

**JD Edwards World**  
Forecasting Guide  
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Describes the process of projecting past sales demand into the future.

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# Preface

Welcome to the JD Edwards World Forecasting Guide.

## Audience

This document is intended for implementers and end users of JD Edwards World Forecasting system.

## Documentation Accessibility

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## Related Information

For additional information about JD Edwards World applications, features, content, and training, visit the JD Edwards World pages on the JD Edwards Resource Library located at:

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## Conventions

The following text conventions are used in this document:

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Convention	Meaning
<b>boldface</b>	Indicates cautionary information or terms defined in the glossary.
<i>italic</i>	Indicates book titles or emphasis.

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## Overview to Forecasting

Effective management of distribution and manufacturing activities begins with understanding and anticipating the needs of the market. Implementing a forecasting system allows you to quickly assess current market trends and sales so that you can make informed decisions about your company.

Forecasting is the process of projecting past sales demand into the future. An accurate forecast helps you make operations decisions. For this reason, forecasting should be a central activity in 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
- Workforce requirements

The Forecasting system can generate the following types of forecasts:

- Detail forecasts - Detail forecasts are based on individual items.
- Summary forecasts - Summary (or aggregated) forecasts are based on larger 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.

This chapter includes the following topics:

- [Section 1.1, "Features,"](#)
- [Section 1.2, "Forecast Considerations,"](#)
- [Section 1.3, "Forecasting Process,"](#)
- [Section 1.4, "Major Tables,"](#)
- [Section 1.5, "Supporting Tables,"](#)

- [Section 1.6, "System Integration,"](#)

## 1.1 Features

You can use the Forecasting system to:

- Generate forecasts
- Enter forecasts manually
- Maintain both manually entered forecasts and forecasts generated by the system
- Summarize the sales order history data in weekly or monthly time periods
- Generate forecasts based on any or all of 12 different formulas that address a variety of forecast situations 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 table
- 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 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
- Forecast up to five years, based on the processing options settings
- Import or export data

Flexibility is a key feature of the JD Edwards World Forecasting system. The most accurate forecasts take into account 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 other levels.

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

### 1.1.1 Forecasting Levels and Methods

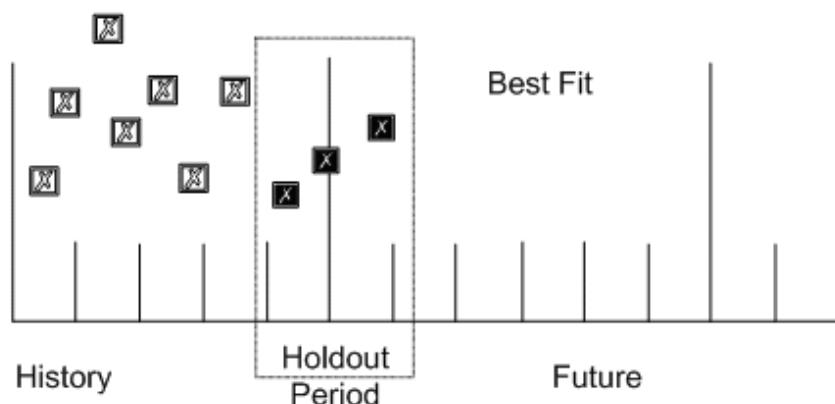
You can generate both single-item (detail) forecasts and product line (summary) forecasts that reflect product demand patterns. Select from 12 forecasting methods, and the system analyzes past sales to calculate the forecast. The forecast includes detail information at the item level and higher-level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

### 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 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.

**Figure 1-1 Best Fit Forecast**

Demand



The system determines the best fit in the following sequence:

1. The system uses each of the methods that you selected in processing options to simulate a forecast for the holdout period. Refer to Appendix A - Forecast Calculation Examples, for a definition of holdout period.
2. The system compares actual sales to the simulated forecasts for the holdout period.
3. The system calculates the percent of accuracy or the mean absolute deviation to determine which forecasting method closest matched the past actual sales. The system uses the percent of accuracy or the mean absolute deviation based on the processing options that you select.
4. The system recommends a best fit forecast by the percent of accuracy that is closest to 100% (over or under) or the mean absolute deviation closest to zero.

### Forecasting Methods

The Forecasting system uses 12 methods for quantitative forecasting. The system also indicates which of the methods provides the best fit for your forecasting situation.

Method	Description
Method 1 - Percent Over Last Year	This 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. It is useful for seasonal items with growth or decline.

Method	Description
Method 2 - Calculated Percent Over Last Year	This 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.
Method 3 - Last Year to This Year	This method requires the periods of sales order history indicated in the processing option plus one year of sales history. It is useful for short-term demand forecasts of seasonal items with growth or decline.
Method 4 - Moving Average	This method uses the Moving Average formula to average the months that you indicate in the processing option to project the next period. This method requires 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 it monthly or at least quarterly to reflect changing demand level. It is useful for mature products without a trend.
Method 5 - Linear Approximation	This 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.
Method 6 - Least Square Regression (LSR)	This method requires periods best fit plus the number of periods that you indicate in the processing option of sales order history. It is useful for new products or products with consistent positive or negative trends that are not due to seasonal fluctuations.
Method 7 - Second Degree Approximation	This 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 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.
Method 8 - Flexible Method (Percent Over n Months Prior)	This method is useful when there is a linear trend in the data. It 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.
	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 requires periods best fit plus the number of periods indicated in the processing option of sales order history times three. It is not useful for long-term forecasts.
	This method allows you to select 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 months best fit plus the number of periods indicated in the processing options of sales data. It is useful for a planned trend.

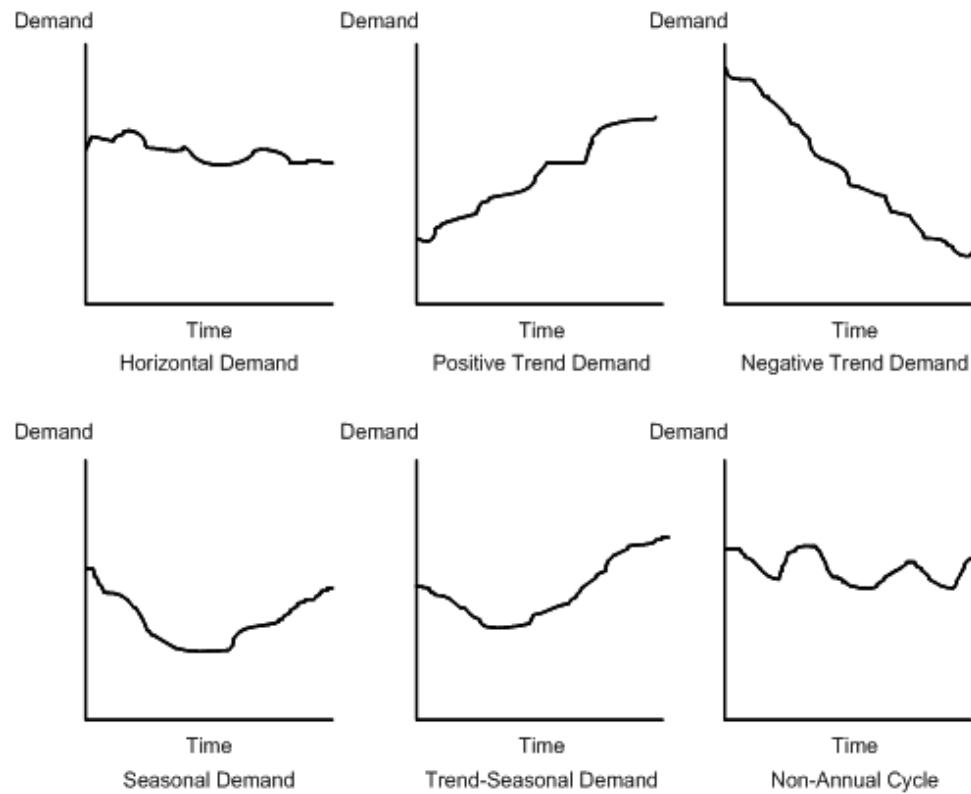
Method	Description
Method 9 - Weighted Moving Average	<p>The Weighted Moving Average formula is similar to the Method 4, Moving Average formula, because it averages the previous number of months of sales history indicated in the processing options to project the next month's sales history. However, with this formula you can assign weights for each of the prior periods in a processing option.</p> <p>This method requires the number of weighted periods selected plus months 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.</p>
Method 10 - Linear Smoothing	<p>This 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 to each period in the forecast.</p> <p>This method requires the months best fit plus the number of periods of sales order history from the processing option.</p>
Method 11 - Exponential Smoothing	<p>This method uses one equation to calculate a smoothed average. This becomes an estimate representing the general level of sales over the selected historical range.</p> <p>This method is useful when there is no linear trend in the data. It requires sales data history for the time period represented by the number of months best fit plus the number of historical data periods specified in the processing options. The minimum requirement is two historical data periods.</p>

#### See Also:

- [Appendix A, "Forecast Calculation Examples."](#)

### 1.1.2 Demand Patterns

The Forecasting system uses sales order history to predict future demand. Different examples of demand follow. Forecast methods available in the JD Edwards World Forecasting system are tailored for these demand patterns.

**Figure 1–2 Six Typical Demand Patterns**

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

- Samples
- Promotional items
- Customer orders
- Service parts
- Inter-plant demands

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

- Make-to-stock - End items to meet customers' demand that occurs after the product is completed
- Assemble-to-order - Subassemblies to meet customers' option selections
- Make-to-order - Raw materials and components stocked in order to reduce lead time

### 1.1.3 Forecast Accuracy

The following statistical laws govern the accuracy of a forecast:

- A short-term forecast is more accurate than a long-term forecast, because the farther 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 as the forecasts for individual items summarize into the group.

## 1.2 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 might use any of the following kinds of long-term trend analysis to influence the design of your forecasts:

- Market surveys
- Leading economic indicators
- Delphi panels

**See Also:**

- [Appendix A, "Forecast Calculation Examples."](#)

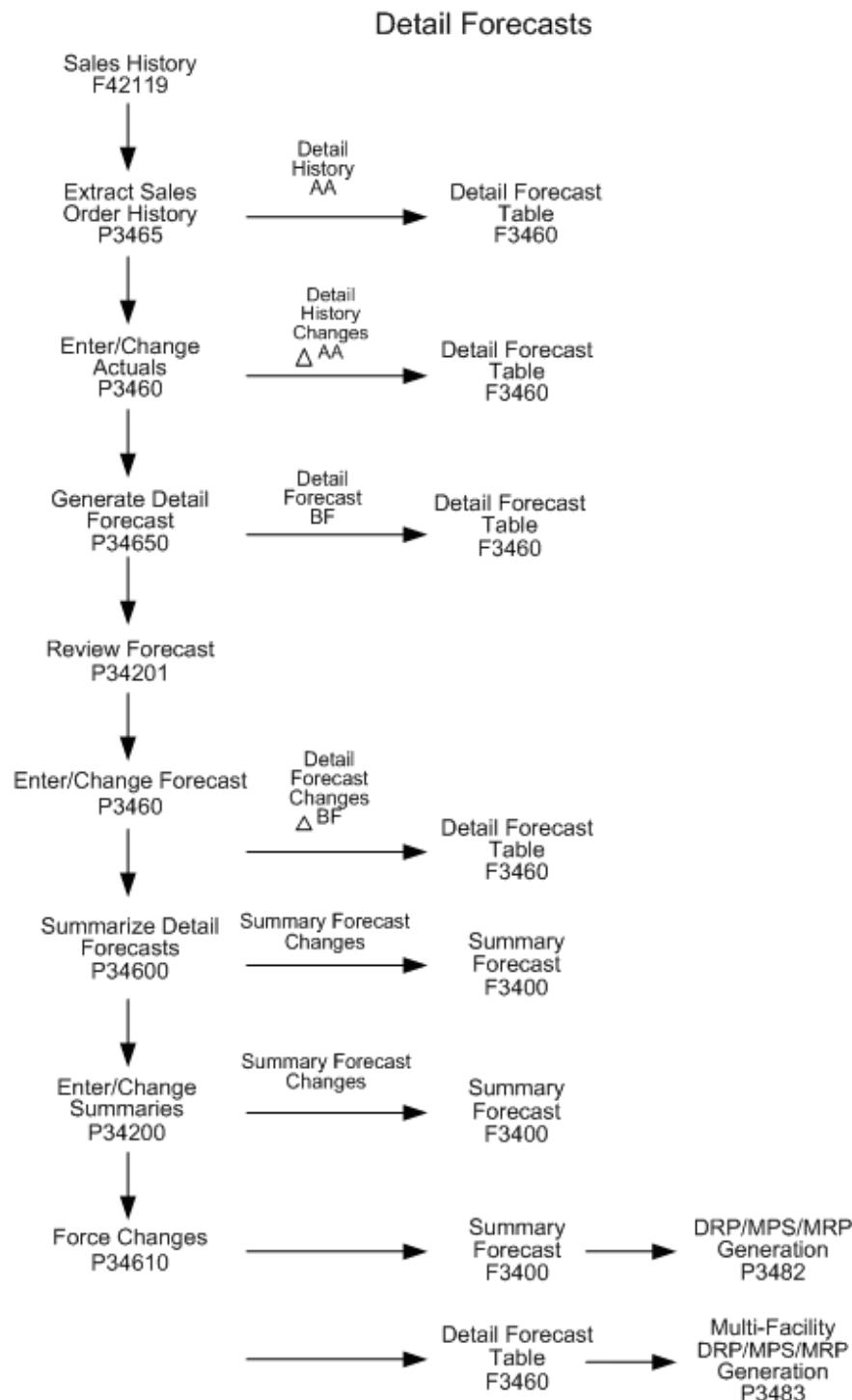
## 1.3 Forecasting Process

You use Extract Sales Order History to copy data from the Sales History table (F42119) into either the Detail Forecast table (F3460) or possibly the Summary Forecast (F3400) table, depending on the kind of forecast you plan to generate.

You can generate detail forecasts or summaries of detail forecasts based on data in the Detail Forecast table. Data from your forecasts can then be revised. The process is illustrated in the following graphic.

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

Figure 1–3 Detail Forecasts



## 1.4 Major Tables

Table	Description
Summary Forecast (F3400)	Contains the summary forecasts generated by the system and the summarized sales order history created by the Extract Sales Order History program.
Detail Forecast (F3460)	Contains the detail forecasts generated by the system and the sales order history created by the Extract Sales Actuals program.
Summary Constants (F4091)	Stores the summary constants that you have set up for each product hierarchy.
Sales History (F42119)	Contains past sales data, which provides the basis for the forecast calculations.
Sales Order Detail (F4211)	Provides sales order demand by the requested date. The system uses this table to update the Sales History table for forecast calculations.

## 1.5 Supporting Tables

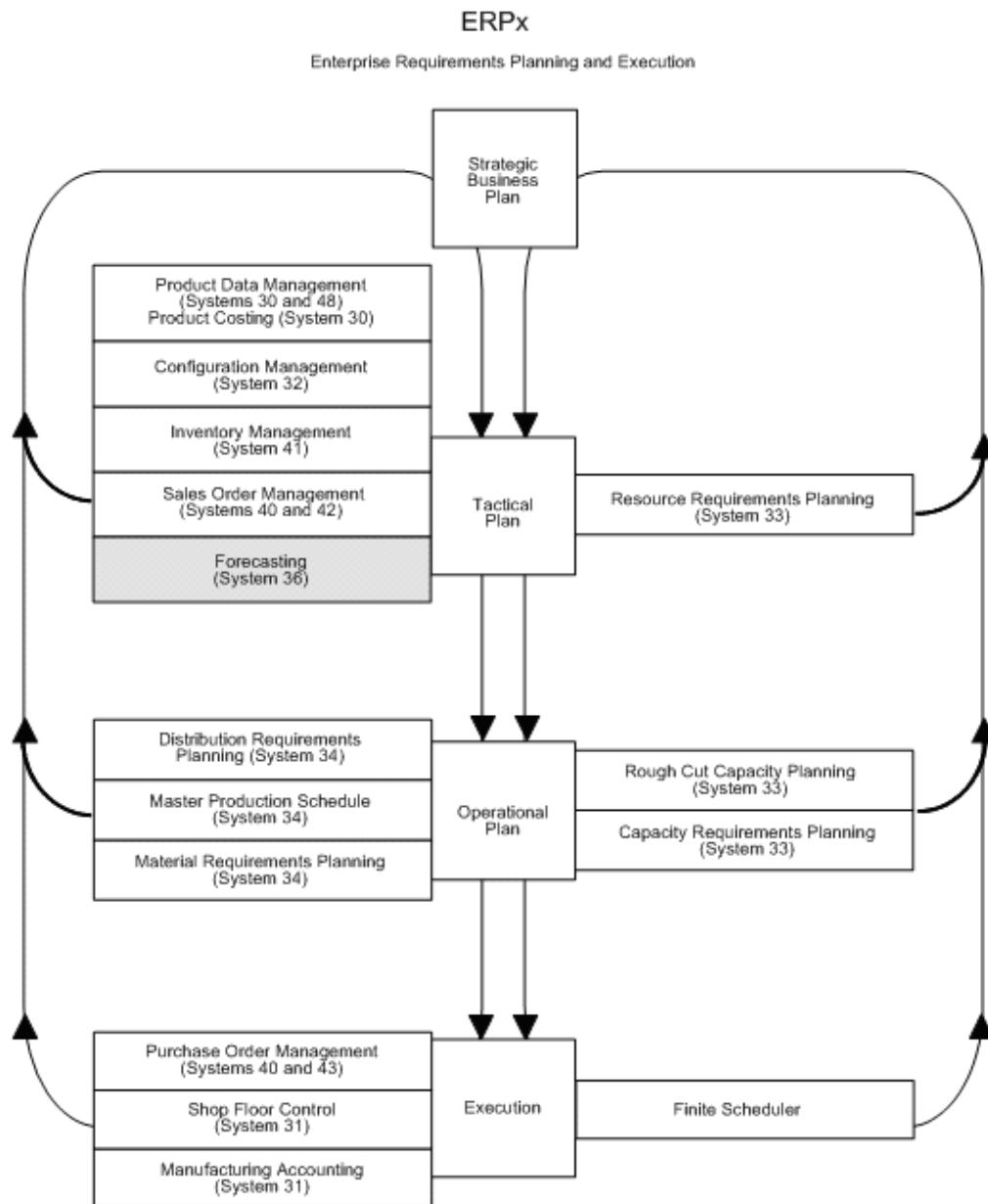
Table	Description
Item Master (F4101)	Stores basic information about each defined inventory item, such as item numbers, description, category codes, and units of measure.
Branch/Plant Master (F4102)	Defines and maintains warehouse or plant level information, such as quantities, physical locations, and branch level category codes.
Business Unit Master (F0006)	Identifies branch, plant, warehouse, or business unit information, such as company, description, and assigned category codes.
Address Book (F0101)	Stores all address information pertaining to customers, vendors, employees, prospects, and other information.
Forecast Summary Work (F34006)	Ties the summary records (F3400) to the detail records (F3460).

## 1.6 System Integration

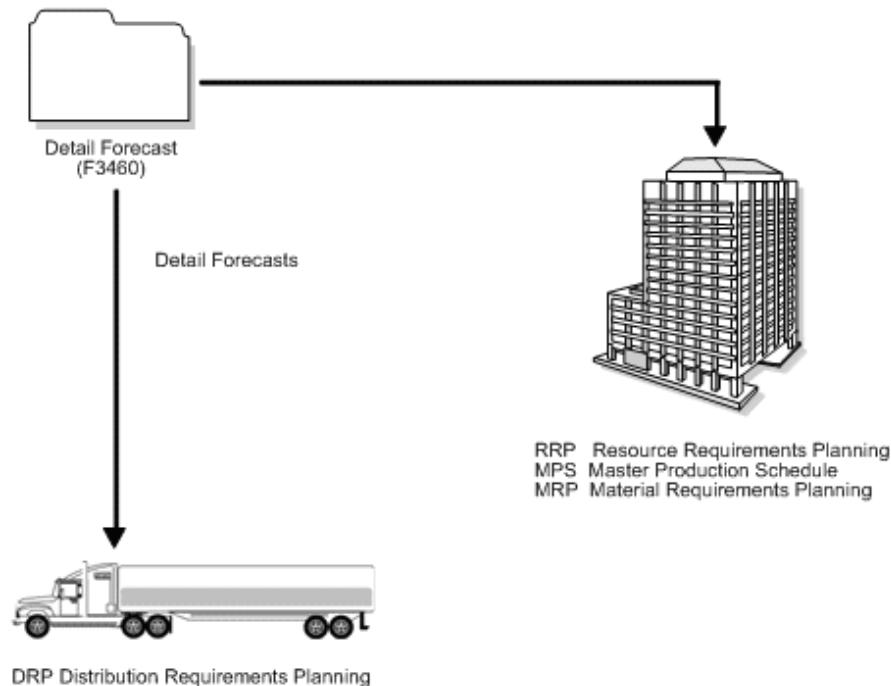
Forecasting is one of many systems that make up the Enterprise Requirements Planning and Execution (ERPx) system. Use the ERPx system to coordinate your inventory, raw material, and labor resources to deliver products according to a managed schedule. ERPx is fully integrated and ensures that information 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 following systems make up JD Edwards World ERPx:

Figure 1–4 Systems in the JD Edwards ERPx Product Group



The Forecasting system generates demand projections that you use as input for JD Edwards World planning and scheduling systems. These systems calculate material requirements for all component levels, from raw materials to complex subassemblies.

**Figure 1–5 Forecasting System Diagram**

The Resource Requirements Planning (RRP) system uses a forecast of future demand to estimate the time and resources needed to make a product.

The Master Production Schedule (MPS) system plans and schedules what a company expects to manufacture. Data from the Forecasting system is one MPS input that helps determine demand before you execute production plans.

Material Requirements Planning (MRP) is an ordering and scheduling system that explodes the requirements of all MPS parent items to the components. You can also use forecast data as demand input for lower-level MRP components that are service parts with independent demand (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 forecasting data as input for DRP so you can more accurately plan the demand that you supply through distribution.



# **Part I**

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## **Detail Forecasts**

This part contains these chapters:

- [Chapter 2, "Overview to Detail Forecasts,"](#)
- [Chapter 3, "Setting Up Detail Forecasts,"](#)
- [Chapter 4, "Work with Sales Order History,"](#)
- [Chapter 5, "Work with Detail Forecasts."](#)



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## Overview to Detail Forecasts

This chapter contains these topics:

- [Section 2.1, "Objectives,"](#)
- [Section 2.2, "About Detail Forecasts."](#)

### 2.1 Objectives

- To set up supply and demand inclusion rules
- To set up fiscal date patterns
- To set up a 52 period date pattern
- To set up forecast types
- To copy a sales order history into the Detail Forecast table
- To review and revise a copied sales order history
- To generate detail forecasts
- To review detail forecasts
- To revise detail forecasts

### 2.2 About Detail Forecasts

You 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 table (F42119), which is updated regularly with sales order demand information from the Sales Order Detail table (F4211). Before you generate forecasts, you use Extract Sales Order History to copy sales order history information from the Sales Order History table into the Detail Forecast table (F3460). This table also stores the generated forecasts.

Complete the following tasks:

- Set up detail forecasts
- Work with sales order history
- Work with detail forecasts



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## Setting Up Detail Forecasts

This chapter contains these topics:

- [Section 3.1, "Setting Up Forecasting Supply and Demand Inclusion Rules,"](#)
- [Section 3.2, "Setting Up Forecasting Fiscal Date Patterns,"](#)
- [Section 3.3, "Setting Up the 52 Period Date Pattern,"](#)
- [Section 3.4, "Setting Up Forecast Types."](#)

Before you generate a detail forecast, you set up criteria for the dates and kinds of data on which the forecasts will be based, as well as what time periods 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 on which you want to base the forecast
- Specify beginning and end 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

### 3.1 Setting Up Forecasting Supply and Demand Inclusion Rules

#### Navigation

[From Material Planning Operations \(G34\), enter 29](#)

[From Material Planning Setup \(G3440\), choose Requirements Planning Setup](#)

[From Material Planning Setup \(G3442\), choose Supply/Demand Inclusion Rules](#)

The Forecasting system uses supply and demand inclusion rules to determine which records from the Sales History table (F42119) to include or exclude when you run Extract Sales Order History. 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.

You should set up an inclusion rule for sales order records with status codes of 999 from the Sales History table.

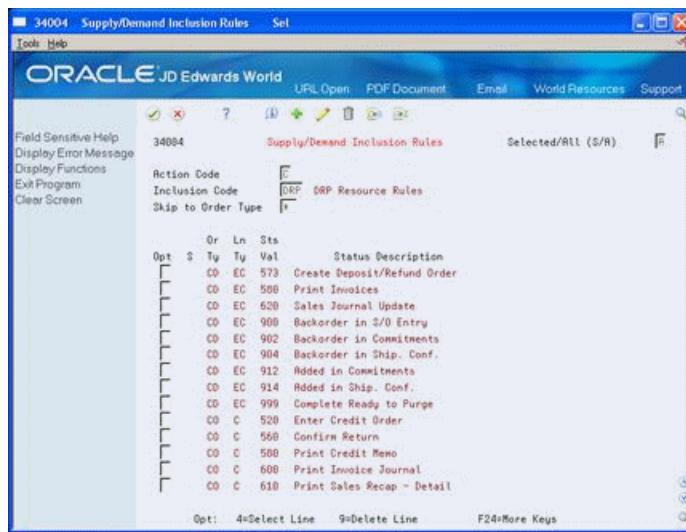
To forecast by weeks, set up a 52 period calendar.

