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Industry Environment and Concepts for Forecasting

The Forecast Management system allows you to effectively manage customer demand with timely, reliable forecasts. Understanding the importance of forecasts can help you plan and manage your forecasts to suit your specific business needs.

To understand the critical role that forecasts play in the business environment, you must be aware of the different types of forecasts and the data that is used to create these forecasts.

Forecasting has grown beyond the simple prediction of future sales based on data from previous years. The globalization of businesses has created a need for multiple forecasts by area; revision level; and, perhaps, even by key customer.

Now more than ever, businesses must be able to quickly create multiple scenarios for instant evaluation in making informed planning decisions. Businesses require the ability to build customer or item forecasts at the detail and aggregate level with algorithms that reflect product demand patterns. Companies must proactively plan and manage forecasts with the flexibility that is needed for specific business requirements.

Forecasting Methods Overview

To stay competitive, companies need to build realistic forecasts that are based on their organization's unique business practices. For example, to match market patterns, companies require the ability to use multiple industry-standard forecast algorithms that include the following values for quantitative or intrinsic forecasting:

- Seasonal
- Weighted average
- Exponential smoothing
- Percent over last year
- Calculated percent over last year
- Last year to this year
- Moving average
- Linear approximation
- Least square regression
- Second degree approximation
- Flexible method
- Linear smoothing

Using these industry-standard forecasting equations, businesses need their system to calculate the percentage of accuracy for the "best fit" forecast, normally using Mean Absolute Deviation (MAD), according to current and historical demand information.

Businesses also require the ability to revise the data that is included in their forecast. For example, a business might include data that is not typical. To forecast more accurately, the data must be revised. Another example for this revision capability requirement is the need to insert data that was not captured in the past because of some unpredictable on-hand information.

Forecasting uses the Qualitative technique. It uses subjective projections based on judgment, intuition, and informed opinions. Extrinsic techniques, using economic indicators, are also necessary methods in calculating a forecast. For example, an economic indicator can be the amount of disposable income, which affects demand.

Companies that want to keep up-to-date must have the ability to develop hypothetical scenarios, using different forecasting methods and techniques.

Multilevel Forecasting

Businesses require the ability to forecast at any level. For example, they might need to generate either detail forecasts (single-item) or summary forecasts that reflect product line demand patterns. They might need to forecast at the company, department, item group, or specific item level.

Demand Forecasting

In today's customer-focused environment, businesses need to create separate forecasts for major customers or customer groups to isolate key demand sources. Demand forecasting is essential in a customer-driven environment. Coordination between planning by the Operations department-- through materials management-- and meeting customer needs by the Marketing department is the key to recognizing and managing product demand.

Integrating Information

Companies need integration within their supply chain. The ability to access all of the pertinent information for accurate forecasting and planning is imperative. Systems need to talk to each other to facilitate decision-making and planning. This integration eases the process of obtaining the necessary information to generate an accurate forecast.

Simplifying the Forecast

To simplify the forecast process, companies generally use a Planning Bill. Planning Bills are an artificial grouping of components, or bills of material, used for planning purposes. For example, if 24 different bills of material exist, based on different end products, the 24 bills can show the percentage split for each type of component on one bill.

Measuring Accuracy

Forecast error due to bias, which is the difference between actual demand and forecast demand, needs to be calculated to make more informed forecasting decisions. One commonly used method for measuring error is Mean Absolute Deviation (MAD). MAD is calculated by dividing the sum of absolute deviations by the number of total observations.

Forecast Management Overview

Effective management of distribution and manufacturing activities begins with understanding and anticipating market needs. Forecasting is the process of projecting past sales demand into the future. Implementing a forecasting system allows you to quickly assess current market trends and sales so that you can make informed decisions about your operations.

You can use forecasts to make planning decisions about:

- Customer orders
- Inventory
- Delivery of goods
- Work load
- Capacity requirements
    - Warehouse space
    - Labor
    - Equipment
- Budgets
- Development of new products
- Work force requirements

The Forecast Management system generates the following types of forecasts:

Detail forecasts	Detail forecasts are based on individual items.
Summary forecasts	Summary (or aggregated) forecasts are based on larger product groups, such as a product line.
Planning bill forecasts	Planning bill forecasts are based on groups of items in a bill of material format that reflect how an item is sold, not how it is built.

System Integration

The Forecast Management system is one of many systems that make up the Supply Chain Management module. Use the Supply Chain Management module to coordinate your inventory, raw material, and labor resources to deliver products according to a managed schedule. Supply Chain Management is fully integrated, and ensures that information is current and accurate across your business operations. It is a closed-loop manufacturing system that formalizes the activities of company and operations planning, as well as the execution of those plans.

The Forecast Management system generates demand projections that you use as input for the J.D. Edwards planning and scheduling systems. The planning and scheduling systems calculate material requirements for all component levels, from raw materials to complex subassemblies.

The Resource Requirements Planning (RRP) system uses forecasts to estimate the time and resources that are needed to make a product.

The Master Production Schedule (MPS) system plans and schedules the products that your company expects to manufacture. Forecasts are one MPS input that helps determine demand before you complete your production plans.

Material Requirements Planning (MRP) is an ordering and scheduling system that explodes the requirements of all MPS parent items to the component levels. You can also use forecasts as input for lower-level MRP components that are service parts with independent demand, which is demand not directly or exclusively tied to production of a particular product at a particular branch or plant.

Distribution Requirements Planning (DRP) is a management system that plans and controls the distribution of finished goods. You can use forecasts as input for DRP so that you can more accurately plan the demand that you supply through distribution.

Features of Forecast Management

You can use the Forecast Management system to:

- Generate forecasts.
- Enter forecasts manually.
- Maintain both forecasts that are generated by the system and manually entered forecasts.
- Create unique forecasts by large customer.
- Summarize sales order history data in weekly or monthly time periods.
- Generate forecasts that are based on any or all of 12 different formulas which address a variety of forecast situations that you might encounter.
- Calculate which of the 12 formulas provides the best-fit forecast.
- Define the hierarchy that the system uses to summarize sales order histories and detail forecasts.
- Create multiple hierarchies of address book category codes and item category codes, which you can use to sort and view records in the detail forecast tables.
- Review and adjust both forecasts and sales order actuals at any level of the hierarchy.
- Integrate the detail forecast records into DRP, MPS, and MRP generations.
- Force changes made at any component level to both higher levels and lower levels.
- Set a bypass flag to prevent changes that are generated by the force program being made to a level.
- Store and display both original and adjusted quantities and amounts.
- Attach descriptive text to a forecast at the detail and summary levels.

Flexibility is a key feature of the J.D. Edwards Forecast Management system. The most accurate forecasts consider quantitative information, such as sales trends and past sales order history, as well as qualitative information, such as changes in trade laws, competition, and government. The system processes quantitative information and allows you to adjust it with qualitative information. When you aggregate, or summarize, forecasts, the system uses changes that you make at any level of the forecast to automatically update all of the other levels.

You can perform simulations that are based on the initial forecast to compare different situations. After you accept a forecast, the system updates your manufacturing and distribution plan with any changes that you have made.

The system writes zero or negative detail records. For example, if the quantities or amounts in Refresh Actuals (R3465), Forecast Generation (R34650), or Forecast Revisions (P3460) are zero or negative, the system creates zero or negative records in the Forecast File table (F3460).

Tables Used by Forecast Management

The tables that are used by the Forecast Management system must identify data and processing information to support the forecasting process.

Business Unit Master (F0006)	Identifies branch, plant, warehouse, or business unit information, such as company, description, and assigned category codes.
Address Book Master (F0101)	Stores all of the address information pertaining to customers, vendors, employees, prospects, and others.
Forecast Summary File (F3400)	Contains the summary forecasts that are generated by the system and the summarized sales order history that is created by the Refresh Actuals program (R3465).
Forecast Summary Work File (F34006)	Connects the summary records from the Forecast Summary File table (F3400) to the detail records in the Forecast File table (F3460).
Forecast Prices (F34007)	Stores price information for item, branch, customer, and forecast type combinations.
Forecast File (F3460)	Contains the detail forecasts that are generated by the system and the sales order history that is created by the Refresh Actuals program (R3465).
Category Code Key Position File (F4091)	Stores the summary constants that you set up for each product hierarchy.
Item Master (F4101)	Stores basic information about each defined inventory item, such as item number, description, category codes, and unit of measure.
Item Branch File (F4102)	Defines and maintains warehouse or plant-level information, such as costs, quantities, physical locations, and branch-level category codes.
Sales Order Detail File (F4211)	Provides sales order demand by the requested date. The system uses this table to update the Sales Order History File table (F42119) for forecast calculations.
Sales Order History File (F42119)	Contains past sales data, which provide the basis for the forecast calculations.

Menu Overview of Forecast Management

The J.D. Edwards Forecast Management system uses the following menus:

- Forecasting (G36)
  - Periodic Forecasting Operations (G3421)
  - Advanced & Technical Operations (G3630)
    - Forecast Interoperability (G36301)
  - Forecasting Setup (G3441)

Fast Path Commands

The following table lists the fast path commands that you can use to access the Forecast Management menus. From any menu, enter the fast path command at the command line.

Fast Path Command	Menu	Title
FC	G3421	Periodic Forecasting Operations
PFOR	G3421	Periodic Forecasting Operations
SFOR	G3441	Forecasting Setup

Forecasting Levels and Methods

You can generate both detail (single item) forecasts and summary (product line) forecasts that reflect product demand patterns. The system analyzes past sales to calculate forecasts by using 12 forecasting methods. The forecasts include detail information at the item level, and higher-level information about a branch or the company as a whole.

Forecast Performance Evaluation Criteria

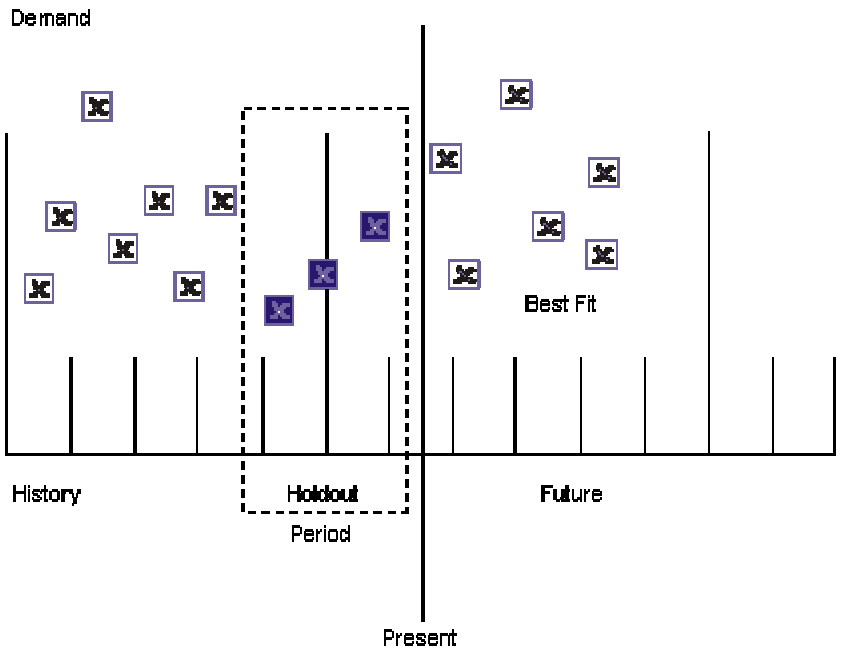
Depending on your selection of processing options and on trends and patterns in the sales data, some forecasting methods perform better than others for a given historical data set. A forecasting method that is appropriate for one product might not be appropriate for another product. It is also unlikely that a forecasting method that provides good results at one stage of a product's life cycle remains appropriate throughout the entire life cycle.

You can choose between two methods to evaluate the current performance of the forecasting methods: Mean Absolute Deviation (MAD) and Percent of Accuracy (POA). Both of these performance evaluation methods require historical sales data for a user-specified period of time. This period of time is called a *holdout period* or *periods of best fit*. The data in this period is used as the basis for recommending which forecasting method to use in making the next forecast projection. This recommendation is specific to each product, and can change from one forecast generation to the next.

Best Fit

The system recommends the best fit forecast by applying the selected forecasting methods to past sales order history and comparing the forecast simulation to the actual history. When you generate a best fit forecast, the system compares actual sales order histories to forecasts for a specific time period and computes how accurately each different forecasting method predicted sales. Then the system recommends the most accurate forecast as the best fit.

Best Fit Forecast



The system uses the following sequence of steps to determine the best fit:

1. Use each specified method to simulate a forecast for the holdout period.
2. Compare actual sales to the simulated forecasts for the holdout period.
3. Calculate the Percent of Accuracy (POA) or the Mean Absolute Deviation (MAD) to determine which forecasting method most closely matches the past actual sales. The system uses either POA or MAD, based on the processing options that you choose.
4. Recommend a best fit forecast by the POA that is closest to 100 percent (over or under) or the MAD that is closest to zero.

Forecasting Methods

The Forecast Management system uses 12 methods for quantitative forecasting and indicates which method provides the best fit for your forecasting situation.

The following 12 methods that are used by the system are:

- Method 1 - Percent Over Last Year
- Method 2 - Calculated Percent Over Last Year
- Method 3 - Last Year to This Year
- Method 4 - Moving Average
- Method 5 - Linear Approximation
- Method 6 - Least Square Regression
- Method 7 - Second Degree Approximation
- Method 8 - Flexible Method
- Method 9 - Weighted Moving Average
- Method 10 - Linear Smoothing
- Method 11 - Exponential Smoothing
- Method 12 - Exponential Smoothing with Trend and Seasonality

Specify the method that you want the system to use in the processing options for the Forecast Generation program (R34650). Most of these methods provide limited user control. For example, the weight placed on recent historical data or the date range of historical data that is used in the calculations can be specified by the user.

Note

The examples in the guide show the calculation procedure for each of the available forecasting methods, given an identical set of historical data.

Historical Sales Data

The method examples in the guide use part or all of the following data set, which is historical data for the years 1996 and 1997. The forecast projection goes into the year 1998.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	125	123	115	137	122	130	141	128	118	123	139	133
1997	128	117	115	125	122	137	140	129	131	114	119	137

This sales history data is stable with small seasonal increases in July and December. This pattern is characteristic of a mature product that might be approaching obsolescence.

Method 1 - Percent Over Last Year

This method uses the Percent Over Last Year formula to multiply each forecast period by the specified percentage increase or decrease.

To forecast demand, this method requires the number of periods for the best fit plus one year of sales history. This method is useful to forecast demand for seasonal items with growth or decline.

Example: Method 1 - Percent Over Last Year

The Percent Over Last Year formula multiplies sales data from the previous year by a user-specified factor, and then projects that result over the next year. This method might be useful in budgeting to simulate the impact of a specified growth rate or when sales history has a significant seasonal component.

Forecast specifications: multiplication factor. For example, specify 110 in the processing option to increase the previous year's sales history data by 10 percent.

Required sales history: one year for calculating the forecast, plus the user-specified number of time periods that are required for evaluating the forecast performance (periods of best fit).

History Used in the Forecast Calculation												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997	128	117	115	125	122	137	140	129	131	114	119	137
Forecast, 110% Over Last Year												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	141	129	127	138	134	151	154	142	144	125	131	151

$$\text{January } 1998 = 128 * 1.1 = 140.8 \text{ or } 141$$

$$\text{February } 1998 = 117 * 1.1 = 128.7 \text{ or } 129$$

$$\text{March } 1998 = 115 * 1.1 = 126.5 \text{ or } 127$$

Method 2 - Calculated Percent Over Last Year

This method uses the Calculated Percent Over Last Year formula to compare the past sales of periods specified to sales from the same periods of the previous year. The system determines a percentage increase or decrease, and then multiplies each period by the percentage to determine the forecast.

To forecast demand, this method requires the number of periods of sales order history plus one year of sales history. This method is useful to forecast short-term demand for seasonal items with growth or decline.

Example: Method 2 -: Calculated Percent Over Last Year

The Calculated Percent Over Last Year formula multiplies sales data from the previous year by a factor that is calculated by the system, and then it projects that result for the next year. This method might be useful in projecting the impact of extending the recent growth rate for a product into the next year while preserving a seasonal pattern that is present in sales history.

Forecast specifications: range of sales history to use in calculating the rate of growth. For example, specify n = 4 in the processing option to compare sales history for the most recent four periods to those same four periods of the previous year. Use the calculated ratio to make the projection for the next year.

Required sales history: one year for calculating the forecast plus the user-specified number of time periods that are required for evaluating the forecast performance (periods of best fit).

History Used in the Forecast Calculation, Given n = 4

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996									118	123	139	133
1997	128	117	115	125	122	137	140	129	131	114	119	137

Calculation of Percent Over Last Year, Given n = 4

1996... 118 + 123 + 139 + 133 = 513

1997... 131 + 114 + 119 + 137 = 501

$$\text{ratio}\,\% = (501/513) * 100\,\% = 97.66\%$$

Forecast, 97.66% Over Last Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	125	114	112	122	119	134	137	126	128	111	116	134

$$\text{January}\,1998 = 128 * 0.9766 = 125.00 \text{ or } 125$$

$$\text{February}\,1998 = 117 * 0.9766 = 114.26 \text{ or } 114$$

$$\text{March}\,1998 = 115 * 0.9766 = 112.31 \text{ or } 112$$

Method 3 - Last Year to This Year

This method uses last year's sales for the following year's forecast.

To forecast demand, this method requires the number of periods best fit plus one year of sales order history. This method is useful to forecast demand for mature products with level demand or seasonal demand without a trend.

Example: Method 3 - Last Year to This Year

The Last Year to This Year formula copies sales data from the previous year to the next year. This method might be useful in budgeting to simulate sales at the present level. The product is mature and has no trend over the long run, but a significant seasonal demand pattern might exist.

Forecast specifications: none.

Required sales history: one year for calculating the forecast plus the number of time periods that are required for evaluating the forecast performance (periods of best fit).

History Used in the Forecast Calculation												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997	128	117	115	125	122	137	140	129	131	114	119	137
Forecast, Last Year to This Year												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	128	117	115	125	122	137	140	129	131	114	119	137

January 1998 = January 1997 = 128

February 1998 = February 1997 = 117

March 1998 = March 1997 = 115

Method 4 - Moving Average

This method uses the Moving Average formula to average the specified number of periods to project the next period. You should recalculate it often (monthly, or at least quarterly) to reflect changing demand level.

To forecast demand, this method requires the number of periods best fit plus the number of periods of sales order history. This method is useful to forecast demand for mature products without a trend.

Example: Method 4 - Moving Average

Moving Average (MA) is a popular method for averaging the results of recent sales history to determine a projection for the short term. The MA forecast method lags behind trends. Forecast bias and systematic errors occur when the product sales history exhibits strong trend or seasonal patterns. This method works better for short-range forecasts of mature products than for products that are in the growth or obsolescence stages of the life cycle.

Forecast specifications: n = the number of periods of sales history to use in the forecast calculation. For example, specify n = 4 in the processing option to use the most recent four periods as the basis for the projection into the next time period. A large value for n (such as 12) requires more sales history. It results in a stable forecast, but it is slow to recognize shifts in the level of sales. Conversely, a small value for n (such as 3) is quicker to respond to shifts in the level of sales, but the forecast might fluctuate so widely that production cannot respond to the variations.

Required sales history: n plus the number of time periods that are required for evaluating the forecast performance (periods of best fit).

History Used in the Forecast Calculation												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997									131	114	119	137
Calculation of Moving Average, Given n = 4												
$(131+114+119+137)/4 = 125.25 \text{ or } 125$												
Moving Average Forecast, Given n = 4												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	125	124	126	128	126	126	127	127	126	126	126	126

$$\text{January } 1998 = (131+114+119+137)/4 = 125.25 \text{ or } 125$$

$$\text{February } 1998 = (114+119+137+125)/4 = 123.75 \text{ or } 124$$

$$\text{March } 1998 = (119+137+125+124)/4 = 126.25 \text{ or } 126$$

Method 5 - Linear Approximation

This method uses the Linear Approximation formula to compute a trend from the number of periods of sales order history and to project this trend to the forecast. You should recalculate the trend monthly to detect changes in trends.

This method requires the number of periods of best fit plus the number of specified periods of sales order history. This method is useful to forecast demand for new products, or products with consistent positive or negative trends that are not due to seasonal fluctuations.

Example: Method 5 - Linear Approximation

Linear Approximation calculates a trend that is based upon two sales history data points. Those two points define a straight trend line that is projected into the future. Use this method with caution because long-range forecasts are leveraged by small changes in just two data points.

Forecast specifications: n = the data point in sales history that is compared to the most recent data point to identify a trend. For example, specify n = 4 to use the difference between December 1997 (most recent data) and August 1997 (four periods prior to December) as the basis for calculating the trend.

Minimum required sales history: n plus 1 plus the number of time periods that are required for evaluating the forecast performance (periods of best fit).

History Used in the Forecast Calculation												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								129	131	114	119	137
Calculation of Linear Approximation, Given n = 4												
$(137-129)/4=2.0$												
Linear Approximation Forecast, Given n = 4												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	139	141	143	145	147	149	151	153	155	157	159	161

$$\text{January}\,1998=\text{Dec.}1997+\text{Trend}=137+(1)2=139$$

$$\text{February}\,1998=137+(2)2=141$$

$$\text{March}\,1998=137+(3)2=143$$

Method 6 - Least Squares Regression

The Least Squares Regression (LSR) method derives an equation describing a straight-line relationship between the historical sales data and the passage of time. LSR fits a line to the selected range of data so that the sum of the squares of the differences between the actual sales data points and the regression line are minimized. The forecast is a projection of this straight line into the future.

This method requires sales data history for the period that is represented by the number of periods best fit plus the specified number of historical data periods. The minimum requirement is two historical data points. This method is useful to forecast demand when a linear trend is in the data.

Example: Method 6 - Least Squares Regression

Linear Regression, or Least Squares Regression (LSR), is the most popular method for identifying a linear trend in historical sales data. The method calculates the values for a and b to be used in the formula:

$$Y=a+bX.$$

This equation describes a straight line, where Y represents sales and X represents time. Linear regression is slow to recognize turning points and step function shifts in demand. Linear regression fits a straight line to the data, even when the data is seasonal or better described by a curve. When sales history data follows a curve or has a strong seasonal pattern, forecast bias and systematic errors occur.

Forecast specifications: n = the periods of sales history that will be used in calculating the values for a and b. For example, specify n = 4 to use the history from September through December 1997 as the basis for the calculations. When data is available, a larger n (such as n = 24) would ordinarily be used. LSR defines a line for as few as two data points. For this example, a small value for n (n = 4) was chosen to reduce the manual calculations that are required to verify the results.

Minimum required sales history: n periods plus the number of time periods that are required for evaluating the forecast performance (periods of best fit).

History Used in the Forecast Calculation

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997									131	114	119	137

Calculation of Linear Regression Coefficients, Given n = 4

	X	Y	XY	X^2
Sep. '97	1	131	131	1
Oct. '97	2	114	228	4
Nov. '97	3	119	357	9
Dec. '97	4	137	548	16
	$\sum X = 10$	$\sum Y = 501$	$\sum XY = 1264$	$\sum X^2 = 30$

$$b = \left(n\sum XY - \sum X\sum Y\right)/\left(n\sum X^2 - \left(\sum X\right)^2\right) = \left[4(1264) - (10 * 501)\right]/\left[4(30) - (10)^2\right] =$$
$$= (5056 - 5010)/(120 - 100) = 46/20 = 2.3$$

$$a = \left(\sum Y/n\right) - b\left(\sum X/n\right) = (501/4) - \left[(2.3)(10/4)\right] = 119.5$$

Linear Regression Forecast, Given Y = 119.5 - 2.3 X, where X = 1 => Sep. 1997

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	131	133	136	138	140	143	145	147	149	152	154	156

$$\text{January } 1998 = 119.5 + (5 * 2.3) = 131$$

$$\text{February } 1998 = 119.5 + (6 * 2.3) = 133.3 \text{ or } 133$$

$$\text{March } 1998 = 119.5 + (7 * 2.3) = 135.6 \text{ or } 136$$

Method 7 - Second Degree Approximation

To project the forecast, this method uses the Second Degree Approximation formula to plot a curve that is based on the number of periods of sales history.

This method requires the number periods best fit plus the number of periods of sales order history times three. This method is not useful to forecast demand for a long-term period.

Example: Method 7 - Second Degree Approximation

Linear Regression determines values for a and b in the forecast formula $Y = a + bX$ with the objective of fitting a straight line to the sales history data. Second Degree Approximation is similar, but this method determines values for a, b, and c in the following forecast formula:

$$Y = a + bX + cX^2$$

The objective of this method is to fit a curve to the sales history data. This method is useful when a product is in the transition between life cycle stages. For example, when a new product moves from introduction to growth stages, the sales trend might accelerate. Because of the second order term, the forecast can quickly approach infinity or drop to zero (depending on whether coefficient c is positive or negative). This method is useful only in the short term.

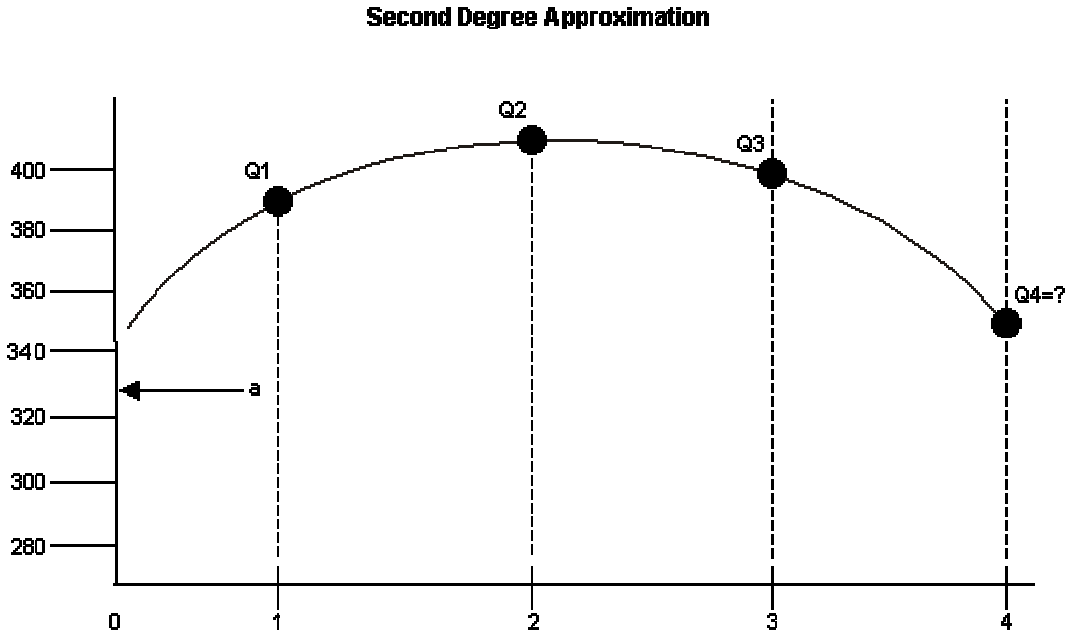
Forecast specifications: the formulae find a, b, and c to fit a curve to exactly three points. You specify n, the number of time periods of data to accumulate into each of the three points. In this example, n = 3. Therefore, actual sales data for April through June is combined into the first point, Q1. July through September are added together to create Q2, and October through December sum to Q3. The curve is fitted to the three values Q1, Q2, and Q3.

Required sales history: 3 * n periods for calculating the forecast plus the number of time periods that are required for evaluating the forecast performance (periods of best fit).

History Used in the Forecast Calculation												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Q0			**Q1**			**Q2**			**Q3**		
				384			400			370		
1997				125	122	137	140	129	131	114	119	137
Q1 = 125 + 122 + 137 = 384 Q2 = 140 + 129 + 131 = 400 Q3 = 114 + 119 + 137 = 370												

The next step involves calculating the three coefficients a, b, and c to be used in the forecasting formula $Y = a + bX + cX^2$.

Q1, Q2, and Q3 are shown on the following graph, where time is plotted on the horizontal axis. Q1 represents total historical sales for April, May, and June and is plotted at X =1, Q2 corresponds to July through September, Q3 corresponds to October through December, and Q4 represents January through March 1998.



Three equations describe the three points on the graph:

(1) $Q1 = a + bX + cX^2$, where $X = 1 (Q1 = a + b + c)$

(2) $Q2 = a + bX + cX^2$, where $X = 2 (Q2 = a + 2b + 4c)$

(3) $Q3 = a + bX + cX^2$, where $X = 3 (Q3 = a + 3b + 9c)$

Solve the three equations simultaneously to find b, a, and c:

Subtract equation (1) from equation (2) and solve for b

$$(2) - (1) = Q2 - Q1 = b + 3c$$

$$b = (Q2 - Q1) - 3c$$

Substitute this equation for b into equation (3)

$$(3) Q3 = a + 3[(Q2 - Q1) - 3c] + 9c$$

$$a = Q3 - 3(Q2 - Q1)$$

Finally, substitute these equations for a and b into equation (1)

$$(1)[Q3 - 3(Q2 - Q1)] + [(Q2 - Q1) - 3c] + c = Q1$$

$$c = [(Q3 - Q2) + (Q1 - Q2)]/2$$

The Second Degree Approximation method calculates a, b, and c as follows:

$$a = Q3 - 3(Q2 - Q1) = 370 - 3(400 - 384) = 370 - 3(16) = 322$$

$$c = [(Q3 - Q2) + (Q1 - Q2)]/2 = [(370 - 400) + (384 - 400)]/2 = -23$$

$$b = (Q2 - Q1) - 3c = (400 - 384) - (3 * -23) = 16 + 69 = 85$$

Calculation of Second Degree Approximation Forecast

$$Y = a + bX + cX^2 = 322 + 85X + (-23)(X^2)$$

When X = 4, Q4 = 322 + 340 - 368 = 294. The forecast = 294 / 3 = 98 per period

When X = 5, Q5 = 322 + 425 - 575 = 172. The forecast = 172 / 3 = 57.33 or 57 per period

When X = 6, Q6 = 322 + 510 - 828 = 4. The forecast = 4 / 3 = 1.33 or 1 per period

Forecast, Last Year to This Year

	Q4 = 294			Q5 = 172			Q6 = 4			Q7 = negative		
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	98	98	98	57	57	57	1	1	1	--	--	--

Method 8 - Flexible Method

This method allows you to select the best fit number of periods of sales order history that starts n months prior to the forecast start date, and to apply a percentage increase or decrease multiplication factor with which to modify the forecast. This method is similar to Method 1, Percent Over Last Year, except that you can specify the number of periods that you use as the base.

Depending on what you select as n, this method requires periods best fit plus the number of periods of sales data that is indicated. This method is useful to forecast demand for a planned trend.

Example: Method 8 - Flexible Method

The Flexible Method (Percent Over n Months Prior) is similar to Method 1, Percent Over Last Year. Both methods multiply sales data from a previous time period by a user-specified factor, and then project that result into the future. In the Percent Over Last Year method, the projection is based on data from the same time period in the previous year. You can also use the Flexible Method to specify a time period, other than the same period in the last year, to use as the basis for the calculations.

Forecast specifications:

- Multiplication factor. For example, specify 110 in the processing option to increase previous sales history data by 10 percent.
- Base period. For example, n = 4 causes the first forecast to be based on sales data in September 1997.

Minimum required sales history: the user-specified number of periods back to the base period plus the number of time periods that is required for evaluating the forecast performance (periods of best fit).

History Used in the Forecast Calculation												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997									131	114	119	137
Forecast, 110% Over n = 4 months prior												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	144	125	131	151	159	138	144	166	174	152	158	182

Method 9 - Weighted Moving Average

The Weighted Moving Average formula is similar to Method 4, Moving Average formula, because it averages the previous month's sales history to project the next month's sales history. However, with this formula, you can assign weights for each of the prior periods.

This method requires the number of weighted periods selected plus the number of periods best fit data. Similar to Moving Average, this method lags behind demand trends, so it is not recommended for products with strong trends or seasonality. This method is useful to forecast demand for mature products with demand that is relatively level.

Example: Method 9 - Weighted Moving Average

The Weighted Moving Average (WMA) method is similar to Method 4, Moving Average (MA). However, with the Weighted Moving Average, you can assign unequal weights to the historical data. The method calculates a weighted average of recent sales history to arrive at a projection for the short term. More recent data is usually assigned a greater weight than older data, so WMA is more responsive to shifts in the level of sales. However, forecast bias and systematic errors occur when the product sales history exhibits strong trends or seasonal patterns. This method works better for short range forecasts of mature products than for products in the growth or obsolescence stages of the life cycle.

Forecast specifications:

- The number of periods of sales history (n) to use in the forecast calculation. For example, specify n = 4 in the processing option to use the most recent four periods as the basis for the projection into the next time period. A large value for n (such as 12) requires more sales history. Such a value results in a stable forecast, but it is slow to recognize shifts in the level of sales. Conversely, a small value for n (such as 3) responds more quickly to shifts in the level of sales, but the forecast might fluctuate so widely that production cannot respond to the variations.
- The weight assigned to each of the historical data periods. The assigned weights must total 1.00. For example, when n = 4, assign weights of 0.50, 0.25, 0.15, and 0.10 with the most recent data receiving the greatest weight.

Minimum required sales history: n plus the number of time periods that are required for evaluating the forecast performance (periods of best fit).

