



What does SAS Forecast Server do?

SAS Forecast Server generates large quantities of high-quality forecasts quickly and automatically, allowing organizations to plan more effectively for the future.

Why is SAS Forecast Server important?

The unsurpassed scalability of SAS Forecast Server enables all levels of your business to operate more efficiently by quickly and automatically producing millions of high-quality forecasts you can trust.

For whom is SAS Forecast Server designed?

It is designed for organizations in any industry that need large-scale forecasting and/or require automation because of the large number of forecasts or a lack of highly-analytic forecasters. The target audience ranges from managers to directors of forecasting, who are responsible for the actual creation of the forecasts, to the executives they support who are responsible for overseeing the success of planning processes.

SAS® Forecast Server

Automatically produces millions of high-quality forecasts you can trust

For companies needing to produce numerous forecasts with huge volumes of data — the forecasting process can be problematic. There may be too few skilled analysts to do the forecasting, or there are too many forecasts for existing staff to analyze within a reasonable timeframe. Another issue may be that current software cannot produce statistically-based forecasts on a large scale, so shortcuts are taken and accuracy is sacrificed.

SAS Forecast Server alleviates these problems by combining a new graphical user interface (SAS Forecast Studio) for ease of use with SAS' sophisticated forecasting capabilities in an incredibly scalable and automated way.

SAS Forecast Server can automatically generate millions of statistically based forecasts without the need for human intervention, unless so desired. The number of forecasts desired will determine if the interactive interface or a batch job is most appropriate. SAS Forecast Server automatically chooses the best forecasting model, optimizes the model parameters and produces the forecasts (even accounting for seasonality and intermittent data).

SAS Forecast Server also includes time series data management capabilities. Transactional data can be converted to a time series format and forecast all in one step, or the converted data can be fed into a "forecasting data warehouse" as part of an overall data processing function. The ability to preprocess transactional data saves significant time and resources.

Key benefits

- Provides forecasts in a quick and timely manner through a user-friendly graphical interface.** SAS Forecast Server automatically produces high-quality forecasts with the ability to modify models interactively without programming. This makes large forecasting processes manageable and allows analysts to focus their time on the most important forecasts. Forecasting requires less manual input, which frees up time for analysis and reporting while also improving forecast accuracy.
- Provides forecasts that reflect the realities of the business, improving your ability to plan future events with confidence.** Only SAS Forecast Server automatically selects the business drivers, holidays or events that aid in the forecasting process from any number of variables supplied to the system in the modeling process. Forecasts better reflect the business and require less overriding and fewer manual interventions. You can trust the accuracy of your forecasts.
- Improves forecasting performance across all products, inventory levels and stock-outs.** SAS has a complete array of advanced forecasting methods and can statistically estimate the impact of sales and marketing events based on sound business logic. Graphical displays of the impacts provide a greater understanding of the effects of holidays, marketing events, sales promotions and unexpected events, such as weather, improving the ability to forecast and plan future sales promotions and marketing events.



Product overview

SAS Forecast Server is a large-scale automatic forecasting solution offering unsurpassed scalability. It enables automatic diagnostics and statistical forecasting of millions of data series in batch or through the interactive graphical user interface. For each item being forecast, SAS Forecast Server automatically selects the best forecasting model from an unlimited repository of candidate models, mathematically optimizes all forecasting model parameters and generates high-quality forecasts.

Project set-up wizard

Using the project set-up wizard novice forecasters can set up the automatic forecasting process quickly and easily. The wizard guides users through data selection, assigning roles to variables in the data set, setting up a forecasting hierarchy and selecting important automatic forecasting criteria. Forecasters can specify criteria for automatic outlier detection, holdout samples, forecast horizons, whether forecasts are allowed to go below zero and more. Exception rules can be set to flag potentially problematic forecasts.

Automatic forecasting

SAS Forecast Server produces forecasts by intelligently determining the forecasting models that best fit the historical data. An appropriate model is generated for each item being forecast based on user-defined criteria. Model parameters are automatically optimized to provide the best-fitting model, resulting in more responsive and accurate forecasts. Business drivers and events (regressors) are automatically selected from any number of supplied regressors. Holdout samples can be specified so that forecasting models are selected not only by how well they fit the past data, but by how well they are likely to predict the future.

Hierarchical forecast reconciliation and disaggregation

Top-down, middle-out and bottom-up forecast reconciliation is provided to support the hierarchical nature of many forecasting processes. Statistical forecasts at the lowest level of the hierarchy can be aggregated to create forecasts at higher levels. Similarly, statistical forecasts at higher levels of the hierarchy can be allocated to lower levels. Forecasters can specify a forecasting hierarchy and the default options within the project set-up wizard.

