SAP Manufacturing Execution

How-To Guide

How To Set Up and Use Activity Hooks in SAP ME

Applicable Release: ME 6.0

Version 1.3

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Document History

Document Version	Description	Author
1.0	Initial version	Chet Moutrie
1.1	Corrected sequencing of EN520 and DM520 and added Best Practice of using EN521 instead of EN520	Chet Moutrie
1.2	Added info that CHECK_CONFIRM_COMP activity was removed from ME 6.0	Chet Moutrie
1.3	Updated CT520 with info regarding CHECK_TIME_BASED activity rule.	Chet Moutrie

Table of Contents

1 Introduction

1.1 Purpose

The SAP ME How-To-Guide for Setting up Activity Hooks is intended to provide sufficient information to enable activity hooks to be easily configured and readily utilized to meet business needs, making use of available best practices.

1.2 Scope

This document covers all aspects of setting up activity hooks in SAP ME.

1.3 Glossary

Activity	An executable software unit in SAP ME
Activity Hook	See Hook Activity and Hook Point
BOM	Bill of Material
Hook Activity	An SAP ME activity that can be executed automatically at a hook point
Hook Point	A processing point in SAP ME where the execution of an activity can be configured to occur automatically (e.g. at Pre-Complete for an operation)
Item	Previous terminology for a material
Material	A unique manufactured or purchased part that is processed or consumed on the shop floor
Operation	A procedure performed at a resource; an element of a routing
POD	Production Operator Dashboard - configurable SAP ME module designed for use by factory floor operators
Resource	A machine or other piece of equipment used to perform an operation
Routing	A series of operations, or routing steps
SFC	Shop Floor Control unit - a single material or a batch of materials being processed on the shop floor
TBCT	Time Based Component Traceability
Time-Based Resource	A resource where identification of the assembled components is determined based upon the time at which the parent SFC was processed at the resource

2 Overview of Setting up Activity Hooks

2.1 Description and Applicability

You can use activity hooks in the system to automatically perform repetitious routine tasks, such as printing barcode labels and checking assemblies, anywhere along your production lines. Activity hooks allow you to control precisely when and where the system executes these tasks.

2.1.1 What is a Hookable Activity?

Each automatic task that the system can perform for you is made up of a particular set of instructions. Each set of instructions is called a hookable activity. The system comes with a set of hookable activities, however you can also write your own custom hookable activities to meet your specific needs.

2.1.2 What is a Hook Point?

A hook point is a trigger of when and where, during manufacturing, the hookable activity is executed. You can add hookable activities to hook points in the following activities:

- Operation Maintenance
- Routing Maintenance
- Resource Maintenance
- NC Code Maintenance
- Site Maintenance

2.1.3 What is an Activity Hook?

While a bit of a misnomer, an activity hook is a hookable activity assigned to a hook point.

2.1.4 Decisions to Make

When you work with activity hooks, you decide:

- Where you want the system to execute the code.
- When you want the system to execute the code.
- Which hookable activities you want the system to execute.

For example, you may want the hookable activity that prints documents to execute every time a POD operator at a PACK operation clicks **Complete**. This would allow you to print a packing list for each SFC you are ready to ship. You may also want the hookable activity that checks assemblies to execute every time a POD operator at a particular resource clicks **Complete**.

You can also use activity hooks with barcode scanners that work with automatic equipment.

2.2 Business Purposes / Functions

The following are the functions, for setting up hook activities, which are described in section 3:

- Where the System Can Execute Hookable Activities
- When the System Can Execute Code – Hook Points
- Which Hookable Activities the System Can Execute

3 Functions for Setting up Activity Hooks

3.1 Where the System Can Execute Hookable Activities

The system allows you to control where it executes hookable activities. The system can execute hookable activities at the site level or at the individual record level.

At the site level, the system can execute hookable activities whenever any operator throughout your entire site performs certain actions. You create site level activity hooks in Site Maintenance.

At the record level, the system can execute hookable activities each time operators:

- Perform a specific operation (you create the activity hook in Operation Maintenance).
- Perform a specific routing step (you create the activity hook in Routing Maintenance).
- Use a specific resource (you create the activity hook in Resource Maintenance).
- Log a particular NC code (you create the activity hook in NC Code Maintenance).

3.2 When the System Can Execute Code – Hook Points

The system can execute hookable activities at several different points in time. These points in time are called hook points. Hook points allow you to precisely control when the system executes hookable activities.

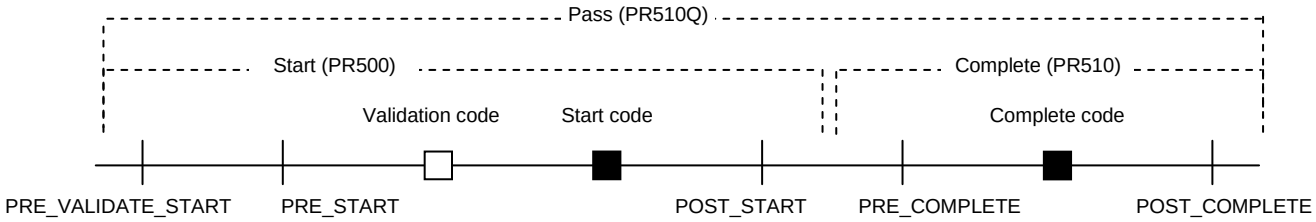
The system has one set of hook points at the object level and another set at the site level. Some hook points are within activities, such as Start (PR500), Complete (PR510), and Serialize (PR550). The hook points that are within activities can be associated with buttons in the POD.

