WORLDSOFTWARE®

Guide
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WORLDSOFTWARE®

Forecasting

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JDEdwards®

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J.D. Edwards World Source Company
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Where Do I Look?

CD–ROM Guides

Guides

Technical Foundation

System Administration and Environment Fundamentals

- Understanding Your Environment
- Creating and Maintaining Environments
- Setting Up Security
- Upgrading Your System

Common Foundation

Prerequisite J.D. Edwards Software Fundamentals

- Using Menus
- Getting Help
- Customizing Data
- Reporting

Important Note for Students in Training Classes

This guide is a source book for online helps, training classes, and user reference. Training classes may not cover all the topics contained here.

Welcome

About this Guide

This guide provides overviews, illustrations, procedures, and examples for the current release of J.D. Edwards software. Forms (screens and windows) shown are only examples. If your company operates at a different software level, you might find discrepancies between what is shown in this guide and what you see on your screen.

This guide includes examples to help you understand how to use the system. You can access all of the information about a task using either the guide or the online help.

Before using this guide, you should have a fundamental understanding of the system, user defined codes, and category codes. You should also know how to:

- Use the menus
- Enter information in fields
- Add, change, and delete information
- Create and run report versions
- Access online documentation

Audience

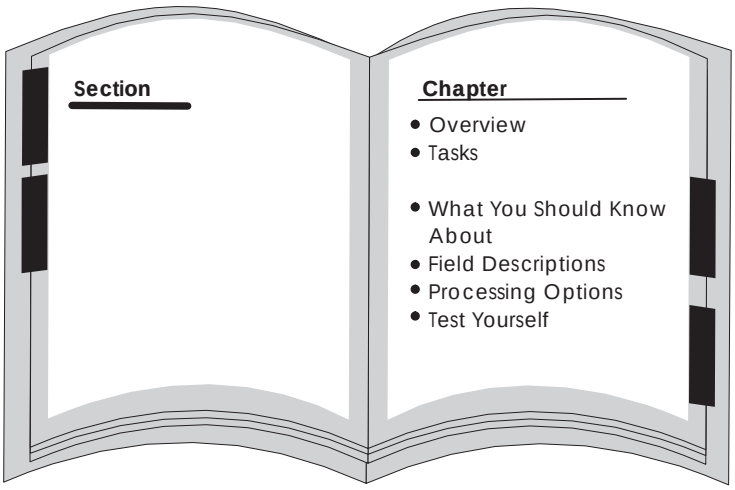
This guide is intended primarily for the following audiences:

- Users
- Classroom instructors
- Client Services personnel
- Consultants and implementation team members

Organization

This guide is divided into sections for each major function. Sections contain chapters for each task or group of related tasks. Each chapter contains the information you need to accomplish the task, run the program, or print the

report. Chapters normally include an overview, form or report samples, and procedures.



When it is appropriate, chapters also might explain automatic accounting instructions, processing options, and warnings or error situations. Some chapters include self-tests for your use outside the classroom.

This guide has a detailed table of contents and an index to help you locate information quickly.

Conventions Used in this Guide

The following terms have specific meanings when used in this guide:

- *Form* refers to a screen or a window.
- *Table* generally means "file."

We assume an "implied completion" at the end of a series of steps. That is, to complete the procedure described in the series of steps, either press Enter or click OK, except where noted.

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Forecasting Overview

Forecasting Overview

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.

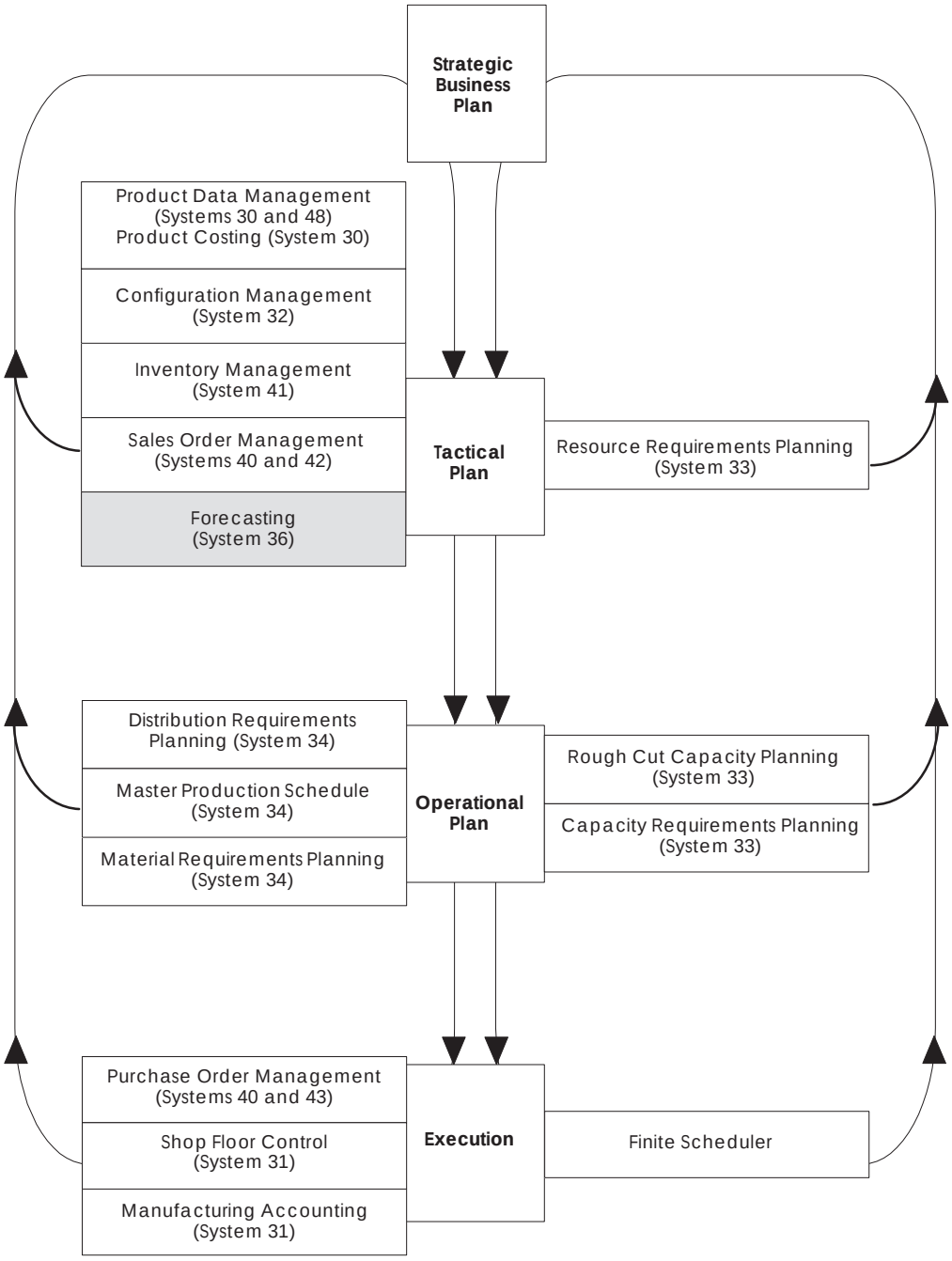
System Integration

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.

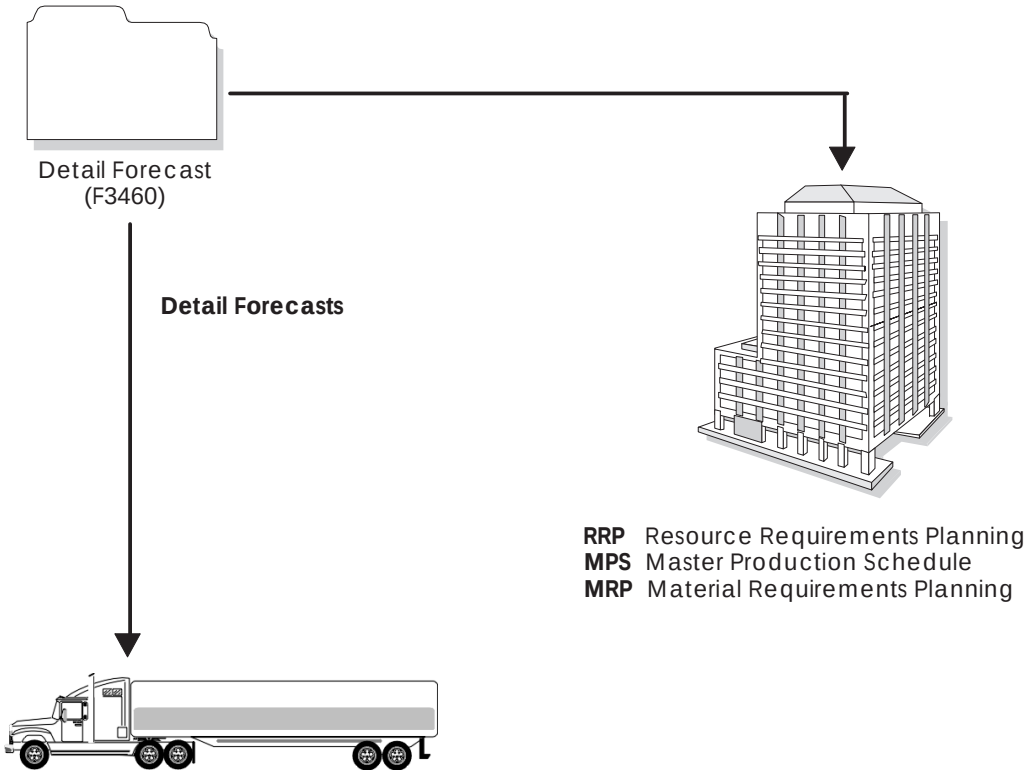
The following systems make up the J.D. Edwards ERPx product group.

ERPx©

Enterprise Requirements Planning and Execution



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



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.

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

Flexibility is a key feature of the J.D. Edwards 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.

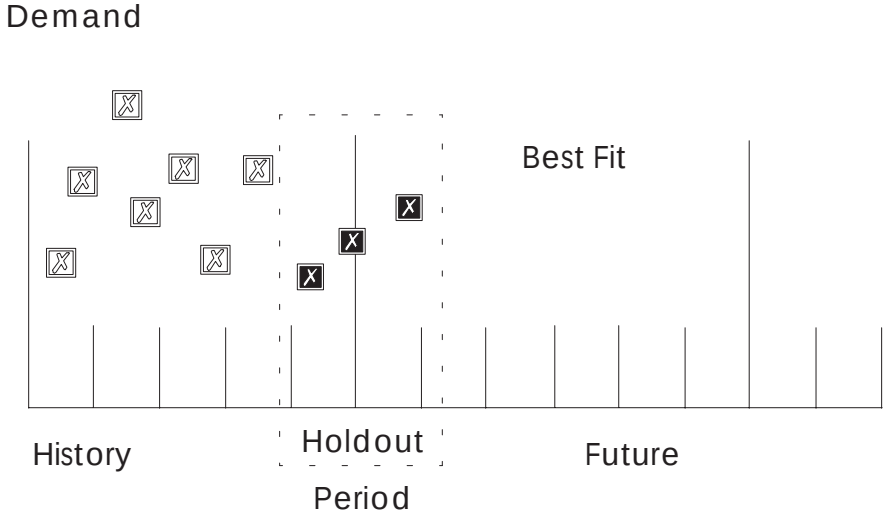
Forecasting Levels and Methods

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.



The system determines the best fit in the following sequence:

1. Uses each of the methods that you selected in processing options to simulate a forecast for the holdout period.
2. Compares actual sales to the simulated forecasts for the holdout period.
3. 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. 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 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 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.

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 3 –

Last Year to This Year

This method uses last year's sales for the following year's forecast. This method requires the periods best fit plus one year of sales order history. It is useful for mature products with level demand or seasonal demand without a trend.

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.

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 6 –

Least Square Regression (LSR)

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.

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.

Method 7 –

Second Degree Approximation

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.

Method 8 –

Flexible Method (Percent Over n Months Prior)

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 9 –

Weighted Moving Average

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.

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.

Method 10 –

Linear Smoothing

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.

This method requires the months best fit plus the number of periods of sales order history from the processing option.

Method 11 –

Exponential Smoothing

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.

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.

Method 12 –

Exponential Smoothing with Trend and Seasonality

The Exponential Smoothing with Trend and Seasonality method calculates a trend, a seasonal index, and an exponentially smoothed average from the sales order history. The system then applies a projection of the trend to the forecast and adjusts for the seasonal index. This method requires months best fit plus two years of sales data and is useful for items that have both trend and seasonality in the forecast. Use the processing options to enter the alpha and beta factor rather than have the system calculate them.

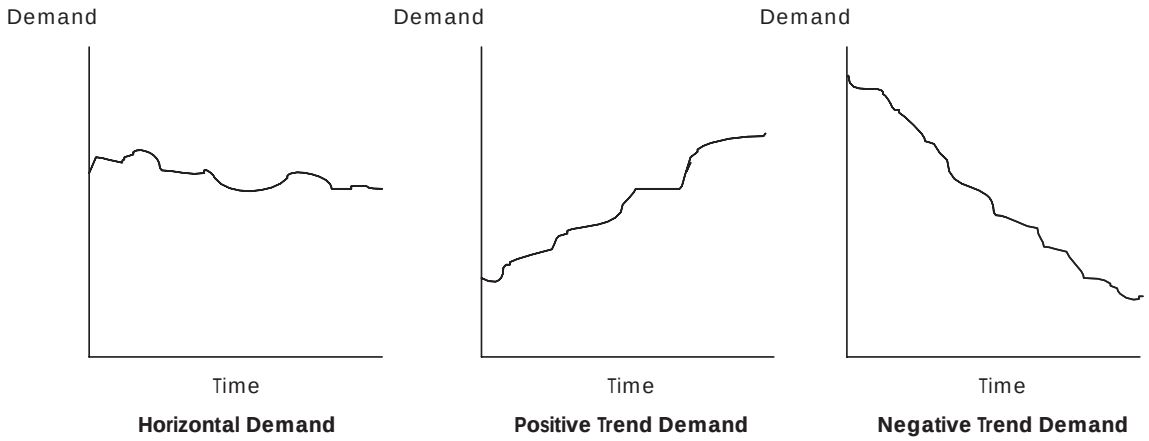
See Also

- *Forecast Calculation Examples* in Appendix B

Demand Patterns

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

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

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.

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

- *Forecast Calculation Examples* in Appendix B

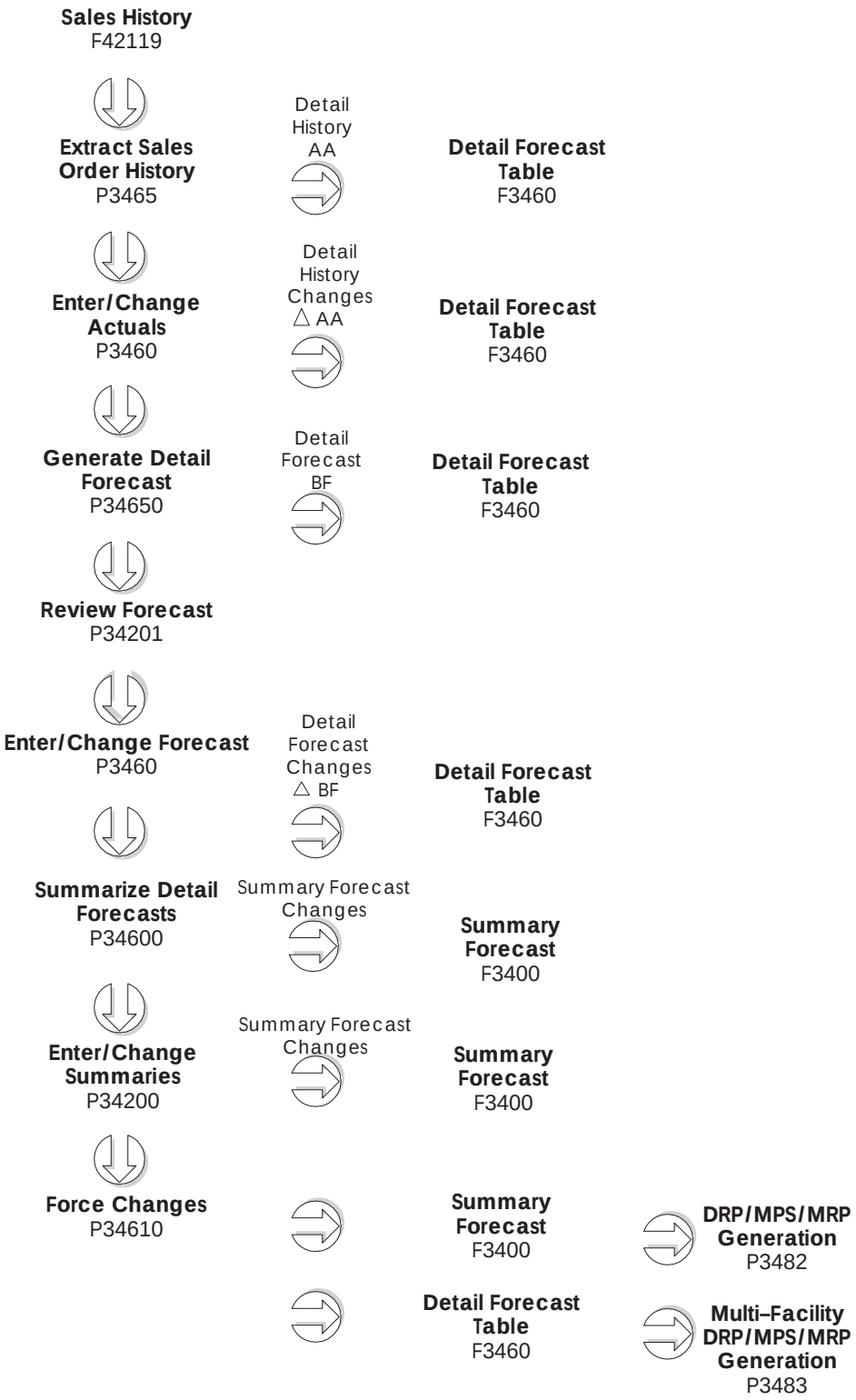
Forecasting Process

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.

Detail Forecasts



Major Tables

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.

Supporting Tables

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 costs, 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).

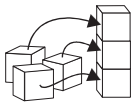
Menu Overview

J.D. Edwards classifies the Forecasting system's menus according to frequency of use.

Menu Overview – Forecasting

Periodic Processes

- Periodic Forecasting Operations G3421



Setup Processes

- Forecasting Setup G3441

Fast Path Commands

The following chart illustrates the fast path commands that you can use to move among the Forecasting menus. From any menu, enter the fast path command at the command line.

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

Detail Forecasts

Detail Forecasts

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

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

Set Up Detail Forecasts

Setting Up Detail Forecasts

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

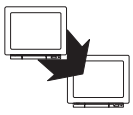
To set up detail forecasts, you must:

- 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

Complete the following tasks:

- ❑ Set up forecasting supply and demand inclusion rules
- ❑ Set up forecasting fiscal date patterns
- ❑ Set up the 52 period date pattern (optional)
- ❑ Set up forecast types

Setting Up Forecasting Supply and Demand Inclusion Rules



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.

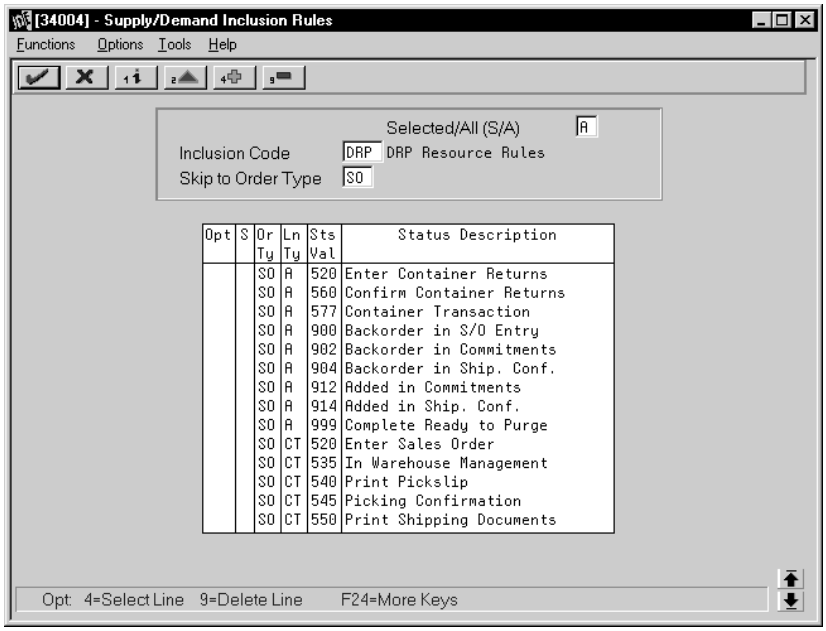
To forecast by weeks, set up a 52 period calendar.

See Also

- *Setting Up Supply/Demand Inclusion Rules (P34004)* in the *Manufacturing and Distribution Planning Guide*
- *Setting Up 52 Period Date Pattern (P0008B)* in the *General Accounting II Guide*

▶ To set up supply and demand inclusion rules

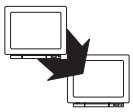
On Supply/Demand Inclusion Rules



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	For World, identifies a group of items that the system can process together, such as reports, business units, or subledgers. For OneWorld, the name of the version. It is created when the version is added.
Or Ty	Order Type
Ln Ty	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: S Stock item J Job cost N Non-stock item F Freight T Text information M Miscellaneous charges and credits W Work order
Sts Val	A user defined code (system 40/type AT) that indicates the status of the line.

Setting Up Forecasting Fiscal Date Patterns



From General Accounting (G09), choose Organization & Account Setup
From Organization & 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.

What You Should Know About

Controlling the date pattern

J.D. Edwards 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.

Fiscal date pattern

The fiscal date pattern must be an annual calendar. For example, January 1 through December 31.

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.

Set up fiscal date patterns for as far back as your sales history extends, and as far forward as you want to forecast.

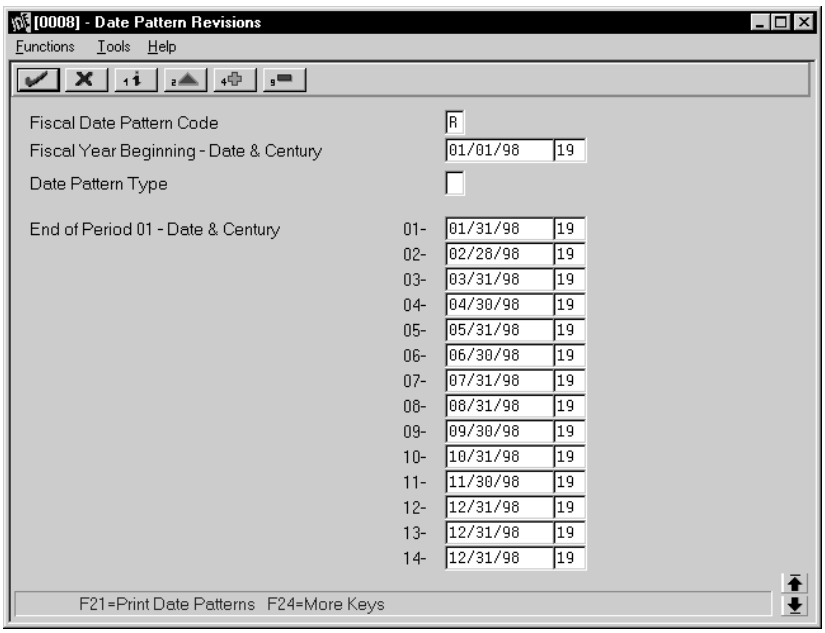
See Also

- *Setting Up the 52 Period Date Pattern (P0008B)* in the *General Accounting II Guide*
- *Setting Up Fiscal Date Patterns (P0008)* in the *General Accounting I Guide*

▶ To set up forecasting fiscal date patterns

On Company Numbers & Names

1. Access Date Pattern Revisions.

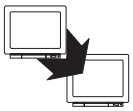


2. On Date Pattern Revisions, complete the following fields:
   - Fiscal Date Pattern Code
   - Fiscal Year Beginning Date
   - Fiscal Year Beginning Century
   - Date Pattern Type
   - End of Period Date
   - End of Period Century

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 Ananlysis 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.

