Eclipse Forecasting

Release 8.6.5 (Eterm)

Legal Notices

Activant® Eclipse™ 8.6.5 (Eterm) Online Help System

Publication Date: March 31, 2009

Table Of Contents

Forecasting Overview

The system uses the process of forecasting to predict how much of a product customers *will purchase in the future* based on *past* sales. Forecasting requires you to define parameters for a product or a period of time which the system uses to make these forecasting predictions. The system also must filter demand to create an accurate forecast picture. This filtering requires considering exceptional sales, lost sales, and trend, such as water heaters that are seasonal products and normally sold in the winter months.

Forecasting must also take into account the hits of a product, order points, line points defined, safety days (for order points and line points), and the economic order quantity (EOQ).

The system also requires the calculation of demand which indicates how often a product sells per day or the average number of units sold per day. The Update Demand Forecast program provides information necessary about demand that the system uses for generating the Suggested Purchase Order Queue, Suggested Auto Transfer, and Product Ranking programs.

These values determine the amount of inventory to stock in your warehouse. In a multiple-branch warehouse company, these values also determine the amount of inventory to transfer to branches.

Forecast Parameters and Periods

Before the system calculates order points, line points, and EOQ, it needs a "clean" demand sample. This sample is as accurate an estimation of demand as possible, despite the unpredictability of the future. To help clarify demand, the system gives you the ability to:

- Use variable forecasting periods.
- Eliminate exceptional sales.
- Compensate for lost sales and exceptional sales.
- Consider trends in demand.
- Handle seasonal and non-seasonal products.

Forecast parameters exist at the branch, buy line, and product levels, providing broad to detailed control over your inventory.

Setup Requirements for Forecasting

Following are the control maintenance records used for forecasting. Set the following control maintenance records:

- Assign Demand Forecast To Price/Ship Branch Or By Zip Code
- Default Lead Time Days If Product And Buy Line Have None
- Default Lead Time Factor If Product And Buy Line Have None
- Demand Hit Definition
- Exclude Exceptional Sales From Customer Demand Index
- Exclude MiscChrg Products From Customer Demand Index
- Forecast Parameters For Demand Calculation
- Global Hits Definition
- Minimum Hits
- Minimum Lead Samples
- Number Of Years To Be Included In Customer Demand Index
- Respect Item Min/Max For Suggested Transfers

Setup Requirements for Exceptional Sales

Following are the control maintenance records and authorization key used for exceptional sales.

Control Maintenance Records

Set the following control maintenance records:

- Demand Hit Definition
- Exclude Exceptional Sales From The Customer Demand Index

Authorization Key

Set the following authorization keys:

- OE.PRODUCT.TYPE.EDIT

Setup Requirements for Lead Time Parameters

Following are the control maintenance records used for lead time parameters.

Control Maintenance Records

Set the following control maintenance records:

- Default Lead Time Days If Product And Buy Line Have None
- Default Lead Time Factor If Product And Buy Line Have None
- Minimum Lead Samples

Setup Requirements for Order Points and Line Points

Following are the control maintenance records and authorization key used for order points and line points.

Control Maintenance Records

Set the following control maintenance records:

- Default For Excess Grace In Buy Line Maint
- Default Lead Time Days For Branch Procurement
- Default Lead Time Days If Product And Buy Line Have None
- Default Lead Time Factor If Product And Buy Line Have None
- Minimum Lead Samples
- Minimum Order Cycle Days For Suggested P/O
- Percentage Of Mother Branch's OP Protected In Suggested Transfer
- Warn About Additional Lead Time During OE

Authorization Key

Set the following authorization keys:

- PRODUCT.MAINT

Entering Forecast Parameters for Products

Forecast parameters filter transactions to determine product demand so that the demand forecast is accurate. Forecast parameters define boundaries for how the system suggests when to replenish products in your warehouse. For example, based on the product history, the system uses the settings you define to determine how much you need to keep on hand to fulfill expected sales.

Forecast parameters are set at the product, branch, or buy line level. Set forecast parameters at the product level to override settings at the branch or buy line level. Assign forecast parameters at the product level to filter demand, set the forecast method and forecast period, and to calculate a product's economic order quantity (EOQ).

> **Note:** The following procedure is a manual process for a single product. Use the Mass Load program to enter inventory parameters to groups of products.

To enter forecast parameters for a product:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **Forecast Params** hot key to display the Forecast Parameters Maintenance screen.
5. Complete the following fields, as needed, to define the parameters you want on this product:

To...	Use this field...
Indicate whether the system uses the standard or median forecasting method for this product. If left blank, the system uses Standard forecasting.	**Fcast Methd**
Indicate whether the product sells more at certain times of the year than at other times. For example, you generally sell more heaters in the winter than in the summer. Use the **Forecast Params** hot key to define the forecast period parameters to identify which time frames to include for seasonal products when the system calculates the forecast.	**Seasonal**
Enter the maximum number of days in the forecast period that the system uses to increase an item's raw demand to compensate for lost sales of a product.	**Lost Sale**
Enter the exceptional sales percentage for the product. The system eliminates from demand forecasting any sale exceeding the percentage difference between the two largest sales in the forecast period.	**Excpt%**
Enter the positive or negative percent to change the calculated demand forecast in anticipation of a trend increasing or decreasing the demand.	**Trend%**

