How to Set Up and Use the SAP ME Variant Configuration Feature

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Version 1.1

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Document History

Document Version	Description	Author
1.0	Initial version	P. Enriquez C. Keglovitz
1.1	The **Net Weaver (NW) Configuration for ME Work Instruction Viewing** section was updated.	Valery Petrov

Table of Contents

1   Introduction

1.1   Purpose

The SAP ME How-To-Guide for Variant Configuration is intended to provide sufficient information to describe the setup, flow and processing of a configurable material, BOM and Routing and Production Orders sent from ERP to ME.

1.2   Scope

This document covers the processing of a Make to Order Configurable material as well as a Make to Stock material that is set up to use the *new* Order Merge process.

1.3   Glossary

Configurable Material/version: Material that has several variants. These variants have characteristics (for example color) that can have different values (in this example red, green, blue etc.). The Bill of Material contains components that are only chosen for a particular production build.

Configurable Routing/version: A routing for a configurable material. It contains all the operations that can be used to manufacture the product.

Configurable BOM/version: A BOM for a configurable material. It contains all of the components for producing each variant of the material.

Make to Order Process: a production order is triggered from a Sales Order. Ex: The ERP Production Order begins after receiving a sales order from the customer. In this case the production order is for a customer specific product configuration.

Make to Order-legacy: An ERP Customer Specific Production Order distributed to ME. The LOIPRO contains the production order specific routing and BOM, which will then create a ME Shop Order with a Shop Order Specific Routing/version and BOM/version. This material does not have a Configurable routing/version or Configurable BOM/version or these links in material maintenance imported prior to a created ME Shop Order. Therefore, the new Order Merge process is not invoked.

Make to Order-new: A material has a routing/version and a BOM/version assigned in Material Maintenance via the routing IDoc, all make-to-order (MTO) are processed using the Order Merge. Any augments (work instructions and/or ME Data Collections will take place for all MTO orders.

Make to Stock: The assembly of a product for which distributor/resellers use manufacturer/supplier's stock as components of the assembled product. Assembly is not triggered by a sales order, but rather begins in anticipation of orders for the assembled product.

Make to Stock-legacy: When a material does not have a master routing/version and BOM/version imported from ERP before the first production order is processed and thus the new Order Merge process is not invoked

Make to Stock-new: When a material has a routing/version and a BOM/version assigned in Material Maintenance via the routing IDoc, all make-to-stock (MTS) orders are processed using

the Order Merge. Any augments (work instructions and/or ME Data Collections) will take place for MTS orders.

Order Merge: During the creation of a ME Production Order, the process in which the Shop Order Specific Routing and BOM (MTO) and Master Routing and BOM(MTS) will be augmented to add Work Instruction and/or ME Data Collection attachments.

1.4   Description and Applicability

ME has been enhanced to receive and process master data objects associated with a configurable material. A new type of *Configurable* has been added to Material, Routing and BOM.

Routing Maintenance has been enhanced to view and augment a routing associated with a configurable or make to stock material. A planner may add/move work instructions to a routing step and/or substep and assign selection rules to those work instructions for Configurable Material. In addition, a planner may add ME Data Collection to a routing step and substep with assign selection rules for Configurable Material. This augment process can also be used for make to stock.

An augmentation process, called Order Merge, was enabled for this master data of a Routing/version to a ME Shop Order of either type. This process is referred to as *New* in this document.

In previous ME releases, the capability to process a make to order (MTO) shop order was supported. This prior process is referred to in the document as *Legacy*. In this instance, the material has a type configurable but the BOM/version and Routing/version do not need to be downloaded before the first shop order because the Order Merge process is not performed.

1.5   Business Purposes / Functions

Even though ERP is the source for the master data of produced products, there is a need to augment the master data that is not assignable to an ERP suboperation/ME substep. Therefore, one of the key benefits of the enhanced process is to allow users to augment the ME Routing with assignment/movement of Work Instruction or ME Data Collection to a ME substep. This then allows operators to view this master data at the appropriate manufacturing substep.

In the *New* process the import of produced material, component materials, BOM, and Routing must be performed before the first order is created. When the Routing is imported, ME will associate in Material Maintenance, the BOM/version, and Routing/version to the material. Thus, setting the criteria for the *New* process.