History Used in the Forecast Calculation												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997									131	114	119	137
Calculation of Moving Average, Given n = 4												
$[(131*0.10)+(114*0.15)+(119*0.25)+(137*0.50)]/(0.10+0.15+0.25+0.50)=128.45 \text{ or } 128$												
Weighted Moving Average Forecast, Given n = 4												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	128	128	128	129	129	129	129	129	129	129	129	129

$$\text{January } 1998 = [(131*0.10)+(114*0.15)+(119*0.25)+(137*0.50)]/(0.10+0.15+0.25+0.50)=128.45$$

$$\text{February } 1998 = [(114*0.10)+(119*0.15)+(137*0.25)+(128*0.50)]/1=127.5 \text{ or } 128$$

$$\text{March } 1998 = [(119*0.10)+(137*0.15)+(128*0.25)+(128*0.50)]/1=128.45 \text{ or } 128$$

Method 10 - Linear Smoothing

This method calculates a weighted average of past sales data. In the calculation, this method uses the number of periods of sales order history (from 1 to 12) that is indicated in the processing option. The system uses a mathematical progression to weigh data in the range from the first (least weight) to the final (most weight). Then the system projects this information to each period in the forecast.

This method requires the month's best fit plus the sales order history for the number of periods that are specified in the processing option.

Example: Method 10 - Linear Smoothing

This method is similar to Method 9, Weighted Moving Average (WMA). However, instead of arbitrarily assigning weights to the historical data, a formula is used to assign weights that decline linearly and sum to 1.00. The method then calculates a weighted average of recent sales history to arrive at a projection for the short term. Like all linear moving average forecasting techniques, forecast bias and systematic errors occur when the product sales history exhibits strong trend or seasonal patterns. This method works better for short range forecasts of mature products than for products in the growth or obsolescence stages of the life cycle.

Forecast specifications:

- n = the number of periods of sales history to use in the forecast calculation. For example, specify n = 4 in the processing option to use the most recent four periods as the basis for the projection into the next time period. The system automatically assigns the weights to the historical data that decline linearly and sum to 1.00. For example, when n = 4, the system assigns weights of 0.4, 0.3, 0.2, and 0.1, with the most recent data receiving the greatest weight.

Minimum required sales history: n plus the number of time periods that are required for evaluating the forecast performance (periods of best fit).

History Used in the Forecast Calculation

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997									131	114	119	137

Calculation of Weights, Given n = 4

$$\left(n^2 + n\right)/2 = \left(16 + 4\right)/2 = 10$$

September weight = 1/10

October weight = 2/10

November weight = 3/10

December weight = 4/10

Total weight = 10/10

Calculation of Moving Average, Given n = 4

$$\left[\left(131 * 0.1\right) + \left(114 * 0.2\right) + \left(119 * 0.3\right) + \left(137 * 0.4\right)\right]/\left(0.1 + 0.2 + 0.3 + 0.4\right) = 126.4 \text{ or } 126$$

Linear Smoothing Forecast, Given n = 4

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	126	127	128	128	128	128	128	128	128	128	128	128

Method 11 - Exponential Smoothing

This method calculates a smoothed average, which becomes an estimate representing the general level of sales over the selected historical data periods.

This method requires sales data history for the time period that is represented by the number of periods best fit plus the number of historical data periods that are specified. The minimum requirement is two historical data periods. This method is useful to forecast demand when no linear trend is in the data.

Example: Method 11 - Exponential Smoothing

This method is similar to Method 10, Linear Smoothing. In Linear Smoothing, the system assigns weights that decline linearly to the historical data. In Exponential Smoothing, the system assigns weights that exponentially decay. The equation for Exponential Smoothing forecasting is:

Forecast = alpha (Previous Actual Sales) + (1 - alpha) Previous Forecast

The forecast is a weighted average of the actual sales from the previous period and the forecast from the previous period. Alpha is the weight that is applied to the actual sales for the previous period. (1 - alpha) is the weight that is applied to the forecast for the previous period. Valid values for alpha range from 0 to 1 and usually fall between 0.1 and 0.4. The sum of the weights is 1.00 (alpha + (1 - alpha) = 1).

You should assign a value for the smoothing constant, alpha. If you do not assign a value for the smoothing constant, the system calculates an assumed value that is based on the number of periods of sales history that is specified in the processing option.

Forecast specifications:

- alpha = the smoothing constant that is used to calculate the smoothed average for the general level or magnitude of sales. Valid values for alpha range from 0 to 1.
- n = the range of sales history data to include in the calculations. Generally, one year of sales history data is sufficient to estimate the general level of sales. For this example, a small value for n (n = 4) was chosen to reduce the manual calculations that are required to verify the results. Exponential Smoothing can generate a forecast that is based on as little as one historical data point.

Minimum required sales history: n plus the number of time periods that are required for evaluating the forecast performance (periods of best fit).

History Used in the Forecast Calculation												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997									131	114	119	137
Calculation of Exponential Smoothing , Given n = 4, alpha = 0.3												

October Smoothed Average*	= September Actual
	= alpha (September Actual) + (1 - alpha) September Smoothed Average
	= 1 * (131) + (0) (0) = 131
November Smoothed Average	= 0.3 (October Actual) + (1 - 0.3) October Smoothed Average
	= 0.3 (114) + 0.7 (131) = 125.9 or 126
December Smoothed Average	= 0.3 (November Actual) + 0.7 (November Smoothed Average)
	= 0.3 (119) + 0.7 (126) = 123.9 or 124
January Forecast	= 0.3 (December Actual) + 0.7 (December Smoothed Average)
	= 0.3 (137) + 0.7 (124) = 127.9 or 128
February Forecast	= January Forecast
March Forecast	= January Forecast

* Exponential Smoothing is initialized by setting the first smoothed average equal to the first specified actual sales data point. In effect, alpha = 1.0 for the first iteration. For subsequent calculations, alpha is set to the value that is specified in the processing option.

Exponential Smoothing Forecast, Given alpha = 0.3, n = 4

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	128	128	128	128	128	128	128	128	128	128	128	128

Method 12 - Exponential Smoothing with Trend and Seasonality

This method calculates a trend, a seasonal index, and an exponentially smoothed average from the sales order history. The system then applies a projection of the trend to the forecast and adjusts for the seasonal index.

This method requires the number of periods best fit plus two years of sales data, and is useful for items that have both trend and seasonality in the forecast. You can enter the alpha and beta factor or have the system calculate them. Alpha and beta factors are the smoothing constant that the system uses to calculate the smoothed average for the general level or magnitude of sales (alpha) and the trend component of the forecast (beta).

Example: Method 12 - Exponential Smoothing with Trend and Seasonality

This method is similar to Method 11, Exponential Smoothing, in that a smoothed average is calculated. However, Method 12 also includes a term in the forecasting equation to calculate a smoothed trend. The forecast is composed of a smoothed average that is adjusted for a linear trend. When specified in the processing option, the forecast is also adjusted for seasonality.

Forecast specifications:

- Alpha = the smoothing constant that is used in calculating the smoothed average for the general level or magnitude of sales. Valid values for alpha range from 0 to 1.
- Beta = the smoothing constant used in calculating the smoothed average for the trend component of the forecast. Valid values for beta range from 0 to 1.
- Whether a seasonal index is applied to the forecast.

Note
Alpha and beta are independent of one another. They do not have to sum to 1.0.

Minimum required sales history: one year plus the number of time periods that are required to evaluate the forecast performance (periods of best fit). When two or more years of historical data are available, the system uses two years of data in the calculations.

Method 12 uses two Exponential Smoothing equations and one simple average to calculate a smoothed average, a smoothed trend, and a simple average seasonal index.

A) An exponentially smoothed average:

$$A_t = \alpha\left(D_t / S_{t-L}\right) + \left(1-\alpha\right)\left(A_{t-1} + T_{t-1}\right)$$

B) An exponentially smoothed trend:

$$T_t = \beta\left(A_t - A_{t-1}\right) + \left(1-\beta\right)T_{t-1}$$

C) A simple average seasonal index:

$$S_t = \left[\left(D_{t-L} + D_{t-2L}\right) / \sum_{n=(t-2L)}^{n=(t-1)} D_n\right] * L$$

D) The forecast is then calculated by using the results of the three equations:

$$F_{t+m} = \left(A_t + T_t m\right)S_{t-L+m}$$

where:

- L is the length of seasonality (L = 12 months or 52 weeks)
- t is the current time period
- m is the number of time periods into the future of the forecast
- S is the multiplicative seasonal adjustment factor that is indexed to the appropriate time period

History Used in the Forecast Calculation													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1996	125	123	115	137	122	130	141	128	118	123	139	133	1534
1997	128	117	115	125	122	137	140	129	131	114	119	137	1514
Calculation of Linear and Seasonal Exponential Smoothing, Given alpha = 0.3, beta = 0.4													

Initializing the Process:

January 1997 Seasonal Index, S_1 =

$$S_1 = (125 + 128/1534 + 1514) * 12 = 0.083005 * 12 = 0.9961$$

January 1997 Smoothed Average*, A_1 =

A_1 = January 1997 Actual/ January Seasonal Index

A_1 = 128/0.9960

A_1 = 128.51

January 1997 Smoothed Trend*, T_1 =

T_1 = 0 insufficient information to calculate first smoothed trend

February 1997 Seasonal Index, S_2 =

$$S_2 = (123 + 117/1534 + 1514) * 12 = 0.07874 * 12 = 0.9449$$

February 1997 Smoothed Average, A_2 =

$$A_2 = \alpha(D_2 / S_2) + (1 - \alpha)(A_1 + T_1)$$

$$A_2 = 0.3(117/0.9449) + (1 - 0.3)(128.51 + 0) = 127.10$$

February 1997 Smoothed Trend, T_2 =

$$T_2 = \beta(A_2 - A_1) + (1 - \beta)T_1$$

$$T_2 = 0.4(127.10 - 128.51) + (1 - 0.4) * 0 = -0.56$$

March 1997 Seasonal Index, S_3 =

$$S_3 = (115 + 115/1534 + 1514) * 12 = 0.07546 * 12 = 0.9055$$

March 1997 Smoothed Average, A_3 =

$$A_3 = \alpha(D_3 / S_3) + (1 - \alpha)(A_2 + T_2)$$

$$A_3 = 0.3(115/0.9055) + (1 - 0.3)(127.10 - 0.56) = 126.68$$

March 1997 Smoothed Trend, T_3 =

$$T_3 = \beta(A_3 - A_2) + (1-\beta)T_2$$

$$T_3 = 0.4(126.68 - 127.10) + (1-0.4) * -0.56 = -0.50$$

(Continue through December 1997)

December 1997 Seasonal Index, S_{12} =

$$S_{12} = (133 + 137/1534 + 1514) * 12 = 0.08858 * 12 = 1.0630$$

December 1997 Smoothed Average, A_{12} =

$$A_{12} = \alpha(D_{12} / S_{12}) + (1-\alpha)(A_{11} + T_{11})$$

$$A_{12} = 0.3(137/1.0630) + (1-0.3)(124.64 - 1.121) = 125.13$$

December 1997 Smoothed Trend, T_{12} =

$$T_{12} = \beta(A_{12} - A_{11}) + (1-\beta)T_{11}$$

$$T_{12} = 0.4(125.13 - 124.64) + (1-0.4) * -1.121 = -0.477$$

Calculation of Linear and Seasonal Exponentially Smoothed Forecast

$$F_{t+m} = (A_t + T_t m)S_{t-L+m}$$

* Calculations for Exponential Smoothing with Trend and Seasonality are initialized by setting the first smoothed average equal to the deseasonalized first actual sales data. The trend is initialized at zero for the first iteration. For subsequent calculations, alpha and beta are set to the values that are specified in the processing options.

Exponential Smoothing with Trend and Seasonality Forecast, alpha = 0.3, beta = 0.4

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	124.16	117.33	112.01	127.10	117.91	128.52	134.73	122.74	118.45	121.77	121.77	126.92

Evaluating the Forecasts

You can choose forecasting methods to generate as many as 12 forecasts for each product. Each forecasting method might create a slightly different projection. When thousands of products are forecast, it is impractical to make a subjective decision regarding which forecast to use in your plans for each product.

The system automatically evaluates performance for each forecasting method that you choose and for each product that you forecast. You can choose between two performance criteria: Mean Absolute Deviation (MAD) and Percent of Accuracy (POA). MAD is a measure of forecast error. POA is a measure of forecast bias. Both of these performance evaluation techniques require actual sales history data for a user-specified period of time. The period of recent history used for evaluation is called a *holdout period* or periods of best fit.

To measure the performance of a forecasting method, the system:

- Uses the forecast formulas to simulate a forecast for the historical holdout period
- Makes a comparison between the actual sales data and the simulated forecast for the holdout period

When you choose multiple forecast methods, this same process occurs for each method. Multiple forecasts are calculated for the holdout period and compared to the known sales history for that same period of time. The forecasting method that produces the best match (best fit) between the forecast and the actual sales during the holdout period is recommended for use in your plans. This recommendation is specific to each product and might change each time that you generate a forecast.

Mean Absolute Deviation

Mean Absolute Deviation (MAD) is the mean (or average) of the absolute values (or magnitude) of the deviations (or errors) between actual and forecast data. MAD is a measure of the average magnitude of errors to expect, given a forecasting method and data history. Because absolute values are used in the calculation, positive errors do not cancel out negative errors. When comparing several forecasting methods, the one with the smallest MAD has shown to be the most reliable for that product for that holdout period. When the forecast is unbiased and errors are normally distributed, a simple mathematical relationship exists between MAD and two other common measures of distribution, which are standard deviation and Mean Squared Error. For example:

- $\text{MAD} = \left(\sum | \, Actual - Forecast \, |\right) / n$
- $\text{Standard Deviation}, \left(\sigma\right) \cong 1.25 \, \text{MAD}$
- $\text{Mean Squared Error} \cong -\sigma^2$

The following shows the calculation of MAD for two of the forecasting methods. This example assumes that the user has specified in the processing option that the holdout period length (periods of best fit) is equal to 5 periods.

Method 1, Last Year to This Year

History Used in the Calculation of MAD, Given Periods of Best Fit = 5												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996								128	118	123	139	133
110 Percent Over Last Year Forecast for the Holdout Period												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								141	130	135	153	146
Actual Sales History for the Holdout Period												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								129	131	114	119	137
Absolute Value of Errors, Actual - Forecast												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
								12	1	21	34	9
Mean Absolute Deviation = (12 + 1 + 21 + 34 + 9) / 5 = 15.4												

Method 4, Moving Average, n = 4

History Used in the Calculation of MAD, Given Periods of Best Fit = 5, n = 4												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997				125	122	137	140					
Moving Average Forecast for the Holdout Period, Given n = 4 (125 + 122 + 137 + 140) / 4 = 131 Aug. `97 (122 + 137 + 140 + 129) / 4 = 132 Sep. `97 (137 + 140 + 129 + 131) / 4 = 134.25 or 134 Oct. `97 (140 + 129 + 131 + 114) / 4 = 128.5 or 129 Nov. '97 (129 + 131 + 114 + 119) / 4 = 123.25 or 123 Dec. `97												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								141	130	135	153	146
Actual Sales History for the Holdout Period												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								129	131	114	119	137

Absolute Value of Errors, Actual - Forecast												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
								2	1	20	10	14
Mean Absolute Deviation = (2 + 1 + 20 + 10 + 14) / 5 = 9.4												

Based on these two choices, the Moving Average, n = 4 method, is recommended because it has the smaller MAD, 9.4, for the given holdout period.

Percent of Accuracy

Percent of Accuracy (POA) is a measure of forecast bias. When forecasts are consistently too high, inventories accumulate and inventory costs rise. When forecasts are consistently too low, inventories are consumed and customer service declines. A forecast that is 10 units too low, then 8 units too high, then 2 units too high is an unbiased forecast. The positive error of 10 is canceled by negative errors of 8 and 2.

$$\text{Error} = \text{Actual} - \text{Forecast}$$

When a product can be stored in inventory, and when the forecast is unbiased, a small amount of safety stock can be used to buffer the errors. In this situation, eliminating forecast errors is not as important as generating unbiased forecasts. However, in service industries, the above situation is viewed as three errors. The service is understaffed in the first period, and then overstaffed for the next two periods. In services, the magnitude of forecast errors is usually more important than is forecast bias.

$$\text{POA} = \left[\left(\sum \text{Actual sales during holdout period}\right)/\left(\sum \text{Forecast sales during holdout period}\right)\right] * 100\%$$

The summation over the holdout period allows positive errors to cancel negative errors. When the total of actual sales exceeds the total of forecast sales, the ratio is greater than 100 percent. Of course, the forecast cannot be more than 100 percent accurate. When a forecast is unbiased, the POA ratio is 100 percent. Therefore, a 95 percent accuracy rate is more desirable than a 110 percent accurate rate. The POA criterion chooses the forecasting method that has a POA ratio that is closest to 100 percent.

The following example shows the calculation of POA for two forecasting methods. This example assumes that the user has specified in the processing option that the holdout period length (periods of best fit) is equal to 5 periods.

Method 1, Last Year to This Year

History Used in the Calculation of POA, Given Periods Best Fit = 5												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996								128	118	123	139	133
110 Percent Over Last Year Forecast for the Holdout Period												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								141	130	135	153	146
Actual Sales History for the Holdout Period												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								129	131	114	119	137

Sum of Actuals = (129 + 131 + 114 + 119 + 137) = 630

Sum of Forecasts = (141 + 130 + 135 + 153 + 146) = 705

$$\text{POA ratio} = (630/705) * 100\% = 89.36\%$$

Method 4, Moving Average, n = 4

History Used in the Calculation of MAD, Given Periods Best Fit = 5, n = 4												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997				125	122	137	140					
Moving Average Forecast for the Holdout Period, Given n = 4												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								131	132	134	129	123
Actual Sales History for the Holdout Period												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								129	131	114	119	137

Sum of Actuals = (129 + 131 + 114 + 119 + 137) = 630

Sum of Forecasts = (131 + 132 + 134 + 129 + 123) = 649

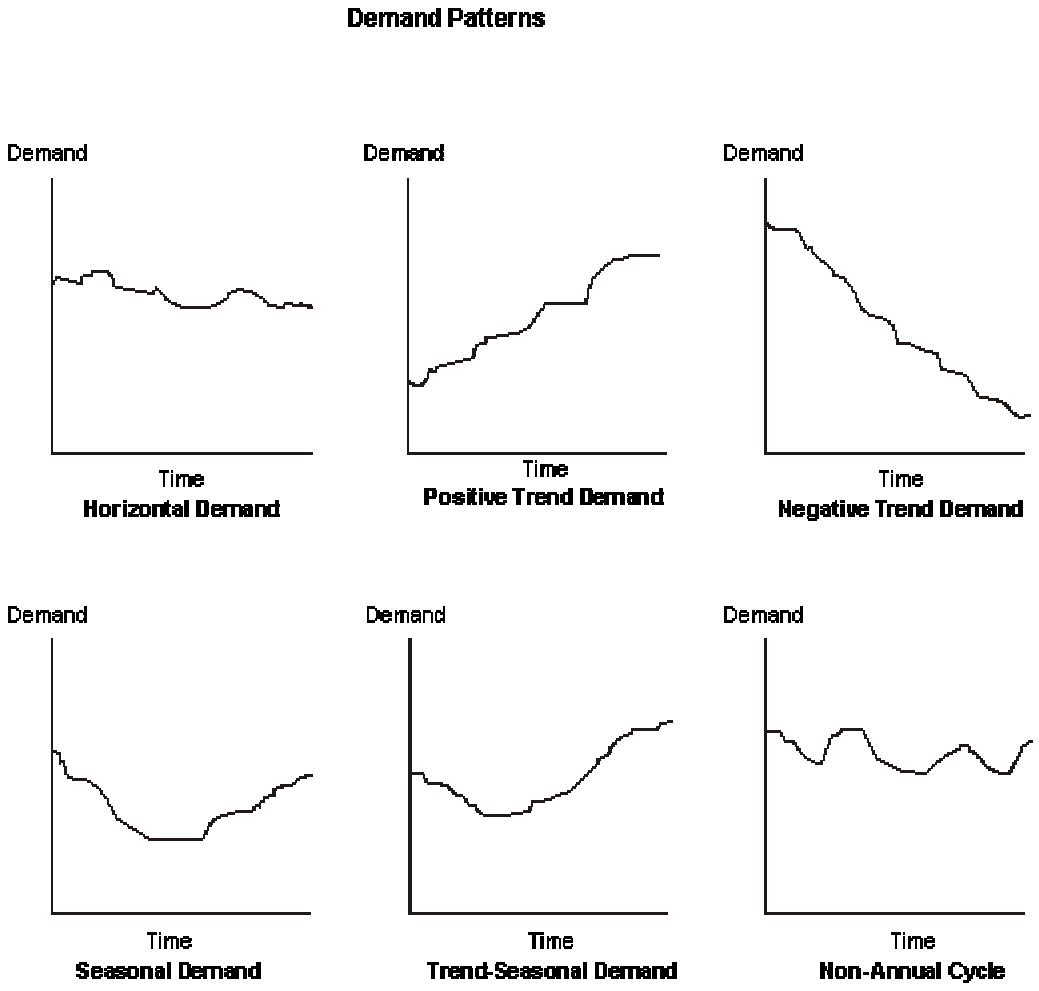
$$\text{POA ratio} = (630/649) * 100\% = 97.07\%$$

Based on these two choices, the Moving Average, n = 4 method is recommended because it has POA closest to 100 percent for the given holdout period.

Demand Patterns

The Forecast Management system uses sales order history to predict future demand. Six typical examples of demand patterns are explained in the following section. Forecast methods available in the J.D. Edwards Forecast Management system are tailored for these demand patterns.

Six Typical Demand Patterns



You can forecast the independent demand of the following information for which you have past data:

- Samples
- Promotional items
- Customer orders
- Service parts
- Interplant demands

You can also forecast demand for the following manufacturing strategy types by using the manufacturing environments in which they are produced:

Make-to-stock	The manufacture of end items that meet the customers' demand which occurs after the product is completed
Assemble-to-order	The manufacture of subassemblies that meet customers' option selections
Make-to-order	The manufacture of raw materials and components that are stocked to reduce leadtime

Forecast Accuracy

The following statistical laws govern forecast accuracy:

- A long-term forecast is less accurate than a short-term forecast because the further into the future you project the forecast, the more variables can impact the forecast.
- A forecast for a product family tends to be more accurate than a forecast for individual members of the product family. Some errors cancel each other as the forecasts for individual items summarize into the group, thus creating a more accurate forecast.

Forecast Considerations

You should not rely exclusively on past data to forecast future demands. The following circumstances might affect your business, and require you to review and modify your forecast:

- New products that have no past data
- Plans for future sales promotion
- Changes in national and international politics
- New laws and government regulations

- Weather changes and natural disasters
- Innovations from competition
- Economic changes

You can also use the following kinds of long-term trend analysis to influence the design of your forecasts:

- Market surveys
- Leading economic indicators

Forecasting Process

You use the Refresh Actuals program (R3465) to copy data from the Sales Order History File table (F42119), the Sales Order Detail File table (F4211), or both, into either the Forecast File table (F3460) or the Forecast Summary File table (F3400), depending on the kind of forecast that you plan to generate.

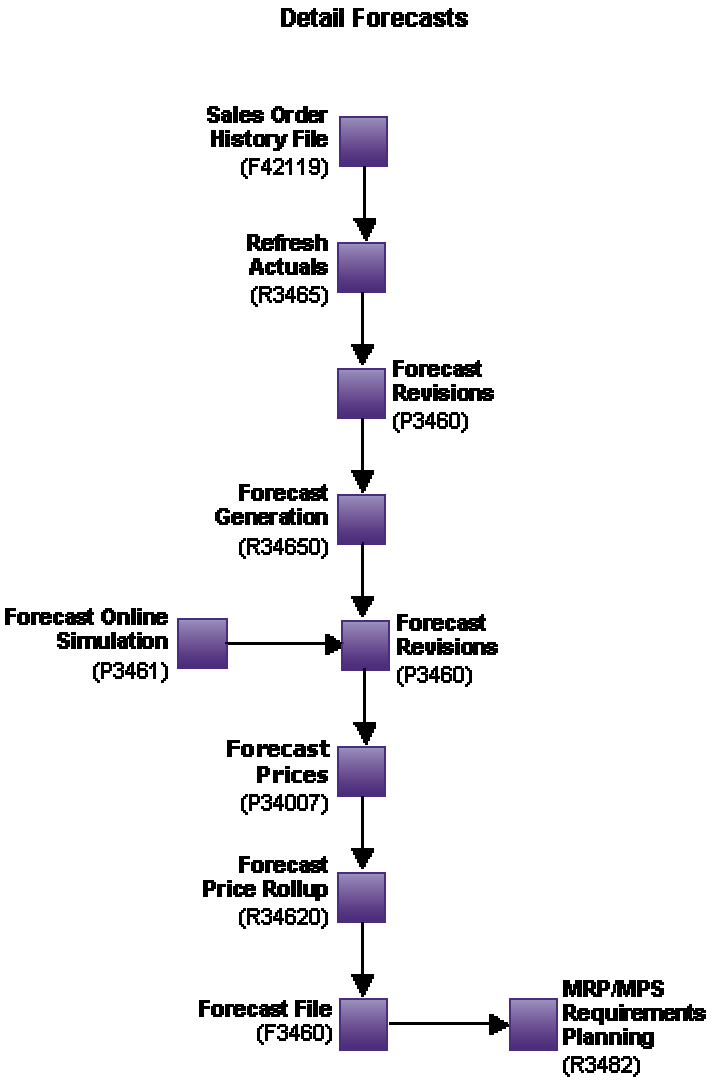
Detail Forecasts

Detail forecasts are based on individual items. Use detail forecasts to project demand at the single-item level, according to each item's individual history.

Forecasts are based on sales data from the Sales Order History File table (F42119) and the Sales Order Detail File table (F4211). Before you generate forecasts, you use the Refresh Actuals program (R3465) to copy sales order history information from tables F42119 and the F4211 into the Forecast File table (F3460). This table also stores the generated forecasts.

You can generate detail forecasts or summaries of detail forecasts, based on data in table F3460. Data from your forecasts can then be revised.

The following graphic illustrates the sequence that you follow when you use the detail forecasting programs.



Setting Up Detail Forecasts

Before you generate a detail forecast, you set up criteria for the dates and kinds of data on which the forecasts are based, and set up the time periods that the system should use to structure the forecast output.

To set up detail forecasts, you must:

- Set up inclusion rules to specify the sales history records and current sales orders on which you want to base the forecast.
- Specify beginning and ending dates for the forecast.
- Indicate the date pattern on which you want to base the forecast.
- Add any forecast types not already provided by the system.
- Define large customers for separate customer forecasts.

Setting Up Forecasting Supply and Demand Inclusion Rules

The Forecast Management system uses supply and demand inclusion rules to determine which records from the Sales Order Detail File table (F4211) and Sales Order History File table (F42119) to include or exclude when you run the Refresh Actuals program (R3465). Supply and demand inclusion rules allow you to specify the status and type of items and documents to include in the records. You can set up as many different inclusion rule versions as you need for forecasting.

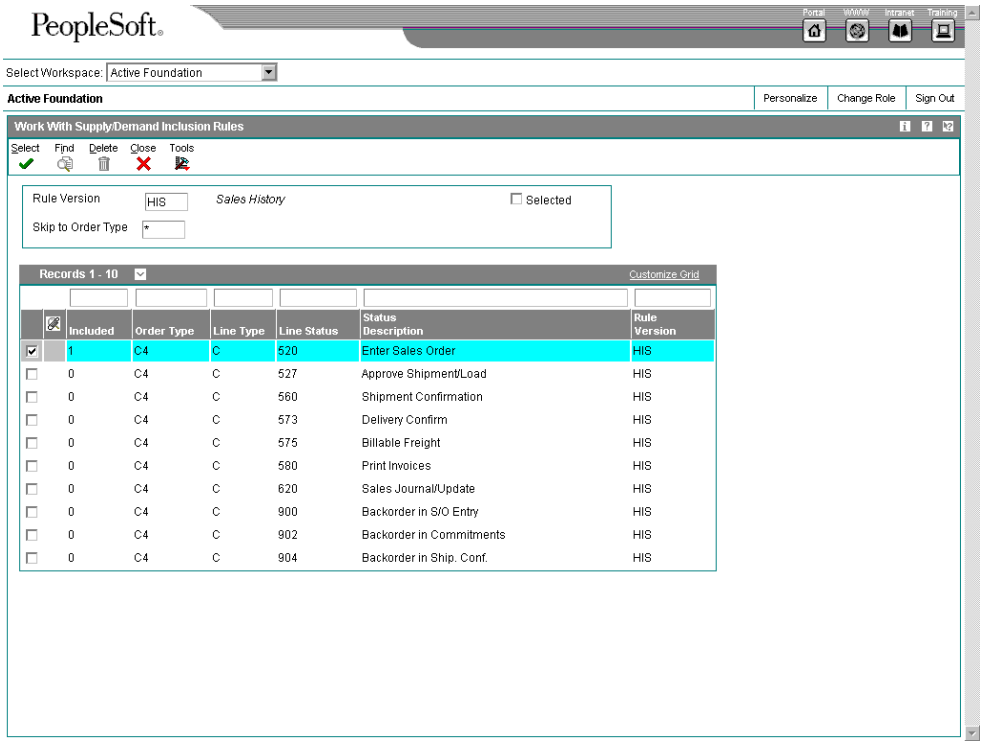
See Also

- *Setting Up Supply and Demand Inclusion Rules* in the *Requirements Planning Guide*

► To set up forecasting supply and demand inclusion rules

From the Material Planning Setup menu (G3442), choose Supply/Demand Inclusion Rules.

1. On Work With Supply/Demand Inclusion Rules, complete the following field and click Find:
   - Rule Version



2. On Work With Supply/Demand Inclusion Rules, review the following fields:
   - Included
   - Order Type
   - Line Type
   - Line Status
3. Choose the lines that you want to include and click Select.

   The program changes the included value of each line that you selected from 0 (not included) to 1 (included).

Setting Up Forecasting Fiscal Date Patterns

Fiscal date patterns are user defined codes (H00/DP) that identify the year and the order of the months of that year for which the system creates the forecast. The Forecast Management system uses fiscal date patterns to determine the time periods into which the sales order history is grouped. Before you can generate a detail forecast, you must set up a standard monthly date pattern. The system divides the sales history into weeks or months, depending on the processing option that you choose. If you want to forecast by months, you must set up the fiscal date pattern. If you want to forecast by weeks, you must set up both the fiscal date pattern and a 52-period date pattern.

To set up fiscal date patterns, specify the beginning fiscal year, current fiscal period, and which date pattern to follow. The Forecast Management system uses this information during data entry, updating, and reporting. Set up fiscal date patterns for as far back as your sales history extends and as far forward as you want to forecast.

Use the same fiscal date pattern for all forecasted items. A mix of date patterns across items that are summarized at higher levels in the hierarchy causes unpredictable results. The fiscal date pattern must be an annual calendar-- for example, from January 1, 1999. through December 31, 1999; or from June 1, 1999, through May 31, 2000.

J.D. Edwards recommends that you set up a separate fiscal date pattern for forecasting only so that you can control the date pattern. If you use the date pattern that is already established in the Financials system, the financial officer controls the date pattern.

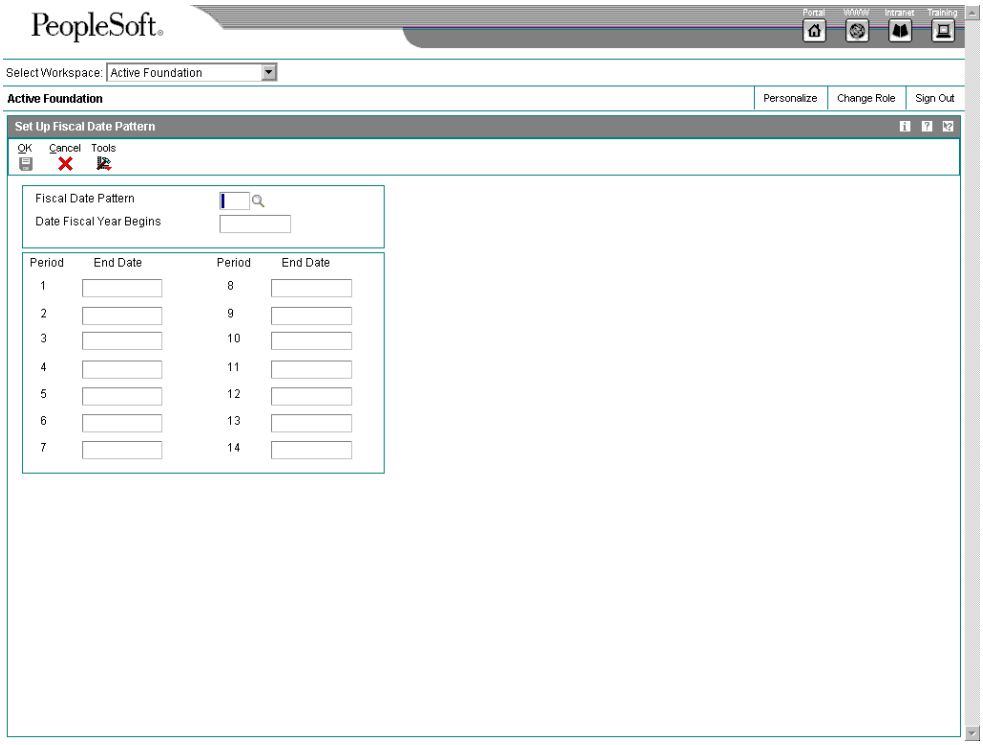
See Also

- *Setting Up Fiscal Date Patterns* in the *General Accounting Guide*

▶ To set up forecasting fiscal date patterns

From the Organization & Account Setup menu (G09411), choose Company Names & Numbers.

