Production lot planning / individual project plann

Release 4.6C

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Production lot planning / individual project planning

Production Lot Planning

Purpose

The necessity to continuously upgrade products and reduce costs, means that in, for example, the mechanical engineering and electronics industries, production lots are created in order to plan finished products and important semi-finished parts. Production lot planning enables you to determine the costs for a product in relation to a certain change status in the preliminary planning stage, that is, before the sales order has been received. This is very important due to the increasingly shorter product life cycles.

Up to now, separate cost determination in relation to changes to a product, that were managed with Engineering Change Management, was not possible for anonymous material requirements planning, that is, without production lots.

Production lots can vary due to, for example, the use of another component or another manufacturing process. In this case, the component changes have to be implemented with reference to the production lot of the finished product or of the important assembly in order to ensure that all changes are synchronous and that the components can be distinguished according to the production lot of the assembly.

Costs can be determined using both valuated and non-valuated individual stock.

You can achieve this by defining production lots. During this process, every production lot is given a number with which all receipt and issue elements of the pegged requirements are linked, or in other words, all receipt and issue elements are assigned to the account of the production lot. It is also possible to create a bill of material and a routing with reference to a production lot. The planning, production and cost evaluation are carried out in relation to this number. This process enables you to evaluate the costs of the different production lots and compare them in the planning stage (before receipt of the sales order). You can thus, for example, check whether the measures you introduced to reduce costs for a product were successful.

It is also practical to use production lots for a finished product or for an important assembly if you, for example, have to procure special components only for particular production lot or if numerous expensive components are to be built into a product that are usually not used very often. In this case, you can procure components specifically for a particular production lot and thus avoid high inventories and storage costs.

Incoming sales orders and networks that are created for a sales order cause stock reservations or reservations for work-in-process of the production lot. Without using a production lot, the system would initiate individual production processes for each sales order or network.

This type of planning is known as **Pre-Planned SEIBAN** in Japan.

Up to now, separate planning and cost evaluation has only been possible for make-to-order and engineer-to-order production, or in other words, after the receipt of concrete customer requirements. For this reason, production lot planning is being introduced with Release 4.5A.

The planning process flow is clearly depicted in the following diagram:

Planning for each production lot	MRP for each production lot	Production of the individual production lots	Acquisition of actual data for orders of production lots

BOM and routing for each production lot	Planning of production lots for assemblies	Receipt of sales order or network

Cost analysis

Determination of planned costs for each production lot	Determination of actual costs for each production lot
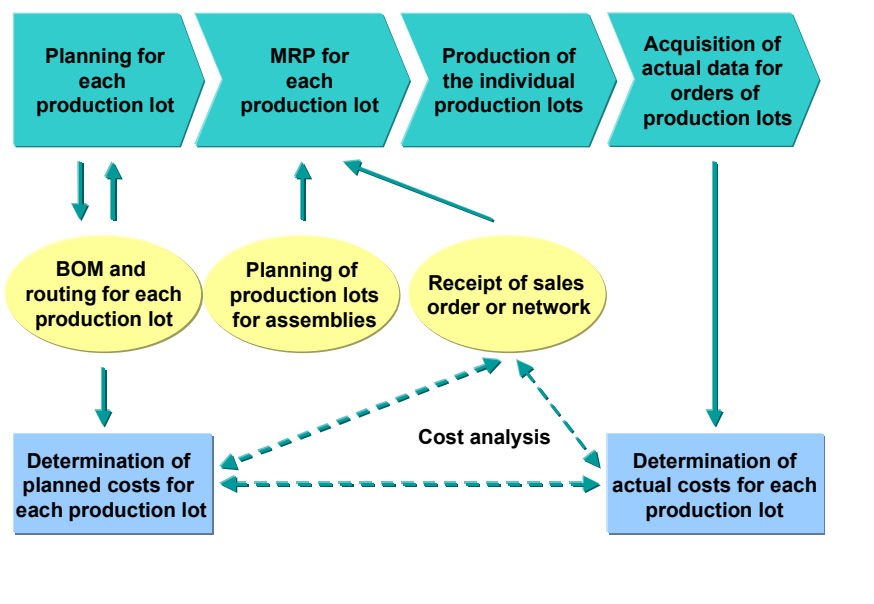
Integration

The system creates a WBS element for the production lot. The maintenance of the master data, in addition to the planning, production and cost determination are executed with reference to the WBS element. The WBS element is an object from Project System. The management of changes is also supported by means of Engineering Change Management.

Production Lot

Definition

The production lot is a particular production unit of an assembly which is planned and manufactured with reference to a number.

The number of the production lot is a WBS element which the system produces whilst creating the number.

Use

By using the production lot number, you can already determine the planned and actual costs that are incurred when manufacturing a particular production quantity of an assembly, before receipt of the sales order.

With this number, you plan and produce the production lot of an assembly and calculate the planned and actual costs for the production of the assembly.
If the manufacturing process of an assembly changes, you create a new production lot number and carry out the planning, production and the planned and actual cost calculation with the new number. This enables you to determine the costs of different manufacturing processes separately and compare them to one another.
This is particularly important for branches of industry which, due to continual product improvements and cost reduction processes, have to plan and produce their finished products or semi-finished parts using different BOMs, routings or change status.

This procedure can be applied for both finished products and important semi-finished parts. Within a BOM structure, you can define a production lot number each for both the finished product and a semi-finished part.

Structure

Two types of production lots are available for planning.

- Production lots with individual project stock

    With this type of production lot, the material stock for each production lot is managed separately in individual project stock. This is necessary if the assemblies of the different production lots vary from one another considerably and therefore are not allowed to be mixed with each other in the general plant stock.

    This procedure is used for **finished products**. In this case, a production lot number must be entered in the sales order. The sales order can only use the individual project stock with the corresponding production lot number.

    However, you can also use this procedure for **important semi-finished parts,** if you want to decide from which individual project stock (production lot) you would like to take the stock, before you install the part into the finished product.

