A Complete Guide to
Oracle ASCP's Inline Forecast Consumption Solution

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Introduction

In Assemble to Order scenarios involving demand driven new BOM definition process, forecast is loaded on *representative assemblies* instead of actual end items. Therefore, it is a challenge to deduce a fairly accurate net component demand post its consumption by dependent demand coming from upstream representative parent assembly forecast. Base Model driven Inline Forecast Consumption in Oracle ASCP is a simple process to cater to this requirement. It eliminates the need for complex customizations to achieve these results. This paper explains the end-to-end Inline Forecast Consumption process through a business case which is based upon an implementation of this solution at a client site. It also highlights the business value delivered in terms of improvement of the organization's planning efficiency and other tangible/intangible benefits.

Background

In discrete manufacturing industries that operate on Assemble to Order or Configure to Order business models, the bills of materials have a common pool of components which accounts for maximum share of the product composition. Product specific components are added on top of this to build a variety of end items. Based on actual demand, new ATO items and BOMs are set up and those include the common pool and the delta share of components.

In such scenarios, forecasting is based on representative assemblies which contain the common pool of components which need to be forecasted for faster order fulfilment of configurations that are regularly ordered. The major shortfall here is that the standard forecast consumption process in Oracle ASCP will not consume this forecast with actual sales order demand as the part numbers are different from those of the representative assemblies.

In most cases, customized solutions are developed to derive component level demand from both representative assembly forecast as well as sales orders and then perform consumption at that level. The logic written in such framework is quite complex. Also, these solutions call for considerable maintenance effort and lack robustness and reliability of results.

The Inline Forecast Consumption solution is a simple answer to the challenges explained above. It leverages features offered by Oracle ASCP and achieves the desired results through minimal implementation effort. No complex customizations are involved here. It just needs minor adaptation to this concept!

Inline Forecast Consumption Process

In the business scenarios considered in this regard, a fairly accurate forecast can be generated at component level based on usage history and other parameters. Therefore, such component level forecast can be used instead of the representative assembly forecast. Forecasting tools like *Demantra* can also be leveraged for this purpose. The sales orders, in turn, can be entered at all levels, i.e., Finished Goods, Sub-assemblies as well as Components.

Oracle ASCP explodes the Sales Order demand of end items (both Assemble to Order and Made to Stock) to generate the component level dependent demand at each level of the BOM. Inline forecast consumption then drives the consumption of component level forecast by the component level dependent demand derived in the earlier step. This *inline forecast consumption* occurs at every level of the BOM wherever forecast is available in every eligible planning bucket. It also follows all the related rules (for example, forward/backward consumption days) as set up in the ASCP plan.
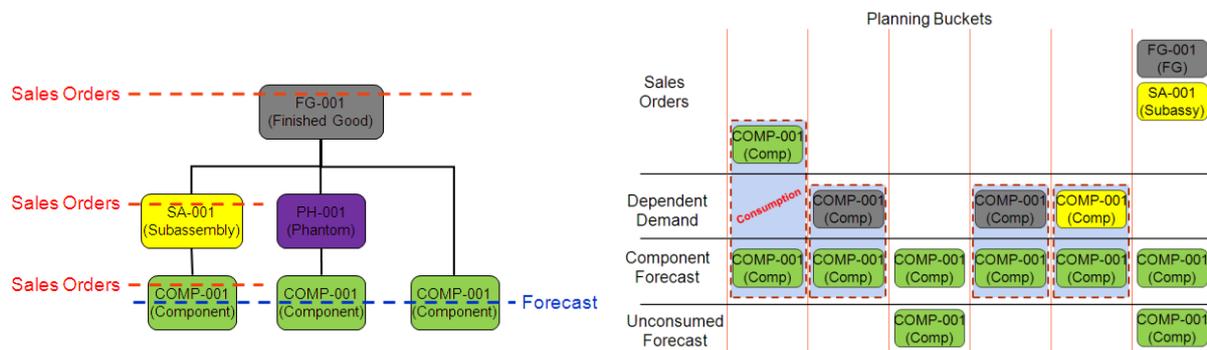

Illustration. 1: Inline Forecast Consumption Process

The process produces consistent results in case of both, under consumption and over consumption scenarios.