**See Also:**

- Supply/Demand Inclusion Rules (P34004) in the *JD Edwards World Manufacturing and Distribution Planning Guide*.
- Set Up 52 Period Accounting in the *JD Edwards World General Accounting II Guide*.

**To set up supply and demand inclusion rules**

On Supply/Demand Inclusion Rules

**Figure 3-1 Supply/Demand Inclusion Rules screen**

1. Complete the following field:
  - Inclusion Code
2. Review the following fields:
  - Order Type
  - Line Type
  - Status Value
3. Select the lines that you want to include.

Field	Explanation
Inclusion Code	Identifies a group of items that the system can process together, such as reports, business units, or subledgers.
Or Ty	Order Type

Field	Explanation
Ln Ty	<p>A code that controls how the system processes lines on a transaction. It controls the systems with which the transaction interfaces (General Ledger, Job Cost, Accounts Payable, Accounts Receivable, and Inventory Management). It also specifies the conditions under which a line prints on reports and is included in calculations. Codes include:</p> <p>S – Stock item  J – Job cost  N – Non-stock item  F – Freight  T – Text information  M – Miscellaneous charges and credits  W – Work order</p>
Sts Val	A user defined code (system 40/type AT) that indicates the status of the line.

### 3.1.1 Processing Options

See [Section 17.1, "Supply/Demand Inclusion Rules \(P34004\)."](#)

## 3.2 Setting Up Forecasting Fiscal Date Patterns

### Navigation

**From General Accounting (G09), choose Organization and Account Setup**

**From Organization and Account Setup (G09411), choose Company Numbers & Names**

The Forecasting 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, set up a standard monthly date pattern. The system divides the sales history into weeks or months, depending on the processing option you have chosen. 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 Forecasting system uses this information during data entry, updating, and reporting.

### 3.2.1 What You Should Know About

Topic	Description
<b>Controlling the date pattern</b>	JD Edwards World recommends you set up a separate fiscal date pattern for forecasting only, so you can control the date pattern. If you use the date pattern already established in the Financials system, the financial officer controls the date pattern.

Topic	Description
<b>Fiscal date pattern</b>	<p>The fiscal date pattern must be an annual calendar. For example, January 1 through December 31.</p> <p>Use the same date pattern for all forecasted items. A mix of date patterns across items that will be summarized at higher levels in the hierarchy causes unpredictable results.</p> <p>Set up fiscal date patterns for as far back as your sales history extends, and as far forward as you want to forecast.</p>

**See Also:**

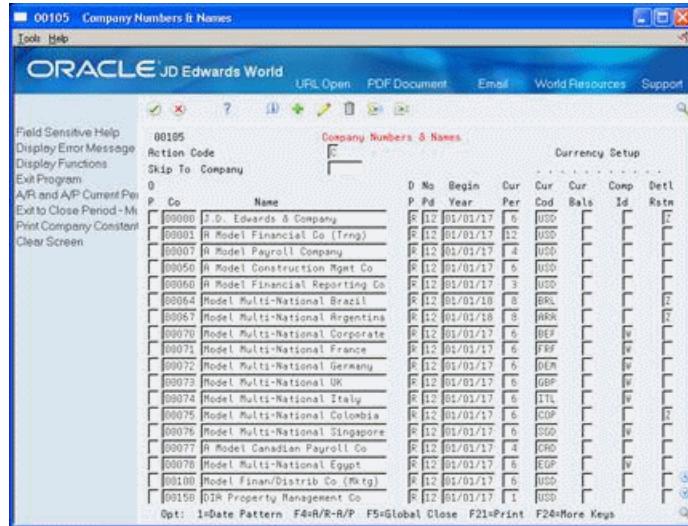
- Set Up 52 Period Accounting in the *JD Edwards World General Accounting II Guide*,
- Set Up Fiscal Date Patterns in the *JD Edwards World General Accounting I Guide*.

### 3.2.2 To set up forecasting fiscal date patterns

On Company Numbers & Names

1. Access Date Pattern Revisions.

**Figure 3–2 Company Numbers & Names screen**



2. On Date Pattern Revisions, complete the following fields:

- Fiscal Date Pattern Code
- Fiscal Year Beginning Date
- Fiscal Year Beginning Century
- Date Pattern Type
- End of Period Date
- End of Period Century

Field	Explanation
Fiscal Date Pattern Code	A code that identifies date patterns. You can use one of 15 codes. You must set up special codes (letters A through N) for 4-4-5, 13 period accounting, or any other date pattern unique to your environment. An R, the default, identifies a regular calendar pattern.
Fiscal Year Beginning - Date & Century	The first day of the fiscal year. A fiscal year spanning 1998 - 1999 and beginning September 1 would be entered as 090198 (US date format).
Date Pattern Type	This field is used by Financial Analysis Spreadsheet Tool and Report Writer (FASTR) to determine the column headings that print on reports. It differentiates normal calendar patterns from 4-4-5 and 13 period accounting patterns. You can maintain headings for non-standard patterns in vocabulary override records R83360Mx, where x represents the value for this field.
End of Period 01 - Date & Century	<p>The month end date in 12 period (monthly) accounting. The period end date in 13 period, 52 period, or 4-4-5 period accounting.</p> <p><i>Form-specific information</i></p> <p>You can use period 13 for audit adjustments in 12-period accounting by setting up period 12 to end on December 30 and period 13 to end on December 31. You can set up period 14 in the same way for 13 period or 4-4-5 accounting. The system validates the dates you enter.</p>

### 3.3 Setting Up the 52 Period Date Pattern

#### Navigation

**From General Accounting (G09), enter 27**

**From G/L Advanced & Technical Operations (G0931), choose 52 Period Accounting**

**From 52 Period Accounting (G09313), choose Set 52 Period Dates**

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-ending dates are weekly instead of monthly.

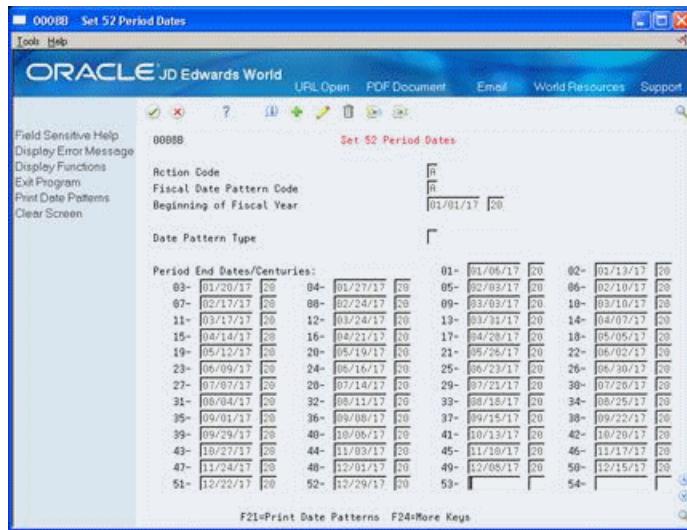
#### See Also:

- Set Up 52 Period Accounting in the *JD Edwards World General Accounting II Guide*.

#### To set up the 52 period date pattern

On Set 52 Period Date

Figure 3–3 Set Period 52 Dates screen



Complete the following fields:

- Fiscal Date Pattern Code
- Beginning of Fiscal Year
- Beginning of Fiscal Year (Century)
- Date Pattern Type
- Period End Dates
- Period End Centuries

## 3.4 Setting Up Forecast Types

### Navigation

From Periodic Forecasting Operations (G3421), enter 29

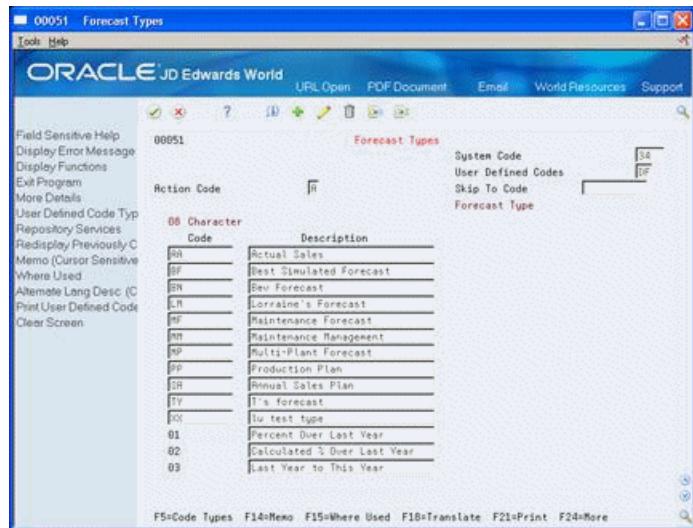
From Forecasting Setup (G3441), choose Forecast Types

You can add codes to the user defined code table (34/DF) that identifies forecast types, such as BF for Best Fit and AA for sales order history. The Forecasting system uses forecast type codes to determine which forecasting types to use when calculating a forecast. Processing options in DRP, MPS, and MRP allow you to enter forecast type codes to define which forecasting types to use in calculations. You can also use forecast type codes when you generate forecasts manually. Forecast Types 01 through 12 are hard-coded.

### To set up forecast types

On Forecast Types

Figure 3-4 Forecast Types screen



Complete the following fields:

- Character Code
- Description

Field	Explanation
Character Code	This column contains a list of valid codes for a specific user defined code list. The number of characters that a code can contain appears in the column title.
Description	A user defined name or remark.



---

## Work with Sales Order History

This chapter contains these topics:

- [Section 4.1, "Copying Sales Order History,"](#)
- [Section 4.2, "Reviewing and Revising Sales Order History."](#)

The system generates detail forecasts based on sales history data that you copy from the Sales History table (F42119) into the Detail Forecast table (F3460). When you copy the sales history, you specify a date range 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 you specified to identify missing or inaccurate information. Then revise the sales order history to account for inconsistencies and distortions before you generate the forecast.

### 4.1 Copying Sales Order History

#### Navigation

**From Material Planning Operations (G34), choose Forecasting**

**From Periodic Forecasting Operations (G3421), choose Extract Sales Order History**

The system generates detail and summary forecasts based on data in the Detail and/or Summary Forecast table. Use Extract Sales Order History to copy the sales order history (type AA) from the Sales History table to the Detail and/or Forecast table based upon criteria that you specify.

This program lets you:

- Select a date range for the sales order history
- 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 the Detail Forecast table before you run this program. The system automatically deletes any records that are:

- For the same period as the actual sales order histories to be generated
- For the same items

- For the same sales order history type
- For the same branch/plant

### Records for Large Customers

For your larger or more active customers, you can create separate forecasts and actual data. To define a customer as a large customer, you set up the customer as a type A customer in the ABC Code Sales field on Customer Master Information.

After you have set up the customer, set the appropriate processing option so that the system searches the sales history table for sales to that customer and creates separate Detail Forecast records for them.

If you have included customer level in the hierarchy the Sales Actuals with customers will summarize into separate branches of the hierarchy.

#### 4.1.1 Before You Begin

- Set up the detail forecast generation program. See [Chapter 3, "Setting Up Detail Forecasts."](#)
- Update sales order history. See Updating Customer Sales in the *JD Edwards World Sales Order Management Guide*.

#### See Also :

- Update Sales Information in the *JD Edwards World Sales Order Management Guide* for more information on processes related to the daily updates of sales order history.

#### 4.1.2 Processing Options

See [Section 19.1, "Extract Sales Order History \(P3465\)."](#)

### 4.2 Reviewing and Revising Sales Order History

#### Navigation

From Material Planning Operations (G34), choose Forecasting

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

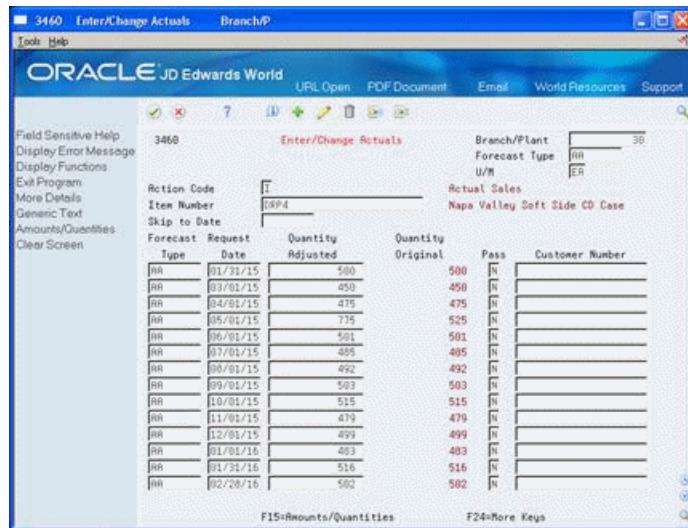
After you copy the sales order history into the Detail Forecast table, you should review the data for spikes, outliers, entry errors, or missing demand that might distort the forecast. You can then revise the sales order history manually to account for these inconsistencies before you generate the forecast.

Enter/Change Actuals allows you to create, change, or delete a sales order history manually. You can:

- Review all entries in the Detail Forecast table
- Revise the sales order history
- Remove invalid sales history data, such as outliers or missing demand

#### 4.2.1 Example: Reviewing and Revising Sales Order History

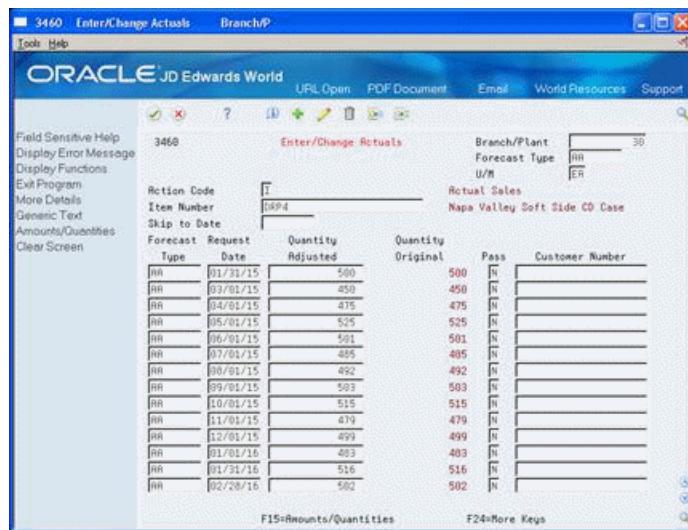
In this example, you run Extract Sales Order History. The program identifies the actual quantities as shown in the following graphic.

**Figure 4-1 Enter Change Actuals screen**

In the Quantity Adjusted field, the 775 value for 05/01/15 is an outlier. It could be a data entry error or a one-time demand that is unlikely to occur again. Use Enter/Change Actuals to revise the invalid outlier so you can generate an accurate forecast.

### To review and revise sales order history

On Enter/Change Actuals

**Figure 4-2 Enter Change Actuals (Revise Sales Order History) screen**

1. Complete the following fields:

- Forecast Type
- Item Number
- Pass
- Customer Number

The following field contains default information:

- Unit of Measure

**2.** Review the following fields:

- Request Date
- Quantity Adjusted
- Quantity Original

**3.** Access Amounts Adjusted.

**4.** On Amounts Adjusted, enter adjusted amounts.

**5.** Review the following field:

- Amount Original

**6.** To access text window 0016, choose the Generic Text function.

**7.** Review the following fields for item information:

- Item Number (short)
- Business Unit
- Forecast Type (Fc Ty)

**8.** To add descriptive information, complete the following field:

- Text

---

## Work with Detail Forecasts

This chapter contains these topics:

- [Section 5.1, "Creating Detail Forecasts,"](#)
- [Section 5.2, "Reviewing Detail Forecasts,"](#)
- [Section 5.3, "Revising Detail Forecasts."](#)

After you set up the actual sales history on which you plan to base your forecast, you 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.

This program also supports Import/Export functionality. See the *JD Edwards World Technical Tools Guide* for more information.

### 5.1 Creating Detail Forecasts

#### Navigation

**From Material Planning Operations (G34), choose Forecasting**

**From Periodic Forecasting Operations (G3421), choose Create Detail Forecast**

The Create Detail Forecast program applies multiple forecasting methods to past sales histories and generates a forecast based on the method that is calculated to provide the most accurate prediction of future demand. The program can also calculate a forecast based on a selected method.

When you run Create Detail Forecast, the system:

- Extracts sales order history information from the Detail Forecast table (F3460)
- Calculates the forecasts using methods that you select
- Calculates the percent of accuracy or the mean absolute deviation for each selected forecast method
- Creates a simulated forecast for the months indicated in the processing option
- Recommends the best fit forecast method
- Creates the detail forecast in either dollars or units from the best fit forecast
- Forecasts up to five years, as defined in the processing options

The system designates the extracted actual records as type AA and the best fit model as BF. Unlike forecast types 01 through 12, these forecast type codes are not hard-coded, so you can specify your own codes. The system stores both types of

records in the Detail Forecast table. The system does not automatically save the other forecast types 01 through 12 unless you set the processing options to do this.

You can also choose to include actual sales orders in your forecast by setting the appropriate processing options when you generate the forecast table. Including actual sales orders enables you to consider current sales activity in the forecasting process, which can enhance forecasting and planning accuracy.

This program 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
- Create zero or negative forecasts, or both
- Run the forecast simulation interactively

### 5.1.1 Processing Options

See [Section 17.3, "Forecast Generation \(P34650\)."](#)

## 5.2 Reviewing Detail Forecasts

### Navigation

From Material Planning Operations (G34), choose Forecasting

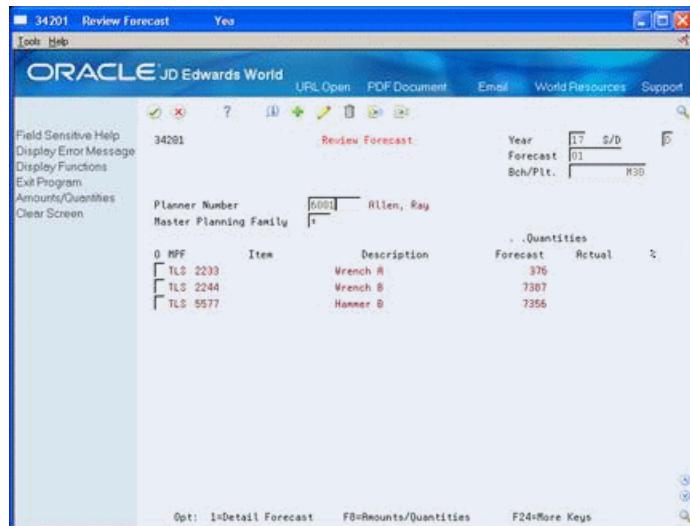
From Periodic Forecasting Operations (G3421), choose Review Forecast

You can display 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 the data in summary or detail mode. The Detail mode lists all item numbers. The Summary mode consolidates data by master planning family.
- Display all information stored in the Detail Forecast table.
- Choose between quantities and amounts to review.

### To review detail forecasts

On Review Forecast

**Figure 5–1 Review Forecast screen**

1. Complete the following fields:
  - Year
  - Forecast Type
  - Branch/Plant
2. Complete one of the following fields:
  - Master Planning Family
  - Planner Number
3. Review the following fields:
  - Quantities Forecast
  - Quantities Sales Order History
  - Percent (%)
4. To access the amounts fields, choose Amounts/Quantities.
5. Review the following fields:
  - Amounts Forecast
  - Amounts Sales Order History
6. To display data in detail mode, choose the Detail selection on an item line.

Field	Explanation
Year	The calendar year.
Forecast Type	A code from the user defined code table 34/DF that indicates either: <ul style="list-style-type: none"> <li>■ The forecasting method used to calculate the numbers displayed about the item</li> <li>■ The actual historical information about the item</li> </ul>

Field	Explanation
Bch/Plt	<p>An alphanumeric field that identifies a separate entity within a business for which you want to track costs. For example, a business unit might be a warehouse location, job, project, work center, or branch/plant.</p> <p>You can assign a business unit to a voucher, invoice, fixed asset, and so on, for purposes of responsibility reporting. For example, the system provides reports of open accounts payable and accounts receivable by business units to track equipment by responsible department.</p> <p>Security for this field can prevent you from locating business units for which you have no authority.</p> <p><b>Note:</b> The system uses this value for Journal Entries if you do not enter a value in the AAI table.</p> <p><i>Form-specific information</i></p> <p>On this form, this is the branch/plant for which you review and revise a forecast.</p>
Master Planning Family	<p>A code (table 41/P4) that represents an item property type or classification, such as commodity type, planning family, or so forth. The system uses this code to sort and process like items.</p> <p>This field is one of six classification categories available primarily for purchasing purposes.</p>
Planner Number	<p>The address number of the material planner for this item.</p> <p><i>Form-specific information</i></p> <p>You can use this field, along with the Master Planning Family and Year fields, to display specific forecast items. For example, you can show items within a planning family that were forecasted by a specific planner for a specific year.</p>
Quantities Forecast	<p>The quantity of units affected by this transaction.</p> <p><i>Form-specific information</i></p> <p>The quantity of units in the sales order history on which a forecast is based.</p>

## 5.2.1 Processing Options

See [Section 17.4, "Forecast Review \(P34201\)."](#)

## 5.3 Revising Detail Forecasts

### Navigation

From Material Planning Operations (G34), choose Forecasting

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

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 a forecast
- Delete a forecast

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

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

- Forecast type
- Request date
- Customer number

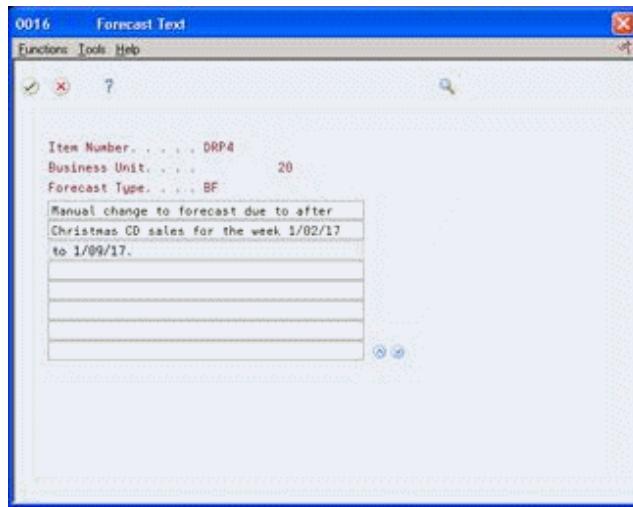
For example, if two records have the same request date and customer number, they must have different forecast types.

### To revise detail forecasts

On Enter/Change Forecast

**Figure 5-2 Enter/Change Forecast screen**

1. To choose the forecast you want to revise, review the following fields:
  - Branch/Plant
  - Forecast Type
  - U/M (Unit of Measure) (Optional)
  - Item Number
2. Complete the following field:
  - Quantity Adjusted
3. To access amounts, choose Amounts/Quantities.
4. Revise the following field:
  - Amount Adjusted (F15)
5. To enter descriptive text, access Forecast Text.

**Figure 5–3 Forecast Text screen**

6. On Forecast Text, enter any descriptive text for the forecast.

Field	Explanation
Bch/Plt	<p>An alphanumeric field that identifies a separate entity within a business for which you want to track costs. For example, a business unit might be a warehouse location, job, project, work center, or branch/plant.</p> <p>You can assign a business unit to a voucher, invoice, fixed asset, and so on, for purposes of responsibility reporting. For example, the system provides reports of open accounts payable and accounts receivable by business units to track equipment by responsible department.</p> <p>Security for this field can prevent you from locating business units for which you have no authority.</p> <p><b>Note:</b> The system uses this value for Journal Entries if you do not enter a value in the AAI table.</p> <p><i>Form-specific information</i></p> <p>On this form, this is the branch/plant for which you are reviewing and revising a sales order history or forecast.</p>
Forecast Type	<p>A code from the user defined code table 34/DF that indicates either:</p> <ul style="list-style-type: none"> <li>■ The forecasting method used to calculate the numbers displayed about the item</li> <li>■ The actual historical information about the item</li> </ul>
U/M	<p>A user defined code (00/UM) that indicates the quantity in which to express an inventory item, for example, CS (case) or BX (box).</p> <p><i>Form-specific information</i></p> <p>The Material Requirements Planning system converts this to the primary unit of measure for planning purposes.</p>
Item Number	A number that the system assigns to an item. It can be in short, long, or 3rd item number format.

Field	Explanation
Original	<p>The quantity of units affected by this transaction. <i>Form-specific information</i></p> <p>The original quantity of units forecasted for production during a planning period.</p>
Amount	The current amount of the forecasted units for a planning period.