- Production lots with transfer posting to the plant stock

    With this type of production lots, stock is planned separately for each individual production lot during the planning and production phase. When the production of the production lot has been completed, the assemblies of the production lots are transferred from the individual project stock to the plant stock.

This procedure can only be used when the assemblies of the different production lots do not vary considerably from one another.

You can apply this procedure for finished products and semi-finished parts. Semi-finished parts can be installed in any of the finished products.

Integration

- The process for production lot planning with sales order stock is exactly the same as for individual project planning.

- ATP Check

    If the ATP check is carried out for a production lot with sales order stock, only the individual segment of the production lot is checked, that is, only the goods receipt and issue elements of the material are included in the availability check that are assigned to the account of the WBS element, in addition to the sales order stock of the production lot (of the WBS element).

    If the ATP check is carried out for a production lot with transfer posting to the plant stock, all segments including the plant stock is checked, that is, all goods receipt and issue elements of the material are included in the ATP check. In order to achieve this, in the MRP data, in the material master, you enter the **1** indicator in the field *Cross-project.*

Planning Process Flow of Production Lots

Purpose

The process describes the procedures for planning production lots.

Prerequisites

In order to be able to carry out production lot planning, you initially have to maintain the following master data:

- In the material master, you define the necessary settings in the MRP data [Page 19].

- You create a number for each individual production lot. The system creates a WBS element during the creation. **See also:** Creating the Production Lot Number [Page 20]

- If the BOM for the production lot is different from the BOM usually used, you create a Work Breakdown Structure BOM [Page 22] with reference to the production lot number (WBS element).

- If the Routing for the Production Lot [Page 27] is different from the normal routing, you create a routing with reference to the production lot number (WBS element).

General Process Flow in the R/3 System

1. There are two possible methods for determining the planned independent requirements for a production lot:

   You can carry out flexible planning (sales and operations planning) for a production lot and then transfer the planned quantities to Demand Management by entering the production lot number.

   You can enter the Planned Independent Requirements [Page 34] directly into Demand Management with reference to the production lot number.

2. You then create a Standard Cost Estimate for the Production Lot [Page 33]. The calculated value forms the basis for the valuation of stock.

3. You carry out the MRP run. The system creates planned orders and purchase requisitions with reference to the production lot for the material to be planned and all components. The number of the production lot is displayed in the procurement elements in the *WBS element* field.

   For each production lot, the system opens an individual project stock with the number of the production lot (WBS element). These are displayed in MRP Evaluations as individual segments.

4. You convert the planned orders and purchase requisitions to production orders and purchase orders. The reference to the production lot number remains unaffected.

5. You produce the production lot. For the production, you can work with production order management or with repetitive manufacturing.

6. After the production, you carry out backflushing for the production lot number.

7. For a production lot, which is to be transferred to the plant stock, you post the complete part from the project stock to the plant stock.

With a production lot with sales order stock, the materials also remain in the project stock of the WBS element even after production has been completed.

8. Incoming sales orders can be covered by plant stock if the material in question was posted to the plant stock.

    With materials from sales order stocks, you have to enter the production lot number (the WBS element) in the sales order item. The sales order can only use materials from the corresponding project stock. The same applies if you create a PS network for a sales order. The requirements can also only be covered by certain individual project stock (stock of the production lot).

Example I of the Process Flow for Machinery

1. You enter the change number when maintaining the material BOM for the product so that changes are taken into account with the help of engineering change management.

2. You create the production lot and enter the planned independent requirement for the product with the change number (in this example, the quantity of the production lot is 3-5).

3. You carry out a cost estimate for the production lot.

4. Material requirements planning is carried out using material BOMs.

5. One of the lower level assemblies is to be planned with a different production lot number. The procurement is therefore not planned based on the dependent requirement but rather on the planned independent requirements that have been created for the production lot of the assembly.

6. The lower level assembly and the components are issued to production. The production lot then has the work-in-process status.

7. A sales order is received. Once you have entered the sales order with the production lot number, the system creates a network for the assembly processing.

    The network involves activities such as:

    A   Customer-specific design

    B   Customer-specific part fabrication

    C   Attachment of customer-specific parts to the product

    D   Installment at customer location and

    E   Inspection at customer location

8. Activity confirmations are entered to the design activities.

9. The network operation creates a network reservation for the specific production lot of the product.

10. The goods receipt of the assembly is posted to the individual project stock of the production lot. The assembly is then directly issued to the network activity of the sales order. The price for this product is determined by the cost estimate for the production lot.

Example II of the Process Flow for Machinery

1.   You create a production lot number for every machine that is to be produced (in this case, the production lot represents a machine number).

2.   You maintain part of the WBS BOM in order to reflect the main parts of the final assembly.

3.   You create planned orders with quantity equal to 1 for each production lot and enter the account assignment category Q and the WBS element (production lot number) in the account assignment data.

4.   You carry out the MRP run.

5.   Purchase orders, transport orders and production orders are posted as actual values. This causes the status of the machines to change to work-in-process.

6.   A sales order is received. When entering the sales order into the system, you also enter the production lot number.

7.   You create the WBS BOM and the routing with reference to the production lot number (WBS element) in order to enable customer requirements to be taken into account.

8.   The production order for the final assembly is completed and you post the goods receipt to the individual project stock of the production lot.

9.   For the delivery, you post the goods issue from the individual project stock to the sales order.

10.   The costs for the production lot are collected using conventional cost determination for WBS elements.

Example of Process Flow for Home Appliances

1.　　The production plan is created using Sales and Operations Planning (SOP) for the production lot (WBS element). The production lot here represents the quantity of the finished product that is to be produced for a specified period (for example, a week).

2.　　You transfer the plan to Demand Management by assigning the production lot number (WBS element).

3.　　The planned independent requirement is assigned to an engineering parameter (change number). This enables changes to be made with reference to the production lot.

4.　　Material requirements planning is carried out using material BOMs or reference WBS BOMs (a reference BOM is created for every finished product. In Release 4.5A, MRP does not explode reference BOMs; thus reference BOMs cannot be used as of Release 4.5A).

