



SAS® Inventory Optimization

Manage inventory to meet customer requirements while reducing costs

What does SAS® Inventory Optimization do?

With SAS Inventory Optimization, organizations can manage data on millions of SKUs, gather and consolidate huge data volumes throughout the distribution chain, then transform, standardize and cleanse the data for inventory optimization. You can calculate optimal inventory levels and policies throughout the entire supply chain based on constraints you specify then share that information throughout the supply chain.

Why is SAS® Inventory Optimization important?

SAS lets you simultaneously optimize inventory levels for every SKU at every location in your organization. You can calculate optimal inventory replenishment policies, develop better replenishment strategies and base your distribution strategy on information from all distribution systems across the enterprise and then align your strategies by sharing appropriate information with distribution teams.

For whom is SAS® Inventory Optimization designed?

The SAS Inventory Optimization process flow is designed to allow inventory control managers the ability to use optimized inventory positions in their product distribution planning. In turn, optimized inventory positions and order suggestions allow the buyer/planner more time to focus on strategic planning activities.

SAS Inventory Optimization helps organizations automate and optimize inventory distribution management by providing the ability to take a forecast and calculate optimized inventory and order quantities for product distribution systems at every level, thus maintaining adequate stock levels, maximizing response times and improving customer satisfaction.

SAS Inventory Optimization is designed for complex global 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.

As more industries see customer fulfillment as a critical differentiator, businesses are realizing the impact that optimizing and automating distribution management can have on profitability and performance. But obstacles can drain profits and thwart attempts to achieve better customer service and optimized inventory levels at lower cost.

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 controls the upward pressure on inventory buffers at all levels of the supply chain.

Key benefits

- Reduce product inventory levels, inventory carrying and expediting costs.** SAS Inventory Optimization calculates optimal inventory levels and replenishment policies based on required lead times, costs and target service levels. It identifies items that have reached reorder thresholds and generates recommended quantities for each item based on cost and service-level targets. You can stock the right products in the right quantities, without creating excesses by rationalizing or the bullwhip effect.
- Planning support for DRP (distribution requirements planning) reporting, sensitivity analysis, and scenario-modeling capabilities.** SAS Inventory Optimization helps produce and compare alternate planning scenarios for multiple items, thus helping select the optimal policy from a policy set.
- Distribution personnel can proactively plan rather than react to unforeseen problems.** Planners can customize key replenishment policy drivers to streamline replenishment for specific items. Using scenario modeling capabilities, planners can compare planning scenarios to pick the optimal policy from a number of options.
- Base distribution strategies on information from all systems across the enterprise.** Gather and consolidate large volumes of data from every echelon of the distribution chain – regardless of format or location – and transform, standardize and cleanse the data (e.g., reconcile inconsistent naming conventions) to prepare it for accurate forecasting.



Solution overview

Many organizations have a complex distribution network, including multiple distribution centers and remote locations, all using different systems and processes. Millions of SKUs and scattered data add to the complexity, making it nearly impossible to generate accurate forecasts and optimize inventory at each location. Even with a stellar distribution record, organizations grapple with excess inventory, huge write-offs and frequent stock-outs. By balancing resources and costs against service-level goals, SAS Inventory Optimization improves profitability, increases customer satisfaction and frees working capital.

Data management

Our data management abilities allow you to gather and consolidate huge data volumes in every echelon of the distribution chain; then transform,

standardize and cleanse the data (reconciling inconsistent naming conventions, removing redundancy, etc.) to prepare it for accurate forecasting and optimization. Sharpen the inputs that affect the information produced by your ERP system to improve your return on its investment.

The data integration capabilities embedded in SAS Inventory Optimization enable proactive and direct data access to native systems instead of forcing you to wait for multiple flat-file extracts when you update your models. This automatic consolidation of information from disparate data sources allows for more consistent and complete analysis. SAS provides access to data from nearly every data source, and data cleansing routines ensure that your models are accurate. The solution also includes a single interface for system administration and maintenance.

Single-, dual- and multi-echelon optimization

SAS provides a buyer's workspace with a suggested plan of orders for given facilities in a single-, dual- or multi-echelon network system. The system provides replenishment plans for low-stock items. Replenishment plan details for a given item include sources for each order and the cost implications of the optimized plan. If satisfied with a plan, the buyer can use the interface to lock and promote order recommendations. The buyer can edit order suggestions, if needed. The impact of the edited order on the replenishment plan metrics can be evaluated before saving the changes.