In certain cases, sales orders are also entered at component or subassembly level. A direct forecast consumption occurs at this level. Such direct consumption takes precedence over inline forecast consumption, which is also logically expected. For example, if there is a dependent demand as well as a component sales order in a particular planning bucket, then the component forecast in that bucket will be first consumed by the component sales order followed by the dependent demand, if any unconsumed forecast is left over.

Inline Forecast Consumption Mechanism

The inline forecast consumption process is driven by the base model concept. A common *Base Model* is assigned to all Make items in the organization. This is a pseudo item which acts as a filter to make the forecast consumption process operate at each level of the BOM. Once the sales order demand is exploded by ASCP, whenever a component forecast comes across a dependent demand which has this base model assigned one level above it, then it is consumed by this dependent demand. The logic remains consistent from the first level till the last level of the BOM.

The following sections will showcase the Inline Forecast Consumption solution in detail through a business case.

Oracle Applications Setup Requirements

The following setups are required on an Oracle EBS installation to facilitate the inline forecast consumption process:

- Forecast Consumption to be switched off on the *source side* by means of the following profile options:
  - *MRP:Consume Fcst Set Summary* = No
  - *MRP:Consume Forecast* = No

- *Planning Manager* is active and running on the source side

- A representative *Base Model* (BOM Item Type = Model) item is setup in the item master org and assigned to all planning enabled orgs.

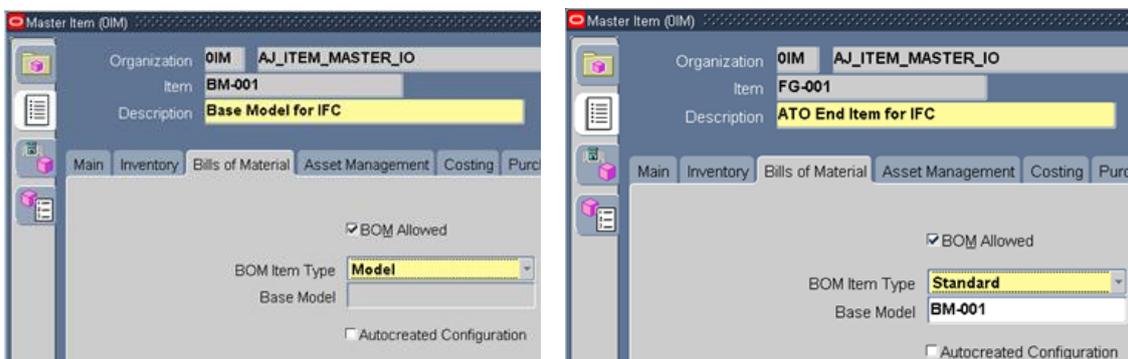- This item is assigned as a base model to *all Make items* at the item master level

Illustration. 2: Setup Requirements

Data Model

- A 2 level BOM comprising of a mix of item types with component quantity = 1 at each level.
- COMP-001: Processing Lead Time = 1 day
- FG-001 & SA-001 lead times rolled up after Routing & BOM definition
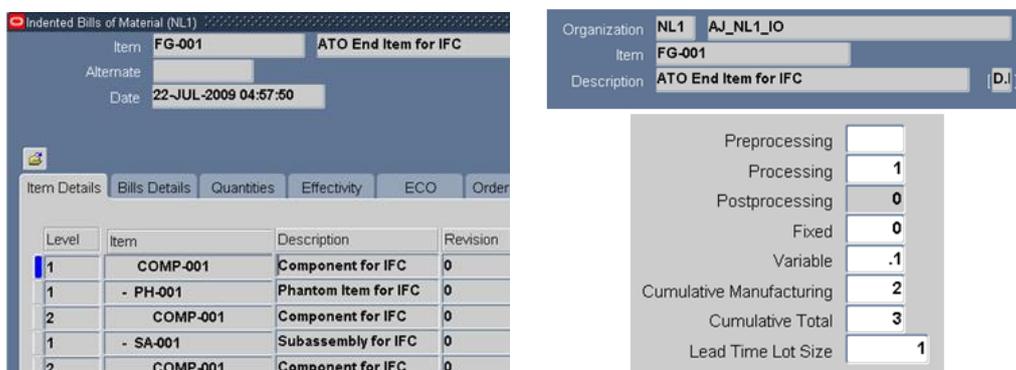 - Variable Lead Time = 0.1 days for 1 piece → 1 day for 10 pieces