To...	Use this field...
Enter the backorder tolerance quantity above which hits are excluded from the demand forecast calculation. The BTQ number indicates how many backordered items you want to include in the forecast calculation.	**BTQ**
Enter the minimum number of most-recent purchase orders the system samples to calculate the lead time for the product. The lead factor indicates the maximum number of processed purchase orders in the forecast period and the system uses this number to derive lead time days.	**Mn LF**
Define how the system calculates lead time for the product. The lead factor indicates the maximum number of processed purchase orders in the forecast period and the system uses this number to derive lead time days. • If greater than zero (0), this is the maximum number of most-recent purchase orders the system samples to estimate the lead time for the product. • If zero (0), the automatic calculation of lead time for the product is turned off and the system uses the value in the **Lead Days** field for the lead time. • If null (blank), the system uses the lead factor set for the product's buy line. **Note:** Seasonal products use a lead time calculated for the season.	**Lead Fctr**
(View Only) The lead time for this product. This field updates when **Lead Fctr** is greater than 0 (zero).	**Lead Days**
Enter the theoretical cost of reordering and restocking a single item, used in calculating the EOQ of the product. We recommend using 1.00 for $1.00.	**EOQ$**
Enter the carry cost percentage used in calculating the EOQ of the product. We recommend using 28 for 28%.	**EOQ%**

6. Press **Esc** to save changes and return to the previous screen.

   Changes take effect when you exit Product Maintenance.

More Options for Entering Forecast Parameters

The Forecast Parameters Maintenance screen also offers these options:

To...	Use this hot key...
View the components of the demand forecast calculation	**Audit**
open the User Inventory Controls screen, where you can: • set minimum and maximum stocking levels for the item • add the product demand from a dependent selling branch to a purchasing branch • add service stock	**User Controls**
View product availability and inventory information for the item	**Inv Inq**
Enter forecast period parameters	**Forecast**

To...	Use this hot key...
View the default cost for the item	**Cost**
Override product lead time	**Lead Time**

Entering Forecast Period Parameters

Demand patterns for products selling an average of 10 times a month are different from those for products selling an average of 10 times a year. Therefore, the system forecasts product demand based on variable forecast periods.

On average, the following is true:

- Fast-moving items use shorter forecast periods, because most recent sales are the best for predicting future demand.
- Slow-moving items use a longer forecast period, because you need more time and purchase for accurate predictions.
- Seasonal products, which are in greater demand at certain times of the year, use the demand history from the prior year's season.

In addition to setting forecast period parameters at the product level, you can also set these parameters at the branch or buy line level. Parameters set at the product level override those set at the buy line and branch level.

Note: The following procedure is a manual process for a single product. Use the Mass Load program to enter inventory parameters to groups of products.

To enter forecast period parameters for a product:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product and use the **Inven** hot key to display the Primary Inventory Maintenance screen.
3. Use the **Forecast Params** hot key to display the Forecast Parameters Maintenance screen.
4. Use the **Forecast** hot key to display the Forecast Parameters screen.
5. To enter non-seasonal demand parameters for a branch, under the **Regular** area, complete the following information:

Field	Value
Hits	Number of hits the system looks for within the regular **Min Days** and **Max Days** range to calculate the number of days of sales history which is used to calculate a non-seasonal product's demand.
Min Days	Minimum days used with regular **Hits** to determine the number of days of sales history used to calculate a non-seasonal product's demand.
Max Days	Maximum days used with regular **Hits** to determine the number of days of sales history used to calculate a non-seasonal product's demand.

Note: If the date of the first transaction for a product is less than **Max Days**, the demand history calculation program uses the date of the first transaction for **Max Days**. If the date of the first transaction for a product is also less than

Min Days, the program also uses the date of the first transaction as **Min Days**.

6. Enter seasonal forecast parameters in the **Seasonal** section of the Forecast Parameters screen:

Field	Value
Hits	Number of hits the system looks for within the seasonal **Min Days** and **Max Days** range to calculate the number of days of sales history which is used to calculate a seasonal product's demand.
Min Days	Minimum days used with seasonal **Hits** to determine the number of days of sales history used to calculate a seasonal product's demand.
Max Days	Maximum days used with seasonal **Hits** to determine the number of days of sales history used to calculate a seasonal product's demand.

Note: If the date of the first transaction for a product is less than **Max Days**, the demand history calculation program uses the date of the first transaction for **Max Days**. If the date of the first transaction for a product is also less than **Min Days**, the program also uses the date of the first transaction as **Min Days**.

7. Press **Esc** to save changes and return to the previous screen.
8. Exit Product Maintenance for changes to take effect.

Entering Control Forecast Parameters

Forecast parameters filter transactions to determine product demand so the system can make a more accurate demand forecast. Use the **Forecast Parameters For Demand Calculation** control maintenance record to define system-wide forecast parameters.

You can assign forecast parameters at the branch level that apply to all products in that branch, unless overridden at the buy line or the product level. These include parameters to filter demand, set the forecast method and forecast period, and to calculate a product's economic order quantity (EOQ).

To enter system-level forecast period parameters:

1. From the **System > System Files** menu, select **Control Maintenance** to display the Control Maintenance screen.
2. In the **Keyword** field, enter **forecast parameters for demand** to display the Control Forecast Parameters Maintenance screen.
3. Complete the following fields, as needed:

   Note: Unless otherwise stated, there is no default setting and the system leaves the field blank.

