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SAS® Forecasting 4.1 for SAP APO

User's Guide

SAS® Documentation

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SAS® Forecasting 4.1 for SAP APO: User's Guide

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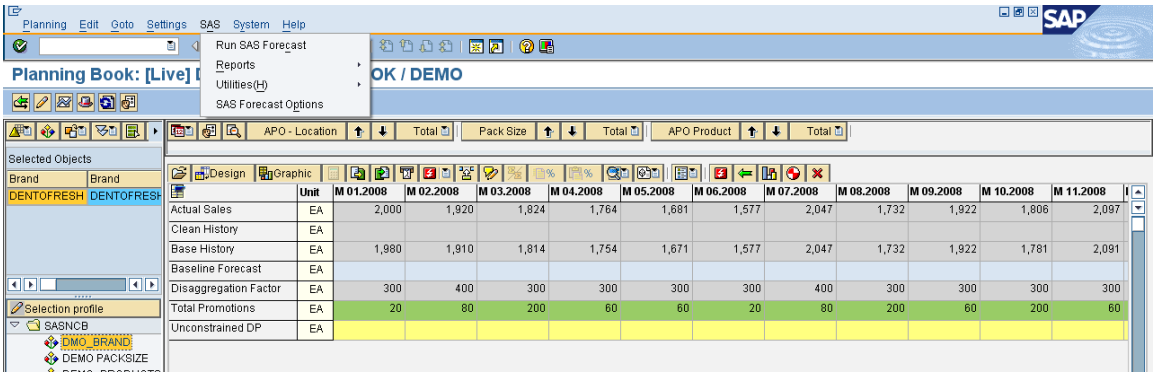
CHAPTER 1

Introduction

Utilizing the SAS "add-in" menu 2

The SAS Forecasting for SAP APO solution integrates SAS forecasting capabilities into the SAP APO Demand Planning (DP) application through a SAS "add-in" menu as illustrated in Figure 1-1.

Figure 1-1.



The SAS "add-in" menu provides users with four primary capabilities:

1 **Run SAS Forecast**: Allows users to initiate creation of a statistical forecast. History values are read from SAP APO and the forecast results generated on the SAS Server are written back to SAP APO so they are visible by the user in the appropriate SAP Planning Book. The "active forecast profile" which is described below under "SAS Forecast Options" contains the parameters that are used to generate the forecast when this option is selected.

2 **Reports**: Allows users to view reports generated during the creation of the statistical forecast (HTML format). Two sets of reports are available for viewing: a) Diagnostic Reports (describing the results of the SAS DIAGNOSTIC step b) Forecast Reports (describing the results of the FORECAST step. The range of reports generated and viewable is specified in the SAS Forecast Profile which can be created or edited using the SAS Forecast Options (described below).

3 **Utilities**: Gives a user the options to launches either SAS Forecast Studio or SAS Web Report Studio applications. Users need a valid SAS userid and password to logon to these SAS user interfaces. These applications will be opened in a separate window.

4 **SAS Forecast Options**: Allows a user to create or modify a forecasting profile with parameters that are utilized by SAS when generating the statistical forecast and to select the "active" profile that will be utilized when "Run SAS Forecast" is selected from add-in menu.

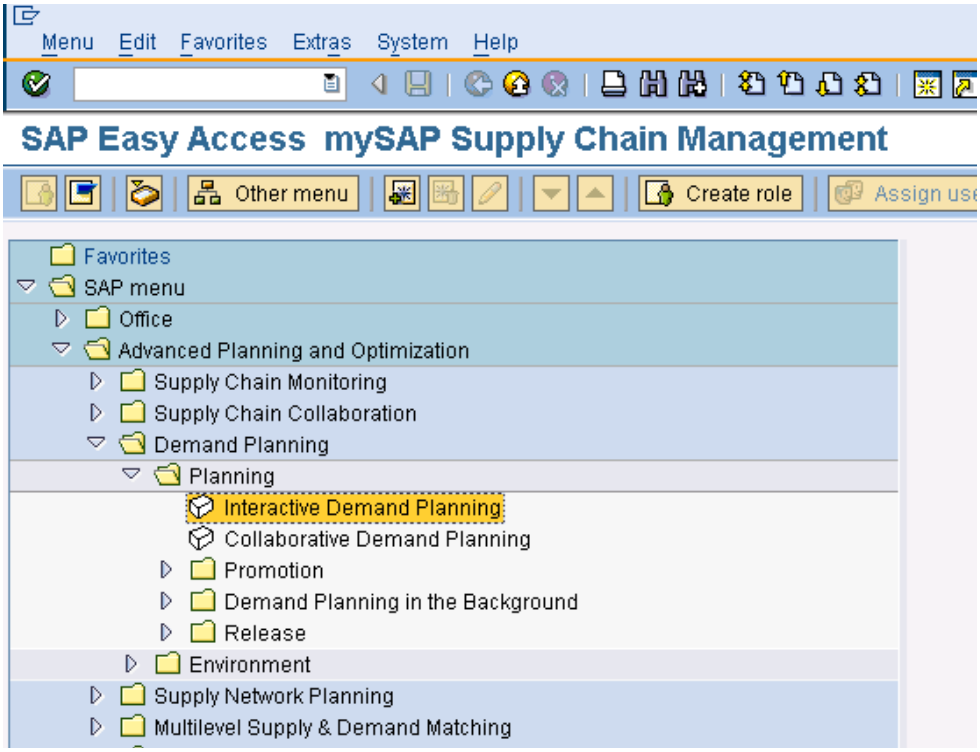
Notes:

1. Based on the authorization granted a specific user, some options on the add-in menu may be disabled (grayed out). For more information on user authorizations see Chapter 7 of the User’s Guide.
2. Some implementations may choose to not install the SAS add-in menu as a separate menu item on the menu bar of the SAP APO (DP) Planning Book. See Appendix 4 - for an alternate way of accessing SAS “add-in” functions from within SAP.

Utilizing the SAS “add-in” menu

To utilize the SAS “add-in” menu, users must be logged on to an SAP SCM system that has the “add-in” installed. Once logged on users should select the “Interactive Demand Planning” application which is under Advanced Planning and Optimization (APO) as shown in Figure 1-2.

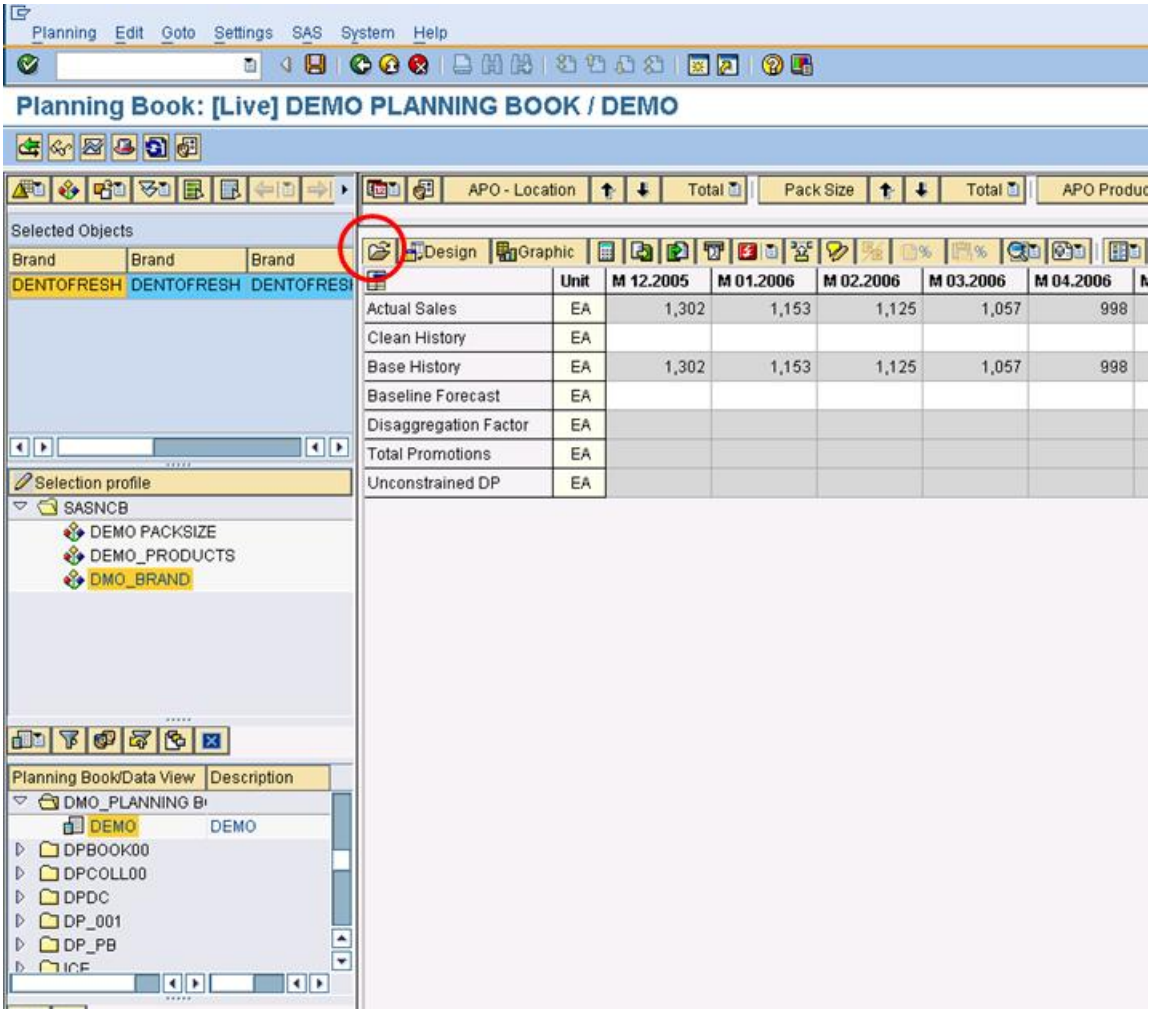
Figure 1-2.



Before utilizing the SAS “add-in” menu, a user must next select:

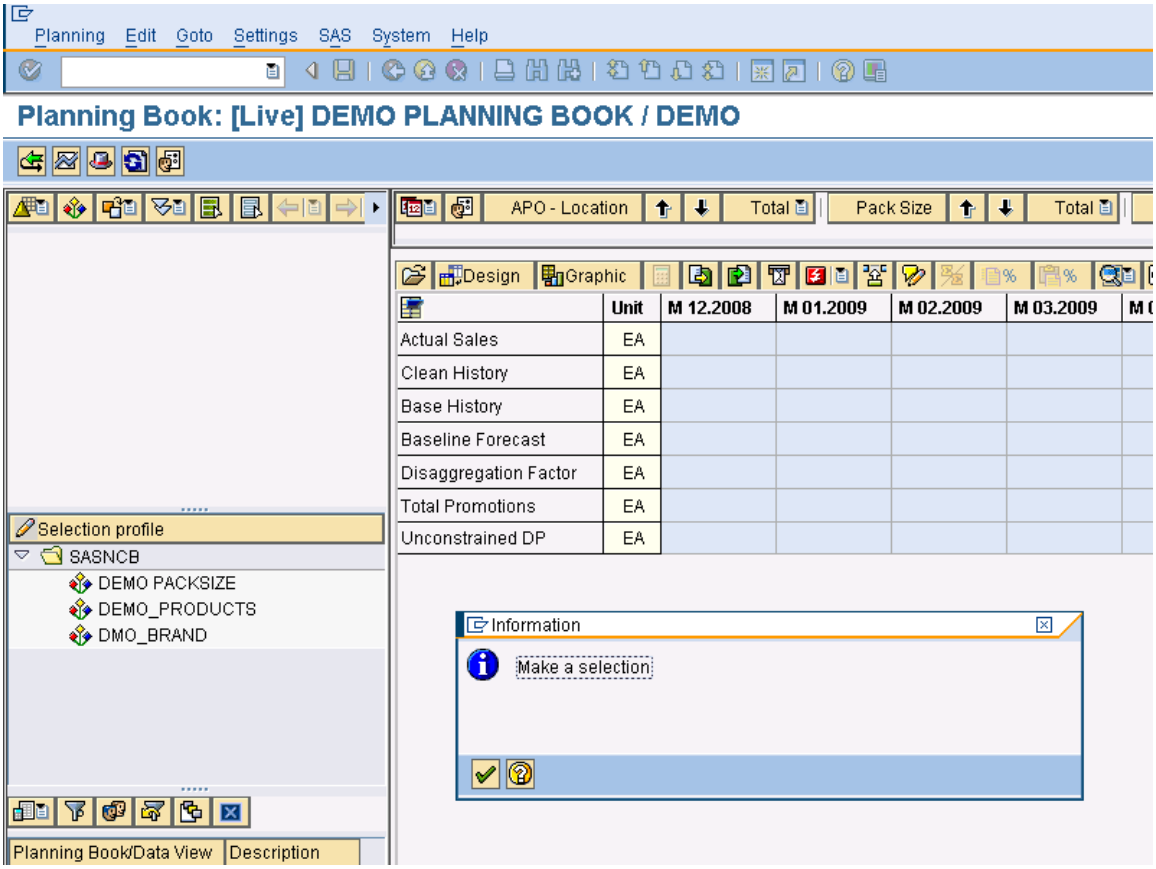
1. A SAP Planning Book /Data View
2. A valid Selection Profile for that Planning Book
3. The data for the Selection Profile should be loaded into the Planning Book and visible to the end user. Figure 1-3 shows a planning book called DMO_PLANNING BOOK selected along with a Selection Profile called DMO_BRAND. Loaded values are visible in the table. In the example shown in Figure 1-3, Actual Sales and Base History sales are visible for each month displayed. (If data is not loaded automatically after the Selection Profile is selected, press the “Load Data” icon which has been circled in Figure 1-3.)

Figure 1-3.



If the user attempts to select an item from the SAS “add-in” menu before selecting a Planning Book and Selection Profile or before data is loaded data into the Planning Book, the user will receive a message to “Make a selection” as illustrated in Figure 1-4. Users may initiate creation of a statistical forecast (Run Forecast) only against the SAP Planning Book and Selection Profile that has been loaded. This will be discussed in more detail in Chapter 4: Run Forecast.

Figure 1-4.



CHAPTER 2

SAS Forecast Options

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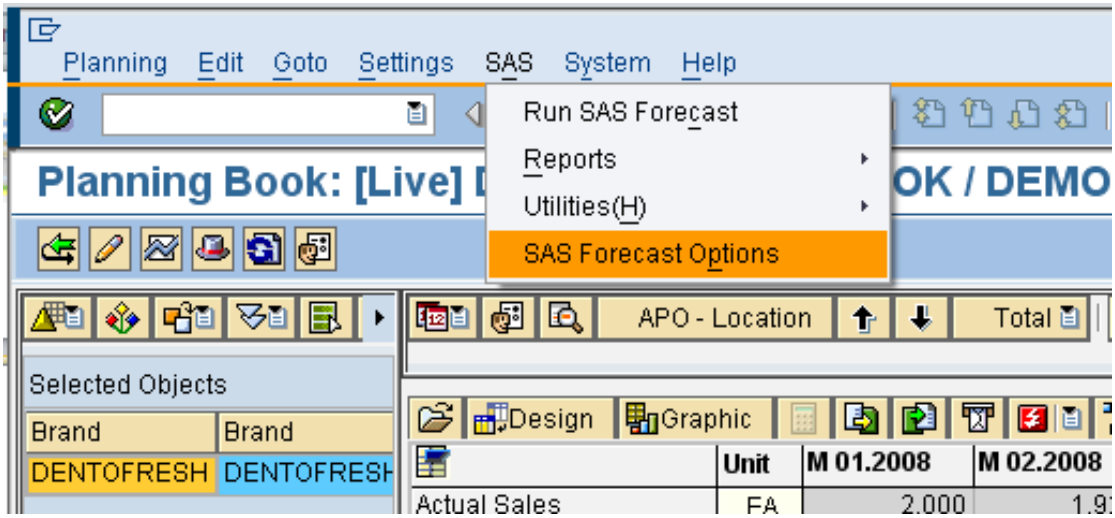
The Forecasting Options allows uses to create a forecast profile that stores a set of options that are utilized when a forecast is created (or run) by SAS. It defines options about the data read from SAP APO and where forecast results will be written back into the SAP APO Planning Book, defines various parameters about what models and model parameters will be utilized during the creation of the statistical forecast and it contains information about what reports will be generated and where these reports will be stored. Multiple Forecast Profiles can be created and saved by business planners using SAP APO Demand Planning (DP) with the SAS add-in menus.

To access or create a Forecasting Profile the user must first select "SAS Forecast Options" from the menu pull-down as shown in Figure 2-1.

Figure 2-1.

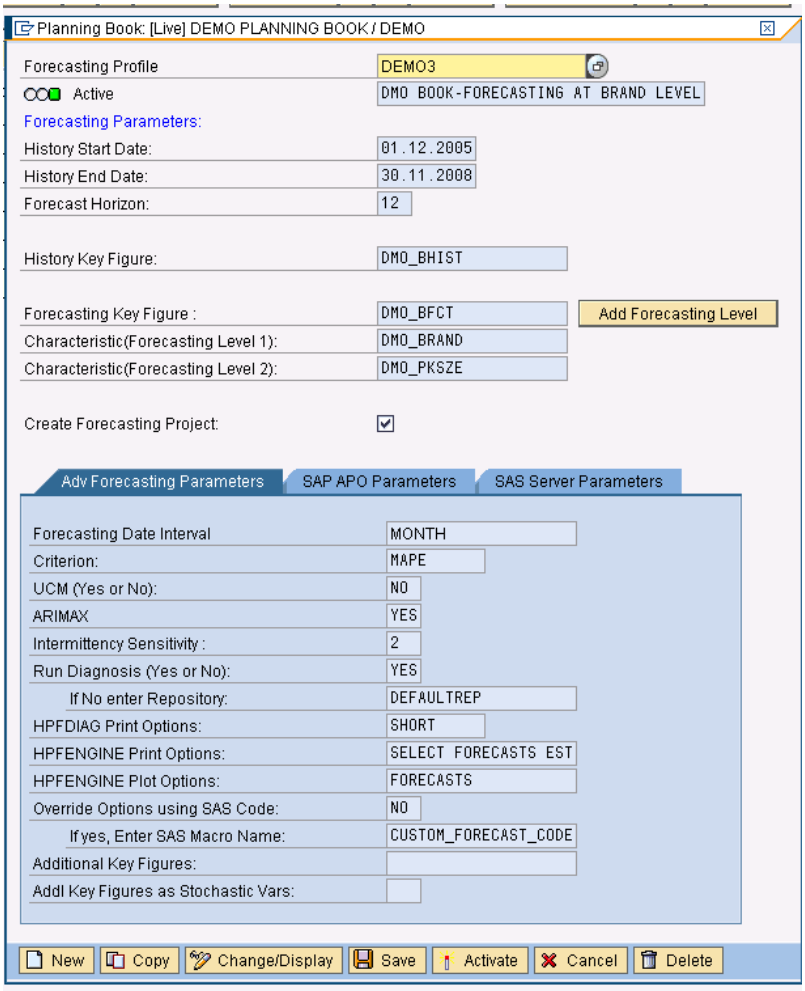


Once, "Options …" has been selected. The Forecast Profile options window appears as illustrated in Figure 2-2. The options window is divided into 4 sections:

1. Base Forecasting Options:
   - Profile Name, Description and Status of Profile
   - Parameters used in Data Selection
2. Advanced Forecasting Parameters
3. SAP APO (Planning Book) Parameters
4. SAS Server Parameters

This chapter will explore the various parameter options available in each of these sections in more detail.

Figure 2-2.



Base Forecasting Options

Since multiple profiles can be created and saved with the “add-in” menus, each saved profile must have a unique name. Optionally, a user can create a description that describes this unique profile.

Forecast Profile Name: *(Required field)* must be unique and can use a combination of characters and spaces up to 22 characters long.

Description: *(Optional field)* Short description describing the usage of the forecasting profile or the SAP APO planning book it is associated with.

Active Status of Profile: Only 1 Forecast Profile may be activated per userid at any point in time.

Figure 2-3 provides an example of a Forecasting Profile named DMO1. This profile was created with a description of "DMO BOOK-FORECASTING AT BRAND LEVEL". DMO1 has a status of "Active".

Figure 2-3.

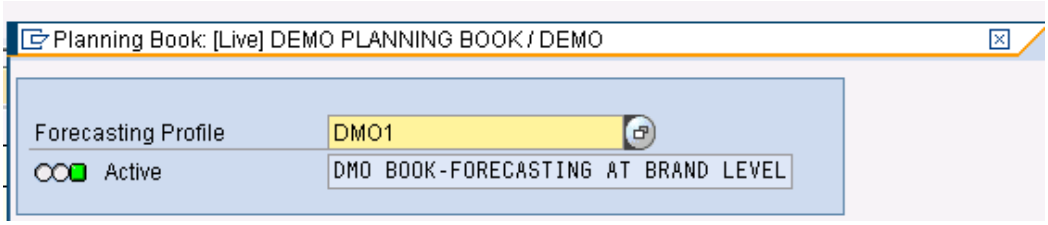
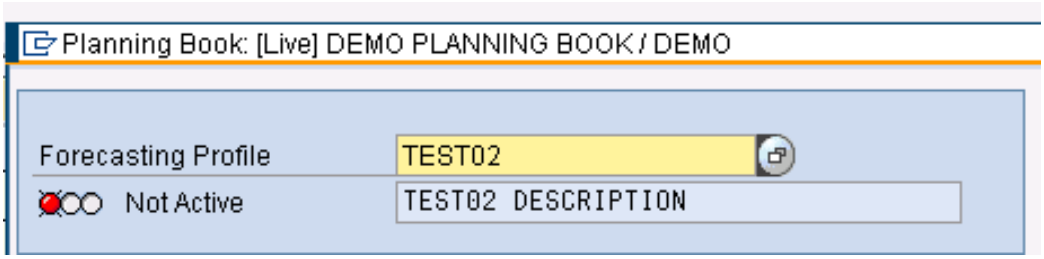


Figure 2-4 shows an example of Forecasting Profile named TEST02. This profile was created with a description of "TEST02 DESCRIPTION". TEST02 has a status of "Not Active".

Figure 2-4.

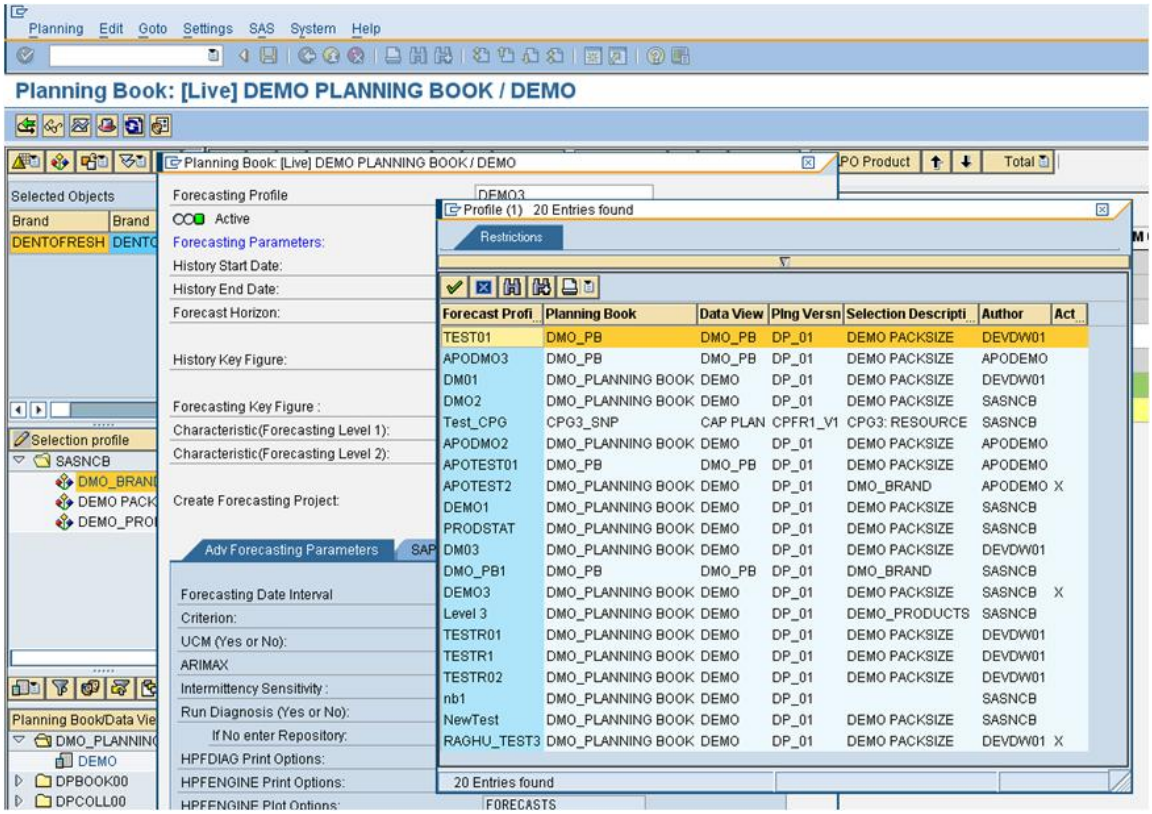


When SAS is requested to generate the forecast using the SAS Forecasting for SAP APO add-in menu, the parameters from the Active Forecasting Profile will be utilized. As previously mentioned, forecast profiles other than the "active" profile can be created and saved. To view a list of previous created "Forecast Profiles", select the Help – Search button (F4) available for the Forecasting Profile field. (Hint: When a user selects or clicks on a field like Forecasting Profile, SAP will highlight the field and display a Help-Search button as shown below in Figure 2-5.)

Figure 2-5

Once the Help-Search button (or F4) is selected, the user is presented with a screen containing the names of previously created and saved Forecasting Profiles. Figure 2-6 shows an example of this screen.

Figure 2-6.

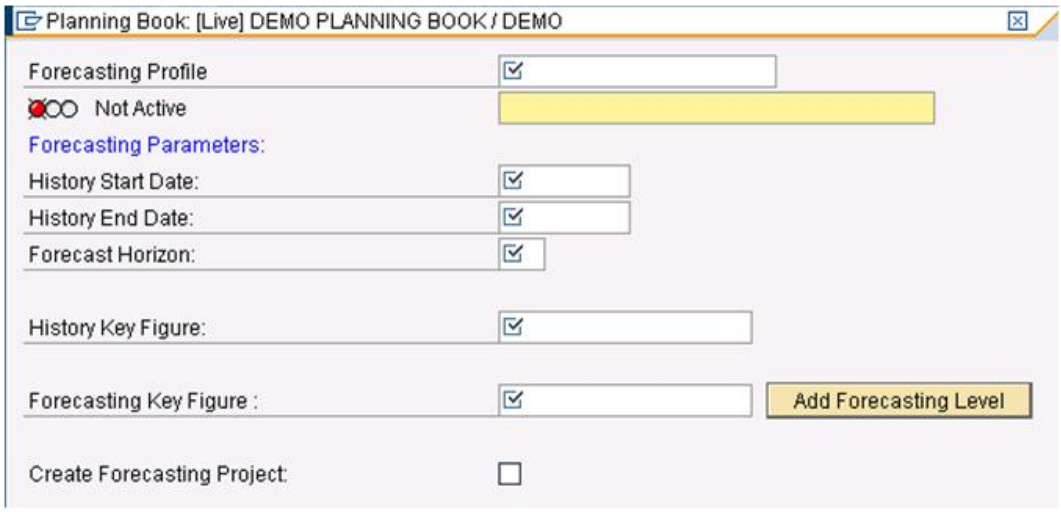


The list of saved profiles not only contains the profile name, but also lists the specific SAP APO Planning Book, Data View, Planning Version and Selection Profile that is associated with the profile. Also contained in the list is the SAP userid that created the profile (Author) and an "X" is displayed next to the profile that is currently active.

The following "Forecasting Parameters", shown in Figure 2-7, are mainly used to handle and prepare the data used or created by the SAS forecasting engine.

- **History Start Date**: *(Required field)* history data is extracted from the SAP APO Planning Area beginning with this date.
- **History End Date**: *(Required field)* history data is extracted from the SAP APO Planning Area from the History Start Date through this History End Date.
- **Forecast Horizon**: *(Required field)* this indicates the number of forecast periods that SAS will generate (12 months, 52 weeks, etc.) Users should enter a number into this field. The increment (month, week, etc.) is based on the value set in the Advanced Forecasting Parameters which will be discussed in that section of this chapter.

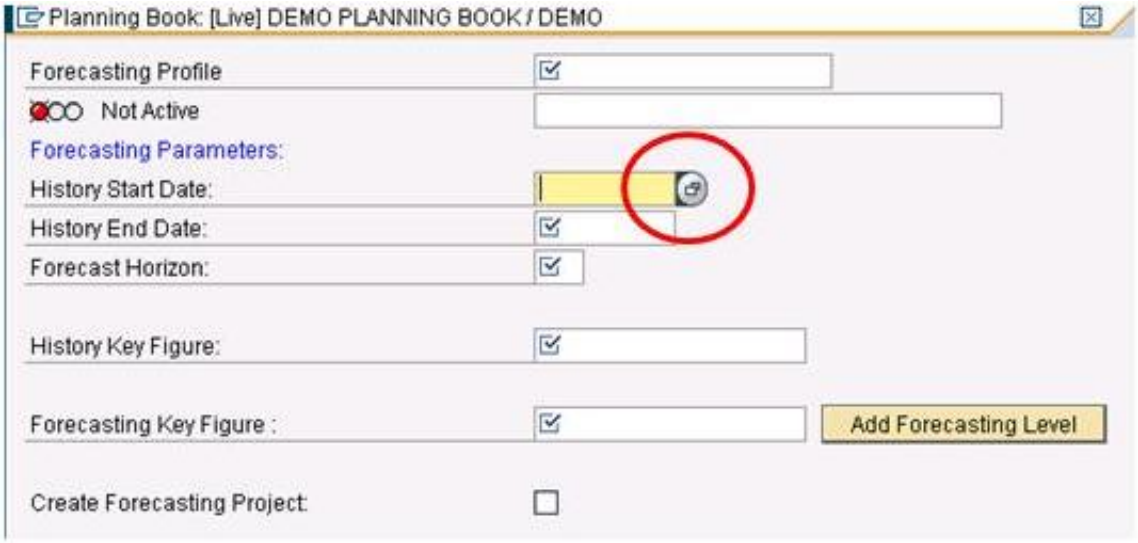
Figure 2-7.



Values for History Start Date, History End Date, and Forecast Horizon are all required values as indicated by the check mark ☑.

