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SAS[®] Forecast Analyst Workbench 5.1 User's Guide, Second Edition

The correct bibliographic citation for this manual is as follows: SAS Institute Inc. 2013. *SAS® Forecast Analyst Workbench 5.1: User's Guide, Second Edition*. Cary, NC: SAS Institute Inc.

SAS® Forecast Analyst Workbench 5.1: User's Guide, Second Edition

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Electronic book 2, September 2013

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About This Book

Audience

SAS Forecast Analyst Workbench is designed for the following users:

- Administrators who are responsible for setting up and maintaining the application environment
- Data analysts who are responsible for data management
- Business users (including planners, analysts, and advanced analysts) who are responsible for analyzing the forecasted data and for making decisions based on that data

This document focuses on explaining the tasks that you can perform by using the SAS Forecast Analyst Workbench user interface. As a user of SAS Forecast Analyst Workbench, you might be assigned to a specific role, which determines the tasks that you can perform.

Prerequisites

You must satisfy the following prerequisites in order to use SAS Forecast Analyst Workbench:

- a user ID and password for logging on to SAS Forecast Analyst Workbench
- a supported Web browser installed on your computer
- access to data sources or stored processes to obtain data

What's New in SAS Forecast Analyst Workbench 5.1

Overview

SAS Forecast Analyst Workbench 5.1 has new features that affect the following areas:

- new Flex-based user interface
- scope-based planning process
- large-scale forecasting and advanced analysis
- consensus planning
- new product forecasting

New Flex-Based User Interface

The new Flex-based user interface is a user-friendly interface in which you create plans and projects, and perform model management and forecasting tasks. The user interface of SAS Forecast Analyst Workbench contains two workspaces that are dedicated to analyzing forecasts. This user interface enables you to perform these day-to-day activities:

- view and create forecast plans
- apply statistical models to the forecast plans and perform other tasks (for example, diagnose the plan or rerun a forecast)
- review the generated predicted values and perform scenario analysis

The workspaces also include common functions such as sorting, filtering, and exporting data to Microsoft Excel. These functions enable you to access required information faster and to disseminate the information to stakeholders. The Flex-based user interface also enables you to work on multiple objects simultaneously.

Scope-Based Planning Process

The Forecast Plans workspace enables you to perform the following activities:

- set the scope of planning activities by creating forecast plans

x *What's New in SAS Forecast Analyst Workbench 5.1*

- segment data based on hierarchy and attributes
- include business rules and specify successor-predecessor relationships and bill of materials for products that are in the planning phase
- include special events and independent variables with planning data
- perform consensus planning

Large-Scale Forecasting and Advanced Analysis

SAS Forecast Analyst Workbench enables you to perform large-scale forecasting, which includes the following activities:

- apply statistical models and generate predicted values for the time series that are included in the planning scope
- perform large-scale forecasting using SAS High-Performance Forecasting
- integrate with SAS Forecast Studio and leverage its modeling capabilities to generate predicted values
- explore the demand (actual, predicted, and consensus) by drilling down into the values
- perform scenario analysis

Consensus Planning

SAS Forecast Analyst Workbench uses the capabilities of SAS Financial Management to perform consensus planning. Consensus planning includes the following activities:

- identify a list of analysis variables and publish the statistical baseline forecasts to all stakeholders
- create form sets and templates as per the business requirement
- obtain inputs from stakeholders in the organizations
- review the inputs that were received from stakeholders and achieve consensus values
- publish the unconstrained demand forecast that was achieved after mutual agreement of all stakeholders

New Product Forecasting

SAS Forecast Analyst Workbench enables you to forecast the demand for a new product. New product forecasting includes the following activities:

- select candidate products that contain attributes that are similar to those of the new product

- select surrogate products by using a similarity technique and by leveraging business knowledge
- generate the surrogate history with the help of statistical techniques combined with business judgment
- construct a statistical model of the surrogate history and generate a forecast that can be reviewed

Accessibility Features of SAS Forecast Analyst Workbench

Overview

SAS Forecast Analyst Workbench has been tested with assistive technology tools. It includes accessibility and compatibility features that improve the usability of the product for users with disabilities, with exceptions noted below. These features are related to accessibility standards for electronic information technology that were adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973 (2008 draft proposal initiative update). Applications are also tested against Web Content Accessibility Guidelines (WCAG) 2.0, part of the Web Accessibility Initiative (WAI) of the Worldwide Web Consortium (W3C). For detailed information about the accessibility of this product, send e-mail to accessibility@sas.com or call SAS Technical Support.

User Interface Layout

SAS Forecast Analyst Workbench provides a framework for working with SAS objects. The application window contains five main sections:

- The top of the window contains the application name and an application bar that includes a menu bar and a **Log Off** button.
- The left side of the window contains a collapsible navigation pane. This pane can contain one or more views (depending on your assigned capabilities and roles) that you select using buttons at the bottom of the pane. The views contain either trees or lists of objects. You can open these objects (one at a time) into tabs in the work area next to the navigation pane.
- The center of the window (the work area) contains information and options about the view that you are working in.
- The right side of the window can contain a pane for docking the Object Preview window and the Permissions Inspector window. This pane is not displayed until a window is docked.
- The bottom of the window contains a status bar that displays information about your connection to the metadata server.

To customize the application window and its features, select **File** ⇒ **Preferences**. For more information about the layout and features of the application window, see [“Understanding the SAS Forecast Analyst Workbench User Interface”](#) on page 7.

Themes

An application's theme is the collection of colors, graphics, and fonts that appear in the application. The following themes are provided with this application: SAS Corporate, SAS Light, and SAS Dark. To change the theme for the application, select **File** ⇒ **Preferences** and go to the **Global Preferences** page.


You can also use keyboard shortcuts to magnify the contents of the browser window or to invert the application colors. For more information, see Keyboard Shortcuts “Keyboard Shortcuts” on page xiv.

Note: If you have special requirements for your themes, then contact your system administrator or visual designer about using the SAS Theme Designer for Flex application to build custom themes. SAS Theme Designer for Flex is installed with SAS themes. For more information about this tool, see *SAS Theme Designer for Flex: User's Guide*.


Keyboard Shortcuts

The following table contains the keyboard shortcuts for the application. In the user interface, the shortcuts are displayed within parentheses in tooltips and menu labels.

Note: Some application-level keyboard shortcuts do not work when you first open an application. When that happens, press Tab to place the focus on the application and then try the keyboard shortcut again.

Note: When you use a keyboard shortcut to activate a button, first give the focus to the field or section that the button is associated with before you use the keyboard shortcut. For example, if a table has an associated  button, you must first move the focus to the table before you press Ctrl+?.

Keyboard Shortcuts

Task	Keyboard Shortcut
Open a Help pop-up window from the  button.	Ctrl+? <i>Note:</i> This shortcut does not work on some keyboards (for example, the Italian keyboard).
Zoom in	Ctrl++
Zoom out	Ctrl+-
Reset zoom state	Ctrl+0
Hide or show the application bar (includes the menu bar and the workspace bar)	Ctrl+Alt+Shift+M <i>Note:</i> This shortcut might not work if the area that has focus contains items that begin with the letter M.

Task	Keyboard Shortcut
<p>Open the Landmarks window and move focus to the list of landmarks. Each landmark represents an area of the application window. You can quickly navigate to that area of the application by selecting a landmark.</p>	<p>Ctrl+F6 and then tab once</p>
<p>Temporarily invert or revert application colors (for the current session only)</p> <p><i>Note:</i> You can set the Invert application colors preference in the Preferences window if you want the color change to persist across sessions.</p>	<p>Ctrl+~</p>
<p>Navigate to the column headings in a table</p>	<p>For a two-dimensional table, first ensure that the table is in focus. Press Ctrl+F8 to move the focus to the column headings and then use the arrow keys to navigate from heading to heading.</p> <p>For a multidimensional table, first ensure that the table is in focus. Press Tab to move the focus to the column headings and then use the arrow keys to navigate from heading to heading.</p>
<p>Sort columns in a table</p>	<p>To sort a single column, navigate to the column heading of the column that you want to sort. Press the Spacebar to sort the column.</p> <p>To sort additional columns, navigate to the column heading of each additional column that you want to sort. Press Ctrl+Spacebar.</p>

Exceptions to Accessibility Standards

These exceptions are known to occur when using the application with Internet Explorer.

Accessibility Issues and Their Workarounds

Accessibility Issue	Workarounds
<p>Using JAWS with this application can sometimes cause Internet Explorer to stop responding.</p>	<p>Using JAWS 13 or later might resolve the issue.</p>
<p>JAWS cannot read some of the controls in the application, such as images, icons, and buttons.</p>	

Accessibility Issue	Workarounds
JAWS cannot read the tooltips of items in trees and lists.	
JAWS refers to table controls as list boxes.	When JAWS reports that a control is a list box, keep in mind that it might actually be a table.
JAWS cannot read two-column property tables.	
<p>JAWS does not correctly read the information in a table:</p> <ul style="list-style-type: none"> • JAWS cannot read the column headings of a table. • When table cells are not editable and the focus is in the body of the table, JAWS reads an entire row at a time instead of cell by cell. • When the table cells are editable, and focus is in the body of the table, JAWS reads only the first row of the table. If you use the arrow keys to select a cell or row, then JAWS does not read anything. If you press Enter to edit a cell, then JAWS reads the row that contains the edited cell. 	
When you are in a table cell, if you press Home, End, Page Up, or Page Down, the selected cell will change to be one in the first column of the currently displayed columns for the table.	Use the arrow keys to navigate through the cells of the table.
You cannot use the Tab key to successfully navigate the cells in a table if the table contains both editable and non-editable cells.	Use arrow keys to navigate to a cell. If the cell is editable, then press Enter to enter Edit mode. Edit the cell. Press Esc to exit Edit mode. Then, use arrow keys to navigate to the next cell.
If you can tab to the bottom of a table to add a row, then you cannot use the Tab key by itself to exit the table.	Press Shift+Tab to navigate to the top of the table and to then exit the table.
You cannot use the keyboard to activate the links within how-to topics and Help pop-up windows.	Use the Help menu to access the linked documents.
You cannot use Shift+F10 to open a pop-up menu.	
You cannot use the keyboard to access the close (x) button that is in the top right corner of a tab.	

Accessibility Issue	Workarounds
You cannot use the keyboard to change a tab label.	

Recommended Reading

Here is the recommended reading list for this title:

- *SAS High-Performance Forecasting: User's Guide*
- *SAS Forecast Studio: User's Guide*
- *Demand-Driven Forecasting: A Structured Approach to Forecasting*
- *SAS Forecast Analyst Workbench 5.1: System Administration Guide*
- *SAS Forecast Analyst Workbench 5.1: Data Administration Guide*

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Part 1

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Chapter 1

Overview of SAS Forecast Analyst Workbench

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Improved Relations	4

What is SAS Forecast Analyst Workbench?

SAS Forecast Analyst Workbench is a component of SAS Demand-Driven Forecasting, the demand planning module of the SAS Demand-Driven Planning and Optimization suite.

SAS Forecast Analyst Workbench helps planners and analysts track, monitor, and predict the demand for products and services. Whether you are operating your business within a country or across countries, you will find that SAS Forecast Analyst Workbench is an incredibly easy and powerful tool to use. SAS Forecast Analyst Workbench helps organizations gain instant visibility and understanding of the demand for their products without needing to rely on personal judgments.

SAS Forecast Analyst Workbench is empowered with the capabilities of SAS solutions—analytics, data integration, and business intelligence. SAS Forecast Analyst Workbench enables your organization to perform the following tasks:

- sense demand signals through the synchronization of internal and external data
- shape demand using advanced analytics
- predict demand to create a more accurate, unconstrained demand forecast

Depending on the license that your organization has purchased, you can use the following modules of the SAS Forecast Analyst Workbench:

- Consensus Planning (see [“Introduction to Consensus Planning”](#) on page 139)
- New Product Forecasting (see [“Introduction to New Product Forecasting”](#) on page 115)

Benefits of Using SAS Forecast Analyst Workbench

Higher Profits

Organizations benefit from more effective downstream planning due to improved demand forecasting results that anticipate unconstrained demand more accurately. More effective downstream planning includes the following benefits:

- a reduction in customer stock orders and retailer shelving
- a significant reduction in customer back orders
- a reduction in the carrying costs for finished goods inventory
- consistently high levels of customer service, which results in high customer retention (due to having the right product at the right time)

Better Insights

Due to the systematic workflow of SAS Forecast Analyst Workbench, collaboration between stakeholders within the organizations improves. This improved collaboration leads a better understanding of what drives profitability, which results in tighter budget control and more efficient allocation of marketing investment. This collaboration also results in a better understanding of products, customers, and market profitability.

Improved Relations

As all the internal stakeholders in the process begin to collaborate, they become more tightly aligned. This closeness enables quality collaboration among sales, marketing, finance, and operations planning. The building of quality relationship translates into stronger network integration, which helps minimize the pressures of market dynamics that surround your organization's brand and products.

Chapter 2

Managing Access to SAS Forecast Analyst Workbench

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Roles and Capabilities

Different users have access to different functionality depending on their assigned roles. Each role is mapped to a set of predefined capabilities. A capability, also known as an application action, defines the operations that a user can perform.

SAS Forecast Analyst Workbench is shipped with three predefined roles: Planner, Forecast Analyst, and Senior Forecast Analyst. Depending on the role that is assigned to you, you can view the hierarchy levels and their values.

Using SAS Management Console, an administrator can modify the roles and specify the capabilities that meet the guidelines for your organization. If you have questions about your assigned roles, contact your administrator.

Logging On To SAS Forecast Analyst Workbench

To display the SAS Forecast Analyst Workbench logon window, go to the URL that is supplied by your administrator or paste it in the address field of your Web browser. For example, you might enter *http://server01.abc.com:8080/SASForecastAnalystWorkbench/*.

To log on to SAS Forecast Analyst Workbench:

1. In the **User ID** box, type your user ID.
2. In the **Password** box, type the password.

Note: Your password is case sensitive. Your user ID might also be case sensitive, depending on the operating system that hosts the Web application server. For assistance, contact your administrator.
3. Click **Log On** or press ENTER.

The Forecast Plans workspace is displayed.

Logging Off From SAS Forecast Analyst Workbench

To log off from SAS Forecast Analyst Workbench, click **Log Off** on the application bar.

If you lose your connection to SAS Forecast Analyst Workbench (for example, your session times out), you must begin again at the point where you last saved your work.

If your connection to SAS Forecast Analyst Workbench remains inactive for a certain time, your session might time out. By default, if there is no activity for 30 minutes, the application prompts you to either continue the session or to log off from the application. If you do not select either of the options within a certain time (the default time is 10 seconds), the application automatically logs you off and displays the Session Timed Out page. Your administrator can change the inactivity period, countdown period, and availability of the **Log On** button on the Session Timed Out page.

Chapter 3

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Overview of the SAS Forecast Analyst Workbench User Interface

The SAS Forecast Analyst Workbench user interface contains workspaces, category views, and views that enable you to perform related tasks within the application. Each workspace contains category views, and each category view also contains views. A workspace is represented by a workspace button on the application bar.

The SAS Forecast Analyst Workbench user interface contains the following workspaces:

- Forecast Plans
- New Products

When you log on to SAS Forecast Analyst Workbench, the Forecast Plans workspace appears by default.

Forecast Plans Workspace

Overview of the Forecast Plans Workspace

Use the Forecast Plans workspace to create and manage forecast plans and projects. You create a forecast plan to analyze a specific business challenge. The plan encompasses the scope of your forecasting activity. You can also create projects in this workspace to integrate with SAS Forecast Studio.

The Forecast Plans workspace is divided into the All Plans category view and the Forecast Studio Projects category view. To open the category view, click the view in the category pane.

All Plans Category View

This category view enables you to create forecast plans and work on them. You can perform a series of tasks on a plan, including diagnosing a plan, reconciling a plan, and accepting a plan. You can view, organize, and track all your forecast plans in the All Plans category view.

This category view is divided into views that you can use to perform a group of related tasks. For more information, see [“Understanding the All Plans Category View” on page 19](#).

Model Management View

In the Model Management view, you can view actual values and predict forecasted values by applying statistical models. You can view and compare the historical and predicted values of the plan. You can also edit the properties of the plan. In this view, you can perform a series of tasks, such as diagnosing a plan, reconciling a plan, accepting a plan, edit parameters of a plan, and creating SAS Forecast Studio projects. You can use different panes, tables, graphs, and components of the view to perform these tasks. The Model Management view also contains a toolbar.

For more information, see [“Understanding the Model Management View” on page 55](#).

Explore Demand View

In the Explore Demand view, you can explore and analyze the historical, current, future, and consensus demand values. You can highlight the demand values that are not within the tolerance limit. You can also explore demand for the variables and dimensions in the hierarchies that interest you the most. The information that you obtain from this view helps you understand how the demand for your products is shaped.

For more information, see [“Components of the Explore Demand View” on page 101](#).

Scenario Analysis View

The Scenario Analysis view helps you understand how the demand for products is shaped. You can vary the future values of the factors that influence the demand for your products.

Consensus Planning View

Use the Consensus Planning view to obtain inputs from all the stakeholders within your organization and achieve consensus on the demand for the products. Using the workflow, you can create templates, share templates with stakeholders, obtain inputs, and finally achieve consensus. You can easily collaborate with different stakeholders by using this view.

For more information, see [“Understanding the Consensus Planning View”](#) on page 141.

Forecast Studio Projects Category View

In the Forecast Studio Projects category view, you can view, track, and organize SAS Forecast Studio projects. You can also update these projects with the data that you modified in SAS Forecast Studio. You can promote the Forecast Studio project so that the forecast plan is updated with the model-related information.

This category view contains the Model Management view, in which you perform the tasks related to model management. For more information, see [“Understanding the Forecast Studio Category View”](#) on page 89.

Overview of the New Products Workspace

In the New Products workspace, you can forecast demand for a new product and promote the result to the forecast plan. This workspace contains the NPF Projects category view, in which you create, view, track, and organize the new product forecast (NPF) projects.

For more information, see [“Understanding the New Product Forecasting Workspace”](#) on page 117.

Components of the User Interface

SAS Forecast Analyst Workbench user interface contains the following components:

- **application bar:** The application bar is located at the top of the application window and is a part of the application banner. The application bar contains the **File** menu, **Help** menu, the workspace buttons, and the **Log Off** option.
- **toolbar:** All views contain a toolbar. The toolbar contains buttons that you can use to perform frequent tasks.
- **File menu:** Using the **File** menu, you can define your preferences and log off from the application.
- **Help menu:** For details, see [“Where to Find Help”](#) on page 12.
- **workspace buttons:** You can use the workspace buttons to switch between workspaces.
- **Log off option:** You can use the **Log Off** option to log off from the application.
- **tile pane:** The **Tile** pane appears on the right side of the user interface. The **Tile** pane consists of the **Actions** and **Layout** menus.

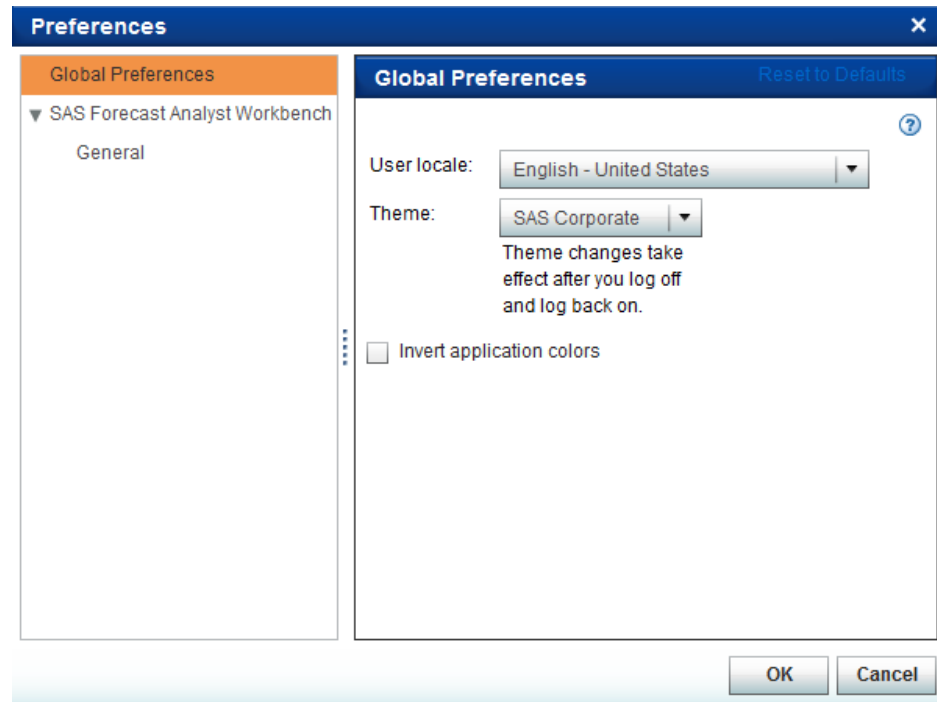
The SAS Forecast Analyst Workbench user interface uses Adobe Flex. You can leverage the capability of Adobe Flex to work on multiple views simultaneously. The **Tile** pane displays all the views that you have open. You can click a view in the **Tile** pane to work on that view.

- **status bar:** The status bar appears at the bottom of the application window. The status bar displays the user name of the user who is logged in.

Define Your Preferences

You can define the global preferences for all the SAS products that you are working on. You can also define preferences specifically for SAS Forecast Analyst Workbench.

Display 3.1 Preferences Dialog Box



To define preferences:

1. Select **File** ⇒ **Preferences**. The Preferences dialog box appears. The left pane is the category pane. The name of the right pane changes depending on the option that you select in the category pane.
2. In the category pane, click **Global Preferences**, and then define the global preferences.

The following table describes the fields in the Global Preferences pane.

Table 3.1 Fields in the Global Preferences Pane

Field	Description
User locale	Select a user locale from the list to specify the geographic region, language, and conventions. This setting might also apply to some SAS Web applications that are not displayed with the Adobe Flash player.
Theme	Select a theme from the list. The theme specifies the collection of colors, graphics, fonts, and effects that appear in the application.
Invert application colors	Select this check box to invert all of the colors in the application window, including text and graphical elements. You can also temporarily invert or revert the colors for an individual application session by pressing Ctrl+~.

- In the category pane, expand SAS Forecast Analyst Workbench, and click **General**.
- Define the general preferences.

The following table describes the fields of the General pane.

Table 3.2 Fields in the General Pane

Field	Description
Open application using this workspace	Select a workspace that will appear as the default workspace when you log on to SAS Forecast Analyst Workbench.
Both icons and labels	Select this option to view both icons and labels on the user interface.
Icons only	Select this option to view only icons on the user interface.
Labels only	Select this option to view only labels on the user interface.

- Click **OK**.

Time Zones and the User Interface

You can access the user interface of SAS Forecast Analyst Workbench by using a browser. SAS Forecast Analyst Workbench does not perform the time zone conversion automatically if the SAS Forecast Analyst Workbench server and browser are located in different time zones. Therefore, the demand that you see for a date and time on the user interface is the demand for that particular server date and time. You must perform the time zone conversion manually to determine the exact demand in your time zone.

Where to Find Help

Help Menu

The **Help** menu is located on the application bar. Use the **Help** menu to access the following information about SAS Forecast Analyst Workbench:

- User's Guide (PDF): Opens the *SAS Forecast Analyst Workbench 5.1: User's Guide* in a separate Web browser.
- SAS On the Web: Includes links to the product support page, SAS customer support, SAS training page, and the SAS home page. The product support page provides information about the documentation that is available for SAS Forecast Analyst Workbench.
- About SAS Forecast Analyst Workbench: Displays copyright and other information about SAS Forecast Analyst Workbench.

Embedded User Assistance

The help components embedded in the SAS Forecast Analyst Workbench interface gives you just enough information to complete a task. You do not need to leave your current task and search for a particular topic in the *SAS Forecast Analyst Workbench 5.1: User's Guide*.

The SAS Forecast Analyst Workbench interface has the following embedded help components:

- Pop-up help: Displays detailed information about corresponding field or interface element. Click the help icon (🔍) to view the information.
- Tooltips: Displays short, descriptive information about icons in a pane. A tooltip appears when you move your mouse pointer over an icon in the interface.
- Instructional text: Displays information persistently in the interface near a field, group of fields, or a table (for example, data entry instructions and introductory text for fields and tables).

Chapter 4

Performing Common Tasks in SAS Forecast Analyst Workbench

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Overview of Commonly Performed Tasks




This chapter explains the tasks that you can perform when you work with the following four common components of the SAS Forecast Analyst Workbench interface:

- windows
- panes
- tables
- lists

Resize a Window

You can resize a window if its default size does not display the complete information.


To resize a window:

1. Position your mouse pointer over any of the borders of the window.
2. When your pointer changes to , , or , drag your mouse pointer to resize the window.