Field	Explanation
End of Period 01 – Date & Century	The month end date in 12 period (monthly) accounting. The period end date in 13 period, 52 period, or 4-4-5 period accounting. . . . . . *Form-specific information* . . . . . . 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.

Setting Up the 52 Period Date Pattern



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

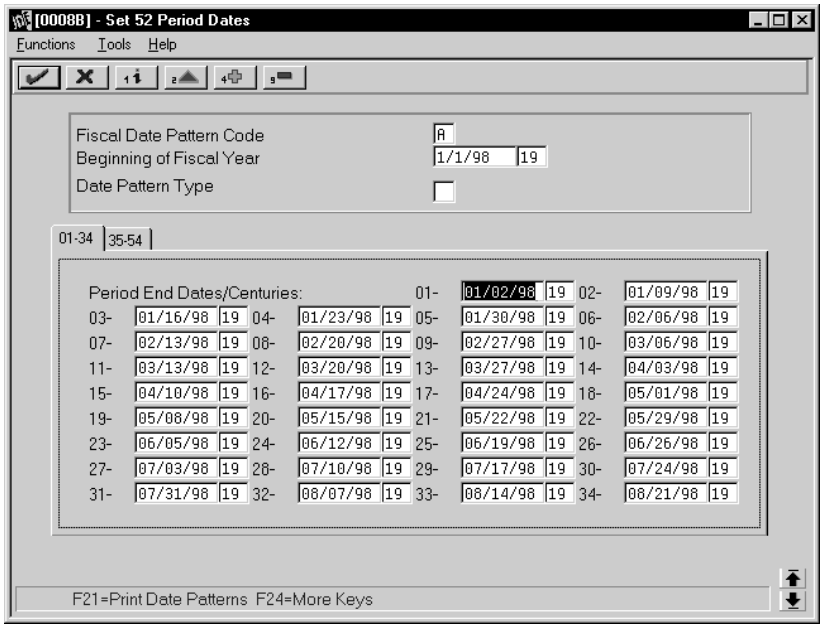
After you set up forecasting fiscal date patterns, you must set up a 52 period pattern for each code to forecast by weeks. When you set up a 52 period date pattern for a forecast, the period-ending dates are weekly instead of monthly.

See Also

- *Setting Up 52 Period Dates (P0008B)* in the *General Accounting II Guide*

▶ To set up the 52 period date pattern

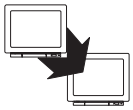
On Set 52 Period Date



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

Setting Up Forecast Types

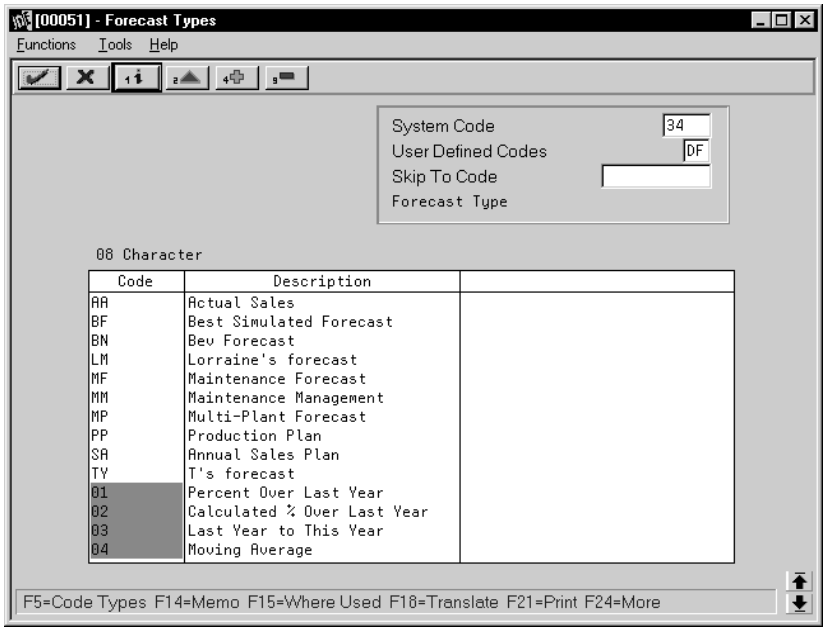


From Periodic Forecasting Operations (G3421), enter 29
From Forecasting Setup (G3441), choose Forecast Types

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



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

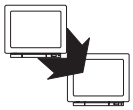
Working with Sales Order History

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.

Complete the following tasks:

- ❑ Copy sales order history
- ❑ Review and revise sales order history

Copying Sales Order History



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.

Before You Begin

❑ Set up the detail forecast generation program. See *Setting Up Detail Forecasts.*

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

See Also

- *Updating Sales Information (P42800)* in the *Sales Order Management Guide* for more information on processes related to the daily updates of sales order history

Processing Options for Extract Sales Order History

PROCESS CONTROL:

1. Enter the Forecast Type for creating Actuals. _____

2. Enter the specific time period to create both the Actuals in the Forecasting File and for creating Summarized Forecasts. (From Date is Required).
   From Date . . . . . _____
   Thru Date . . . . . _____

3. Enter the version of Supply/Demand Inclusion Rules to be used for processing. (Required) _____

4. Enter a '1' to specify weekly planning. If left blank, monthly planning will be used. _____

SUMMARY RECORDS:

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

6. 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:

7. Enter a '1' to create summarized forecast records as well as detail forecast records. Enter a '2' to create only the summarized forecast records. If left blank, only the detail forecast records will be created. _____

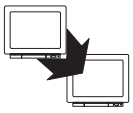
8. Enter the Summary Code to be used to create summarized forecasts. _____

9. 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:

10. 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. _____

Reviewing and Revising Sales Order History



From Material Planning Overview (G34), choose Forecasting

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

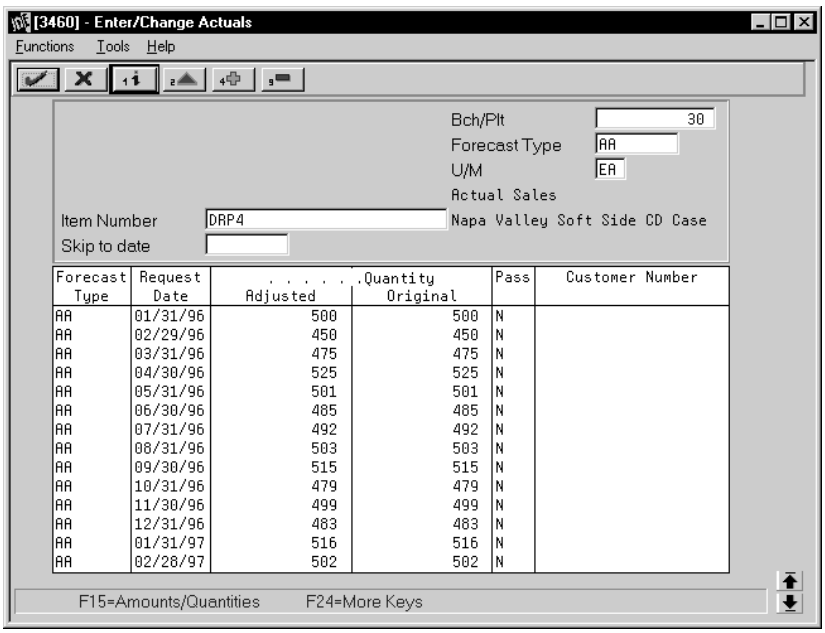
After you copy the sales order history into the Detail Forecast table, you should review the data for spikes, outliers, entry errors, or missing demand that might distort the forecast. You can then revise the sales order history manually to account for these inconsistencies before you generate the forecast.

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

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.

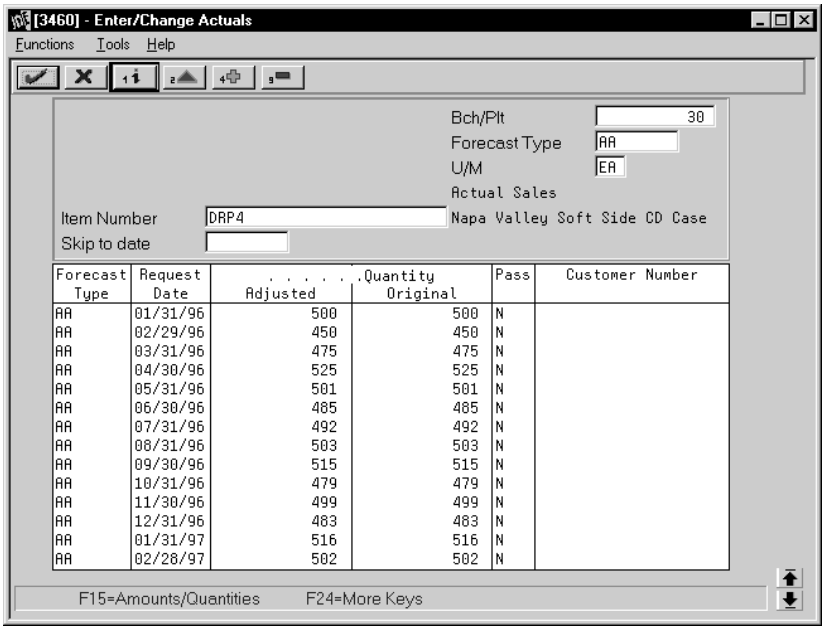


Forecast Type	Request Date	Quantity Adjusted	Quantity Original	Pass	Customer Number
AA	01/31/96	500	500	N	
AA	02/29/96	450	450	N	
AA	03/31/96	475	475	N	
AA	04/30/96	525	525	N	
AA	05/31/96	501	501	N	
AA	06/30/96	485	485	N	
AA	07/31/96	492	492	N	
AA	08/31/96	503	503	N	
AA	09/30/96	515	515	N	
AA	10/31/96	479	479	N	
AA	11/30/96	499	499	N	
AA	12/31/96	483	483	N	
AA	01/31/97	516	516	N	
AA	02/28/97	502	502	N	

In the Quantity Adjusted field, the 775 value 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



Forecast Type	Request Date	Quantity Adjusted	Quantity Original	Pass	Customer Number
AA	01/31/96	500	500	N	
AA	02/29/96	450	450	N	
AA	03/31/96	475	475	N	
AA	04/30/96	525	525	N	
AA	05/31/96	501	501	N	
AA	06/30/96	485	485	N	
AA	07/31/96	492	492	N	
AA	08/31/96	503	503	N	
AA	09/30/96	515	515	N	
AA	10/31/96	479	479	N	
AA	11/30/96	499	499	N	
AA	12/31/96	483	483	N	
AA	01/31/97	516	516	N	
AA	02/28/97	502	502	N	

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

Field	Explanation
Forecast Type	A code from the user defined code table 34/DF that indicates either: • The forecasting method used to calculate the numbers displayed about the item • The actual historical information about the item
Item Number	A number that the system assigns to an item. It can be in short, long, or 3rd item number format.
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.

Field	Explanation
Customer Number	The address number you want to retrieve. You can use the short format, the long format, or the tax ID (preceded by the indicators listed in the Address Book constants).
U/M	A user defined code (00/UM) that indicates the quantity in which to express an inventory item, for example, CS (case) or BX (box). . . . . . *Form-specific information* . . . . . . The Material Requirements Planning system converts this to the primary unit of measure for planning purposes.
Request	The date that an item is to arrive or that an action is to be complete. . . . . . *Form-specific information* . . . . . . Header: Enter a date in the Skip to Date field to display all quantities forecasted on or after that date. Detail: The date on which the items are expected to arrive at a work center.
Adjusted	The quantity of units forecasted for production during a planning period.
Original	The quantity of units affected by this transaction. . . . . . *Form-specific information* . . . . . . The original quantity of units forecasted for production during a planning period.
Item Number	A number that the system assigns to an item. It can be in short, long, or 3rd item number format.
Bch/Plt	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. 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. Security for this field can prevent you from locating business units for which you have no authority. Note: The system uses this value for Journal Entries if you do not enter a value in the AAI table. . . . . . *Form-specific information* . . . . . . On this form, this is the branch/plant for which you are reviewing and revising a sales order history or forecast.

Work with Detail Forecasts

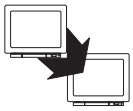
Working with Detail Forecasts

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.

Working with detail forecasts includes the following tasks:

- ❑ Creating detail forecasts
- ❑ Reviewing detail forecasts
- ❑ Revising detail forecasts

Creating Detail Forecasts



From Material Planning Operations (G34), choose Forecasting

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

Create Detail Forecast 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

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 so.

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

Processing Options for Forecast Generation

```
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. _____

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, the 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 '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. _____

FISCAL DATE PATTERN:

22. 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). _____

FORECAST AMOUNTS/QUANTITIES:

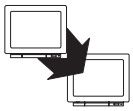
23. Enter a '1' to forecast using amounts. If left blank, quantities will be used to forecast. _____

What You Should Know About Processing Options

Saving records for forecast types 01 to 12 to the Detail Forecast table (F3460)

To save records for any of the forecast types to the Detail Forecast table (F3460), enter the corresponding number in the processing options (01 for type 01, 04 for type 04, and so on). To include any forecast types in a best fit calculation without saving the records, enter 1 (without the 0 preceding it) in the processing options for each type that you want to include.

Reviewing Detail Forecasts



From Material Planning Operations (G34), choose Forecasting

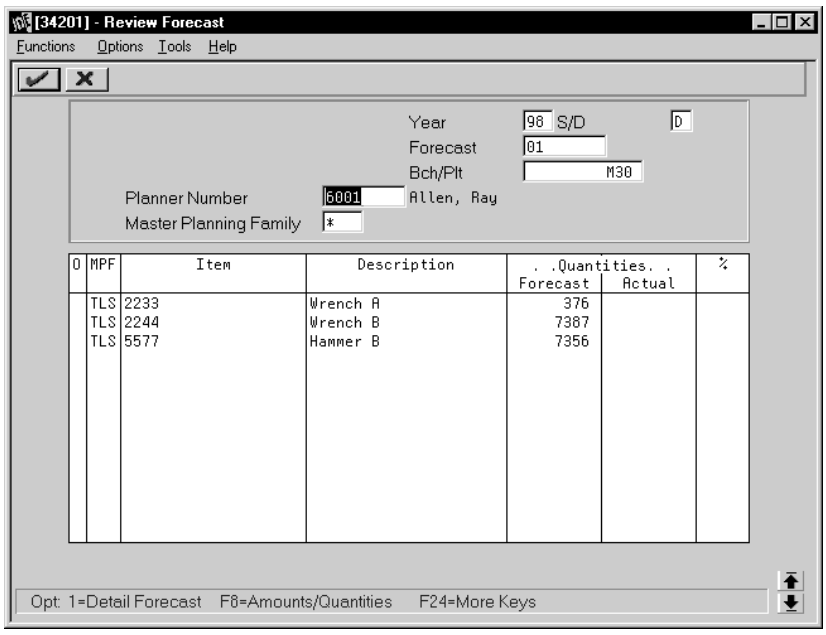
From Periodic Forecasting Operations (G3421), choose Review Forecast

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. Detail mode lists all item numbers. 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



9. Complete the following fields:
   - Year
   - Forecast Type
   - Branch/Plant
10. Complete one of the following fields:
   - Master Planning Family
   - Planner Number
11. Review the following fields:
   - Quantities Forecast
   - Quantities Sales Order History
   - Percent (%)
12. To access the amounts fields, choose Amounts/Quantities.
13. Review the following fields:
   - Amounts Forecast
   - Amounts Sales Order History
14. To display data in detail mode, choose the Detail selection on an item line.

Field	Explanation
Year	The calendar year.

Field	Explanation
Forecast Type	A code from the user defined code table 34/DF that indicates either: • The forecasting method used to calculate the numbers displayed about the item • The actual historical information about the item
Bch/Plt	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. 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. Security for this field can prevent you from locating business units for which you have no authority. Note: The system uses this value for Journal Entries if you do not enter a value in the AAI table. . . . . . *Form-specific information* . . . . . . On this form, this is the branch/plant for which you review and revise a forecast.
Master Planning Family	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. This field is one of six classification categories available primarily for purchasing purposes.
Planner Number	The address number of the material planner for this item. . . . . . *Form-specific information* . . . . . . 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.
Quantities Forecast	The quantity of units affected by this transaction. . . . . . *Form-specific information* . . . . . . The quantity of units in the sales order history on which a forecast is based.

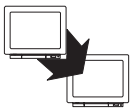
Processing Options for Forecast Review

1. Forecasts are driven by quantities. Enter a 1 if you would prefer to see amounts as the primary forecast. _____

2. You may have multiple concurrent forecasts. Enter the default forecast type _____

3. Enter the forecast type for displaying the actual quantities and amounts. _____

Revising Detail Forecasts



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 the following combination must be unique for each item number and branch record:

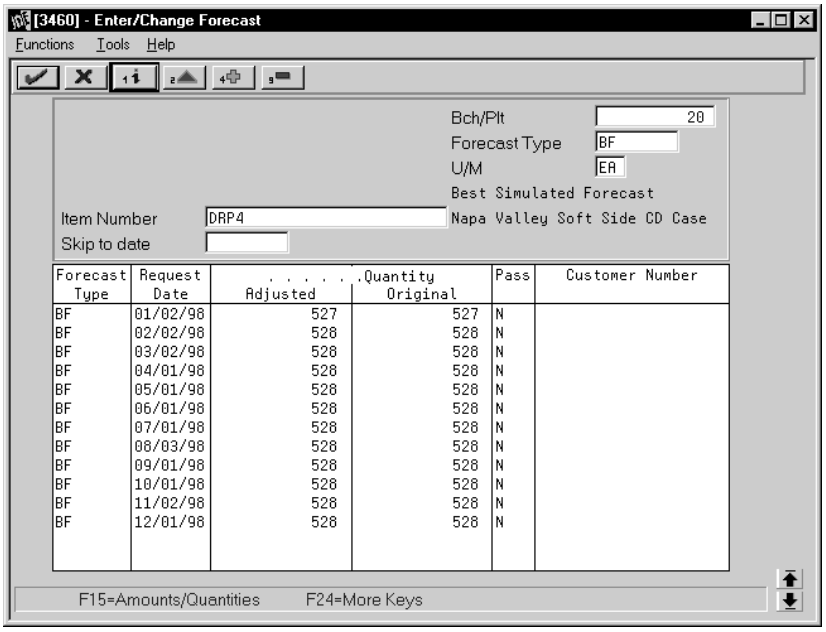
- Forecast type
- Request date
- Customer number

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

Example: Revising a Detail Forecast

You expect increased sales for a specific month. On Enter/Change Forecast, you manually increase the forecast for that month, and add a qualitative forecast for new items with no sales history.

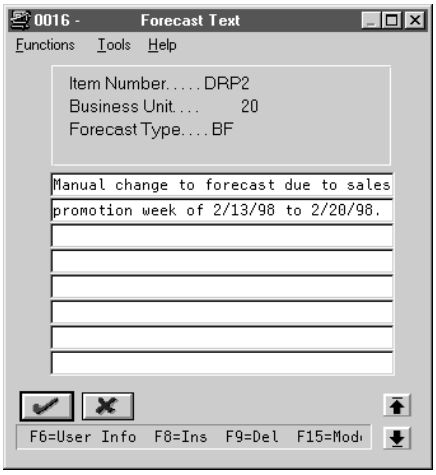
In the following example, the forecast for the CD boxes has been increased for the week of 2/13/98 from 330 to 500 to accommodate the increased sales.



▶ To revise detail forecasts

On Enter/Change Forecast

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.



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

Field	Explanation
Bch/Plt	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. 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. Security for this field can prevent you from locating business units for which you have no authority. Note: The system uses this value for Journal Entries if you do not enter a value in the AAI table. . . . . . *Form-specific information* . . . . . . On this form, this is the branch/plant for which you are reviewing and revising a sales order history or forecast.
Forecast Type	A code from the user defined code table 34/DF that indicates either: • The forecasting method used to calculate the numbers displayed about the item • The actual historical information about the item
U/M	A user defined code (00/UM) that indicates the quantity in which to express an inventory item, for example, CS (case) or BX (box). . . . . . *Form-specific information* . . . . . . The Material Requirements Planning system converts this to the primary unit of measure for planning purposes.

Field	Explanation
Item Number	A number that the system assigns to an item. It can be in short, long, or 3rd item number format.
Original	The quantity of units affected by this transaction. . . . . . *Form-specific information* . . . . . . The original quantity of units forecasted for production during a planning period.
Amount	The current amount of the forecasted units for a planning period.

Processing Options for Detail Forecast Maintenance

```
DEFAULT VALUES:
  1. You may have multiple concurrent          _____________
     forecasts. Enter the default
     forecast type.

  2. Enter a '1' to default the forecast       _____________
     type from the heading into the
     detail records on an add.

