Working with Parameter Effectivity

Release 4.6C

SAP™

Copyright

Icons

Icon	Meaning
⚠	Caution
🗨	Example
💡	Note
🧭	Recommendation
SYN	Syntax

Contents

Working with Parameter Effectivity

Purpose

When you process an object (such as a BOM item) using a particular change number for the first time, the system generates a new processing status (change status [Ext.]). If your organization does not use parameter effectivity, these changes simply have time-related validity, which means that a change status's validity extends from its valid-from date to immediately before the valid-from date of the change status following.

However, if you **do** use parameter effectivity, you can also make a change status's validity dependent on other criteria, such as serial number or customer.

Prerequisites

In *Engineering Change Management* Customizing you have set the *Parameter effectivity* indicator in *Setup control data.* You have made settings for *Parameter Effectivity* according to your requirements. This may have included defining effectivity parameters [Page 6] and types [Page 8] for your organization, if required.

Process Flow

1. You create a change master record with parameter effectivity.

   In the change master record you define the effectivity criteria, according to which you want the changes you make with reference to this change master record, to be effective. For more information, see Create Change Master Records with Parameter Effectivity [Page 17].

2. You process one or more objects with reference to this change master record.

   For each object (such as a BOM item) you process for the first time, with reference to a particular change master record, the system generates a new change status. For more information, see Processing an Object [Page 20].

3. In various operational areas (such as when you create a sales order) you assign values to the effectivity parameters. For more information, see Parameter Variant [Page 29].

   Other processes, such as planning runs, take the parameter variant you entered in the sales order into account.

   The system determines the valid change status, for all objects you create with reference to change master records with parameter effectivity. For more information, see Selection of Valid Change Statuses [Page 35].

Effectivity Parameter

Define

Data used to define parameter effectivity.

Use

You use effectivity parameters to define effectivity types. More than one effectivity parameter may be required.

In a change master record with parameter effectivity you assign single values or interval values to the effectivity parameters. You do this to define the criteria according to which the change statuses, which are generated with reference to this change master record, are valid.

To determine the effective change statuses for a product to be assembled, you have to assign values to the effectivity parameters.

Structure

An effectivity parameter's attributes are defined in Customizing by

- The data element that is assigned to it

  You can assign any data element with the CHAR or NUMC data type and a maximum length of 30 characters, to an effectivity parameter.

  You can assign those values to an effectivity parameter that are allowed for the assigned data element. For example, the data element CC_SERNR is assigned to the SERNR effectivity parameter. As any strings up to 18 characters long are allowed for CC_SERNR, the same character strings can also be assigned to SERNR.

- Its parameter type

You assign one of the following parameter types to an effectivity parameter:

Type	In the change master record a parameter can be assigned	Example:
S (single value)	A single value	You assign the single value *123*.
I (closed interval)	A single value A closed interval	You assign the closed interval "between *123* and *456*".
O (open interval)	A single value A closed interval An open interval	You assign the open interval "greater than *456*".

Multiple single values or intervals are also possible.

If you want to restrict the possible entries for an effectivity parameter you can

- Assign a check table to an effectivity parameter

  When you enter a value for this parameter, the system checks whether the value is given in the table.

- Assign fixed values to the data element

    When you enter a value for this parameter, the system checks whether the value corresponds to one of the fixed values.

You define effectivity parameters in Customizing for Engineering Change Management, in the *Parameter effectivity → Define parameters* activity.

Integration

Multiple effectivity parameters are grouped to form an effectivity type.

Effectivity Type

Define

Type of parameter effectivity. An effectivity type groups together one or more effectivity parameters.

Use

You select an effectivity type when you create a change master record with parameter effectivity. An effectivity type specifies which effectivity parameters you have to assign values to, to define the parameter effectivity.

An effectivity type determines how you respond to the question "According to which criteria is change status *A* for object *X* effective?". If you **do not** use parameter effectivity, you always respond with a date (such as "from January 01, 2005"). However, if you do use parameter effectivity and the SERNR effectivity type, you respond with a material and a serial number (such as "If object *X* has material number *123* and a serial number between *456* and *789*").

Structure

An effectivity type is defined in Customizing by

- One or more effectivity parameters

    The maximum number of effectivity parameters you can assign to an effectivity type depends on the type of the effectivity parameter: A change master record's effectivity can be defined by a total of 18 values. These values correspond to the columns on the *Effectivity* screen in the change master record.

An effectivity parameter with the parameter type	Requires
Single value (S)	1 value
Closed interval (I)	2 values
Open interval (O)	3 values

    So an effectivity type can consist, for example, of 18 parameters with the *single value* type or six of the *open interval* type. So the effectivity data remains clear we recommend you assign a maximum of four effectivity parameters to an effectivity type.

- Its priority

    If you have processed an object (such as a BOM) with reference to multiple change master records with different effectivity types and more than one change status fulfills the parameter variant, the system determines the effective change status by the priority. For more information, see .

In the R/3 standard system, the effectivity types *SERNR* (serial number) and *DATE* (time interval) are defined. If your organization requires special effectivity types, you can define these yourself.

Example: Effectivity Types in the Standard System

There are two effectivity types in the standard R/3 system (*time interval* and *serial number interval*).

- **Serial number (SERNR)**

You can define the effectivity of an assembly for a specific finished product depending on the serial number.

The SERNR (serial number) effectivity type is also defined by the effectivity parameters in the standard system.

- MATNR (single value)
- SERNR (open interval value)

The priority value 20 defined as standard in the system.

SERNR Effectivity Type (Schematic)

⚠️
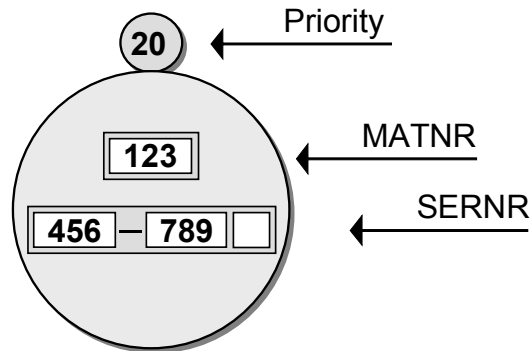
Remember the changes that you make with reference to a change number with parameter effectivity are only effective if you have **valuated** the effectivity parameters accordingly. The mere **use** or a specific serial number in the processes of requirements planning and production is **not** sufficient for a change to become operative.

- **Date interval (DATE)**

For example, you can use the *date interval* effectivity type if you want to react quickly to season-related changes in the market and introduce a product change (for example, a change in the color or accessories) for a limited period of time (for example, March to October).

The DATE (*date interval*) effectivity type is only defined by an effectivity parameter in the standard system.

- DATE (open interval value)

The priority value 10 defined as standard in the system.

Example: Effectivity Types in the Standard System

DATE Effectivity Type (Schematic)
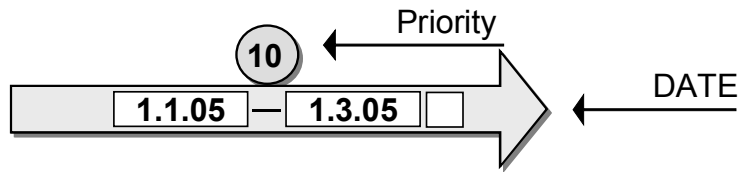
Example: Company-Specific Effectivity Types

Single effectivity parameters

You are an aircraft manufacturer, producing aircraft for two different airlines. You use different seat fabric for each airline. When you create a sales order you want the system to select the correct seat fabric automatically, depending on the customer (airline).

1. You first define the CM effectivity parameter with the *single value* (S) parameter type in Customizing.

CM Effectivity Parameter

2. You define the CUSTOMER effectivity type. This contains the CM effectivity parameter. You assign priority 30 to the CUSTOMER effectivity type.

CUSTOMER Effectivity Type
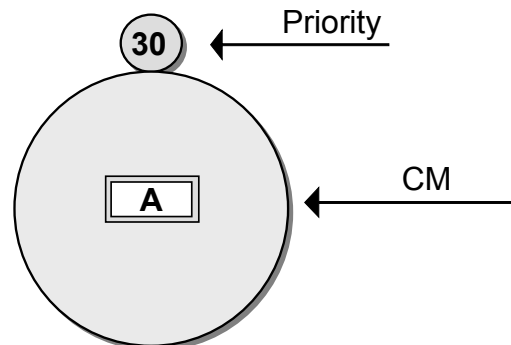
You can enter several types of seat fabric in the BOM for an aircraft, and specify exactly which material item (seat fabric) is valid for which customer (airline).

Combination of Parameters

When you define an effectivity type in Customizing, you can also assign **several** parameters to this effectivity type, such as CM and DATE. In this case, you can make a change that is effective within a limited time interval for a specific customer.