Note: The system executes all code associated with a hook point in the same database transaction. For hook points within POD button activities, the transaction includes a single button activity, such as Start (PR500). If the hookable activity fails, the system rolls back, or cancels, the *entire* transaction. For example, in the illustration below, if you associate Check Configuration (CT520) with the POST_START hook point and the components do not match, the system rolls back the Start as well. This is true of **all** hook points.

3.2.1 Object Level Hook Points

The system provides hook points at the following object-levels: Operation, Resource, and Routing. This means you can set an activity hook for individual operation and resource records and for individual steps on a routing. You create these activity hooks in Operation Maintenance, Resource Maintenance, and Routing Maintenance.

The illustration below shows the object-level hook points that are common to Operation Maintenance, Resource Maintenance, and Routing Maintenance and their relationships to Starts and Completes in the POD:



Note: When the operator selects multiple SFCs, either individually or in a shop order or process lot, the system executes the hooked activity for each SFC selected. If you want the activity to execute only once for the entire set of SFCs, see the following topic, Additional Resource and Operation Level Hook Points.

3.2.1.1 Additional Resource and Operation Level Hook Points

The following table describes additional hook points common to the resource and operation level:

Hook Point	When a Hooked Activity Executes
PRE_BATCH_START	After the operator clicks **Start**, before the system executes the start. The system executes the hooked activity only once for all SFCs the operator selected.
POST_BATCH_START	After the operator clicks **Start**, after the system executes the start. The system executes the hooked activity only once for all SFCs the operator selected.
PRE_BATCH_COMPLETE	After the operator clicks **Complete**, before the system executes the complete. The system executes the hooked activity only once for all SFCs the operator selected.
POST_BATCH_COMPLETE	After the operator clicks **Complete**, after the system executes the complete. The system executes the hooked activity only once for all SFCs the operator selected.

3.2.1.2 Additional Operation Level Hook Points

The following table describes additional hook points available only at the operation level:

Hook Point	When a Hooked Activity Executes
PRE_SIGNOFF	After the operator clicks **Signoff**, before the system executes the signoff.
POST_SIGNOFF	After the operator clicks **Signoff**, after the system executes the signoff.

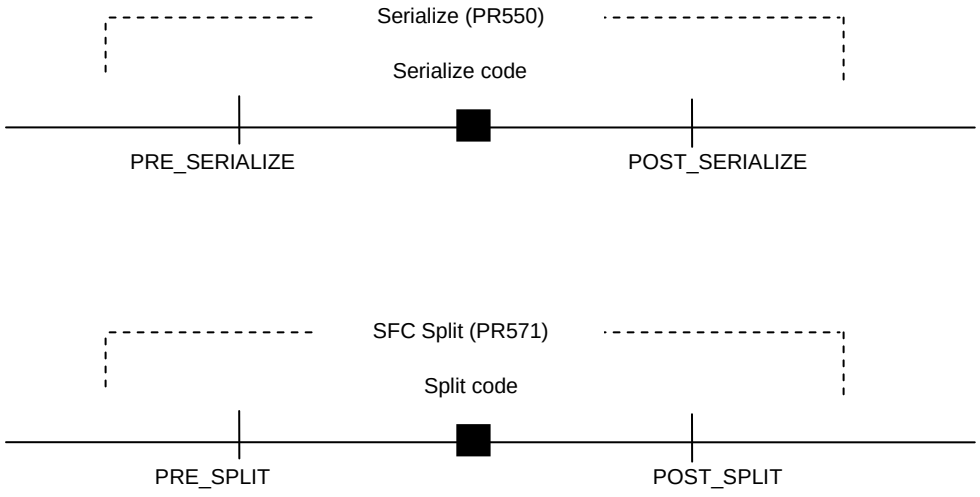
3.2.1.3 Additional NC Code Level Hook Points

The following table describes additional hook points available only when an operator or machine logs an NC against one or more SFCs:

Hook Point	When a Hooked Activity Executes
PRE_DISP	After the operator logs the NC and before the system sends the SFC to its new destination or state, such as USEABLE_AS_IS.
POST_DISP	After the operator logs the NC and after the system sends the SFC to its new destination or state, such as USEABLE_AS_IS.

