

Methods of Selecting BOM Variant Parts in Variant Configuration



Applies to:

SAP R/3 and ECC 6.0

For more information, visit the [Product Lifecycle Management homepage](#).

Summary

This document explains in detail about the methods of selecting BOM Variant Parts (BOM Items) in Variant configuration.

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Overview

This document explains in detail about the three ways of selecting variant parts in the Bill of Material (BOM) of a configurable material.

Options available in Standard SAP are given below.

Option 1: By entering the variant part as a BOM item and assign selection conditions to it

Option 2: By classifying the variant part in a class & entering the class as class item in the BOM.

Option 3: By using classification data of a material as a selection condition.

Approach

Under each option, required master data settings are specified.

Next, Simulation of configuration, its result etc. for each option is illustrated.

Option 1: By Entering the Variant Part as a BOM Item with Selection Conditions

Master data required and Simulation of configuration for Option 1 is explained with an example below.

Maintain following master data for the scenario.

Characteristics

Create characteristics HD_MAKE & HD_MEMORY using Transaction code CT04 with following data

Characteristic	HD_MAKE	HD_MEMORY
Char. Desc.	Hard Disc Make	Hard Disc Memory In GB
Data type	Char	Char
Length	7	3
Values	MAKE-A	160
	MAKE-B	320
	MAKE-C	

Variant Class - Class type 300

Create Class HD_CLASS of Class type 300 using Transaction Code CL02. Assign Characteristics HD_MAKE and HD_MEMORY to this class.

Material Master - Variant Parts

Create following 6 materials with Material type ROH in plant 1000

Material	Material Desc	Material	Material Desc
MAKE-A160	Hard disc MAKE-A 160 GB	MAKE-B320	Hard disc MAKE-B 320 GB
MAKE-A320	Hard disc MAKE-A 320 GB	MAKE-C160	Hard disc MAKE-C 160 GB
MAKE-B160	Hard disc MAKE-B 160 GB	MAKE-C320	Hard disc MAKE-C 320 GB

Material Master - Configurable Material

Create Configurable material PC_SC01 with Material type FERT in plant 1000 and Mark as Configurable.

Configuration Profile

Create Configuration profile for the following configurable materials using Transaction code CU41.

Assign Variant Class HD_CLASS (class type 300). Maintain configuration profile settings for material PC_SC01, as shown below.

Change Configuration profile for material: Detail Screen

Administrative data...

Material: PC_SC01 Configurable PC - Scenario 1
Profile name: PC_SC01

Basic data / **Config initial screen**

Config Parameters / UserInterf / Order BOM

Process

PInd/Prod. Order
 Sales Order (SET)
 Order BOM
 Knowl.-Based
 Result-Oriented

BOM Explosion

None
 Sing-Level
 Multilevel

Parameters for BOM Explosion

Application: PP01 Production - general
Filter

Order Functions

Component Availability

Level of Detail

Only Configurable Assemblies

Change Configuration profile for material: Detail Screen

Administrative data...

Material: PC_SC01 Configurable PC - Scenario 1
Profile name: PC_SC01

Basic data / **Config initial screen**

Config Parameters / UserInterf / Order BOM

Interface design

Settings

Config browser

Allowed screens

Char. value assign
 Result
 Master data
 Config structure

Start with

Char. value assign
 Result
 Master data
 Config structure

BOM with Dependencies

Create BOM in plant 1000 for Configurable material PC_SC01 using Transaction code CS01.

Change material BOM: General Item Overview

Material: PC_SC01 Configurable PC - Scenario 1
Plant: 1000 Sunnyvale Plant
Alternative BOM: 1

Material / Document / Class / General

Item	ICt	Component	Component description	Quantity	Un
0010	L	MAKE-A160	Make-A Hard Disk 160 GB	1	PC
0010	L	MAKE-A320	Make-A Hard Disk 320 GB	1	PC
0010	L	MAKE-B160	Make-B Hard Disk 160 GB	1	PC
0010	L	MAKE-B320	Make-B Hard Disk 320 GB	1	PC
0010	L	MAKE-C160	Make-C Hard Disk 160 GB	1	PC
0010	L	MAKE-C320	Make-C Hard Disk 320 GB	1	PC

Select each Variant item and click on dependency button



Maintain Dependency: Assignments to Objects

Dependency editor Basic data

BOM PC_SC01
 Item 0010 M MAKE-A160
 Make-A Hard Disk 160 GB

Assignments

Sort	Dep.	Description	S	Dep. Type
	MAKEA160	MAKEA160	1	Sel. cond

Create Dependency

Dependency MAKEA160

Effectivity

Change Number
 Valid from 07/08/2009

Change Dependency: Basic Data

Dependency editor Descriptions

BOM PC_SC01
 Item 0010 M MAKE-A160
 Make-A Hard Disk 160 GB

Dependency MAKEA160 SCE Format

General Data

Description MAKEA160 Documentation
 Status 2 In preparation
 Dependency Group
 Maintenance Auth.

