



A Position Paper



**EVOLVING FROM DISTRIBUTION REQUIREMENTS PLANNING TO  
COLLABORATIVE SUPPLY CHAIN PLANNING**

---

*June 2002*



## **Introduction**

Coordination is the key to survival in today's global, dynamic environment. Distribution and logistics managers are faced with demands to improve service levels while simultaneously lowering costs. In many industries, managing distribution constraints and costs is key to winning in today's intensely competitive marketplace — if the consumer can't get the product from their first choice when they need it, they'll buy from the competition.

Distribution and logistics managers are faced with managing increasingly complex supply chain networks which include multiple suppliers, manufacturing sources, warehouses, and transportation providers; not to mention a dizzying array of product variations. Coordination among these disparate players is key to success. It is no longer acceptable to create plans for only one enterprise.

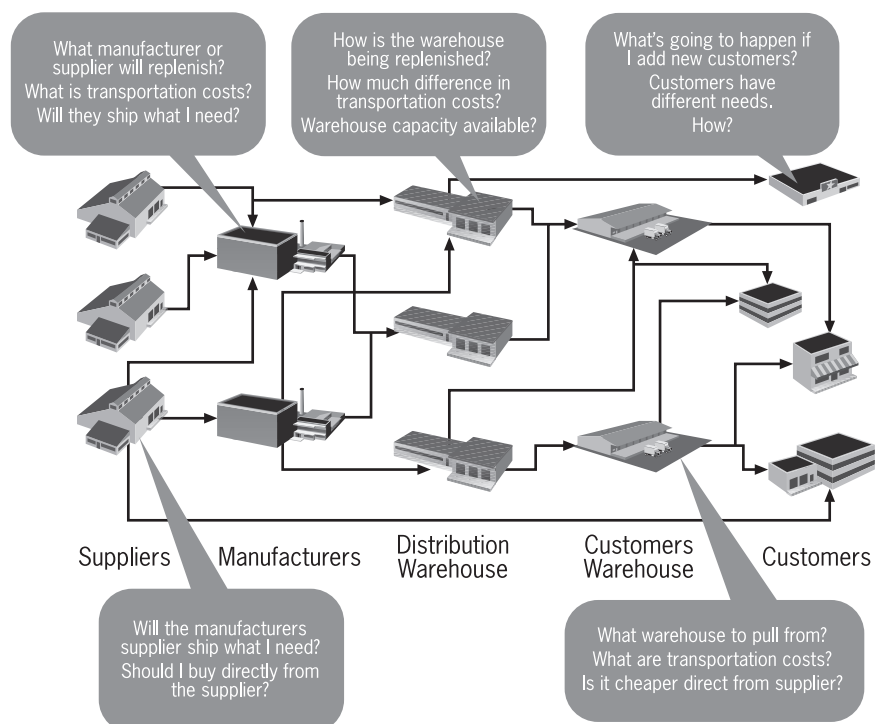
Traditional Distribution Requirements Planning (DRP) tools are not up to today's planning challenge. DRP creates distribution plans without considering the costs and constraints that exist within logistics networks. Furthermore, DRP isn't linked to the plans created by manufacturers, suppliers, or customers.

This paper introduces the concept of Collaborative Supply Chain Planning as the logical evolution to replace traditional DRP, while at the same time extending plans to include collaboration with manufacturers, suppliers, and customers. The result is a plan that considers constraints such as supplier, production, storage, and transportation capacities. It is a plan that utilizes all resources, and takes an end-to-end view of the supply chain.

## Why is Traditional DRP Not Enough?

Why is traditional DRP no longer a viable option for distributors and manufacturers today? Some of the reasons include:

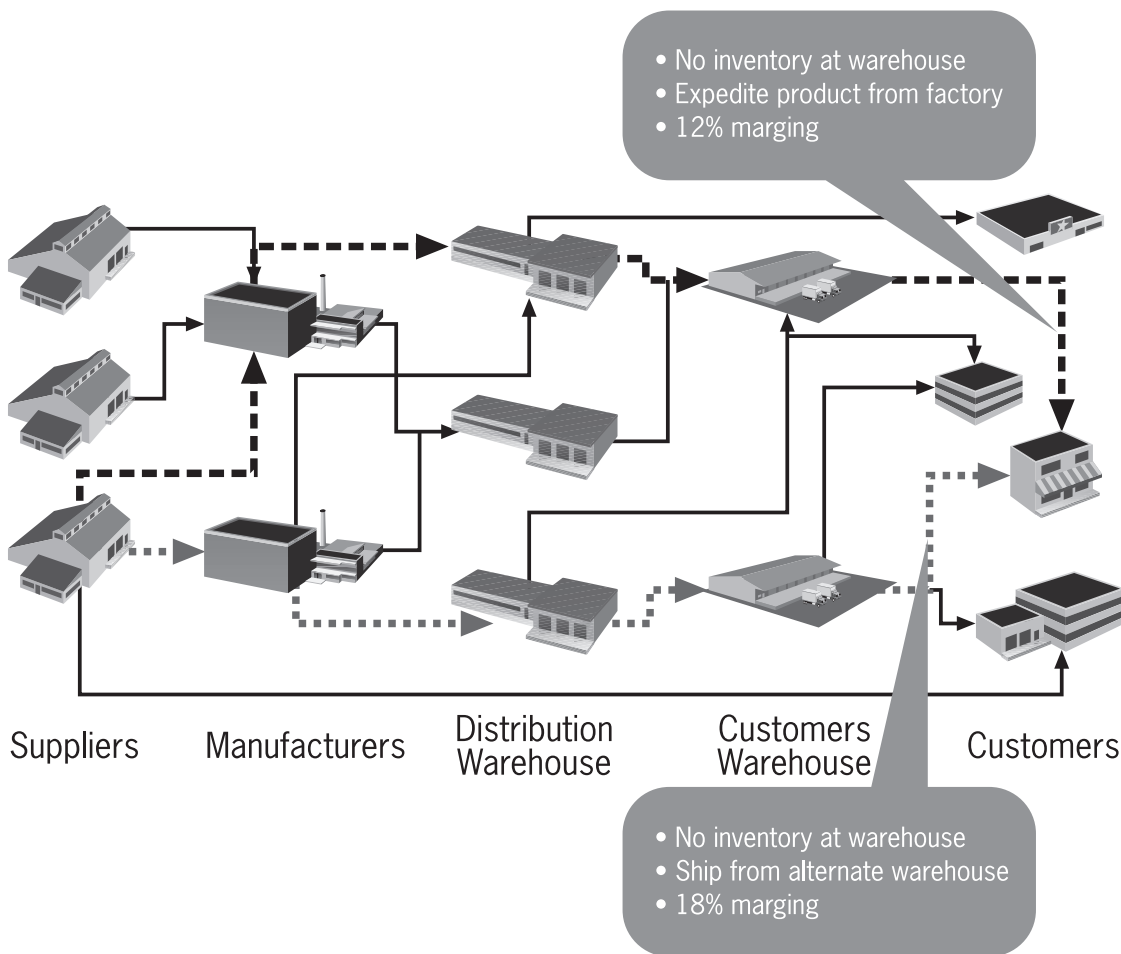
- **Unconstrained Planning** – DRP doesn't consider the real constraints that exist within distribution networks, such as limited transportation capacity and schedules, limited storage space, and the ability of manufacturers and suppliers to satisfy requirements. DRP simply generates a plan based on forecasted customer demand and safety stock policies and assumes the actions required to execute the plan will be taken.
- **Fixed Safety Stock** – DRP assumes safety stock levels are a fixed quantity. There is no ability to vary safety stock policies through time to maintain a constant service level. Sometimes there isn't enough inventory, other times there is excess. It is a no-win situation.
- **Fixed Deployment Network** – DRP instructs products to be deployed based on a pre-defined set of sourcing options. Products move across fixed lanes without considering alternative sourcing possibilities (i.e., product availability in another warehouse), lane capacities (i.e., truck unavailability), or the ability to optimize the movement of products across lanes (i.e., pulling in deployments to fill a truck).
- **Inability to React to Changes** – DRP systems typically run in overnight or weekend batch jobs, but customers can change orders minute-by-minute and the availability of products can change in a moment's notice. DRP can't possibly react to these changes, which leaves planners having to guess what to do next. Even if the DRP program could be run in real time, the plans it generates wouldn't recommend optimal actions to take or prioritize those actions.
- **Unprioritized Messages** – DRP systems may be able to notify planners to take a variety of actions, but it cannot prioritize those actions. Important tasks go unnoticed while irrelevant tasks are actioned with no measurable effect on the business.
- **No Visibility Outside the Enterprise** – DRP systems plan within the enterprise. The best installations can plan an entire distribution network, but they don't include suppliers, manufacturers, or customers in the process.
- **Zero Collaboration** – DRP systems aren't enabled for collaboration. Planners can't easily share information between sites or with customers and suppliers.