Field	Description
Branch	Branch for which to define forecast period parameters. The default is Branch 1.
Forecast Method	Whether the system uses the standard or median forecasting method for this branch. The default is Standard (S).
Seasonal (Y/N)	Whether the branch sells more of certain products at certain times of the year than at other times and is therefore seasonal. The default setting is No (N).
Lost Sale	The maximum number of days in the forecast period that the system uses to increase an item's raw demand to compensate for lost sales of a product.
Exceptional %	The exceptional sales percentage for the product. The system eliminates from demand forecasting any sale exceeding the percentage difference between the two largest sales in the forecast period.
Trend %	The positive or negative percent to change the calculated demand forecast in anticipation of a trend increasing or decreasing the demand.
EOQ $	The theoretical cost of reordering and restocking a single item, used in calculating the EOQ of the product. We recommend using 1.00 for $1.00. The default is $1.00.
EOQ %	The carry cost percentage used in calculating the EOQ of the product. We recommend using 28 for 28%. The default is 28.
Auto-Trend	Whether to apply an automatic trend for seasonal products. The system calculates and applies a trend based on recent demand compared to the previous year's demand. The default is No (N).
Max Decrease%	The maximum negative trend to apply to the demand forecast for the product. This parameter only applies to seasonal products with the Auto Trend flag enabled.

Field	Description
Max Increase%	The maximum positive trend to apply to the demand forecast for the product. This parameter only applies to seasonal products with the Auto Trend flag enabled.
Include Directs	Whether to include direct shipments in the demand calculation for the product. The default is No (N).

4. In the **Regular** section, enter non-seasonal forecast parameters:

Field	Description
Hits	The number of times an item sold within the regular **Min Days** and **Max Days** range. The system uses hits to calculate the forecast period for calculating demand for a non-seasonal product. The **Demand Hit Definition** control maintenance record determines how the system calculates hits based on sales orders. The default is 25.
Min Days	Minimum days used with regular **Hits** to determine the forecast period for calculating demand for a non-seasonal product. The default is 90.
Max Days	Maximum days used with regular **Hits** to determine the forecast period for calculating demand for a non-seasonal product. The default is 365.

Note: If the date of the first transaction for a product is less than the defined **Max Days**, the system uses the date of the first transaction as **Max Days**. If the date of the first transaction for a product is also less than the defined **Min Days**, the program uses the date of the first transaction as **Min Days**.

5. In the **Seasonal** section, enter seasonal forecast parameters:

Field	Description
Hits	The number of times an item sold within the seasonal **Min Days** and **Max Days** range. The system uses hits to calculate the forecast period for calculating demand for a seasonal product. The **Demand Hit Definition** control maintenance record determines how the system calculates hits based on sales orders. The default is 10.
Min Days	Minimum days used with seasonal **Hits** to determine the forecast period for calculating demand for a seasonal product. The default is 42.
Max Days	Maximum days used with seasonal **Hits** to determine the forecast period for calculating demand for a seasonal product. The default is 122.

Note: If the date of the first transaction for a product is less than the defined **Max Days**, the system uses the date of the first transaction as **Max Days**. If the date of the first transaction for a product is also less than the defined **Min Days**, the program uses the date of the first transaction as **Min Days**.

6. Press **Esc** to save changes and exit the screen.

How Standard and Median Forecasting Works

The system offers two different methods for forecasting product demand. The default is Standard. You can select one of the following forecasting methods:

- **Standard** for products with larger demand histories.
- **Median** for products with smaller demand histories.

Standard Forecasting Method

- The system identifies and eliminates from demand forecasting any sales exceeding the back order tolerance quantity (BTQ) during the forecast period.
- After eliminating sales exceeding the BTQ, the system eliminates from demand forecasting any sale exceeding the exceptional sale percent during the forecast period.
- The system adds the remaining sales quantities together and divides the sum by the number of days in the forecast period.
- This demand per day is then multiplied by 30 to produce a monthly demand. The system rounds up to the nearest unit.

For example, Product A sells ten times in a forecast period of 365 days in the following quantities: 200, 100, 9, 8, 7, 6, 5, 4, 3, and 2. The sale of 200 is exceptional and eliminated from demand forecasting. The system adds the remaining quantities together (100+9+8+7+6+5+4+3+2=144) and divides the sum by the days in the demand period (144/365=.394). The system then multiplies the daily demand by 30 days (one month) to produce a monthly demand of 12 units (.394*30=11.82).

Consider that if Product A had a BTQ set to 100, the sale of 200 would be eliminated and the sale of 100, being 50% more than the second largest sale of 9, would be considered an exception and eliminated from demand forecasting. Adding the remaining quantities together (9+8+7+6+5+4+3+2=44), dividing by the days in the demand period (44/365=0.12), and multiplying by 30 days would produce a monthly demand of only 4 units (0.12*30=3.61).

Median Forecasting Method

- The system identifies and eliminates from demand forecasting, any sales exceeding the BTQ and the exceptional sale percent during the forecast period.
- The system identifies the median quantity of the remaining sales and multiplies this quantity by the number of hits counted in the forecast period.
- This daily demand is multiplied by 30 days to produce a monthly demand. The system rounds up to the nearest unit.