1. On Work With Companies, click Find to locate the companies in the system.
2. Choose a company, and then choose Date Pattern from the Form menu.
3. On Work With Fiscal Date Patterns, click Add.



4. On Set Up Fiscal Date Pattern, complete the following fields:
   - Fiscal Date Pattern
   - Date Fiscal Year Begins
5. Complete the End Date field for each period and click OK.

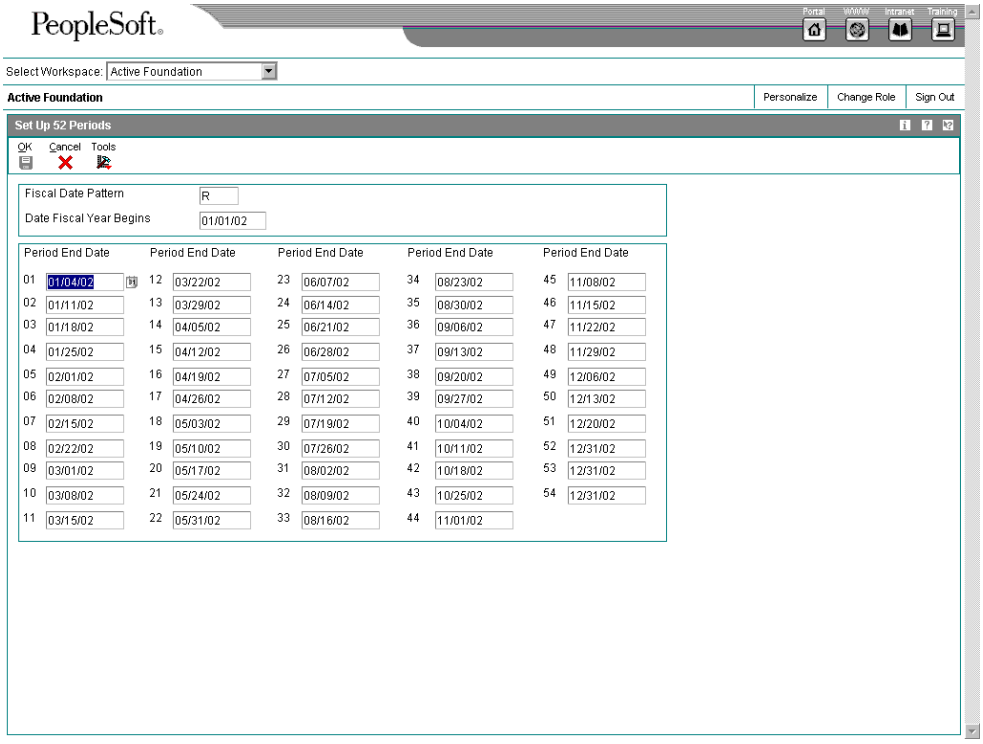
Setting Up the 52 Period Date Pattern

After you set up forecasting fiscal date patterns, you must set up a 52 period pattern for each code to forecast by weeks. When you set up a 52 period date pattern for a forecast, the period end dates are weekly instead of monthly.

► To set up the 52 period date pattern

On the 52 Period Accounting menu (G09313), choose Set 52 Period Dates.

1. On Work With 52 Periods, click Add.



2. On Set Up 52 Periods, complete the following fields:
   - Fiscal Date Pattern
   - Date Fiscal Year Begins
3. Complete the following field for each period and click OK:
   - Period End Date

Setting Up Forecast Types

The Forecast Management system uses Forecast Type (34/DF) to differentiate the multiple forecasts that reside in the Forecast File table (F3460). Forecast Type can identify actual sales history, a system generated best-fit forecast, each of the 12 generated forecast methods, or manually entered forecasts. Each time that sales history is extracted or a forecast is generated, the user can select a forecast type to identify the data.

You can set up multiple forecasts for the same item, branch/plant, and date by using different forecast types. You can use existing codes or add codes to the user defined code table 34/DF to identify forecast types, such as the following:

Code	Description	Hard Coded
01	Simple Percent Over Last Year	Y
11	Exponential Smoothing	Y
AA	Actual Sales	N
BF	Best Simulated Forecast	N
MF	Maintenance Forecast	N
MM	Maintenance Management	
PP	Production Plan	
SP	Service Parts Forecast	N

Processing options in the Distribution Requirements Planning (DRP), Master Production Schedule (MPS), and Material Requirements Planning (MRP) versions of MRP/MPS Requirements Planning (R3482) allow you to enter forecast type codes to define which forecasting types to use in calculations.

Defining Large Customers

For customers with significant sales demand or more activity, you can create separate forecasts and actual history records. Use this task to specify customers as large so that you can generate forecasts and actual history records for only those customers.

After you set up the customer, set the appropriate processing option in the Forecast Generation program (R34650) so that the system searches the Sales Order History File table (F42119) for sales to that customer and creates separate Forecast File table (F3460) records for that customer.

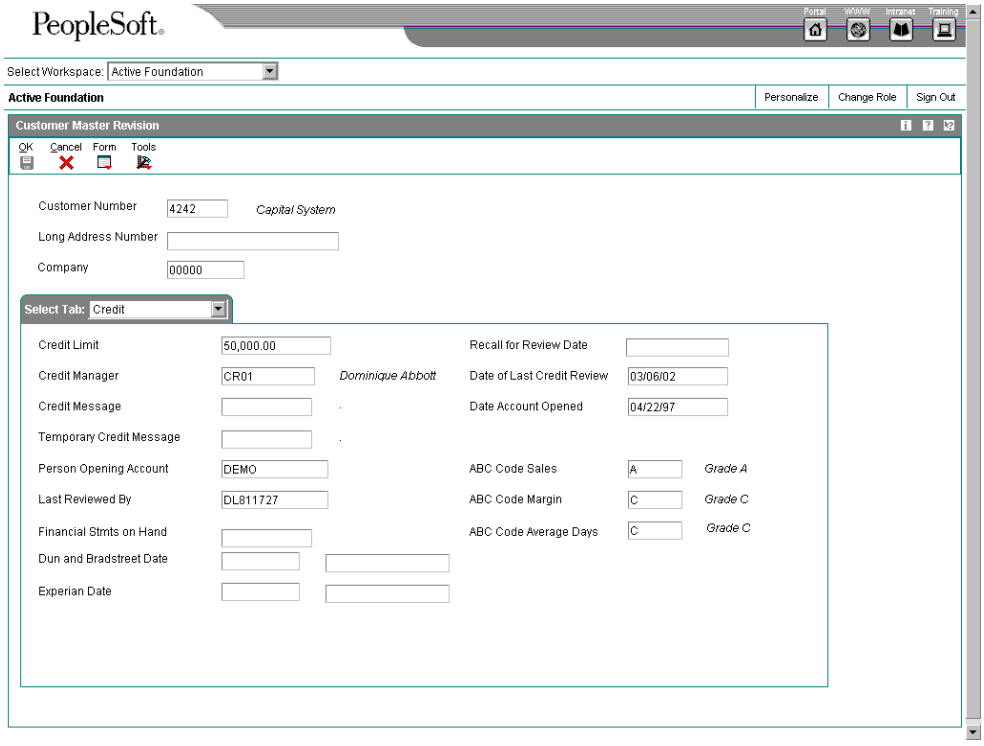
Use a processing option to enable the system to process larger customers by Ship To instead of Sold To.

If you included customer level in the hierarchy, the system summarizes the sales actuals with customers into separate branches of the hierarchy.

► To define large customers

From the Sales Order Management Setup menu (G4241), choose Customer Billing Instructions.

1. On Work With Customer Master, complete the following fields and click Find:
   - Alpha Name
   - Search Type
2. Choose the row you want to define as a large customer and click Select.



3. On Customer Master Revision, click the Credit tab, type A in the following field, and then click OK:
   - ABC Code Sales

Note

The ABC code indicates an item's ABC ranking by sales amount. During ABC analysis, the system groups items by sales amount in descending order. It divides this array into three classes called A, B, and C. The A group usually represents 10% to 20% of your total items and 50% to 70% of your projected sales volume. The next grouping, B, usually represents about 20% of the items and 20% of the sales volume. The C class contains 60% to 70% of the items and represents about 10% to 30% of the sales volume. The ABC principle states that you can save effort and money when you apply different controls to the low-value, high-volume class than you apply to improve control of high-value items.

You can override a system-assigned ABC code on the Item/Branch Plant Info form (41026A) on the Additional Info tab.

Working with Sales Order History

The system generates detail forecasts based on sales history data, current sales data, or both, that you copy from the Sales Order Detail File table (F4211) and the Sales Order History File table (F42119) into the Forecast File table (F3460). If you want the forecast to include current sales data, you must so specify in a processing option for the extraction program. When you copy the sales history, you specify a date range that is based on the request date of the sales order. The demand history data can be distorted, however, by unusually large or small values (spikes or outliers), data entry errors, or lost sales (sales orders that were cancelled due to lack of inventory).

You should review the data in the date range that you specified to identify missing or inaccurate information. Then you can revise the sales order history to account for inconsistencies and distortions before you generate the forecast.

Copying Sales Order History

The system generates detail and summary forecasts that are based on data in the Forecast File table (F3460), Forecast Summary File table (F3400), or both. Use the Refresh Actuals program (R3465) to copy the sales order history (type AA) from the Sales Order History File table (F42119) to table F3460, table F3400 table, or both, based upon criteria that you specify.

This program lets you:

- Select a date range for the sales order history, current sales order information, or both.
- Select a version of the inclusion rules to determine which sales history to include.
- Generate monthly or weekly sales order histories.
- Generate a separate sales order history for a large customer.
- Generate summaries.
- Generate records with amounts, quantities, or both.

You do not need to clear table F3460 before you run this program. The system automatically deletes any records for the same:

- Period as the actual sales order histories to be generated
- Items
- Sales order history type
- Branch/plant

Before You Begin

- ❑ Set up the Forecast Generation program (R34650).
- ❑ Update sales order history. See *Updating Customer Sales* in the *Sales Order Management Guide*.

What You Should Know About Processing Options for Refresh Actuals (R3465)

Sometimes you must refresh or update sales history information that will be used as the input to the forecast generation process.

The Refresh Actuals program (R3465) allows the user to specify the following edits in sales history, prior to use in forecast generation:

- Specify forecast type.
- Specify the version of Supply/Demand Inclusion Rules program (P34004) to use.
- Specify whether the system will use weekly or monthly planning to create actuals.
- Specify whether the system creates separate records for large customers when creating actuals.
- Specify whether the system uses the Ship To address or the Sold To address upon which to base large customer summaries when creating actuals

- Specify whether the system creates detail forecasts with quantities, amounts, or both.
- Specify whether the system uses both the Sales Order Detail File table (F4211) and the Sales Order History File table (F42119) when creating actuals, or uses only table F42119.
- Specify the fiscal date pattern in user defined code H00/DP that is used when creating actuals.
- Specify the beginning date from which the system processes records.
- Specify the ending date that the system uses when creating actuals.

The summary processing options let you specify how the system processes the following edits:

- Create summarized forecast records, either detail or both.
- Use summary codes.
- Retrieve address book category codes.

Processing Options for Refresh Actuals (R3465)

Process Tab

These processing options let you specify how the system performs the following edits when generating sales history:

- Use the default forecast type.
- Use the version of the Supply/Demand Inclusion Rules program (P34004).
- Use weekly or monthly planning.
- Create summary records.
- Use Ship To address.
- Use quantities and amounts.
- Include sales order detail.

---

1. Forecast Type

   Blank = AA

Use this processing option to specify the forecast type that the system uses when creating the forecast actuals. Forecast type is a user defined code (34/DF) that identifies the type of forecast to process. Enter the forecast type to use as the default value or choose it from the Select User Define Code form. If you leave this field blank, the system creates actuals from AA forecast types.

---

2. Supply Demand Inclusion Rules

Use this processing option to specify the version of the Supply/Demand Inclusion Rules program (P34004) that the system uses when extracting sales actuals. You must enter a version in this field before you can run the Extract Sales Order History program (R3465).

Versions control how the Supply/Demand Inclusion Rules program displays information. Therefore, you might need to set the processing options to specific versions to meet your needs.

3. Actuals Consolidation

1 = Weekly

Blank = Monthly

Use this processing option to specify whether the system uses weekly or monthly planning when creating actuals. Valid values are:

1 The system uses weekly planning.

Blank The system uses monthly planning.

4. Large Customer Summary

1 = Create

Blank = Do not create

Use this processing option to specify whether the system creates summary records for large customers when creating actuals. Valid values are:

1 The system creates summary records for large customers.

Blank The system does not create summary records.

5. Ship To or Sold To Address

1 = Ship To

Blank = Sold To

Use this processing option to specify whether the system uses the Ship To address on which to base large customer summaries, or the Sold To address, when creating actuals. Valid values are:

1 The system uses the Ship To address.

Blank The system uses the Sold To address.

6. Amount or Quantity

    1 = Quantity

    2 = Amount

    Blank = Both

Use this processing option to specify whether the system creates detail forecasts with quantities, amounts, or both. Valid values are:

1 The system creates forecasts with only quantities.

2 The system creates forecasts with only amounts.

Blank The system creates forecasts with both quantities and amounts.

7. Use Active Sales Orders

    1 = Active Sales Order

    Blank = Sales Order History

Use this processing option to specify whether the system uses both the Sales Order Detail table (F4211) and the Sales Order History table (F42119) when creating actuals, or uses only the history table. Valid values are:

1 The system uses both tables.

Blank The system uses only the history table.

Dates Tab

These processing options let you specify the fiscal date pattern that the system uses, and the beginning and ending dates of the records that the system includes in the processing.

1. Fiscal Date Pattern

Use this processing option to specify the fiscal date pattern that the system uses when creating actuals. Fiscal date pattern is a user defined code (H00/DP) that identifies the fiscal date pattern. Enter a pattern to use as the default value or choose it from the Select User Defined Code form.

2. Begin Extract Date

Blank = Today's Date

Use this processing option to specify the beginning date from which the system processes records. Enter the beginning date to use as the default value or choose it from the Calendar. If you leave this field blank, the system uses the system date.

3. End Extract Date

Use this processing option to specify the ending date that the system uses when creating actuals. Enter the ending date to use as the default value or choose it from the Calendar. Enter an ending date only if you want to include a specific time period.

Summary Tab

These processing options let you specify how the system processes the following edits:

- Create summarized forecast records.
- Use summary codes.
- Retrieve address book category codes.

1. Summary or Detail

    1 = Summary and Detail

    2 = Summary only

    Blank = Detail only

Use this processing option to specify whether the system creates summarized forecast records, detail forecast records, or both. Valid values are:

1 The system creates both summarized and detail forecast records.

2 The system creates only summarized forecast records.

Blank The system creates only detail forecast records.

2. Forecast Summary Code

Use this processing option to specify the summary code that the system uses to create summarized forecast records. Summary code is a user defined code (40/KV) that identifies the code to create summarized forecast records. Enter the code to use as the default value or choose it from the Select User Define Code form.

3. Category Codes Address Book

1 = Sales address

Blank = Business unit

Use this processing option to specify from where the system retrieves the address book category codes. Valid values are:

1 The system retrieves the address book number from the Forecast table (F3460).

Blank The system uses the cost center to determine which address book number to use to retrieve the category codes.

Interop Tab

These processing options let you specify the default document type for the system to use for the purchase order, and whether to use before or after image processing.

1. Transaction Type

Use this processing option to specify the transaction type to which the system processes outbound interoperability transactions. Transaction type is a user defined code (00/TT) that identifies the type of transaction. Enter a type to use as the default value or choose it from the Select User Define Code form.

2. Image Processing

1 = Before Image

2 = After Image

Use this processing option to specify whether the system writes before or after image processing. Valid values are:

1 The system writes before the images for the outbound change transaction are processed.

Blank The system writes after the images are processed.

Revising Sales Order History

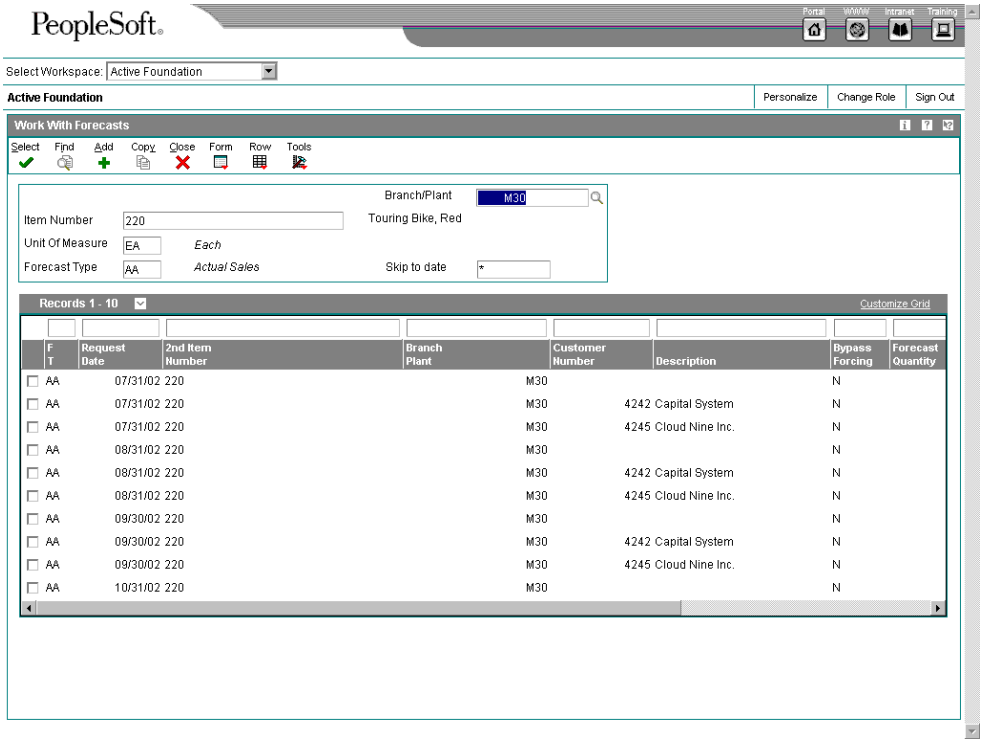
After you copy the sales order history into the Forecast File table (F3460), you should review the data for spikes, outliers, entry errors, or missing demand that might distort the forecast. You can then revise the sales order history manually to account for these inconsistencies before you generate the forecast.

Forecast Revisions (P3460) allows you to create, change, or delete a sales order history manually. You can:

- Review all entries in the Forecast File table (F3460).
- Revise the sales order history.
- Remove invalid sales history data, such as outliers or missing demand.
- Enter descriptive text for the sales order history, such as special sale or promotion information.

Example: Revising Sales Order History

In this example, you run Refresh Actuals (R3465). The program identifies the actual quantities as shown in the following form:

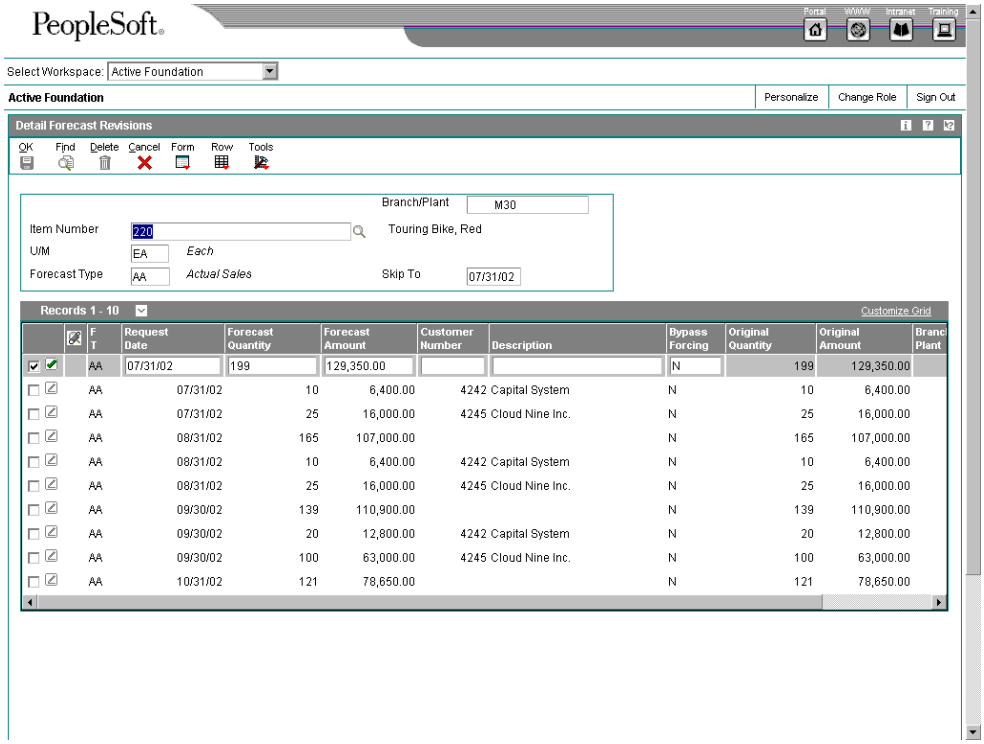


You use Forecast Revisions (P3460) to associate the forecasted quantities with the forecasted amounts. The system reflects the changes made to a quantity in its corresponding amount and to an amount in its corresponding quantity. The system does so by retaining the same ratio that existed before the change. For example, when a change increases the quantity to 24, a quantity of 15 and an amount of 100 become a quantity of 24 and an amount of 160.

► To revise sales order history

From the Periodic Forecasting Operations menu (G3421), choose Enter/Change Actuals.

1. On Work With Forecasts, complete the following fields and click Find:
   - Branch/Plant
   - Item Number
2. Choose an item and click Select.



3. On Detail Forecast Revisions, review the following fields:
    - Item Number
    - Forecast Type
    - Request Date
    - Original Quantity
    - Original Amount
4. To attach information to a forecast type, choose the row, and then choose Attachments from the Form menu.

Processing Options for Forecast Revisions (P3460)

Defaults
1. Default Forecast Type.

Forecast Type
2. Enter a '1' to default header Forecast Type to grid records on Copy.

Default Forecast Type
3. Customer Self Service

Blank = Bypass Customer Self-Service functionality
1 = Activate Customer Self Service functionality to use in Java/HTML
Interop
1. Enter the Transaction Type for processing outbound interoperability transactions

Type - Transaction
2. Enter a '1' to write before images for outbound change transactions. If left blank, only after images will be written.

Before Image Processing
Versions
Enter the version for each program. If left blank, version ZJDE0001 will be used.

1. Forecast Online Simulation (P3461)

2. Forecast Price (P34007)

Working with Detail Forecasts

After you set up the actual sales history on which you plan to base your forecast, you can generate the detail forecast. You can then revise the forecast to account for any market trends or strategies that might make future demand deviate significantly from the actual sales history.

Creating Detail Forecasts

The system creates detail forecasts by applying multiple forecasting methods to past sales histories and generating a forecast that is based on the method which provides the most accurate prediction of future demand. The system can also calculate a forecast that is based on a method that you select.

When you generate a forecast for any method, including best fit, the system rounds off the forecast amounts and quantities to the nearest whole number.

When you create detail forecasts, the system:

- Extracts sales order history information from the Forecast File table (F3460)
- Calculates the forecasts by using methods that you select
- Calculates the percent of accuracy (POA) or the mean absolute deviation (MAD) for each selected forecast method
- Creates a simulated forecast for the months that you indicate in the processing option
- Recommends the best fit forecast method
- Creates the detail forecast in either dollars or units from the best fit forecast

The system designates the extracted actual records as type AA and the best fit model as BF. These forecast type codes are not hard-coded, so you can specify your own codes. The system stores both types of records in table F3460.

When creating detail forecasts, the system allows you to:

- Specify the number of months of actual data to use to create the best fit.
- Forecast for individual large customers for all methods.
- Run the forecast in proof or final mode.
- Forecast up to five years into the future.
- Create zero forecasts, negative forecasts, or both.
- Run the forecast simulation interactively.

Creating Forecasts for Multiple Items

Use the Forecast Generation program (R34650) to create detail forecasts for multiple items. Review the processing options to select the values that are applicable for the program to use.

Processing Options for Forecast Generation (R34650)

Methods 1 - 3 Tab

These processing options specify which forecast types that the system uses when calculating the best fit forecast. You can also specify whether the system creates detail forecasts for the selected forecast method.

Enter 1 to use the forecast method when calculating the best fit. The system does not create detail forecasts for the method. If you enter zero before the forecast method-- for example, 01 for Method 1 - Percent Over Last Year-- the system uses the forecast method when calculating the best fit and creates the forecast method in the Forecast File table (F3460). If you leave the field blank, the system does not use the forecast method when calculating the best fit and does not create detail forecasts for the method.

A period is defined as a week or month, depending on the pattern that is selected from the Date Fiscal Patterns table (F0008). For weekly forecasts, verify that you have established 52 period dates.

---

1. Percent Over Last Year

Blank = Do Not Use This Method

1 = Consider for Best Fit

01 = Create Detail Forecasts

Use this processing option to specify which type of forecast to run. This forecast method uses the Percent Over Last Year formula to multiply each forecast period by a percentage increase or decrease that you specify in a processing option. This method requires the periods for the best fit plus one year of sales history. This method is useful for seasonal items with growth or decline. Valid values are:

Blank The system does not use this method.

1 The system calculates the best fit forecast.

01 The system uses the Percent Over Last Year formula to create detail forecasts.

---

2. Percent

Any Percent Amount

Cannot be a Negative Amount

Use this processing option to specify the percent of increase or decrease used to multiply by the sales history from last year. For example, type 110 for a 10% increase or type 97 for a 3% decrease. Valid values are any percent amount, however, the amount cannot be a negative amount. Enter an amount to use or choose it from the Calculator.

3. Calculated Percent Over Last Year

Blank = Do Not Use This Method

1 = Consider for Best Fit

02 = Create Detail Forecasts

Use this processing option to specify which type to run. This forecast method uses the Calculated Percent Over Last Year formula to compare the periods specified of past sales to the same periods of past sales of the previous year. The system determines a percentage increase or decrease, then multiplies each period by the percentage to determine the forecast. This method requires the periods of sales order history indicated in the processing option plus one year of sales history. This method is useful for short-term demand forecasts of seasonal items with growth or decline. Valid values are:

Blank The system does not use this method.

1 The system calculates the best fit forecast.

02 The system uses the Calculated Percent Over Last Year formula to create detail forecasts.

4. Number of Periods

Use this processing option to specify the number of periods to include when calculating the percentage increase or decrease. Enter a number to use or choose a number from the Calculator.

5. Last Year to This Year

Blank = Do Not Use This Method

1 = Consider for Best Fit

03 = Create Detail Forecasts

Use this processing option to specify which type of forecast to run. This forecast method uses Last Year to This Year formula which uses last year's sales for the following year's forecast. This method uses the periods best fit plus one year of sales order history. This method is useful for mature products with level demand or seasonal demand without a trend. Valid values are:

Blank The system does not use this method.

1 The system calculates the best fit forecast.

03 The system uses the Last Year to This Year formula to create detail forecasts.

Methods 4 - 6 Tab

These processing options specify which forecast types that the system uses when calculating the best fit. You can also specify whether the system creates detail forecasts for the selected forecast method.

Enter 1 to use the forecast method when calculating the best fit. The system does not create detail forecasts for the method. If you enter zero before the forecast method-- for example, 01 for Method 1 - Percent Over Last Year, the system uses the forecast method when calculating the best fit and creates the forecast method in the Forecast File table (F3460). If

you leave the field blank, the system does not use the forecast method when calculating the best fit and does not create detail forecasts for the method.

A period is defined as a week or month, depending on the pattern that is selected from the Date Fiscal Patterns table (F0008). For weekly forecasts, verify that you have established 52 period dates.

---

1. Moving Average

Blank = Do Not Use This Method

1 = Consider for Best Fit

04 = Create Detail Forecasts

Use this processing option to specify which type of forecast to run. This forecast method uses the Moving Average formula to average the months that you indicate in the processing option to project the next period. This method uses the periods best fit from the processing option plus the number of periods of sales order history from the processing option. You should have the system recalculate this forecast monthly or at least quarterly to reflect changing demand level. This method is useful for mature products without a trend. Valid values are:

Blank The system does not use this method.

1 The system calculates the best fit forecast.

04 The system uses the Moving Average formula to create detail forecasts.

---

2. Number of Periods

Use this processing option to specify the number of periods to include in the average. Enter a number to use or choose a number from the Calculator.

---

3. Linear Approximation

Blank = Do Not Use This Method

1 = Consider for Best Fit

05 Create Detail Forecasts

Use this processing option to specify which type of forecast to run. This forecast method uses the Linear Approximation formula to compute a trend from the periods of sales order history indicated in the processing options and projects this trend to the forecast. You should have the system recalculate the trend monthly to detect changes in trends. This method requires periods best fit plus the number of periods that you indicate in the processing option of sales order history. This method is useful for new products or products with consistent positive or negative trends that are not due to seasonal fluctuations. Valid values are:

Blank The system does not use this method.

1 The system calculates the best fit forecast.

05 The system uses the Linear Approximation formula to create detail forecasts.

---

4. Number of Periods

Use this processing option to specify the number of periods to include in the linear approximation ratio. Enter the number to use or choose a number from the Calculator.

5. Least Squares Regression

Blank = Do Not Use This Method

1 = Consider for Best Fit

06 = Create Detail Forecasts

Use this processing option to specify which type of forecast to run. This forecast method derives an equation describing a straight-line relationship between the historical sales data and the passage of time. Least Squares Regression (LSR) fits a line to the selected range of data such that the sum of the squares of the differences between the actual sales data points and the regression line are minimized. The forecast is a projection of this straight line into the future. This method is useful when there is a linear trend in the data. This method requires sales data history for the period represented by the number of periods best fit plus the number of historical data periods specified in the processing options. The minimum requirement is two historical data points. Valid values are:

Blank The system does not use this method.

1 The system calculates the best fit forecast.

06 The system uses the Least Squares Regression formula to create detail forecasts.

---

6. Number of Periods

Use this processing option to specify the number of periods to include in the regression. Enter the number to use or choose a number from the Calculator.

Methods 7 - 8 Tab

These processing options let you specify which forecast types that the system uses when calculating the best fit. You can also specify whether the system creates detail forecasts for the selected forecast method.

Enter 1 to use the forecast method when calculating the best fit. The system does not create detail forecasts for the method. If you enter zero before the forecast method-- for example, 01 for Method 1 - Percent Over Last Year-- the system uses the forecast method when calculating the best fit and creates the forecast method in the Forecast File table (F3460). If you leave the field blank, the system does not use the forecast method when calculating the best fit and does not create detail forecasts for the method.

A period is defined as a week or month, depending on the pattern that is selected from the Date Fiscal Patterns table (F0008). For weekly forecasts, verify that you have established 52 period dates.

1. Second Degree Approximation

Blank = Do Not Use This Method

1 = Consider for Best Fit

07 = Create Detail Forecasts

Use this processing option to specify which type of forecast to run. This method uses the Second Degree Approximation formula to plot a curve based on the number of periods of sales history indicated in the processing options to project the forecast. This method adds the periods best fit and the number of periods, and then multiplies by three. You indicate the number of periods in the processing option of sales order history. This method is not useful for long-term forecasts. Valid values are:

Blank The system does not use this method.

1 The system calculates the best fit forecast.

07 The system uses the Second Degree Approximation formula to create detail forecasts.

2. Number of Periods

Use this processing option to specify the number of periods to include in the approximation. Enter the number to use or choose a number from the Calculator.

3. Flexible Method

Blank = Do Not Use This Method

1 = Consider For Best Fit

08 = Create Detail

Use this processing option to specify which type of forecast to run. This forecast method specifies the periods best fit block of sales order history starting "n" months prior and a percentage increase or decrease with which to modify it. This method is similar to Method 1 - Percent Over Last Year, except that you can specify the number of periods that you use as the base. Depending on what you select as "n", this method requires periods best fit plus the number of periods indicated in the processing options of sales data. This method is useful for a planned trend. Valid values are:

Blank The system does not use this method.

1 The system calculates the best fit forecast.

08 The system uses the FIexible method to create detail forecasts.

4. Number of Periods

Use this processing option to specify the number of periods prior to the best fit that you want to include in the calculation. Enter the number to use or choose a number from the Calculator.

5. Percent Over Prior Period

Any Percent Amount

Cannot be a Negative Amount

Use this processing option to specify the percent of increase or decrease for the system to use. For example, type 110 for a 10% increase or type 97 for a 3% decrease. You can enter any percent amount, however, the amount cannot be a negative amount.

Method 9 Tab

These processing options let you specify which forecast types that the system uses when calculating the best fit. You can also specify whether the system creates detail forecasts for the selected forecast method.

