

Network Design & Optimization



JDA Software: Powering the Adaptive Supply Chain with Network Design and Optimization

Optimize your supply chain design to meet future business objectives by enabling robust and complete strategic analysis.



Real Results

Sample of JDA's Network Design & Optimization Customers

Why do companies worldwide rely on JDA Software to deliver network optimization value? Real Results. Fast.

JDA Software helps the world's leading companies achieve tangible benefits through innovative network design and optimization. Here are some of the real results that our customers have achieved with JDA's Network Design & Optimization solution*:

- Determined site selection, disaster planning and net landed cost for distribution centers in a growing discount retail chain with 8,250 stores in 35 U.S. states
- Designed strategic and tactical network – including new distribution center, consolidation and plant-to-DC sourcing – for a growing \$1.2 billion bottling operation with 54 distribution centers, whose number of items has quadrupled in a four-year period
- Evaluated a finished vehicle supply chain for an Asian automotive manufacturer and identified ways to reduce greenhouse gas emissions by an estimated 25 percent or more while also reducing costs by about 10 percent
- Determined what and where to source, resulting in 15 percent reduction in network costs across two manufacturing plants
- Determined optimal “how and when” pre-build decisions, including use of resources and tradeoffs (truck vs. rail) affecting overall line cost
- Reduced working capital through rationalization of current distribution centers and cost effectively determining long-term optimal network configuration
- Devised contingency plans to respond to changes in variables and the environment
- Validated current assumptions and question paradigms/tradeoffs, including the decision to move the pre-build start date back based on cost considerations
- Justified capital investment for major manufacturing shifts while improving capacity analysis scope and productivity
- Determined “what and where” production decisions across three plants with similar capabilities, while justifying capital expenditures plus evaluating total network cost and most optimal manufacturing configuration
- Utilized long-term capacity planning to determine number of lines needed for 5-10 year horizon
- Managed continually changing model without requiring constant consultant engagements

* Represents actual results realized by JDA customers.

Avery Dennison Corporation
Best Buy Co. Inc.
BlueLinX Holdings Inc.
Bristol-Myers Squibb Company
Caterpillar Logistics Services, Inc.
CCBCC Operations LLC
Cooper Tire & Rubber Company
Covidien
Defense Logistics Agency- DPMS
Dell Inc.
Delphi Corporation
Dreyer's Grand Ice Cream Holdings, Inc.
Georgia-Pacific Corporation
Glazer's Wholesale Distributing
Gordon Food Service Inc.
Heinz Company Ltd.
Heinz Wattie's Limited
Hyundai Mobis
James Hardie Building Products Inc.
Kraft Foods UK Ltd.
LG Electronics
Michaels Stores, Inc.
Monsanto Company
Paccar Australia Pty Ltd.
Pactiv Corporation
PepsiCo
Perdue Farms
PETCO Animal Supplies Stores, Inc.
Publix Super Markets, Inc.
RadioShack
Ryder PLC
Samsung Electronics Co., Ltd.
Sara Lee Food & Beverage
Schreiber Foods Inc.
Sears Holding Company
Southwest Airlines
Swire Beverage
Texas Instruments, Inc.
Tyson Foods, Inc.
Virgin Mobile USA, Inc.
Vodafone Ltd.
Wallenius Wilhelmsen Logistics
Wisconsin Public Service Corporation
YRC Logistics



Adaptive Supply Chain

Challenge: Evaluating the Complex Tradeoffs for Site Location, Manufacturing Facility Missions, Transportation and Environmental Sustainability

Transforming the supply chain into a source of competitive advantage is challenging amidst increasingly complex tradeoffs stemming from globalization and consolidation, economic uncertainty and rising costs. Retailers and suppliers must discover better, more innovative ways of reducing operational costs and working capital investments while also driving continuously improved customer service, revenue and growth. Achieving true optimization requires more than today's status-quo daily planning and execution – it requires next-level supply chain network design and optimization.

Solution: Strategic Supply Chain Planning with Innovative Network Design and Optimization

JDA's innovative Network Design & Optimization solution provides strategic, end-to-end capabilities to evaluate, design, optimize and ultimately transform your supply chain network – whether you are looking to expand or simply optimize your current network resources.

This solution can be deployed across industry sectors – from food, beverage, consumer durables and apparel to life sciences, aerospace and defense.

Optimizing Network Performance

JDA's Network Design & Optimization solution provides a modeling and optimization environment capable of representing the appropriate breadth and depth of the supply chain required to answer the strategic questions at hand. This may mean modeling the entire supply chain from raw materials to finished products. Or, the model may be limited to a particularly troublesome portion of the supply chain or one that has been significantly affected by a recent merger or acquisition. Unlike spreadsheet models that simply act as sophisticated calculators, JDA Network Design & Optimization determines a truly optimal network design.

JDA Network Design & Optimization creates a major advantage for its users by making the strategic planning process repeatable and standardized. Planners become competent users of a powerful modeling and analysis tool and the company builds a core competency in strategic planning. You will increase planning productivity, significantly decreasing manual analysis while also benefiting from a low-risk implementation.

Strategic and Tactical Supply Chain Visibility

Gain the supply chain visibility and advanced information you and your stakeholders need to make the best strategic and tactical decisions. The JDA solution makes both continuous decisions (e.g., “How much of a specific product should be made in Chicago?”) and discrete decisions (e.g., “Should we choose Philadelphia or Newark for a new distribution center location?”) in the same optimization. These decisions can be applied to the entire planning horizon or to individual periods. Whether creating a multi-year strategic plan or an 18-month strategic master plan, the planner uses the same flexible application. The solution's interactive graphical supply chain analysis reports and maps enhance information delivery.