For example:

Product A does not have a BTQ set. The exceptional sales percent equals 50%. Product A sells ten times in a forecast period of 365 days in the following quantities: 200, 100, 9, 8, 7, 6, 5, 4, 3,

and 2. The sale of 200 is proven to be exceptional and eliminated from demand forecasting. The median of the remaining quantities (100, 9, 8, 7, 6, 5, 4, 3, 2) is 6. The system multiplies the median quantity by the number of hits counted (6*9=54) and divided by the days in the forecast period (54/365=.148). The system then multiplies the daily demand by 30 days to produce a monthly demand of 5 units (.148 x 30=4.4).

Including Direct Shipments in the Demand Calculation

Include direct shipments from the vendor in the demand calculation for the product when the majority of your direct shipments are the result of not having enough of the item on the shelf.

Forecast parameters set at the product level override those set at the branch or buy line level.

Note: The following procedure is a manual process for a single product. Use the Mass Load program to enter inventory parameters to groups of products.

To include direct shipments from the vendor in the demand calculation for a product:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **Forecast Params** hot key to display the Forecast Parameters Maintenance screen.
5. Use the **Hierarchy** hot key to select a branch.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.

6. Use the **Forecast** hot key to display the Forecast Parameters screen.
7. Use the **Hierarchy** hot key to select a branch.
8. In the **Incl Dirs** column corresponding to the branch or territory where you want to include direct shipments in the demand calculation for the product, type **Y**.
9. Press **Esc** to save changes and return to the previous screen.

   Exit Product Maintenance for changes to take effect.

Viewing Default Costs for Products

If you have authorization, you can view the default cost used in the economic order quantity (EOQ) calculation for the product at the sales branch. This cost comes from Global Basis name matching the **Dflt Cost Prompt**, set in the **Global Buy/Sell Basis Names** control maintenance record. Assign costs to products through Product Price Sheet Maintenance or Price Line Maintenance.

Users must have the COST.VIEW and COGS.VIEW authorization key to view the default cost. Otherwise, the column displays asterisks (****).

To view the default cost for a product:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
3. Use the **Forecast Params** hot key to display the Forecast Parameters Maintenance screen.
4. Use the **Hierarchy** hot key to select a branch.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.

5. Use the **Cost** hot key to display the default cost.
6. Press **Esc** to return to the previous screen.

How the System Filters Demand for Forecasting

Demand is a filtered forecast of products being sold to the customers. The calculation of demand answers this question: "How much of the product is being *demanded* by customers?" When calculating item demand, the system clarifies the data sample by applying inventory forecast parameters that eliminate exceptional sales.

> **Note:** If the **Enable Exclusion Of Matrix Cells From Demand Calculations** control maintenance record is set, the system excludes products priced using sell matrix cells flagged for exclusion in the demand calculation. For more information, see **Excluding Items From Demand Calculation Through Matrix Cells** in the Pricing documentation.

The system uses the following steps to produce a clean data sample for the demand forecast calculation:

1. The system examines all sales occurrences within a data sample to be used for a forecast period, based on the **Demand Hit Definition** control maintenance record, and determines the largest sale of an item.
2. The system examines the remaining sales occurrences in the data sample and determines whether the largest sale exceeds the **Excpt %** (Exceptional Sales Percent) value. If so, the largest sale is not used in the data sample.
3. The system examines all sales occurrences for the item and eliminates those sales exceeding the Back Order Tolerance Quantity (BTQ) value.

   For example, use a BTQ for promotional sales when you require customers to purchase the item in large quantities. The BTQ prevents these large purchase quantities from being considered in the demand forecast calculation.
3. The system compensates for lost sales and applies any identified trend.
4. The system uses the remaining sales occurrences with the chosen Forecast Method as the data sample to calculate item demand.

Customer Demand

Demand is a filtered forecast of products being sold to the customers. The calculation of demand answers this question: "How much of the product is being *demanded* by customers?"

The system uses demand calculation to set order points, line points, and transfer points. In addition, demand determines surplus for the Suggested Purchase Order Queue and the Suggested Auto Transfer program.

For more information on order and line points, see the following topics:

- Order Points and Line Points Overview
- How the System Calculates Order Points
- How the System Calculates Line Points

Demand is calculated when the Update Demand program runs. You can audit the Update Demand program by accessing an individual product in the Product Maintenance screen.

This topic provides information about the following:

- Demand History Period
- Using the Add Demand Screen
- Using Demand Override

Demand History Period

To determine the amount of sales history to use to calculate demand, the Update Demand program first determines the number of hits for each product in each branch.

Then, the following rules apply to establish the amount of sales history appropriate to a product's rate of sale.

If a product has...	then..
25 or more hits in the past 91 days	the system uses the sales of the last 91 days to determine usage.
less than 25 hits in 91 days but more than 25 hits in the past year	the system totals the sales back to the occurrence on the day of the 25th hit. If more than one hit occurred on the day of the 25th hit, all sales on that day are included.
less than 25 hits in the past year	the sales for the past year are totaled together.

Items that sell frequently are more predictable over short periods of time. By setting the **Seasonal** field to using Mass Load, you can identify items that have a seasonal sales character. The same rules apply to seasonal items, except that the system starts from a date beginning one year *previous* and moving forward to the present date.

Using the Add Demand Screen

Use the Add Demand screen to add the demand history of one or more discontinued products to its replacement product or add a product's demand history in one branch to another branch. For example, you receive notice from your vendor that the furnace Model 721A is being replaced with Model 721B. You do not want to lose the sale history for the furnace. Transfer the demand history from the discontinued model to the new model.