Enter 1 to have the system use the forecast method when calculating the best fit. The system does not create detail forecasts for the method. If you enter zero before the forecast method--for example, 01 for Method 1 - Percent Over Last Year-- the system uses the forecast method when calculating the best fit and creates the forecast method in the Forecast File table (F3460). If you leave the field blank, the system does not use the forecast method when calculating the best fit and does not create detail forecasts for the method.

The total of all the weights that are used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods.

A period is defined as a week or month, depending on the pattern that is selected from the Date Fiscal Patterns table (F0008). For weekly forecasts, verify that you have established 52 period dates.

---

1. Weighted Moving Average

Blank = Do Not Use This Method

1 = Consider for Best Fit

09 = Create Detail Forecasts

Use this processing option to specify which type of forecast to use. The Weighted Moving Average forecast formula is similar to Method 4 - Moving Average formula, because it averages the previous number of months of sales history indicated in the processing options to project the next month's sales history. However, with this formula you can assign weights for each of the prior periods in a processing option. This method requires the number of weighted periods selected plus periods best fit data. Similar to Moving Average, this method lags demand trends, so it is not recommended for products with strong trends or seasonality. This method is useful for mature products with demand that is relatively level. Valid values are:

Blank The system does not use this forecast.

1 The system calculates the best fit forecast.

09 The system uses the Weighted Moving Average formula to create detail forecasts.

---

2. One Period Prior

Use this processing option to specify the weight to assign to one period prior for calculating a moving average. Enter the number to use or choose it from the Calculator.

3. Two Periods Prior

Use this processing option to specify the weight to assign to two periods prior for calculating a moving average. Enter a number to use or choose it from the Calculator.

4. Three Periods Prior

Use this processing option to specify the weight to assign to three periods prior for calculating a moving average. Enter the number to use or choose it from the Calculator.

5. Four Periods Prior

Use this processing option to specify the weight to assign to four periods prior for calculating a moving average. Enter the number to use or choose it from the Calculator.

6. Five Periods Prior

Use this processing option to specify the weight to assign to five periods prior for calculating a moving average. Enter the number to use or choose a number from the Calculator.

7. Six Periods Prior

Use this processing option to specify the weight to assign to six periods prior for calculating a moving average. Enter the number to use or choose a number from the Calculator.

8. Seven Periods Prior

Use this processing option to specify the weight to assign to seven periods prior for calculating a moving average. Enter a number to use or choose a number from the Calculator.

9. Eight Periods Prior

Use this processing option to specify the weight to assign to eight periods prior for calculating a moving average. Enter the number to use or choose a number from the Calculator.

10. Nine Periods Prior

Use this processing option to specify the weight to assign to nine periods prior for calculating a moving average. Enter the number to use or choose a number from the Calculator.

11. Ten Periods Prior

Use this processing option to specify the weight to assign to 10 periods prior for calculating a moving average. Enter the number to use or choose a number from the Calculator.

12. Eleven Periods Prior

Use this processing option to specify the weight to assign to 11 periods prior for calculating a moving average. Enter the number to use or choose a number from the Calculator.

13. Twelve Periods Prior

Use this processing option to specify the weight to assign to 12 periods prior for calculating a moving average. Enter the number to use or choose a number from the Calculator.

14. Periods to Include

Use this processing option to specify the number of periods to include. Enter the number to use or choose a number from the Calculator.

Methods 10 - 11 Tab

These processing options let you specify which forecast types that the system uses when calculating the best fit. You can also specify whether the system creates detail forecasts for the selected forecast method.

Enter 1 to use the forecast method when calculating the best fit. No detail forecasts are created for the method. If you enter the method number-- for example, 11 for Method 11 - Exponential Smoothing-- the system uses the forecast method when calculating the best fit and creates the forecast method in the Forecast File table (F3460). If the field is blank, the system does not use the forecast method when calculating the best fit; no detail forecasts are created for the method

A period is defined as a week or month, depending on the pattern that is selected from the Date Fiscal Patterns table (F0008). For weekly forecasts, verify that you have established 52 period dates.

1. Linear Smoothing

Blank = Do Not Use This Method

1 = Consider for Best Fit

10 = Create Detail Forecasts

Use this processing option to specify which type of forecast to run. This forecast method calculates a weighted average of past sales data. You can specify the number of periods of sales order history to use in the calculation (from 1 to 12) in a processing option. The system uses a mathematical progression to weigh data in the range from the first (least weight) to the final (most weight). Then, the system projects this information for each period in the forecast. This method requires the periods best fit plus the number of periods of sales order history from the processing option. Valid values are:

Blank The system does not use this method.

1 The system calculates the best fit forecast.

10 The system uses the Linear Smoothing method to create detail forecasts.

2. Number of Periods

Use this processing option to specify the number of periods to include in the smoothing average. Enter the number to use or choose a number from the Calculator.

3. Exponential Smoothing

Blank = Do Not Use This Method

1 = Consider for Best Fit

11 = Create Detail Forecasts

Use this processing option to specify which type of forecast to run. This forecast method uses one equation to calculate a smoothed average. This becomes an estimate representing the general level of sales over the selected historical range. This method is useful when there is no linear trend in the data. This method requires sales data history for the time period represented by the number of periods best fit plus the number of historical data periods specified in the processing options. The minimum requirement is two historical data periods. Valid values are:

Blank The system does not use this method.

1 The system calculates the best fit forecast.

11 The system uses the Exponential Smoothing method to create detail forecasts.

4. Number of Periods

Use this processing option to specify the number of periods to include in the smoothing average. Enter the number to use or choose a number from the Calculator.

5. Alpha Factor

0 - 1

Use this processing option to specify the alpha factor, a smoothing constant,the system uses to calculate the smoothed average for the general level or magnitude of sales. You can enter any amount, including decimals, from zero to one.

Method 12 Tab

These processing options let you specify which forecast types that the system uses when calculating the best fit. You can also specify whether the system creates detail forecasts for the selected forecast method.

Enter 1 to use the forecast method when calculating the best fit. No detail forecasts are created for the method. If you enter the method number before the forecast method-- for example 12 for Method 12 - Exponential Smoothing With Trend and Seasonality-- the system uses the forecast method when calculating the best fit and creates the forecast method in the Forecast File table (F3460). If the field is blank, the system does not use the forecast method when calculating the best fit; no detail forecasts are created for the method.

A period is defined as a week or month, depending on the pattern that is selected from the Date Fiscal Patterns table (F0008). For weekly forecasts, verify that you have established 52 period dates.

1. Exponential Smoothing with Trend and Seasonality

Blank = Do Not Use This Method

1 = Consider for Best Fit

12 = Create Detail Forecasts

Use this processing option to specify which type of forecast to run. This forecast method calculates a trend, a seasonal index, and an exponentially smoothed average from the sales order history. The system then applies a projection of the trend to the forecast and adjusts for the seasonal index.

This method requires months best fit plus two years of sales data and is useful for items that have both trend and seasonality in the forecast. Use the processing options to enter the alpha and beta factor rather than have the system calculate them. Valid values are:

Blank The system does not use this method.

1 The system calculates the best fit forecast.

12 The system uses the Exponential Smoothing with T&S method to create detail forecasts.

2. Alpha Factor

0 - 1

Use this processing option to specify the alpha factor, a smoothing constant, the system uses to calculate the smoothed average for the general level or magnitude of sales. You can enter any amount, including decimals, from zero to one.

3. Beta Factor

0 - 1

Use this processing option to specify the beta factor, a smoothing constant,the system uses to calculate the smoothed average for the trend component of the forecast. You can enter any amount, including decimals, from zero to one.

4. Seasonality

0 = Do Not Include Seasonality

1 = Include Seasonality

Use this processing option to specify whether the system includes seasonality in the calculation. Valid values are:

0 The system does not include seasonality.

1 The system includes seasonality.

Blank The system does not include seasonality.

Defaults Tab

These processing options let you specify the defaults that the system uses to calculate forecasts. The system extracts actual values from Sales History and stores the forecasts that are generated in the Forecast File table (F3460). You can define your own forecast types for Actuals (AA) and best fit (BF).

1. Actuals Forecast Type

Use this processing option to specify the forecast type that identifies the sales order history used as the basis for the forecast calculations, or Actuals. Forecast type is a user defined code (34/DF) that identifies the type of forecast to run. Enter the forecast type to use as the default value or choose it from the Select User Define Code form.

2. Best Fit Forecast Type

Use this processing option to specify the forecast type that is generated as a result of the best fit calculation. Forecast type is a user defined code (34/DF) that identifies the type of forecast to run. Enter the forecast type to use as the default value or choose it from the Select User Define Code form.

Process Tab

These processing options let you specify whether the system:

- Runs the Forecast Generation program (R34650) in proof or final mode
- Creates forecasts for large customers
- Creates weekly or monthly forecasts

In addition, you use the processing options to specify:

- The start date, length, and data used when the system creates forecasts
- How the system calculates the best fit forecast

The system applies the selected forecasting methods to past sales order history and compares the forecast simulation to the actual history. When you generate a forecast, the system compares actual sales order histories to forecasts for the months or weeks that you indicate in the processing option, and computes how accurately each of the selected forecasting methods would have predicted sales. Then the system recommends the most accurate forecast as the best fit.

Mean Absolute Deviation (MAD) is the mean of the absolute values of the deviations between actual and forecast data. MAD is a measure of the average magnitude of errors to expect, given a forecasting method and data history. Because absolute values are used in the calculation, positive errors do not cancel out negative errors. When comparing several

forecasting methods, the one with the smallest MAD has shown to be the most reliable for that product for that holdout period.

Percent of Accuracy (POA) is a measure of forecast bias. When forecasts are consistently too high, inventories accumulate and inventory costs rise. When forecasts are consistently too low, inventories are consumed and customer service declines. A forecast that is ten units too low, then eight units too high, then two units too high is an unbiased forecast. The positive error of ten is canceled by negative errors of eight and two.

---

1. Mode

Blank = Proof Mode

1 = Final Mode

Use this processing option to specify whether the system runs in proof or final mode. Valid values are:

Blank The system runs in proof mode, creating a simulation report.

1 The system runs in final mode, creating forecast records.

---

2. Large Customers

Blank = Do Not Create Large

Customer Forecasts

1 = Create Large Customer Forecasts

Use this processing option to specify whether to create forecasts for large customers. Based on the Customer Master table (F0301), if the ABC code is set to A and this option is set to 1 the system creates separate forecasts for large customers. Valid values are:

Blank The system does not create large customer forecasts.

1 The system creates large customer forecasts.

3. Weekly Forecasts

Blank = Monthly Forecasts

1 = Weekly Forecasts

Use this processing option to specify weekly or monthly forecasts. For weekly forecasts, use fiscal date patterns with 54 periods. For monthly forecasts, use fiscal date patterns with 14 periods. Valid values are:

Blank The system creates monthly forecasts.

1 The system creates weekly forecasts.

4. Start Date

Blank = Today's date

Use this processing option to specify the date on which the system starts the forecasts. Enter a date to use or choose a date from the Calendar. If you leave this field blank, the system uses the system date.

5. Forecast Length

Blank = 3 periods

Use this processing option to specify the number of periods to forecast. You must have previously established fiscal date patterns for the forecasted periods. If you leave this field blank, the system uses 3.

6. Actual Data

Blank = 3 periods

Use this processing option to specify the number of periods of actual data that the system uses to calculate the best fit forecast. If you leave this field blank, the system uses 3.

The system applies the selected forecasting methods to past sales order history and compares the forecast simulation to the actual history. When you generate a forecast, the system compares actual sales order histories to forecasts for the months or weeks you indicate in the processing option and computes how accurately each of the selected forecasting methods would have predicted sales. Then, the system recommends the most accurate forecast as the best fit.

7. Mean Absolute Deviation

Blank = Percent of Accuracy

1 = Mean Absolute Deviation

Use this processing option to specify whether the system uses the Mean Absolute Deviation formula or the Percent of Accuracy formula to calculate the best fit forecast. Valid values are:

Blank The system uses the Percent of Accuracy formula.

1 The system uses the Mean Absolute Deviation formula.

8. Amounts or Quantity

Blank = Quantity

1 = Amount

Use this processing option to specify whether the system calculates the best fit forecast using amounts or quantities. If you specify to use amounts, you must also extract sales history using amounts. This also affects forecast pricing. Valid values are:

Blank The system uses quantities.

1 The system uses amounts.

9. Fiscal Date Pattern

Use this processing option to specify the fiscal date pattern type to use for the forecast calculations. When generating weekly forecasts, the fiscal date pattern defined here must be set up for 52 periods.

10. Negative Values

Blank = Zeros

1 = Negative Values

Use this processing option to specify whether the system displays negative values. Valid values are:

Blank The system substitutes a zero value for all negative values.

1 The system displays negative values.

Interoperability Tab

This processing option lets you specify the transaction type that the system uses for interoperability.

1. Transaction Type

Blank = Do Not Create Outbound Forecast

JDEFC = Create Outbound Forecast

Use this processing option to specify the transaction type used for interoperability. Valid values are:

Blank The system does not create outbound forecasts.

JDEFC The system creates outbound forecasts.

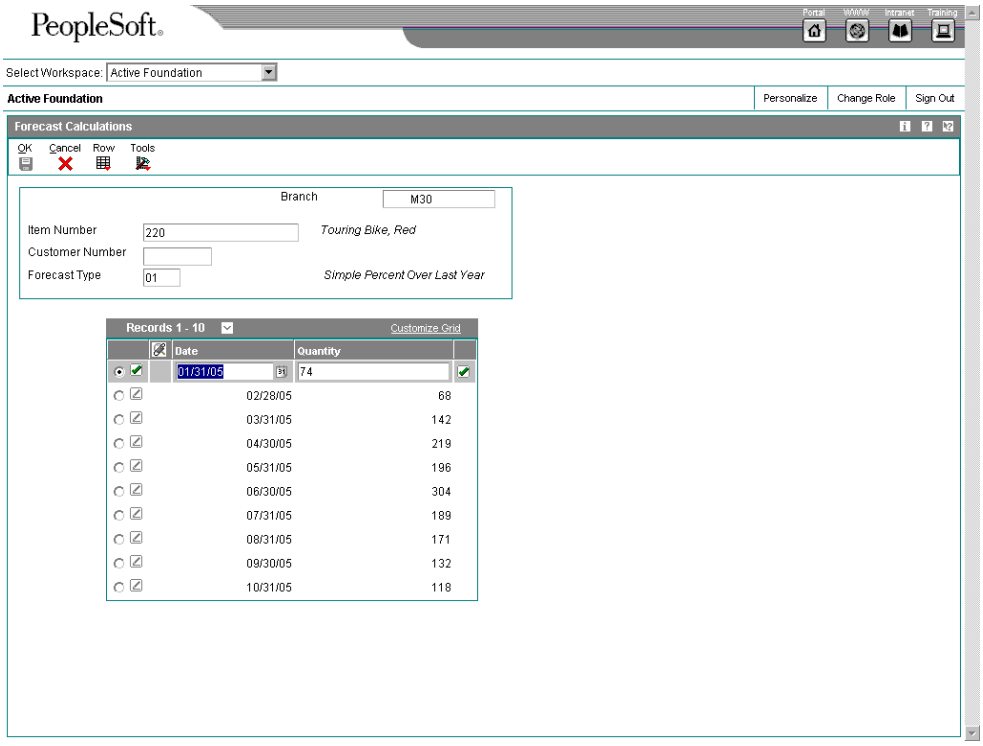
Creating Forecasts for a Single Item

Use the Forecast Online Simulation program (P3461) to create a detail forecast for a single item. After you run the simulation interactively, you can modify the simulated forecast and commit it to the Forecast File table (F3460).

► To create forecasts for a single item

From the Periodic Forecasting Operations menu (G3421), choose Online Simulation.

1. On Work With Forecast Simulations, complete the following fields and click Find:
   - Item Number
   - Actual Type
   - Branch
2. Choose a method and click Select.



3. On Forecast Calculations, modify the simulated forecasts as necessary and click OK to commit the changes to the Forecast File table (F3460).

Processing Options for Forecast Online Simulation (P3461)

Method 1- 3
Enter a '1' or a Forecast Type next to the Method desired.

1.) Percent Over Last Year

Percent
Note: Enter the percent increase over last year (eg. 110 for a 10% increase, 97 for a 3% decrease).

2.) Calculated Percent Over Last Year

Enter the number of periods to include in the percentage.

3.) Last Year to This Year
Method 4 - 6

4.) Moving Average

Enter the number of periods to include in the average.

5.) Linear Approximation

Enter the number of periods to include in the ratio.

6.) Least Squares Regression

Enter the number of periods to include in the regression.
Method 7- 8

7.) Second Degree Approximation

Enter the number of periods.

8.) Flexible Method (Percent over N periods prior)

Enter the number of periods prior.

Enter the percent over the prior period (eg. 110 for a 10% increase, 97 for a 3% decrease).
Method 9

9.) Weighted Moving Average
Note: The weights must add up to 100 (i.e. 60, 30, and 10)

Weight for one period prior

Weight for two periods prior

Weight for three periods prior

Weight for four periods prior
Method 9 Cont.

Weight for five periods prior

Weight for six periods prior

Weight for seven periods prior

Weight for nine periods prior

Weight for nine periods prior

Weight for ten periods prior
Method 9 Cont.

Weight for eleven periods prior

Weight for twelve periods prior
Note: If no weight is entered for a period within the number of periods specified, a weight of zero will be used for that period. Weights entered for periods greater than the number of periods specified will not be used.

Enter the number of periods to include.
Method 10-11

10.) Linear Smoothing

Enter the number of periods to include in smoothing average.

11.) Exponential Smoothing

Enter the number of periods to include in the smoothing average.

Enter the Alpha factor. If zero it will be calculated.
Method 12

12.) Exponentail Smoothing with Trend and Seasonality factors

Enter the Alpha factor. If zero it will be calculated.

Enter the Beta factor. If zero it will be calculated.

Enter a '1' to include seasonality in the calculation. If blank seasonality will not be used.
Process 1

1.) Enter the Forecast Type to use when creating the Best Fit Forecast.

2.) Enter a '1' to create summary records for large customers (ABC = type).

3.) Enter a '1' to specify weekly forecasts. Blank defaults to monthly.

4.) Enter the date to start forecasts. Default of today's date if left blank.

5.) Enter Number of periods to forecast. Default to 3 periods if blank.

6.) Enter the number of periods of actual data to be used to calculate best fit forecast. If left blank 3 periods of data will be used.
Process 2

7.) Enter a '1' to calculate Best Fit forecast using Mean Absolute Deviation. Blank will calculate the Best Fit using Percent of Accuracy.

8.) Enter a '1' to forecast using amounts. Default of blank will forecast quantities.

9.) Enter the Fiscal Date Pattern Type to use for forecast dating.

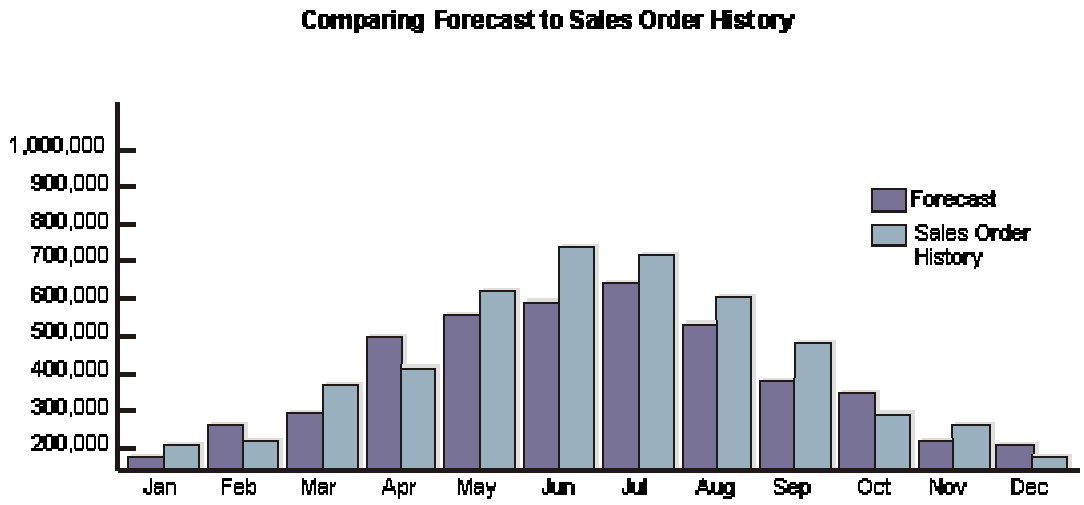
10.) Enter a '1' to allow negative values to be written. If left blank, negative values will be written as zeroes.
Versions
Enter the version for each program. If left blank, version ZJDE0001 will be used.

1. Forecast Review by Type (P34300)

Reviewing Detail Forecasts

Review forecasts to compare the actual sales to the detail forecast. The system shows the forecast values, and actual quantities or sales order extended price for an item for the specified year.

Example: Comparing Forecast to Sales Order History

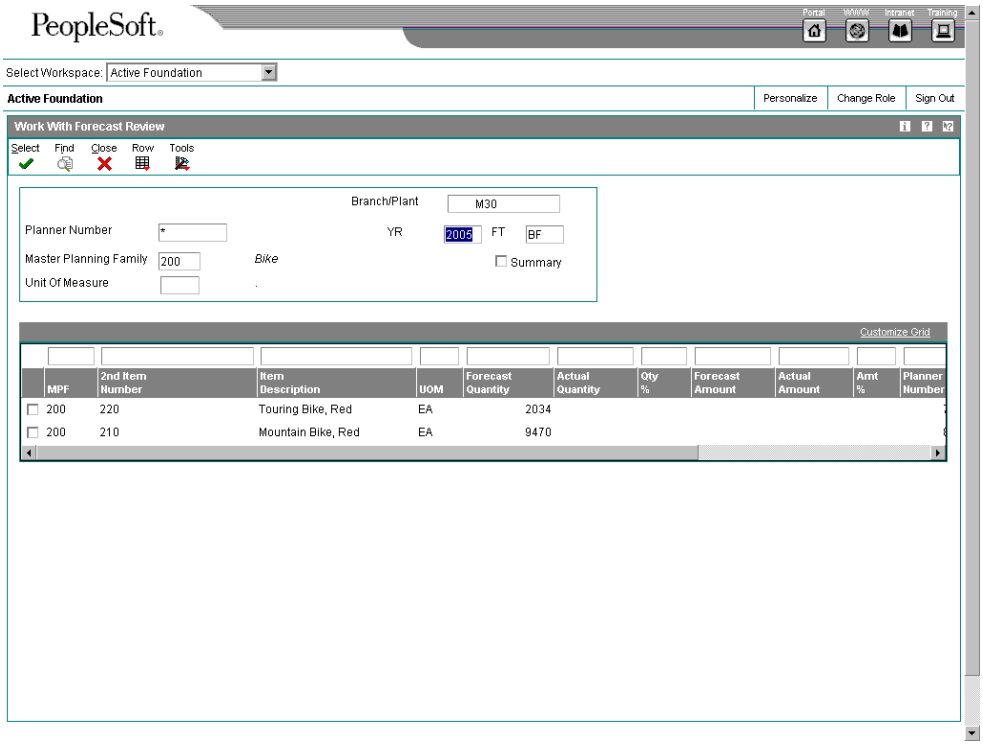


You can review information by planner, master planning family, or both. You can then change the forecast type to compare different forecasts to the actual demand. You can also display all of the information that is stored in the Forecast File table (F3460), choose whether to review quantities or amounts, and view the data in summary or detail mode.

► To review detail forecasts

From the Periodic Forecasting Operations menu (G3421), choose Review Forecast (P34201).

1. On Work With Forecast Review, complete the following fields:
   - Branch/Plant
   - YR
   - FT
2. Complete one of the following fields and click Find:
   - Planner Number
   - Master Planning Family
   - Unit Of Measure



3. Review the following fields:
   - Forecast Quantity
   - Actual Quantity
   - Qty %
   - Forecast Amount
   - Actual Amount

Detail mode lists all item numbers. Summary mode consolidates data by master planning family. Click the Summary option in the header area, and then click Find to review information in summary mode.

Processing Options for Forecast Review (P34201)

Defaults

1. Enter the default Forecast Type

2. Enter the default type for Actual
Versions
Enter the version for each program. If left blank, version ZJDE0001 will be used.

1. Forecast Revisions (P3460)

Revising Detail Forecasts

After you generate and review a forecast, you can revise the forecast to account for changes in consumer trends, market conditions, competitors' activities, your own marketing strategies, and so on. When you revise a forecast, you can change information in an existing forecast manually, add or delete a forecast, and enter descriptive text for the forecast.

You can access the forecasts that you want to revise by item number, branch/plant, forecast type, or any combination of these elements. You can specify a beginning request date to limit the number of periods.

As you revise the forecast, be aware that the following combination must be unique for each item number and branch record:

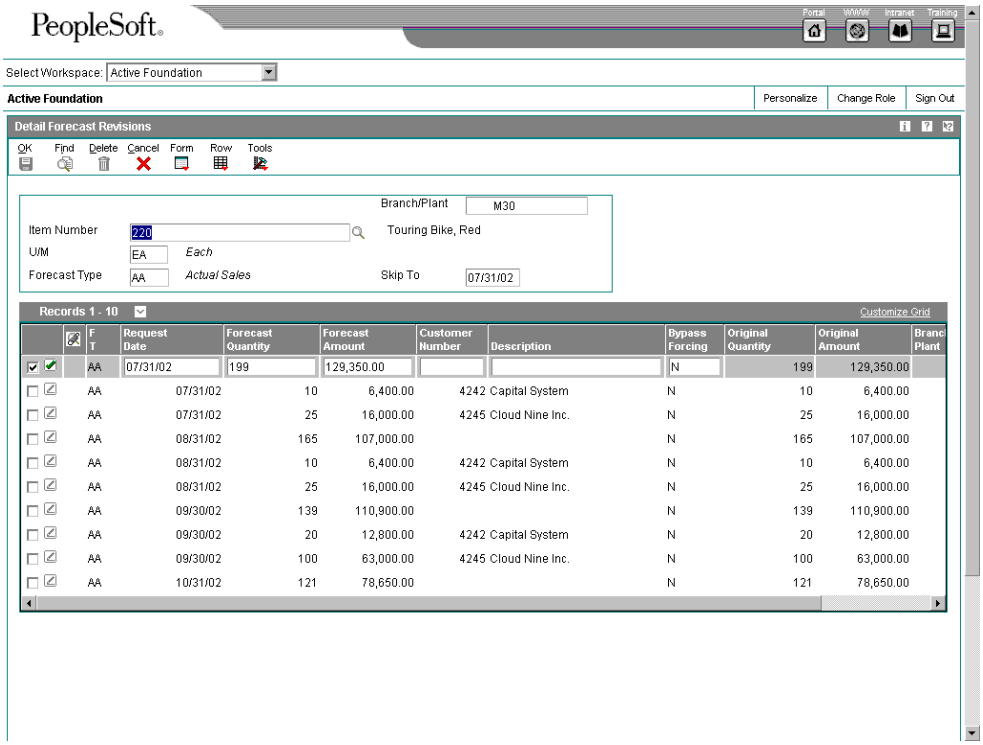
- Forecast type
- Request date
- Customer number

For example, if two records have the same request date and customer number, they must have different forecast types.

► To revise detail forecasts

From the Periodic Forecasting Operations menu (G3421), choose Enter/Change Forecast.

1. On Work With Forecasts, complete the following fields and click Find:
   - Branch/Plant
   - Item Number
   - Unit Of Measure
   - Forecast Type
2. Choose a forecast and click Select.



3. On Detail Forecast Revisions, change the information in one of the following fields:
   - Forecast Quantity
   - Forecast Amount
4. To associate information, such as text or drawings, with a forecast type, choose the row, and then choose Attachments from the Form menu.
5. Click OK.

Revising Forecast Prices

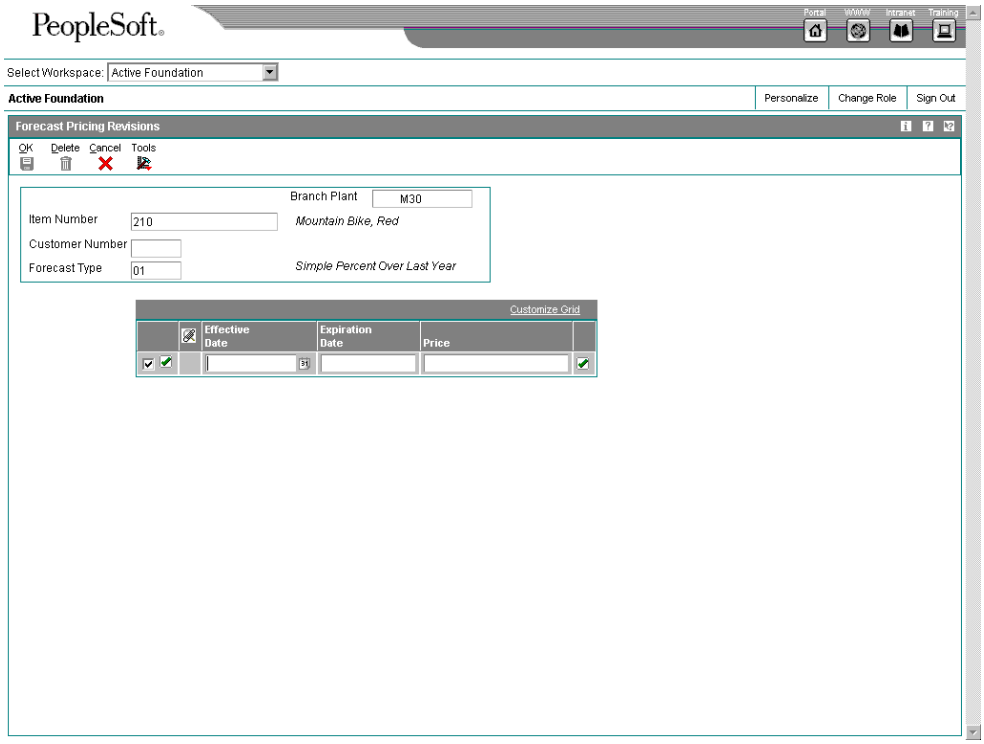
You can enter prices for unique combinations of item number, branch/plant, forecast type, and customer number. All these values are stored in the Forecast Prices table (F34007), and are used to extend the amount or quantity on a detail forecast record in the Forecast File table (F3460) and the Forecast Summary File table (F3400). You can roll up these prices to the higher-level items in the forecast hierarchy by using the Forecast Price Rollup program (R34620).

If the forecast is stated in terms of quantity, you can use table F34007 to extend the forecast in amounts-- for example, as a projection of revenue. In the case of a sales forecast, the forecast might already be stated in terms of revenue. In this case, you might want to convert the forecast into quantities to support production planning.

► To revise forecast prices

From the Periodic Forecasting Operations menu (G3421), choose Enter/Change Forecast Price (P34007).

1. On Work With Forecast Prices, click Find to view all of the unique combinations of item number, branch/plant, forecast type, and customer number.
2. Choose a forecast to which you want to change the price and click Select.



3. On Forecast Pricing Revisions, complete the following fields and click OK:
   - Effective Date
   - Expiration Date
   - Price

Generating a Forecast Price Rollup

Use the Forecast Price Rollup program (R34620) to roll up the prices that you entered on the Forecast Pricing Revisions form to the higher-level items in the forecast hierarchy. This program uses the manually entered prices to extend the amount or quantity on a detail record and rolls up the prices through the forecasting hierarchy.

Processing Options for Forecast Price Rollup (R34620)

Control

1.) Enter the Summary Code to use for pricing the summary forecast records. If left blank only the detail forecasts will be priced.

2.) Enter a '1' to Rollup based on Amount. Blank will default to Rollup based on Quantity.

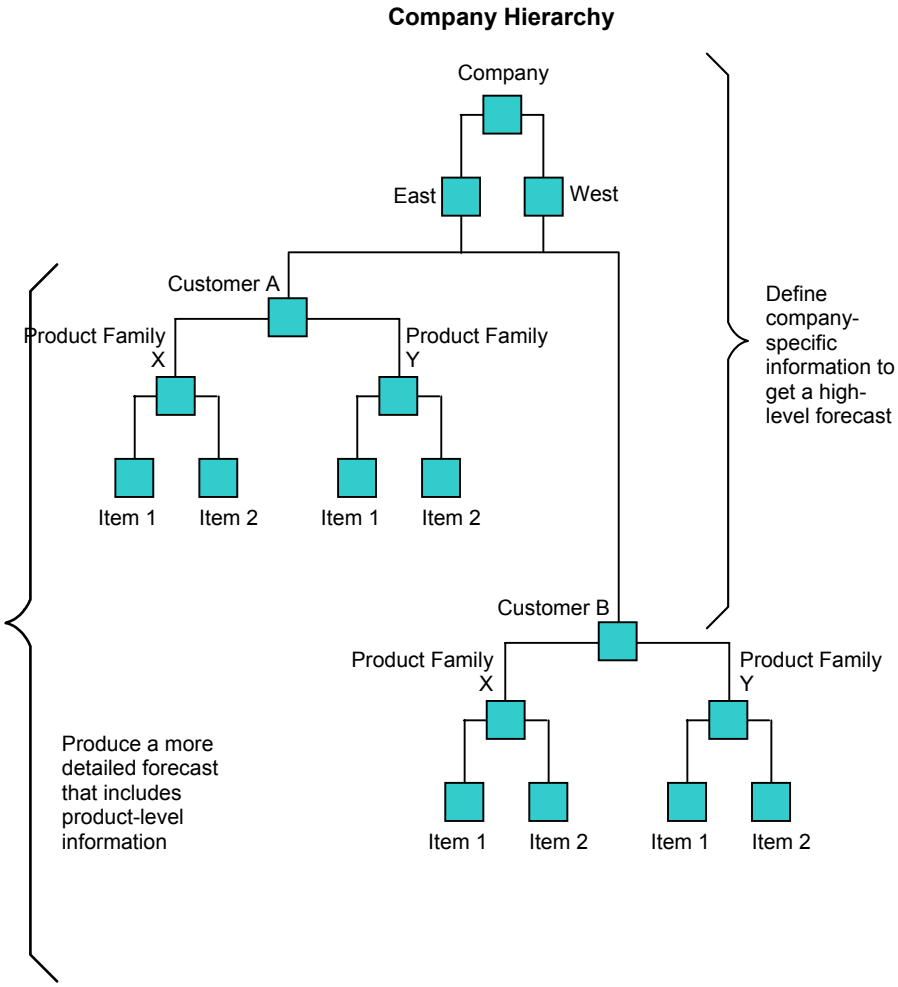
Summary Forecasts

You use summary forecasts to project demand at a product group level. Summary forecasts are also called aggregate forecasts. You can generate a summary of a detail forecast or a summary forecast based on summarized actual sales history.