Dependency Type

Precondition Action Constraint
 Selection condition Procedure Rule

Change Dependency: Basic Data

Dependency editor Descriptions

BOM PC_SC01
 Item 0010 M MAKE-A160
 Make-A Hard Disk 160 GB

Dependency MAKEA160 SCE Format

General Data

Description MAKEA160 Documentation
 Status 1 Released
 Dependency Group
 Maintenance Auth.

Dependency Type

Precondition Action Constraint
 Selection condition Procedure Rule

Edit Dependency

Continue Replace Concatenate Split

Sel. condition MAKEA160 MAKEA160
 BOM PC_SC01
 Item 0010 M MAKE-A160
 Make-A Hard Disk 160 GB

.....+.....1.....+.....2.....+.....3.....+.....4.....+.....5.....+.....

000010 HD_MAKE = 'MAKE-A' AND HD_MEMORY = '160'

Similarly create dependencies for each variant part as explained above. Observe that OD (object dependency) field gets checked for those items which have dependency.

Change material BOM: General Item Overview

Material PC_SC01 Configurable PC - Scenario 1
 Plant 1000 Sunnyvale Plant
 Alternative BOM 1

Material Document Class General

Item	ICt	Component	Component description	Quantity	Un	OD
0010	L	MAKE-A160	Make-A Hard Disk 160 GB	1	PC	<input checked="" type="checkbox"/>
0010	L	MAKE-A320	Make-A Hard Disk 320 GB	1	PC	<input checked="" type="checkbox"/>
0010	L	MAKE-B160	Make-B Hard Disk 160 GB	1	PC	<input checked="" type="checkbox"/>
0010	L	MAKE-B320	Make-B Hard Disk 320 GB	1	PC	<input checked="" type="checkbox"/>
0010	L	MAKE-C160	Make-C Hard Disk 160 GB	1	PC	<input checked="" type="checkbox"/>
0010	L	MAKE-C320	Make-C Hard Disk 320 GB	1	PC	<input checked="" type="checkbox"/>

Configuration Simulation

Simulate the configuration using Transaction code CU50

Configuration: Initial Screen

Material: PC_SC01
Plant: 1000 Sunnyvale Plant

Basic data
Quantity: 1.000
Date: 08.07.2009

Configuration
 Sales/distribution
 Engineering

Configuration: Characteristic Value Assignment

Material: PC_SC01 Configurable PC - Scenario 1
Date: 08/27/2009 Quantity: 1.000

Char. description	Char. Value	Inf.
Hard Disk Make	MAKE-A	
Hard Disk Memory	320 GB	

Click on **Engineering** button and then click on **Result** button. Configuration Result is displayed with variant part. As characteristic values selected are 'MAKE-A' and '320', variant part selected is MAKE-A320.

Configuration : Result

Material: PC_SC01 Configurable PC - Scenario 1
Date: 08/27/2009 Quantity: 1.000

Lv	Item	Component number	Qty	Un	ICat	A6Rp	ObDp
0	0000	PC_SC01					
Description							
1	0010	MAKE-A320	1.000		PC	L	X
Make-A Hard Disk 320 GB							

Information

Instance: 00000002
Typ: (MATERIAL) () MAKE-A320

The object was selected by
Selection condit MAKEA320 MAKEA320

Detail

Display Selection Condition MAKEA320:

Source code In language EN

```
Hard Disk Make EQ 'MAKE-A' AND
Hard Disk Memory EQ '320 GB'
```

Current char. values:

```
$ROOT .Hard Disk Make                    MAKE-A
$ROOT .Hard Disk Memory                 320 GB
```

Option 2: By Classifying the Variant Part in a Class & Entering the Class as Class Item in the BOM

Master data required and Simulation of configuration for Option 2 is explained with an example below:

Maintain following master data for the scenario.

Characteristics

Create characteristics HD_MAKE & HD_MEMORY using Transaction code CT04 with following data

Characteristic	HD_MAKE	HD_MEMORY
Char. Desc.	Hard Disc Make	Hard Disc Memory In GB
Data type	Char	Char
Length	7	3
Values	MAKE-A	160
	MAKE-B	320
	MAKE-C	

Variant Class - Class type 300

Create Class HD_CLASS of Class type 300 using Transaction Code CL02. Assign Characteristics HD_MAKE and HD_MEMORY to this class.