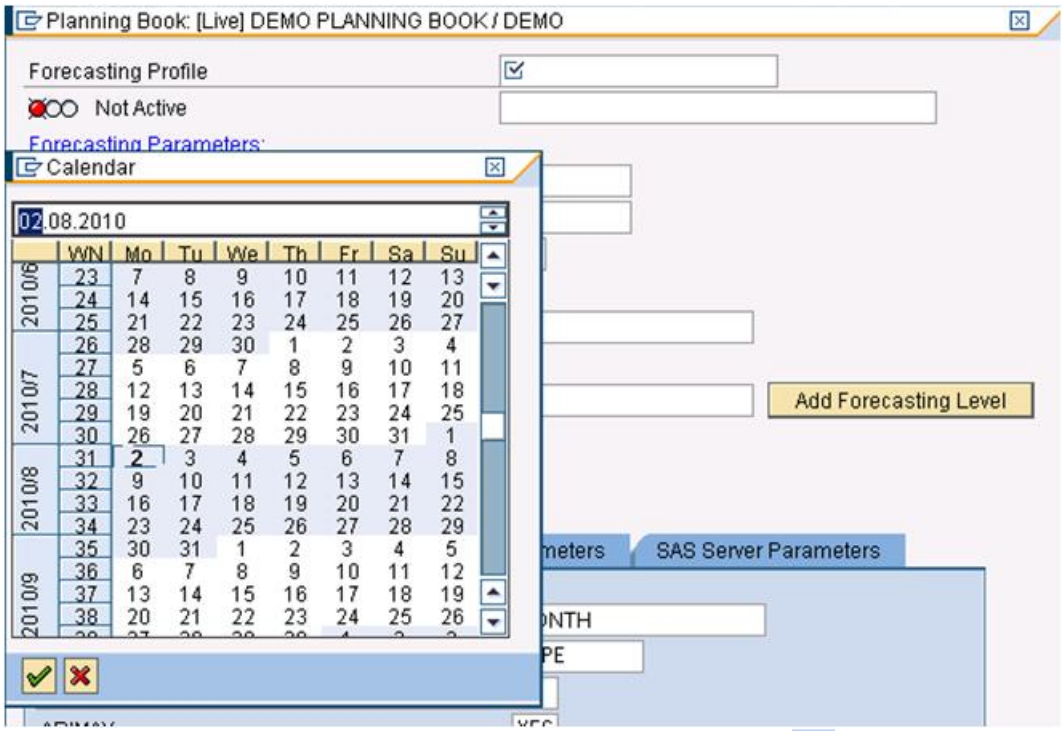
A user may enter values directly in the date fields using the format DD.MM.YYYY or by selecting a date from a calendar that can be surfaced by the Search-Help button (or F4) as highlighted in Figure 2-8.

Figure 2-8.



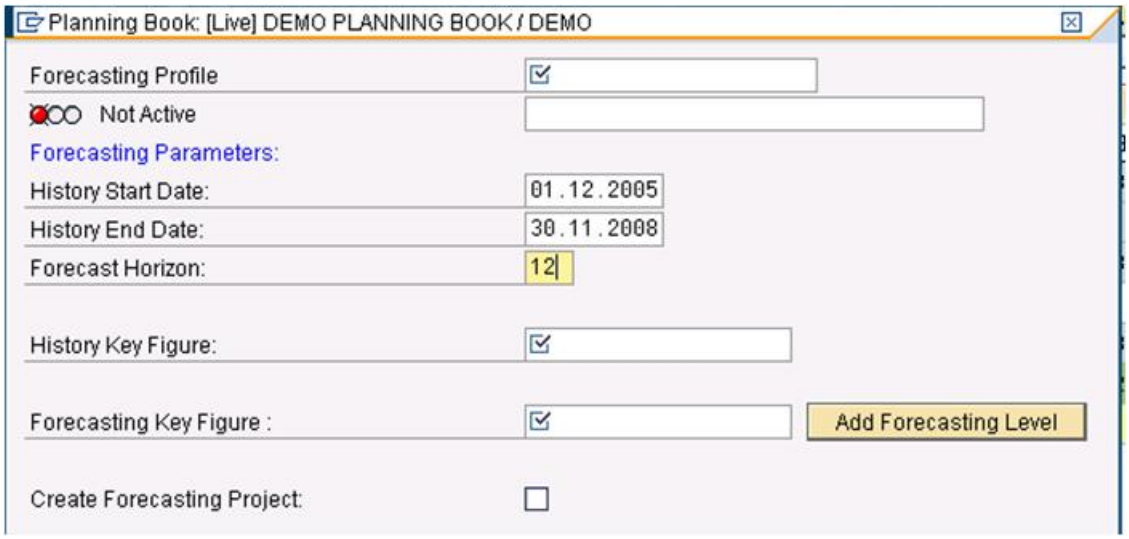
Once the Search-Help button (F4) has been selected; the user is presented with a calendar as illustrated in Figure 2-9. The user can scroll the calendar backwards and forwards to select the date desired.

Figure 2-9.



Once the user has selected the desired date, the check button on the calendar screen should be pressed to confirm the choice. In Figure 2-10, the user has selected a History Start Date of December 1, 2005 and a History End Date of November 30, 2008. The user has manually keyed a Forecast Horizon of 12.

Figure 2-10.



In some installations History Start Date, History End Date and Forecast Horizon may already be filled in when a user creates a "new" Forecast Profile. This happens if a "SAP Forecasting Profile" is active for the SAP Planning Book and Selection Profile. For more information regarding the SAP Forecasting Profile refer to Appendix 1 of this guide.

Returning to the SAS Forecasting Profile we will focus on the remaining Base Forecasting Parameters that specify the SAP Key Figures and Characteristics that will be utilized by SAS.

- **History Key Figure**: *(Required field)* this indicates the row from the SAP Planning Book that history data will be read and used when creating the Statistical Forecast.
- **Forecasting Key Figure**: *(Required field)*: this indicates the row in the planning book where the SAS Statistical Forecast values will be written and will be visible to the user.
- **Forecasting Level(s):** *(Level 1 Required field)* allows users to select the hierarchy values. Data will be extracted at this level of the hierarchy from SAP and SAS will generate the Statistical Forecast at the level designated. Up to twelve (12) levels can be selected using the "add-in" options menu. To select each level, including the first level, the user presses the Add Forecasting Level button shown in Figure 2-10.
- **Create Forecast Project:** *(Optional)* when checked this creates a forecasting project that can be launched in SAS Forecast Studio or in Microsoft Excel using the SAS Add-in for Microsoft Office

Each of the Key Figures and Characteristics just described are values that have been configured as part of the creation of the SAP Planning Book. Users can see valid options by selecting on the option and then selecting the Search-Help (F4) button available. Figures 2-11 and 2-12 show expanding on the History Key Figure option and how the user is presented with valid SAP Key Figures to choose from.

Figure 2-11.

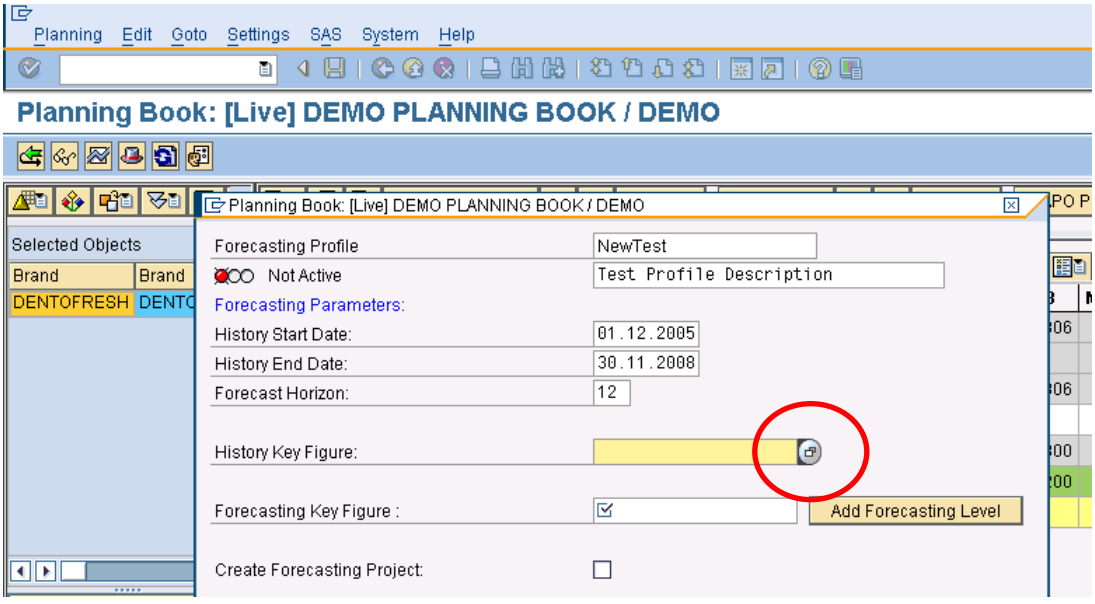
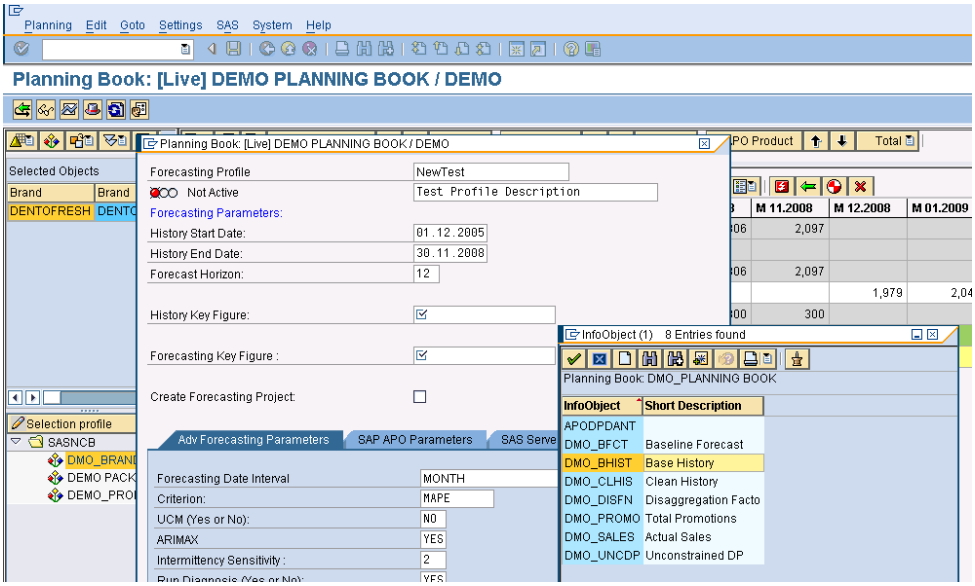
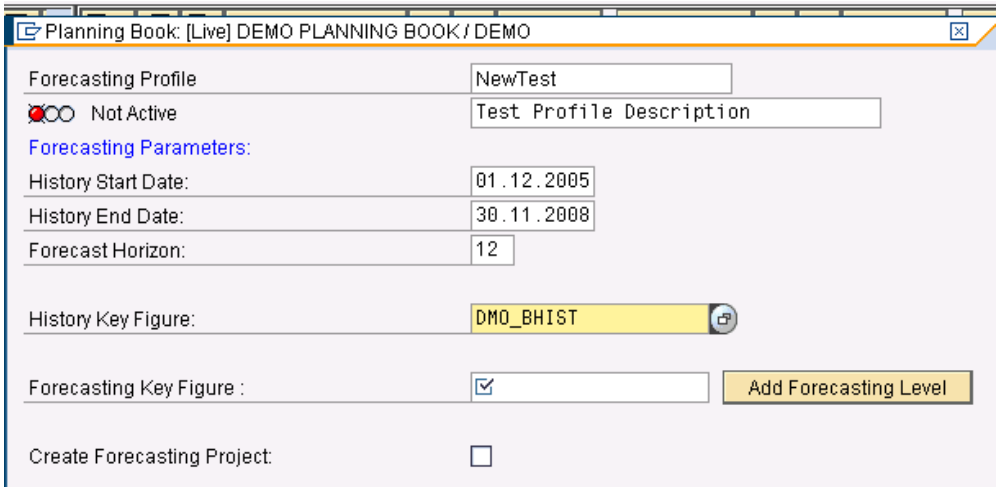


Figure 2-12.



In Figure 2-12 the user has highlighted (selected) DMO_BHIST (Base History). The choice is confirmed when the user presses the green check icon ✔. The selected value is now displayed in the SAS Forecasting Profile (Figure 2-13.)

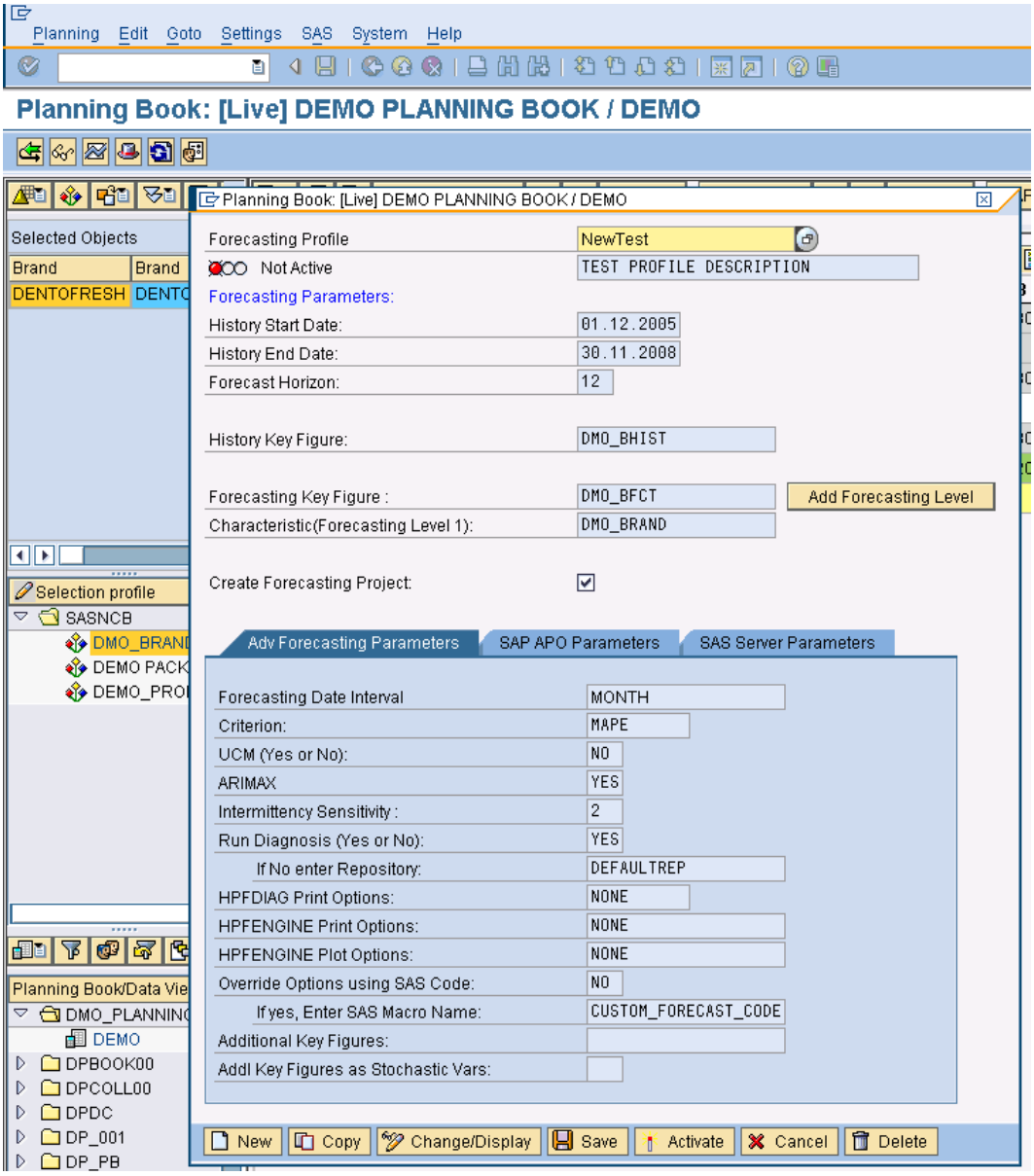
Figure 2-13.



Advanced Forecasting Parameters

The Advanced Forecasting Parameters provide options that are used directly by the SAS forecasting engine.

Figure 2-14.

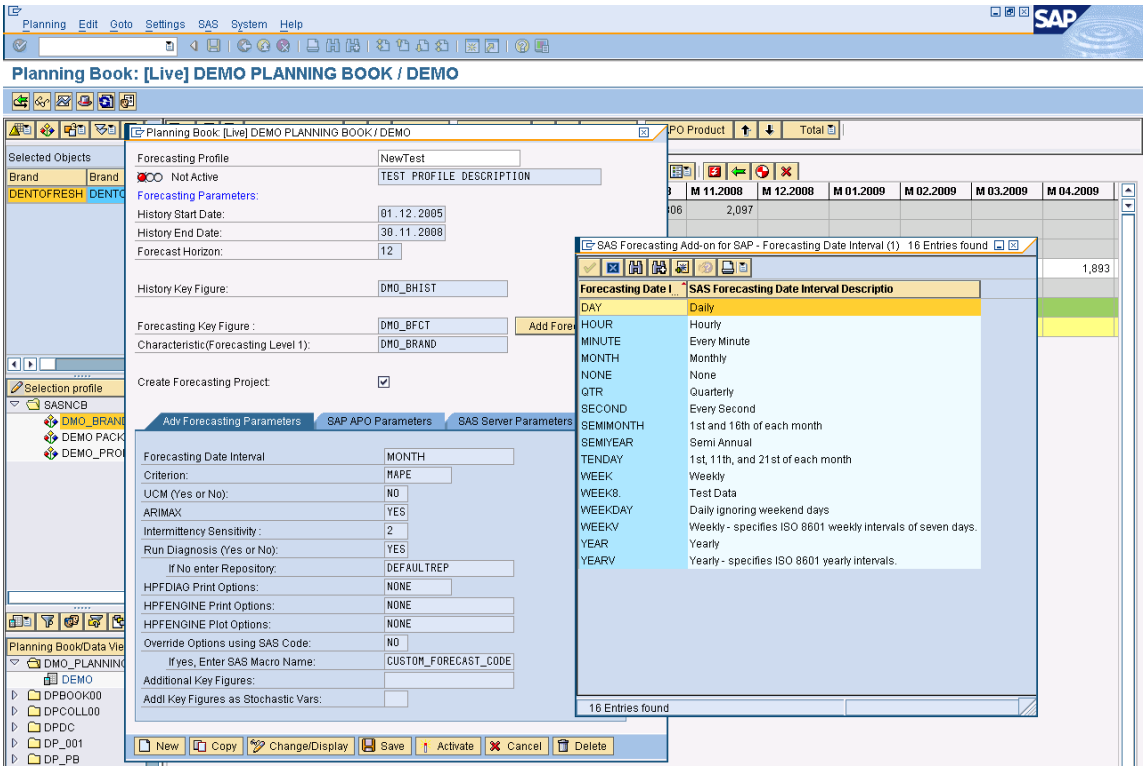


Default values are initially filled in for each of these options but may be changed by the user. The Forecast Profile displayed in Figure 2-14 is currently using the default values.

- **Forecasting Date Interval**: *(Default value **MONTH**)* specifies the frequency of the time series or forecast created. The most common intervals are presented in

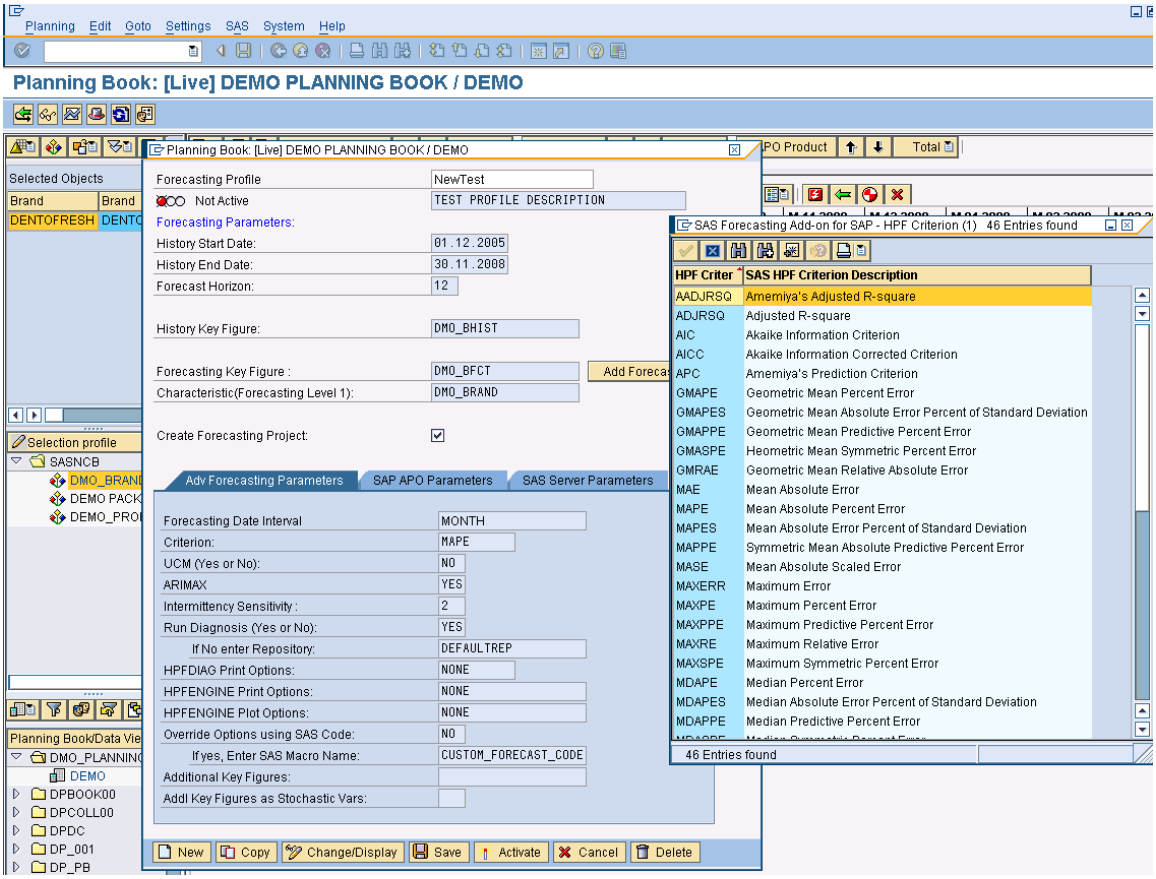
the selection window provided. These are shown in Figure 2-15. Refer to SAS/ETS User's Guide chapter on Date Interval, Formats, and Functions for a complete list of intervals that can be specified.

Figure 2-15.



- **Criterion:** *(Default value **MAPE**)* specifies the model selection criterion to pick the best model. A list of valid criterion available for selection is presented in the selection window provided. A partial list is shown in Figure 2-16. A complete list follows.

Figure 2-16.



The complete list of available statistics includes:

SSE : sum of square error

MSE : mean squared error

RMSE: root mean squared error

UMSE : unbiased mean squared error

URMSE: unbiased root mean squared error

MAXPE: maximum percent error

MINPE: minimum percent error

MPE: mean percent error

MAPE: mean absolute percent error

MDAPE: median percent error

GMAPE: geometric mean percent error

MAPES: mean absolute error percent of standard deviation

MDAPES: median absolute error percent of standard deviation

GMAPES: geometric mean absolute error percent of standard deviation

MINPPE: minimum predictive percent error

MAXPPE: maximum predictive percent error

MPPE: mean predictive percent error

MAPPE: symmetric mean absolute predictive percent error

MDAPPE: median predictive percent error

GMAPPE: geometric mean predictive percent error

MINSPE: minimum symmetric percent error

MAXSPE: maximum symmetric percent error

MSPE: mean symmetric percent error

SMAPE: symmetric mean absolute percent error

MDASPE: median symmetric percent error

GMASPE: geometric mean symmetric percent error

MINRE: minimum relative error

MAXRE: maximum relative error

MRE: mean relative error

MRAE: mean relative absolute error

MDRAE: median relative absolute error

GMRAE: geometric mean relative absolute error

MAXERR: maximum error

MINERR: minimum error

ME: mean error

MAE: mean absolute error

MASE: mean absolute scaled error

RSQUARE: R-square

ADJRSQ: adjusted R-square

AADJRSQ: Amemiya's adjusted R-square

RWRSQ: random walk R-square

AIC: Akaike information criterion

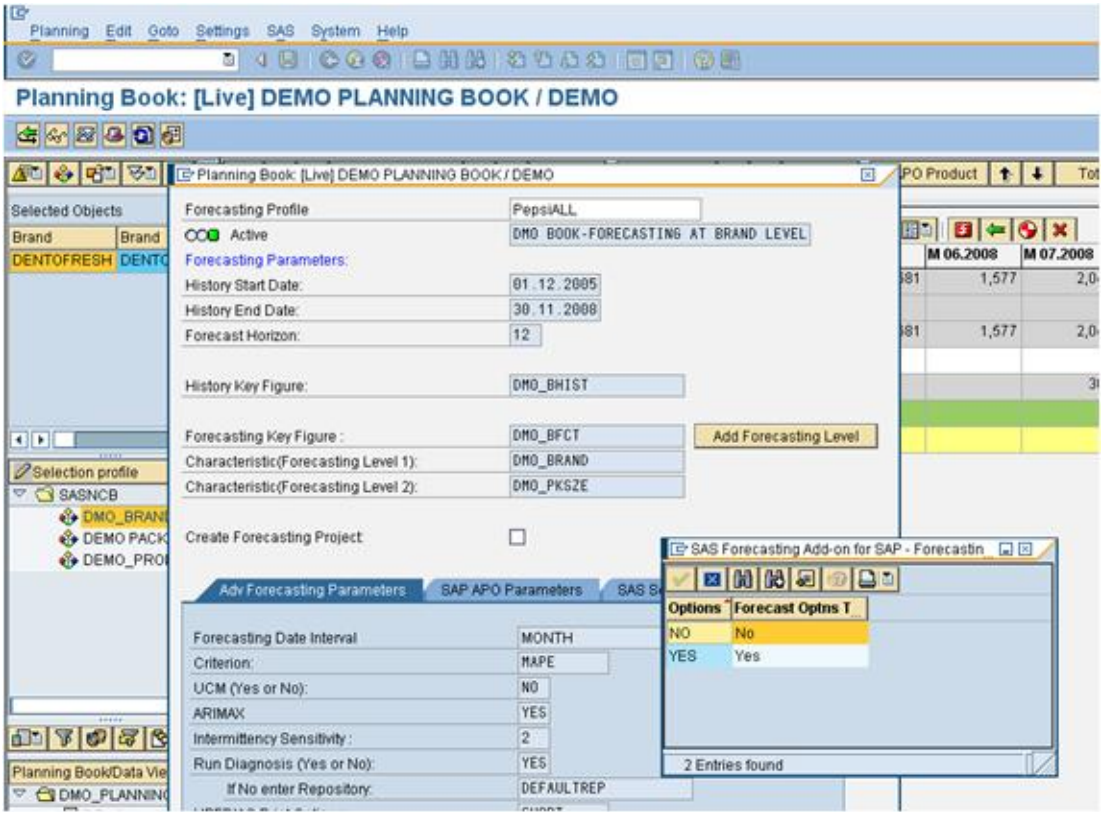
AICC: Akaike information Corrected criterion

SBC: Schwarz Bayesian information criterion

APC: Amemiya's prediction criterion

- **UCM:** *(Default value **NO**)* the Unobserved Component Model Option can be set to YES or NO (Figure 2-17) to turn on or off whether SAS considers utilizing UCM models for forecasting.

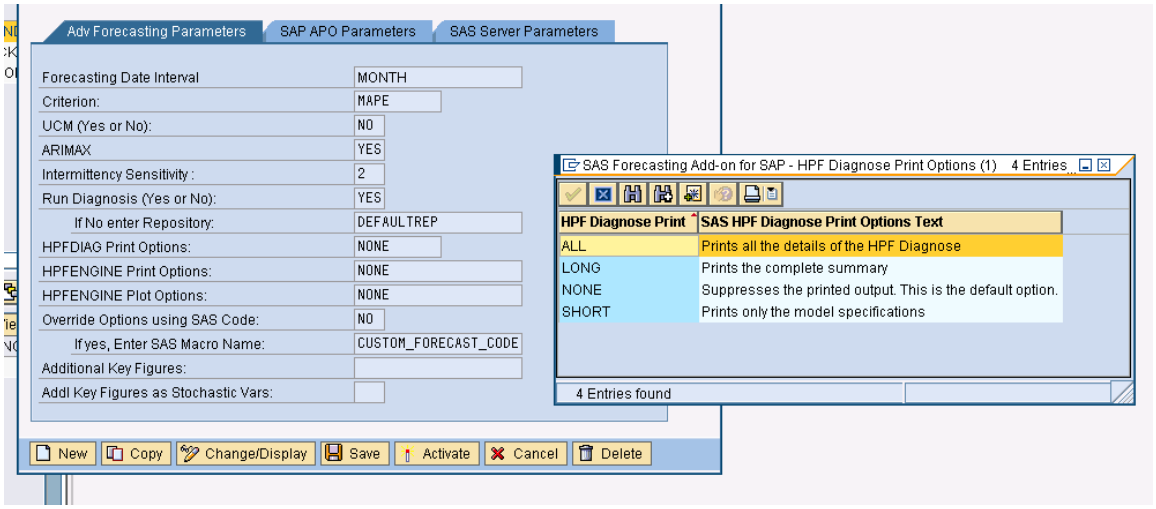
Figure 2-17.



- **ARIMAX:** *(Default **Yes**)* turns on/off whether SAS will consider utilizing ARIMAX models in generating the statistical forecast.
- **Intermittency Sensitivity:** *(Default **2**)* specifies the intermittency test threshold.
- **Run Diagnosis (Yes or No):** *(Default **Yes**)* determines whether HPFDIAGNOSIS will be used to create a candidate list of models.