Company Hierarchies

You must define your company's hierarchy before you generate a summary forecast. J.D. Edwards recommends that you organize the hierarchy by creating a diagram or storyboard.

The following graphic is an example of a company hierarchy:



Establish a forecasting structure that realistically depicts the working operation of your company, from item level to headquarters level, to increase the accuracy of your forecasts. By defining your company's processes and relationships at multiple levels, you maintain information that is more detailed and can plan better for your future needs.

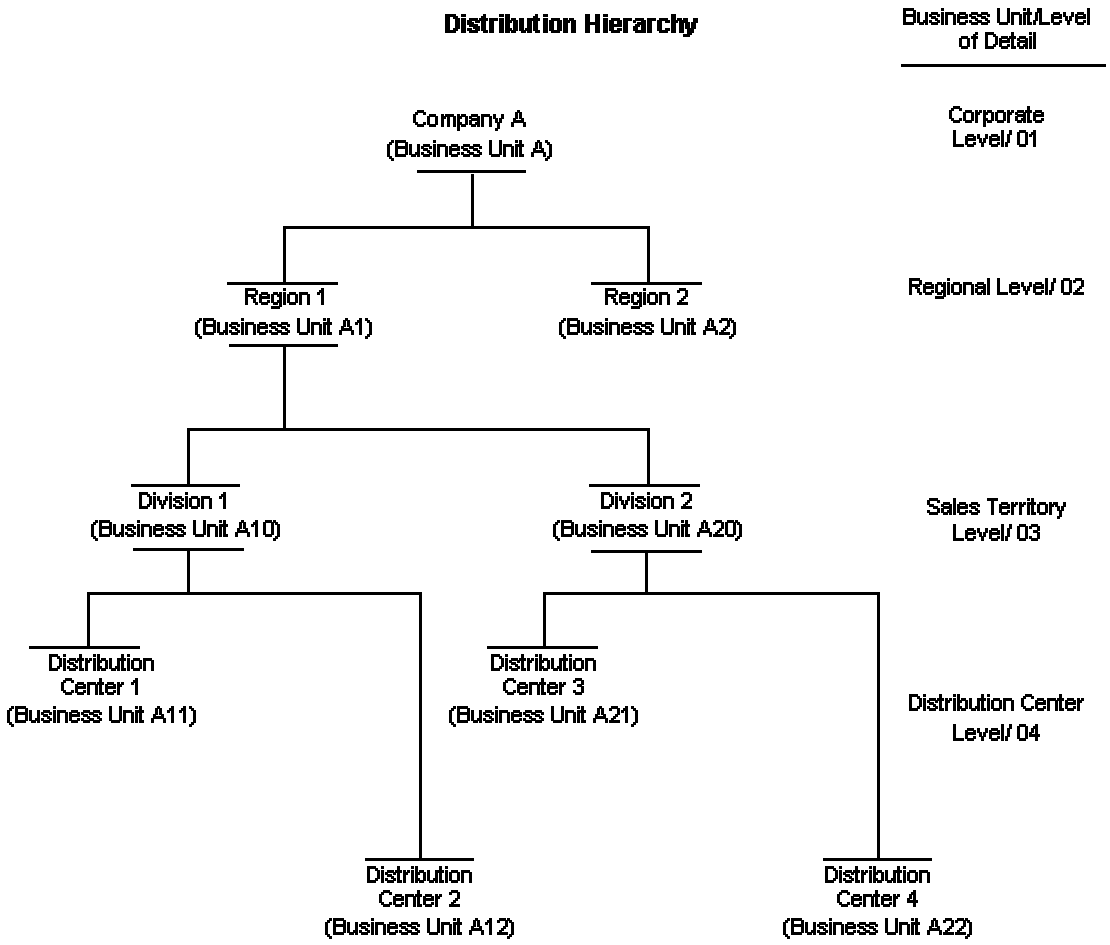
Defining Distribution Hierarchies

When planning and budgeting for divisions of your organization, you can summarize detailed forecasts that are based on your distribution hierarchy. For example, you can create forecasts by large customer or region for your sales staff, or create forecasts by product family for your production staff.

To define the distribution hierarchy, you must set up summary codes and assign summary constants. You also must enter address book, business unit, and item branch data.

Example: Distribution Hierarchy

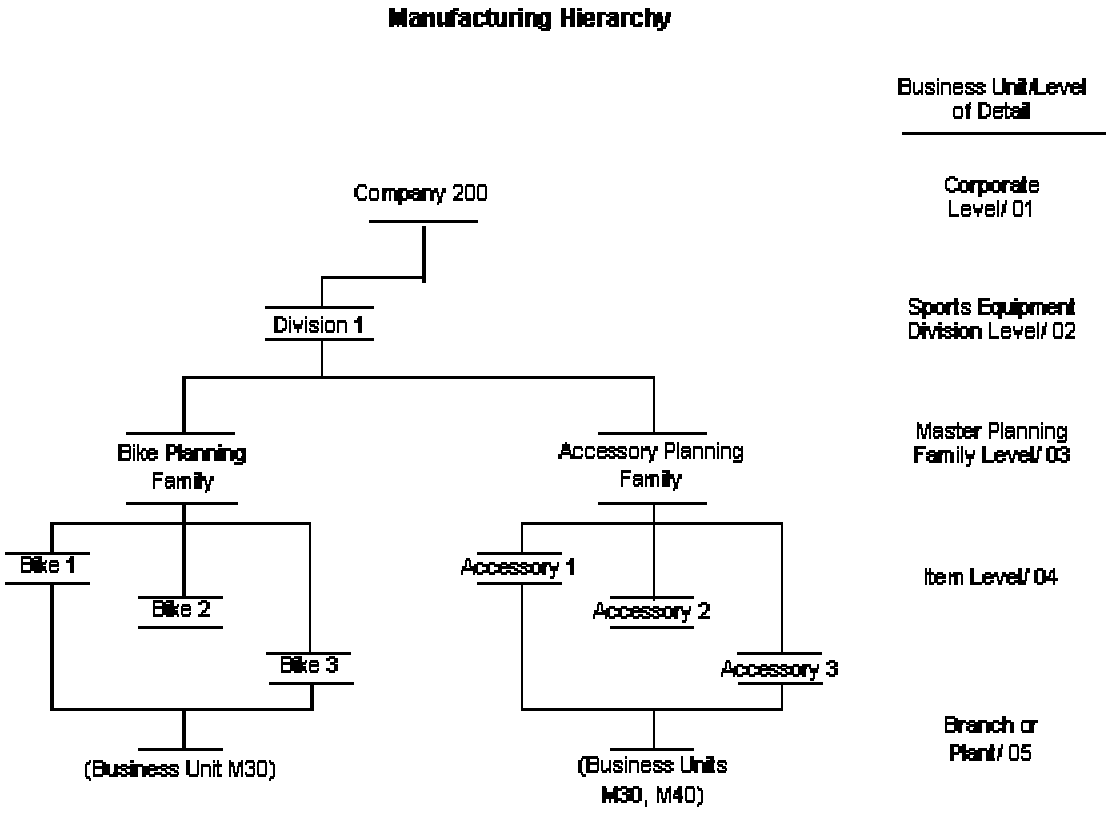
The following chart shows an example of a distribution hierarchy:



Example: Manufacturing Hierarchy for Company 200

You might want to see a forecast of the total demand for a product summarized by product families.

The following chart shows an example of how to set up a hierarchy to get the forecast summary by product:



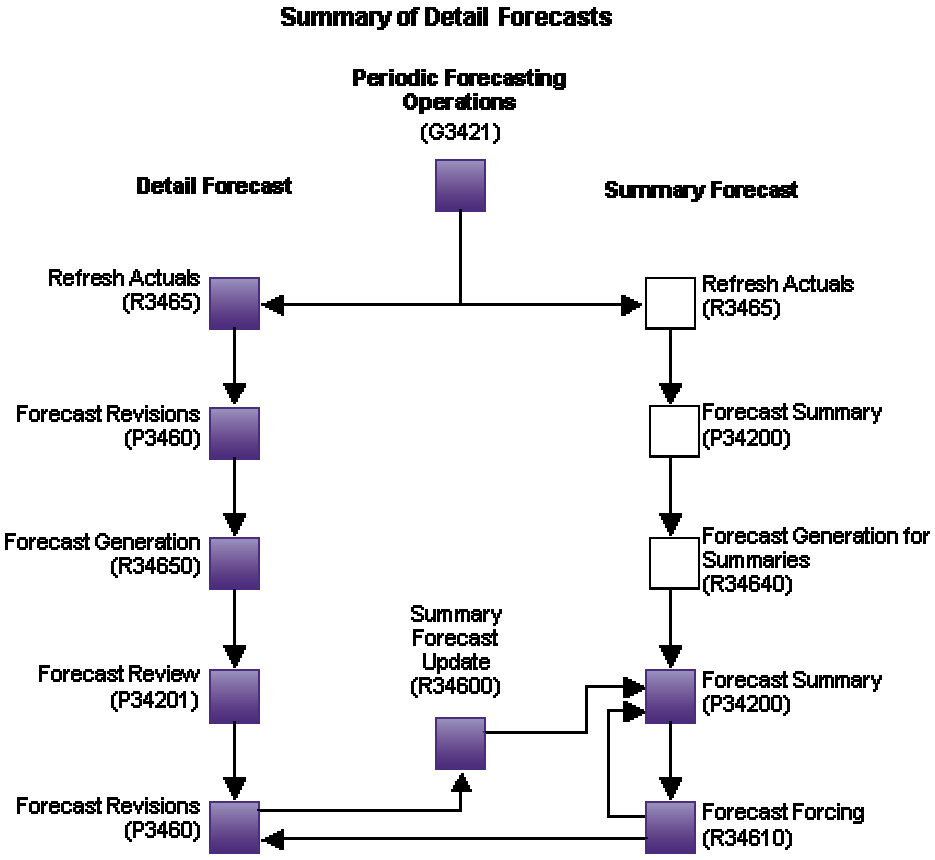
Comparing Summary of Detail Forecasts and Summary Forecasts

Summary of Detail Forecasts

A summary of detail forecast uses item-level data and predicts future sales in terms of item quantities and sales amounts.

The system updates the Sales Order History File table (F42119) with sales data from the Sales Order Detail File table (F4211). You copy the sales history into the Forecast File table (F3460) to generate summaries of detail forecasts. The system generates summary forecasts that provide information for each level of the hierarchy that you set up with summary constants. These constants are stored in the Category Code Key Position File table (F4091). Both summaries of detail forecasts and summary forecasts are stored in the Forecast Summary File table (F3400).

The shaded blocks of the following graphic show this process:



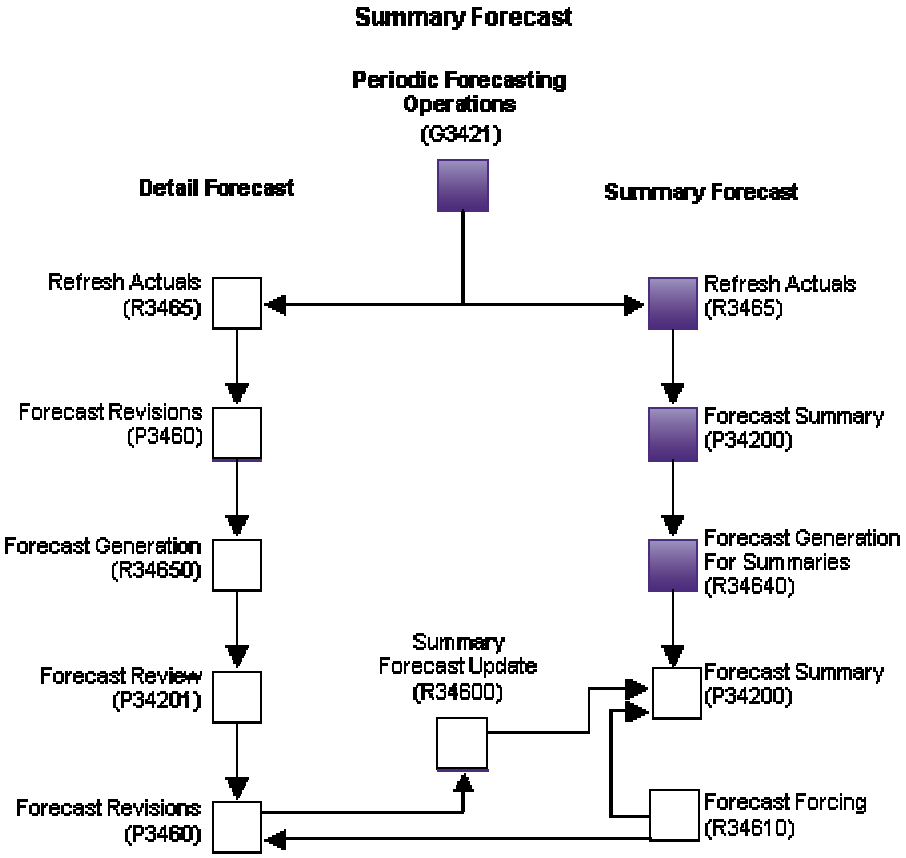
Summary Forecasts

Use summary forecasts to project demand at a product group level. Summary forecasts are also called aggregate forecasts. You generate a summary forecast that is based on summary actual data.

Summary forecasts combine sales history into a monetary value of sales by product family, by region, or in other groupings that are used as input to the aggregate production planning activity. You can use summary forecasts to run simulations.

The system updates the Sales Order History File table (F42119) with sales data from the Sales Order Detail File table (F4211) to generate summary forecasts. You copy the sales history into the Forecast Summary File table (F3400) to generate summary forecasts. The system generates summary forecasts that provide information for each level of the hierarchy that you set up with summary constants. Summary constants are stored in the Category Code Key Position File table (F4091). Both summary forecasts and summaries of detail forecasts are stored in table F3400.

The shaded blocks in the following graphic illustrate the process flow of generating a summary forecast:



Setting Up Summary Forecasts

For summary forecasts, the Forecast Management system requires you to set up the information for detail forecasts, and set up and define a summary hierarchy.

You set up your summary codes (40/KV) and then identify the constants for each summary code. These summary codes and constants define your distribution hierarchy.

To set up summary forecasts, you must:

- Define the hierarchy with summary codes and constants
- Enter address book data, business unit data, and item branch data

Before You Begin

- ❑ Set up detail forecasts.

Setting Up Summary Codes

To set up the hierarchy, you must set up summary codes. For each hierarchy that you define, you must specify a unique identifier called a summary code. Summary codes are setup in user defined code (UDC) 40/KV. Examples of summary codes include the following:

Codes	Description	Hard Coded
200	Sales Channel Summarization	N
CUS	Large Customer Summarization	N
EAS	Eastern Forecast	N
MDW	Mid-Western Forecast	N
PHR	Pharmaceutical Forecast	N
SM	Marketing Summarization Code	N

When creating summary forecasts, you choose a summary code to indicate the hierarchy with which you want to work.

Before You Begin

- ❑ Update the sales history. *See Updating Customer Sales* in the *Sales Order Management Guide*.

Assigning Constants to Summary Codes

For each summary code, use summary constants to define each level of the hierarchy. You can use category codes from the Address Book program (P01012) and Item Master table (F4101) to define up to 14 levels in the hierarchy. You can define these levels as follows:

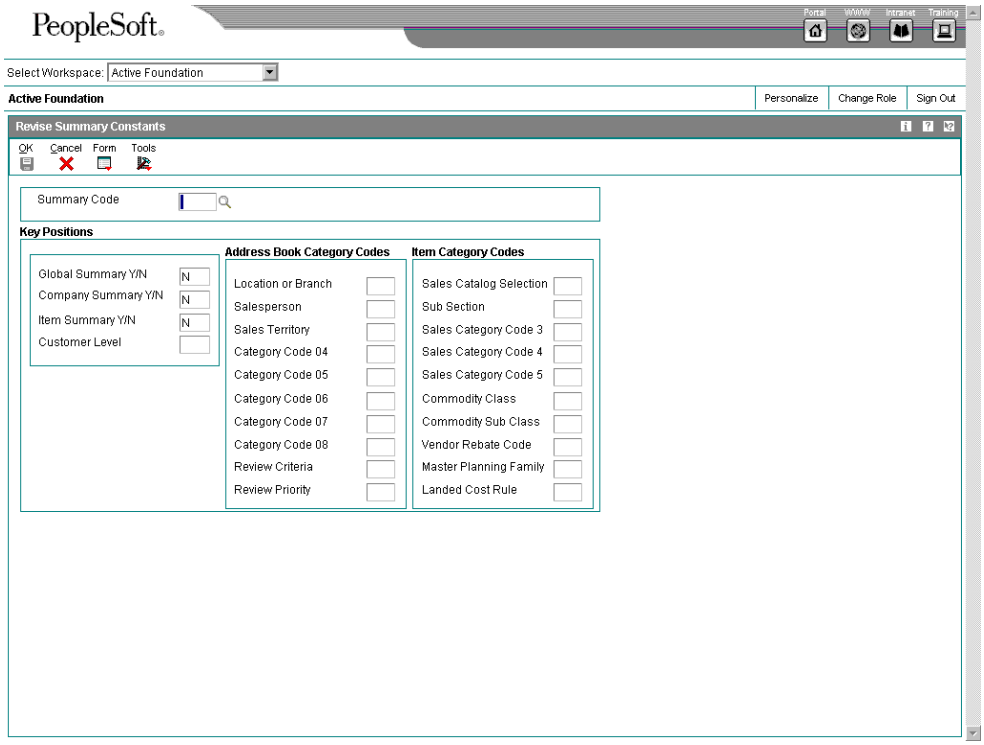
- Define the top level as the Global Summary to summarize forecasts for several companies into a single corporate view.
- Define the second level as the Company Summary to summarize forecasts for all of the facilities in a single company.
- Define up to 11 middle levels, which include the category codes and the customer level.
- Use as many as 20 address book category codes and 20 item branch category codes to assign other levels in the hierarchy.
- Use the Customer Level field as another category code. You can specify each of your large customers as a level of the hierarchy. This action allows you to create specific forecasts for each large customer.
- The lowest level that you can define is the item level.
- Define an Item Summary level that provides forecasts for the individual item level. All detail forecast records for an item can be summarized at this level.

Detail records for a branch/plant item are automatically placed after all levels of the hierarchy. The system does not include these detail records as one of the 14 levels of the hierarchy.

► To assign constants to summary codes

From the Forecasting Setup menu (G3441), choose Summary Constants (P4091).

1. On Work With Summary Constants, click Add.



2. On Revise Summary Constants, complete the following fields:
   - Summary Code
   - Global Summary Y/N
   - Company Summary Y/N
   - Item Summary Y/N
   - Customer Level
3. To define the hierarchy levels, complete any of the following fields:
   - Location or Branch
   - Salesperson
   - Sales Territory
   - Category Code 04
   - Category Code 05
   - Category Code 06
   - Category Code 07

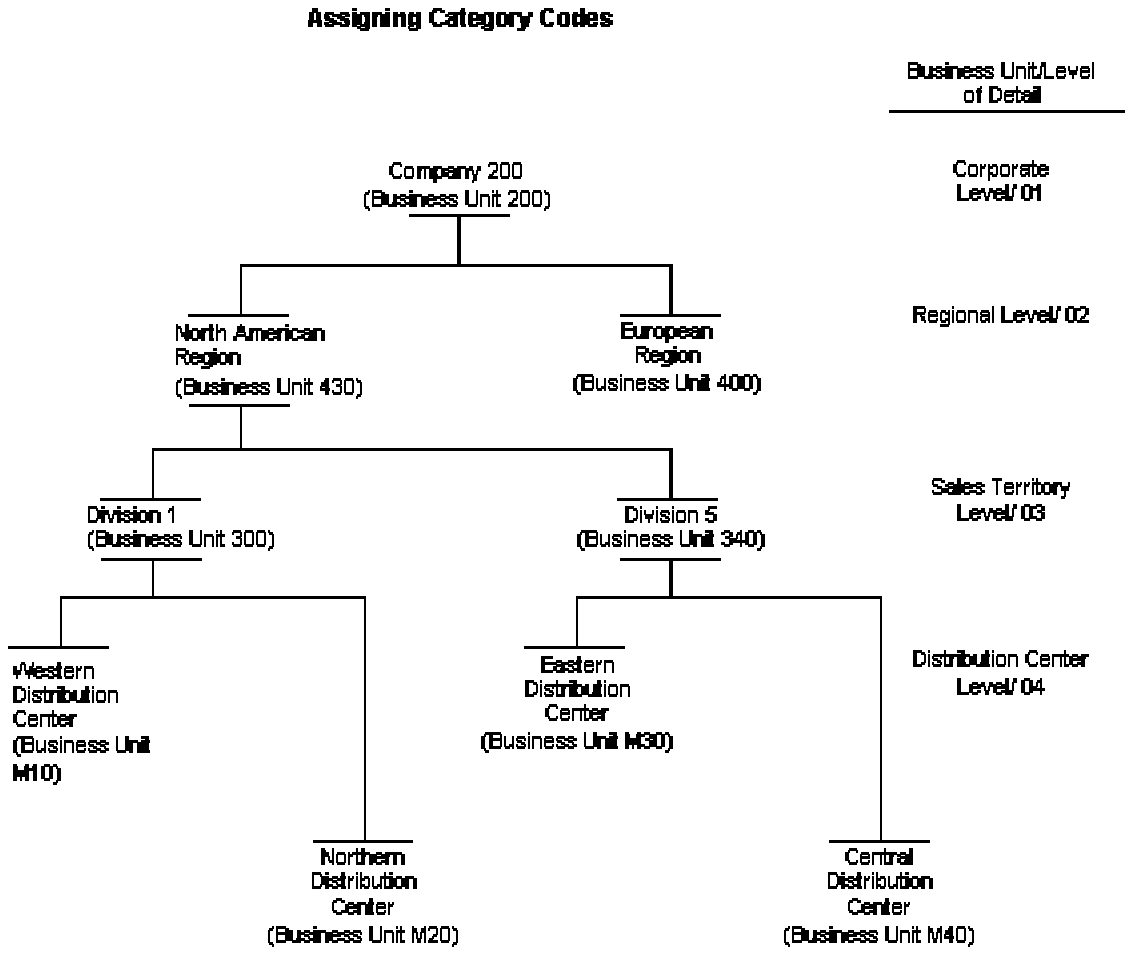
- Category Code 08
- Review Criteria
- Review Priority
- Sales Catalog Selection
- Sub Section
- Sales Category Code 3
- Sales Category Code 4
- Sales Category Code 5
- Commodity Class
- Commodity Sub Class
- Vendor Rebate Code
- Master Planning Family
- Landed Cost Rule

4. To display and enter additional summary constants, click the More button.
5. Click OK.

Verifying Address Book Category Codes

You use address book category codes to define business attributes for the summary hierarchy-- for example, regions, territories, and distribution centers. The address book category codes associate the levels of the hierarchy when you generate the summary forecast. Optionally, you can define your category codes with your business unit if your hierarchy is tied to your business unit structure.

Example: Assigning Category Codes



For example, Division 1 (in the North American Region) uses business unit code 430 as its address book Sales Territory (03) category code. The Western Distribution Center resides in Division 1. To establish the link to the North American Region, the address book category codes for the Western Distribution Center must include the business unit codes that are defined at each level of the hierarchy. In the address book for Western Distribution Center (M10), the Division 1 business unit code (300) resides in the Sales Territory (03) category code. The North American Region's business unit code (430) is assigned to the Region category code (02).

The following table illustrates the category codes for the North American Region hierarchy:

Business Unit Description	Business Unit Number	Level of Detail	Address Book	Address Book Category Code
Corporate Business Unit	200	1	200	
North American Region	430	2	1234	
European Region	400	2	4567	
Division 1	300	3	5678	Territory (03): 430
Division 5	340	3	8765	Territory (03): 430
Northern Distribution Region	M20	4	6066	Territory (03): 300 Region (04): 430
Western Distribution Region	M10	4	6058	Territory (03): 300 Region (04): 430
Central Distribution Region	M40	4	6082	Territory (03): 340 Region (04): 430
Eastern Distribution Region	M30	4	6074	Territory (03): 340 Region (04): 430

At each level in the hierarchy, the first category code defines the highest level in the hierarchy. The second category code defines the second higher level, and so on.

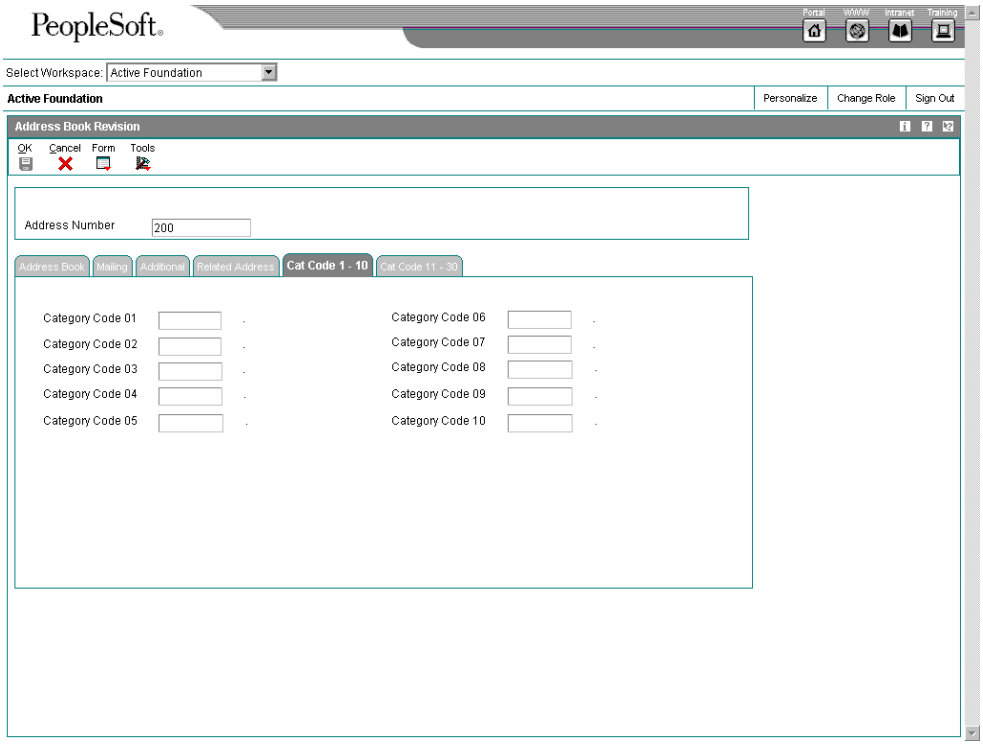
Before You Begin

- Enter new records for all locations and customers that are defined in your distribution hierarchy which are not included in your address book.

► To revise address book category codes

From the Daily Processing menu (G01), choose Address Book Revisions.

1. On Work With Addresses, complete the following fields and click Find:
   - Alpha Name
   - Search Type
2. Choose an address number and click Select.



3. On Address Book Revision, click the Cat Code 1 - 10 tab and complete any of the fields.
4. To access additional category code fields, click the Cat Code 11-30 tab.
5. Click OK.

Reviewing Business Unit Data

Review the company business units and business unit address book numbers to verify that the business units and corresponding address book numbers have been set up correctly. To review company business units, review the level of detail for each business unit in the company hierarchy, and verify that the appropriate address book number is assigned to the business unit.

Before You Begin

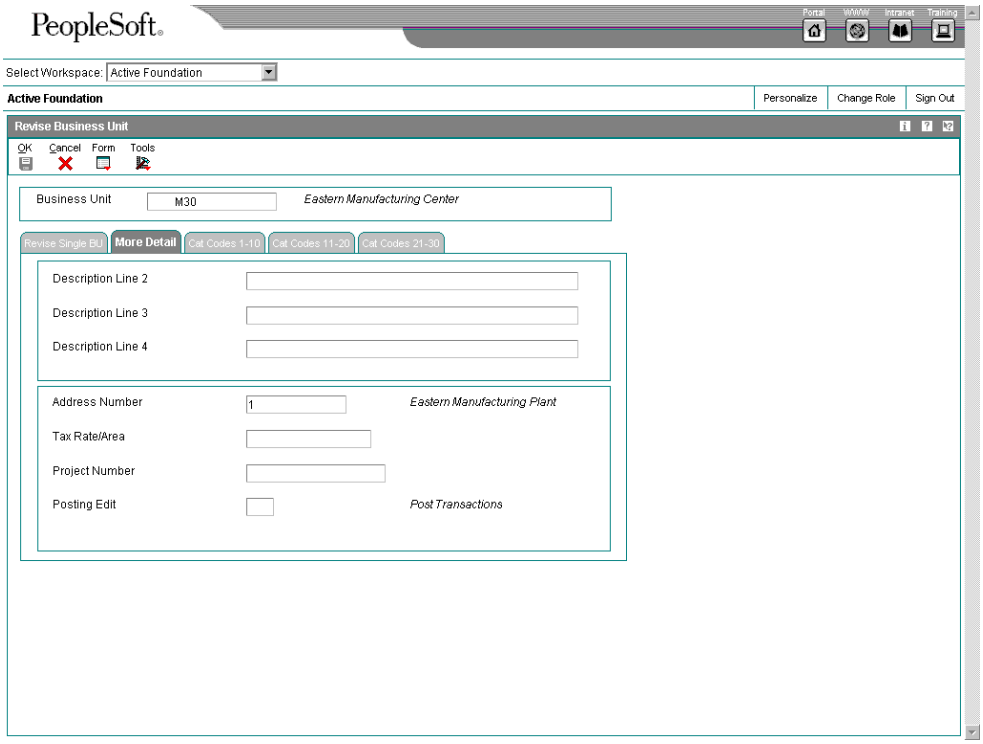
- ❑ Set up the address book numbers for each business unit.

► To review business unit data

From the Organization & Account Setup menu (G09411), choose Review and Revise Business Units.

1. On Work With Business Units, complete the following field and click Find:
   - Company

2. Choose a business unit and click Select.



3. On Revise Business Unit, click the More Detail tab and complete the following field:
   - Address Number
4. Click OK.

See Also

- *Working with Business Units* in the *General Accounting Guide*

Verifying Item Branch Category Codes

Information for an item at a specific branch is maintained in item branch records. The system stores this information in the Item Branch File table (F4102). You should review the item branch records to verify that the items in each branch/plant contain data for the category codes that you selected as levels on the Revise Summary Constants form.

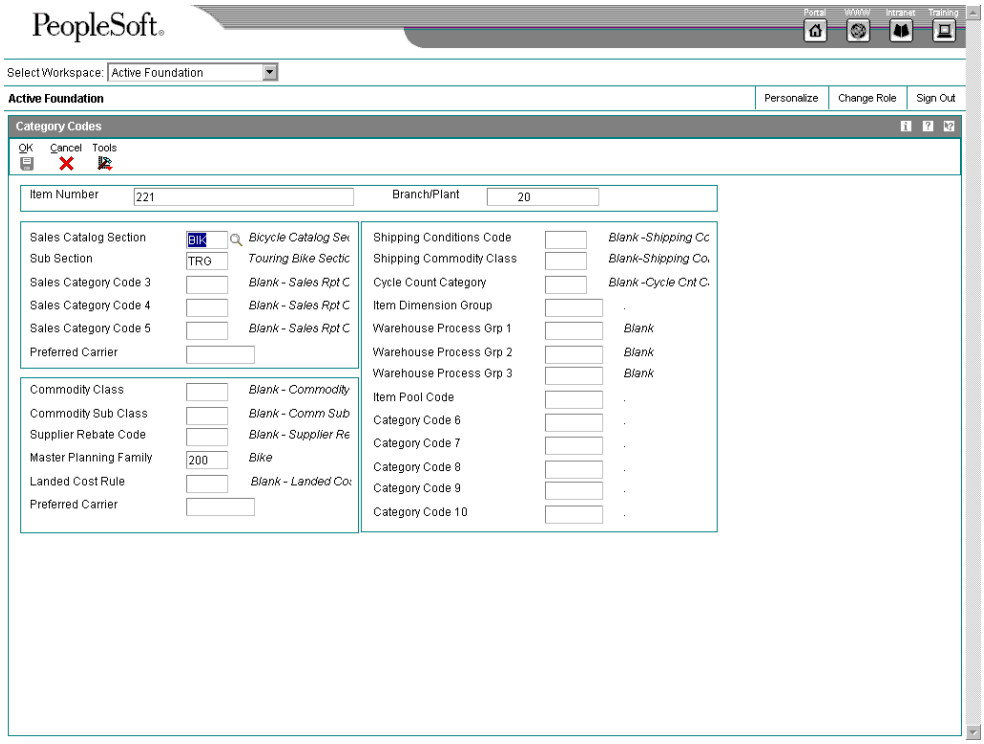
For example, if you select a Master Planning Family as part of a company hierarchy, you must verify that a corresponding user defined code exists in the item branch category code field for that Master Planning Family.

