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BaanERP - Enterprise Planning

Net Change Planning

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1. Introduction

The Enterprise Planning (EP) module of BaanERP contains the planning algorithms that are used to generate production, distribution and purchase plans and planned orders. These regenerative planning runs are typically executed in batch mode during the night or in the weekends. In some business situations companies want to plan with a higher frequency, to assess the implications of certain business events. For example, a new sales order has been entered in the system, the physical stock on hand was adjusted because of a cycle count, or a change in the product structure (Bill of Material, Routing Operations) has taken place.

A regenerative planning run for all items often takes too much time to assess the impact of a limited number of such business events. Therefore, EP offers the functionality to execute the planning run in '**net change**' mode. This means that only those items that were affected by such a business event since the last regenerative planning run are planned for.

In this document we describe how a net change planning run can be executed in EP (Chapter 2). Furthermore, the business events that trigger the setting of net change flags for plan items (Chapter 3) and general items (Chapter 4) is described in detail. Finally, a summary on net change is given (Chapter 5).

2. Net Change Planning in EP

2.1 Net Change Planning

In EP there are two types of planning runs: 'Simulate Orders' (cprrp1210m000) and 'Simulate Master Plan' (cprmp1202m000). Both the 'Simulate Orders' session (for creating planned supply within the order horizon) and the 'Simulate Master Plan' session (for creating planned supply outside the order horizon but within the planning horizon) can be executed in net change mode (only for the actual scenario). In 'Simulate Orders', the option ' **Run a Net Change RRP Run** ' has to be checked (see Figure 1) if you want to execute a net change planning run.

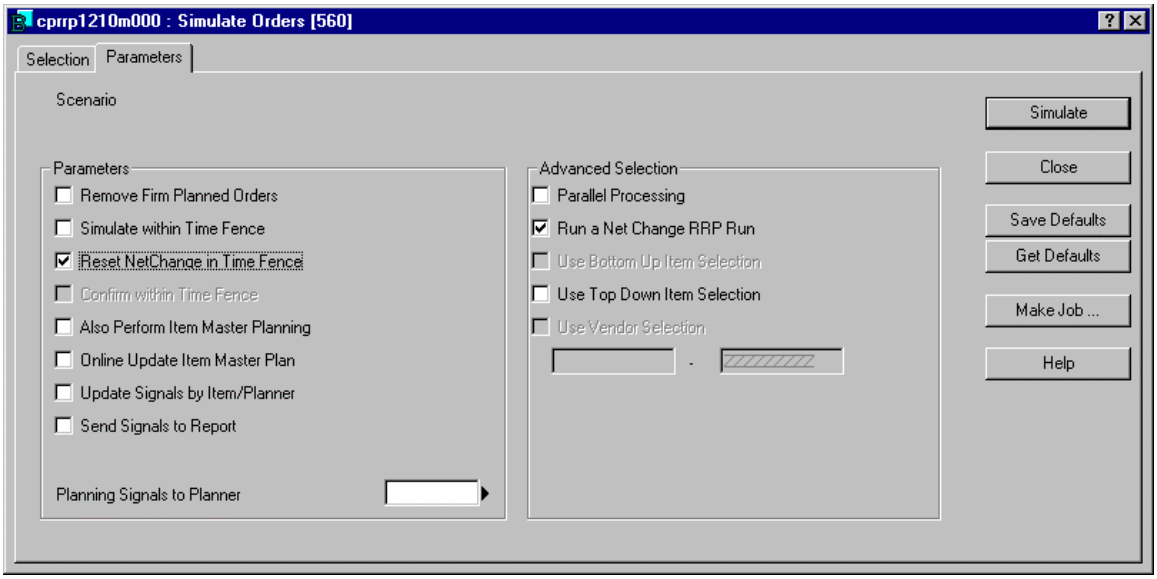

Figure 1: 'Simulate Orders' in net change mode

For every plan item in the selected range, the system will check if the item has been flagged 'net change' (see section 2.2 for more details) and the net-change date is within the selected order plan time frame or order horizon . If so, the item will be simulated, if not, the item will be skipped from the planning run.