Use the **Customer Demand** hot key on the Add Demand screen to add a customer's demand history for one product to another. You can also subtract a customer's demand from a product. If the **Customer Demand** hot key on the Add Demand screen is highlighted, this indicates a customer name has been entered on the Add Demand Customer Information screen.

> **Note:** The Days Out calculation remains the same even if the customer is a Subtract Demand Customer as set up in the Add Demand program.

For more information, see Adding Demand History to Products and Adding Demand from Dependent Selling Branches to Purchasing Branches.

Using Branch Demand Override

The **Assign Demand Forecast To Price/Ship Branch Or By Zip Code** control maintenance record defines where the demand should flow. For example, if you have an order that is a pricing branch 1 and a shipping branch 2, you need to decided if the replenishment of that product goes to branch 1 or 2.

You can override this setting at the customer level. Use the Miscellaneous Customer Information screen to change the Branch Demand Override field to the selected branch. If this field is not set, the system uses the setting at the control maintenance level.

To change the Branch Demand Override:

1. From the **Files** menu, select **Customer** to display the Customer Maintenance screen.
2. In the **Customer/New** field, enter the customer name for which you want to override the branch demand and press **Enter** to display the customer record .
3. Use the **Add'l Info** hot key to display the Addl Info screen selections.
4. Use the **Misc Cust Info** hot key to display the Miscellaneous Customer Information screen.
5. In the **Branch Demand Override** field, enter the branch number you want to use.
6. Press **Esc** to save the changes and exit the screen.
7. Press **Esc** to exit the customer record.

Managing How the System Applies Demand

One of the biggest assets to how the purchasing process works is the way the system calculates demand based on products purchased and sold. The demand is a filtered forecast of products being sold to the customers. The calculation of demand answers this question: "How much of the product is being *demanded* by customers?" The system uses this calculation to help you project what to buy and how to replenish your warehouses.

However, you must decide who gets the credit for the demand that the system calculates. Should the demand be credited to the branch who prices the product, ships the product, or the region from which the product sells?

Use the **Assign Demand Forecast To Price/Ship Branch Or By Zip Code** control maintenance record to indicate how you want to apply the demand credit.

If you use the pricing branch or the shipping branch, the system applies the demand calculated to the branch indicated. If you select Zip Code, then the system uses the Branch Zip Code Maintenance screen to determine how to apply the calculated demand. You can group zip codes into regions and apply the demand results to areas rather than narrowing it down to a particular branch. For example, you can group all your branches in Florida in one group and apply the demand to them all by associating them with a single branch.

To set up the zip code branch maintenance table:

1. From the **Files** > **Zip Code** menu, select **Branch Zip Code Maintenance** to display the Branch Zip Code Maintenance screen.
2. In the **Starting Zip Code** column, enter the zip code with which you want to start the range, such as 32000.
3. In the **Ending Zip Code** column, enter the zip code with which you want to end the range, such as 32999.
4. In the **Br** column, assign a branch to which you want to associate the zip codes indicated, such as 2.
5. Press **Esc** to apply the codes you have indicated.

Exceptional Sales Overview

The system must identify and adjust exceptional sales prior to demand being calculated. Exceptional sales are one time sales events that unrealistically distort demand. You can flag exceptional sales by editing the invoice and changing the detail status. This calculation excludes that sale from the total of units sold in the demand history period. The demand hit definition affects how the system calculates exceptional sales and usage for items split among multiple orders. More exceptional sales are possible when calculating hits on a per-sales order basis, than when set to the generation or line item level.

For example, usually you sell Product A twice a year. However, a contractor engaged in a major restoration project purchases twenty of Product A in one day. By flagging a sale as exceptional, you prevent those quantities from being used in the demand forecast calculation. If you do not flag a sale as exception, the system uses the quantity as a normal sale and this can distort your demand results.

Exceptional sales can be flagged by:

- Line item
- Order generation
- Product
- Processed orders

You can limit the effect on demand of the largest single sale during the demand history period by setting the Exceptional Sales Percentage in the Inventory sub-screen of Product Maintenance.

Exceptional Sales on the Order Service Level Report

You can determine how the Order Service Level Report handles exceptional sales as well. This report is designed to give a statistical picture of how successful you are in completing your orders by the required date.

As exceptional sales can occur due to the unusual circumstances, you might want to prevent these sales from displaying on the report. However, you may want to see how successful you are in handling sales of above-average quantity. Use the **Exceptional Sales** field on the report to decide which way to run the report.

Exceptional Sales on the Product Fill Rate Report

You can determine how the Product Fill Rate Report handles exceptional sales as well. This report is designed to give a statistical picture of how successful you are in sending your customers the products they requested by the required date.

As exceptional sales can occur due to the unusual circumstances, you might want to prevent these sales from displaying on the report. However, you may want to see how successful you are in handling sales of above-average quantity. Use the **Exceptional Sales** field on the report to decide which way to run the report.

Filtering Demand for Exceptional Sales

Use the exceptional sales percent (**Excpt%**) inventory parameter in Product Maintenance to identify an exceptional sale. The system eliminates from demand forecasting any sale exceeding the percentage difference between the two largest sales in the forecast period.