1.6   High-Level Process Flows

MTO Configurable Product with Order Merge *New*

MTO Configurable Product *Legacy*

MTS Configurable Product with Order Merge *New*

MTS Configurable Product *Legacy*
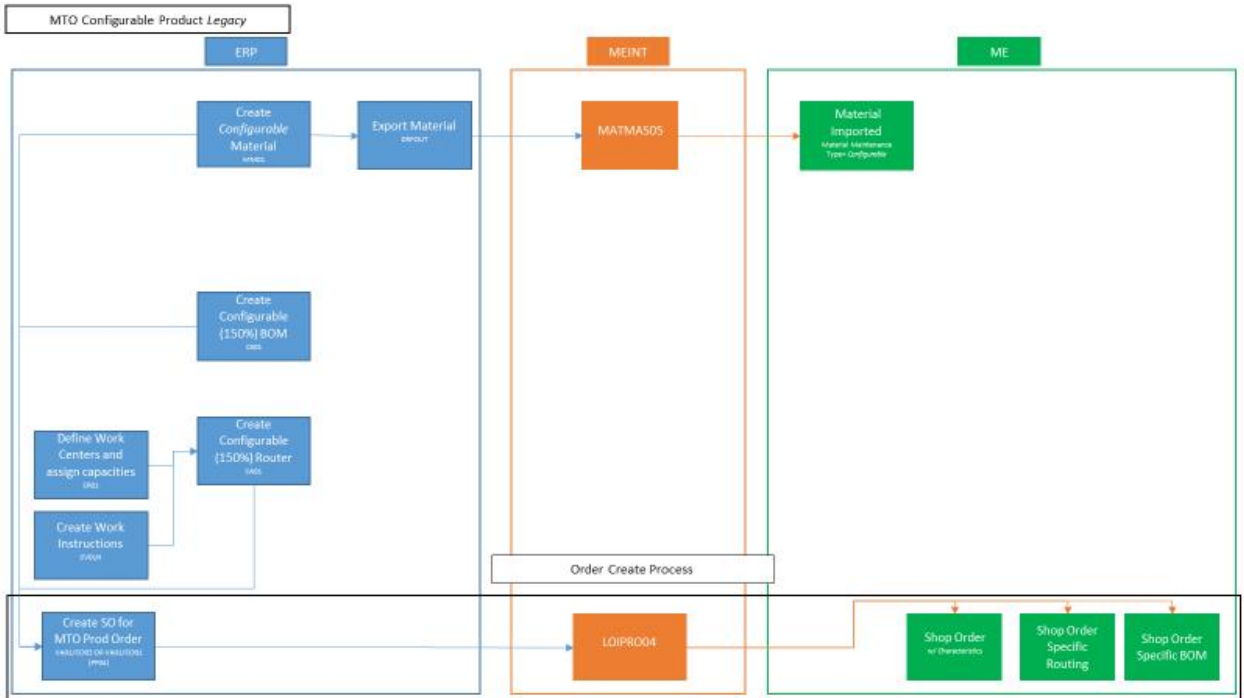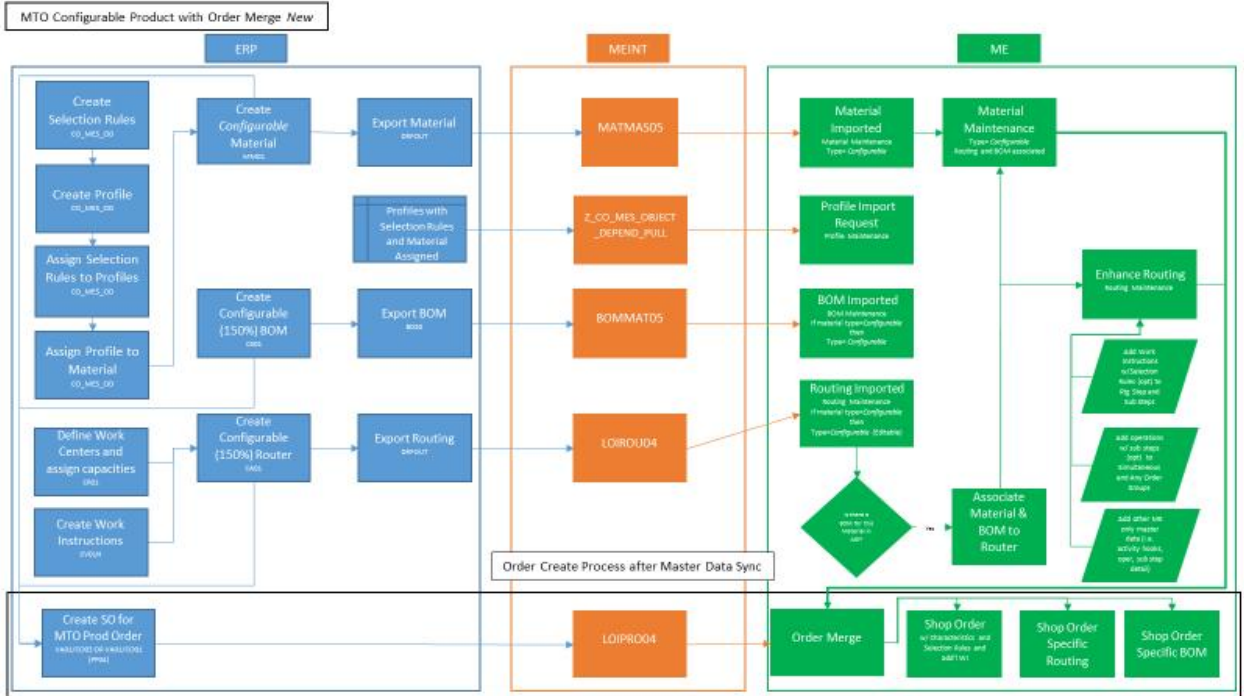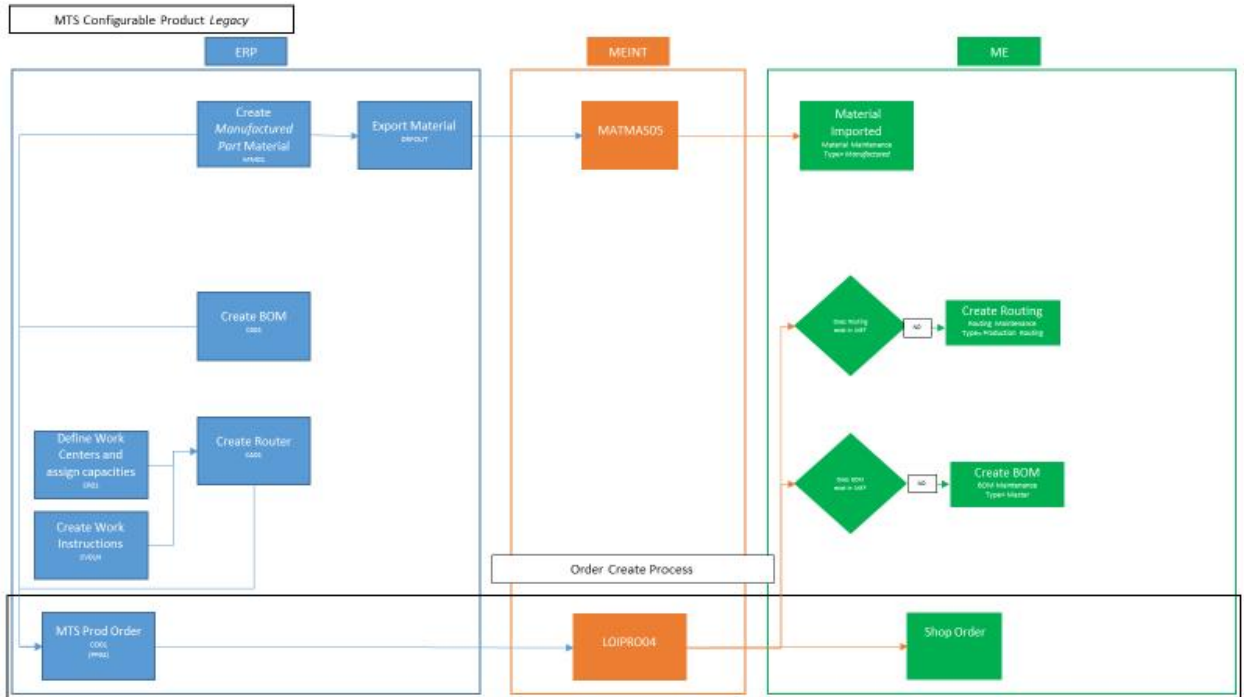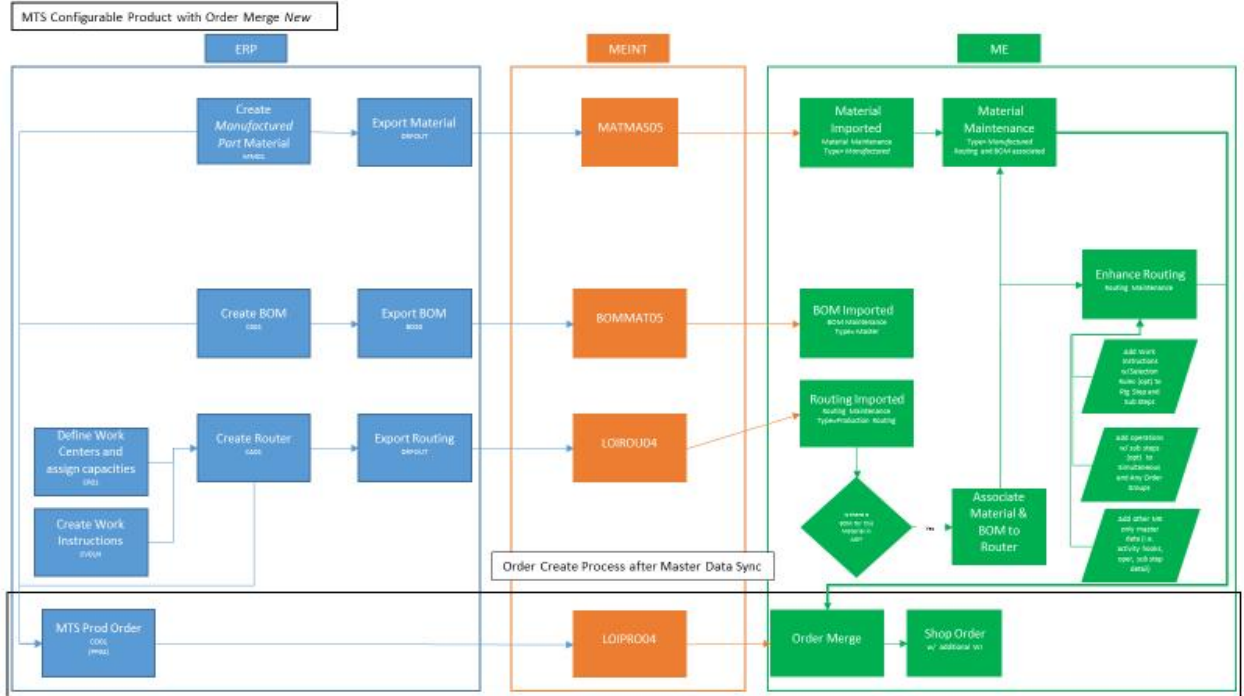
2 Functions

