



## Demand Fulfillment

i2 Demand Fulfillment™ is a high-performance, world-class order promising solution designed to increase order capture, enhance delivery confidence, enable full supply utilization, and deliver exceptional customer service. The solution can be used in all buy/sell transactions where the question of product availability must be answered quickly. i2 Demand Fulfillment is a fault-tolerant, 24/7, mission-critical, enterprise application with successes across many industries.

### Solution Capabilities

#### ***Available-to-Promise, Capable-to-Promise and Configure-to-Order***

i2 Demand Fulfillment supports available-to-promise (ATP), capable-to-promise (CTP) and configure-to-order (CTO) processes by enabling forward-looking visibility into what is available as well as what can be produced to promise orders. Companies can expand the search for supply by modeling the manufacturing constraints in a supply chain to find material and capacity that is available to promise and can be combined to build new products. This production flexibility is further maximized by the ability to delay the commitment to manufacture a particular end item as long as possible. With i2 Demand Fulfillment, a product's bill-of-material or distribution (BOM/BOD) can be accurately modeled with as many levels of components and sub-components as necessary. The production, assembly, and transportation operations within the BOM can be precisely modeled using efficiencies, yields, lot sizing, quantity relationships, alternate BOMs, product substitutions, etc. — all with characteristics that can vary with the calendar (date effectivity). During order promising, the full BOM explosion can be explored to find the best combination of material and capacity to meet the order. i2 Demand Fulfillment also supports advanced promising logic designed to search for replaceable supply that is already pegged to firm orders in the future.

#### ***Allocated Available-to-Promise***

i2 Demand Fulfillment also supports allocated ATP (AATP) by providing extensive flexibility for modeling customer and/or product reservations by leveraging intelligent decision making that respects and changes allocations during order promising. As part of the ATP search, all feasible demand channels are explored to find available supply. A common use of allocations is to give the appropriate relative priority to demand channels. This enables a seller to promise orders with the right mix of fairness and preferential treatment to maximize business objectives. i2 Demand Fulfillment enables automatic consumption of ATP across allocation boundaries when appropriate, expiration of allocation (so that unused allocations get released to a common pool if they go unused), selective re-allocation based on configurable events, and manual manipulation of allocations to override automated behavior. Dynamic sourcing is another key capability that enables allocations to be managed independently

"i2 Demand Fulfillment allows Clarks to determine real-time SKU level delivery availability for our customers based upon inventory, purchases, and production capacities. This provides a strong foundation for improving our performance as a supplier to our retail partners."

— Trent Sams  
Director of Planning  
Clarks

“To compete successfully in this environment, companies must become more flexible and continue to reliably meet their commitments. We needed an accurate and highly configurable solution to manage order fulfillment to the customer with fast response times. i2 has worked diligently to address these challenges and deliver a leading-edge solution for VF and to help us continue to be successful in the soft-goods industry.”

—Ellen Martin  
Vice President of Supply Chain System  
VF Corporation

of physical locations, while supply is constrained by location and can be sourced with simultaneous checks at the time of promising. Sellers can also allocate material and capacity in a CTP environment and respect those allocations during order promising.

### ***Forecast Profiling and Netting***

i2 Demand Fulfillment provides support for advanced forecast profiling and netting. Forecast netting can help net backlog from forecasts, converting forecast demand from a hierarchical market-oriented view to a manufacturing-oriented view for supply planning. i2 Demand Fulfillment’s ability to weigh and profile forecasts with policies enables enterprises to smooth large forecast signals to consider planned manufacturing ramp-ups, ramp-downs, as well as shutdowns into smoothed forecast requests per plan period. i2 Demand Fulfillment also provides different netting strategies that suit the needs of a market or product, including proportional netting across profiled buckets, nearest profiled bucket, and backward forward walks across profiled buckets that enable forecasts to be netted more effectively compared to simple bucket-based netting. Netting can also be performed with a sales hierarchy, and the net forecasts can be grouped and ranked to the enterprise’s specification. Netting can also be based on multiple forecast dimensions such as consensus and optimistic forecasts, enabling an enterprise to appropriately use capacity above committed levels. Profiled forecasts may also selectively expire as the time horizon shifts with each passing plan cycle.