DISPLAY MODE:
  3. The forecast is driven by                 _____________
     quantities.  Enter a '1' if you
     would prefer to see amounts as the
     primary forecast.
```

Exercises

See the exercises for this chapter.

Summary Forecasts

Summary Forecasts

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

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

Comparing Summaries of Detail and Summary Forecasts

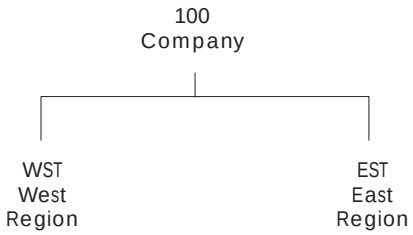
A summary of a detail forecast uses item-level data and predicts future sales in terms of both item quantities and sales amounts.

A summary forecast uses summary data to predict future sales.

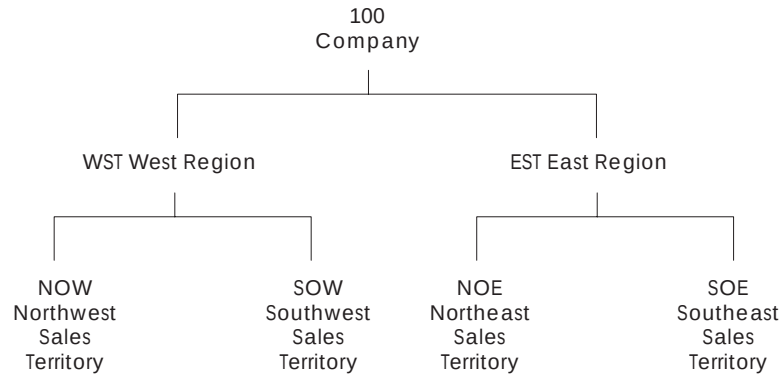
Example: Company Hierarchy

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

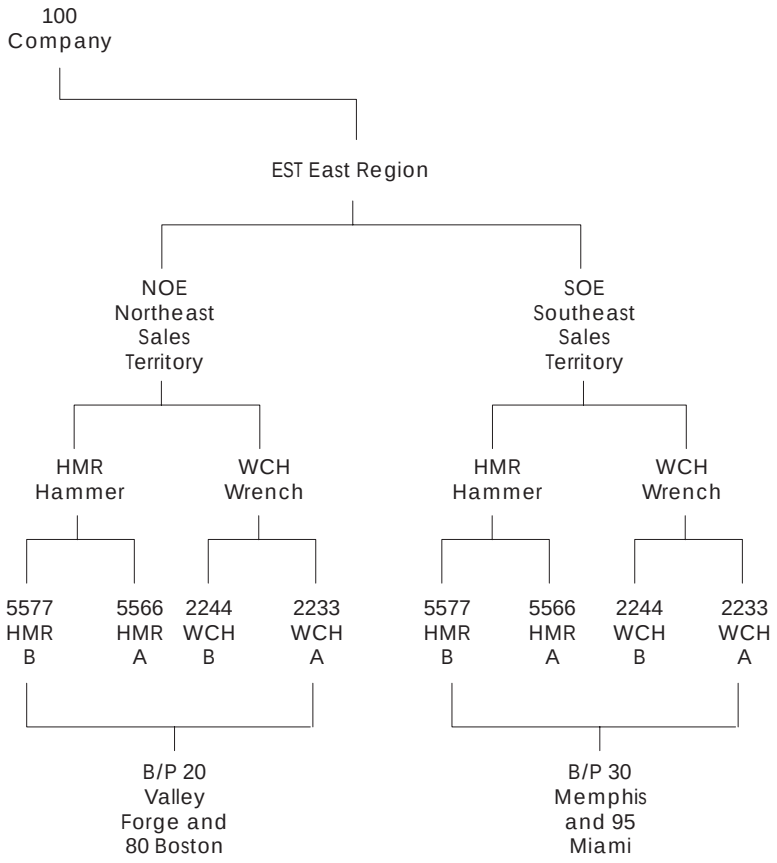
- Company 100 consists of two regions East (EST) and West (WST).

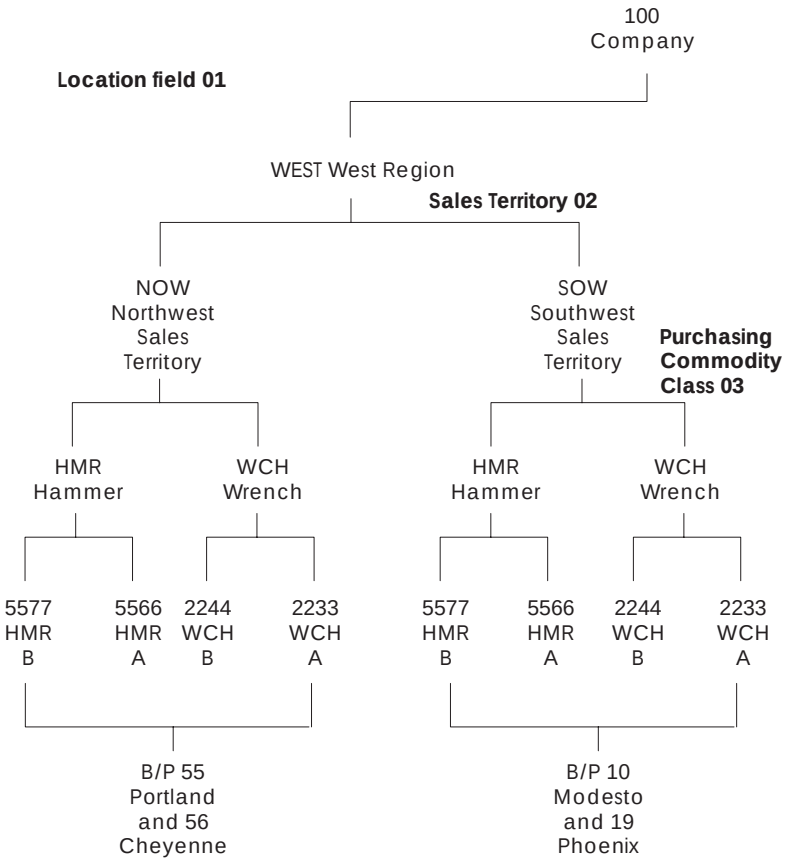


- Within the East Region, there are two sales territories, Southeastern (SOE) and Northeastern (NOE).
- Within the West Region, there are two sales territories, Southwestern (SOW) and Northwestern (NOW).



- 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)


100
Company
EST East Region
NOE
Northeast
Sales
Territory
SOE
Southeast
Sales
Territory
HMR
Hammer
WCH
Wrench
HMR
Hammer
WCH
Wrench
5577
HMR
B
5566
HMR
A
2244
WCH
B
2233
WCH
A
5577
HMR
B
5566
HMR
A
2244
WCH
B
2233
WCH
A
B/P 20
Valley
Forge and
80 Boston
B/P 30
Memphis
and 95
Miami



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

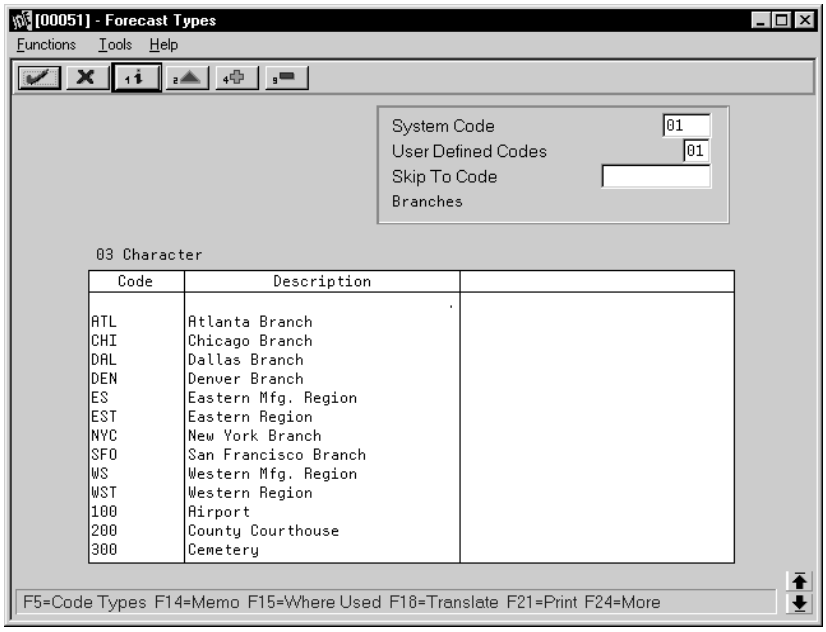
For each hierarchy you define, you must specify a unique identifier called a summary code. You can define for each summary code what each level of the hierarchy represents. Then, you can enter the summary code during summary forecasting programs to indicate which hierarchy you want to work with.

The following chart 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

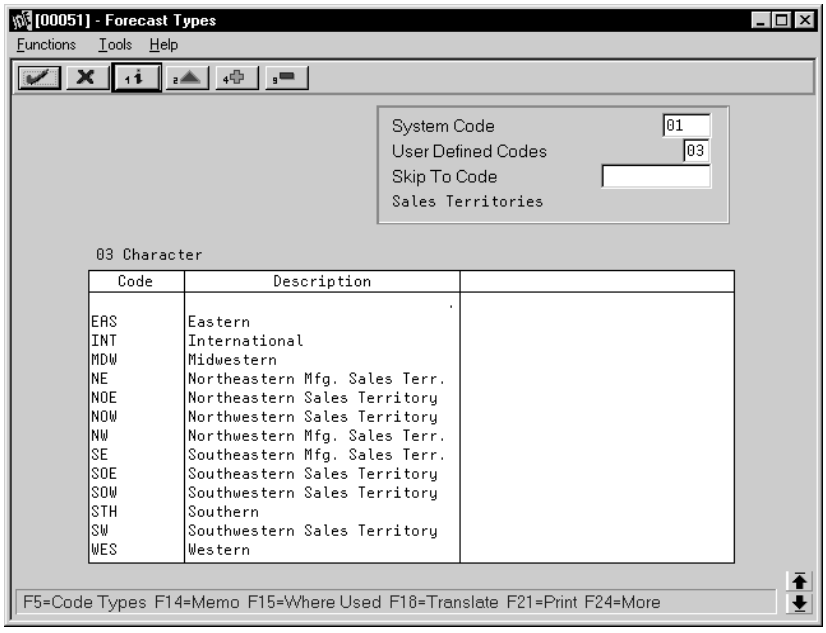
The sample data in the chart includes two sets of user defined codes. You can access the codes at the level that you choose. The location level (UDC 01/01) contains WST and EST.

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



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

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



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

See Also

- *Defining the Distribution Hierarchy (P4091)*

Set Up Summary Forecasts

Setting Up Summary Forecasts

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

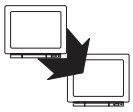
Complete the following tasks:

- ❑ Define distribution hierarchies
- ❑ Revise address book records
- ❑ Review business unit data
- ❑ Review item branch records

Before You Begin

- ❑ Set up detail forecasts. See *Setting Up Detail Forecasts*.
- ❑ Create on paper a map or storyboard diagramming your definition of the company hierarchy. See Summary Forecasts.

Defining Distribution Hierarchies



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:

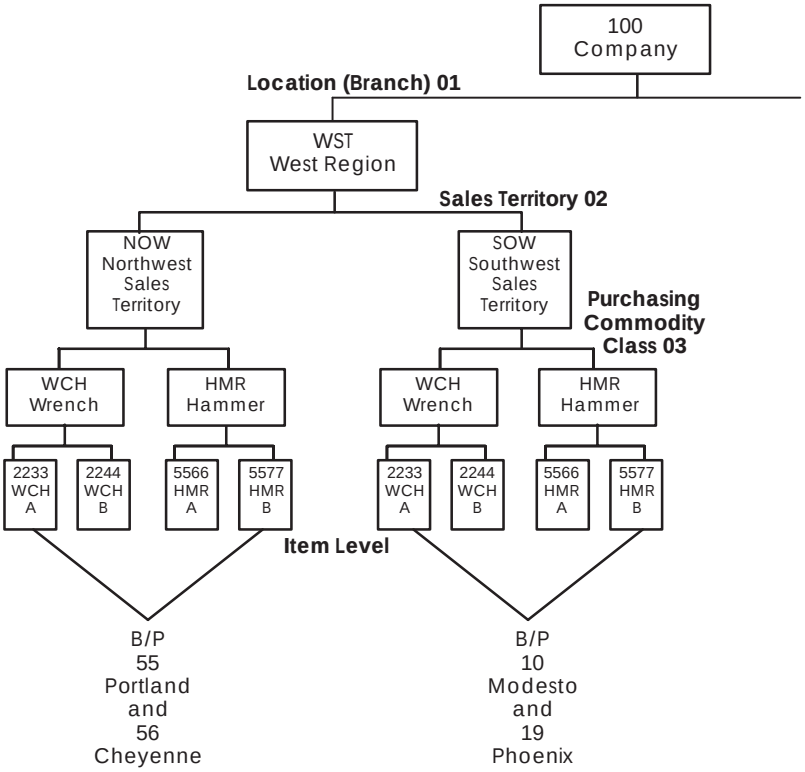
- Set up summary codes
- Assign summary constants

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.

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.



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

1. You set up a West Region summary code WST.

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

2. You assign 01 to Location or Branch.
3. You assign 02 to Sales Territory.
4. You assign 03 to Purchase Commodity Class.
5. You include the item in the hierarchy that will be the last level.

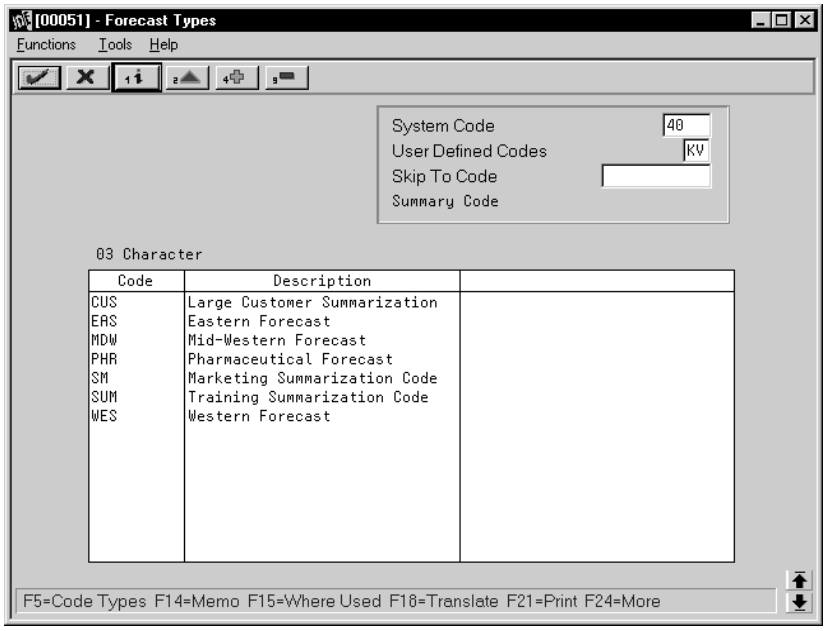
Before You Begin

❑ Update the Sales history. See *Updating Customer Sales* in the *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



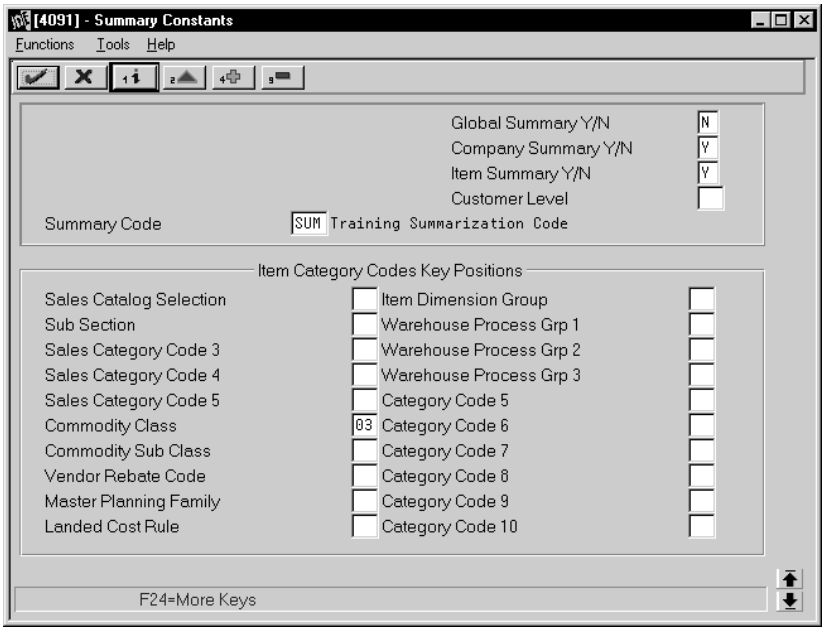
Complete the following fields:

- 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.

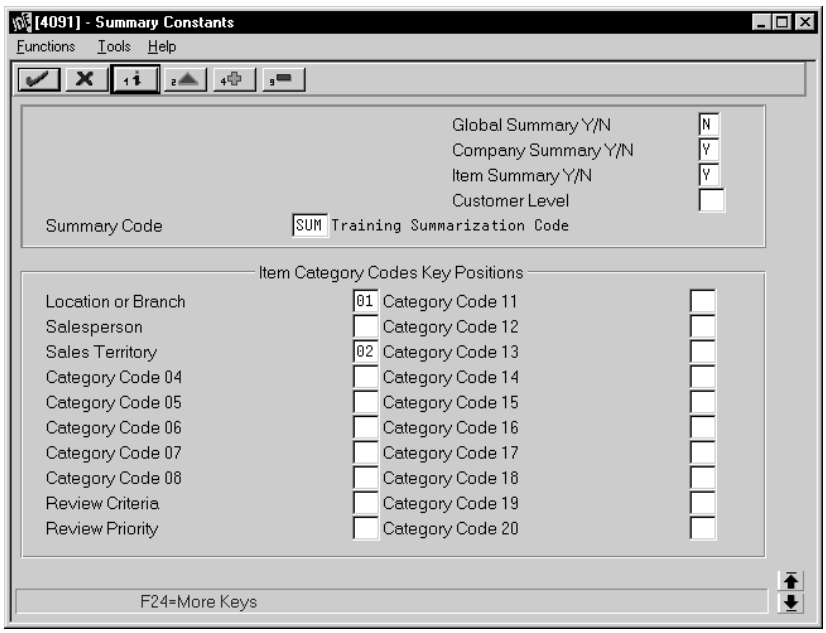
▶ To assign summary constants

On Summary Constants



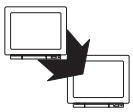
1. To display the sample summary constants, enter SUM in the following field:
   - Summary Code
2. Complete the following field (for your own code):
   - Summary Code
3. Complete the following fields:
   - Global Summary Y/N
   - Company Summary Y/N
   - Item Summary Y/N
   - Customer Level
4. To specify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

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



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.

Revising Address Book Records



From Master Directory (G), choose Address Book

From Account Budgeting (G14), choose Other Budgeting Methods

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

Before You Begin

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

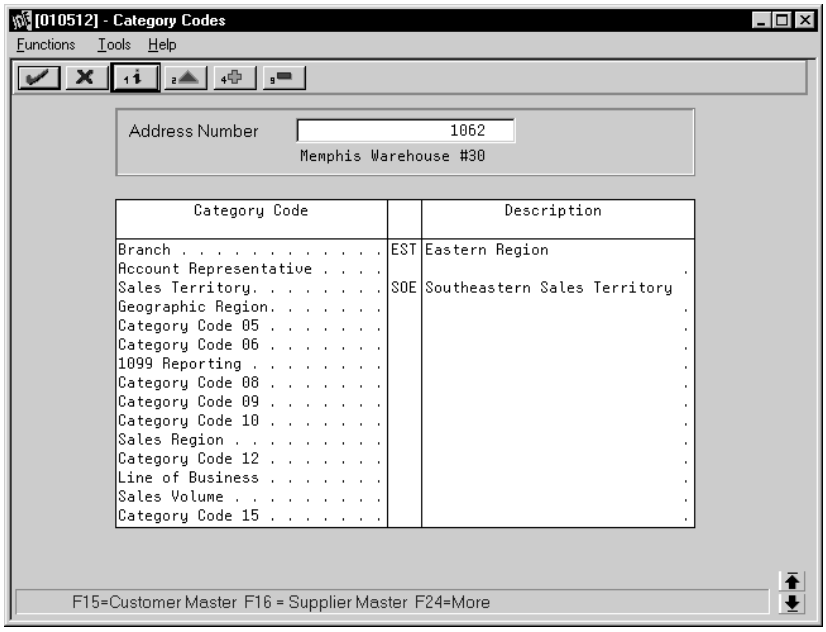
See Also

- *Working with Basic Address Book Information (P01051)* in the *Address Book Guide*

To enter category codes

On Address Book Revisions

1. Access Category Codes.



2. On Category Codes, complete the following fields:
   - Address Number
   - Category Codes

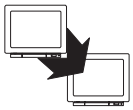
   The following field contains default information:

   - Alpha Name

Field	Explanation
Address Number	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. . . . . . *Form-specific information* . . . . . . If you leave this field blank, the system assigns a number using the Next Numbers program.

Field	Explanation
Alpha Name	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.

Reviewing Business Unit Data



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

From Organization & Account Setup (G09411), choose an option

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.

Before You Begin

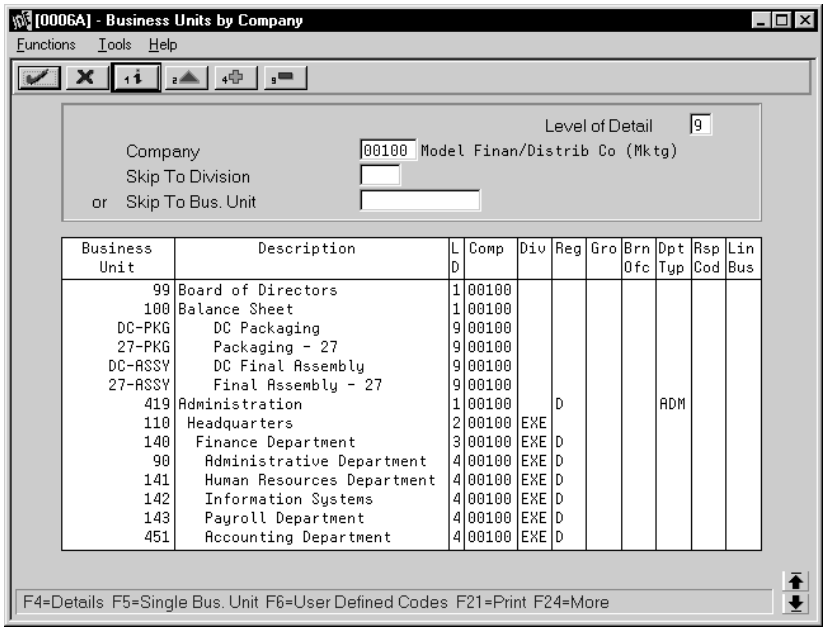
❑ Set up the address numbers for each business unit

See Also

- *Setting Up Business Units (P0006A)* in the *General Accounting I Guide*

To review business unit data

On Business Units by Company



Business Unit	Description	LD	Comp	Div	Reg	Gro	Brn Ofc	Dpt Typ	Rsp Cod	Lin Bus
99	Board of Directors	1	00100							
100	Balance Sheet	1	00100							
DC-PKG	DC Packaging	9	00100							
27-PKG	Packaging - 27	9	00100							
DC-ASSY	DC Final Assembly	9	00100							
27-ASSY	Final Assembly - 27	9	00100							
419	Administration	1	00100		D			ADM		
110	Headquarters	2	00100	EXE						
140	Finance Department	3	00100	EXE	D					
90	Administrative Department	4	00100	EXE	D					
141	Human Resources Department	4	00100	EXE	D					
142	Information Systems	4	00100	EXE	D					
143	Payroll Department	4	00100	EXE	D					
451	Accounting Department	4	00100	EXE	D					

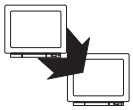
1. Complete the following field:
   - Company
2. To verify that the business units correspond to the level of detail in the distribution hierarchy you set up, review the following field:
   - Level of Detail (LD)

Field	Explanation
Company	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. NOTE: You can use company 00000 for default values, such as dates and automatic accounting instructions (AAIs). You cannot use it for transaction entries. . . . . . *Form-specific information* . . . . . . 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.

What You Should Know About

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.

Reviewing Item Branch Records



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

From Inventory Master/Transaction (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.

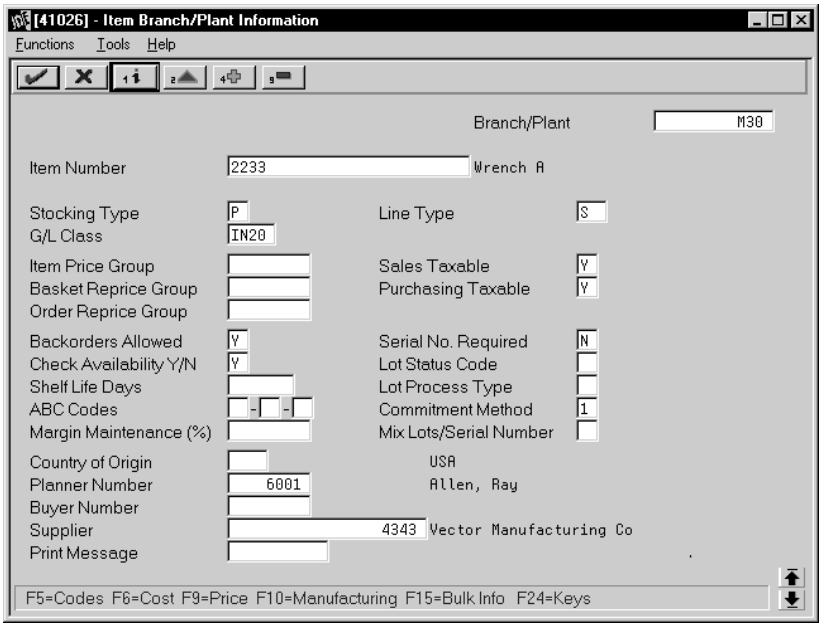
For example, you select Commodity Class as part of the hierarchy for summary code SUM. To include Wrench A (item 2233) in summary code SUM, you must verify that the value WCH appears in the Item Branch/Plant Information record for item 2233 as the category code for Commodity Class.

See Also

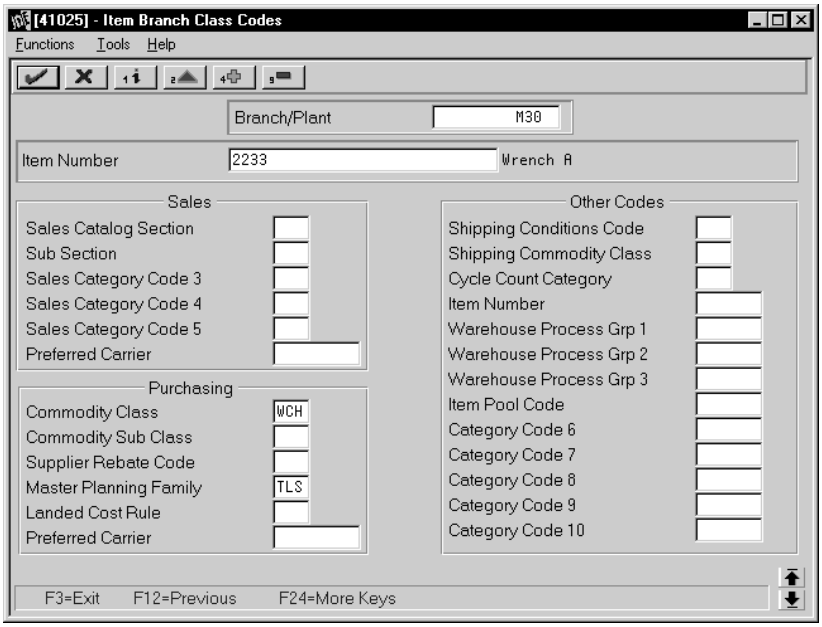
- *Defining the Distribution Hierarchy (P4091)*

To review item branch records

On Item Branch/Plant Information



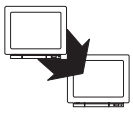
1. Complete the following field:
   - Item Number
2. Access Item Branch Class Codes.



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

Generate Summaries of Detail Forecasts

Generating Summaries of Detail Forecasts



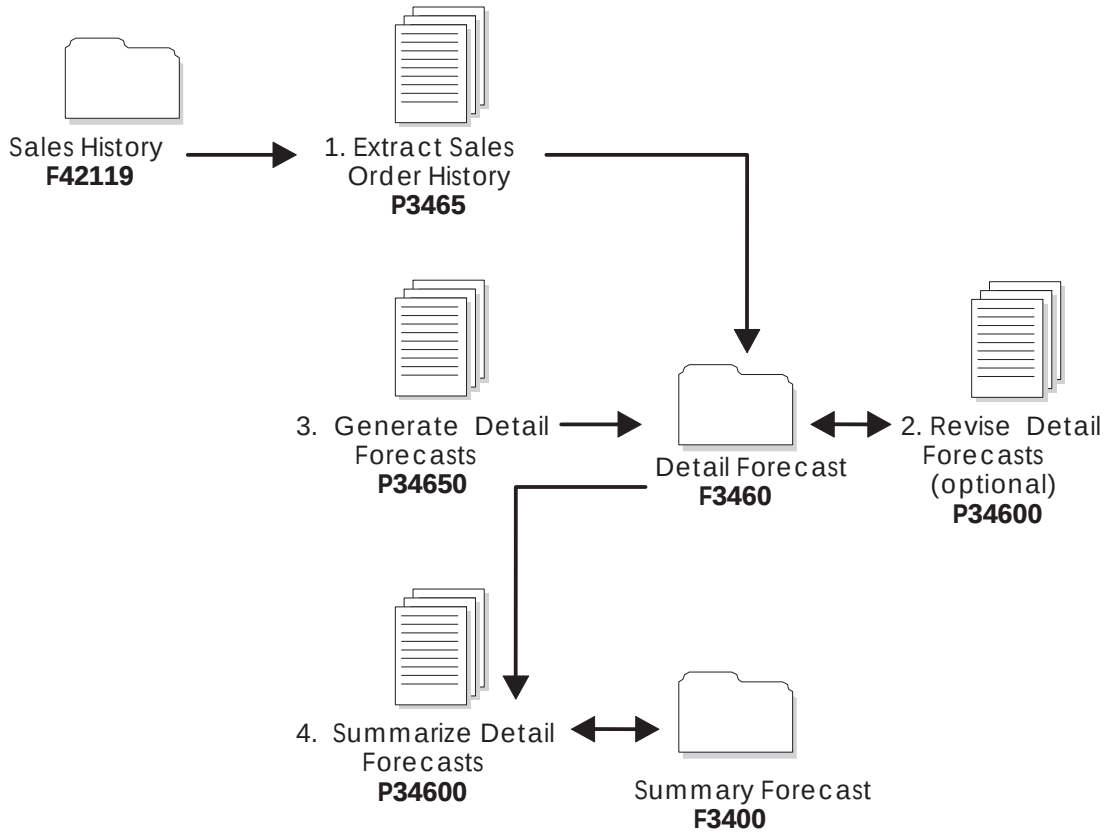
From Material Planning Operations (G34), choose Forecasting

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.



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.

Before You Begin

- ❑ Run the Generate Detail Forecast program

What You Should Know About

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

Processing Options for Summary Forecast Update – Batch

PROCESS CONTROL :

1.) Enter the Summary Code you wish to run the summary for. _____

2.) Enter the Forecast Type you wish to run the Summary for. _____

3.) If you wish the Forecast to include only a specific time period, enter the from and thru date.

From Date. . . . . _____
Thru Date. . . . . _____

PROCESS CONTROL (Cont) :

4.) 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. _____

Work with Summaries of Forecasts

Working with Summaries of Forecasts

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

When you review summaries of forecasts, you can also access a previously generated forecast. You can access a date range to 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.

Complete the following tasks:

- ❑ Review a summary forecast
- ❑ Revise a summary forecast
- ❑ Revise summary forecasts using Force Changes (optional)

Before You Begin

- ❑ Generate a summary forecast or a summary of detail forecast. See *Generating Summary Forecasts* or *Generating Summaries of Detail Forecasts*.
- ❑ Enter the summary code you want to access in the appropriate processing option.

Reviewing a Summary Forecast

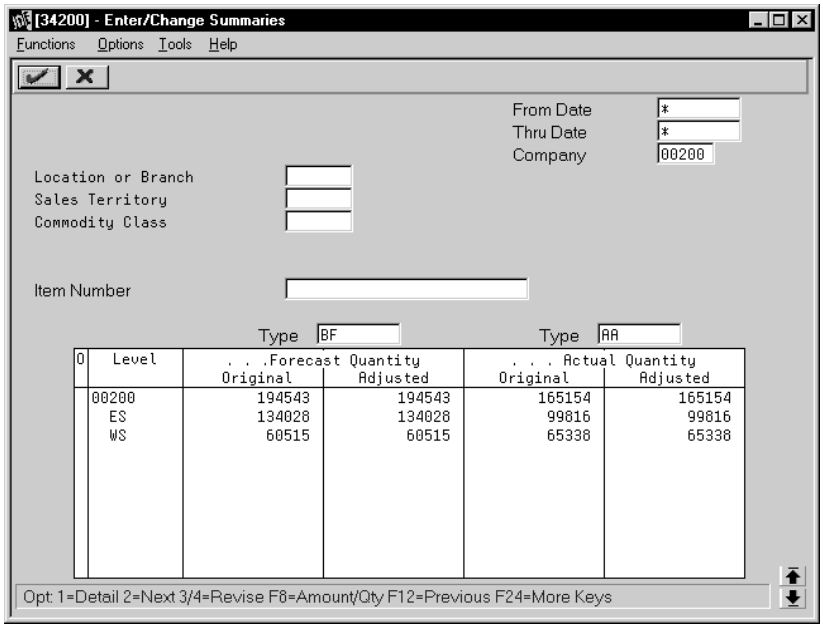
From Material Planning Operations (G34), choose Forecasting

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

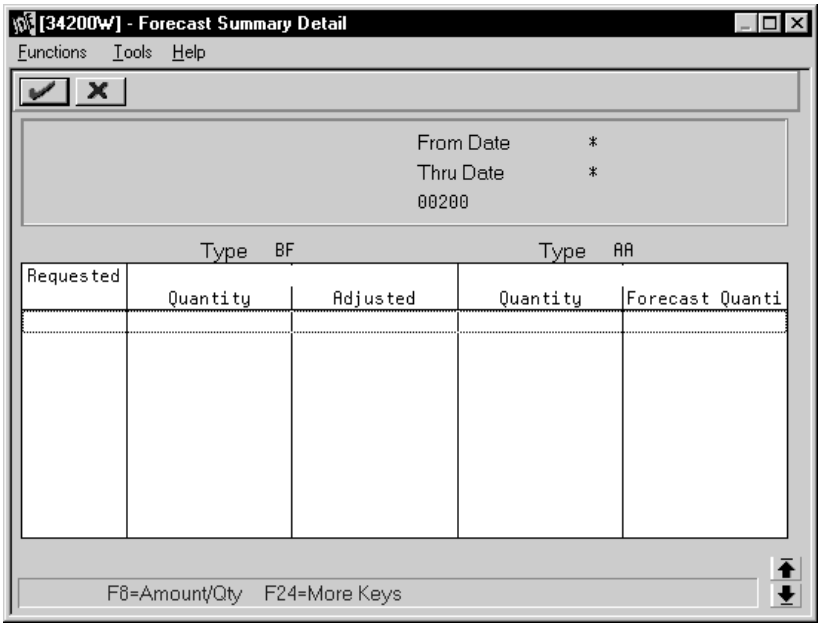
When you review summaries of forecasts, you can also access a previously generated forecast. You can access a date range to display the sales order history and the forecast of item quantities or sales amounts. Then, you can compare actual sales to the forecast.

▶ To review a summary forecast

On Enter/Change Summaries



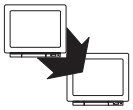
1. Complete the following fields:
    - Company
    - Location or Branch
2. Review the following fields:
    - Level
    - Forecast Quantity Original
    - Forecast Quantity Adjusted
    - Sales History Original
    - Sales History Adjusted
3. Toggle to display amount information.
4. Review the following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



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. NOTE: 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 postion of the forecasting hierarchy. The value in this field relates to the second level chosen in the forecasting constants.

Revising a Summary Forecast



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.

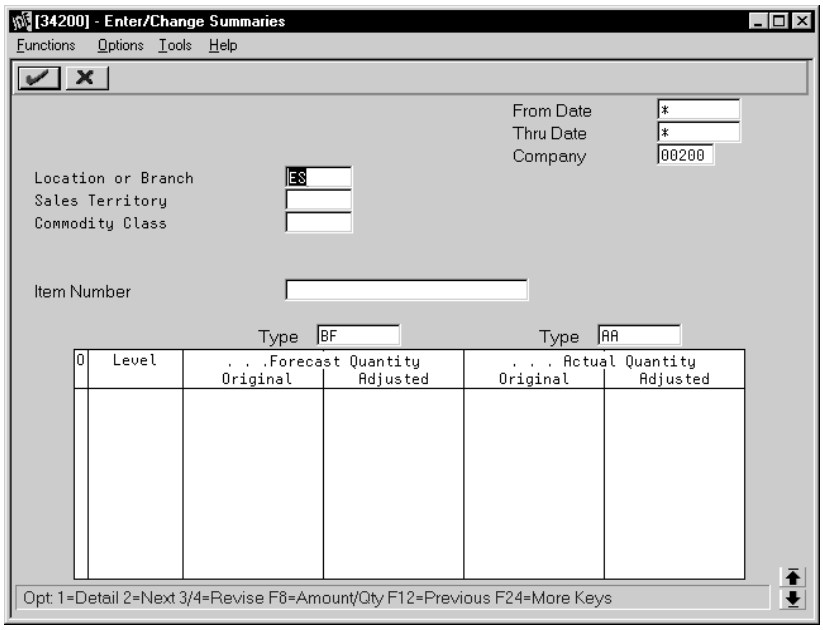
You can access other revision forms, such as Force Changes, by entering options from Enter/Change Summaries. The formats vary, depending on the summary level that you view. Subsequent revision forms maintain the hierarchy level and From/Thru dates from Enter/Change Summaries.

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

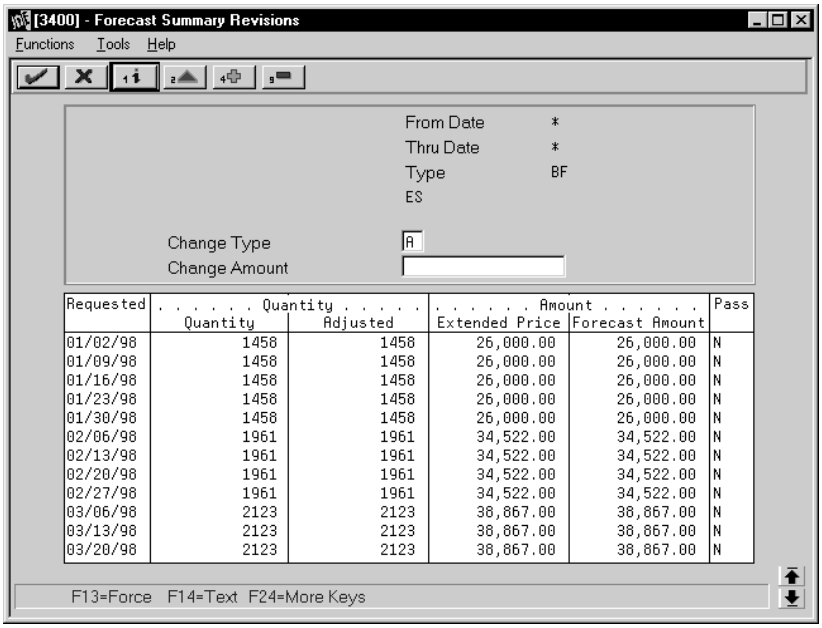
quantities. However, if you run Summarize Detail Forecasts to update the Summary Forecast table, these forms display the lower-level forecasts of item quantities.

▶ To revise a summary forecast

On Enter/Change Summaries

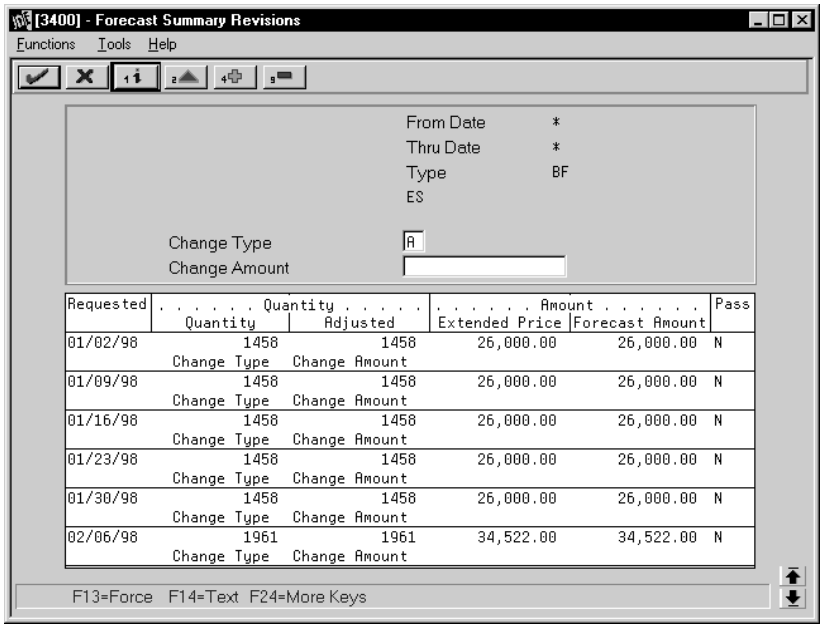


1. Complete the following fields:
   - Company
   - Location or Branch
2. Access Forecast Summary Revisions.



Requested	Quantity		Amount		Pass
	Quantity	Adjusted	Extended Price	Forecast Amount	
01/02/98	1458	1458	26,000.00	26,000.00	N
01/09/98	1458	1458	26,000.00	26,000.00	N
01/16/98	1458	1458	26,000.00	26,000.00	N
01/23/98	1458	1458	26,000.00	26,000.00	N
01/30/98	1458	1458	26,000.00	26,000.00	N
02/06/98	1961	1961	34,522.00	34,522.00	N
02/13/98	1961	1961	34,522.00	34,522.00	N
02/20/98	1961	1961	34,522.00	34,522.00	N
02/27/98	1961	1961	34,522.00	34,522.00	N
03/06/98	2123	2123	38,867.00	38,867.00	N
03/13/98	2123	2123	38,867.00	38,867.00	N
03/20/98	2123	2123	38,867.00	38,867.00	N

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.



6. Complete the following fields:
   - Change Type
   - Change Amount
   - Pass
7. Access Force Changes to submit adjustments to the Force Changes program if you want to apply the changes to higher or lower levels in the hierarchy.

   See *Revising Summary Forecasts Using the Force Changes*

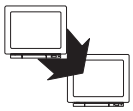
Field	Explanation
From Date	The beginning date of the range in a search. If you do not specify a beginning date, the system uses the current date.
Thru Date	A numeric code that identifies either the period number or the date that you want to locate. If you leave this field blank, the system uses the 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

Field	Explanation
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. NOTE: When entering a percentage, enter it as a whole number. For example: . . . . . *Form-specific information* . . . . . . 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. . . . . . *Form-specific information* . . . . . . 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.

Processing Options for Forecast Summary Inquiry