Robust what-if scenario development capabilities

A scenario development workspace enables you to perform what-if analysis. You can view a summary of all the scenarios or choose to view details

Order Suggestions Workbench

Facility Name	Facility ID	Low Stock Items	Low Stock Items	Normal Items	Overstock Items	Organization	Organization Name
MFG Plant Indiana 1	F1	ED THE B.	0	0	46	OR01	ORGANIZATION...
WH Indiana 2	F2	ED THE B.	0	0	0	OR01	ORGANIZATION...
WH Indiana 6	F6	ED THE B.	7	0	41	OR01	ORGANIZATION...
WH Newyork City 7	F7	ED THE B.	9	0	39	OR02	ORGANIZATION...
DC Indiana 18	F18	ED THE B.	1	0	47	OR01	ORGANIZATION...
DC Indiana 19	F19	ED THE B.	144	0	4	OR01	ORGANIZATION...
DC Newyork City 20	F20	ED THE B.	2	2	44	OR02	ORGANIZATION...
DC Newyork City 21	F21	ED THE B.	41	1	2	OR02	ORGANIZATION...
MFG Plant Detroit 1	F51	JM THE B.	26	0	0		
DC Detroit 24	F24	JM THE B.	26	0	0		
DC Detroit 25	F25	JM THE B.	26	0	0		
DC Detroit 26	F26	JM THE B.	26	0	0		
DC Manchester 30	F30	JM THE B.	0	0	0		
DC Manchester 31	F31	JM THE B.	4	0	0		
DC Manchester 32	F32	JM THE B.	0	0	0		
DC Manchester 33	F33	JM THE B.	22	0	0		
DC Manchester 34	F34	JM THE B.	22	0	0		
DC Paris 32	F32	JOHN THE	25	0	0		

Inventory Metrics

Category	Items	Facilities	Actual Service Level (%)	Target Service Level (%)	% High Service Level	% Low Service Level	% High Demand	% Low Demand
Power Train & Chassis	28	8	77.6	--	54.5	0.0	100.0	0.0
Braking System	3	8	69.5	--	66.7	0.0	100.0	0.0
Brake Parts	3	8	69.5	--	66.7	0.0	100.0	0.0
Engine Parts	15	8	76.2	--	20.7	0.0	100.0	0.0
Camshaft Parts	7	8	--	--	0.0	0.0	100.0	0.0
Connecting Rod p...	5	8	--	--	0.0	0.0	100.0	0.0
Cylinder Head Parts	3	8	76.2	--	100.0	0.0	100.0	0.0
Exhaust System	10	8	79.6	--	100.0	0.0	100.0	0.0
Exhaust System	10	8	79.6	--	100.0	0.0	100.0	0.0
Miscellaneous Parts	12	8	96.8	--	79.2	0.0	100.0	0.0
Interior	8	8	69.6	--	100.0	0.0	79.7	0.0

Inventory Details

Braking System (All)

Metrics For: Braking System (All)

Actual Service Level (%)	Target Service Level (%)	% High Service Level	% Low Service Level	% High Demand	% Low Demand	% High Lead Time	% Low Lead Time
69.5	--	66.7	0.0	100.0	0.0	100.0	0.0

Rows Filtered By

Facilities: 8

Facility Name	Facility ID	Items	Actual Service Level (%)	Target Service Level (%)	% High Service Level	% Low Service Level	% High Dem...	% Low Demand
MFG Plant Indiana 1	F1	3	69.5	--	66.7	0.0	100.0	0.0
WH Indiana 2	F2	3	69.5	--	66.7	0.0	100.0	0.0
WH Indiana 6	F6	3	69.5	--	66.7	0.0	100.0	0.0
WH Newyork City 7	F7	3	69.6	--	66.7	0.0	100.0	0.0
DC Indiana 18	F18	3	69.5	--	66.7	0.0	100.0	0.0
DC Indiana 19	F19	3	69.6	--	66.7	0.0	100.0	0.0
DC Newyork City 20	F20	3	69.5	--	66.7	0.0	100.0	0.0

Below: Inventory Analysis Workbench showing inventory metrics. Inventory information can be viewed by item or location and can be disaggregated into buyer portfolios.

Above: Order Suggestions Workbench viewed by facilities, filtered by buyers with alerts and drill-down window.

of a scenario. You can edit, create a copy of, or delete an existing scenario. You can modify certain metrics such as service level, lead time, demand and unit cost of an item in a scenario and view the impact of this change on other metrics such as total inventory cost, on-hand cost, etc. If you are satisfied with results of the scenario, you can promote these values, that is, submit them for updating the underlying tables.