Exception rule settings

Automatic forecasting processes are not always perfect. SAS Forecast Server lets users set up business rules for flagging potentially problematic forecasts. Upon completion of the automatic forecasting process, forecasters can quickly identify the forecasts that violate a defined rule so they can focus attention where it is most needed.

Events management console

Events such as sales promotions, unusual weather, etc., can greatly affect forecasts. An events management console allows users to create event definitions, assign events to selected series in the project and delete events. Users can specify event duration, shape and recurrence options. Predefined common events and holidays are available for inclusion in the forecasting models, making model development and deployment fast and easy.

Code generation for batch processing

SAS Forecast Server generates SAS code through the interactive graphical interface. All work performed within SAS Forecast Studio is captured as SAS code. Users can export the code to edit the project in a program editor, schedule and run projects in a batch mode or create SAS Stored Processes.

User override facility

With SAS Forecast Studio, forecasters can override the statistical forecast to incorporate judgment or outside information into the forecasting process. Forecasters who are short on time or do not wish to refine the forecasting models may find that overriding forecasts is the quickest way to deal with problematic forecasts.

Client-server architecture

SAS Forecast Server can reside on a single machine or on a server for multiple users to access. The ability to operate in a client-server environment makes SAS Forecast Server suitable for large-scale forecasting problems. SAS Forecast Studio is a Java-based GUI, which can be set up to connect to SAS Forecast Server either on a server or on the same stand-alone machine.

Optimized model parameters

Mathematically optimized model parameters are provided so users don't have to guess and manually enter model parameters or perform a cumbersome grid search for reasonable estimates. Optimized parameters provide better fitting models and forecasts that are more accurate and responsive to changes in the data.

Automatic regressor/event selection and model specification

SAS Forecast Server automatically selects the regressors (“causal variables”) or events that aid in the forecasting process. Regressors and events that improve the forecasting model are selected from any number of regressors supplied to the system. In addition to selecting the most useful regressors and events, SAS Forecast Server automatically determines how they are specified in the model. The system not only examines the contemporaneous relationships of the regressors and events to the items being forecast, but it also determines whether lagged and/or dynamic relationships are present. It automatically computes variable transformations, lags and transfer function definitions.

Automatic outlier detection

SAS Forecast Server examines the history of each item being forecast and automatically identifies outliers and shifts in the data. Subsequent forecasts adjust for these outliers and shifts appropriately. The automatic detection of outliers and shifts in the data allows forecasters to spend more time focusing on more important forecasts rather than fixing data problems.

Choice of automation level

Users can choose the level of automation of the forecasting process. If the best forecasting model for each item is unknown or if the models have become outdated, users may choose a maximum level of forecast automation. If suitable models have previously been determined, users may choose to keep the current models and simply re-estimate the model parameters. For maximum processing speed, users may keep the previously selected models and model parameter estimates and simply generate forecasts.

Key features

Easy-to-use GUI

- Automatic forecasting: set up the forecasting process, hierarchy, parameters and business rules through an interactive graphical interface.
- Project set-up wizard: generate automatic forecasts for millions of data series in batch or thousands through the interactive graphical interface.
- Hierarchical reconciliation: reconcile up and down the hierarchy, leveraging the strength of SAS’ analytics.
- Fix exceptions automatically: generate exception reports based on sound statistical logic and business rules.
- User override facility: fix models and override forecast values.
- Extensible reporting: publish results automatically via company portal or Internet.

Scalability

- Choice of forecast automation level: leverages the power of SAS High-Performance Forecasting with its large-scale automatic forecasting capabilities to handle millions of data series.
- Facilitates ongoing and repeatable forecasting as part of a company’s overall planning process, surfacing more effective statistically-based forecasting methods that can be operationalized throughout the forecasting process.
- Extensible model selection list: intermittent demand models, unobserved components models, ARIMA models, dynamic regression, Exponential Smoothing models with optimized parameters.
- Client-server architecture.

Easy manageability

- Easy access to the superior forecasting capabilities of SAS through SAS Forecast Studio with the ease of a user-friendly interactive graphical interface. No programming is required, users just point-and-click their way through the superior forecasting capabilities.
- Functionality to support forecasting as an ongoing and repeated process.
- An easy means to customize several aspects of the large-scale forecasting process, including exception rules, the model repository and events, which gives users more flexibility and control over model selection, event identification and exception reporting.
- Events management console.
- Code generation via GUI: code generation for batch processing.
- Automatic regressor selection.
- Automatic outlier detection.

Trust

Only SAS Forecast Studio features the ability to:

- Perform automatic hierarchical forecast reconciliation: set up the forecasting process, hierarchy, parameters and business rules through an interactive graphical interface.
- Generate automatic forecasts for millions of data series in batch or thousands through the interactive graphical interface.
- Reconcile up and down the hierarchy, leveraging the strength of SAS’ analytics.
- Generate exception reports based on sound statistical logic and business rules.
- Fix exceptions automatically: fix models and override forecast values.
- Publish results automatically via company portal or Internet.