Resize a Pane

You can resize a pane if the default size of the pane does not display the complete information. You can also resize a pane in order to provide more area to other panes.

To resize a pane:

1. Position your mouse pointer on the horizontal or vertical split bar of the pane.
2. When your pointer changes to , drag your mouse pointer to resize the pane.

Working with Tables

Change the Sort Order of a Column

You can sort data by only a single column at a time. To change the order in which a column is sorted, click the up or down arrow that is displayed in the column heading.

Change the Width of a Column

If the default width of a column does not display the complete information, you can change the column width. To change the width of a column, drag the boundary on the right side of the column heading.

Move a Column

If the order in which the columns are displayed does not meet your needs, you can change the sequence of the columns. To move a column, click the column heading and drag the column to the location that you want.

Part 2

Working with Forecast Plans

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Chapter 5

Introduction to Forecast Plans

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What Is a Plan?

A plan is the scope of the forecasting and planning activities. A plan contains the following attributes:

- objective or type of the plan that defines the purpose of your planning (for example, operational plan)
- key performance indicator (KPI), which depends on the type of plan that you choose (for example, demand)
- dimensions for which you want to forecast (for example, product or store location)
- hierarchy levels for each of the selected dimensions at which you might want to analyze the planning variable
- hierarchy values for each of the selected dimensions
- product chaining information if one of the selected dimensions is the product dimension
- factors that impact or influence the planning variables, such as independent variables and events

The status of a plan enables you to maintain a consistent and collaborative workflow within various departments of your organization. You can run a plan in batch mode to forecast periodically.

Depending on your permissions, you can create plans and work on them. You can also view and work on the plans that other users created and shared with you. You can perform the following tasks in the Forecast Plans workspace:

- create a plan
- edit a plan
- delete a plan
- copy a plan
- refresh a plan
- schedule a plan in batch mode

Chapter 6

Understanding the All Plans Category View

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Overview of the All Plans Category View

The All Plans category view consists of a table, a toolbar, views, and several panes. You can manage forecast plans using these components. The table displays the following information:

- a list of forecast plans
- name of each plan
- run mode of each plan (for example, ad hoc or batch mode)
- type of each plan (for example, operational or financial)
- status of each plan (for example, created or forecasted)
- key performance indicator (KPI) of each plan
- periodicity of each plan
- planning horizon
- number of series in each plan
- description of each plan
- if the plan is scheduled to run in batch mode, the date on which the plan was last run
- if the plan is scheduled to run in batch mode, the date when the plan will run next
- date when each plan was created
- user name of the person who created each plan
- latest date when each plan was modified

- user name of the person who last modified each plan

Components of the All Plans Category View

About the Components








The All Plans category view contains the following components:

- toolbar
- Properties pane
- Plan Details pane
- Comments Manager pane
- Batch Run Details pane

Toolbar

The toolbar contains buttons that you can use to perform frequent tasks. The following table describes the buttons of the All Plans category view.

Table 6.1 The All Plans Category View Toolbar Buttons

Button	Function
	Create a new forecast plan. For more information about creating a plan, see “Creating a Plan” on page 23 .
	Modify the parameters of the selected plan. For more information about editing a plan, see “Edit a Plan” on page 43 .
	Delete the selected plan. You can delete a plan that is not needed. For more information about deleting a plan, see “Delete a Plan” on page 44 .
	Copy the information of the selected plan and create a new plan. For more information about copying a plan, see “Copy a Plan” on page 45 .
	Refresh the selected plan so that new data can be added to the plan. For more information about refreshing a plan, see “Refresh a Plan” on page 46 .
	Diagnose the selected plan. When you click this button, a confirmation message appears. Click Yes . For more information about diagnosing a plan, see “Diagnose a Plan” on page 66 .
	Open the selected plan in the Model Management view. For more information about the Model Management view, see “About Model Management” on page 51 .

Properties Pane

The **Properties** pane displays detailed information about the selected plan. The **Properties** pane displays the following information:

- name of the selected plan
- type of the selected plan
- KPI of the selected plan
- dimensions of the selected plan
- date when the plan was created
- date when the plan was last modified
- status of the plan and the description of any error that has occurred
- whether models are applied to the plan
- whether the plan is scheduled in batch mode
- root level of the plan
- forecast leaf level of the plan

Plan Details Pane

The **Plan Details** pane of the All Plans category view displays the following information:

- number of records that are present in each dimension (for example, the number of products selected in the PRODUCT dimension)
- number of substitutes that are present in the selected plan
- number of independent variables that are present in the selected plan

Comments Manager Pane

You can add comments to the selected plan in the **Comments Manager** pane. Comments include information that is specific to a plan or information that you might want to share and discuss with others.

If you have the required permission, you can perform the following tasks:

- create a new topic

You can type a subject and description for the new topic. You can select the priority of the topic and attach important files to the comment.

- reply to a topic
- search for a topic to comment on

Batch Run Details Pane

You can schedule a plan to run periodically in the **Batch Run Details** pane. You can schedule a plan to run daily, weekly, monthly, or quarterly. You can also edit the batch

run settings that are specified. For more information about scheduling a plan to run in batch mode, see [“Schedule a Plan to Run in Batch Mode”](#) on page 46.

Open the All Plans Category View

When you log on to SAS Forecast Analyst Workbench, the All Plans category view of the Forecast Plans workspace appears by default. However, if you are in another view and you want to open the All Plans category view, perform the following step:

- In the Forecast Plans workspace, expand the category pane and click **All plans**. The All Plans category view appears.


Chapter 7

Managing Plans

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Creating a Plan

Overview of Creating a Plan

The process of creating a plan consists of five steps. You must have permission to create a plan. In the Forecast Plans workspace, click . The New Plan wizard appears. The wizard takes you through the following steps:

1. Define the objective of the plan
2. Select hierarchy levels
3. Select hierarchical values
4. Reorganize the hierarchy
5. Specify other parameters

Define the Objective of the Plan

A plan contains name, its objective, and its dimensions. You define the objective for the plan by specifying the key performance indicator (KPI). For example, you can define Demand as the KPI to use to measure the operational performance of the plan.

After you specify the objective of the plan, select one or more dimensions for which you want to forecast. For example, you can select PRODUCT to forecast the demand for your products.

Display 7.1 Define Objective Page

Define Objective

Plan name: * USA_Camera (Maximum 40 characters)

Plan description: The plan is created to forecast the demand for (Maximum 1024 characters)

Type: Operational ?

KPI: DEMAND_KPI

Select dimensions.

Available items:

- CUSTOMER

Selected items:

- PRODUCT
- STORE_LOCATION

Previous Next Cancel Finish

To define the objective of the plan:

1. In the **Plan name** box, enter a name for the plan.


Note: This field is required. The plan name must be unique and must be a valid SAS name. For more information about SAS naming conventions, see *SAS Language Reference: Concepts*.


2. In the **Plan description** box, enter a short description for the plan.
3. In the **Type** list, select the plan type. A plan type defines the objective of your plan.

Note: The key performance indicators in the **KPI** list depend on the plan type that you select.

4. In the **KPI** list, select the key performance indicator.

Note: The dimensions that you see in the **Available items** section depend on the KPI that you select.

5. In the **Available items** section, select the dimension and click . The selected dimension appears in the **Selected items** section.

Press and hold the Ctrl key to select multiple dimensions. To change the sequence of the dimensions, use the up and down arrows. Click  to select all the dimensions.

Note: The dimensions that you see in the **Available items** section depend on the options that you selected in the **Type** and **KPI** lists. The available dimensions also depend on your permissions.

Note: To remove a dimension, click . Click  to remove all the dimensions.

6. Click **Next** to continue.

Select Hierarchy Levels

On the Select Hierarchy Levels page, choose the hierarchy levels that you want to include in the plan. You must specify hierarchy levels for all dimensions that you have selected.

Display 7.2 Select Hierarchy Levels Page

Select Hierarchy Levels
[PRODUCT,STORE_LOCATION]

For each dimension, select the hierarchy levels that you want to include in the plan.


Dimension: PRODUCT ▼


Select hierarchy levels.



Available items:	Selected items:
ALL Segment Class Category SubCategory Product Name	ALL Segment Class Category SubCategory Product Name
⋮ → →	

Previous
Next
Cancel
Finish

To select hierarchy levels:

1. In the **Dimension** list, select a dimension.
2. In the **Available items** section, select the hierarchy level and click . The selected hierarchy level appears in the **Selected items** section.

Press and hold the Ctrl key to select multiple levels. Click  to select all levels.

Note: To remove a hierarchy level, select the level that you want to remove in the **Selected items** section, and then click . Click  to remove all the levels.

Note: You cannot select only the lowest-level leaf node. You must select the parent node of the lowest-level leaf node in the hierarchy.

3. Repeat steps 1 and 2 for all the dimensions.
4. Click **Next** to continue.

Select Hierarchical Values and Specify Attributes

Select Hierarchical Values

You must choose the hierarchical values for all the dimensions that you included in the plan. You can also specify common attributes and product-specific attributes (also called product specifications) to further filter the data.

Display 7.3 Select Hierarchical Values Page

To select hierarchical values:

1. In the **Dimension** list, select a dimension.
2. In the **Available items** section, select the hierarchical value that you want. The hierarchical values are arranged in a tree structure. You can expand and collapse the hierarchy to select the values.
3. Click . The selected hierarchical values appear in the **Selected items** section.

Press and hold the Ctrl key to select multiple values. Click to select all the values.

Note: To remove a hierarchical value, select the value that you want to remove in the Selected items section, and then click . Click to remove all the values.

Note: You must select the valid hierarchy values

4. Repeat steps 1 through 3 for all the dimensions.
5. (Optional) Click **Common attributes** to define the common attributes.

For more information about defining common attributes, see [“Specify Common Attributes” on page 28](#).

Note: This link is available only if common attributes are defined for the selected hierarchical values.

6. (Optional) Click **Product-specific attributes** to define the attributes that are specific to a product.

For more information about defining product-specific attributes, see [“Specify Product-Specific Attributes” on page 29](#).

Note: This link is available only if product-specific attributes are defined for the selected hierarchical values.

7. (Optional) Click **Select leaf nodes** to define the leaf nodes for the selected dimension.

For more information about selecting leaf nodes, see [“Select Leaf Nodes” on page 30](#).

Note: This link is available only when the parent node of the lowest-level lead node is selected.

8. Click **Next** to continue.

Specify Common Attributes

You can specify additional criteria that are common among all products to filter the data. For example, you can specify to forecast the demand for all products that are manufactured in the Seoul, South Korea plant and set the life cycle stage to **MATURE**.

When you specify attributes at different levels, SAS Forecast Analyst Workbench filters the data at the top-most level first. In other words, SAS Forecast Analyst Workbench filters the data from the top level to the bottom level when the following conditions are true:

- the data is arranged in a hierarchy
- the attributes that are defined at the highest level are different from the attributes that are defined at lower levels in the hierarchy

For example, SAS Forecast Analyst Workbench filters all red shirts first and then filters by size when shirt color is defined at the highest level in the hierarchy.

Hierarchical Values pages are displayed. You can perform the following actions with respect to the hierarchy levels:

- reorganize the hierarchy levels

You reorganize the hierarchy based on your purpose. For example, if you want to forecast the demand for all the products in a store, move the Product level to be immediately below the Store Location level.

- define the forecast-leaf-level node

By defining the forecasting leaf level node, you specify the level up to which the forecasting process must generate the forecasting values. For all levels below the forecast leaf level, SAS Forecast Analyst Workbench uses the disaggregation method to generate the forecasting values.

- define the reconciliation level

By defining the reconciliation level, you specify the level where the process of reconciliation must start. Based on the reconciliation level, SAS Forecast Analyst Workbench automatically selects one of the following reconciliation methods: bottom-up, middle-out, or top-down. If the reconciliation level that you selected is the same as that of forecast leaf level, SAS Forecast Analyst Workbench uses the bottom-up method for reconciliation. If you select the highest level, SAS Forecast Analyst Workbench uses the top-down method for reconciliation. For all other levels, SAS Forecast Analyst Workbench uses the middle-out method for reconciliation.

Display 7.6 Reorganize Hierarchy Page

Reorganize Hierarchy
[PRODUCT]

Move up or down the hierarchy levels to rearrange them. Modify the forecast leaf level and reconciliation level if required.

Hierarchy Level	Forecast Leaf Level	Reconciliation Level
All Brands	<input type="radio"/>	<input type="radio"/>
Brands	<input type="radio"/>	<input type="radio"/>
Category	<input type="radio"/>	<input type="radio"/>
Product Group	<input type="radio"/>	<input type="radio"/>
Product	<input checked="" type="radio"/>	<input checked="" type="radio"/>

Selected reconciliation method: Bottom Up

Specify Time Periods

Periodicity of historical data:

Number of periods of historical data: * Days

Number of periods in planning horizon: * Days

Minimum number of periods of historical data: * Days

Click Finish to create the plan. If you want to specify other parameters, click Next.

To reorganize the hierarchy levels:

1. In the Hierarchy Level column, select a level and click or .

You cannot change the order of the hierarchy levels within a dimension. For example, for the Location dimension, you cannot move the States hierarchy level

above the Regions hierarchy level. You can change the order of the hierarchy levels across dimensions.

2. In the Forecast Leaf Level column, click the lowest level up to which the forecasting process must run.
3. In the Reconciliation Level column, select the level at which the reconciliation method must start.

Note: You cannot select a reconciliation level that is below the forecast leaf level that you selected.

4. In the **Periodicity** list, select the periodicity.

The periodicity defines the forecasting interval, which is the frequency at which the data should be forecasted.

5. In the **Number of periods of historical data** box, enter the number of periods of historical data that the forecasting process must include for generating forecast results.
6. In the **Number of periods in planning horizon** box, enter the number of periods for which you want to generate forecast results.
7. In the **Minimum number of periods of historical data** box, enter the least number of periods that the forecasting process should consider to generate statistical forecast results.
8. Click **Next** to continue, or click **Finish**.

If you click **Finish**, the status of the plan becomes **Plan creation in progress**. If the data is present in accordance with the parameters that you specified, the status of the plan changes to **Created**.

Specify Other Parameters

Steps to Specify Other Parameters

On the Specify Other Parameters page, you can specify product chaining settings, events, and independent variables in order to generate forecast results.

To specify other parameters:

1. On the **Product Chaining** tab, specify succession, substitution, and bill of material information.

For more information about product chaining, see [“Manage Product Chaining” on page 33](#).

Note: The **Product Chaining** tab is available only if you selected the following parameters when you created the plan:

- Product dimension
- Leaf level hierarchy node in the Product dimension

2. On the **Events** tab, select the events and the method of events usage.

Press and hold the Ctrl key to select multiple events. For more information about events, see [“Manage Events” on page 38](#).

Note: If you do not want to use the events, press Ctrl key and click the selected event to remove it.

3. On the **Independent Variables** tab, select the independent variables and the method of aggregation from the list.

Press and hold the Ctrl key to select multiple independent variables. For more information about independent variables, see “[Independent Variables](#)” on page 43.

Note: When you select multiple independent variables, SAS Forecast Analyst Workbench applies the common method of aggregation to all the selected variables. If you do not select an aggregation method, SAS Forecast Analyst Workbench applies the total aggregation method.

Note: If you do not want to use the independent variables, press Ctrl key and click the selected independent variable to remove it.

TIP If only one transactional data point is present for every time period, do not select the **STD** aggregation method.

4. Click **Finish**.

The plan is created in the **Plan creation in progress** state. After the plan is completed, the status of the plan changes to **Created**.

Manage Product Chaining

You define the product substitution, product succession, and bill of material settings on the **Product Chaining** tab.

Product succession is the process of specifying a product as a successor to an older version of that product (which is also called the predecessor product). Because the successor replaces the earlier version of the product, the successor’s demand can be considered to be similar to the predecessor’s demand. The successor product uses the historical data of the predecessor product to analyze the demand. In the product succession settings, you can define and manage the predecessor-successor relationships for all successor products.


Product substitution is the process of specifying an existing product as a substitute for another product. The substitute product must contain characteristics that are very similar to the master product. In product substitution, the products and the substitute products coexist in the market. In the product substitution settings, you can define and manage the substitute product relationships.

Display 7.7 Product Chaining Tab

Specify Other Parameters

[PRODUCT]

Product Chaining | **Events** | **Independent Variables**

Use succession: 

Allow multilevel successions

Scale historical data of predecessors

Scale factor: (0.01 to 10.00)

Use substitution:

Explode BOM:

The **Product Chaining** tab contains the following fields:

Table 7.1 Description of Fields on the Product Chaining Tab

Field	Description
Use succession	Select Yes to define and manage the predecessor-successor relationships for all successor products.
Allow multilevel successions	Select this check box to use the historical data of all previous predecessor products to generate the history of the successor. If you do not select this check box, the data of only the latest predecessor product is considered for forecasting. This check box is available only when you select Yes in the Use Succession list.

Field	Description
Scale historical data of predecessors	<p>Select this check box to scale the historical data of the predecessor products. You can scale up or scale down the historical data of the predecessor products, as a percentage value. For example, you might want to scale down the historical data of the 250 mg toothpaste when you increase its price by 5%.</p> <p>This check box is available only when you select Yes in the Use Succession list.</p>
Scale factor	<p>Enter the factor by which to scale up or scale down the historical data of the predecessor products. The default scale factor is 1. Valid values are in the range of 0.01–10.00.</p> <p>This field is available only when you select the Scale historical data of predecessors check box.</p>
Manage Successor Relationships	<p>Click this link to manage the successor relationships. When you click this link, the Manage Successor Relationships window appears.</p> <p>This link is available only when you select Yes in the Use Succession list.</p> <p>For more information about product succession, see “Manage Product Succession” on page 35.</p>
Use substitution	<p>Select Yes to specify the substitute settings.</p>
View Substitute	<p>Click this link to view the substitution. When you click this link, the View Substitutes window appears.</p> <p>This link is available only when you select Yes in the Use substitution list.</p> <p>For more information about product substitution, see “Manage Product Substitution” on page 37.</p>
Explode BOM	<p>Select Yes to explode the bill of material (BOM) of the combined products while the forecasting results are being generated.</p>

Manage Product Succession

Product succession is the process of replacing a product by a newer version of that product (also called the successor product). Because the successor replaces the predecessor, the successor’s demand can be considered to be similar to the predecessor’s demand.

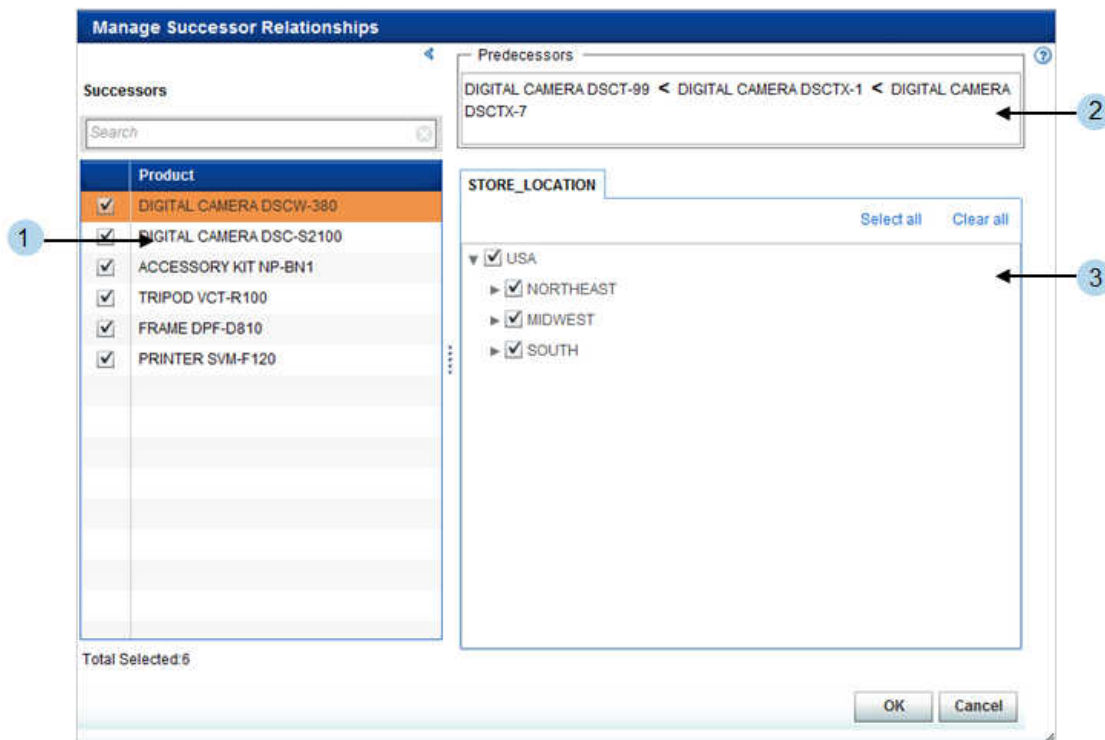
For example, a cell phone manufacturing organization introduces a newer version of the cell phone with improved screen resolution and camera settings. This newer version of the cell phone can be a successor product whose demand can be considered to be similar to the demand for the earlier product.

The product succession chains enable you to define and manage the predecessor-successor relationships for all successor products.

If the historical data of a successor is less than the minimum number of periods of historical data that is required for generating forecasts, the forecasting process uses the relationships that you defined. You can use one of the following types of predecessor-successor relationships:

- single level, singular succession (for example, a product is replaced by another product)
- single level, multiple successions (for example, a product is replaced by a group of products, or a group of products is replaced by a single product)
- multilevel, singular succession (for example, a successor product is again succeeded by another product)
- multilevel, multiple succession (for example, a succession chain is formed that contains a combination of one-to-one, one-to-many, many-to-one, and multilevel succession)

Figure 7.1 Manage Successor Relationships Dialog Box



- 1 all products that are successors
- 2 all products that are the predecessors of the selected product
- 3 all dimensions that you have selected, and their hierarchical values

To apply succession:

1. On **Product Chaining** tab, in the **Use succession** list, select **Yes**. The **Manage Successor Relationships** link becomes available.
2. Click the **Manage Successor Relationships** link. The Manage Successor Relationships dialog box appears and displays a list of all successor products. By default, all successor products are selected.

Note: If you have applied common or product-specific attributes, you might not be able to view some of these successor products after the plan is created.

3. (Optional) Clear the check box next to the successor products for which you do not want to define the relationship.

- Click on a successor product. The predecessors for that successor product are displayed and all the hierarchy values for the selected dimensions are listed.

If you have selected only the PRODUCT dimension, you cannot apply the succession relationship to any other dimension.

Note: By default, all hierarchical values for the dimension are selected.

Note: The leaf nodes are not shown for dimensions when you are defining the successor relationship. To display the leaf-level nodes of the selected node in the hierarchy, expand the hierarchy of a dimension, select the leaf node that is currently visible, and then click **Fetch leaf nodes** link.

- Clear the check box next to the hierarchical value for which you do not want to apply the successor relationship.

For example, if you are introducing a newer version of the LCD TV only in Europe, you can clear the check box next to all locations except Europe.

- Click **OK**.

All successor relationships that you defined are stored in the plan. When the plan is forecasted, the forecasting process uses this information to apply succession.

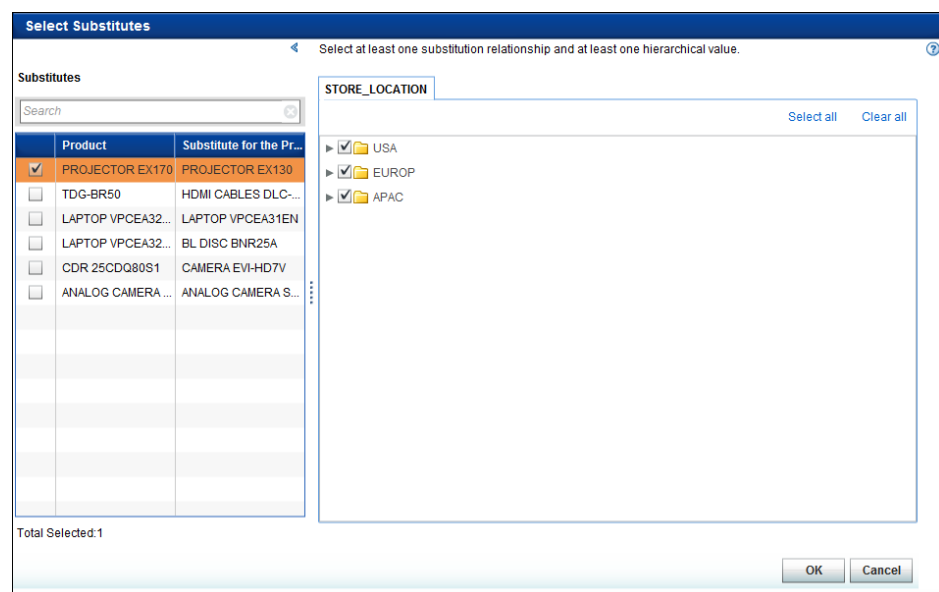
Manage Product Substitution

Substitution is the process of defining an existing product by using another product that has similar characteristics. You can use one of the following types of product substitution relationships:

- one-to-one (for example, a product is substituted with another product)
- one-to-many (for example, a product is substituted with a group of products)
- many-to-one (for example, multiple products are substituted with a single product)

When you are defining the substitute relationships, you can define the dimensions and hierarchical values for which you want to use the substitutes.