3.2.2 Site Level Hook Points

The illustration below shows the site-level hook points that relate to serialization and split in the POD:



The following table describes the site-level hook points:

Hook Point	**When a Hooked Activity Executes**
POST_ORDER_RELEASE	After the system releases a shop order to the shop floor.
POST_PROD_CHANGE	After the user clicks **Save** in Change Production. Use with a custom hookable activity. The hook point passes old and new values for the material, routing, BOM and/or shop order to the activity.
PRE_MERGE	After the user clicks **Merge** in SFC Merge, before the system merges SFCs.
POST_MERGE	After the user clicks **Merge** in SFC Merge, after the system merges SFCs.
POST_SERIALIZE	After the user clicks **OK** in Serialize, after the SFC is serialized.
POST_SPLIT	After the user clicks **OK** in SFC Split, after the SFC is split.
PRE_RMA_SFC_RECEIPT	After the user clicks **Done** in RMA SFC Receipt, before the system adds the SFCs to the RMA shop order.
PRE_SERIALIZE	After the user clicks **OK** in Serialize, before the SFC is serialized.
PRE_SPLIT	After the user clicks **OK** in SFC Split, before the SFC is split.
POST_RMA_SFC_RECEIPT	After a user clicks **Done** in RMA SFC Receipt, after the system adds the SFCs to the RMA shop order.
POST_CONTAINER_SAVE	After the user clicks **Save** or **Close Container** in Pack/Unpack.
POST_CONTAINER_CLOSE	After the user clicks **Close Container** in Pack/Unpack.
PRE_PACKING_SFC	After the user clicks **Add** in Pack/Unpack, before the system adds the SFC to the container.
PACKING_VALIDATION	After the user clicks **Add** in Pack/Unpack, before the system adds the SFC to the container.
REOPEN_CONTAINER	After the user clicks **Unpack** in Pack/Unpack.
CALC_DIMENSIONS	After the user clicks **Close Container** in Pack/Unpack.
ADD_COMPONENT	After the user clicks **Add** on the Add Component window of As-Built Configuration.
REMOVE_COMPONENT	After the user clicks **Scrap**, **Return**, or **Send To Routing** on the Remove Component window of As-Built Configuration.
POST_ORDER_CLOSE	After the system closes a shop order and the status of the shop order changes to “Done”.

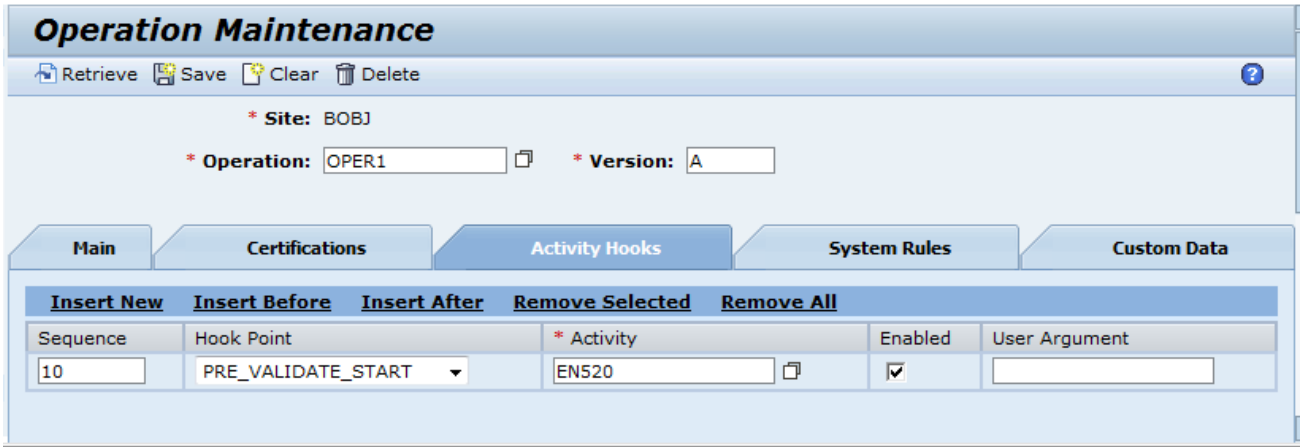
Hook Point	When a Hooked Activity Executes
POST_PL_REMOVE	After an SFC is removed from a process lot in the Process Lot activity (PR560).
POST_PL_ADD	After an SFC is added to a process lot in the Process Lot activity (PR560).
POST_INV_RECEIPT	After an Inventory ID is received and added to the floor stock
PARSE_COMPONENT	See section below for more details
PARSE_SLOT_COMPONENT	See section below for more details