Effectivity Profile

Define

Group of settings for parameter effectivity [Ext.]. In an effectivity profile you activate one or more effectivity types.

An effectivity profile can be assigned to a client [Ext.] or certain materials. An effectivity profile restricts the number of effectivity types [Ext.] available, among those that are available in the chosen client or for the chosen material.

Structure

In an effectivity profile up to ten effectivity types [Ext.] can be active. You maintain effectivity profiles in Customizing for *Engineering Change Management*, in the *Parameter Effectivity* → *Maintain Effectivity Profiles* activity. There you create effectivity profiles and define which effectivity types are active in the effectivity profile.

You can maintain single-client and material-specific effectivity profiles in the same Customizing activity (*Engineering Change Management* → *Parameter Effectivity* → *Maintain Effectivity Profiles*). These only differ from one another according to their usage. When you

- Define an effectivity profile for a client, this is described as a **single-client** effectivity profile. For more information, see Single-Client Effectivity Profile [Page 13].

- Assign an effectivity profile to one or more materials, it is described as a **material-specific** effectivity profile. For more information, see Assigning Materials to Effectivity Profiles [Page 14].

Single-Client Effectivity Profile

Use

You set a single-client effectivity profile when you only want to work in a client with some of the effectivity types that are available in your system. This is particularly worthwhile if you have defined many effectivity types in your system.

Prerequisites

In Customizing for engineering change management, you have created an effectivity profile in the *Parameter effectivity → Maintain effectivity profiles* step. You have assigned the effectivity types to this effectivity profile that you want to use in your client.

Features

When you assign an effectivity profile to a client, in this client you only continue working with those effectivity types that are active in the effectivity profile:

- When you create a change master record you can only select those effectivity types that are active in the effectivity profile.

- When you assign values to effectivity parameters [Ext.], the system only displays those effectivity parameters in the *Assign Effectivity Parameter Values* dialog box, which are assigned to the active effectivity types.

Activities

You set a single-client effectivity profile in the client in which you want it to be valid. Carry out the *Set up control data* activity in *Engineering Change Management* Customizing and enter the name of the effectivity profile under *Effectivity profile*.

Assigning Materials to Effectivity Profiles

Use

You use material-specific effectivity profiles if you manufacture various different products, which you process with reference to change master records with different effectivity types.

You assign a material to an effectivity profile when you only use **some** of the effectivity types for a material that are available in your client. When you assign values to the effectivity parameters, you only want the system to display those effectivity parameters that are relevant for this material.

> For example, you processed a certain material only with reference to those change master records with the CUSTOMER effectivity type. If you are creating a sales order for this material, you therefore also only want to assign values to the CUSTOMER effectivity parameter. The other effectivity parameters should be hidden in this situation.

Prerequisites

In Customizing for engineering change management, you have created an effectivity profile in the *Parameter effectivity → Maintain effectivity profiles* step. You have assigned the effectivity types to this effectivity profile that you want to use for your material.

Procedure

You assign a material to an effectivity profile like this:

1. Choose *Logistics → Central Functions → Engineering change management → Environment → Parameter effectivity → Assign material to profile*.

   The *Material Assignment to Effectivity Profile* screen appears.

2. Choose *New entries*.

3. Under *Finished product* enter the material number and under *Effectivity profile* enter the effectivity profile number.

4. Save your data.

Result

When you assign values to the effectivity parameters for this material, in the *Assign Effectivity Parameter Values* dialog box only the effectivity parameters are displayed for those effectivity types, which are included in the effectivity profile. All other effectivity parameters are not displayed and cannot be assigned values.

Determining Enterprise-Specific Effectivity Types

Purpose

In the standard SAP System, the effectivity types *DATE* (date interval) and *SERNR* (serial number interval) are supported. Because it is not possible to construct all variants based on effectivity conditions in the standard SAP System it is possible to create further effectivity type with parameters you require.

You can, for example, define the effectivity type AIRLINE (Airline) that has the parameter DEBIT (customer) as an individual value.

In the SAP System the following values exist in the database table for the customer master record:

- A (airline company A))

- B (airline company B)

- C (airline company C)

When you assign values to the effectivity parameter CUST in the change master record you can choose from among these three customers.

You can then create several components for different seat cover material for the BOM of an aircraft and set which components (seat cover material) is effective for which airline company.

You create two change numbers with the effectivity type AIRLINE and set values for the parameter DEBIT (customer) for the first change number the value A and for the second change number the value B. When you then want to add the seat cover material for each airline company in the BOM you process the BOM of the seat cover in relation to the matching change number.

Prerequisites

You must make the required settings in Customizing for *Logistics - General → Engineering Change Management* if you want to define the effectivity of BOM changes using parameter effectivity.

Activate parameter effectivity under *Set up control data*.

You define whether you can enter a rank in the change mater record. The rank controls the valid change numbers when an object with different change numbers of the same effectivity type is processed.

Process Flow

In *Engineering Change Management* Customizing select *Parameter effectivity*.

1. Select work step *Define parameters*.

   Define the effectivity parameters that you want to use as effectivity conditions.

   You specify the characteristics of the parameter values by linking them with an alternative date. You can link the parameters with any *ABAP Workbench* alternative date or you can create a new alternative date.

   − The alternative date determines the data type, for example:

   SERNR (serial number)

Determining Enterprise-Specific Effectivity Types

- ▪ You set the properties of the parameter value (such as data type: Characterstring with output length 18) with this link

- ▪ Output length: 18.

– The allocated parameter type determines the entry possibilities (for example, a single value or an open interval).

Use an entry in a check table and a check field to make the system check when assigning values of the parameter whether the values entered exist in the database.

2. Select work step *Describe parameters*.

Describe the parameter in a language-dependent text.

3. Select the work step Create header for parameters.

Enter the header for the parameter that you want displayed when processing the change master record.

4. Select work step *Define effectivity types*.

Define the effectivity types. Since you can change an object, such as a BOM with different effectivity types you must enter a priority sequence for the effectivity types. The selection of effectivity parameters is set the same as the effectivity of the effectivity type.

Result

After you have made the necessary setting in Customizing you can create a change master record with relation to a newly defined effectivity type.

You can also process a change object in relation to a change number. The change can only be done within the conditions that were set for the change master record in the effectivity data.

Create Change Statuses with Parameter Effectivity

Purpose

You create a change master record with parameter effectivity if you do not (just) make changes in chronological order, but rather want to make the validity of those change statuses generated using this change master record, dependent on other criteria, which you define yourself.

Prerequisites

You have activated parameter effectivity in *Engineering Change Management* Customizing and defined effectivity parameters and types for your organization, if necessary.

Process Flow

1. Enter an effectivity type [Page 8] on the initial screen.

2. You maintain the change master record header data.

    If you have activated Rank [Page 40] in the *Setup control data* option of *Engineering Change Management* Customizing, you can also enter a rank for the change master record in the header data.

3. You define an effectivity by creating a parameter variant, in other words, by assigning values to effectivity parameters [Page 6].

    Depending on the type of the individual effectivity parameters you either enter a single value for each parameter, or an open or closed interval.

    All change statuses you later process with reference to this change master record, are valid according to the criteria you define here.

4. You select the object types you want to be able to change using the change master record.

5. If need be, you can define that change objects, such as BOMs, can only be processed using object management records [Ext.] and you enter the objects you want to process with reference to the change master record.

    This procedure is similar to creating change master records with date validity. For more information, see Object Type Indicators [Ext.].

6. You enter maintenance values [Page 24] if necessary.

7. You save the change master record.

Creating a Change Master with Parameter Effectivity

1. Choose *Logistics → Central functions → Engineering change management → Change master → Create*.

    The *Create Change Master* initial screen appears.

2. Enter a change number if required.

3. Select whether you want to create an ordinary change master record or an engineering change request (ECR).

4. Select whether you want to create the change master record with or without a release key, or as a change package.

5. Enter an effectivity type.

    Example: SERNR (serial number validity).

6. Click 🗹.

    The *Change Header* screen appears.

7. Enter a short text and a status.

8. Enter further data as required, such as the rank.

    If a change object has been changed several times, with reference to change master records with the same effectivity type, the system determines the valid version by the highest rank.

9. Choose *Effectiv.*

    The *Effectivity* screen appears.

10. Enter the parameter effectivity values.

    You can define an interval as follows:

    - For a **closed** interval you enter the upper and lower limits (for example, 1 - 900).

    - You define an **open** interval using the indicator.
      In this situation, you only enter the lower limit and then the value **x** in the *Indicator* column. The system interprets the lower limit as the lower limit of an **open** interval.

11. Click 👤 *Object types.*

    The *Object types* screen appears.

12. Make the necessary settings.

    You can find further information in Object Type Indicators [Ext.].