The same principle holds for the session 'Simulate Master Plan'. If the option ' **Net Change Run**' is checked, only those plan items in the selected range will be planned that are flagged 'net change' (see Figure 2) and the net-change date is within the selected master plan time frame or planning horizon.

The second use of the 'net-change date' is an indication to the planner if the changes to the item are valid for the short term (i ndicates that there is little time to react), or for the longer term (indicated that there is more time to react).

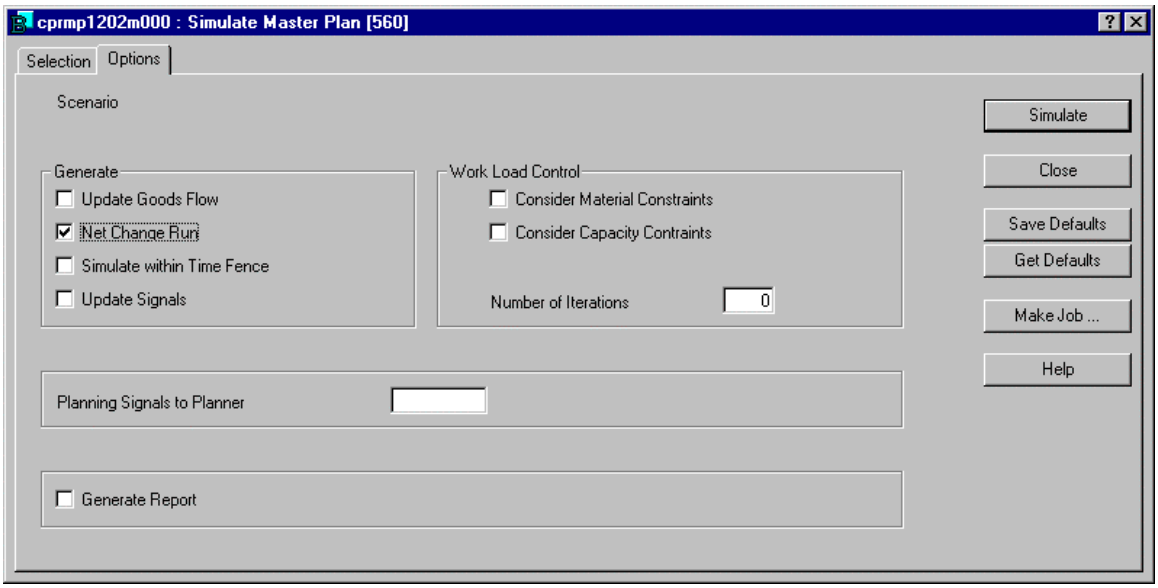

Figure 2: 'Simulate Master Plan' in net change mode

2.2 Simulate Orders – Net Change

When the 'Simulate Orders' session is run in net change mode, the system will automatically plan only for those plan items that are flagged 'net change' within the selected order plan time frame or order horizon. In fact, there are two places in the system where a net change 'flag' and a net change 'date' is maintained for an item, that are relevant for order planning:

?? Plan Item Data (cprpd1500m000), 'Net Change' tab: a checkbox '**Net Change**' and a field '**Date**' (see Figure 3).

?? Item Ordering Data (tcibd2500m000), 'Generation II' tab: a checkbox '**Net Change MRP**' and a field '**Net Change Date**' (see Figure 4).

The differences between these flags/dates and the way they are triggered in the system is discussed in chapters 3 and 4.

A plan item is considered for net change planning if one or both checkboxes are enabled. The net change date is equal to the minimum of both displayed dates. Once the planning of an item has been completed, the net change flag will be 'pushed out' or 'reset'.