2.1 Profile Maintenance

2.1.1 Description and Applicability

A profile is a collection of ERP Object Dependency rules which are ME relevant Selection Rules. A Profile is created in ERP and imported into ME. A profile is simply a logical means of identifying a series of selection rules. Profiles may consist of many selection rules which are not directly related to one another. Profiles may consist of any type of information.

2.1.2 Purpose / Effects

The purpose of Profile maintenance is to display a profile with the associated selection rules and assigned materials. The profile and selection rules are view only. If any changes are required, they must be made in ERP and exported to ME.

2.1.3 Process Flow

A Profile is created in ERP in the CO_MES_OD transaction. It is imported into ME through the *Download Profiles* button from the ME Profile Maintenance Activity. This download is processed into ME by making a BAPI call into ERP. This request then results in an XML file being processed by MII and then imports the resulting data into the ME database. This imports all profiles along with associated selection rules and material assignment. These profiles and selection rules are then stored in the database and associated with a material (or item). *Profiles* are not site-specific.

The Profile Maintenance activity has two tabs. The Selection Rules tab displays all the selection rules associated with the profile. The Assigned Materials tab displays all the materials assigned to that profile.

2.1.4 Settings / Example

2.1.4.1 Profile Maintenance: Selection Rule Tab

2.1.4.2 Profile Maintenance: Assigned Materials Tab
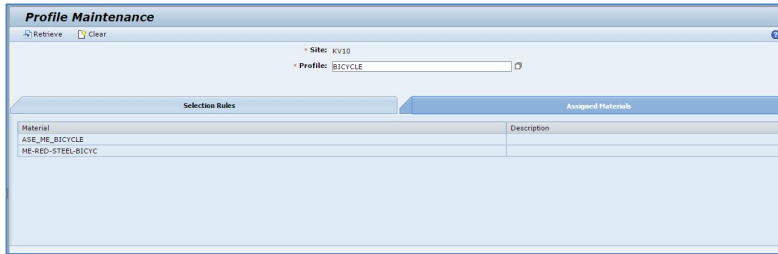
2.2 Configurable Material

2.2.1 Description and Applicability

A material is identified through the configurable indicator in the Basic data of the material master record. One single material is created for an entire product configuration which includes all available options. Variations of that product configuration are known as variants. NOTE: ME currently does not support Variant Materials.

2.2.2 Purpose / Effects

Once a material is defined and is imported to ME, it will be assigned a *configurable* type on the Main tab of Material Maintenance. Additionally, the Configurable tab will display its Profile and Class 300 characteristics. A *View Selection Rules* button allows you to view the selection rules associated with the listed profile.

2.2.3 Process Flow

Configurable materials are then imported to ME. This material type designation is recognized when the MATMAS05 (Material IDoc) receives a tag of *VERP*. If that tag exists, the material is identified as a configurable type (i.e. type 'C') and the procurement type value is ignored.

2.3 Configurable BOM

2.3.1 Description and Applicability

A BOM associated to a *Configurable* material will be assigned the *Configurable* BOM Type once imported to ME. A Configurable BOM is also known as a 150% BOM. It contains all components for all options to produce a product.

2.3.2 Purpose / Effects

The new Configurable BOM type has a designation of 'C' in the database column. The BOM Type drop-down now contains an option for Configurable.

2.3.3 Process Flow

Once a BOM is imported to ME, via ERP transaction BD30, no Assembly Operations (Assy Operation) will be loaded or displayed in BOM Maintenance. The component assignment occurs through the LOIROU IDoc processing. The BOM Component assignment is displayed in Routing Maintenance upon the opening of a Routing Step and the selection of the BOM Components tab.

NOTE: BOM Components are read-only and cannot be removed or added in ME Routing Maintenance. All component assignments occur in ERP and at an ERP operation.

The ME BOM comparison logic for Configurable BOM type will be skipped. A new BOM/version will only occur when the Valid From Date changes.

The BOM comparison logic for a Master BOM type will remain and will up-version an existing BOM if the BOM reflects changes.

2.3.4 Best Practices

If a Configurable BOM is updated (as example, component quantity, component removal, component add) in ERP, the ERP Routing associated to this BOM should also be updated to reflect the change. Once the ERP BOM has been updated, it should be exported to ME. However, it will not be associated to the ME Routing until ME receives an ERP Routing update via LOIROU.

2.4 Configurable Routing

2.4.1 Description and Applicability

A Routing associated to a *Configurable* material will be assigned the *Configurable* Routing Type of once imported to ME. A Configurable Routing is also known as a 150% Routing. It contains all routing steps and substeps (if defined) and associated work instructions to produce a product.

2.4.2 Purpose / Effects

The new Configurable Routing type has a designation of 'G' in the database column. The Routing Type drop-down now contains an option for Configurable.

2.4.3 Process Flow

Once imported to ME, a Configurable routing will have a status of *New* and the Current Version check box will be unchecked. A configurable routing will remain with this status and Current Version unchecked throughout its' use because there will never be a ME Shop Order released on this routing type. This results in a configurable routing type not being put into *Limited Edit* mode. This is possible because a shop order created for the configurable material will always have shop order specific routing type because it contains only the routing steps and substeps required to make the product.

Imported with the configurable routing type is the following: routing step Selection Rules, PRT/document assignment to a routing step, substep selection rules, substep description, and routing step component assignment. Unassigned components will be automatically assigned to the first reporting step in the ME routing as auto-assembled. The Routing Step Components will be ordered based on erp_sequence which is a new database column and not visible on the UI. Substeps will be ordered based on the substepID. The Work Center received will be assigned to a routing step or substep. These values can also be updated via the LOIPRO.

The Routing logic for a configurable routing type will also display the Effective Start Date and Effective End Date received through the LOIROU as read-only fields.

The Material Assigned to Routing (Actions > Material Assignment) will list the Configurable Material in the Assigned Material column. This assignment is also visible in Material Maintenance for the material. **NOTE:** Only one material can be assigned to a Configurable Routing type.

The BOM and Version field on the Main Tab of Routing Maintenance is populated via the LOIROU and will display as read-only.

Once a *configurable* routing has been received into ME, it can be viewed and augmented. Upon initial download of routing, the ERP work instruction (PRT) assignments will be attached and displayed in routing maintenance. Once the planner starts to augment and make changes to the work instruction attachments in Routing Maintenance, ME becomes the master record for work instructions. For example, an ME planner might attach a work instruction to a step in ERP. Once in ME, he may choose to change that attachment a substep. When an order is created, the work attachment(s) in ME will be used rather than the LOIPRO data.

2.4.4 Best Practices

If an ERP routing is updated, the change must be distributed to ME via the LOIROU IDoc. In addition, if an ERP BOM update occurs, the ERP Routing should be updated to reflect this change.