Display 7.8 Select Substitutes Dialog Box



To define a substitute:

1. On the **Product Chaining** tab, in the **Use substitute** list, select **Yes**. The **View Substitute** link becomes available.
2. Click the **View Substitute** link. The **Select Substitutes** dialog box appears.
3. In the **Substitutes** section, select a product-substitute pair. If you have selected dimensions other than the Product dimension, the hierarchical values for all the dimensions appear as tabs.

Note: By default, all hierarchical values are selected.

Note: The leaf nodes are not shown for dimensions when you are defining the substitution relationship. To display the leaf-level nodes of the selected node of the hierarchy, expand the hierarchy of a dimension, select the leaf node that is currently visible, and then click **Fetch leaf nodes** link.

4. Clear the check box next to the hierarchical value for which you do not want to apply the substitute.

For example, if you are not introducing an LCD TV in Europe, you can clear the check box next to **Europe**.

5. Click **OK**.

All the substitute relationships that you defined are stored in the plan.

Bill of Material

You can explode the bill of material of the combined products while the forecasting results are being generated. When you explode the bill of material, the forecasting process generates the predicted values of child products separately. If you do not explode the bill of material, the forecasting process considers the combined products as a single product, and then generates the forecast result.

Manage Events

You can specify special events that can affect the forecast. For example, during holidays, the demand for packaged food items is higher, which can affect the forecast for those products.

An event can be a simple event or a combined event. A combined event consists of two or more events.

You can import and export the events using a .csv file. You must comply with the following guidelines to import events:

- The .csv file must contain columns in the following order: Name, Description, Type, Before Duration (In Periods), After Duration (In Periods), Event, Recurrence, Starting Date, Ending Date, Event Usage, Event Class, Event Occurrence, Date Interval, Date Time Interval, Start Observation, End Observation, Observation Interval, Value, Pulse, Slope Before, Slope After, Shift, T C Parameters, Rule, and Key Name.
- Some columns of the .csv file must contain specific numbers to represent event class, event type, event usage, event recurrence, and event occurrence. The following table explains the values that are required for the event class column of the .csv file.

Table 7.2 Required Values for the Event Class Column

Event Class	Value
SIMPLE	1

Event Class	Value
COMBINATION	2

The following table explains the values that are required for the event type column of the .csv file.

Table 7.3 Required Values for the Event Type Column

Event Type	Value
POINT	1
LS	2
RAMP	3
TR	4
TEEMPRAMP	5
TC	6
LIN	7
LINEAR	8
QUAD	9
CUBIC	10
INV	11
INVERSE	12
LOG	13
LOGARITHMIC	14

The following table explains the values that are required for the event usage column of the .csv file.

Table 7.4 Required Values for the Event Usage Column

Event Usage	Value
Do not use	1
Try to use	2
Use if significant	3

Event Usage	Value
Force use	4

The following table explains the values that are required for the event recurrence column of the .csv file.

Table 7.5 Required Values for the Event Recurrence Column

Event Recurrence	Value
DAY	1
WEEK	2
MONTH	3
QTR	4
YEAR	5

Note: If you enter a value in the keyname field in the .csv file, then you do not need to enter a value in the Event Recurrence column or in the Starting Date column in the .csv file.

The following table explains the values that are required for the event occurrence table of the .csv file.

Table 7.6 Required Values for the Event Occurrence Table

Event Occurrence	Value
BOXING	1
CANADA	2
CANADAOBSERVED	3
CHRISTMAS	4
COLUMBUS	5
EASTER	6
FATHERS	7
HALLOWEEN	8
LABOR	9
MLK	10

Event Occurrence	Value
MEMORIAL	11
MOTHERS	12
NEWYEAR	13
THANKSGIVING	14
THANKSGIVINGCANADA	15
USINDEPENDENCE	16
USPRESIDENTS	17
VALENTINES	18
VETERANS	19
VETERANSUSG	20
VETERANSUSPS	21
VICTORIA	22

- If the .csv file contains a simple event, the following columns of the .csv file must contain information: Name, Type, Before Duration (In Periods), After Duration (In Periods), Starting Date, Event Class, Value, Slope Before, Slope After, Shift, T C Parameters, and Rule.
- If the .csv file contains a combined event, the following columns of the .csv file must contain information: Name, Type, Event Usage, Rule, and Key Name.
- The .csv file must not be corrupt.
- The .csv file must not be empty or contain any empty lines.
- Events with the same name must not exist on the **Events** tab.
- The .csv file must not contain duplicate entries of events.
- The .csv file must be in UTF-8 encoding.

You can also create events in SAS Forecast Studio and import them into SAS Forecast Analyst Workbench. You can import the events into SAS Forecast Analyst Workbench by copying the event-related information from the following tables:

- the eventrepository table in SAS Forecast Studio to the config.Create_event table in SAS Forecast Analyst Workbench
- the eventrepository2 table in SAS Forecast Studio to the config.Event_required table in SAS Forecast Analyst Workbench

When you export the events, the .csv file contains columns in the following order: Name, Description, Type, Before Duration (In Periods), After Duration (In Periods), Event, Recurrence, Starting Date, Ending Date, Event Usage, Event Class, Event Occurrence, Date Interval, Date Time Interval, Start Observation, End Observation,

Observation Interval, Value, Pulse, Slope Before, Slope After, Shift, T C Parameters, Rule, and Key Name.

For more information about events, see the *SAS High-Performance Forecasting: User's Guide*.

Display 7.9 Events Tab

Specify Other Parameters
[PRODUCT,STORE_LOCATION]

Product Chaining Events Independent Variables

Select one or more events for the plan.



Name	Description	Type	Event Usage	Event Class	Before Duratio...	After D
EVENT1		POINT	Force use	SIMPLE	0	0
EVENT2		LS	Force use	SIMPLE	0	0
EVENT3		RAMP	Force use	SIMPLE	0	0
EVENT4		TC	Force use	SIMPLE	0	0

Number of selected events: 0

Previous Next Cancel Finish

The following table describes the fields on the **Events** tab.

Table 7.7 Description of Fields on the Events Tab

Field	Description
	Click to import the events using a .csv file. When you click this button, a dialog box appears. Browse to the events .csv file on your computer or on the network and import it.
	Click to export the events in a .csv file. When you click this button, a dialog box appears. Browse to the location on your computer or on the network and click Save .
Name	The name of the event. <i>Note:</i> The event name must be a valid SAS name. For more information about SAS naming conventions, see <i>SAS Language Reference: Concepts</i> .
Description	The description of the event.

Field	Description
Type	The type of the event.
Event Usage	Select an option from the list to specify how events must be used when the model is generated. You can use one of the following options: <ul style="list-style-type: none"> • Select Do not use to exclude the event in the model. • Select Force use to include the event in the model, if feasible. By default, this option is selected. • Select Try to use to include the event in the model (if feasible) if the resulting model is stable and is an improvement over the simple model. • Select Use if significant to include the event in the model (if feasible) if the resulting model is stable, is an improvement over the simple model, and if the event is significant.
Event Class	The event class information.
Before Duration (In periods)	The before duration, in periods.
After Duration (In periods)	The after duration, in periods.
Event Recurrence	The number of times that the event must recur.
Event Occurrence	The key name of the event, which indicates when it should occur. For example, if the key name is BOXING, the event occurs on December 26; if the key name is NEWYEAR, the event occurs on January 1.
Starting Date	The starting date of the event.
Ending Date	The end date of the event.

Independent Variables

Independent variables are the factors that influence demand. These factors can be internal or external and can include price, advertising, sales promotions, marketing events, economic factors, and so on. The forecasting process applies the appropriate model and generates the forecasting values based on the independent variables and the method of aggregation that you select.

Edit a Plan

You can edit a plan to modify your demand forecasting criteria. For example, you can include special events in the plan.

If the plan is in the **Ready for creation** state, you can update all its details. If the plan is in the **Created** or **Forecasted** state, you can update the following details of the plan:

- hierarchy values


- product chaining information, if the Product dimension is selected
- events information
- independent variables information

If the plan is in progress (for example, the state is **Forecasting in progress**), is in an error state (for example, **Error in plan creation**), or is in the **Accepted** state, you cannot modify the plan.

The following prerequisites apply:

- You must have permission to edit a plan. For more information, contact your System Administrator.
- The plan status must not be in progress, error, **Scheduled**, **Warning: Forecasted with errors**, **Accepted**, or **Promoted**.

To edit a plan:

1. In the All Plans category view of the Forecast Plans workspace, select a plan, and click . A message appears that informs you that the edit functionality is limited.
2. Click **Yes**. The Edit Plan window appears.
3. Edit the information and click **Finish**.

For more information about updating hierarchy values, see [“Select Hierarchical Values and Specify Attributes” on page 27](#).

For more information about updating other parameters, see [“Specify Other Parameters” on page 32](#).

If you modify the hierarchical values of the dimensions while you are editing the plan, the Explore Demand view displays the actual and forecasted data for both the previously selected hierarchical values and for the latest hierarchical values. The data for the previously selected hierarchical values is shown up to the date when you edited the plan. The data for the latest hierarchical values is shown for the selected historical period and horizon, beginning from the date when you edited the plan. The Model Management view displays the actual and forecasted data for the latest hierarchical values that are selected in the plan.

If you want to update all parameters of the plan, you must create a new copy of the plan and edit it. For more information about copying a plan, see [“Copy a Plan” on page 45](#).


Delete a Plan

You can delete a plan that it is not required or a plan that failed while you were creating it.

The following prerequisites apply:

- You must have permission to delete a plan. For more information, contact your System Administrator.
- The plan status must not in progress, error, **Scheduled**, or **Promoted**.
- The plan must not be scheduled to run in batch mode.
- The plan that you want to delete must have been created by you.

To delete a plan:

1. In the All Plans category view of the Forecast Plans workspace, select the plan and click . A confirmation message appears.

Note: Press and hold the Ctrl key to select multiple plans to delete.

2. Click **OK**.

After you delete a plan, the plan is removed, and all data (including the data that was created for a SAS Forecast Studio project, if any) is deleted from the database.


Copy a Plan

When you want to change some parameters of a plan but you do not want to disturb the remaining parameters of the plan, you can create a copy of that plan. For example, if you want to add one more dimension to the plan but you want to retain the rest of the plan parameters, make a copy. When you copy a plan, the metadata of the existing plan is copied and a new plan is created. The new plan does not contain analytical base tables (ABT) for forecasting. You must specify the complete information in the plan and diagnose the plan.


The following prerequisites apply:

- You must have permission to copy a plan. For more information, contact your System Administrator.
- The plan status must not in progress, error, **Scheduled**, or **Warning: Forecasted with errors**.
- The plan must not be scheduled to run in batch mode.
- The plan that you want to copy must have been created by you.

To copy a plan:

1. In the All Plans category view of the Forecast Plans workspace, select a plan, and click . The Copy Plan window appears.
2. In the **Name** box, enter a name for the plan and click **OK**. The application starts copying the metadata of the plan, and a confirmation message appears.
3. Click **OK**. The application creates the plan in the **Ready for Creation** state and displays it in the **All Plans** list.

Now you can edit various parameters of the plan.

4. In the **All Plans** list, select the plan that you copied, and click . The Edit Plan window appears.
5. Update the information about the plan.

For more information about updating the objectives and dimensions of the plan, see [“Define the Objective of the Plan” on page 24](#).

For more information about updating the hierarchy levels of the plan, see [“Select Hierarchy Levels” on page 25](#).

For more information about updating the hierarchical values of the plan, see [“Select Hierarchical Values and Specify Attributes” on page 27](#).

For more information about reorganizing the hierarchy, see [“Reorganize the Hierarchy” on page 30](#).

For more information about updating other parameters, see “Specify Other Parameters” on page 32.

6. Click **Finish**.

The plan is created with new parameters. Now you can apply different models to the plan.


Refresh a Plan

Refresh a plan so that new data is added to the plan. When you refresh a plan, the forecasting process uses the entire data set to generate forecast values.

The following prerequisites apply:

- The plan must not be in progress state, error state, or in the **Ready for creation** state.

To refresh a plan:

1. In the All Plans category view of the Forecast Plans workspace, select a plan, and click . A confirmation message appears.
2. Click **Yes**.

The selected plan is refreshed and the new data is loaded for the plan according to the periodicity and forecast start date settings. After you refresh a plan, its status might change. The following table explains the statuses of the plan when you refresh it.

State of plan before the refresh	State of plan after the refresh
Created	Created
Error in plan creation	Created (if the error is removed from the plan)
Forecasted	Forecasted
Promoted	Forecasted
Accepted	Forecasted
Forecasted with errors	Forecasted (if the error is removed from the forecasted values)
Consensus completed	Forecasted

Schedule a Plan to Run in Batch Mode

You can schedule a plan to run periodically in batch mode. You can set the frequency of the run to meet your business requirements.

SAS Forecast Analyst Workbench does not perform the time zone conversion automatically if the SAS Forecast Analyst Workbench server and client are located in different time zones. You must perform the GMT time zone conversion manually before you enter the start and end dates.

The following prerequisites apply:

- You must have permission to schedule a plan in batch mode.
- The plan must not be in progress, error, or in the **Created** state.

To schedule a plan in batch mode:

1. In the All Plans category view of the Forecast Plans workspace, select a plan.
2. In the **Batch Run Details** pane, click **Edit**. The **Batch Run Details** pane refreshes and displays fields.
3. Enter information in each field. The following table describes the fields and their description.

Table 7.8 Description of Fields on the Batch Run Details Pane

Field	Description
Schedule to run in batch mode	Select Yes to schedule the plan to run in batch mode.
Batch interval	Select the frequency at which the plan should run. You can select one of the following options: daily, weekly, monthly, quarterly, or yearly. <i>Note:</i> This field is available only when you select Yes in the Schedule to run in batch mode list.
Start date	Select the date when the plan should begin to run periodically. <i>Note:</i> This field is available only when you select Yes in the Schedule to run in batch mode list.
End date	Select the date when the plan should stop running periodically. By default, the end date is displayed according to the periodicity that you selected. You can change the end date to meet your business requirements. <i>Note:</i> This field is available only when you select Yes in the Schedule to run in batch mode list.

4. Click **OK**.

Statuses of a Plan

The following table describes the statuses of a plan.

Table 7.9 Forecast Plan Status and Description

Status	Description
Draft	The plan is being created, and the necessary information is being retrieved from the database.
Plan creation in progress	SAS Forecast Analyst Workbench is in the process of creating the analytical base tables (ABTs) to create the plan.
Created	The plan is completely created and is ready for statistical models to be applied to it.
Forecasting in progress	The forecasting process is generating the predicted values for the plan.
Forecasted	The plan is forecasted and predicted values are present for the plan.
Promoted	The consensus planning process has been initiated for the plan.
Error: In plan creation	An error occurred while the plan was being created.
Error: In forecasting	An error occurred while the plan was being forecasted. The predicted values are not generated.
Accepted	The statistical model has been applied to the plan and the predicted values are satisfactory. After the plan is accepted, you can view and explore the historical values, predicted values, and consensus values in the Explore Demand view.
Scheduled	The plan is scheduled to run periodically in batch mode.
Ready for creation	The plan has been copied and can be edited to create a new plan.
Warning: Forecasted with errors	The plan has been forecasted, but at least one time series is in error.
Consensus completed	The consensus planning process is complete.
Delete in progress	SAS Forecast Analyst Workbench is deleting the plan and its relevant information, such as its metadata, analytical base tables, and so on.
Error: In delete	Indicates that an error occurred while the plan was being deleted.
Plan acceptance in progress	The plan is being accepted.
Data refresh in progress	SAS Forecast Analyst Workbench is refreshing the plan.

Part 3

Generating Forecasts

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Chapter 8

Using the Model Management View to Generate Forecasts

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About Model Management

In the Model Management view, you can identify the most suitable statistical model and generate forecasts. You can also improve the quality of the forecasts by modifying the forecast-specific parameters.

You can perform the following tasks in the Model Management view:

- view demand for individual time series, based on the periodicity (for example, daily, monthly, and so on) of the plan
- view the demand for all nodes in the hierarchy
- diagnose the plan and compare actual versus forecasted values in tabular and graphical form
- view the independent variables and events that will be applied in the model, and view their impact on the predicted values
- filter the time series using different parameters (for example, forecast quality, forecast status, life cycle stage of the product)
- improve the quality of the forecast by using the following methods: editing the parameters at different levels (such as at the plan or time series level) or by creating a SAS Forecast Studio project
- reconcile the forecasted values
- accept the plan so that the predicted values can be used in different processes

The Model Management view helps you sense and predict the dependent variable for the portfolio of your products or services. You can also view the degree of accuracy and the confidence limits within which the forecasts occur.

Model Management Workflow

In the Model Management view, you can use the following workflow to choose the most suitable statistical model and to predict values:

1. View the time series either in the **Hierarchy View** or in the **Table View**. You can also view the actual values of the time series.

For more information about **Hierarchy View**, see [“Hierarchy View” on page 57](#).

For more information about **Table View**, see [“Table View” on page 57](#).

2. Diagnose the plan so that the best suitable statistical model is applied and predicted values are generated. The status of the plan changes from **Created** to **Forecasted**.

For more information about diagnosing a plan, see [“Diagnose a Plan” on page 66](#).

3. After the predicted values are obtained, consider the following factors when you examine them:

- the data that is available to you
- the purpose of your forecasting
- your organizational environment
- the market conditions
- the suite of products
- the goals of your organization or department
- constraints

Compare the predicted values that are generated for the historical period with the actual values. You can use the prediction error, the root mean square error (RMSE), and the mean absolute percent error (MAPE) to compare the predicted values. You can also use graphs to compare the actual values with the predicted values.

For more information about RMSE and MAPE, see [“Model Information Tab” on page 61](#).

If the prediction error, RMSE, and MAPE are not satisfactory, you might consider improving forecast. You can perform one of the following tasks:

- edit parameters for the entire plan, or for a single or multiple forecast-leaf-level time series.

For more information about editing parameters, see [“About Editing Parameters” on page 67](#).

- analyze the plan in SAS Forecast Studio. You can generate different models, add events, and create scenarios in the SAS Forecast Studio, and then apply them.

For more information about SAS Forecast Studio projects, see [“Introduction to SAS Forecast Studio Projects” on page 85](#).

4. Re-diagnose the plan. When you re-diagnose, SAS Forecast Analyst Workbench performs the following tasks:

1. considers the edited parameters to build models
2. automatically selects the most suitable model

3. calculates the predicted values for the selected time series or for the entire plan
For more information about re-diagnosing the plan, see [“Re-diagnose a Plan” on page 78.](#)
5. Repeat steps 3 and 4 until the prediction error, RMSE, MAPE, and forecasted values are satisfactory.
6. Reconcile the plan to remove conflicts from the forecasted values if you have performed one of the following actions:
 - analyzed the node or time series in SAS Forecast Studio and then promoted it in SAS Forecast Analyst Workbench
 - edited or re-diagnosed some of the time series
 - evaluated and changed the default model of a time series
 - rerun the selected time series
 For more information about reconciling the plan, see [“Reconcile a Plan” on page 79.](#)
7. After you are satisfied with the model that is applied to the plan and the forecasting results, you can accept the plan. The status of the plan changes from **Forecasted** to **Accepted**.
For more information about accepting the plan, see [“Accept a Plan” on page 80.](#)
8. Rerun the forecast to evaluate the forecasted values of the selected time series whose parameters are changed. You can also rerun the forecast for the entire plan.
Fore more information about rerunning the forecast, see [“Rerun the Forecast” on page 81.](#)
9. Refresh the plan. When you refresh a plan that is in **Created** status, SAS Forecast Analyst Workbench refreshes actual values and includes newly added time series with their actual data. When you refresh a plan that is in **Forecasted** or **Accepted** status, SAS Forecast Analyst Workbench includes all latest time series, forecasts the values, and changes the plan status to **Forecasted**.

You can open a plan in the Model Management view. The following table lists the tasks that you can perform in the Model Management view, depending on the status of the plan.

Table 8.1 Plan Statuses and Permitted Tasks in the Model Management View

State of the plan	Tasks that you can perform in the Model Management view	Information that you can view in the Model Management view
Created	<ul style="list-style-type: none"> • edit parameters for the plan • diagnose the plan • analyze the plan in SAS Forecast Studio • set parameters for multiple time series 	<ul style="list-style-type: none"> • actual values for the entire period, in tabular and graphical form • time series in hierarchy or tabular form. When you are viewing the time series in tabular form, you can filter it.

State of the plan	Tasks that you can perform in the Model Management view	Information that you can view in the Model Management view
Forecasted	<ul style="list-style-type: none"> • edit parameters for the entire plan or for the forecast-leaf-level time series that you have selected • evaluate the single time series, compare the two models, and set one of them as the default model • analyze the entire plan, a few nodes of the hierarchy, or the selected time series in SAS Forecast Studio • reconcile the plan • rerun the forecast • re-diagnose the plan • accept the plan 	<ul style="list-style-type: none"> • actual values for the entire period, in tabular and graphical form • predicted values for the entire period • prediction error • upper control limit and lower control limit of the predicted values • model information such as name of the model that is applied to the plan, the type of the model, the source of the model, and the MAPE and RMSE of the model
Accepted	<ul style="list-style-type: none"> • edit parameters for the entire plan or for the selected forecast-leaf-level time series • evaluate the single time series, compare the two models, and set one of them as the default model • analyze the entire plan or the selected time series in SAS Forecast Studio • reconcile the plan • re-diagnose the plan • rerun the forecast 	<ul style="list-style-type: none"> • actual values for the entire period, in tabular and graphical form • predicted values for the entire period • prediction error • upper control limit and lower control limit of the predicted values • model information such as the name of the model that is applied to the plan, the type of the model, the source of the model, and the MAPE and RMSE of the model

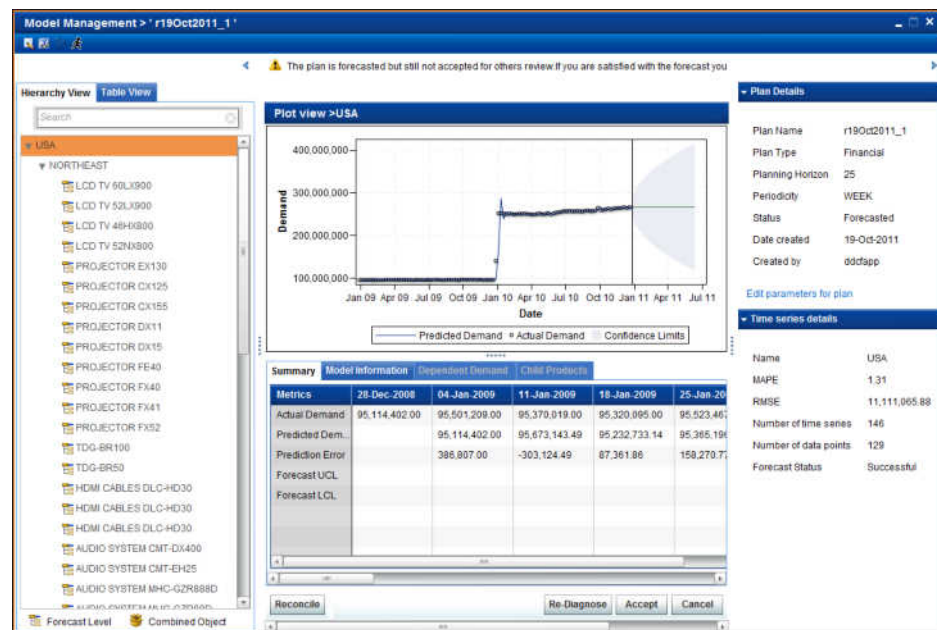
Chapter 9

Understanding the Model Management View

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About the Model Management View




This section explains the components of the Model Management view in detail.