► To verify item branch category codes

From the Inventory Master/Transactions menu (G4111), choose Item Branch/Plant.

1. On Work With Item Branch, complete the following field and click Find:
   - Item Number

2. Choose a branch/plant and then choose Category Codes from the Row menu.



3. On Category Codes, verify the following field:
   - Commodity Class

Generating Summary Forecasts

The system generates summary forecasts that are based on sales history data that you copy from the Sales Order History File table (F42119) into the Forecast Summary File table (F3400). When you copy the sales history, you specify a date range that is based on the request date of the sales order. The sales history data can be distorted by unusually large or small values (spikes or outliers), data entry errors, or missing demand (sales orders that were cancelled due to lack of inventory).

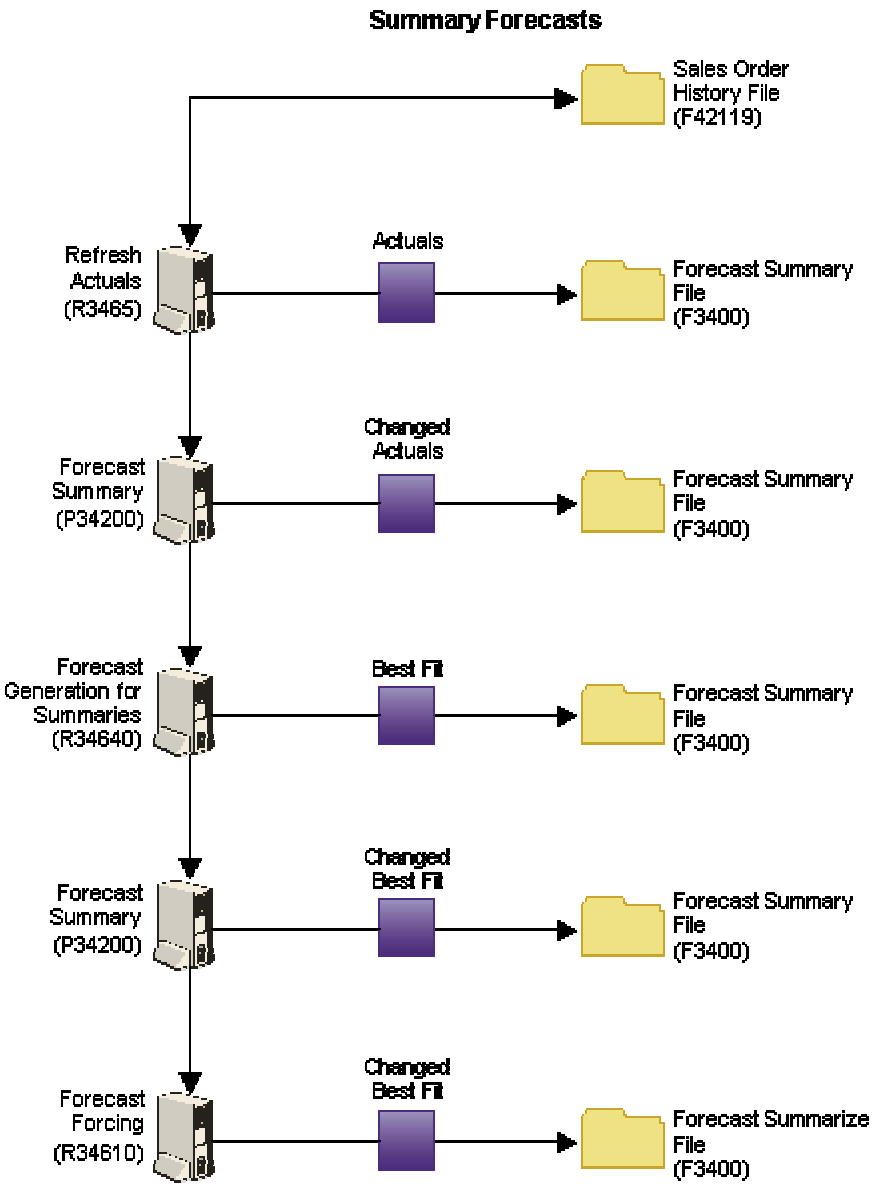
You should review the data in the date range that you specified to identify missing or inaccurate information. You then revise the sales order history to account for inconsistencies and distortions when you generate the forecast. If you want to account for changes in sales order activity for an especially large customer, the J.D. Edwards Forecast Management system allows you to work with that customer's changes separately.

Note

To generate summary forecasts for item quantities on all levels of the hierarchy, generate a detail forecast first, and then run the Summary Forecast Update program (R34600).

Copying Summary Sales Order History

The system generates summary forecasts that are based on data in the Forecast Summary File table (F3400). Use the Refresh Actuals program (R3465) to copy the sales order history (type AA) from the Sales Order History File table (F42119) to table F3400, based upon criteria that you specify.



The system stores sales order histories in table F3400 with forecast type AA or a type code that you designate.

You do not need to clear table F3400 before you run this program. The system automatically deletes any records for the same:

- Period as the actual sales order histories to be generated
- Items
- Sales order history type (AA)
- Branch or plant

Note

The Refresh Actuals program (R3465) converts sales orders into the primary unit of measure and adjusts the resulting quantities.

Before You Begin

- Set up detail forecasts.
- Set up the summary forecast.

See Also

- *Entering Customer Master Information* in the *Accounts Receivable Guide*

Creating a Summary Forecast

The Forecast Generation for Summaries program (R34640) allows you to test simulated versions of future sales scenarios without having to run full detail forecasts. You can use this program to simulate and plan long-range trends because this program does not update information in the Forecast File table (F3460), which is used as input to Distribution Requirements Planning (DRP), Master Production Schedule (MPS), and Material Requirements Planning (MRP) generation.

You can simulate multiple forecasting methods, including the system's 12 hard-coded methods, with past sales order histories; and then select the best fit as determined by the system or another appropriate model to generate a forecast of future sales amounts. You can also select a specific forecasting method and use that model to generate the current forecast. The system generates forecasts of sales amounts for each level in the hierarchy and stores them in the Forecast Summary File table (F3400).

The Forecast Generation for Summaries program uses the same 12 forecasting methods that are used to create detail forecasts. However, the system creates forecast information for each level in the hierarchy.

You can also use the Forecast Generation for Summaries program to:

- Specify the summary code for the hierarchy for which you want to forecast.
- Generate summary forecasts that are based on sales history.
- Select a best fit forecast.
- Store any or all of the forecast methods in table F3400.
- Generate the forecast in a fiscal date pattern that you select.
- Specify the number of months of actual data to use to create the best fit.
- Forecast for individual large customers.
- Forecast an unlimited number of periods into the future.

If you use the default type codes in the processing options, the actual sales history records are identified by type AA, and the best fit model is identified by type BF. The system saves the BF type and AA type records (or corresponding type codes that you designate) in table F3400. However, forecast types 01 through 12 are not automatically saved. You must set a processing option to save them.

When you run the Forecast Generation for Summaries program, the system:

- Extracts sales order history information from table F3400
- Calculates the forecasts by using methods that you select
- Determines the Percent of Accuracy (POA) or Mean Absolute Deviation (MAD) for each selected forecast method
- Recommends the best fit forecast method
- Generates the summary forecast in both monetary amounts and units from the best fit forecast

Before You Begin

- ❑ Run the Refresh Actuals program (R3465).
- ❑ Make changes to the sales order history with the Forecast Revisions program (P3460).

Processing Options for Forecast Generation for Summaries (R34640)

Methods 1 - 3 Tab

These processing options let you specify which forecast types that the system uses when calculating the best fit forecast for each level in the hierarchy. You can also specify whether the system creates summary forecasts for the selected forecast method.

Enter 1 to use the forecast method when calculating the best fit. If you leave the processing option blank, the system does not use that forecast method when calculating the best fit and does not create summary forecasts for the method.

The system defines a period as a week or month, depending on the pattern that is chosen from the Date Fiscal Patterns table (F0008). For weekly forecasts, verify that you have established 52 period dates.

---

1. Percent Over Last Year

Blank = Do not use this method

1 = Use this method to create a forecasts

Use this processing option to specify which type of forecast to run. This forecast method uses the Percent Over Last Year formula to multiply each forecast period by a percentage increase or decrease. You specify the increase or decrease in the Percent processing option. This method requires the periods for the best fit plus one year of sales history. This method is useful for seasonal items with growth or decline. Valid values are:

Blank The system does not use this method.

1 The system uses the Percent Over Last Year formula to create summary forecasts.

---

2. Percent

Use this processing option to specify the percent of increase or decrease by which the system multiplies the sales history from last year. For example,type 110 for a 10 percent increase or type 97 for a 3 percent decrease. Valid values are any percent amount; however, the amount cannot be a negative amount. Enter an amount to use or choose it from the Calculator.

3. Calculated Percent Over Last Year

Blank = Do not use this method

1 = Use this method to create forecasts

Use this processing option to specify which type of forecast to run. This forecast method uses the Calculated Percent Over Last Year formula to compare the periods of past sales that you specify to the same periods of past sales of the previous year. The system determines a percentage increase or decrease, then multiplies each period by this percentage to determine the forecast. This method uses the periods of sales order history that you specify in the following Number of Periods processing option plus one year of sales history.

This method is useful for short-term demand forecasts of seasonal items with growth or decline. Valid values are:

Blank The system does not use this method.

1 The system uses the Calculated Percent Over Last Year formula to create summary forecasts.

4. Number of Periods

Use this processing option to specify the number of periods to include when calculating the percentage increase or decrease. Enter a number to use or choose it from the Calculator.

5. Last Year to This Year

Blank = Do not use this method

1 = Use this method to create forecasts

Use this processing option to specify which type of forecast to run. This forecast method uses the Last Year to This Year formula which calculates the year's forecast based on the prior year's sales. This method uses the periods best fit plus one year of sales order history. This method is useful for mature products with level demand or seasonal demand without a trend. Valid values are:

Blank The system does not use this method.

1 The system uses the Last Year to This Year formula to create summary forecasts.

Methods 4 - 6 Tab

These processing options let you specify which forecast types that the system uses when calculating the best fit forecast for each level in the hierarchy. You can also specify whether the system creates summary forecasts for the selected forecast method.

Enter 1 to use the forecast method when calculating the best fit. If you leave the processing option blank, the system does not use that forecast method when calculating the best fit and does not create summary forecasts for the method.

The system defines a period as a week or month, depending on the pattern that is chosen from the Date Fiscal Patterns table (F0008). For weekly forecasts, verify that you have established 52 period dates.

1. Moving Average

Blank = Do not use this method

1 = Use this method to create forecasts

Use this processing option to specify which type of forecast to run. This forecast method uses the Moving Average formula to average the months that you indicate in the following Number of Periods processing option to project the next period. This method uses the periods for the best fit from the Actual Data processing option under the Process 1 tab plus the number of periods of sales order history. You should have the system recalculate this forecast monthly or at least quarterly to reflect changing demand level. This method is useful for mature products without a trend. Valid values are:

Blank The system does not use this method.

1 The system uses the Moving Average formula to create summary forecasts.

2. Number of Periods

Use this processing option to specify the number of periods to include in the Moving Average forecast method. Enter a number to use or choose it from the Calculator.

3. Linear Approximation

Blank = Do not use this method

1 = Use this method to create forecasts

Use this processing option to specify which type of forecast to run. This forecast method uses the Linear Approximation formula to compute a trend from the periods of sales order history and projects this trend to the forecast.

You should have the system recalculate the trend monthly to detect changes in trends. This method uses period's best fit plus the number of periods that you indicate in the following Number of Periods processing option of sales order history. This method is useful for new products or products with consistent positive or negative trends that are not due to seasonal fluctuations. Valid values are:

Blank The system does not use this method.

1 The system uses the Linear Approximation formula to create summary forecasts.

4. Number of Periods

Use this processing option to specify the number of periods to include in the Linear Approximation forecast method. Enter the number to use or choose it from the Calculator.

5. Least Squares Regression

Blank = Do not use this method

1 = Use this method to create forecasts

Use this processing option to specify which type of forecast to run. This forecast method derives an equation describing a straight-line relationship between the historical sales data and the passage of time. Least Squares Regression fits a line to the selected range of data such that the sum of the squares of the differences between the actual sales data points and the regression line are minimized. The forecast is a projection of this straight line into the future. This method is useful when there is a linear trend in the sales data. This method uses sales data history for the period represented by the number of periods best fit plus the number of historical data periods specified in the following Number of Periods processing option. The system requires a minimum of two historical data points. Valid values are:

Blank The system does not use this method.

1 The system uses the Least Squares Regression formula to create summary

forecasts.

6. Number of Periods

Use this processing option to specify the number of periods to include in the Least Squares Regression forecast method. You must enter at least two periods.

Enter the numbers to use or choose them from the Calculator.

Methods 7 - 8 Tab

These processing options let you specify which forecast types that the system uses when calculating the best fit forecast for each level in the hierarchy. You can also specify whether the system creates summary forecasts for the selected forecast method.

Enter 1 to use the forecast method when calculating the best fit. If you leave the processing option blank, the system does not use that forecast method when calculating the best fit and does not create summary forecasts for the method.

The system defines a period as a week or month, depending on the pattern that is chosen from the Date Fiscal Patterns table (F0008). For weekly forecasts, verify that you have established 52 period dates.

1. Second Degree Approximation

Blank = Do not use this metod

1 = Use this method to create forecasts

Use this processing option to specify which type of forecast to run. This forecast method uses the Second Degree Approximation formula to plot a curve based on a specified number of sales history periods. You specify the number of sales history periods in the following Number of Periods processing option to project the forecast. This method adds the period's best fit and the number of periods, and then the sum multiplies by three. This method is not useful for long-term forecasts. Valid values are:

Blank The system does not use this method.

1 The system uses the Second Degree Approximation formula to create summary forecasts.

2. Number of Periods

Use this processing option to specify the number of periods to include in the Second Degree Approximation forecast method. Enter the number to use or choose it from the Calculator.

3. Flexible Method

Blank = Do not use this method

1 = Use this method to create forecasts

Use this processing option to specify which type of forecast to run. This forecast method specifies the period's best fit block of sales order history starting "n" months prior and a percent increase or decrease with which to modify the forecast. This method is similar to Method 1 - Percent Over Last Year, except that you can specify the number of periods that you use as the base. Depending on what you select as "n", this method requires period's best fit plus the number of periods that you specify in the following Number of Periods processing option. This method is useful when forecasting products with a planned trend. Valid values are:

Blank The system does not use this method.

1 The system uses the Flexible Method formula to create summary forecasts.

4. Number of Periods

Use this processing option to specify the number of periods prior to the best fit that you want to include in the Flexible Method calculation. Enter the number to use or choose it

from the Calculator.

5. Percent Over Prior Period

Use this processing option to specify the percent of increase or decrease for the system to use. For example, type 110 for a 10 percent increase or type 97 for a 3 percent decrease. Valid values are any percent amount; however, the amount cannot be a negative amount. Enter an amount to use or choose it from the Calculator.

Method 9 Tab

These processing options let you specify which forecast types that the system uses when calculating the best fit forecast for each level in the hierarchy. You can also specify whether the system creates summary forecasts for the selected forecast method.

Enter 1 to use the forecast method when calculating the best fit. If you leave the processing option blank, the system does not use that forecast method when calculating the best fit and does not create summary forecasts for the method.

The system defines a period as a week or month, depending on the pattern that is chosen from the Date Fiscal Patterns table (F0008). For weekly forecasts, verify that you have established 52 period dates.

1. Weighted Moving Average

Blank = Do not use this method

1 = Use this method to create forecasts

Use this processing option to specify which type of forecast to use. The Weighted Moving Average forecast formula is similar to Method 4 - Moving Average formula, because it averages the previous number of months of sales history indicated in the following processing options to project the next month's sales history. However, with this formula you use the following processing options to assign weights for each of the prior periods (up to 12).

This method uses the number of weighted periods selected plus period's best fit. Similar to the Moving Average, this method lags demand trends, so it is not recommended for products with strong trends or seasonality. This method is useful for mature products with demand that is relatively level. Valid values are:

Blank The system does not use this method.

1 The system uses the Weighted Moving Average formula to create summary forecasts.

2. One Period Prior

Use this processing option to specify the weight to assign to one period prior for calculating a moving average. The total of all the weights used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods. Enter the number to use or choose it from the Calculator.

3. Two Periods Prior

Use this processing option to specify the weight to assign to two periods prior for calculating a moving average. The total of all the weights used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods. Enter the number to use or choose it from the Calculator.

4. Three Periods Prior

Use this processing option to specify the weight to assign to three periods prior for calculating a moving average. The total of all the weights used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods. Enter the number to use or choose it from the Calculator.

5. Four Periods Prior

Use this processing option to specify the weight to assign to four periods prior for calculating a moving average. The total of all the weights used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods. Enter the number to use or choose it from the Calculator.

6. Five Periods Prior

Use this processing option to specify the weight to assign to five periods prior for calculating a moving average. The total of all the weights used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods. Enter the number to use or choose it from the Calculator.

7. Six Periods Prior

Use this processing option to specify the weight to assign to six periods prior for calculating a moving average. The total of all the weights used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods. Enter the number to use or choose it from the Calculator.

8. Seven Periods Prior

Use this processing option to specify the weight to assign to seven periods prior for calculating a moving average. The total of all the weights used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods. Enter the number to use or choose it from the Calculator.

9. Eight Periods Prior

Use this processing option to specify the weight to assign to eight periods prior for calculating a moving average. The total of all the weights used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods. Enter the number to use or choose it from the Calculator.

10. Nine Periods Prior

Use this processing option to specify the weight to assign to nine periods prior for calculating a moving average. The total of all the weights used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods. Enter the number to use or choose it from the Calculator.

11. Ten Periods Prior

Use this processing option to specify the weight to assign to 10 periods prior for calculating a moving average. The total of all the weights used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods. Enter the number to use or choose it from the Calculator.

12. Eleven Periods Prior

Use this processing option to specify the weight to assign to 11 periods prior for calculating a moving average. The total of all the weights used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods. Enter the number to use or choose it from the Calculator.

13. Twelve Periods Prior

Use this processing option to specify the weight to assign to 12 periods prior for calculating a moving average. The total of all the weights used in the Weighted Moving Average calculation must equal 100. If you do not enter a weight for a period within the specified number of periods, the system uses a weight of zero for that period. The system does not use weights entered for periods greater than the number of specified periods. Enter the number to use or choose it from the Calculator.

14. Periods to Include

Use this processing option to specify the number of periods to include in the Weighted Moving Average forecast method. Enter the number to use or choose it from the Calculator.

Methods 10 - 11 Tab

These processing options let you specify which forecast types that the system uses when calculating the best fit forecast for each level in the hierarchy. You can also specify whether the system creates summary forecasts for the selected forecast method.

Enter 1 to use the forecast method when calculating the best fit. If you leave the processing option blank, the system does not use that forecast method when calculating the best fit and does not create summary forecasts for the method.

The system defines a period as a week or month, depending on the pattern that was chosen from the Date Fiscal Patterns table (F0008). For weekly forecasts, verify that you have established 52 period dates.

1. Linear Smoothing

Blank = Do not use this method

1 = Use this method to create forecasts

Use this processing option to specify which type of forecast to run. This forecast method calculates a weighted average of past sales data. You can specify the number of periods of sales order history to use in the calculation (from 1 to 12). You enter these periods in the following Number of Periods processing option. The system uses a mathematical progression to weigh data in the range from the first (least weight) to the final (most weight). Then, the system projects this information for each period in the forecast. This method requires the period's best fit plus the number of periods of sales order history. Valid values are:

Blank The system does not use this method.

1 The system uses the Linear Smoothing formula to create summary forecasts.

2. Number of Periods

Use this processing option to specify the number of periods to include in the Linear Smoothing forecast method. Enter the number to use or choose it from the Calculator.

3. Exponential Smoothing

Blank = Do not use this method

1 = Use this method to create forecasts

Use this processing option to specify which type of forecast to run. This forecast method uses one equation to calculate a smoothed average. This becomes an estimate representing the general level of sales over the selected historical range. This method is useful when there is no linear trend in the data. This method requires sales data history for the time period represented by the number of period's best fit plus the number of historical data periods specified in the following Number of Periods processing option. The system requires that you specify at least two historical data periods. Valid values are:

Blank The system does not use this method.

1 The system uses the Exponential Smoothing formula to create summary forecasts.

4. Number of Periods

Use this processing option to specify the number of periods to include in the Exponential Smoothing forecast method. Enter the number to use or choose it from the Calculator.

5. Alpha Factor

Use this processing option to specify the alpha factor (a smoothing constant) that the system uses to calculate the smoothed average for the general level or magnitude of sales. You can enter any amount, including decimals, from zero to one.

Method 12 Tab

These processing options let you specify which forecast types that the system uses when calculating the best fit forecast for each level in the hierarchy. You can also specify whether the system creates summary forecasts for the selected forecast method.

Enter 1 to use the forecast method when calculating the best fit. If you leave the processing option blank, the system does not use that forecast method when calculating the best fit and does not create summary forecasts for the method.

The system defines a period as a week or month, depending on the pattern that is chosen from the Date Fiscal Patterns table (F0008). For weekly forecasts, verify that you have established 52 period dates.

1. Exponential Smoothing with Trend and Seasonality

Blank = Do not use this method

1 = Use this method to create forecasts

Use this processing option to specify which type of forecast to run. This forecast method calculates a trend, a seasonal index, and an exponentially smoothed average from the sales order history. The system then applies a projection of the trend to the forecast and adjusts for the seasonal index.

This method requires month's best fit plus two years of sales data and is useful for items that have both trend and seasonality in the forecast. Use the following Alpha Factor and Beta Factor processing options to enter the alpha and beta factors rather than have the system calculate them. Valid values are:

Blank The system does not use this method.

1 The system uses the Exponential Smoothing with Trend and Seasonality formula

to create summary forecasts.

2. Alpha Factor

Use this processing option to specify the alpha factor (a smoothing constant) that the system uses to calculate the smoothed average for the general level of magnitude of sales. You can enter any amount, including decimals, from zero to one.

3. Beta Factor

Use this processing option to specify the beta factor (a smoothing constant) that the system uses to calculate the smoothed average for the trend component of the forecast. You can enter any amount, including decimals, from zero to one.

4. Seasonality

Use this processing option to specify whether the system includes seasonality in the calculation. Valid values are:

Blank The system does not include seasonality.

1 The system includes seasonality in the Exponential Smoothing with Trend and Seasonality forecast method.

Defaults Tab

These processing options let you specify the default values that the system uses to calculate forecasts. The system extracts actual values from the Sales Order History File (F42119).

1. Forecast Type

Use this processing option to specify the forecast type that the system uses when creating the summary forecast. Forecast type is a user defined code (34/DF) that identifies the type of forecast to process. Enter the forecast type to use as the default value or choose it from the Select User Define Code form. If you leave this processing option blank, the system does not create any summaries. You must enter a forecast type.

Process Tab

These processing options let you specify whether the system runs the program in proof or final mode; creates weekly or monthly forecasts; and specifies the start date, length, and data that are used to create forecasts.

In addition, you use these processing options to specify how the system calculates the best fit forecast. The system applies the selected forecasting methods to past sales order history and compares the forecast simulation to the actual history. When you generate a forecast, the system compares actual sales order histories to forecasts for the months or weeks that you indicate in the Forecast Length processing option, and computes how accurately each of the selected forecasting methods predict sales. Then the system identifies the most accurate forecast as the best fit. The system uses two measurements for forecasts: Mean Absolute Deviation (MAD) and Percent of Accuracy (POA).

MAD is the mean of the absolute values of the deviations between actual and forecast data. MAD is a measure of the average magnitude of errors to expect, given a forecasting method and data history. Because absolute values are used in the calculation, positive errors do not cancel out negative errors. When you compare several forecasting methods, the forecast with the smallest MAD has shown to be the most reliable for that product for that holdout period.

POA is a measure of forecast bias. When forecasts are consistently too high, inventories accumulate and inventory costs rise. When forecasts are consistently too low, inventories are consumed and customer service declines. A forecast that is ten units too low, then eight units too high, and then two units too high, is an unbiased forecast. The positive error of ten is cancelled by the negative errors of eight and two.

1. Mode

Blank = Run in proof mode

1 = Run in final mode

Use this processing option to specify whether the system runs the summary forecast in proof or final mode. When you run this program in proof mode, the system does not create any forecast records which allows you to run it again with different criteria until you

produce appropriate forecast information.

When you run this program in final mode, the system creates forecast records.

Valid values are:

Blank The system runs the summary forecast in proof mode.

1 The system runs the summary forecast in final mode.

2. Weekly Forecasts

Blank = Create monthly forecasts

1 = Create weekly forecasts

Use this processing option to specify monthly or weekly forecasts. For weekly forecasts, use fiscal date patterns with 52 periods. For monthly forecasts, use fiscal date patterns with 14 periods. Valid values are:

Blank The system creates monthly forecasts.

1 The system creates weekly forecasts.

3. Start Date

Use this processing option to specify the date on which the system starts the forecast. Enter a date to use or choose one from the Calendar. If you leave this processing option blank, the system uses the system date.

4. Forecast Length

Use this processing option to specify the number of periods to forecast. You must have previously established fiscal date patterns for the forecasted periods. If you leave this processing option blank, the system uses 3.

5. Actual Data

Use this processing option to specify the number of periods of actual data that the system uses to calculate the best fit forecast. If you leave this processing option blank, the system uses 3 periods.

The system applies the selected forecasting methods to past sales order history and compares the forecast simulation to the actual history. When you generate a forecast, the system compares actual sales order histories to forecasts for the months or weeks that you indicate in the Forecast Length processing option and computes how accurately each of the selected forecasting methods would have predicted sales. Then, the system identifies the most accurate forecast as the best fit.

6. Mean Absolute Deviation

Blank = Use Percent of Accuracy

1 = Use Mean Absolute Deviation

Use this processing option to specify whether the system uses the Mean Absolute Deviation formula or the Percent of Accuracy formula to calculate the best fit forecast. Valid values are:

Blank The system uses the Percent of Accuracy formula.

1 The system uses the Mean Absolute Deviation formula.

7. Amounts or Quantities

Blank = Quantities

1 = Amounts

Use this processing option to specify whether the system calculates the best fit forecast using quantities or amounts. If you specify to use amounts, you must also extract sales history using amounts. This processing option also affects forecast pricing. Valid values are:

Blank The system uses quantities.

1 The system uses amounts.

8. Fiscal Date Pattern

Use this processing option to specify the fiscal date pattern type to use for the forecast calculations. If you run weekly forecasts, the fiscal date pattern that you specify here must be set up for 52 periods.

9. Negative Values

Blank = Substitute a zero for negative values

1 = Display negative values

Use this processing option to specify whether the system displays negative values. Valid values are:

Blank The system substitutes a zero value for all negative values.

1 The system displays all negative values.

Revising Sales Order History

After you copy the sales order history into the Forecast Summary File table (F3400), you should review the data for spikes, outliers, entry errors, or missing demand that might distort the forecast. Revise the sales order history manually to account for these inconsistencies before you generate the forecast.

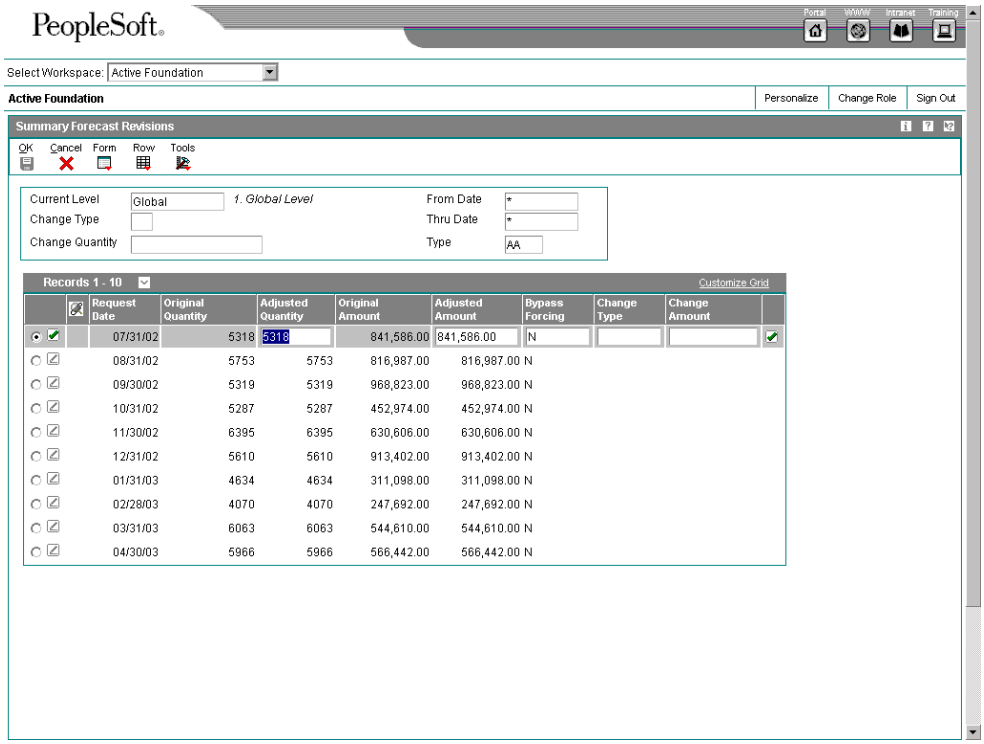
Before You Begin

- Run the Refresh Actuals program (R3465).

► To revise summary sales order history

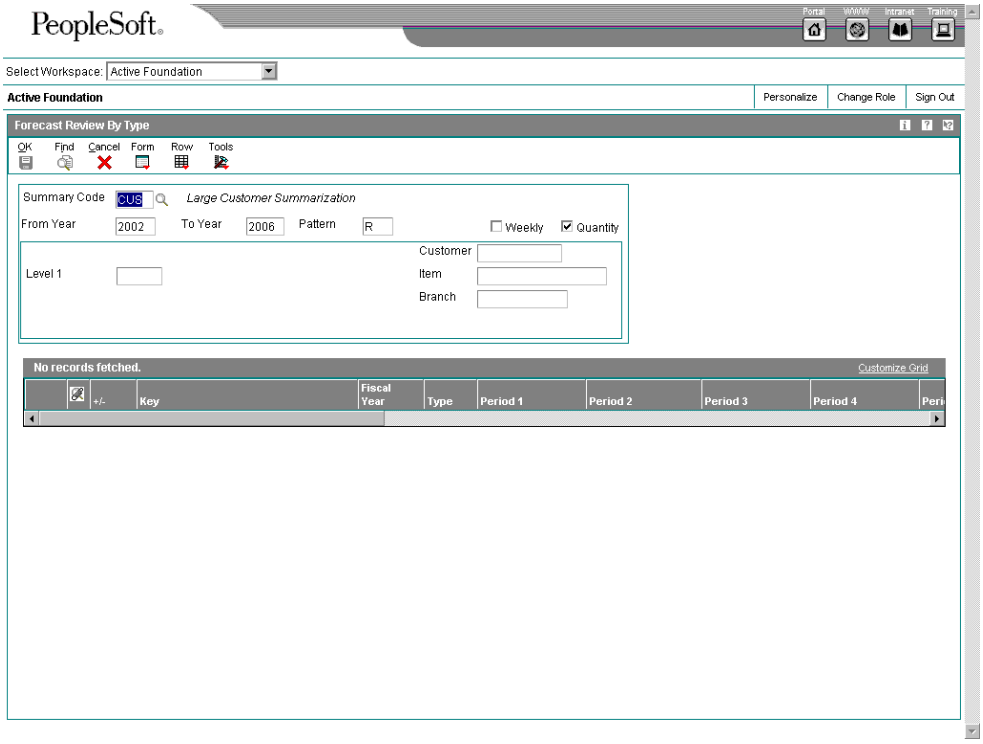
From the Periodic Forecasting Operations menu (G3421), choose Enter Change Summaries.

1. On Work With Summary Forecast, complete the following fields and click Find:
   - Summary Code
   - Actual Type
   - Forecast Type
   - From Date
   - Thru Date
2. Choose the record that you want to review and click Select.