2.5 ERP Transaction for ERP (PRT) Documents/ ME Work Instruction (optional)

2.5.1 Use ERP transaction, BDA5, **to transfer an ERP PRT to ME.**

2.6 Order Merge Process

2.6.1 Description and Applicability

The order merge process is dependent upon the master data objects have been *previously* imported via their associated IDoc. This includes the: MATMAS (materials), BOMMAT (BOM/BOM Components), LOIROU (Routings/Routing Steps/Routing Substeps/Work Instruction/Component Assignment, and Selection Rules). While, the order merge will use the routing step and substep segments in the LOIPRO, it will use the existing work instruction and ME Data Collections attachments, and BOM Component assignment in the existing Configurable and Production routing.

2.6.2 Purpose / Effects

The Order Merge is primarily for Work Instruction and ME Data Collection attachments for MTO and MTS production orders that follow the new process. MTO orders will create a *Shop Order Specific* Routing and BOM. MTS orders will continue to use *Master* BOM and *Production* Routing.

2.6.3 Order Merge Creation Process Flow

The first step in this process requires all master data objects having been imported to ME. A production order is processed through MEINT to ME. Upon import of the production order, ME

will validate if a routing/version and BOM/version assignment exists in the ME Material master for the planned material for both Configurable and Manufactured product. If this assignment exists, ME will trigger the Order Merge Process during Production Order creation.

2.6.3.1 Configurable Creation

For Configurable product, ME will create a Shop Order Specific Routing containing only the routing steps and substeps contained in the LOIPRO. The process will then copy, from the existing configurable routing, the attachments for work instructions and data collections and BOM Component assignment to the shop order specific routings' routing steps and substeps. A Shop Order Specific BOM will be created containing only the BOM Components contained in the LOIPRO. In addition, ME will import shop order characteristics that are visible in Shop Order Maintenance on the Characteristics Tab. ME will also import relevant selection rules.

2.6.3.2 Make to Stock Creation

For make to stock product, ME will compare the routing steps, substeps, and BOM Component assignments contained in the LOIPRO to the existing Production Routing/version and BOM/version. If there are no differences in this Routing data or BOM data, the Production Routing/version and BOM/version will be assigned to the Production Order.

2.6.4 Order Merge Update Process Flow

2.6.4.1 Configurable Version Update

There is logic in ERP Field Maintenance associated with various object types. The Configurable Master Data business comparison logic will, in most cases, result in an update of those objects rather than an up-version. The following scenarios describe additional behavior for configurable master data:

- If a new routing version is created and the previous version has existing component assignments, ME will look for a BOM/version whose effective date falls within an equivalent date range. If one is not found all component assignments will be removed.
- If ME has existing routing referenced to a BOM ERP ID and ME receives an update to the existing routing with a different BOM ERP ID, ME will throw an exception to identify this condition.
- After the new routing/version has been created, ME as a rule, will copy the master data from the previous effective routing.

2.6.4.2 Make to Stock Version Update

The ERP Field Maintenance business logic associated with various object types is used for make to stock master data during Order Merge. In most cases, a Production routing will be up-version pertaining to work instruction and ME Data Collection attachments, and BOM Component assignment. After the new routing/version has been created, ME as a rule, will copy the master data from the previous effective routing. The same business logic applies to an up-version of an existing BOM.

2.6.4.3   Production Order Update

When a MTO production order update is received, ME will use the existing shop order specific Routing/version and BOM/version assigned to the shop order for business logic comparison. If a difference is found in the Routing or BOM structure, the Shop Order Specific Routing and BOM will be up-version. One additional fact, if a work instruction is contained in the received Routing/version it will be evaluated to if it existed in the previous version of the order. If a new work instruction is found, it will be added to the shop order only. If that work instruction needs to be included in future orders, the master routing will need to be updated with the new work instruction. Next, the existing production order process update will need to be executed.

When a MTS production order update is received, ME will use the existing Production Routing/version and Master BOM/version assigned to the shop order for business logic comparison. If a difference is found in the Routing or BOM structure, the Production Routing and BOM will be up-version. If a new work instruction is found, it will be added to the new Production Routing/version. Next, the existing production order process update will need to be executed.

3   Integration – Master Data from ERP to ME

NOTE 1: The master data transfer order is IMPORTANT!

NOTE 2: These instructions assume the DRF (Data Replication Framework) has been setup in ERP to distribute supported Master Data to ME.

1. Use transaction ERP transaction **DRFOUT** to transfer all Material, including component material, records to ME.

2. Use ME transaction Profile Maintenance to download ERP Profiles to ME.
    a. Open Profile Maintenance in ME.
    b. Select the action button Download Profile. A confirmation dialog is displayed with the message: If you confirm, all profiles will be downloaded. Do you want to continue? Submit the OK action button. A message is displayed: The request has been sent.
        NOTE: This will transfer all defined ERP Profiles with ERP object dependencies to ME selection rules and assigned materials to each imported Profile.
3. Use ERP transaction **BD30** to transfer Configurable (150%) BOM from ERP to ME.
4. Use ERP transaction DRFOUT to transfer Configurable Routing (150%) to ME.

3.1 System Activities

3.1.1 Net Weaver (NW) Configuration for ME Work Instruction Viewing
Note: Please see the following SAP Notes first: 2631228 and 2518291.