```
DEFAULT INFORMATION :
  1.)  Enter the default Summary Code                  _____________
       to be used.

  2.)  Enter the default type for the
       following :
               Forecasts. . . . . .                   _____________
               Actuals. . . . . . .                   _____________

  3.)  Enter a '1' if you want the                     _____________
       Quantity format to display
       first.  If left blank the
       Amount format will display.

DREAM WRITER VERSIONS:
  4.)  Enter the version of the Detail                 _____________
       Revisions program to call.  If
       left blank version ZJDE0001
       will be used.
```

Revising Summary Forecasts Using Force Changes



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

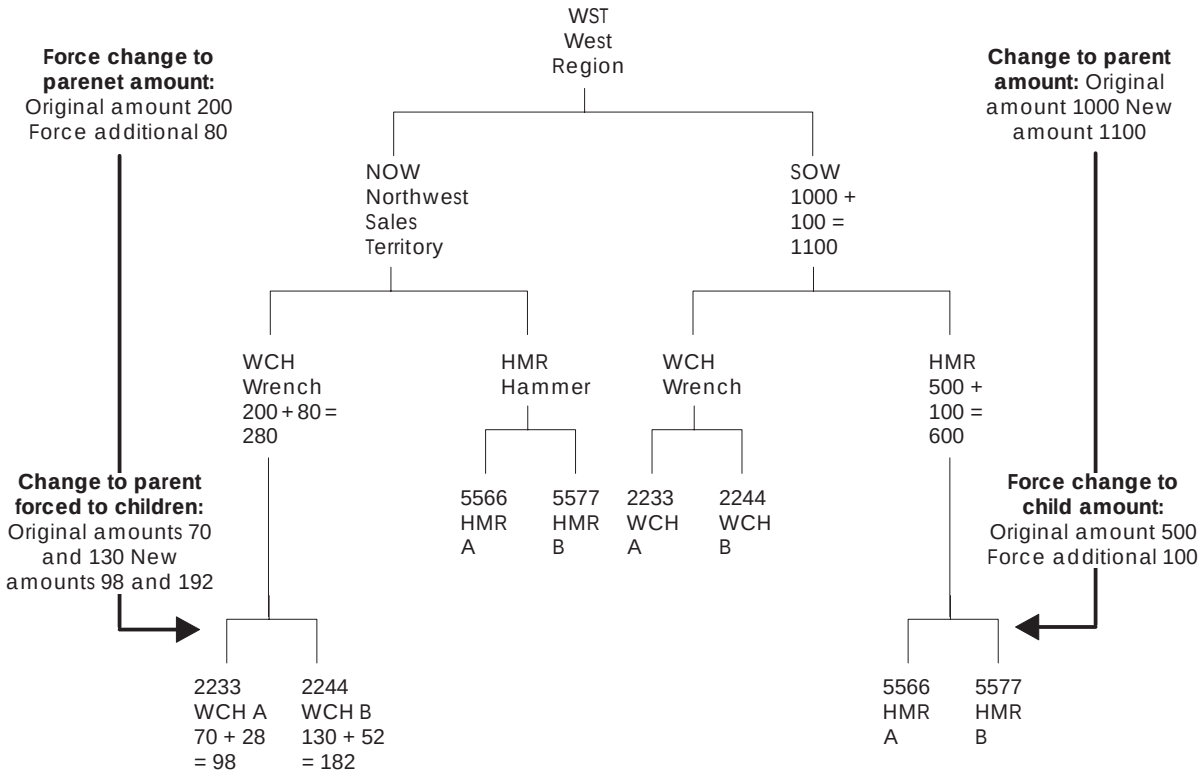
The program makes changes down the hierarchy to the lowest detail level. These changes are also updated in the Detail Forecast table.

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

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% of 80) = 98 and 130 + (65% of 80) = 182, respectively.



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.

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

What You Should Know About

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 bybassed. 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.

Processing Options for Forecast Forcing

```
PROCESS CONTROL :
 1. Enter one of the below to indicate                    _____________
    which direction to force changes.
                1 = “UP” the hierarchy
                2 = “DOWN” the hierarchy
           Blanks = Both directions

 2. Enter a ’1’ to reset the Revised                      _____________
    flag on the records in the file.
    If left blank, the flag will only
    be reset if you have choosen
    to force both directions in the
    option above.
```

Exercises

See the exercises for this chapter.

Aggregate Planning Forecasts

Aggregate Planning Forecasts

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

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

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

- *Generate Summaries of Detail Forecasts*

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

Working with Summary Sales Order History

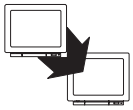
The system generates summary forecasts based on sales history data that you copy from the Sales History table (F42119) into the Summary Forecast table (F3400). When you copy the sales history, you specify a date range based on the request date of the sales order. The sales history data can be distorted,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

Complete the following tasks:

- ❑ Copy summary sales order history
- ❑ Review and revise sales order history

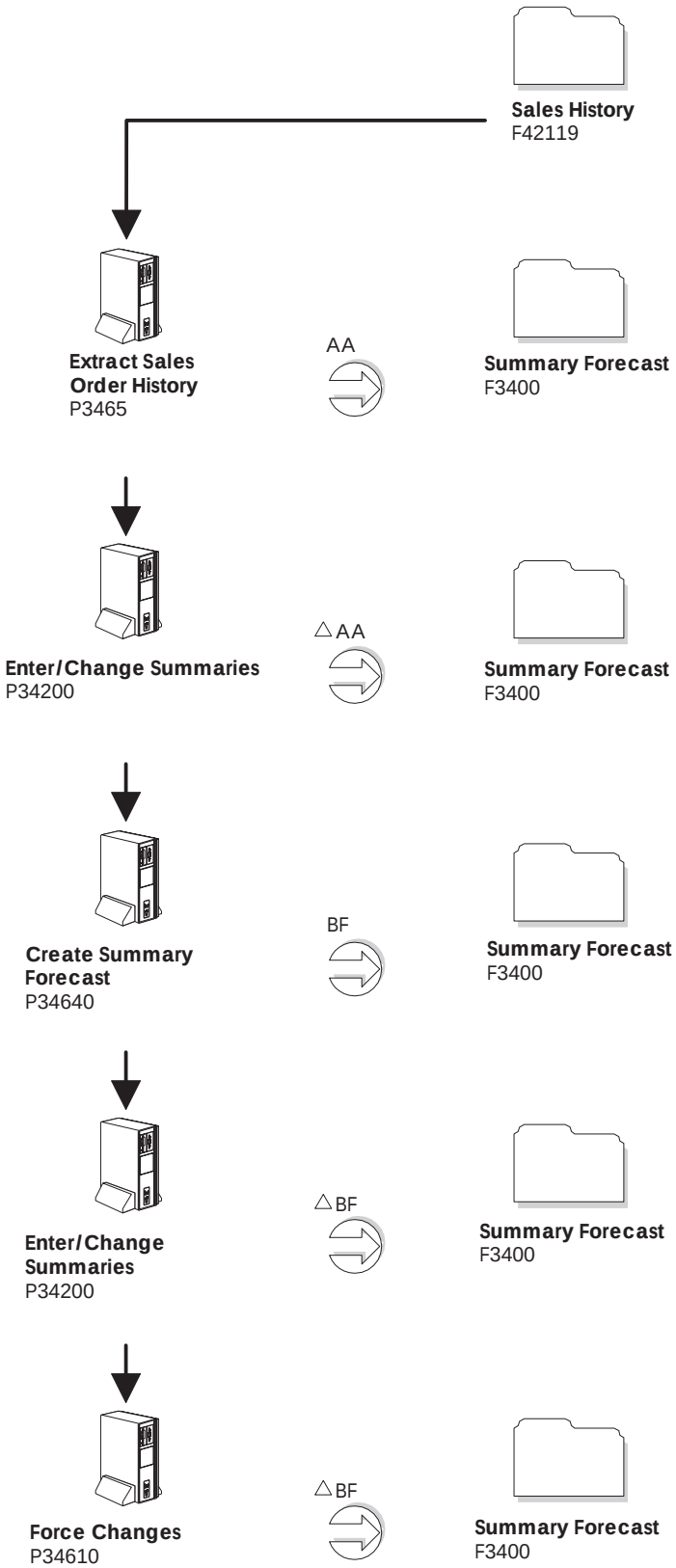
Copying Summary Sales Order History



From Material Planning Operations (G34), choose Forecasting

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

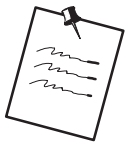
The system generates summary forecasts based on data in the Summary Forecast table. Use Extract Sales Order History to copy the sales order history (type AA) from the Sales History table to the Summary Forecast table based upon criteria that you specify.


Sales History
F42119
Extract Sales Order History
P3465
AA
Summary Forecast
F3400
Enter/Change Summaries
P34200
△AA
Summary Forecast
F3400
Create Summary Forecast
P34640
BF
Summary Forecast
F3400
Enter/Change Summaries
P34200
△BF
Summary Forecast
F3400
Force Changes
P34610
△BF
Summary Forecast
F3400

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



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

Before You Begin

❑ Set up detail forecasts. See *Setting Up Detail Forecasts.*

❑ Set up the summary forecast. See *Setting Up Summary Forecasts.*

See Also

- *Entering Customer Information (P01053)* in the *Accounts Receivable Guide*

Processing Options for Extract Sales Order History

```
PROCESS CONTROL:
 1. Enter the Forecast Type for                    _____________
    creating Actuals.