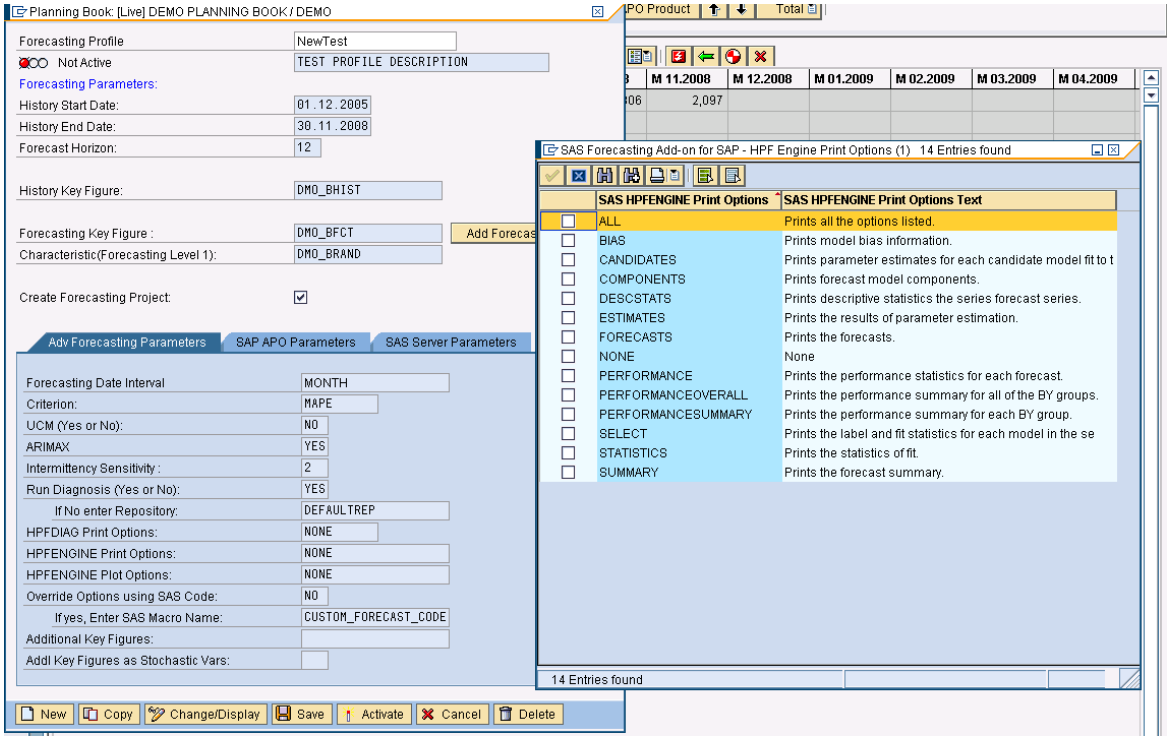
  If No enter Repository: ***(Default DEFAULTREP)*** if a list of models is preselected the name of the repository should be entered here.
- **HPFDIAG Print Options:** *(Default **NONE**)* a list of valid options is available in the selection window provided (Figure 2-18). Valid options include ALL, LONG, NONE, SHORT. Users may specify 1 of the valid options.

Figure 2-18.



- **HPFENGINE Print Options:** *(Default **NONE**)* a list of valid options is available in the selection window provided (Figure 2-19). Users may make multiple selections. Valid choices include: ALL, BIAS, CANDIDATES, COMPONENTS, DESCSTATS, ESTIMATES, FORECASTS, NONE, PERFORMANCE, PERFOMRANCOVERALL, PERFORMANCESUMMARY, SELECT, STATISTICS, SUMMARY.

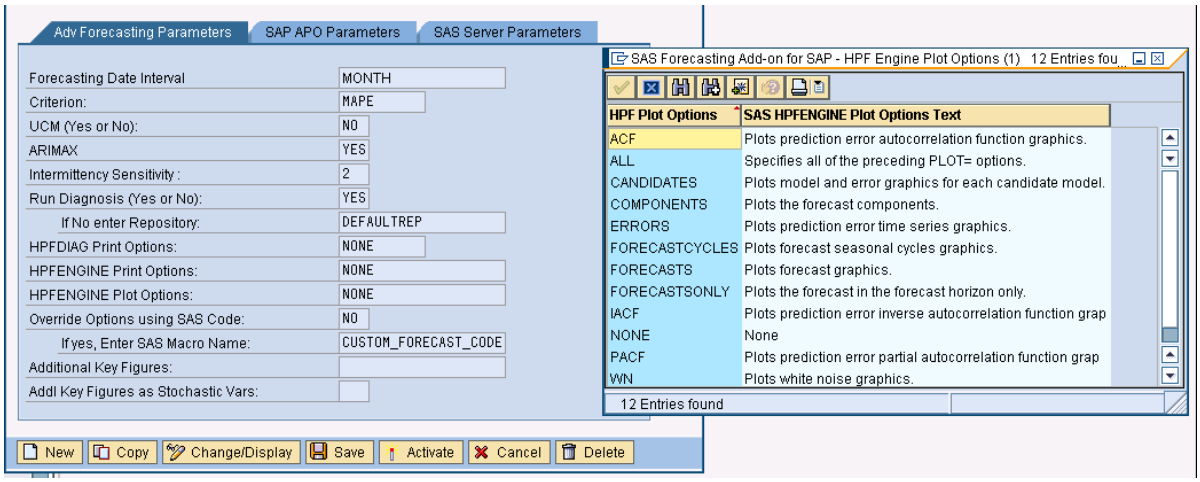
Figure 2-19.



- **HPFENGINGE Plot Options:** *(Default **NONE**)* a list of valid options is available in the selection window provided (Figure 2-20). Users may select from one of the

following options: ACF, ALL, CANDIDATES, COMPONENTS, ERRORS, FORECASTCYCLES, FORECASTS, FORECASTSONLY, IACF, NONE, PACF, WN.

Figure 2-20.

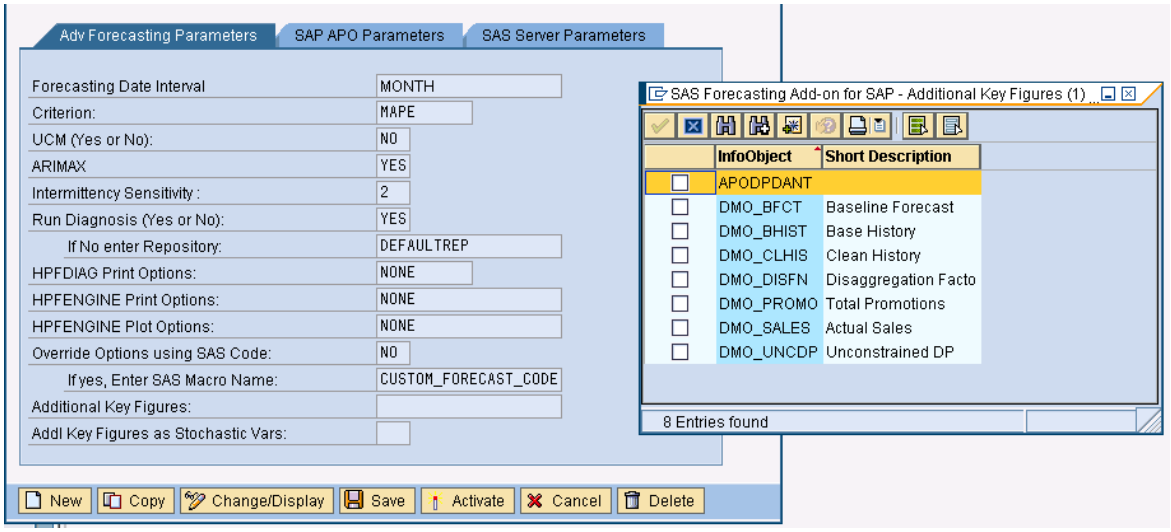


- **Override Options using SAS Code:** *(Default **NO**)*
- **IF yes, Enter SAS Macro Name:** *(Default **CUSTOM_FORECAST_CODE**)*

This option is used to create a flag in the Forecast Profile that will allow consultants to modify the SAS program to run alternate code that may extract additional data from SAP or utilize additional forecasting parameters allowed by HPFDIAG and HPFENGINE. The name of the file containing the alternate code should be added to the line asking for the SAS MACRO Name. These options can be seen in Figure 2-20.

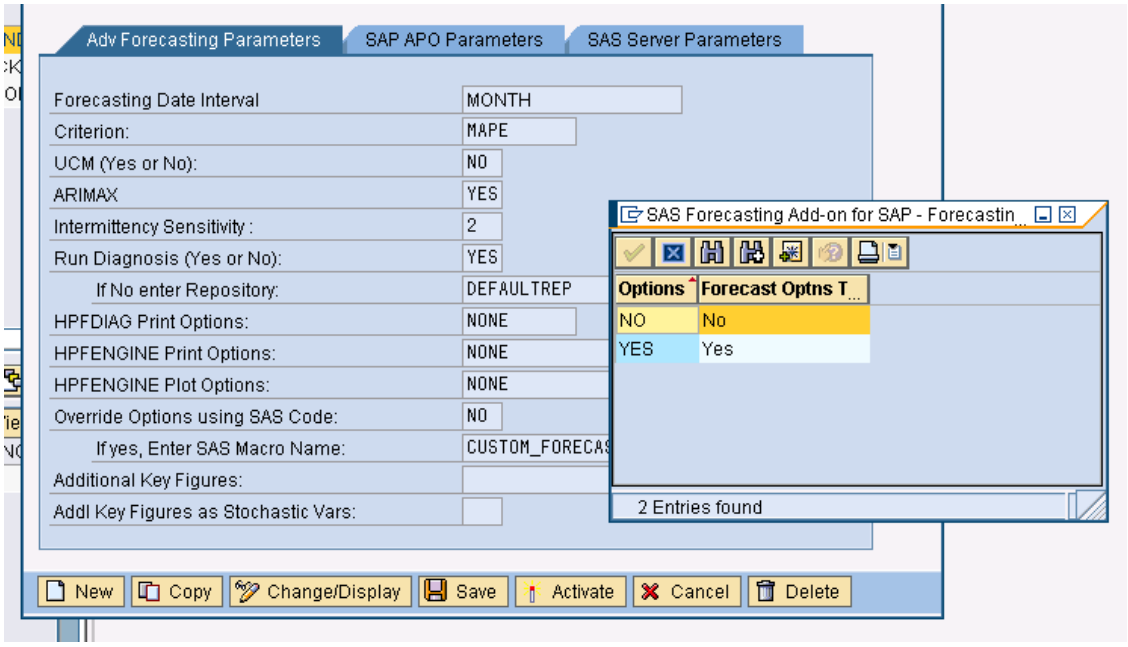
- **Additional Key Figures**: *(Optional field)* these allow the user to select additional rows from the planning book that can be extracted and used by SAS. Typically these additional key figures would be utilized as casual variables but could potentially be used for other analytical purposes. Figure 2-21 illustrates the dialog box presented with a list of available key figures that can be extracted from the planning book.

Figure 2-21.



- **Addl Key Figures as Stochastic Vars**: *(Optional field)* this option allows the users to select (Yes or No) whether the Additional Key Figures (if selected) will be evaluated by the SAS Forecasting engine as independent, stochastic variables. The dialog box presented for this parameter is illustrated in Figure 2.22.

Figure 2-22.

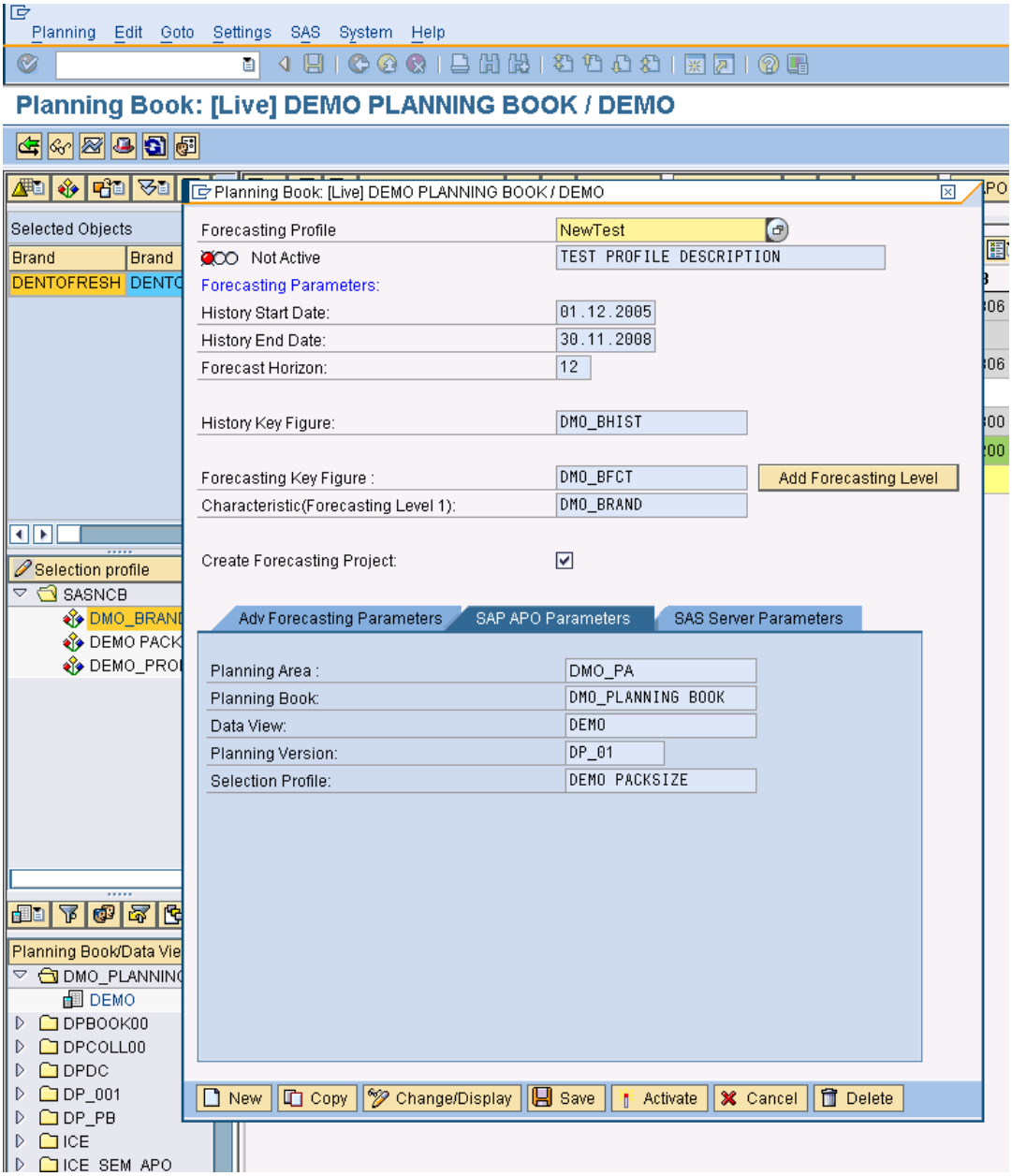


APO Planning Book Parameters

The APO Planning Book Parameters (tab) contains a description of where data will be accessed from SAP when the forecast is created (these parameters are displayed in Figure 2-23).

- **Planning Area:** (Required) is a central data structure in SAP APO Demand Planning (DP) which is created as part of the process of configuration for Demand Planning. It specifies items should as quantity in which data is planned, currency in which data is planned and aggregation levels. This option provides the name of a specific Planning Area that has already been defined in SAP APO.
- **Planning Book:** (Required) defines the content and layout of the interactive planning screen in SAP APO Demand Planning (DP). A planning book is based on a Planning Area. This option provides the name of a specific planning book that has already been defined in SAP APO.
- **Data View:** (Required) user specific views of the planning book that define columns displayed and sequence displayed in addition to the planning horizon and periods.
- **Planning Version:** (Required) Planning Area version number.
- **Selection Profile:** (Required) shows the selection IDs used by the current planner. The demand planner uses the selection profile to quickly access frequently used selections.

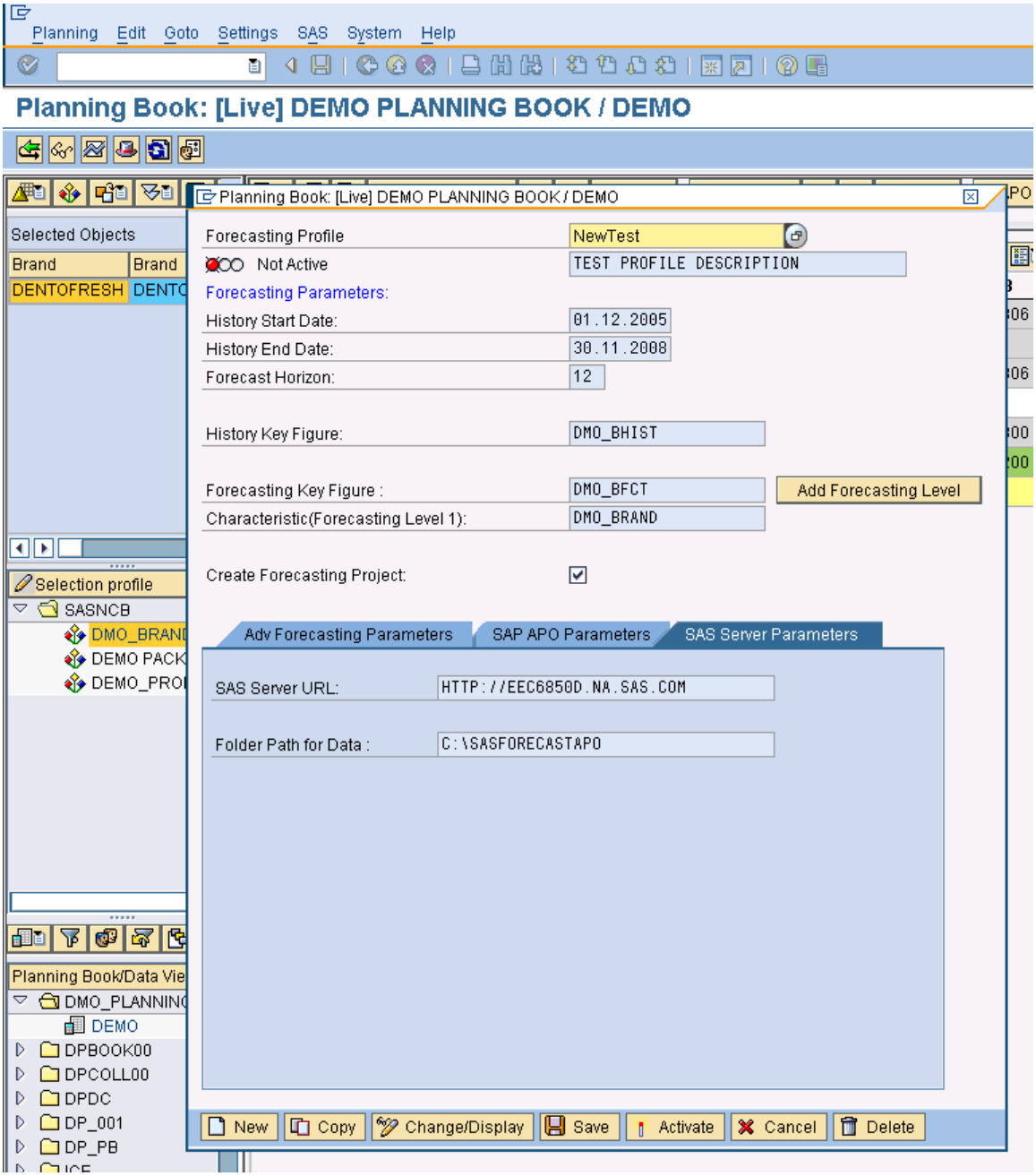
Figure 2-23.



SAS Server Options

The SAS Server option (Figure 2-24) contains the URL of the server the SAS forecast is run on. This value is also used to point to the server where the print/plot (report and graphics) output (URL) requested under Advanced Forecasting Parameters is stored and the Folder Path where the reports are physically stored.

Figure 2-24.


Planning Edit Goto Settings SAS System Help
Planning Book: [Live] DEMO PLANNING BOOK / DEMO
Planning Book: [Live] DEMO PLANNING BOOK / DEMO
Selected Objects
Brand
Brand
DENTOFRESH
Forecasting Profile
NewTest
Not Active
TEST PROFILE DESCRIPTION
Forecasting Parameters:
History Start Date:
01.12.2005
History End Date:
30.11.2008
Forecast Horizon:
12
History Key Figure:
DMO_BHIST
Forecasting Key Figure :
DMO_BFCT
Add Forecasting Level
Characteristic(Forecasting Level 1):
DMO_BRAND
Create Forecasting Project:
Selection profile
SASNCB
DMO_BRAND
DEMO PACK
DEMO_PRO
Adv Forecasting Parameters
SAP APO Parameters
SAS Server Parameters
SAS Server URL:
HTTP://EEC6850D.NA.SAS.COM
Folder Path for Data :
C:\SASFORECASTAPO
Planning Book/Data Vie
DMO_PLANNIN
DEMO
DPBOOK00
DPCOLL00
DPDC
DP_001
DP_PB
New
Copy
Change/Display
Save
Activate
Cancel
Delete

CHAPTER 3

Working with Forecast Profiles

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Create a New Forecast Profile 34
Activate a Forecast Profile 36
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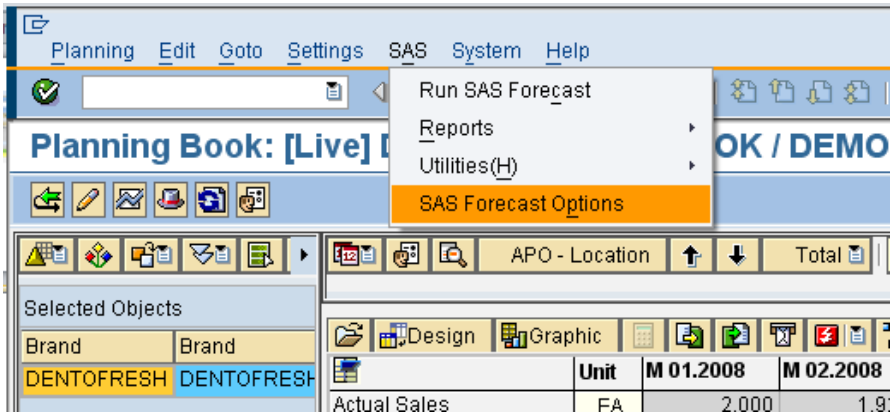
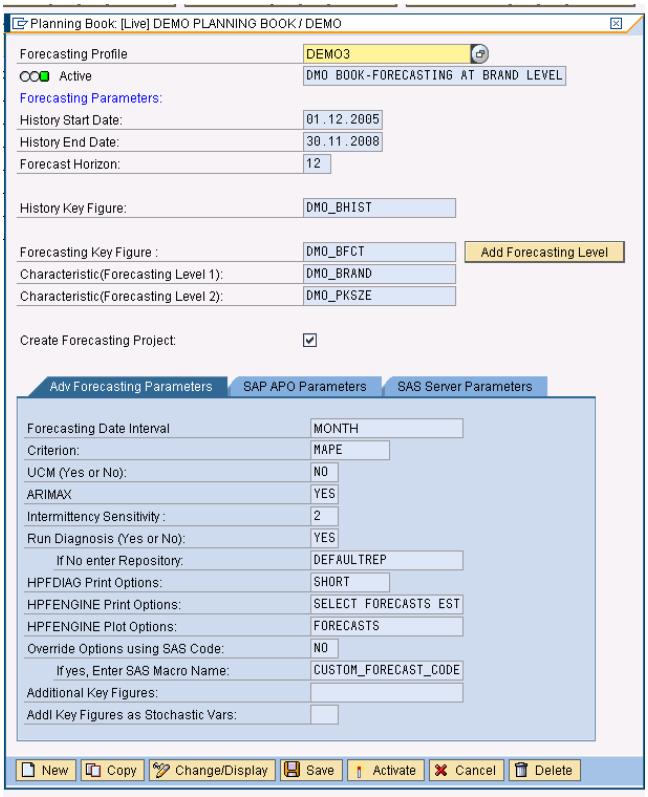
To create a new Forecasting Profile or work with an existing Forecasting Profile the user must first select “SAS Forecast Options” from the menu pull-down as shown in Figure 3-1.

Figure 3-1.



The details of the “active” profile for the user logged on are displayed, as shown in Figure 3-2.

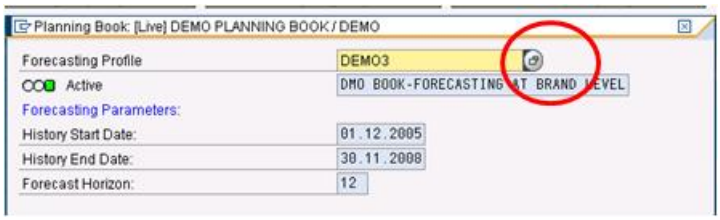
Figure 3-2.



View Existing Forecast Profiles

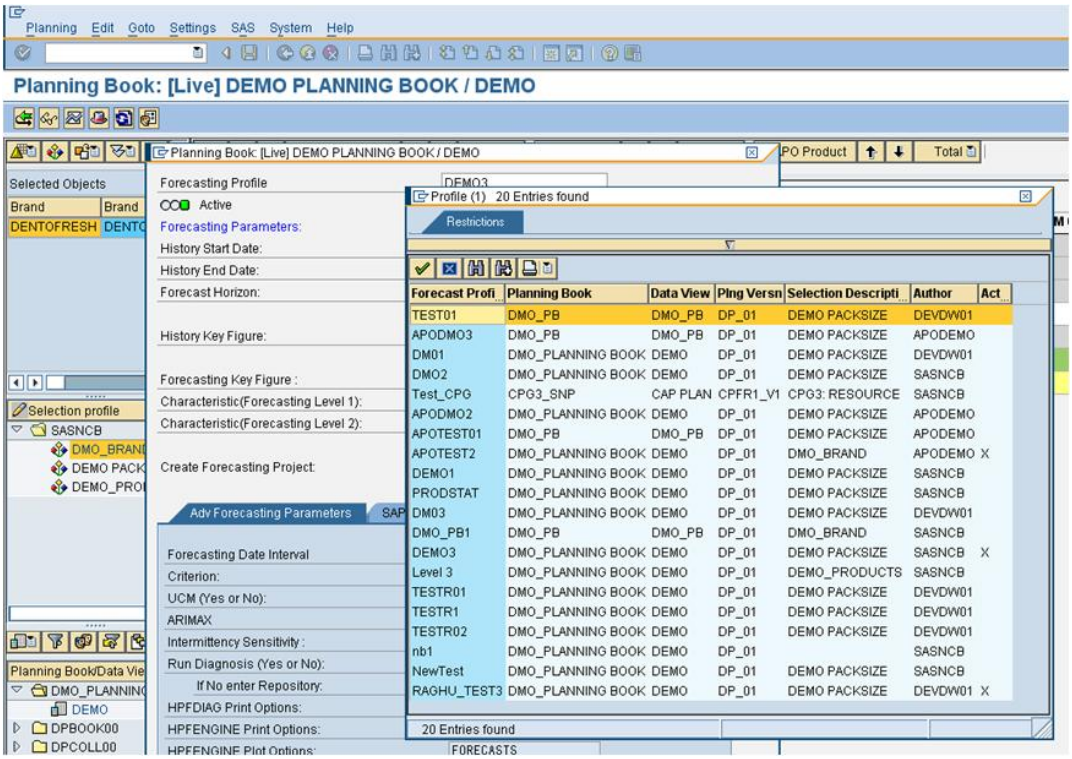
To view a list of all Forecasting Profiles already created, select the Search-Help button (F4) for the Forecasting Profile (name) field. The Search-Help button is circled in Figure 3-3 and appears after the user selects the field.

Figure 3-3.



The Search-Help button (F4) will open a window that displays a list of all the previous created profiles. An example of the Forecast Profile List window is illustrated in Figure 3-4.

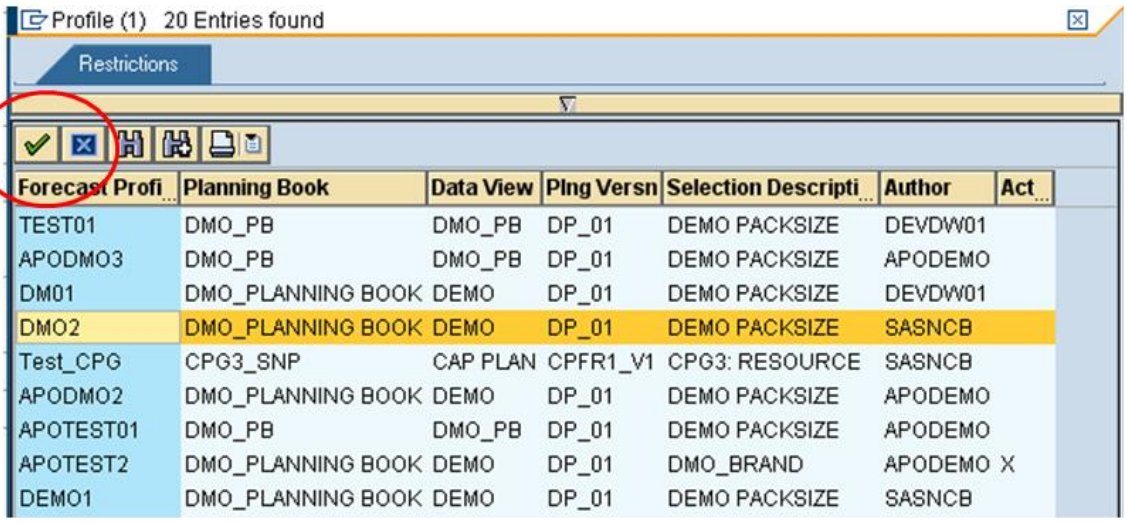
Figure 3-4.



The list displayed shows the name of the profile and key attributes associated with the profile. The Profile that is currently active has an X displayed in the last column. In Figure 3-4 we can see that the Forecast Profile called DMO1 is currently active.

To view all the attributes of a Forecast Profile, the user should select that profile from the list and then press the check button as illustrated in Figure 3-5.

Figure 3-5.



The selected profile (DMO2 in Figure 3-5) will appear in the options window as illustrated in Figure 3-6, **but the user must then press the enter key to refresh the Options screen with the values for DMO2.**

Figure 3-6.