13. Enter further data if necessary, such as object management records [Ext.].

14. Save the change master record.

Result

If you are processing an object (such as a BOM item) with reference to this change master record, a change status is generated, which is valid according to the criteria you defined on the *Effectivity* screen.

If you want the changes to be taken into account in the adjoining work areas, you must set a release key [Ext.] that allows the changes to be released for the relevant areas.

If you have created a change master record **without** a release key, the changes you make with reference to this change master record are automatically released for all areas.

Object Processing

Purpose

You process an object with reference to a change master record with parameter effectivity, if you want the change status generated as a result of processing, to be valid according to the criteria defined in that change master record.

You can process the following change objects with reference to a change master record with parameter effectivity:

- BOMs

- Routings

- Characteristics

- Characteristics of class

- Classifications

Prerequisites

In *Engineering Change Management* Customizing you have activated parameter effectivity.

You have already created a change master record with parameter effectivity. For more information, see Create Change Master Records [Page 17].

Process Flow

1. Enter a change number on the initial screen.

   If you enter a change number for which you have entered maintenance values, when you process BOMs and classification system objects, the system displays the change statuses that fulfill these values. For more information, see Selection of Change Statuses to be Processed [Page 22].

2. You make the desired changes.

   If you are processing a change object that is made up of several parts, you make the changes to one or more of these parts. For example, if you are processing a BOM, you make changes to one or more **items**.

   For more information about part objects in routings, see the *Engineering Workbench* component under Object Type (Workbench) [Ext.].

3. You save the object.

Result

For each object (such as a BOM item) you process for the first time, with reference to a particular change master record, the system generates a new change status.

Each change status is valid according to the criteria defined in the change master record, which was used to generate it.

If you **again** process a particular part object, such as an item, with reference to the same change master record, the system does **not** generate a new change status. In this case you change the change status that was generated with reference to this change master record.

See also:

Example: BOM Item Processing [Page 26]

Selection of the Change Statuses to be Processed

Use

You use this function when you have already processed a change object (such as a BOM) with reference to change master records with parameter effectivity and want to further processing to begin from a certain development [Ext.] status.

Prerequisites

In *Engineering Change Management* Customizing you have activated parameter effectivity.

You have set the *Assign effect. vals* indicator on the *Basic data 1* view in the material master record for a BOM header material.

Features

If you have processed a change object (such as a BOM) with reference to multiple change master records with parameter effectivity, there are various development statuses, which do not have to have a time-related connection. When you process an object and want to proceed from a certain development status, you have to assign values to the effectivity parameters so the system can determine this particular development status.

Object type	Select the change statuses to be processed as follows:
BOM	If you have entered maintenance values [Page 24] in the change master record and enter a change number on the initial screen, the system displays the change statuses that fulfill these values on the item overview.
	If you have **not** entered maintenance values in the change master record, you can call up the *Assign Effectivity Parameter Values* dialog box from the initial screen. See *Activities* below for the procedure.
	Otherwise the system displays all change statuses on the item overview.
Routing	If you want to process a routing with reference to a change number with parameter effectivity, use the Engineering Workbench. For more information about selecting the change statuses to be processed, see Object Selection with Parameter Effectivity [Ext.] in the *Engineering Workbench* component.
Objects in the classification system	If you have entered maintenance values in the change master record and enter a change number on the initial screen, the system determines the change statuses that fulfill these values.
	For more information, see Changes with Parameter Effectivity [Ext.] in the *Classification System (CA - CL)* component.

Activities

If you want to process a particular development status for a BOM and have not entered maintenance values, proceed as follows:

1. Choose *Logistics → Production → Master data → Bills of material → Bill of material → Material BOM → Change*.

    The *Change Material BOM: Initial Screen* appears.

2. Enter the required data.

3. Choose *Extras → More... → Enter parameter variant*.

    The *Assign Effectivity Parameter Values* dialog box appears.

4. Enter a parameter variant and click .

    You return to the *Change Material BOM: Initial Screen.*

5. Click .

Maintenance Values

Use

You use maintenance values when you want to process objects with reference to a change master record with parameter effectivity, from a particular development status [Ext.].

Features

When you process an object with reference to a change master record with parameter effectivity, the system can only determine a clear development status using a parameter variant.

Maintenance values are a form of parameter variant, which you enter in the change master record.

When you change or create a change object (such as a BOM) with reference to a change master record by entering maintenance values, the system determines the change statuses that fulfill these values. In the create or change function for the object (such as the item overview for BOMs), the system only displays these change statuses. In the change function for the object you can only edit these change statuses.

Entering Maintenance Values for the Effectivity Parameters

Prerequisites

The validity of the chosen change master record is determined with parameter effectivity.

Procedure

You are on one of the screens for creating or changing a change master record.

1. Choose *Goto* → *Maintenance values.*

    The *Maintenance Values* screen appears.

2. Enter the parameter values you want to use as a basis for processing and displaying the change objects with reference to the change master record.

3. Save the change master record.

Entering maintenance values when maintaining objects in the class system

If you process an object from the classification system with reference to a change number with parameter effectivity that you have not entered maintenance values for, then the dialog box for assigning values to the parameters automatically appears.

1. Enter the parameter values you want to use as a basis for changing and displaying the change objects with reference to the selected change master record.

2. Choose *Continue*.

    The change master appears. You can change the data in the change master.

3. Save your changes.

    The system copies your maintenance values to the change master record.

Example: BOM Item Processing

You are a manufacturer of pumps and normally ship pumps with the material number *PUMP*, with a blue casing. In the bill of material for *PUMP* you entered the component CBLUE (casing, blue) in item *10*.

Item *10* is valid from 01/01/1999
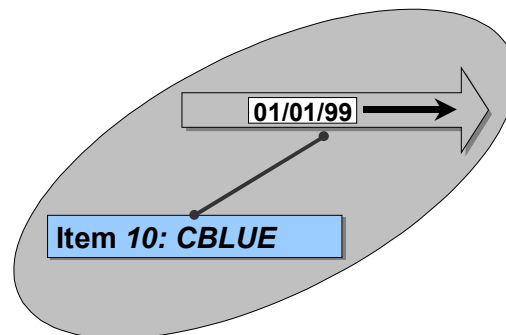
You decide to ship pumps with the serial numbers *1001* to *1020* with a red casing.

You create a change master record using change number *CH1* and the SERNR (*serial number*) effectivity type. The SERNR effectivity type is assigned the priority *20*. You define the following effectivity: Material number *PUMP*, serial number interval *1001* to *1020*.
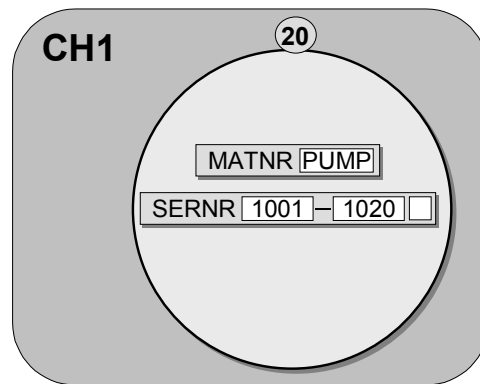
Using change number *CH1*, you change the material number from CBLUE to CRED (casing, red) in item *10* of your bill of material. The system creates a new change status with the same effectivity as *CH1*.

Example: BOM Item Processing

01/01/99 ➡

Item *10: CBLUE*

+

(20)

MATNR PUMP

SERNR 1001 – 1020

Item *10: CRED*
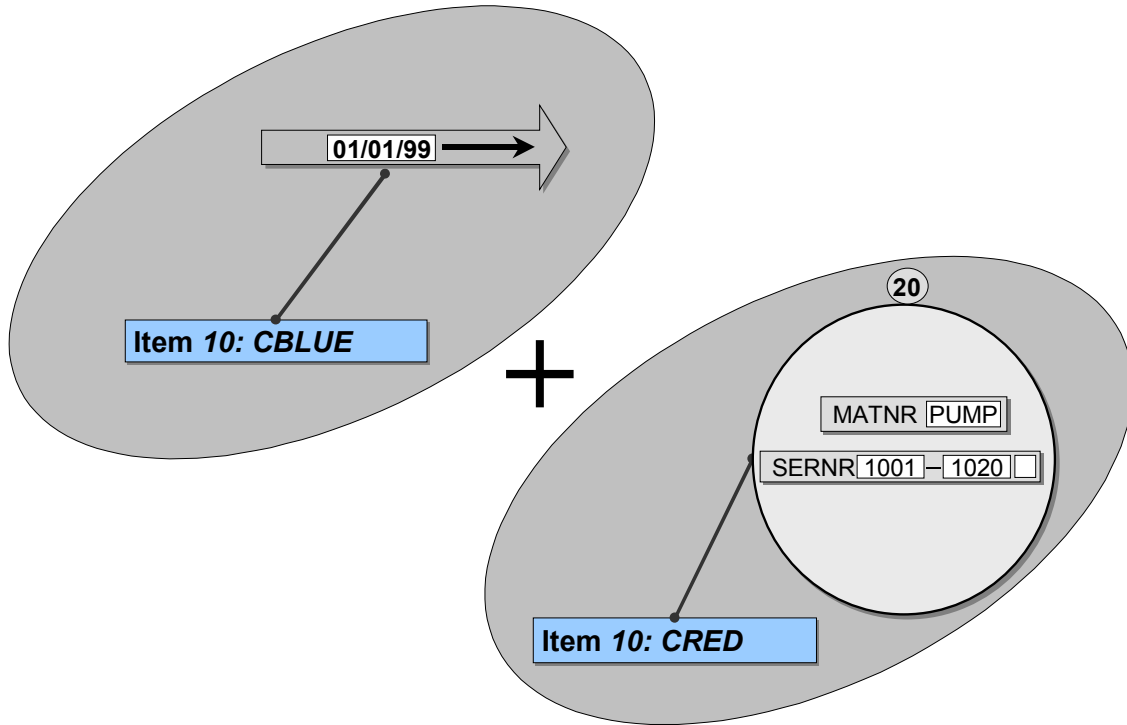
Now two change statuses with differing effectivity exist for item *10*.