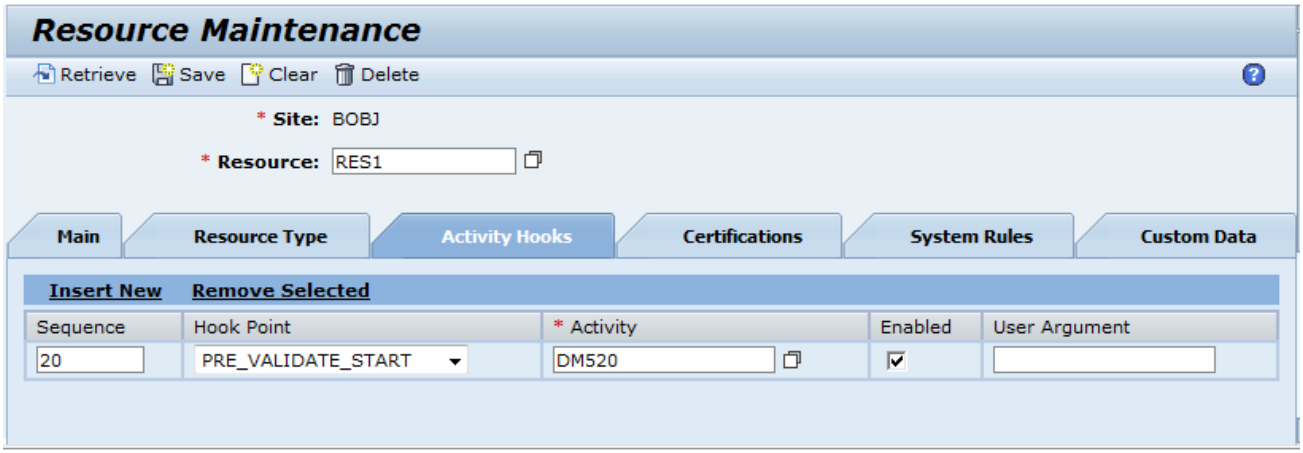
3.2.3 Sequencing Object-Level Hook Points

When you create activity hooks, you use the Activity Hooks tab in the maintenance activity you want. Each Activity Hooks tab contains a table in which you associate a hookable activity with a hook point for that object. When the hook point occurs, the system executes the associated activity. When the system executes hookable activities, the activities store and retrieve information in the database.

The table on the Activity Hooks tab also contains a Sequence column. If you assign more than one activity the same sequence number and the same hook point, when the hook point occurs, the system executes each activity in the order that it reaches the database. To avoid unexpected results, ensure that each object-level activity hook associated with the same hook point has a different sequence number.

For example, you should run the Check Next Number (EN520) or Check Mask Validation (EN521) activity before the Create SFC (DM520) activity. If you hook both activities to the PRE_VALIDATE_START for the operation OP1 and the resource RES1, you must use different sequence numbers to control the order the system executes the activities. When you use different sequence numbers, such as 10 and 20, when the operator who enters OP1 and RES1 in the POD clicks the Start button, the system executes sequence 10 first and sequence 20 second:





3.2.4 The PARSE_COMPONENT and PARSE_SLOT_COMPONENT Hook Points

In addition to the other hook points, the system includes two hook points specific to component traceability:

- PARSE_COMPONENT, that resides in Assembly Point (CT500), and relates to manual/discrete component traceability.
- PARSE_SLOT_COMPONENT, that resides in Resource Slot Config Setup (EN530) and Load or Replenish (EN531), and relates to time-based component traceability (TBCT).

Activity hooks at these hook points allow operators to enter component and/or slot identifiers you use on your floor that the system doesn't recognize. You must write a custom hookable activity to work with these hook points. A software developer's kit (SDK) is available for SAP ME. For more information, see the SDK Implementation Guide available with the SASP ME SDK.

3.3 Which Hookable Activities the System Can Execute

The system includes many hookable activities you can use:

- Adjust Production End Time (ADJUST_PROD_COMPLETE)
- Adjust Production Start Time (ADJUST_PROD_START)
- ADS Document Print (SY521)
- Auto As Built (AUTO_ASBUILT)
- Auto Assemble Component (AUTOASSY_COMPONENT)
- Auto Signoff SFCs (AUTO_SIGN_OFF_SFCS)
- Award Unclaimed Standards (AWARD_UNCLAIMED_STDS)
- Barcode Parser (BARCODE_PARSER)
- Check Buyoff (CHECK_BUYOFF)
- Check Configuration (CT520)
- Check Confirm Components (CHECKCONFIRM_COMP) – Removed in ME 6.0
- Check Mask Validation (EN521)
- Check Next Number (EN520)
- Check Resource Setup (CHECK_RESOURCE_SETUP)

- Check SFC Data (CHECK_SFC_DATA)
- Check SFC LCC (LT300)
- Check SFC(s) for open NCs (NC520)
- Create SFC (DM520)
- Create Shop Order Batch Number (CREATE_BATCH)
- Check Time (CHECK_TIME)
- Check Time-Sensitive Components (CHECK_TSM_COMPONENTS)
- Data Collection Limits Check (DC521)
- Document Print (SY520)
- Elapsed Time in Process (ELAPSED_TIME_CHECK)
- Load CNC Program (LOAD_CNC_HOOK)
- Log Tool Check (LOG_TOOL_HOOK)
- Open Data Collections Check (DC520)
- Parametric SFC Check (TP110)
- Post Split/Serialize - Copy CT Data (CT999)
- Post Split/Serialize - Copy DC Data (DC999)
- Post Split/Serialize - Copy NC Data (NC999)
- Post Split/Serialize - Copy Tool Data (TOOL999)
- Post Split/Serialize - Copy WI View Data (WI999)
- Reset Tool Status (RESET_TOOL_HOOK)
- SFC Quantity Multiplication (PR597)
- Slot Quantity Decrement (SLOT_QTY_DECREMENT)
- Stop Time-Sensitive Clock (STOP_TIME_SENS_CLOCK)
- Unload CNC Program (UNLOAD_ CNC_HOOK)
- Verify Bin Location (BIN_VERIFY)
- WIP Change (SU570)

A software developer's kit (SDK) is available for SAP ME. For more information, see the SDK Implementation Guide available with the SASP ME SDK.