3. On Summary Forecast Revisions, review the following fields in the detail area:
   - Original Quantity
   - Adjusted Quantity
   - Original Amount
   - Adjusted Amount

4. Complete the following fields in the detail area to change information for the forecast summary:
    - Change Type
    - Change Amount
5. To change information for individual lines, complete the following fields and click OK:
    - Adjusted Quantity
    - Adjusted Amount
    - Bypass Forcing
6. On Work with Summary Forecast, choose Review from the Form menu.

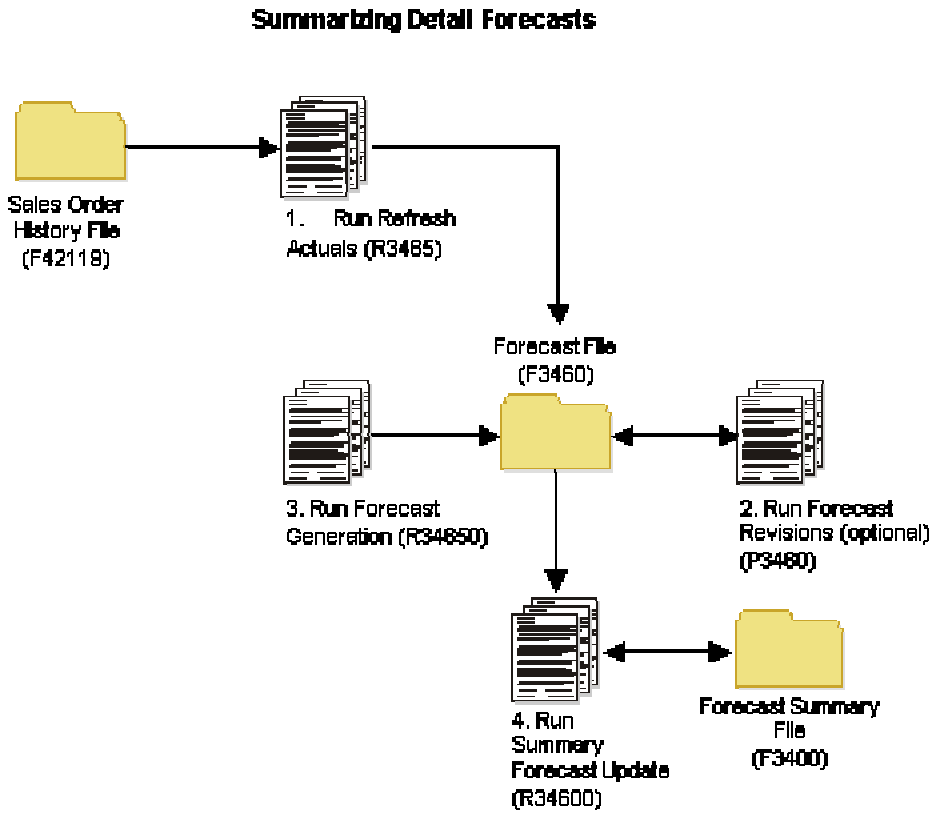


7. On Forecast Review by Type, review the following options and fields:
    - Weekly
    - Quantity
    - Level 1
    - Fiscal Year
    - Type
    - Period 1

Summarizing Detail Forecasts

The Summary Forecast Update program (R34600) generates summary forecasts, which are stored in the Forecast Summary File table (F3400) and are based on data from the Forecast File table (F3460). The Summary Forecast Update program allows you to use detail data to generate summary forecasts that provide both sales amount and item quantity data. You can summarize detail actual sales data or forecasted data. Proper data selection is critical to accurate processing. You should include only items in the summary constants hierarchy.

Data in table F3460 is based on both input that is copied from the Sales Order History File table (F42119) by using the Refresh Actuals program (R3465) and input that is generated by the Forecast Generation program (R34650).



You do not need to clear table F3400 before you run this program. The system deletes any forecasts in the table for the summary code that you specify. If you enter the from and through dates, the system only deletes those forecasts within the date range. The system adds the forecast amounts to the selected record and to every record in the hierarchy above it.

Before You Begin

- Run the Forecast Generation program (R34650).

Processing Options for Summary Forecast Update (R34600)

Process Tab

These processing options let you specify the defaults the system uses for the Summary Forecast Update program (R34600). These defaults include summary code, forecast type, beginning and ending dates, address, and fiscal date pattern.

The Summary Forecast Update program generates summary forecasts that are based on data from the Forecast File table (F3460) and stores the forecasts in the Forecast Summary File table (F3400). The summary forecasts provide both sales amount and item quantity data. Proper data selection is critical to accurate processing. Include only items in the summary constants hierarchy.

Summary Code

Use this processing option to specify which summary code the system uses when running the summary. Summary code is a user defined code (40/KV) that identifies the summary code for running the summary. You define summary codes using the Summary Constants program (P4091) from the Forecasting Setup menu (G3441). Enter the summary code to use as the default value or choose it from the Select User Define Code form.

Forecast Type

Use this processing option to specify the detail forecast type that you want the system to use to summarize the forecast. Forecast type is a user defined code (34/DF) that identifies the detail forecast type. Enter the forecast type to use as the default value or choose it from the Select User Define Code form.

From Date

Blank = Use all data

Enter a Date

Use this processing option to specify the date from which the system begins the summary forecast. Enter a date to use as the beginning forecast date or choose a date from the calendar. If you leave this field blank, the system uses all data to generate the summary forecast.

Thru Date

Blank = Use all data

Enter a Date

Use this processing option to specify the date from which the system ends the summary forecast. Enter a date to use as the ending forecast date or choose a date from the calendar. If you leave this field blank, the system uses all data to generate the summary forecast.

Address

Blank = Business Unit

1 = Address

Use this processing option to specify whether the system considers the address book numbers are part of the hierarchy or if the system retrieves the address book numbers from the business unit associated with the forecast.

If you leave this field blank, the system retrieves the address book numbers from the business units associated with the forecast detail. In the Business Units program (P0006) on the Organization Account Setup menu (G09411) you can determine which address number is assigned to a business unit. In this case, the system uses the category codes for that address number if you are using address book category codes in the summarization hierarchy.

If you enter 1, the system considers the address book numbers of the customers are part of the hierarchy. This customer number comes from the Forecast table (F3460). The customer number would be part of the forecast as a result of generating forecasts for large customers. If you did not generate forecasts for large customers or if you do not have any customers defined as large (ABC code on the Customer Master table (F0301) set to A) the system does not associate address book numbers with the forecasts.

Valid values are:

Blank The system retrieves the address book number from the business units associated with the forecast detail.

1 The system considers the address book numbers of the customers are part of the hierarchy.

Fiscal Date Pattern

Use this processing option to specify the monthly fiscal date pattern the system uses to create summary forecasts. Fiscal date pattern is a user defined code (H00/DP) that identifies the date pattern for the forecast. The system retrieves the pattern from the Date Fiscal Patterns table (F0008). Enter the fiscal date pattern to use as the default value or choose it from the Select User Define Code form. If you leave this field blank, the system creates records using dates from the detail forecast records.

Working with Summarized Detail Forecasts

After generating the forecasts, you can compare them to actual sales order histories. You can then revise both history and forecast data, according to your own criteria.

When you review summaries of forecasts, you can also access a previously generated forecast. You can access a date range to show the sales order history, and the forecast of item quantities or sales amounts. Then you can compare actual sales to the forecast.

When you revise summaries of forecasts, you revise information in a specific level of the forecast. You can also use the Forecast Forcing program (R34610) to apply changes that you made to the summary. You can apply these changes up the hierarchy, down the hierarchy, or in both directions.

Before You Begin

- Generate a summary forecast or a summary of detail forecast.

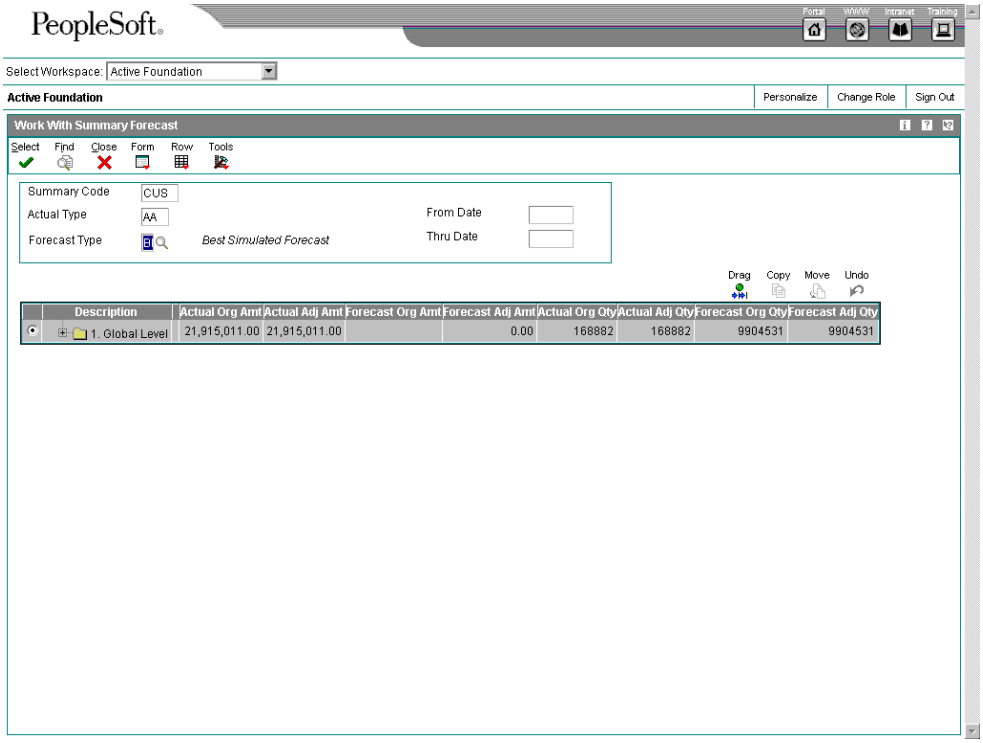
Reviewing a Summary Forecast

Use the Forecast Summary program (P34200) to review summaries of your forecasts. You can also review previously generated forecasts.

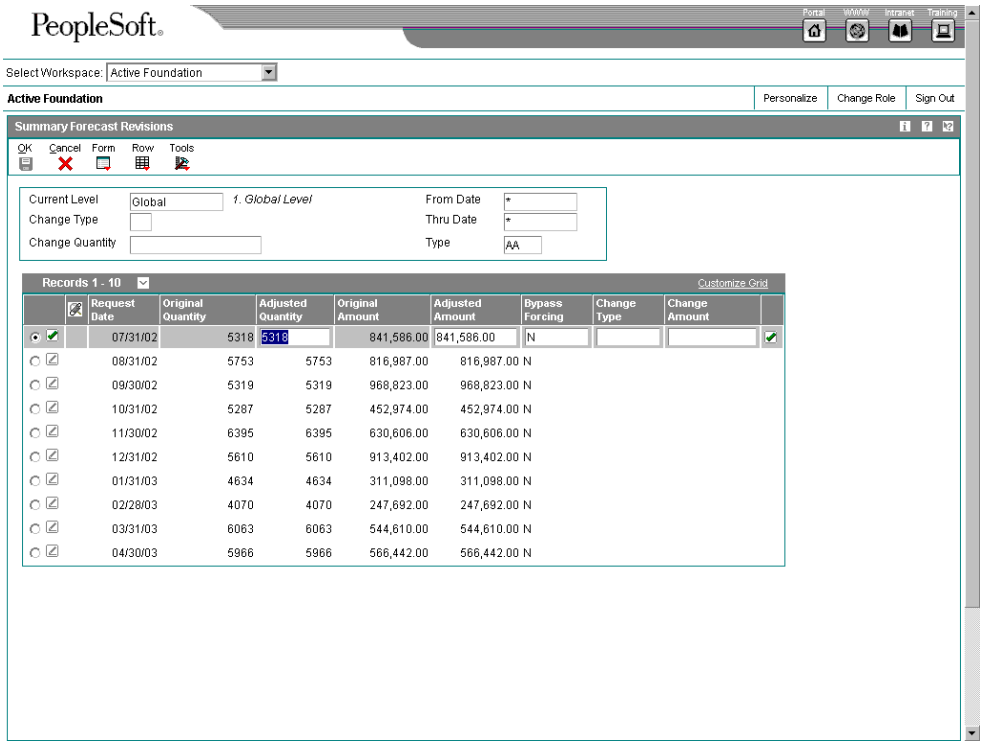
► To review a summary forecast

From the Periodic Forecasting Operations menu (G3421), choose Enter Change Summaries.

1. On Work With Summary Forecast, complete the following fields and click Find:
   - Summary Code
   - Actual Type
   - Forecast Type
   - From Date
   - Thru Date



2. Choose the record that you want to review and click Select.



3. On Summary Forecast Revisions, review the following fields:
   - Original Quantity
   - Adjusted Quantity
   - Original Amount
   - Adjusted Amount

Processing Options for Forecast Summary (P34200)

Defaults

Forecast Type

Actual Type
Versions
Enter the version for each program. If left blank, either ZJDE0001 or the version listed will be used.

1. Forecast Forcing (XJDE0001) (R34610)

2. Forecast Review By Type (P34300)

3. Forecast Revisions (P3460)

Revising a Summary Forecast

After reviewing the forecasts, you can compare them to actual sales order histories. You can then revise both forecast data, according to your own criteria.

If you run the Forecast Generation for Summaries program (R34640) to update the Summary Forecast File table (F3400), the revision forms do not show lower-level forecasts of item quantities. However, if you run the Summary Forecast Update program (R34600) to update table F3400, these forms show the lower-level forecasts of item quantities.

► To revise a summary forecast

From the Periodic Forecasting Operations menu (G3421), choose Enter Change Summaries.

1. On Work With Summary Forecast, complete the following fields and click Find:
   - Summary Code
   - Actual Type
   - Forecast Type
   - From Date
   - Thru Date
2. Choose the record that you want to review and click Select.
3. On Summary Forecast Revisions, complete the following fields in the header area to change information for the forecast summary:
   - Change Type
   - Change Quantity

   Use the fields in the header area to update all detail lines. Use the fields in the detail area to update a specific row.
4. To change information for individual lines, complete the following fields:
   - Adjusted Quantity
   - Adjusted Amount
5. Complete the fields that appear based on summary constants and click OK.

Revising Summary Forecasts Using Forecast Forcing

The Forecast Forcing program (R34610) enables you to apply the manual changes that you made to the summary of a forecast either up the hierarchy (aggregation), down the hierarchy (disaggregation), or in both directions. The system stores these changes in the Forecast Summary File table (F3400).

You can force changes to quantities, amounts, or both. When you make changes both up and down the hierarchy, the program resets the flag on the record to indicate the change. The program makes changes down the hierarchy to the lowest detail level. These changes are also updated in the Forecast File table (F3460).

Note

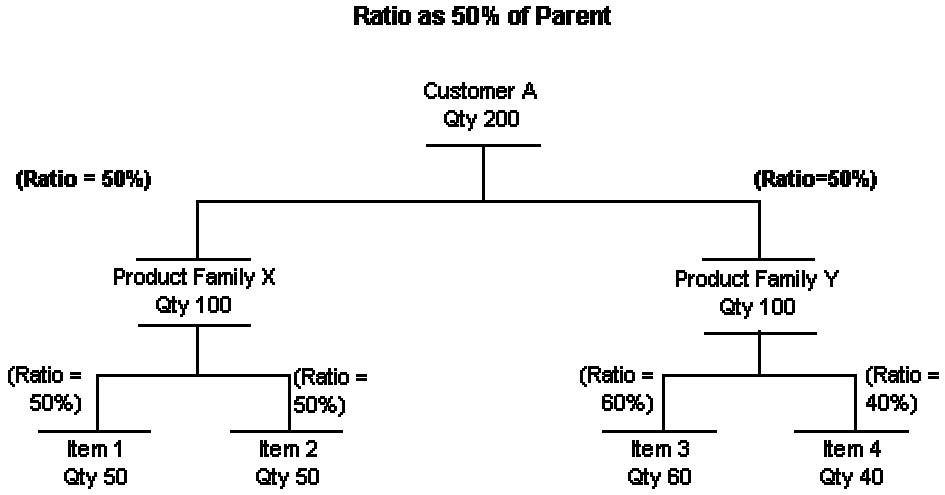
If you force changes in only one direction, the program resets the flag, based on a processing option. You can lose the ability to make changes in the other direction if you force a change in only one direction.

On Forecast Summary (P34200), you can set the Bypass Forcing flag on the Summary Forecast Revisions form for records in the hierarchy below an adjusted record. The system subtracts the bypassed record amounts and quantities from the parent amounts and quantities before calculating the percentages. The system distributes the total amounts to the other children in the hierarchy that were not bypassed. You can only bypass records when you make changes down the hierarchy.

Example: Using Forecast Forcing (R34610)

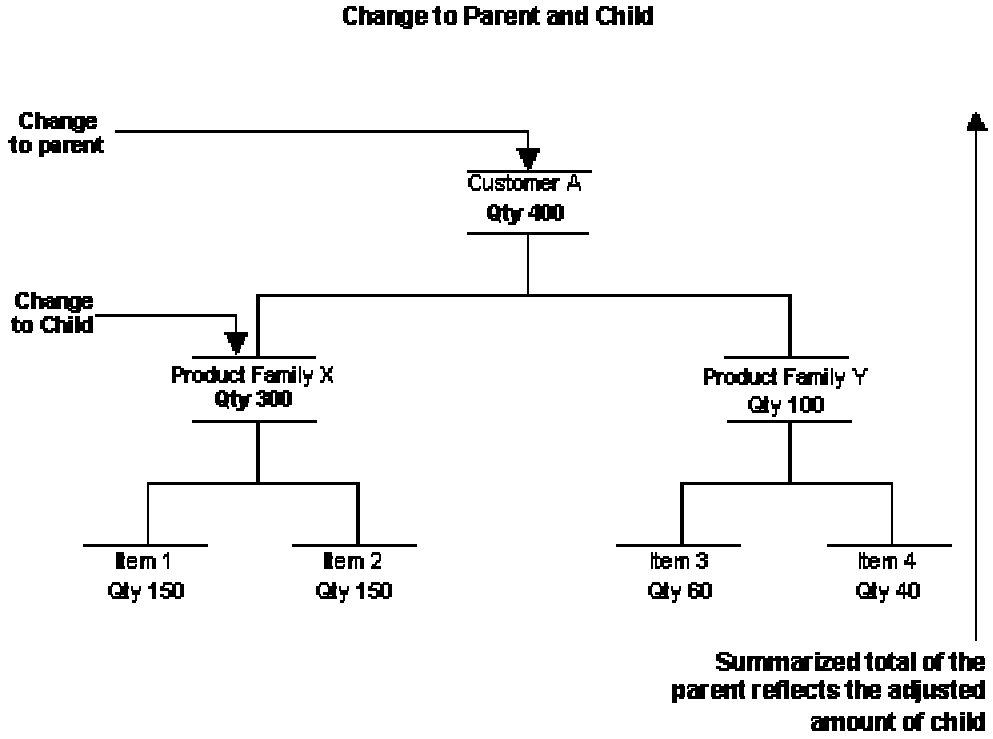
The Forecast Forcing program (R34610) uses the parent/child relationship at each level within the hierarchy to calculate a parent/child ratio. The parent/child ratio is the percentage of the amount or quantity for each child level, based on the total amount or quantity of the parent.

In the following example, the parent's original amount is 200 and its two children in the next level each have an original amount of 100. The program calculates the ratio as 50 percent of the parent. The parent/child ratio is calculated at each level of the hierarchy.

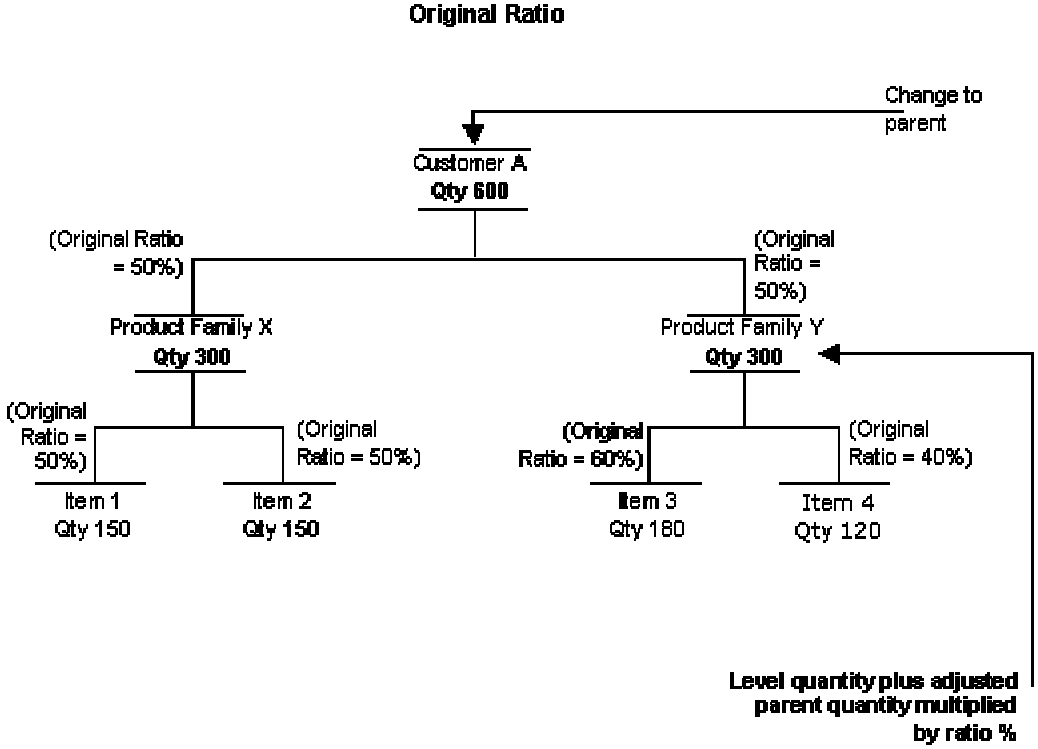


When forcing the changes up the hierarchy, the program summarizes each record again so that the summarized total of the records above it reflects the adjusted amount.

The system summarizes the changes to the lower levels up to the parent level. If you change Product Family X from a quantity of 100 to a quantity of 300, the parent quantity changes to 400.

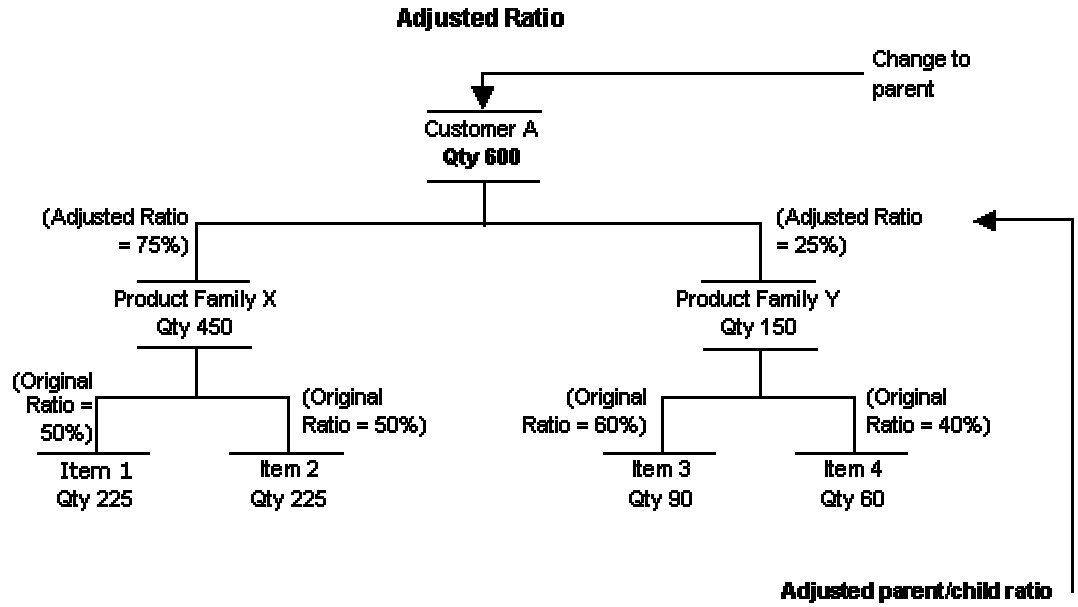


The Forecast Forcing program also makes adjustments down the hierarchy. The parent/child ratio can be based on an original parent/child ratio or an adjusted parent/child ratio.



Using the original parent/child ratio, the system maintains the parent/child ratio when the parent quantity changes. The system uses the adjusted quantity of the parent to calculate the changes at the next lower level. An increase of 600 units to Customer A using the original ratio of 50 percent for each child results in the children calculation of 600 x .5 = 300 each.

The following graphic illustrates an adjusted parent/child ratio of 75 percent for child 1 and 25 percent for child 2.



Before You Begin

- Review and revise the summary forecast.
- Choose the processing option that indicates a specific forecast type with which to make changes.
- Choose the processing option that indicates the direction in which you want to make changes.

Processing Options for Forecast Forcing (R34610)

Process Tab

These processing options let you specify how you want the system to process the manual changes that are made to the applicable summary forecast. These processes include:

- Forcing the changes in the specified hierarchy direction
- Resetting the flag for changed records
- Forcing only quantity or amount changes
- Using the adjusted or original forecast values
- Using the specified summary code
- Identifying which fiscal date pattern was used to create the summary forecast

1. Hierarchy Direction

Blank = Force changes in both directions

1 = Force changes up the hierarchy

2 = Force changes down the hierarchy

Use this processing option to specify the direction in which to force the changes made to the summary forecast. The system updates the changes in the Forecast table (F3460).

Blank The system forces the changes up and down the hierarchy and automatically resets the flag on the record to indicate the change.

1 The system forces the changes up the hierarchy.

2 The system forces the changes down the hierarchy.

If you set this processing option to 1 or 2 and you want the system to reset the flag on the changed record, set the Revised Flag processing option to 1.

2. Revised Flag

Blank = Do not reset the Revised Flag

1 = Reset the Revised flag

Use this processing option to specify whether the system resets the revised flag for the records changed when you set the Hierarchy Direction processing option to 1 or 2.

Blank The system does not reset the Revised flag.

1 The system resets the Revised flag for the changed record.

3. Quantities and Amounts

Blank = Force changes to quantities and amounts

1 = Force quantity changes only

2 = Force amount changes only

Use this processing option to specify whether the system forces the changes made to quantities or amounts or both.

Blank The system forces the changes made to both quantities and amounts.

1 The system forces only the quantity changes.

2 The system forces only the amount changes.

4. Ratio Calculations

Blank = Use original forecast values

1 = Use adjusted forecast values

Use this processing option to specify whether the system calculates the parent/child ratios using the original or the adjusted forecast values. The parent/child ratio is the percentage of the amount or quantity for each child level, based on the total amount or quantity of the parent.

Blank The system uses the original forecast values.

1 The system uses the adjusted forecast values.

5. Summary Code (Required)

Use this processing option to specify the summary code for which to force changes. This processing option is required and the system overrides any summary code specified in the data selection. Summary code is a user defined code (40/KV) that identifies the summary code. You define summary codes using the Summary Constants program (P4091) from the Forecasting Setup menu (G3441).

Enter the summary code to use or choose it from the Select User Define Code form.

6. Fiscal Date Pattern

Use this processing option to specify the fiscal date pattern used to create this summary forecast. This processing option is required if you set the Hierarchy Direction processing option to force changes down and if you created the summary and detail forecasts using different fiscal date patterns. Fiscal date pattern is a user defined code (H00/DP) that identifies the date pattern for the forecast. The system retrieves the pattern from the Date fiscal Patterns table (F0008). Enter the fiscal date pattern to use or choose it from the Select User Define Code form. If you leave this field blank, the system forces the changes both up and down the hierarchy.

Working with Planning Bill Forecasts

Planning bills are groups of items in a bill of material format that reflect how an item is sold rather than how it is built. Planning bills allow you to account for the variety of possible options and features that might be included as components in a saleable end item.

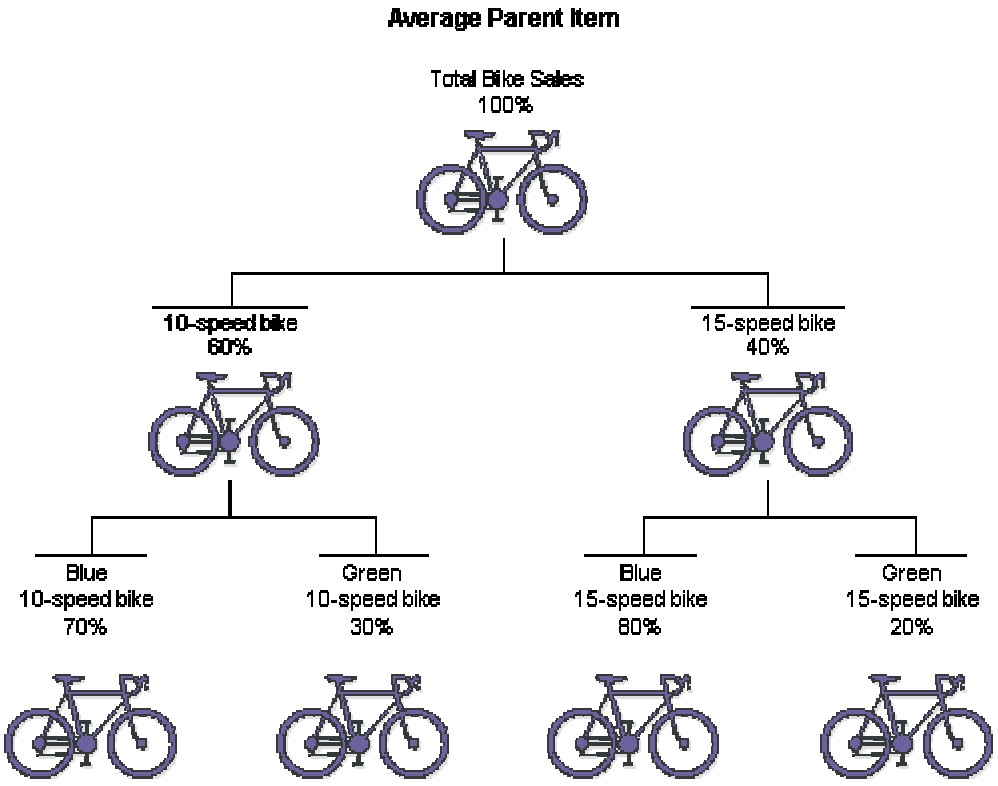
Planning Bill Forecasts

You can use a planning bill to configure a hypothetical average parent item that is not manufactured, but represents the components which are needed to satisfy demand for all the combinations of options and features that you expect to sell. For example, if your sales history shows that 60 percent of all the bikes you sell are 10-speed bikes and 40 percent are 15-speed bikes, your planning bill includes an average parent bike that is neither a 10-speed bike nor a 15-speed bike, but a hybrid bike that is 60 percent 10-speed bike and 40 percent 15-speed bike.

Use planning bills during master scheduling or material planning. You can forecast with a planning bill to determine component demand within the Master Production Schedule (MPS), Material Requirements Planning (MRP), and Distribution Requirements Planning (DRP) systems.

Example: Average Parent Item

Your sales history shows that 60 percent of the bikes that you sell are 10-speed bikes and 40 percent are 15-speed bikes. Of the 10-speed bikes, 70 percent are blue and 30 percent are green. Of the 15-speed bikes, 80 percent are blue and 20 percent are green. You use these percentages to configure an average parent item.



The average parent bike will be:

- 60 percent 10-speed
- 40 percent 15-speed
    - 42 percent blue 10-speed (70 percent of 60 percent)
    - 18 percent green 10-speed (30 percent of 60 percent)
    - 32 percent blue 15-speed (80 percent of 40 percent)
    - 8 percent green 15-speed (20 percent of 40 percent)

You decide to manufacture or purchase at these percentages.

Summary forecasts are more accurate than detail forecasts. For example, a forecast for the total number of bikes that will sell in 1998 is more accurate than a forecast for blue 10-speed bikes that will sell in 1998.

The forecast is based upon total bike sales history. This forecast is the summary forecast. The option percentages produce a production (or purchase) forecast for each of the options. This forecast is the detail forecast.

Exploding the Forecast to the Item Level

You use the planning bill to explode a forecast for the total number of products down to the level of the specific combination of options and features that are included in each saleable end item.

As you set up a planning bill, you designate each level of the item hierarchy above the end item level as an average parent with a planning code of 4. You designate the saleable end items as components of the phantom parents with a planning code of 5.

As you generate the planning bill forecast, you use processing options to designate a forecast type to be read as input and a forecast type to be calculated for the components. You also designate the calculated forecast type as the second type to be read so that it can be exploded down through each level of the hierarchy until the forecast is applied to the saleable end items.

Example: Exploding the Forecast

You use a planning bill to configure an average parent item that represents total bike sales. This average parent bike represents the top level of the item hierarchy and is configured as follows:

- 60 percent 10-speed bike
- 40 percent 15-speed bike

Because bikes with both the 10-speed and 15-speed options can be further divided into blue and green bikes, both the total of all 10-speed bikes and the total of all 15-speed bikes are represented by average parent bikes on the second level of the item hierarchy. These average parents are configured as follows:

- 10-speed bikes:
    - 70 percent blue
    - 30 percent green

- 15-speed bikes:
    - 80 percent blue
    - 20 percent green

The system enables you to process multiple parent items as in this example. You use planning code 4 to designate each of the phantom products on the two higher levels of the hierarchy (total bikes on the top level, and total 10-speed bikes and total 15-speed bikes on the second level) as parent items. You use planning code 5 to designate the end item bikes (for example, blue 15-speed bikes) on the bottom level as components of the phantom parent items.