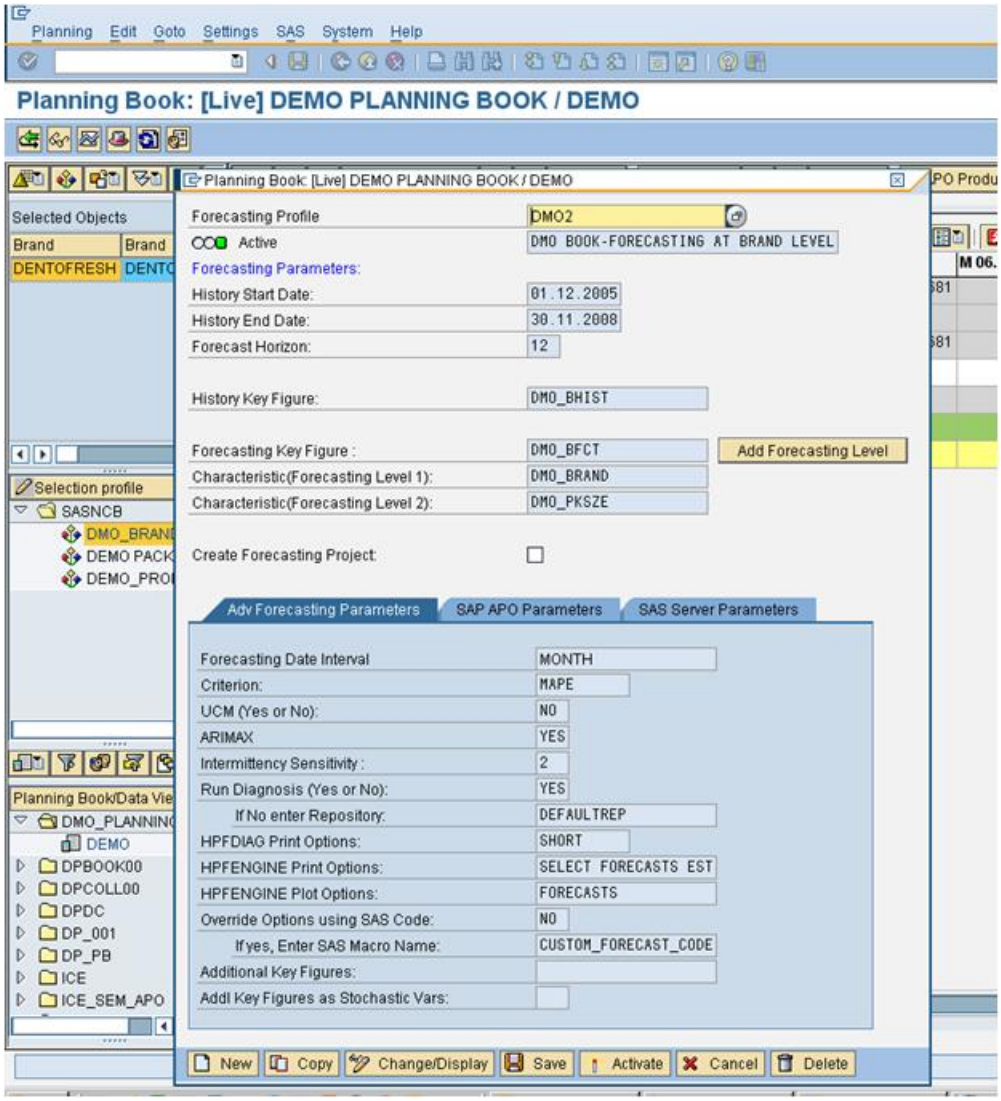
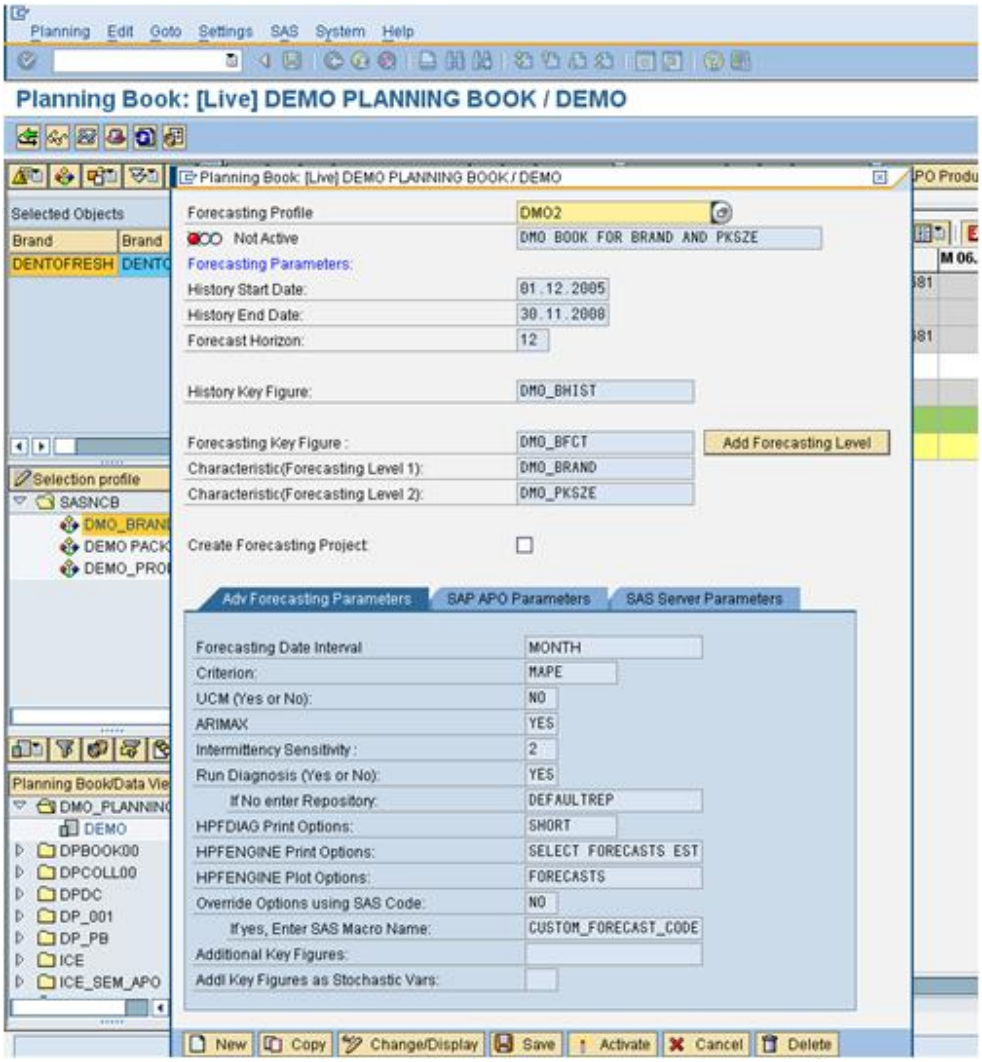


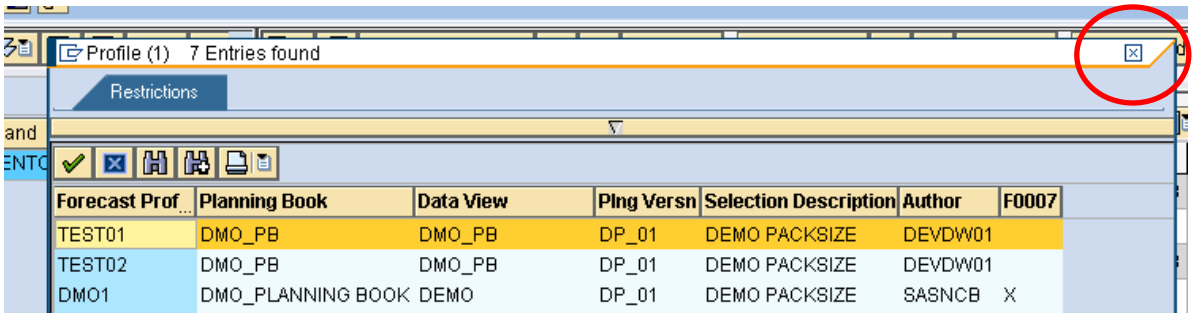
Figure 3-7 shows the refreshed screen after the enter key was pressed. Now the user can see the values saved in Forecasting Profile DMO2. Notice that when the selected profile is displayed that it has a status of Not Active. See Active the Forecast Profile section later in this chapter for information about making the selected forecast Active.

Figure 3-7.



To leave the list of Forecast Profiles without selecting a profile, press the X in the upper right hand corner of the screen (Figure 3-8).

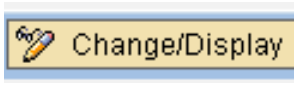
Figure 3-8.



Change/Display an Existing Forecast Profile

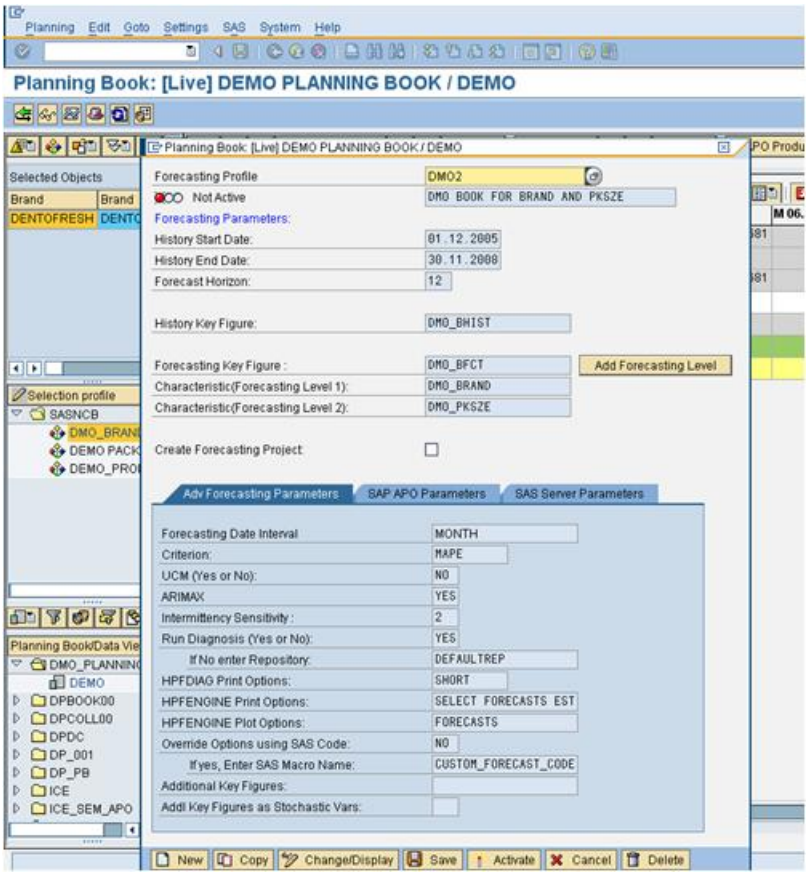
The Change/Display button (Figure 3-9) toggles the currently displayed profile between edit (change) and display mode.

Figure 3-9.



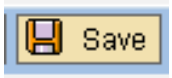
When in “Change” mode the fields are no longer grayed out and the values can be changed (Figure 3-10).

Figure 3-10.



Once the changes have been made the user must press the save button (Figure 3-11) to keep the changes made to the Forecast Profile.

Figure 3-11.



Copy a Forecast Profile

A user may choose to copy a profile. All the options specified in the original profile are copied into a profile under a new name. To copy a profile, the user must press the copy button as illustrated in Figure 3-12.

Figure 3-12

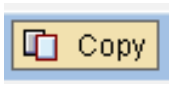
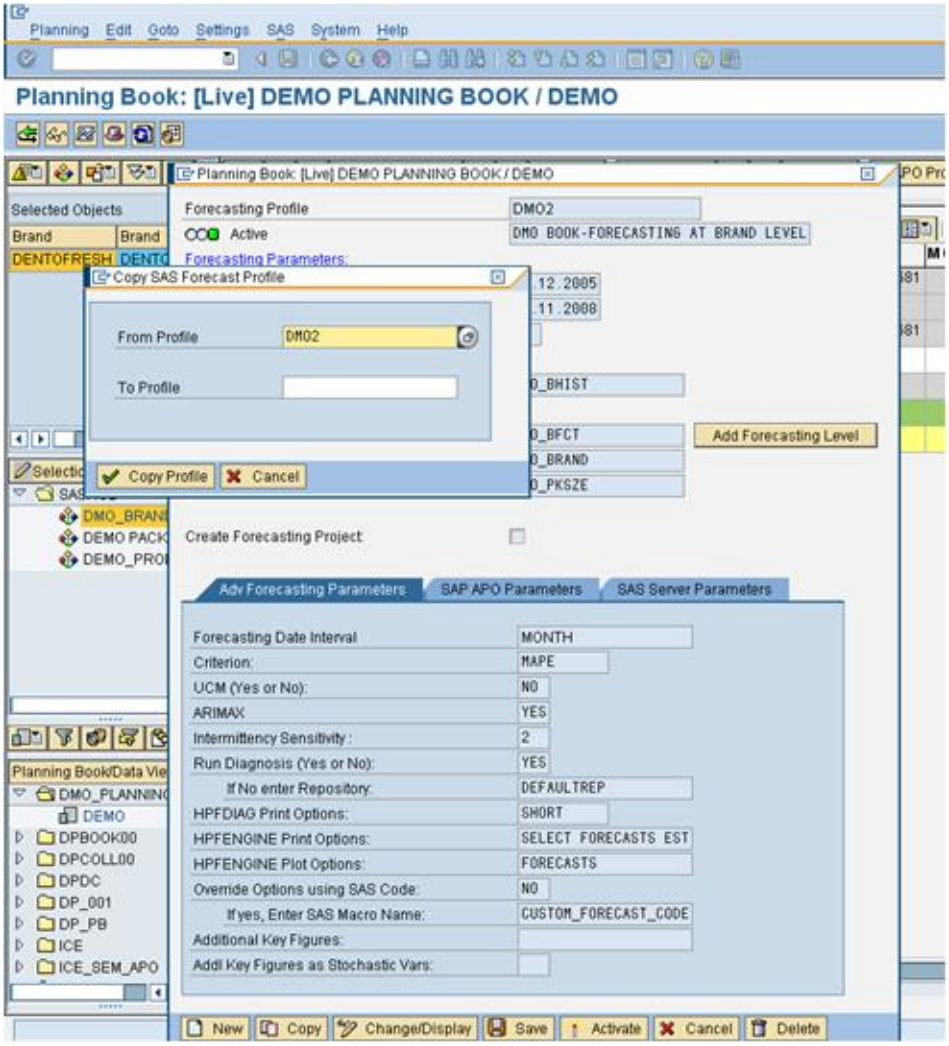


Figure 3-13.



The user is presented with a window (Figure 3-13) to enter or select the “From Profile” and to key in the name of the “To Profile” (a new profile name).

Figure 3-14.

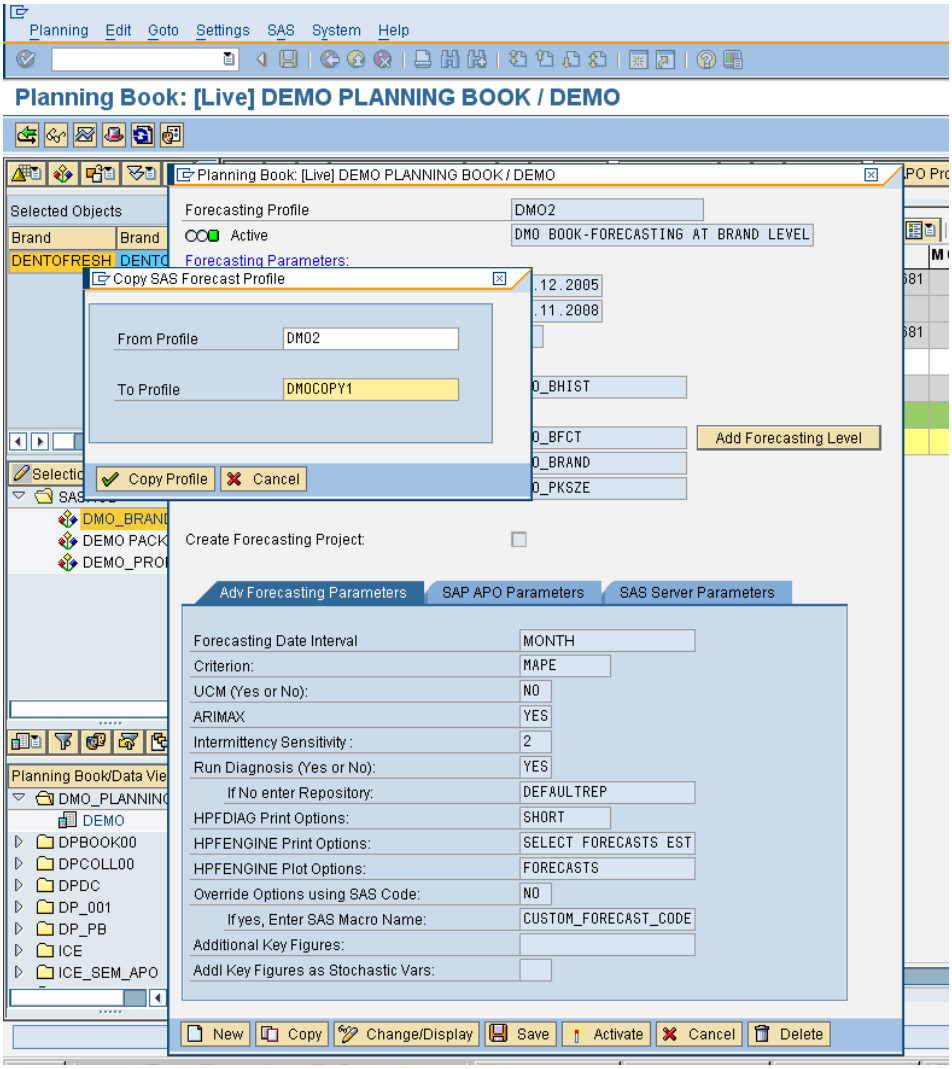
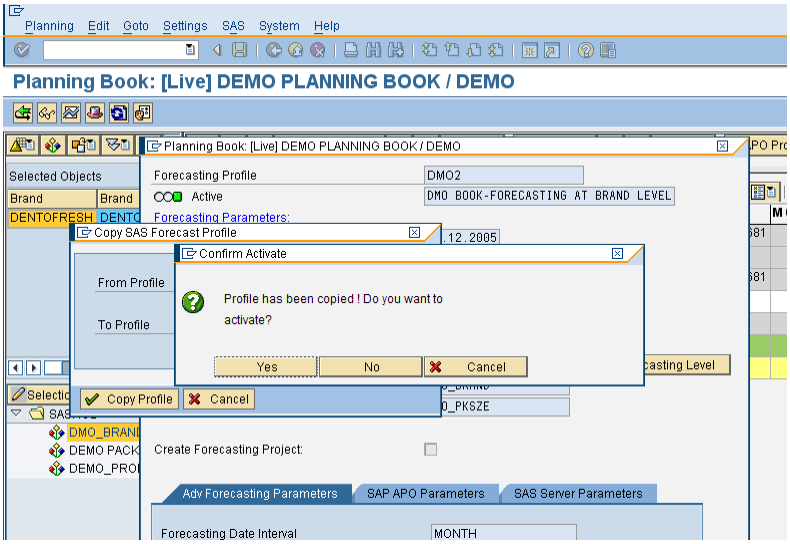


Figure 3-14 shows the “To Profile” name filled in with the value DEMOCOPY1.

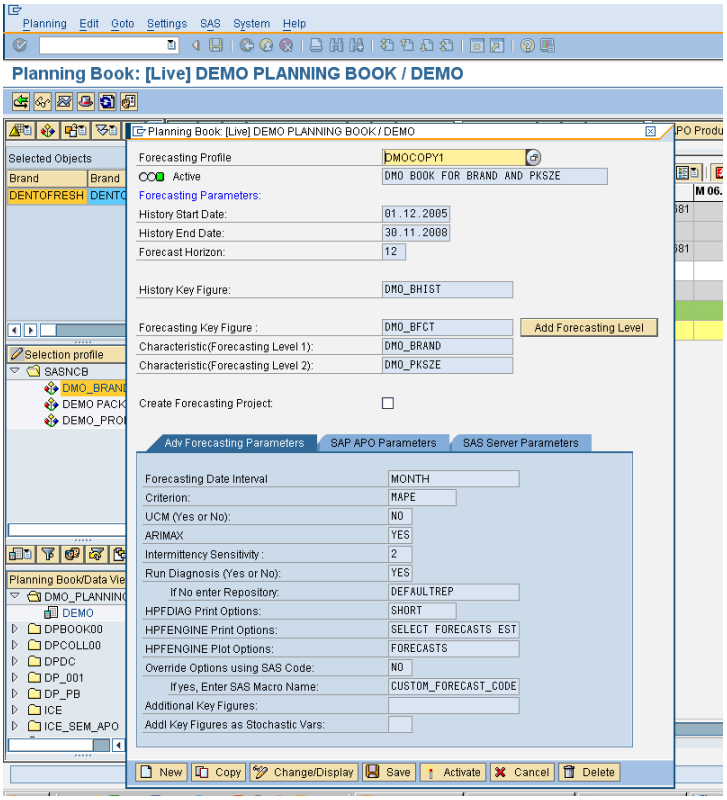
When the user finishes selecting or entering values, the user presses the Copy Profile button. The user is then presented with a screen that confirms the Profile has been copied (Figure 3-15) and asks if the user would like make this copied profile “active”. The user can press either the Yes, No or Cancel buttons.

Figure 3-15.



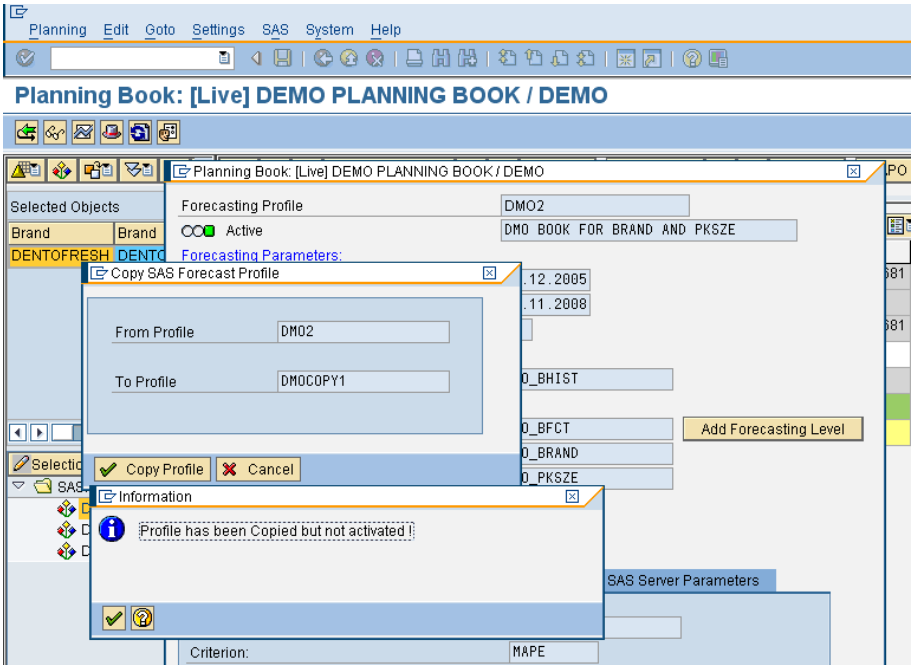
The newly copied profile will now be displayed in the option window. If the user asks for the newly copied profile to be active, it will show as “Active” as illustrated in Figure 3-16.

Figure 3-16.



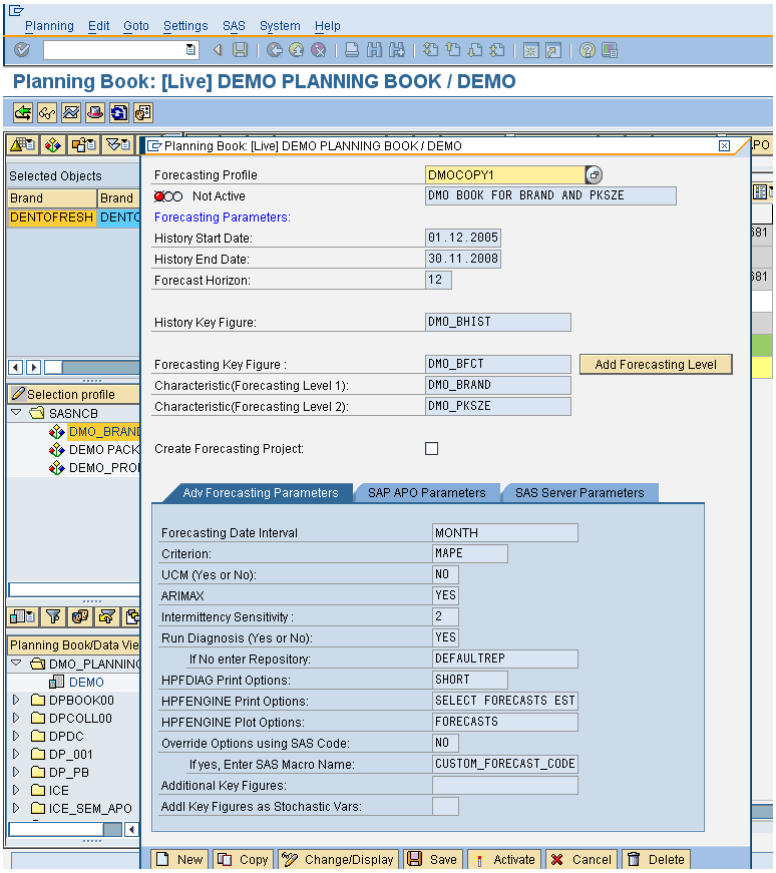
If the user does not ask for the newly copied profile to be active, the user will be informed that the profile has been copied but not activated as shown in Figure 3-17.

Figure 3-17.



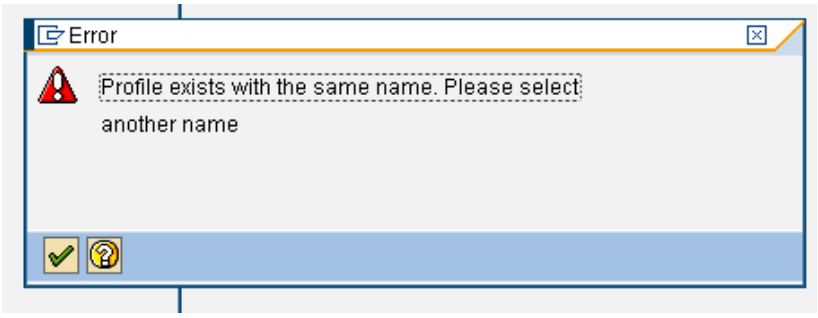
Also, it will show as “Not active” when viewing the profile details as shown in Figure 3-18.

Figure 3-18.



If a user attempts to create a copy using a Profile Name that already exists, an error message will be displayed (Figure 3-19.). The user should press the check button to return to the copy screen and enter a unique Forecast Profile name.

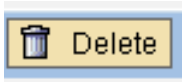
Figure 3-19.



Delete a Forecast Profile

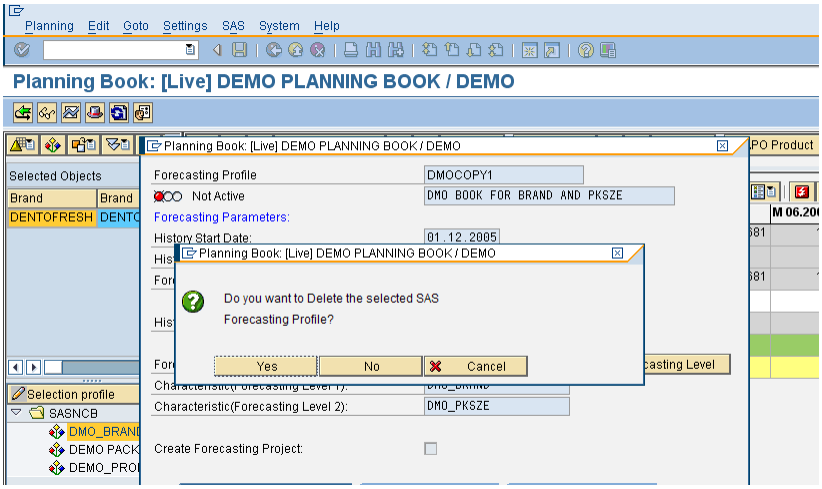
The profile currently displayed can be deleted by pressing the delete button (Figure 3-20).

Figure 3-20



Once the delete button is selected the user is prompted to confirm the delete as illustrated in Figure 3-21.

Figure 3-21.



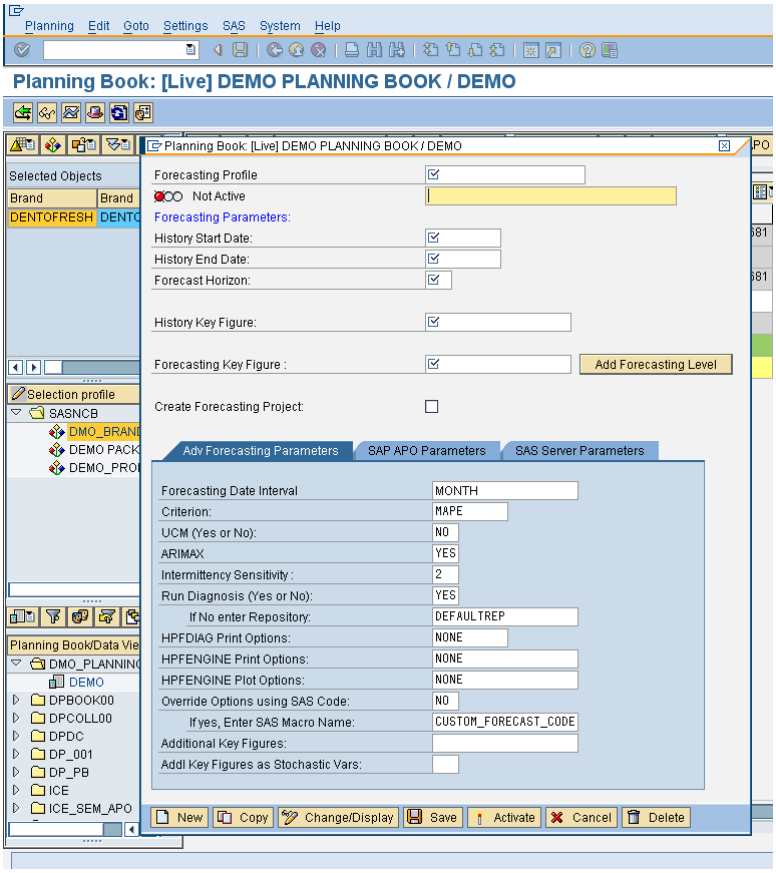
Create a New Forecast Profile

To create a “new” Forecast Profile, select the New button (from the bottom of the Forecast Profile screen) which is shown in Figure 3-22.

Figure 3-22.

The user is presented with an expanded Forecasting Profile screen with only the “default” values filled in as illustrated in Figure 3-23.

Figure 3-23.

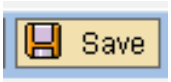


The users must enter a Forecasting Profile name for the new profile and provide a valid value for any parameter option that contains a (check mark) as shown in Figure 3-24.

Figure 3-24.

Once all the values have been entered or selected (see chapter 2 for a description of all the various profile options and values), the user must press the “save” button (Figure 3-25) to store the new profile. Saving a new profile does not automatically make this profile active. See the section for Activate a Forecast Profile for more information.

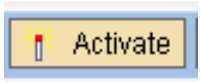
Figure 3-25.