'Pushed out' into the future if the planning run is not until the end of the order horizon, or when the item has a master planning period after the order horizon (so called combined order planning + master planning). The 'push out' date will be the end of the order planning date + 1 second.

'Reset' to NO, and a removal of the date, will happen when planning is performed till the end of the order horizon and the item has no master planning period after the order horizon.

For order planning, there is an additional option in 'Simulate Orders' that is relevant for net change planning. The option '**Reset NetChange in Time Fence** ' (see Figure 1) determines whether a net change date that falls within the time fence should be reset or not after the simulation for a plan item has been completed. This option is only relevant when you do NOT simulate within the time fence. If you do simulate within the time fence, this option is disabled and the net change date and flag will automatically be reset after completion of t he simulation The same principle of 'pushed out' or 'reset' applies.

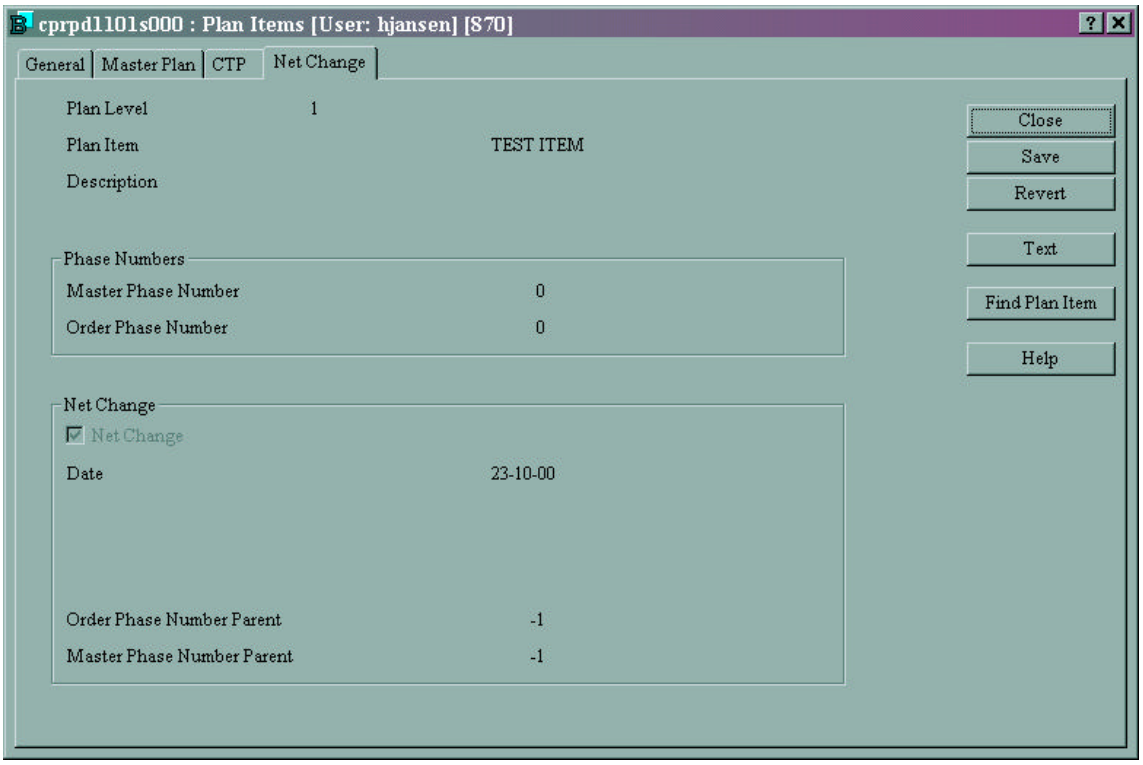

Figure 3: Net change information in Plan Item Data

2.3 Simulate Master Plan – Net Change

When the 'Simulate Master Plan' session is run in net change mode, the system will automatically plan only for those plan items that are flagged 'net change' within the selected master plan time frame or planning horizon. Again, there are two places in the system where this information is stored, that is relevant for master planning:

?? Plan Item Data (cprpd1500m000), 'Net Change' tab: a checkbox ' **Net Change**' and a field '**Date**' (see Figure 3).