Material Master - Variant Parts

Create following 6 materials with Material type ROH in plant 1000

Material	Material Desc	Material	Material Desc
MAKE-A160	Hard disc MAKE-A 160 GB	MAKE-B320	Hard disc MAKE-B 320 GB
MAKE-A320	Hard disc MAKE-A 320 GB	MAKE-C160	Hard disc MAKE-C 160 GB
MAKE-B160	Hard disc MAKE-B 160 GB	MAKE-C320	Hard disc MAKE-C 320 GB

Material Master - Configurable Material

Create Configurable material PC_SC02 with Material type FERT in plant 1000 and Mark as Configurable.

Configuration Profile

Create Configuration profile for the following configurable materials using Transaction code CU41.

Assign Variant Class HD_CLASS (class type 300). Maintain configuration profile settings for material PC_SC02.

Material (Configurable Objects) class – Class type 200

Create Class HD_CLASS of Class type 200 using Transaction Code CL02. Assign Characteristics HD_MAKE and HD_MEMORY to this class. Mark field Allowed in BOMs. Maintain Default base Unit of Measure and Resulting Item Category.

Assignment of above class to Variant Parts

Assign Class HD_CLASS (class type 200) to all 6 variant part materials and maintain respective characteristic values as shown below.

Class	Description
HD_CLASS	Hard Disk class

Characteristic Description	Value
Hard Disk Make	MAKE-B
Hard Disk Memory	160 GB

BOM with Class Item

Create BOM in plant 1000 for Configurable material PC_SC02 using Transaction code CS01. Specify item category as 'K' and quantity for item 0010. Maintain Class type, Class, Res. Item Cat. as shown below.

Material: PC_SC02 Configurable PC - Scenario 2
 Plant: 1000 Sunnyvale Plant
 Alternative BOM: 1

Item	ICt	Component	Component description	Quantity	Un
0010	K			1	

Class Type: 200
 Class: HD_CLASS
 Quantity: 1.000
 Component unit: PC
 Item Category: K Class item
 Res. item cat.: L

Item	ICt	Component	Component description	Quantity	Un
0010	K		Hard Disk class	1	PC

Configuration Simulation

Simulate the configuration using Transaction code CU50

Material: PC_SC02
 Plant: 1000 Sunnyvale Plant

Basic data
 Quantity: 1.000
 Date: 08.07.2009

Configuration
 Sales/distribution
 Engineering

Material: PC_SC02 Configurable PC - Scenario 2
 Date: 08/27/2009
 Quantity: 1.000

Char. description	Char. Value	Inf...
Hard Disk Make	MAKE-A	
Hard Disk Memory	320 GB	

Click on **Engineering** button and then click on **Result** button. Configuration Result is displayed with variant part. As characteristic values selected are 'MAKE-A' and '320', variant part selected is MAKE-A320.

Configuration : Result

Material: PC_SC02 Configurable PC - Scenario 2
 Date: 08/27/2009 Quantity: 1.000

Result	Lv	Item	Component number	Qty	Un	ICat	A6rp	ObDp
Description								
<input type="checkbox"/>	0	0000	PC_SC02			Configurable PC - Scenario 2		
<input type="checkbox"/>	1	0010	MAKE-A320	1.000		PC	L	
Make-A Hard Disk 320 GB								

Information

Instance: 00000002
 Typ: (MATERIAL) (200) MAKE-A320
 The object was selected by: User

Option 3: By Using Classification Data of a Material as a Selection Condition

Master data required and Simulation of configuration for Option 3 is explained with an example below:
 Maintain following master data for the scenario.

Characteristics

Create characteristics HD_MAKE & HD_MEMORY using Transaction code CT04 with following data

Characteristic	HD_MAKE	HD_MEMORY
Char. Desc.	Hard Disc Make	Hard Disc Memory In GB
Data type	Char	Char
Length	7	3
Values	MAKE-A	160
	MAKE-B	320
	MAKE-C	

Variant Class - Class type 300

Create Class HD_CLASS of Class type 300 using Transaction Code CL02. Assign Characteristics HD_MAKE and HD_MEMORY to this class.