For example, a sale of 50 would flag any sale with a quantity that is 50% more than the quantity of the second largest sale. If the largest sale was 13 and the second largest sales was 8, any quantity greater than 12 becomes an exceptional sale. Therefore, 13 would be considered exceptional and not be included in the demand calculation.

Note: The following procedure is a manual process for a single product. Use the Mass Load program to enter inventory parameters to groups of products.

To set inventory parameters to identify exceptional sales for a product:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **Forecast Parameters** hot key to display the Forecast Parameters Maintenance screen.
5. Use the **Hierarchy** hot key to select a branch.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.

6. Enter a percentage in the **Excpt%** column for the branch or a territory to eliminate exceptional sales.

For items that sell...	To eliminate exceptional sales, use a...
Frequently	Higher percentage
Infrequently	Lower percentage

7. Exit Product Maintenance for changes to take effect.

Setting the Backorder Tolerance Quantity

Use the backorder tolerance quantity (BTQ) to exclude orders with unusually large quantities of the product -- even larger than exceptional sales -- from the demand calculation. This value is the maximum order quantity for the product on one order. Any order with a quantity greater than this amount is excluded from the demand calculation.

When filtering orders for the demand calculation, the system first eliminates from the demand calculation those orders with products above the BTQ, before determining whether an order qualifies as an exceptional sale. Unlike the exceptional sales inventory parameter, which changes depending on the second largest sale made in the forecast period, the BTQ is a fixed amount.

For example, Product A normally sells one or two each per month. The system sets the exceptional sales inventory parameter to 200% and the backorder tolerance quantity is set to six. A contractor orders a quantity of 24 of Product A for a large job, and schedules shipments in groups of eight every month for the next three months. Whether you define hits by the order (one order of 24) or the generation (three generations of eight), the system does not consider this order when calculating demand. Furthermore, consider that to be an exceptional sale, the highest order quantity must be 200% of the second highest order quantity, AFTER eliminating orders greater than the BTQ. Therefore, any sale of Product A in a quantity over (6 / 200% = 3) three is considered exceptional.

Note: The following procedure is a manual process for a single product. Use the Mass Load program to enter inventory parameters to groups of products.

To set the backorder tolerance quantity for identifying exceptional quantities:

1. From the **Files** menu, select **Product Maintenance** to display the Product Maintenance screen.
2. Display a product record.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **Forecast Parameters** hot key to display the Forecast Parameters Maintenance screen.
5. Use the **Hierarchy** hot key to select a branch.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.

6. In the **BTQ** column for each branch, enter the maximum order quantity considered normal for this product.
7. Enter other forecast parameters, if needed.

Flagging Processed Orders as Exceptional

Mark orders that have shipped or invoiced as exceptional so they are not considered in the demand calculation. Not marking orders as exceptional can distort your demand calculations. Use the Inventory History Ledger screen to flag exceptional orders. Using this screen enables you to indicate exceptional order generations that might have been missed during the order creation.

> **Note:** You must have the OE.PRODUCT.TYPE.EDIT authorization key to change stock transactions to exceptional on the Inventory History Ledger screen.

Direct shipments do not affect the demand forecast calculation. You cannot flag direct shipment order generation as being an exceptional sale generation because the inventory does not come into your warehouse.

To indicate a processed order as being exceptional:

1. From the **Orders > Inquiries** menu, select **Inventory History Ledger** to display the Inventory History Ledger screen.
2. Select a line item in the **Desc** field.

   The screen displays all transactions on which the selected product appears.
3. Use the **Arrow** keys or the **Page Up** and **Page Down** keys to locate the order on which the exceptional transaction occurred.
4. Position the cursor in the **Type** column for the transaction.
5. Type **E** (or press **F10** and select **Except**) to change the quantity type.
6. Press **Esc** to exit the screen.

Flagging Sales Orders as Exceptional

On new or existing sales orders, you can flag either entire order generations or individual line items as being exceptional sales.

Direct shipments do not affect the demand forecast calculation. You cannot flag a direct shipment order generation as being an exceptional sale generation because the inventory does not come into your warehouse.

To indicate that an entire order generation is an exceptional sale:

1. From the **Orders** menu, select **Sales Order Entry** to display the Sales Order Entry Body screen.
2. Display the sales order for which to mark generations or line items as exceptional.
3. Use the **Header** hot key to display the Sales Order Entry Header screen.
4. Use the **Add'l** hot key to display a list of additional hot keys.
5. Use the **Add'l Header Info** hot key to display the Additional Header Data screen.
6. In the **Exceptional Sales** field, enter **Y**.

   The system now considers all items related to this order generation to be exceptional sales. When the order is processed, the stock location code for the exceptional sale items change from **S** (Stock) to **E** (Exceptional).

To indicate that an individual line item is an exceptional sale:

1. From the **Orders** menu, select **Sales Order Entry** to display the Sales Order Entry Body screen.
2. Display the sales order for which to mark generations or line items as exceptional.
3. Use the **Sched** hot key to display the Sales Order Entry Scheduling screen.

   You cannot flag tagged quantities as exceptional sales.
4. In the **Qty Typ** column for a ship date that corresponds with a ship quantity, enter **E** (Exceptional).

   The system now considers this line item to be an exceptional sale.

Flagging Purchase Orders as Exceptional

On new or existing purchase orders, you can flag either entire order generations or individual line items as being exceptional. The system omits the exceptional purchase order from the lead factor median calculation. This omission is useful when procuring stock from a source with a shorter lead time that might distort the calculated lead time of your regular vendor.