Display 9.1 Model Management View

Toolbar

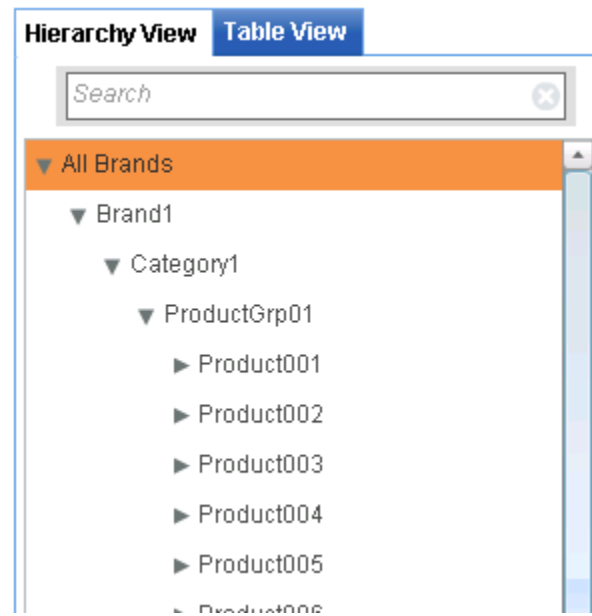
The toolbar contains buttons that you can use to perform frequent tasks. The following table describes the buttons that are on the Model Management view toolbar.



Table 9.1 Buttons on the Model Management View Toolbar

Button	Description
	<p>Click this button to edit the parameters of the selected multiple forecast-leaf-level time series or to evaluate the selected single forecast-leaf-level time series. SAS Forecast Analyst Workbench uses the parameters that you defined to apply the model and predict the values.</p> <p>For more information about editing parameters of multiple forecast-leaf-level time series, see “Edit Parameters of Multiple Time Series” on page 68.</p>
	<p>Click this button to create a SAS Forecast Studio project for the entire plan, for the selected hierarchy node, or for the selected forecast-leaf-level time series. You can perform more analysis in SAS Forecast Studio, apply models, and promote the plan.</p> <p>For more information about analyzing the plan or a time series in SAS Forecast Studio, see “Creating a SAS Forecast Studio Project” on page 77.</p>
	<p>Click this button to rerun the forecast for the entire plan or for the selected forecast-leaf-level time series. Rerunning the forecast applies newly assigned parameters to the time series. Forecasts might change to acceptable levels.</p> <p>For more information about running the forecast, see “Rerun the Forecast” on page 81.</p>

Hierarchy View

The **Hierarchy View** displays the time series in a tree view. You defined the time series when you created the plan.



You can expand or collapse the nodes to view the time series hierarchy. In the **Hierarchy View**, the  icon denotes the forecast leaf level and the  icon denotes the combined products.

The **Hierarchy View** displays the time series that contain data. The time series that do not contain any data are not displayed in the **Hierarchy View**.

The forecasting process applies the statistical models up to the forecast leaf level, and then generates the predicted values. All levels below the forecast leaf level are forecasted with the disaggregation method. You can select a time series in the **Hierarchy View** and work on it in the Model Management view.

Table View

The **Table View** displays the hierarchical values that you selected while you were creating the plan, in tabular form. You can select a time series in the **Table View** and work on it in the Model Management view.

The **Table View** displays the time series that contain data. The time series that do not contain any data are not displayed in the **Table View**.

The **Table View** contains the following columns.

Table 9.2 Description of Table View Columns

Column Name	Description
Parent Path	The path that starts from the parent and ends with the selected hierarchy value.
Name	The name of the hierarchical value.
Succession	Whether the product succession is applicable. The column contains one of the following values: <ul style="list-style-type: none"> • Yes if you selected succession settings when you created the plan. • No if you did not select succession settings when you created the plan. • NA if the succession settings are not applicable.
BOM	Whether the bill of material is applicable for the selected time series. The column contains one of the following values: <ul style="list-style-type: none"> • Yes if you selected bill of material settings when you created the plan. • No if you did not select the bill of material settings when you created the plan. • NA if the bill of material settings are not applicable for the product. <p><i>Note:</i> This column displays a value only when you select a product at the forecast leaf level.</p>
Forecast Status	One of the following forecast states for the hierarchical value: Normal, Failed to forecast, Forecasted with warnings, Disaggregated, and NPF-Forecasted.
MAPE	The mean absolute percentage error for the time series that are statistically forecasted.
RMSE	The root mean square error.
Prediction APE	The prediction absolute percent error for the selected time series if the plan has run at least twice in batch mode.
Prediction MAPE	The prediction mean absolute percent error for the selected time series if the plan has run at least twice in batch mode.

Filter the Time Series

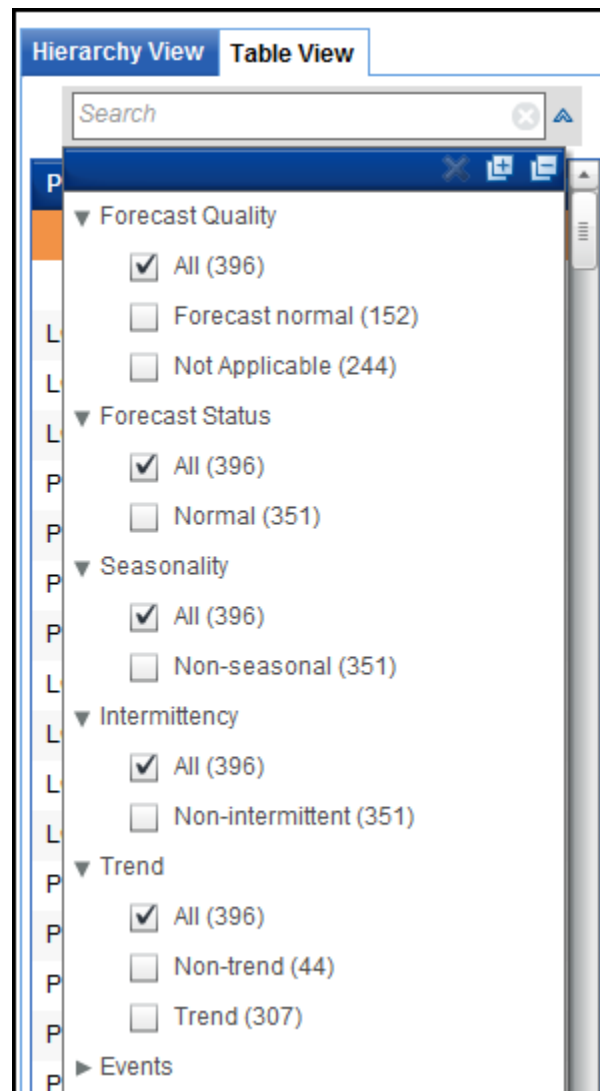
The **Table View** also enables you to filter the time series based on the following parameters:

- Forecast Quality
- Forecast Status
- Seasonality
- Intermittency

- Trend
- Events
- Independent variables
- Lifecycle Status
- Low History
- RMSE
- MAPE


For example, select the **New products** option in the Lifecycle Status parameter to view data about new products only.

Display 9.2 Table View Filter Parameters



To filter a time series:

1. In the Model Management view, click **Table View**. The **Table View** tab displays all the time series in tabular form.

2. Click . SAS Forecast Analyst Workbench displays the parameters that you can filter on in the tree structure.
3. Expand the parameter that you want to filter on and select the appropriate option.

The **Table View** displays the time series that satisfy the selected filtering criteria.

You can also use the **Search** box to filter the time series.

Plot View

The **Plot View** displays information in graphical form. Graphs help you compare information easily. If the plan is in the **Created** state, the **Plot View** displays the actual values.

If the plan is in the **Forecasted** state, the **Plot View** displays the following values:

- predicted values
- actual values
- confidence limits

The **Plot View** displays the actual and forecasted data for the latest hierarchical values that are selected in the plan. The graph in the **Plot View** displays a vertical line that indicates the start date of the planning horizon. The title bar of the **Plot View** displays the name of the time series whose values are shown in the graph.

Display 9.3 Title Bar of the Plot View



You can use one of the following views to display the demand values in the **Plot View**:

- use the **Divided view** to view the demand values in tabular and graphical form
- use the **Graph view** to view the demand values only in graphical form
- use the **Table view** to view the demand values only in tabular form

Summary Tab

The **Summary** tab displays the demand values. When the plan is in the **Created** state, the **Summary** tab displays the actual values. When the plan is in the **Forecasted** state, the **Summary** tab displays the following values:

- actual values for the historical period
- predicted values for the entire horizon

The predicted value is the value that SAS Forecast Analyst Workbench generates after it applies the appropriate model by running the forecasting process. The predicted values are generated for the historical period and for the planning horizon. The value that is calculated for the historical period is called the historical prediction.

- prediction error

Prediction error shows you the number by which the predicted values are deviated from the actual values. The prediction error value is shown only for the historical period and not for the planning horizon.

- forecast upper control limit (UCL)

The forecast upper control limit (UCL) is the upper limit of the predicted values for the planning horizon.

- forecast lower control limit (LCL)

The forecast lower control limit (LCL) is the lower limit of the predicted values for the planning horizon.

- values of the independent variables that have been applied to the model
- impact of events if they are applied to the model
- scenario values if the scenarios are created in SAS Forecast Studio and promoted in SAS Forecast Analyst Workbench

The historical values are displayed in regular font, and the current and future values are displayed in bold.

Note: The **Summary** tab does not display the forecast upper control limit and lower control limit values for any new products that you have assigned to the plan.

Model Information Tab

The **Model Information** tab displays the model that is applied to the selected time series. The **Model Information** tab is available only when the plan is in the **Forecasted** or **Accepted** state. You can view the following information in the **Model Information** tab:

- name of the model that is applied to each of the hierarchy level up to the forecast leaf level that is selected on the **Hierarchy View** tab
- type of the model (for example, ESM, ARIMA)
- source where the model was created (for example, Default, Forecast Server, User Created)

If the model was created in SAS Forecast Analyst Workbench, the **Source** column displays Default. If the model was created in SAS Forecast Studio, the **Source** column displays Forecast Server. If you edit the parameters and change the model or evaluate the time series, the **Source** column displays User Created.

- mean absolute percentage error (MAPE) of the selected time series
- root mean square error (RMSE) of the selected time series

The **Model Information** tab displays a list of models when you evaluate a time series or import a model from the SAS Forecast Studio project. You can select a model from the list, then and click **Set this model as forecast model**.

The **Model Summary** section of the **Model Information** tab displays the following information about the selected model:

- name of the selected model
- description of the selected model (for example, Linear Exponential Smoothing)

- type of the selected model (for example, ESM)
- source of the selected model (for example, Default)
- status of the forecast after the selected model has been applied (for example, Successful)

When the evaluated parameters of the time series and the selected model do not result in the most suitable model, SAS Forecast Analyst Workbench displays a warning message and applies another model.

SAS Forecast Analyst Workbench displays the complete formula of the model if you apply combined models.

Child Products Tab

The **Child Products** tab contains the demand values for the parent product and its child products, in tabular format.

The **Child Products** tab displays the following information:

- names of the member that constitutes the product
Various members constitute a product.
- relationship of the member to the product (for example, parent or child)
- number of the members that constitutes the product
- demand type (for example, actual demand or forecasted demand)
- demand values for the entire horizon

If the plan is in the **Created** state, the **Child Products** tab displays only actual demand values. If the plan is in the **Forecasted** state, the **Child Products** tab displays the actual and forecasted demand values.

The **Child Products** tab is available only when the following criteria exist:

- you select a product in the **Hierarchy View** that contains child products.
- you selected **Yes** in the **Explode BOM** list when you created the plan. For more information about child products, see [“Manage Product Chaining” on page 33](#).

Plan Details Section

The **Plan Details** section of the Model Management view displays the following information:

- name of the plan
- type of the plan (for example, financial)
- planning horizon or the number of periods to forecast
- periodicity (for example, week)
- status of the plan (for example, forecasted)
- date when the plan was created

- name of the user who created the plan

By using the **Edit parameters for the plan** link, you can edit the parameters of the entire plan. For more information about editing parameters, see [“Editing Parameters” on page 67](#).

Click  to expand and  to collapse the section.

Time Series Details Section

The **Time Series Details** section of the **Model Management** view displays the following information:

- name of the time series that you selected in the **Hierarchy View**
- MAPE of the selected time series
- RMSE of the selected time series
- number of time series up to and including the selected node or time series
- number of historical data points
- forecast status of the time series (for example, Successful) and the reason for failure if the forecast has failed

When the evaluated parameters of the time series and the selected model does not result in the most suitable model, SAS Forecast Analyst Workbench displays a warning message and applies another model.

By using the **Edit parameters for the time series** link, you can edit the parameters of the selected forecast-leaf-level time series. For more information about editing parameters, see [“Editing Parameters” on page 67](#).

Click  to expand and  to collapse the section.

Chapter 10

Working in the Model Management View

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Diagnosing Plans

Overview of Diagnosing Plans

Diagnose a plan to find the most suitable statistical model and generate the predicted values for future period. When you diagnose a plan, the forecasting process analyzes the data and applies the appropriate model to all hierarchy levels up to the forecast leaf level.

For all levels below the forecast leaf level, the values are predicted by using the disaggregation method. The predictions in the upper levels are desegregated to lower levels based on their proportions in the historic demand. The forecasting process, which is based on SAS High-Performance Forecasting, is used for levels up to and including the forecast leaf level. The demand that is obtained from the disaggregation method is called dependent demand. SAS Forecast Analyst Workbench does not display the upper and lower control limits for the dependent demand time series.

During the forecasting process, SAS Forecast Analyst Workbench checks the history of the time series in the plan. If the time series have sufficient historical data available, you can diagnose the plan.

After SAS Forecast Analyst Workbench diagnoses the plan, it displays the following information:



- predicted demand values for the historical period
- predicted demand values for the planning horizon (that is, for a future period)
- prediction error
- forecast upper control limit (UCL)
- forecast lower control limit (LCL)
- events that are applied in the model
- independent variables that are applied in the model

Diagnose a Plan

The following prerequisites apply for diagnosing plans:

- You must have permission to diagnose the plan. For more information, contact your System Administrator.
- The time series in the plan must contain sufficient historical data.
- The plan must be in the **Created** state.

To diagnose a plan, use one of the following methods:

- In the Forecast Plans workspace, select a plan, and click .
- Perform the following steps:
 1. In the Forecast Plans workspace, select a plan, and click . The Model Management view appears.
 2. Click **Diagnose**.

SAS Forecast Analyst Workbench starts forecasting the plan and closes the Model Management view. The state of the plan changes from **Created** to **Forecasting in progress**. After the forecasting process is complete, the state of the plan changes to **Forecasted**. You can view the model-related information on the **Model Information** tab. You can view the predicted values on the **Summary** tab and on the plot.

During the forecasting process, SAS Forecast Analyst Workbench does not calculate the predicted values for the time series that have historical data for less than the minimum number of periods that are required for forecasting. If you have defined the succession settings, SAS Forecast Analyst Workbench uses the succession settings for these time series. You can also import the low history time series to SAS Forecast Studio to generate the predicted values.

SAS Forecast Analyst Workbench also does not calculate the predicted values for the time series that result in an error during forecasting. Therefore, even though the status of the plan is **Forecasted**, there can be a few time series that do not contain predicted values. You must select the individual time series in order to view their predicted values.

Editing Parameters

About Editing Parameters

You can edit parameters for the entire plan, for multiple time series, or for a specific time series to improve forecast. When you edit parameters for the time series, you can evaluate the model and the predicted values.

You can choose to apply the ARIMAX, ESM, or UCM model to the time series or to the plan. You can also define the model selection and forecasting parameters. After you edit parameters for the entire plan or for multiple time series, you must re-diagnose the plan. When you edit the parameters for a single time series, you can evaluate it.

Display 10.1 Parameter Settings Dialog Box

Edit Parameters for the Entire Plan

You can edit parameters for the entire plan.

The following prerequisites apply:

- At least one time series in the plan must contain sufficient historical data.
- The plan must not be in the **Created** state.

To edit the parameters of the entire plan:

1. In the **Plan Details** section of the Model Management view, click **Edit parameters for plan**. The **Parameter Settings** dialog box appears.
2. Edit the parameters, and then click **OK**.

For more information about editing the parameters, see [“Editing Parameter Fields” on page 69](#).

After you edit the parameters for the entire plan, you must diagnose or re-diagnose the plan to apply the parameters and calculate the new predicted values. If the plan is in the **Created** state, you must diagnose the plan after you edit the parameters. If the plan is in the **Forecasted** or **Accepted** state, you must re-diagnose the plan after you edit the parameters.

For more information about diagnosing a plan, see [“Diagnose a Plan” on page 66](#). For more information about re-diagnosing the plan, see [“Re-diagnose a Plan” on page 78](#).


Edit Parameters of Multiple Time Series

You can select multiple time series and edit their parameters.

The following prerequisites apply:

- The selected time series must contain sufficient historical data.
- The plan must not be in the **Created** state.

To edit parameters for multiple time series:

1. In the Model Management view, press and hold the CTRL key and select multiple leaf-level time series.
2. Click . The **Edit Parameters** dialog box appears.
3. Edit the parameters, and then click **OK**.

Note: The **!** mark next to a field indicates that the default value of the selected time series for that field is different than the value currently being displayed.

After you have edited the parameters for the selected time series, you must re-diagnose the plan to recalculate the predicted values. For more information about re-diagnosing the plan, see [“Re-diagnose a Plan” on page 78](#).

Evaluate a Time Series

You can evaluate a time series and check the forecasted values for that time series.

The following prerequisite applies:

- The plan must not be in the **Created** state.

To evaluate a time series:

1. In the Model Management view, select a forecast-level time series.
2. In the **Time Series Details** section, click **Edit parameters for time series**. The **Edit Parameters** dialog box appears.
3. Edit the parameters, and then click **Evaluate**.

For more information about edit parameters fields, see [“Editing Parameter Fields” on page 69](#).

SAS Forecast Analyst Workbench uses the edited parameters to build models and to predict the future values by using the most suitable model. The **Model Information** tab displays a model that was applied before the parameters were edited and another model with the new parameters. You can compare the values of the default model with the values of the evaluated model and select one model to be the default model. For more information about selecting a default model, see [“Select a Default Model” on page 77](#).

Editing Parameter Fields

Defining ARIMAX Model Parameters

You can define the autoregressive integrated moving average with exogenous inputs (ARIMAX) model parameters.

The following table describes the fields of the **Use ARIMAX** option on the **Model Generation** tab.

Table 10.1 Field Descriptions for the Use ARIMAX Option

Field	Description
Use ARIMAX	Select Yes to use the ARIMAX model parameters.
Nonseasonal Options	
AR orders (p)	Select a range for the nonseasonal autoregressive (AR) orders from the lists. The valid range for nonseasonal AR orders is 0–13. The default value for the minimum AR order is 0, and the default value for the maximum AR order is 5.
MA orders (q)	Select a range for the nonseasonal moving average (MA) orders from the lists. The valid range for nonseasonal MA orders is 0–13. The default value for the minimum MA order is 0, and the default value for the maximum MA order is 5.
Seasonal Options	
AR Orders (P)	Select a range for the seasonal AR orders from the lists. The valid range for nonseasonal AR orders is 0–2. The default value for the minimum AR order is 0, and the default value for the maximum AR order is 2.
MA orders (Q)	Select a range for the seasonal MA orders from the lists. The valid range for nonseasonal MA orders is 0–2. The default value for the minimum MA order is 0, and the default value for the maximum AR order is 2.
Numerator	Select a range for the numerator orders of the transfer function of the ARIMAX model from the list. The valid range for the numerator orders is 0–2. The default value for the minimum numerator is 0, and the default value for the maximum numerator is 2.
Denominator	Select a range for the denominator orders of the transfer function of the ARIMAX model from the list. The valid range for the denominator orders is 0–2. The default value for the minimum denominator is 0, and the default value for the maximum denominator is 2.

Field	Description
Criterion	Select the model selection criteria from the list. The list contains the following options: <ul style="list-style-type: none"> • SBC: Schwarz Bayesian information criterion • AIC: Akaike information criterion
Significance level to decide AR and MA orders	Enter the significance level to use as a cutoff value for determining the AR and MA orders. The significance level must be in the range (0, 1).
Method for choosing tentative ARMA order	Select the method for choosing the tentative ARMA order. The list contains the following options: <ul style="list-style-type: none"> • CLS: conditional least squares method. This is the default method. • ULS: unconditional least squares method • ML: maximum likelihood method
Identification orders when input and events are specified	Select the identification order to use when inputs and events are specified. The list contains the following options: <ul style="list-style-type: none"> • ARIMA: Select this option to first find an ARIMA model for the error series and then choose significant inputs and events. This option is the default. • REG: Select this option to first find a regression model first and then decide the AR and MA polynomial orders. • BOTH: Select this option to fit models by using both methods to determine which is better. This is the default value.
Include constants	Select whether you want to include constants.
Outlier detection (ARIMA models only)	
Detect outliers	Select this check box to detect the outliers for ARIMA models, and then enter a value. You must enter a value that is equal to or greater than 1.
Significance level	Enter the significance level to use as a cutoff value for detecting the outliers for ARIMA models. The significance level must be within (0, 1).
Maximum percentage of series that can be outlier	Enter the maximum percentage of series that can be outliers. The default value is 2%.

Defining UCM Parameters

You can define the unobserved component model (UCM) parameters.

The following table describes the fields of the **Use UCM** option on the **Model Generation** tab .

Table 10.2 Field Descriptions for the Use UCM Option

Field	Description
Use unobserved component model (UCM)	Select Yes to use the UCM parameters.
Components to be included in UCM	Select a component to test for inclusion in the UCM. The list contains the following options: <ul style="list-style-type: none"> • all: test which components, variances, or both are significant in the model. This is the default option. When the series contains seasonality information, the Irregular, Level, Slope, and Season components are included. Otherwise, the Irregular, Level, Slope, and Cycle components are included. • Autoreg: test whether an autoregressive component is significant in the model. • Cycle: test whether two Cycle components are significant in the model. The two Cycle components are included and the Level component is added. When the series contains seasonality information, the Cycle component is not tested. • Deplag: test whether a dependent lag component is significant in the model. Only the order 1 is included. • Irregular: test whether an irregular component is significant in the model. • Level: test whether a level component is significant in the model. • Season: test whether a season component is significant in the model. When the series contains seasonality information, the Season component is not tested. • Slope: test whether a slope component is significant in the model.
Significance level for model components	Enter the significance level to use as a cutoff value for deciding which components or variances are significant. The significance level must be within (0, 1)

Defining ESM Parameters

You can define the exponential smoothing model (ESM) parameters.

The following table describes the fields of the **Use ESM** option on the **Model Generation** tab.

Table 10.3 Field Descriptions for the Use ESM Option

Field	Description
Use exponential smoothing model (ESM)	Select Yes to use the ESM parameters.

Field	Description
ESM method	Select the ESM method from the list. The list contains the following options: <ul style="list-style-type: none"> • Best: Select this option to fit the best candidate smoothing model (SIMPLE, DOUBLE, LINEAR, DAMPTREND, SEASONAL, WINTERS, ADDWINTERS). This is the default option. • Best nonseasonal: Select this option to fit the best candidate nonseasonal smoothing model (SIMPLE, DOUBLE, LINEAR, DAMPTREND). • Best seasonal: Select this option to fit the best candidate seasonal smoothing model (SEASONAL, WINTERS, ADDWINTERS).

Defining Other Parameters

You can define the other parameters for a time series.

The following table describes the fields of the **Other Options** options on the **Model Generation** tab.

Table 10.4 Field Descriptions for the Other Options Option

Field	Description
Trend Diff	Specify the simple differencing for the dependent series. The list contains the following options: <ul style="list-style-type: none"> • Auto: Select this option to test for simple differencing. This is the default option. • Nonnegative number: Select this option to specify the simple differencing order. • None: Select this option to specify that simple differencing is not used.
Trend SDiff	Select an option from list to specify the seasonal differencing for the dependent series. The list contains the following options: <ul style="list-style-type: none"> • Auto: Select this option to test for seasonal differencing. This is the default option. • Nonnegative number: Select this option to specify the seasonal differencing order. • None: Select this option to specify that seasonal differencing is not used.
Diagnose independent variables separately	Select this check box, and then select an option from the list to diagnose the independent variables of the plan separately. The list contains the following options: <ul style="list-style-type: none"> • Both: Select this option to specify that the log transform and trend testing of the input variables are applied independently of the variable to be forecast. This is the default option. • Transform: Select this option to specify that the log transform testing of the input variables is applied independently of the variable to be forecast. • Trend: Select this option to specify that the trend testing of the input variables is applied independently of the variable to be forecast.



Defining Model Selection Parameters

You can define the model selection parameters for the selected time series or for the entire plan.

The following table describes the fields on the **Model Selection** tab of the **Parameters Settings** dialog box.