 2. Enter the specific time period
    to create both the Actuals in
    the Forecasting File and for
    creating Summarized Forecasts.
    (From Date is Required).
            From Date . . . . . .                  _____________
            Thru Date . . . . . .                  _____________

 3. Enter the version of Supply/Demand             _____________
    Inclusion Rules to be used for
    processing. (Required)

 4. Enter a '1' to specify weekly                  _____________
    planning.  If left blank, monthly
    planning will be used.

SUMMARY RECORDS:
 5. Enter a '1' to create summary                  _____________
```

records for large customers (ABC type = 'A').

6. 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:

7. Enter a '1' to create summarized forecast records as well as detail forecast records. Enter a '2' to create only the summarized forecast records. If left blank, only the detail forecast records will be created. _____

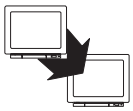
8. Enter the Summary Code to be used to create summarized forecasts. _____

9. 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:

10. 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. _____

Reviewing and Revising Sales Order History



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:

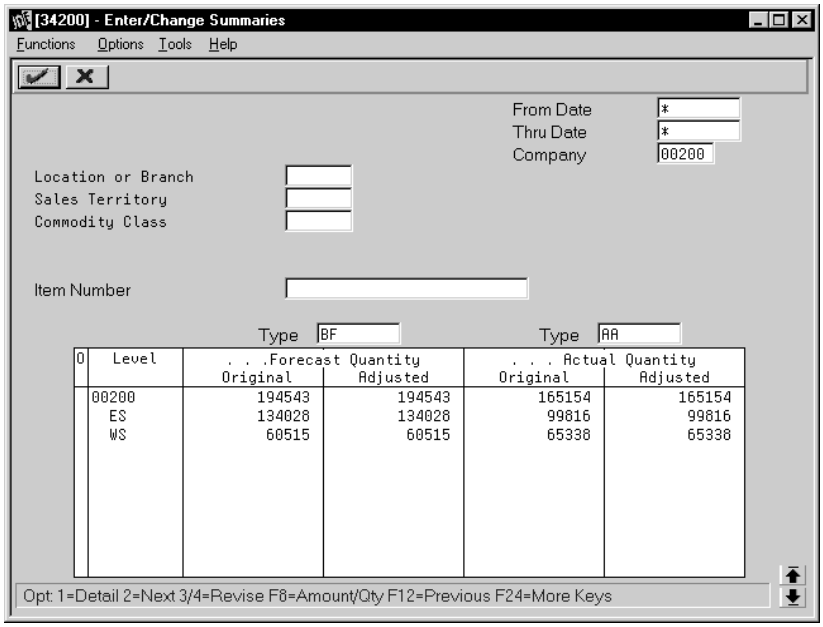
- Reviewing summary sales order history
- Revising summary sales order history
- Reviewing forecasts by type

Before You Begin

❑ Run the Extract Sales Order History program

▶ To review summary sales order history

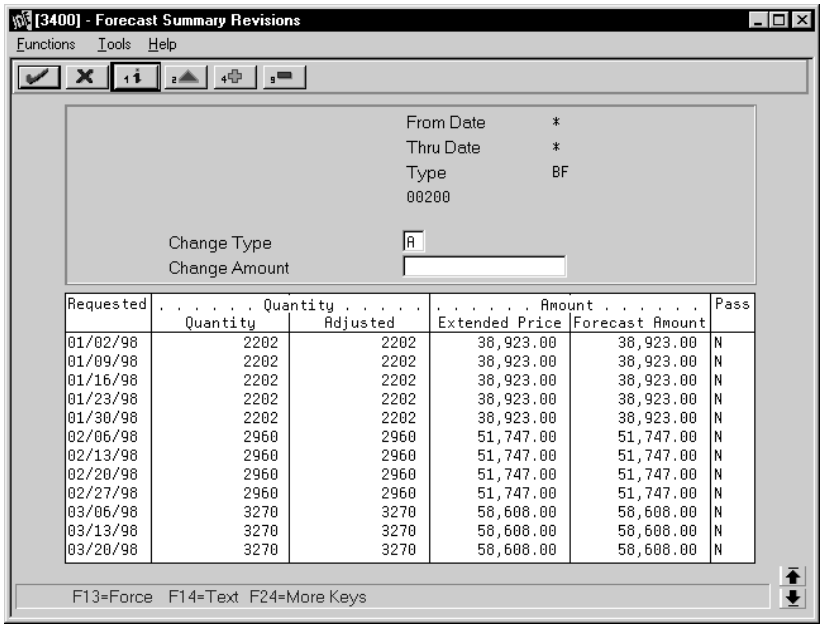
On Enter/Change Summaries



1. Complete the following fields:
   - From Date
   - Thru Date
   - Company
   - Forecast Type
2. To view the next level lower in the hierarchy, access Next.
3. Complete the fields that appear 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 Revision



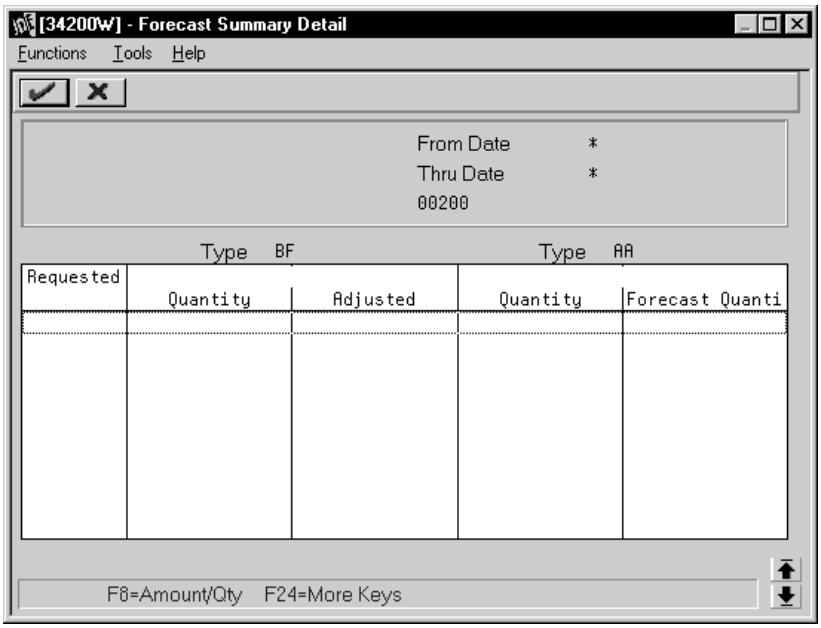
Requested	Quantity	Adjusted	Amount Extended Price	Forecast Amount	Pass
01/02/98	2202	2202	38,923.00	38,923.00	N
01/09/98	2202	2202	38,923.00	38,923.00	N
01/16/98	2202	2202	38,923.00	38,923.00	N
01/23/98	2202	2202	38,923.00	38,923.00	N
01/30/98	2202	2202	38,923.00	38,923.00	N
02/06/98	2960	2960	51,747.00	51,747.00	N
02/13/98	2960	2960	51,747.00	51,747.00	N
02/20/98	2960	2960	51,747.00	51,747.00	N
02/27/98	2960	2960	51,747.00	51,747.00	N
03/06/98	3270	3270	58,608.00	58,608.00	N
03/13/98	3270	3270	58,608.00	58,608.00	N
03/20/98	3270	3270	58,608.00	58,608.00	N

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



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. NOTE: You can use company 00000 for default values, such as dates and automatic accounting instructions (AAIs). You cannot use it for transaction entries.

Processing Options for Forecast Summary Inquiry

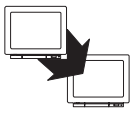
```
DEFAULT INFORMATION :
  1.)  Enter the default Summary Code                  _____________
       to be used.

  2.)  Enter the default type for the
       following :
              Forecasts. . . . . .                    _____________
              Actuals. . . . . .                      _____________

  3.)  Enter a '1' if you want the                     _____________
       Quantity format to display
       first.  If left blank the
       Amount format will display.

DREAM WRITER VERSIONS:
  4.)  Enter the version of the Detail                 _____________
       Revisions program to call.  If
       left blank version ZJDE0001
       will be used.
```

Exercises

See the exercises for this chapter.

Generate Summary Forecasts

Generating Summary Forecasts



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.

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

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

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

Processing Options for Summary Forecast Generation

```
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 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 _____

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. _____

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. _____

FISCAL DATE PATTERN:

20. 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). _____

FORECAST AMOUNTS/QUANTITIES:

21. Enter a '1' to forecast using amounts. If left blank, quantities will be used to forecast. _____

Understand Planning Bill Forecasts

About Planning Bill Forecasts

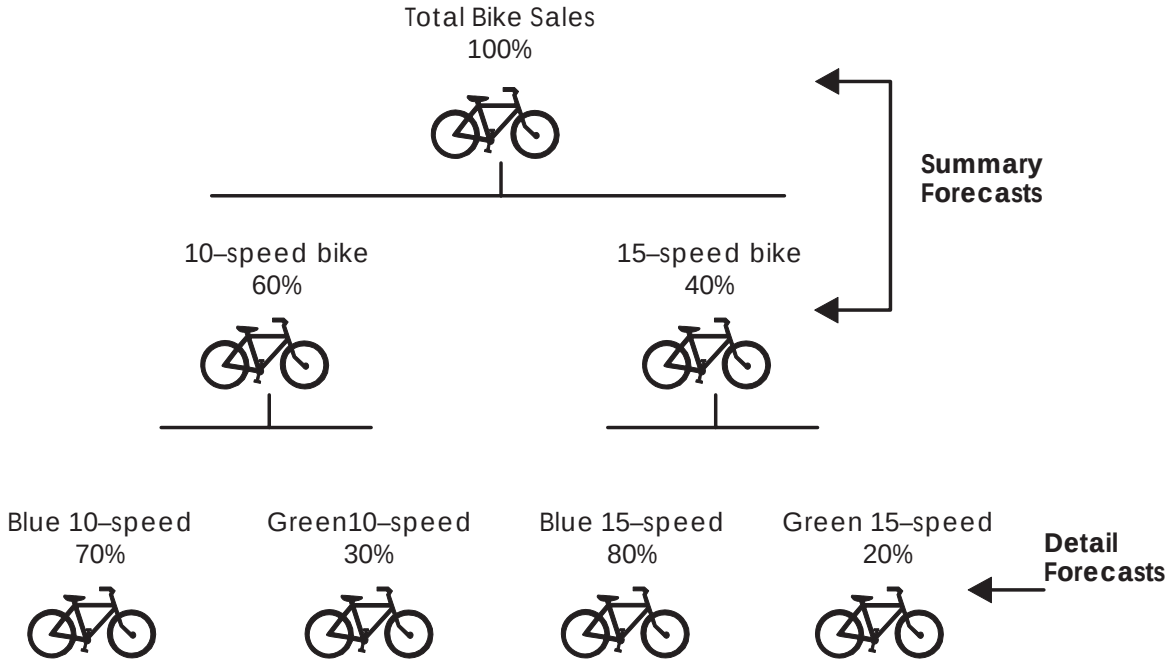
Planning bills are groups of items in a bill of material format that reflect how an item is sold, rather than how it is built. Planning bills allow you to account for the variety of possible options and features that might be included as components in a saleable end item.

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.

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.



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.

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.

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 *Manufacturing and Distribution Planning Guide*

Set Up a Planning Bill

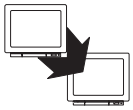
Setting Up a Planning Bill

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

Setting up forecasting with a planning bill includes the following tasks:

- ❑ Setting up item master information
- ❑ Entering planning bills

Setting Up Item Master Information



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).

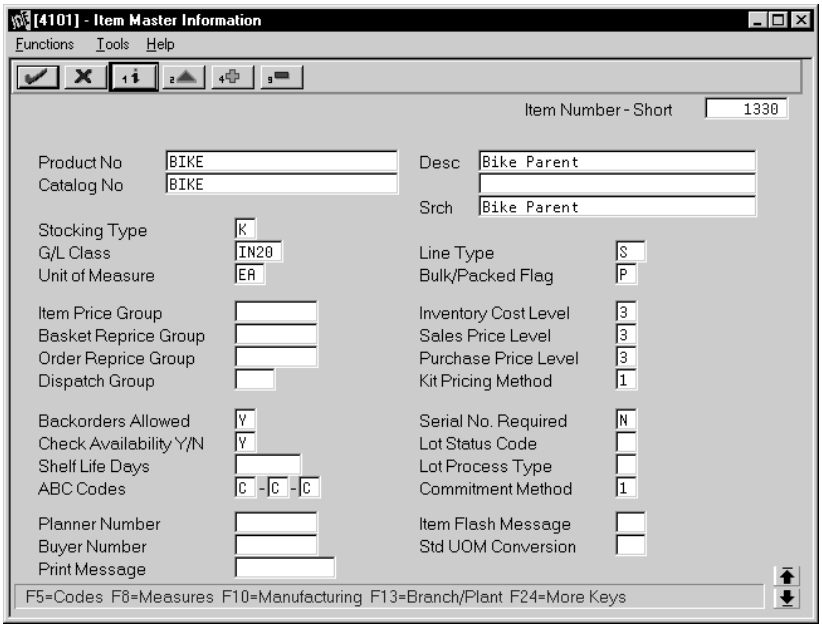
The Branch/Plant Master table (F4102) also stores the item information. After you add item master records for appropriate part numbers, the system retrieves item information from the Branch/Plant Master table.

See Also

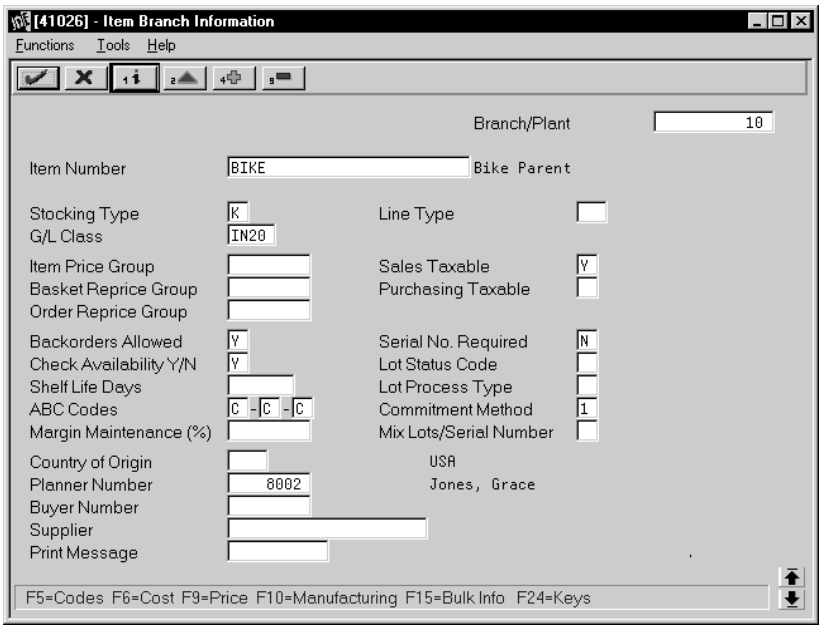
- *Entering Item Master Information (P4101)* in the *Inventory Management Guide*

▶ To set up item master information

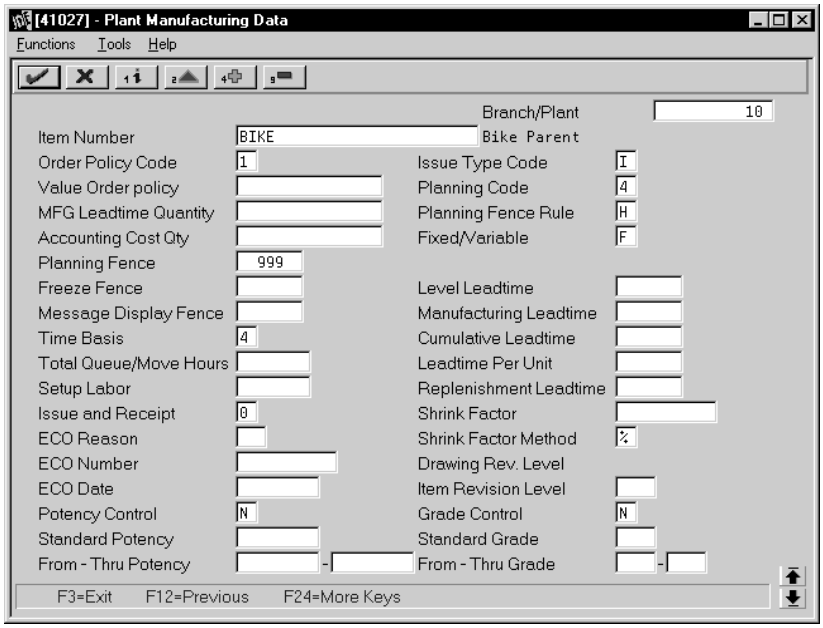
On Item Master Information



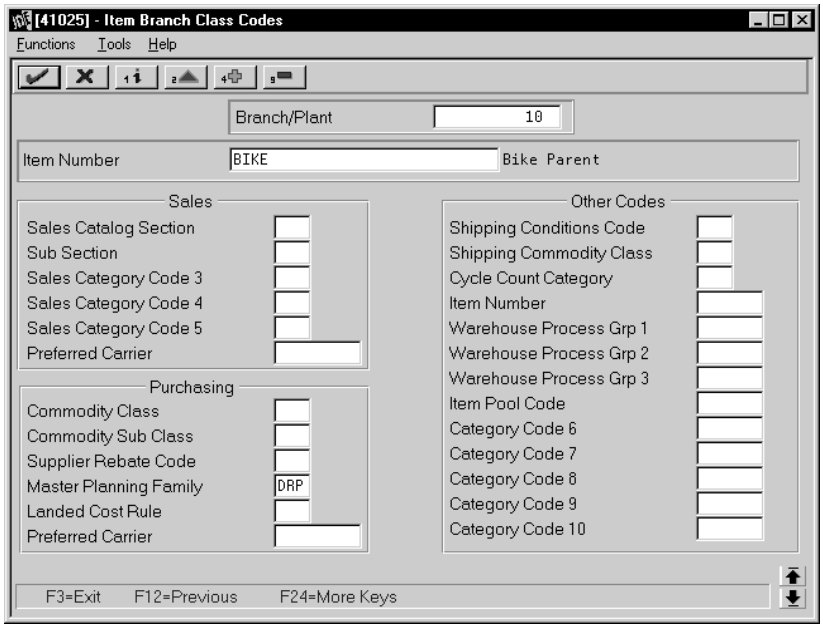
1. Complete the following fields:
   - Product Number
   - Description
   - Stocking Type
   - General Ledger (G/L) Class
2. Access Item Branch Information.



3. On Item Branch Information, complete the following field:
   - Branch/Plant
4. Access Plant Manufacturing Data.



5. On Plant Manufacturing Data, complete the following field:
   - Planning Code
6. Exit to Branch/Plant Information by pressing F3.
7. Access Branch/Plant Class Codes.

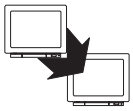


8. On Item Branch Class Codes, complete the following field:
   - Master Planning Family

Field	Explanation
Product No	The system provides three separate item numbers plus an extensive cross-reference capability to alternate item numbers. These item numbers are: 1. Item Number (short) – An 8-digit, computer-assigned item number. 2. 2nd Item Number – The 25-digit, free–form, user defined, alphanumeric item number. 3. 3rd Item Number – Another 25-digit, free–form, user defined, alphanumeric item number. 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). . . . . . *Form-specific information* . . . . . . The second of three identifiers that you can assign to an item. This field is alphanumeric. If you leave the third identifier field blank, the system copies this number to that field.
Stocking Type	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: B Bulk floor stock C Configured item F Feature K Kit parent item N Non-stock
Planning Code	A code that indicates how Master Production Schedule (MPS), Material Requirements Planning (MRP), or Distribution Requirements Planning (DRP) processes this item. Valid codes are: 0 Not Planned by MPS, MRP, or DRP 1 Planned by MPS or DRP 2 Planned by MRP 3 Planned by MRP with additional independent forecast 4 Planned by MPS, Parent in Planning Bill 5 Planned by MPS, Component in Planning Bill These codes are hard-coded.

Field	Explanation
Master Planning Family	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. This field is one of six classification categories available primarily for purchasing purposes.

Entering Planning Bills



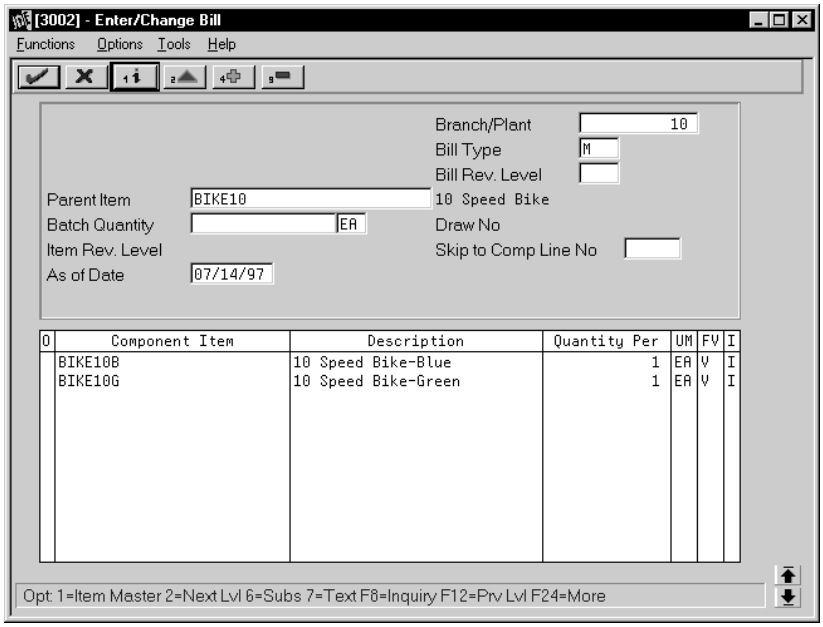
From Product Data Management (G30), choose Daily PDM Discrete

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

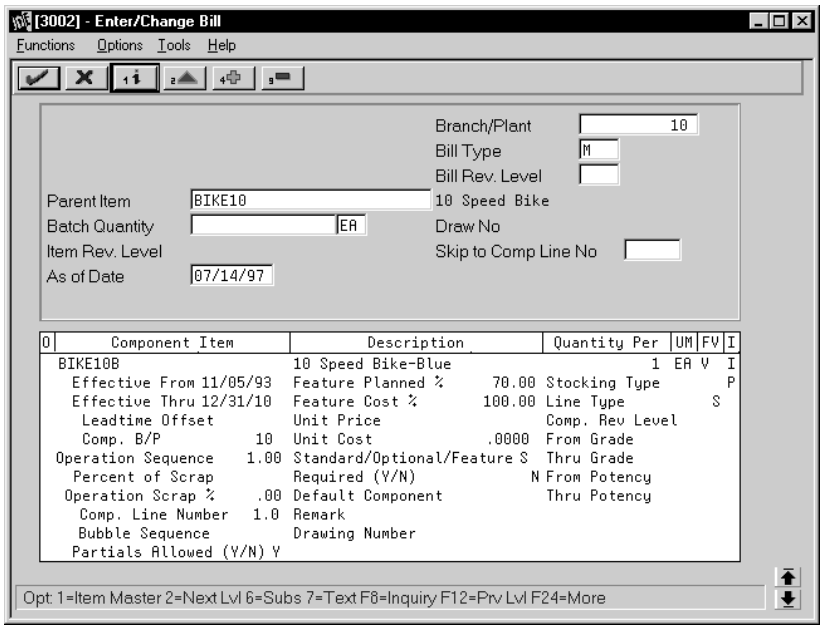
You enter a planning bill in the Product Data Management system to change the percentages on which the hypothetical average parent item is based. This allows you to account for any planning variations on which you might want to base forecasts.