### 5.3.1 Processing Options

See [Section 17.5, "Forecast Revisions \(P3460\)."](#)



# **Part II**

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## **Summary Forecasts**

This part contains these chapters:

- [Chapter 6, "Overview to Summary Forecasts,"](#)
- [Chapter 7, "Set Up Summary Forecasts,"](#)
- [Chapter 8, "Generate Summaries of Detail Forecasts,"](#)
- [Chapter 9, "Work with Summaries of Forecasts."](#)



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## Overview to Summary Forecasts

This chapter contains these topics:

- [Section 6.1, "Objectives,"](#)
- [Section 6.2, "About Summary Forecasts."](#)

### 6.1 Objectives

- To define the distribution hierarchy
- To revise address book records
- To review branch or plant data
- To review item branch records
- To generate summaries of detail forecasts
- To revise summaries of forecasts
- To revise summaries of forecasts using the Force Changes program

### 6.2 About 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 based on detail sales histories or a summary forecast based on summary actual data.

The system updates the Sales History table (F42119) with sales data from the Sales Order table (F4211). You copy the sales history into the Summary Forecast table (F3400) to generate summary forecasts. You copy the sales history into the Detail Forecast 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 Summary Constants table (F4091). Both summary forecasts and summaries of detail forecasts are stored in the Summary Forecast table.

Complete the following tasks:

- Set up summary forecasts
- Generate summaries of detail forecasts
- Work with summaries of forecasts

## 6.2.1 Comparing Summaries of Detail and Summary Forecasts

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

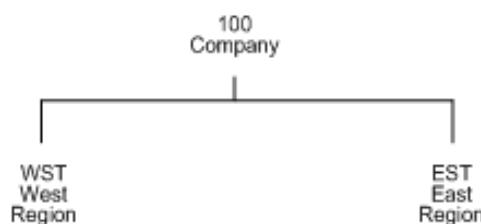
A summary forecast uses summary data to predict future sales.

## 6.2.2 Example: Company Hierarchy

You need to define your company's hierarchy before you generate a summary forecast. JD Edwards World recommends that you organize the hierarchy by creating a diagram or storyboard. The following example illustrates this process.

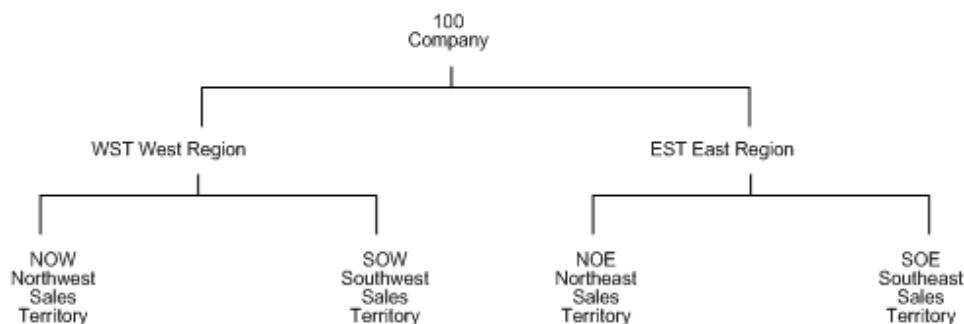
- Company 100 consists of two regions East (EST) and West (WST).

**Figure 6-1 Company 100**

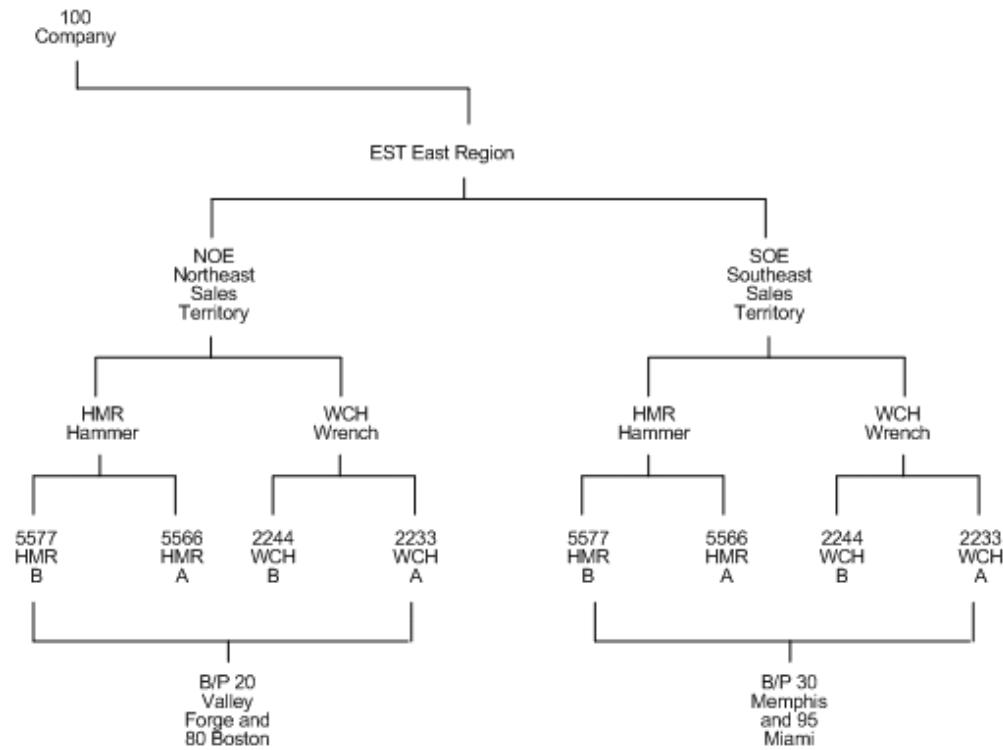
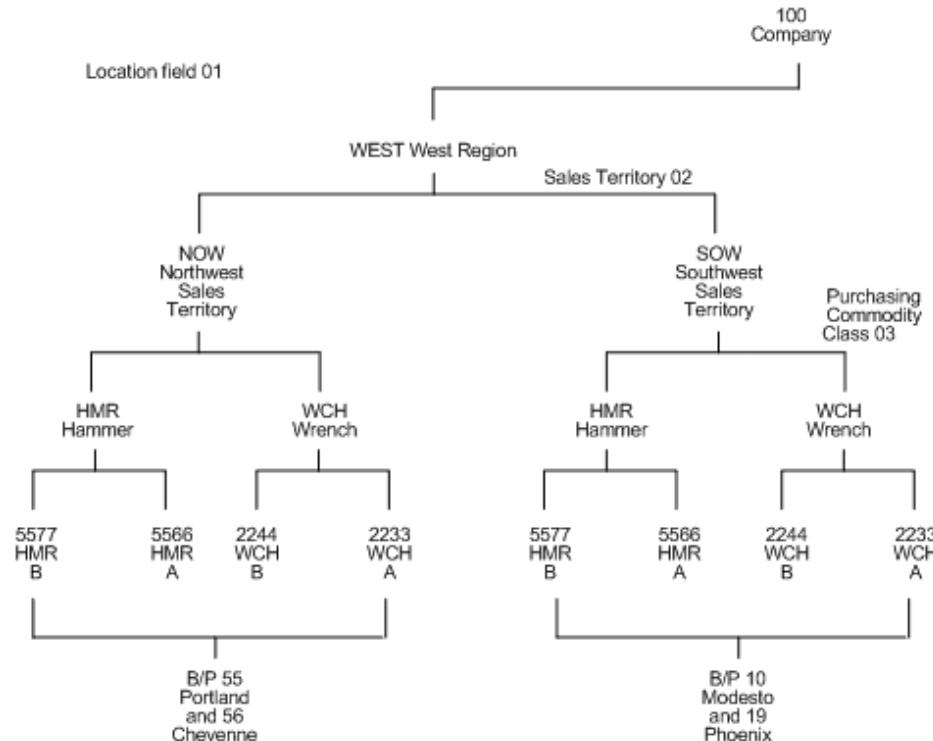


- Within the East Region, there are two sales territories, Southeastern (SOE) and Northeastern (NOE).
- Within the West Region, there are two sales territories, Southwestern (SOW) and Northwestern (NOW).

**Figure 6-2 Company 100 Regions**



- Each Sales Territory consists of two branch/plants:
  - SOE: B/P 30 (Memphis) and B/P 95 (Miami)
  - NOE: B/P 20 (Valley Forge) and B/P 80 (Boston)
  - SOW: B/P 10 (Modesto) and B/P 19 (Phoenix)
  - NOW: B/P 55 (Portland) and B/P 56 (Cheyenne)

**Figure 6-3 Company 100 East Region (EST)****Figure 6-4 Company 100 West Region (WEST)**

Each branch or plant distributes hand tools (TLS), including hammers (HMR) and wrenches (WCH). The following item numbers represent the four main products.

Item	Master Planning Family	Commodity Class
2233	TLS	WCH
2244	TLS	WCH
5566	TLS	HMR
5577	TLS	HMR

### Hierarchy of Company 100

The user defined hierarchy for Company 100 is:

- 01 = Location field (for example, a region). Specified by category code 01 in the Address Book system.
- 02 = Sales Territory. Specified by category code 03 in the Address Book system.
- 03 = Purchasing Commodity Class. Specified by category code P1 in Branch/Plant.

Each item rolls up to an appropriate Purchasing Commodity Code. The lowest level is the sales order history or forecast for an item at the branch or plant level.

### Summary Codes

For each hierarchy you define, you must specify a unique identifier called a summary code. You can define for each summary code what each level of the hierarchy represents. Then, you can enter the summary code during summary forecasting programs to indicate which hierarchy you want to work with.

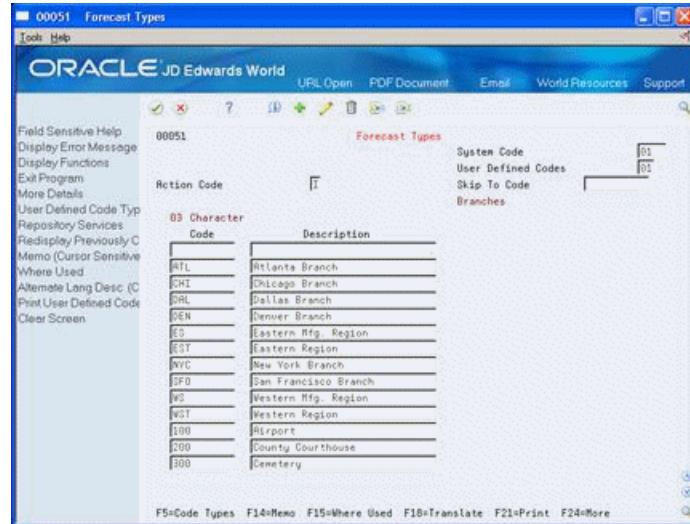
The following table illustrates a sample hierarchy defined for Company 100.

Branch/Plant Region or Territory	Address Book Number	Description	Location	Sales Territory
WST	100676	West Region		
EST	100677	East Region		
NOE	100678	Northeast	EST	
SOE	100680	Southeast	EST	
NOW	100679	Northwest	WST	
SOW	100681	Southwest	WST	
10	1063	Modesto	WST	SOW
19	100675	Phoenix	WST	SOW
20	1064	Valley Forge	EST	NOE
30	1062	Memphis	EST	SOE
55	100672	Portland	WST	NOW
56	100674	Cheyenne	WST	NOW
80	100669	Boston	EST	NOE
95	100671	Miami	EST	SOE

The sample data in the chart includes two sets of user defined codes. You can access the codes at the level that you choose. The location level (UDC 01/01) contains WST and EST.

The following sample screen illustrates codes set at the location level.

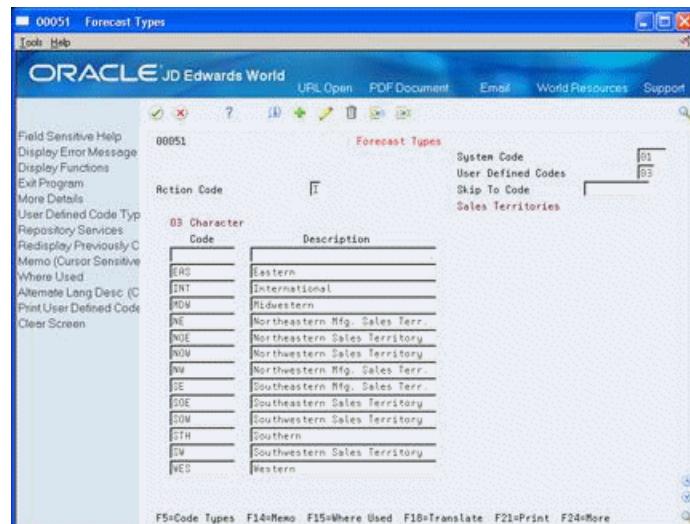
**Figure 6-5 Forecast Types screen**



The Sales Territory level (UDC 01/03) contains NOW, SOW, NOE, and SOE.

The following sample screen illustrates codes set at the sales territory level.

**Figure 6-6 Forecast Types (Codes Set) screen**



The Purchasing Commodity Class level (UDC 41/P1) contains HMR and WCH.

#### See Also :

- [Section 7.1, "Defining Distribution Hierarchies."](#)



---

# Set Up Summary Forecasts

This chapter contains these topics:

- [Section 7.1, "Defining Distribution Hierarchies,"](#)
- [Section 7.2, "Revising Address Book Records,"](#)
- [Section 7.3, "Reviewing Business Unit Data,"](#)
- [Section 7.4, "Reviewing Item Branch Records."](#)

In addition to the information set up for detail forecasts, the Forecasting system requires sales order history information to generate a summary forecast.

To set up summary forecasts, you must:

- Define the hierarchy with codes and constants
- Enter address book, branch or plant, and item branch data

## Before You Begin

- Set up detail forecasts. See [Chapter 3, "Setting Up Detail Forecasts."](#)
- Create on paper a map or storyboard diagramming your definition of the company hierarchy. See [Chapter 6, "Overview to Summary Forecasts."](#)

## 7.1 Defining Distribution Hierarchies

### Navigation

[From Material Planning Operations \(G34\), enter 29](#)

[From Material Planning Setup \(G3440\), choose Forecasting Setup](#)

[From Forecasting Setup \(G3441\), choose an option](#)

The Forecasting system generates a summary forecast based on the distribution hierarchy that you define and select.

To define the distribution hierarchy, complete the following tasks:

- Set up summary codes
- Assign summary constants

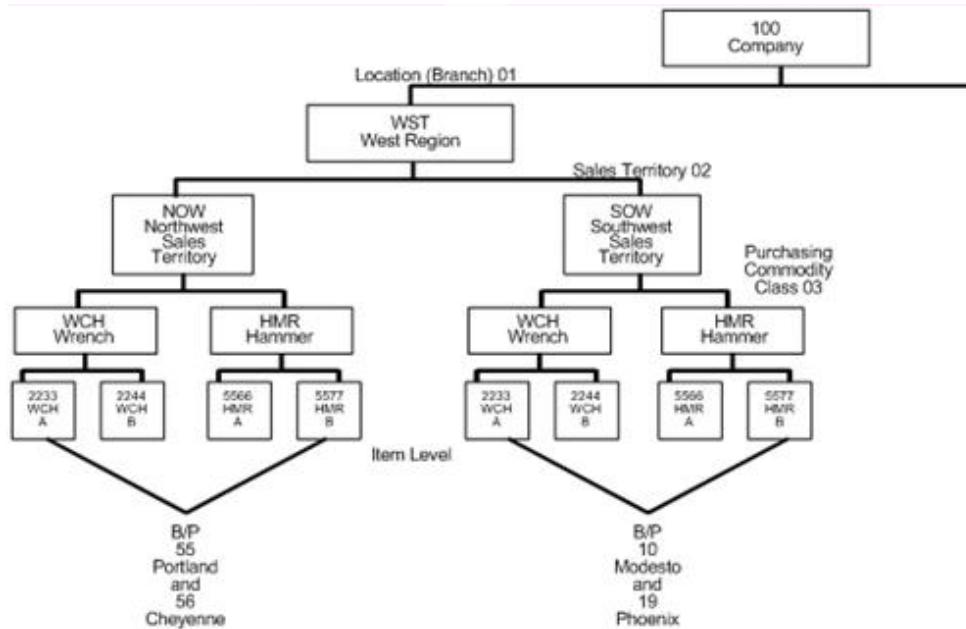
You assign a summary code to each hierarchy that you define. For each summary code, you should identify the levels of the hierarchy. For each summary code, you can define up to 14 levels, as follows:

- You can define the top level as the global summary level. You determine whether to summarize forecasts globally across multiple companies in the hierarchy at the global level.
- You can define the next level as the company summary level. You determine whether to summarize forecasts for an entire company at the company summary level.
- You can define up to 11 middle levels, which include the category codes and the customer level. You can choose from 20 address book category codes and 20 item balance category codes that you can assign to different levels in the hierarchy. The available codes all appear in the Summary Constants table. In the Customer Level field, you can specify what level of the hierarchy the customer number should be. This acts as another category code level.
- You can define one bottom level. The lowest level you can define is the item level. In the Item Number field, you can indicate that the forecast should extend to the item level.
- The branch or plant item detail records are automatically placed at the bottom level. The system does not include these as one of the 14 levels in the hierarchy.

### 7.1.1 Example: Distribution Hierarchy for Company 100

The following chart shows an example of a distribution hierarchy for the West Region of Company 100. The East Region section of the chart would extend to the right.

**Figure 7-1 Example Distribution Hierarchy for Company 100's West Region**



In this example, you define the hierarchy for the West Region as follows:

## 1. Set up a West Region summary code WST.

You assign levels to in the Summary Constants table for summary code WST as follows:

1. Assign 01 to Location or Branch.
2. Assign 02 to Sales Territory.

3. Assign 03 to Purchase Commodity Class.
4. Include the item in the hierarchy that will be the last level.

### 7.1.2 Before You Begin

- Update the Sales history.

**See Also:**

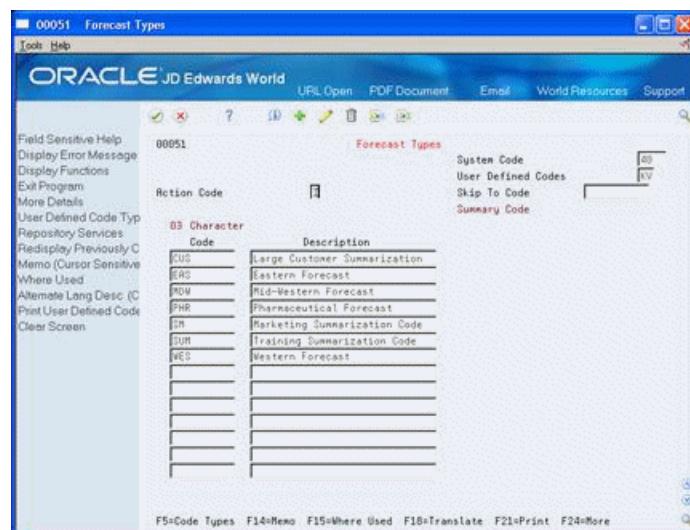
- See Update Sales Information in the *JD Edwards World Sales Order Management Guide*.

**To set up summary codes**

You use the summary codes entered in the Character Code fields to define the summary hierarchy when you set up summary constants.

On Summary Codes

**Figure 7-2 Forecast Types (Character Codes) screen**



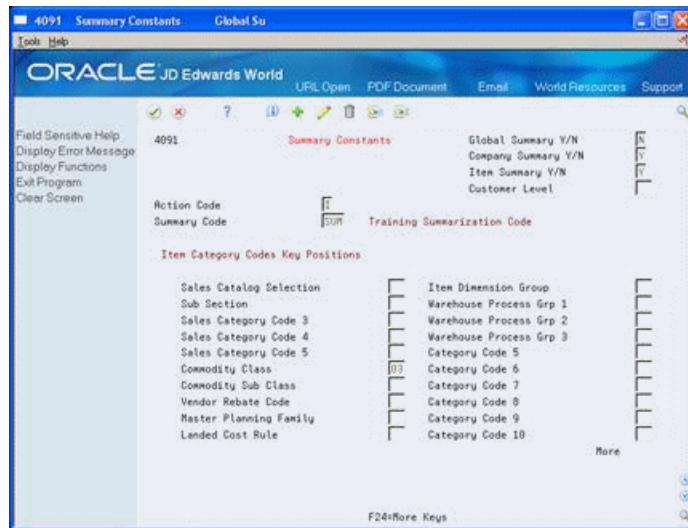
Complete the following fields:

- Character Code - Summary Code
- Description

Field	Explanation
Character Code	This column contains a list of valid codes for a specific user defined code list. The number of characters that a code can contain appears in the column title.
Description	A user defined name or remark.

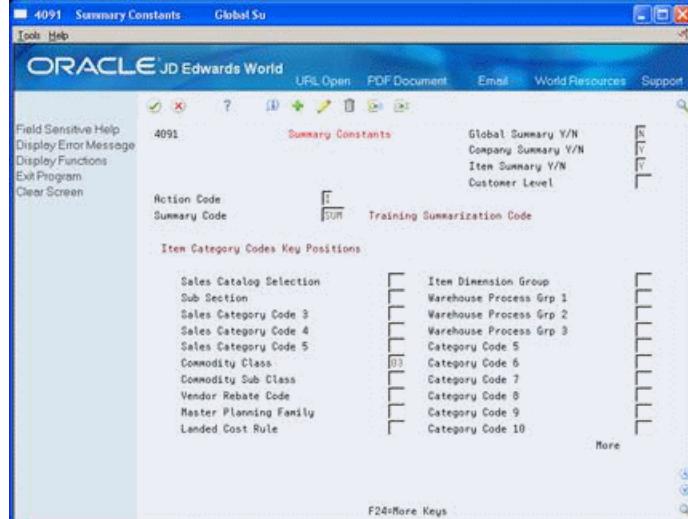
**To assign summary constants**

On Summary Constants

**Figure 7–3 Summary Constants screen**

1. To display the sample summary constants, enter SUM in the following field:
  - Summary Code
2. Complete the following field (for your own code):
  - Summary Code
3. Complete the following fields:
  - Global Summary Y/N
  - Company Summary Y/N
  - Item Summary Y/N
  - Customer Level
4. To specify the hierarchy levels, complete Category Code fields.

Use the scroll keys to display and enter additional summary constants.

**Figure 7–4 Summary Constants (Global Sum) screen**

Field	Explanation
Summary Code	The key to distinguish between different forecasting hierarchies.
Global Summary Y/N	This flag indicates whether the forecast should be summarized to the global level. This level is the top level of the forecasting hierarchy and represents a summarization of all levels.
Company Summary Y/N	This flag indicates whether the forecast should be summarized to the Company level. This level is the next level above the level indicated as number one in the hierarchy. All forecasts within the company will be summarized into this level.
Item Summary Y/N	This flag indicates whether the forecast should be summarized down to the item number level. This level is the last level in the hierarchy. All forecast detail records for an item will be summarized into this level.
Customer Level	To use Customer Number as one of the levels in the forecasting hierarchy, enter that level number here.
Item Category Codes Key Positions	An indicator that specifies which level in the forecasting hierarchy a specific Category Code should be.

### 7.1.3 Processing Options

See [Section 18.1, "Summary Constants \(P4091\)."](#)

## 7.2 Revising Address Book Records

### Navigation

**From Master Directory (G), choose Address Book**

**From Address Book (G01), choose Address Book Revisions**

After you have defined the company hierarchies, you need to revise the address book records so they include the new information.

When you generate a summary forecast and have address book category codes in the hierarchy, the system properly applies the forecast to the entire hierarchy only if you have assigned the appropriate code to each address in the address book.

For example, you have assigned a purchasing category code to an individual product belonging to a branch. If you have entered appropriate codes for each level of the hierarchy in the address book, the category code for the branch record links the individual product at the branch to a commodity class, which links to a sales territory, which links to a region, which links to the whole company.

To revise address book records, complete the following task:

- Enter category codes (F14)

### 7.2.1 Before You Begin

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

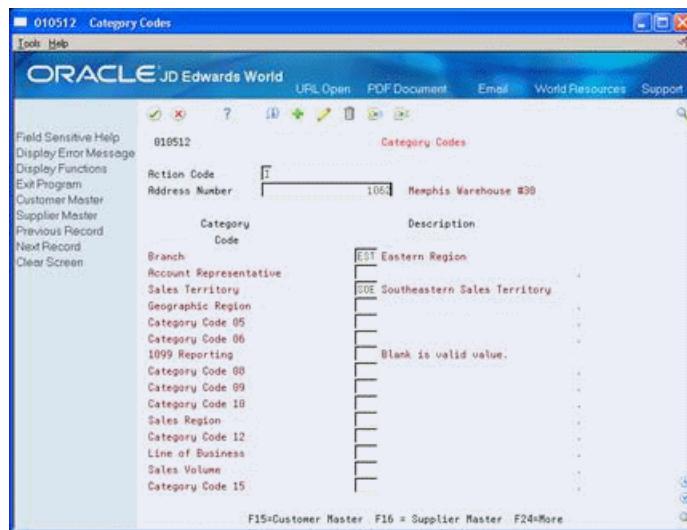
#### See Also:

- Enter Address Book Records in the *JD Edwards World Address Book and Electronic Mail Guide*.

