MII user who has permission to run the *Scheduler*
Password	The password for the SAP MII user
Parameters	*messageRetentionPeriod* The number of hours the messages are kept in the system after they are received into SAPMEINT. SAPMEINTCTC defaults a value of 24 for this parameter.

Pattern	Your pattern

4. Save your entries.

36.3.13 Configuring SAP ME

1. Verify that the following is configured in SAP ME:
   - Site matches an existing SAP ERP plant (see Site Maintenance on the SAP Help Portal at http://help.sap.com)
   - *MESYS* user assigned to the *SYSTEM* user group (see User Maintenance on the SAP Help Portal at http://help.sap.com)
   - The following system rule settings (see System Rule Maintenance on the SAP Help Portal at http://help.sap.com)
     - *Specific BOM Component Version Required* set to *false*
     - *ERP Integration Active* set to *true*
     - *Track Production* set to *true*
     - *Track Resource Time* set to *Yes - Track Idle Time*
   - The following system properties (see System Setup Maintenance on the SAP Help Portal at http://help.sap.com)
     - *erp.basicAuth.user* set to *MESYS*
     - *erp.basicAuth.password* set to *<MESYS password>*
     - *erp.mii.webClient.poolSize* set to 50
   - The following custom data fields, values for which are populated when IDocs come from SAP ERP and the corresponding SAPMEINT messages are sent from SAP MII to SAP ME (see Custom Data Maintenance on the SAP Help Portal at http://help.sap.com)

Custom Data Category	Custom Data Field	Comment
BOM	ERP_MATERIAL	
Routing	ERP_MATERIAL ERP_VALIDITY_FROM ERP_VALIDITY_TO ERP_LOT_SIZE_FROM ERP_LOT_SIZE_TO	
Reason Code	COST_CENTER CENTRAL_STR_LOC	The operator must enter a value for this custom data field for the reason code starting with RTN- or SCR- to clear the floor stock reservations in SAP ERP.

   - Collaboration links and directives (see Configuring SAP ME Outbound Collaboration on the SAP Help Portal at http://help.sap.com)
2. In *Activity Maintenance*, retrieve the *Pack/Unpack* (*PK020*) activity and set values for the following integration-related activity rules to send container close confirmations to SAP

ERP (see Transfer of Production Yield Confirmation on the SAP Help Portal at http://help.sap.com):

- *ERP_ITEM_FILTER*
- *ERP_OPERATION*
- *ERP_REPORTING_STEP*
- *ERP_SEQUENCE*

For more information about these activity rules, see Pack/Unpack on the SAP Help Portal at http://help.sap.com.

3. Create and configure data type for floor stock integration as follows:
    1. In *Data Field Definition Maintenance*, create the following data fields:
        - *CENTRAL_STORAGE_LOCATION*
        - *BATCH_NUMBER* (necessary for batch-managed materials)
    2. You deploy SAP ME and perform an initial data load. This automatically creates an *ERP_INV_RCPT_DATA* data type of the *Assembly* category and assigns the following data fields to it:
        - *CENTRAL_STORAGE_LOCATION*
        - *BATCH_NUMBER*
        - *VENDOR_LOT*
        - *VENDOR_DATE_CODE*
        - *VENDOR*
        - *MAT_DOC_YEAR*
        - *MAT_DOC_NUM*
        - *LINE_NUM*
    3. You add *ERP_INV_RCPT_DATA* as *Data to Collect on Floor Stock Receipt* on the *Build* tab of *Material Maintenance* for inventory IDs initially received in SAP ME via the floor stock IDoc.

        Note: Make sure that VENDOR, which is coming along with INVCON02 IDoc, exists in SAP ME, before transferring the INVCON02 IDoc to SAP ME. This vendor must be configured in SAP ME to receive and consume the material for which the inventory is received.

For more information, see Transfer of Floor Stock Data on the SAP Help Portal at http://help.sap.com.

4. In *Reason Code Maintenance*, create reason codes for clearing floor stock reservations.

    The reason codes must begin with the following prefixes to trigger the collaboration event *COLLABORATION_ERP_INV_CLEAR_RESERVATION*:

    - RTN- used for return to floor stock
    - SCR- used for scrap

For more information, see Transfer of Floor Stock Return and Scrap Data on the SAP Help Portal at http://help.sap.com.

36.3.14 Configuring Supported SAP ME Plants

SAPMEINTCTC configures supported SAP ME sites that correspond to SAP ERP plants during the SAPMEINTCTC execution. To modify this configuration, proceed as follows:

1. On the *SAP MII Dashboard* menu, choose *SAP ME ERP Integration* > *SAPMEINT Configuration* > *Supported SAP ME Plants*.
2. On the *Supported SAP ME Plants* screen, select the SAP ME site (plant) to modify.

You can modify the following properties:

Field	Example Value
Plant Language	*E* – This value should match the language field in the IDocs. **Note**: The language field for MATMAS and LOIWCS can be found in SPRAS and the language field for DOCMAS can be found in LANGU.
SAP ERP Server	<Name of the IDoc Listener>_SAP_JCO
SAP ME Host URL	http://<host>:<port>
SAP ERP Plant Time Zone	*US/Eastern*
SAP ME Site Time Zone	*US/Eastern*
SAP ERP Server Mode	*EXT_MAT_NUM_ON* – Version of SAP ERP system is SAP S/4HANA, on-premise edition 1511 with activated Extended Material Numbers function *EXT_MAT_NUM_OFF* – Version of ERP system is SAP S/4HANA, on-premise edition 1511 with deactivated Extended Material Numbers function Empty – all other supported versions of ERP

Plant language is used to map locale-specific descriptions from IDocs in case they are available. It is supported for the following IDocs:

- BOMMAT03/05
- MATMAS03/05
- LOIWCS02/03
- DOCMAS04

SAP ERP Server is the name of the connection to SAP ERP in SAP MII (*MII menu* > *Data Services* > *Connections*). When SAP ME sends an outbound message to SAP ERP, it uses SAP ERP Server name to do a BAPI call. Value of SAP ERP Server name is obtained according to SAP ME Site.

Apart from SAP ERP server details, credentials are also required to do a BAPI call. For all SAP ERP server configurations, credentials are stored under SAPMEINT_ALE Credential store (*MII Menu* > *Security Services* > *Credential Stores*). This means that if Plants located on different SAP ERP servers are connected to the same SAPMEINT, all these SAP ERP systems must have the same user with the same password.

SAP ME Host URL is the host and port of SAP ME server.

SAP ERP Plant Time Zone is the time zone of SAP ERP server. It is used to convert date/time values to GMT-0 before sending them to SAP ME (for example, Production Order Planned Start date).

SAP ME Site Time Zone is the time zone of the SAP ME server.

SAP ERP Server Mode is used to choose correct fields for Material names. For example, S/4HANA, on-premise edition 1511 uses fields with "_LONG" postfix to transfer Material names (for example, MATNR_LONG); other versions of SAP ERP with activated DIMP LAMA business function use fields with "_EXT" postfix (for example, MATNR_EXT); and without activated DIMP LAMA business function use fields without postfix at all (for example, MATNR).

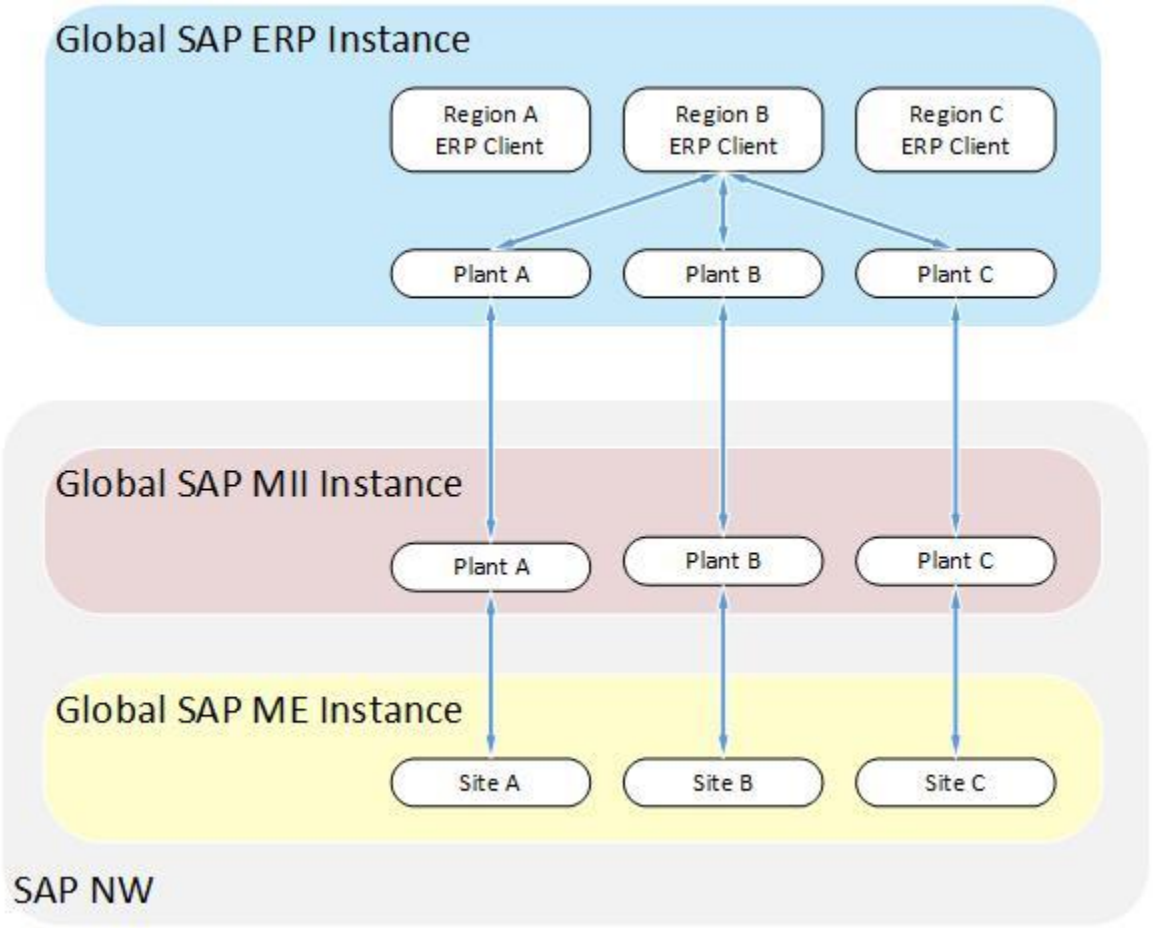
For more information about multiple plant configuration, see the Multiple Plant Configuration section of this guide.

