



## SAS® Forecasting for Desktop

Plan more confidently with reliable, automatically generated forecasts

### What does SAS® Forecasting for Desktop do?

SAS Forecasting for Desktop automatically generates forecasts to help you plan more efficiently and effectively. It includes a complete model repository with a full range of forecasting methods; automated statistical forecast model selection and optimization; hierarchical reconciliation; event modeling; what-if analysis; and scenario planning.

### Why is SAS® Forecasting for Desktop important?

The solution gives small and midsize organizations access to automated and statistically sophisticated forecasting that only large companies could afford previously. It frees users from the data constraints of spreadsheets and regression-based planning and enables self-sufficiency by automatically selecting forecast models from a comprehensive repository. Forecasters can adjust parameters without manual programming or reliance on IT – so they can focus on the most business-critical planning.

### For whom is SAS® Forecasting for Desktop intended?

It is designed for small and midsize organizations, or departments or individual users in large enterprises, that need an easy-to-use, affordable and quick-to-deploy forecasting solution. Built for organizations with limited IT support or forecasting resources, it caters to the needs of analysts who create forecasts and managers and directors who use the forecasts for planning.

It's challenging for small and midsize organizations to plan with confidence. Without skilled forecasters or IT assistance, management may have to rely on instinct and simple spreadsheet models. Data can also be an issue – either inaccurate or incomplete, in the wrong format or with missing values or outliers – all can skew the forecast.

You may use simple, off-the-shelf software and Microsoft Excel to make forecasts. But these tools lack the sophistication to forecast reliably in a volatile business environment. Those tools can't handle large data volumes, don't support data preparation, can't account for missing values and outliers and are unable to model the effect of multiple variables – such as holidays, marketing events and competitive activity. The results are cumbersome, time-consuming processes and unreliable, poor-quality forecasts riddled with user biases.

With SAS Forecasting for Desktop, you get an affordable, easy-to-use solution that provides comprehensive forecasting capabilities in a PC platform. With point-and-click tools, you can quickly generate forecasts without having to learn programming. The automation and statistical sophistication improve efficiency and effectiveness for all levels of decision makers.

### Key Benefits

- **Get reliable forecasts without programming.** Across multiple products and locations, and at all levels of aggregation, the solution builds the most appropriate models for your data while minimizing the opportunity for errors due to human intervention, bias or lack of expertise.
- **Make faster, better decisions with manageable forecasting processes.** By making your forecasting process easier to manage, we enable analysts to focus on the most important forecasts and on other value-added analysis and reporting tasks.
- **Plan future events more realistically.** Based on variables that you supply in the modeling process, the software automatically selects variables such as business drivers, holidays or events to generate forecasts that reflect the intricacies of your business.
- **Assess uncertainty and risk in forecasts.** By indicating a statistical and visual range of likely outcomes instead of just providing a point forecast, the solution enables users to assess forecast uncertainty and risk and make decisions accordingly.
- **Provide ease of use to all skill levels.** The solution's convenient, wizard-driven interface gives novice users state-of-the-art forecasting methods without programming or knowledge of time series models. Yet it has all the power and sophistication that more experienced analysts need.



## Product Overview

Organizations often lack the right tools for automated forecasting, and the tools they have get bogged down generating large numbers of forecasts. The result could be compromises in the model selection process because modelers may use limited, generic models for all their forecasts rather than building realistic custom models.

Inferior forecasting can have severe consequences, including lost revenue, customer dissatisfaction, tied-up working capital, higher inventory costs, etc.

SAS Forecasting for Desktop helps you plan more effectively by speeding and improving the forecasting process. It automatically selects from a full range of forecasting methods, including exponential smoothing, ARIMA, dynamic regression, unobserved component models and models for intermittent demand. As a result, the solution minimizes instinct-based decision making and delivers statistical robustness.

Through the solution's hierarchical reconciliation capability, you generate forecasts at every level of product hierarchy and then reconcile the forecast up or down based on your needs. A wizard-driven interface guides you to

select the most appropriate reconciliation technique. The solution can combine multiple forecasting models. These composite models – based on averaging (or other combination methods) of more than one individual model – tend to be more accurate than an individual model.

SAS Forecasting for Desktop also includes an event-modeling engine to help account for the effects of sales promotions, marketing events and other external events (e.g., pricing policy actions, severe weather, etc.). You can test what-if scenarios such as price changes or promotional activity to determine their likely effect on future demand. Graphical displays show the effects of planned and unexpected events, helping you forecast and plan future sales and marketing activities. The solution is designed to help you integrate forecasting within your organization's planning workflow as an ongoing, repeatable process.

### Automatic forecasting

SAS Forecasting for Desktop can generate statistically sound forecasts for up to 1,000 time series per project without the need for human intervention in the modeling process. It includes a patented forecast engine that selects the most appropriate forecasting model

(or combination of models) from a comprehensive model repository based on historical data and user-defined criteria. It also optimizes model parameters.