Traditional DRP requires the performance of many manual processes to meet customer demand. This proliferation of manual processes creates an endless iteration of longer cycle times, higher distribution costs, and reduced profit margins. Customer service and customer satisfaction suffer, further reducing potential profits.

What if there was better solution? A solution that could incorporate all areas of the supply chain, and in the process, lower costs and improve the bottom line by producing:

- A plan that considers all the necessary costs and constraints
- A system that dynamically creates variable safety stock allocations in the network
- A process that optimizes deployments by allowing the distribution network to be maximized
- A system that produces actions and alerts that are meaningful, prioritized, and related to all levels of the plan, giving planners the best way to solve problems
- A plan that provides complete visibility and collaboration across the supply chain



Collaborative supply chain planning provides the optimal method of supplying customer demand. Collaborative supply chain planning can significantly reduce distribution costs, help increase profit margins, and foster the ability to manage customer relationships.

### Consider All Costs and Constraints

The reality is that every distribution network has constraints and each action taken within the network has a cost. Systems that consider constraints can generate feasible plans. Traditional DRP doesn't recognize constraints. Collaborative Supply Chain Planning not only respects constraints, it understands cost and profit objectives. Meeting objectives without violating constraints allows the creation of an optimal distribution plan that is much better than traditional DRP.

Some examples of the constraints and costs considered in Collaborative Supply Chain Planning include:

**Storage Constraints** – Before a product is shipped to a warehouse is there room to store it? Are there alternative locations where the product can be stored?

**Handling Constraints** – Are the appropriate resources available to unload, move, put away, and pick the product at the source and destination locations?

**Transportation Constraints** – Is there sufficient capacity to ship the product in the preferred mode of transportation? What about alternative modes?

**Transportation Costs** – What is the cost of rail versus truck versus air shipment relative to profit objectives? Are full loads being taken advantage of? Can future shipments be pulled to maximize transportation utilization?

**Opportunity Cost of Production versus Trans-shipment or Substitution** – What is the cost trade-off to produce the product versus sourcing it from an alternative location or substituting it with an alternative product? Which scenario best meets company objectives?

Collaborative Supply Chain Planning gives planners the flexibility to consider alternatives when it comes to planning distribution. Relevant constraints are respected and final plans are optimized for cost and/or profit objectives. The result is improved service levels and lower costs.

### **Dynamic Safety Stock Networks**

For years, safety stock levels have been considered as a fixed quantity by DRP. Collaborative Supply Chain Planning considers safety stock to be a dynamic variable quantity, which should be changed through time to deliver a constant service level to customers. If the goal is to maintain a 98 percent service level, safety stock requirements will fluctuate based on overall demand and the expected variation in demand.

In addition, traditional DRP systems treat safety stock as a property of a given location or warehouse. Collaborative Supply Chain Planning allows established safety stock policies across a network of warehouses resulting in reduced overall inventory levels. The carrying costs of inventory can be compared to the additional trans-shipment costs associated with establishing a safety stock network.

### **Optimized Deployments**

Collaborative Supply Chain Planning optimizes deployment plans based on cost and profit objectives. If the goal is to minimize transportation costs, deployments will be pulled in to fully load the vehicles. If the goal is to minimize inventory investment, deployments will be delayed until the last possible period and trucks may move partially loaded. Optimal plans can be reviewed and adjusted by the planner with full knowledge of the cost and profit implications. Changes can be made and plans updated in real time without waiting for a batch re-calculation.