5.　　The necessary components are provided to the production lines, whereby pull lists with reference to the production lot number (WBS element) are used and backflushing is carried out.

6.　　The products of the production lot are posted from the individual project stock to the plant stock. The planned independent requirements are reduced during this process.

7.　　Sales orders are now taken.

8.　　You post the goods issue from the plant stock to the sales order.

Maintaining Master Data

Purpose

This process describes how to proceed when you maintain the master data.

Prerequisites

You have checked and created the necessary <u>Customizing Settings [Page 16]</u>.

Process Flow

1. You maintain the MRP data in the material master record of the material for which you would like to carry out production lot planning.

2. You create a number for the production lot. The system creates a WBS element during the creation. This is the number of the production lot. The planning, production and cost determination of the assembly are carried out using this number.
   If you would like to use the same work breakdown structure BOM for several production lots of an assembly, you have to designate the first production lot, which you create for the assembly, as the *reference WBS element*.

3. Normally, you have already created a material BOM. This is used as a reference when creating the work breakdown structure BOM, which you can create for the production lot.

4. Normally, you have created a routing or a rate routing for the material to be planned. You can use these as a reference when creating the routing for the production lot.

Defining the Customizing Settings

Use

In order to be able to carry out planning for production lots, you have to check and create settings in Customizing.

Integration

In Customizing for Production, you will find the unit *Production Lot Planning.* From this text, you are able to branch to the necessary IMG activities with the help of links.

In order to access this text, you position the cursor on the unit in question, you choose *Utilities → Text display → SAPScript* and then choose the function key *Read.*

Activities

The following list provides you with an overview of the essential IMG activities:

Engineering Change Management for Work Breakdown Structure BOMs

If you would like to manage changes to work breakdown structure BOMs using engineering change management, you have to *maintain profile* in Customizing for Engineering Change Management, for which the work breakdown structure BOM is permitted.

Define Planning Strategy for Production Lot Planning:

- In Customizing for Sales and Distribution, in the IMG activity *"Define requirements classes"*, you check the **requirements classes 091** and **092**, which are default settings for production lot planning.

  The requirements class **091** is intended for materials that are to be planned using production lots with sales order stock. The requirements class contains the account assignment category **Q** for individual project planning and valuation indicator **M** for separate valuation with reference to the sales document/project.

  The requirements class **092** is intended for materials that are to be planned using production lots with transfer posting to the plant stock.

- In Customizing for Sales and Distribution, you check the requirements types **KSB1** and **KSB2** in the IMG activity *"Define requirements types"*.

  KSB1 is the default setting for production lots with sales order stock. This requirements type is assigned to the requirements class 091.

  KSB2 is the default setting for production lots with transfer posting to plant stock. This requirements type is assigned to the requirements class 092.

- In Customizing for Demand Management or for MRP, in the IMG activity *"Define strategy"*, you create a *planning strategy* for production lot planning.

  You use the *requirements type: Planning* VSFB (planning at assembly level) or LSF and the *requirements type: Customer requirements* KSB or KSB2, depending on for which type of production lots you will use the strategy.

- In Customizing for Demand Management or for MRP, in the IMG *activity "Define strategy group",* you create a *strategy group* for production lot planning by entering the strategy you have defined as the *main strategy*.

Availability Check

In order to be able to carry out an availability check for SD orders with the special stock indicator Q (project stock) and SD deliveries, for the materials of production lots that remain in the sales order stock of the WBS element, you have to check the checking rule and the control of the availability check.

- The checking rules AQ for SD orders and BQ for SD deliveries are default settings.

- You can check the default settings (combinations) in Customizing for Sales and Distribution, in the IMG activity "Carry out control for availability check" and, if necessary, you can set further control indicators for a combination, like, for example, which stock is to be taken into account.

  The following are the default settings (combinations):

  01/AQ, 02/AQ, 01/BQ, 02/BQ, CH/AQ, CH/BQ.

Sales and Operations Planning

If you use sales and operation planning and you would like to transfer the planning results for each production lot to demand management, you have to define the following settings:

In Customizing for the Logistics Information System, in the IMG activity "Maintain self-defined information structures", you create an information structure for production lots (WBS elements).

In Customizing for the Logistics Information System, in the IMG activity "Maintain planning type", you define a planning type for your information structure.

In Customizing for Sales and Operations Planning, in the IMG activity "Set parameters for info structures and key figures", you set the indicator: Transfer to Demand Mgmt with user exit. This indicator is in the details screen of the table which was generated by the system for your info structure.

This indicator enables you to transfer the planned quantities (planned independent requirements) to Demand Management using special user exits. The reference to the production lot number (WBS element) is unaffected by the transfer.

Material Requirements Planning

If the system is to use the work breakdown structure BOM (BOM of the production lot with reference to the WBS element) during the MRP run, then you have to set *the "Processing with sales order/work breakdown structure BOM active"* indicator in the IMG activity *"Define BOM explosion control".*

Project System

In Customizing for Project system, in the IMG activity "Maintain project profiles", you define a profile for the creation of production lots.

If you use *production orders*, you should define a project profile for which the *valuated stock* field is flagged.

If you use *repetitive manufacturing*, you have to define a project profile for which the *non-valuated stock* indicator is selected.

Defining the Customizing Settings

Product Cost Controlling for Production Lots

In order to create a calculation for a production lot, you require a costing variant**.** The default setting for the *costing variants* are **PPC5**. This costing variant is assigned the *costing type* **40**.

To check the costing variants, you use the IMG activity *"Costing variants for production lot costing"* in Customizing for Product Cost Controlling.

To check the costing type, you use the IMG activity *"Costing types for production lot costing"*.

Maintaining MRP Data in the Material Master

Use

In order to be able to carry out production lot planning for a material, you have to enter certain data in the *MRP data* of the *material master*.

Prerequisites

You have defined a for production lot planning in Customizing for MRP or Demand Management.

Activities

You must maintain the following fields in the MRP data for *production lot planning with individual project stock*:

- You enter the *planning strategy* in the *strategy group* field.