▶ To enter planning bills

On Enter/Change Bill



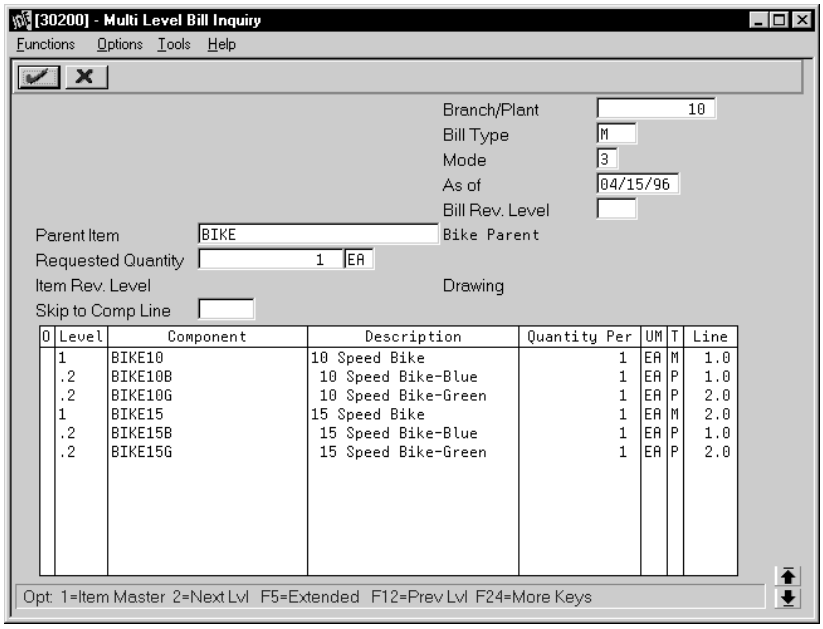
1. Complete the following fields:
   - Branch/Plant
   - Parent Item
2. Access the detail area.



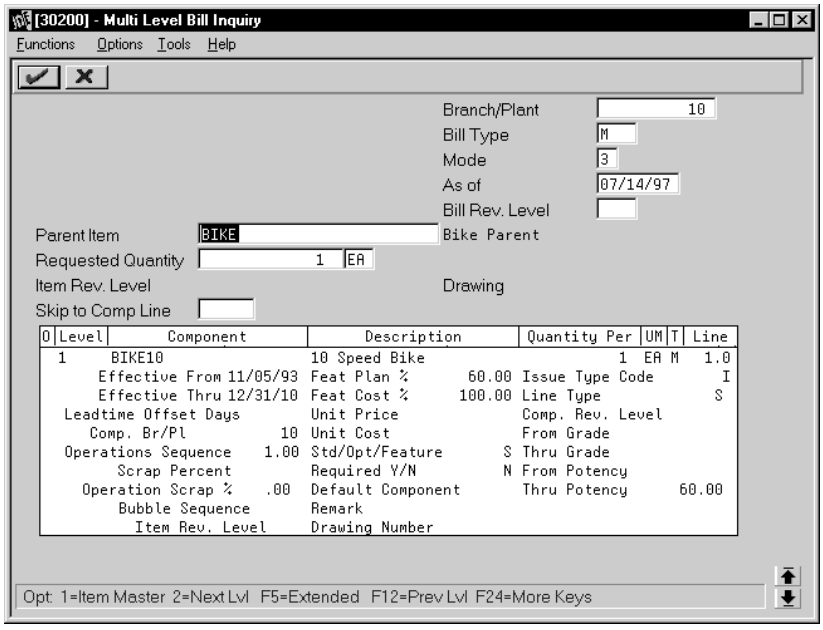
3. Complete the following fields:
   - Component Item
   - Quantity Per
   - Feature Plan Percent

   The following field contains default information:

   - Issue Type Code
4. Exit to Daily PDM Discrete by pressing F3.
5. Access Multi Level Bill Inquiry.



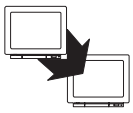
6. On Multi Level Bill Inquiry, complete the following fields:
   - Parent Item
   - Branch/Plant
7. To review exploded percentages, access the detail area.



Field	Explanation
Branch/Plant	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: • Branch/Plant (MMCU) • Dept A (MCU) • Dept B (MCU) • Job 123 (MCU) Business unit security is based on the higher-level business unit. . . . . . *Form-specific information* . . . . . . An inquiry field for a branch or plant code to which an item is assigned. This field is required.
Quantity Per	The number of units to which the system applies the transaction. . . . . . *Form-specific information* . . . . . . 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.
Feature Planned %	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. 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%.
I	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: 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 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.

Generate Planning Bill Forecasts

Generating Planning Bill Forecasts



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.

Before You Begin

- ❑ Enter a planning bill. See *Entering Planning Bills.*
- ❑ Run Enter/Change Forecast manually to add the forecast for the parent item.

What You Should Know About Processing Options

Document Types Used in Planning (1)

When you choose a Forecast Type for the system to use with a planning bill, you must also enter the type code for this forecast as a Forecast Type to be read. This allows the system to read the forecast and explode it down to the component level. You can designate up to five Forecast Types to be read in a sequence you specify.

Processing Options for Master Planning Schedule

```
BUCKET INFORMATION:
 1. Enter the Generation Start Date.                    _____________
    (Default is current date)

 2. Enter the number of past due
    periods, (0, 1 or 2).                               _____________
    (Default is 0)

 3. Enter the planning horizon periods.
    (maximum of 52 periods):
```

a. Days (e.g. 5) _____
b. Weeks (e.g. 25) _____
c. Months (e.g. 6) _____

GENERATION DEFINITION:

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 – Multi Level MPS Items
   4 – MRP with/without MPS
   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. _____

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.
   a. Quantity in Transit _____
   b. Quantity in Inspection _____
   c. User Defined Quantity 1 _____
   d. User Defined Quantity 2 _____

   NOTE: Any quantity not included will be placed in the On Receipt bucket.

DAMPER DAYS:

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). _____

SAFETY LEADTIME:

12. Enter the purchased item leadtime days. _____

13. Enter the manufactured item leadtime days. _____

FORECASTING INFORMATION:

14. Enter the Forecast Types to include. Up to 5 types can be included.
   a. Forecast Type _____
   b. Forecast Type _____
   c. Forecast Type _____
   d. Forecast Type _____
   e. Forecast Type _____

15. Enter the Forecast Type for MPS to create when using Planning Bills. _____

RATE BASED SCHEDULING INFORMATION:

16. Enter the Schedule Type for rate based items. (Default is 'AC') _____

17. Enter a '1' to extend rate based adjustments to lower level items. _____

18. Enter status code used to denote closed rates. If blank, 99 will be used. _____

PURCHASE ORDER INFORMATION:

19. Enter the Document Type for purchase orders. (Default is 'OP') _____

WORK ORDER INFORMATION:

20. Enter the Document Type for work orders. (Default is 'WO') _____

21. 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:

22. Enter the Version of Supply/Demand Inclusion Rules to be used. _____

PERFORMANCE ISSUES:

23. 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. _____

24. 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. _____

25. Enter '1' to clear the DRP/MPS/MRP files before a Regeneration. This option should be used with EXTREME CAUTION. It will totally clear the following files:
    F3411 – Message Detail File
    F3412 – Pegging File
    F3413 – Time Series File
    NOTE: If a '1' is entered, it will improve performance and clean up any bad data in the files. _____

PROCESS PLANNING:

26. Enter a '1' to generate planning in Process Mode. _____
    NOTE: If left blank, the run time of the generation will be reduced.

LOT EXPIRATION:

27. Enter a '1' to consider lot expiration dates in calculations. _____

FORECAST CONSUMPTION PROCESSING:

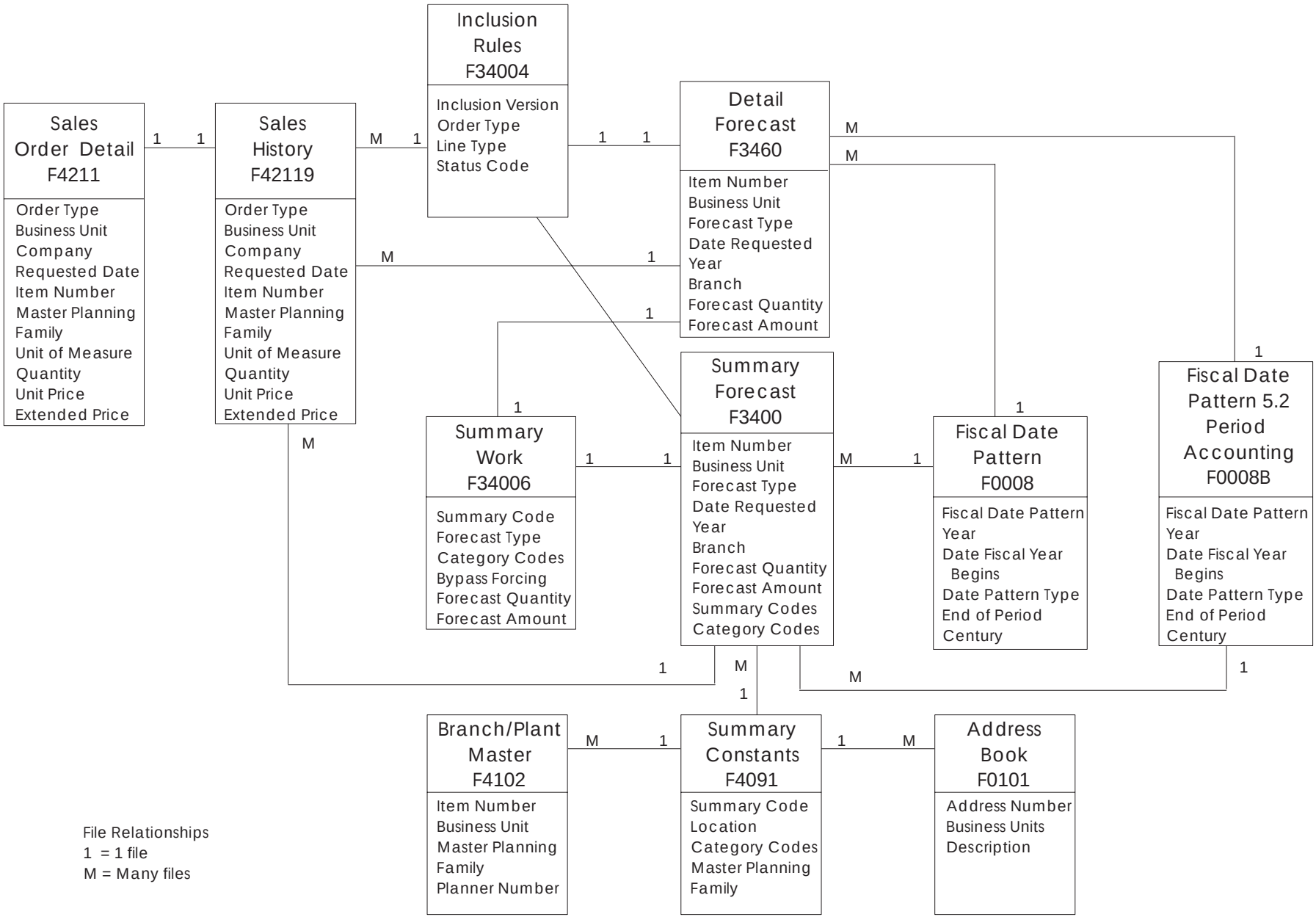
28. Enter a '1' to use Forecast Consumption logic. _____

Exercises

See the exercises for this chapter.

Appendices

Appendix A — Data Model


Sales Order Detail F4211
Order Type
Business Unit
Company
Requested Date
Item Number
Master Planning Family
Unit of Measure
Quantity
Unit Price
Extended Price
Sales History F42119
Order Type
Business Unit
Company
Requested Date
Item Number
Master Planning Family
Unit of Measure
Quantity
Unit Price
Extended Price
Inclusion Rules F34004
Inclusion Version
Order Type
Line Type
Status Code
Detail Forecast F3460
Item Number
Business Unit
Forecast Type
Date Requested
Year
Branch
Forecast Quantity
Forecast Amount
Summary Work F34006
Summary Code
Forecast Type
Category Codes
Bypass Forcing
Forecast Quantity
Forecast Amount
Summary Forecast F3400
Item Number
Business Unit
Forecast Type
Date Requested
Year
Branch
Forecast Quantity
Forecast Amount
Summary Codes
Category Codes
Fiscal Date Pattern F0008
Fiscal Date Pattern
Year
Date Fiscal Year Begins
Date Pattern Type
End of Period
Century
Fiscal Date Pattern 5.2 Period Accounting F0008B
Fiscal Date Pattern
Year
Date Fiscal Year Begins
Date Pattern Type
End of Period
Century
Branch/Plant Master F4102
Item Number
Business Unit
Master Planning Family
Planner Number
Summary Constants F4091
Summary Code
Location
Category Codes
Master Planning Family
Address Book F0101
Address Number
Business Units
Description
File Relationships
1 = 1 file
M = Many files

Appendix B — Forecast Calculation Examples

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.

Historical Sales Data

In all of the examples the following arbitrarily chosen set of data will be used. The "historical" data is for the years 1996 and 1997, and the forecast projections will go into the year 1998.

Table 1

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

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

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.

Method 1: Percent Over Last Year

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

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

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

Table 2

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

January 1998 = 128 * 1.1 = 140.8 or 141

February 1998 = 117 * 1.1 = 128.7 or 129

March 1998 = 115 * 1.1 = 126.5 or 127

Method 2: Calculated Percent Over Last Year

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

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

Table 3

History Used in the Forecast Calculation, given n = 4												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996									118	123	139	133
1997	128	117	115	125	122	137	140	129	131	114	119	137
Calculation of Percent Over Last Year, Given n = 4												
1996... 118 + 123 + 139 + 133 = 513 1997... 131 + 114 + 119 + 137 = 501 ratio, % = 501 / 513 * 100 % = 97.66%												
Forecast, 97.66% Over Last Year												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	125	114	112	122	119	134	137	126	128	111	116	134

January 1998 = 128 * 0.9766 = 125.00 or 125

February 1998 = 117 * 0.9766 = 114.26 or 114

March 1998 = 115 * 0.9766 = 112.31 or 112

Method 3: Last Year to This Year

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

Forecast specifications: None.

Required sales history: One year for calculating the forecast plus the number of time periods required for evaluating the forecast performance (PBF).

Table 4

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

January 1998 = January 1997 = 128

February 1998 = February 1997 = 117

March 1998 = March 1997 = 115

Method 4: Moving Average

Moving Average (MA) is a popular method for averaging the results of recent sales history to arrive at a projection for the short term. One characteristic of the moving average forecast method is that it will lag trends. Forecast bias and systematic errors occur when the product sales history exhibits strong trend or seasonal patterns. This method works better for short range forecasts of mature products 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 = 4 in the processing option to use the most recent four periods as the basis for the projection into the next time period. A large value for n (such as 12) requires more sales history. It results in a stable forecast, but will be slow to recognize shifts in the level of sales. On the other hand, a small value for n (such as 3) will be quicker to respond to shifts in the level of sales, but the forecast may fluctuate so widely that production can not respond to the variations.

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

Table 5

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

January 1998 = (131 + 114 + 119 + 137) / 4 = 125.25 or 125

February 1998 = (114 + 119 + 137 + 125) / 4 = 123.75 or 124

March 1998 = (119 + 137 + 125 + 124) / 4 = 126.25 or 126

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.

Forecast specifications: n = identifies the data point in sales history that will be compared to the most recent data point for the purposes of identifying a trend. For example, specify n = 4 to use the difference between December 1997 (most

recent data) and August, 1997 (four periods prior to December) as the basis for calculating the trend.

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

Table 6

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

January 1998 = Dec. 1997 + Trend

= 137 + (1) 2 = 139

February 1998 = 137 + (2) 2 = 141

March 1998 = 137 + (3) 2 = 143

Method 6: Least Squares Regression

Linear Regression or Least Squares Regression (LSR) is the most popular method for identifying a linear trend in historical sales data. The method calculates the values for "a" and "b" to be used in the formula: Y = a + bX. 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 = 4 to use the history from September through and December, 1997 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 = 4) was chosen to reduce the manual calculations required to verify the results.

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

Table 7

History Used in the Forecast Calculation												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997									131	114	119	137

Calculation of Linear Regression Coefficients, Given n = 4

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

$$b = \frac{n \Sigma XY - \Sigma X \Sigma Y}{n \Sigma X2 - (\Sigma X)^2} = \frac{4(1264) - (10 * 501)}{4(30) - (10)\,2} = \frac{5056 + 5010}{120 - 100} = \frac{46}{20} = 2.3$$

$$a = \frac{\Sigma Y}{n} - b\frac{\Sigma X}{n} = \frac{501}{4} - (2.3)\frac{10}{4} = 119.5$$

Linear Regression Forecast, Given Y = 119.5 – 2.3 X, where X = 1 => Sep. '97												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	131	133	136	138	140	143	145	147	149	152	154	156

January 1998 = 119.5 + (5 * 2.3) = 131

February 1998 = 119.5 + (6 * 2.3) = 133.3 or 133

March 1998 = 119.5 + (7 * 2.3) = 135.6 or 136

Method 7: Second Degree Approximation.

Linear Regression determines values for a and b in the forecast formula Y = a + b X 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 + b X + c X^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 find a, b, and c to fit a curve to exactly three points. You specify n, the number of time periods of data to accumulate into each of the three points. In this example n = 3. Therefore, actual sales data for April through June 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).

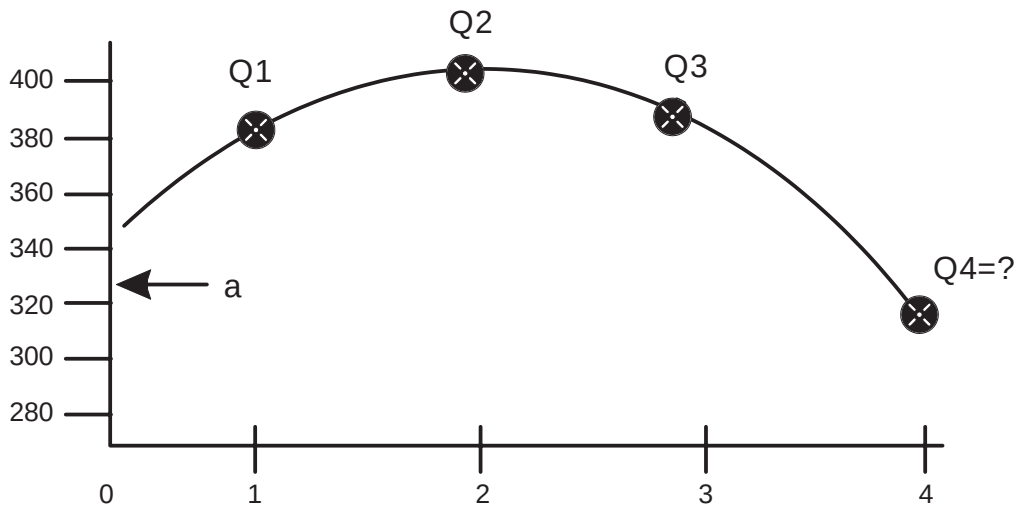
Table 8

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

The next step involves calculating the three coefficients a, b, and c to be used in the forecasting formula Y = a + b X + c X2.

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

Graph 1



Three equations describe the three points on the graph:

(1) Q1 = a + b X + c X2 where X = 1 Q1 = a + b + c

(2) Q2 = a + b X + c X2 where X = 2 Q2 = a + 2b + 4c

(3) Q3 = a + b X + c X2 where X = 3 Q3 = a + 3b + 9c

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

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

(2) − (1) = Q2 − Q1 = b + 3c

b = (Q2 − Q1) − 3c

Substitute this equation for b into equation (3)

(3) Q3 = a + 3 [(Q2 − Q1) − 3c] + 9 c

a = Q3 − 3 (Q2 − Q1)

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

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

c = [(Q3 − Q2) + (Q1 − Q2)] / 2

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

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

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

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

Table 9

Calculation of Second Degree Approximation Forecast												
$Y = a + b X + c X^2 = 322 + 85 X + (-23)(X^2)$												
When X = 4, Q4 = 322 + 340 – 368 = 294. The forecast = 294 / 3 = 98 per period												
When X = 5, Q5 = 322 + 425 – 575 = 172. The forecast = 172 / 3 = 57.33 or 57 per period												
When X = 6, Q6 = 322 + 510 – 828 = 4. The forecast = 4 / 3 = 1.33 or 1 per period												
Forecast, Last Year to This Year												
	Q4 = 294			Q5 = 172			Q6 = 4			Q7 = negative		
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	98	98	98	57	57	57	1	1	1	––	––	––

Method 8: Flexible Method

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 110 in the processing option to increase the previous sales history data by 10%.
- Base period. For example, n = 4 will cause the first forecast to be based upon sales data in September, 1997.

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).

Table 10

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

Method 9: Weighted Moving Average

The Weighted Moving Average (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 = 4 in the processing option to use the most recent four periods as the basis for the projection into the next time period. A large value for n (such as 12) requires more sales history. It results in a stable forecast, but 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 = 4, assign weights of 0.50, 0.25, 0.15, and 0.10, with the most recent data receiving the greatest weight.

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

Table 11

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

Jan '98 =
[(131 * 0.10)+(114 * 0.15)+(119 * 0.25)+(137 * 0.50)] / (0.10+0.15+0.25+0.50)

= 128.45 or 128

Feb '98 =
[(114 * 0.10)+(119 * 0.15)+(137 * 0.25)+(128 * 0.50)] / 1 = 127.5 or 128

Mar '98 =
[(119 * 0.10)+(137 * 0.15)+(128 * 0.25)+(128 * 0.50)] / 1 = 128.45 or 128

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

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

Table 12

History Used in the Forecast Calculation												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997									131	114	119	137
Calculation of Weights, Given n = 4												
(n2 + n) / 2 = (16 + 4) / 2 = 10												
September weight = 1/10												
October weight = 2/10												
November weight = 3/10												
December weight = 4/10												
Total weight = 10/10												
Calculation of Moving Average, Given n = 4												
[(131 * 0.1) + (114 * 0.2) + (119 * 0.3) + (137 * 0.4)] / (0.1 + 0.2 + 0.3 + 0.4) = 126.4 or 126												
Linear Smoothing Forecast, Given n = 4												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	126	127	128	128	128	128	128	128	128	128	128	128

Method 11: Exponential Smoothing

This method 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 = alpha (Previous Actual Sales) + (1 – alpha) Previous Forecast

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

You should assign a value for the smoothing constant, alpha. If you do not assign 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.

Forecast specifications:

- alpha = 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.
- n = the range of sales history data to include in the calculations. Generally one year of sales history data is sufficient to estimate the general level of sales. For this example, a small value for n (n = 4) was chosen 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).