The following table describes the hookable activities that come with the standard system:

Hookable Activity	Description	Hook Points and Uses
Adjust Production End Time (ADJUST_PROD_COMPLETE)	Corrects the operator's productive time by adjusting the complete time by a fixed amount. This allows you to account for delays in sending the complete message from an automated production machine.	Used with the PRE_COMPLETE hook point.
Adjust Production Start Time (ADJUST_PROD_START)	correct the operator's productive time by adjusting the start time by a fixed amount. This allows you to account for delays in sending the start message from an automated production machine.	Used with the PRE_START hook point.

Hookable Activity	Description	Hook Points and Uses
ADS Document Print (SY521)	Prints documents, created from master data from SAP Manufacturing Execution, through SAP NetWeaver Adobe Document Server (ADS).	Used with the following hook points at the operation, routing step, and resource: PRE_COMPLETE POST_COMPLETE PRE_START POST_START
Auto As Built (AUTO_ASBUILT)	Creates "planned" as-built configuration records for all the installation orders that are released with a production order.	Used with POST_ORDER_RELEASE hook point.
Auto As Built (AUTO_ASBUILT)	Updates "planned" as-built configuration records to "assembled" for all the installation orders that are released with a production order.	Used with POST_ORDER_CLOSE hook point.
Auto Assemble Component (AUTOASSY_COMPONENT)	When a BOM for an SFC contains components whose assembly data type is NONE and a defined assemble operation, these components will be automatically assembled and saved to the SFC Build History record. This can occur upon shop order release or at a specific operation.	Commonly used with PRE_START, PRE_COMPLETE, and POST_ORDER_RELEASE.
Auto Signoff SFCs (AUTO_SIGN_OFF_SFCS)	Automatically move SFC numbers from the POD Work List to the Browse Work List. When an SFC number is moved, its status changes from Active to In Queue.	
Award Unclaimed Standards (AWARD_UNCLAIMED_STDS)	Award all unclaimed standards when an operation/step is completed or when the last open operation of the SFC number is completed and before the SFC number status changes to Done. The hook automatically awards the balance of the standards for an operation/step or SFC number once the user has completed it. If no standards have been claimed through the Earned Standards activity, then the hook will be the vehicle for awarding all earned standards. The user who completes the operation gets the credit for the remaining unclaimed standards, both for operations and for the SFC number.	Used only with the POST_COMPLETE hook point.

Hookable Activity	Description	Hook Points and Uses
Barcode Parser (BARCODE_PARSER)	Parses two-dimensional (2D) barcodes when shop floor operators scan barcodes on documents, tags, packaging, or components to populate data about a material.	Used with either a material or with the PARSE_COMPONENT hook point at the site level
Check Buyoff (CHECK_BUYOFF)	Validates that all buyoffs have been closed before proceeding to the next operation.	Can be at any hook point.
Check Configuration (CT520)	Compares the components in the build history of an SFC that is a parent assembly to its BOM. Depending on option settings, can fail the assembly when component or their quantities do not match BOM specifications. To use with time-based component tracking, the activity rule CHECK_TIME_BASED must be set to True for activity CT520. If operators use this activity with multiple SFCs or process lots, if one SFC in the group fails, the system fails the entire group. **Note**: This hook works only if the SFC is on the Production routing.	Commonly used with PRE_COMPLETE, POST_COMPLETE. Use with the last operation on a routing to ensure the shipped product is complete. Use at other operations to ensure complete product is sent to the next step, especially when it's another part of the plant.
Check Confirm Components (CHECKCONFIRM_COMP)	Checks for unconfirmed Kit components for an SFC at an operation on a production routing. **Note: This activity was removed from the activity list in ME 6.0 and is no longer available for use.**	Commonly used with PRE_START and PRE_COMPLETE.
Check Mask Validation (EN521)	Performs mask validation on data element: SFC, External Serial Number, External Lot, Vendor Lot, or Vendor Date Code specified on the Rules tab of Activity Maintenance. Mask is set up in Validation Mask Maintenance.	Commonly used with manual assembly, resource replenishment, or logging nonconformances.
Check Next Number (EN520)	Compares the SFC with the SFC-release pattern defined in Next Number Maintenance. Depending on option settings, can also check the length of the entry. This activity is obsolete. Best Practice is to use Check Mask Validation (EN521) instead.	Use with PRE_START or PRE_VALIDATE_START. Be sure to sequence properly. For operators, use with Create SFC (DM520). Make sure the system runs Check Next Number (EN520) before Create SFC (DM520).