**To enter category codes**

On Address Book Revisions

1. Choose Category Codes.

**Figure 7-5 Category Codes screen**

2. On Category Codes, complete the following fields:

- Address Number
- Category Codes

The following field contains default information:

- Alpha Name

Field	Explanation
Address Number	<p>A number that identifies an entry in the Address Book system. Use this number to identify employees, applicants, participants, customers, suppliers, tenants, and any other Address Book members.</p> <p><i>Form-specific information</i></p> <p>If you leave this field blank, the system assigns a number using the Next Numbers program.</p>
Alpha Name	<p>The text that names or describes an address. This 40-character alphabetic field appears on a number of forms and reports. You can enter dashes, commas, and other special characters, but the system cannot search on them when you use this field to search for a name.</p>

## 7.3 Reviewing Business Unit Data

### Navigation

From General Accounting (G09), choose Organization and Account Setup

From Organization and Account Setup (G09411), choose Business Units by Company

Reviewing the company business units and business unit address numbers allows you to ensure the business units and corresponding address numbers have been set up correctly.

### 7.3.1 Before You Begin

- Set up the address numbers for each business unit

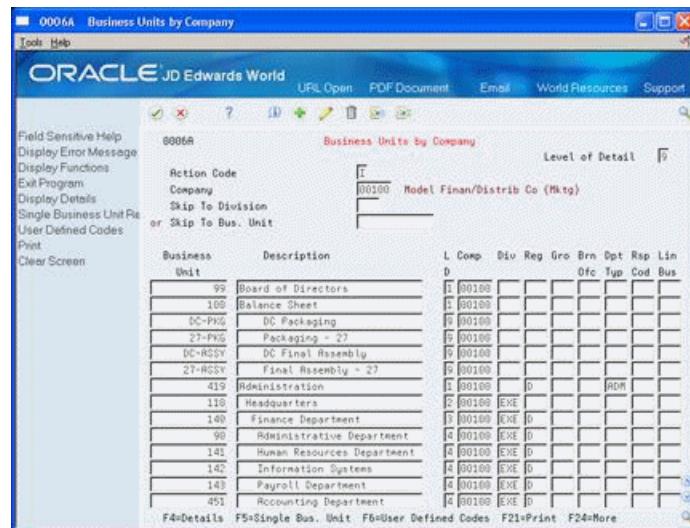
#### See Also :

- Work With Business Units in the *JD Edwards World General Accounting I Guide*.

#### To review business unit data

On Business Units by Company

**Figure 7-6 Business Units by Company screen**



1. Complete the following field:
  - Company
2. To verify that the business units correspond to the level of detail in the distribution hierarchy you set up, review the following field:
  - Level of Detail (LD)

Field	Explanation
Company	<p>A code that identifies a specific organization, fund, entity, and so on. This code must already exist in the Company Constants table (F0010). It must identify a reporting entity that has a complete balance sheet. At this level, you can have intercompany transactions.</p> <p><b>Note:</b> You can use company 00000 for default values, such as dates and automatic accounting instructions (AAIs). You cannot use it for transaction entries.</p> <p><i>Form-specific information</i></p> <p>To locate the business units for a company, enter the company number in the Company field at the top of the form. When you enter a new business unit or change an existing one, you must enter a company number for the business unit in the Comp field on the lower part of the form. The company number must already be set up in Company Numbers and Names.</p>

### 7.3.2 What You Should Know About

Topic	Description
Business unit levels	The specific numbers assigned to the business unit levels are not important, but the relative placement of the levels should correspond to the levels in the forecast hierarchy.

## 7.4 Reviewing Item Branch Records

### Navigation

From Inventory Management (G41), choose Inventory Master/Transactions

From Inventory Master/Transactions (G4111), choose Item Branch/Plant Information

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

For example, you select Commodity Class as part of the hierarchy for summary code SUM. To include Wrench A (item 2233) in summary code SUM, you must verify that the value WCH appears in the Item Branch/Plant Information record for item 2233 as the category code for Commodity Class.

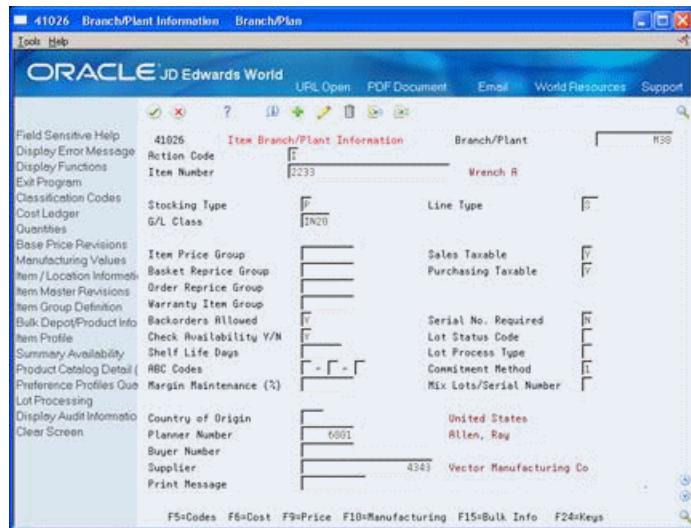
### See Also:

- [Section 7.1, "Defining Distribution Hierarchies."](#)

### To review item branch records

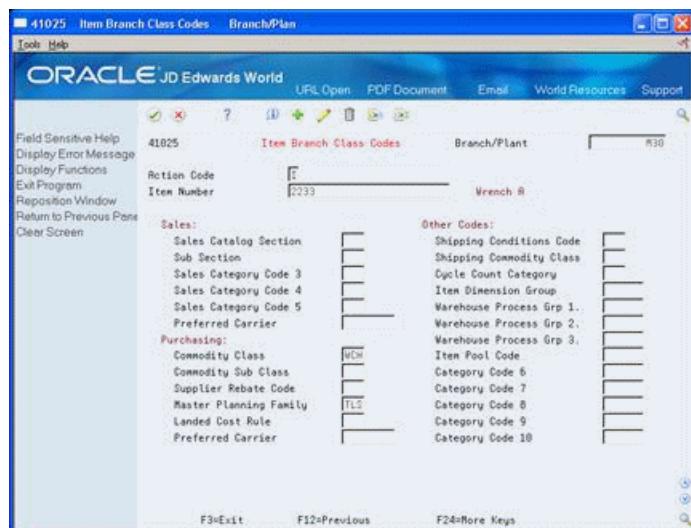
On Item Branch/Plant Information

Figure 7-7 Branch/Plant Information screen



1. Complete the following field:
  - Item Number
2. Choose Codes.

Figure 7-8 Item Branch Class Codes screen



3. On Item Branch Class Codes, verify the item Purchasing Commodity Class code.



---

## Generate Summaries of Detail Forecasts

This chapter contains the topic:

- [Section 8.1, "Generating Summaries of Detail Forecasts."](#)

### 8.1 Generating Summaries of Detail Forecasts

#### Navigation

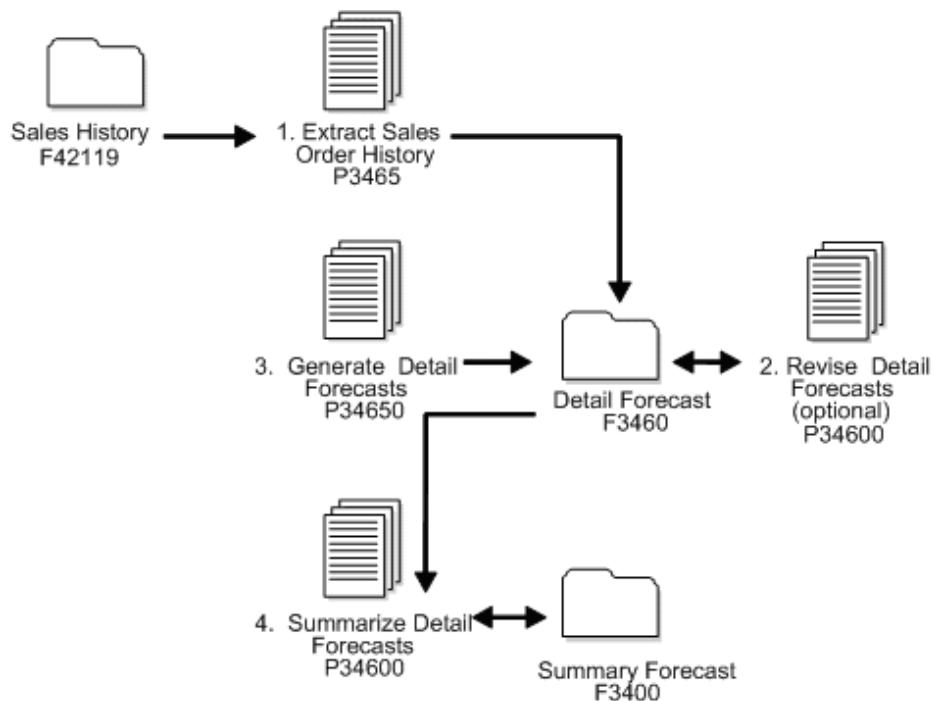
**From Material Planning Operations (G34), choose Forecasting**

**From Periodic Forecasting Operations (G3421), choose Summarize Detail Forecasts**

Summarize Detail Forecasts generates summary forecasts, which are stored in the Summary Forecast table (F3400), based on data from the Detail Forecast table (F3460).

This 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.

The Detail Forecast table is based on both input copied from the Sales History table (F42119) using Extract Sales Order History and input generated by the Generate Detail Forecast program.

**Figure 8–1 Detail Forecast Table**

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

### 8.1.1 Before You Begin

- Run the Generate Detail Forecast program

### 8.1.2 What You Should Know About

Topic	Description
Items from summary constants	Proper data selection is critical to accurate processing. You should include only items in the summary constants hierarchy.

### 8.1.3 Processing Options

See [Section 18.2, "Forecast Generation \(P34650\)."](#)

See [Section 18.3, "Forecast Summary \(P34600\)."](#)

---

# Work with Summaries of Forecasts

This chapter contains these topics:

- [Section 9.1, "Reviewing a Summary Forecast,"](#)
- [Section 9.2, "Revising a Summary Forecast,"](#)
- [Section 9.3, "Revising Summary Forecasts Using Force Changes."](#)

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 display the sales order history and the forecast of item quantities or sales amounts. Then, you can compare actual sales to the forecast.

You can also specify the summary code (SUM) in the processing option to access records by planner, master family, or both.

When you revise summaries of forecasts, you revise information in a specific level of the forecast. You can also use the Force Changes program to apply changes you made to the summary up the hierarchy, down the hierarchy, or in both directions.

## Before You Begin

- Generate a summary forecast or a summary of detail forecast. See [Section 13.1, "Generating Summary Forecasts"](#) or [Section 8.1, "Generating Summaries of Detail Forecasts."](#)
- Enter the summary code you want to access in the appropriate processing option.

## 9.1 Reviewing a Summary Forecast

### Navigation

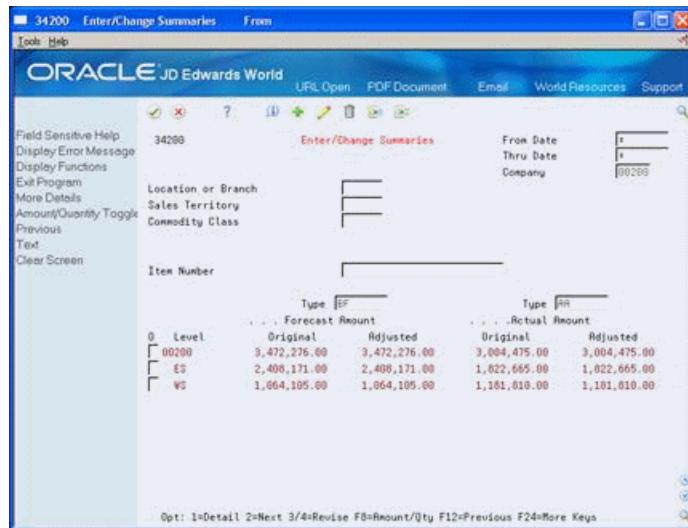
From Material Planning Operations (G34), choose Forecasting

From Periodic Forecasting Operations (G3421), choose Enter/Change Summaries

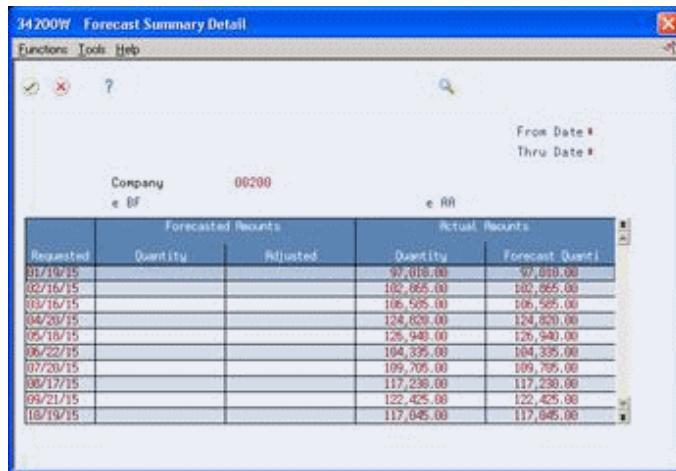
When you review summaries of forecasts, you can also access a previously generated forecast. You can access a date range to display the sales order history and the forecast of item quantities or sales amounts. Then, you can compare actual sales to the forecast.

### To review a summary forecast

On Enter/Change Summaries

**Figure 9–1 Enter/Change Summaries screen**

1. Complete the following fields:
  - Company
  - Location or Branch
2. Review the following fields:
  - Level
  - Forecast Quantity Original
  - Forecast Quantity Adjusted
  - Sales History Original
  - Sales History Adjusted
3. Toggle to display amount information.
4. Review the following fields:
  - Forecast Amount Original
  - Forecast Amount Adjusted
  - Sales Amount Original
  - Sales Amount Adjusted
5. Access Forecast Summary Detail.

**Figure 9–2 Forecast Summary Detail screen**

6. On Forecast Summary Detail, review the following fields:
  - Forecast Quantity
  - Forecast Quantity Adjusted
  - Actual Quantity
  - Actual Quantity Adjusted
7. Toggle to display amount information.
8. Review the following fields:
  - Forecast Amount
  - Forecast Amount Adjusted
  - Sales Amount
  - Sales Amount Adjusted

Field	Explanation
Company	A code that identifies a specific organization, fund, entity, and so on. This code must already exist in the Company Constants table (F0010). It must identify a reporting entity that has a complete balance sheet. At this level, you can have intercompany transactions.  <b>Note:</b> You can use company 00000 for default values, such as dates and automatic accounting instructions (AAIs). You cannot use it for transaction entries.
Location or Branch	The second key position of the forecasting hierarchy. The value in this field relates to the second level chosen in the forecasting constants.

## 9.2 Revising a Summary Forecast

### Navigation

From Material Planning Operations (G34), choose Forecasting

From Periodic Forecasting Operations (G3421), choose Enter/Change Summaries

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.

You can access other revision forms, such as Force Changes, by entering options from Enter/Change Summaries. The formats vary, depending on the summary level that you view. Subsequent revision forms maintain the hierarchy level and From/Thru dates from Enter/Change Summaries.

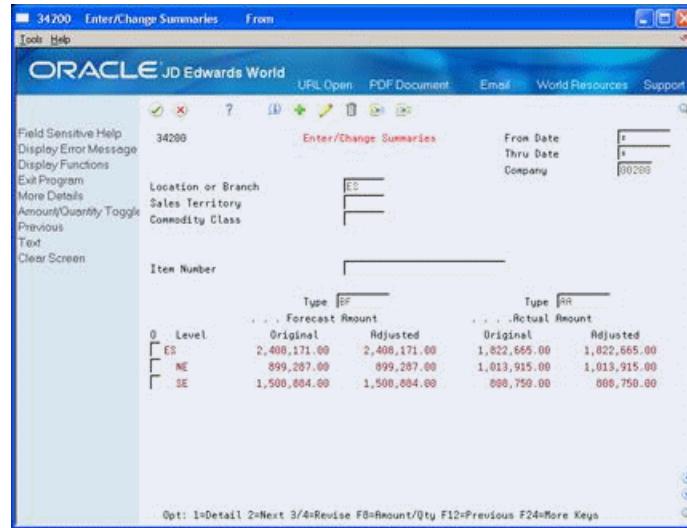
If you run the Generate Summary Forecast program to update the Summary Forecast table, the revision forms do not display lower-level forecasts of item quantities.

However, if you run Summarize Detail Forecasts to update the Summary Forecast table, these forms display the lower-level forecasts of item quantities.

### To revise a summary forecast

On Enter/Change Summaries

**Figure 9–3 Enter/Change Summaries (Revise Summary Forecast) screen**



1. Complete the following fields:
  - Company
  - Location or Branch
2. Access Forecast Summary Revisions.

**Figure 9–4 Forecast Summary Revisions screen**

3400 Forecast Summary Revisions

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Field Sensitive Help **3400** Forecast Summary Revisions From Date: **\***  
 Display Error Message Thru Date: **\***  
 Display Functions Action Code **E** Type **BF**  
 Exit Program **E**  
 More Details **E**  
 Forecast Forcing **E**  
 Text: **E**  
 Clear Screen **E**

Requested	Quantity	Adjusted	Extended Price	Amount	Forecast Amount	Pass
01/02/17	1450	1450	26,000.00	26,000.00	26,000.00	Y
01/09/17	1450	1450	26,000.00	26,000.00	26,000.00	Y
01/16/17	1450	1450	26,000.00	26,000.00	26,000.00	Y
01/23/17	1450	1450	26,000.00	26,000.00	26,000.00	Y
01/30/17	1450	1450	26,000.00	26,000.00	26,000.00	Y
02/06/17	1961	1961	34,522.00	34,522.00	34,522.00	Y
02/13/17	1961	1961	34,522.00	34,522.00	34,522.00	Y
02/20/17	1961	1961	34,522.00	34,522.00	34,522.00	Y
02/27/17	1961	1961	34,522.00	34,522.00	34,522.00	Y
03/06/17	2123	2123	38,867.00	38,867.00	38,867.00	Y
03/13/17	2123	2123	38,867.00	38,867.00	38,867.00	Y
03/20/17	2123	2123	38,867.00	38,867.00	38,867.00	Y

F13=Force F14=Text F24=More Keys

3. On Forecast Summary Revisions, complete the following fields:
  - From Date
  - Thru Date
  - Change Type
  - Change Amount
  - Requested
  - Quantity Adjusted
  - Amount Forecast Adjusted
4. Complete the fields that appear based on summary constants.
5. Access the detail area.

**Figure 9–5 Forecast Summary Revisions (Fields Entered) screen**

3400 Forecast Summary Revisions

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Field Sensitive Help **3400** Forecast Summary Revisions From Date:   
 Display Error Message **ES** Thru Date:   
 Display Functions **ES** Type: **BF**  
 Exit Program  
 More Details  
 Forecast Forcing  
 Text  
 Clear Screen

Change Type   
 Change Reason

Requested	Quantity	Adjusted	Extended Price	Forecast Amount	Pass
01/02/17	1458	1458	26,000.00	26,000.00	<input type="checkbox"/>
	Change Type	Change Amount			
01/09/17	1450	1450	26,000.00	26,000.00	<input type="checkbox"/>
	Change Type	Change Amount			
01/16/17	1450	1450	26,000.00	26,000.00	<input type="checkbox"/>
	Change Type	Change Amount			
01/23/17	1450	1450	26,000.00	26,000.00	<input type="checkbox"/>
	Change Type	Change Amount			
01/30/17	1450	1450	26,000.00	26,000.00	<input type="checkbox"/>
	Change Type	Change Amount			
02/06/17	1961	1951	34,522.00	34,522.00	<input type="checkbox"/>
	Change Type	Change Amount			

F13=Force F14=Text F24=More Keys

**6. Complete the following fields:**

- Change Type
- Change Amount
- Pass

7. To apply the changes to higher or lower levels in the hierarchy, access Force Changes to submit adjustments to the Force Changes program.

See [Section 9.3, "Revising Summary Forecasts Using Force Changes."](#)

Field	Explanation
From Date	The beginning date of the range in a search. If you do not specify a beginning date, the system uses the current date.
Thru Date	A numeric code that identifies either the period number or the date that you want to locate. If you leave this field blank, the system uses the ending date of the current period that is set up for the company. Valid period numbers are 1 through 14.
Change Type	A field that tells the system whether the number in the New Price field is an amount or a percentage. Codes are: A – Amount % – Percentage
Change Amount	The amount of the future change in unit price. This number can be either a dollar amount or a percentage value. If the next field (Column Title = PT) is a \$ sign, the change is in dollars; if the value is a % sign, the change is to be a percentage of the current price.  <b>Note:</b> When entering a percentage, enter it as a whole number. For example: <i>Form-specific information</i> The change type determines whether this value is expressed as an amount or percentage.
Quantity Adjusted	The quantity of units forecasted for production during a planning period.
Amount Extended Price	The number of units multiplied by the unit price. <i>Form-specific information</i> The original dollar amount of the forecasted units for a planning period.
Forecast Amount	The current amount of the forecasted units for a planning period.
Pass	This indicates whether to bypass the force changes program. A Y indicates that the quantity and amount of a forecast should not be changed by an adjustment made to a forecast higher or lower in the hierarchy.

### 9.2.1 Processing Options

See [Section 18.4, "Forecast Summary Inquiry \(P34200\)."](#)

## 9.3 Revising Summary Forecasts Using Force Changes

### Navigation

From Material Planning Operations (G34), choose Forecasting

### From Periodic Forecasting Operations (G3421), choose Force Changes

Force Changes 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 Summary Forecast table. You can access the Force Changes program in the following ways:

- From Periodic Forecasting
- From Forecast Summary Revisions, after you revise forecast data

The program makes changes down the hierarchy to the lowest detail level. These changes are also updated in the Detail Forecast table.

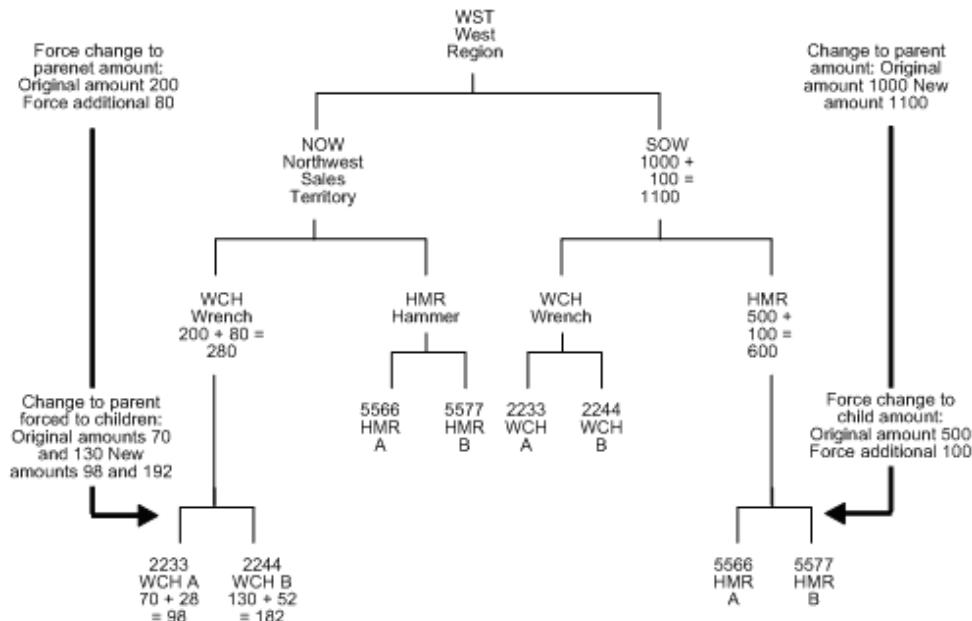
You can force changes to quantities, amounts, or both.

#### 9.3.1 Example: Using Force Changes

The Force Changes program makes manual adjustments down the hierarchy by calculating what percentage each child level's original quantity or amount is of the parent level's original quantity or amount. For example:

- The parent's original amount is 200 and its two children in the next level have an original amount of 70 and 130, respectively. The program calculates that the first child is 35% of the parent and the second child is 65% of the parent.
- The system maintains the parent/child ratio when the parent quantity changes. When the adjusted amount of the parent increases to 280, the adjusted amounts for the children become  $70 + (35\% \text{ of } 80) = 98$  and  $130 + (65\% \text{ of } 80) = 182$ , respectively.

**Figure 9–6 Force Changes**



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.

Because a summarized forecast is more accurate than a detailed forecast, the forecast of total sales for the West region is more accurate than the forecast of sales of hammer 5566.

### 9.3.2 Before You Begin

- Review and revise the summary forecast
- Choose processing options to indicate:
  - The summary code for the hierarchy that you want to work with
  - A specific forecast type with which to make changes
  - The direction that you want to make changes

### 9.3.3 What You Should Know About

Topic	Description
Specifying bypassed records	On Enter/Change Summaries, you can set the Bypass Force flag for records in the hierarchy below an adjusted record. The system subtracts the bypassed record's amounts and quantities from the parent's 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.
Setting the Revised Flag processing option	When you make changes both up and down the hierarchy, the flag on the record indicating that it was changed will be reset. If you force changes in only one direction, the flag will not be reset unless the processing option is set to do so. You will lose the ability to make changes in the other direction if you do this.