Assignment of the Effectivity Parameters

Purpose

You create a parameter variant (in other words, you assign values to effectivity parameters) when you have processed an object (such as a BOM) with reference to change master records with parameter effectivity and want the system to determine particular change statuses

For example, when you create a sales order for a material, whose BOM you processed with reference to change master records with parameter effectivity, the system requires you to assign values to the effectivity parameters, to decide for which change statuses material requirements need to be generated.

Integration

The following functions allow you to create parameter variants to determine particular change statuses you want to process:

- Change BOM

- Engineering Workbench

For more information, see Selection of Change Statuses to be Processed [Page 22].

Within the following functions the system automatically displays a dialog box in which you can enter a parameter variant:

- BOM explosion, BOM comparison

- Create sales order

- Create customer requirements

- Create planned independent requirement

You can display a parameter variant in the following situations:

- Display planned order

- Display production order

- Project System (parameter variant is displayed and can be changed)

Prerequisites

In *Engineering Change Management* Customizing you have set the *Parameter effectivity* indicator in *Setup control data.*

You have set the *Assign effect. vals* indicator in the material master record for the material with which you are working.

Additionally, you have made the necessary settings in Customizing for the individual components in which you want to create parameter variants.

Process Flow

You have processed one or more objects with reference to change master records with parameter effectivity.

1. In the above situation the system displays a dialog box in which you can enter a parameter variant.

2. You assign values [Page 31] to the effectivity parameters.

   Alternatively you can enter a standard variant [Page 32]. The system then inserts the values from the standard variant automatically. For more information, see Maintaining Standard Variants [Page 32].

3. If necessary you can specify that certain change numbers are valid or invalid, regardless of the parameter variant. This then overrides the variant. For more information, see Overriding Validity with Change Numbers [Page 33].

4. The system determines the effective change statuses.

5. If you need to, you can display a trace log, where you can see why the system selected the change statuses it did. For more information, see Trace Log [Page 51].

Assigning Values to Effectivity Parameters

Prerequisites

In engineering change management Customizing you have activated parameter effectivity.

You have set the *Assign effect. vals* indicator on the *Basic data 1* view in the material master record for the BOM header material.

Procedure

1. Enter the values for the parameters in the *Assign effectivity parameter values* dialog box.

2. If required, enter indicators for the release status.

   This step can only be carried out during simulation and the selection of change statuses.

3. If you want to set the individual change numbers to valid or invalid and thus override the values assigned, click 🖉. Otherwise continue from step 4.

   Overriding values assigned is particularly useful for change status simulation, if you want to, for example, simulate a change status, whose valid-from date is sometime in the future, as being valid. You can find further information in Overriding Validity with Change Numbers [Page 33].

4. Click 🕒.

   A Trace Log [Page 51] is created, which gives you information about how the system determined the valid change statuses.

   💡

   If you want to undo all the entries you made, click 🖉. The system only determines those change statuses, which were generated without engineering change management, or with reference to change master records with date validity.

Maintaining Standard Variants

Use

You use a standard variant if you need to assign values to numerous effectivity parameters and want to use a certain combination of values repeatedly. In a standard variant you save a set of values for a number of effectivity parameters.

Procedure

1. Choose *Logistics → Central Functions → Engineering change management → Environment → Parameter effectivity → Maintain standard variant*.

2. Enter values for one or more effectivity parameters.

3. Enter a name and, if necessary, a description for the standard variant.

4. Save your data.

Result

The system saves the standard variant.

In the *Assign Effectivity Parameter Values* dialog box you can enter this standard variant, instead of having to assign values to the effectivity parameters individually. Standard variants are also available via input help.

Override Validity with Change Numbers

Use

You use this function if you want to set the change statuses, generated by the system with reference to change master records, as valid or invalid, regardless of the parameter variant. This may be worthwhile in the following situations:

- Change status simulation

    You override the validity when simulating if, for example, you want to check the components that would be in a BOM, if a particular change number were valid or invalid.

- In operative areas

    For example, you have newly designed an assembly. As you do not want to use the assembly in your product until a test phase has been completed, you want the change to take effect in the future. You therefore make the change with reference to a change number with date validity, whose valid-from date is in the future.

    You create a sales order for one of your charter clients, who wants to test the product with the new assembly. So you want to assemble a change status now, that will become valid in the future. When you enter a parameter variant in the sales order, you validate the change number you used to create the new assembly.

Features

When you validate a change number, the system also sees all change statuses generated with reference to this change number, as valid. This applies

- Regardless of the parameter variant

- Only if the change master record is released for the respective area

Activities

You are working in the *Assign Effectivity Parameter Values* dialog box.

1. Click 📝.

    The *Override Variant with Change Numbers* dialog box appears.

2. You override the validity with change numbers as follows:

    - Enter the change numbers you want to validate and on the respective lines, activate the *Valid* option.

    - Enter the change numbers you want to invalidate and on the respective lines, activate the *Invalid* option.

4. Click 🕒.

    You return to the Assign Effectivity Parameter Values [Page 31] dialog box.

Effective Change Status Selection

Purpose

If you have assigned values to effectivity parameters, the system determines a development status as described below.

An object (such as a BOM item) can be subject to several changes with reference to different change master records throughout its total life cycle. In practice, it may be the case that several change master records fulfill the parameter variant at the same time. In order to determine just one change status for the object, the system has to decide in the operational areas (for example, material requirements planning) which change status should be selected.

Process Flow

This decision is made according to the following rules:

1. The system determines all change master records, which have been used to process the object and which are released for the respective operational area.

   If a change master record was created without a release key, the change statuses generated with it are released for all areas.

2. The system only picks out those change master records selected in step 1, which fulfill the parameter variant.

   For example, the BOM for material M1 has been processed using two change master records (effectivity type: *serial number*).

Change Number	Serial Number Interval
N-3108	SN003 - SN200
N-3109	SN201 - SN300

   If you enter material number M1 in a sales order item and assign the value "SN099" to the *serial number* effectivity parameter, the system picks out change master record N-3108.

3. If the system determines **more than one** effective change status for an item in steps one and two, it picks out a **single** change status using a decision model:

- If there are several change statuses for an object with reference to different change master records of **different** effectivity types, then the change master record is selected according to priority [Page 37].

   The system determines the change status that was generated with reference to the change master record with the highest priority.

   If there are change statuses with date effectivity (*valid-from* date) as well as parameter effectivity (for example, serial number interval) for an object, the changes with parameter effectivity have a higher priority.

- If there are several change statuses for an object with reference to different change master records of the **same** effectivity type, then the change master record is selected as follows:

−   If you have made no additional settings in Customizing, the system automatically determines the change that was made with reference to the change master record that was created last.

−   If you have activated Rank [Page 40] in Customizing you can enter a rank under header data in the change master record. The system determines the change status that was generated with reference to the change master record with the highest rank.

  If you have not entered a rank in a change master record, it then has a lower status than change master records in which a rank has been maintained.

  If you override [Page 33] a parameter variant by setting a change number as valid, the system selects the change status that was generated using this change number.

4. If the system selected a component, which is an assembly, the system repeats the entire operation for the items in the assembly.

   This operation can be repeated throughout any number of levels in a multi-level BOM.

   If you change the effectivity criteria in a change master record and then create a new parameter variant, the system determines the change statuses according to the new criteria.

Priority for Different Effectivity Types

Use

An object (for example, a BOM item) can be processed with reference to different change master records.

It may be that the following conditions prevail:

- At least two change master records with **different** change types define the effectivity conditions.