Note: The system includes tagged purchase orders except when the orders are marked as exceptional.

Direct shipments do not affect the demand forecast calculation. You cannot flag a direct shipment order generation as being an exceptional generation because the inventory does not come into your warehouse. For more complete information, see Including Direct Shipments in the Demand Calculation.

To flag a purchase order as exceptional:

1. From the **Purch** menu, select **Purchase Order Entry** to display the Purchase Order Entry screen.

   Note: You need the POE.ALLOWED authorization key to access Purchase Order Entry.

2. Select a transaction to mark as exceptional.
3. Choose whether to make an entire order generation or an individual line item an exceptional sale.

To indicate that an entire order generation is an exceptional sale:

1. From the Purchase Order Entry Body screen, with the transaction displayed, use the **Header** hot key to display the Header screen.
2. Use the **Addl** hot key to display a list of additional hot keys.
3. Use the **Add'l Header Info** hot key to display the Additional Header Data screen.
4. In the **Exceptional Order** field, enter **Y**.

   All items related to this order generation are now considered as exceptional purchases. When the order is processed, the stock location code for the exceptional sale items change from **S** (Stock) to **E** (Exceptional).

5. Complete the order.

To indicate that an individual line item is an exceptional sale:

1. From the Purchase Order Entry Body screen, with the transaction displayed, use the **Sched** hot key to display the Purchase Order Entry Scheduling screen.

   Note: You cannot flag tagged quantities as being exceptional purchases.

2. In the **Typ** column for a received date that corresponds with a order quantity, press **F10** to display a list of quantity types and select **E - Exceptional**.

   The line item is now considered an exceptional purchase.

3. Complete the order.

Lost Sales Overview

A lost sale occurs when a customer wants to purchase an item, but there is insufficient stock to fulfill the request and the customer does not want to place a backorder or calls to cancel an order that has been placed. The system can calculate out of stock periods, estimate the lost sales during these periods, and increase demand to prevent future lost sales.

For example, an item is out of stock for one month out of the last six months. During the last six months, the product sold an average of 100 units per month when the item was in stock. The system estimates that 100 more could have been sold in the month that the item was out of stock.

The system also provides a lost sales parameter which helps prevent accumulating surplus inventory. For example, a run on inventory causes 30 days supply of an item to sell out in one day. You do not want the system to estimate that 30 days supply could be sold in the 29 days the item was out of stock.

Therefore, the system selects the lesser of two values when calculating lost sales and increasing an item's demand:

- The number of days the item was out of stock during the forecast period.
- The lost sale parameter multiplied by the number of days in the forecast period. That is, use a percentage of the forecast period as the maximum number of days to count as lost sales days.

For example, in the last 180 days, an item was out of stock for 30 days. The lost sales parameter is 50%. 50% of 180 days is 90. Because 30 is less than 90, the system uses the 30 out of stock days to calculate lost sales.

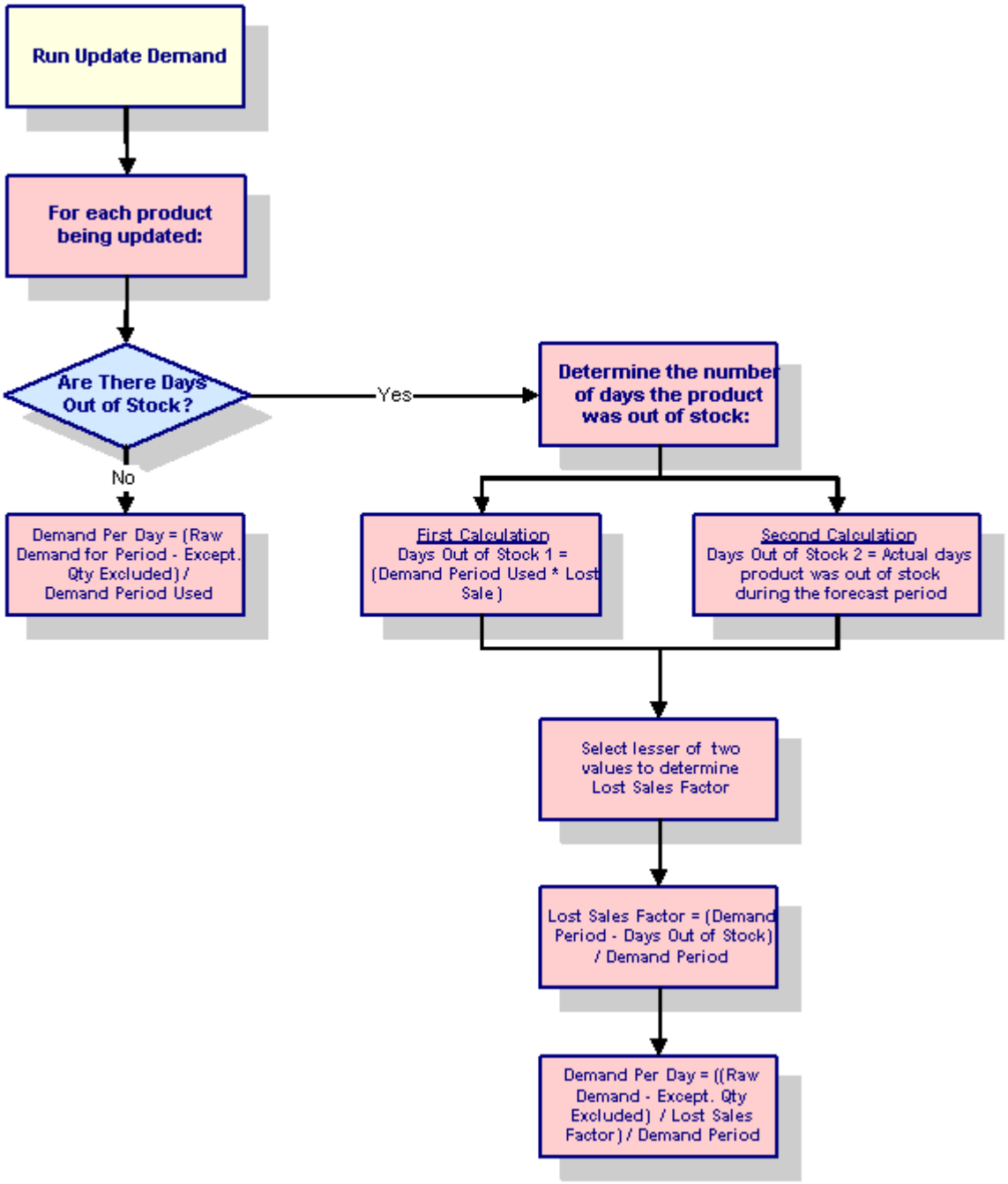
On the other hand, suppose there was a run on inventory: in the last 180 days, the item was out of stock for 150 days. A lost sales parameter of 50% limits the system to using 90 days of the forecast period to calculate lost sales.