### 9.3.4 Processing Options

See [Section 18.5, "Forecast Forcing \(P34610\)."](#)

# Part III

---

## Aggregate Planning Forecasts

This part contains these chapters:

- [Chapter 10, "Overview to Aggregate Planning Forecasts,"](#)
- [Chapter 11, "Understand Summary Forecasts,"](#)
- [Chapter 12, "Work with Summary Sales Order History,"](#)
- [Chapter 13, "Generate Summary Forecasts,"](#)
- [Chapter 14, "Understand Planning Bill Forecasts,"](#)
- [Chapter 15, "Set Up a Planning Bill,"](#)
- [Chapter 16, "Generate Planning Bill Forecasts."](#)



---

## Overview to Aggregate Planning Forecasts

This chapter contains these topics:

- [Section 10.1, "Objectives,"](#)
- [Section 10.2, "About Aggregate Planning Forecasts."](#)

### 10.1 Objectives

- To define the distribution hierarchy
- To revise address book revisions
- To review branch or plant data
- To review item branch locations
- To copy summary sales order history into the Summary Forecast table
- To review and revise summary copied sales order history
- To generate summary forecasts
- To explode a forecast for a pseudo parent item down to the component

### 10.2 About Aggregate Planning Forecasts

An aggregate production plan is usually stated by product family in terms of a monetary value of production over the given planning horizon.

Factors considered in the aggregate planning activity include:

- Sales forecasts
- Inventory investment
- Capital equipment utilization
- Work force capacity
- Skills training requirements
- Corporate policies concerning customer service levels, overtime, and subcontracting

Summary forecasts aggregate sales history into a monetary value of sales by product family, by region, or in other groupings used as input to the aggregate production planning activity. Planning bill forecasts convert the output of the approved aggregate plan into a time-phased master schedule for buildable end item numbers.

Complete the following tasks:

- Understand summary forecasts
- Work with summary sales order history
- Generate summary forecasts
- Understand planning bill forecasts
- Set up a planning bill
- Generate planning bill forecasts

---

## Understand Summary Forecasts

This chapter contains the topic:

- [Section 11.1, "About Summary Forecasts."](#)

### 11.1 About 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 based on detail sales histories or a summary forecast based on summary actual data.

The system updates the Sales History table (F42119) with sales data from the Sales Order table (F4211) to generate summary forecasts. You copy the sales history into the Summary Forecast 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. These constants are stored in the Summary Constants table (F4091). Both summary forecasts and summaries of detail forecasts are stored in the Summary Forecast table.

**See Also:**

- [Chapter 8, "Generate Summaries of Detail Forecasts."](#)

#### 11.1.1 Comparing Summaries of Detail and Summary Forecasts

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

A summary forecast uses summary data to predict future sales.



---

## Work with Summary Sales Order History

This chapter contains these topics:

- [Section 12.1, "Copying Summary Sales Order History."](#)
- [Section 12.2, "Reviewing and Revising Sales Order History."](#)

The system generates summary forecasts based on sales history data that you copy from the Sales History table (F42119) into the Summary Forecast table (F3400). When you copy the sales history, you specify a date range based on the request date of the sales order. The sales history data can be distorted, however, 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 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 JD Edwards World Forecasting system allows you to work with that customer's changes separately.

### 12.1 Copying Summary Sales Order History

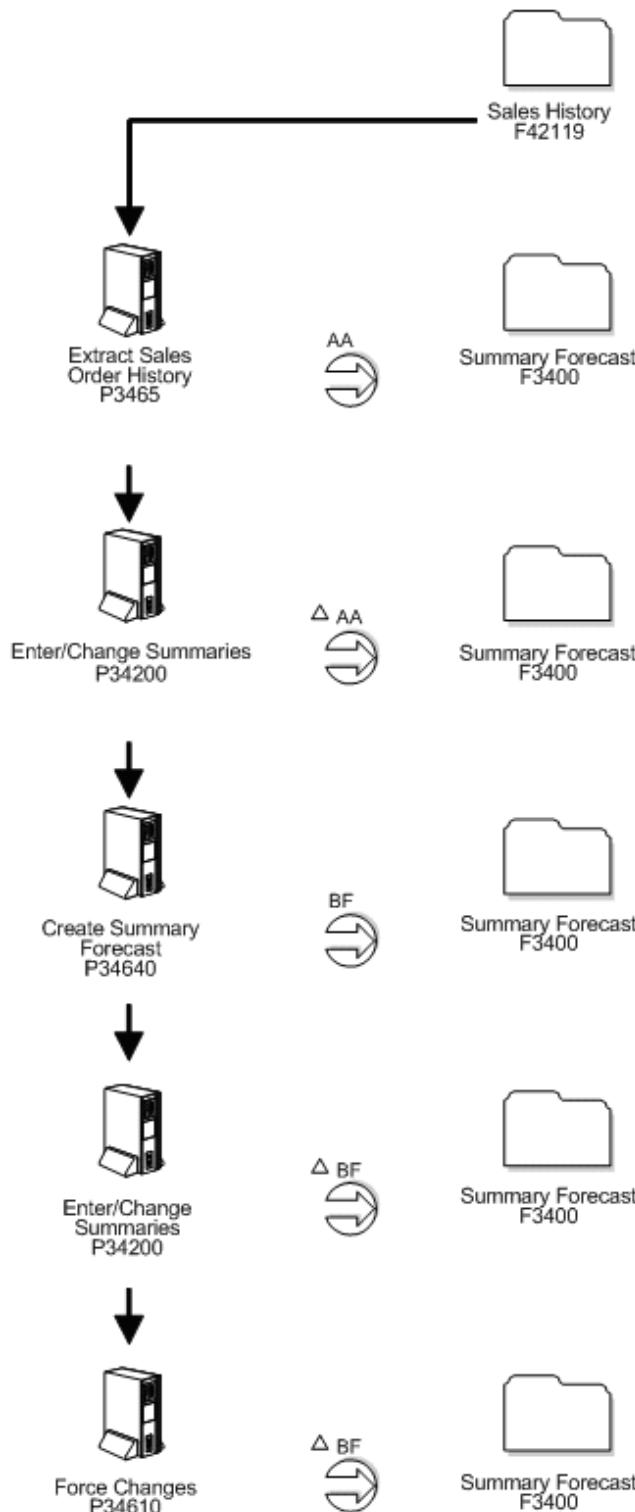
#### Navigation

[From Material Planning Operations \(G34\), choose Forecasting](#)

[From Periodic Forecasting Operations \(G3421\), choose Extract Sales Order History](#)

The system generates summary forecasts based on data in the Summary Forecast table. Use Extract Sales Order History to copy the sales order history (type AA) from the Sales History table to the Summary Forecast table based upon criteria that you specify.

Figure 12-1 Extract Sales Order History



You can also choose to enter the actual sales histories manually using the Enter/Change Summaries program. The system stores sales order histories in the Summary Forecast table with forecast type AA or a type code that you designate.

You do not need to clear the Summary Forecast table before you run this program. The system automatically deletes any records that are:

- For the same period as the actual sales order histories to be generated
- For the same items
- For the same sales order history type (AA)
- For the same branch or plant

---

**Note:** The Extract Sales Order History program converts sales orders into the primary unit of measure and adjusts the resulting quantities.

---

### 12.1.1 Before You Begin

- Set up detail forecasts. See [Chapter 3, "Setting Up Detail Forecasts."](#)
- Set up the summary forecast. See [Chapter 7, "Set Up Summary Forecasts."](#)

**See Also:**

- Enter Customers in the *JD Edwards World Accounts Receivable Guide*.

### 12.1.2 Processing Options

See [Section 17.2, "Extract Sales Order History \(P3465\)."](#)

## 12.2 Reviewing and Revising Sales Order History

### Navigation

**From Material Planning Operations (G34), choose Forecasting**

**From Periodic Forecasting Operations (G3421), choose Enter/Change Summaries**

After you copy the sales order history into the Summary Forecast table (F3400), 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.

Working with summary sales order history consists of:

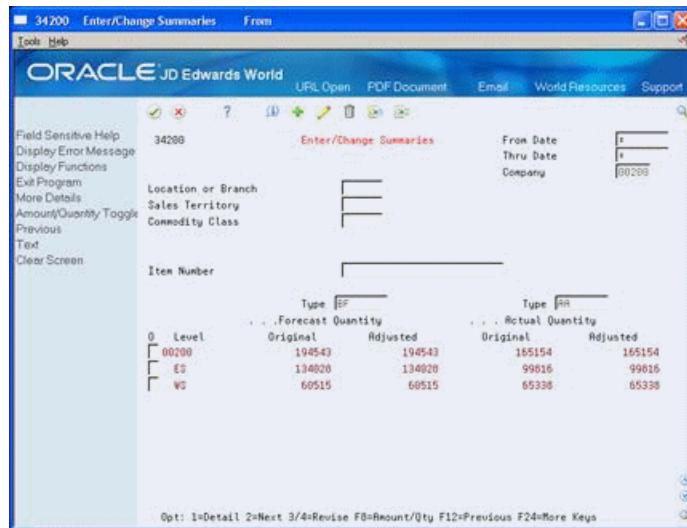
- Reviewing summary sales order history
- Revising summary sales order history
- Reviewing forecasts by type

### 12.2.1 Before You Begin

- Run the Extract Sales Order History program

**To review summary sales order history**

On Enter/Change Summaries

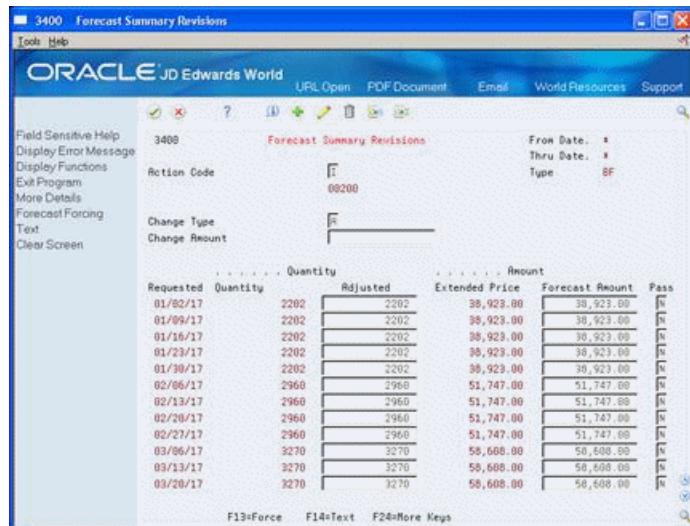
**Figure 12–2 Enter/Change Summaries screen**

1. Complete the following fields:
  - From Date
  - Thru Date
  - Company
  - Forecast Type
2. To view the next level lower in the hierarchy, choose Next.
3. Complete the fields that display based on summary constants.
4. For summary information, review the following fields:
  - Level
  - Forecast Quantity Original
  - Forecast Quantity Adjusted
  - Actual Amount Original
  - Actual Amount Adjusted

**To revise summary sales order history**

On Forecast Summary Revisions

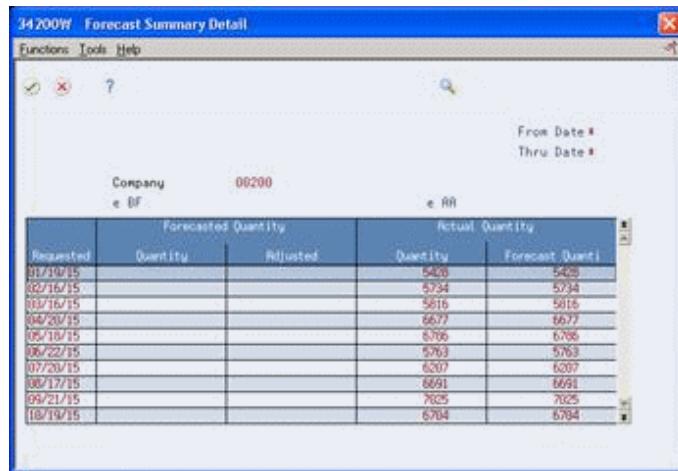
**Figure 12–3 Forecast Summary Revisions screen.**



1. To change information for the entire forecast summary, complete the following fields:
  - Change Type
  - Change Amount
2. To change information for individual lines, complete the following fields:
  - Requested Date
  - Quantity Adjusted
  - Amount Forecast Adjusted
  - Pass
3. Access the detail area.
4. Complete the following fields:
  - Change Type
  - Change Amount

## To review the forecast by type

## On Forecast Summary Detail

**Figure 12–4 Forecast Summary Detail screen**

1. Review the following fields:
  - Actual Quantity
  - Actual Quantity Adjusted
2. Toggle to display amount information.
3. Review the following fields:
  - Sales Amount
  - Sales Amount Adjusted

Field	Explanation
From Date	The beginning date of the range in a search. If you do not specify a beginning date, the system uses the current date.
Thru Date	A numeric code that identifies either the period number or the date that you want to locate. If you leave this field blank, the system uses the ending date of the current period that is set up for the company. Valid period numbers are 1 through 14.
Company	A code that identifies a specific organization, fund, entity, and so on. This code must already exist in the Company Constants table (F0010). It must identify a reporting entity that has a complete balance sheet. At this level, you can have intercompany transactions.  <b>Note:</b> You can use company 00000 for default values, such as dates and automatic accounting instructions (AAIs). You cannot use it for transaction entries.

## 12.2.2 Processing Options

See [Section 18.4, "Forecast Summary Inquiry \(P34200\)."](#)

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## Generate Summary Forecasts

This chapter contains the topic:

- [Section 13.1, "Generating Summary Forecasts."](#)

### 13.1 Generating Summary Forecasts

#### Navigation

**From Material Planning Operations (G34), choose Forecasting**

**From Periodic Forecasting Operations (G3421), choose Create Summary Forecast**

Generate Summary Forecast 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 Detail Forecast table, which is used as input to DRP, MPS, and MRP generation.

You can also use this program to:

- Specify the summary code for the hierarchy for which you want to forecast.
- Generate summary forecasts based on sales history.
- Select a best fit forecast.
- Store any or all of the forecast methods in the Summary Forecast table.
- Generate the forecast in a fiscal date pattern you select.

If you use the default type codes in the system's processing options, the actual sales history records are indicated by type AA, and the best fit model is indicated by type BF. The system saves the BF type and AA records (or corresponding type codes that you designate) in the Summary Forecast table. However, the other forecast types 01 through 12 are not automatically saved unless you set a processing option to do so.

You can also choose to include actual sales orders in your forecast by setting the appropriate processing options when you generate the forecast table. Including actual sales orders enables you to consider current sales activity in the forecasting process, which can enhance forecasting and planning accuracy.

When you run Generate Summary Forecast, the system:

- Extracts sales order history information from the Summary Forecast table
- Calculates the forecasts using methods that you select
- Determines the percent of accuracy or mean absolute deviation 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

---

**Note:** To generate summary forecasts for item quantities on all levels of the hierarchy, first generate a detail forecast. Next, run the Summarize Detail Forecasts program.

---

### 13.1.1 Before You Begin

- Run the Extract Sales Order History program
- Make any changes to the sales order history with the Enter/Change Actuals program
- On Generate Summary Forecast, set processing option "Dollar/Unit Forecast" to forecast summary amounts

### 13.1.2 Processing Options

See [Section 19.3, "Summary Forecast Generation \(P34640\)."](#)

# 14

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## Understand Planning Bill Forecasts

This chapter contains these topics:

- [Section 14.1, "About Planning Bill Forecasts,"](#)
- [Section 14.2, "Exploding the Forecast to the Item Level."](#)

### 14.1 About Planning Bill Forecasts

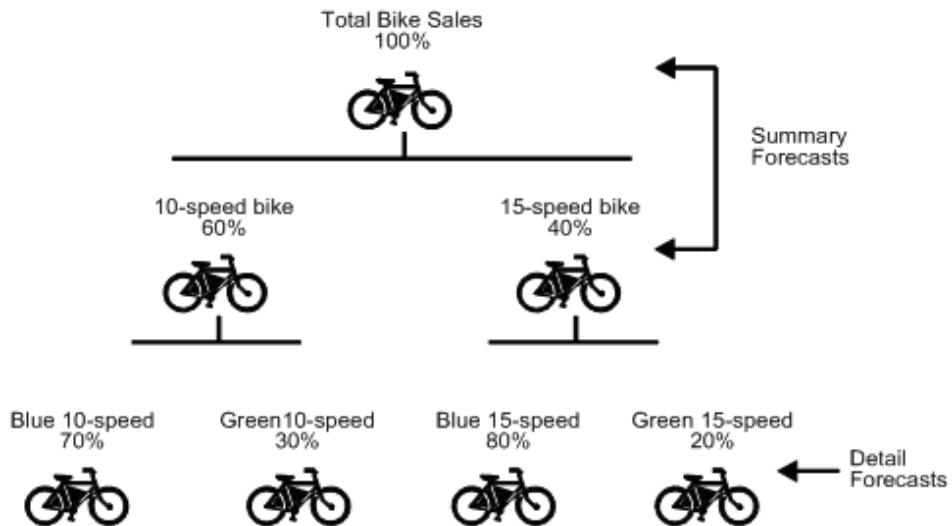
Planning bills are groups of items in a bill of material format that reflect how an item is sold, rather than how it is built. Planning bills allow you to account for the variety of possible options and features that might be included as components in a saleable end item.

You can use a planning bill to configure a hypothetical average parent item that is not actually manufactured, but represents the components 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 of all the bikes you sell, 60% are 10-speeds and 40% are 15-speeds, your planning bill includes an average parent bike that is neither a 10-speed nor a 15-speed, but a hybrid pseudo bike that is 60% 10-speed and 40% 15-speed.

Use planning bills during master scheduling and/or material planning. You can forecast with a planning bill to determine component demand within the MPS, MRP, and DRP systems.

#### 14.1.1 Example: Pseudo Parent Item

Your sales history shows that 60% of the bikes that you sell are 10-speeds and 40% are 15-speeds. For 10-speeds, 70% are blue and 30% are green. For 15-speeds, 80% are blue and 20% are green. You use these percentages to configure a pseudo parent item.

**Figure 14-1 Pseudo Parent Item**

The average parent bike will be:

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

You decide to manufacture or purchase at these percentages.

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

The forecast is based upon total bike sales history. This is the summary forecast.

The option percentages produce a production (or purchase) forecast for each of the options. This is the detail forecast.

## 14.2 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 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 a phantom 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 latter 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.

### 14.2.1 Example: Exploding the Forecast

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

- 60% 10-speed
- 40% 15-speed

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 phantom parent bikes on the second level of the item hierarchy. These phantom parents are configured as follows:

- 10-speed:
  - 70% blue
  - 30% green
- 15-speed:
  - 80% blue
  - 20% 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-speeds and total 15-speeds on the second level) as parent items. You use planning code 5 to designate the end item bikes (for example, blue 15-speeds) on the bottom level as components of the phantom parent items.

You assign user defined codes to several additional forecast types you want to include in the processing options to supplement the types that come with the system. For this forecast, you plan to use forecast types 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 determined by forecast type 16 and assign 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," the percentage of total products that include particular features that differentiate some products in the total from others. You define the feature planned percent on the Enter/Change Bill form. In this example, the feature planned percents are 60% for the 10-speed feature and 40% for the 15-speed feature.

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

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% of the 20,000 total bikes = 12,000 10-speed bikes
- 40% of the 20,000 total bikes = 8,000 15-speed bikes

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

**See Also:**

- About Multi-Level Master Scheduling in the *JD Edwards World Manufacturing and Distribution Planning Guide*.

---

## Set Up a Planning Bill

This chapter contains these topics:

- [Section 15.1, "Setting Up Item Master Information,"](#)
- [Section 15.2, "Entering Planning Bills."](#)

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. The system uses the planning bill to generate a forecast for the hypothetical average parent item, which it explodes to the component level.

### 15.1 Setting Up Item Master Information

#### Navigation

From Inventory Management (G41), choose Inventory Master/Transactions

From Inventory Master/Transactions (G4111), choose 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 your planning is based. The system stores this information in the Item Master table (F4101).

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

#### See Also:

- Entering Item Master Information in the *JD Edwards World Inventory Management Guide*.

#### To set up item master information

On Item Master Information

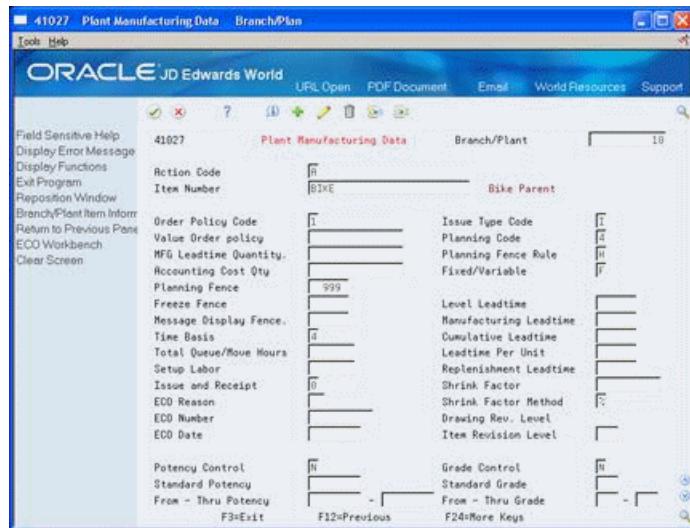
**Figure 15–1 Item Master Information screen**

1. Complete the following fields:
  - Product Number
  - Description
  - Stocking Type
  - General Ledger (G/L) Class
2. Choose Branch/Plant (F13).

**Figure 15–2 Item Branch Information screen**

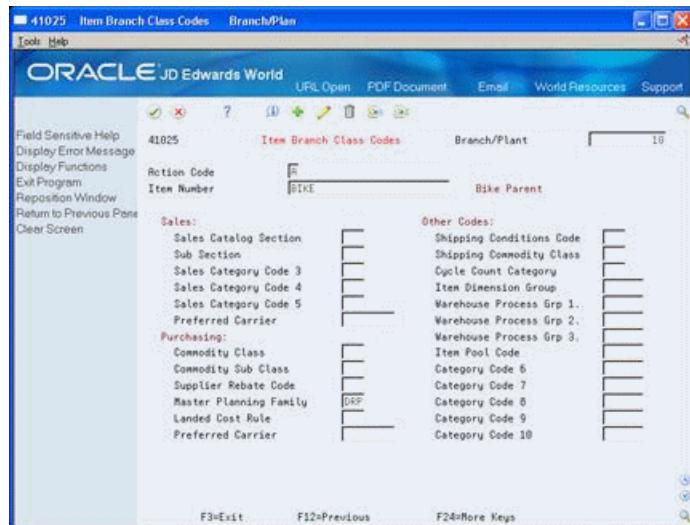
3. On Item Branch Information, complete the following field:
  - Branch/Plant
4. Choose Manufacturing (F10).

Figure 15–3 Plant Manufacturing Data screen



5. On Plant Manufacturing Data, complete the following field:
  - Planning Code
6. Exit Branch/Plant Information by pressing F3.
7. On Item Branch Information, choose Codes (F5).

Figure 15–4 Item Branch Class Codes screen



8. On Item Branch Class Codes, complete the following field:
  - Master Planning Family

Field	Explanation
Product No	<p>The system provides three separate item numbers plus an extensive cross-reference capability to alternate item numbers. These item numbers are:</p> <ol style="list-style-type: none"> <li>1. Item Number (short) - An 8-digit, computer-assigned item number.</li> <li>2. 2nd Item Number - The 25-digit, free-form, user defined, alphanumeric item number.</li> <li>3. 3rd Item Number - Another 25-digit, free-form, user defined, alphanumeric item number.</li> </ol> <p>In addition to these three basic item numbers, an extensive cross-reference search capability has been provided (see XRT). Numerous cross-references to alternate part numbers can be user defined (for example, substitute item numbers, replacements, bar codes, customer numbers, or supplier numbers).</p>
	<p><i>Form-specific information</i></p>
	<p>The second of three identifiers that you can assign to an item. This field is alphanumeric.</p>
	<p>If you leave the third identifier field blank, the system copies this number to that field.</p>
Stocking Type	<p>A user defined code (41/I) that indicates how you stock an item (for example, as finished goods, or as raw materials). The following stocking types are hard-coded and you should not change them:</p> <ul style="list-style-type: none"> <li>B – Bulk floor stock</li> <li>C – Configured item</li> <li>F – Feature</li> <li>K – Kit parent item</li> <li>N – Non-stock</li> </ul>
Planning Code	<p>A code that indicates how Master Production Schedule (MPS), Material Requirements Planning (MRP), or Distribution Requirements Planning (DRP) processes this item. Valid codes are:</p> <ul style="list-style-type: none"> <li>0 – Not Planned by MPS, MRP, or DRP</li> <li>1 – Planned by MPS or DRP</li> <li>2 – Planned by MRP</li> <li>3 – Planned by MRP with additional independent forecast</li> <li>4 – Planned by MPS, Parent in Planning Bill</li> <li>5 – Planned by MPS, Component in Planning Bill</li> </ul> <p>These codes are hard-coded.</p>
Master Planning Family	<p>A code (table 41/P4) that represents an item property type or classification, such as commodity type, planning family, or so forth. The system uses this code to sort and process like items.</p> <p>This field is one of six classification categories available primarily for purchasing purposes.</p>

### 15.1.1 Processing Options

See [Section 19.4, "Item Master Revisions \(P4101\)."](#)

## 15.2 Entering Planning Bills

### Navigation

From Product Data Management (G30), choose Daily PDM Discrete

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

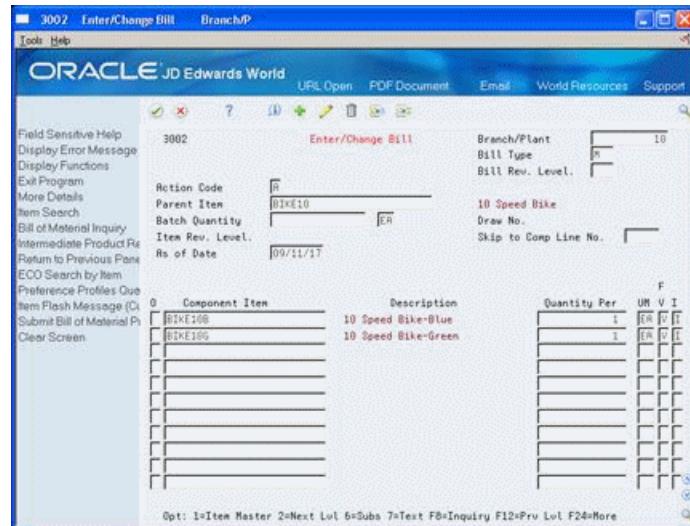
You enter a planning bill in the Product Data Management system to change the percentages on which the hypothetical average parent item is based. This allows you to account for any planning variations on which you might want to base forecasts.