- In the *MRP dep.requirements* field, you set the indicator to **1** so that dependent requirements (reservations) are not planned.

- You **do not** set an indicator in the Cross-project field for the availability check. This means that only the individual segment (segment of the production lot) is checked during the availability check.

- In the *Individual/coll.* field, you set the indicator to **1** for *Individual requirements only*.

You must maintain the following fields in the MRP data for *production lot planning with transfer posting to plant stock*:

- You enter the *planning strategy* in the *strategy group* field.

- In the MRP dep.requirements field, you set the indicator to **1** so that dependent requirements (reservations) are not planned.

- In the cross-project field, you set the indicator to **1** for the availability check. This means that all segments (there is one segment for each production lot) are checked together during the availability check.

- In the *Individual/coll.* field, you set the indicator to **2** for *Collective requirements only*.

Creating the Production Lot Number

Use

In order to carry out production lot planning, you have to create the *production lot* and assign the material which is to be planned and produced with this *production lot number*.

When you create the production lot, the system automatically produces a *project definition* and a *WBS element* for the production lot. The WBS element is the number of the production lot.

Prerequisites

You have created a project profile in Customizing for Project System:

- If you use *production orders*, you have defined a project profile for which either the *valuated stock* field or the *non-valuated* stock indicators is selected.

- As of Release 4.5A, if you use *repetitive manufacturing*, you have defined a project profile for which the *non-valuated stock* indicator is selected. Non-valuated project stock is a prerequisite for backflushing in repetitive manufacturing.

Features

When you create the production lot, you maintain the parameters on the control data screen. Among other parameters, you define which type of BOM you would like to use for a production lot:

- Only use the material BOM for all production lots of a material:

    If you use usually work with the material BOM for all production lots, then when creating the production lot, you only have to enter one production lot number, a project profile in addition to the description and material which you would like to plan with this production lot number.

- Use a individual work breakdown structure BOM for each production lot:

    If you want to create a work breakdown structure BOM for each production lot, when creating the production lot, you only have to enter one production lot number, a project profile in addition to the description and material which you would like to plan with this production lot number.

Activities

To create a production lot, proceed as follows:

1. Starting from the MRP menu, choose *Master data → Production Lot → Create*.

    The initial screen appears.

2. Enter the number of the production lot and a project profile.

3. Choose Enter.

    The screen for control data appears.

4. Enter the description for the production lot and the material which is to be planned with the production lot.

5. Save your data.

In order to change or display a production lot, starting from the MRP menu, you choose: *Master data → Production lot → Change* or *Display*.

Creating Single-Level Work Breakdown Structure BOMs

Use

You require a BOM in order to plan and produce a production lot and to determine its costs. You can use an existing material BOM, create a work breakdown structure BOM for each individual production lot or you can use one work breakdown structure BOM for several production lots of a material.

Prerequisites

You have Created Production Lots [Page 20] and maintained the necessary control data during the creation.

Features

The components of material or work breakdown structure BOMs, which have already been created, can be copied and adopted in the initial screen.

Activities

1. In order to create a single-level work breakdown structure, starting from the bills of material menu, you choose: *Bill of material* → *WBS BOM* → *Single-level* → *Create.*

    The initial screen appears.

2. Enter the necessary data, like, for example, the WBS element, the material and the usage for the material.

    Choose *Enter*. The *Material Item Overview* screen appears.

3. Enter the item categories, the components and the quantity.

    Save your data.

To *change* or *display* the single-level work breakdown structure BOM, starting from the Bill of material menu, you choose: *Bill of material* → *WBS BOM* → *Single-level* → *Change* or *Display.*

Creating Multi-Level Work Breakdown Structure BOMs

Use

You can use existing assemblies, create a multi-level work breakdown structure BOM for each individual production lot or you can use one multi-level work breakdown structure BOM for several production lots of a material.

Prerequisites

You have Created Production Lots [Page 20] and maintained the necessary control data during the creation.

Features

If you use an existing assembly, the multi-level WBS BOM automatically adopts the components. In the component overview, you also have the option of copying additional material or WBS BOMs and attaching them to a BOM item.

The components of a newly created multi-level WBS BOM are **not** adopted by the BOM of the assembly normally used due to its planning characteristics.

There are two different views which you can choose to create multi-level WBS BOMs:

- Multi-level view

     All components in the individual BOMs are displayed.

- Structure

     All components of the product are displayed in a structure according to their role in production.

     If you copy an assembly that already exists in the WBS BOM and attach it to another item, the assembly is aggregated and displayed in the *Structure Overview*, in order to avoid redundancy.

See also: Representation of Multi-Level BOMs [Page 25] or Multi-Level Display of Single-level BOMs [Ext.] and Multi-Level Display of Structure [Ext.].

Activities

1. In order to create a multi-level work breakdown structure, starting from the bills of material menu, you choose: Bill of material → WBS BOM → Multi-level maintenance → Create.

     The initial screen appears.

2. Enter the necessary data, like, for example, the WBS element (production lot number), the material and the application for the material.

     Choose *Enter*. The multi-level component overview appears.

3. You can insert items for your BOM as follows:

- You select the header material and choose *Child.*

Creating Multi-Level Work Breakdown Structure BOMs

- You select an item and choose *Sibling.*

    Header materials cannot own a *Sibling* (same level node) but the lowest item can be maintained as header material and therefore can have *Child* (sub-level node*).*

    Save your data.

    To *change* or *display* the multi-level work breakdown structure BOM, starting from the Bills of material menu, you choose: *Bill of material → WBS BOM → Multi-level maintenance → Change* or *Display.*

    If you would like to delete an assembly, check whether it is used for other items. This assembly will otherwise be deleted for all items.

Representation of Multi-level BOMs

Multi-Level BOM

The structure indicates which components make up the individual assemblies. Components, which form their own individual assembly (like, for example, "C"), are displayed in the same structure, almost in the form of an individual material BOM.