Illustration. 3: Data Model

Supply Chain Planning using Inline Forecast Consumption

Plan Options

An ASCP plan is set up with the following plan options:
- Spread Forecast Evenly = Yes
- Backward Consumption Days = 30
- Forward Consumption Days = 25
- Aggregation: 90 days, 8 Weeks, 1 Period

Supply Chain Demand

- Forecast is entered at Component level
- Sales orders are entered at all the 3 levels, i.e., Finished Goods, Subassembly and Component

Illustration. 4: Sales Order Demand and Component Forecast

Planning Cycle

Once the inline forecast consumption related setups are performed, and the demand is loaded in the form of forecast and sales orders, the standard ASCP cycle is executed:
- Standard Data Collections
- Advanced Supply Chain Plan

ASCP Plan Output / Results: Horizontal Plan

The results produced by inline forecast consumption can be seen and analyzed through the horizontal plan for a particular item. In this case, the forecast was entered at component level. Therefore, the horizontal plan for the same is shown below. An *overconsumption* scenario has been considered here.

Illustration. 5: Horizontal Plan for Component

Inline Forecast Consumption at Component Level

- Component level forecast is spread into daily buckets
- The forecast consumption process is then percolated through both Phantom as well as Subassembly
- Forecast entered at component level is consumed by:
    - Sales orders entered at component level
    - Dependent demand of component resulting from upstream sales orders entered at FG level and Subassembly level
- Lead times are taken into consideration while placing the dependent demands in planning buckets
- The inline consumption process also follows backward / forward consumption days logic

		9-Sep-09	10-Sep-09	11-Sep-09	12-Sep-09	13-Sep-09	14-Sep-09	15-Sep-09	16-Sep-09	17-Sep-09	18-Sep-09	TOTAL
FG-001	SO									30		
SA-001	SO										20	
COMP-001	SO + Dependent Demand	30					61		20			111
Consumptions												
COMP-001	Forecast						20	20	20	20	20	
Unconsumed Forecast							0	0	0	0	0	
Overconsumption									11			

Callout boxes:
- FG SO - 17 Sep - 30 / SA - 14 Sep - 30 / COMP - 09 Sep -30
- FG SO - 17 Sep - 30 / COMP - 14 Sep - 30 / PH - 14 Sep - 30 / COMP - 14 Sep - 30 / COMP SO - 14 Sep - 1 / Total: / COMP - 14 Sep - 61
- SA SO - 18 Sep - 20 / COMP - 16 Sep - 20

Illustration. 6: ASCP Plan and Inline Forecast Consumption: Calculations & Results

Calculations

Here is a brief explanation of the ASCP and inline forecast consumption calculations illustrated in the previous sections:

- Forecast of COMP-001 in Week Starting 14-Sep-09 = 100
- Total SO Demand of FG-001 = 30
    - Dependent Demand of COMP-001 = 30 x 3 = 90
        - Split & placed as per lead times of FG-001 & SA-001
- Total SO Demand of SA-001 = 20
    - Dependent Demand of COMP-001 = 20 x 1 = 20
- Total SO Demand of COMP-001 = 1
- Total SO + Dependent Demand: 90 + 20 + 1 = 111
- Overconsumption = 111 − 100 = 11
- COMP-001: Gross Requirements = Planned Orders = 111

Solution Highlights

The highlights of inline forecast consumption solution in terms of the business process involved and implementation considerations are listed below:

- Easy to set up and implement
- Minimum setups involved
- No major business process transformations required
- Ability to use the forecast generated at component level, which in certain cases is more accurate than end assembly level forecast
- Forecast entered at component level consumed by ATO / MTS Sales Orders by drilling down through the BOMs, at each level, till the lowest level of dependant demand
- Consumption calculations for every component are visible through the horizontal plan thereby making it possible for the planners to analyze the same

Value Proposition

The business value proposition and benefits achieved through this solution are as follows:

- The solution is based on standard Oracle ASCP features with no customizations involved
- Facilitates use of component level forecast in supply chain planning in an ATO environment, while the Sales Orders can still be entered at a higher level
- The solution will drive correct consumption at granular level of the demand thereby ensuring optimum gross demand
- Provides better visibility of the forecast consumption process at component level
- Improves planned order suggestions
- Reduces maintenance (in absence of customizations)

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