As an alternative to entering planning bill data manually, you can use the Bill of Material Revisions - Z File program (P3002Z) to import an extensive amount of planning bill data into your system. See [Appendix C, "Import Mass Data into Manufacturing Systems"](#) for more information.

### To enter planning bills

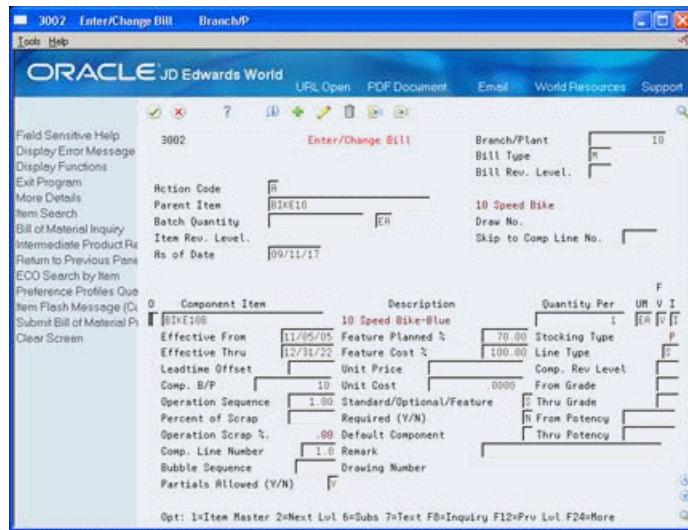
On Enter/Change Bill

**Figure 15–5 Enter/Change Bill screen**



1. Complete the following fields:
  - Branch/Plant
  - Parent Item
2. Access the detail area.

Figure 15–6 Enter/Change Bill (With Fields) screen



3. Complete the following fields:

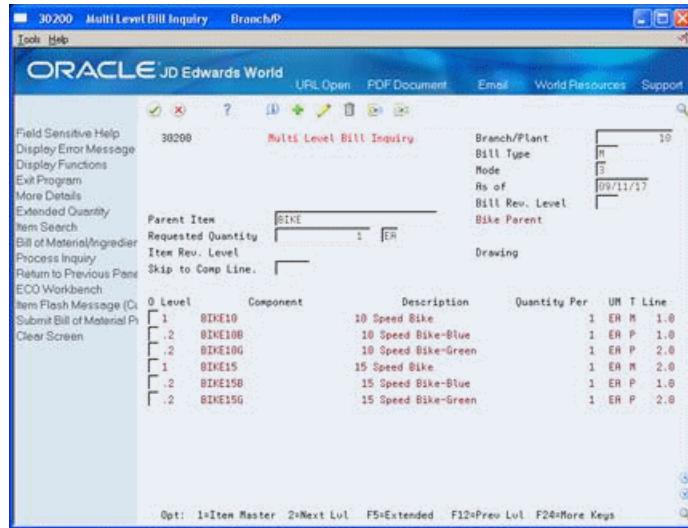
- Component Item
- Quantity Per
- Feature Plan Percent

The following field contains default information:

- Issue Type Code

4. Exit to the Daily PDM Discrete menu by pressing F3.  
 5. Access Multi Level Bill Inquiry.

Figure 15–7 Multi Level Bill Inquiry screen



6. On Multi Level Bill Inquiry, complete the following fields:

- Parent Item
- Branch/Plant

7. To review exploded percentages, access the detail area.

**Figure 15–8 Multi Level Bill Inquiry (Detail) screen**

30200 Multi Level Bill Inquiry Branch/P:

Tools Help

ORACLE JD Edwards World URL Open PDF Document Email World Resources Support

Field Sensitive Help 30200 Multi Level Bill Inquiry Branch/Plant 19

Display Error Message Bill Type M

Display Functions Mode :

Exit Program As of 09/11/17

More Details Bill Rev. Level

Extended Quantity Bike Parent

Parent Item BIKE

Item Search Requested Quantity 1 ER

Bill of Material/Materials Item Rev. Level

Process Inquiry Skip to Comp Line Drawing

Return to Previous Page

ECO Workbench

Item Flesh Message (C) 0 Level Component Description Quantity Per UM T Line

Submit Bill of Material/Pi 1 BIKE10 10 Speed Bike 1 ER M 1.0

Clear Screen Effective From 11/05/05 Feature Plan % 60.00 Issue Type Code 1

Effective Thru 12/31/22 Feature Cost % 100.00 Line Type 5

Leadtime Offset Days Unit Price Comp. Br/Pt Comp. Rev. Level

Comp. Br/Pt 10 Unit Cost From Grade

Operations Sequence 1.00 Std/Opt/Feature S Thru Grade

Scrap Percent Required Y/N N From Potency

Operation Scrap % .00 Default Component Thru Potency

Bubble Sequence Remark

Item Rev. Level Drawing Number

Opt: 1=Item Master 2=Next Lvl F5=Extended F12=Prev Lvl F24=More Keys

Field	Explanation
Branch/Plant	<p>A code that represents a high-level business unit. It can be used to reference a branch or plant that might have departments or jobs, which represent lower-level business units (data item MCU), subordinate to it. For example:</p> <ul style="list-style-type: none"> <li>■ Branch/Plant (MMCU)</li> <li>■ Dept A (MCU)</li> <li>■ Dept B (MCU)</li> <li>■ Job 123 (MCU)</li> </ul>
	<p>Business unit security is based on the higher-level business unit.</p> <p><i>Form-specific information</i></p>
Quantity Per	<p>An inquiry field for a branch or plant code to which an item is assigned. This field is required.</p>
	<p>The number of units to which the system applies the transaction.</p> <p><i>Form-specific information</i></p>
Feature Planned %	<p>A number that indicates how many components you use to manufacture the parent item. A quantity of zero is valid. The default value is 1.</p>
	<p>The percentage of demand for a specified feature based on projected sales. For example, a company might sell 35% of their computers with a standard keyboard and 65% of them with an extended keyboard, based on customer demand.</p>
	<p>The Material Planning system uses this percentage to accurately plan for a feature's component items. Enter percents as whole numbers: 5% as 5.0. The default value is 100%.</p>

Field	Explanation
I	<p>A code that defines how the system issues each component in the bill of material from stock. In shop floor control, it indicates how the system issues a part to a work order. Valid codes are:</p> <p>I – Manual issue (default) F – Floor stock (no issue) B – Backflush (when part is reported as complete) P – Preflush (when parts list is generated) U – Super backflush (at pay-point operation) S – Sub-contract item (send to supplier) Blank – Shippable end item</p> <p>You can issue a component in more than one way within a specific branch/plant by using a different code on the bill of material and work order parts list. The bill of material code overrides the branch/plant value.</p>

### 15.2.1 Processing Options

See [Section 19.5, "Bill of Material Revisions \(P3002\)."](#)

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# Generate Planning Bill Forecasts

This chapter contains the topic:

- [Section 16.1, "Generating Planning Bill Forecasts."](#)

## 16.1 Generating Planning Bill Forecasts

### Navigation

**From Material Planning Operations (G34), choose Single Site Planning**

**From Single Site Planning Operations (G3422), choose DRP Regeneration**

After setting up a planning bill, you can generate a planning bill forecast to help you plan configurations for end products. The material planning generation program 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.

### 16.1.1 Before You Begin

- Enter a planning bill. See [Section 15.2, "Entering Planning Bills."](#)
- Run Enter/Change Forecast manually to add the forecast for the parent item.

### 16.1.2 Processing Options

See Gross Regeneration in the *JD Edwards World Manufacturing and Distribution Planning Guide*.



# **Part IV**

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## **Processing Options**

This part contains these chapters:

- [Chapter 17, "Detail Forecasts Processing Options,"](#)
- [Chapter 18, "Summary Forecasts Processing Options,"](#)
- [Chapter 19, "Aggregate Planning Forecasts Processing Options."](#)



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## Detail Forecasts Processing Options

This chapter contains these topics:

- [Section 17.1, "Supply/Demand Inclusion Rules \(P34004\),"](#)
- [Section 17.2, "Extract Sales Order History \(P3465\),"](#)
- [Section 17.3, "Forecast Generation \(P34650\),"](#)
- [Section 17.4, "Forecast Review \(P34201\),"](#)
- [Section 17.5, "Forecast Revisions \(P3460\)."](#)

### 17.1 Supply/Demand Inclusion Rules (P34004)

Processing Option	Processing Options Requiring Further Description
DOCUMENT TYPES:	
1. Enter the Document Types for Work Order and Rate you want to setup Inclusion Rules for. The document types can be stacked one after the other for multiple document types.	
If left blank, 'WOSC' will be used.	

### 17.2 Extract Sales Order History (P3465)

Processing Option	Processing Options Requiring Further Description
PROCESS CONTROL:	
1. Enter the Forecast Type for creating actuals.	
2. Enter the date range for creating actuals and summarized forecasts:	
a. From Date (Required)	
b. Thru Date (Optional)	
3. Enter the version of Supply/Demand Inclusion Rules to be used for processing.	
4. Enter a '1' to specify weekly buckets.	
If left blank, monthly buckets will be used.	

Processing Option	Processing Options Requiring Further Description
5. Enter a '1' to extract sales orders from F4211 as well as F42119.	If left blank, sales orders are extracted from only the sales order history file (F42119).
SUMMARY RECORDS:	
6. Enter a '1' to create summary records for large customers (ABC Type = 'A').	
7. Enter a '1' to base the large customer summary on the 'Ship To' address. If left blank, the 'Sold To' address will be used.	
SUMMARY FORECASTS:	
8. Enter a '1' to create summarized forecast records as well as detail forecast records or a '2' to create only the summarized forecast records.	
If left blank, only the detail forecast records will be created.	
9. Enter the Summary Code to be used to create summarized forecasts.	
10. Enter a '1' if you want the Address Book number from the Forecast File to be used to retrieve the Address Book Category Codes.	If left blank, the Cost Center will be used to determine which Address Book number to use to retrieve the Category Codes.
FISCAL PATTERN:	
11. Enter the Fiscal Date Pattern to use for creating actuals.	
If left blank, the pattern specified for company '00000' will be used.	
The Fiscal Patterns must include a 'Begin Date'. For best results, the pattern must extend to include the last Sales Order History date.	
INTERBRANCH SALES ORDERS:	
12. Enter a '1' to use sales branch instead of supply branch for interbranch sales orders.	
13. Enter the interbranch order type(s).	
To specify more than one order type, type them one after the other along this field. (e.g. 'SIS1S2')	

## 17.3 Forecast Generation (P34650)

Processing Option	Processing Options Requiring Further Description
FORECASTING METHODS:	
Enter a '1' by the method(s) desired:	

Processing Option	Processing Options Requiring Further Description
1. Percent Over Last Year a. Enter the percentage of change over last year. For example, use 1.10 for a 10% increase, or 0.97 for a 3% decrease.	
2. Calculated Percent Over Last Year a. Enter the number of periods to include in the percentage.	
3. Last Year to This Year	
4. Moving Average a. Enter the number of periods to include in the average.	
5. Linear Approximation a. Enter the number of periods to include in the ratio.	
6. Least Squares Regression a. Enter the number of periods to include in regression.	
7. Second Degree Approximation a. Enter the number of periods to include.	
8. Flexible Method (Percent over N periods prior.) a. Enter the number of periods prior. b. Enter the percent over the prior period.	
9. Weighted Moving Average a. Enter the number of periods b. Weight for one period prior c. Weight for two periods prior d. Weight for three periods prior e. Weight for four periods prior f. Weight for five periods prior g. Weight for six periods prior h. Weight for seven periods prior i. Weight for eight periods prior j. Weight for nine periods prior k. Weight for ten periods prior l. Weight for eleven periods prior m. Weight for twelve periods prior	
<b>Note:</b> Weights must add up to 1. If weights are entered for periods greater than the number of periods to include, they will not be used.	
If no weight is entered for a period within the number of periods to include, a zero weight will be used for that period.	
10. Linear Smoothing a. Enter the number of periods to include in smoothing average.	

Processing Option	Processing Options Requiring Further Description
11. Exponential Smoothing	<p>a. Enter the number of periods to include in smoothing average.</p> <p>b. Enter the alpha factor. If left blank, alpha will be calculated.</p>
12. Exponential Smoothing with Trend and Seasonality Factors	<p>a. Enter the alpha factor. If left blank, alpha will be calculated.</p> <p>b. Enter the beta factor. If left blank, beta will be calculated.</p> <p>c. Enter a '1' to include seasonality in the calculation. If left blank, seasonality will not be included.</p>
RECORD TYPES TO USE:	
13. Enter the 'Actual Type' in which the actual information is stored.	
14. Enter the Forecast Type to use when creating forecasts.	
SUMMARY RECORDS:	
15. Enter a '1' to create summary records for large customers. (ABC type = 'A').	
FORECAST TYPE AND RANGE:	
16. Enter a '1' to specify weekly forecasts. If left blank, monthly forecasts will be generated.	
17. Enter the date to start forecasts. If left blank, today's date will be used.	
18. Enter the number of periods to forecast. If left blank, three periods will be used.	
19. Enter the number of periods of actual data to be used to calculate the Best Fit forecast. If left blank, three periods of data will be used.	
20. Enter a '1' to calculate best fit using Mean Absolute Deviation. If left blank, Percent of Accuracy will be used.	
21. Enter a '1' to run the report in final mode. If left blank, the report will run in proof mode.	
22. Enter a '1' to allow negative values to be written. If left blank, negative values will be written as zeroes.	
FISCAL DATE PATTERN:	

Processing Option	Processing Options Requiring Further Description
23. Enter the Fiscal Date Pattern Type to use for forecast dating.	If left blank, the type specified for company '00000' will be used. (See Company Names-Fiscal Patterns 'P00105' for more information).
BEST FIT AMOUNTS/QUANTITIES:	
24. Enter a '1' to calculate Best Fit using amounts.	If left blank, quantities will be used to calculate Best Fit.

## 17.4 Forecast Review (P34201)

Processing Option	Processing Options Requiring Further Description
DEFAULT VALUES:	
1. Enter a '1' to display the Amount format first.	If left blank, the Quantity format will be displayed.
2. Forecast Type (Optional)	
3. Enter the default forecast type for displaying the actual quantities and amounts.	

## 17.5 Forecast Revisions (P3460)

Processing Option	Processing Options Requiring Further Description
DEFAULT VALUES:	
1. Forecast Type (Optional)	
2. Enter a '1' to default the forecast type from the heading into the detail records on an add.	
3. Enter a '1' to display the Amount format first.	If left blank, the Quantity format will be displayed.



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## Summary Forecasts Processing Options

This chapter contains these topics:

- [Section 18.1, "Summary Constants \(P4091\),"](#)
- [Section 18.2, "Forecast Generation \(P34650\),"](#)
- [Section 18.3, "Forecast Summary \(P34600\),"](#)
- [Section 18.4, "Forecast Summary Inquiry \(P34200\),"](#)
- [Section 18.5, "Forecast Forcing \(P34610\)."](#)

### 18.1 Summary Constants (P4091)

Processing Option	Processing Options Requiring Further Description
PROCESSING CONTROL :	
1. Enter a '1' next to the type of Category Code Key Positions you would like to see first.	
If both categories are left blank then the Item format will display first.	
Address Book .....	
Item .....	

### 18.2 Forecast Generation (P34650)

Processing Option	Processing Options Requiring Further Description
FORECASTING METHODS:	
Enter a '1' by the method(s) desired:	
1. Percent Over Last Year	
a. Enter the percentage of change over last year. For example, use 1.10 for a 10% increase, or 0.97 for a 3% decrease.	
2. Calculated Percent Over Last Year	
a. Enter the number of periods to include in the percentage.	
3. Last Year to This Year	

Processing Option	Processing Options Requiring Further Description
4. Moving Average	a. Enter the number of periods to include in the average.
5. Linear Approximation	a. Enter the number of periods to include in the ratio.
6. Least Squares Regression	a. Enter the number of periods to include in regression.
7. Second Degree Approximation	a. Enter the number of periods to include.
8. Flexible Method (Percent over N periods prior.)	a. Enter the number of periods prior. b. Enter the percent over the prior period.
9. Weighted Moving Average	a. Enter the number of periods b. Weight for one period prior c. Weight for two periods prior d. Weight for three periods prior e. Weight for four periods prior f. Weight for five periods prior g. Weight for six periods prior h. Weight for seven periods prior i. Weight for eight periods prior j. Weight for nine periods prior k. Weight for ten periods prior l. Weight for eleven periods prior m. Weight for twelve periods prior
<b>Note:</b> Weights must add up to 1. If weights are entered for periods greater than the number of periods to include, they will not be used.	
If no weight is entered for a period within the number of periods to include, a zero weight will be used for that period.	
10. Linear Smoothing	a. Enter the number of periods to include in smoothing average.
11. Exponential Smoothing	a. Enter the number of periods to include in smoothing average. b. Enter the alpha factor. If left blank, alpha will be calculated.

Processing Option	Processing Options Requiring Further Description
12. Exponential Smoothing with Trend and Seasonality Factors	
a. Enter the alpha factor.	
If left blank, alpha will be calculated.	
b. Enter the beta factor.	
If left blank, beta will be calculated.	
c. Enter a '1' to include seasonality in the calculation.	
If left blank, seasonality will not be included.	
RECORD TYPES TO USE:	
13. Enter the 'Actual Type' in which the actual information is stored.	
14. Enter the Forecast Type to use when creating forecasts.	
SUMMARY RECORDS:	
15. Enter a '1' to create summary records for large customers.	
(ABC type = 'A').	
FORECAST TYPE AND RANGE:	
16. Enter a '1' to specify weekly forecasts.	
If left blank, monthly forecasts will be generated.	
17. Enter the date to start forecasts.	
If left blank, today's date will be used.	
18. Enter the number of periods to forecast.	
If left blank, three periods will be used.	
19. Enter the number of periods of actual data to be used to calculate the Best Fit forecast.	
If left blank, three periods of data will be used.	
20. Enter a '1' to calculate best fit using Mean Absolute Deviation.	
If left blank, Percent of Accuracy will be used.	
21. Enter a '1' to run the report in final mode.	
If left blank, the report will run in proof mode.	
22. Enter a '1' to allow negative values to be written.	
If left blank, negative values will be written as zeroes.	
FISCAL DATE PATTERN:	
23. Enter the Fiscal Date Pattern Type to use for forecast dating.	
If left blank, the type specified for company '00000' will be used.	
(See Company Names-Fiscal Patterns 'P00105' for more information).	
BEST FIT AMOUNTS/QUANTITIES:	

Processing Option	Processing Options Requiring Further Description
24. Enter a '1' to calculate Best Fit using amounts. If left blank, quantities will be used to calculate Best Fit.	

## 18.3 Forecast Summary (P34600)

Processing Option	Processing Options Requiring Further Description
PROCESSING CONTROL:	
1. Enter the Summary Code.	
2. Enter the Forecast Type.	
3. Enter the Date Range:	
a. From Date	
b. Thru Date	
4. Enter a '1' to use the Address Book Number from the Forecast file (F3460) to retrieve Category Codes. If left blank, the Address Book Number from the Cost Center will be used.	

## 18.4 Forecast Summary Inquiry (P34200)

Processing Option	Processing Options Requiring Further Description
DEFAULT INFORMATION:	
1. Summary Code	
2. Enter Forecast Types for the following:	
a. Forecast	
b. Actual	
3. Enter a '1' to display the Quantity format first. If left blank, the Amount format will be displayed.	
DREAM WRITER VERSIONS:	
Enter the version for each program. If left blank, 'ZJDE0001' will be used.	
4. Summary Revisions (P3400)	
5. Detail Revisions (P3460)	

## 18.5 Forecast Forcing (P34610)

Processing Option	Processing Options Requiring Further Description
PROCESSING CONTROL:	

Processing Option	Processing Options Requiring Further Description
1. Enter a code to indicate which direction to force changes.	<p>1 = Up the hierarchy 2 = Down the hierarchy If left blank, changes will be forced in both directions.</p>
2. Enter a '1' to reset the Revised flag on the records in the file.	<p>If left blank, the flag will only be reset if option 1 is blank.</p>



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# Aggregate Planning Forecasts Processing Options

This chapter contains these topics:

- [Section 19.1, "Extract Sales Order History \(P3465\),"](#)
- [Section 19.2, "Forecast Summary Inquiry \(P34200\),"](#)
- [Section 19.3, "Summary Forecast Generation \(P34640\),"](#)
- [Section 19.4, "Item Master Revisions \(P4101\),"](#)
- [Section 19.5, "Bill of Material Revisions \(P3002\),"](#)
- [Section 19.6, "Bill of Material Revisions - Z File \(P3002Z\),"](#)
- [Section 19.7, "Master Planning Schedule - Plant Maintenance \(P3482\)."](#)

## 19.1 Extract Sales Order History (P3465)

Processing Option	Processing Options Requiring Further Description
PROCESS CONTROL:	
1. Enter the Forecast Type for creating actuals.	
2. Enter the date range for creating actuals and summarized forecasts:	
a. From Date (Required)	
b. Thru Date (Optional)	
3. Enter the version of Supply/Demand Inclusion Rules to be used for processing.	
4. Enter a '1' to specify weekly buckets. If left blank, monthly buckets will be used.	
5. Enter a '1' to extract sales orders from F4211 as well as F42119. If left blank, sales orders are extracted from only the sales order history file (F42119).	
SUMMARY RECORDS:	
6. Enter a '1' to create summary records for large customers (ABC Type = 'A').	

Processing Option	Processing Options Requiring Further Description
7. Enter a '1' to base the large customer summary on the 'Ship To' address. If left blank, the 'Sold To' address will be used.	
SUMMARY FORECASTS:	
8. Enter a '1' to create summarized forecast records as well as detail forecast records or a '2' to create only the summarized forecast records.	
If left blank, only the detail forecast records will be created.	
9. Enter the Summary Code to be used to create summarized forecasts.	
10. Enter a '1' if you want the Address Book number from the Forecast File to be used to retrieve the Address Book Category Codes.	
If left blank, the Cost Center will be used to determine which Address Book number to use to retrieve the Category Codes.	
FISCAL PATTERN:	
11. Enter the Fiscal Date Pattern to use for creating actuals.	
If left blank, the pattern specified for company '00000' will be used.	
The Fiscal Patterns must include a 'Begin Date'. For best results, the pattern must extend to include the last Sales Order History date.	
INTERBRANCH SALES ORDERS:	
12. Enter a '1' to use sales branch instead of supply branch for interbranch sales orders.	
13. Enter the interbranch order type(s).	
To specify more than one order type, type them one after the other along this field. (e.g. 'SIS1S2')	

## 19.2 Forecast Summary Inquiry (P34200)

Processing Option	Processing Options Requiring Further Description
DEFAULT INFORMATION:	
1. Summary Code	
2. Enter Forecast Types for the following:	
a. Forecast	
b. Actual	
3. Enter a '1' to display the Quantity format first.	
If left blank, the Amount format will be displayed.	
DREAM WRITER VERSIONS:	
Enter the version for each program.	
If left blank, 'ZJDE0001' will be used.	
4. Summary Revisions (P3400)	

Processing Option	Processing Options Requiring Further Description
5. Detail Revisions (P3460)	

## 19.3 Summary Forecast Generation (P34640)

Processing Option	Processing Options Requiring Further Description
FORECASTING METHODS:	
Enter a '1' by the method(s) desired.	
1. Percent Over Last Year	
a. Enter the percentage of change over last year. For example, use 1.10 for a 10% increase, or 0.97 for a 3% decrease.	
2. Calculated Percent Over Last Year	a. Enter the number of periods to include in the percentage.
3. Last Year to This Year	
4. Moving Average	a. Enter the number of periods to include in the average.
5. Linear Approximation	a. Enter the number of periods to include in the ratio.
6. Least Squares Regression	a. Enter the number of periods to include in regression.
7. Second Degree Approximation	a. Enter the number of periods to include.
8. Flexible Method (Percent over N periods prior.)	a. Enter the number of periods prior. b. Enter the percent over the prior period.