?? Item Ordering Data (tcibd2500m000), 'Generation II' tab: a checkbox ' **Net Change MRP**' and a field '**Net Change Date** '. Note that the same information is used for order planning as well.

A plan item is considered for net change planning if one or both checkboxes are enabled. The net change date is equal to the minimum of both displayed dates. After a plan item has been

planned, the net change flags and dates of the plan item will be ‘pushed out’ or ‘reset’ depending on the simulation end date.

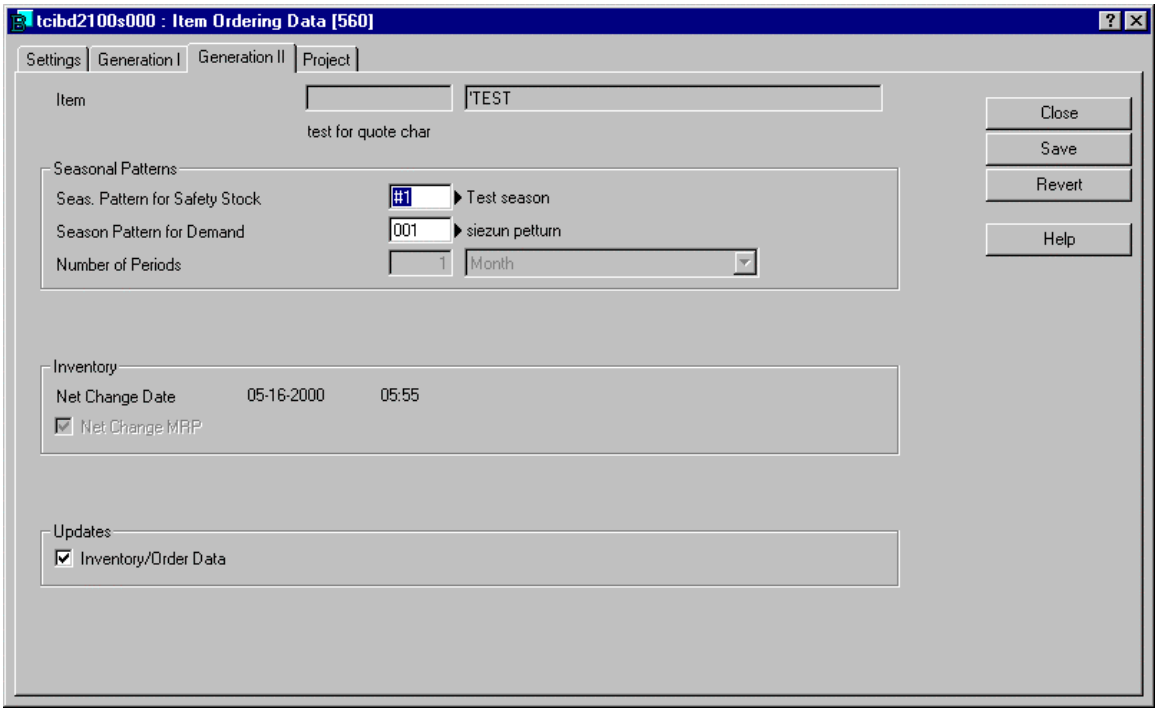

Figure 4: Net change information in Item Ordering Data

3. Net Change Trigger for Plan Item Data

There are a number of business events that trigger the setting of the net change flag and date in the session 'Plan Item Data' (cprpd1500m000). The flags and dates we consider in this chapter are:

Flag

?? Net Change

Date

?? Date

3.1 Special Demand

When the user enters/changes a special demand (cpdsp1200m000), the net change flag and date will be set. The net change date is equal to the date of the special demand.