Table 10.5 Field Descriptions for the Model Selection Tab

Field	Description
Intermittency test	Enter a number that is greater than 1. This number is used to determine whether a time series is intermittent. If the average demand interval is greater than this number, then the series is assumed to be intermittent. The default value is 2.
Seasonality	Enter a number that is equal to or greater than 1 to specify the seasonality.
Perform seasonality test	Specify whether the seasonality test must be performed.
Seasonality test	Specify the seasonality test threshold. Time series with strong seasonality have small test probabilities. The value 0 always implies seasonality. The value 1 always implies no seasonality. The default value is 0.01.
Holdout	<p>Enter a number to specify the size of the holdout sample to be used for model selection. The holdout sample is a subset of actual time series that end at the last nonmissing observation. If the holdout sample is not specified, the full range of the actual time series is used for model selection.</p> <p>The holdout option is used only to select the best forecasting model from a list of candidate models. After SAS Forecast Analyst Workbench selects the best model, the full range of the actual time series is used for subsequent model fitting and forecasting.</p>
Holdout percent	Specify the size of the holdout sample as a percentage of the length of the time series.
Minimum observations for trend	Specify the number of observations that SAS Forecast Analyst Workbench must use to perform trend modeling. You must enter a value that is equal to or greater than 1.
Minimum observations for seasonality model	Specify the minimum number of observations that SAS Forecast Analyst Workbench must use to perform seasonality modeling. You must enter a value that is equal to or greater than 1.
Minimum observations for non-mean model	Specify the minimum number of observations that SAS Forecast Analyst Workbench must use to perform non-mean modeling. You must enter a value that is equal to or greater than 2.
Criterion	Select the method that SAS Forecast Analyst Workbench will use to select the best model. The list contains the following options: RMSE and MAPE.

Field	Description
Transform type	Specify the type of functional transformation. The list contains the following options: <ul style="list-style-type: none"> • Auto: Select this option to automatically choose between NONE and LOG, based on model selection criteria. This is the default option. • Boxcox: Select this option to specify the Box-Cox transformation with a parameter value, where the value is between -5 and 5. • Log: Select this option to specify logarithmic transformation. • Logistic: Select this option to specify logistic transformation. • None: Select this option if you do not want to apply any transformation. • Square root: Select this option for square root transformation.
Boxcox	Enter the Box-Cox transformation value. The value must be between -5 to 5 . The default value is 1 . <i>Note:</i> This box is available only if you select the Boxcox option in the Transform type list.
Transopt	Specify the response series transformation option. The list contains the following options: mean and median . By default, the median option is selected.
Transform significance level	Specify the significance level to use as a cutoff value for deciding whether the series requires a log transformation. The significance level must be between 0 and 1 .
Start date for demand series	Click  , and then select a date to start the demand series.
End date for demand series	Click  , and then select a date to end the demand series.

Defining Forecast Parameters

You can define the alpha and lead parameters to define the forecast.

The **Forecast** tab of the **Parameters Settings** dialog box contains the following fields.

Table 10.6 Field Descriptions for the Forecast Tab

Field	Description
Alpha	Enter the significance level to use in computing the confidence limits of the forecast. The alpha value must be between 0 and 1 . The default value is 0.05 , which produces 95% confidence intervals.
Lead	Enter the number of periods to forecast (forecast lead or horizon). The default value is 12 . You must enter a value that is equal to or greater than 1 .

Defining Combined Model Parameters

You can define the combined model parameters.

The **Combined Model** tab of the **Parameters Settings** dialog box contains the following fields.

Table 10.7 Field Descriptions for the Combined Model Tab

Field	Description
Use combined diagnosed model	<p>Select Yes to use the combined diagnosed models.</p> <p><i>Note:</i> Do not use combined model parameters in the following conditions:</p> <ul style="list-style-type: none"> • you are not using ARIMAX, UCM, and ESM models • you are using either UCM or ESM model
Method of combination	<p>Select the method of combination from the list. The list contains the following options:</p> <ul style="list-style-type: none"> • AICC: Akaike information Corrected criterion. Select this option to compute the combination weights based on corrected AIC weights. • Average: Select this option to compute the simple average of the forecasts that are selected for combination. This is the default option. • ERLS: Select this option to compute the combination weights based on a constrained least squares problem. This option minimizes the norm of the combined forecast residuals that are subject to the constraint that the weights sum to 1. • LAD: Select this option to compute the weights based on a least absolute deviations measure of fit for the combined forecast. • NERLS: Select this option to compute the combination weights based on a constrained least squares problem. This option minimizes the norm of the combined forecast residuals that are subject to the constraints that the weights sum to 1 and be nonnegative. • NRLS: Select this option to compute the combination weights based on a constrained least squares problem. This option minimizes the norm of the combined forecast residuals that are subject to the constraints that the weights be nonnegative. • OLS: Select this option to compute the combination weights that result from the ordinary least squares problem. This option minimizes the norm of the combined forecast residuals. • RMSEWGT: Select this option to compute the combination weights based on the RMSE statistic of fit for the forecast contributors. <p><i>Note:</i> This list is available only if you select Yes in the Use combined diagnosed model list.</p>

Field	Description
Forecast encompassing test	<p>Select this check box, select the type of encompassing test, and then enter the encompassing test value. The list contains the following options:</p> <ul style="list-style-type: none"> • HLN: Select this option to use the Harvey-Leybourne-Newbold (HLN) test to estimate pairwise encompassing between candidate forecasts. The default value is 0.05. The value can be in the range 0–1. • OLS: Select this option to use an OLS-based regression test to estimate pairwise encompassing between candidate forecasts. The default value is 0.05. The value can be in the range 0–1. <p><i>Note:</i> This list is available only if you select Yes in the Use combined diagnosed model list.</p>
Rank criterion	<p>Select a method from the list for computing ranking or order statistics.</p> <p><i>Note:</i> This list is available only if you select Yes in the Use combined diagnosed model list.</p>
Treatment of missing values	<p>Specify how missing values in the forecast combination are treated. In a given time slice across the combination ensemble, one or more combination contributors can have a missing value. This setting determines the treatment of the missing values in the final combination for such time indices.</p> <p>The list contains the following options:</p> <ul style="list-style-type: none"> • Missing: Generate a missing combined forecast at each time index that has one or more missing contributors. <p><i>Note:</i> Select this option if you selected the OLS or NRLS option in the Method of combination list.</p> <ul style="list-style-type: none"> • Rescale: Rescale the combination weights for the nonmissing contributors at each time index to sum to 1. By default, this option is selected. <p><i>Note:</i> This list is available only if you select Yes in the Use combined diagnosed model list.</p>
Compute prediction error variance series	<p>Select a method for computing the prediction error variance series. This series is used to compute the prediction standard error, which in turn is used to compute confidence bands on the combined forecast.</p> <p>The list contains the following options:</p> <ul style="list-style-type: none"> • DIAG: computes the prediction error variance by assuming that the forecast errors at time t are uncorrelated so that the simple diagonal form of summation of t is used. This is the default method for computing prediction error variance. • ESTCORR: computes the prediction error variance by using estimates of correlation coefficient of i, j, t, the sample cross-correlation between $e_{i,t}$ and $e_{j,t}$ over the time span $t = 1, \dots, T$, where T denotes the last time index of the actual series y_t. This option implies that the error series $e_{i,t}$ and $e_{j,t}$ are assumed to be jointly stationary. <p><i>Note:</i> This list is available only if you selected Yes in the Use combined diagnosed model list.</p>

Field	Description
Percentage of missing forecast values in the combination horizon	<p>Select this check box and enter the threshold for the percentage of missing forecast values in the combination horizon. The threshold value is used to exclude a candidate forecast from consideration in the final combination. By default, no horizon missing percentage test is performed on candidate forecasts. The forecast horizon is the span of time in which multistep forecasts are generated.</p> <p><i>Note:</i> This list is available only if you select Yes in the Use combined diagnosed model list.</p>
Percentage of missing forecast values in the combination region	<p>Select this check box and enter the threshold for the percentage of missing values in the combination estimation region. The threshold value is used to exclude a candidate forecast from consideration in the final combination. By default, no missing percentage test is performed on the candidate forecasts.</p> <p><i>Note:</i> This list is available only if you select Yes in the Use combined diagnosed model list.</p>

Select a Default Model

When you edit the parameters of a time series, the **Model Information** tab displays two models. You can view the details of each model and select the most suitable model as the default model. After you select a default model, you must re-diagnose the plan.

The following prerequisites apply:

- The **Model Information** tab must contain multiple models.
- You must have permission to select a default model. For more information, contact your System Administrator.

To select a default model:

1. On the **Model Information** tab of the Model Management view, select the most suitable model.
2. Click **Set this model as forecast model**.

The selected model is applied to the time series. Now, you must re-diagnose the plan to predict the values for the entire plan. For more information about re-diagnosing the plan, see [“Re-diagnose a Plan” on page 78](#).

Creating a SAS Forecast Studio Project

You can create the SAS Forecast Studio project to use the forecasting capabilities of SAS Forecast Studio and improve your forecast. You can create a SAS Forecast Studio project in order to analyze the following items in SAS Forecast Studio:


- an entire plan
- a selected hierarchy node

- an individual forecast-leaf-level time series

The following prerequisites apply:

- You must have permission to create the SAS Forecast Studio project. For more information, contact your System Administrator.
- The plan must be in the **Created**, **Forecasted**, or **Accepted** state.

To create a SAS Forecast Studio project:

1. In the All Plans category view, select a plan and click . The Model Management view appears.

2. (Optional) In the **Hierarchy View**, select the hierarchy node or time series.

Note: Press and hold the CTRL key to select multiple hierarchy nodes and time series.

3. Click . The **Analyze in Forecast Studio** dialog box appears.

4. Select one of the following options:

- Select **Analyze entire plan** to analyze the entire plan in SAS Forecast Studio.

SAS Forecast Analyst Workbench considers all nodes up to and including the forecast leaf level. All nodes below the forecast leaf level are not considered when you create a SAS Forecast Studio project.

- Select **Analyze on the selected hierarchy node** to base the analysis on the selected hierarchy node.

SAS Forecast Analyst Workbench creates the SAS Forecast Studio project with the selected hierarchy node and all nodes that are below the selected hierarchy node up to and including the forecast leaf level.

Note: This option is not available if the plan is in the **Created** state.

- Select **Analyze on individual time series** to base the analysis on the individual forecast-leaf-level time series of the plan.

Note: This option is not available if the plan is in the **Created** state.

5. In the **Name** box, enter the name for the SAS Forecast Studio project.

Note: This is a required field.

The project name must be a valid SAS name. For more information about SAS naming conventions, see *SAS Language Reference: Concepts*.

6. In the **Description** box, enter a description of the project.

7. Click **OK**.

The Forecast Studio Projects category view appears and displays the project that you created. By default, the project is created in the **Submitted** state.

For more information about SAS Forecast Studio projects, see [“Introduction to SAS Forecast Studio Projects” on page 85](#).

Re-diagnose a Plan


You must re-diagnose the plan to recalculate the predicted values. You can re-diagnose the plan for various reasons, such as you want to generate new forecasted values after

you edited the parameters for the entire plan or after you selected a default model. When you re-diagnose the plan, the forecast process considers factors such as the parameters that you edited and the model that you selected to recalculate the forecasted values.

The following prerequisites apply:

- You must have permission to re-diagnose the plan. For more information, contact your System Administrator.
- The plan must be in any of the following states: **Forecasted**, **Accepted**, **Warning: Forecasted with errors**, **Consensus completed**, or **Promoted**.

To re-diagnose the plan:

1. In the Forecast Plans workspace, select a plan, and click . The Model Management view appears.
2. Click **Re-Diagnose**.

SAS Forecast Analyst Workbench starts re-diagnosing the plan. The Model Management view closes and the plan status changes to **Forecasting in progress**. SAS Forecast Analyst Workbench uses the information that you modified to diagnose the most suitable model and uses the model to forecast the future values. After the plan is forecasted, its status changes to **Forecasted**. If an error occurs during forecasting, the plan status changes to **Error in forecasting**.

Reconcile a Plan

You must reconcile the plan to remove any conflicts if you have performed one of the following tasks:

- analyzed the node or time series in SAS Forecast Studio and then promoted it in SAS Forecast Analyst Workbench
- edited and re-diagnosed some of the time series
- evaluated a time series and changed its default model
- reran the selected time series

SAS Forecast Analyst Workbench uses one of the following reconciliation methods, which you defined when you created the plan:

top-down

aggregates the data from the lowest levels in the forecast and then uses these values to generate the forecasts at the highest level. SAS Forecast Analyst Workbench then uses this forecast and the disaggregation method that you specified to reconcile the forecasts for lower levels in the hierarchy.

The top-down method enables you to remove the excessive noise from the data at the lower levels of the hierarchy. However, you also might lose the pattern (such as the seasonality) in the forecast.

bottom-up

uses the data at the lowest level of the hierarchy to generate the forecasts. These forecasts are then used to reconcile the forecasts for the higher levels in the hierarchy.

The bottom-up method enables you to see any patterns (such as seasonality) in the data. However, because you are at the lowest level of the hierarchy, you can also

have too much noise or randomness in the data. Also, these forecasts might fail because the data at the lowest level of the hierarchy is sporadic or too sparse.

middle-out


aggregates the data from the lower levels and then uses these values to generate the forecasts for the middle level. SAS Forecast Analyst Workbench uses the forecasts at the middle level to reconcile the forecasts for both the higher and lower levels. Some hierarchies have more than one middle level, so you need to specify the level that you want to use.

For more information about reconciliation, see *SAS High-Performance Forecasting: User's Guide* and *SAS Forecast Server: User's Guide*.

The following prerequisites apply:

- You must have permission to reconcile the plan. For more information, contact your System Administrator.
- The plan must be in one of the following states: **Forecasted**, **Accepted**, **Promoted**, **Warning: Forecasted with errors**, or **Consensus completed**.

To reconcile a plan:

1. In the Forecast Plans workspace, select a plan and click . The Model Management view appears.
2. Click **Reconcile**.

SAS Forecast Analyst Workbench starts reconciling the plan and closes the Model Management view.

Accept a Plan


You can accept a plan when you are satisfied with the RMSE, MAPE, and predicted values. When you accept a plan, its status changes from **Forecasted** to **Accepted**, and you can view and explore its latest forecasted values in the Demand Explore view.

After you accept a plan, you can perform tasks on it. For more information about tasks that you can perform on a plan that is in the **Accepted** state, see [Table 8.1 on page 53](#). After you perform any of these tasks, the state of the plan changes from **Accepted** to **Forecasted**. You must review the forecast values and accept the plan again in order to change its status to **Accepted**.

The following prerequisites apply:

- You must have permission to accept the plan. For more information, contact your System Administrator.
- The plan must be in the **Forecasted** or **Warning: Forecasted with errors** state.

To accept a plan:

1. In the Forecast Plans workspace, select a plan and click . The Model Management view appears.
2. Click **Accept**.

The Model Management view closes and the state of the plan changes to **Accepted**. After you accept the plan, you can run it in batch mode so that SAS Forecast Analyst Workbench calculates the predicted values for the newly added time series.


Rerun the Forecast

When you rerun the forecast, SAS Forecast Analyst Workbench recalculates the demand values. You can rerun the forecast for the entire plan or for the selected forecast-leaf-level time series.

The following prerequisites apply:

- You must have permission to rerun the forecast. For more information, contact your System Administrator.
- The plan must be in the **Forecasted** or **Accepted** state.
- You must select the top-level node in the **Hierarchy View** to rerun the entire plan.

To rerun the forecast:

1. In the Forecast Plans workspace, select a plan and click . The Model Management view appears.
2. Select one of the following options:
 - If you want to run the forecast for the entire plan, select the top-level node in the Hierarchy View.
 - If you want to run the forecast for a specific time series, select a time series in the **Hierarchy View**.


Note: Press and hold the CTRL key to select multiple time series.
3. Click . The **Rerun Forecast Options** dialog box appears.
4. Enter the appropriate information in each field. The following table describes each field.

Table 10.8 Fields in the Rerun Forecast Options Dialog Box

Field	Description
Selection options	
Entire plan	Select this option to rerun the forecast for the entire plan. When you select the top-level node in the Hierarchy View , this option is already selected.
Selected forecast leaf level nodes	Select this option to rerun the forecast for the time series that you selected in the Hierarchy View . When you select the forecast-leaf-level nodes in the Hierarchy View , this option is already selected. This option is not available if you select the top-level node in the Hierarchy View .
Execution options	

Field	Description
Diagnose and then forecast	Select this option to perform the following tasks: <ul style="list-style-type: none"> • analyze the data • apply the most suitable model • estimate the model parameters • calculate forecast demand values
Select and forecast	Select this option to perform the following tasks: <ul style="list-style-type: none"> • estimate the model parameters • calculate forecast demand values SAS Forecast Analyst Workbench uses the same model but estimates the model parameters again and calculates the forecast demand values.
Only forecast	Select this option to produce the forecast demand values only. SAS Forecast Analyst Workbench uses the same model and the same modeling parameters to calculate the forecast demand values. <p><i>Note:</i> When you are recalculating the demand values for the forecast leaf level nodes or for the entire plan, do not use this option.</p>

5. Click **OK**.

Part 4

Integrating with SAS Forecast Studio

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Chapter 11

Introduction to SAS Forecast Studio Projects

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About SAS Forecast Studio Projects

You use the forecasting capabilities of SAS Forecast Studio and improve your forecast. You can analyze the entire plan, any node of the hierarchy, or the selected forecast-leaf-level time series in SAS Forecast Studio. You can perform the following tasks in SAS Forecast Studio:

- select models to fit to each time series
- specify the forecast model
- check the accuracy of the models
- compare models
- add a model to a time series
- create a new model based on the default model
- create a scenario and perform scenario analysis
- add override values
- create and add events

After you are satisfied with the results, you can import the results from the output data sets in the forecast projects directory in SAS Forecast Analyst Workbench. You can also import the models and events in SAS Forecast Analyst Workbench.

Forecast Studio Projects Category View Workflow

In the Forecast Studio Projects category view, you can use the following workflow to choose the most suitable statistical model:

1. Create a SAS Forecast Studio project to analyze the entire plan, the selected hierarchy node, or the selected time series in SAS Forecast Studio. SAS Forecast

Analyst Workbench opens the Forecast Studio Projects category view and displays a list of projects that are in different states.

For more information about creating a SAS Forecast Studio project, see [“Creating a SAS Forecast Studio Project” on page 77](#).

2. Open the Model Management view of the Forecast Studio Projects category view to explore the project. You can view the model information and demand values.

For more information about the Model Management view, see [“Model Management View” on page 91](#).

3. If the plan on which you based the Forecast Studio project was in the **Forecasted** state, observe and compare the actual values and predicted values in the Model Management view.
4. Click the **Open Forecast Studio** link in the Model Management view to open SAS Forecast Studio. SAS Forecast Studio appears with the project that you created. You can perform the model-related tasks in SAS Forecast Studio.

For more information about opening SAS Forecast Studio, see [“Managing SAS Forecast Studio Projects” on page 95](#).

5. In SAS Forecast Studio, view the project and perform tasks to improve the predicted demand values. For more information about tasks that you can perform in SAS Forecast Studio, see the *SAS Forecast Studio: User’s Guide*.
6. After you improve the predicted demand values, close SAS Forecast Studio.
7. If you have performed the model management-related tasks and updated the project, refresh the project in the Forecast Studio Project category view. After you refresh the selected project, SAS Forecast Analyst Workbench updates the Model Management view with the latest data.

For more information about refreshing the project, see [“Refresh a SAS Forecast Studio Project” on page 96](#).

8. Promote the Forecast Studio project so that the latest model-related information and values are overwritten to the forecast plan.

For more information about promoting a project, see [“Promote a SAS Forecast Studio Project” on page 96](#).

About the Statuses of SAS Forecast Studio Projects

Every project in the Forecast Studio Projects category view has a specific status. The following table describes the statuses.

Table 11.1 Statuses of SAS Forecast Studio Projects

Status	Description
Submitted	Indicates that the SAS Forecast Studio project has been submitted for creation.

Status	Description
Created	Indicates that the SAS Forecast Studio project and all necessary input tables have been created. This status also indicates that the KPI data has been transferred to SAS Forecast Studio for forecasting and that predicted values have been generated.
Data refreshing in progress	Indicates that SAS Forecast Analyst Workbench is updating the SAS Forecast Studio project data.
Promoted	Indicates that the SAS Forecast Studio project has been promoted and that the data has been overwritten to the forecast plan.

Chapter 12

Understanding the Forecast Studio Category View

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Overview of the Forecast Studio Projects Category View

The Forecast Studio Projects category view consists of a table, toolbar, view, and different panes. The table in this view displays the following information:

- list of projects
- description of the projects
- status of each project
- name of the forecast plan that the SAS Forecast Studio project is linked to
- name of the person who created the project
- date when the project was created
- date when the project was last modified

The Model Management view of the Forecast Studio Projects category view enables you to view the demand values and to open SAS Forecast Studio. The toolbar of the Forecast Studio Project category view contains different buttons. You can perform frequent tasks using these buttons.

Components of the Forecast Studio Projects Category View





About the Forecast Studio Projects Category View

Various components constitute the Forecast Studio Projects category view. This section explains these components in detail.

Toolbar

The toolbar contains buttons that you can use to perform frequent tasks. The following table describes the buttons of the Forecast Studio Projects category view.

Table 12.1 *Toolbar Buttons on the Forecast Studio Projects Category View*

Button	Description
	<p>Click this button to promote the selected project and assign it to the plan in the Forecast Plans category view.</p> <p>For more information about promoting a SAS Forecast Studio project, see “Promote a SAS Forecast Studio Project” on page 96.</p>
	<p>Click this button to refresh the selected project in the Forecast Studio Projects category view.</p> <p>When you refresh the selected SAS Forecast Studio project, SAS Forecast Analyst Workbench updates the project with the changes that you performed in the SAS Forecast Studio. The status of the project changes to Data refresh in progress. After the data is updated completely, the status of the SAS Forecast Studio project changes to Created.</p> <p>For more information about refreshing the project in the Forecast Studio Projects category view, see “Refresh a SAS Forecast Studio Project” on page 96.</p>
	<p>Click this button to delete the selected project from the Forecast Studio Projects category view.</p> <p>For more information about deleting a project, see “Delete a SAS Forecast Studio Project” on page 97.</p>
	<p>Click this button to open the selected project in SAS Forecast Studio.</p>

Properties Pane

The **Properties** pane displays the detailed information of the selected project. The **Properties** pane displays the following information:

- name of the forecast plan that the project is linked to
- date when the project was created

- date when the project was last modified

Comments Manager Pane

The **Comments Manager** pane enables you to add comments to the selected project. Comments include information that is specific to a project or important information that you might want to discuss with other users.

If you have the required permission, you can perform the following tasks in the **Comments Manager** pane:

- create a new topic
You can enter a subject and description to the new topic. You can select the priority of the topic and attach a file.
- reply to a topic
- search for a topic to comment on

Model Management View

The Forecast Studio Projects category view contains only one view, which is the Model Management view. This Model Management view is very similar to the Model Management view of the All Plans category view. For more information about that Model Management view, see [“Understanding the Model Management View” on page 55](#).

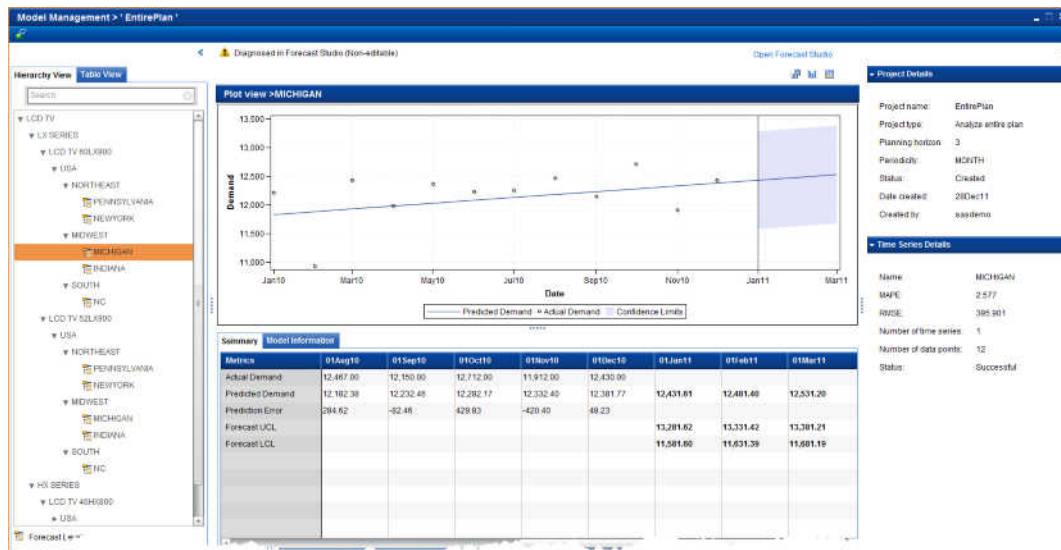
However, in the Model Management view of the Forecast Studio Projects category view, you can perform the following tasks:

- open the project in SAS Forecast Studio to perform advanced model management-related tasks
- promote the project to the linked plan if you have made any changes to it
- compare the default model with the model that is generated by SAS Forecast Studio
By default, the SAS Forecast Studio project displays the values for the model that is generated by SAS Forecast Analyst Workbench. Click the model that is generated by SAS Forecast Studio to compare those values.