Activate a Forecast Profile

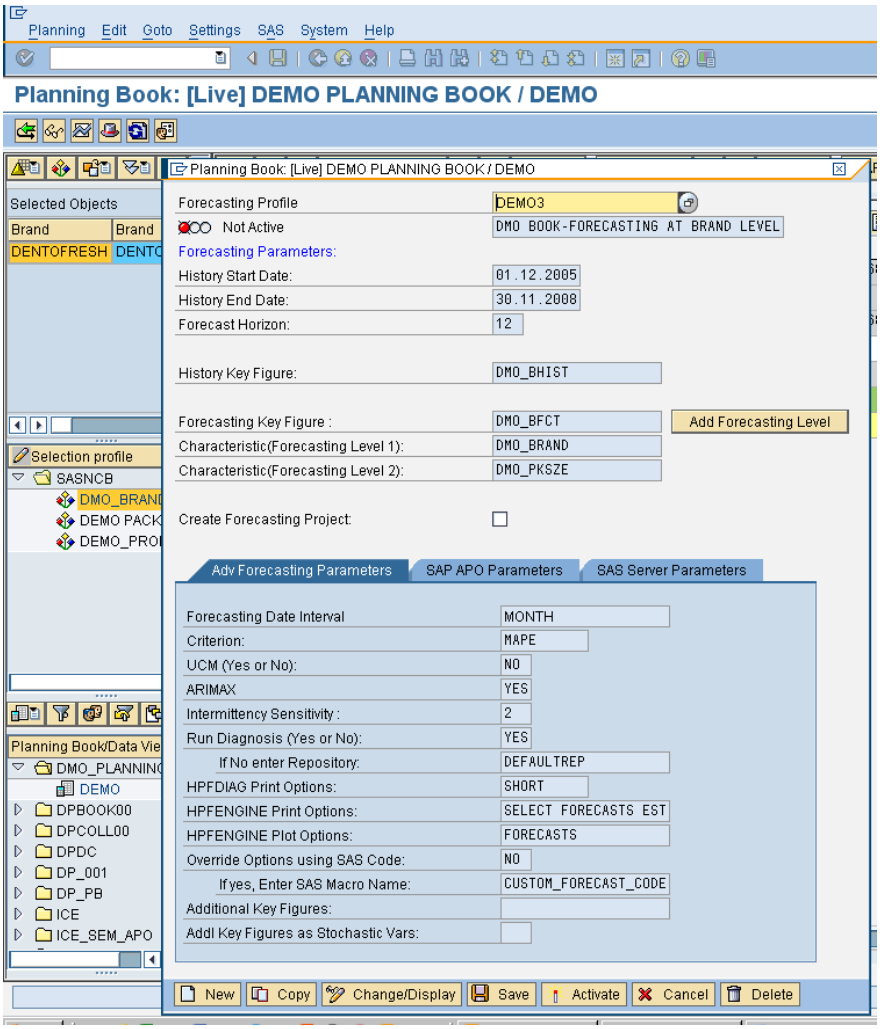
Any Forecast Profile can be made the “active” profile using the Activate button illustrated in Figure 3-26.

Figure 3-26.



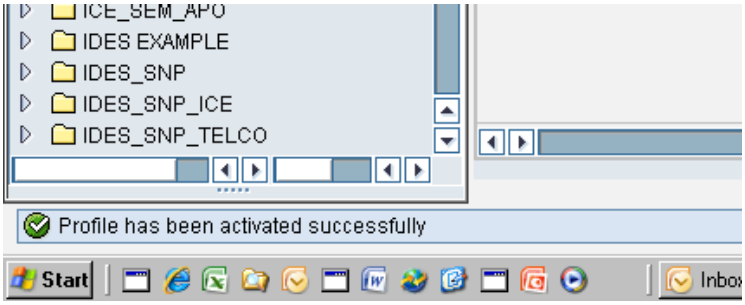
The user should first display the profile to be activated in the option window. This could be by selecting in from the current list of available profiles (see View Existing Forecast Profiles for more information). In Figure 3-27, the Forecasting Profile DEMO3 is displayed but Not Active.

Figure 3-27.



When the user presses the Activate button, the profile is immediately made Active. The option window is closed, but the user will see a message confirming the activation at the bottom of the SAP APO Demand Planning (DP) screen as illustrated in Figure 3-28.

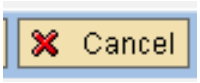
Figure 3-28.



Cancel a Forecast Profile Session

The cancel button illustrated in Figure 3-29 immediately closes the Options window.

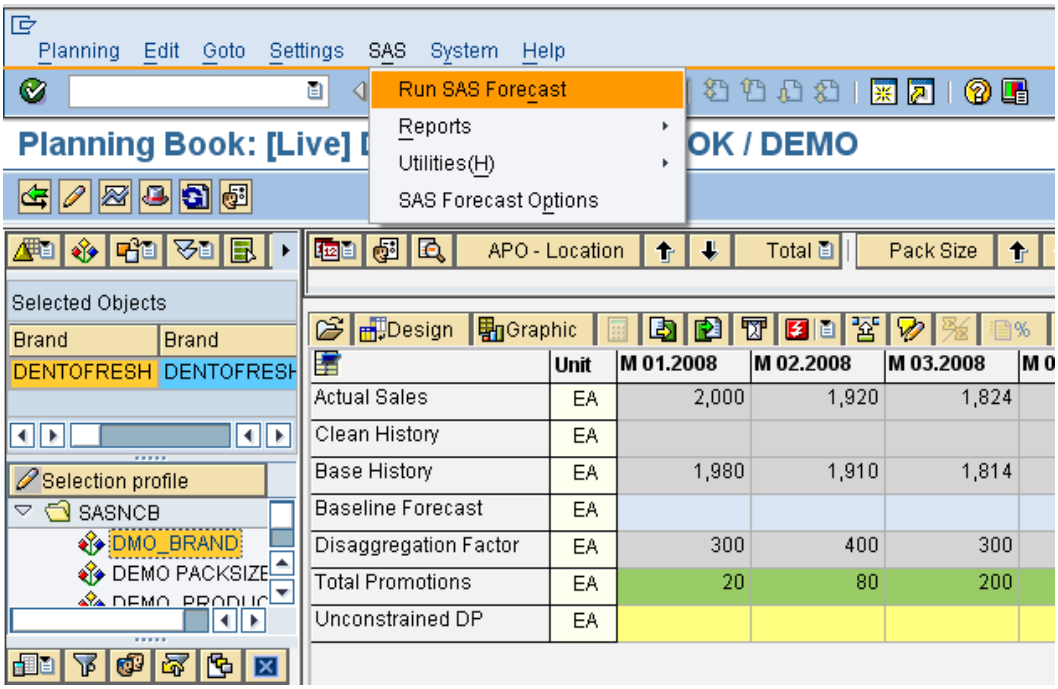
Figure 3-29.



CHAPTER 4 Run Forecast

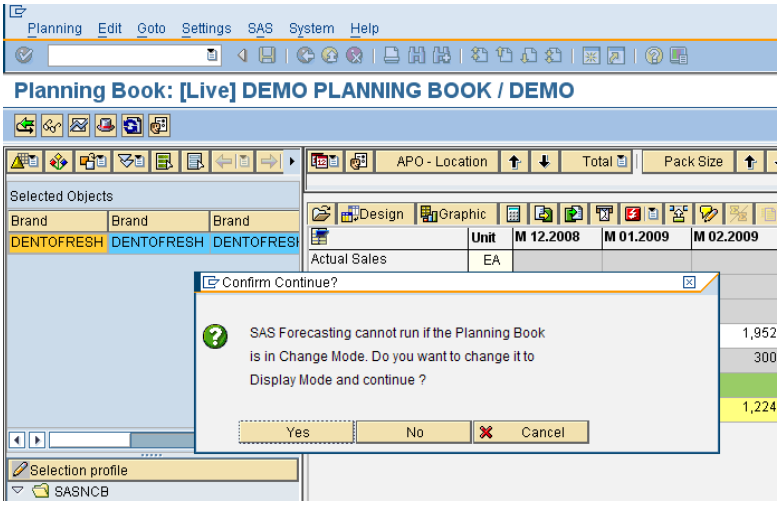
To run a forecast with SAS from within SAP APO Demand Planning (DP), select "Run Forecast" from the menu pull down as illustrated in Figure 4-1.

Figure 4-1.



If the planning book is in "Change Mode", the underlining database (SAP liveCache) will be locked and not allow the new forecast to be written from SAS to SAP. The SAS "add-in" informs the user if the Planning Book is in "Change Mode" as illustrated in Figure 4-2 and allows the user to toggle it to "Display Mode" by selecting "Yes".

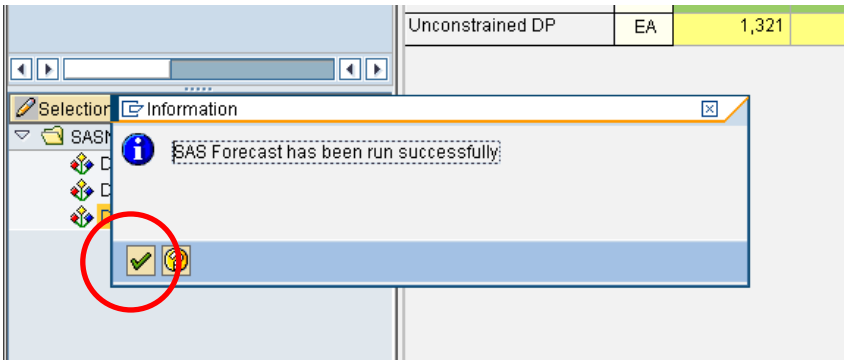
Figure 4-2.



Selecting No or Cancel will cancel the request to run a forecast with SAS.

Once the forecast has been completed, the user will receive an information window informing them the SAS Forecast has been run successfully. When the user presses the check button as displayed in Figure 4-3., the forecast results will be displayed in the Planning Book.

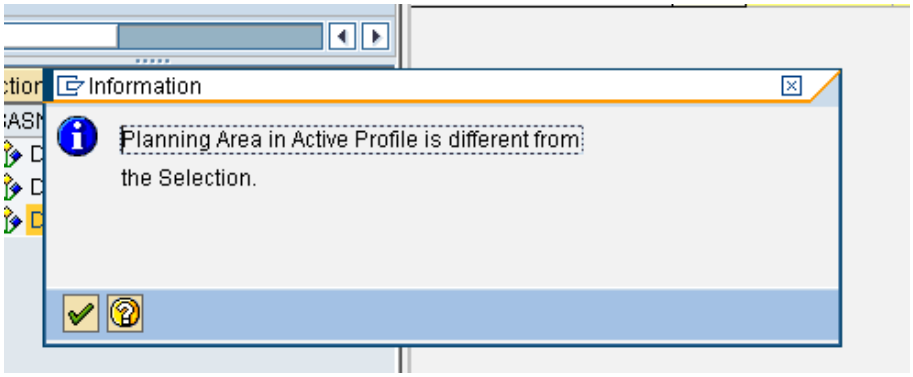
Figure 4-3.



Limitations:

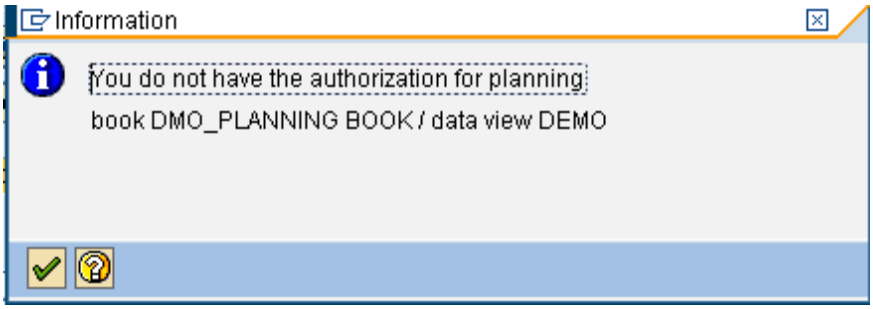
1. A user may only create a forecast against a planning book that is displayed. If the active forecast profile is not assigned to the planning book displayed the user will receive the information window in Figure 4-4 and the request to create the forecast will be canceled.

Figure 4-4.



2 Users also may not run a forecast against a planning book they are unauthorized to access. If the user attempts to run a forecast against a planning book they are unauthorized for they will receive the message in Figure 4-5. For further details on the authorization, please refer to Appendix 2.

Figure 4-5.



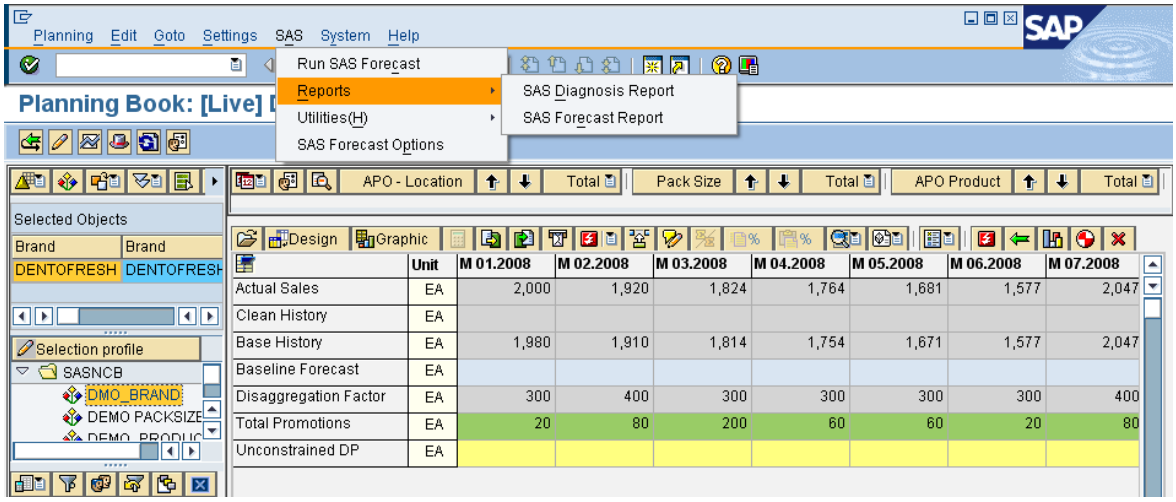
CHAPTER 5

Reports

Diagnosis and Forecast Reports *43*

The add-in menu provides access to 3 types of reports as illustrated in Figure 5-1.

Figure 5-1.



Diagnosis and Forecast Reports

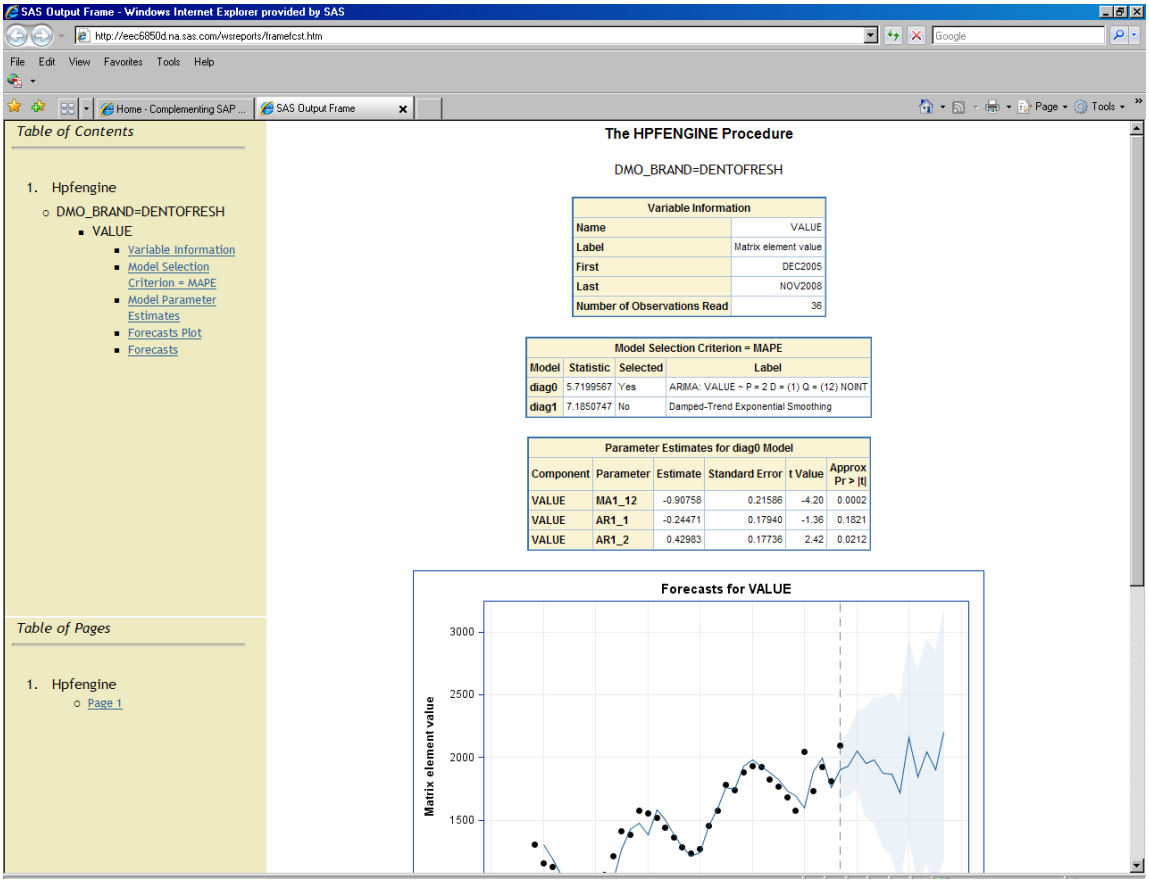
The Diagnosis and Forecast reports were created when the last forecast was created (with Run SAS Forecast). The type of report generated was determined by the options selected in the Advanced Forecasting Parameters. See Advanced Forecasting Parameters in Chapter 2 for more information about:

- HPFDIAG PRINT OPTIONS
- HPFENGINE PRINT OPTIONS
- HPRENGINE PLOT OPTIONS

The options selected for HPFDIAG PRINT will appear when the Diagnosis menu option is selected. The options for HPFENGINE PRINT and PLOT will appear when the Forecast menu option is selected.

The Diagnosis and Forecast reports will appear in separate windows. An example of the Forecast Reports are illustrated in Figure 5-2.

Figure 5-2.



The Diagnosis and Forecast report screens provide links under Table of Contents and Table of Pages (on the left) that allow the user to quickly navigate to a particular item. Table of Contents links will navigate to a particular report or chart for a specific time series item. Table of Pages will navigate the user to data about a specific item that was forecasted.

CHAPTER 6

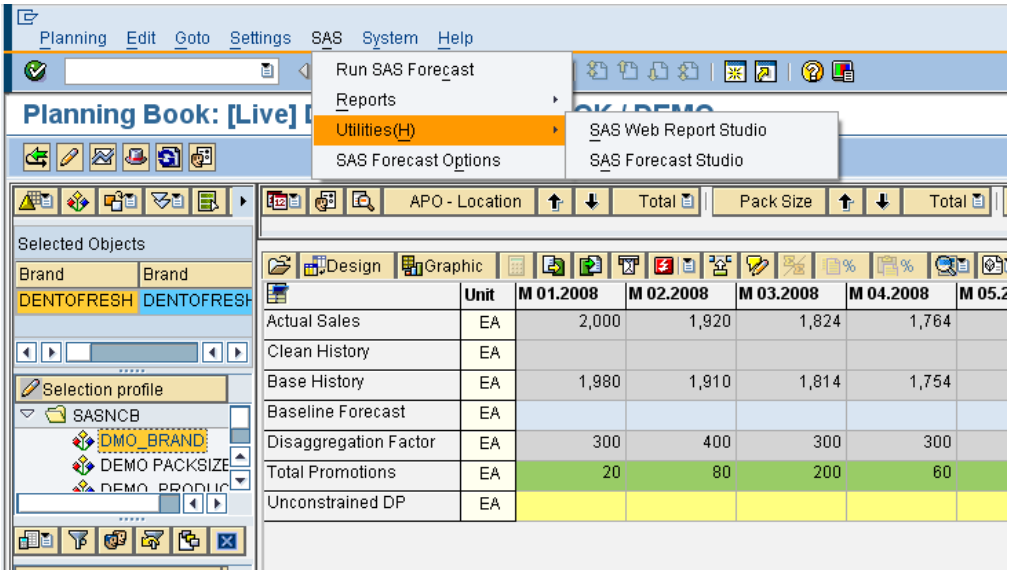
Utilities

Features available for SAS Forecast Studio *45*
FS_Read_from APO *47*
FS_Write_to_APOliveCache *48*

The Utilities menu items (shown in Figure 6-1) allows users to launch in a separate window either of the following:

- SAS Web Report Studio
- SAS Forecast Studio

Figure 6-1



Users need a valid SAS userid and password to logon to these SAS user interfaces. These applications will be opened in a separate window.

Features available for SAS Forecast Studio

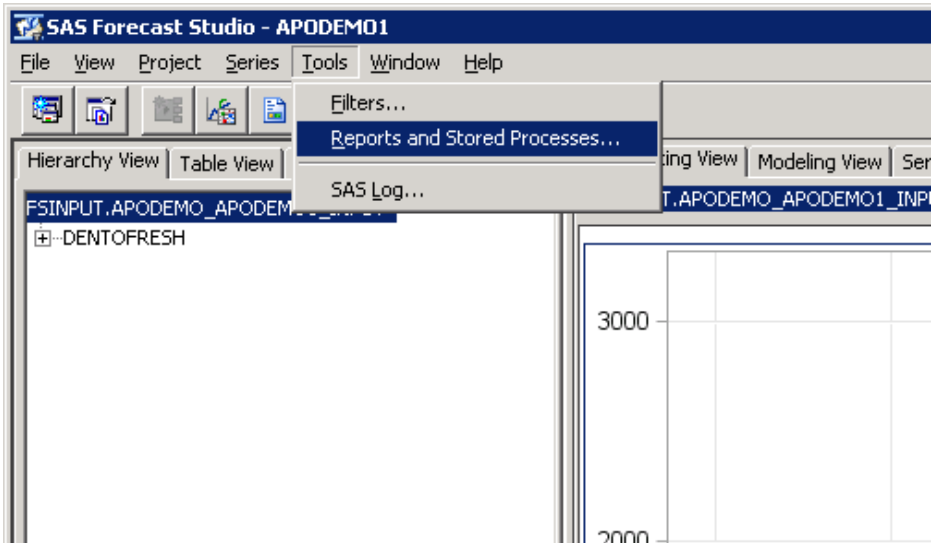
Two stored processes are provided for use inside of SAS Forecast Studio:

- FS_Read_from_APO: allows the user to select a SAS Forecast Profile to define data to be extracted from SAP APO to generate a Forecast Studio project (the project will be created with the same name as the SAS Forecast Profile).
- FS_Write to APOLiveCache: allows the user to write results from a SAS Forecast Studio project back to SAP APO liveCache utilizing the parameters specified in a SAS Forecast Profile.

Before attempting to utilize the stored processes from SAS Forecast Studio, check with your SAS administrator to validate the stored processes were installed. The default location for accessing the stored processes is illustrated below.

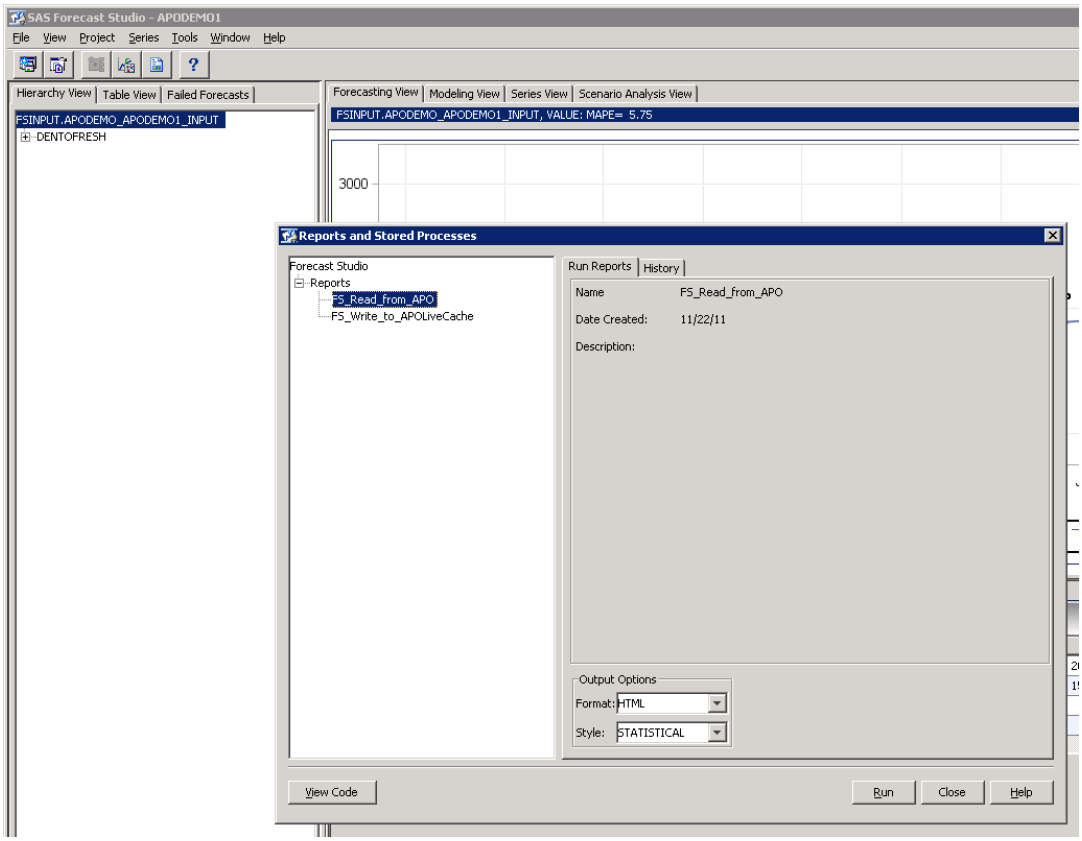
From within SAS Forecast Studio, select "Tools" from the menu bar, then "Reports and Stored Processes…" as shown in Figure 6-2.

Figure 6-2.



The user will be presented with a screen similar to the one shown in Figure 6-3 with available stored process.

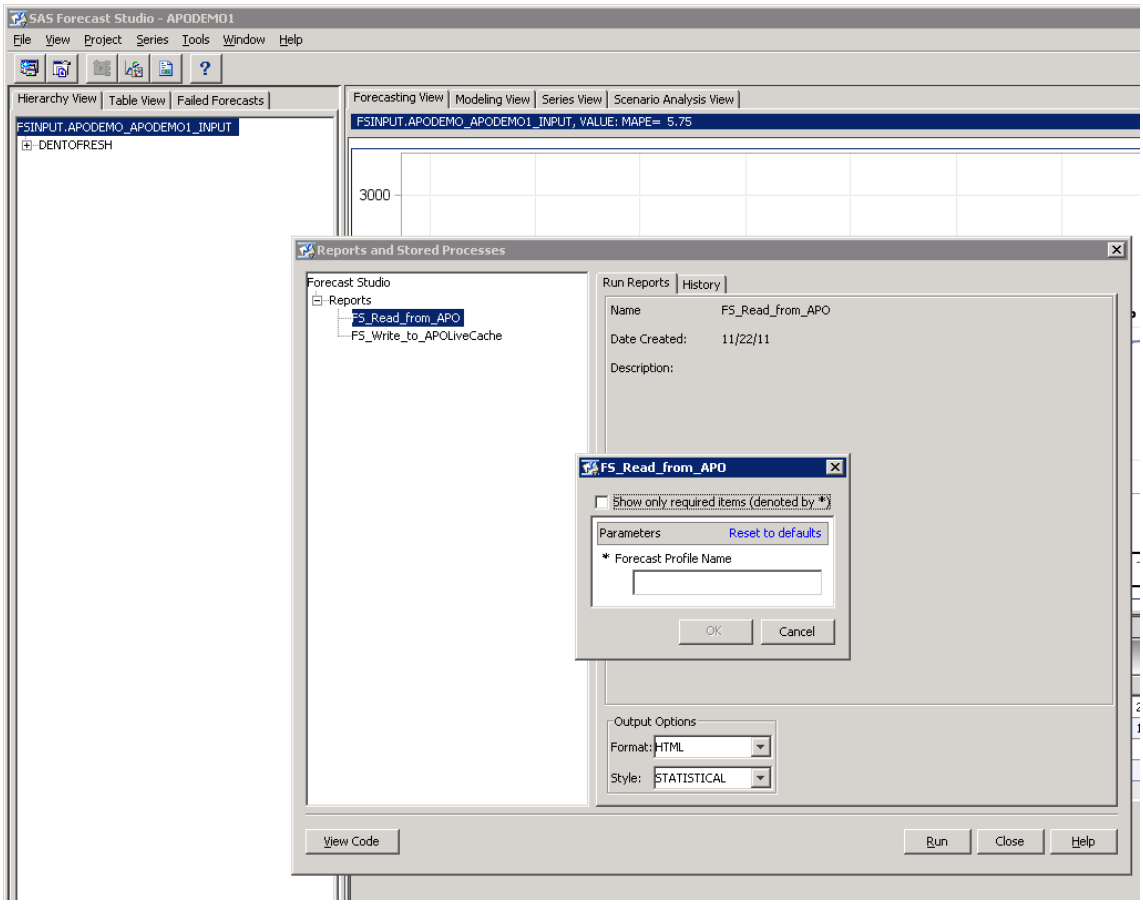
Figure 6-3



FS_Read_from APO

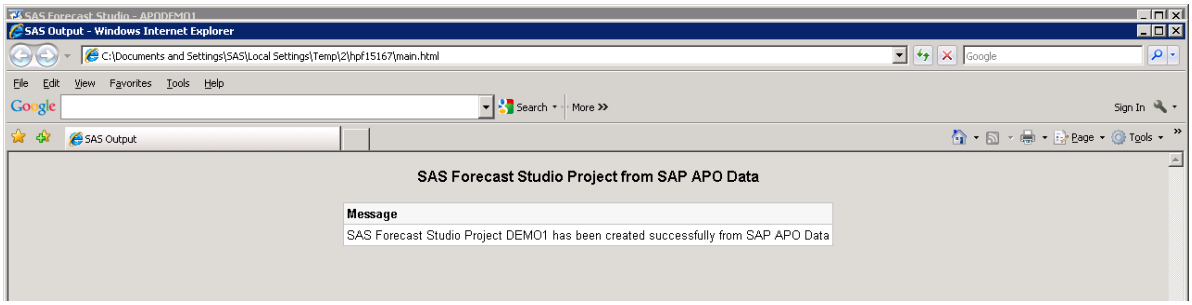
When FS_Read_from_APO is selected and the Run button is pressed, the user is prompted to provide a valid SAS Forecast Profile (as shown in Figure 6-4).

Figure 6-4



After entering a valid profile name, press OK button. When the data has been extracted from SAP APO and the project created, the user will receive a message that the project was successfully created (as shown in Figure 6-5). The user can now open the newly created project in SAS Forecast Studio.