Level	
0	A
1	B C
1	C
2	D E
2	E
3	F G
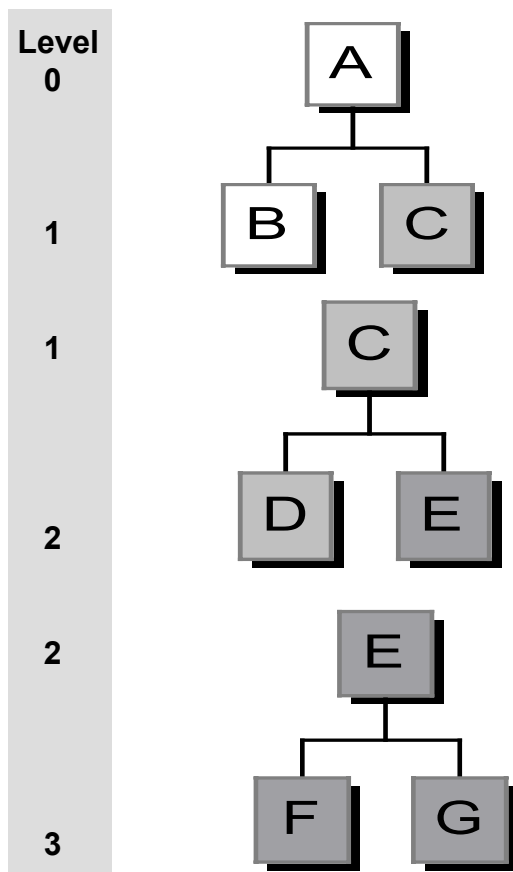
Structure of a Multi-Level BOM from a Technical Production View

It is clear in this structure that a component can be both an item and a header material. As a header material, it forms its own assembly.

The structure of the subordinate assembly is indented directly behind this header material and is displayed when you enter a higher structure number.

Representation of Multi-level BOMs

Level	
0	A
1	B C / C **Item = Header material**
2	D E / E
3	F G
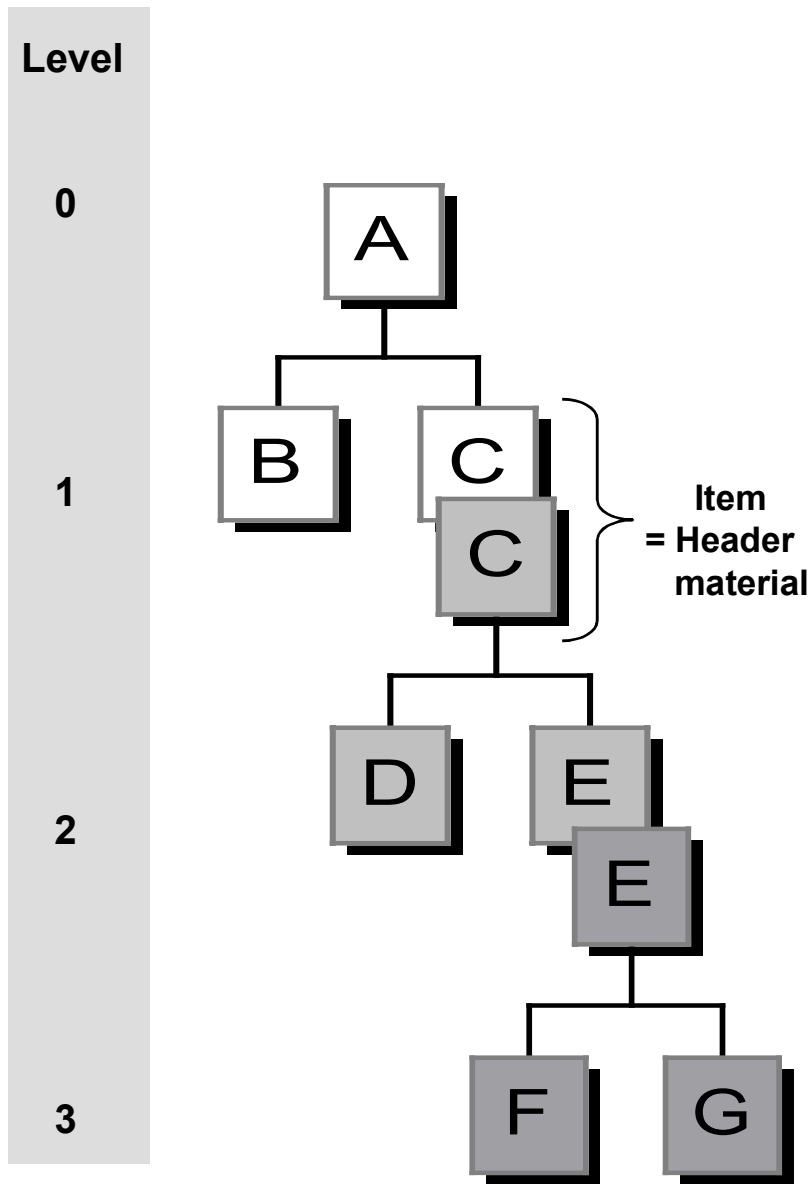
Assigning Routings to Production Lots

Use

To be able to plan or produce a production lot, you have to assign a routing to it.

Prerequisites

You have created a production lot.

Features

You can:

- Create a new routing for a production lot.

- Assign an existing routing to a production lot.

Creating a New Routing

1. In the main R/3 menu, choose: *Logistics → Production → Master data → Routings* and then *Routings → <Type of Routing> → Create*.

2. On the initial screen, enter the material of the production lot, the plant of the material in the appropriate fields and enter the production lot number in the *WBS element* field. You can specify the task list group in which you would like to create the routing. If you do not specify a task list group, the system will automatically define the group.

3. Choose Enter.

    The screen that appears next depends on whether you extend an existing task list group or whether you create a new task list group for your routing.

If you:	The following screen appears.
Extend existing task list groups	*Create <Routing type>: Overview* Continue with step 4.
Create new task list groups	*Create <Routing type>: Header Details* Continue with step 5.

1. Choose *Edit → New entries*.

    The *Create <Routing type>: Header Details* screen appears*.*

2. Enter the data for the routing header.

    For more information, see *PP - Routings* Processing Header Data [Ext.] .