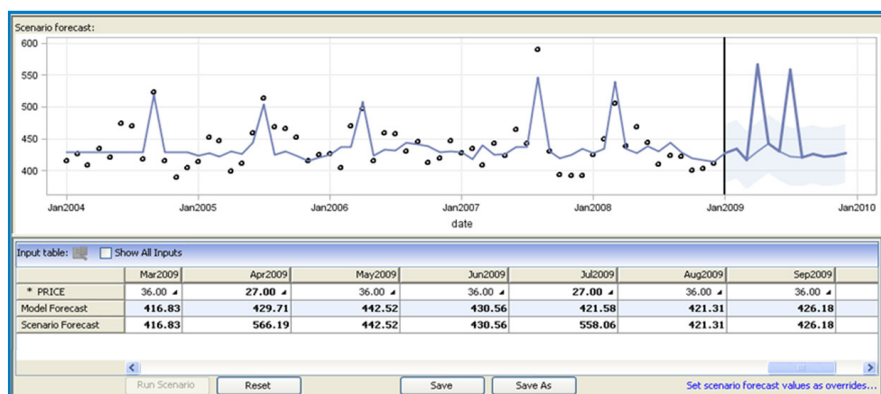
Add any number of business drivers and events to the models to produce a forecast that best depicts your business and market. Specify holdout samples so that forecasting models are selected based on how well they fit with past data, and how likely they are to predict the future.

Hierarchical forecasting is provided for organizations that have complex product or corporate hierarchies. You can forecast at all levels and then synchronize and allocate forecasts within the hierarchy. This approach provides reliable forecasts at every level to help prevent forecast errors due to aggregate-level forecasting.

The solution provides scalability by allowing you to create multiple projects if there are more than 1,000 time series to forecast. For example, you can set up separate projects by product family, brand, sales or distribution territory, or by forecaster.

### Unlimited model repository

The solution provides forecasting methods to address all your organizational forecasting needs (for revenue, unit sales, staffing requirements, etc.) by incorporating the unique market dynamics associated with your business. SAS Forecasting for Desktop offers a virtually unlimited range of model types in its extensible repository. In addition to the multiple built-in models (naive, exponential smoothing, ARIMAX, unobserved components, dynamic regression and intermittent demand), users can create and add their own models to the repository. By selecting from this array of models, you can generate better forecasts for a wider range of behavior.



**Figure 1:** The Scenario Analyzer lets planners test what-if scenarios such as changes to pricing or promotions, and determine their likely effect on future demand.

## Easy-to-use graphical user interface (GUI)

SAS Forecasting for Desktop includes the easy-to-use SAS Forecast Studio GUI. This GUI provides access to the power of SAS forecasting without requiring you to learn how to write SAS code.

## Event-modeling console

You can statistically model events to determine revenue increases associated with promotions, special marketing events and other activities. Using patented technology, the event-modeling console allows you to choose among several event types – including pulse, level shift, ramp up/down and temporary events. Preprogrammed holiday events are also available (e.g., Thanksgiving or New Year's Day). Additional events can be added.

## What-if analysis and scenario planning

The solution includes a scenario analyzer that lets you test what-if scenarios – changes to pricing or promotions, for example – to determine their likely effect on future demand. This capability is useful in designing sales and marketing programs across a variety of industries and can help proactively push customer demand toward more favorable patterns. Using scenario analysis, you can generate realistic, optimistic and pessimistic projections for better planning.

## Data preparation

SAS Forecasting for Desktop includes time series data management capabilities. You can convert transactional data to a time series format and make forecasts in a single step, or you can feed the converted data into a forecasting data mart as part of an overall data processing function. By preprocessing transactional data, the solution saves significant time and resources.

## Key Features

### Automatic forecasting

- Forecast for large numbers of products, entities or tasks; optimize model parameters.
- Include or add any number of business factors and events in your models to produce the forecast that best depicts your business.
- Specify holdout samples so that forecasting models can be selected based on their fit with past data and on their likelihood to predict the future.
- Perform automatic hierarchical forecasting by defining the hierarchy and model parameters through an interactive graphical interface.
- Define your own flexible hierarchies to make them more suitable to your forecasting challenges.
- Reconcile up and down the hierarchy, preserving locked forecast values.
- Generate exception reports based on sound statistical logic and business rules.
- Support forecasting as an ongoing and repeated process that fits into your organizational planning workflow.
- Publish results via hard copy, the company portal or the Internet.

### Unlimited model repository

- Meet all your forecasting needs with an extensible model repository complete with a broad range of built-in models, such as time series methods, including:
  - Single exponential smoothing.
  - Holt's/Brown's two-parameter exponential smoothing.
  - Winters' three-parameter exponential smoothing (additive/multiplicative).
  - ARIMA.
- Causal methods, including:
  - ARIMAX (ARIMA with intervention and causal variables).
  - Lagged variables/transfer functions.
  - Dynamic multiple regression.
  - Unobserved components model (UCM).
- Allows users to create and add their own custom models using the open model repository.