Processing Option	Processing Options Requiring Further Description
9. Weighted Moving Average a. Enter the number of periods. b. Weight for one period prior c. Weight for two periods prior d. Weight for three periods prior e. Weight for four periods prior f. Weight for five periods prior g. Weight for six periods prior h. Weight for seven periods prior i. Weight for eight periods prior j. Weight for nine periods prior k. Weight for ten periods prior l. Weight for eleven periods prior m. Weight for twelve periods prior	NOTE: Weights must add up to 1.
If weights are entered for periods greater than the number of periods to include, they will not be used.	
If no weight is entered for a period within the number of periods to include, a zero weight will be used for that period.	
10. Linear Smoothing a. Enter the number of periods to include in smoothing average.	
11. Exponential Smoothing a. Enter the number of periods to include in smoothing average. b. Enter the alpha factor.	If left blank, alpha will be calculated.
12. Exponential Smoothing with Trend and Seasonality Factors a. Enter the alpha factor.	If left blank, alpha will be calculated.
b. Enter the beta factor.	If left blank, beta will be calculated.
c. Enter a '1' to include seasonality in the calculation. If left blank, seasonality will not be included.	
RECORD TYPES TO USE:	
13. Enter the Forecast Type to use when creating forecasts.	
FORECAST TYPE AND RANGE:	
14. Enter a '1' to specify weekly forecasts. If left blank, monthly forecasts will be generated.	
15. Enter the date to start forecasts. If left blank, today's date will be used.	

Processing Option	Processing Options Requiring Further Description
16. Enter the number of periods to forecast.	If left blank, three periods will be used.
17. Enter the number of periods of actual data to be used to calculate the Best Fit forecast.	If left blank, three periods of data will be used.
18. Enter a '1' to calculate best fit using Mean Absolute Deviation.	If left blank, Percent of Accuracy will be used.
19. Enter a '1' to run the report in Final mode.	If left blank, the report will run in Proof mode.
20. Enter a '1' to allow negative values to be written.	If left blank, negative values will be written as zeroes.
FISCAL DATE PATTERN:	
21. Enter the Fiscal Date Pattern Type to use for forecast dating.	If left blank, the type specified for company '00000' will be used. (See Company Names-Fiscal Patterns 'P00105' for more information).
BEST FIT AMOUNTS/QUANTITIES:	
22. Enter a '1' to calculate Best Fit using amounts.	If left blank, quantities will be used to calculate Best Fit.

## 19.4 Item Master Revisions (P4101)

Processing Option	Processing Options Requiring Further Description
DEFAULT VALUES :	1. Primary Unit of Measure (Blanks = EA)
2. Weight Unit of Measure	(Blanks = LB)
PROCESS CONTROL :	
3. Specify the from and thru dates to be used for effective dates in the Item Notes File :	From Date (Blank = System date) Thru Date (Blank = 12/31 with the year = to the default value for the data dictionary item Century Change Year (#CYR))

Processing Option	Processing Options Requiring Further Description
4. Enter a '1' for each additional Item Master information screen to display when performing an add or change.	
If blank, the screen will not display.	
Classification Codes	
Cost Revisions (Conditional)	
Price Revisions (Conditional)	
Units & Measures	
Manufacturing Values	
Bulk Product Information	
UCC Codes & UOMs	
Lot Processing	
5. Enter a '1' to use the window version of the screens selected above.	
If left blank, the full screen versions will be displayed.	
6. Enter a '1' to automatically call the Item Branch Program (P41026) when adding a new item number and return to the Item Master Screen.	
Enter a '2' to call the Item Branch program automatically and remain on the Item Branch Screen.	
If left blank, the Item Branch Program will not be called.	
GLOBAL UPDATE:	
7. Enter a '1' to transfer changes made to the 2nd (LITM) and the 3rd (AITM) item numbers to the Item Branch (F4102) item records.	
(F19 from Item Master Revisions allows you to update other files).	
or	
Enter a '2' to transfer changes to records in the selected files (see User Defined Codes 40/IC).	
Press F1 to display the selected files.	
DREAM WRITER VERSIONS:	
Enter the version to be used for each program.	
If left blank, ZJDE0001 is used.	
8. Item Availability (P41202)	
9. Item Branch (P41026)	
10. Product Catalog Detail (P41903)	
DRAWING INFORMATION:	
11. Enter a '1' to protect item drawing information from update.	

## 19.5 Bill of Material Revisions (P3002)

Processing Option	Processing Options Requiring Further Description
INVENTORY VALIDATION:	

Processing Option	Processing Options Requiring Further Description
1. Enter a '1' to validate for an existing Branch/Item record.	DREAM WRITER VERSIONS:
	Enter the version for each program.
	If left blank, 'ZJDE0001' will be used.
	<b>Note:</b> Options 2 and 3 are used ONLY to set Printer Overrides.
2. Single-Level BOM Print (P30410)	
3. Multi-Level BOM Print (P30415)	
4. ECO Workbench (P30225)	
5. Component Maintenance (P3015)	DREAM WRITER VERSION FROM WINDOW:
6. Enter the version of ECO Revisions (P48020) to call from the Revisions Window (P30BREV).	If left blank, version 'ZJDE0001' will be used.
COMPONENT BRANCH:	7. Enter a '1' to change the Component Branch (Additions Only) to that which is displayed at the top of the screen.
FIELD DISPLAY:	8. Enter a '1' by the following fields to activate them:
Bill Type	
Batch Quantity	DEFAULT VALUES:
9. Bill Type (Optional)	DATE EFFECTIVITY:
DATE EFFECTIVITY:	10. Enter a date to default into the As of Date or '*' to display all dates.
If left blank, the system date will be used.	COMPONENT SEQUENCING:
11. Enter the sequence to be displayed:	1 - Component Line Number
2 - Operation Sequence Number	<b>Note:</b> If left blank, components will be sequenced by Component Line Number.
REVISION LEVEL CONTROL:	12. Enter a '1' to protect Component Revision Level from update.

## 19.6 Bill of Material Revisions - Z File (P3002Z)

Processing Option	Processing Options Requiring Further Description
DREAM WRITER VERSIONS:	
1. Enter the version to be used to call Bill of Material Revisions (P3002).	
If left blank, ZJDE0001 will be used	
ERROR REPORTING:	
2. Enter '1' to skip printing the error report. If left blanks, the report will print.	
3. Enter the version to be used to call the error report program (P41ZERR). If left blank, XJDE0010 will be used	

## 19.7 Master Planning Schedule - Plant Maintenance (P3482)

Processing Option	Processing Options Requiring Further Description
BUCKET INFORMATION:	
1. Enter the Start Date.	
If left blank, the system date will be used.	
2. Enter the number of past due periods (0-2).	Set to 2 if using Planning Fence Rule H.
If left blank, there will be no past due periods.	
3. Enter the planning horizon periods (maximum of 52 periods):	Maximum of 52 including Past Due buckets
Days (e.g. 5 )	
Weeks (e.g. 25)	
Months (e.g. 6 )	
PROCESSING CONTROL:	
4. Enter the Generation Mode:	
1 = Net Change	
2 = Gross Regeneration	
5. Enter the Generation Type:	
1 = Single Level MPS/DRP	
2 = Planning Bill	
3 = MRP	
5 = MRP with Frozen MPS	
PHANTOM ITEMS:	
6. Enter a '1' to generate messages and time series records for phantoms.	
ON HAND ADJUSTMENTS:	
7. Enter a '1' to decrease beginning available by safety stock quantity.	

Processing Option	Processing Options Requiring Further Description
8. Enter the lot hold codes (up to 5) to be considered on hand, or enter an '*' to consider all held lots as on hand. If left blank, held lots will not be considered on hand.	
9. Enter a '1' by the following Receipt Routing quantities to be considered on hand. Quantity in Transit Quantity in Inspection User Defined Quantity 1 User Defined Quantity 2	
<b>Note:</b> Any quantity not included will be placed in the On Receipt bucket.	
<b>DAMPER DAYS:</b>	
10. Enter the Defer Damper days, (no defer message if less than 'X' number of days).	
11. Enter the Expedite Damper days, (no expedite message if less than 'X' number of days).	
<b>SAFETY LEADTIME:</b>	
12. Enter the purchased item lead time days. 13. Enter the manufactured item lead time days.	
<b>FORECASTING INFORMATION:</b>	
14. Enter up to five forecast types: Forecast Type 1 Forecast Type 2 Forecast Type 3 Forecast Type 4 Forecast Type 5	
15. Enter the Forecast Type for MPS to create when using Planning Bills.	
<b>RATE BASED SCHEDULING INFORMATION:</b>	
16. Enter the Schedule Type for rate based items. If left blank, 'SC' will be used.	
17. Enter a '1' to extend rate based adjustments to lower level items.	
18. Enter status code used to denote closed rates. If left blank, 99 will be used.	
19. Enter a '1' to include Past Due Rates as a supply.	
<b>PURCHASE ORDER INFORMATION:</b>	
20. Enter the Document Type for purchase orders. If left blank, 'OP' will be used.	
<b>WORK ORDER INFORMATION:</b>	
21. Enter the Document Type for work orders. If left blank, 'WO' will be used.	

Processing Option	Processing Options Requiring Further Description
22. Enter the Work Order Status at which messages will no longer be exploded to lower level items.	If left blank, all messages will be exploded to lower level items.
INCLUSION RULES:	
23. Enter the Version of Supply/Demand Inclusion Rules to be used.	
PERFORMANCE ISSUES:	
24. Enter a '1' to initialize the MPS/MRP Print Code. This code is used for selecting records during the MPS/MRP print.	(See glossary for MRPD.)
Note: If left blank, the run time of the generation will be reduced.	
25. Enter the User Defined Code Type that contains the list of quantity types to be calculated & written to the Time Series file (F3413). User Defined Code 34/QT contains a master list of quantity types that can be written and will be used as the default.	
26. Enter a '1' to completely clear the material planning files (messages, pegging, and time series) prior to the generation or a '2' to retain manual remarks (type M messages) while clearing the files.	Default of blank will not clear files.
Note: If a '1' or '2' is entered, files will be cleared without respect to data selection.	
Clearing the files will improve performance and clean up any bad data in the files.	
PROCESS PLANNING:	
27. Enter a '1' to generate planning in Process Mode.	
Note: If left blank, the run time of the generation will be reduced.	
LOT EXPIRATION:	
28A. Enter a '1' to consider lot expiration dates in calculations.	
28B. Enter optional date to be used for expiration calculations when processing option 28A = '1'.	
If left blank, Lot expiration date will be used.	
1 = Sell By Date	
2 = Best Before Date	
3 = User Defined Date 1	
4 = User Defined Date 2	
5 = User Defined Date 3	
6 = User Defined Date 4	
7 = User Defined Date 5	
8 = Commitment Date Method from Item/Branch Master.	
FORECAST CONSUMPTION PROCESSING:	

Processing Option	Processing Options Requiring Further Description
29. Enter a '1' to use Forecast Consumption logic.	
ROUNDING:	
30. Enter a '1' to round existing Work/ Purchasing orders suggested quantity to the nearest order transaction unit of measure quantity.	
<b>Note:</b> If left blank, no rounding will occur.	



# A

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## Forecast Calculation Examples

This appendix contains these topics:

- [Section A.1, "Forecast Calculation Methods,"](#)
- [Section A.2, "Forecast Performance Evaluation Criteria,"](#)
- [Section A.3, "Method 1 - Specified Percent Over Last Year,"](#)
- [Section A.4, "Method 2 - Calculated Percent Over Last Year,"](#)
- [Section A.5, "Method 3 - Last year to This Year,"](#)
- [Section A.6, "Method 4 - Moving Average,"](#) [Section A.7, "Method 5 - Linear Approximation,"](#)
- [Section A.7, "Method 5 - Linear Approximation,"](#)
- [Section A.8, "Method 6 - Least Square Regression,"](#)
- [Section A.9, "Method 7 - Second Degree Approximation,"](#)
- [Section A.10, "Method 8 - Flexible Method,"](#)
- [Section A.11, "Method 9 - Weighted Moving Average,"](#)
- [Section A.12, "Method 10 - Linear Smoothing,"](#)
- [Section A.13, "Method 11 - Exponential Smoothing,"](#)
- [Section A.14, "Method 12 - Exponential Smoothing with Trend and Seasonality,"](#)
- [Section A.15, "Evaluating the Forecasts,"](#)
- [Section A.16, "Mean Absolute Deviation \(MAD\)."](#)

### A.1 Forecast Calculation Methods

Twelve methods of calculating forecasts are available. Most of these methods provide for limited user control. For example, the weight placed on recent historical data or the date range of historical data used in the calculations might be specified. The following examples show the calculation procedure for each of the available forecasting methods, given an identical set of historical data.

The following examples use the same 2004 and 2005 sales data to produce a 2006 sales forecast. In addition to the forecast calculation, each example includes a simulated 2005 forecast for a three month holdout period (processing option 19 = '3') which is then used for percent of accuracy and mean absolute deviation calculations (actual sales compared to simulated forecast).

## A.2 Forecast Performance Evaluation Criteria

Depending on your selection of processing options and on the trends and patterns existing in the sales data, some forecasting methods will perform better than others for a given historical data set. A forecasting method that is appropriate for one product may 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 will remain appropriate throughout the entire life cycle.

You can choose between two methods to evaluate the current performance of the forecasting methods. These are 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 best fit (PBF). The data in this period is used as the basis for recommending which of the forecasting methods to use in making the next forecast projection. This recommendation is specific to each product, and may change from one forecast generation to the next. The two forecast performance evaluation methods are demonstrated in the pages following the examples of the twelve forecasting methods.

## A.3 Method 1 - Specified Percent Over Last Year

This method multiplies sales data from the previous year by a user specified factor; for example, 1.10 for a 10% increase, or 0.97 for a 3% decrease.

Required sales history: One year for calculating the forecast plus the user specified number of time periods for evaluating forecast performance (processing option 19).

Month	2004 Sales	2005 Sales	2006 Forecast	Simulated 2005 Forecast
January	125	128	147	
February	132	117	135	
March	115	115	132	
April	137	125	144	
May	122	122	140	
June	130	137	158	
July	141	129	148	
August	128	140	161	
September	118	131	151	
October	123	114	131	141.45
November	139	119	137	159.85
December	133	137	158	152.95

### A.3.1 Forecast Calculation

User specified factor (processing option 1a) = 1.15 in this example.

### A.3.2 Simulated Forecast Calculation

October, 2004 sales =  $123 * 1.15 = 141.45$

November, 2004 sales =  $139 * 1.15 = 159.85$

December, 2004 sales =  $133 * 1.15 = 152.95$

### A.3.3 Percent of Accuracy Calculation

$$\text{POA} = (141.45 + 159.85 + 152.95) / (114 + 119 + 137) * 100 = 454.25 / 370 = 122.770$$

### A.3.4 Mean Absolute Deviation Calculation

$$\text{MAD} = (|141.45 - 114| + |159.85 - 119| + |152.95 - 137|) / 3 = (27.45 + 40.85 + 15.95) / 3 = 84.25 / 3 = 28.08$$

## A.4 Method 2 - Calculated Percent Over Last Year

This method multiplies sales data from the previous year by a factor calculated by the system.

Required sales history: One year for calculating the forecast plus the user specified number of time periods for evaluating forecast performance (processing option 19).

Month	2004 Sales	2005 Sales	2006 Forecast	Simulated 2005 Forecast
January	125	128	120	
February	132	117	110	
March	115	115	108	
April	137	125	117	
May	122	122	114	
June	130	137	128	
July	141	129	121	
August	128	140	131	
September	118	131	123	
October	123	114	107	127.13178
November	139	119	111	143.66925
December	133	137	128	137.4677

### A.4.1 Forecast Calculation

Range of sales history to use in calculating growth factor (processing option 2a) = 3 in this example.

Sum the final three months of 2005:  $114 + 119 + 137 = 370$

Sum the same three months for the previous year:  $123 + 139 + 133 = 395$

The calculated factor =  $370 / 395 = 0.9367$

Calculate the forecasts:

January, 2005 sales =  $128 * 0.9367 = 119.8036$  or about 120

February, 2005 sales =  $117 * 0.9367 = 109.5939$  or about 110

March, 2005 sales =  $115 * 0.9367 = 107.7205$  or about 108

## A.4.2 Simulated Forecast Calculation

Sum the three months of 2005 prior to holdout period (July, Aug, Sept):

$$129 + 140 + 131 = 400$$

Sum the same three months for the previous year:

$$141 + 128 + 118 = 387$$

The calculated factor =  $400 / 387 = 1.033591731$

Calculate simulated forecast:

$$\text{October, 2004 sales} = 123 * 1.033591731 = 127.13178$$

$$\text{November, 2004 sales} = 139 * 1.033591731 = 143.66925$$

$$\text{December, 2004 sales} = 133 * 1.033591731 = 137.4677$$

## A.4.3 Percent of Accuracy Calculation

$$\text{POA} = (127.13178 + 143.66925 + 137.4677) / (114 + 119 + 137) * 100 = 408.26873 / 370 * 100 = 110.3429$$

## A.4.4 Mean Absolute Deviation Calculation

$$\text{MAD} = (|127.13178 - 114| + |143.66925 - 119| + |137.4677 - 137|) / 3 = (13.13178 + 24.66925 + 0.4677) / 3 = 12.75624$$

## A.5 Method 3 - Last year to This Year

This method copies sales data from the previous year to the next year.

Required sales history: One year for calculating the forecast plus the number of time periods specified for evaluating forecast performance (processing option 19).

Month	2004 Sales	2005 Sales	2006 Forecast	Simulated 2005 Forecast
January	125	128	128	
February	132	117	117	
March	115	115	115	
April	137	125	125	
May	122	122	122	
June	130	137	137	
July	141	129	129	
August	128	140	140	
September	118	131	131	
October	123	114	114	123
November	139	119	119	139
December	133	137	137	133

## A.5.1 Forecast Calculation

January 2005 sales = January 2006 forecast = 128

February 2005 sales = February 2006 forecast = 117

March 2005 sales = March 2006 forecast = 115

### A.5.2 Simulated Forecast Calculation

October 2004 sales = 123

November 2004 sales = 139

December 2004 sales = 133

### A.5.3 Percent of Accuracy Calculation

$$POA = (123 + 139 + 133) / (114 + 119 + 137) * 100 = 395/370 * 100 = 106.7567$$

### A.5.4 Mean Absolute Deviation Calculation

$$MAD = (|123-114| + |139 - 119| + |133 - 137|) / 3 = (9 + 20 + 4) / 3 = 11$$

## A.6 Method 4 - Moving Average

This method averages a user specified number of months (processing option 4a) to project the next months demand.

Required sales history: Twice the number of periods to be included in the average (processing option 4a), plus number of time periods for evaluating forecast performance (processing option 19).

Month	2004 Sales	2005 Sales	2006 Forecast	Simulated 2005 Forecast
January	125	128	123	
February	132	117	126	
March	115	115	129	
April	137	125	126	
May	122	122	127	
June	130	137	127	
July	141	129	127	
August	128	140	127	
September	118	131	127	
October	123	114	127	133.3333
November	139	119	127	128.3333
December	133	137	127	121.3333

### A.6.1 Forecast Calculation

Number of periods to be included in the average (processing option 4a) = 3 in this example

For each month of the forecast, average the previous three month's data.

January forecast:  $114 + 119 + 137 = 370, 370 / 3 = 123.333$  or 123

February forecast:  $119 + 137 + 123 = 379$ ,  $379 / 3 = 126.333$  or 126

March forecast:  $137 + 123 + 126 = 386$ ,  $386 / 3 = 128.667$  or 129

## A.6.2 Simulated Forecast Calculation

October 2005 sales =  $(129 + 140 + 131)/3 = 133.3333$

November 2005 sales =  $(140 + 131 + 114)/3 = 128.3333$

December 2005 sales =  $(131 + 114 + 119)/3 = 121.3333$

## A.6.3 Percent of Accuracy Calculation

POA =  $(133.3333 + 128.3333 + 121.3333) / (114 + 119 + 137) * 100 = 103.513$

## A.6.4 Mean Absolute Deviation Calculation

MAD =  $(|133.3333 - 114| + |128.3333 - 119| + |121.3333 - 137|) / 3 = 14.7777$

## A.7 Method 5 - Linear Approximation

Linear Approximation calculates a trend 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, as long range forecasts are leveraged by small changes in just two data points.

Required sales history: The number of periods to include in regression (processing option 5a), plus 1 plus the number of time periods for evaluating forecast performance (processing option 19).

Month	2004 Sales	2005 Sales	2006 Sales	Simulated 2005 Forecast
January	125	128	149	
February	132	117	160	
March	115	115	172	
April	137	125	183	
May	122	122	195	
June	130	137	206	
July	141	129	218	
August	128	140	229	
September	118	131	241	
October	123	114	252	132
November	139	119	264	101
December	133	137	275	113

### A.7.1 Forecast Calculation

Number of periods to include in regression (processing option 5a) = 3 in this example

For each month of the forecast, add the increase or decrease during the specified periods prior to holdout period the previous period.

January forecast:  $(137 - 114)/2 + 137 = 148.5$  or 149

February forecast:  $(137 - 114)/2 * 2 + 137 = 160$

March forecast:  $(137 - 114)/2 * 3 + 137 = 171.5$  or 172

### A.7.2 Simulated Forecast Calculation

October 2004 sales =  $(131 - 129) / 2 + 131 = 132$

November 2004 sales =  $(114 - 140) / 2 + 114 = 101$

December 2004 sales =  $(119 - 131) / 2 + 119 = 113$

### A.7.3 Percent of Accuracy Calculation

POA =  $(132 + 101 + 113) / (114 + 119 + 137) * 100 = 93.5135$

### A.7.4 Mean Absolute Deviation Calculation

MAD =  $(|132 - 114| + |101 - 119| + |113 - 137|) / 3 = 20$

## A.8 Method 6 - Least Square 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:  $Y = a + bX$ . The 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 would better be described by a curve. When the sales history data follows a curve or has a strong seasonal pattern, forecast bias and systematic errors occur.

Forecast specifications: n = identifies the periods of sales history that will be used in calculating the values for a and b. For example, specify n = 3 to use the history from October through December, 2005 as the basis for the calculations. When data is available a larger n (such as n = 24) would ordinarily be used. LSR will define a line for as few as two data points. For this example, a small value for n (n = 3) was chosen to reduce the manual calculations required to verify the results.

Required sales history: The number of periods to include in regression (processing option 6a) plus the number of time periods for evaluating forecast performance (processing option 19).

Month	2004 Sales	2005 Sales	2006 Forecast	Simulated 2005 Forecast
January	125	128	146	
February	132	117	158	
March	115	115	169	
April	137	125	181	
May	122	122	192	
June	130	137	204	
July	141	129	215	
August	128	140	227	

Month	2004 Sales	2005 Sales	2006 Forecast	Simulated 2005 Forecast
September	118	131	238	
October	123	114	250	135.333
November	139	119	261	102.333
December	133	137	273	109.333

### A.8.1 Forecast Calculation

Number of periods to include in regression (processing option 6a) = 3 in this example

For each month of the forecast, add the increase or decrease during the specified periods prior to holdout period the previous period.

January forecast:

Average of the previous three months =  $(114 + 119 + 137)/3 = 123.3333$

Summary of the previous three months with weight considered

=  $(114 * 1) + (119 * 2) + (137 * 3) = 763$

Difference between the values

=  $763 - 123.3333 * (1 + 2 + 3) = 23$

Ratio =  $(1^2 + 2^2 + 3^2) - \{(1 + 2 + 3)/3\}^2 * 3 = 14 - 12 = 2$

Value1 = Difference/Ratio =  $23/2 = 11.5$

Value2 = Average - value1 \* ratio =  $123.3333 - 11.5 * 2 = 100.3333$

Forecast =  $(1 + n) * value1 + value2 = 4 * 11.5 + 100.3333 = 146.333$  or 146

February forecast:

Forecast =  $5 * 11.5 + 100.3333 = 157.8333$  or 158

March forecast:

Forecast =  $6 * 11.5 + 100.3333 = 169.3333$  or 169

### A.8.2 Simulated Forecast Calculation

October 2004 sales:

Average of the previous three months

=  $(129 + 140 + 131)/3 = 133.3333$

Summary of the previous three months with weight considered

=  $(129 * 1) + (140 * 2) + (131 * 3) = 802$

Difference between the values

=  $802 - 133.3333 * (1 + 2 + 3) = 2$

Ratio =  $(1^2 + 2^2 + 3^2) - \{(1 + 2 + 3)/3\}^2 * 3 = 14 - 12 = 2$

Value1 = Difference/Ratio =  $2/2 = 1$

Value2 = Average - value1 \* ratio =  $133.3333 - 1 * 2 = 131.3333$

Forecast =  $(1 + n) * value1 + value2 = 4 * 1 + 131.3333 = 135.3333$

November 2004 sales

Average of the previous three months

$$= (140 + 131 + 114) / 3 = 128.3333$$

Summary of the previous three months with weight considered

$$= (140 * 1) + (131 * 2) + (114 * 3) = 744$$

Difference between the values =  $744 - 128.3333 * (1 + 2 + 3) = -25.9999$

Value1 = Difference/Ratio =  $-25.9999 / 2 = -12.9999$

Value2 = Average - value1 \* ratio =  $128.3333 - (-12.9999) * 2 = 154.3333$

Forecast =  $4 * -12.9999 + 154.3333 = 102.3333$

December 2004 sales

Average of the previous three months

$$= (131 + 114 + 119) / 3 = 121.3333$$

Summary of the previous three months with weight considered

$$= (131 * 1) + (114 * 2) + (119 * 3) = 716$$

Difference between the values

$$= 716 - 121.3333 * (1 + 2 + 3) = -11.9999$$

Value1 = Difference/Ratio =  $-11.9999 / 2 = -5.9999$

Value2 = Average - value1 \* ratio =  $121.3333 - (-5.9999) * 2 = 133.3333$

Forecast =  $4 * (-5.9999) + 133.3333 = 109.3333$

### A.8.3 Percent of Accuracy Calculation

$$\text{POA} = (135.33 + 102.33 + 109.33) / (114 + 119 + 137) * 100 = 93.78$$

### A.8.4 Mean Absolute Deviation Calculation

$$\text{MAD} = (|135.33 - 114| + |102.33 - 119| + |109.33 - 137|) / 3 = 21.88$$

## A.9 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. However, this method determines values for a, b, and c in the forecast formula  $Y = a + bX + cX^2$  with the objective of fitting a curve to the sales history data. This method may be useful when a product is in the transition between stages of a life cycle. For example, when a new product moves from introduction to growth stages, the sales trend may 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). Therefore, this method is useful only in the short term.