3. Choose *Goto → Operation Overview*.

    Create the operations and sub-operations of your routing.

    For more information, see *PP - Routings* Processing Operations and Sub-Operations [Ext.] .

4. Save your routing.

Assigning Existing Routings

1. In the main R/3 menu, choose: *Logistics* → *Production* → *Master data* → *Routings* and then *Routings* → *<Type of Routing>* → *Create*.

2. Enter the data of the existing routing in the initial screen, for example, the BOM header material and the appropriate plant and/or task list group.

3. Choose *Enter* and then *<Routing type>* → *Material allocation*.

4. Enter the following data:

    – The group counter of the routing to which you would like to assign the material

    – The material of the production lot.

    – The plant of the material.

    – The production lot number in the *WBS element* field.

5. Choose *Continue*.

6. Save your routing.

Assigning Material Components

Use

If you would like to plan the use of material components, you have to assign the BOM items of the production lot to the routing of the production lot.

Prerequisites

You have created a routing for the production lot or assigned the material of the production lot to an existing routing.

Features

If you use a WBS BOM for the production lot, the system offers you the items from this BOM for the assignment. The same applies if you use a material BOM for the production lot.

➡

> Initially without reference to the production lot, you can assign the material BOM items to operations of a routing. If you then assign the material BOM and routing to a production lot, the component assignment remains; that is, you do not have to re-assign the items. If necessary, you can change the component assignment.

Assigning Material Components

Procedure

1. In the main R/3 menu, choose: *Logistics* $\rightarrow$ *Production* $\rightarrow$ *Master data* $\rightarrow$ *Routings* and then *Routings* $\rightarrow$ *<Type of Routing>* $\rightarrow$ *Create*.

2. On the initial screen, enter the material of the production lot, the plant of the material in the appropriate fields and enter the production lot number in the *WBS element* field.

3. Choose Enter.

   The operations overview of the routing screen appears for your production lot.

4. Choose *Goto* $\rightarrow$ *Comp. alloc. - gen.*

   The table shows which screen appears.

Navigation when calling up the material component overview

If you have created the following for the production lot	The following screen appears:
WBS BOM	*Material Component Overview*
No WBS BOM, but exactly **one** material BOM for the material of the WBS BOM	*Material Component Overview*
No WBS BOM, but **several** material BOMs for the material of the WBS BOM	The *Choose alternative BOM* dialog box. Select the BOM whose components you would like to assign and choose *Select*.

1. Select the material components that you would like to assign to an operation.

2. Choose *Edit* $\rightarrow$ *New allocation*.

   The *New allocation*. dialog box appears.

3. Enter the operation and the sequence, to which you would like to assign the material components. You can:

   – Directly assign the material components

   – Assign the material components via the operations list.

      To receive a list of the operations to which you can assign the material components, choose *Oper./act. list* (*operation list)* in the *New allocation* dialog box. You then select the operation from the list.

8. Choose Enter.

Result

The components are assigned to the operation.

Assigning Material Components

Assigning Material Components

Creating the Cost Estimate for a Production Lot

Use

In order to determine the planned costs for the production lot of a material, you carry out a production lot cost estimate. First of all, you have to create the cost estimate for the production lot.

Integration

The procedure for creating the cost estimate for the production lot is similar to the procedure for creating a material cost estimate. The only difference being that it is created with reference to the production lot (WBS element).

Prerequisites

You have checked the costing variant *PPC5* in Customizing for Product Cost Controlling, in the IMG activity *"Costing Variants for Production Lot Costing"* or you have created your own costing variant.

Features

If you created a routing and a work breakdown structure BOM with reference to the production lot (WBS element) for the production lot, these will be used to carry out the costing. If you have only created a routing and a material BOM, the system will them use these for the costing of the production lot.

Activities

1. In order to create a cost estimate for a production lot, starting from the R/3 menu, you choose: *Logistics → Production → Product Cost Planning → Material Costing → Production Lot Cost Estimate → Create.*

    The initial screen appears.

2. You enter the following data in the initial screen:

    Costing variant *PPC5*

    WBS element (production lot number)

    Material

    Plant

    If necessary, costing lot size

3. Choose Enter.

    The *Create Production Lot Cost Estimate: Costing for Mat.* screen appears.

4. Check the costing results and choose *Save*.

5. Activate the costing result.

Creating Planned Independent Requirements for each Production Lot

Use

In order to be able to carry out production lot planning, you can create planned independent requirements with reference to the production lot, that is, you enter a WBS element, for the material in Demand Management.

You also create planned independent requirements if the material to be planned is an assembly with the material type HALB. In this case, dependent requirements are determined during the BOM explosion in the MRP run, but no procurements elements are created for them, as only the created planned independent requirements of the assembly are taken into account in MRP.

Integration

If you use sales and operations planning, you can also carry out flexible planning for each production lot and then transfer the results by entering the WBS element in Demand Management. **See also:** Transferring the Flexible Planning Results [Page 36]

You can then display the planned independent requirements for each production lot in Demand Management.

Prerequisites

You have assigned a strategy group, which is intended for production lot planning, to the material in the material master.

Features

You can create planned independent requirements for each production lot of a material.

When you create the planned independent requirements for the different production lots of a material, you have to enter the following data, in order for you to be able to assign the production lot number (WBS element) to the planned independent requirements:

- When creating the planned independent requirements for a production lot, you enter a requirements plan number in the requirements plan field. You can choose the requirements plan number as required.

Activities

1. In order to create planned independent requirements, starting from the Demand Management menu, you choose: *Planned indep.reqmts → Create*.

   The initial screen appears.

2. Select the *requirements plan* and enter the *requirements plan number*.

3. Enter the *plant* and choose Enter.

   The *planning table for planned independent requirements* screen appears.

4. Enter the material and the quantities into the periods.

5. Select the line and choose Goto → Additional data.

The dialog box for *Additional data: planned independent requirements* appears.

6. Enter a **Q** for *individual project planning* in the *acct assmt cat.* field and choose Enter.

    The account assignment data dialog box appears.