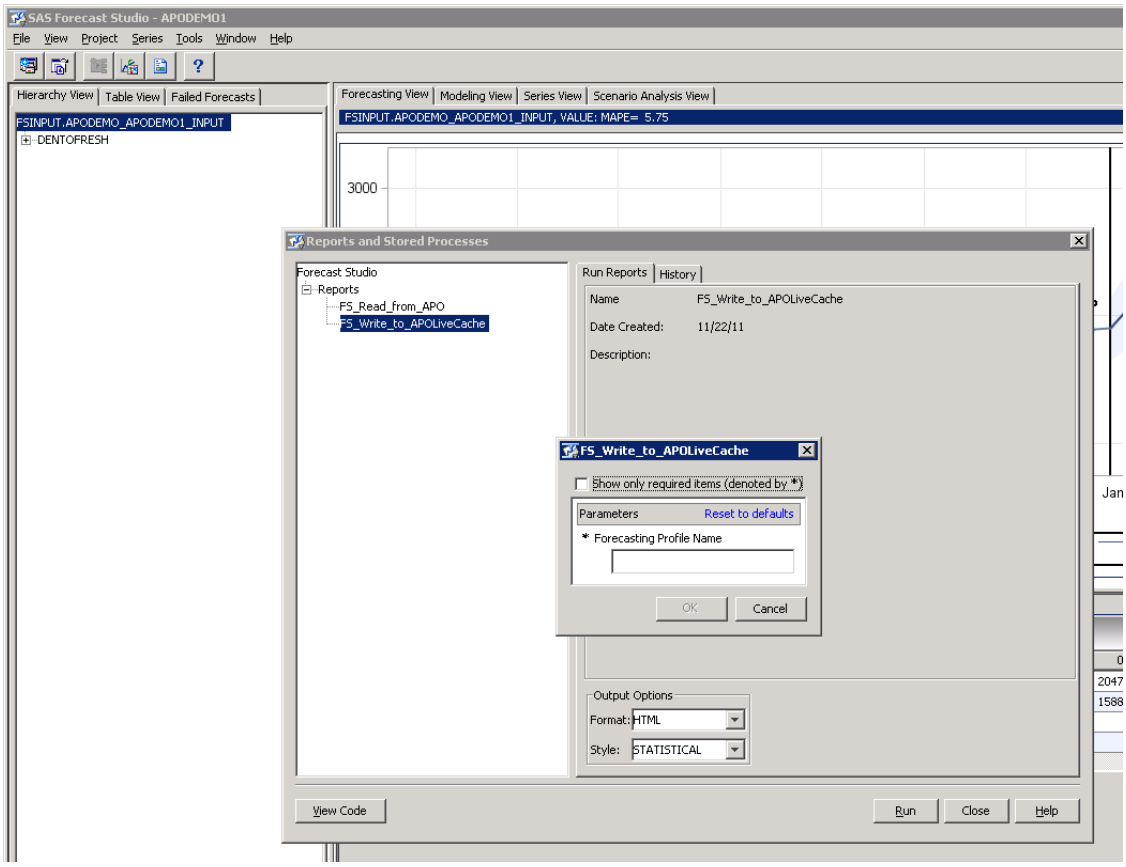
Figure 6-5



FS_Write_to_APOliveCache

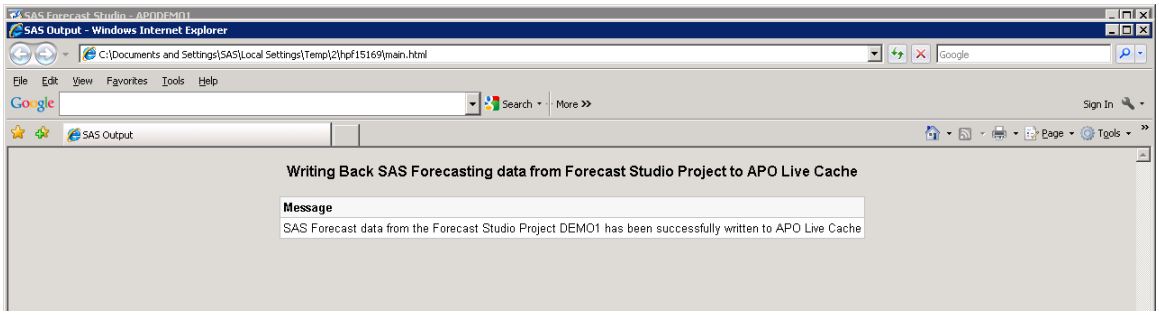
When FS_Write to_APOliveCache is selected and the Run button is pressed, the user is prompted to provide a valid SAS Forecast Profile (as shown in Figure 6-6).

Figure 6-6



After entering a valid profile name, press OK button. When the statistical forecast a has been written to SAP APO from the SAS Forecast Studio project, the user will receive a message that: SAS Forecast data from the Forecast Studio Project has been successfully written to APO LiveCache (as shown in Figure 6-7). The user should now be able to see the updated values in the appropriate SAP APO Planning Book.

Figure 6-7



CHAPTER 7

Administrator's Workbench

Batch Process 52
Time Period Options 56

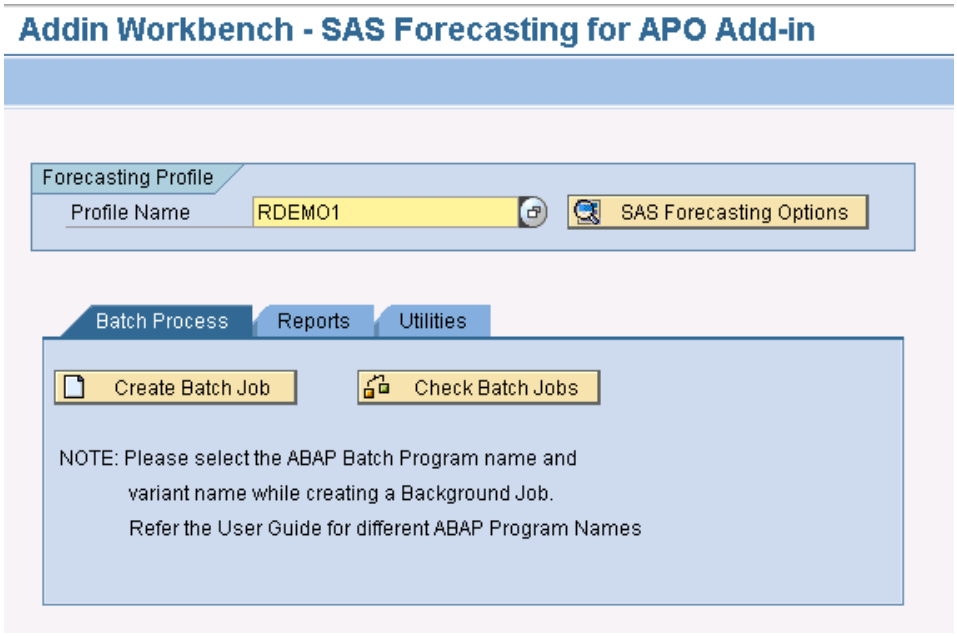
The Add-in Administrator's Workbench provide options that can be used directly by the Administrator to set up Background Jobs for SAS forecasting, to generate SAS Forecasting Reports and to create SAS Forecast Studio Projects for SAP APO data.

Some implementations may choose to not install the SAS add-in menu as a separate menu item on the menu bar of the SAP APO (DP) Planning Book. This Add-in Workbench provides an alternate way of accessing SAS "add-in" functions from within SAP.

The main purpose of Add-in Workbench is to provide the Add-in functionalities to the users who does not have access to the Interactive Demand Planning (Eg: Statistical Forecaster or Administrator and not a Demand Planner) .

To access the Add-in Workbench, go to the transaction /SAS/ADDIN, the initial screen is as shown in Figure 7-1.

Figure 7-1.



The Add-in Workbench provides users with three primary capabilities:

Batch Process: Allows users to create and Monitor the batch jobs for executing the statistical forecast using SAS.

Reports: Allows users to view reports generated during the creation of the statistical forecast (HTML format) or allows users to view or create custom reports using SAS Web Report Studio.

Utilities: Allows a user to create a SAS Forecast Studio Project, to write back SAS results from SAS Forecast Studio Project into SAP APO Livecache and to launch SAS Forecast Studio.

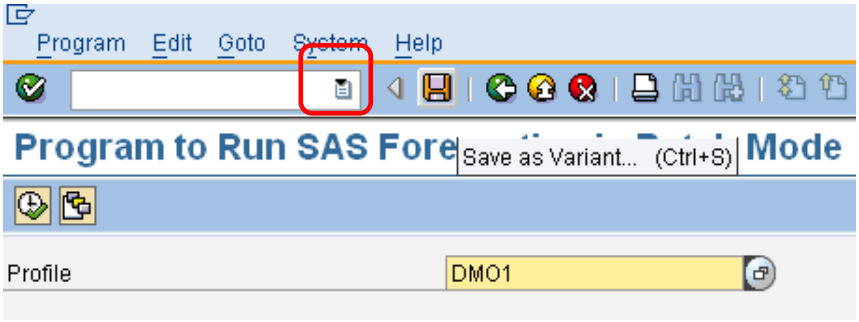
Batch Process

To run a forecast with SAS from SAP APO in Batch Mode, schedule the program "/SAS/SASFORECAST_BATCH" in the SAP Background Job Scheduler. The following steps to be followed to run the forecast with SAS in background or batch mode.

Prerequisite: SAS Forecasting Profile need to be created in the SAP APO Interactive Demand Planning transactions using the "Options" under SAS pull-down menu. Refer to the Chapter 2 for more details on how to create forecasting profile.

Step 1 - Creating Variant: Create a variant for the program "/SAS/SASFORECAST_BATCH" with the Forecasting profile which you want to use it for batch mode as illustrated in Figure 7-2.

Figure 7-2.

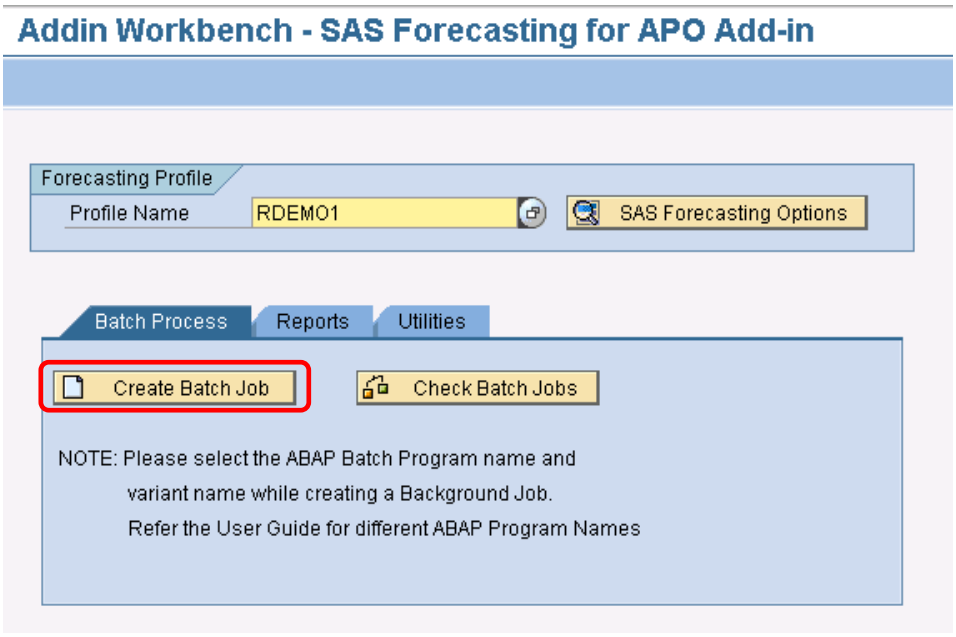


Step 2 – Creating a Background Job: Schedule a background job in the SAP Background Job Scheduler for the program "/SAS/SASFORECAST_BATCH" with the above created variant as explained in Figure 7-2.

Go to the transaction /SAS/ADDIN, press the button "Create Batch Job"

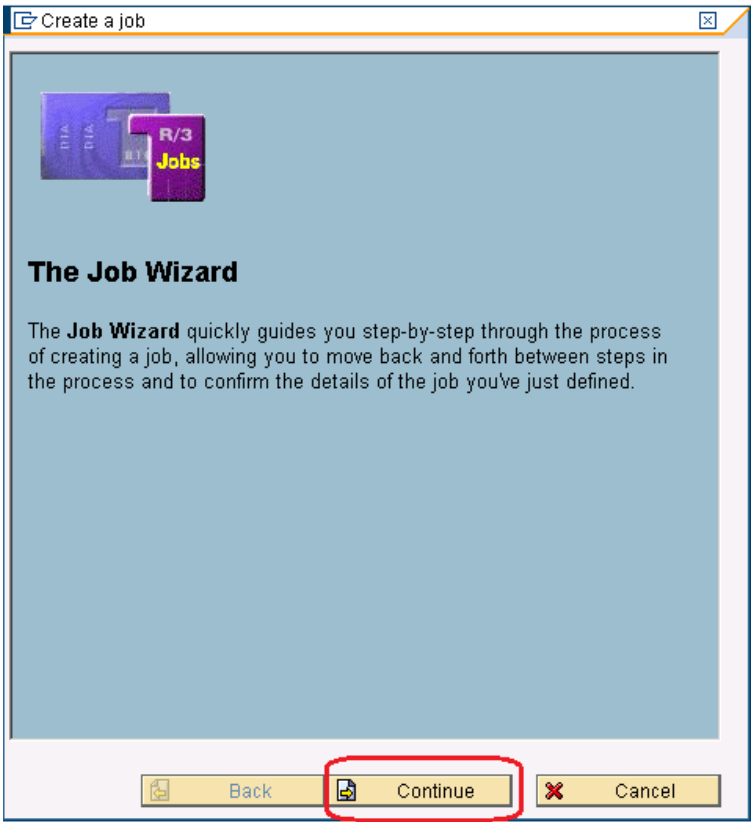
as shown in the Figure 7-3.

Figure 7-3.



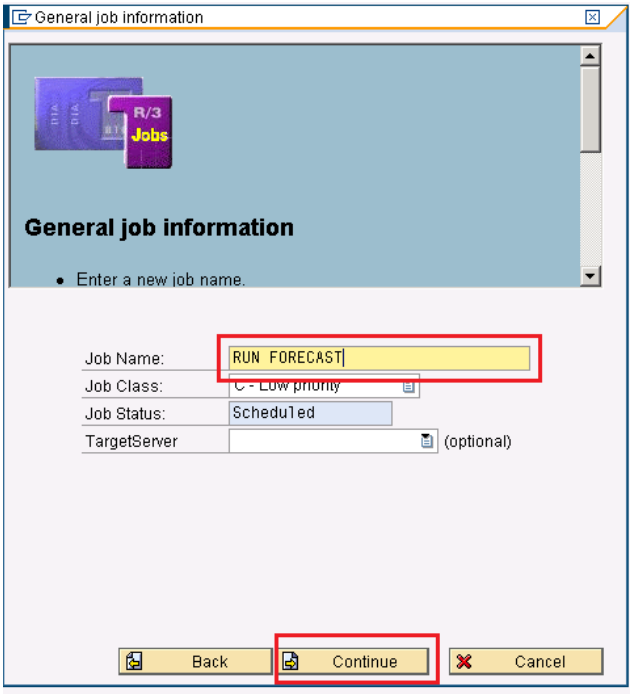
In the next screen, press the button "Continue" as shown in the Figure 7-4.

Figure 7-4.



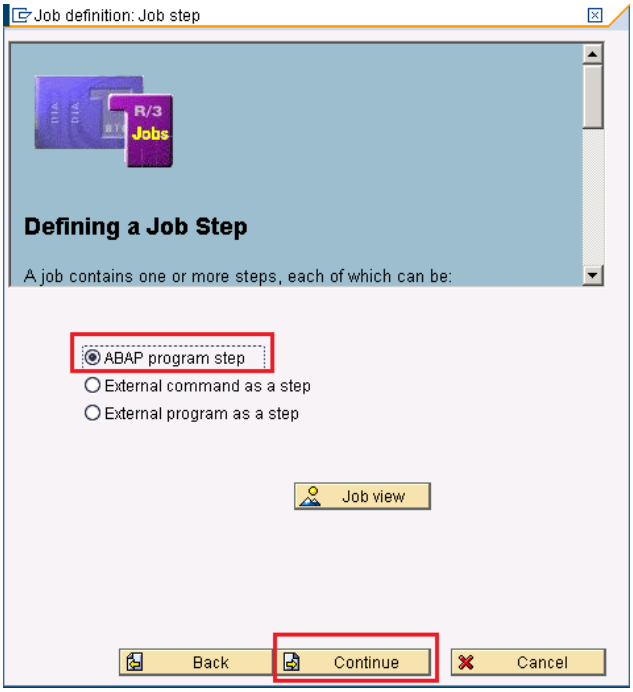
In the next screen, enter the Job name and press “Continue” button as shown in the Figure 7-5.

Figure 7-5.



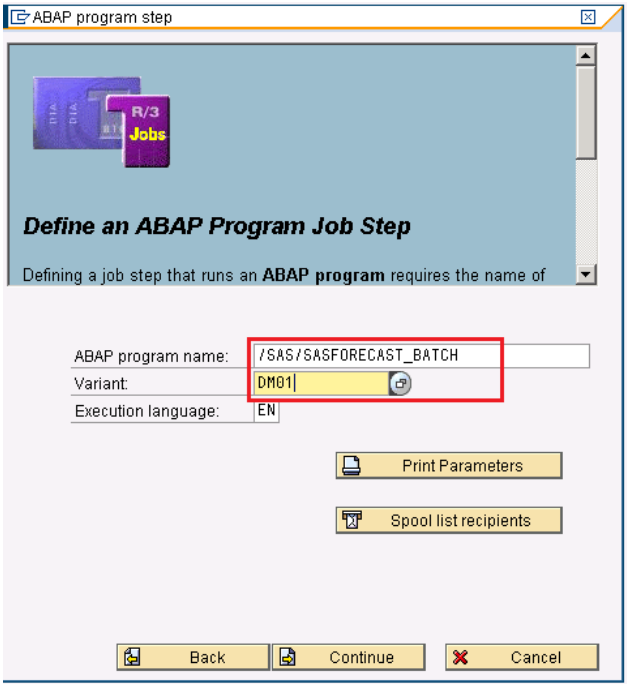
On the Job Step screen of the Wizard, Select the Option “ABAP Program step” and press “Continue” button as shown in the Figure 7-6.

Figure 7-6.



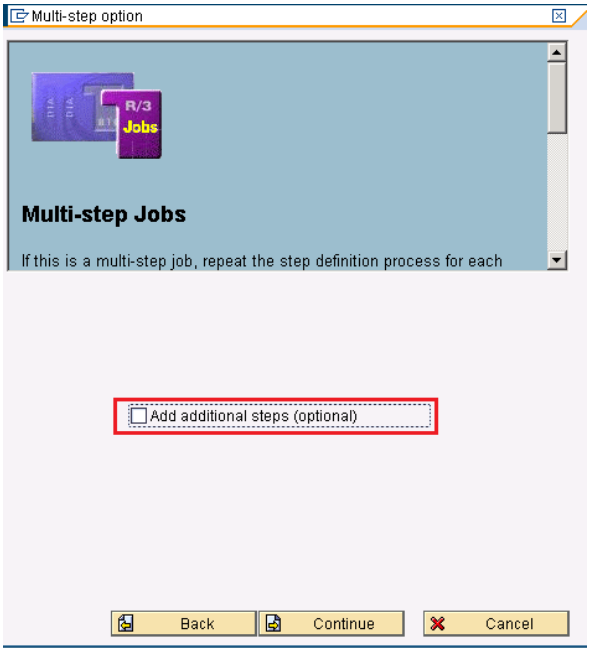
In the next screen, enter the program name (/SAS/SASFORECAST_BATCH), variant (DM01) and press "Continue" button as shown in the Figure 7-7.

Figure 7-7



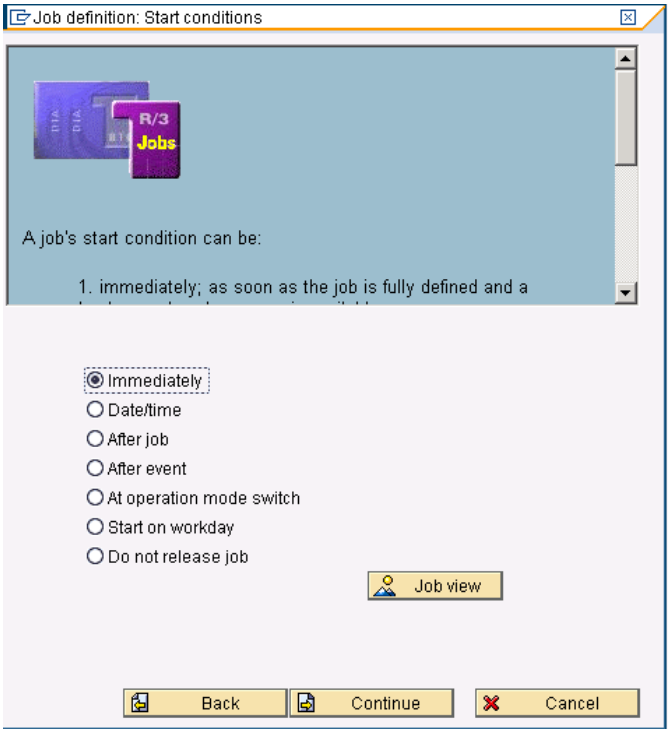
In the next screen, select the checkbox if you are defining multiple steps in a single background job. To skip this step, uncheck the checkbox and press "Continue" button as shown in Figure 7-8.

Figure 7-8



SAP has provided many time period options for scheduling the back ground job as shown in the Figure 7-9.

Figure 7-9

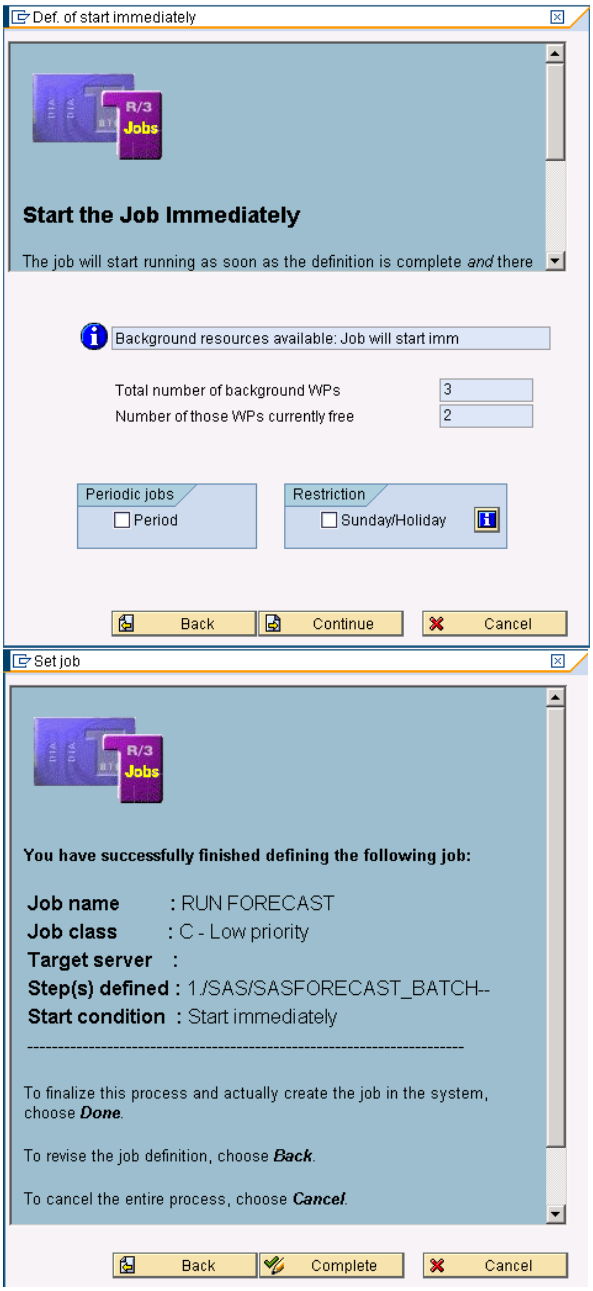


Time Period Options

SAP Background Scheduler provides many other options other than the options explained below. The below explained options are the most appropriate options for SAS Forecasting Add-in. Refer to the SAP help documentation for further details.

Immediate: Select this option, if you wish to run the background job immediately. To trigger the job immediately, press the Continue button and then press the button “Complete” on the Summary screen as shown in Figure 7-10.

Figure 7-10.



Date/Time: Select this option, if you wish to run the background job on a particular date at a particular time. Enter the date and time at which you wish to run the background job and press Continue button as shown in Figure 7-11. You can also select the date and time after which you do not want to run the back ground job.

If you wish to run the job periodically, select the checkbox “Period” and press the button “Continue” then set the periodic values as shown in Figure 7-12.

Figure 7-11

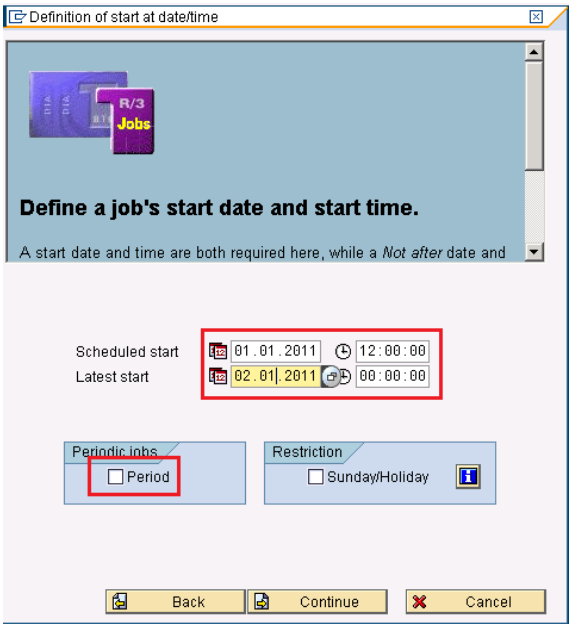
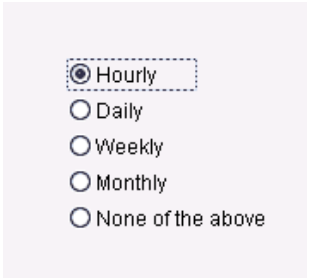
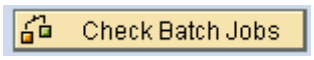


Figure 7-12

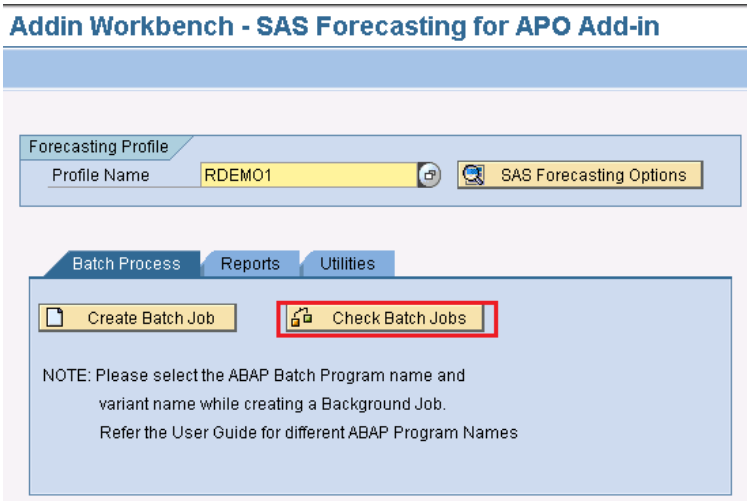


As soon as the complete button on summary screen is pressed, a background Job is scheduled as per the options selected above.

Step 3 – Monitoring the Background Job: To monitor the job created in the previous step, select the “Check Batch Jobs” button 

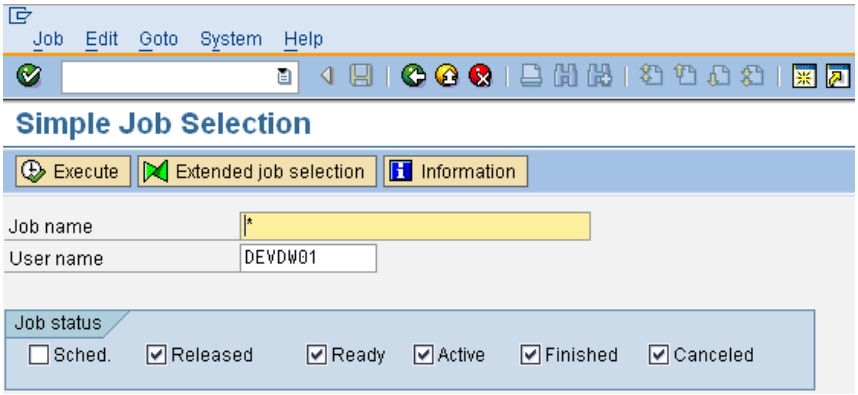
as shown in the Figure 7-13.

Figure 7-13.



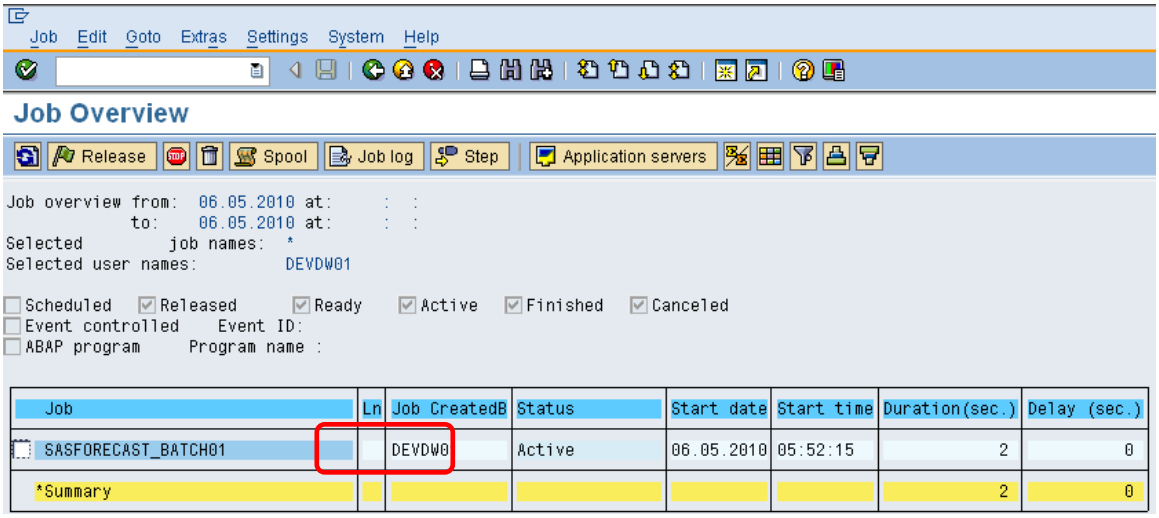
SAP Background Job Monitor initial screen will be displayed. Press F8 or Execute button to display the status of the Job scheduled as shown in Figure 7-14.