3.2 Item Master Plan

When the user enters/changes a 'forecast', an 'extra demand', or an ' inventory plan' in the Item Master Plan (cprmp2101m000), the net change flag and date for the plan item will be set. The same rules are applied as described in section 3.1.

3.3 ATP/CTP

When entering a sales order line for an item, it is possible to perform an ATP/CTP check in Enterprise Planning. In the session 'EP Parameters' (cprpd0100s000) the user can specify if an 'Online ATP Update' should be done in EP after saving the sales order line. If this is the case, the net change flag of the plan item involved is set and the net change date is set to the date where the ATP change took place.

It is also possible to apply the concept of 'Component CTP' in Enterprise Planning (i.e., the availability of critical components is taken into account when entering a sales order for the end-item). In that case, 'CTP reservations' might be made for those critical components. This will trigger the setting of the net change flag and date of those critical components (i.e., plan items) as well.

3.4 Order Planning

When the user enters/changes a planned order manually in the system, the net change flag/date will be set. The net change date is equal to the finish date of the planned order. The resulting dependent demand will trigger the setting of the net change flags/dates of the components (in case of production) or supplying items (in case of distribution). The same will happen when during a 'simulate orders' run, dependent demand is calculated for plan items.

3.5 Simulate Master Plan

When master planning is performed, dependent demand for critical materials (as maintained in the Bill of Critical Material) is calculated. This will trigger the setting of the net change flags and dates of those critical materials. So, if a plan is created for the parent item (either manually or through simulate master plan), the net change flags and dates of the critical components are automatically set. The net change date for such a plan item is equal to the date of the dependent demand.

When you run ‘simulate master plan’ in net change mode, the system will also consider all plan items that have a negative projected inventory at any point in time, even if the net change flag has not been set for such a plan item.

3.6 Initialize, Roll & Update

When running the session ‘Initialize, Roll and Update Scenario’ (cprpd4200m000), the net change flag and date will be set for all plan items involved. The net change date will be set to the start date of the plan. If the plan is initialized or rolled, the associated plan items will automatically be flagged ‘net change’.

3.7 Bill of Material

When a new BOM line item is entered (tibom1510m000), the net change flag and date for the corresponding plan item (i.e., plan item which has the same cluster as the warehouse defined in the BOM line) is set. The order net change date is set to the current date.

When saving a BOM line (i.e., an existing line has been changed or a new line has been entered), the net change flag and date of the *parent* item will be set as well if any of the following fields have changed (the net change date will be set to the current date):

- Item Code
- Effective/Expiry Date
- Net Quantity
- Scrap Factor/Quantity
- Use Lead Time Offset
- Lead Time Offset
- Yield Agg. Planning
- Routing Scrap Agg.
- Phantom
- Use Phantom Inventory

If the BOM item is a phantom item, the net change flag/date will also be set for the BOM item itself.

3.8 Bill of Critical Material

When a BCM line is saved, the net change flag/date are set for the parent item. The net change flag/date for the BCM line item itself is only set when a new BCM line is inserted.

The plan item for which the flag/date will be set is the plan item with the ‘empty’ cluster segment. The net change date is set to the effective date of the BCM line.

3.9 Item Production Data

The net change flag/date is set for the plan item with the ‘empty’ cluster, if any of the following fields are changed in the session ‘Item Production Data’ (tiipd0501m000):

- BOM Unit
- Scrap Factor/Quantity
- BOM Updated by Configurator
- Order Lead Time

?? Routing Unit

?? Order Qty Dependent Routing

The net change date is set to the c urrent date.

3.10 Routing Code

The net change flag/date is set for the plan item with the ‘empty’ cluster, if any of the following fields are changed in the session ‘Routing Codes by Item’ (tirou1501m000):

?? Standard Routing (checkbox and description)

?? Routing Unit

?? Up to Order Quantity

?? Corrected Bottleneck Work Center

?? Corrected Bottleneck Rate

?? Automatic Update

The net change date is set to the current date.