### Easy-to-use GUI

- Use automated forecasting and set up the hierarchy, parameters and business rules through an interactive graphical interface.
- Employ an eight-step project wizard that walks analysts through the steps to set up a new forecasting project or work with existing projects.
- Easily add events that might influence the forecast – such as holidays and promotions – through an events dialog box.
- Guide analysts through the development of custom forecasting models, built from scratch or based on models in the repository, using a model-builder dialog box.
- Give analysts multiple ways to work with the forecast results using forecast, series and model views.
- Let analysts use the scenario analysis view to create what-if scenarios – such as changes to pricing or promotions – and determine their likely effects on future demand.
- Identify exceptions automatically based on sound statistical logic and business rules.
- Employ the user-override facility to manually forecast statistical values; override the locking facility if needed.
- Publish results automatically via hard copy, company portal or Internet using extensible reporting tools.

### Event-modeling console

- Use the interactive GUI to include predefined holiday events (e.g., Thanksgiving, New Year's Day).
- Realign dates automatically for moving holidays (e.g., Easter).
- Use the custom event creator with four event types: pulse, ramp up/down level shift, temporary.

## SAS® Forecasting for Desktop System Requirements

To learn more about SAS Forecasting for Desktop system requirements, download white papers, view more screenshots and see other related material, please visit: [sas.com/forecasting-desktop](http://sas.com/forecasting-desktop)

## Key Features (continued)

### What-if analysis and scenario planning

- Use the Scenario Analyzer interface (which includes what-if planning capabilities) to change model parameter estimates and determine the effects on forecasts.

### Data preparation

- Automatically aggregate raw transaction data by time period into time series data.

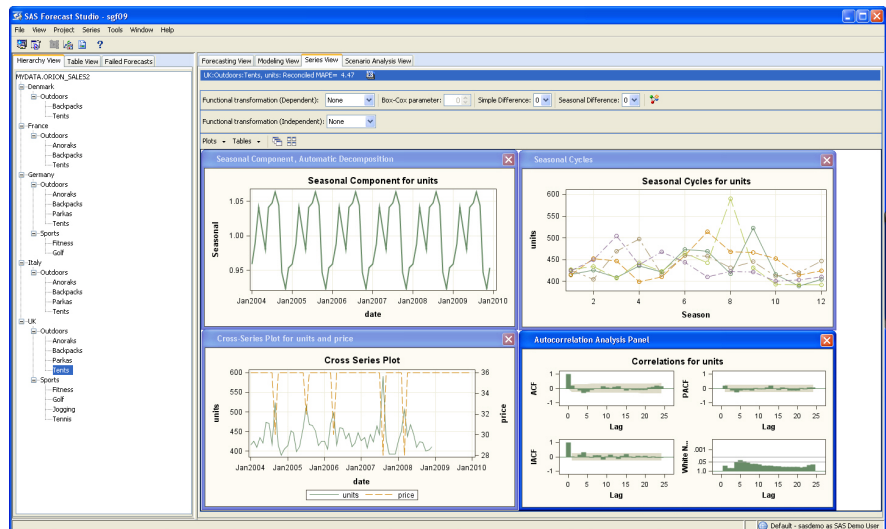
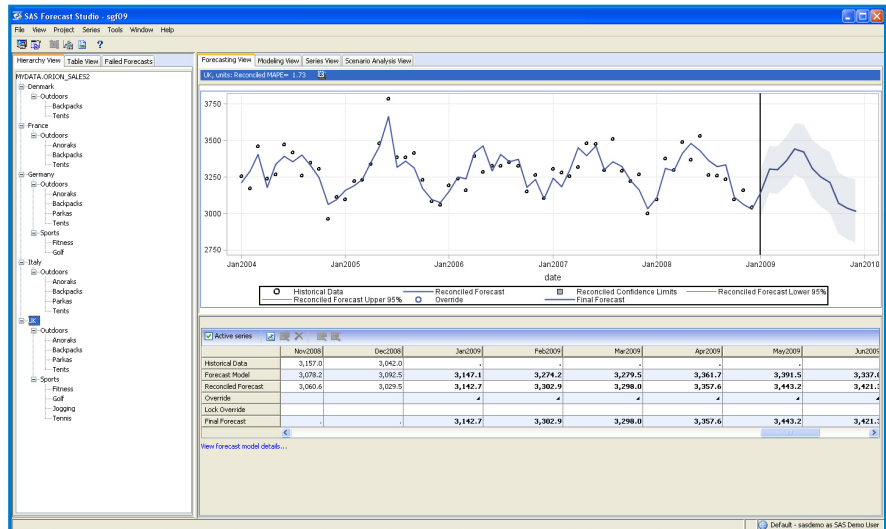


Figure 2: SAS Forecasting for Desktop provides a quick and easy way to manage forecasting through the SAS Forecast Studio graphical user interface. It allows forecasters to focus their attention on addressing exceptions and high-value forecasts.