7. You enter the *production lot number* in the *WBS element* field for which you would like to create the *planned independent requirements*, and choose *Enter*.

8. Exit the *additional data* screen by choosing Enter.

    The *planning table for planned independent requirements* screen appears again.

9. Save your data.

10. If you would like to allocate a parameter effectivity, change the planned independent requirements by using transaction MD62.

11. Select the line and choose Goto → Additional data.

12. Choose "create" in parameter effectivity and allocate an effectivity.

Transferring the Flexible Planning Results

Use

You can carry out flexible planning (sales and operations planning) for a material, which is planned with a production lot, and then transfer the planning results to Demand Management with reference to the appropriate production lot (WBS element).

Prerequisites

The prerequisites for transferring the results for each production lot from flexible planning to Demand Management are:

You have created an information structure which includes a characteristic with a data element or the domain PS_POSNR (WBS element).

In Customizing for Sales and Operations Planning, in the IMG activity "Set parameters for info structures and key figures", you have set the *Transfer to Demand Mgmt with user exit* indicator. You then choose the function key: *Set parameters for info structures and key figures*.

Features

In order to transfer the results, you have to use the following functional enhancements. These enhancements enable data from other levels other than material/plant to be transferred:

    MCP20020 (both online and in batch)

    MCP20021 (both online and in batch)

    MCP20023 (for batch)

If you transfer the data online, you have to enter the production lot number (WBS element) by choosing *Extras -> WBS element.*

Carrying out the MRP Run

Use

During the MRP run, the system determines the material requirements that are needed to produce the production lot, and creates the necessary procurement elements with reference to the production lot (WBS element).

Prerequisites

- In Customizing for MRP, in the IMG activity *"Define BOM explosion control",* you have set the indicator: *Procedure with sales order/WBS BOMs active*.

- In the material master record of the material, for which you have created production lots, you have set the indicator to *1* in the field *MRP dep.requirements* of the *MRP data*. This indicator means that, during the MRP run, no receipt elements (planned orders, purchase requisitions and so on) are created by the system for the dependent requirements of the material (dependent requirements, dependent reservations, reservation requirements).

- You have created *planned independent requirements* for the finished product or for the assembly with reference to the *production lot* (WBS element) in Demand Management.

Features

- You can carry out a total planning run or a single-item, multi-level planning run.

- The planning run creates dependent requirements for assemblies (with material type: HALB) for which production lots and planned independent requirements have been created. However, no receipt elements are created for these dependent requirements, as only the available planned independent requirements for the material are taken into account in the planning.

- The work breakdown structure BOM, which you created for the production lot, is used for the BOM explosion in the planning run. If you have not created a work breakdown structure BOM, the system uses the material BOM.

- The system creates procurement elements that are assigned to the account of the production lot (WBS element) for every BOM level of the material, which is designated to be planned using production lots.

- An individual project segment is available at every BOM level for the production lot, which are then displayed in MRP Evaluations. The required quantities for the production lot are managed and billed as individual project stock.

Activities

In order to carry out material requirements planning, starting from the MRP menu, you choose: *Total planing*, *Sng-item, multi-lvl* or *Sng-item project.*

Evaluation of MRP Results

Use

You can check the planning results in MRP Evaluations.

Features

Displaying the MRP List or Current Stock/Requirements List

- A individual project segment is displayed for each production lot of a material with the production lot number (WBS element). In the individual segments, the receipt and issue elements are listed which are assigned to the account of the production lot (WBS element). This applies to both the finished product or the assembly, for which the production lot was created, and for the components which are necessary for the production of a material with a production lot.

- If you have created a production lot (with individual project stock) for an important assembly with the material type HALB, and this assembly is built into a finished product as a component which is also planned with the production lot number, you can recognize the following results in the MRP list or the current stock/requirements list of the assembly as described below:

   The dependent requirements of the assembly, which the system calculated when exploding the BOM of the finished product, are listed in the project segment of the production lot for the finished product. No planned orders were created for these dependent requirements.

   In the individual project segment of the production lot that was created for the assembly, you see the planned independent requirements with the requirements type VSFB, which you have created for the assembly, and the corresponding receipt elements.

Activities

Starting from the MRP list or the current stock/requirements list, you can display the account assignment data of the MRP elements:

- In order to display the account assignment data of a planned order, starting from the details screen of the planned order, you choose the *Acct assgt data* tab page. The production lot number is displayed in the *Project* field.

- In order to display the account assignment data of a purchase requisition, you select an item from the purchase requisition and choose the *Acct assgts* key. In the dialog box for account assignment, you see the production lot number in the *WBS element* field.

Converting Planned Orders

Use

You can collectively convert planned orders into production orders or into purchase requisitions.

The reference to the production lot number (WBS element) remains unaffected by the conversion.

Features

Collective Conversion of Planned Orders to Production Orders

With the collective conversion into production orders, you can enter the production number in the *WBS element* field of the initial screen, for which you would like to convert planned orders. The system then automatically selects all planned orders that are assigned to the account of the WBS element. For the order type, you can use, for example, the standard order type PP01.

Collective Conversion of Planned Orders to Purchase Requisitions

With the collective conversion into purchase requisitions, you can enter the production number in the *WBS element* field of the initial screen, for which you would like to convert planned orders. The system then automatically selects all planned orders that are assigned to the account of the WBS element.

Activities

To collectively convert planned orders, starting from the MRP menu, you choose: *Planned order → Convert to pur.req* or *prod.ord. → Collect. conversion.*

Carrying Out Production and Backflushing

Use

The production of a material for which you have created one or several production lots, in addition to the production of the necessary components are carried out with reference to the production lot (WBS element). The WBS element is displayed in the planned order and in the production order.

You have to enter the production lot number (WBS element) when backflushing or posting goods movements.

Integration

You can use the production order management or repetitive manufacturing to control the production of individual production lots.

If you use *production orders*, you can manage the production lot as *valuated individual project stock*. You achieve this by using a *project profile* when creating a production lot and by flagging *valuated stock* in Customizing for Project System.