3.11 Operations

The net change flag/date is set for the plan item with the ‘empty’ cluster, if any of the following fields are changed in the session ‘Routing Operations’ (tirou1502m000):

?? Task

?? Work Center

?? Machine

?? Effective/Expiry Date

?? Setup Time

?? Production Rate

?? Run Time

?? Operation Overlap

?? Man/Machine Occupation

?? Scrap Quantity

?? Yield Percentage

?? Subcontracting Rate Factor

?? Count Point

3.12 Bill of Critical Capacities

When any changes are made in the Bill of Critical Capacities (tirou2530m000), the net change flag/date is set for the associated plan item with the ‘empty’ cluster. The net change date is set to the effective date i n the BCC.

3.13 Project Control (PCS)

There are several sessions in PCS where information can be copied between projects. The net change flag/date is set for the ‘copy-to’ items, when any of the following sessions is run:

?? Copy Project (tipcs2210m000)

?? Copy Standard Product Structure to Customized Structure (tipcs2230m000)

?? Copy Customized Product Structure to Customized Structure (tipcs2231m000)

?? Copy Customized Product Structure to Standard Structure (tipcs2232m000)

The net change date is set to the current date.

3.14 Supplying Relations

When changes are made in a supplying relation (cprpd7530m000), the net change flag/date will be set for the *receiving* item in the supplying relation. The net change date will be set to the effective date of the supplying relation. If th ere is no receiving item in the supplying relation (e.g. the supplying relation is defined between clusters or item groups), no net change flags/dates will be set.

When a new supplying relation is created, the net change flags/dates will also be set for the *supplying* item in the supplying relation. This is also the case when the supplying item of an existing supplying relation is changed.

4. Net Change Trigger for Item Ordering Data

There are a number of business events that trigger the setting of the net cha nge flags and dates in the session 'Item Ordering Data' (tcibd2500m000). The flags and dates we consider in this chapter are:

Flags

?? Net Change MRP

Dates

?? Net Change Date

4.1 Warehouse

When the warehouse in the session 'General Item Data' (tcibd0501m000) is changed, the net change flag/date are set for the corresponding item. The net change date is set to the current date.

4.2 Planned Inventory Transactions

All anticipated inventory changes for an item are recorded in the session 'Planned Inventory Transactions by Item' (whinp1500m000). Examples of events that lead to a registration of a planned inventory transaction are: entering a sales order in SLS, creating a purchase order in PUR, creating a production order in SFC, creating a warehouse order in WH, transferring a planned order from EP to one of the execution modules, etc. Every time a new planned inventory transaction is recorded or an existing transaction is changed, the net change flag/date of the corresponding item is set. The net change date is always set to the current date.

When the session 'Rebuild Planned Inventory Transactions' (whinp1200m000) is run, the net change flag/date for all items are set. The net change date is set to the current date.

4.3 Physical Stock

Every time a change takes place in the physical inventory on hand of an item, the net change flag/date is set. The net change date is set to the current date. The physical inventory on hand changes when an inbound (stock increase) or outbound (stock decrease) procedure in warehousing is executed., or a manual stock adjustment is executed (session 'Cycle-Counting/Adjustment Orders', whinh5500m000).

Note

In 'Item Production Data' (tiipd0501m000) there is a field called 'Net Change SFC'. This net change field is not used by Enterprise Planning, it is only used by SFC (Shop Floor Control). This field is marked when a change in BOM or Routing takes place.

5. Summary

Net change planning is needed to assess in a reasonable time limit the planning impact of some business events. Instead of planning all items (regenerative planning run), only those items will be planned for which changes took place (net change planning run). In Enterprise Planning net change planning can be performed for both order planning and master planning. To identify the items that need to be planned in a net change planning run, net change flags/dates are read from two different places: 'Plan Item Data' and 'Item Ordering Data'. When these flags and dates are set is described in detail in this document.