You can double-click on a project in the Forecast Studio Projects category view to open the Model Management view. Alternatively, click **Open** to open the selected project in the Model Management view.

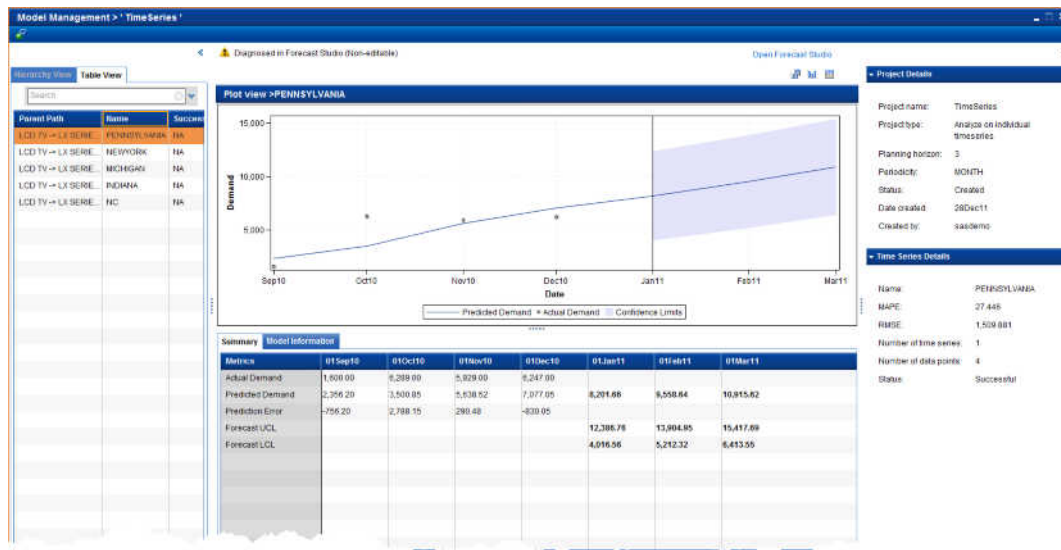
When you create the SAS Forecast Studio project for the entire forecast plan, the Model Management view displays all the hierarchy nodes on the **Hierarchy View** tab. The data for all the nodes is also displayed.

Display 12.1 Model Management View for an Entire Plan

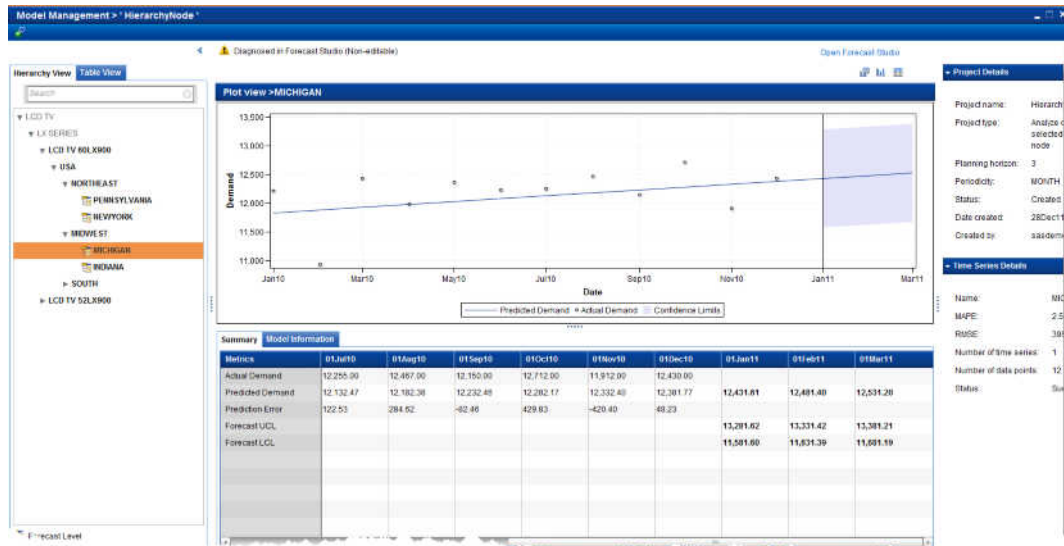


When the SAS Forecast Studio project for the forecast-leaf-level time series is created, the **Hierarchy View** tab of the Model Management view is not available. The forecast-leaf-level time series are displayed on the **Table View** tab.

Display 12.2 Model Management View for a Time Series



When the SAS Forecast Studio project for the selected hierarchy nodes is created, the **Hierarchy View** tab of the Model Management view displays those hierarchy nodes in bold. The data for all nodes that are above the selected hierarchy nodes is not displayed.

Display 12.3 Model Management View for Hierarchy Nodes

The graph in the **Plot View** displays a vertical line that indicates the start date of the planning horizon. A mismatch in the start date of the planning horizon might occur in the following conditions:

- you are generating the predicted values using SAS Forecast Studio and SAS Forecast Analyst Workbench
- all time series of the input date contains missing values at the end of the `GL_FORECAST_DATE`

For more information about `GL_FORECAST_DATE`, see the *SAS Forecast Analyst Workbench: System Administration Guide*.

Open the Forecast Studio Projects Category View

To open the Forecast Studio Projects category view, expand the category pane in the Forecast Plans workspace, and then click **Forecast Studio Projects**. The Forecast Studio Projects category view appears.

Chapter 13

Managing SAS Forecast Studio Projects

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Guidelines for SAS Forecast Studio Projects

When you are working on a project in SAS Forecast Studio, you must conform to the following guidelines:

- Do not change the hierarchy.
- Do not change the periodicity of the plan or time series.
- Do not change the horizon of the plan or time series.
- Do not change the reconciliation hierarchy.
- If you change the model for a time series or add an override to the data when it is arranged hierarchically, reconcile the SAS Forecast Studio project.

When you import the results from the resulting data sets in the forecast projects directory in SAS Forecast Analyst Workbench, you can also import the models and events. You can change the parameters other than the periodicity and horizon. However, they are not imported to SAS Forecast Analyst Workbench.

You can create scenarios in SAS Forecast Studio. The Model Management view of the Forecast Studio Projects category view displays the forecast studio scenario values when you perform the following steps:

1. Create SAS Forecast Studio project for the entire plan.
2. Create and run the scenarios in SAS Forecast Studio.
3. Set the scenario values as override, reconcile the hierarchy, and close SAS Forecast Studio.
4. Refresh the SAS Forecast Studio project in the Forecast Studio Projects category view.

Open SAS Forecast Studio

The SAS Forecast Studio project is created in the Forecast Studio Projects category view. You can use this view to perform the model management-related advanced tasks.

The following prerequisites apply:

- You must have permission to open SAS Forecast Studio. For more information, contact your System Administrator.
- A 32-bit Java Runtime Environment 1.6.0_24 must be installed on the host environment.
- The SAS Forecast Studio project must not be in the **Promoted** state.

To open SAS Forecast Studio:

1. In the Forecast Studio Projects category view, double-click on a project. Alternatively, select a SAS Forecast Studio project and click **Open**. The Model Management view appears.
2. In the Model Management view, click **Open Forecast Studio**.

SAS Forecast Studio opens and displays the project. For more information, see the *SAS Forecast Studio: User's Guide*.

Note: When you create a scenario in a SAS Forecast Studio project in SAS Forecast Studio, the model forecast values and the scenario forecast values might be different.

Refresh a SAS Forecast Studio Project

You must refresh the SAS Forecast Studio project to import the changes that you made in SAS Forecast Studio to the Forecast Studio Projects category view of SAS Forecast Analyst Workbench.

The following prerequisite applies:

- You must have permission to refresh the SAS Forecast Studio project. For more information, contact your System Administrator.

To refresh a Forecast Studio project:

- In the Forecast Studio Projects category view, select a project and click .

SAS Forecast Analyst Workbench starts refreshing all data from SAS Forecast Studio. The status of the project changes to **Data refreshing in progress**. After the data is imported, the status of the project changes to **Created**.


Promote a SAS Forecast Studio Project

After you perform advanced tasks related to model management, you can promote the SAS Forecast Studio project. When you promote the project, the data associated with the project is merged with the linked plan in SAS Forecast Analyst Workbench.

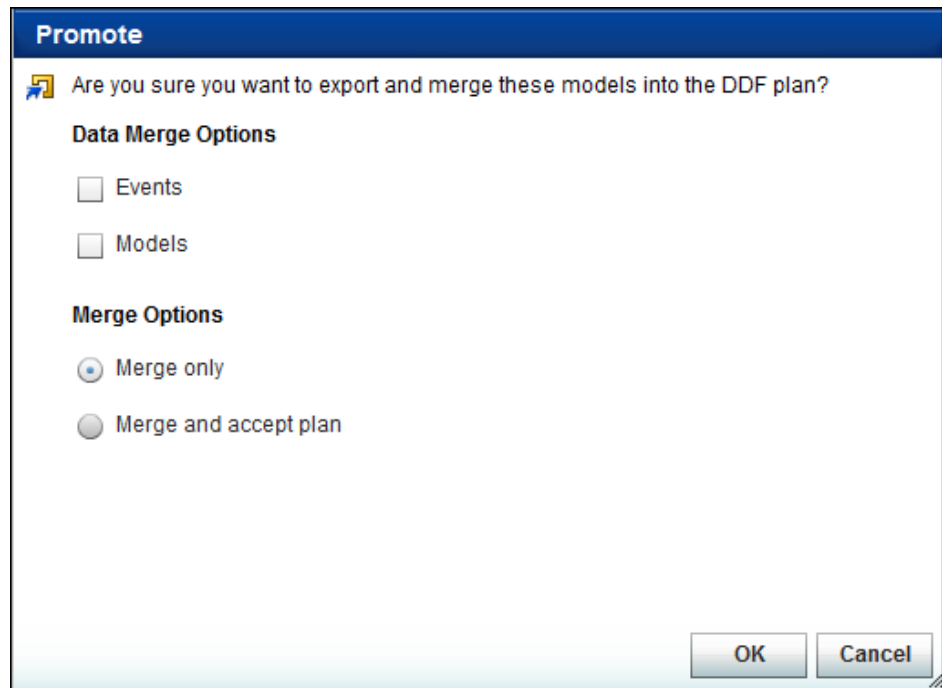
The following prerequisite applies:

- You must have permission to promote the SAS Forecast Studio project. For more information, contact your System Administrator.

To promote the SAS Forecast Studio project:

1. In the Forecast Studio Projects category view, select a project and click . The **Promote** dialog box appears.

Display 13.1 Promote Dialog Box



2. Choose the appropriate options.
3. Click **OK**.

SAS Forecast Analyst Workbench starts promoting the SAS Forecast Studio project and changes the status to **Promoting**. After the data of the project is overwritten with the data of the forecast plan, the status of the project changes to **Promoted**.

After you promote a SAS Forecast Studio project, you can make changes to it but you cannot promote it again to the forecast plan. You can retain the project in the Forecast Studio Projects category view for future reference, or you can delete the project.


Delete a SAS Forecast Studio Project

You can delete a SAS Forecast Studio project that you do not need anymore.

The following prerequisite applies:

- You must have permission to delete a SAS Forecast Studio project. For more information, contact your System Administrator.

To delete a SAS Forecast Studio project:

1. In the Forecast Studio Projects category view, select a project, and click . A confirmation message appears.
2. Click **Yes**.

The selected SAS Forecast Studio project is deleted. All associated tables and data that were created for the project are also deleted.

Part 5

Analyzing Forecasts

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Chapter 14

Exploring Demand

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Overview of the Explore Demand View

Use the Explore Demand view to perform the following tasks:

- drill down and explore historical demand, current demand, future demand, and consensus demand
- highlight the demand values that are not within the tolerance limit
- perform scenario or what-if analyses

You can drill down into the demand of the analysis variables in the dimensions and hierarchies that you are interested in. You can select any level of the hierarchy in order to view its demand values.

The information that you obtain from the Explore Demand view can help you get better insight into demand signals. It can also help you understand how demand is shaped.

For example, suppose your organization is manufacturing cell phones. As a Territory Manager, you want to view the demand signals for cell phones in your territory. In this scenario, you select product, customer, and location dimensions to explore the demand. You can drill down and view how much demand a customer in your territory is generating for a particular model of cell phone.

Components of the Explore Demand View

The Explore Demand view consists of the following components: **Configuration Filter** pane, **Demand Summary** table, **Summary** tab, **Drill Path** tab, and **Scenario** tab.

Configuration Filter Pane

Overview of the Configuration Filter Pane

In the **Configuration Filter** pane, you define the display options, time, and dimensions. The options that you see in the **Configuration Filter** pane depend on the plan that you selected and the status of that plan.

Display Options

Perform the following tasks in the **Display Options** section:



- select the analysis variables for which you want to explore demand. For example, select **Actual** to explore the historical demand for your products.
- compare the demand values with another analysis variable. For example, compare the actual demand with the predicted demand.
- specify the tolerance limit in order to observe the variations in how the demand is shaped with respect to the compared variable. The demand values that are not within the tolerance limit are highlighted in red.
- select the dimensions for which you want to explore demand. For example, select the Product and Store Location dimensions to explore their demand.

The dimensions that you do not select are used to filter the data and do not appear in the **Demand Summary** table. For example, if Product, Location, and Customer are the three available dimensions and you select only Product and Location, you can use the third dimension as a filter. You can also choose the order in which the demand should be displayed in the **Demand Summary** table.

Time

You define the period for which you want to explore demand by using the **Time** section. For example, you can define a past period that you want to view the actual demand for.

The **Time** area shows you the data for the period that you defined when you created the plan. The range of the dates that is included on the slider depends on the values that you have specified earlier. The earliest date corresponds to the value that you specified in the **Number of periods of historical data** field. The most recent date on the slider corresponds to the value that you specified in the **Number of periods in planning horizon** field. For more information about these fields, see [“Reorganize the Hierarchy” on page 30](#).

You can explore the demand for a year, quarter, month, week, or day. You can move  to the right or left on the time line to define the period. The time that is defined between the two sliders is the length of time that is used to generate the output. You can click  to reset the time.

Dimensions

The **Configuration Filter** pane lists all dimensions and their hierarchies for the selected plan in separate sections. For example, if the plan contains Product, Location, and Customer dimensions, the **Configuration Filter** pane lists three separate components for each dimension.

You can select the appropriate level and then its value to explore the demand. For example, in the Location dimension, you could select the level Country and the value USA in order to explore the demand for USA.

Note: Press Ctrl and select multiple values for the dimension that you are using as a slicer.

Demand Summary Table

The **Demand Summary** table displays the demand for the dimensions and time that you select. If you modified the hierarchical values of the dimensions while you were editing the plan, the **Demand Summary** table displays actual and forecasted data for both the previously selected hierarchical values and for the latest hierarchical values. The data for the previously selected hierarchical values is shown up to the date when you edited the plan. The data for the latest hierarchical values is shown for the selected historical period and horizon, beginning from the date when you edited the plan.

For example, suppose you edited the plan on September 01. The horizon is 2 months, and the historical period is 5 months. In this case, the **Demand Summary** table displays the forecasted data for the latest hierarchical values up to October 31 and actual data for the latest hierarchical values from April 01. The **Demand Summary** table also displays the actual data and historical forecasted data for the previously selected hierarchical values, up to September 01.

You can drill-down or slice the demand in the hierarchy by clicking different values for the dimensions. As you click different values, the **Demand Summary** table displays the respective demand values. You can explore the demand for a dimension value until a hyperlink is available for it.

The **Demand Summary** table displays the current value of the demand in bold and the demand values that are not within the selected tolerance limit in red.

Display 14.1 Demand Summary Table

Demand Summary		Search								
PRODUCT	STORE_LOCATION	W38 2010	W39 2010	W40 2010	W41 2010	W42 2010	W43 2010	W44 2010	W45 2010	W46 2010
TELEVISION & PROJECTORS	INDIANA	28972	28238	28927	28720	28692	29196	28481	28585	288
HOME AUDIO	INDIANA	9887	9767	9975	9585	9422	9851	9653	9654	9811
DIGITAL PHOTOGRAPHY	INDIANA	1405	1809	2824	2845	2884	2766	5349	5555	554
COMPUTER & PERIPHERA	INDIANA	6937	7794	9827	9690	10002	9693	9899	9836	974

For example, in the figure, the **Demand Summary** table displays the demand for different categories of consumer products for Indiana. The values that are not within the tolerance limit are in red. You can drill down to see the demand for different home audio products in Indiana.

Summary Tab

The **Summary** tab displays the demand values for the row that you selected in the **Demand Summary** table. The **Summary** tab is displayed and enables you to compare the demand values for all the analysis variables even though you are exploring the demand for only one analysis variable.

You can use the following views to view the demand values:

- use the **Table view** to compare the analysis variable values side by side.

- use the **Graphic view** to select the analysis variables in order to display their demand values in graphical form. You can select a maximum of 12 analysis variables to compare .
- use the **Divided view** to view the demand values in a combination of tabular form and graphical form.

Drill Path Tab

The **Drill Path** tab displays the navigation path of the demand exploration. The navigation path contains the nodes and its dimensions that you selected while you were exploring the demand. You can click any row to go back to any previous step of the **Drill Path** table.

Scenario Tab

By using the **Scenario** tab, you can shape the demand by varying the future values of the factors that influence demand. You can vary the internal or external factors that impact the demand to perform scenario analysis. For more information about performing scenario analysis, see [“Run a Scenario” on page 108](#).

Explore Demand

You can drill down and explore demand for your analysis variables in any direction.

TIP In order to view the latest forecasted values of the plan in the Explore Demand view, accept the plan. For more information about accepting a plan, see [“Accept a Plan” on page 80](#).

The following prerequisite applies:



- The plan must not be in an in progress state or error state.

To explore demand:


1. In the **Plans** workspace, double-click the plan. The Explore Demand view appears.
2. In the **Display Options** component of the **Configuration Filter** pane, specify the following display parameters.

Table 14.1 Fields in the Display Options Component

Field	Description
Select variable	Select an analysis variable for which you want to explore demand. The list of analysis variables depends on the status of the plan. If you are exploring the demand for a plan that is in the Created state or in the Forecasted state, only the Actual variable is available. If you are exploring the demand for a plan that is in the Accepted state, the Actual and Predicted variables are available.

Field	Description
Allow conditional highlighting	<p>Select this check box to allow conditional highlighting. All the demand values that are not within the tolerance limit are highlighted in red. The demand value that is in bold indicates the demand for the current period.</p> <p>This check box is available only when the selected plan contains more than one analysis variable.</p>
Compare with	<p>Select the variable from the list with which you want to compare the demand. For example, if you selected Actual in the Select variable area, and selected Predicted in the Compare with list, then you can compare the actual demand values with the predicted demand values.</p> <p>This list is available only when you select the Allow conditional highlighting check box.</p>
Tolerance limit	<p>Enter the tolerance limit (as a percentage) in order to observe variations in your demand shaping with respect to the compared variable. The demand values that are not within the tolerance limit are highlighted in red.</p> <p>This box is available only when you select the Allow conditional highlighting check box.</p>
Select dimensions	<p>Select the dimensions for which you want to explore demand. The Select dimensions area displays all the dimensions that are available in the selected plan.</p>
	<p>Click this button to move the selected dimension up by one level. Use this button to determine the order of the dimensions that appears in the Demand Summary table.</p>
	<p>Click this button to move the selected dimension down by one level. Use this button to determine the order of the dimensions that appears in the Demand Summary table.</p>

3. In the **Time** component of the **Configuration Filter** pane, specify the following parameters:
 - a. In the **Level** list, select the periodicity for exploring demand.

Note: If the periodicity of the plan is daily, you can explore the demand on a daily, weekly, monthly, quarterly, or yearly basis. If the periodicity of the plan is weekly, you can explore the demand only on a weekly basis. If the periodicity of the plan is monthly, you can explore the demand on a monthly, quarterly, or yearly basis. If the periodicity of the plan is quarterly, you can explore the demand on a quarterly or yearly basis.
 - b. Move  to the right and left on the time line. The time that is defined between the two sliders is the length of time that is used to generate the output.
4. Specify the hierarchy levels and their values.

Note: You can select multiple values of the selected level for a dimension if you have not selected the dimension in the **Select dimension** area of the **Display Options** section.
5. Click **Apply**.

The demand for the analysis variables that you selected is displayed. You can click the **Reset** button to reset the options.

Chapter 15

Performing Scenario Analysis

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Introduction to Scenario Analysis

Using scenario analysis, you can shape demand by varying the future values of the factors that influence the demand. The factors that influence the demand can be internal or external and can include price, advertising, sales promotions, marketing events, economic factors, and others.

For example, you can use scenario analysis to determine what happens to the product demand when the price of gasoline increases by 5%.

Scenario analysis helps you complete the following tasks:

- compare scenarios values to predicted demand values
- export scenario values for future reference
- ensure that you have correctly envisioned different scenarios and have performed the analysis thoroughly

Although scenario analysis is integrated into SAS Forecast Analyst Workbench and uses the data of the current plan, the values that you change do not change the generated forecasts in your plan.


Run a Scenario

You can run a scenario and analyze the impact of various independent variables on the forecasted demand. For example, you can increase the value of gasoline to check and compare the predicted and scenario values.

The following prerequisites apply:

- You must have permission to perform scenario analysis. For more information, contact your System Administrator.
- The plan must have been accepted at least once.
- The time series for which you want to perform scenario analysis must contain independent variables.
- The independent variables should be a part of the statistical model that is applied to the plan.
- You must not have selected the top-level node in the **Demand Summary** table of the Explore Demand view.

To run a scenario:

1. In the **Plans** workspace, double-click the plan. The Explore Demand view appears.
2. Explore the demand for the variables and dimensions of the selected plan.
For more information about exploring the demand, see [“Explore Demand” on page 104](#).
3. In the **Demand Summary** table of the Explore Demand view, navigate and explore the demand.
4. In the **Demand Summary** table, select a time series and click . The Scenario Time Series Details dialog box appears and displays the time series for which the independent variables are applied through the model.
5. Select the time series for which you want to perform the scenario analysis, and click **OK**. (You can select only one time series at a time.) The **Scenario** tab of the Explore Demand view displays the values of the independent variables that are used to apply the model and to calculate the predicted demand and the scenario demand.

Note: By default, the predicted demand and scenario demand are same. After you run the scenario analysis, these values might change.

6. In the input table, edit the future values for the independent variable. You can edit the values directly in the input table or by using the Input Calculator.

For more information about editing a time period value in the input table, see [“Edit a Value in the Input Table” on page 109](#).

For more information about editing values by using the Input Calculator, see [“Edit Values By Using the Input Calculator” on page 109](#).

7. Click **Run Scenario**.

The **Scenario** tab updates the scenario values. You can change the values of independent variables to generate different scenarios. After you perform the scenario analysis, the scenario values are not saved in SAS Forecast Analyst Workbench. You must export the scenario values in a .csv file for future reference.

While scenario analysis is being executed, you can perform the following actions:

- change the time series
- view the generated scenario values in graphical form
- export and save scenario values in a .csv file

Editing the Values of Input Variables

About Editing Input Variables

You can edit the future values of the input variables in the following ways:

- by entering the input value in the input table to specify a single value.
For example, to run a scenario for the holiday season, you might want to increase the cost of transport charges for December.
- by using the input calculator. You can use this method when you want to specify all new values in the input table.
For example, if you are running a scenario for a weather forecast report, you might want to decrease the value of rainfall by 8% for the entire year.

Edit a Value in the Input Table

To edit the value of an input variable in the input table:

1. In the input table, double-click in the cell for the time period that you want to override.
2. Type the new value and press ENTER.

Edit Values By Using the Input Calculator

To edit the values for multiple time periods:


1. While you are running the scenario analysis, select the independent variable whose values you want to change in the input table.
2. Click . The Input Calculator dialog box appears.
3. Enter the appropriate information for the following parameters.

Table 15.1 Parameters in the Input Calculator Dialog Box

Parameter	Description
Adjustment	Select this option, click + or –, and then enter the adjustment value, as a percentage. For example, click +, and then type 10. The application adds 10% to all values in the time period for the selected independent variable.
Set to value	Select this option and enter the value that you want to assign.

Parameter	Description
Distribution method	<p>Select the appropriate option to distribute the value that you entered in the Set to value field. You can select one of the following options:</p> <ul style="list-style-type: none"> • Assign value to each period: Select this option to assign the value that you entered to each time period of the selected independent variable. • Split evenly: Select this option to split the value evenly across all time periods of the selected independent variable. • Split proportional to current input value: Select this option to split the value proportionately to the current value of all time periods. <p><i>Note:</i> The options in this list are available only when you select the Set to value option.</p>

4. Click **OK**.

Changing the Time Series

Overview of Changing the Time Series


When you are performing scenario analysis, you can change the time series to generate the forecast for a different scenario. You can change the time series either in the **Demand Summary** table or in the Scenario Time Series Details dialog box.