Figure 7-14.



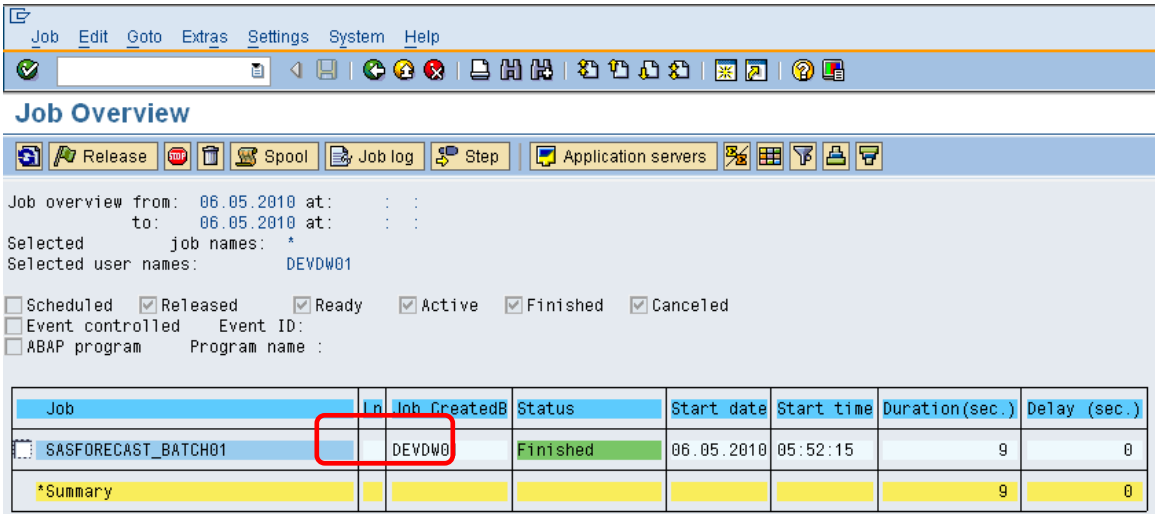
SAP Job Overview screen is displayed, which shows the status of the background job scheduled. Status "Active" denotes that the Background job is running and not yet completed.

Figure 7-15.



The status of the background job will change to "Finished" as soon as the job execution is complete as shown in the Figure 7-16.

Figure 7-16.

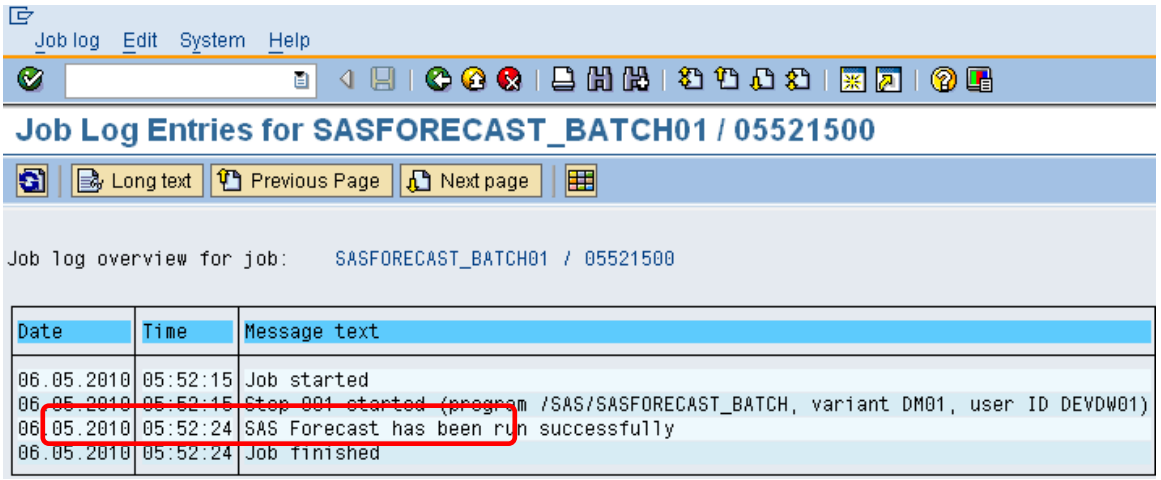


Please note that the status "Finished" does not mean that the background job has been ran successfully, it just denotes that the Job has finished the execution irrespective of the result of the run. For example, a background job has been scheduled to run SAS Forecast; the job status will be "Finished" irrespective of the output of the SAS Forecasting process. The job status will show "Finished" even if the SAS Forecasting process has given some exception.

To know the output of the Job, press the "Job log" button

. Success message would be displayed if the SAS Forecast has run successfully as shown in the Figure 7-17.

Figure 7-17.



NOTE: Repeat the above 3 steps for creating the background jobs which create SAS Forecast Studio Project and write SAS Results into APO LiveCache. The details of different ABAP programs are as below.

1. ABAP Program to create SAS Forecast Studio project from SAP APO Planning Data- /SAS/CREATE_PROJ_BATCH
2. ABAP Program to write SAS Forecasting results from SAS Forecast Studio into SAP APO LiveCache - /SAS/WRITE_BACK_TO_APO_BATCH.

CHAPTER 8

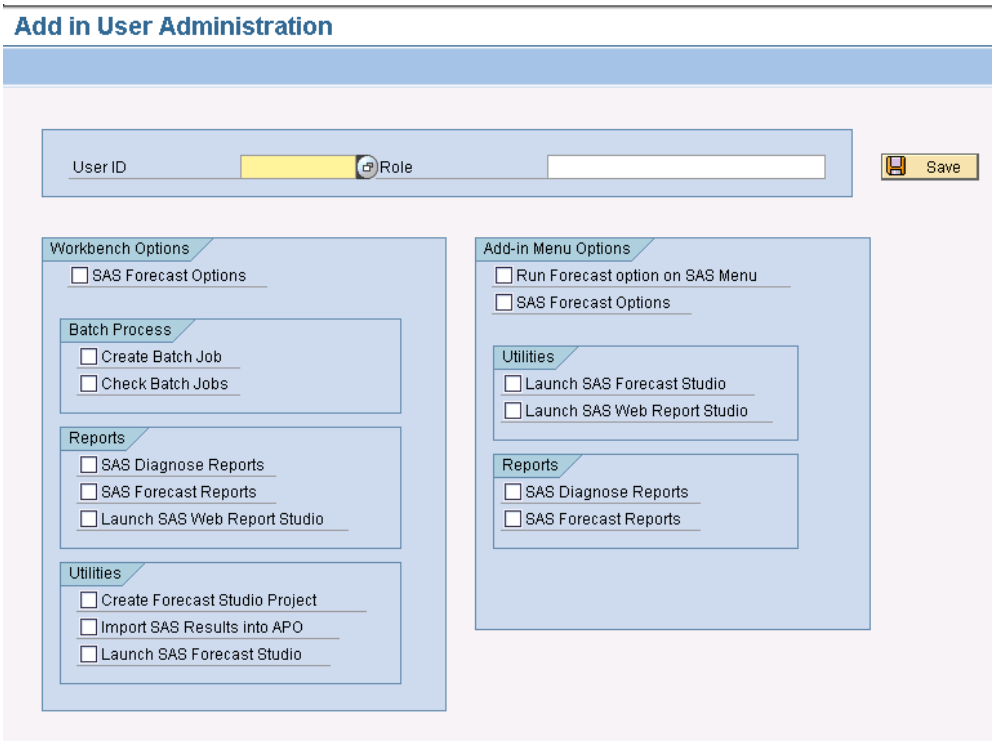
User Administration

The Add-in User Administration transaction provides options to control the access to the Add-in functions for a given user both in the Workbench and in the Add-in menu.

Some implementations may choose to limit the SAS add-in functions to a specific user. This transaction provides the flexibility to switch on and off the required functions and this transaction should be used only by the SAP Administrator who is authorized for User Administration.

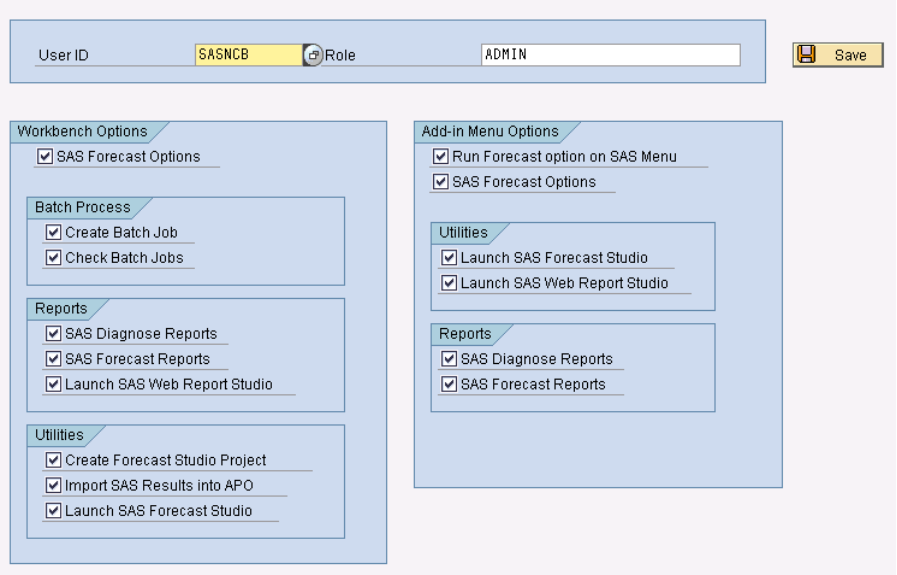
To access the Add-in Workbench, go to the transaction /n/SAS/ADDIN_USER, the initial screen is as shown in Figure 8-1.

Figure 8-1.



As part of standard installation, default roles have been provided to activate the preset options based on the role assigned. For example, if the role ADMIN is selected then all the functions will be activated for the given user as shown in Figure 8-2.

Figure 8-2.



The default roles provided are as below (Figure 8-3):

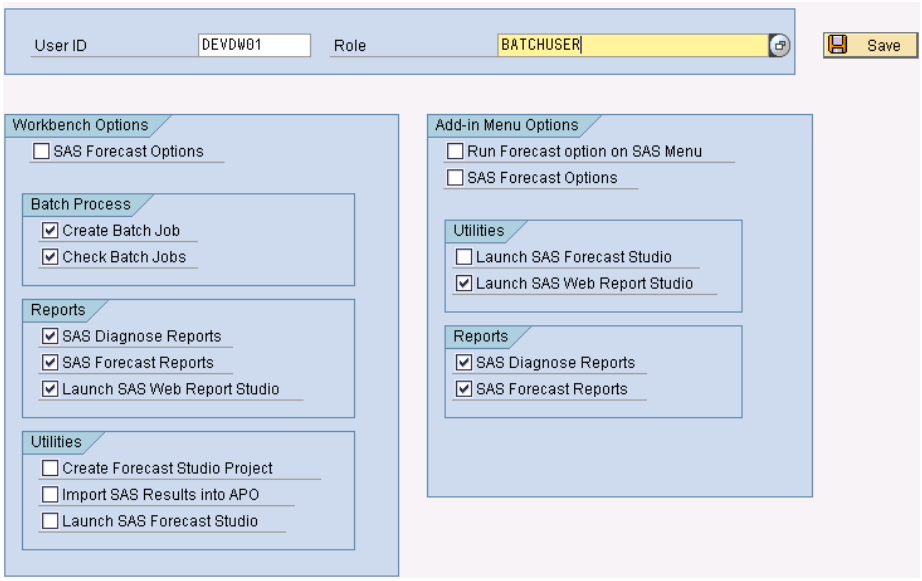
Figure 8-3.

ADMIN	Administrator
BATCHUSER	Batch User
CUSTOM	Custom Role
REPORTUSER	Reports Users
FORECASTER	Statistical Forecaster

Once the required role is selected, press enter and then “Save” button to save the user settings. The Administrator can modify the options as and when required depending on the customer specific needs.

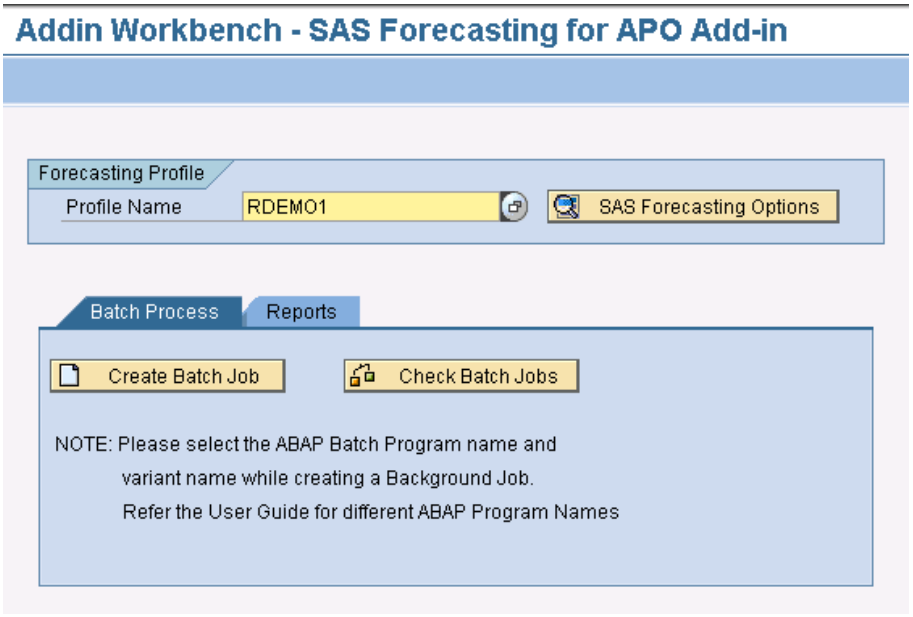
The functions of the Add-in Workbench as well as in Menu are set as per the options selected in this transaction. Here, if the role selected is BATCHUSER then the checkboxes will be automatically preset and accordingly the functions are activated/deactivated in Workbench and Add-in Menu as shown in Figure 8-4, Figure 8-5, and Figure 8-6

Figure 8-4



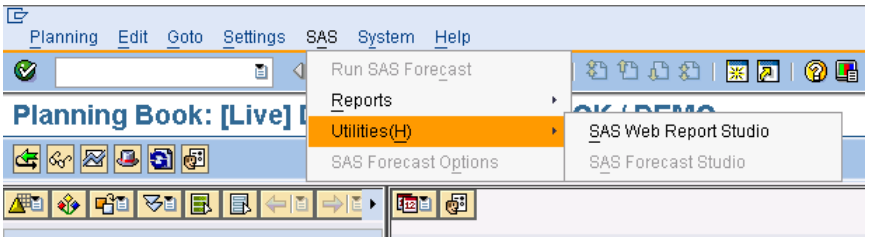
As per the settings shown in Figure 8-4, there is no option selected under "Utilities" for the Workbench and hence there is no "Utilities" tab in the Add-in Workbench as shown in Figure 8-5.

Figure 8-5



As per the settings shown in Figure 8-4, the options “Run Forecast” and “SAS Forecast Options” have been deactivated for the Add-in Menu and hence those functions have been deactivated in the Add-in Menu.

Figure 8-6

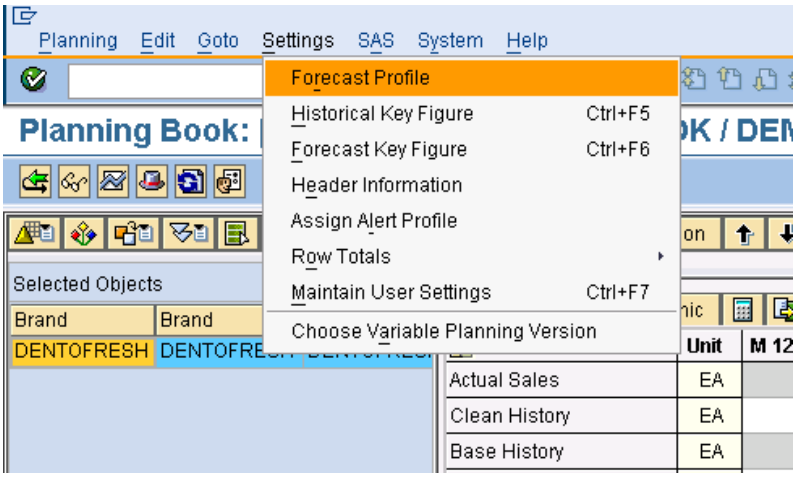


APPENDIX 1

SAP Forecasting Profile

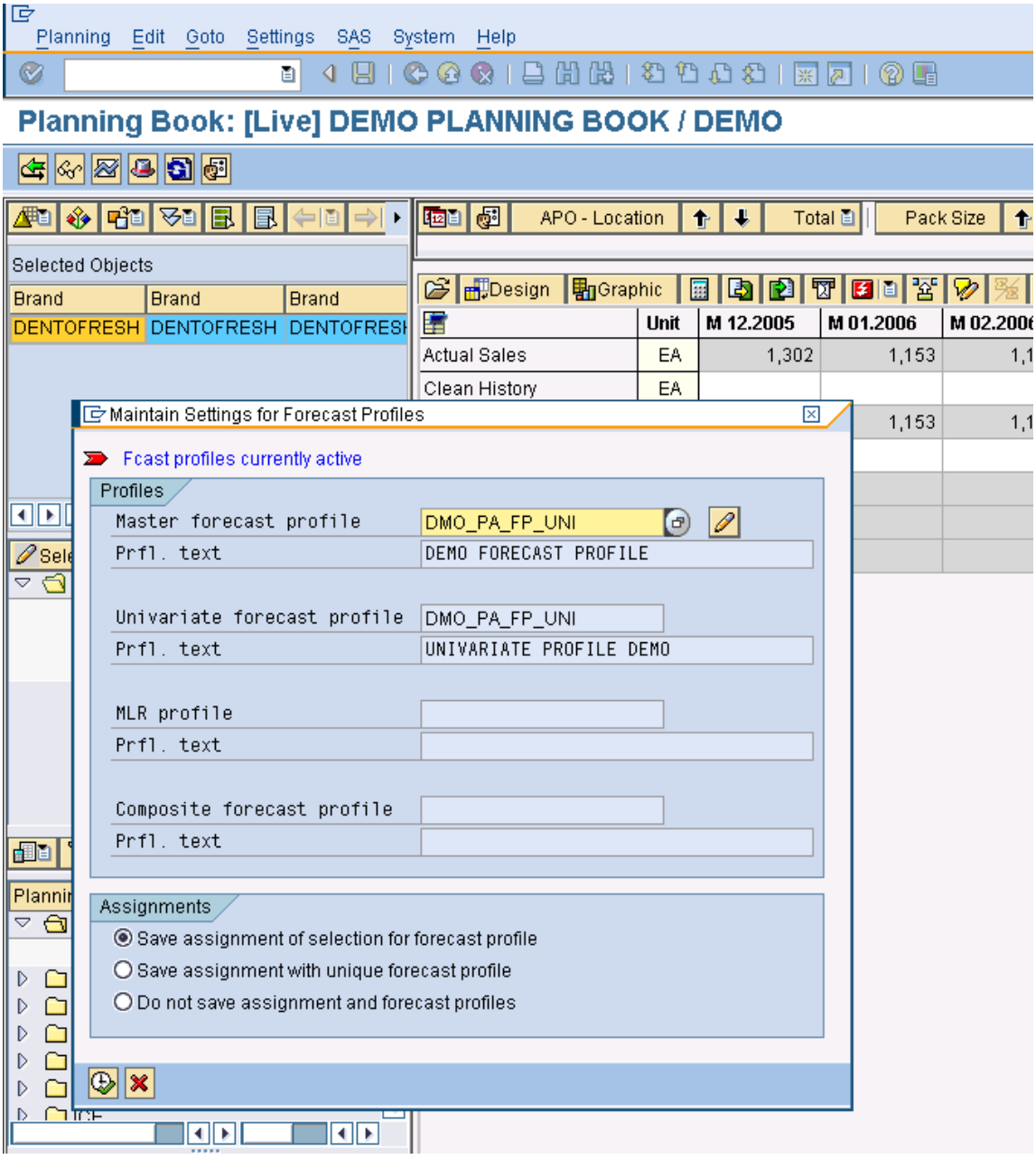
A SAP Forecasting Profile is visible by choosing Forecast Profile from the Settings pull-down menu illustrated in Figure A1-1.

Figure A1-1.



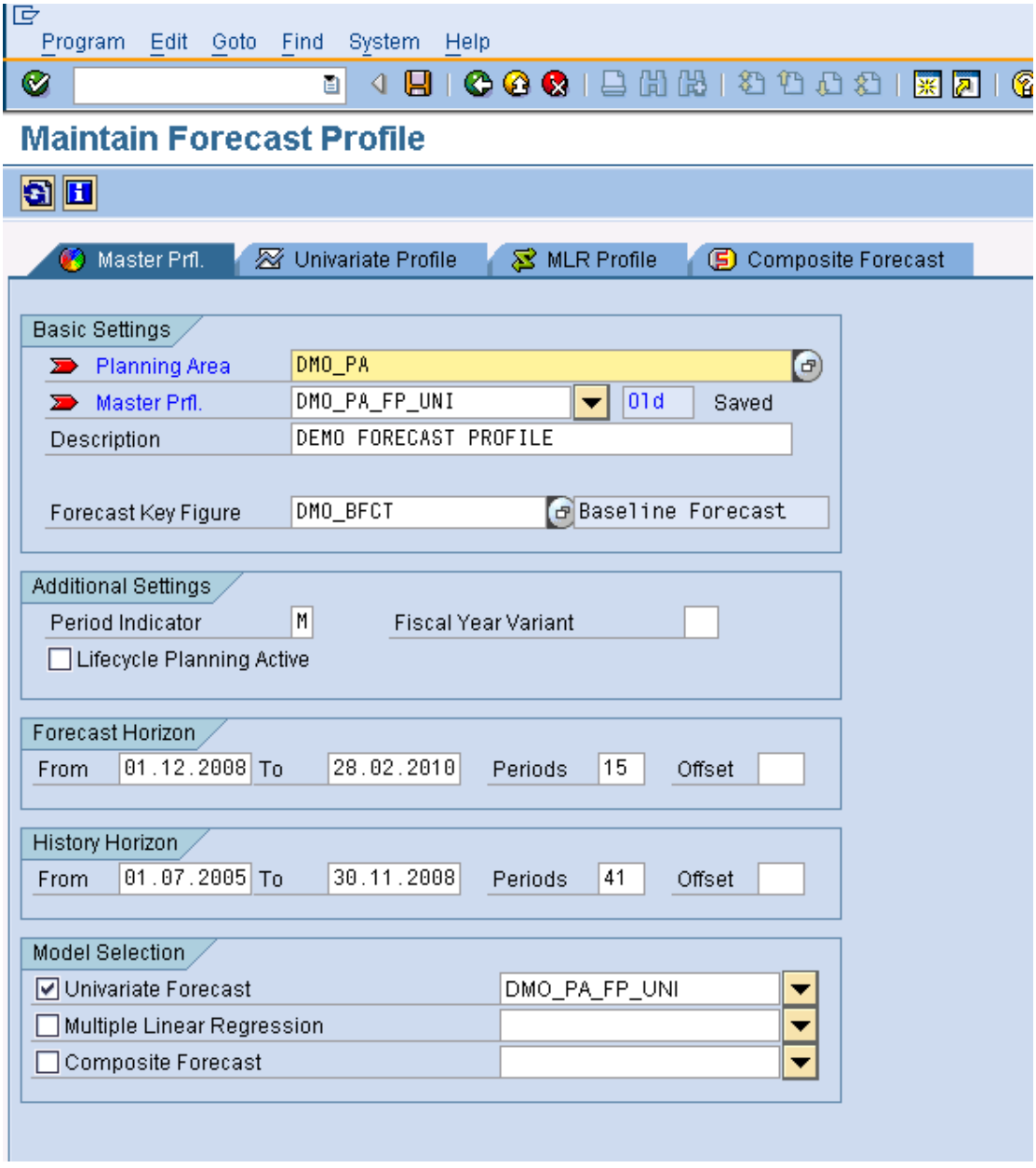
The active Master SAP Forecasting Profile is visible from the Maintain Settings for Forecast Profiles window illustrated in Figure A1-2.

Figure A1-2.



Selecting the edit button (Pencil) on this screen will allow the user to see the History dates established in the SAP Forecast Profile. In the example illustrated in Figure A1-3, the History Start Date is 01.06.2005 and History End Date is 30.11.2008. The number of Forecast Periods (Forecast Horizon in the SAS Forecast Profile) will be 15.

Figure A1-3.

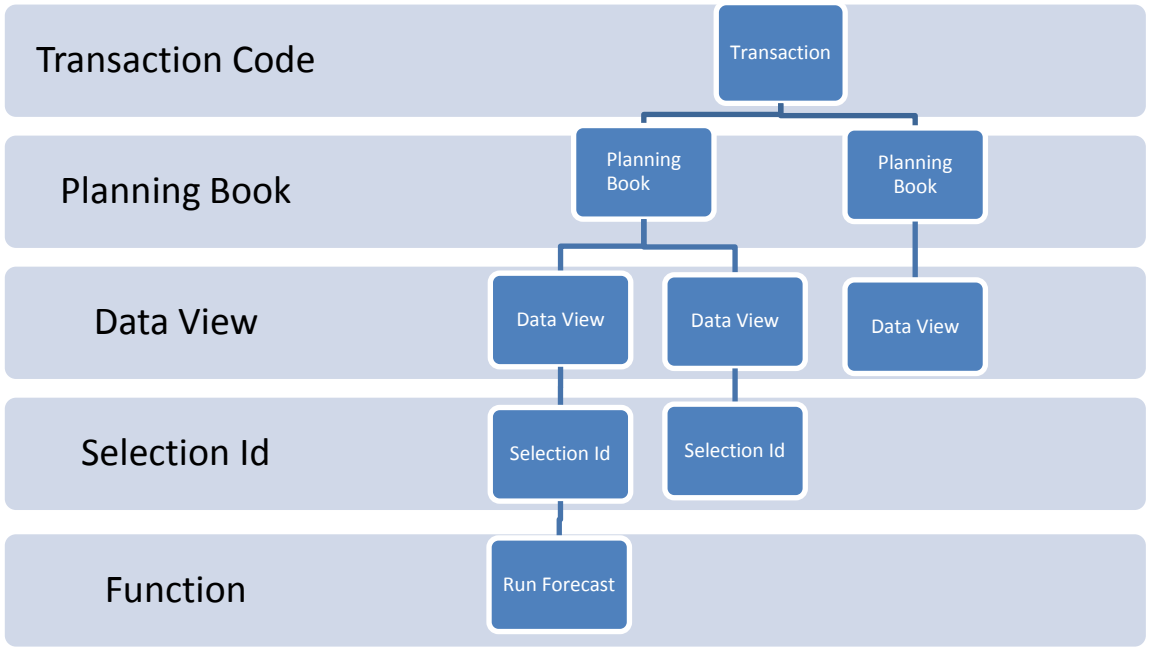


APPENDIX 2

SAP Authorizations

In SAP, The authorizations are maintained at different levels such as Transaction, Planning Book, Data View, and Selection Id & Functions. The authorizations in SAP are hierarchical as illustrated in Figure A2-1.

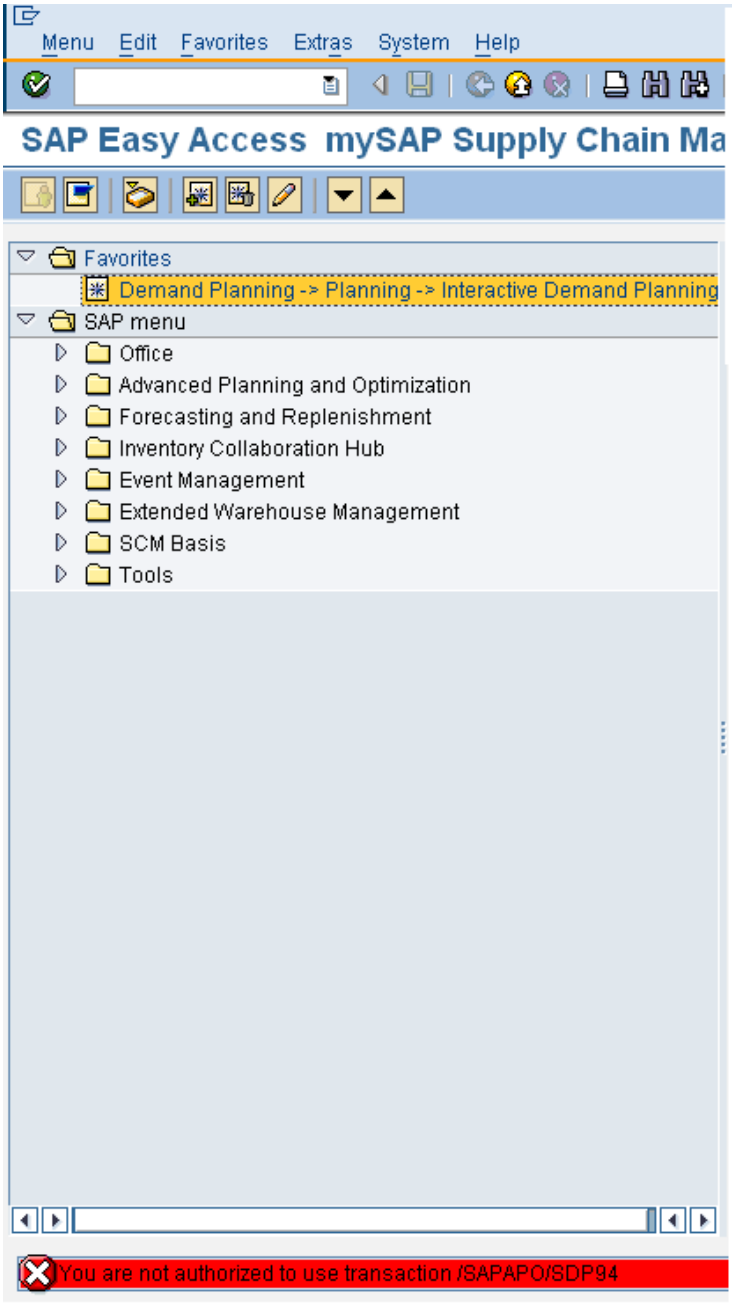
Figure A2-1.



SAS Forecasting add-in strictly follows all the authorizations provided at the SAP user level.

Scenario 1: User does not have authorization to the Demand Planning Transaction. In this case, the user cannot enter into the transaction and hence there is no chance of running the SAS Forecasting Add-in as illustrated in Figure A2-2.

Figure A2-2.



Scenario 2: User is authorized to access the Demand Planning Transaction but he/she is not authorized for a specific Planning book. In this case, the user gets a warning message while entering into the transaction (Figure A2-3.) and after pressing "Enter", user will be able to get into the transaction but he/she would not be able to open the Planning book as he/she is not authorized (Figure A2-4.).