36.3.15 Multiple Plants Configuration

You can configure SAPMEINT to integrate multiple SAP ERP plants with multiple SAP ME sites.

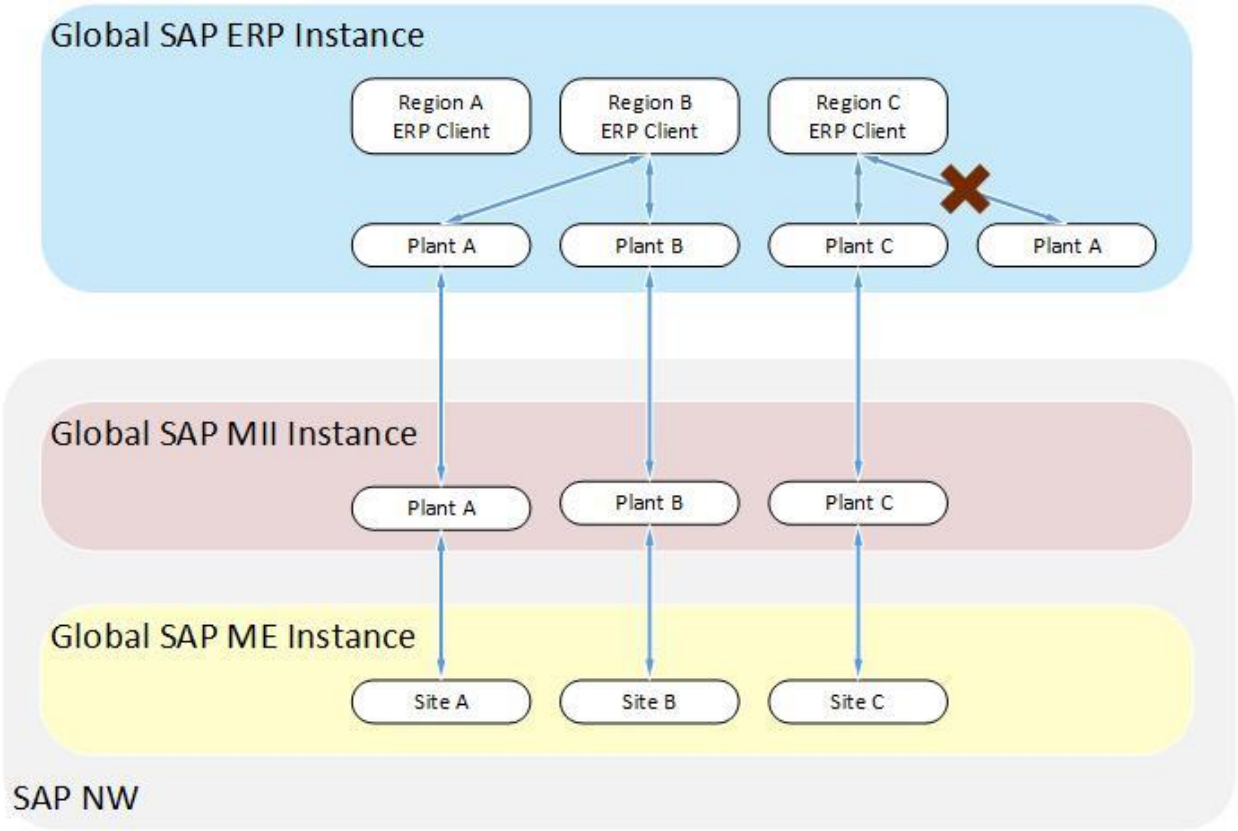
Each SAP ERP Plant can be mapped to a particular SAP ME Site. The SAP ME Site cannot be integrated with multiple Plants on the same or different SAP ERP systems.

Scenario 1



All three plants belong to the same SAP ERP client and the same SAP MII instance can be used for integration.

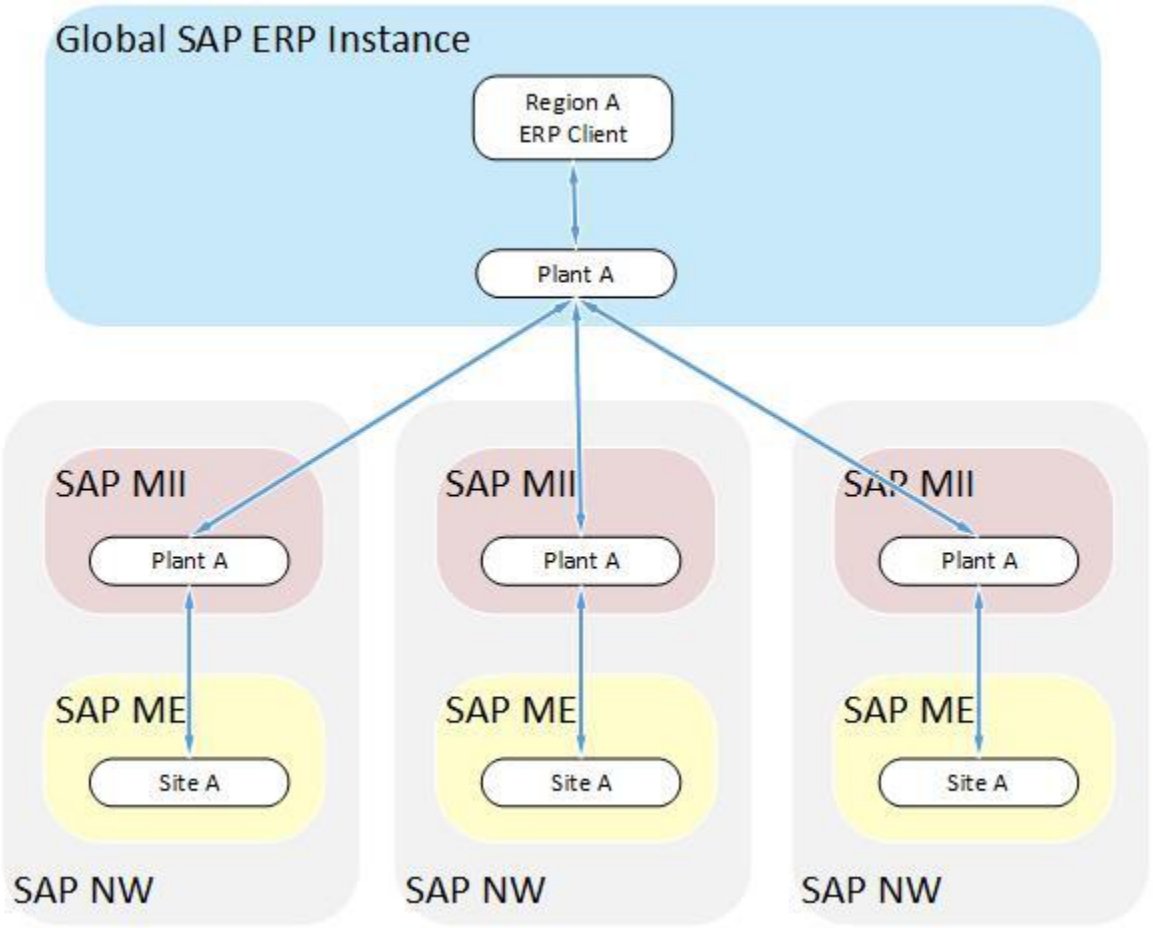
Scenario 2



Plants that belong to different SAP ERP clients can be integrated with the single global instance of SAP MII and SAP ME with the following limitations:

- The plant name must be unique across the systems. For example, if the same plant name A is reused across two or more clients or SAP ERP systems, only one of those can be integrated using a single instance of SAP MII and SAP ME.
- The credentials (user name and password) used to connect to the SAP ERP system must be same and valid for both clients. The reason for this is that SAPMEINT uses only one credential alias for connecting to all SAP ERP instances (for BAPI calls).
- Some SAP MII dashboard reports for SAPMEINT may not work properly because they retrieve data from one system only.
- All workflow configurations are reused for all plants. This means that:
    - You can use multiplant integration with different SAP ERP systems if one of them has a version lower than EHP5 and another EHP5 or higher;
    - Changes in SAPMEINT workflows affect all integrated plants.