Hookable Activity	Description	Hook Points and Uses
Check Resource Setup (CHECK_RESOURCE_SETUP)	Prevents the Start of an SFC number in the POD under conditions controlled by the activity rule settings.	Used at the resource, operation, or routing step level with the PRE_START, PRE_BATCH_START, and PRE_VALIDATE_START hook points.
Check SFC Data (CHECK_SFC_DATA)	Prevents start or complete of SFC number, if required SFC data has not been collected.	Used at resource, operation, or routing step level with the following hook points: PRE_START, PRE_BATCH_START, POST_START, POST_BATCH_START At these hook points, the activity checks all previous operations on the current routing to ensure that all required SFC data has been collected and passed the validations. If SFC data has been collected, SFC number is started. PRE_COMPLETE, PRE_BATCH_COMPLETE, POST_COMPLETE, POST_BATCH_COMPLETE At these hook points, the activity checks the current operation and all previous operations on the current routing to ensure that all required SFC data has been collected and passed all validations. If SFC data has been collected, SFC number is completed and placed in queue at the next operation. If the operation is the last operation on the production routing, the SFC number status is changed to *Done*.
Check SFC LCC (LT300)	Checks if the SFC number exists and that it has a valid labor charge code (LCC) assigned (see Labor Charge Code).	Used with PRE_START hook point.
Check SFC(s) for open NCs (NC520)	Stops execution of the activity in which the hook point resides when the SFC has one or more open NCs.	Commonly used with PRE_COMPLETE, POST_COMPLETE, POST_CONTAINER_SAVE, POST_CONTAINER_CLOSE.

Hookable Activity	Description	Hook Points and Uses
Create SFC (DM520)	Creates a new SFC number when: Operators enter a non-existing SFC number in the POD. A machine sends a Start message with a non-existing SFC number to the system. Uses the material or shop order defined for the operator's resource in Resource setup.	Use only with PE_START or PRE_VALIDATE_START at Operation or Resource objects (not Routing Steps). Often used with automatic equipment, such as barcode scanners that work with pick and place machines. For more information, see the SAP ME online help for Resource Setup. For operators, use with Check Next Number (EN520) or Check Mask Validation (EN521). Make sure the system runs the check activity before Create SFC (DM520).
Create Shop Order Batch Number (CREATE_BATCH)	Automatically generates and assigns a batch number to the shop order upon completion of the first SFC. Does not generate a batch number, if the shop order already has a batch number assigned. **Note**: This functionality is used for Inventory Management when there is an SAP Integration with SAP Manufacturing Execution.	Commonly used only with PRE_COMPLETE for operation, resource, and routing step.
Check Time (CHECK_TIME)	Checks the difference, between the current date and time and the date and time of the start of the SFC number with the *In Queue* status, against the user argument value.	
Check Time-Sensitive Components (CHECK_TSM_COMPONENTS)	Validates all time-sensitive components within an SFC number, and nested SFC numbers, to assure they have not expired before they are assembled.	
Data Collection Limits Check (DC521)	Checks all operations on the routing up to the current operation to verify if all "current" Data Collections that have been logged against current SFC are within the defined **Min**/**Max** thresholds. Checks all operations on the routing up to the current operation. Any Data Collection re-collected will be treated as being updated with the newer value and only the most recent DC will be checked.	Commonly used with data collection.

Hookable Activity	Description	Hook Points and Uses
Document Print (SY520)	Prints documents you have set up both in the system and a third-party printing program (most often Abode and Loftware). See "Setting Up Printing" in the SAP ME How-To-Guide - Setting Up Production Lines and the SAP ME How-To-Guide - Printing for more information.	Commonly used with PRE_COMPLETE, POST_COMPLETE, and PRE_ and POST_START.
Elapsed Time in Process (ELAPSED_TIME_CHECK)	Ensures that each SFC number has been Active at an operation for the required amount of time. If the elapsed time is less than the required process time, the system does not allow an operator to complete the SFC. If an SFC number is restarted at an operation as a result of Sign Off, SFC Step Status Change, or following logging a nonconformance, the system sets the operation's Start date and time for the SFC number to the current date and time.	
Load CNC Program (LOAD_CNC_HOOK)	Validates whether there is a CNC program assigned to the material/routing/step id/resource relationship. Depending on the results, the CNC program can be downloaded from the CNC/DNC Server specifies in System Rule Maintenance to the machine via the CNC/DNC system.	Can be at any START hook point.
Log Tool Check (LOG_TOOL_HOOK)	Validates that tools required for an SFC number at current point are logged or set up on the resource.	Used with the Start or Complete hook points at resource, operation, or routing step level.
Open Data Collections Check (DC520)	Checks the current operation/resource to verify if all the required data collection fields have been collected.	Commonly used with data collection.
Parametric SFC Check (TP110)	Determines whether an SFC number passed the test at the last place it was tested. Depending on the results, the system can send the SFC number to the appropriate routing.	Used as a prestart command for an operation to verify that the SFC number passed the last test.
Post Split/Serialize - Copy CT Data (CT999)	Copies component traceability records from the original SFC number to the new SFC numbers that result from serialization, split, or relabel.	Used with the POST_SPLIT and POST_SERIALIZE hook points.