Figure A2-3.

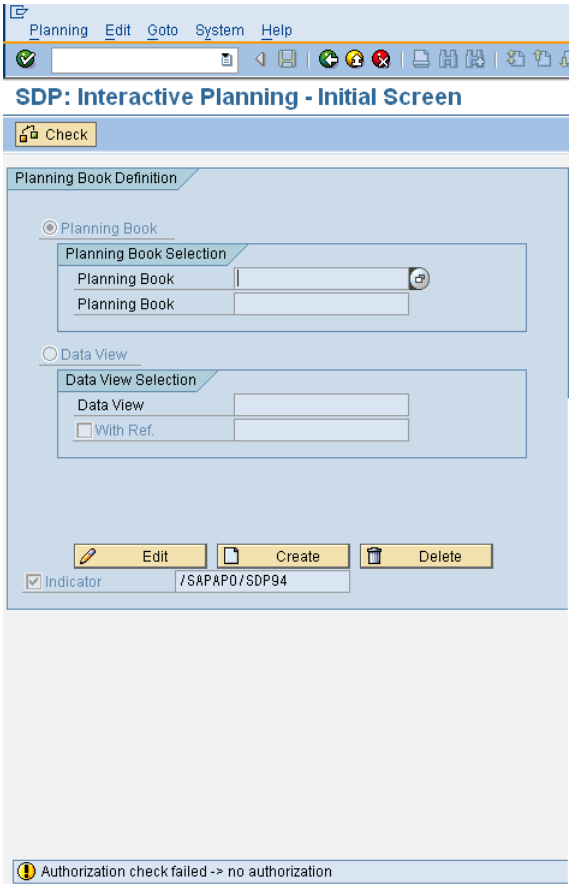
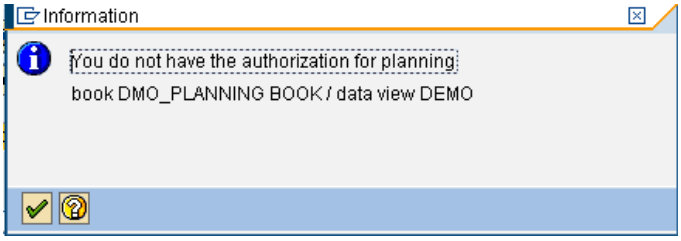
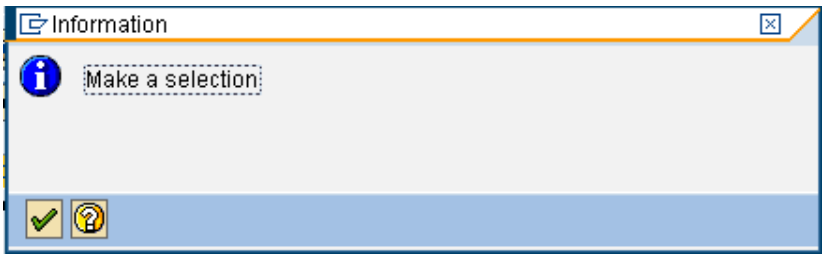


Figure A2-4.



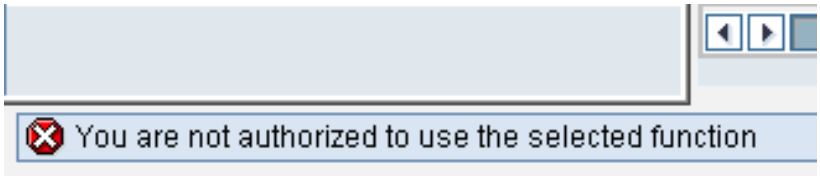
When the user selects the “Run Forecast” menu option, the message shown in Figure A2-5. is displayed.

Figure A2-5.



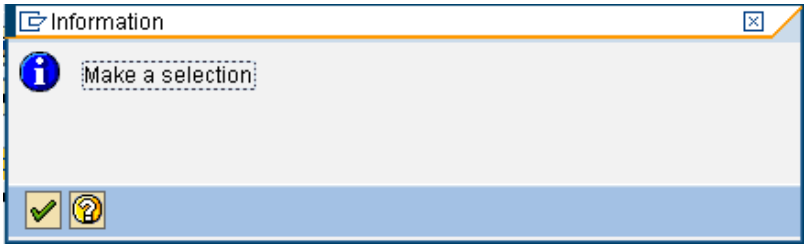
Scenario 3: User is authorized to access both the Demand Planning Transaction and the specific Planning book but the user is not authorized for a specific data view. In this case, the user will be able to access the planning the book but he/she would not be able to access the data in the planning book as he/she is not authorized for the specific data view.

Figure A2-6.



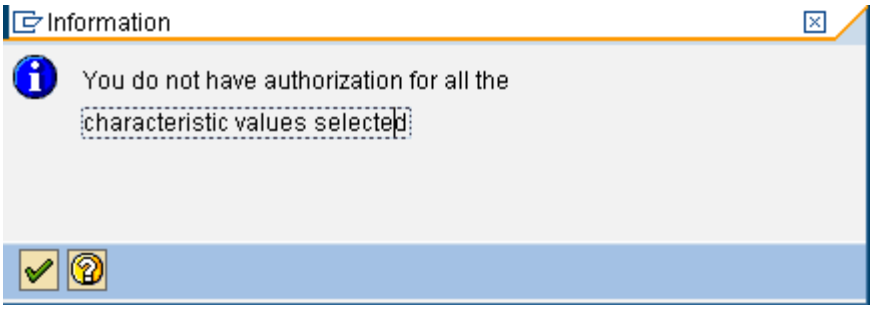
If the user selects the “Run Forecast” menu option, then the information message is displayed that the user needs to select the Selection view for the given planning book.

Figure A2-7.



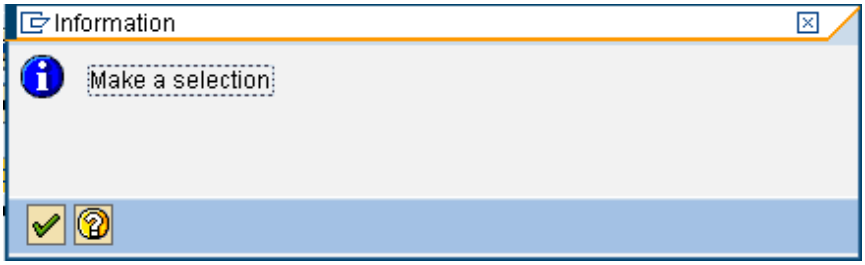
Scenario 4: User is authorized to access the Demand Planning Transaction, specific Planning book and the selection view but the user is not authorized for a specific characteristic. In this case, the user will be able to access the planning the book but he/she would not be able to access the data in the planning book as he/she is not authorized for the specific characteristic. The user will receive the message displayed in Figure A2-8.

Figure A2-8.



If the user selects the "Run Forecast" menu option, then the information message is displayed that the user needs to select the Selection view for the given planning book as shown in Figure A2-9.

Figure A2-9.



Scenario 5: User is authorized to access the Demand Planning Transaction, specific Planning book, selection view and the specific characteristic values but the user is not authorized for running the Forecasting or any specific function. In this case, the user will be able to access the planning the book and be able to access the data in the planning book but he/she will not be able to run the forecasting.

APPENDIX 3

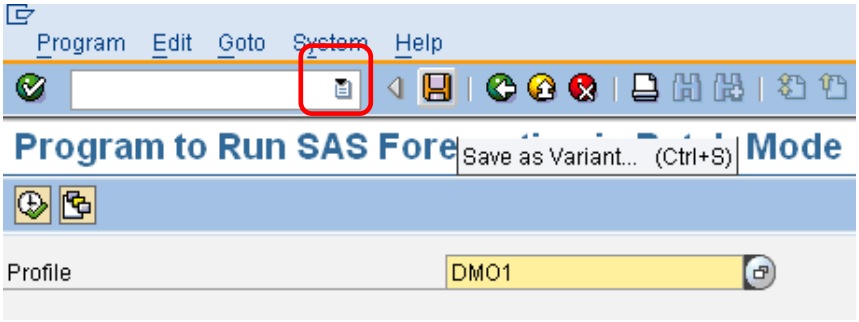
Run SAS Forecast in Batch Mode

To run a forecast with SAS from SAP APO in Batch Mode, schedule the program "/SAS/SASFORECAST_BATCH" in the SAP Background Job Scheduler. The following steps to be followed to run the forecast with SAS in background or batch mode.

Prerequisite: SAS Forecasting Profile need to be created in the SAP APO Interactive Demand Planning transactions using the "Options" under SAS pull-down menu. Refer to the Chapter 2 for more details on how to create forecasting profile.

Step 1 - Creating Variant: Create a variant for the program "/SAS/SASFORECAST_BATCH" with the Forecasting profile which you want to use it for batch mode as illustrated in Figure A3-1.

Figure A3-1.

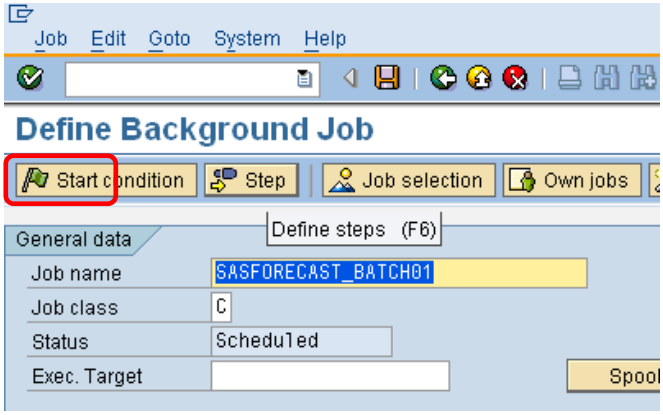


Step 2 – Creating a Background Job: Schedule a background job in the SAP Background Job Scheduler for the program "/SAS/SASFORECAST_BATCH" with the above created variant as explained in Figure A3-2.

Go to the transaction SM36, enter name of the Background Job and press the "Define Steps (F6)"

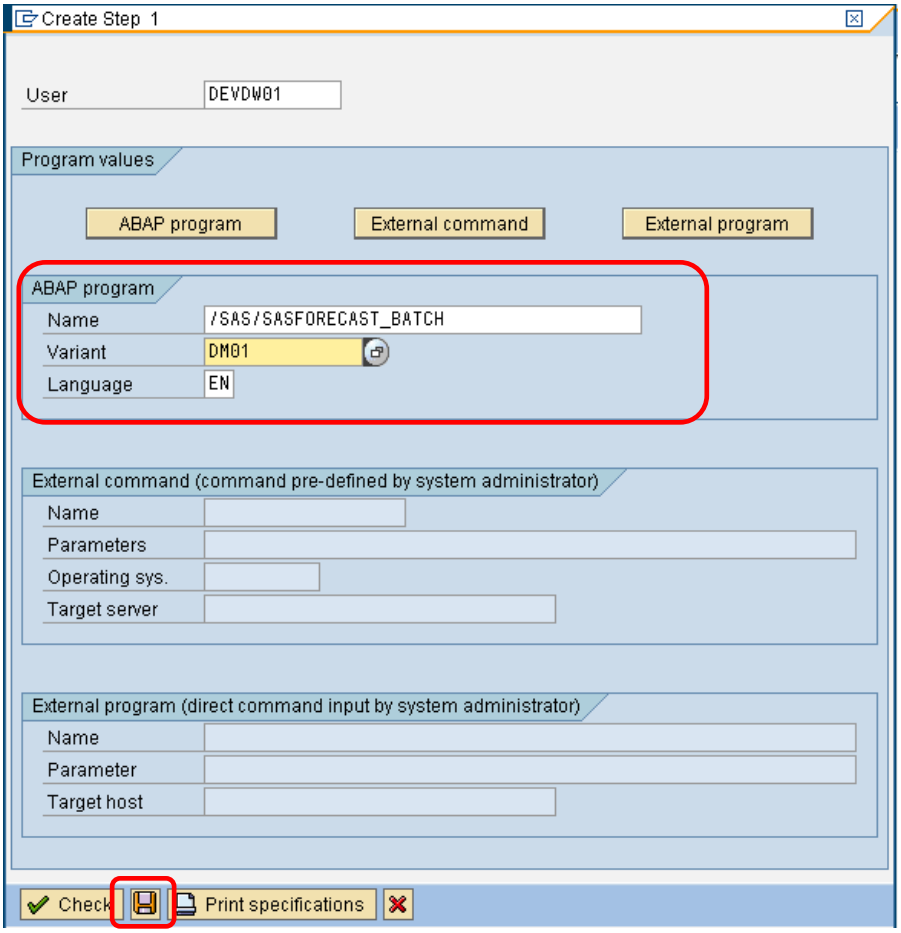
button as shown in the Figure A3-2.

Figure A3-2.



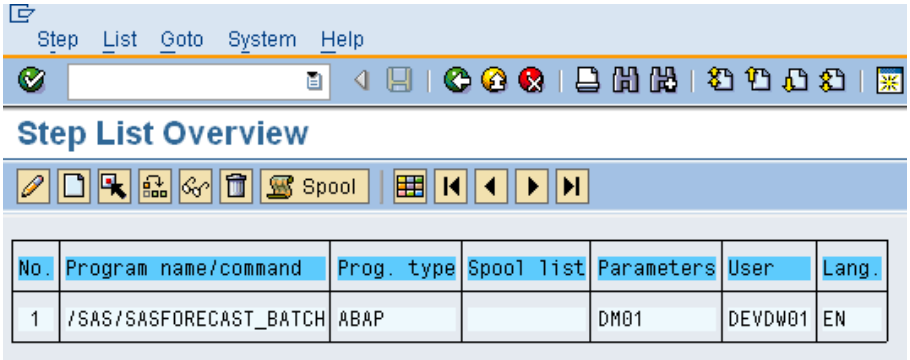
In the next screen, enter the program name (/SAS/SASFORECAST_BATCH), variant (DM01) and press “save” button as shown in the Figure A3-3.

Figure A3-3.



An overview screen will appear as shown in Figure A3-4; no action is required on this screen. Press back button to navigate to the initial screen.

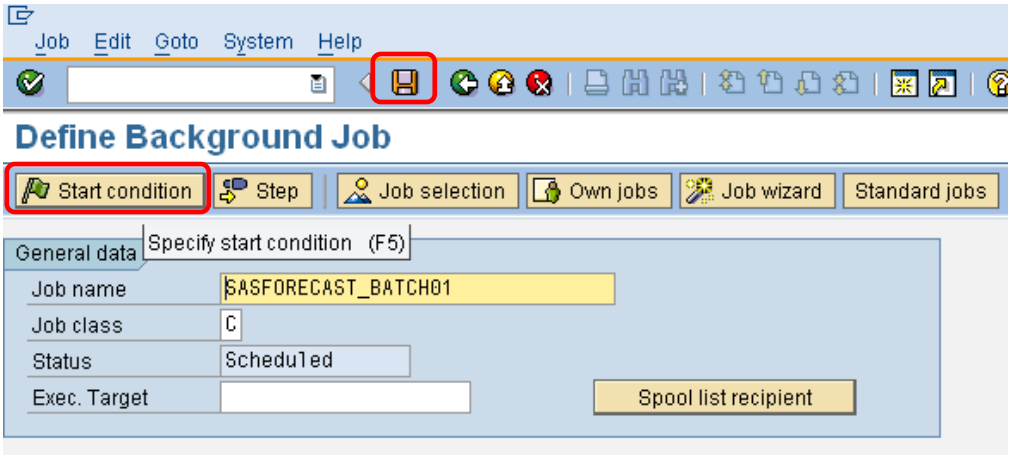
Figure A3-4.



On the

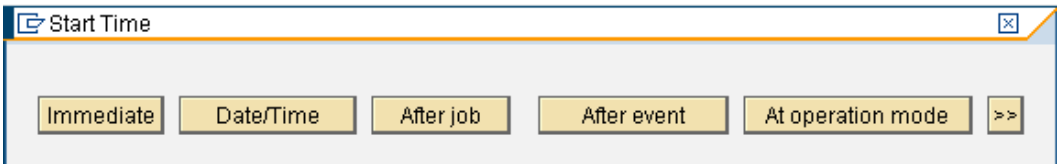
initial screen of the Scheduler, press the "save" button and then "Start Condition" button for selecting the time period of the batch/ background job as illustrated in the Figure A3-5.

Figure A3-5.



SAP has provided many time period options for scheduling the back ground job as shown in the Figure A3-6.

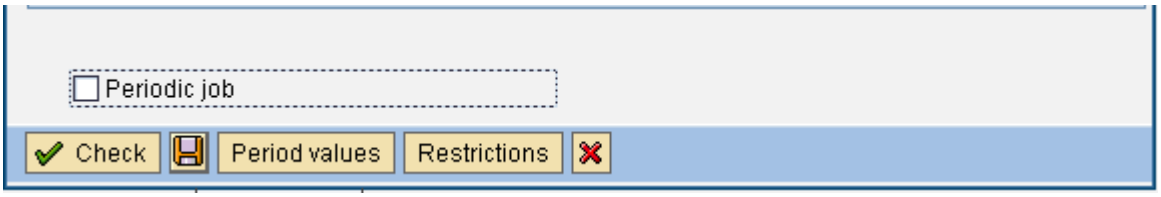
Figure A3-6.



Time Period Options: SAP Background Scheduler provides many other options other than the options explained below. The below explained options are the most appropriate options for SAS Forecasting Add-in. Refer to the SAP help documentation for further details.

Immediate: Select this option, if you wish to run the background job immediately. To trigger the job immediately, press the save button as shown in Figure A3-7.

Figure A3-7.



Date/Time: Select this option, if you wish to run the background job on a particular date at a particular time. Enter the date and time at which you wish to run the background job and press Save button as shown in Figure A3-8. You can also select the date and time after which you do not want to run the back ground job.

If you wish to run the job periodically, select the checkbox "Periodic Job" and press the button "Period Values" at the bottom of the screen to set the periodic values as shown in Figure A3-9.

Figure A3-9

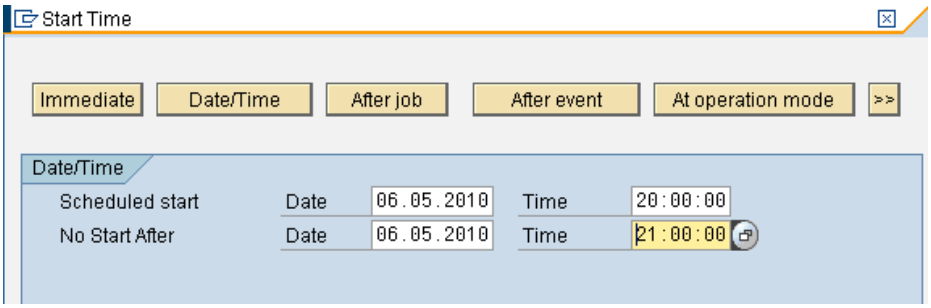
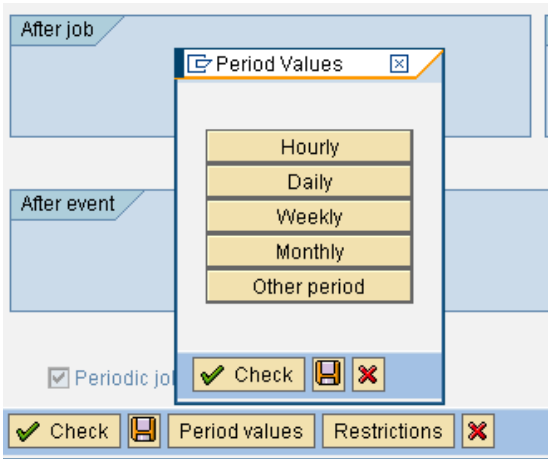


Figure A3-10.



As soon as the Save button is pressed, a background Job is scheduled as per the options selected above.

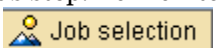
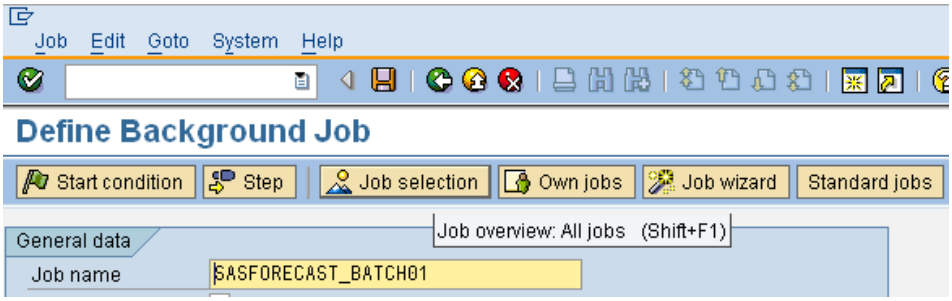
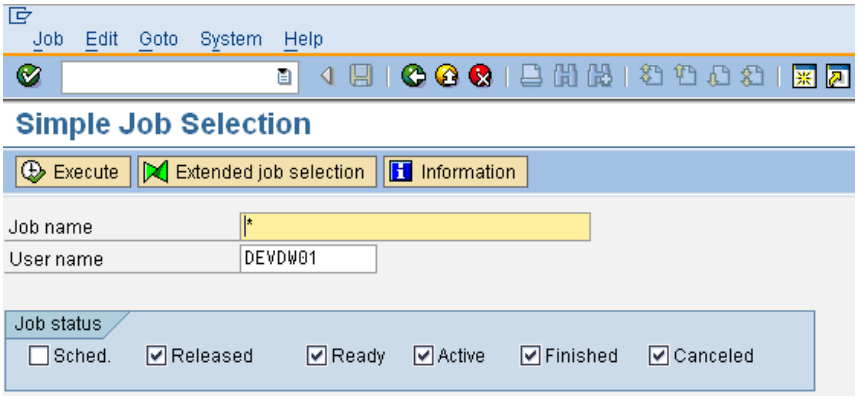
Step 3 – Monitoring the Background Job: SAP Scheduler Initial screen is shown once save button is pressed in the previous step. To monitor the job created in the previous step, select the "Job selection"  button as shown in the Figure A3-11.

Figure A3-11.



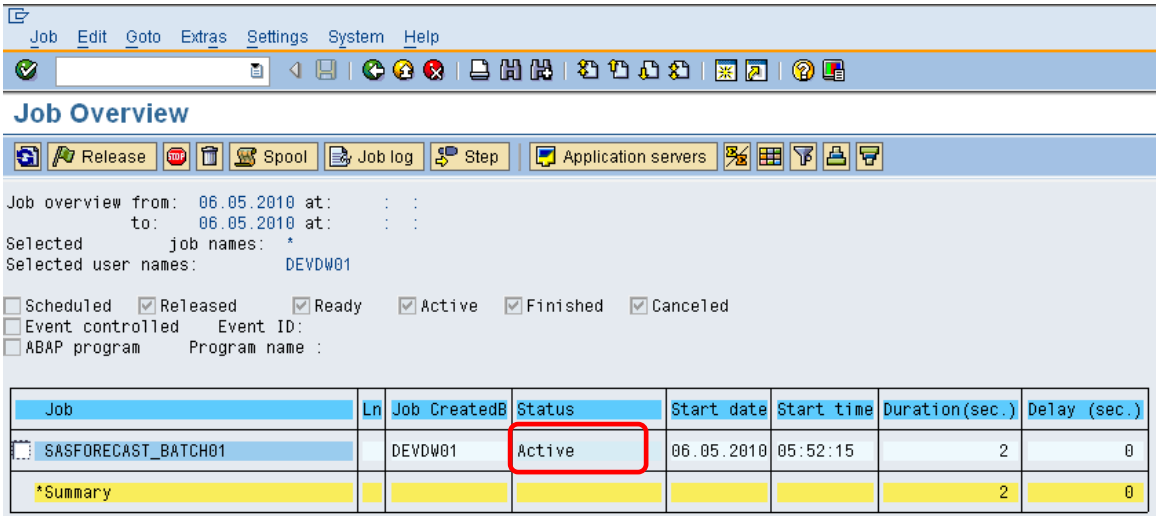
SAP Background Job Monitor initial screen will be displayed. Press F8 or Execute button to display the status of the Job scheduled as shown in Figure A3-12.

Figure A3-12.



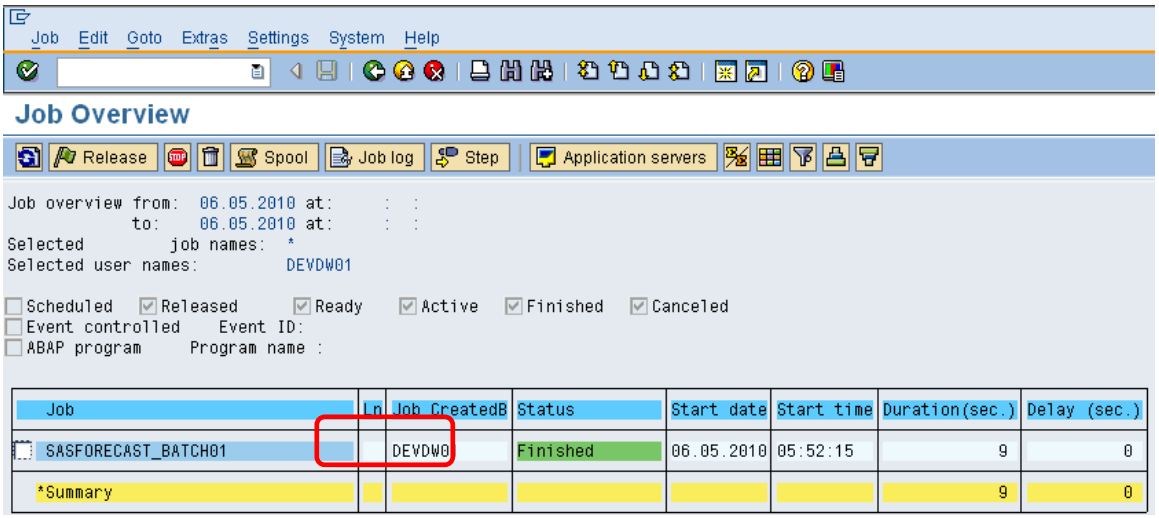
SAP Job Overview screen is displayed, which shows the status of the background job scheduled. Status “Active” denotes that the Background job is running and not yet completed.

Figure A3-13.



The status of the background job will change to “Finished” as soon as the job execution is complete as shown in the Figure A3-14.

Figure A3-14.

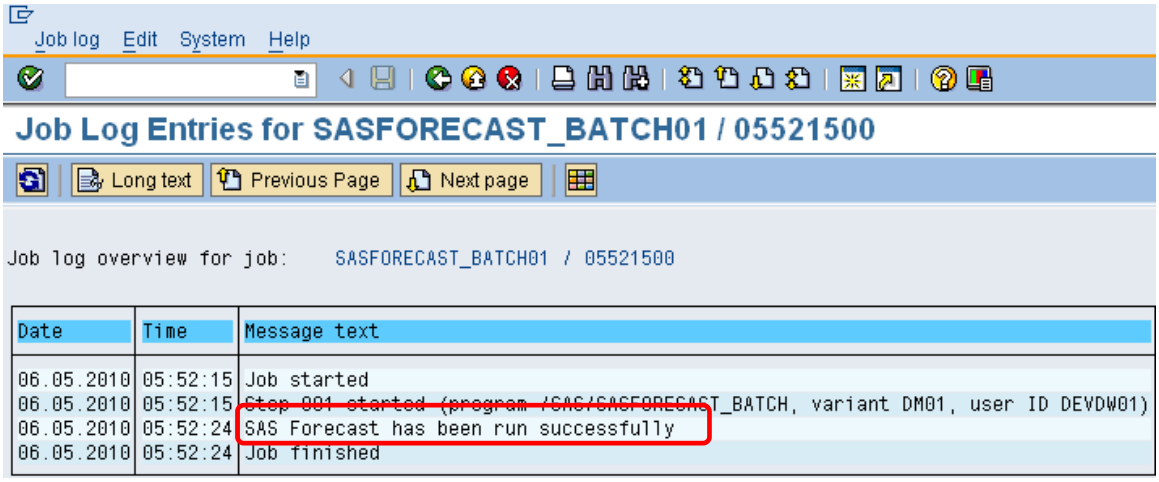


Please note that the status “Finished” does not mean that the background job has been ran successfully, it just denotes that the Job has finished the execution irrespective of the result of the run. For example, a background job has been scheduled to run SAS Forecast; the job status will be “Finished” irrespective of the output of the SAS Forecasting process. The job status will show “Finished” even if the SAS Forecasting process has given some exception.

To know the output of the Job, press the “Job log” button

. Success message would be displayed if the SAS Forecast has run successfully as shown in the Figure A3-15.

Figure A3-15.

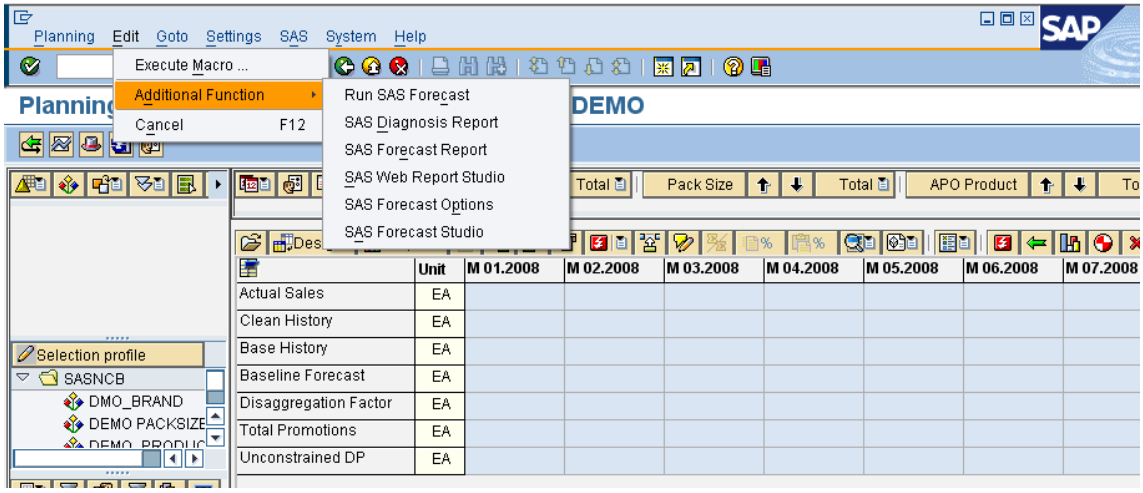


APPENDIX 4

Alternate Add-in Menu

Some installations may choose to not implement the SAS add-in menu to the main menu bar in the SAP APO (DP) interactive planning book as illustrated in Chapter 1 of this manual. SAS "add-in" menu options can optionally be accessed from the EDIT ▶ Additional Function menu's as illustrated in Figure A4-1.

Figure A4-1.



The Additional Functions menu under EDIT does not group the SAS functions in the same way as the "add-in" menu. All the options are available, but presented in one list.