Change the Time Series in the Demand Summary Table

The following prerequisites apply:

- You must have permission to perform scenario analysis and to change the time series.

To change the time series in the **Demand Summary** table:


1. In the Explore Demand view, navigate and select a time series in the Demand Summary table.
2. Click . The Scenario Time Series Details dialog box appears.
3. In the Scenario Time Series Details dialog box, select a time series and click **OK**.

The time series in the **Demand Summary** table displays the newly selected time series and its values.

When you select a new time series, the scenario analysis that you performed for the earlier time series is lost. You must export the scenario analysis values in a .csv file. For more information about exporting scenario analysis values, see “[Export Scenario Values](#)” on page 111.

Change the Time Series in the Scenario Time Series Dialog Box

To change the time series in the Scenario Time Series Details dialog box:

1. On the **Scenario** tab of the Explore Demand view, click . The Scenario Time Series Details dialog box appears.
2. Select a time series and click **OK**.


The time series in the Scenario Time Series Details dialog box displays the values for the newly selected time series.

View Graphs

Graphs can help you understand the information and analyze trends in a better way. When you are performing scenario analysis, you can view the scenario values in graphical form. In the graphs, you can also see a comparison of the predicated demand values and scenario demand values.

The following prerequisite applies:

- You must have permission to perform scenario analysis and view the graph.

To view the scenario values in graphical form, click . The Scenario Demand Line Chart dialog box displays the predicted demand and scenario demand in graphical form.


Export Scenario Values

When you perform a scenario analysis, the values that you change do not change the generated forecasts in your plan. You can export the generated scenario values in a .csv file so that you can refer to these values in the future for planning purposes. You can export the values of all independent variables, predicted demand values, and scenario demand values.

The following prerequisite applies:

- You must have permission to perform scenario analysis and to export scenario values.

To export the scenario values:

1. Click . The Export Scenario Values dialog box appears.
2. Browse to the location where you want to save the file.
3. Enter a name for the file, and click **Save**.

The values of all independent variables, predicted demand values, and scenario demand values are exported in .csv file.

Part 6

Forecasting a New Product

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Chapter 16

Introduction to New Product Forecasting

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Overview of New Product Forecasting

The new product forecast uses a structured and judgmental analysis method that combines statistical analysis and judgmental analysis methods. This process helps you overcome the following challenges that are involved in forecasting the demand for a new product:

- lack of product history
- uncertain product lifecycle

The new product forecasting enables you to accomplish the following goals:

- leverage your business or domain knowledge using a structured judgment technique
- combine business judgment with statistical techniques to calculate the history of surrogate products
- construct an appropriate model based on the history of surrogate products, in order to generate forecasts of the new product that can be reviewed easily

New Product Forecasting Workflow

SAS Forecast Analyst Workbench contains a systematic workflow to forecast the values for new products. This section contains the detailed steps of that workflow:

1. Create the new product forecast project. The project contains the new product and its parameters such as KPI, periodicity, number of clusters to be created, and so on.

For more information about creating a new product forecast project, see [“Create a New Product Forecast Project”](#) on page 122.

2. Define the relationship of the new product to the dimensions and select candidate products. A candidate product is a product whose historical demand data can be used to forecast the new product. You can also specify common attributes and attributes that are specific to the new product to filter the candidate products. SAS Forecast

Analyst Workbench uses the historical demand data of the candidate products for the selected dimensions.

For more information about defining the relationship of the product to the dimensions and defining candidate products, see [“Define Relationships and Candidate Products” on page 123](#).

3. Analyze the seasonality of the candidate products. Using your business judgment, remove outlier products whose demand pattern will not be similar to the expected demand pattern of the new product. SAS Forecast Analyst Workbench creates clusters of the remaining candidate products that have a similar demand pattern. Each cluster contains the candidate products that can be used for modeling and forecasting the values of the new product.

For more information about selecting candidate products, see [“Selecting Candidate Products” on page 125](#).

4. Select a cluster that contains the most suitable candidate products. The historical data of these candidate products is used to apply the statistical models.

For more information about selecting surrogate products, see [“Select Surrogate Products” on page 127](#).

5. Apply models and generate the predicted demand for the new product.

For more information about selecting a model, see [“Selecting a Model” on page 128](#).

6. Using your judgment of various factors (such as market conditions, organizational environment, constraints, and so on), review and override the predicted demand, if you need to. After you override the predicted demand, SAS Forecast Analyst Workbench marks the demand values the final forecasted values.

For more information about reviewing the forecasted demand values, see [“Reviewing the Forecast” on page 130](#).

7. Assign the project into a plan. You can view the demand in the Explore Demand view and in the Model Management view.

For more information about assigning the New Product Forecasting project to a plan, see [“Assigning New Product Forecast Projects to a Plan” on page 132](#).

Chapter 17

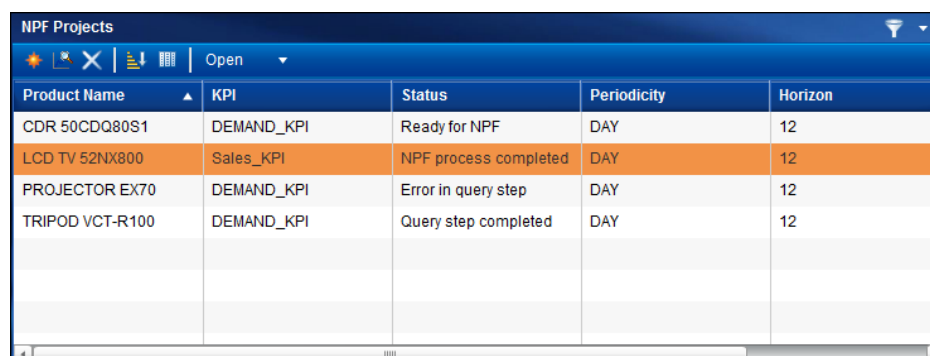
Understanding the New Product Forecasting Workspace

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Overview of New Products Workspace

The New Products workspace contains the NPF Projects category view. The NPF Projects category view contains the New Product Forecast Project view. Using the New Product Forecast Project view, you can forecast the demand for new products.

Display 17.1 New Products Workspace



Product Name	KPI	Status	Periodicity	Horizon
CDR 50CDQ80S1	DEMAND_KPI	Ready for NPF	DAY	12
LCD TV 52NX800	Sales_KPI	NPF process completed	DAY	12
PROJECTOR EX70	DEMAND_KPI	Error in query step	DAY	12
TRIPOD VCT-R100	DEMAND_KPI	Query step completed	DAY	12




Components of the NPF Projects Category View

This section gives detailed information about the toolbar and the table that are in the NPF Projects category view.

Toolbar

The toolbar contains buttons that you can use to perform frequent tasks. The following table describes the buttons on the toolbar.

Table 17.1 Description of Buttons on the NPF Projects Category View

Button	Description
	<p>Click this button to create a new product forecast project. You can choose the new products from a list of new products and specify the parameters for the project.</p> <p>For more information about creating a new product forecast project, see “Create a New Product Forecast Project” on page 122.</p>
	<p>Click this button to assign the selected new product forecast project to a plan. After you forecast the demand for the new product, you can assign the project to a plan that has the product at the leaf level.</p> <p>For more information about assigning a new product forecast project to a plan, see “Assigning New Product Forecast Projects to a Plan” on page 132.</p>
	<p>Click this button to delete the selected new product forecast project.</p>

New Product Forecast Projects

The NPF Projects category view displays a table that lists all the new product forecast projects. You can view the following information about a new product forecast project:


- name of the new product
- key performance indicator (KPI) of the project
- status of the project, such as **Ready for NPF**
- periodicity or forecasting interval

Double-click a project to start working on it. When you double-click a project, the New Product Forecast Project view appears.

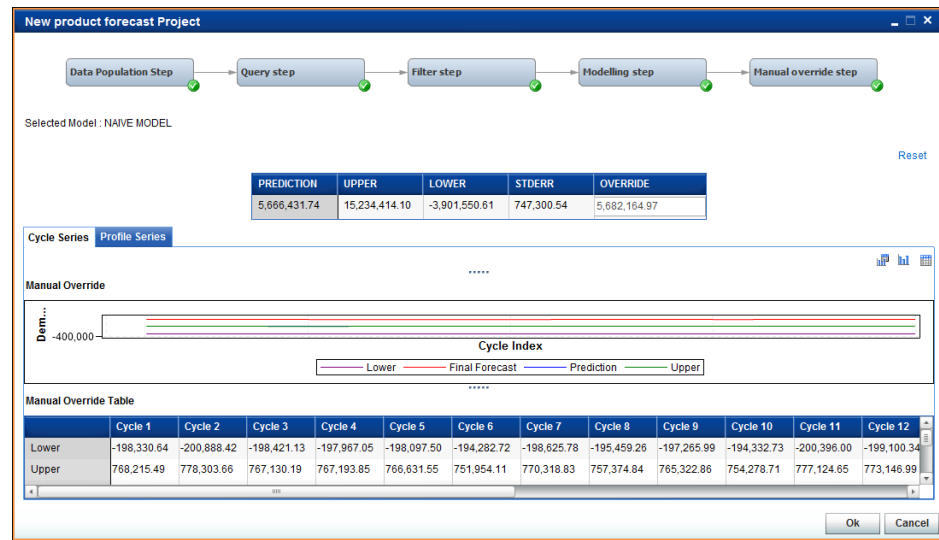
You can perform the following tasks, which are common to all views:

- sort the table rows
- modify the width of the table columns

Overview of New Product Forecast Project View

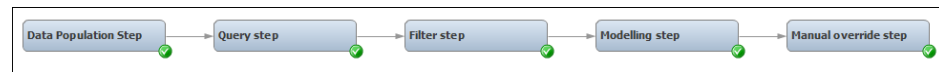
The New Product Forecast Project view is divided into two parts. The upper part of the view displays the steps of the new product forecasting process. After you complete each step, a  appears at the bottom of the process step, which indicates that the step is complete. The bottom part of the view displays the options for the selected step and the result of the process.

Display 17.2 New Product Forecast Project View



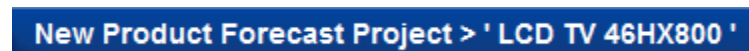
You cannot proceed to the next step of the process unless you have completed the previous step. However, you can click a rectangle that contains to view and change the options for that step. You must complete all the previous steps to work on a subsequent step. These steps help you maintain a consistent and structured workflow to forecast the values of the KPI for the new product.

Display 17.3 NPF Process Flow



The title bar of the New Product Forecast Project view displays the name of the new product.

Display 17.4 Title Bar of the New Product Forecast Project View




Open the New Product Forecast Project View

You perform all the steps necessary to forecast the demand of the new product in the New Product Forecast Project view.

To open the New Product Forecast Project view double-click a project in the NPF Projects category view of the New Products workspace. Alternatively, select a project and click on the toolbar. The New Product Forecast Project view appears.

Close the New Product Forecast Project View

The process of forecasting new products consists of several steps. You can perform all these steps in the New Product Forecast Project view. After you complete a step in the New Product Forecast Project view and you click **OK**, the view closes. You must double-click the project to work on the next step.

If you open the New Product Forecast Project view to view the details of the forecasting process and want to close it, click . Alternatively, you can click **Cancel**.

Chapter 18

Managing New Product Forecast Projects

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About New Product Forecast Projects

The process of forecasting a new product is very structured and consists of the following steps:

- create a new product forecast project

- define candidate products
- select candidate products
- select surrogate products
- select a model
- review the forecast

After you complete these steps for a new product forecast project, you obtain the possible demand values for the new product. You can also assign the new product forecast project to a plan, or delete a project that you no longer need.

Create a New Product Forecast Project

You must create a new product forecast project to forecast the demand for that new product. A new product forecast project consists of the new product and its parameters, such as key performance indicator (KPI), periodicity or forecasting interval, and so on.

The following prerequisite applies:

- You must have permission to create a new product forecast project. For more information, contact your System Administrator.

To create a new product forecast project:



1. In the New Products workspace, click the NPF Projects category view, and then click . The New Product Forecast Project view appears.
2. In the **Select Product** section, select a new product.
3. In the **Select Parameters** section, enter information in each field. The following table describes each field.

Table 18.1 Field Descriptions for the Select Parameters Section

Field	Description
KPI	Select the key performance indicator (KPI) from the list. The KPI is the variable that is to be forecasted for the new product. For example, select Demand to forecast the demand for the new product.
Periodicity	Select the periodicity from the list. The periodicity defines the forecasting interval, which is the frequency at which the demand should be forecasted.
Number of cycles	Enter the number of cycles of the candidate products that you want to consider for forecasting the demand values of the new product. A cycle is measured from the introduction of the candidate product. Data from cycle series is useful for modeling and for comparing the time series data with different introduction times. SAS Forecast Analyst Workbench considers the demand that is available for the specified number of cycles of the candidate products. For example, if you selected Month in the Periodicity list and entered 12 in the Number of cycles field, SAS Forecast Analyst Workbench considers the demand that was generated during the initial 12 months of the selected candidate products.

Field	Description
Number of clusters	Enter the number of clusters that SAS Forecast Analyst Workbench must create. Clustering helps you divide the candidate products into different groups. Each cluster contains the candidate products that have similar demand patterns.
Reduction method	Select the reduction method from the list in order to reduce each candidate series to a uniform set of statistical properties that are not time-dependent. The list contains the following options: <ul style="list-style-type: none"> • Decomposition: Select this option to analyze seasonal patterns. You can use this option when at least two seasonal cycles of the time series data are available to you. • Smoothing: Select this option to obtain surrogate products that depend on level and trend estimates of the candidate products.
Sales introduction date	Displays the sales introduction date of the new product. Click  to change the date. <i>Note:</i> SAS Forecast Analyst Workbench does not convert the time zone automatically if the SAS Forecast Analyst Workbench server and client are located in different time zones. You must perform the GMT time zone conversion manually before you enter the sales introduction date.
Hierarchy path	Displays the path where the new product fits into the product hierarchy. This path helps you identify the new product easily in the Model Management and Explore Demand views.

4. Click **OK**.

Note: You cannot create multiple new product forecast projects for the same new product with the same KPI.

SAS Forecast Analyst Workbench closes the New Product Forecast Project view and creates the project with the status **Ready for NPF**. Now, you can start the process of forecasting the possible demand values for this new product.

Define Relationships and Candidate Products

In this step, you define the applicability of your product. You can define the relationship between the new product and the other dimensions that are defined for the selected KPI. Defining this relationship helps you focus your forecasting goal across dimensions. For example, if you are introducing the new product in a particular region of the USA, you would define the relationship of the new product to your Location dimension in this step.

You also define one or more products whose historical demand data can be used to forecast the new product. These products are called candidate products.

SAS Forecast Analyst Workbench uses the relationship of the new product with the dimensions to generate the demand history for the selected candidate products. For example, SAS Forecast Analyst Workbench calculates the demand history that was generated for cell phone 1 and 2 in California if you select that dimension and those

candidate products in this step. The historical demand data of these candidate products is used as product history to generate the forecast of the new product.

You can also specify common attributes and product-specific attributes for the new product. SAS Forecast Analyst Workbench uses this attribute information to identify a set of candidate products that have similar attributes.



TIP In this step, you should identify a forecast plan to which you will promote this new product forecasting project after you obtain the demand for the new product.



To define relationships and candidate products:

1. In the New Products workspace, click the NPF Projects category view, and double-click a project that is in the **Ready for NPF** state. The New Product Forecast Project view appears and contains two panes. The name of the right pane changes depending on the option that you select in the left pane.
2. Define the relationship of the new product with the dimensions.
 - a. In the left pane, click **Relationships**. The **Select domain relationships** pane displays all the dimensions on separate tabs.
 - b. Select the values on each tab.

For example, if you are introducing the new product in a particular region of the USA, you would define the relationship of the new product to the Location dimension in this step.

3. Define the candidate products whose historical data can be used to forecast the new product.
 - a. In the left pane, click **Candidate Products**. The right pane displays two sections: **Available items** and **Selected items**.
 - b. In the **Available items** section, select the candidate products. The candidate products are arranged in a tree structure. You can expand and collapse the hierarchy to select the candidate products.

Note: Press and hold the CTRL key to select multiple candidate products.
 - c. Click . The hierarchy of the selected candidate products appears in the **Selected items** section. Click  to select all candidate products.

Note: To remove a candidate product from the **Selected items** section, select that product and click . Click  to remove all the candidate products.
 - d. (Optional) Click **Common attributes** to define the common attributes.

Note: This link is available only if common attributes are defined for the selected hierarchical values.
 - e. (Optional) Click **Product-specific attributes** to define the product-specific attributes of the new product.

By specifying the product-specific attributes, you can filter the candidate products that are most suitable.

Note: This link is available only if product-specific attributes are defined for the selected hierarchical values.
4. Click **OK**.

SAS Forecast Analyst Workbench starts generating the historical data for the defined candidate products for the selected dimensions. SAS Forecast Analyst Workbench uses this data to forecast the new product.

The state of the new product forecast project changes from **Ready for NPF** to **Data population completed**.

Selecting Candidate Products

About Selecting Candidate Products

This step helps you find a set of candidate products whose attributes are similar to a new product and that are useful in forecasting the unknown new product series. Because the new product series is not known, the known attributes of the new product can be used to find a set of candidate products with similar attributes. In this step, you can graphically explore the set of the candidate series that are associated with the candidate products. You can also explore the number of candidate products. After you explore the candidate products, you can apply judgment by removing one or more candidate products. Then you can graphically explore the revised set of candidate products to better understand the impact of judgments.

In this step, you can analyze the seasonality and life cycle of the candidate products by using the following plots: histogram, demand plot, demand percent plot, and time series plot.

Histogram

A histogram is a graphical representation of the distribution of data. A histogram consists of tabular frequencies, shown as adjacent rectangles, erected over discrete intervals (bins). The x-axis displays the total KPI for historical products over the number of cycles. If the KPI is demand, the x-axis displays the total demand for historical products over the number of cycles. The y-axis displays the percentage of candidates that fall within each interval of total demand.

KPI Plot

A KPI plot is helpful to remove outlier products from the list of candidate products. The name of the plot depends on the KPI that you select. For example, if you select **Demand**, SAS Forecast Analyst Workbench displays the name of the plot as Demand Plot.

The KPI plot displays the historical values of the selected candidate products in different cycles. The x-axis displays cycle index, and the y-axis displays the historical values of the candidate products. You can observe the historical values of the outlier product to remove it from the list of the candidate products.

KPI Percent Plot

The KPI percent plot displays the historical values of the selected candidate products as percentages. The name of the plot depends on the KPI that you select. For example, if you select **Sales**, SAS Forecast Analyst Workbench displays the name of the plot as Sale Percent Plot.

This plot helps you analyze the historical values of the candidate products against the cycle index. The x-axis displays cycle index, and the y-axis displays the historical values of the candidate products, as percentages.

Time Series Plot

The time series plot displays the historical demand for the candidate products against the date. Each line in this graph denotes the actual demand data of each candidate product in its original time period. Thus, the graph of each candidate product can start at a different date.

Because the demand for each candidate product is displayed against its actual time, the time series plot helps you understand the seasonal pattern of the candidate products. If the candidate products show seasonal fluctuations, you might decide to adjust their seasonality.

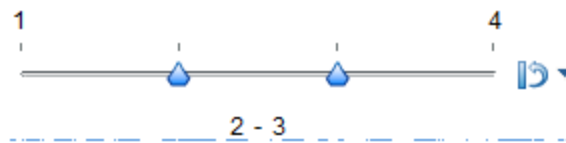
The plot shows the data for the selected candidate products in separate colors. When you select a candidate product in the left pane, the time series plot displays the demand for that product in red.

The time series plot enables you to view the data for particular time series and for particular durations. For example, you can view the data for products whose first seven time series are between January 2010 and December 2010.

Click **Reset graph** to reset the time series and duration.

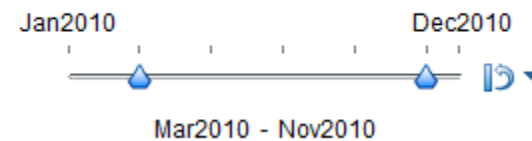
You can select the candidate products and then filter their demand data. For example, you might want to view the demand data of only two candidate products out of four candidate products.

Filter by selected candidate products:



You can filter the data that you view by selecting a time range for which you want to view data. For example, you might want to view the demand data that was generated from March to November.

Filter by time dimension:



Note: If all time series contain the value 0 for a particular date, change NPF_MODE to **ADD** in the configuration table. For more information, contact your System Administrator.

Select Candidate Products

You can select the candidate products that are likely to be useful in forecasting the demand for the new product.

The following prerequisite applies:

- The new product forecast project must be in the **Data population completed** state.

To select the candidate products:

1. In the New Products workspace, click the NPF Projects category view, and double-click a project. The New Product Forecast Project view appears. The left pane displays a list of candidate products in different colors. The right pane contains a histogram, demand plot, demand percent plot, and time series plot on separate tabs.
2. Clear the check box of the candidate product that is an outlier. You can now explore the historical demand data of the candidate products using the different plots.

Note: Whenever you select or remove a candidate product, click **Refresh** to refresh the data on the plots.

3. (Optional) Select the **Adjust seasonality** check box to remove the seasonality patterns from the data for the candidate products.

You can adjust the seasonality if the candidate products display regular seasonal fluctuations.

Note: This check box is available only when the selected candidate products contain at least two periods of data.

4. (Optional) Click **Refresh** to refresh the histogram, demand plot, demand percent plot, and time series plot.

Note: If you click **Refresh** after you adjust the seasonality, the histogram, demand plot, and demand percent plot display the de-seasonalized data. However, the time series plot does not display the de-seasonalized data.

5. Click **OK**.

SAS Forecast Analyst Workbench removes the outlier products from the set of the candidate products and forms the clusters based on the time series pattern of the candidate products. The state of the new product forecast project changes from **Data population completed** to **Clustered**.

Select Surrogate Products

This step displays the clusters of candidate products that are formed after the following processes are completed:

- analyzing the statistical pattern of the demand of the candidate products
- filtering the outlier products from the list of candidate products

SAS Forecast Analyst Workbench uses the reduction method that you selected when you created the new product forecast project to create the clusters. Each cluster contains the candidate products that have similar demand patterns.

This step helps you remove the outlier products from the set of the candidate products that was returned when you completed the previous step. If you correctly remove the outlier series, the set of surrogate series should be more similar to the new product series than the set of the candidate series was.

You can graphically explore the set of surrogate products by selecting particular clusters of surrogate products. You can also explore the number of surrogate products to ensure that sufficient surrogate products are present. After you explore the set of surrogate series, you can apply judgment by removing one or more series from the set of surrogate products. After you apply judgment, you can graphically explore the revised set of surrogate products to better understand the impact of judgments.

The following prerequisite applies:

- The new product forecast project must be in the **Clustered** state.

To select surrogate products:

1. In the New Products workspace, click the NPF Projects category view and double-click a project. The New Product Forecast Project view appears.
2. In the **Select Cluster** list, select a cluster. The cluster graph and the cluster table display the historical demand data of the surrogate products in percentages, arranged against different cycles.
3. (Optional) Clear the check box next to a product to remove it from the cluster. The cluster graph refreshes and displays the updated data.
4. Repeat steps 2 and 3 to select the cluster that is most suitable to your needs.
5. Click **OK**.

SAS Forecast Analyst Workbench starts fitting the NAIVE and NEURAL models to the surrogate products of the selected cluster. You can also use a custom model. Detailed information about how to use a custom model is in the *SAS Forecast Analyst Workbench: System Administration Guide*.

After the models are fitted, SAS Forecast Analyst Workbench generates the predicted demand for the new product by using the demand of the surrogate products of the selected cluster. The state of the new product forecast project changes from **Clustered** to **Modeled**.

Selecting a Model

About Selecting a Model

SAS Forecast Analyst Workbench applies the NAIVE and NEURAL model to the surrogate products of the selected cluster. For each model, you can view the following information in graphical form:

- predicted demand of the new product
- actual demand of the surrogate products
- upper control limit and lower control limit of the predicted values

This step enables you to extract the statistical features from the set of surrogate products that was returned by the previous step. The set of surrogate products is similar to the new product series and is therefore useful in forecasting it.

After you select a model, it is fitted to the surrogate products and prediction errors are computed. You can graphically explore the set of surrogate products. You can also explore each surrogate product by using the following information:

- mean absolute percentage error (MAPE)
- root mean square error (RMSE)
- Akaike information criterion (AIC)
- adjusted R-square

After you explore the model results of each surrogate product, you can apply judgment by using one of the following methods:

- removing one or more surrogate products from the set of surrogate products
- changing statistical model

For example, you might select or remove poorly fitting surrogate (outlier) series or choose other model specifications.