## **Solution Differentiators**

### ***Comprehensive Coordinated Demand-Supply Matching***

i2 Demand Fulfillment provides a rich framework for modeling supply chain complexities that range from simple build-to-stock (BTS) to outsourced assemble-to-order (ATO) processes. This enables a business to consider a well defined set of manufacturing, transportation, and order-level constraints at the time of promising the order fulfillment. This improves the reliability of the order promise, as well as enables the seller to coordinate a response across multiple line items in the order by date, source, or grouping.

### ***Accommodate Extensible Business Rules***

i2 Demand Fulfillment’s modeling language (Object Interaction Language - OIL) enables users to create rules-based supply chain models. The modeling language is particularly useful for modeling supply chain constraints and unique business rules of specific sales channels, organizations, or geographies that have the same saleable products at specific sources — as process extensions over a comprehensive base set of business rules are already supported.

### Rapid Response to Customer Demand (24/7 Availability)

Order promising is a mission-critical, customer-facing business process that interacts with the order entry and sales and distribution systems. The high availability extension for i2 Demand Fulfillment facilitates reliable software fault tolerance, and fast (often sub-second) and efficient connectivity that is scalable to high transaction loads. High availability is hardware-independent with the flexibility to leverage different messaging transports.

### Ability to Integrate with any Source of Supply and Demand

Automated order promising has given competitive advantage to companies in many industries including semiconductor, high tech, metals, soft goods, paper, consumer packaged goods, industrial, chemical, retail, and telecommunications. i2 Demand Fulfillment has a proven track record of integrating with any source of supply and demand to form closed-loop workflows with APS and ERP systems.

### Service-Oriented Architecture

The i2 platform is a finely tuned, synergistic development suite designed to support supply chain management solutions, in which standardized application components such as data models, business rules, user interfaces, and business workflows can quickly be assembled and then adapted to meet company-specific business and market needs. As a one-stop-shop for business process design and development, the platform coexists naturally and complements enterprise platforms such as IBM's Websphere, SAP's NetWeaver, and BEA's Weblogic. i2 Demand Fulfillment has an open web service-based approach for transactional integration, user interfaces and workflows exposed out of the box on the i2 platform. Workflow extensions may be built as licensed extensions on the i2 platform or other enterprise platforms with service engagements, or via subscription to i2's library of workflows and web services, with built-in capabilities of data staging, validation, and business rules. These workflows are designed to be used as building blocks to compose and orchestrate specific supply chain processes and may include other i2 solutions such as i2 Supply Chain Planner,™ i2 Demand Planner,™ i2 Factory Planner,™ i2 Transportation Manager,™ or external transactional/planning solutions.

### Key Features

- Rich supply chain model for BTS, build-to-order (BTO), and CTO environments using ATP allocations
- Optimized supply/demand matching
- Exhaustive ATP search and consumption rules
- Just-in-time (JIT) consumption
- Transactional multi-order re-promising with real-time optimization
- Forecast profiling and netting for accurate input to supply planning
- Supply updates between planning runs
- Exception management
- High availability and fault tolerant system (hardware-independent 24/7, with zero down time between plan swaps)
- Service-oriented architecture
- Seamless integration with ERP, OMS, execution, and APS

### Supported Platforms

#### Server

- AIX 5.3/6.1
- HP 11.23/11.31
- Solaris 10
- Windows 2003

#### Databases

- DB2 9 Viper 2 9.5
- Oracle 11gR1

#### Client

- Windows Vista
- Windows XP

#### Browser

- Internet Explorer 7.0

*i2 Demand Fulfillment's flexible reports display the available supply and the associated allocations across time, organized here by product and demand channel.*

The screenshot shows the 'Allocation Management Report: Page 1 of 1' in a web browser. The table displays ATP (Available-to-Promise) data for three different product/demand channel combinations. The columns represent dates from 01/15/2007 to 06/17/2007. The rows show Committed, Allocated, Accepted, Consumed, and ATP values. A legend at the bottom indicates that green cells represent Positive ATP, red cells represent Negative ATP, pink cells represent Constrained Allocation, and yellow cells represent Zero ATP.