Hookable Activity	Description	Hook Points and Uses
Post Split/Serialize - Copy DC Data (DC999)	Copies or moves the DC data from the original SFC to the new SFCs that result from a serialization, split, or relabel. If an operator splits, serializes, or relabels the entire quantity of an SFC to a new SFC, the system moves data collection records from the original SFC to the new SFC. If an SFC split, or serialization results in multiple SFCs, the system copies data collection records from the original SFC to the new SFCs. **Note**: Only if the Copy DC Data system rule is set to true and this activity is hooked at the site level, the DC data is copied or moved.	Commonly used with POST_SPLIT and POST_SERIALIZE.
Post Split/Serialize - Copy NC Data (NC999)	Copies the nonconformance (NC) data from the original SFC number to the new SFC numbers that result from a serialization, split, or relabel. Note: NC data is copied only if the Copy NC Data system rule is set to true and this activity is hooked at the site level.	Used with POST_SPLIT and POST_SERIALIZE hook points.
Post Split/Serialize - Copy Tool Data (TOOL999)	Copies or moves the data about tools logged on the original SFC number to the new SFC numbers that result from serialization, split, or relabel activities.	Used with the POST_SPLIT and POST_SERIALIZE hook points.
Post Split/Serialize - Copy WI View Data (WI999)	Copies or moves work instruction view log records from the original SFC number to the new SFC numbers that result from serialization, split, or relabel.	Used with the POST_SPLIT and POST_SERIALIZE hook points.
Reset Tool Status (RESET_TOOL_HOOK)	Automatically changes the resource status from Productive to Enabled after the tool was used to process and complete SFC number.	Used with PRE_COMPLETE or POST_COMPLETE hook points at the operation or resource level.

Hookable Activity	Description	Hook Points and Uses
SFC Quantity Multiplication (PR597)	Automatically multiplies the SFC's quantity by a multiplier defined in the SFC's material definition. An SFC can be multiplied only once. If an SFC passes through two operations set to perform a multiplication, the system ignores the second multiplication.	Can be at any START or COMPLETE hook point. Most often used at POST_COMPLETE. If set at a hook point other than POST_COMPLETE, also set at PRE_SIGNOFF or POST_SIGNOFF so multiplication is reversed if the SFC is signed off before completion.
Slot Quantity Decrement (SLOT_QTY_DECREMENT)	Decrements the SLOT_QTY value based on the SFC BOM quantity for the time-based components. You can use the minimum quantity message and the zero quantity message to alert about this situation. This activity can be configured at the operation, resource, or routing step. We recommend that you use it at the resource level.	Used with the PRE_START and PRE_COMPLETE hook points.
Stop Time-Sensitive Clock (STOP_TIME_SENS_CLOCK)	Halts the shelf and floor life clocks for TSM components that have been consumed into an SFC number and are no longer time sensitive.	
Time-Based Tool to Discrete (TB_TOOL_TO_DISCRETE)	Logs tools set up on a time-based resource against a specific SFC number. When executed, all tools set up on the resource and required for an SFC number at the current time will be logged in the same tables as the tools logged manually	Normally attached at the PRE_COMPLETE hook point. It also can be attached at the PRE_START, POST_START or POST_COMPLETE hook points. For other hook points, this activity exits silently without executing.
Unload CNC Program (UNLOAD_ CNC_HOOK)	Validates where there is a CNC program assigned to the material/routing/step id/resource relationship and loaded to the machine. Depending on the results, the CNC program is unloaded (removed) in the machine via the CNC/DNC system.	Can be at any COMPLETE hook point.
Verify Bin Location (BIN_VERIFY)	Verifies that the entered value is a valid bin for a material.	
WIP Change (SU570)	Automatically performs the Change Production function, but requires custom coding. Use the public API (ChangeProductionServiceInterface) instead of this hook activity.	Used at any PRE_START or POST_COMPLETE hook point.

4 Integration

Not Applicable

5 Setting up Products

5.1 Setting Up Activity Hooks

If desired, change the option settings for the hookable activity in the Rules tab in Activity Maintenance.

Note: For the Document Print (SY520) activity, add the name of one or more documents in the **Setting** column on the Rules tab. See "Setting Up Printing" in the SAP ME How-To-Guide - Setting Up Production Lines.

Do one of the following:

- For a site-level hook point, retrieve the record you want in Site Maintenance and create the activity hook on the Activity Hooks tab.
- For an object-level hook point, retrieve the record you want in Operation, Resource, Routing, or NC Code Maintenance. In Operation, Resource, and NC Code Maintenance, create the activity hook on the Activity Hooks tab. In Routing Maintenance, double-click the operation routing step and create the activity hook in the Operation Properties window.
- For a PARSE_COMPONENT or PARSE_SLOT_COMPONENT hook point, see corresponding topic in this section.

5.1.1 Setting Up Activity Hooks at PARSE_COMPONENT

You create a PARSE_COMPONENT activity hook in Material Maintenance for a particular component or on the Activity Hooks tab in Site Maintenance for all components used at all assembly points in the site.

This activity hook associates:

- Your custom hookable activity.
- The PARSE_COMPONENT hook point.
- The component record defined in Material Maintenance or the site defined in Site Maintenance.