3.1.1.1 To NOT authenticate the user to view in WI500, you need to set up destinations in NWA and link them to WI500**.**
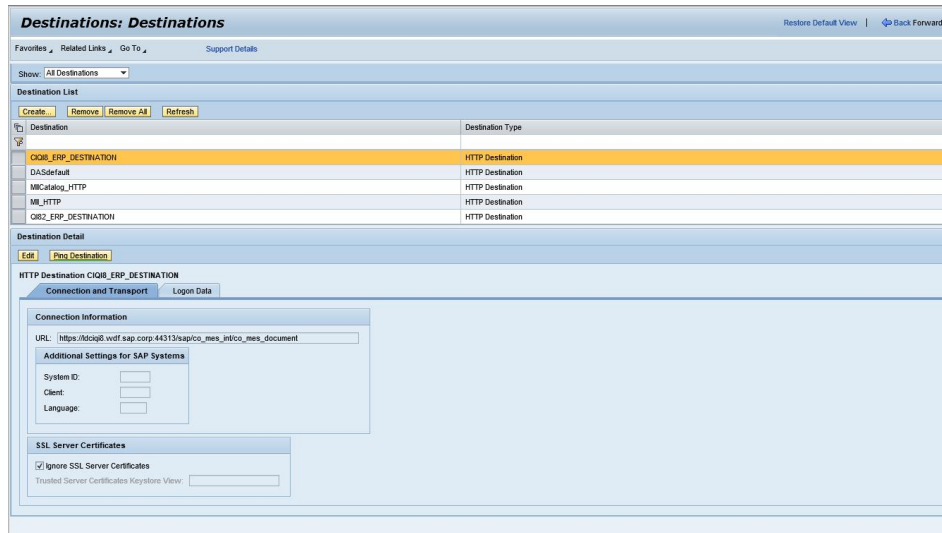
Note: If an error occurs when you choose **Ping Destination**, please continue the configuration process. This specific URL path is not designed to provide a valid response without additional parameters that are defined in the SAP ME work instruction URL.

3.1.2 ME Activity Maintenance – WI500 Activity Rule Setup
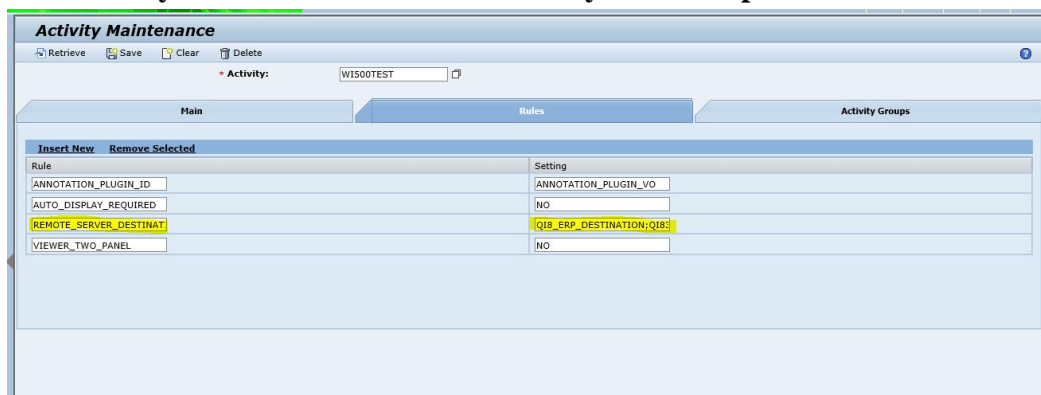
3.1.2.1 There can be several destinations created from the DMS. The destinations are listed separated by semi colons (;)

3.1.3 Pre-configuration setup for ME Production

3.1.3.1 Substep List Display
a. Open List Maintenance. It is found in Maintenance/System Configuration
b. Retrieve: <u>category</u>: Substep; <u>value</u>: DEF_SUBSTEP_LIST
c. Confirm if sequence, listed column names are required or if columns should be removed or added.
Note 1: if this default list is changed, it is best practice to save the value with another value.
Note 2: if you change the value, make sure to update any POD using the default substep list.
d. If Allow Multiple Selection checkbox is selected, the Select All and Deselect All icon will appear in this POD plug-in.
e. Submit Save.

3.2 ME Verification of Product Configuration for *New* Order Merge Process

3.2.1 Material Maintenance
a. Open Material Maintenance, Product Configuration and verify the following on the Main Tab of Material Maintenance for your MTO and/or MTS Top level materials.
    i. Material type: Configurable (MTO) and Manufactured (MTS)
    ii. Status: Releasable
    iii. Current Version: Checked
    iv. Routing and Routing version field: contains Routing value and Version.
    v. BOM and BOM version field contains: contains BOM value and BOM version.
b. Configurable tab is visible (**MTO Materials ONLY**)
    i. Select Configurable Tab
    ii. Profile should display a profile name as assigned in ERP and read only.
        o Select View Selection Rule action button. Selection rules assigned in ERP display. Submit Close action button.
        o Review Characteristics and Values.

3.2.2 BOM Maintenance
1. Open BOM Maintenance and retrieve the Shop Order Specific BOM for your order. Note: the BOM type must be Shop Order for MTO Material only.
    a. Verify the Assy Operation column is empty. Assembly operations are assigned via the Routing IDoc and are visible in Routing Maintenance.
    b. Verify the defined ERP Subitem Installation Point exists in ME as a ref des for the appropriate component(s).
    c. Verify the defined ERP Alternate Component is assigned in ME as an alternate component in Component Details. **NOTE:** the ERP BOM Component with the highest priority and usage of 100% is the primary component. All other ERP BOM Components should have a lower priority and usage of 0%. If the usage is defined other than 0%, an alternate component will appear as a primary component in the ME BOM with the same component quantity.