Material Master - Variant Parts

Create following 6 materials with Material type ROH in plant 1000

Material	Material Desc	Material	Material Desc
MAKE-A160	Hard disc MAKE-A 160 GB	MAKE-B320	Hard disc MAKE-B 320 GB
MAKE-A320	Hard disc MAKE-A 320 GB	MAKE-C160	Hard disc MAKE-C 160 GB
MAKE-B160	Hard disc MAKE-B 160 GB	MAKE-C320	Hard disc MAKE-C 320 GB

Material Master - Configurable Material

Create Configurable material PC_SC03 with Material type FERT in plant 1000 and Mark as Configurable.

Configuration Profile

Create Configuration profile for the following configurable materials using Transaction code CU41.

Assign Variant Class HD_CLASS (class type 300). Maintain configuration profile settings for material PC_SC03.

Material class – Class type 001

Create Class HD_CLASS of Class type 001 using Transaction Code CL02. Assign Characteristics HD_MAKE and HD_MEMORY to this class.

Assignment of Above Class to Variant Parts

Assign Class HD_CLASS (class type 001) to all 6 variant part materials and maintain respective characteristic values as shown below.

Classification		
Object		
Material	MAKE-C320	Make-C Hard Disk 320 GB
Class Type	001	Material class
Assignments		
Class	Description	
HD_CLASS	Hard Disk class	
Values for Class HD_CLASS - Object MAKE-C320		
General		
Characteristic Description	Value	
Hard Disk Make	MAKE-C	
Hard Disk Memory	320 GB	

BOM with Selection Condition

Create BOM in plant 1000 for Configurable material PC_SC03 using Transaction code CS01.

Change material BOM: General Item Overview

Material: PC_SC03 Configurable PC - Scenario 3
 Plant: 1000 Sunnyvale Plant
 Alternative BOM: 1

Material | Document | Class | General

Item	Ict	Component	Component description	Quantity	Un
0010	L	MAKE - A160	Make-A Hard Disk 160 GB	1	PC
0010	L	MAKE - A320	Make-A Hard Disk 320 GB	1	PC
0010	L	MAKE - B160	Make-B Hard Disk 160 GB	1	PC
0010	L	MAKE - B320	Make-B Hard Disk 320 GB	1	PC
0010	L	MAKE - C160	Make-C Hard Disk 160 GB	1	PC
0010	L	MAKE - C320	Make-C Hard Disk 320 GB	1	PC



Select each variant part item and click on . Specify class type 001 and check 'as selection cond.' field.

Change material BOM: Item: All data

Material: PC_SC03 Configurable PC - Scenario 3
 Plant: 1000 Sunnyvale Plant
 Alternative BOM: 1

Basic Data | Status/Lng Text | Administr. | Document Assgmt

BOM item

Item Number: 0010
 Component: MAKE - A160 Make-A Hard Disk 160 GB
 Item Category: L Stock item
 Item ID: 00000007
 Sort String:
 Sub-item ID Class Type: 001 as selection cond.

Configuration Simulation

Simulate the configuration using Transaction code CU50

Configuration: Initial Screen

Material: PC_SC03
 Plant: 1000 Sunnyvale Plant

Basic data
 Quantity: 1.000
 Date: 08.07.2009

Configuration
 Sales/distribution
 Engineering

Configuration: Characteristic Value Assignment

Material: PC_SC03 Configurable PC - Scenario 3
 Date: 08/27/2009 Quantity: 1.000

Characteristic Value Assignment

Char. description	Char. Value	Inf.
Hard Disk Make	MAKE-A	[i]
Hard Disk Memory	320	[i]

Click on **Engineering** button and then click on **Result** button. Configuration Result is displayed with variant part. As characteristic values selected are 'MAKE-A' and '320', variant part selected is MAKE-A320.

Configuration : Result

Material: PC_SC03 Configurable PC - Scenario 3
 Date: 08/27/2009 Quantity: 1.000

Result

Lv	Item	Component number	Qty	Un	ICat	A6rp	ObDp
		Description					
<input type="checkbox"/>	0	0000 PC_SC03			Configurable PC - Scenario 3		
<input type="checkbox"/>	1	0010 MAKE-A320	1.000		PC	L	X
		Make-A Hard Disk 320 GB					

Information

Instance: 00000002
 Typ: (MATERIAL) (001) MAKE-A320

The object was selected by Classification data

Conclusion

By using any of the above three options, variant parts can be selected in the BOM of configurable materials. Each method has its own advantages and limitations in their application; however final result of variant selection will be same.

Related Content

[Selecting BOM Items](#)

[The Configuration Simulation](#)

For more information, visit the [Product Lifecycle Management homepage](#).

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