- The changes are released using the release key.

If this is the case, the priority of the effectivity type determines which change is taken as effective.

Features

The priority of an effectivity type determines whether the change is taken as effective. The likelihood of a change being taken as effective increases with priority.

Activities

1. In Customizing for Engineering Change Management, choose the *Parameter effectivity* → *Define effectivity types* step.

2. Enter the priority for one or more than one effectivity type.

3. Save your entries.

See: Example: Changes with Different Effectivity Types [Page 38]

Changes with Different Effectivity Types

You change a BOM item with reference to four change master records. You have created the change master records with release keys. At the time when you determine a development status, you have only released some of the change master records.
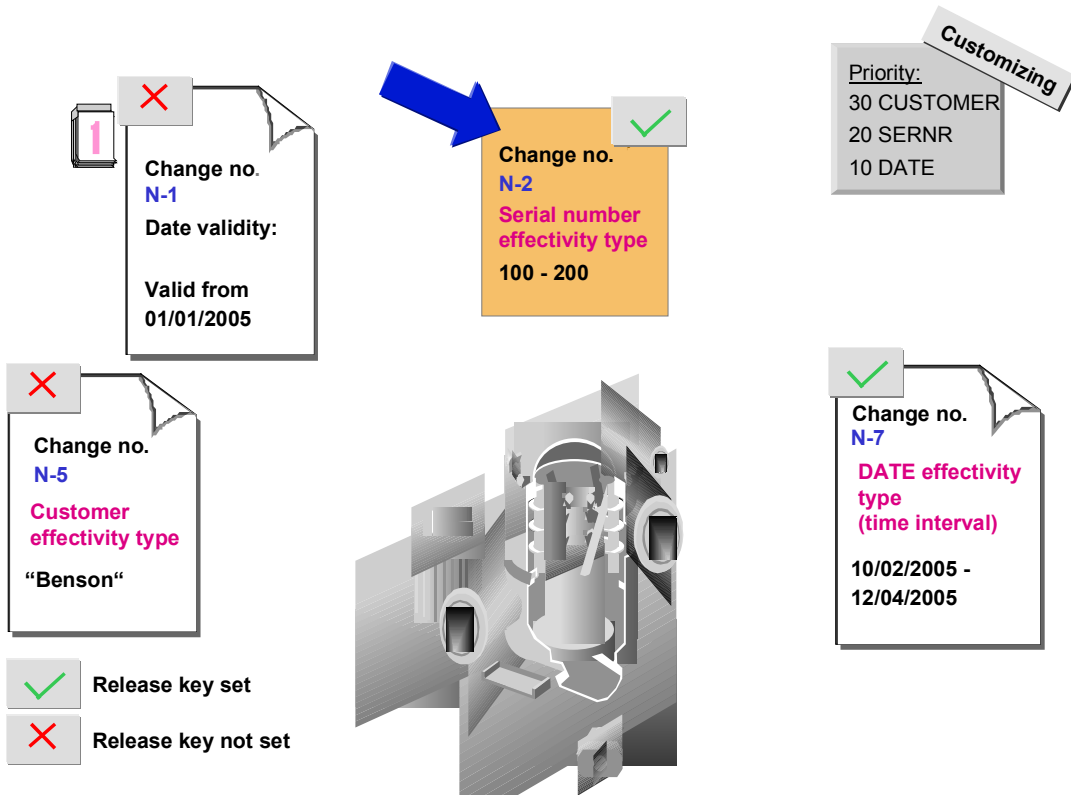
Change number N-1 has date validity. The other change numbers have parameter effectivity with various change types. You have defined effectivity type priorities in Customizing. Change number N-1 has the lowest priority, as change numbers with parameter effectivity always have a higher priority than those with date validity.

The following table shows the effectivity types, the priority of the effectivity types, and the release key.

Change number	Effectivity type	Priority	Release key
N-1	Date *Valid from*		not released
N-2	**SERNR** Serial number	**20**	**Released**
N-5	CUSTOMER CUSTOMER	30	not released
N-7	DATE Date interval	10	Released

In this example, N-5 is the change number with the highest priority. However, N-5 was not released. N-2 is the change number with the second highest priority and it was also released. Therefore, the system refers to the change status you created with reference to N-2.

Changes with Different Effectivity Types

1

❌ **Change no.**
N-1
Date validity:

Valid from
01/01/2005

➡️ **Change no.**
N-2
Serial number
effectivity type
100 - 200
✅

Customizing

Priority:
30 CUSTOMER
20 SERNR
10 DATE

❌ **Change no.**
N-5
Customer
effectivity type
"Benson"

✅ **Change no.**
N-7
DATE effectivity
type
(time interval)

10/02/2005 -
12/04/2005

✅ **Release key set**

❌ **Release key not set**

Rank for the Same Effectivity Type

Use

A change object (for example, a BOM item) can be processed with reference to different change master records.

It may be that the following conditions prevail:

- At least two change master records with the **same** change type define the effectivity conditions.

- The changes are released using the release key.

You must determine which rules the system uses to select the change master record.

Prerequisites

You have maintained an object with reference to different change master records of one effectivity type.

You have activated the rank indicator in Customizing for *Engineering Change Management* in the *Set up control data* step.

Features

Determining the Change Status without Rank

Rank is not activated in the standard system. The system determines the change status that was made with reference to the change master record that was created last.

Determining the Change Status with Rank

If you have activated the rank in Customizing, then you can determine the rank (in the change master record) that a change status adopts under the same effectivity type conditions.

The rank of a change master record determines whether the change is likely to be chosen or not. This likelihood grows as the rank number increases.

> You change a BOM with reference to four change master records with the same effectivity type SERNR (*serial number*).
>
> The following table shows the different ranks and release keys.

Change number	Rank	Release key
A	05	Released
B	**30**	**Released**
D	10	Released
F	35	not released

> Because the SERNR effectivity type has the highest rank and the changes are also released, the changes for change number B are taken into account.

Rank for the Same Effectivity Type

Determining the Rank of a Change

Use

You can control which change status is chosen as effective if you have made several changes with reference to change master records of the same effectivity type by using the rank.

Prerequisites

You have activated the rank indicator in the Customizing for Engineering Change Management *Set up control data* step.

Procedure

1. Create a change master record with parameter effectivity or change one.

2. Go to the *Change header* screen.

3. Enter a numerical value for the rank in the *Description* dataset.
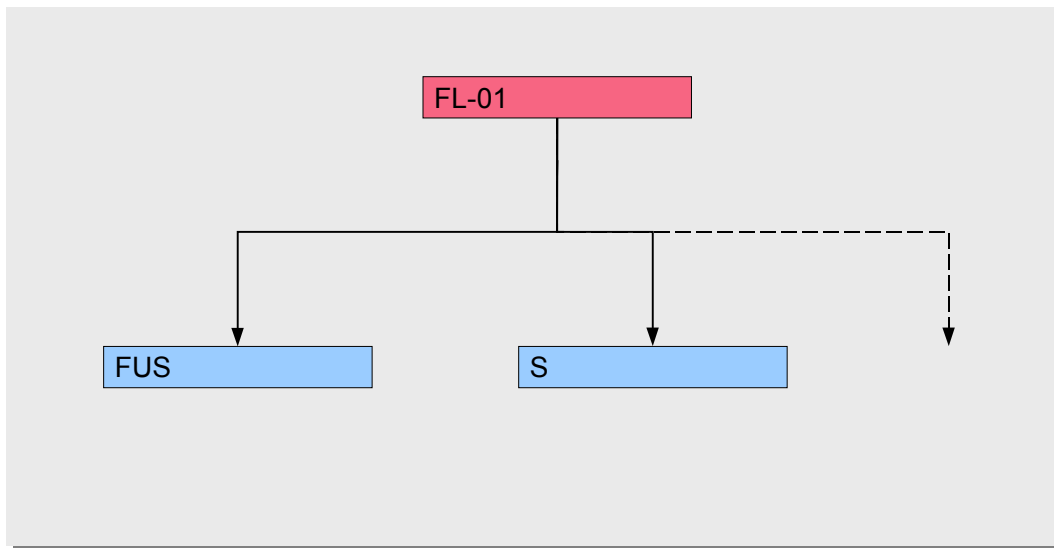
4. Save your change.

Result

If an object has been changed more than once with reference to different change numbers of the same effectivity type, the system determines the change status in the operative areas (for example, requirements planning) that has the highest rank with reference to the change master record.

Example: Effective Change Status Selection

You are a manufacturer of aircraft for airlines A and B. The BOM for your FL-01 aircraft contains components including FUS (fuselage) and S (seat).

