What does SAS® Inventory Optimization Workbench do?
While anyone can simply track inventory using a spreadsheet, it takes robust analytic capabilities to properly optimize your inventory. SAS Inventory Optimization Workbench provides the ability to take a forecast and from it calculate optimized inventory levels and order quantities.

Why is SAS® Inventory Optimization Workbench important?
Your inventory equation has two parts – cash and costs on one side and having the best inventory levels possible on the other. The solution enables true multiechelon optimization by letting you optimize inventory levels simultaneously for every SKU at every location in your network against both cost and service-level constraints.

For whom is SAS® Inventory Optimization Workbench designed?
It is designed for complex, global, multichannel, multiechelon environments, scales to large volumes of data, and includes performance management dashboards and scorecards as well as optimization routines that are customized for distribution needs.

Fact Sheet
Inventory optimization is a persistent challenge without robust data management and advanced analytics. No spreadsheet exists that can even begin to properly address the calculations necessary to solve for the right inventory levels and placements. But with a purpose-built inventory optimization solution, ROI is immediate, significant and permanent.

The typical application of our analytical inventory optimization solution results in a sustainable 10-20 percent reduction in inventory levels and inventory carrying costs. For organizations ready to take a disciplined, analytical approach to inventory management, the working capital is ready for harvesting.

As more industries see customer fulfillment and service-level agreements (SLAs) as critical differentiators, businesses are realizing the effect that optimizing and automating distribution management can have on profitability, inventory levels and performance.

Benefits
• **Automate optimization activities.** Stop spending time on the routine product elements that can be planned more accurately through our solution and instead use that time for hard-to-plan or incomplete orders. Multichannel business environments are particularly difficult to optimize – automation can improve the results by enabling inventory analysts to spend more of their time resolving unique multichannel issues.
• **Perform multiechelon optimization.** SAS helps you stock the right products at the right locations in the right quantities without creating excesses. This enables a permanent release of nonproductive working capital for reinvestment elsewhere and reduces inventory carrying and holding costs as well as SLAs and backorder penalty costs.
• **Manage your data more effectively.** You can consolidate large volumes of data regardless of format or location. Automatic consolidation from disparate data sources allows for more consistent and complete analysis. And, you will have direct access to native systems to update models instead of waiting for someone to send multiple flat-file extracts.
• **Increase sharing and visibility.** You can share appropriate information with distribution professionals throughout the organization to ensure strategies are aligned. Additionally, you can deliver timely information in a secure, relevant format (e.g., high-level KPIs for executives, drill-down and ad hoc reports for planners).
• **Create what-if analysis.** Develop accurate cost analysis of inventory policy proposals before implementation. You can create multiple scenarios simultaneously. Users can review how business decisions affect both single-echelon and multiechelon networks, and inventory and forecast analysts can easily collaborate for better results.
This solution enables you to pull together the people, systems and processes necessary to achieve higher quality, lower costs and better customer service. SAS Inventory Optimization Workbench controls the upward pressure on inventory buffers at all levels of the supply chain.

Overview

SAS Inventory Optimization Workbench helps organizations automate and optimize inventory distribution by providing the ability to take a forecast and from it calculate optimized inventory levels and order quantities at every level to maintain adequate stock, maximize response times, increase revenue, reduce carrying costs and improve customer satisfaction.

Data management

You can effectively manage data on millions of SKUs. Gather and consolidate huge data volumes from every part of the distribution chain and then transform, standardize and cleanse the data to achieve single, dual or multiechelon optimization. SAS augments these traditional capabilities with advanced analytics. In the same way that analytics is applied to other business operations to drive better efficiencies and business value, analytics can be used to optimize routine data management responsibilities, providing the basis for a strategic approach to information management.

Single, dual and multiechelon inventory optimization

Calculate optimal inventory levels using inventory policy parameters throughout the entire supply chain. These parameters can be based on specified constraints (e.g., fulfillment levels, lead times and costs) by product, location, category, SKU, etc. SAS Inventory Optimization Workbench identifies items that have reached reorder thresholds and generates recommended order quantities for each item based on cost and service-level targets.