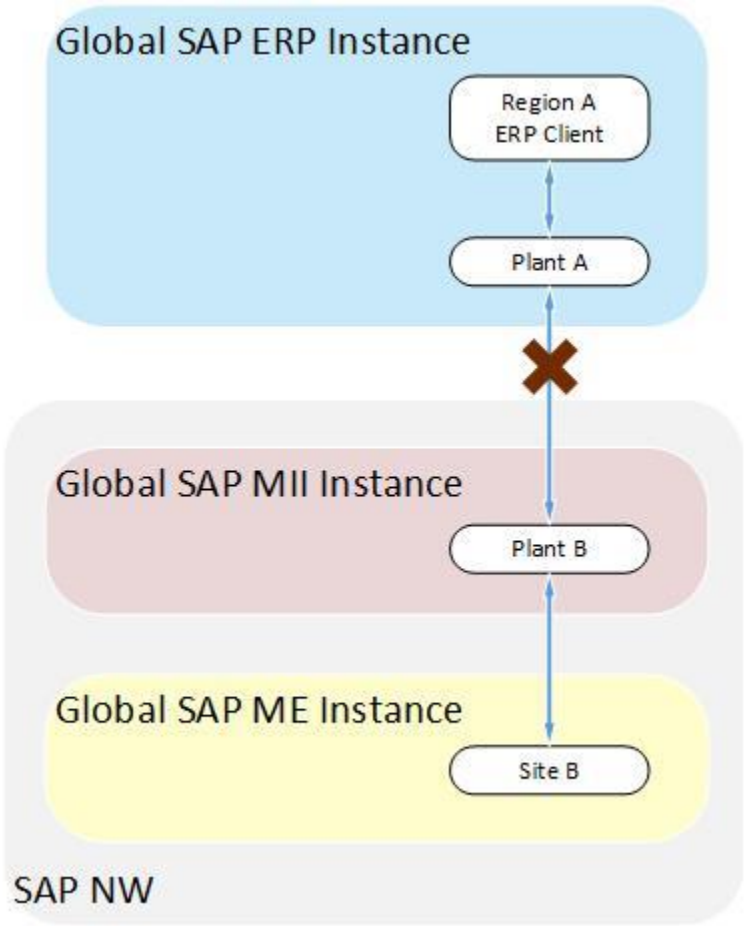
Scenario 3



You can integrate a single SAP ERP plant with several SAP ME servers.

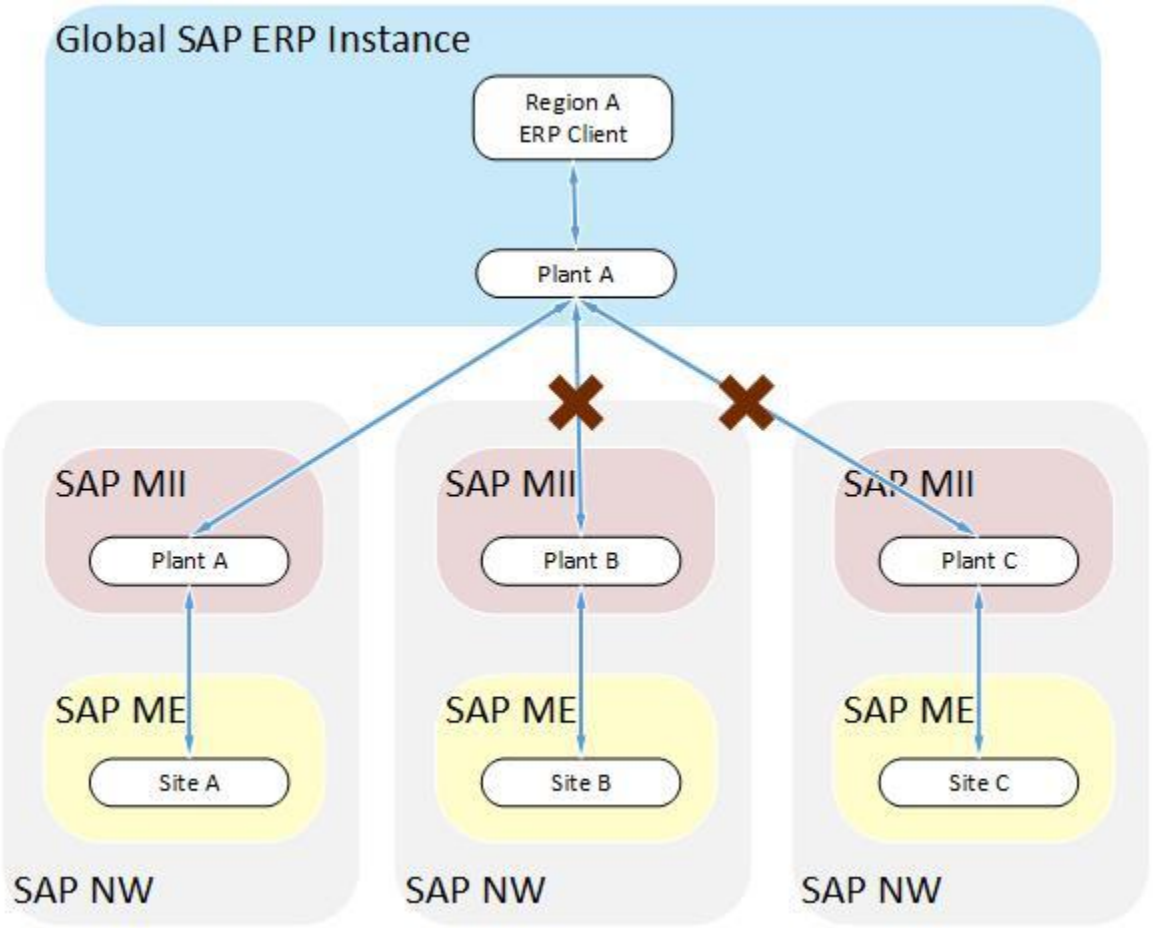
The SAP ERP plant name must match the SAP ME site name. To distribute master data and production orders to the right SAP ME system, define correct filter criteria.

Scenario 4



The SAP ERP plant name must match the SAP ME site name. For example, you cannot map SAP ERP Plant A to SAP ME Site B.

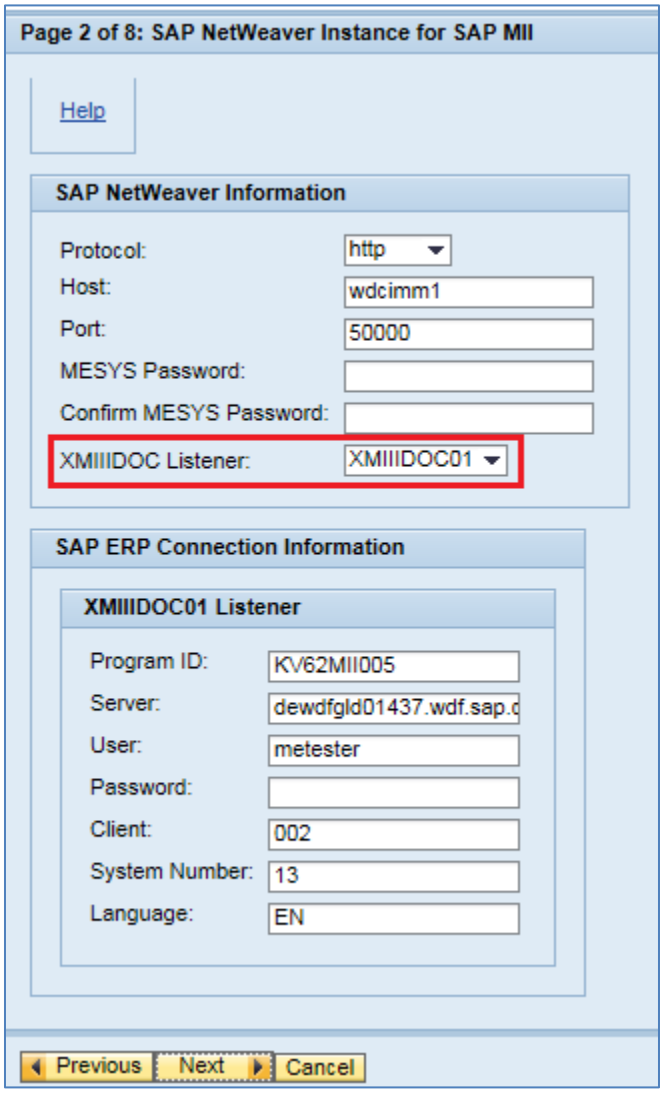
Scenario 5



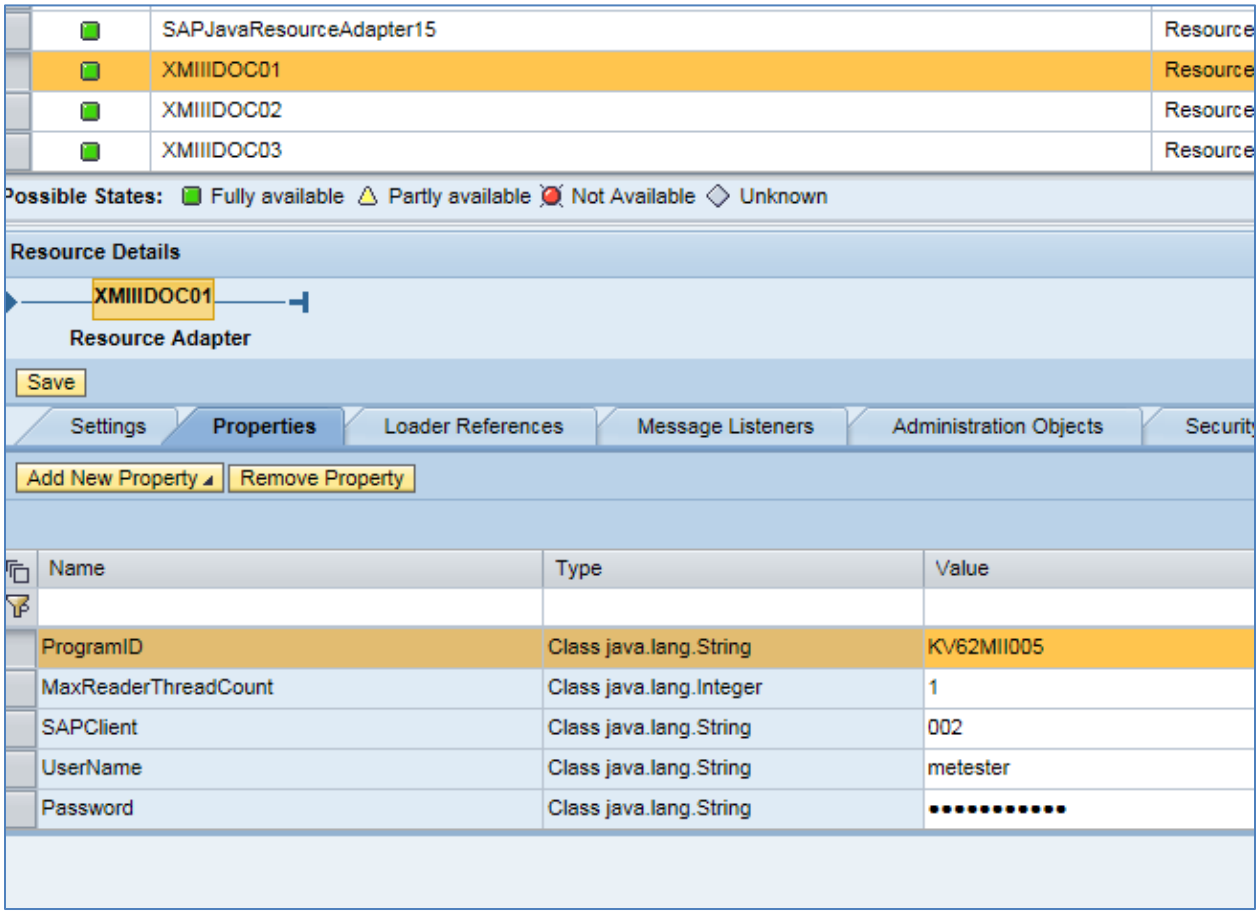
You cannot map a single SAP ERP plant to multiple SAP ME sites that have different names (You cannot map SAP ERP Plant A to a SAP ME Plant B or C)