After you apply judgment, you can graphically explore the revised set of surrogate products and the new statistical model results to better understand the impact of judgments. For example, you might explore the result of judgmentally excluding particular surrogate product or of changing model specifications. If you are not satisfied with the results of this step, you can go back to the **Select Cluster** step.

Model Summary Tab

The **Model Summary** tab displays a histogram of the percentage of surrogate products that are within a particular range of the total demand.

The x-axis displays the range of total demand of surrogate products, and the y-axis displays percentage of the surrogate products. The **Model Summary** tab also displays the predicted demand value of the new product, the upper control limit, and the lower control limit of the predictions, in different colors.

Profile Series Model Tab

The **Profile Series Model** tab displays the following information:

- the profile series predictions of the new product
- the upper control limit and lower control limit of the new product
- the actual profile data for each of the surrogate products

The x-axis displays the cycles index, and the y-axis displays the percentage of demand. The **Profile Series Model** tab displays a graph of the percentages of the predicted demand value of the new product, the upper control limit, and the lower control limit of the predicted values, in different colors.

Cycle Series Model Tab

The **Cycle Series Model** tab displays the predicted demand for each candidate product in each cycle. For example, cell phone V1 contains 14150 units of demand in cycle 4.

The x-axis displays the cycle index, and the y-axis displays the predicted demand. The **Cycle Series Model** tab also displays the predicted demand value of the new product, the upper control limit, and the lower control limit of the predicted values, in different colors.

Select a Model

You can select the model that is most suitable for the new product.

The following prerequisite applies:

- The new product forecast project must be in the **Modeled** state.

To select a model:

1. In the New Products workspace, click the NPF Projects category view, and double-click a project. The New Product Forecast Project view appears.

2. In the **Select model** list, select a model. The **Model Summary**, **Profile Series Model**, and **Cycle Series Model** tabs display the graphs of the predicted demand of the new product.

The information on the **Model Summary** tab represents the overall prediction, irrespective of the cycle ID. The information on the **Profile Series Model** tab represents the percentage of the predicted value of the new product for different cycles. The **Cycle Series Model** tab shows the actual prediction for each cycle. The upper control limit and lower control limit are also displayed in each graph.

3. (Optional) Clear the check box that is next to the product that is an outlier to remove it from the list of surrogate products.

Note: Whenever you select or remove any product from the list of the surrogate products, click **Refresh** to update the graphs.

4. Repeat steps 2 and 3 to select a model that is the most suitable to your needs.
5. Click **OK**.

SAS Forecast Analyst Workbench applies the selected model to the surrogate products and generates the predicted demand values for the new product. The state of the new product forecast project changes from **Modeled** to **Forecasted**.

If you specified to adjust for seasonality when you selected the candidate products, SAS Forecast Analyst Workbench readjusts the predicted demand of the new product for seasonality.

Reviewing the Forecast

About Reviewing the Forecast

You can review the predicted demand value of the new product and use your business judgment to override the value in order to make it the final forecast. This step predicts the new product series using the predictions that are associated with the surrogate products. You can explore the forecast of the new product in the profile series and in a cycle series.

After you explore the forecasts, you might decide to override the statistical predictions. For example, you can override the forecasts for the profile series, the total quantity, or the cycle series. After you apply judgment, you can graphically explore statistical forecasts and judgmental overrides to better understand the impact of the judgments. For example, you might explore the impact of judgmental overrides within the context of the statistical forecasts (predictions and confidence limits). If you are not satisfied with the results of this step, you can go back to the previous step and select a different model.

Demand Summary Table

The demand summary table contains the following columns:

- Prediction
predicted demand is the sum of the KPI for entire cycle series
- Upper Control Limit (UCL)
upper control limit for the predicted demand

- Lower Control Limit (LCL)
lower control limit for the predicted demand
- Standard Error
standard error of prediction
- Override
a text box where you can provide your judgment of demand

You can enter a value in the **Override** column of the table to override the total demand manually. When you override the total demand, SAS Forecast Analyst Workbench changes the predicted demand values of all cycles on the **Cycle Series** tab but retains the percentage of all cycles on the **Profile Series** tab.

Cycle Series Tab

The **Cycle Series** tab displays the predicted demand values of the new product for all cycles.

The x-axis displays the cycles index, and the y-axis displays the predicted demand values. The **Cycle Series** tab displays the upper control limit, lower control limit, predicted demand value, and final forecast values, in different colors.

The **Cycle Series** tab also displays the demand values in tabular format. You can enter a new demand value in the cell of any cycle to override it manually. When you override the demand value on the **Cycle Series** tab, SAS Forecast Analyst Workbench changes the total predicted demand in the **Demand Summary** table and the percentage of all cycles on the **Profile Series** tab.

Profile Series Tab

The **Profile Series** tab displays the predicted demand values of the new product, as a percentage, for all cycles.

The x-axis displays the cycle index, and the y-axis displays the predicted demand as a percentage. The **Profile Series** tab also displays the upper control limit, lower control limit, predicted demand value, and final forecast values, in the different colors.

The **Profile Series** tab also displays the demand values, as a percentage, in a tabular format. You can enter a new percentage value in the cell of any cycle to override its demand value manually. The predicted demand is shown up to the four decimal points.

When you override the demand value on the **Profile Series** tab, SAS Forecast Analyst Workbench changes the predicted demand values of all cycles on the **Cycle Series** tab and the percentage of all cycles on the **Profile Series** tab. SAS Forecast Analyst Workbench retains the total predicted demand value.

Review the Forecast

You can review and override the predicted demand value of the new product to make it the final forecast.

The following prerequisite applies:

- The new product forecast project must be in the **Forecasted** state.

To review the forecast:

1. In the New Products workspace, click the NPF Projects category view and double-click a project. The New Product Forecast Project view appears.
2. On the **Cycle Series** tab and the **Profile Series** tab, review the predicted demand values.
3. To override the demand values, enter a new value on the **Cycle Series** tab, on the **Profile Series** tab, or in the demand summary table, and press Enter.

Note: You cannot enter negative values.

4. (Optional) If you are not satisfied with the override values, click **Reset**. SAS Forecast Analyst Workbench resets the demand values to the original values.
5. (Optional) Repeat steps 2 through 4 to perform different scenarios.
6. After you are satisfied with the demand values, click **Close**.

SAS Forecast Analyst Workbench changes the predicted demand values for the final forecast values. The state of the new product forecast project changes to **NPF completed**. Now, you can assign this project to a plan.

Assigning New Product Forecast Projects to a Plan

Overview of Assigning New Product Forecast Projects to a Plan

You can assign the new product forecast project to a forecast plan if the following conditions are true:

- the forecast plan and the new product forecast project contain the same KPI
- when you created the plan, you selected **PRODUCT** at the forecast-leaf-level node in the Select Hierarchical Values page

You can assign the new product forecast project to multiple forecast plans.

When you assign the new product forecast project to a plan and a mismatch in the periodicity occurs, SAS Forecast Analyst Workbench automatically performs the conversion of the new product forecast project demand according to the plan periodicity values. In other words, even if the plan is at granular periodicity, new product forecasts can be accommodated in the plan.

For example, if the periodicity of the new product forecast project is weekly but the plan periodicity is monthly, SAS Forecast Analyst Workbench converts the weekly values of the new product forecast project to monthly values to fit them in the forecast plan.

When you assign the new product forecast project to a plan, the **Model Management** view displays the forecasted values of the new product.

The new product for which you created the new product forecast project can be a part of a forecast plan. Due to the low history of the new product, SAS Forecast Analyst Workbench does not generate predicted values. However, if the plan threshold is very small and the new product is a part of the plan, SAS Forecast Analyst Workbench can generate forecasts for the new product.

If sufficient historical data is available in the forecast plan that is in the **Created** or **Forecasted** state, the predicted values of the new product are not incorporated in that forecast plan.

When you assign the new product forecast project to a forecast plan that already contains forecasted values for the new product, SAS Forecast Analyst Workbench does not override the forecast values that were generated by the new product forecasting process.

When you assign the new product forecast project to a forecast plan that contains forecasted values for the new product that were generated by SAS Forecast Studio, SAS Forecast Analyst Workbench overwrites those values with the values that were generated by the new product forecasting process.


After you assign the new product forecast project to a forecast plan, SAS Forecast Analyst Workbench uses the forecast values that were generated by the new product forecasting process until the new product time series has sufficient historical data. After the new product time series contains sufficient historical data, SAS Forecast Analyst Workbench no longer uses the forecast values that are generated by the new product forecasting process. When SAS Forecast Analyst Workbench contains sufficient historical data for the new product, SAS Forecast Analyst Workbench treats the new product as a regular product and generates the forecasts.

Assign a New Product Forecast Project to a Plan

The following prerequisite applies:

- You must have permission to assign a new product forecast project to a forecast plan. For more information, contact your System Administrator.
- The new product forecast project must be in either the **NPF completed** or **Forecasted** state.
- The forecast plan must be in one of the following states: **Created**, **Forecasted**, or **Accepted**.

To assign a new product forecast project to a forecast plan:

1. In the New Products workspace, click the NPF Projects category view and select a project.
2. Click . The Assign to Plan dialog box appears. The Assign to Plan dialog box displays a list of plans that have the same KPI.

Note: The list of plans does not include plans to which you have already assigned this new product forecast project.

3. Select a forecast plan.

Note: Press and hold the CTRL key to select multiple forecast plans.

4. Click **OK**.

TIP After you assign the new product forecast project to a plan, you should reconcile that plan. SAS Forecast Analyst Workbench provides the best reconciliation results when the reconciliation level of the plan is Product Name. For more information about reconciling a plan, see [“Reconcile a Plan” on page 79](#).

Delete a New Product Forecast Project


You can delete a new product forecast project that you no longer need. If you delete a new product forecast project that is assigned to a forecast plan, the forecast plan

continues to use the forecast values that the new product forecasting process generated for the new product.

The following prerequisites apply:

- You must have permission to delete a new product forecast project. For more information, contact your System Administrator.
- The new product forecast project must not be in the **Ready for NPF** state or in a state that is in progress.

To delete a new product forecast project:

1. In the New Products workspace, select a project and click . A confirmation messages appears.

Note: You cannot delete multiple projects simultaneously.

2. Click **Yes**.

The selected new product forecast project and its data are removed from SAS Forecast Analyst Workbench.

Statutes of a New Product Forecast Project

The following table describes that statuses that a new product forecast project can be in.

Table 18.2 *Statutes of New Product Forecasting Projects*

Status	Description
Ready for NPF	The new product forecast project has been created. You can double-click the project to open it and perform additional tasks.
Data population in progress	The new product forecast project is being created, and SAS Forecast Analyst Workbench is calculating the data.
Error in data population	An error occurred in calculating the data for the new product forecasting project.
Data population completed	The candidate products have been defined. The relationships between the new product and the dimensions of the plan have also been defined.
Clustering in progress	SAS Forecast Analyst Workbench is creating clusters based on the settings that you defined when you created the new product forecasting project.
Clustered	The candidate products have been selected and clusters have been created.
Error in clustering	An error occurred when the clusters were created.
Modeling in progress	The surrogate products are being selected.
Modeled	The surrogate products have been selected.

Status	Description
Error in modeling	An error occurred when the surrogate products were selected.
Forecasting in progress	The statistical model is being applied to the surrogate products, and the predicted demand values are being generated.
Forecasted	The statistical model has been applied to the surrogate products, and predicted demand values have been generated.
Error in forecasting	An error occurred in applying the model and generating the predicted demand values.
NPF completed	The predicted values of the new product have been reviewed and finalized.
Deleting NPF project	The new product forecasting project is being deleted.
Error in deleting NPF project	An error occurred in deleting the new product forecasting project.

Part 7

Performing Consensus Planning

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Chapter 19

Introduction to Consensus Planning

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What is Consensus Planning?

The consensus planning process enables the following tasks:

- the planner can publish the statistical baseline forecast for all products in the product hierarchy
- stakeholders can use the statistical baseline forecast as a foundation to add domain knowledge to improve the quality of an unconstrained demand forecast
- the planner and reviewers can examine the inputs that the stakeholders provide in order to achieve the final unconstrained consensus demand forecast

The consensus planning process is a structured workflow that consists of the following tasks:

- configure analysis variables
- initiate the consensus planning process
- create templates to obtain inputs
- publish the form sets to stakeholders
- obtain inputs from various stakeholders within a specified time
- review and mutually achieve a consensus on the inputs that were provided by the stakeholders

SAS Forecast Analyst Workbench integrates with SAS Financial Management to perform consensus planning.

Consensus Planning Workflow

SAS Forecast Analyst Workbench contains a systematic workflow for consensus planning. This section contains the detailed steps of the consensus planning workflow:

1. Open the Consensus Planning view and configure the analysis variables. An analysis variable is a numeric variable that is used to calculate statistics. You can use the Actual and Predicted analysis variables to view the actual and predicted values.

For more information about configuring analysis variables, see [“Configure Analysis Variables” on page 143](#).

2. Initiate the consensus-planning process. When you initiate this process, Plan-specific dimension hierarchy data and fact data are loaded into SAS Financial Management. You can open SAS Financial Management and check whether the cycles and models have been created for the specific plan. The state of the plan changes from **Accepted** to **Promoted**.

For more information about initiating consensus planning process, see [“Initiate Consensus Planning” on page 144](#).

3. Open SAS Financial Management Studio and design form sets. Each form set contains a separate template that helps you obtain inputs from different stakeholders.

For more information about creating templates, see [“Creating Form Sets and Form Templates” on page 145](#).

4. After you create form sets and templates in SAS Financial Management, publish the form sets so that notifications are sent to all the defined stakeholders.

For more information about publishing templates, see [“Publish Form Sets” on page 146](#).

5. After inputs from all stakeholders are obtained, review the inputs and mutually achieve a consensus to complete the consensus process. When you complete the process, the consensus values are displayed in the Demand Explore view and the Model Management view. The state of the plan changes from **Promoted** to **Consensus completed**.

For more information about completing the consensus process, see [“Complete Consensus Planning” on page 147](#).

6. (Optional) Reset the consensus to repeat steps 2 through 5. Reset the consensus process when you want to repeat it. You can repeat the consensus process to reiterate it for the same period or for the next planning period. You repeat the consensus process to improve the quality of the unconstrained demand forecast. You can continue this iterative consensus process until you achieve a high level of confidence and trust in the unconstrained demand forecast.

For more information about resetting the consensus process, see [“Reset Consensus Planning Process” on page 147](#).

Chapter 20

Understanding the Consensus Planning View

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Overview of the Consensus Planning View


The Consensus Planning view contains the following components:

- Workflow section
- **Form Details** section
- **Consensus Planning Details** pane

The title bar of the Consensus Planning view shows the name of the forecast plan that you are currently working on.

Open the Consensus Planning View

To open the Consensus Planning view:



1. In the Forecast Plans workspace, click the All Plans category view, and then double-click a plan. The Explore Demand view appears.
2. In the Explore Demand view, click .


The Consensus Planning view appears.

Close the Consensus Planning View

Click  to close the Consensus Planning view.

Workflow Section

The workflow section of the Consensus Planning view displays the steps that need to be completed for the consensus-planning process. The steps of the process are indicated by rectangular boxes. You can click a box to work on that step. When a step is completed, a  appears at the bottom of the process step. When a step is incomplete, a  appears at the bottom of the process step. The process step also shows the status of that step.

The workflow section contains a toolbar. You can click  on the toolbar to reset the consensus.

Form Details Section

The **Form Details** section contains a list of forms that are created for consensus planning. The **Form Details** section displays the following details about each form:

- identification number of the form set
- name of the form set
- name of the form
- status of the form (for example, ready or submitted)
- date that the form needs to be submitted

The **Form Details** section contains a toolbar. Click  to refresh the **Form Details** section.

Consensus Planning Details Pane

The **Consensus Planning Details** pane displays the following information:

- name of the forecast plan that is used for consensus planning
- planning cycle
- date when the consensus planning process started
- status of the consensus planning (for example, planning in progress or phase created)

Chapter 21

Performing Consensus Planning

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Configure Analysis Variables


You configure the analysis variables in order to start the process of consensus planning. An analysis variable is a numeric variable that is used to calculate statistics. For example, you might want to use the actual demand values for analysis. You can use the default analysis variables to observe their values and provide inputs. By default, SAS Forecast Analyst Workbench provides the following list of analysis variables for you to use: Actual, Predicted, Override, and Consensus. In addition to the default analysis variables, you can also use custom variables (for example, scenario analysis and other seeded analysis variables) for analysis. For example, you might want to use a variable to analyze the productivity of employees. For more information about seeding and seeded analysis variables, see the *SAS Forecast Analyst Workbench: Data Administration Guide*.

The following prerequisites apply:


- The ETL jobs must be executed before you configure the analysis variables. For more information about executing ETL jobs, contact your System Administrator.
- You must have permission to configure the analysis variables.


To configure the analysis variables:


1. In the Forecast Plans workspace, click the All Plans category view, and then double-click a plan. The Explore Demand view appears.
2. In the Explore Demand view, click . The Consensus Planning view appears.
3. In the Consensus Planning view, click **Configure Analysis Variables**. The **Select Variable** dialog box appears.

- In the **Available items** section, select a variable and click . The selected variable appears in the **Selected items** section.

Press and hold the CTRL key to select multiple variables.

Note: Click  to select all the variables.

- (Optional) In the **Selected items** section, select a variable and click . The selected variable is removed and appears in the **Available items** section.

Note: Click  to remove all the selected variables.

- Click **OK**.

The default analysis variables and the selected analysis variables are used to perform consensus planning.

Initiate Consensus Planning

When you initiate the consensus-planning process, plan-specific dimension data, hierarchy data, and fact data are loaded in SAS Financial Management. Phases, models, and cycles are also created in SAS Financial Management. You can open SAS Financial Management and check whether cycles and models have been created.


When you initiate the consensus-planning process for a plan, you must ensure that the following items are created in SAS Financial Management:

- the cycle is created with the set of default dimensions and plan-specific dimensions.
- the model is created with plan-specific hierarchies.
- the period is created as per the plan-specific time period. The start and end period directly affect the visibility of plan data in templates.

The following prerequisites apply:

- SAS Financial Management must be installed.
- You must have permission to initiate consensus planning. For more information, contact your System Administrator.
- You must have configured the analysis variables.

To initiate consensus planning:

- In the Forecast Plans workspace, click the All Plans category view, and double-click a plan. The Explore Demand view appears.
- In the Explore Demand view, click . The Consensus Planning view appears.
- In the Consensus Planning view, click the **Initiate Consensus Planning** process box. A confirmation message appears.

Note: You cannot initiate consensus planning for multiple plans simultaneously.

- Click **Yes**.

SAS Forecast Analyst Workbench starts loading the plan-specific dimension data, hierarchy data, and fact values to SAS Financial Management. The status field of the **Consensus Planning Details** pane shows the following statuses:

- Process initiated

- Dimension hierarchy data loaded
- Cycle created
- Model created
- Fact data loaded
- Phase created

After the data is loaded in SAS Financial Management, the **Consensus Planning Details** pane displays the **Template not present** status. You can now create the templates to obtain inputs.

Creating Form Sets and Form Templates

After you initiate the consensus-planning process, you must create form sets in SAS Financial Management in order to obtain inputs from all relevant stakeholders. A form is a document that is used for data-entry purposes. A form set is a collection of forms that can be sent through a data-entry and approval process. You can also create a workflow that the forms must follow. For example, after a sales professional submits a form, it might go next to a sales manager for review and approval, then to the sales manager's manager, and on to successive reviewers.

When you create a form set, you select a target hierarchy. The forms are distributed to the members of the target hierarchy. The consensus process works best when you select the stakeholder dimension to create target hierarchy for SAS Forecast Analyst Workbench. You can select which members of the target hierarchy the forms should be distributed to. Every form set contains a deadline (a due date and time), which applies to each of its forms.

You perform the following tasks in SAS Financial Management:

- create a form set

The form set that you create can contain multiple forms. The number of forms will equal the number of members that you selected in the target hierarchy. The parameters that you define when you create the form set are used to prepare the template.

- define a form template

You can create different templates for different members within your hierarchy. For example, you can create a form template for sales and marketing professionals to use to provide their input for consensus. You can create another template for sales and marketing managers to provide their inputs.

- edit the form set properties, as required

You can edit the properties of individual forms or multiple forms, as required. For example, you might want to assign additional reviewers to a financial form, or you might want to select different members of the target hierarchy.

You can use the following rules and guidelines to create form sets:

- Select the **Stakeholder** dimension hierarchy to create the form sets.
- Select the **Override** analysis variable so that stakeholders can provide their inputs using this analysis variable.
- Select the **Consensus** analysis variable so that reviewers or planners can provide consensus values using this analysis variable.

- Ensure that the form is created for the current date and for the required duration in the model properties.
- Ensure that you select only those dimensions that the stakeholders are authorized to work on.

For more information about creating form sets and editing form-set properties, see the *SAS Financial Management: User's Guide*.


Publish Form Sets

After you create form sets and edit the properties of the form sets, you then publish the form set. When you create the forms, they are in the **Draft** state. When you publish the forms, notifications are sent to the relevant stakeholders, and the state of the forms changes to **Ready**.

The following prerequisites apply:

- You must have permission to publish the form sets. For more information, contact your System Administrator.
- You must have created the form sets.

To publish the form set:

1. In the Forecast Plans workspace, click the All Plans category view and double-click a plan. The Explore Demand view appears.
2. In the Explore Demand view, click . The Consensus Planning view appears.
3. In the Consensus Planning view, click the **Publish Forms** process box. A confirmation message appears.
4. Click **Yes**.

The forms are published and notifications are sent to the relevant stakeholders. The **Consensus Planning Details** pane displays the **Planning in progress** status.

Providing Input for Consensus

When you publish the forms, notifications are sent to all stakeholders who are involved in the consensus-planning process. The stakeholders can use the notifications to view the statistical baseline forecast that was created for all the products in the product hierarchy. The stakeholders can use the statistical baseline forecast as a foundation and add domain knowledge to improve the quality of the unconstrained demand forecast.

When a stakeholder provides input and submits the form, the status of the form changes from **Ready** to **Submitted**. You can click the **Refresh form details** button to view the current status of all forms. After all the stakeholders provide their inputs, the status of the forms changes from **Ready** to **Submitted**, and a tick mark appears at the bottom of the process box.


Complete Consensus Planning

After all stakeholders have provided the inputs for planning, the planner and reviewer can review these inputs. By reviewing the inputs, the planner and the reviewer can achieve mutual agreement on the estimated demand values, and provide these values by using the Consensus analysis variable. Click the **Complete Consensus Process** process box to complete the consensus process. The **Consensus Planning Details** pane displays the **Consensus completed** status. The consensus data that is generated in SAS Financial Management is loaded into SAS Forecast Analyst Workbench by using the FINAL (Consensus) analysis variable.

The following prerequisites apply:

- You must have permission to complete the consensus-planning process. For more information, contact your System Administrator.
- You must have completed all previous steps.

To complete the consensus-planning process:

1. In the Forecast Plans workspace, click the All Plans category view, and then double-click a plan. The Explore Demand view appears.
2. In the Explore Demand view, click . The Consensus Planning view appears.
3. In the Consensus Planning view, click **Complete Consensus Planning** process box.

The data is loaded into SAS Forecast Analyst Workbench and all the forms that were submitted by different stakeholders are locked. Stakeholders cannot provide inputs or change their input when the form is locked. After the data is completely loaded into SAS Forecast Analyst Workbench, you can view and explore the actual, predicted, and consensus values in the Demand Explore view. The state of the plan changes to **Consensus completed**. You can re-diagnose a plan that is in the **Consensus completed** state.

Reset Consensus Planning Process

You can reset the consensus process to repeat all the steps that are involved in consensus planning. You can reset the process to repeat the cycle for the same period or to run the cycle for the next planning period.



You can reset the consensus process during any step of the process. If you reset the process after it has completed, the consensus values become the last consensus values and the new consensus values become the final values.

If you reset the consensus values at any time before the consensus-planning process is complete, all information except the analysis variables that you have configured is reset.

The following prerequisite applies:

- You must have permission to reset the consensus-planning process. For more information, contact your System Administrator.

To reset the consensus:

1. In the Forecast Plans workspace, click the All Plans category view, and then double-click a plan. The Explore Demand view appears.
2. In the Explore Demand view, click . The Consensus Planning view appears.
3. In the **Workflow** section of the Consensus Planning view, click .

The consensus process is reset. The only information that is retained are the analysis variables that you configured. Now, you can initiate the process again in order to obtain inputs from the stakeholders. If you reset the consensus process to obtain inputs for a new period, you must specify the new period in SAS Financial Management for the form sets.

When you reset the consensus-planning process, a log that contains the final consensus values is maintained.

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