Forecast specifications: The formulae finds a, b, and c to fit a curve to exactly three points. You specify n in the processing option 7a, 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 are combined into the first point, Q1. July through September are added together to create Q2, and October through December sum to Q3. The curve will be 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 required for evaluating the forecast performance (PBF).

Month	2004 Sales	2005 Sales	2006 Forecast	Simulated 2005 Forecast
January	125	128	98	
February	132	117	98	
March	115	115	98	
April	137	125	57	
May	122	122	57	
June	130	137	57	
July	141	129	1	
August	128	140	1	
September	118	131	1	
October	123	114		136
November	139	119		136
December	133	137		136

### A.9.1 Forecast Calculation

Number of periods to include (processing option 7a) = 3 in this example

Use the previous  $(3 * n)$  months in three-month blocks:

$$Q1(\text{Apr - Jun}) = 125 + 122 + 137 = 384$$

$$Q2(\text{Jul - Sep}) = 129 + 140 + 131 = 400$$

$$Q3(\text{Oct - Dec}) = 114 + 119 + 137 = 370$$

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

$$(1) Q1 = a + bX + cX^2 \text{ (where } X = 1\text{)} = a + b + c$$

$$(2) Q2 = a + bX + cX^2 \text{ (where } X = 2\text{)} = a + 2b + 4c$$

$$(3) Q3 = a + bX + cX^2 \text{ (where } X = 3\text{)} = a + 3b + 9c$$

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)

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

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

Finally, substitute these equations for  $a$  and  $b$  into equation (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:

$a = Q3 - 3(Q2 - Q1) = 370 - 3(400 - 384) = 322$   
 $c = [(Q3 - Q2) + (Q1 - Q2)]/2 = [(370 - 400) + (384 - 400)]/2 = -23$   
 $b = (Q2 - Q1) - 3c = (400 - 384) - (3 * -23) = 85$   
 $Y = a + bX + cX^2 = 322 + 85X + (-23)X^2$   
 January thru March forecast (X=4):  
 $(322 + 340 - 368)/3 = 294/3 = 98$  per period  
 April thru June forecast (X=5):  
 $(322 + 425 - 575)/3 = 57.333$  or 57 per period  
 July thru September forecast (X=6):  
 $(322 + 510 - 828)/3 = 1.33$  or 1 per period  
 October thru December (X=7)  
 $(322 + 595 - 1127)/3 = -70$

### A.9.2 Simulated Forecast Calculation

October, November and December, 2004 sales:

$Q1(\text{Jan - Mar}) = 360$   
 $Q2(\text{Apr - Jun}) = 384$   
 $Q3(\text{Jul - Sep}) = 400$   
 $a = 400 - 3(384 - 360) = 328$   
 $c = [(400 - 384) + (360 - 384)]/2 = -4$   
 $b = (384 - 360) - 3 * (-4) = 36$   
 $[328 + 36 * 4 + (-4) * 16]/3 = 136$

### A.9.3 Percent of Accuracy Calculation

$$\text{POA} = (136 + 136 + 136) / (114 + 119 + 137) * 100 = 110.27$$

### A.9.4 Mean Absolute Deviation Calculation

$$\text{MAD} = (|136 - 114| + |136 - 119| + |136 - 137|) / 3 = 13.33$$

## A.10 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, 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. The Flexible Method adds the capability to specify a time period other than the same period last year to use as the basis for the calculations.

Forecast specifications:

- Multiplication factor. For example, specify 1.15 in the processing option 8b to increase the previous sales history data by 15%.
- Base period. For example, n = 3 will cause the first forecast to be based upon sales data in October, 2005.

Minimum sales history: The user specified number of periods back to the base period, plus the number of time periods required for evaluating the forecast performance (PBF).

Month	2004 Sales	2005 Sales	2006 Sales	Simulated 2005 Forecast
January	125	128	131	
February	132	117	137	
March	115	115	158	
April	137	125	151	
May	122	122	157	
June	130	137	181	
July	141	129	173	
August	128	140	181	
September	118	131	208	
October	123	114	199	148.35
November	139	119	208	161
December	133	137	240	150.65

### A.10.1 Forecast Calculation

Number of periods prior (processing option 8a) = 3, and the percent over the previous period (processing option 8b) is 1.15 in this example

For each month of the forecast, multiple the sales history n periods prior by the specified percent

January forecast:  $(114 * 1.15) = 131.1$  or 131

February forecast:  $(119 * 1.15) = 136.85$  or 137

March forecast:  $(137 * 1.15) = 157.55$  or 158

### A.10.2 Simulated Forecast Calculation

October 2004 sales =  $129 * 1.15 = 148.35$

November 2004 sales =  $140 * 1.15 = 161$

December 2004 sales =  $131 * 1.15 = 150.65$

### A.10.3 Percent of Accuracy Calculation

$POA = (148 + 161 + 151) / (114 + 119 + 137) * 100 = 124.32$

### A.10.4 Mean Absolute Deviation Calculation

$MAD = (|148 - 114| + |161 - 119| + |151 - 137|) / 3 = 30$

## A.11 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 this makes WMA more responsive to shifts in the level of sales. However, forecast bias and systematic errors still do occur when the product sales history exhibits strong trend or seasonal patterns. This method works better for short range forecasts of mature products rather 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  $n = 3$  in the processing option 9a to use the most recent three 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 will be slow to recognize shifts in the level of sales. On the other hand, a small value for  $n$  (such as 3) will respond quicker to shifts in the level of sales, but the forecast may fluctuate so widely that production can not respond to the variations.
- The weight assigned to each of the historical data periods. The assigned weights must total to 1.00. For example, when  $n = 3$ , assign weights of 0.6, 0.3, and 0.1, with the most recent data receiving the greatest weight.

Minimum required sales history:  $n$  plus the number of time periods required for evaluating the forecast performance (PBF).

Month	2004 Sales	2005 Sales	2006 Forecast	Simulated 2005 Forecast
January	125	128	129	
February	132	117	131	
March	115	115	131	
April	137	125	131	
May	122	122	131	
June	130	137	131	
July	141	129	131	
August	128	140	131	
September	118	131	131	
October	123	114	131	133.5
November	139	119	131	121.7
December	133	137	131	118.7

### A.11.1 Forecast Calculation

Number of periods prior (processing option 9a) = 3, and the weight for one, two and three periods prior (processing option 9b, 9c and 9d) are 0.6, 0.3, and 0.1 in this example.

January forecast:  $137 * 0.6 + 119 * 0.3 + 114 * 0.1 = 129.3$  or 129

February forecast:  $129.3 * 0.6 + 137 * 0.3 + 119 * 0.1 = 130.58$  or 131

March forecast:  $131 * 0.6 + 129 * 0.3 + 137 * 0.1 = 130.748$  or 131

### A.11.2 Simulated Forecast Calculation

$$\text{October 2004 sales} = 129 * 0.1 + 140 * 0.3 * 131 * 0.6 = 133.5$$

$$\text{November 2004 sales} = 140 * 0.1 + 131 * 0.3 + 114 * 0.6 = 121.7$$

$$\text{December 2004 sales} = 131 * 0.1 + 114 * 0.3 + 119 * 0.6 = 118.7$$

### A.11.3 Percent of Accuracy Calculation

$$\text{POA} = (133.5 + 121.7 + 118.7) / (114 + 119 + 137) * 100 = 101.05$$

### A.11.4 Mean Absolute Deviation Calculation

$$\text{MAD} = (|133.5 - 114| + |121.7 - 119| + |118.7 - 137|) / 3 = 13.5$$

## A.12 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.

As is true of 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 rather 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. This is specified in the processing option 10a. For example, specify  $n = 3$  in the processing option 10b to use the most recent three periods as the basis for the projection into the next time period. The system will automatically assign the weights to the historical data that decline linearly and sum to 1.00. For example, when  $n = 3$ , the system will assign weights of 0.5, 0.3333, and 0.1, with the most recent data receiving the greatest weight.

Minimum required sales history:  $n$  plus the number of time periods required for evaluating the forecast performance (PBF).

Month	2004 Sales	2005 Sales	2006 Forecast	Simulated 2005 Forecast
January	125	128		
February	132	117	127	
March	115	115	129	
April	137	125	130	
May	122	122	129	
June	130	137	129	
July	141	129	129	
August	128	140	129	
September	118	131	129	
October	123	114	129	133.6666
November	139	119	129	124

Month	2004 Sales	2005 Sales	2006 Forecast	Simulated 2005 Forecast
December	133	137	129	119.3333

### A.12.1 Forecast Calculation

Number of periods to include in smoothing average (processing option 10a) = 3 in this example

Ratio for one period prior =  $3/(n^2 + n)/2 = 3/(3^2 + 3)/2 = 3/6 = 0.5$

Ratio for two periods prior =  $2/(n^2 + n)/2 = 2/(3^2 + 3)/2 = 2/6 = 0.3333..$

Ratio for three periods prior =  $1/(n^2 + n)/2 = 1/(3^2 + 3)/2 = 1/6 = 0.1666..$

January forecast:  $137 * 0.5 + 119 * 1/3 + 114 * 1/6 = 127.16$  or 127

February forecast:  $127 * 0.5 + 137 * 1/3 * 119 * 1/6 = 129$

March forecast:  $129 * 0.5 + 127 * 1/3 * 137 * 1/6 = 129.666$  or 130

### A.12.2 Simulated Forecast Calculation

October 2004 sales =  $129 * 1/6 + 140 * 2/6 * 131 * 3/6 = 133.6666$

November 2004 sales =  $140 * 1/6 + 131 * 2/6 + 114 * 3/6 = 124$

December 2004 sales =  $131 * 1/6 + 114 * 2/6 + 119 * 3/6 = 119.3333$

### A.12.3 Percent of Accuracy Calculation

POA =  $(133.6666 + 124 + 119.3333) / (114 + 119 + 137) * 100 = 101.891$

### A.12.4 Mean Absolute Deviation Calculation

MAD =  $(|133.6666 - 114| + |124 - 119| + |119.3333 - 137|) / 3 = 14.1111$

## A.13 Method 11 - Exponential Smoothing

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

Forecast =  $a$  (Previous Actual Sales) +  $(1 - a)$  Previous Forecast

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

You should assign a value for the smoothing constant,  $a$ . If you do not assign values for the smoothing constant, the system calculates an assumed value based upon the number of periods of sales history specified in the processing option 11a.

Forecast specifications:

- $a$  = the smoothing constant used in calculating the smoothed average for the general level or magnitude of sales. Valid values for  $a$  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  $n$  ( $n = 3$ ) was chosen in order to reduce the manual calculations required to verify the results. Exponential smoothing can generate a forecast based on as little as one historical data point.

Minimum required sales history:  $n$  plus the number of time periods required for evaluating the forecast performance (PBF).

Month	2004 Sales	2005 Sales	2006 Sales	Simulated 2005 Forecasts
January	125	128	127	
February	132	117	127	
March	115	115	127	
April	137	125	127	
May	122	122	127	
June	130	137	127	
July	141	129	127	
August	128	140	127	
September	118	131	127	
October	123	114	127	133.6666
November	139	119	127	124
December	133	137	127	119.3333

### A.13.1 Forecast Calculation

Number of periods to include in smoothing average (processing option 11a) = 3, and alpha factor (processing option 11b) = blank in this example

a factor for the oldest sales data =  $2/(1+1)$ , or 1 when alpha is specified

a factor for the 2nd oldest sales data =  $2/(1+2)$ , or alpha when alpha is specified

a factor for the 3rd oldest sales data =  $2/(1+3)$ , or alpha when alpha is specified

a factor for the most recent sales data =  $2/(1+n)$ , or alpha when alpha is specified

November Sm. Avg. =  $a$  (October Actual) +  $(1 - a)$  October Sm. Avg. =  $1 * 114 + 0 * 0 = 114$

December Sm. Avg. =  $a$  (November Actual) +  $(1 - a)$  November Sm. Avg. =  $2/3 * 119 + 1/3 * 114 = 117.3333$

January Forecast =  $a$  (December Actual) +  $(1 - a)$  December Sm. Avg. =  $2/4 * 137 + 2/4 * 117.3333 = 127.16665$  or 127

February Forecast = January Forecast = 127

March Forecast = January Forecast = 127

### A.13.2 Simulated Forecast Calculation

July, 2004 Sm. Avg. =  $2/2 * 129 = 129$

August Sm. Avg. =  $2/3 * 140 + 1/3 * 129 = 136.3333$

September Sm. Avg. =  $2/4 * 131 + 2/4 * 136.3333 = 133.6666$

October, 2004 sales = Sep Sm. Avg. = 133.6666

August, 2004 Sm. Avg. =  $2/2 * 140 = 140$

September Sm. Avg. =  $2/3 * 131 + 1/3 * 140 = 134$

October Sm. Avg. =  $2/4 * 114 + 2/4 * 134 = 124$

November, 2004 sales = Sep Sm. Avg. = 124

September 2004 Sm. Avg. =  $2/2 * 131 = 131$

October Sm. Avg. =  $2/3 * 114 + 1/3 * 131 = 119.6666$

November Sm. Avg. =  $2/4 * 119 + 2/4 * 119.6666 = 119.3333$

December 2004 sales = Sep Sm. Avg. = 119.3333

### A.13.3 Percent of Accuracy Calculation

$$POA = (133.6666 + 124 + 119.3333) / (114 + 119 + 137) * 100 = 101.891$$

### A.13.4 Mean Absolute Deviation Calculation

$$MAD = (|133.6666 - 114| + |124 - 119| + |119.3333 - 137|) / 3 = 14.1111$$

## A.14 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 adjusted for a linear trend. When specified in the processing option, the forecast is also adjusted for seasonality.

Forecast specifications:

- a = the smoothing constant used in calculating the smoothed average for the general level or magnitude of sales. Valid values for alpha range from 0 to 1.
- b = 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:** a and b are independent of each other. They do not have to add to 1.0.

---

Minimum required sales history: two years plus the number of time periods required for evaluating the forecast performance (PBF).

Method 12 uses two exponential smoothing equations and one simple average to calculate a smoothed average, a smoothed trend, and a simple average seasonal factor.

### A.14.1 Forecast Calculation

- A) An exponentially smoothed average

**Figure A-1**

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

B) An exponentially smoothed trend

**Figure A-2**

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

C) A simple average seasonal index

**Figure A-3**

$$S_t = \left( \frac{D_{t-L} + D_{t-2L} + \dots + D_{t-(L-1)L}}{\sum_{n=(t-2L)}^{n=(t-1)} D_n} \right)$$

When a is not specified in the processing option, it is calculated.

When b is not specified in the processing option, it is calculated.

---

**Note:** A "t" is considered 6 when it is 6 or greater.

---

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

D)

**Figure A-4**

$$\beta_t = \frac{2}{t+1}$$

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 indexed to the appropriate time periods

Month	2003 Sales	2004 Sales	2005 Sales	2006 Forecast	Simulated 2005 Forecast
January		115	115	116	
February		137	125	132	
March		122	122	123	
April		130	137	135	

Month	2003 Sales	2004 Sales	2005 Sales	2006 Forecast	Simulated 2005 Forecast
May		141	129	137	
June		128	140	136	
July		118	131	127	
August	118	123	114	121	122.81
September	121	139	119	132	133.14
October	130	133	137	139	135.33
November		1543	1514		
December					
Total					

## A.14.2 Forecast Calculation

Alpha, and beta factor (processing option 12a, and 12b) = blank, and seasonality (processing option 13c) is '1' in this example

Description	Calculation
January, 05 Seasonal Index, S1	$= (125 + 128) / (1543 + 1514) * 12$ $= 0.99313$
January, 05 Smoothed Average, A1	$= \text{Jan, 05 Actual} / \text{Jan, 05 Seasonal Index}$ $= 128 / 0.99313$ $= 128.885$
January, 05 Smoothed Trend, T1	= 0 insufficient information to calculate first smoothed trend
February Seasonal Index, S2	$= (132 + 117) / (1543 + 1514) * 12$ $= 0.97742$
February Smoothed Average, A2	$= 122.7519$
February Smoothed Trend, T2	$= 2/3 * (122.7519 - 128.885) + 1/3 * 0$ $= -4.088733$
March Seasonal Index, S3	$= (115 + 115) / 3057 * 12 = 0.90284$
March Smoothed Average, A3	$= 2/4 * 115 / 0.90284 + 2/4 * [122.7519 + (-4.088733)] = 123.01950$
March Smoothed Trend, T3	$= 2/4 (123.01950 - 122.7519) + 2/4 (-4.0888733) = -1.91063665$
(Continued through December '06)	
December '06 Seasonal Index, S12	$= (133 + 137) / 3057 * 12 = 1.05986$
December Smoothed Average, A12	$= (2/13)137 / 1.05986 + (11/13)(A11 + T11) = 19.8865 + 107.47247 = 127.35897$

## Calculation of Linear and Seasonal Exponentially Smoothed Forecast

$$\text{January '06} = (A12+T12)S1 = (127.35897 + 0.28814 * 1) * 0.99313 = 126.77 \text{ or } 127$$

$$\text{February '06} = (A12+T12)S2 = (127.35897 + 0.28814 * 2) * 0.9774 = 125.04 \text{ or } 125$$

$$\text{March '06} = (A12+T12)S3 = (127.35897 + 0.28814 * 3) * 0.902845 = 115.77 \text{ or } 116$$

$$\text{December '06} = (A12+T12)S12 = (127.35897 + 0.28814 * 12) * 1.059862 = 138.65 \text{ or } 139$$

**A.14.3 Simulated Forecast Calculation**

Description	Calculation
October, 04 Seasonal Index, S1	= $(118 + 123)/(3056) * 12$ = 0.94633
October, 04 Smoothed Average, A1	= $a * \text{Oct, 04 Actual}/\text{Oct, 04 Seasonal Index}$ = $123/0.94633$ = 129.9758
October, 04 Smoothed Trend, T1	= 0 insufficient information to calculate first smoothed trend
(Continued through September '05)	
September, 05 Seasonal Index, S12	= $(118 + 131)/(3056) * 12$ = 0.97774869
September, 05 Smoothed Average, A12	= $2/13 * 131/0.97774869 + 11/13 * (A11 + T11)$ = 129.1410
September, 05 Smoothed Trend, T12	= $2/7 * (129.141025630 - A11) + 5/7 * T11 = 0.6343542$

$$\text{October 2005 sales} = (A12 + T12 * 1)S1 = (129.1410 + 0.6343542 * 1) * 0.94633 = 129.775379872 * 0.94633 = 122.81$$

$$\text{November 2005 sales} = (A12 + T12 * 2)S2 = (129.1410 + 0.6343542 * 2) * 1.02094236 = 133.14$$

$$\text{December 2005 sales} = (A12 + T12 * 3)S3 = (129.1410 + 0.6343542 * 3) * 1.032722508 = 135.33$$

**A.14.4 Percent of Accuracy Calculation**

$$\text{POA} = (122.81 + 133.14 + 135.33) / (114 + 119 + 137) * 100 = 105.75$$

**A.14.5 Mean Absolute Deviation Calculation**

$$\text{MAD} = (|122.81 - 114| + |133.14 - 119| + |135.33 - 137|) / 3 = 8.2$$

**A.15 Evaluating the Forecasts**

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

The system automatically evaluates performance for each of the forecasting methods that you select, and for each of the products 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. This period of recent history is called a "holdout period" or "periods best fit" (PBF).

To measure the performance of a forecasting method, use the forecast formulae to simulate a forecast for the historical holdout period. There will usually be differences between actual sales data and the simulated forecast for the holdout period.

When multiple forecast methods are selected, 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 producing 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 from one forecast generation to the next.

## A.16 Mean Absolute Deviation (MAD)

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, there is a simple mathematical relationship between MAD and two other common measures of distribution, standard deviation and Mean Squared Error:

### A.16.1 Percent of Accuracy (POA)

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, would be an unbiased forecast. The positive error of 10 is canceled by negative errors of 8 and 2.

Error = Actual - 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, it is not so important to eliminate forecast errors as it is to generate unbiased forecasts. However in service industries, the above situation would be viewed as three errors. The service would be understaffed in the first period, then overstaffed for the next two periods. In services, the magnitude of forecast errors is usually more important than is forecast bias.

**Figure A-5**

$$\text{POA} = \frac{\sum \text{Actual sales during holdout period}}{\sum \text{Forecast sales during holdout period}} * 100\%$$

---

**Note:** 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%. Of course, it is impossible to be more than 100% accurate. When a forecast is unbiased, the POA ratio will be 100%. Therefore, it is more desirable to be 95% accurate than to be 110% accurate. The POA criteria select the forecasting method that has a POA ratio closest to 100%.

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# B

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## Functional Servers

This appendix contains the topic:

- [Section B.1, "About Functional Servers."](#)

### B.1 About Functional Servers

Several JD Edwards World programs access functional servers. The purpose of functional servers is to provide a central location for standard business rules about entering documents, such as vouchers, invoices, and journal entries. These business rules establish the following:

- Data dictionary default values
- Field edits and valid values
- Error processing
- Relationships between fields or applications

The advantages of a functional server are:

- It reduces maintenance of entry programs because edit rules reside in one central location.
- You can standardize documents across all applications because you create them using the same business rules.
- Generally, the user interface (appearance and interaction) of a form is now separate from how a program works.

#### To set up business rules for an entry program

The steps for setting up business rules for an entry program are:

1. Create a DREAM Writer version for a specific functional server program (for example, XT0411Z1 for voucher entry).
2. Set the processing options within the version according to your company requirements.
3. Specify the version you want the entry program to use in the processing options for that entry program.

You can have all your entry programs use the same DREAM Writer version (and thus, use the same rules) or you can set up different DREAM Writer versions. JD Edwards World provides DREAM Writer version ZJDE0001 as the default functional server version for your entry programs.

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**Caution:** Only the person responsible for system-wide setup should make changes to the functional server version. For more information about how to set up DREAM Writer versions, see the *JD Edwards World Technical Foundation Guide*.

---

#### **Example: Voucher Processing Functional Server**

The following programs use the voucher processing functional server. JD Edwards World provides two demo versions of the functional server, ZJDE0001 and ZJDE0002.

- Speed Voucher Entry (P040015)
- Standard Voucher Entry (P04105)
- Void Payment Entry (P4704103)
- Credit Tied to Debit Bill (P041010)
- Multi-Voucher (P041017)
- Calculate Withholding (P04580)

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## Import Mass Data into Manufacturing Systems

You can use the Bill of Material Revisions - Z File program (P3002Z) to run Bill of Material Revisions (P3002) in batch mode and accept planning bill data from the Bill of Material Master - Z File Header (F3002HZ) and Detail (F3002DZ) files. This allows you to process mass amounts of data from an outside source easily and efficiently using existing programs to validate the data.

You can process any number of records to add, change, or delete. You also have the advantage of:

- Data selection to limit the records you want to process.
- Processing options that allow you to choose the version of the interactive program to process the records.
- Error report printing.

**See:**

- Import Using Z File Processing in the *JD Edwards World Technical Tools Guide* for detailed information about Z file processing.
- Overview to Import/Export in the *JD Edwards World Technical Tools Guide* for information about importing data into the system.

**Navigation**

From Manufacturing Z File Processes (G3001Z), choose Bill of Materials

**Processing Options**

See [Section 19.6, "Bill of Material Revisions - Z File \(P3002Z\)".](#)

**Data Selection**

Do not change the existing data selection. The Processed Y/N field is set to NE Y. This prevents the program from processing records more than once.

You can add additional selections to limit the data.

**Data Sequence**

Do not change the data sequence.



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