To set up integration for multiple plants, proceed as follows:

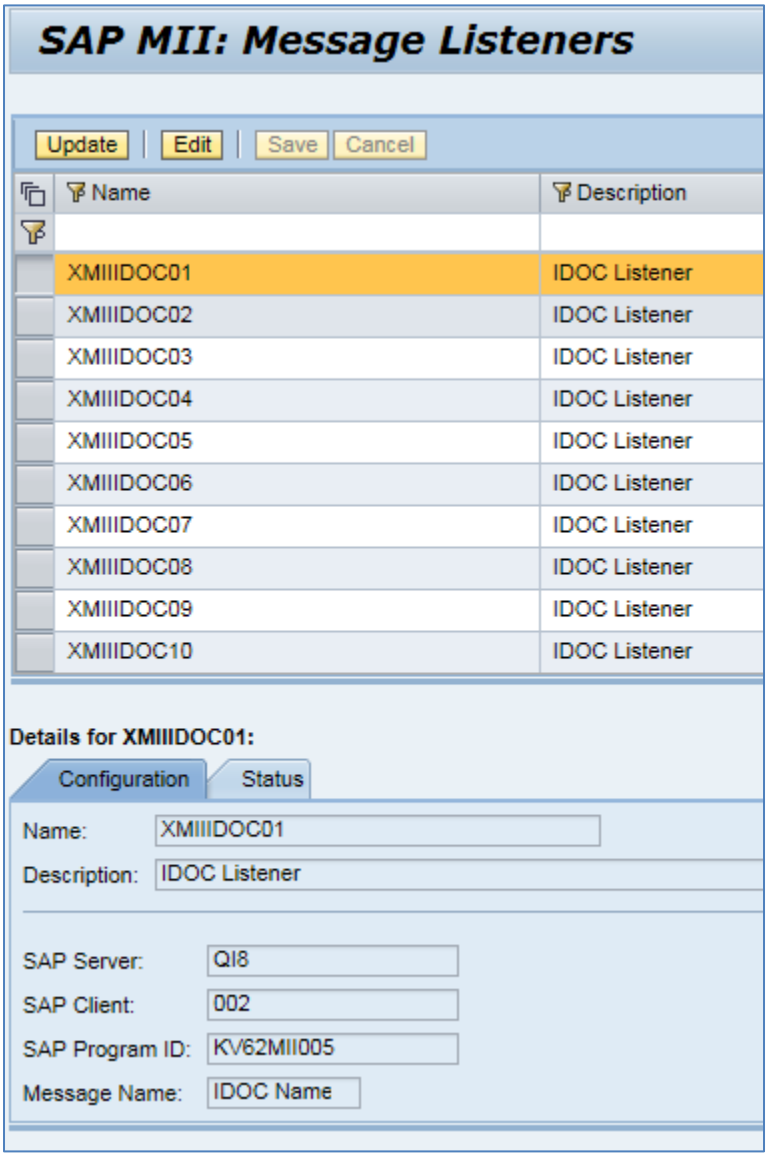
1. To integrate the first plant, run the *SAPMEINT Standard Interfaces CTC* wizard. On the *SAP NetWeaver Instance for SAP MII* screen, select an available listener, for example, XMIIIDOC01 XMIIIDOC Listener. As a result, the SAP ERP connection details are stored in the XMIIIDOC01 Resource adapter.



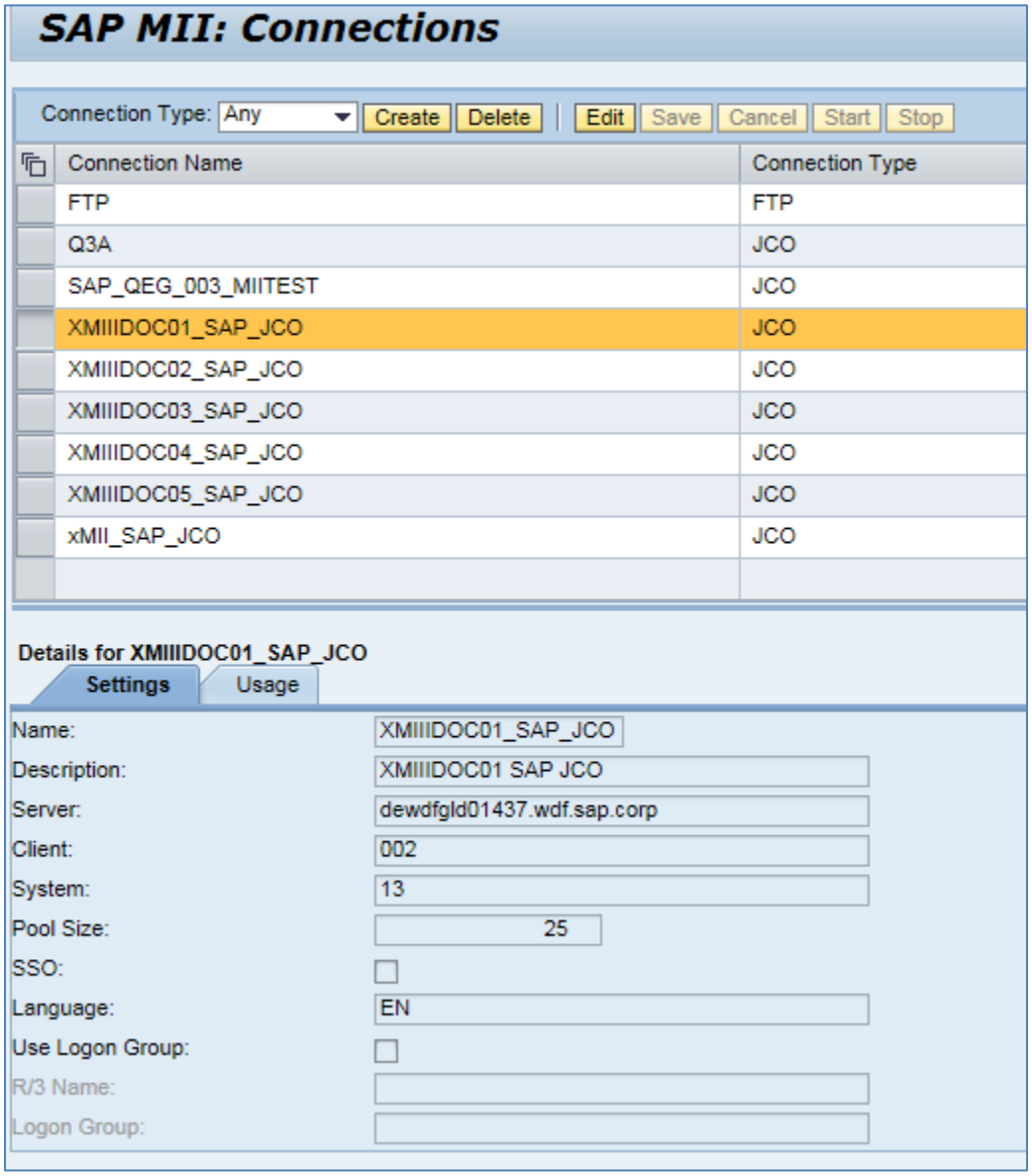
2. Execution of the SAPMEINT Standard interfaces CTC configures the following objects:
    a. XMIIIDOC01 Resource adapter in SAP NetWeavear. This contains the SAP ERP server connection details for the IDoc listener.