If you work with repetitive manufacturing and use *final backflush for production lots*, you have to use *non-valuated individual project stock* for the production lot (as of Release 4.5A). You achieve this by using a *project profile* when creating a production lot and by flagging non-*valuated stock* in Customizing for Project System.

Features

Functions in Repetitive Manufacturing

The following functions are available in repetitive manufacturing to support you when producing the production lot:

Decompressed Representation of MRP Segments in the Planning Table

In the planning table, you can choose a decompressed representation of the MRP segments. This allows you to display the individual segments of the production lots (project segments) in addition to changing production quantities of a production lot or assigning additional lines.

WBS Element in the Pull List

By entering a WBS element number, you can select particular component requirements: The pull list searches for planned orders which contain the WBS number entered and calculates the component requirements for these planned orders.

The WBS number is then one of many selection criteria in the pull list which are used by the system to determine the missing parts.

The missing parts calculation only refers to the individual project stock when you enter a WBS element. The stock for the project number is managed separately, thus the missing parts calculation is also only carried out with reference to this individual project stock.

Backflushing

For backflushing in Repetitive Manufacturing, see Final Backflush for Production Lots [Page 42].

Final Backflush for Production Lots

Use

You use this function when you produce materials with reference to a production lot and would particularly like to use the simplified backflush of repetitive manufacturing. The production lot (WBS element) is then the account assignment object in which the incurred costs are collected.

Prerequisites

- You have entered a repetitive manufacturing profile in the material master of the material for which you have created a production lot.

   As the costs are assigned to the account of the production lot (WBS element) and a costs collector is therefore not necessary, you do not create a cost collector during this process.

- All additional settings are the same as those for repetitive manufacturing for stock items.

- The individual project stock of the production lot has to be non-valuated individual project stock. In order to achieve this, you must have used a project profile that is defined as being for non-valuated individual project stock, when creating the production lot.

- You have created a cost estimate for the production lot.

Features

- During the final backflush, the system determines the planned orders that are assigned to the account of the WBS element (the production lot number).

- The system explodes the BOM of the production lot.

- The system posts the goods receipt for the finished material and the backflush of the components. It creates material documents and accounting documents during this process.

- The system reduces the planned orders or run schedule quantities for the material by the backflush quantity. The system uses one of the following strategies for the reduction of planned orders that you have defined in Customizing:

- With Backflushing [Ext.] for materials that are planned and produced with production lots, the costs are posted to the production lot (WBS element). The valuation basis for this is the cost estimate for the production lot. If you have not created a cost estimate for the production lot, the system uses the standard cost estimate of the assembly as the basis for valuation.

- The system debits the WBS element with the following costs:

   With material costs

   The system determines the prices of the components used from the material master record. It then assigns the total prices to the account of the production cost collector.

   Production activity

   As an option, you can post production activities. The system determines the production costs from the standard cost estimate for the production lot or for the material. With the final backflush for the production lot, you can also enter actual times for the production

lot. The production activities are then posted on the basis of the production times which were actually required for the production lot.

Posting the Goods Receipt for the Production Lot

Procedure

1. Starting from the menu screen for Repetitive Manufacturing, you choose: Backflush → Final backflush for production lot.

    The *Goods receipt for production lot* screen appears.

2. Enter the following data:

    Posting Date

    Using this date, the system determines the current BOM if you have not specified an additional revision level.

    Document date

    The current day's date is suggested as the document date. Check the date.

    Plant

    Enter the plant for which you would like to carry out the goods receipt for the production lot.

    Production lot

3. Choose Enter.

4. Using the *WBS element* (production lot), the system determines the corresponding planned orders:
    A dialog box appears in which the planned orders are displayed.

5. If the system finds several planned orders, it selects the "oldest" planned order.

    The planned order appears in the appropriate field and the planned order quantity is suggested as the backflush quantity.

6. In the quantities data segment, you enter either the quantity which is to be backflushed or scrap and a reason for the scrap. If you would like to post both yield and a scrap quantity, you have to carry out the final backflush twice.

7. You now have various possibilities:

    You choose: *Edit → Actual data*, in order, for example, to check the data of the components or enter actual times. (See also: Entering Actual Times [Ext.]).

    You choose *Goto → Change parameters* in order to, for example, post ordering costs or to post the goods receipt in another type of stock.

Reducing Planned Independent Requirements and Individual Project Stock

Use

When the production of a production lot is complete, the planned independent requirements are then reduced.

Features

- Reducing planned independent requirements of production lots **with individual project stock**:

    The complete materials of the production lots are then classed as project stock. The individual project stock and the planned independent requirements are not reduced until the goods issue for the product is posted to a sales order or to a production order. The sales order or the production order, however, must have been created with reference to the production lot number (WBS element).

    If you have created a network for a sales order, the planned independent requirements and individual project stock of the production lot are reduced if the goods issue is posted to the network.

- Reducing planned independent requirements of production lots **with transfer posting to the plant stock**

    The complete materials of the production lot remain as individual project stock until the production of the production lots has been completed and the materials have been transferred to the plant stock via Transfer Posting [Page 46]. The planned independent requirements are reduced as a result of this transfer posting.

Transferring Material from Individual Project Stock to Plant Stock

Use

The transfer posting of materials, after completing the production of individual project stock of the production lot, to plant stock is only necessary for *Production lots with transfer posting*.

Procedure

1. Starting from the *Inventory Management* menu, choose the *Reposting* function key.

    The *Enter transfer posting*: *Initial screen* appears.

2. Enter the movement type 411 (*Transfer posting project to own*) and the special stock indicator **Q** as well as the plant.

3. Choose Enter.

    The *Enter transfer posting*: *Initial screen* appears.

4. Enter the necessary data, for example, like material, quantity. Enter the production lot number in the WBS element field.

5. Save your data.

Result

The materials are transferred from individual project stock to the plant stock.
Every sales order or, in the case of assemblies with the material type HALB, every production order, can use the materials from the plant stock to meet their requirements.

The planned independent requirements of the material that were created for the production lot are reduced as a result of this transfer posting.