Table 13

History Used in the Forecast Calculation												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997									131	114	119	137

Calculation of Exponential Smoothing , Given n = 4, alpha = 0.3	
October Sm. Avg.*	= September Actual
	= alpha (September Actual) + (1 − alpha) September Sm. Avg.
	= 1 * (131) + (0) (0) = 131
November Sm. Avg.	= 0.3 (October Actual) + (1 − 0.3) October Smoothed Average
	= 0.3 (114) + 0.7 (131) = 125.9 or 126
December Sm. Avg.	= 0.3 (November Actual) + 0.7 (November Smoothed Average)
	= 0.3 (119) + 0.7 (126) = 123.9 or 124
January Forecast	= 0.3 (December Actual) + 0.7 (December Smoothed Average)
	= 0.3 (137) + 0.7 (124) = 127.9 or 128
February Forecast	= January Forecast
March Forecast	= January Forecast

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

Exponential Smoothing Forecast, Given alpha = 0.3, n = 4												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	128	128	128	128	128	128	128	128	128	128	128	128

Method 12: Exponential Smoothing with Trend and Seasonality

This method 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 averaged adjusted for a linear trend. When specified in the processing option, the forecast is also adjusted for seasonality.

Forecast specifications:

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

Note: alpha and beta are independent of each other. They do not have to add to 1.0.

Minimum required sales history: one year plus the number of time periods required for evaluating the forecast performance (PBF). When two or more years of historical data is available, the system will use two years of data in the calculations.

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

A) An exponentially smoothed average

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

B) An exponentially smoothed trend

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

C) A simple average seasonal index

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

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

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

Where:

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

Table 14

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

Initializing the Process:

January'97 Seasonal Index, S_1 = (125 + 128/1534 + 1514) * 12 = 0.083005 * 12 = 0.9961

January'97 Smoothed Average*, A_1 = January, 1997 Actual/ January Seasonal Index
= 128/0.9960
= 128.51

January'97 Smoothed Trend*, T_1 = 0 insufficient information to calculate first smoothed trend

February'97 Seasonal Index, S_2 = (123 + 117/1534 + 1514) * 12 = 0.07874 * 12 = 0.9449

February'97 Smoothed Average, A_2 =

$$A_2 = \alpha \frac{D_2}{S_2} + (1-\alpha)(A_1 + T_1)$$

$$A_2 = 0.3\frac{117}{0.9449} + (1-0.3)(128.51+0) = 127.10$$

February'97 Smoothed Trend, T_2 =

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

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

March'97 Seasonal Index, S_3 = (115 + 115/1534 + 1514) * 12 = 0.07546 * 12 = 0.9055

March'97 Smoothed Average, A_3 =

$$A_3 = \alpha \frac{D_3}{S_3} + (1-\alpha)(A_2 + T_2)$$

$$A_3 = 0.3\frac{115}{0.9055} + (1-0.3)(127.10 - 0.56) = 126.68$$

March'97 Smoothed Trend, T_3 =

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

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

(Continued through December 1997)

December'97 Seasonal Index, S_{12} = (133 + 137/1534 + 1514) * 12 = 0.08858 * 12 = 1.0630

December'97 Smoothed Average, A_{12} =

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

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

December'97 Smoothed Trend, T_{12} =

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

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

Calculation of Linear and Seasonal Exponentially Smoothed Forecast

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

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

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

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

Evaluating the Forecasts

You can 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.

Mean Absolute Deviation

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

- MAD = (Σ | Actual – Forecast |) / n
- Standard Deviation, (σ) $\cong$ 1.25 MAD
- Mean Squared Error $\cong -\sigma^2$

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

Table 15 Method 1, Last Year to This Year

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

Table 16 Method 4, Moving Average, n = 4

History Used in the Calculation of MAD, Given PBF = 5, n = 4												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997				125	122	137	140					
Moving Average Forecast for the Holdout Period, Given n = 4												
(125 + 122 + 137 + 140) / 4 = 131 Aug. '97												
(122 + 137 + 140 + 129) / 4 = 132 Sep. '97												
(137 + 140 + 129 + 131) / 4 = 134.25 or 134 Oct. '97												
(140 + 129 + 131 + 114) / 4 = 128.5 or 129 Nov. '97												
(129 + 131 + 114 + 119) / 4 = 123.25 or 123 Dec. '97												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								131	132	134	129	123
Actual Sales History for the Holdout Period												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								129	131	114	119	137
Absolute Value of Errors, Actual – Forecast												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
								2	1	20	10	14
Mean Absolute Deviation = (2 + 1 + 20 + 10 + 14) / 5 = 9.4												

Based on these two choices, the Moving Average, n = 4 method would be recommended, since it has the smaller MAD for the given holdout period.

Percent of Accuracy

Percent of Accuracy (POA) is a measure of forecast bias. When forecasts are consistently too high, inventories accumulate and inventory costs rise. When forecasts are consistently two 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.

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

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 selects the forecasting method that has a POA ratio closest to 100%.

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

Table 17 Method 1, Last Year to This Year

History Used in the Calculation of POA, Given PBF = 5												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996								128	118	123	139	133
110 Percent Over Last Year Forecast for the Holdout Period												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								141	130	135	153	146
Actual Sales History for the Holdout Period												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								129	131	114	119	137
Sum of Actuals = (129 + 131 + 114 + 119 + 137) = 630												
Sum of Forecasts = (141 + 130 + 135 + 153 + 146) = 705												
POA ratio = (630 / 705) * 100% = 89.36%												

Table 18 Method 4, Moving Average, n = 4

History Used in the Calculation of MAD, Given PBF = 5, n = 4												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997				125	122	137	140					
Moving Average Forecast for the Holdout Period, Given n = 4 (see table 14)												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								131	132	134	129	123
Actual Sales History for the Holdout Period												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997								129	131	114	119	137
Sum of Actuals = (129 + 131 + 114 + 119 + 137) = 630												
Sum of Forecasts = (131 + 132 + 134 + 129 + 123) = 649												
POA ratio = (630 / 705) * 100% = 97.07%												

Based on these two choices, the Moving Average, n = 4 method would be recommended, since it has POA closest to 100% for the given holdout period.

Appendix C — Functional Servers

Several J.D. Edwards 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.

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

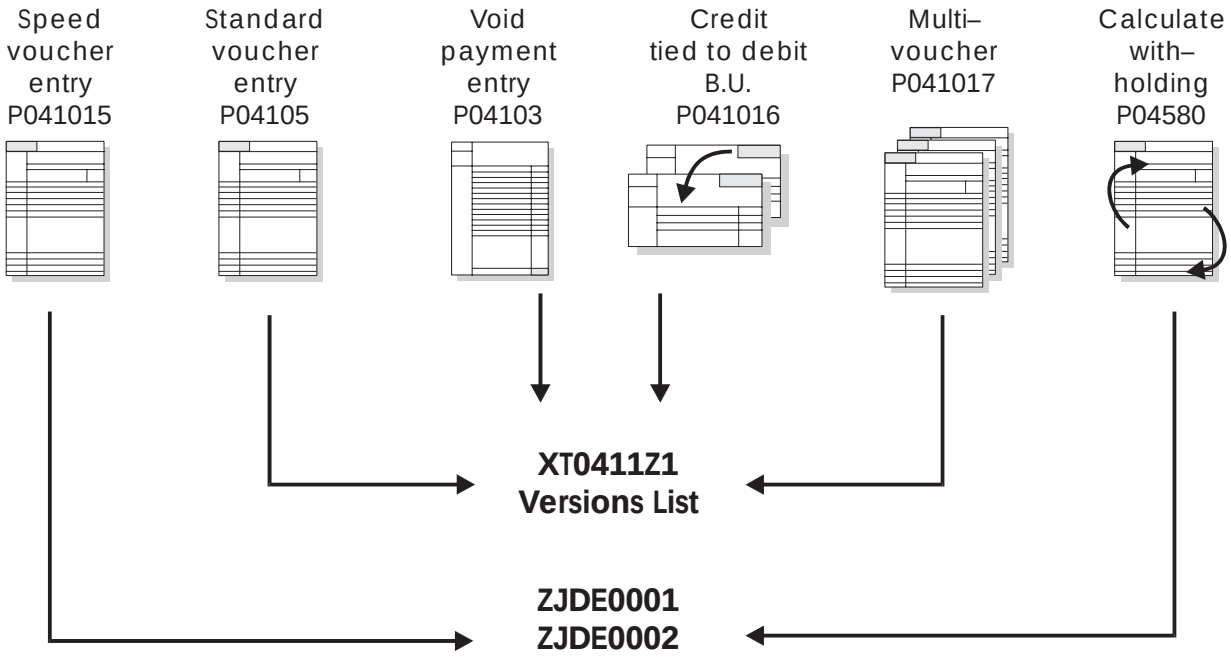
1. Create a DREAM Writer version for a specific functional server program (for example, XT0411Z1 for voucher entry).
2. Set the processing options within the version according to your company requirements.
3. Specify the version you want the entry program to use in the processing options for that entry 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. J.D. Edwards provides DREAM Writer version ZJDE0001 as the default functional server version for your entry programs.

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 *Technical Foundation Guide*.

Example: Voucher Processing Functional Server

The following graphic shows the programs that use the voucher processing functional server. J.D. Edwards provides two demo versions of the functional server, ZJDE0001 and ZJDE0002.



Glossary

Glossary

This glossary defines terms in the context of your use of JDE systems and the accompanying user guide.

access. To get to the information or functions provided by the system through menus, screens, and reports.

allocated material. Material on hand or on order that is assigned to specific future production or customer orders. Synonymous with *reserved material.*

alphabetic character. Represents data by using letters and other symbols from the keyboard (such as *&#). Contrast with *numeric character*.

alphanumeric character. Represents data in a combination of letters, numbers, and other symbols (such as *&#).

alternate operation. Replacement for a normal step in the manufacturing process or routing for an item.

alternate routing. A routing, usually less preferred than the primary routing, but resulting in an identical item.

assemble–to–order. A make–to–order product for which key components (bulk, semi-finished, intermediate, subassembly, fabricated, purchased, packaging, etc.) used in the assembly or finishing process are planned and stocked in anticipation of a customer order. Receipt of an order initiates assembly of the finished product. This is useful when a large number of finished products can be assembled from common components.

assembly. A group of subassemblies and/or parts that are put together and constitute a major subdivision for the final product. An assembly may be an end item or a component of a higher level assembly.

audit trail. The detailed, verifiable history of a processed transaction. The history consists of the original documents, transaction entries, and posting of records, and usually concludes with a report.

automatic accounting instruction (AAI). A code that points to an account in the chart of accounts. AAIs define rules for programs that automatically generate journal entries. This includes interfaces between Accounts Payable, Accounts Receivable, and Financial Reporting and the General Accounting system. Each system that interfaces with the General Accounting system has AAIs. For example, AAIs can direct the Post to General Ledger program to post a debit to a certain expense account and an automatic credit to a certain accounts payable account.

backflush. The deduction from inventory records of the component parts used in an assembly or subassembly by exploding the bill of material by the production count of assemblies produced.

back scheduling. A technique for calculating operation start dates and due dates. The schedule is computed starting with the due date for the order and working backward to determine the required start date and/or due dates for each operation.

backup copy. A copy of original data preserved on a magnetic tape or diskette as protection against destruction or loss.

batch. A group of like records or transactions that the computer treats as a single unit during processing. For identification purposes, the system usually assigns each batch a unique identifier, known as a “batch number.”

batch bill of material. A bill of material in which the statement of quantity per is based on the standard batch quantity of the parent.

batch header. Information the computer uses as identification and control for a group of transactions or records in a batch.

batch job. A task or group of tasks you submit for processing that the system treats as a single unit during processing, for example, printing reports and purging files. The computer performs these tasks with little or no user interaction.

batch processing. A method by which the computer selects jobs from the job queue, processes them, and writes output to the outqueue. Contrast with *interactive processing.*

batch type. A code that designates which JDE system the associated transactions pertain to, thus controlling what records are selected for processing. For example, in the Post General Journal process, only unposted transaction batches with a batch type of G for General Accounting are selected for posting.

bill of material (BOM). A listing of all the subassemblies, parts, and raw materials that go into a parent assembly showing the quantity of each required to make the assembly. It is used in conjunction with the master production schedule to determine the items for which purchase requisitions and production orders must be released. There is a variety of display formats for bills of material, including: single level, multi level, indented, planning, and costed. Synonymous with *formula, recipe*, and *ingredients list.*

Boolean logic operand. In JDE's DREAM Writer, the parameter of the Relationship field. The Boolean logic operand tells the system to perform a comparison between certain records or parameters. Available operands are:

EQ = Equal To
LT = Less Than
LE = Less Than or Equal To
GT = Greater Than
GE = Greater Than or Equal To
NE = Not Equal To
NL = Not Less Than
NG = Not Greater Than

bubble chart. A diagram that attempts to display the interrelationships of systems, functions, or data in sequential flow. It derives its name from the circular symbols used to enclose the statements on the chart.

bucketed system. An MRP, DRP, or other time–phased system in which all time–phased data are accumulated into time periods or "buckets." If the period of accumulation is one week, then the system is said to have weekly buckets.

bucketless system. An MRP, DRP, or other time–phased system in which all time–phased data are processed, stored, and usually displayed using dated records rather than defined time periods or "buckets."

bulk issue. Parts issued from stores to work–in–process inventory, but not based on a job order. They are issued in quantities estimated to cover requirements of individual work centers and production lines. The issue may be used to cover a period of time or to fill a fixed–size container.

by–product. A material of value produced as residual of or incidental to the production process. The ratio of by–product to primary product is usually predictable. By–products may be recycled, sold as is, or used for other purposes.

CAD/CAP. Computer Assisted Design/ Computer Assisted Programming. A set of automated programming tools for designing and developing systems. These tools automate system design, generate source code and documentation, enforce design standards, and help to ensure consistency throughout all JDE systems.

capacity requirements planning (CRP). The function of establishing, measuring, and adjusting limits or levels of capacity. It is the process of determining in detail how much labor and machine resources are required to accomplish the tasks of production. Open shop orders and planned orders in the MRP system are input to CRP, which "translates" these orders into hours of work by work center and by time period.

category code. In user defined codes, a temporary title for an undefined category. For example, if you are adding a code that designates different sales regions, you could change *category code 4* to *Sales Region*, and define E (East), W (West), N (North), and S (South) as the valid codes. Category codes were formerly known as *reporting codes*.

character. Any letter, number, or other symbol that a computer can read, write, and store.

closed–loop MRP. A system built around material planning that includes the additional planning functions of sales and operations (production planning, master production scheduling, and capacity requirements planning). Once this planning phase is complete and the plans have been accepted as realistic and attainable, the execution functions come into play. These include the manufacturing control functions of input–output (capacity) measurement, detailed scheduling and dispatching, as well as anticipated delay reports from both the plant and supplier. The term "closed loop" implies that not only is each of these elements included in the overall system, but also that feedback is provided by the execution functions so that the planning can be kept valid at all times.

command. A character, word, phrase, or combination of keys you use to tell the computer to perform a defined activity.

component. Raw material, ingredient, part, or subassembly that goes into a higher level assembly, compound, or other item. This term may also include packaging materials for finished items.

component availability. The availability of component inventory for the manufacture of a specific parent order or group of orders or schedules.

constants. Parameters or codes that rarely change. The computer uses constants to standardize information processing by an associated system. Some examples of constants are allowing or disallowing out-of-balance postings and having the system perform currency conversions on all amounts. Once you set constants such as these, the system follows these rules until you change the constants.

Core. The central and foundational systems of JDE software, including General Accounting, Accounts Payable, Accounts Receivable, Address Book, Financial Reporting, Financial Modeling and Allocations, and Back Office.

costed bill of material. A form of bill of material that extends the quantity per of every component in the bill by the cost of the components.

crew size. The number of people required to perform an operation. The associated standard time should represent the total time for all crew members to perform the operation, not the net start to finish time for the crew.

cumulative leadtime. The longest planned length of time involved to accomplish the activity in question. For any item planned through MRP, it is found by reviewing the leadtime for each bill of material path below the item. Whichever path adds up to the greatest number defines cumulative leadtime. Synonymous with *aggregate leadtime, composite leadtime,* and *critical path leadtime.*

cumulative manufacturing leadtime. The cumulative planned leadtime when all purchased items are assumed to be in stock.

cumulative MRP. The planning of parts and subassemblies by exploding a master schedule, as in MRP, except that the master scheduled items and therefore the exploded requirements are time phased in cumulative form. Usually these cumulative figures cover a planning year.

current cost. The current or replacement cost of labor, material, or overhead. Its computation is based on current performance or measurements, and it is used to address "today's" costs before production as a revision of annual standard costs.

cursor. The blinking underscore or rectangle on your screen that indicates where the next keystroke will appear.

cursor sensitive help. JDE's online help function, which allows you to view a description of a field, an explanation of its purpose, and, when applicable, a list of the valid codes you can enter. To access this information, move the cursor to the field and press F1.

data. Numbers, letters, or symbols that represent facts, definitions, conditions, and situations, that a computer can read, write, and store.

database. A continuously updated collection of all information a system uses and stores. Databases make it possible to create, store, index, and cross-reference information online.

data dictionary. A database file consisting of the definitions, structures, and guidelines for the usage of fields, messages, and help text. The data dictionary file does not contain the actual data itself.

default. A code, number, or parameter the system supplies when you do not enter one. For example, if an input field's default is N and the you do not enter something in that field, the system supplies an N.

demand. A need for a particular product or component. The demand could come from any number of sources, such as a customer order or forecast, or an interplant requirement or a request from a branch warehouse for a service part or for manufacturing another product.

dependent demand. Demand that is directly related to or derived from the bill of material structure for other items or end products. Such demands are calculated and need not and should not be forecast. A given inventory item may have both dependent and independent demand at any given time. For example, a part may simultaneously be the component of an assembly and also sold as a service part.

descriptive title. See *user defined code*.

detail. The individual pieces of information and data that make up a record or transaction. Contrast with *summary*.

detail file. A file which contains manufacturing, routing, or specification details. Contrast with *master file.*

direct labor. Labor that is specifically applied to the product being manufactured or utilized in the performance of the service.

direct material. Material that becomes a part of the final product in measurable quantities.

discrete manufacturing. Production of distinct items such as automobiles, appliances, or computers.

display. (1) To cause the computer to show information on a terminal's screen. (2) A specific set of fields and information that a JDE system might show on a screen. Some screens can show more than one display when you press a specified function key.

display field. A field of information on a screen that contains a system-provided code or parameter that you cannot change. Contrast with *input field.*

downstream operation. A task subsequent to the task currently being planned or executed.

DREAM Writer. Data Record Extraction And Management Writer. A flexible data manipulator and cataloging tool. You use this tool to select and sequence the data that is to appear on a programmed report.

edit. (1) To make changes to a file by adding, changing, or removing information. (2) The program function of highlighting fields into which you have entered inadequate or incorrect data.

effectivity date. The date on which a component or an operation is to be added or removed from a bill of material or an assembly process. The effective dates are used in the explosion process to create demands for the correct items. Normally, bill of material and routing systems provide for an effectivity "start date" (from) and "stop date" (thru), signifying the beginning and end of a particular relationship. Synonymous with *effective date.*

efficiency. A measure (as a percentage) of the actual output to the standard output expected. Efficiency measures how well something is performing relative to expectations; it does not measure output relative to any input. For example, if there is a standard of 100 pieces per hour and 780 units are produced in one eight–hour shift, the efficiency is 780 divided by 800, then multiplied by 100% or 97.5%.

electronic data interchange (EDI). The paperless (electronic) exchange of trading documents, such as purchase orders, shipment authorizations, advanced shipment notices, and invoices, using standardized document formats.

end item. A product sold as a completed item or repair part. Any item subject to a customer order or sales forecast. Synonymous with *end product, finished good,* and *finished product.*

engineering change order (ECO). A work order used to implement a change in a manufactured product. This can be a change in design, quantity or parts required, assembly or production process, and so forth.

engineer–to–order. Products whose customer specifications require unique engineering design or significant customization. Each customer order results in a unique set of part numbers, bills of material, and routings.

execute. See *run*.

exit. (1) To interrupt or leave a computer program by pressing a specific key or a sequence of keys.
(2) An option or function key displayed on a screen that allows you to access another screen.

expedite. To "rush" or "chase" production or purchase orders that are needed in less than the normal leadtime. To take extraordinary action because of an increase in relative priority.

facility. A collection of computer language statements or programs that provides a specialized function throughout a system or throughout all integrated systems. Some examples DREAM Writer and FASTR.

FASTR. Financial Analysis Spreadsheet Tool and Report Writer. A report writer that allows you to design your own report specifications using the general ledger database.

feature. An accessory or attachment to an item.

field. (1) An area on a screen that represents a particular type of information, such as name, document type, or amount. Fields that you can enter data into are designated with underscores. See *input field* and *display field.* (2) A defined area within a record that contains a specific piece of information. For example, a vendor record

consists of the fields Vendor Name, Address, and Telephone Number. The Vendor Name field contains just the name of the vendor.

file. A collection of related data records organized for a specific use and electronically stored by the computer.

fixed cost. An expenditure that does not vary with the production volume, for example, rent, property tax, and salaries of certain personnel.

fixed order quantity. A lot–sizing technique in MRP or inventory management that will always cause planned or actual orders to be generated for a predetermined fixed quantity, or multiples thereof, if net requirements for the period exceed the fixed order quantity.

fixed overhead. Traditionally all manufacturing costs, other than direct labor and direct materials, that continue even if products are not produced. Although fixed overhead is necessary to produce the product, it cannot be directly traced to the final product.

fold area. An area of a screen, accessed by pressing F4, that displays additional information associated with the records or data items displayed on the screen.

forecast. An estimate of future demand. A forecast can be determined by mathematical means using historical data, created subjectively by using estimates from informal sources, or a combination of both techniques.

function. A separate feature within a facility that allows you to perform a specific task, for example, the field help function.

function key. A key you press to perform a system operation or action. For example, you press F4 to have the system display the fold area of a screen.

Gantt chart. A control chart designed to show graphically the relationship between planned performance and actual performance.

hard copy. A presentation of computer information printed on paper. Synonymous with *printout*.

header. Information at the beginning of a file. This information is used to identify or provide control information for the group of records that follows.

help instructions. Online documentation or explanations of fields that you access by pressing the Help key or by pressing F1 with your cursor in a particular field.

helps. See *help instructions*.

hidden selections. Menu selections you cannot see until you enter HS in a menu's Selection field. Although you cannot see these selections, they are available from any menu. They include such items as Display Submitted Jobs (33), Display User Job Queue (42), and Display User Print Queue (43). The Hidden Selections window displays three categories of selections: user tools, operator tools, and programmer tools.

implode. 1) Compression of detailed data in a summary–level record or report. 2) Tracing a usage and/or cost impact from the bottom to the top (end product) of a bill of material using where–used logic.

implosion. The process of determining the where–used relationship for a given component. Implosion can be single–level (showing only the parents on the next higher level) or multilevel (showing the ultimate top–level parent). Synonymous with *where used.* Contrast with *explosion.*

indented bill of material. A form of multilevel bill of material that lists the highest level parent items at the left margin and all the components going into these parents indented to the right of the margin. All subsequent levels of components are indented farther to the right. If a component is used in more than one parent within a given product structure, it will appear more than once, under every subassembly in which it is used.

indented where–used. A listing of every parent item, and the respective quantities required, as well as each of their respective parent items, continuing until the ultimate end item, or level–0 item, is listed. Each of these parent items is one that calls for a given component item in a bill of material file. The component item is shown closest to the left margin of the listing, with each parent indented to the right, and each of their respective parents indented even further to the right.

indirect costs. Costs that are not directly incurred by a particular job or operation. Certain utility costs, such as plant heating, are often indirect. An indirect cost is typically distributed to the product through the overhead rates.

indirect labor. Work required to support production in general without being related to a specific product, for example, sweeping the floor.

indirect materials. Items that become part of the final product or substances that are consumed in the manufacture of a product that have a negligible value relative to the value of the final product or the usage of which cannot be effectively determined. These components may or may not be included in the bill of material. Synonymous with *supplies*.

input. Information you enter in the input fields on a screen or that the computer enters from other programs, then edits and stores in files.

input field. An area on a screen, distinguished by underscores (_ _), where you type data, values, or characters. A field represents a specific type of information such as name, document type, or amount. Contrast with *display field*.

install system code. The code that identifies a JDE system. Examples are 01 for the Address Book system, 04 for the Accounts Payable system, and 09 for the General Accounting system.

interactive processing. A job the computer performs in response to commands you enter from a terminal. During interactive processing, you are in direct communication with the computer, and it might prompt you for additional information during the processing of your request. See *online*. Contrast with *batch processing.*

interface. A link between two or more JDE systems that allows these systems to send information to and receive information from one another.

issue. The physical movement of items from a stocking location and, often, the transaction reporting of this activity.

issue cycle. The time required to generate a requisition for material, pull the material from an inventory location, and move it to its destination.

item. Any unique manufactured or purchased part, material, intermediate, subassembly, or product.

item master record. The master record for an item. Typically, it contains identifying and descriptive data and control values (leadtimes, lot sizes, etc.) and may contain data on inventory status, requirements, planned orders, and costs. Item records are linked together by product structure records which define the bill of material for an item.

item number. A number that serves to uniquely identify an item. Synonymous with *part number.*

jargon. A JDE term for system specific help text. You base your help text on a specific reporting code you designate in the Data Dictionary Glossary. You can display this text as part of online help.

job. A single identifiable set of processing actions you tell the computer to perform. You start jobs by choosing menu selections, entering commands, or pressing designated function keys. An example of a computer job is check printing in the Accounts Payable system.

job queue. A screen that lists the batch jobs you and others have told the computer to process. When the computer completes a job, the system removes the job's identifier from the list.

justify. To shift information you enter in an input field to the right or left side of the field. Many of the facilities within JDE systems justify information. The system does this only after you press Enter.