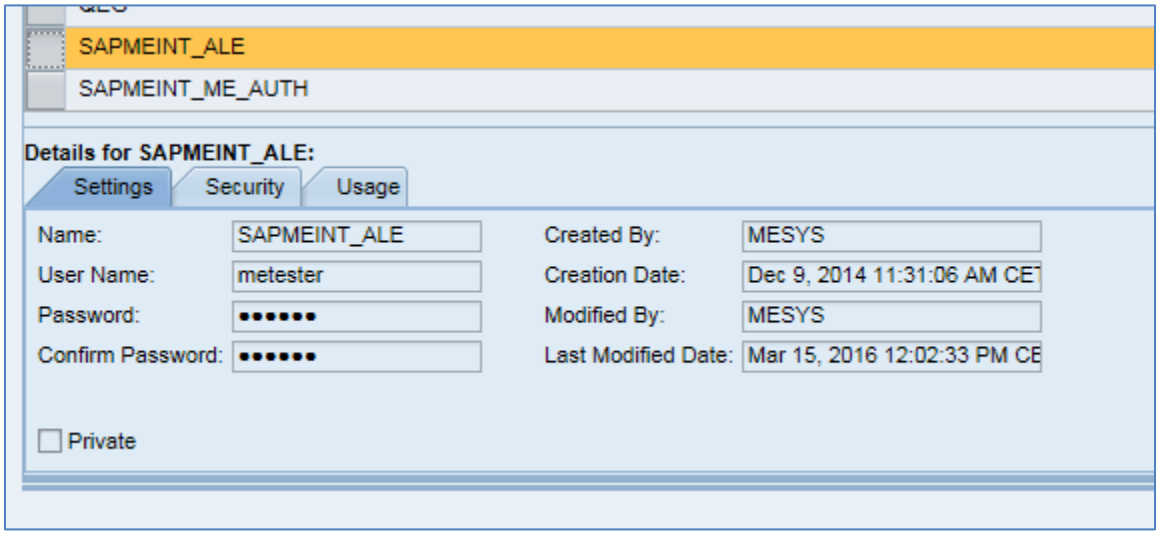
b. XMIIIDOC01 Message Listener in SAP MII that is initialized with data from the XMIIIDOC01 Resource adapter.



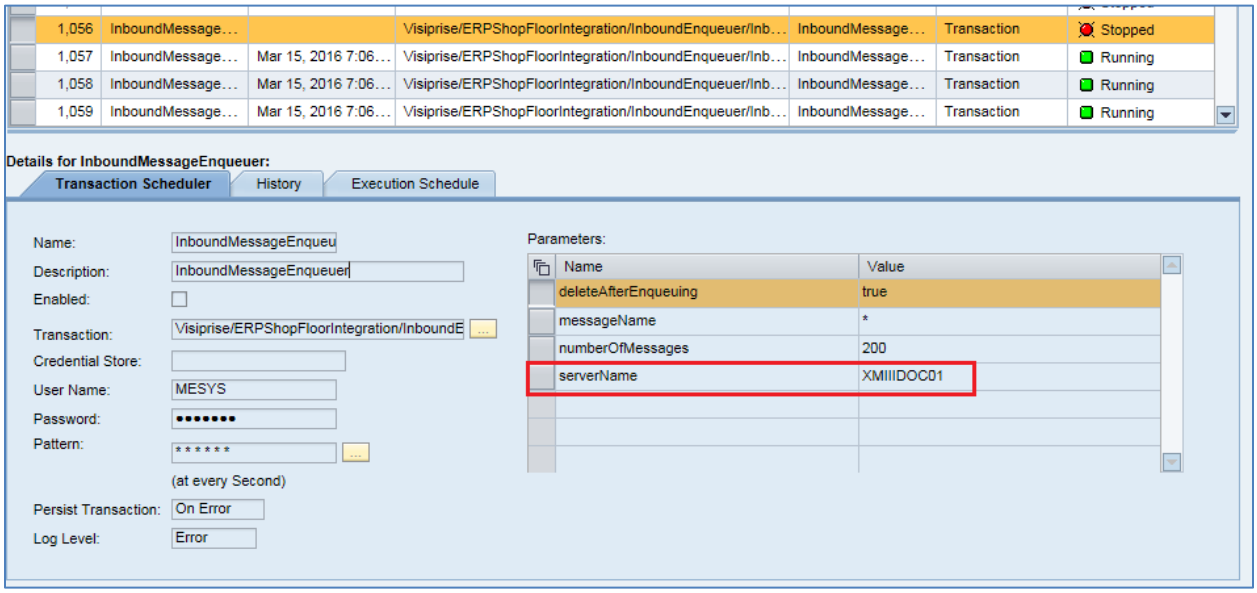
c. XMIIIDOC01_SAP_JCO SAP MII Data Services Connection with SAP ERP connection details required for BAPI calls. This has the same connection details as the XMIIIDOC01 Resource adapter.



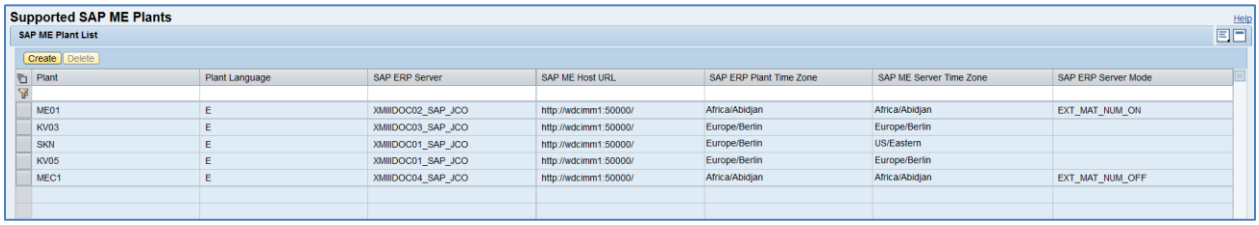
d. SAPMEINT_ALE SAP MII Credential store with user information that is used for BAPI calls.



e. SAP MII Scheduler InboundMessageEnqueuer that enqueues IDocs received by XMIIIDOC01 Message Listener. The listener name is specified in the serverName parameter.



f. Entry for the specified plant in Supported SAP ME Plants.

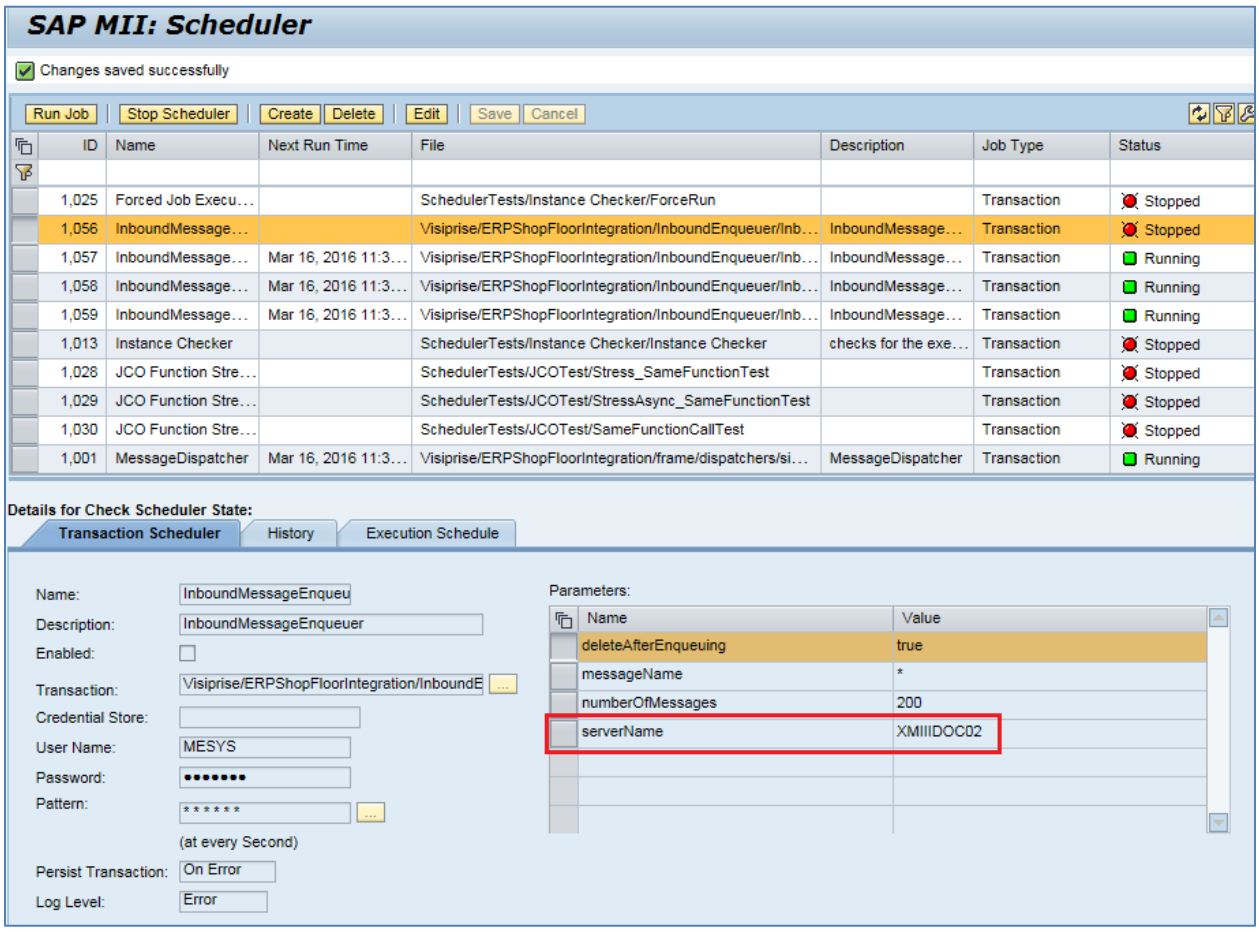


3. To integrate the second plant, run the *SAPMEINT Standard Interfaces CTC* wizard. On the *SAP NetWeaver Instance for SAP MII*, select a different listener name, for example, XMIIIDOC02 XMIIIDOC Listener. This configures the same set of objects:

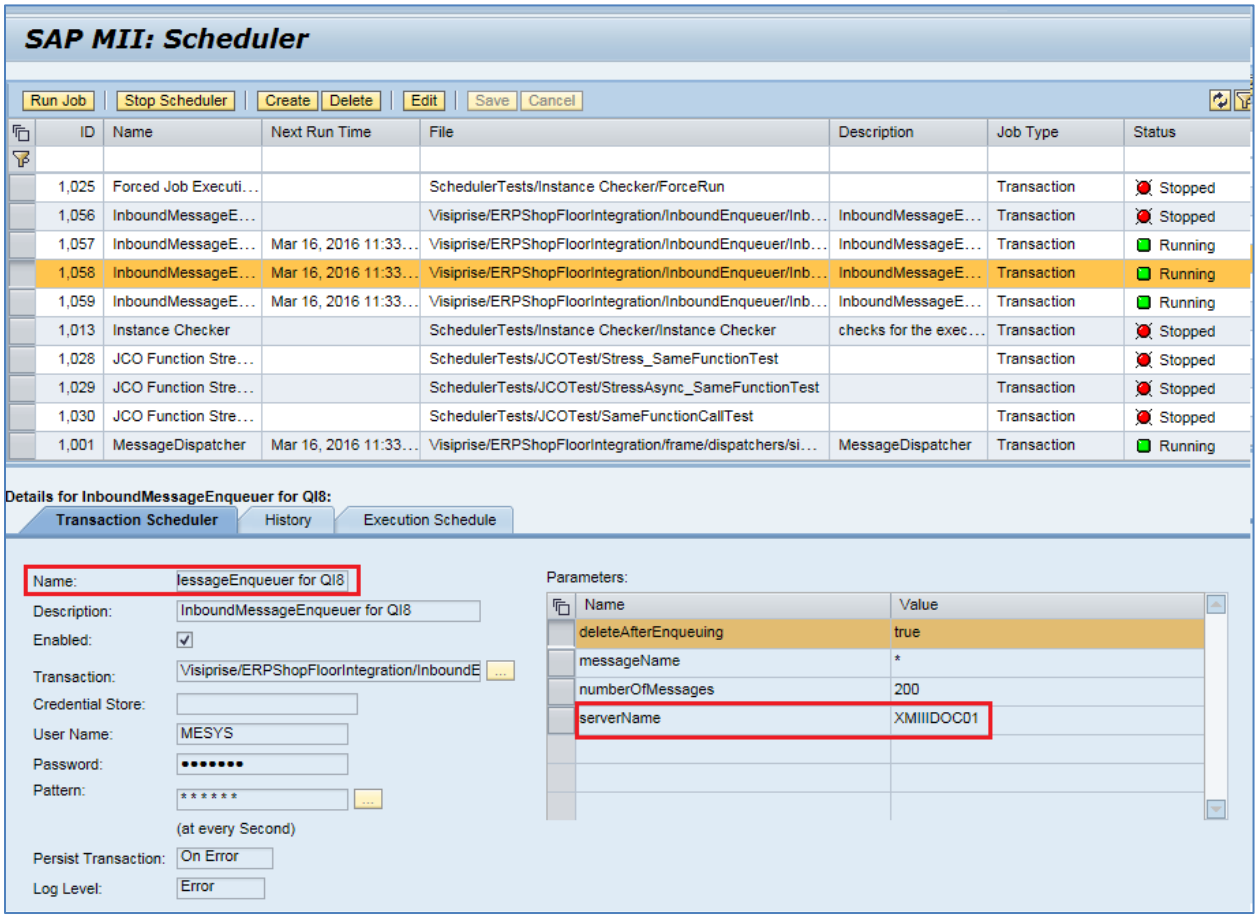
Configuration Location	Configuration Type	Configuration Name
NWA	Resource adapter	XMIIIDOC02
MII	Message Listener	XMIIIDOC02
MII	Data Services Connection	XMIIIDOC02_SAP_JCO
MII	Credential store	SAPMEINT_ALE
MII	Scheduler	InboundMessageEnqueuer

The same SAP MII Credential store is reused each time you run *SAPMEINT Standard Interfaces CTC* to integrate different SAP ERP plants. That is why all integrated SAP ERP systems must have the same user with the same password.

Also, after the second CTC execution the same SAP MII Scheduler InboundMessageEnqueuer is reconfigured to read IDocs only received by the XMIIIDOC02 Message listener:



4. To read messages received by XMIIIDOC01, create a new SAP MII Scheduler manually. Create it as a copy of InboundMessageEnqueuer and enter XMIIIDOC01 in the serverName parameter:



After this, messages received by both Message listeners appear in *Queue Monitor*. The Supported SAP ME Plants table contains entries for both plants.

36.3.16 Clearing SAP MII Transaction Cache

As a final step, after the configuration of SAPMEINT, clear the transaction cache by executing the following URL:

http://<host>:<port>/XMII/Illuminator?Service=BLSManager&Mode=ClearCache&Type=Transaction

36.4 Configuring SAP ME Outbound Collaboration

SAPMEINTCTC configures collaboration directives to specify the data source name for operation confirmation, scrap confirmation, yield confirmation, clearing floor stock reservation, equipment usage, equipment status change, and storage location movements.

1. In *Collaboration Directive Maintenance*, review transport parameters.

   If SAPMEINT and SAP ME tables are stored in the same database, then the *Transport* parameter should be configured with the value *dataSource=jdbc/jts/SAPMEINT*; otherwise, with the value *dataSource=jdbc/jts/SAPMEINTXA* for the following collaboration directives:

- ERP_COMPONENT_ADD
- ERP_CONTAINER_CLOSED_BACKFLUSHING
- ERP_CONTAINER_CLOSED_CONFIRMATION
- ERP_DIRECT_LABOR_CONFIRMATION
- ERP_EQUIPMENT_STATUS_CHANGE
- ERP_EQUIPMENT_USAGE
- ERP_INV_CLEAR_RESERVATION
- ERP_QUALITY_NOTIFICATION
- ERP_ROUTING_EXPORT
- ERP_SCRAP_BACKFLUSHING
- ERP_SCRAP_CONFIRMATION
- ERP_SO_COMPLETE
- ERP_STORAGE_LOC_MOVE
- ERP_YIELD_BACKFLUSHING
- ERP_YIELD_CONFIRMATION

For more information, see Collaboration Directive Maintenance on the SAP Help Portal at http://help.sap.com.

2. In *Collaboration Link Maintenance*, ensure that the following collaboration links are set up as follows:

Standard SAPMEINT Interfaces		
Link	**Trigger Action**	**Directive**
ERP Scrap Backflushing	COLLABORATION_ERP_SCRAP_BACKFLUSHING	ERP_SCRAP_BACKFLUSHING
ERP Scrap Confirmation	COLLABORATION_ERP_SCRAP_CONFIRMATION	ERP_SCRAP_CONFIRMATION
ERP Yield Backflushing	COLLABORATION_ERP_YIELD_BACKFLUSHING	ERP_YIELD_BACKFLUSHING
ERP Yield Confirmation	COLLABORATION_ERP_YIELD_CONFIRMATION	ERP_YIELD_CONFIRMATION
ERP Goods Movement Independent of Yield Confirmation	COLLABORATION_SFC_COMPONENT_ADD	ERP_COMPONENT_ADD
ERP Clear Floor Stock Reservation	COLLABORATION_ERP_INV_CLEAR_RESERVATION	ERP_INV_CLEAR_RESERVATION

Standard SAPMEINT Interfaces		
Link	**Trigger Action**	**Directive**
ERP Equipment Status Change	COLLABORATION_EQUIPMENT_STATUS_CHANGE	ERP_EQUIPMENT_STATUS_CHANGE
ERP Equipment Usage	COLLABORATION_ERP_EQUIPMENT_USAGE	ERP_EQUIPMENT_USAGE
ERP Shop Order Complete	COLLABORATION_SHOPORDER_COMPLETE	ERP_SO_COMPLETE
ERP Nonconformance Logged	COLLABORATION_NC_LOG	ERP_QUALITY_NOTIFICATION
ERP Storage Location Move	COLLABORATION_STORAGE_LOC_MOVE	ERP_STORAGE_LOC_MOVE
ERP Direct Labor Confirmation	COLLABORATION_ERP_DIRCT_LABOR_CNFRM	ERP_DIRECT_LABOR_CONFIRMATION
ERP Routing Export	COLLABORATION_ERP_ROUTING_EXPORT	ERP_ROUTING_EXPORT

For more information, see Collaboration Link Maintenance and Collaboration Log Report on the SAP Help Portal at http://help.sap.com.

3. In *Service Extension Maintenance*, ensure that you have entered the following:
   - *DataCollectionService* in the *Service* field
   - *LogSfcDcGroups* in the *Method* field

You can view the service extension points and their activity description details for a quality inspection lot.

37 When to Use Correlation

SAPMEINT supports correlation for *yieldConfirmation* messages. The correlation workflow allows you to decrease the number of messages sent to SAP ERP. When correlation is configured for *yieldConfirmationRequest* messages, SAPMEINT summarizes yield and goods movements quantities and sends these summarized quantities to SAP ERP. This allows you to decrease processing time.

Setting up correlation for the *yieldConfirmationRequest* may be considered when estimated time to process all the predicted messages per day exceeds available time. Using correlation for *yieldConfirmationRequest* messages can decrease the number of messages sent to SAP ERP and the total time spent on processing all *yieldConfirmationRequest* messages expected per day.

In addition to the correlation of *yieldConfirmationRequest* messages, you can use an asynchronous queue for processing goods movements in SAP ERP (see SAP Note 2016712). This decreases ERP response time for production order confirmations that contain goods movements.

For more information about setting up correlation for yield confirmations, see the Correlated Production Yield Confirmation on Operation Complete section of this guide.

38 Queuing in SAP ERP

Due to the high data volumes, there are bottlenecks for the update of confirmations for a production order sent from the MES to the ERP system.

The bottlenecks can occur if the confirmations are posted in the system sequentially and synchronously. This is true for the interface between SAP Manufacturing Integration and Intelligence (MII) and SAP ERP.