SAS® Forecast Server Technical Requirements

Client environment

- Windows (x86-32): Windows 2000 Professional, Windows XP Professional.
- Internet Explorer 5.5+

Server environment

SAS Servers, including Base SAS and SAS Metadata Server can be installed on one or more hardware systems in a multitier configuration.

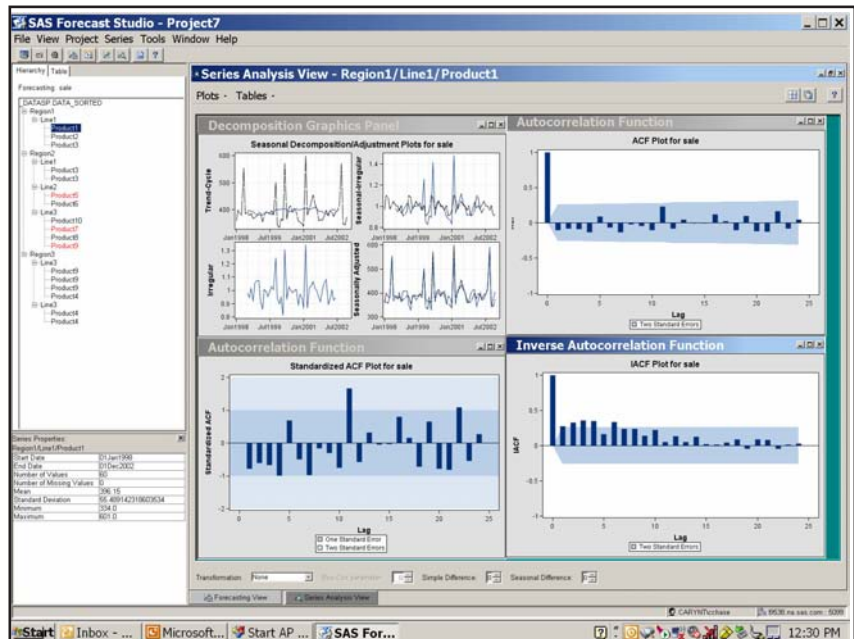
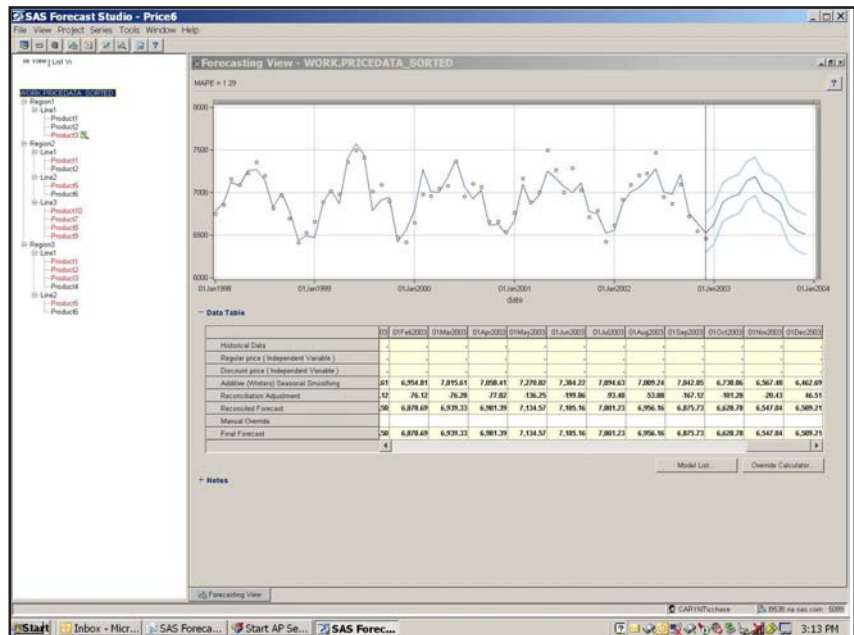
- AIX (64-bit), Release 5.1+
- Windows (x86-32): Windows 2000 Professional, Windows XP Professional, Windows NT 4 Server*

* Note: SAS Metadata Server must be installed on an alternate supported platform.

Web tier

SAS includes a reference implementation of Apache Tomcat. Sites can optionally choose to license WebLogic or WebSphere directly from the vendor:

- BEA WebLogic (AIX, Windows 2000 Server, Windows Server 2003).
- IBM WebSphere (AIX, Windows 2000 Server, Windows Server 2003).
- Tomcat (AIX, Windows 2000 Server, Windows Server 2003).



SAS Forecast Server provides a quick and easy way to view and adjust forecasts through the new SAS Forecast Studio interactive graphical interface. It allows forecasters to best utilize their time identifying and addressing exception forecasts first.



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