3.2.3 MTO Routing Maintenance
1. Verify the following on the Main Tab of Routing Maintenance:
    b. Routing type: Configurable
    c. Effective Start and End Date: visible and read-only

        d. Status: New

        e. Current Version: unchecked

        f. BOM: contains BOM value/version and is read-only

        g. Replication to ERP: No and read-only

        h. Open Actions menu and select Material Assignment. Verify material assigned to the Routing.

2. Select the Routing Tab

        a. Double click on the first routing step.

        b. Select Substep Tab

            i. Verify all the substeps defined in the ERP routing display in the table. Verify the description column contains the description from the LTXA1 field of the Routing IDoc.

           ii. Verify the substep details in the table can be edit.

          iii. Select the icon in the details icon.

               · Verify the Substep description is the same as the description from the substep table.

               · On the Selection Rule tab, verify the selection rules assigned in ERP appear on this tab as read-only

               · On the Work Instruction tab, select the <u>Insert New</u> action from the table. Drag a work instruction to the Work Instruction table. Select the icon in the details column. Assign the appropriate selection rules to the work instruction. Submit the OK action button.

        c. Verify substeps & substep details on Substep Tab for a routing step.

        d. Verify BOM Components on BOM Component Tab for a routing step.

           a. Verify read-only Component Selection Rules on routing step via the details icon in the Component row.

3. Verify Work Instructions on Work Instruction Tab for a routing step.

           a. Verify Work Instruction Selection Rules on routing step via the details icon in the Work Instruction row.

4. Verify read-only Selection Rules on Selection Rule Tab for a routing step.

5. Verify that additional WI can be assigned to a routing step and/or substep along with a selection rule assignment.

6. Verify components assigned to 1st reporting step automatically if components exist in the assigned BOM but were not received in the routing IDoc.

        a. Add auto assembly hook to first routing step for these components.

3.2.4 MTS Routing Maintenance

1. Enter an *MTS Routing and Version* that uses the NEW Process (means BOM and Routing imported in order described previous section). Verify the following on the Main Tab.

           i. Routing type: Production Routing

           ii. Status: Releasable

          iii. Current Version: Checked

          iv. BOM: contains BOM value/version.

2. Replication to ERP: No or Use System Rule Setting and read-only

3. Perform the steps in previous section except there will be no selection rules for MTS so these steps can be skipped.

4   Usage Scenario Examples

4.1   Create ERP Sales Order for Make to Order (MTO) Production Order

1. After the order is distributed from and successfully processed through MEINT, the Order Merge process executes in ME.

4.1.1   Open Shop Order Maintenance and retrieve the MTO Production Order

a. Verify Shop Order is imported and created.
b. Verify serial numbers appear on Serial Number tab (optional)
c. Verify in the BOM type field the value is Shop Order and the format of BOM Planned field contains the shop order specific BOM format. Example:1005352-ME-BICYCLE-1-1
d. Verify in the Routing field the format of the routing contains the shop order specific Routing format. Example: 1005352-50000356-1
e. Verify the Characteristic tab is populated.

4.1.2   Open Routing Maintenance and retrieve the Shop Order Specific Routing

1. Verify the following information on the Main Tab of Routing Maintenance for your **Shop Order**. You must enter the Shop Order specific name and version.
   a. Routing type: Shop Order Specific Routing
   b. Status: Releasable
   c. Current Version: Checked
   d. BOM: your shop order specific BOM and version
   e. Replication to ERP: Use System Rule Setting and read-only
2. Now select the Routing tab and double click on a routing step.
3. Verify the following Shop Order Specific Routing data:
   a. On the details tab of Routing step:
      i. Work Center and ERP Work Center contain a value – this is new.
4. Select Substep Tab
   a. Verify the substeps display in the table are correct based upon the options selected in the Sales order.
   b. Verify the description column contains the description from the LTXA1 field of the ERP suboperation.
   c. Verify the substep details in the table can be edit. Use the first substep, Assemble Frame:
      i. Change the Substep Type to Critical.
      ii. Substep Timer functionality is available for this value to be set.
   d. Select the details icon in the Details column of this row.
      i. Verify the Substep description is the same as the description from the substep table.
      ii. On the Selection Rule tab, verify the selection rule is displayed and is read-only, and matches the options selected the sales order.
      iii. On the Work Instruction tab, drag a work instruction to the Work Instruction table.
      iv. Select the icon in the details column. Select <u>Insert New</u> and select a selection rule to the work instruction and submit the OK action button on this dialog. Select the OK action button when return to the Substep Details page.
5. Select BOM Component Tab for a routing step
   a. The folders Traceable and Auto Assembled display applicable components. All Auto-assembly components should have the associated check box selected.

      b. When selecting the first routing step, all components not assigned in ERP should be assigned and will show on the right-side table.

      c. Select the details icon in the Component row

          i. Verify the selection rule assigned in ERP are in the Selection Rule field and the field is read-only.

6. Verify Work Instructions on Work Instruction Tab for a routing step

      a. Select the details icon in the Work Instruction row for one of the Work Instructions.

      b. Verify the selection rule assigned Selection Rule and the field is read-only.

      c. Insert additional WI to a routing step along with a selection rule assignment.

4.1.3 Open BOM Maintenance and retrieve the Shop Order Specific BOM

1. Open BOM Maintenance and retrieve the Shop Order Specific Routing for your order. Note: the BOM type must be Shop Order.

      a. Verify the Assy Operation column is empty.

      b. Verify the defined ERP Subitems / ME Ref des display for the appropriate component(s).

4.2 Create a Production Order for a Make to Stock (MTS) Material

After the order is distributed from and successfully processed through MEINT, the Order Merge process executes in ME.