This problem is relevant only if the business function *LOG_PP_MES_INT_02* has been activated in your system.

SAP Note 2016712 provides a function that enables the writing of confirmations for a production order to a queue for asynchronous processing (inbound queue using queued remote function call/qRFC) instead of these confirmations being processed immediately. This takes the burden off the inbound interface because the call time for the confirmation module is shortened to the time required for the registration of the queue.

We recommend that you implement this solution using one of the following Support Packages:

Release	Support Package
605	SAPKH60513
606	SAPKH60613
616	SAPKH61608
617	SAPKH61706

The manual implementation of this SAP Note is time-consuming and does not include the documentation and IMG activity. Perform manual steps before and after the automatic implementation of the code changes to implement this SAP Note.

Procedure for Implementing the Solution Using a Support Package

If you implement this solution using a Support Package, the Implementation Guide contains a new activity at the following path: *Production > Integration with a Manufacturing Execution System > Control Confirmation of Production Orders from the MES*. For all further information, see the documentation for the new activity.

Procedure for manual advance implementation of solution using this SAP Note

If you implement the advance correction manually, the new IMG activity is not available in your system. Activate the inbound queue by maintaining the view *V_TCOPOCONF* using transaction *SM30*. Here, you can define for each plant whether the system should process confirmations immediately or using the inbound queue.

If you define that confirmations must be processed using the inbound queue, further configuration steps are required:

- Make sure that the inbound queue is registered for processing. To do this, call the *SMQR* transaction and register the queue MES* using the relevant button. In most cases, you can accept the proposals offered by the system for the other parameter values.

- Register a display program for the inbound queue using transaction *SMQE*. To do this, call the *SMQE* transaction and choose *Edit > Register Display Program*. Enter the display program *CO_MES_INT_QUEUE_DISPLAY_TOOLS* for the queue name MES*.
- If you want the system to automatically restart the inbound queue if lock errors occur, configure the *CO_MES_INT100* error message so that it is output as an error. To do this, execute the activity *Production > Shop Floor Control > System Modifications > Define System Message Attributes*.

The system now writes the received confirmations to an inbound queue with the name MESINPPORD<order number> so that a separate queue is created for each order. The inbound queue is processed by the ERP system asynchronously. You can use transaction *SMQ2* to monitor the inbound queues.

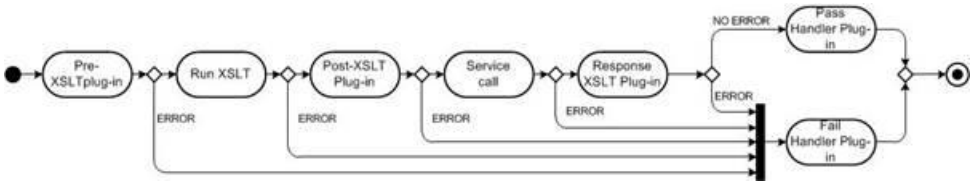
We recommend that you decouple goods movements from the confirmation if you use the inbound queue because the parallel processing of inbound queues can result in lock problems for the posting of components. You can make the relevant process control settings in the *Production > Shop Floor Control > Operations > Define Confirmation Parameters* IMG activity. See the recommendations in section 12 of SAP Note 1793291.

For more information, see SAP Note 2016712.

39 Standard Workflow Message Type Details

Use this workflow to transform and send a message to a destination system (SAP ERP or SAP ME).

The Standard workflow is a linear sequence of steps where plugins can be configured. In most cases the Standard workflow transforms the message using XSLT to different XML and sends this message to the other system.



The following table describes fields requiring explanation:

Field	Description
Message Type	Identifies the type of message received in SAPMEINT, such as BOMMAT03 and MATMAS03
Workflow	Identifies this workflow as Standard Workflow
Workflow Handler	A path to the program that handles the workflow.
Workflow Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the workflow handler.
Retry Limit	The number of times a message is retried when the system fails.
Pre-XSLT Transaction	A path to the program used to enhance the incoming message before message transformation.
Pre-XSLT Transaction Parameters	A comma separated name-value pair, which is passed as parameters to pre-XSLT transaction.
Partner Pre-XSLT Transaction	A path to the program, used to enhance the incoming message before message transformation. If entered, this program takes precedence over the standard pre-XSLT transaction.
Partner Pre-XSLT Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner pre-XSLT transaction.
Customer Pre-XSLT Transaction	A path to the program used to enhance the incoming message before message transformation. If entered, this program takes precedence over the partner and standard pre-XSLT transactions.

Field	Description
Customer Pre-XSLT Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner pre-XSLT transaction.
Request XSLT Address	A path to the standard XSLT file that performs transformation of incoming message.
Partner Request XSLT Address	A path to the XSLT file that performs transformation of incoming message. This file takes precedence over the standard request XSLT address.
Customer Request XSLT Address	A path to the XSLT file that performs transformation of incoming message. This file takes precedence over the partner and standard request XSLT addresses.
Post XSLT Transaction	A path to the standard program used to enhance the message payload after transformation.
Post XSLT Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the post-XSLT transaction.
Partner Post XSLT Transaction	A path to the program used to enhance the message payload after transformation. If entered, this program takes precedence over the standard post XSLT transaction.
Partner Post XSLT Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner post-XSLT transaction.
Customer Post XSLT Transaction	A path to the program used to enhance the message payload after transformation. If entered, this program takes precedence over the standard and partner post XSLT transactions.
Customer Post XSLT Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the customer post-XSLT transaction.
Service Transaction	A path to the standard program that sends the transformed message to the destination system to perform the intended action. For example, creating a material master in SAP ME or recording a yield confirmation in SAP ERP, and so on.
Service Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the service transaction.
Partner Service Transaction	A path to the program that sends the transformed message to the destination system to perform the intended action. If entered, this program takes precedence over the standard service transaction.
Partner Service Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner service transaction.

Field	Description
Customer Service Transaction	A path to the program, which sends the transformed message to the destination system to perform the intended action. If entered, this program takes precedence over the standard and partner service transactions.
Customer Service Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the customer service transaction.
Response XSLT Address	A path to the standard XSLT file that performs transformation of the message received as a result of the service transaction.
Partner Response XSLT Address	A path to XSLT file that performs transformation of the message received as a result of service transaction. If entered, this file takes precedence over the standard response XSLT.
Customer Response XSLT Address	A path to XSLT file that performs transformation of the message received as a result of service transaction. If entered, this file takes precedence over the standard and customer response XSLTs.
Pass Handler Transaction	A path to the standard program used to perform actions after the service transaction is successfully executed.
Pass Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the pass handler transaction.
Partner Pass Handler Transaction	A path to the program used to perform actions after the service transaction is successfully executed. If entered, this program takes precedence over the standard pass handler transaction.
Partner Pass Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner pass handler transaction.
Customer Pass Handler Transaction	A path to the program used to perform actions after the service transaction is successfully executed. If entered, this program takes precedence over the standard and partner pass handler transactions.
Customer Pass Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the customer pass handler transaction
Fail Handler Transaction	A path to the standard program used to perform actions after the service transaction fails.
Fail Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the fail handler transaction.

Field	Description
Partner Fail Handler Transaction	A path to the program used to perform actions after the service transaction fails. If entered, this program takes precedence over the standard fail handler transaction.
Partner Fail Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner fail handler transaction.
Customer Fail Handler Transaction	A path to the program used to perform actions after the service transaction fails. If entered, this program takes precedence over the standard and partner fail handler transactions.
Customer Fail Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the customer fail handler transaction.
Save Request XML	Allows you to save the Request XML created after transformation. When it is selected, the requested XML is saved and can be viewed using the trace option on SAPMEINT Queue Monitor.
Save Response XML	Allows you to save Response XML, which is returned after transformation. When set to true, the requested XML is saved and can be viewed using the trace option in the SAPMEINT Queue Monitor.

The Standard workflow is implemented by the com.sap.me.integration.frame.workflow.StandardWorkflow java class. The Standard workflow supports the following parameters (Handler Transaction Parameters):

Parameter	Description
plant	xPath that returns the plant value from inputXml
identifier	xPath that returns an identifier for this message; it is shown in Queue Monitor
enrichWithSuppPlantConfig	when *true* enriches inputXml by supported plants XML by adding the following XML under root node <SupportedPlant xmlns=""> <Plant></Plant> <Language></Language> <LanguageISO></LanguageISO> <MEHostUrl></MEHostUrl> <ErpServer></ErpServer> <ErpServerTz></ErpServerTz> <MEServerTz></MEServerTz> <ErpServerMode></ErpServerMode > </SupportedPlant>

Multiple parameters in Handler Transaction Parameters must be delimited by a semicolon.

Each workflow supports a Retry Limit. This is the number of attempts that the system does to process a message if it finishes execution with the SYS_ERROR status. For example, when a confirmation message is sent to SAP ERP when it is down. In this case, the Service call plugin returns the SYS_ERROR status. If the limit of attempts is not reached, the message gets the *RETRY* status and it is processed again.

If the plugin is not configured for a step, this step is passed and output from the previous step is passed as an input to the next step.

The Response XSLT step transforms the response returned from a Service call to some predefined XML expected by the framework. The framework expects the following XML structure:

```
<sch:ResponseAction xmlns:sch="http://sap.com/xi/ME/erpcon">
    <sch:status>SUCCESS</sch:status>
    <sch:message>Service call succeeded.</sch:message>
</sch:ResponseAction>
```

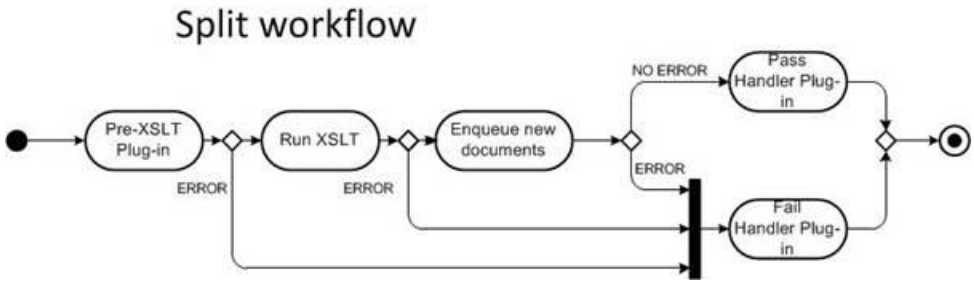
In this case, the *SUCCESS* and *PASSED* statuses are the same.