Information sharing

We provide executive dashboards, KPI scorecards, snapshots and customizable report templates designed specifically for the distribution chain to align product strategies by sharing information with executives and supply chain professionals in a format they can understand. SAS Inventory Optimization incorporates business analytics capabilities designed specifically for the distribution chain, including drillable views and trends. You can share summary and detailed reports on an as-needed basis with your logistic partners. The executive dashboard shows current performance at various levels and geographies throughout the network. You can monitor demand and pipeline variance and receive alerts based on outliers. If you need more specific information, you can drill down for a detailed analysis.

Scenario Development Details with Overall Results for changing the leadtime in the supply chain. If the results are acceptable the user can easily promote the information to the master files.

Key Features

Data management

- Aggregate disparate sources of product distribution data, while overcoming inconsistencies and redundancy.
- Enable all factors that affect demand that you need to consider for accurate forecasts.
- Pull data from ERP and legacy systems.
- Maximize your return on your ERP investments.

Inventory optimization

- Optimize your safety stock levels.
- Reduce redundant stock.
- Reduce or eliminate the bullwhip effect.
- Minimize ordering, inventory, holding and backorder penalty costs.
- Achieve targeted customer service levels and improve cash flow by having the right products at the right locations.
- Realize savings of 5-20 percent on your inventory costs.

Replenishment planning

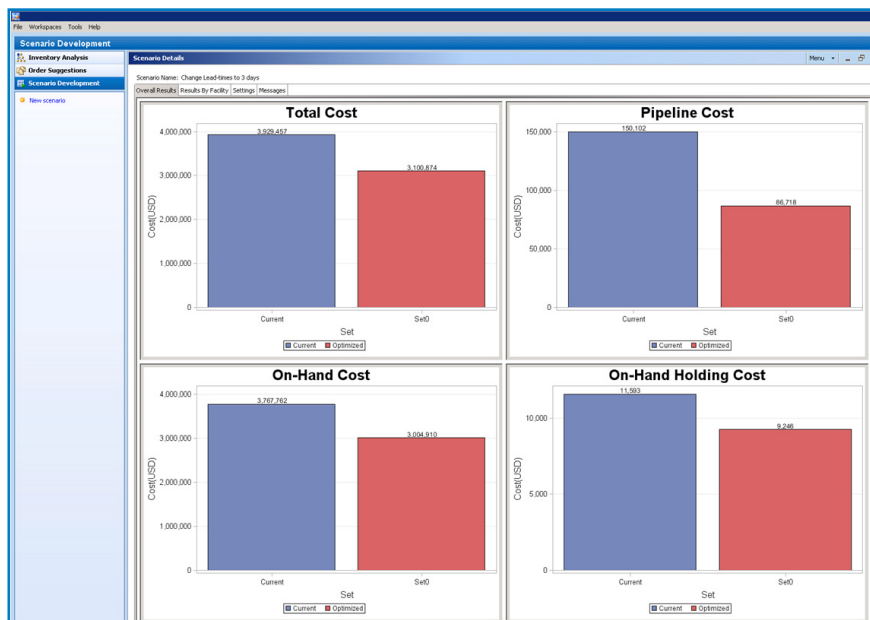
- Synchronize orders to reduce stock levels.
- Factor in the variability of supply into safety stock calculations.
- Minimize ordering costs.
- Reduce the number of expedited orders.

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 multi-echelon networks.

Information sharing

- Align distribution strategies by sharing appropriate information with professionals throughout the network.
- Deliver information on a timely basis in a secure, relevant format (e.g., high-level KPIs for executives, drill-down and ad hoc reports for planners, etc.) that focuses on user-specific capabilities.



Modular suite for flexibility

SAS Inventory Optimization is part of the SAS Demand-Driven Planning and Optimization suite. SAS Demand-Driven Planning and Optimization is a modular suite of products designed to improve demand and inventory management processes utilizing advanced analytics, data integration, alerting, workflow, dashboards and reports. Common foundational components and interfaces (SAS Demand Driven Planning and Optimization Foundation), combined with optional modules (Forecast Analyst Workbench, Inventory Optimization Workbench, Consensus Forecasting, New Product Forecasting and Forecasting for SAP/APO) allow customers to address immediate business challenges and add future capabilities while protecting their current investments.

SAS® Inventory Optimization Software System Requirements

To learn more about SAS Inventory Optimization system requirements, download white papers, view screenshots and see other related material, please visit sas.com/inventory-optimization.



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