To set up an activity hook at the PARSE_COMPONENT hook point:

1. Create the custom hookable activity.
2. Add the custom activity to Activity Maintenance.
3. To create the activity hook for a particular component, in Material Maintenance:
   a. Retrieve or create the material record for the component.
   b. In the **Assembly Pt Parsing Activity** field, enter the custom activity's activity ID.

c. In the **User Argument** field, enter the values your custom activity needs from Assembly Point.
d. On the Build tab, select the component's assembly data type in the **Data to Collect on Assembly** field.

4. To create the activity hook for all components used at all assembly points in the site, in Site Maintenance:
   a. Retrieve the site.
   b. On the Activity Hooks tab, select **PARSE_COMPONENT** in the Hook Point column.
   c. In the Activity column, enter the custom activity's activity ID.
   d. In the **User Argument** column, enter the values your custom activity needs from Assembly Point (CT500).

5.1.2 Setting Up Activity Hooks at PARSE_SLOT_COMPONENT

You create a PARSE_SLOT_COMPONENT activity hook in on the Activity Hooks tab in Site Maintenance for all components used during Resource Slot Config Setup and/or Load or Replenish in the site. This activity hook associates:

- Your custom hookable activity.
- The PARSE_SLOT_COMPONENT hook point.
- The site defined in Site Maintenance.

To set up an activity hook at the PARSE_SLOT_COMPONENT hook point:

1. Create a custom hookable activity.
2. Add the custom activity to Activity Maintenance.
3. In Site Maintenance:
   a. Retrieve the site.
   b. On the Activity Hooks tab, select **PARSE_SLOT_COMPONENT** in the Hook Point column.
   c. In the Activity column, enter the custom activity's activity ID.
   d. In the **User Argument** column, enter the values your custom activity needs from Resource Slot Config Setup (EN530) and/or Load or Replenish (EN531).

6 Usage Scenario Examples

Some frequently used hookable activities are:

- Create SFC
- Document Print
- Check Configuration
- SFC Quantity Multiplication
- Check SFC for Open NC

Below are some common scenarios for these hookable activities.

6.1 Create SFC

Create SFC is commonly used with automatic equipment, such as barcode scanners that work with automated machines. This allows the system to create the SFC the first time it is seen by the system. This avoids the need to release demand before materials can be produced on the shop floor.

The only valid hook point for Create SFC is PRE_VALIDATE_START. Create the activity hook in Resource Maintenance.

6.2 Document Print

Document Print is commonly used to create barcode labels. It is typically used with the POST_COMPLETE hook point at the first step on the routing. For packing lists, Document Print is used with the last step on the routing. The activity hook is often created in Resource Maintenance or in Operation Maintenance, if several operators perform printing. See "Setting Up Printing" in the SAP ME How-To-Guide - Setting Up Production Lines.

If the operator experiences printer problems, he or she can use the Document Reprint production activity.

Note: Make sure you have given this operator permission to use the Document Reprint production activity.

6.2.1 Document Print Example

In the Operation Maintenance activity, you might set up a POST_COMPLETE hook for operation INSERT associated with activity SY520-LABEL, to print labels for boards where they enter the assembly line. You might also set up a POST_START hook for operation PACK associated with activity SY520-PACK, to print a packing list for finished products before they are packed.

6.3 Check Configuration

Check Configuration is used typically at assembly points with the PRE_COMPLETE hook point, or with the PRE_START hook point on the next routing step. In the latter case, create the activity hook in the operation routing step in Routing Maintenance.

Typically, Check Configuration is used with the last operation on a routing to ensure the shipped product is complete. It is also used at other operations to ensure complete product is sent to the next step, especially when it's another part of the plant.

6.4 SFC Quantity Multiplication

SFC Quantity Multiplication is used typically at operations where operators or machines cut SFCs into pieces but the SFCs continue to be tracked under the same SFC number. Such operations often are called DICE operations.

Note: In many cases, a later operation after the SFC Quantity Multiplication operation is a step where operators run Serialize to serialize the multiplied SFC into individual unit SFCs.

To configure this activity, do the following for each operation where you want to run the activity:

In Operation Maintenance, define the operation where you want the SFC quantity to be multiplied so:

- SFC Quantity Multiplication runs at one of the Start or Complete activity hooks of the operation. POST_COMPLETE is recommended so that SFC Multiplication runs only if the SFC is completed successfully.
- If you run SFC Quantity Multiplication at a hook point other than POST_COMPLETE, also set it to run at one of the Signoff hooks of the operation to set the SFC quantity, since it did not complete the operation.

In Material Maintenance, for each material you want multiplied, enter in the **Qty Multiplier** field the number you want the material's quantity multiplied by.

Note: The entry in the **Qty Restriction** field in Material Maintenance may limit how operators can multiply quantity. For example, if the field is set to **Only 1.0**, the operator cannot multiply the SFC by any number other than 1.

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7 Links to Additional Information

SAP ME online Help

8 Other Reference Material

SAP ME How-To-Guide – Setting up Activity Rules

SAP ME How-To-Guide – Printing

SAP ME How-To-Guide – Setting up Production Lines

9 Overview of Changes

Not applicable