If some of the steps cause an error, the framework calls the Fail handler if it is configured. The Pass handler is called when all the steps are passed successfully and the XSLT response returns the *SUCCESS* or *PASSED* status.

40 Split Workflow Message Type Details

Use this workflow to split messages based on certain criteria and create multiple messages with different message types. The split messages undergo further workflow processing as defined in the workflow configuration.

For example, when the *MATMAS03* IDoc comes from SAP ERP, it may contain data for multiple plants. When it comes to SAP ME, it is created on different sites using separate service calls. This Split workflow splits the *MATMAS03* into multiple IDocs (with new type *Z_MATMAS03*) and each one of the split documents is processed independently by the Standard workflow.



The following table describes fields requiring explanation:

Field	Description
Message Type	Identifies the type of message to be split, such as BOMMAT03and MATMAS03
Workflow	Identifies a type of this workflow as Split Workflow
Workflow Handler	A path to the program that handles the message.
Workflow Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the workflow handler.
Retry Limit	The number of times a message is retried when the system fails.
Pre-XSLT Transaction	A path to the standard program used to enhance the incoming message before message transformation.
Pre-XSLT Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the pre-XSLT transaction.
Partner Pre-XSLT Transaction	A path to the program used to enhance the incoming message before message transformation. If entered, this program takes precedence over the standard pre-XSLT transaction.
Partner Pre-XSLT Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner pre-XSLT transaction.

Field	Description
Customer Pre-XSLT Transaction	A path to the program used to enhance the incoming message before message transformation. If entered, this program takes precedence over the partner and standard pre-XSLT transactions.
Customer Pre-XSLT Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner pre-XSLT transaction.
Split XSLT Address	A path to the XSLT file that splits the incoming message based on certain criteria.
Partner Split XSLT Address	A path to the XSLT file that splits the incoming message based on certain criteria. This file takes precedence over the standard split XSLT address.
Customer Split XSLT Address	A path to the XSLT file that splits the incoming message based on certain criteria. This file takes precedence over the standard and partner split XSLT addresses.
Pass Handler Transaction	A path to the standard program used to perform actions after the split of messages is successfully executed.
Pass Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the pass handler transaction.
Partner Pass Handler Transaction	A path to the program used to perform actions after the split of messages is successfully executed. If entered, this program takes precedence over the standard pass handler transaction.
Partner Pass Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner pass handler transaction.
Customer Pass Handler Transaction	A path to the program used to perform actions after the split of messages is successfully executed. If entered, this program takes precedence over the standard and partner pass handler transactions.
Customer Pass Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the customer pass handler transaction
Fail Handler Transaction	A path to the standard program used to perform actions after the split of messages fails.
Fail Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the fail handler transaction.
Partner Fail Handler Transaction	A path to the program used to perform actions after the split of messages fails. If entered, this program takes precedence over the standard fail handler transaction.
Partner Fail Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner fail handler transaction.
Customer Fail Handler Transaction	A path to the program used to perform actions after the split of messages fails. If entered, this program takes precedence over the standard and partner fail handler transactions.

Field	Description
Customer Fail Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the customer fail handler transaction.

The Split to multiple documents is done by the XSLT specified in "Split XSLT Address" step (it can be overwritten by Partner or Customer XSLTs). The result of this XSLT should be an XML with root element <DOCS>. All the immediate child nodes under <DOCS> are considered as new documents. For example, when *MATMAS03* is transformed, it looks like this:

```
<DOCS>
   <Z_MATMAS03>
   …
   </Z_MATMAS03>
   <Z_MATMAS03>
   …
   </Z_MATMAS03>
   <Z_MATMAS03>
   …
   </Z_MATMAS03>
</DOCS >
```

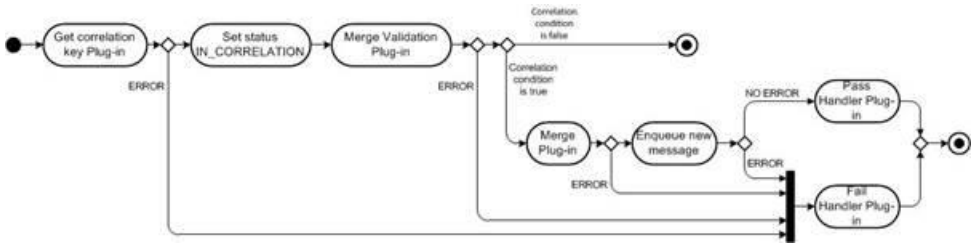
The Split Workflow then splits the previously transformed message into 3 documents and queues these 3 new documents.

The Split workflow is implemented by the com.sap.me.integration.frame.workflow.SplitWorkflow java class. The Split workflow supports the following parameters (Handler Transaction Parameters):

Parameter	Description
identifier	xPath that returns an identifier for this message. Shown in Queue Monitor.

41 Correlation Workflow Message Type Details

Use this workflow to merge messages based on certain criteria or to create a single message with a different message type. The merged message undergoes further workflow processing as defined in the workflow configuration.



The following table describes fields requiring explanation:

Field	Description
Message Type	Identifies the type of message to be correlated, such asBOMMAT03 and MATMAS03
Workflow	Identifies a type of this workflow as the Correlation Workflow.
Workflow Handler	A path to the standard program that handles this workflow.
Workflow Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the workflow handler.
Retry Limit	The number of times a message is retried when the system fails.
Get Correlation Key Transaction	A path to the standard program that retrieves the fields used to correlate and merge the messages.
Get Correlation Key Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the get correlation key transaction.
Partner Get Correlation Key Transaction	A path to the standard program that retrieves the fields that are used to correlate and merge the messages. If entered, this program takes precedence over the standard get correlation key transaction.
Partner Get Correlation Key Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner get correlation key transaction.
Customer Get Correlation Key Transaction	A path to the standard program that retrieves the fields that are used to correlate and merge the messages. If entered, this program takes precedence over the standard and partner get correlation key transactions.

Field	Description
Customer Get Correlation Key Transaction Parameters	A set of one or more comma separated name-value pairs that are passed as parameters to the customer get correlation key transaction.
Merge Validation Transaction	A path to the standard program that determines whether the messages with the correlation key are ready for merge.
Merge Validation Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the merge validation transaction.
Partner Merge Validation Transaction	A path to program that determines whether the messages with the correlation key are ready for merge. If entered, this program takes precedence over the standard merge validation transaction.
Partner Merge Validation Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner merge validation transaction.
Customer Merge Validation Transaction	A path to program that determines whether the messages with the correlation key are ready for merge. If entered, this program takes precedence over the standard and partner merge validation transactions.
Customer Merge Validation Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner merge validation transaction
Merge Transaction	A path to standard program that merges the messages that have a correlation key in the queue. This program is invoked when the merge validation is successful.
Merge Transaction Parameters	A set of one or more comma-separated name-value pairs that are passed as parameters to the merge transaction.
Partner Merge Transaction	A path to standard program that merges the messages that have a correlation key in the queue. This program is invoked when the merge validation is successful. If entered, this program takes precedence over the standard merge transaction.
Partner Merge Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner merge transaction.
Customer Merge Transaction	A path to standard program that merges the messages that have a correlation key in the queue. This program is invoked when the merge validation is successful. If entered, this program takes precedence over the standard and partner merge transactions.

Field	Description
Customer Merge Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner merge of messages transaction.
Pass Handler Transaction	A path to the standard program used to perform actions after the merge of messages is successfully executed.
Pass Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the pass handler transaction.
Partner Pass Handler Transaction	A path to the program used to perform actions after the merge of messages is successfully executed. If entered, this program takes precedence over the standard pass handler transaction.
Partner Pass Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner pass handler transaction.
Customer Pass Handler Transaction	A path to the program to perform actions after the merge of messages is successfully executed. If entered, this program takes precedence over the standard and partner pass handler transactions.
Customer Pass Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the customer pass handler transaction
Fail Handler Transaction	A path to the standard program used to perform actions after the merge of messages fails.
Fail Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the fail handler transaction.
Partner Fail Handler Transaction	A path to the program used to perform actions after the merge of messages fails. If entered, this program takes precedence over the standard fail handler transaction.
Partner Fail Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the partner fail handler transaction.
Customer Fail Handler Transaction	A path to the program used to perform actions after the merge of messages fails. If entered, this program takes precedence over the standard and partner fail handler transactions.
Customer Fail Handler Transaction Parameters	A set of one or more comma separated name-value pairs, which are passed as parameters to the customer fail handler transaction.

When the message is picked by the message dispatcher for the first time, the correlation key is empty and the Get correlation key plugin calculates a correlation key. The correlation key is saved in the database in the SAPMEINT_MESSAGE_QUEUE.CORRELATION_KEY field and its status is updated to *IN_CORRELATION*. Later the correlation key is used to find messages that must be merged into a new message. Then the Merge Validation plugin is called. It contains logic that determines whether messages must be merged or not. The Merge Validation plugin that is delivered with SAPMEINT executes validation logic based on the number of documents or timeout.

The Correlation workflow is implemented by the com.sap.me.integration.frame.workflow.CorrelationWorkflow java class. The correlation workflow supports the following parameters (Handler Transaction Parameters):

Parameter	**Description**
identifier	xPath that returns an identifier for this message. Shown in Queue Monitor.