BOM for Material FL-01

```
                    ┌──────────┐
                    │  FL-01   │
                    └────┬─────┘
          ┌──────────────┼──────────────┐
          ▼              ▼               ▼
    ┌──────────┐   ┌──────────┐
    │ FUS      │   │ S        │
    └──────────┘   └──────────┘
```
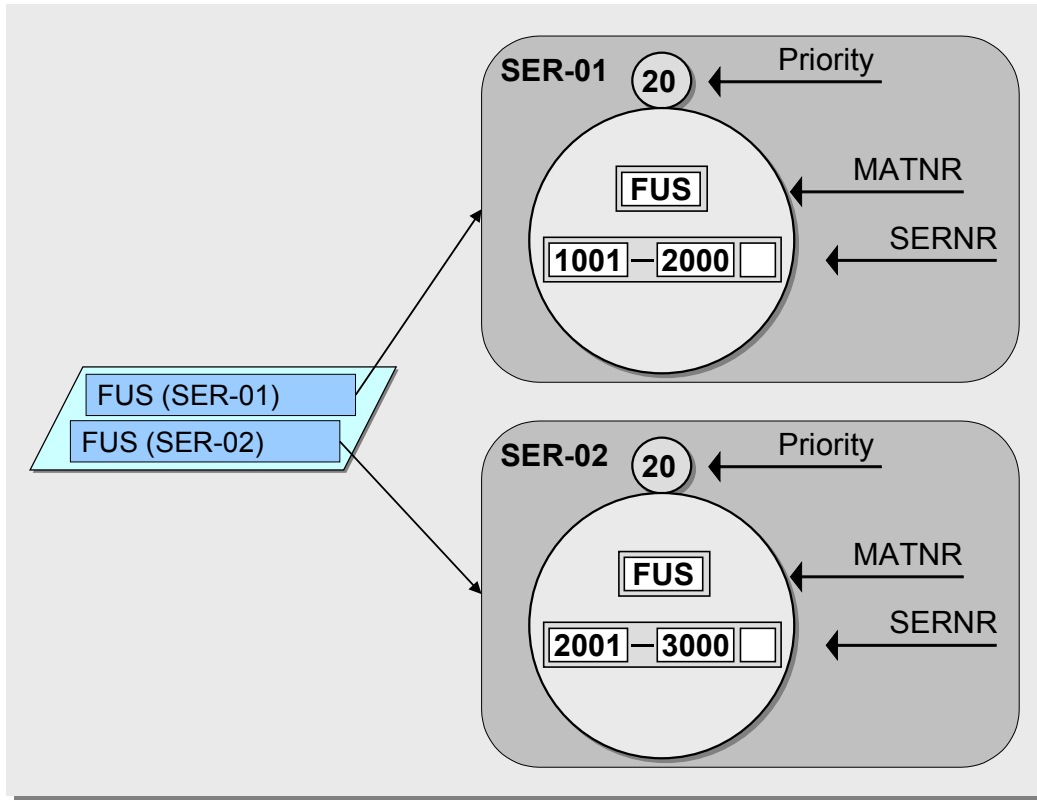
Serial Number Effectivity Type

You want to assemble the fuselage with serial numbers 1001 to 2000 with different materials than the fuselage with serial numbers 2001 to 3000. You therefore decide to use the *serial number* (SERNR) effectivity type from the standard system.

You create two change master records with the *serial number* effectivity type: In the SER-01 change master record, you define the serial number interval 1001 - 2000, and in the SER-02 change master record, the serial number interval 2001 - 3000.

You process the FUS (fuselage) component with reference to these two change master records. This generates two change statuses for the FUS component.

Effectivity of the FUS Component

Customer Effectivity Type

For each airline you require different seat fabrics in the colors of the respective airline. For airline A you require green seat fabric and for airline B blue. You therefore decide to create a CUSTOMER effectivity type in your system. You define the KUN effectivity parameter for this effectivity type.

You create two change master records with the CUSTOMER effectivity type: CM-A and CM-B. You define the effectivity in the change master records as follows:

- CM-A: Single value "A"

- CM-B: Single value "B"

You process component S with reference to the change master records CM-A and CM-B. With CM-A you create the green seat fabric and with CM-B the blue. Two change statuses for S are thus generated.
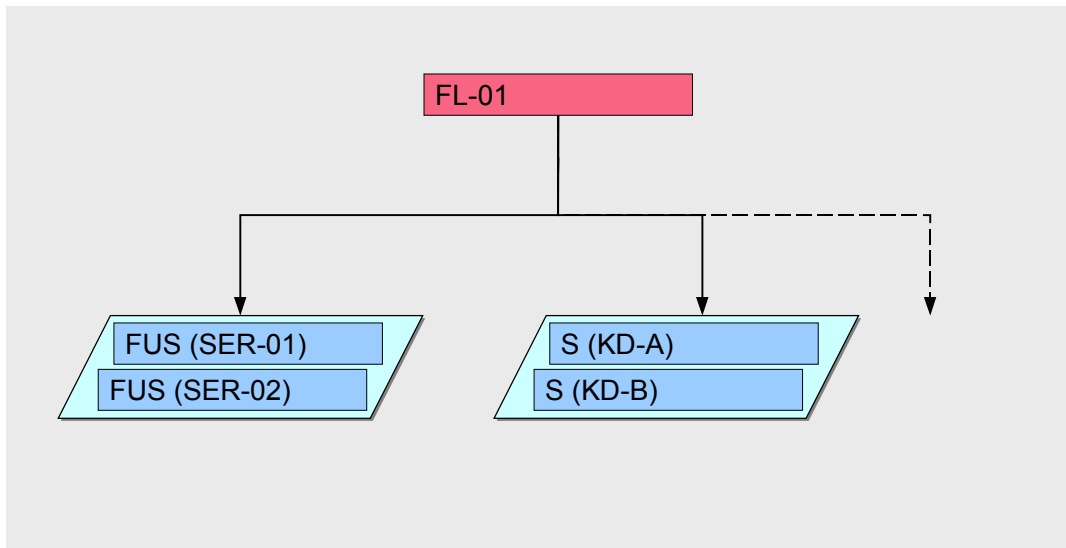
Effectivity of the S Component

Example: Effective Change Status Selection
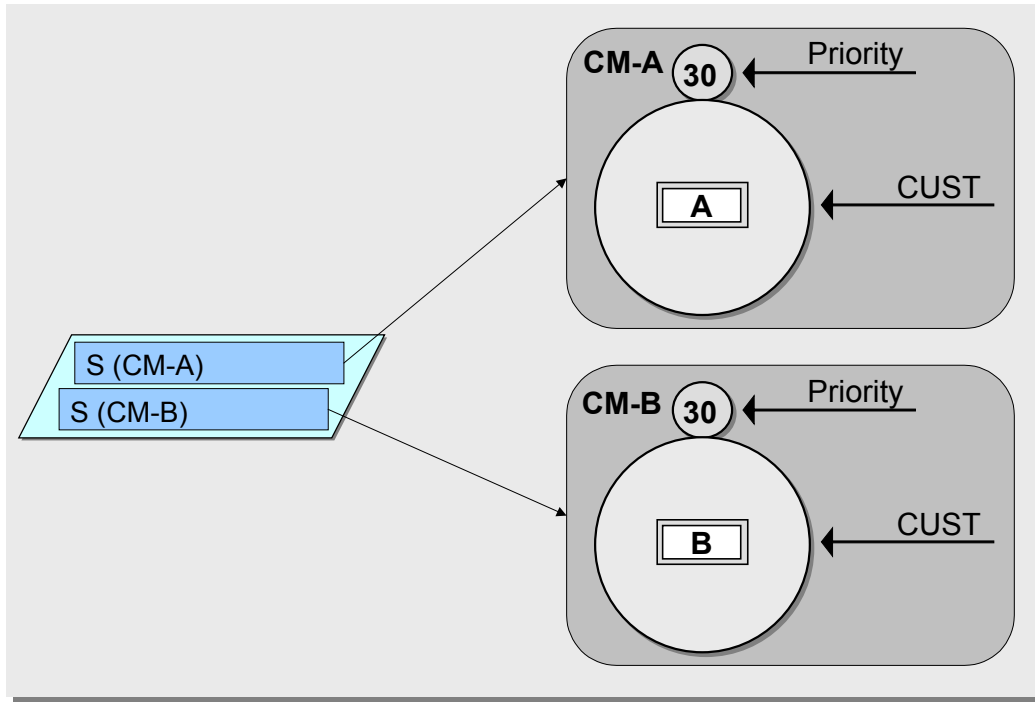
After you have carried out these processes, the items in the BOM for the FL-01 aircraft have multiple change statuses:

BOM for Material FL-01 with Change Statuses

Assigning Values to Effectivity Parameters

You receive a sales order from customer A for an F-01 aircraft. Customer A will be supplied with the fuselage, serial number 2507.