Product	Seller		01/15/2007	02/15/2007	03/17/2007	04/17/2007	05/17/2007	06/17/2007
Item1::SKU::Loc1	WWS::Level1	Committed	0	0	0	0	0	0
		Allocated	4,600	4,400	4,200	4,400	0	0
		Accepted	4,600	4,400	4,200	4,400	0	0
		Consumed	300	0	200	0	0	0
		ATP	0	0	0	0	0	0
Item1::SKU::Loc1	US::Level2	Committed	0	0	0	0	0	0
		Allocated	1,000	1,500	1,200	0	0	0
		Accepted	1,000	1,500	1,200	0	0	0
		Consumed	0	0	0	0	0	0
		ATP	200	1,100	200	0	0	0
Item1::SKU::Loc1	US_North::Level1	Committed	0	0	0	0	0	0
		Allocated	400	200	500	0	0	0
		Accepted	400	200	500	0	0	0
		Consumed	0	0	0	0	0	0
		ATP	400	200	500	0	0	0
Item1::SKU::Loc1	US_South::Level1	Committed	0	0	0	0	0	0

## Benefits

### *Promise More, Deliver Better*

World-class, automated order promising has three key components: a rich supply chain model that provides visibility, an extensive representation of business rules that provide flexibility, and an optimized approach to supply-demand matching that effectively uses supply. Some of the choices for order fulfillment include searching forward and backward in time, looking at multiple locations and alternate products, building new products from available material and capacity, pulling committed supply from suppliers, and exhausting other feasible supply sources that contain material or capacity that is ATP. By default, orders will be fulfilled JIT to ensure subsequent orders have the best chance of being filled on time. i2 Demand Fulfillment functions as both an online, transactional system that provides real-time quotes and promises, as well as a batch order management system that re-promises and tracks changes to existing orders.

### *Better Customer Service, Less Inventory*

One of the key decisions in order promising is making the trade-off between the desire to utilize all available supply and the desire to reserve supply to meet business objectives. If the ATP supply is treated as one large pool of supply and orders are promised using a first-come-first-served policy until all supply is exhausted, then the seller has lost the advantage of separating the supply into categories and treating the categories differently based on price, profit, customer priority, etc. To be able to gain the competitive advantages associated with recognizing different categories of supply, the seller's total ATP must be split up and allocated to demand channels in such a way that the business objectives will be maximized. Subsequent order promising should then intelligently navigate these demand channels, making optimal trade-offs between respecting and violating the allocations, as appropriate, to optimize the seller's objectives.

### *The Perfect Promise*

The ability to configure business rules is critical to achieving an order promise that satisfies the buyer and seller. With i2 Demand Fulfillment, the ATP search logic recognizes and respects all the detailed constraints required to deliver the perfect order promise. Examples of business rules include constraints on minimum quantity, the maximum number of shipments the buyer will accept or that are profitable for the seller, the allowable date ranges for consuming ATP, the limits on how early or late the order can be filled, and control over exactly how the order is fulfilled (on-time, full quantities, as soon as possible, etc.). Once an order is promised, it becomes a commitment. If the commitment is far enough into the future, the supply picture that supported the commitment may change due to raw material availability, changes in resource availability, etc. The full set of promised orders will therefore need to be periodically re-promised to account for these changes. The management of how these orders get re-promised is a significant piece of order management. i2 Demand Fulfillment provides high-speed order re-promising that employs all of the same business rules and exhaustive search capabilities that were used during the initial order promising. The re-promising is completed with full awareness of earlier promises, along with rules that control which changes are allowable. Accurate and frequent re-promising makes it easy to keep customers current on the status of their orders, and it gives early warnings of any supply-side changes that need to be made in order to respect prior commitments.

For more information on i2 Demand Fulfillment and other i2 solutions, visit [www.i2.com](http://www.i2.com).



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