Collaborative Supply Chain Planning also recognizes that the deployment network is dynamic. Sourcing relationships can vary based on customer priorities or unforeseen supply chain constraints. Planners need to see recommendations and understand the cost and profit implications of making "special" decisions. For example, the planner may accept a recommendation to substitute an upgraded product for a high-priority customer, or trans-ship inventory to circumvent a shortage caused by a damaged pallet of product at one warehouse.

## **Meaningful, Prioritized Alerts**

Collaborative Supply Chain Planning provides meaningful, prioritized alerts that allow the most critical problems to be solved first. "Multi-level pegging" provides instant visibility to the implications of problems both upstream and downstream. Planners can drill down directly from alert messages to get to the cause of the problem. The planner has quick access to whatever information is necessary to solve the problem, thus increasing productivity and allowing the planner to focus on issues that will impact the business.

In today's complex supply chains, there is usually more than one way to solve a problem. Alert messages generated to multiple planners are retracted as soon as the problem is solved. This minimizes thrashing in the plan and frees up planners to do meaningful work.

## **Complete Visibility and Collaboration Across the Supply Chain**

Collaborative Supply Chain Planning brings suppliers, manufacturers, and customers into the distribution planning process. Partners outside of the enterprise can be modeled with just the level of detail required to make them an active participant in the planning process. Profiles of Trust control access to information based on the level of the partnership in place. Key customers may be able to view plans, change orders, and forecasts. Suppliers may be limited to visibility of inventory on hand at selected warehouses with no update capabilities. Real-time alerts deliver action messages to internal and external parties. Web clients provide access to information via an Internet browser. Extended business processes (XBPs) linked directly to partners' systems are supported using XML or EDI standards.

## **Conclusion**

DRP systems are outdated and ineffective when used to plan and schedule distribution of products. Traditional DRP is unable to plan around constraints or optimize based on cost/profit objectives. DRP systems are not collaborative and cannot integrate the entire supply chain — and they put a company at a competitive disadvantage because service can't be improved and costs aren't reduced.

With Production and Distribution Planning, J.D. Edwards delivers Collaborative Supply Chain Planning to replace traditional DRP. A module of our Advanced Planning solution, Production and Distribution Planning replaces the DRP algorithms in WorldSoftware™, OneWorld® Xe, or ERP 8.0 with a constraint-based optimization tool enabled for collaboration. Production and Distribution Planning works in conjunction with other modules of the Advanced Planning solution including Demand Planning, Demand Consensus, Order Promising, and Production Scheduling to deliver a comprehensive package for supply chain planning that allows better relationships to develop with customers, suppliers, and trading partners and makes staff more productive in order to remain competitive. These solutions help to meet business objectives, such as improving the bottom line by increasing revenues, lowering operating costs, improving asset utilization, and improving relations with customers and suppliers.



J.D. Edwards World Solutions Company  
*World Headquarters*  
One Technology Way  
Denver, CO 80237, USA  
800 727 5333 / 303 334 4000

J.D. Edwards UK Ltd.  
*Serving Europe, the Middle East, and Africa*  
Colorado House  
300 Thames Valley Park Drive  
Reading  
Berkshire RG6 1RD, UK  
44 1189 091 700

J.D. Edwards World Solutions Company  
*Serving Latin America and the Caribbean*  
806 Douglas Entrance, Suite 570  
Coral Gables, Florida 33134, USA  
305 442 7800

J.D. Edwards Pte Ltd.  
*Serving Asia Pacific*  
No. 1 International Business Park  
The Synergy, #06-01/04  
Singapore 609917  
65 227 3391

[www.jdedwards.com](http://www.jdedwards.com)

The materials contained herein constitute J.D. Edwards restricted information and are not intended for external dissemination. The materials are summary in nature, subject to change, and intended for general information only. The materials reflect current plans for future software or enhancements that may require additional license fees to obtain, and are not a commitment of J.D. Edwards to develop or deliver such software or enhancements.

J.D. Edwards® is a registered trademark of J.D. Edwards & Company. JDE™ is a trademark of J.D. Edwards & Company. The names of all products and services of J.D. Edwards used herein are trademarks or registered trademarks of J.D. Edwards World Source Company. All other product names used herein are trademarks or registered trademarks of their respective owners.

© J.D. Edwards World Source Company 2002.