You assign values to the effectivity parameters in the customer order. You assign the value "FUS" to the *Material number* parameter, "2507" to the *Serial number* parameter and "A" to the *Cust* parameter.

When the system generates a planned order, it determines the effective change statuses. For each individual item, the system checks whether a change status fulfills the parameter variant.

- In the FUS item, a change status fulfills the parameter variant: The change status that was generated with reference to the SER02 change master record.

- In item S there is also a change status that fulfills the parameter variant: The change status that was generated with reference to the KD-A change master record.

The system only transfers the effective change statuses to the planned order.

BOM for Material FL-01 in Requirements Planning
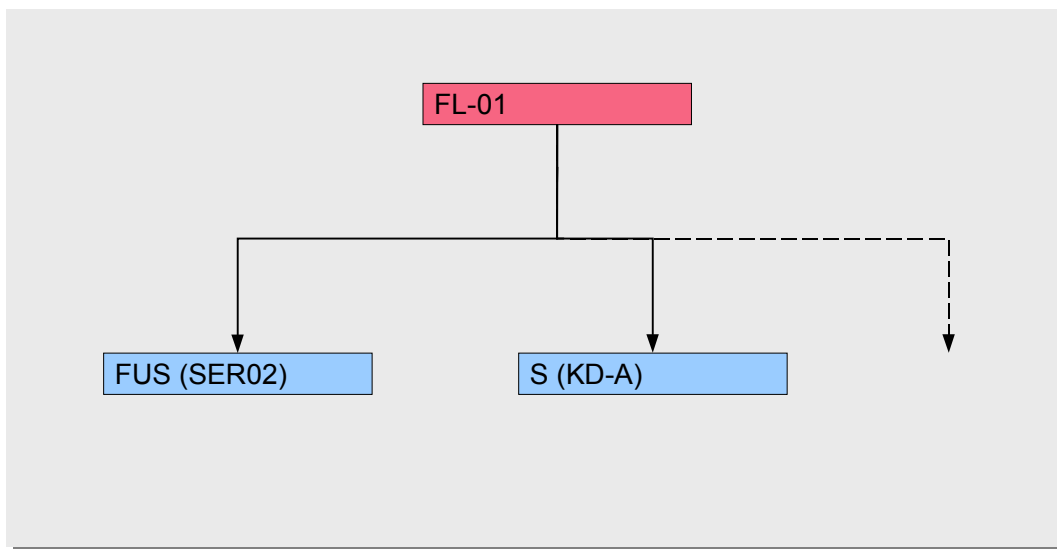
Example: Selection in a Multi-Level BOM

You have created an item containing material M1, in the BOM for material FL01, using change number KD01. KD01 has the CUSTOMER effectivity type. You have assigned the value "Smith" to the CUSTOMER effectivity parameter, in change master record KD01.

You created component 2 without a change number valid from July 1 1999. You do not make any changes to this component. Therefore M2 is always valid and effective after 1 June 1999.

Single-Level BOM
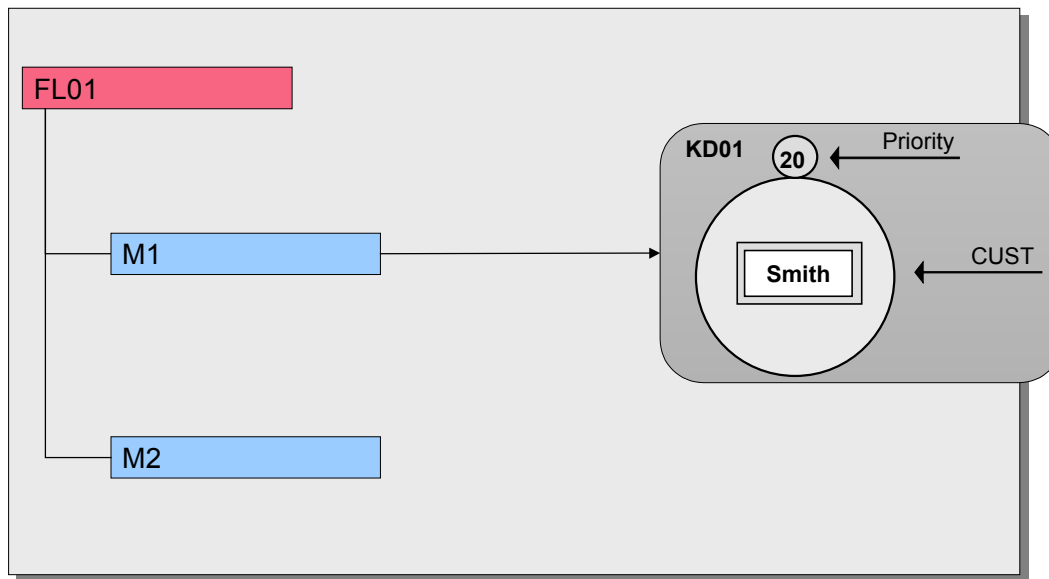
M1 is an assembly whose items you also create with reference to change master records with parameter effectivity. However, these items have the SERNR (serial number) effectivity type.

Multi-Level BOM
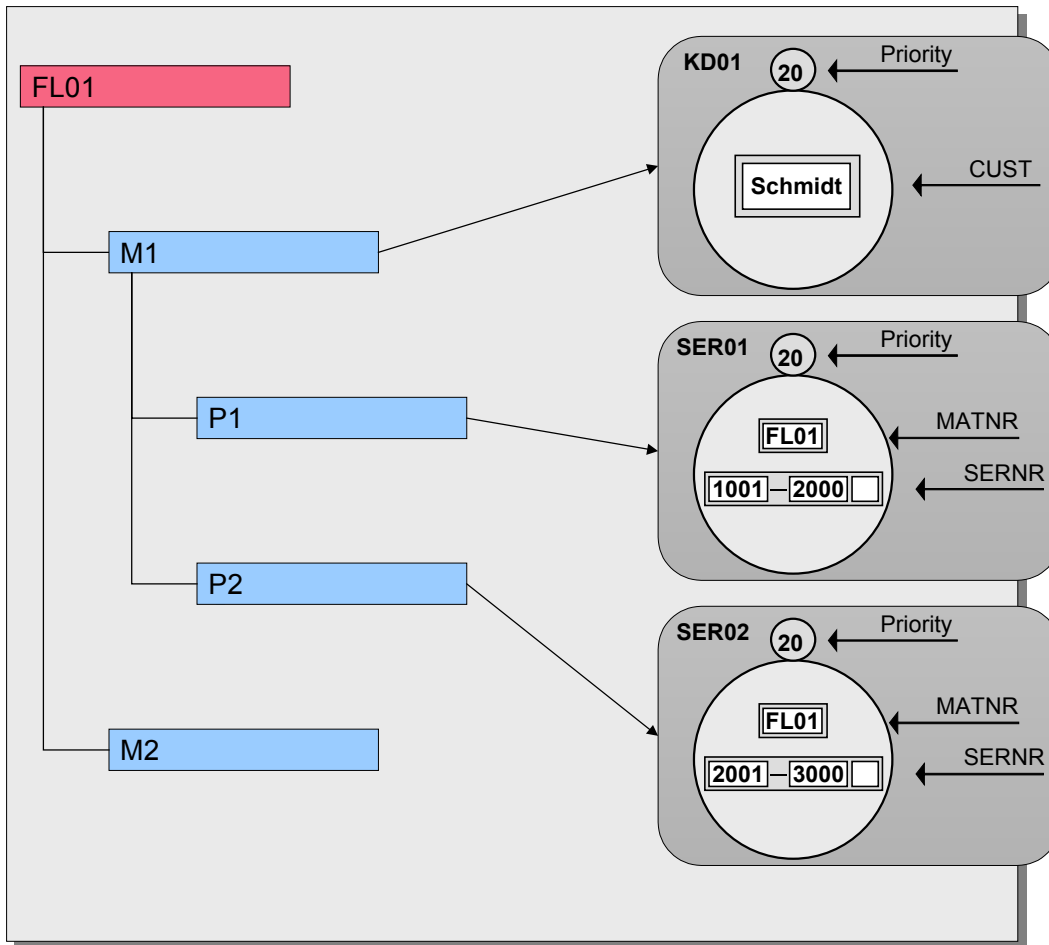
The system only checks the effectivity of items P1 and P2 if the product is assembled for customer "Smith":

- If product FL01 is assembled for customer "**Smith**" the system selects the **valid** component M1 (highlighted in yellow in the first evaluation list in the trace log). The system then checks the effectivity of the components in M1 (P1 or P2).