Maximize Revenue

Free Working Capital

Costs and Constraints Optimization, Planning for Uncertainties

With a powerful, flexible modeling paradigm, strategic planners can investigate a wide range of what-if scenarios. Employing reusable reports of key performance indicators, the relative value of the scenarios can be compared from either a cost or profit perspective. Scenario results can also be compared using standard desktop tools.

Portions of the network can be temporarily excluded from consideration without deleting the corresponding model structure. A distribution center can be disabled and the effects of this change on the optimal network can be investigated. Selected flows, cycles and capacities can be locked to baseline or previously optimized values, allowing the strategic planner to quickly consider alternative scenarios and easily return to an earlier scenario.

JDA's Network Design & Optimization solution supports all relevant supply chain costs and constraints, including:

- Processing and product handling costs
- Transportation costs
- Inventory costs
- Fixed costs for operating, opening and/or closing model entities, by time period
- Maximum production cycles and product handling
- Process and transportation lead times
- Safety-stock inventory ranges

Costs and prices can vary across time periods to represent seasonal variations or market dynamics. Multiple currencies with varying currency conversion factors between time periods enables sensitivity analysis with respect to exchange rates.

Landed cost, the buildup of cost that occurs as a product flows through the supply chain, is calculated automatically after each optimization and can be analyzed for many different dimensions – by product, demand location and time period.

Some key modeling features include:

- Model time periods can have similar or different lengths to meet the needs of the strategic study
- Key decision variables have minimum and maximum fields for simple constraint definition
- General-purpose selection constraints enable modeling of complex business constraints such as cross-facility capacities
- Inventory can be represented as “power curve” inventory for facility location models and days-of-supply inventory for more tactical models
- Bundling allows demand requirements to be grouped together with optional single-, multiple- or proportional-sourcing constraints
- Centroid calculation can determine facility location based on demand concentration and the number of facilities required

The solution also provides an optimization server, which enables you to use tabular scripting to run multiple scenarios sequentially in a “hands-off” mode, simplifying sensitivity analysis.

Outstanding Analytic and Reporting Capabilities

An important capability in strategic planning is the ability to clearly demonstrate optimization results in a variety of graphical formats.

- Thematic maps use region shading, relative sizes and colors of icons and line colors to distinguish between activity levels
- Charts capture significant network data clearly and concisely
- Summary views are snapshot reports that dynamically capture key performance indicators of the optimized network



JDA Delivers Innovative Network Design and Optimization that Reduces Costs and Drives Service, Revenue and Growth

Requirements	JDA Capabilities	Benefits
Network Design	<ul style="list-style-type: none"> • Incorporates strategic policies or network changes, including: <ul style="list-style-type: none"> – New market or store opening – Adding or consolidating distribution centers – Changing transportation modes – Moving production lines from one plant to another – Adding new network plant – Moving production overseas • Optimizes new network strategy and compares to baseline costs and margins • Displays part or all of the supply chain network on a graphical geographic map with icons to represent activity levels • Enables what-if scenario generation and analysis 	<ul style="list-style-type: none"> • Enables stakeholder consensus before changing network strategy • Increases return on equity with 10-20 percent reduction in non-effective fixed assets • Enables strategic, informed executive decisions
Sourcing Optimization	<ul style="list-style-type: none"> • Incorporates changes to resource capacities, fixed and variable costs for operating, opening and/or closing model entities, inventory considerations, and carrying and transportation costs • Reveals optimized network plans on plan analysis: Fixed and variable costs, margins, inventory levels, product flow and resource utilization in user-defined time periods • Groups demand requirements together with single-, multiple- or proportional-sourcing constraints 	<ul style="list-style-type: none"> • Increases return on equity with 10-20 percent reduction in non-effective fixed assets • Enables stakeholder consensus before changing network strategy • Reduces logistics costs 15-20 percent
Capacity Optimization	<ul style="list-style-type: none"> • Evaluates cross-facility capacities • Supports varying capacities across time periods per entity to analyze seasonal impacts • Identifies optimal levels of discretionary demand while maintaining service levels • Addresses sustainability concerns through the modeling of greenhouse gas emissions, water utilization and energy consumption 	<ul style="list-style-type: none"> • Decreases production costs 20-30 percent through improved resource decisions and reduced premium charges • Improves accuracy of seasonal planning decisions • Enables optimization for minimized cost or maximized profit

Network Design & Optimization

“We realized the need to implement strategic solutions for Swire to maintain its industry position and to have one synchronized view of demand integrated into all of Swire’s manufacturing, bottling, planning and execution activities. JDA’s understanding of Swire’s business, combined with its expertise and realistic ‘can do’ approach, have effectively contributed to the successful implementation and real results achieved.”

*Maggie Huang
APS Center Manager, Supply Chain,
Swire Beverages*



About JDA Software Group, Inc.

JDA® Software Group, Inc. (NASDAQ:JDAS), The Supply Chain Company®, is a leading global provider of innovative supply chain management, merchandising and pricing excellence solutions. JDA empowers more than 6,000 companies of all sizes to make optimal decisions that improve profitability and achieve real results in the discrete and process manufacturing, wholesale distribution, transportation, retail and services industries. With an integrated solutions offering that spans the entire supply chain from materials to the consumer, JDA leverages the powerful heritage and knowledge capital of acquired market leaders including i2 Technologies®, Manugistics®, E3®, Intactix® and Arthur®. JDA’s multiple service options provide customers with flexible configurations, rapid time-to-value, lower total cost of ownership and 24/7 functional and technical support and expertise. To learn more, visit www.jda.com or e-mail info@jda.com.

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