You assign user defined codes to additional forecast types that you want to include in the processing options which were not supplied with the system. For this forecast, you plan to use forecast types that you have defined and assigned to codes 13 and 16. You designate 16 in processing options as the forecast type to be read as input for the top-level parent item and 13 as the forecast type to be created for calculating the forecast for the components.

The system reads the forecast for total bike sales as determined by forecast type 16 and assigns a percentage of the total forecast to each of the portions of the total on the next level of the hierarchy (total 10-speed and total 15-speed sales).

These percentages are based on feature planned percents. Feature planned percents are the percentage of total products that include features that differentiate some products in the total from others. You define the feature planned percent on the Enter/Change Bill – [Enter Bill of Material Information] form. In this example, the feature planned percents are 60 percent for the 10-speed feature and 40 percent for the 15-speed feature.

The system then calculates a forecast that is based on forecast type 13 which it applies to the next level. You also designate 13 as the second forecast type to be read as input so that the system reads the forecast for the second level, which it then applies to the saleable end items (blue and green 10-speed bikes and blue and green 15-speed bikes).

The system reads forecast type 16 and calculates a type 13 forecast of 20,000 total bikes. The system then reads the forecast and explodes it down the hierarchy to the end item level as follows:

- 60 percent of the 20,000 total bikes = 12,000 10-speed bikes
- 40 percent of the 20,000 total bikes = 8,000 15-speed bikes
    - 70 percent of the 12,000 10-speed bikes (42 percent of total bike sales) = 8,400 blue 10-speed bikes
    - 30 percent of the 12,000 10-speed bikes (18 percent of total bike sales) = 3,600 green 10-speed bikes
    - 80 percent of the 8,000 15-speed bikes (32 percent of total bike sales) = 6,400 blue 15-speed bikes
    - 20 percent of the 8,000 15-speed bikes (8 percent of total bike sales) = 1,600 green 15-speed bikes

See Also

- *Working with Multilevel Master Schedules* in the *Requirements Planning Guide*

Setting Up a Planning Bill

You must set up a planning bill before you generate a planning bill forecast. You use the Product Data Management system to set up a planning bill. Then the system uses the planning bill to generate a forecast for the hypothetical average parent item. The forecast shows the component level exploded.

Setting Up Item Master Information

Before you enter the criteria that you want to use on the planning bill, you must set up item master information on which the planning is based. The system stores this information in the Item Master table (F4101).

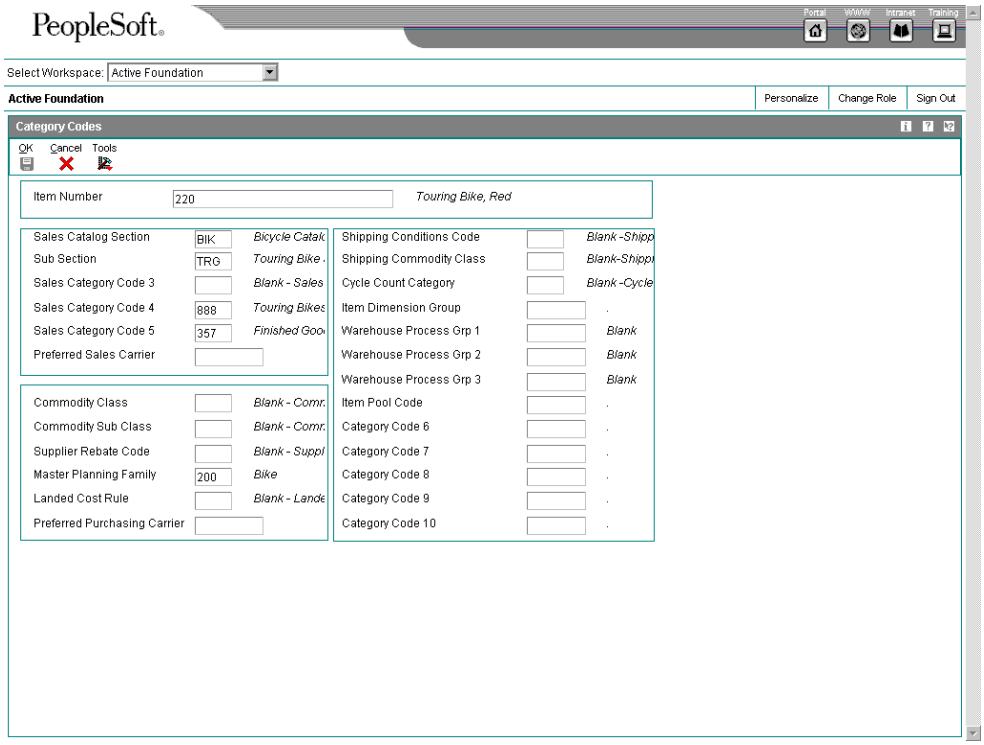
The Item Branch File table (F4102) also stores the item information. After you add item master records for the appropriate part numbers, the system retrieves item information from table F4102.

► To set up item master information

From the Inventory Master/Transactions menu (G4111), choose Item Master.

1. On Work With Item Master Browse, click Add.
2. On Item Master Revisions, complete the following fields and click OK:
   - Item Number
   - Description
   - Stocking Type
   - G/L Class
   - Kit/Configurator Pricing Method

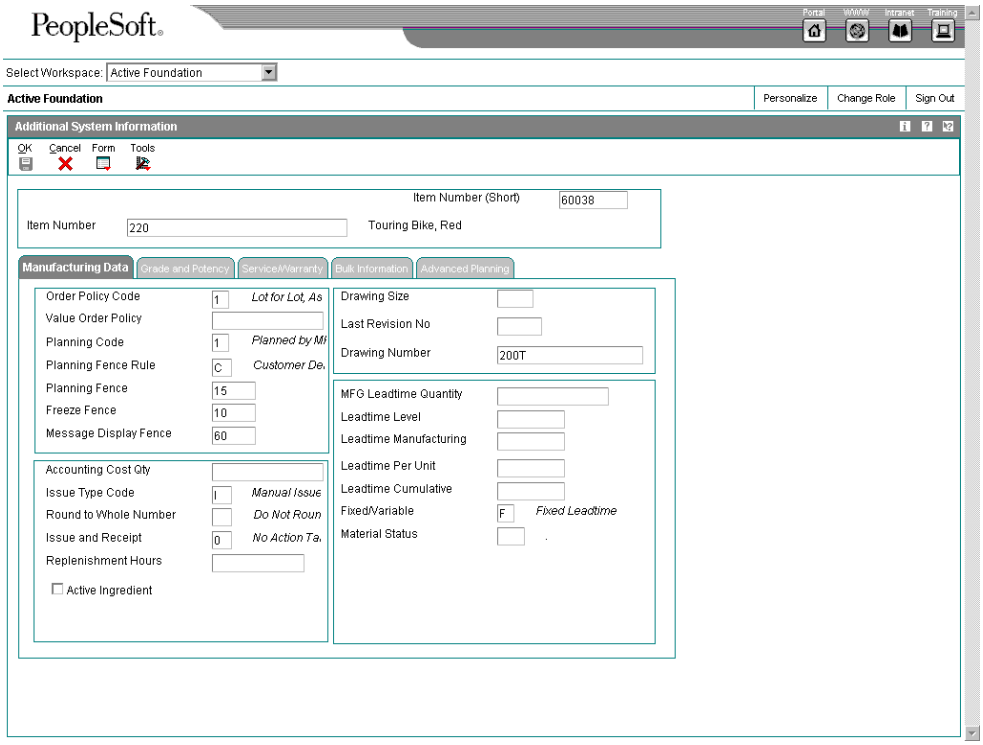
   Depending on how the processing options are set, other forms might appear.
3. On Work With Item Master Browse, click Find.
4. Choose the item, and then choose Category Codes from the Row menu.



5. On Category Codes, complete the following field and click OK:

   - Master Planning Family

   Depending on how the processing options are set, other forms might appear.



6. On Work With Item Master Browse, choose the item and then choose Additional System Information from the Row menu.
7. On the Manufacturing Data tab, complete the following field, and then click OK:
   - Planning Code

   Depending on how the processing options are set, other forms might appear.
8. If the Item Branch Revisions form appears, click Cancel to return to Work With Item Master Browse.

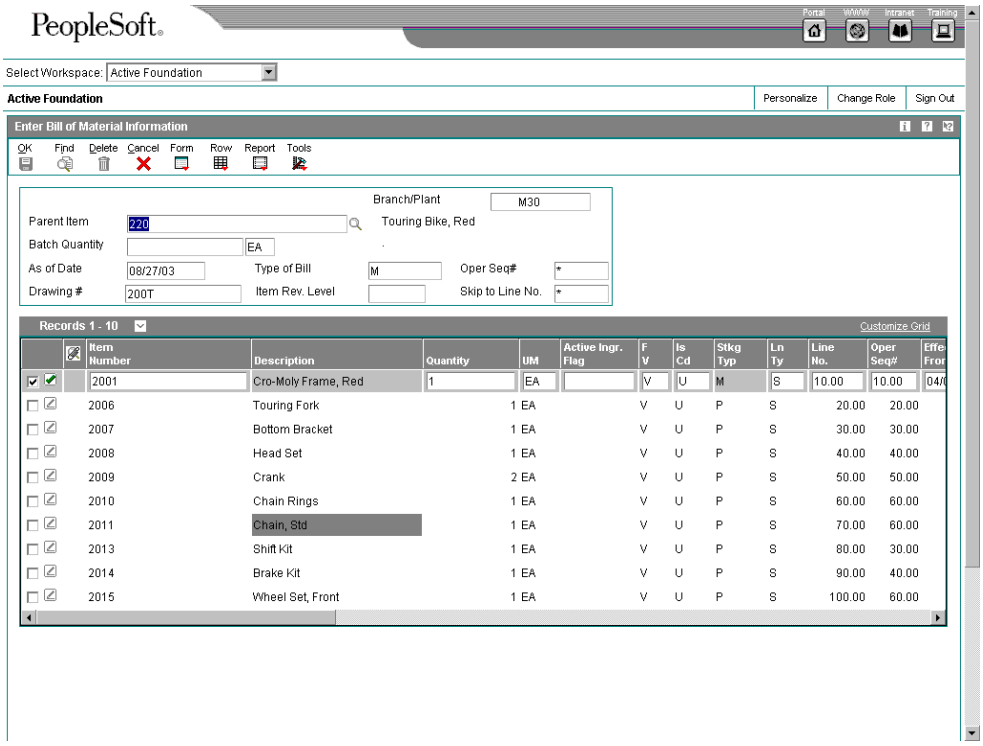
Entering Planning Bills

You enter a planning bill in the Product Data Management system to change the percentages on which the hypothetical average parent item is based. This action allows you to account for any planning variations on which you might want to base forecasts.

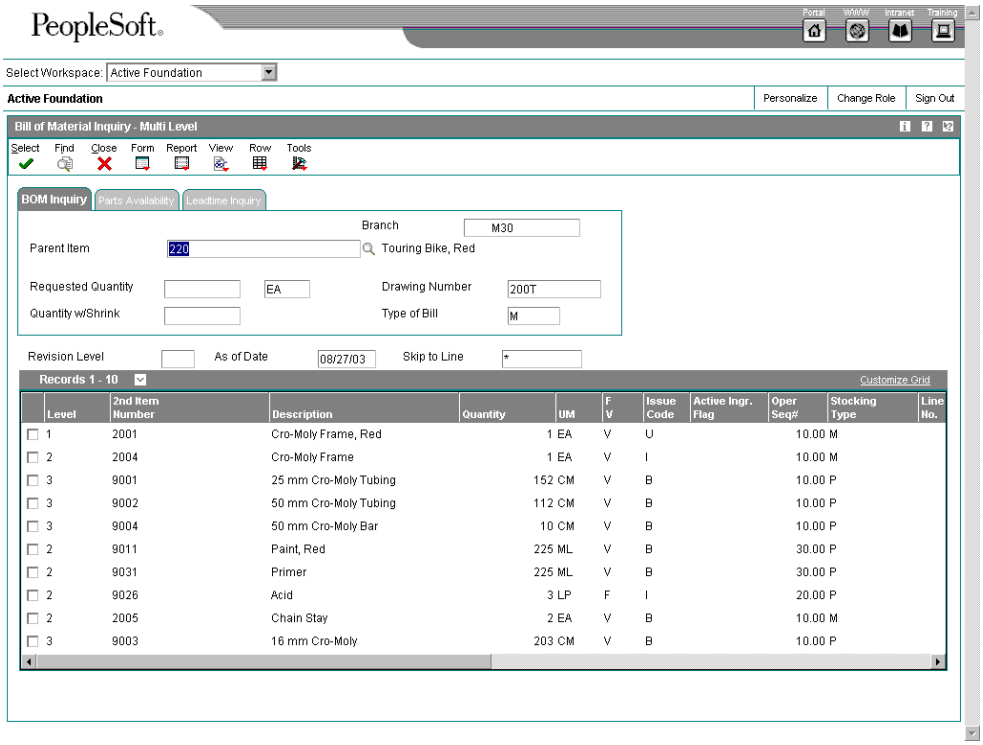
► To enter planning bills

From the Daily PDM Discrete menu (G3011), choose Enter/Change Bill.

1. On Work with Bill of Material, complete the following fields and click Find:
   - Item Number
   - Branch/Plant
2. Choose the item number and click Select.



3. On Enter Bill of Material Information, complete the following fields and click OK:
   - Item Number
   - Quantity
   - Feat Plan %
4. Review the default value in the following field:
   - Is Cd
5. To return to Work with Bill of Material, click Cancel.
6. Choose the record.
7. Choose BOM Inquiry from the Row menu.
8. On Bill of Material Inquiry - Single Level, choose Multi Level from the View menu to view the multilevel bill of material.



9. Click Close when done reviewing the bill of material.

Processing Options for Bill of Material Revisions (P3002)

Defaults Tab

These processing options control the default values for the parent branch, the bill of material type, and the current date. The system uses the default values when processing a bill of material. You can also sort the information by component line number or by operation sequence number.

---

1. Component Branch

Use this processing option to specify whether the system uses the parent branch as the default value in the bill of material records when you copy the bill of material to add a new bill of material. Valid values are:

Blank The system uses the component branch when you copy the bill of material.

1 The system uses the parent branch when you copy the bill of material.

---

2. Bill of Material Type

Use this processing option to specify the type of bill of material for the system to use as the default value in the Type of Bill fields. Bill of material type is a user defined code (40/TB) that designates the type of bill of material. Enter the bill of material type to use or choose it from the Select User Define Code form. If you leave this processing option blank, the system uses M.

3. As of Date

Use this processing option to specify whether the system uses the current date as the default value in the As Of Date field in the header area of the Work with Bill of Material form. Enter the date to use or choose it from the Calendar. Additional valid values are:

Blank The system uses * as the default value, which allows the system to select all dates.

1 The system uses the current date as the default value.

4. Display Sequence

Use this processing option to specify how the system sorts the information on the Enter Bill of Material Information form. You can choose whether to sequence the data by component line number or by operation sequence number.

The component line number indicates the sequence of the components on a bill of material. The operation sequence number indicates the sequence of the fabrication or assembly steps in the manufacture of an item. Valid values are:

Blank The system sorts by component line number.

1 The system sorts by component line number.

2 The system sorts by operation sequence number.

Display Tab

These processing options control whether the system displays the Bill Type and Batch Quantity fields. The Bill Type field appears in the header area on the Work With Bill of Material and the Enter Bill of Material Information forms. The Batch Quantity field only appears in the header area on the Enter Bill of Material Information form. If you leave these processing options blank, the system does not display the fields.

1. Bill Type

Use this processing option to activate the Bill Type field in the header area of both the Work With Bill of Material and Enter Bill of Material Information forms. Bill of material type is a user defined code (40/TB) that designates the type of bill of material. Valid values are:

Blank The system does not display the Bill Type field.

1 The system displays the Bill Type field.

2. Batch Quantity

Use this processing option to specify whether the system activates the Batch Quantity field in the header area of the Enter Bill of Material Information form. Batch quantity is the quantity of finished units that you expect a specific bill of material to produce. Valid values are:

Blank The system does not display the Batch Quantity field.

1 The system displays the Batch Quantity field.

Versions Tab

These processing options control which versions of the following programs that the system uses when processing a bill of material.

1. Single Level BOM Print (R30460)

Use this processing option to specify the version of the Single Level Bill of Material Print program that the system uses. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Single Level Bill of Material program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

2. Multi Level BOM Print (R30460)

Use this processing option to specify the version of the Multi Level Bill of Material Print program that the system uses. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Multi Level Bill of Material program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

3. ECO Workbench (P30225)

Use this processing option to specify the version that the system uses when you choose the Row exit to the ECO Workbench form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the ECO Workbench program displays information.

Therefore, you might need to set the processing option to a specific version to meet your needs.

4. Component Maintenance (P3015)

Use this processing option to specify the version that the system uses when you choose the Row exit to the Component Maintenance form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Component Maintenance program displays information.

Therefore, you might need to set the processing option to a specific version to meet your needs.

5. ECO Header [P30BREV]

Use this processing option to specify the version that the system uses when you choose the Row exit to the ECO Header form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the ECO Header program displays information. Therefore,you might need to set the processing option to a specific version to meet your needs.

6. Bill of Material Where Used (P30201)

Use this processing option to specify the version of the Bill of Material Where Used program that the system uses. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Bill of Material Where Used program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

7. Item Master (P4101)

Use this processing option to specify the version that the system uses when you choose the Row exit to the Item Master program. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Item Master program displays information. Therefore,you might need to set the processing option to a specific version to meet your needs.

8. Co/By- Products Inquiry (P30211)

Use this processing option to specify the version that the system uses when you choose the Row exit to the Co/By-Products Inquiry program. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Co/By-Products Inquiry program displays information.

Therefore, you might need to set the processing option to a specific version to meet your needs.

9. Bill of Material Inquiry (P30200)

Use this processing option to specify the version that the system uses when you choose the Row exit to the Bill of Material Inquiry program. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Bill of Material Inquiry program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

Edit Tab

This processing option controls whether the system verifies that an item branch record exists in the Item Branch File table (F4102).

1. Item Branch Validation

Use this processing option to specify whether the system checks for a component's existing item branch record in the Item Branch table (F4102).

Valid values are:

Blank The system does not check to see if the item branch is valid.

1 The system checks for a valid item branch record.

Interoperability Tab

These processing options control the transaction type that the system uses for export processing, the version of the Interoperability Generic Outbound Subsystem UBE report (R00460), and whether you want the system to write the before or after image for a changed transaction.

1. Transaction Type

Use this processing option to specify the transaction type that the system uses for export processing. Transaction type is a user defined code (00/TT) that identifies the type of transaction for the work order. Enter the transaction type to use as the default value or choose it from the Select User Define Codes form. If you leave this processing option blank, the system does not use export processing.

2. Write Image for a Change Transaction

Use this processing option to specify whether the system writes the before or after image for a change transaction. The images are written to the Bill of Material Transaction Revisions table (F3002Z1) from the Bill of Material Master table (F3002). Valid values are:

Blank The system stores the after image.

1 The system stores the before image.

3. Interoperability Outbound (R00460)

Use this processing option to specify the version of the Interoperability Outbound Subsystem program that the system uses for export processing. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Interoperability Outbound Subsystem program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

Generating Planning Bill Forecasts

After setting up a planning bill, you can generate a planning bill forecast to help you plan configurations for end products. The MRP/MPS Requirements Planning program (R3482) reads the detail forecast for the selected parent planning bill items and explodes it to create a forecast for the planning bill components for the same time periods.

Before You Begin

- Enter a planning bill.
- Run the Forecast Revisions program (P3460) manually to add the forecast for the parent item.

Processing Options for MRP/MPS Requirements Planning (R3482)

Horizon

1. Generation Start Date

2. Past Due Periods
   0 (default)
   1
   2
3. Planning Horizon Periods

Number of planning days

Number of planning weeks

Number of planning months
Parameters

1. Generation Mode
   1 = net change
   2 = gross regeneration

2. Generation Type
   1 = single level MPS/DRP
   2 = planning bill
   3 = multi-level MPS
   4 = MRP with or without MPS
   5 = MRP with frozen MPS

3. UDC Type

4. Version of Supply/Demand Inclusion Rules
On Hand Data

1. Include Lot Expiration Dates

   blank = do not include
   1 = include

2. Safety Stock Decrease

   blank = do not decrease
   1 = decrease
3. Receipt Routing Quantities

Quantity in Transit

blank = do not include in on-hand inventory
1 = include in on-hand inventory

Quantity in Inspection

blank = do not include in on-hand inventory
1 = include in on-hand inventory

User Defined Quantity 1

blank = do not include in on-hand inventory
1 = include in on-hand inventory

User Defined Quantity 2

blank = do not include in on-hand inventory
1 = include in on-hand inventory

4. Lot Hold Codes (up to 5)

blank = inlclude no held lots in calculation of on-hand inventory
* = include all held lots in calculation of on-hand inventory

5. Include Past Due Rates as a supply

blank = do not include
1 = include

Forecasting

1. Forecast Types Used (up to 5)

2. Forecast Type For Planning Bills/Forecast Consumption By Customer

3. Forecast Consumption Logic

blank = do not use forecast consumption
1 = use forecast consumption
2 = use forecast consumption by customer

4. Default Customer Address Relationship for Forecast Consumption by Customer

1 = Ship to (default)
2 = Sold to

Document Types

1. Purchase Orders

2. Work Orders

3. Rate Schedules

Lead Times

1. Purchased Item Safety Leadtime

2. Manufactured Item Safety Leadtime

3. Expedite Damper Days

4. Defer Damper Days

Performance

1. Clear F3411/F3412/F3413 Tables

blank = do not clear tables
1 = clear tables

2. Input B/P Where Planning Tables Will Be Cleared

blank = all planning tables will be cleared

3. Initialize MPS/MRP Print Code.

blank = do not initialize the Item Branch file
1 = initialize the Item Branch file

4. Messages And Time Series For Phantom Items

blank = do not generate
1 = generate

5. Ending Firm Order Status

blank = all messages exploded

6. Extend Rate Based Adjustments

blank = do not extend
1 = extend

7. Closed Rate Status

8. Set Key Definition For Table F3411

9. Set Key Definition For Table F3412

10. Suppress Time Series

blank = generate time series
1 = do not generate time series

Mfg Mode

1. Process Planning

blank = discrete
1 = process

2. Project Planning

blank = do not include
1 = include

3. Configurator Components Table

blank = do not process configured components table
1 = process configarator components table

Parallel

1. Number of Subsystem Jobs
0 = Default

2. Pre Processing
blank = Do not perform pre processing
1= Perform pre processing

What You Should Know About Processing Options for MRP/MPS Requirements Planning (R3482)

Document Types Used in Planning

When you choose a forecast type to use with a planning bill, you must also enter the type code for this forecast as a forecast type to be read. This action allows the system to read the forecast and explode it down to the component level. You can specify up to five forecast types to be read in a sequence that you specify.

Working With Interoperability for Forecast Management

To address the information requirements of an enterprise, companies sometimes use products from different software and hardware providers. Interoperability between different products is key to successfully implementing the enterprise solution. Full interoperability among different systems results in a flow of data between the different products that is seamless to the user. The J.D. Edwards Interoperability function provides an interface that facilitates exchanging transactions with external systems. These transactions are inbound and outbound.

External systems send information to the interface tables, using either an external program, or flat files and the Inbound Flat File Conversion program (R47002C). The sending party is responsible for conforming to format and other requirements for the interface tables.

You run a transaction process (a batch program) that validates the data, updates valid data to the J.D. Edwards application tables, and sends action messages to the Work Center (P012501) about any invalid data.

You use an inquiry function to interactively review the data for correctness and then run the transaction process again. You can repeat this process, if necessary.

You set a processing option to specify the transaction type for the outbound transaction. The system uses the master business function for the type of transaction, creates a copy of the transaction, and places the copy in the interface table where external systems can access it.

You use the purge function to remove obsolete and unnecessary data from interface tables. Your system is more efficient when you keep these tables as small as possible.

Interoperability Programs for Forecast Management

The interoperability programs for the Forecast Management system are as follows:

- Inbound Flat File Conversion (R47002C)
- Forecast Transactions Revisions (P3460Z1)
- Forecast Inbound Processor (R3460Z1I)
- Purge Forecast Transactions (R3460Z1P)

Converting Flat Files to Interface Tables

You can use a variety of methods to send data from external systems to the interoperability interface tables. One method is to enter the data in a flat file. If you use this method, the system converts the flat file to the interface table.

You can set a processing option to start the transaction process when the conversion completes successfully.

Before You Begin

- Ensure that the flat file is a comma-delimited ASCII text file that is stored on the hard drive of your personal computer.
- Ensure that the data conforms to the specified format. See *Converting Data from Flat Files into EDI Interface Tables* in the *Data Interface for Electronic Data Interchange Guide* for information about formatting requirements.

Setting Up the Flat File Cross-Reference

Before you can convert a flat file, you must provide a cross-reference from the flat file fields to the interface table fields. When you exchange data between this system and an external system, you use flat file cross-reference information for the following conditions:

- For inbound transactions for which the external system cannot write data to the interface tables in the required format for this system. In this case, the external system can write the data to a specific flat file for each transaction and record type.
- For outbound transactions for which this system cannot write data to the interface tables in the format that is required by the external system. In this case, this system can write the data to a specific flat file for each transaction and record type.

See Also

- *Converting Data from Flat Files into EDI Interface Tables* in the *Data Interface for Electronic Data Interchange Guide* for more information about this process. The process for setting up flat file cross-references for Interoperability is identical to that for EDI interface tables.

Before You Begin

- On the appropriate drives on your computer or network, set up the folders for the flat files.

► To set up the flat file cross-reference

Use one of the following navigations:

From the Forecast Interoperability menu (G36301), choose Flat File Cross-Reference.

From the Sales Interoperability menu (G42A313), choose Flat File Cross Reference.

From the Inventory Interoperability menu (G41313), choose Flat File Cross-Reference.

From the Product Data Interoperability menu (G30311), choose Flat File Cross-Reference.

From the Purchasing Interoperability menu (G43A313), choose Flat File Cross-Reference.

From the Shop Floor Management Interoperability menu (G31311), choose Flat File Cross-Reference.

1. On Work With Flat File Cross-Reference, click Add.
2. On Flat File Cross-Reference, to specify the transaction type, such as receipts, complete the following field:
   - Transaction
3. To indicate whether this transaction type is Inbound (1), or Outbound (2), complete the following field:
   - Direction Indicator
4. To indicate the information source, complete the following field:
   - Record Type
5. Enter the specific file name in the following field:
   - File Name

   The file name refers to the application table from which the system exchanges information, as defined by the record type.
6. Click OK.

Running the Conversion Program

Use one of the following navigations:

From the Forecast Interoperability menu (G36301), choose Inbound Flat File Conversions

From the Inventory Interoperability menu (G41313), choose Inbound Flat File Conversion.

From the Product Data Interoperability menu (G30311), choose the applicable Inbound Flat File Conversion.

From the Purchasing Interoperability menu (G43A313), choose Inbound Flat File Conversion.

From the Shop Floor Management Interoperability menu (G31311), choose the applicable Inbound XX Flat File Conversion, where XX is the process that the conversion completes, such as Inbound Completion Flat File Conversion.

You use the Inbound Flat File Conversion program (R47002C) to import flat files into J.D. Edwards interface tables. You can create a separate version of the Inbound Flat File Conversion program for each interface table. This program recognizes both the flat file from which it reads and the record types (UDC 00/RD) within the flat file. Each flat file contains records of differing lengths, based on the interface table record to which they correspond. The Inbound Flat File Conversion program uses the Flat File Cross-Reference Table (F47002) to convert the flat file into the interface tables. Table F47002 indicates to the conversion program which flat file to read from, based on the transaction type that you are receiving.

The conversion program reads each record in the flat file and maps the record data into each field of the interface tables, based on the text qualifiers and field delimiters that are specified in the flat file.

The conversion program inserts the field data as one complete record in the interface table. If the conversion program encounters an error while converting data, it withholds the data in error and continues processing the conversion. If the data is successfully converted, the system automatically starts the transaction process for that interface table, provided that you set the processing options in the conversion program to do so.

See Also

- *Receiving Transactions from External Systems* in the *Inventory Management Guide* for information about the transaction process programs

Processing Options for Inbound Flat File Conversion (R47002C)

Transaction

1. Enter the transaction to process.

Separators

1. Enter the field delimiter.

2. Enter the text qualifier.

Process

1. Enter the inbound processor to run after successful completion of the conversion.

2. Enter the version for the inbound processor. If left blank, XJDE0001 will be used.

Receiving Transactions from External Systems

When an external system sends inbound transactions, the J.D. Edwards system stores the data in interface tables. These tables contain unedited transactions. You must run the appropriate transaction process to edit the transactions and update the application tables. For example, if you receive a transaction in the Forecast Unedited Transactions (F3460Z1) interface table, you run the Forecast Inbound Processor (R3460Z1I) to update the Forecast File table (F3460).

To be received in the interface tables, data from an external system must conform to the minimum field requirements that are specified for the interface table.

During the transaction process, the system does the following:

- Validates the data in the interface table (for example, table F3460Z1) to ensure that the data is correct and conforms to the format that is defined for the Forecast Management system
- Updates the associated application table (for example, table F3460) with validated data
- Produces a report that lists invalid transactions and sends an action message for each invalid transaction to the Work Center (P012501)
- Marks in the interface tables those transactions that are successfully updated to the application tables

If the report indicates errors, you can choose the Employee Work Center option from the Workflow Management menu (G02) to review the messages in the message center. You can use the associated inquiry function to review and revise the transactions, and rerun the transaction process.

Note

When the Inbound Flat File Conversion program (R47002C) completes successfully, the system automatically starts the transaction process if you have set the appropriate processing option.

You need to perform only those tasks that are appropriate for the situation.

Reviewing and Revising Inbound Transactions

Running the transaction process, Forecast Transactions Revisions (P3460Z1), often identifies one or more inbound transactions that contain invalid transactions. For example, a forecast might have an invalid inclusion rule. In that case, the program cannot add that forecast to the Forecast File table (F3460). Instead, the program sends an error message to the Work Center (P012501), indicating the transaction number for the transaction in error.

Use the inquiry menu selection to review and revise inbound transactions; and then to add, change, or delete transactions containing errors. Then run the transaction process again. Continue to make corrections and rerun the transaction process until the program runs without errors.

► To review and revise inbound transactions

From the Forecast Interoperability menu (G36301), choose Forecast Transaction Revisions.

1. On Work With Forecast Batches, complete the following fields to limit the search to specific transactions and click Find:
   - User ID
   - Batch Number
   - Transaction Number
2. On Work With Transactions (All), choose the transaction to review and revise, and click Select.
3. On Forecast Transaction Revision, review and revise as needed, and then click OK.

   After you correct the errors identified by the Forecast Inbound Processor (R3460Z1I), run the transaction process again. If other errors are identified, correct them and run the transaction process again.

See Also

- *EDI Document Inquiry and Revision* in the *Data Interface for Electronic Data Interchange Guide* for information about reviewing and revising inbound product activity data transactions

Processing Options for Forecast Transaction Revisions (P3460Z1)

Display

1. Enter '1' to inquire at the batch level, leave Blank to inquire at the transaction level.

2. Enter '1' for Processed Records, '2' for Unprocessed or Blank for both.

3. Enter '1' for Inbound records, '2' for Outbound Records or Blank for both.

Version

1. Enter the version for "Process Inbound Forecasts" for batch of One. If left blank, ZJDE0001 will be used

Sending Transactions to External Systems

You might send transactions you create or change in the Forecast Management system to another system. For example, if your organization uses hand-held scanning devices, you can use interoperability transactions to update the database that is used by the scanning devices.

The default outbound transaction is a copy of a data transaction after you created or changed it (an *after image*). With interoperability, you can also send a copy of each transaction as it was before you changed it (a *before image*). Creating and sending *before images* requires additional processing time. To control the type of image, you set a processing option in the application programs that create transactions.

You can send transactions to an external system from the Forecast Revisions (P3460) program in the Forecast Management system.

To create outbound transactions, specify the appropriate transaction type in the related processing option. The system places a copy of the transaction in the interface table for that type of transaction. For example, when you run Forecast Revisions with the interoperability processing option turned on, the system places a copy of updated forecast data in the Forecast Unedited Transactions (F3460Z1) interface table. The data is then available for an eternal system to use.

The system creates the outbound transaction in EDI format. External systems can process the transactions using standard EDI processing, including extraction.

Before You Begin

- Define the data export controls for the type of outbound transaction. The system uses data export controls to determine the batch programs or business processes that third parties supply for use in processing transactions.

Purging Interoperability Transaction Records

When data becomes obsolete or you need more disk space, you can use purge programs to remove data from interface tables.

The Forecast Interoperability menu (G36301) contains an option for purging inbound transactions. Use the Purge Forecast Transactions program to remove data from the corresponding interface tables.

See Also

- *Purge Interface Table Information* in the *Interoperability Guide* for more information about purging information from the interface tables