4.2.1 Open Shop Order Maintenance and retrieve the MTS Production Order

      a. Verify Shop Order is imported and created.

      b. Verify serial numbers appear on Serial Number tab (optional)

      c. Verify in the BOM type field the value is Master. Example: 50000356-1-1

      d. Verify in the Routing field the format of the routing contains the Production Routing. Example: 50000356-1

4.2.2 Open Routing Maintenance and retrieve the Master Routing (optional)

NOTE: Since the MTS Production Order should use the current master routing/version this step is optional.

1. Retrieve your *MTS Routing and Version* from Shop Order Maintenance and verify the following on the Main Tab of Routing Maintenance and verify the following

      a. Routing type: Production Routing

      b. Status: Releasable

      c. Current Version: Checked

      d. BOM: contains BOM value/version.

      e. Replication to ERP: Use System Rule Setting.

2. Now select the Routing tab and double click on the first routing step:

      a. Details tab of Routing Step:

      b. Work Center and ERP Work Center contain a value – this is new.

3. Select Substep tab

      a. Verify the substeps display in the table are correct.

      b. Verify the description column contains the description from the LTXA1 field of the ERP suboperation.

      c. Verify the substep details in the table can be edit. Use the first substep, Assemble Frame:

   i. Change the Substep Type to Critical.

   ii. **NOTE:** Substep Timer functionality is available.

  d. Select the details icon in the Details column of this row.

   i. Verify the Substep description is the same as the description from the substep table.

   ii. On the Work Instruction tab, drag a work instruction to the Work Instruction table.

4. Select BOM Component tab for the Routing step

 a. Select BOM Component Tab for the routing step

  i. The folders Traceable and Auto Assembled display applicable components. All Auto-assembly components should have the associated check box selected

  ii. When selecting the first routing step, all components not assigned in ERP should be assigned and will show on the right-side table.

5. Select Work Instruction tab

  i. Insert additional WI to a routing step and or a substep.

4.2.3 Open BOM Maintenance and retrieve the Master BOM (optional)

NOTE: Since the MTS Production Order should use the current master BOM/version this step is optional.

1. Open BOM Maintenance and retrieve the BOM for your order. Note: the BOM type must be Master.

 a. Verify the Assy Operation column is empty.

 b. Verify the defined ERP Subitems / ME Ref des display for the appropriate component(s).

4.3 Begin Production Activity testing for MTO & MTS *New* Process

1. Enter Work Center field and then <u>retrieve</u>.

2. Select SFC from your MTO shop order

3. Select first operation from Operation List.

4. Substep Plug-in is now displayed

 a. Mark first substep as finish. You will see warning message because operation has not been started.

5. Submit the <u>Start</u> action button for order at the first operation.

6. Submit the <u>Shop Order Characteristic</u> action button – you will see the characteristics for the specific Shop Order. (MTO Only)

7. Submit the <u>Component List</u> action button

 a. If System Rule to show autoassembled is TRUE, then all auto assembled components will display with Rem Assy Qty =0 and row is disabled for these components. Select first component and assemble button. CT500 is in sequence mode.

 b. Assembly Components in CT500 at routing step.

8. Submit the <u>Work Instruction</u> List for routing step with work instruction

 a. View Work Instruction attached to routing step

9. Submit the Finish action button for any substeps.

10. Select the unfinish button for a finished step.

 a. Test: ALLOW_UNFINISHED:

 b. Allow_Unfinished activity rule is set to YES

     c. If a Finished substep row is selected, the UNFINISHED button will become enabled

     d. When Unfinished button clicked the status of the substep will change to READY and the FINISHED button will enable

     e. An activity log called substep_unfinish will be written out to the activity log

     f. A substep can only be Unfinished if the operation is not Complete

     g. If the operation is Complete, all rows can be selected and you may view WI and Component attachments

          i. Finished and Unfinished button are not displayed

11. Then select remaining substeps and mark them finish. This will auto_complete the operation if the AUTO_COMPLETE rule is set to Yes. You will see a message that the SFC will be processed at the next operation which is in a different work center.

12. Open Activity Maintenance and retrieve your substep_list activity:

     a. Select the Rules tab and change the ALLOW_SELECT to FIRST_NORMAL.

          i. FIRST_NORMAL, the first Normal substep TYPE row will be automatically selected upon the loading of the substep list plugin

13. After changing the activity rule, select the Home icon in the POD to reset it.

14. Enter the work center field and retrieve.

15. Select the SFC you have been working in the Worklist.

16. Select the second operation in Operation List.

17. Substep Plug-in: the first Normal substep row will be automatically selected upon the loading of the substep list plugin.

18. You can repeat steps 12 through 17 if you have changed a substep in your Configurable Routing to critical, if not you can skip repeating these steps.

     a. If set to FIRST_CRITICAL, the first Critical substep TYPE row will be automatically selected

19. Open Activity Maintenance and retrieve activity: SUBSTEP_LIST_DISPLAY. Select the Rules tab and change the SUBSTEP_MODE to SEQUENCE.

     a. After you have marked substep 1 and 2 finish, select the first substep and submit the Unfinish button.

     b. Since the substep plugin activity rule SUBSTEP_MODE=sequence, a warning will show because there is a subsequent substep in the Finished state.

20. Test - Ability to see All step/oper WI when no selected substeps in the POD

     a. When you select an operation but no substep, then all WI attached to all the substeps in that operation will appear in the WI List.

     b. Then, if you have assigned a work instruction to a substep, select the substep and the WI List should filter to that substep only.

          i. If you view the Work Instruction, and if log viewing is on, then once a WI has been displayed, the View button will have a green check box.