Just–in–Time (JIT). A philosophy of manufacturing based on planned elimination of all waste and continuous improvement of productivity. The primary elements of zero inventories are to have only the required inventory when needed; to improve quality to zero defects; to reduce leadtimes by reducing setup times, queue lengths, and lot sizes; to incrementally revise the operations themselves; and to accomplish these things at minimum cost.

key field. A field common to each record in a file. The system uses the key field designated by the program to organize and retrieve information from the file.

Key General Ledger Account (Key G/L). See *automatic accounting instructions.*

labor cost. The dollar amount of added value due to labor performed during manufacturing.

leading zeros. A series of zeros that certain facilities in JDE systems place in front of a value you enter. This normally occurs when you enter a value that is smaller than the specified length of the field. For example, if you enter 4567 in a field that accommodates eight numbers, the facility places four zeros in front of the four numbers you enter. The result would look like this: 00004567.

leadtime. 1) A span of time required to perform a process (or series of operations). 2) In a logistics context, the time between recognition of the need for an order and the receipt of goods. Individual components of leadtime can include order preparation time, queue time, move or transportation time, and receiving and inspection time.

leadtime offset. A technique used in MRP where a planned order receipt in one time period will require the release of that order in an earlier time period based on the leadtime for the item.

level. Every part or assembly in a product structure is assigned a level code signifying the relative level in which that part or assembly is used within the product structure. Normally the end items are assigned to level 0 with the components and subassemblies going into it assigned to level 1 and so forth. The MRP explosion process starts from level 0 and proceeds downward one level at a time.

level of detail. (1) The degree of difficulty of a menu in JDE software. The levels of detail for menus are as follows:

A=Major Product Directories
B=Product Groups
1=Basic Operations
2=Intermediate Operations
3=Advanced Operations
4=Computer Operations
5=Programmers
6=Advanced Programmers

Also known as *menu levels.*
(2) The degree to which account information in the General Accounting system is summarized. The highest level of detail is 1 (least detailed) and the lowest level of detail is 9 (most detailed).

master file. A computer file that a system uses to store data and information which is permanent and necessary to the system's operation. Master files might contain data or information such as paid tax amounts and vendor names and addresses.

load. The amount of planned work scheduled and actual work released for a facility, work center, or operation for a

specific span of time. It is usually expressed in terms of standard hours of work or, when items consume similar resources at the same rate, units of production.

lot. A quantity produced together and sharing the same production costs and resultant specifications.

lot number. A number that identifies a designated group of related items manufactured in a single run or received from a vendor in a single shipment.

lot number control. Assignment of unique numbers to each instance of receipt and carrying forth that number into subsequent manufacturing processes so that, in review of an end item, each lot consumed from raw materials through end item can be identified as having been used for the manufacture of this specific end item lot.

lot number traceability. Tracking parts by lot numbers to a group of items. This tracking can assist in the tracing of quality problems to their source.

lot traceability. The ability to identify the lot or batch numbers of consumption and/or composition for manufactured, purchased, and shipped items. This is a federal requirement in certain regulated industries.

low–level code. A number that identifies the lowest level in any bill of material at which a particular component may appear. Net requirements for a given component are not calculated until all the gross requirements have been calculated down to that level. Low–level codes are normally calculated and maintained automatically by the computer software. Synonymous with *explosion level.*

machine hours. The amount of time, in hours, that a machine is actually running. Machine hours, rather than labor hours, may be used for planning capacity and scheduling and for allocating costs.

make–to–order product. A product that is finished after receipt of a customer's order. The final product is usually a combination of standard items and items custom designed to meet the special needs of the customer. Frequently long leadtime components are planned prior to the order arriving in order to reduce the delivery time to the customer. Where options or other subassemblies are stocked prior to customer orders arriving, the term "assemble–to–order" is frequently used.

make–to–stock product. A product that is shipped from finished goods, "off–the–shelf," and therefore is finished prior to a customer order arriving. The master scheduling and final assembly scheduling are conducted at the finished goods level.

manufacturing leadtime. The total time required to manufacture an item, exclusive of lower level purchasing leadtime. It includes the time for order preparation, queue, setup, run, move, inspection, and put–away.

manufacturing resource planning (MRP II) A method for the effective planning of all resources of a manufacturing company. Ideally, it addresses operational planning in units, financial planning in dollars, and has a simulation capability to answer "what if" questions. It is made up of a variety of functions, each linked together: business planning, sales and operations (production planning), master production scheduling, material requirements planning, capacity requirements planning, and the execution support systems for capacity and material. Output from these systems is integrated with financial reports such as the business plan, purchase commitment report, shipping budget, inventory projections in dollars, etc. Manufacturing resource planning is a direct outgrowth and extension of closed–loop MRP.

master file. A computer file that a system uses to store data and information which is permanent and necessary to the system's

operation. Master files might contain data or information such as paid tax amounts and vendor names and addresses.

master planning. A classification scheme that includes the following activities: forecasting and order servicing (which together constitute demand management); production and resource planning; and master scheduling (which includes the final assembly schedule, the master schedule, and the rough cut capacity plan).

master production schedule (MPS). A detailed statement of how many items are planned to be produced and when. The MPS focuses on products to be made and, through the detailed planning system, identifies the resources (materials, work force, plant equipment and capital) needed and the timing of the need.

menu. A screen that displays numbered selections. Each of these selections represents a program. To access a selection from a menu, type the selection number and then press Enter.

menu levels. See *level of detail.*

menu masking. A security feature of JDE systems that lets you prevent individual users from accessing specified menus or menu selections. The system does not display the menus or menu selections to unauthorized users.

menu message. Text that appears on a screen after you make a menu selection. It displays a warning, caution, or information about the requested selection.

need date. The date when an item is required for its intended use. In an MRP system, this date is calculated by a bill of material explosion of a schedule and the netting of available inventory against that requirement.

next number facility. A JDE software facility you use to control the automatic numbering of such items as new G/L accounts, vouchers, and addresses. It lets you specify your desired numbering system and provides a method to increment numbers to reduce transposition and typing errors.

nonsignificant part numbers. Part numbers that are assigned to each part but do not convey any information about the part. They are identifiers, not descriptors. Contrast with *significant part numbers.*

numeric character. Represents data using the numbers 0 through 9. Contrast with *alphabetic character* and *alphanumeric character*.

offline. Computer functions that are not under the continuous control of the system. For example, if you were to run a certain job on a personal computer and then transfer the results to a host computer, that job would be considered an offline function. Contrast with *online*.

online. Computer functions over which the system has continuous control. Each time you work with a JDE system-provided screen, you are online with the system. Contrast with *offline*. See *interactive processing*.

online information. Information the system retrieves, usually at your request, and immediately displays on the screen. This information includes items such as database information, documentation, and messages.

operand. See *Boolean logic operand.*

operation number. A sequential number, usually two, three, or four digits long, such as 010, 020, 030, and so forth, that indicates the sequence in which operations are to be performed within an item's routing.

operations sequence. The sequential steps for an item to follow in its flow through the plant. For instance, operation 1: cut bar stock; operation 2: grind bar stock; operation 3: shape; operation 4: polish; operation 5: inspect and send to stock. This information is normally maintained in the routing file.

option. A numbered selection from a JDE screen that performs a particular function or task. To select an option, you enter its number in the Option field next to the item you want the function performed on. When available, for example, option 4 allows you to return to a prior screen with a value from the current screen.

output. Information the computer transfers from internal storage to an external device, such as a printer or a computer screen.

output queue. A screen that lists the spooled files (reports) you have told the computer to write to an output device, such as a printer. After the computer writes a file, the system removes that file's identifier from the online list.

overhead. Costs incurred in the operation of a business that cannot be directly related to the individual products or services produced. These costs, such as light, heat, supervision, and maintenance, are grouped in several pools (department overhead, factory overhead, general overhead) and distributed to units of product or service by some standard allocation method.

overlap. The percentage that an operation overlaps the previous operation in the sequence. For example, a 20% overlap means that the step can begin when the previous step is 80% complete.

override. The process of entering a code or parameter other than the one provided by the system. Many JDE systems offer screens that provide default field values when they appear. By typing a new value over the default code, you can *override* the default. See *default*.

parameter. A number, code, or character string you specify in association with a command or program. The computer uses parameters as additional input or to control the actions of the command or program.

part. Generally, a material item that is used as a component and is not an assembly, subassembly blend, intermediate, and so forth.

password. A unique group of characters that you enter when you sign on to the system that the computer uses to identify you as a valid user.

pegging. In MRP, the capability to identify for a given item the sources of its gross requirements and/or allocations. Pegging can be thought of as "live where–used" information.

phantom bill of material. A bill of material coding and structuring technique used primarily for transient (nonstocked) subassemblies. For the transient item, leadtime is set to zero and the order quantity to lot–for–lot. This permits MRP logic to drive requirements straight through the phantom item to its components, but the MRP system usually retains its ability to net against any occasional inventories of the item. This technique also facilitates the use of common bills of material for engineering and manufacturing. Synonymous with *blow–through, pseudo bill of material,* and *transient bill of material.*

picking. The process of withdrawing from stock the components to make the products or the finished goods to be shipped to a customer.

pick list. A document that lists the material to be picked for manufacturing or shipping orders.

planned order. A suggested order quantity, release date, and due date created by MRP processing when it encounters net requirements. Planned orders are created by the computer, exist only within the computer, and may be changed or deleted by the computer during subsequent MRP processing if conditions change. Planned orders at one level will be exploded into gross requirements for components at the next lower level. Planned orders, along with released orders, serve as input to capacity

requirements planning to show the total capacity requirements by work center in future time periods.

planning bill of material. An artificial grouping of items and/or events in bill of material format, used to facilitate master scheduling and/or material planning. Sometimes called a pseudo bill of material.

planning family. A group of end items whose similarity of design and manufacture facilitates being planned in aggregate.

planning horizon. The amount of time the master schedule extends into the future. This is normally set to cover a minimum of cumulative leadtime plus time for lot sizing low–level components and for capacity changes of primary work centers.

planning time fence. A time period beyond which only forecasts of expected customer orders exist. The master schedule planning horizon is divided into three regions. The demand time fence separates regions 1 and 2 and the planning time fence separates regions 2 and 3. Region 1 contains actual orders. Region 2 contains actual orders and forecast orders. Region 3 contains forecast orders and extends to the end of the planning horizon. Between the demand fence and the planning time fence actual customer orders replace the forecast quantities.

primary location. The designation of a certain storage location as the standard, preferred location for an item.

printout. A presentation of computer information printed on paper. Synonymous with *hard copy*.

print queue. An online list (screen) of written files that you have told the computer to print. Once the computer prints the file, the system removes the file's identifier from the online list. See *output queue*.

priority. The relative importance of jobs. The sequence in which jobs should be worked on.

process manufacturing. Production that adds value by mixing, separating, forming, and/or performing chemical reactions. It may be done in either batch or continuous mode.

processing options. A feature of the JDE DREAM Writer that allows you to supply parameters to direct the functions of a program. For example, processing options allow you to specify defaults for certain screen displays, control the format in which information gets printed on reports, change the way a screen displays information, and enter "as of" dates.

program. A collection of computer statements that tells the computer to perform a specific task or group of tasks.

program specific help text. Glossary text that describes the function of a field within the context of the program.

prompt. (1) A reminder or request for information displayed by the system. When a prompt appears, you must respond in order to proceed. (2) A list of codes or parameters or a request for information provided by the system as a reminder of the type of information you should enter or action you should take.

PTF. Program Temporary Fix. A representation of changes to JDE software, which your organization receives on magnetic tapes or diskettes.

purchased part. An item sourced from a supplier.

purge. The process of removing records or data from a system file.

record. A collection of related, consecutive fields of data the system treats as a single unit of information. For example, a vendor record consists of information such as the vendor's name, address, and telephone number.

reporting code. See *category code.*

reverse image. Screen text that displays in the opposite color combination of characters and background from what the screen typically displays (for example, black on green instead of green on black).

quantity per. The quantity of a component to be used in the production of its parent. This value is stored in the bill of material and is used to calculate the gross requirements for components during the explosion process of MRP.

queue. 1) In computers: See job queue, output queue, and print queue.
2) In manufacturing: A waiting line. The jobs at a given work center waiting to be processed. As queues increase, so do average queue time and work–in–process inventory.

rated capacity. The demonstrated capability of a system. Traditionally, capacity is calculated from such data as planned hours, efficiency, and utilization. The rated capacity is equal to hours available x efficiency x utilization.

rate–based scheduling. A method for scheduling and producing based on a periodic rate, for example, daily, weekly or monthly. Traditionally, this method has been applied to high–volume and process industries. The concept can be applied within job shops using cellular layouts and mixed–model level schedules where the production rate is matched to the selling rate.

raw material. Purchased items or extracted materials that are converted via the manufacturing process into components and/or products.receipt. 1) The physical acceptance of an item into a stocking location. 2) The transaction reporting of this activity.

record. A collection of related, consecutive fields of data the system treats as a single unit of information. For example, a vendor record consists of information such as the vendor's name, address, and telephone number.

release. The authorization to produce or ship material that has already been ordered.

repetitive manufacturing. A form of manufacturing where various items with similar routings are made across the same process whenever production occurs. Products may be made in separate batches or continuously. Production in a repetitive environment is not a function of speed or volume.

replacement parts. Parts that can be used as substitutes that differ from completely interchangeable service parts in that they require some physical modification, such as cutting, drilling, and so forth, before they can replace the original part.

revision level. A number or letter representing the number of times a document has been changed.

rework order. A manufacturing order to rework and salvage defective parts or products.

resource requirements planning (RRP). The process of converting the production plan and/or the master production schedule into capacity needs for key resources: work force, machinery, warehouse space, suppliers' capabilities, and in some cases, money. Comparison of capacity required of items in the MPS to available capacity is usually done for each key resource. Synonymous with *rough cut capacity planning.*

routing. A set of information detailing the method of manufacture of a particular item. It includes the operations to be performed, their sequence, the various work centers to be involved, and the standards for setup and run. In some companies, the routing

also includes information on tooling, operator skill levels, inspection operations, testing requirements, and so forth.

run. To cause the computer to perform a routine, process a batch of transactions, or carry out computer program instructions.

run size. See standard batch quantity.

safety stock. 1) In general, a quantity of stock planned to be in inventory to protect against fluctuations in demand and/or supply. 2) In the context of master production scheduling, the additional inventory and/or capacity planned as protection against forecast errors and/or short–term changes in the backlog. Overplanning can be used to create safety stock.

scrap. Unusable material that results from the production process. It is material outside of specifications and of such characteristics that rework is impractical.

scrap factor. A percentage factor in the product structure used to increase gross requirements to account for anticipated loss within the manufacture of a particular product. Synonymous with *scrap rate.*

scroll. To use the roll keys to move screen information up or down a screen at a time. When you press the Rollup key, for instance, the system replaces the currently displayed text with the next screen of text if more text is available.

selection. Found on JDE menus, selections represent functions that you can access from a given menu. To make a selection, you type its associated number in the Selection field and press Enter.

setup. 1) The work required to change a specific machine, resource, work center, or line from making the last good piece of unit A to the first good piece of unit B; 2) Teardown of the just completed production and preparation of the equipment for production of the next scheduled item.

setup cost. The costs such as scrap costs, calibration costs, downtime costs, and lost sales associated with preparing the resource for the next product.

setup leadtime. The time needed to prepare a manufacturing process to start. Setup leadtime may include run and inspection time for the first piece.

shelf life. The amount of time an item may be held in inventory before it becomes unusable.

shop calendar. See work day calendar.

shop floor control (SFC). A system for utilizing data from the shop floor to maintain and communicate status information on shop orders (manufacturing orders) and on work centers. The major subfunctions of shop floor control are: 1) assigning priority of each shop order, 2) maintaining work–in–process quantity information, 3) conveying shop order status information to the office, 4) providing actual output data for capacity control purposes, 5) providing quantity by location by shop order for work–in–process inventory and accounting purposes, and 6) providing measurement of efficiency, utilization, and productivity of the work force and machines.

shrinkage. Reductions of actual quantities of items in stock, in process, or in transit. The loss may be caused by scrap, theft, deterioration, evaporation, and so forth.

shrinkage factor. A percentage factor in the item master record that compensates for expected loss during the manufacturing cycle either by increasing the gross requirements or by reducing the expected completion quantity of planned and open orders. The shrinkage factor differs from the scrap factor in that the former affects all uses of the part and its components and the scrap factor relates to only one usage. Synonymous with *shrinkage rate.*

significant part numbers. Part numbers that are intended to convey certain information, such as the source of the part, the material in the part, the shape of the part, and so forth. These usually make part numbers longer. Contrast with *nonsignificant part numbers.*

simulation. 1) The technique of using representative or artificial data to reproduce in a model various conditions that are likely to occur in the actual performance of a system. It is frequently used to test the behavior of a system under different operating policies. 2) Within MRP II, using the operational data to perform "what if" evaluations of alternative plans to answer the question, "Can we do it?" If yes, the simulation can then be run in the financial mode to help answer the question, "Do we really want to?" Synonymous with *what–if analysis.*

single level bill of material. A display of those components that are directly used in a parent item. It shows only the relationships one level down.

single–level where–used. A list of each parent in which a specific component is directly used and in what quantity. Done by imploding the bill of material.

softcoding. A JDE term that describes an entire family of features that allows you to customize and adapt JDE software to your business environment. These features lessen the need for you to use computer programmers when your data processing needs change.

software. The operating system and application programs that tell the computer how and what tasks to perform.

special character. Representation of data in symbols that are neither letters nor numbers. Some examples are * & # /.

spool. The function by which the system puts generated output into a storage area to await printing and processing.

spooled file. A holding file for output data waiting to be printed or input data waiting to be processed.

standard batch quantity. The quantity of a parent that is used as the basis for specifying the material requirements for production. The "quantity per" is expressed as the quantity to make the standard batch quantity, not to make only one of the parent. It is often used by manufacturers that use some components in very small quantities or by process–related manufacturers. Synonymous with *run size.*

standard costs. The target costs of an operation, process, or product including direct material, direct labor, and overhead charges.

standard cost system. A cost system that uses cost units determined before production. For management control purposes, the standards are compared to actual costs and variances are computed.

standard hours. The length of time that should be required to 1) set up a given machine or operation and 2) run one part/assembly/batch/end product through that operation. This time is used in determining machine and labor requirements. It is also frequently used as a basis for incentive pay systems and as a basis of allocating overhead in cost accounting systems.

subassembly. An assembly that is used at a higher level to make up another assembly.

subfile. An area on the screen where the system displays detailed information related to the header information at the top of the screen. Subfiles might contain more information than the screen can display in the subfile area. If so, use the roll keys to display the next screen of information. See *scroll*.

submit. See *run*.

summary. The presentation of data or information in a cumulative or totaled manner in which most of the details have been removed. Many of the JDE systems offer screens and reports that are summaries of the information stored in certain files.

superflush. A technique to relieve all components down to the lowest level using the complete bill of material, based on the count of finished units produced and/or transferred to finished good inventory.

system. A collection of computer programs that allows you to perform specific business tasks. Some examples of applications are Accounts Payable, Inventory, and Order Processing. Synonymous with *application.*

throughput. 1) The total volume of production through a facility (machine, work center, department, plant, or network of plants). 2) In theory of constraints, the rate at which the system (firm) generates money through sales.

time fence. A policy or guideline established to note where various restrictions or changes in operating procedures take place. For example, changes to the master production schedule can be accomplished easily beyond the cumulative leadtime, whereas changes inside the cumulative leadtime become increasingly more difficult to a point where changes should be resisted. Time fences can be used to define these points.

time series. A set of data that is distributed over time, such as demand data in monthly time period occurrences.

unit cost. Total labor, material, and overhead cost for one unit of production, for example, one part, one gallon, or one pound.

unit of measure. The unit in which the quantity of an item is managed, such as by weight, each, box, package, case, and so forth.

use as is. A classification for material that has been dispositioned as unacceptable per the specification, yet can be used.

user defined code. The individual codes you create and define within a user defined code type. Code types are used by programs to edit data and allow only defined codes. These codes might consist of a single character or a set of characters that represents a word, phrase, or definition. These characters can be alphabetic, alphanumeric, or numeric. For example, in the user defined code type table ST (Search Type), a few codes are C for Customers, E for Employees, and V for Vendors.

user defined code (type). The identifier for a table of codes with a meaning you define for the system (for example, ST for the Search Type codes table in Address Book). JDE systems provide a number of these tables and allow you to create and define tables of your own. User defined codes were formerly known as *descriptive titles.*

user identification (user ID). The unique name you enter when you sign on to a JDE system to identify yourself to the system. This ID can be up to 10 characters long and can consist of alphabetic, alphanumeric, and numeric characters.

valid codes. The allowed codes, amounts, or types of data that you can enter in a specific input field. The system checks, or edits, user defined code fields for accuracy against the list of valid codes.

variable. Changing, not constant or fixed. For example, variable costs are costs that change according to varying conditions.

variable overhead. All manufacturing costs that vary directly with production volume, other than direct labor and direct materials. Variable overhead is necessary to produce the product, but cannot be directly assigned to a specific product.

variance. The difference between the expected (budgeted or planned) value and the actual value.

video. The display of information on your monitor screen. Normally referred to as the *screen*.

vocabulary overrides. A JDE facility that allows you to override field, row, or column title text on a screen-by-screen or report-by-report basis.

where used list. A listing of every parent item that calls for a given component, and the respective quantity required, from a bill of material file. Synonymous with *implosion.*

window. A software feature that allows a part of your screen to function as if it were a screen in itself. Windows serve a dedicated purpose within a facility, such as searching for a specific valid code for a field.

work center. A specific production facility, consisting of one or more people and/or machines with identical capabilities, that can be considered as one unit for purposes of capacity requirements planning and detailed scheduling. Synonymous with *load center.*

work day calendar. A calendar used in inventory and production planning functions that consecutively numbers only the working days so that the component and work order scheduling may be done based on the actual number of work days available. Synonymous with *planning calendar, manufacturing calendar,* and *shop calendar.*

work in process (WIP). A product or products in various stages of completion throughout the plant, including all material from raw material that has been released for initial processing up to completely processed material awaiting final inspection and acceptance as finished product. Many accounting systems also include the value of semi-finished stock and components in this category. Synonymous with *in–process inventory.*

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