

## Publicaciones

# Total Value Management with JD Edwards Advanced Planning: An Overview<sup>i</sup>

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JDE's Advanced Planning Solution is a hot topic these days. We predict that the majority of JDE's manufacturing and distribution clients will be using APS within 2 years. The authors are members of the professional team of **S&T – Servicio y Tecnología**. Based in Buenos Aires, Argentina, S&T is a JDE business partner providing Advanced Planning consulting services in Latin America.

### Supply Chain Goals

If you talk with the men and women at the "C Level" (CEO, COO, CFO) they usually will tell you that their supply chain goals are to: reduce cost of goods sold and increase margin, reduce levels of inventory, and make more effective use of expensive plant and equipment assets.

What everyone wants is a system that allows us to:

- Effectively model extended business processes.
- Create an optimized plan across the entire supply chain—this means servicing our customers and taking into account constraints such as plant capacity, availability of transportation and storage capacity, while keeping costs as low as possible.
- Execute against the plan.
- Use real-time data to automatically update the plan.
- Collaborate by communicating in real-time inside and outside the enterprise.

### A Complex Network

Product supply to markets always has relied upon the supply chain. From material suppliers to manufacturing plants, from plants to distribution centers (DCs), from DCs to customers, this chain varies in size and complexity.

To have a successful supply chain planning and optimization system requires the ability to extend beyond the four walls of the enterprise and to collaborate with customers and suppliers.

Companies understand that collaboration adds value to every player in the supply chain including the end customer, a concept that challenges the old idea that every winner needs a loser. Total value added in an integrated and a collaborative supply chain outweighs the sum of the value added by each part.

## Costs and constraints

There are major cost variables to be considered in managing a supply chain. They fall into two categories:

- Hard constraints
- Soft constraints

Hard constraints are not easily overcome (e.g.; buying a new machine or building a new plant). Soft constraints are more flexible (e.g. working overtime or rejecting one order, even though the individual impact of those penalties may not be large). *The optimal solution is the one that supports the desired customer service level while at the same time minimizing costs and respecting constraints throughout the supply chain.*

## A new challenge

At a *strategic level*, suppliers, plants, and distribution centers need to share the following data:

- Demand forecasts
- Capacities
- Operating costs

This data allows optimal long-term capacity and network configuration decisions to be made. At the *tactical level*, collaboration demands that parties exchange detailed information, such as planned capacity or adjustments to forecasts. At the *operational level*, every new purchase order, for example, is transmitted upwards (vertically) so that suppliers are advised in time when replenishment is needed.

The challenge is to *replace material flows by information flows*. The greater amount of relevant information every player has increases his or her ability to positively impact the solution early in the process, the result –a more cost effective solution.

## The JD Edwards Approach: Advanced Planning Solution

Starting with its acquisition in 1999 of Numetrix, JDE's solution has evolved into the current Advanced Planning Solution. Numetrix was a very mature Advanced Planning System, founded about the same time JDE itself was, in the late 1970s. **Advanced Planning** embraces 5 main components:

### 1. Strategic Network Optimization (SNO)

Long-term decisions are not frequent, but they have a major impact on enterprise operations and capacity. **SNO** is a tool that helps determine the optimal configuration of the supply chain. Taking demand forecasts and capacity information as inputs, SNO optimizes the flow of materials across the entire supply chain. SNO has the ability to model "what if" scenarios. These can be run to make determinations regarding:

- Quantity and dates of production
- Selection of suppliers
- Resource utilization
- Justification for opening or closing facilities
- Prebuilding of inventory for seasonality purposes
- Evaluation of new markets

## 2. Demand Planning (DP)

**DP** is an advanced forecasting tool. DP's complex algorithms process both historical and environmental or non-repetitive data, (e.g. new promotions, competitor price moves, and macroeconomic changes). As forecasts are made available to other APS components, they can be reviewed and adjusted by the parties involved.

DP uses Bayesian Statistical forecasting. Unlike most other forecasting systems, which have various formulas from which one is picked as a best fit formula, the Bayesian method uses advanced sampling methods to create an even better forecast of future demand.

DP also includes **Demand Collaboration (DC)**. With **DC** we can allow customers to access their forecast over the web. Changes made by the customer generate real-time messages to the product planner.

## 3. Production and Distribution Planning (PDP)

**PDP** creates an optimized master production schedule that can be automatically passed to MRP for execution. It helps you choose among different suppliers, decide to delay or move up an order. PDP takes into consideration factors such as the cost and capacity in the following critical areas: transportation, storage, and manufacturing.

PDP is the main integrator of the Advanced Planning, and allows real-time visibility of the network status (e.g. inventories at each location and remaining capacity per production line).

PDP has an associated application called Vehicle Loading that optimizes the use of the available fleet by considering vehicle characteristics and product restrictions.

Another feature of this component is the ability to dynamically calculate safety stock. Most other systems, including JDE's MRP system, use a static number for safety stock.

## 4. Production Scheduling (PS)

**PS** is a powerful tool for optimizing line/plant utilization. The output is a feasible schedule that considers capacities and costs (of both inventory and setup). Working shifts and calendar exceptions such as maintenance downtime can be included in the model.

PS takes into consideration the trade off between having more inventory and doing more set ups, depending on the costs of these two alternatives.

Additionally, PS allows the user to generate different "what if" scenarios. What if one line of the plant is stopped for maintenance?. What would be the new schedule?

### **5. Order Promising (OP)**

**OP** is integrated in real-time with both APS and JDE's One World Sales Order Processing module. OP delivers available to promise (ATP) and capable to promise (CTP) answers based on PDP models. The enterprise is in an ATP position when there is available or projected inventory to satisfy demand. A CTP position takes place when there is no projected inventory but production capacity can be assigned to satisfy an incoming order.

Capable to promise goes beyond traditional MRP systems, which assume infinite capacity. Advanced Planning evaluates the real capacity, constraints, and availability of raw materials to manufacture.

You are probably wondering about the relationship between Advanced Planning and JDE's MRP module. **Advanced Planning Agent (APAg)** enables information flows on either a batch or real-time basis between the Advanced Planning components as well as the Inventory and MRP system. (Real-time processing is handled with JDE's XPI functionality). For example, order information and inventory levels are communicated to Advanced Planning from JDE's distribution modules. A master production schedule containing order expedite and defer messages are communicated from Advanced Planning to the MRP module.

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<sup>i</sup> This article applies to both World and OneWorld.

<sup>ii</sup> The authors are members of the professional team of S&T - Servicio y Tecnología. Based in Buenos Aires, Argentina, S&T is a JDE business partner providing consulting services in Latin America. The article was published on the March 2001 issue of JDETips. It can be requested as free sample issue at [www.JDETips.com/RequestFreeIssue.htm](http://www.JDETips.com/RequestFreeIssue.htm)