You enter the following values:

Effectivity Parameter	Value
CUSTOMER	Smith
MATNR	FL01
SERNR	1500

BOM for Customer Smith

Example: Selection in a Multi-Level BOM
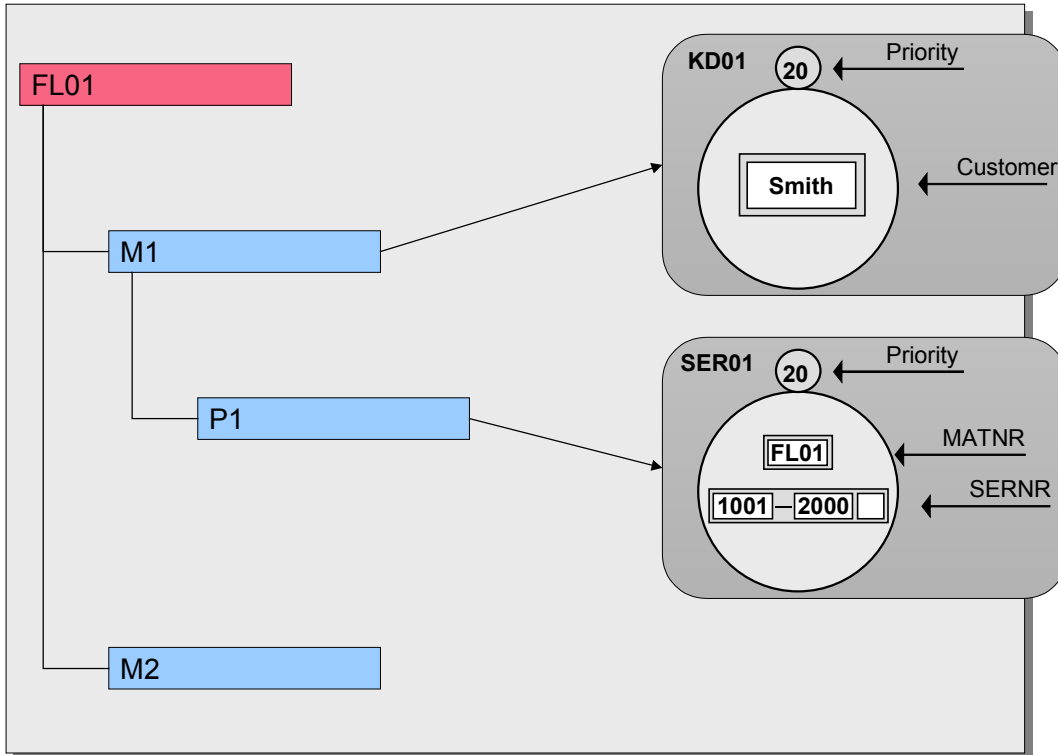
- On the other hand, if product FL01 is assembled for a **different customer**, component M1 is **invalid** (highlighted in red in the evaluation list in the trace log). In this case, items P1 and P2 are not checked.

You enter the following values:

Effectivity Parameter	Value
CUSTOMER	Jones
MATNR	FL01
SERNR	1500

BOM for a Different Customer

FL01

M2
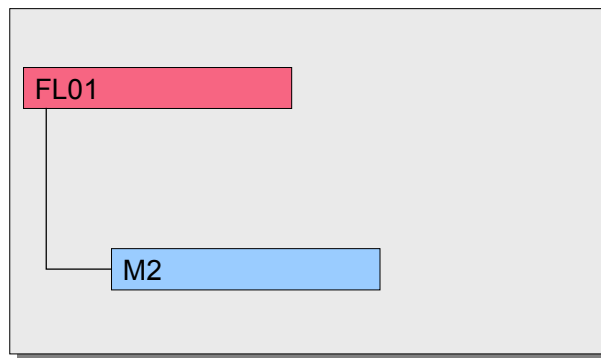
Trace Log

Use

The trace log gives you information on the conditions under which the change statuses [Ext.] of the objects are effective. This information is particularly helpful for complex changes, so you can follow why the system selects a certain change status for an object (such as a BOM item).

Prerequisites

The following requirements must be met before you can display a trace log:

- You have made the changes with reference to a change number.

- You must have set the *Assign effect. vals* indicator in the material master record (*Basic data 1* view) for the material BOM header material.

- You have activated the trace log (*Logistics → Central functions → Engineering change management → Environment → Parameter effectivity → Trace on/off*). This setting is saved user-specifically.

Features

When you have assigned values to the effectivity parameters the system determines the effective change statuses and displays the trace log. From the trace log you can discover why the system selected which change statuses.

The trace log contains the following information:

Settings in Customizing for Engineering Change Management

The trace log tells you whether the following control data indicators are set:

- Parameter effectivity active

- Release active

  - Rank active

Depending on which indicator is set, the appropriate data is displayed in the list of change numbers. For example, if the *Rank active* indicator is set, the list contains the *Rank* field.

Assigning Values to the Parameters

The system lists all the effectivity parameters that there are values for in the present processing situation.

Values can be assigned in the following way:

- User entry in the *Assign Parameter Effectivity Values* dialog box

- Transfer of maintenance values from the change master record

List of Change Numbers

The system lists all the change numbers with parameter effectivity that the object has been processed using.

You see the following information for each change number:

- Release key (RL)

- Effectivity type (Efftype)

- Priority (Pr)

- Rank

- Internal counter (AEDIF)

- Color coded change number indicator

    The choice of color shows, for example, whether a change number is effective and has been selected on the basis of the release key. The system also takes into account whether you have set a change number as valid or invalid in the *Override Variant with Change Numbers* dialog box.

    If you want to display the legend for the color code, click .

- Effectivity data

    - This function displays the effectivity criteria that are defined in a change master record with parameter effectivity, which means the single values or the lower and upper limit values

    If you want to display the effectivity data, click .

Multi-Level Trace Log

You see a multi-level log in the following situation:

- The system determines the effective change statuses for a multi-level object (such as a multi-level BOM).

- On the top level the system has selected at least one change status for an object, which has subordinate objects.

- At least one of the subordinate objects for the selected object was also processed with reference to change master records with parameter effectivity.

When you click the system displays the evaluation list for the next assembly.

See also:

Example: Selection in a Multi-Level BOM [Page 47]

Change Status Simulation

Use

Simulation gives you a preview of a certain development status [Ext.] for a BOM, which was processed with reference to change master records with parameter effectivity. You can check the components in a BOM according to various effectivity criteria, before the changes become effective in the operative areas.

Prerequisites

You have set the *Assign effect. vals* indicator on the *Basic data 1* view for the BOM header material in the material master record.

Features

Changes that have already been made only become effective under certain conditions. The parameter variant and release key in the change master record, determine whether a change status is referred to in costing, MRP and production.

You can simulate a certain parameter variant, while taking the release key into account. For example, if you set the *Released for production* indicator, the system only refers to those change master records, whose release key allows release for production.

As well as this, you can override [Page 33] a parameter variant, to simulate as valid or invalid, change statuses, which you created using certain change numbers. Here, the system also only refers to those change statuses, whose release key allows release for the selected areas.

Activities

1. Choose *Logistics → Production → Master data → Bills of material → Reporting → BOM explosion → Material BOM → BOM level by level*.

   The *Initial Screen* appears.

2. Enter the required data.

   The entry you make for the *valid-from* date is only taken into account for changes that have been made with reference to a change master record with the DATE (date interval) effectivity type.

3. Click .

   The *View* screen appears. You should at least set the *Multi-level* indicator here. For more information, see Selection Criteria for BOM Explosions [Ext.].

4. Click .

   The *Assign Effectivity Parameter Values* dialog box appears.

5. Enter effectivity parameter values.

6. Set indicators for the release status if you only want to display changes that have already been released for a specific area.

7. If you want to override the parameter variant with change numbers, click .

> The *Override Variant with Change Numbers* dialog box appears. Here you can set certain change numbers as valid or invalid, regardless of the parameter variant. For more information, see Overriding Validity with Change Numbers [Page 33].

8. Click .

Result

The system determines the development status [Ext.] for your product. A list appears of all items in the multi-level BOM, with the change statuses the system has determined.

Maintaining Data for Parameter Effectivity (Overview)

The following graphic summarizes where you maintain data for parameter effectivity.

Activity	Go to...
Activate parameter effectivity	Customizing (*control data*)
Define parameters (for example, define the entry values)	Customizing (*parameter effectivity*)
Define effectivity (validity) types (for example, assigning parameters, defining the priority of the effectivity type)	Customizing (*parameter effectivity*)
Rank of a change • *Activate* • *Maintain*	 Customizing (*control data*) Change master record (*change header*)
Release key • Define • Maintain	 Customizing (*release key*) Change master record (*change header*)
Define *effectivity type* of a change number	Change master record (*initial screen*)
Enter effectivity data	Change master record (*change header*, *effectivity* function)
Enter maintenance values for the effectivity parameters	Change master record (*change header*, *maintenance values* function)
Support BOM explosion with parameter effectivity for BOM header material	Material master record (*Basic data 1* view, *Assign effect. vals* indicator)