Information sharing

We provide executive dashboards, KPI scorecards, snapshots and standard or customizable reports – all designed specifically for the distribution chain – to align product strategies by sharing information in a format everyone can understand. Know how much and what kind of inventory you should have at each location. Understand all associated costs – transportation, ordering, inventory, holding, etc. – for every single product.

Scenario development

You can review supply chain or product initiatives as part of an exploration of the “effectiveness frontier” prior to implementation so that the results are clearly understood and your final decisions can be fact-based. A separate scenario development workspace enables you to perform what-if scenario analysis. You can view a summary of the available scenarios, choose details of specific scenarios to drill into, or create new scenarios. Selected values can be used to update supporting tables and dependent models during the next batch process run.

Figure 1. Reduce over/under stock by auto-leveling and balancing products between locations when costs indicate a shift is cost effective.

Figure 2. Replenishment Review: The buyer/planner has access to product and facility portfolio views of replenishment suggestions.
Key Features

**Data management**
- Data from disparate sources of product distribution can be aggregated while eliminating inconsistencies and redundancy.
- All factors that affect demand can be considered, which creates more accurate forecasts.
- Data can be pulled from ERP and legacy systems.
- Transform, standardize and cleanse your data.

**Inventory optimization**
- A buyers’ workspace with a suggested plan of orders for a given facility in a single, dual or multiechelon network.
- Replenishment plans for low-stock items.
- Cost by source for each order.
- Cost summaries for each optimized plan.
- Lock and promote order recommendations that include an automated pathway when needed.
- Auto leveling.
- Edit suggested orders, or create a manual order.
- Promotional and turn ordering workflows:
  - Base/turn orders allow for the normal volume and demand fluctuations that fall within standard lead times.
  - Promotional ordering allows for long lead-time planning, collaboration and execution.
- Order suggestions and optimization overrides:
  - The system automates the creation of trusted ordering requirements.
  - System provides a logical stepped process to go from the opening order, to promotion of the order, and then to order execution.
  - Allows for cancellation of an order and an immediate system update.
  - Ability to generate a manual order to override the optimization process.
- Promotional order sequencing and sorting:
  - Order processing can be configured to align with negotiation periods.
  - Align ordering with optimal upstream and downstream product flows to support promotional events.
  - Sort order by promotion ID, date, name, vendor, product and locations.
- Improved inventory performance and advanced product and location segmentation:
  - Easily viewable outputs provide insight into the optimization policy results.
  - Configurable product segmentation allows for extremely accurate segmentation and the ability to link to product attribute segments for hard-to-forecast products, including attribute filtering in what-if scenarios.
  - Configurable facility segmentation allows customization of facility hierarchy.
  - Customized alert thresholds and the ability to assign specific service levels to regular (versus promotional) volumes.
  - Visual facility hierarchy view to easily understand product flows, including the ability to see upstream inventory support for underlying locations.

**What-if scenario development**
- Provides accurate cost analysis of inventory proposals before implementation.
- Allows for multiple scenarios to be developed at once.
- Enables the user to review how business decisions affect both single-echelon and multiechelon networks.
Key Features (continued)

Forecasting suite integration

- Tight integration with the other forecasting components of the SAS Demand-Driven Planning and Optimization suite:
  - Forecast analyst workbench - Generate large-scale forecasts.
  - Collaborative planning workbench - Forecast input, review, comparison and override, all facilitated with a configurable workflow and approval process integrated with email.
  - New product forecasting workbench - Combine business judgment with statistics to anticipate future demand of new products based on surrogate products.
  - Forecasting for SAP APO - Advanced analytic forecasting integrated with APO for forecast parameter selection.
  - Demand signal analytics - An integrated repository of demand information with tools to explore and analyze sales, products, stores, territories, promotions, inventory, price, performance and operations.

Visit SAS Inventory Optimization Workbench for system requirements, to download white papers, view screenshots and see other related material.

Figure 3. Forecasting Integration: A seamless link to SAS Forecast Analyst Workbench enabling collaboration between demand and inventory management.