When setting the lost sales parameter, consider whether the item sells often and you do not want to be out of stock. For fast-moving items, the system uses shorter forecast periods, so use a higher lost sales parameter. The system is more likely to select the actual out of stock days and increase demand.

On the other hand, for slow-moving items, the system uses longer forecast periods, so use a lower lost sales parameter. If it is acceptable for the item to be out of stock, the system is more likely to select a percentage of the forecast period and decrease demand.

Preventative measures to *eliminate* lost sales through inventory parameters differ from *tracking* lost sales through the unquality event tracking (UET) system. Eliminating lost sales affects the forecast demand calculation, automated purchasing, and transfers. Tracking lost sales is a sales analysis tool.

How the System Calculates Lost Sales



Adjusting the Demand Parameter to Compensate for Lost Sales

Enable the lost sales calculation by using the **Lost Sale** field on the Forecast Parameters screen. Increasing demand guards against future lost sales on fast-moving items. Limiting demand prevents over-purchasing and stock surplus.

We recommend setting the parameter according to item demand, using one of the following:

- A higher percentage (80) to increase item demand and compensate for lost sales during out of stock periods.
- A lower percentage (20) to limit the increase in item demand of slow-moving items during out of stock periods.
- Zero (0) where you cannot guarantee inventory accuracy for the product or you have less than six months of product history.

  Note: The following procedure is a manual process for a single product. Use the Mass Load program to enter inventory parameters to groups of products.

To assign a lost sales percentage to a product:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **Forecast Params** hot key to display the Forecast Parameters Maintenance screen.
5. Use the **Hierarchy** hot key to select the branch where the lost sale percentage applies for the product.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.

6. In the **Lost Sale** column, enter a lost sale percentage for the branch or territories.
7. Press **Esc** to save changes and return to the previous screen.
8. Exit Product Maintenance for changes to take effect.

How the System Determines Lost Sales for Fast-Moving Items

Fast-moving items with high demand have shorter forecast periods. For items that sell every day, you want to include the demand of any day that the item was out of stock to prevent future lost sales. The percent that you set determines the number of days by which the system recommends to increase demand.

To ensure that you are counting the days the item is out of stock, set the **Lost Sale** parameter to a higher percentage.

The system eliminates exceptional sales from the demand calculation before including lost sales in the demand forecast.

Example

The system uses the lesser of one of the following values to increase the item's raw demand:

- The number of days that the item was out of stock during the forecast period.
- The **Lost Sale** percentage multiplied by the number of days in the forecast period.

Compare the effect of two different Lost Sale percentages for fast-moving items:

Days out of stock	Forecast period	Lost Sale percentage	Forecast period Lost Sale %	Increase item demand by...
25 days	90 days	80	72 days	25 days
25 days	90 days	20	18 days	18 days

By setting the Lost Sale percentage to a higher value for fast-moving items, the system increases demand by the days the item was out of stock, thereby avoiding future lost sales.

How the System Determines Lost Sales for Slow-Moving Items

Slow-moving items with low demand have longer forecast periods. For items that sell only a few times a year, you want to keep only the average sale quantity in stock and replenish them when needed. You replenish these items when you are ready to purchase them as part of a line buy. The percent that you set determines the number of days by which the system recommends to increase demand.

If you count all the days that a slow-moving item is out of stock as lost sale days and increase the item's raw demand, the item demand increases beyond its average sale quantity. This adjustment results in an unnecessary stock surplus. To prevent this, set the **Lost Sale** parameter to a lower percentage.

The system eliminates exceptional sales from the demand calculation before including lost sales in the demand forecast.

Example

The system uses the lesser of one of the following values to increase the item's raw demand:

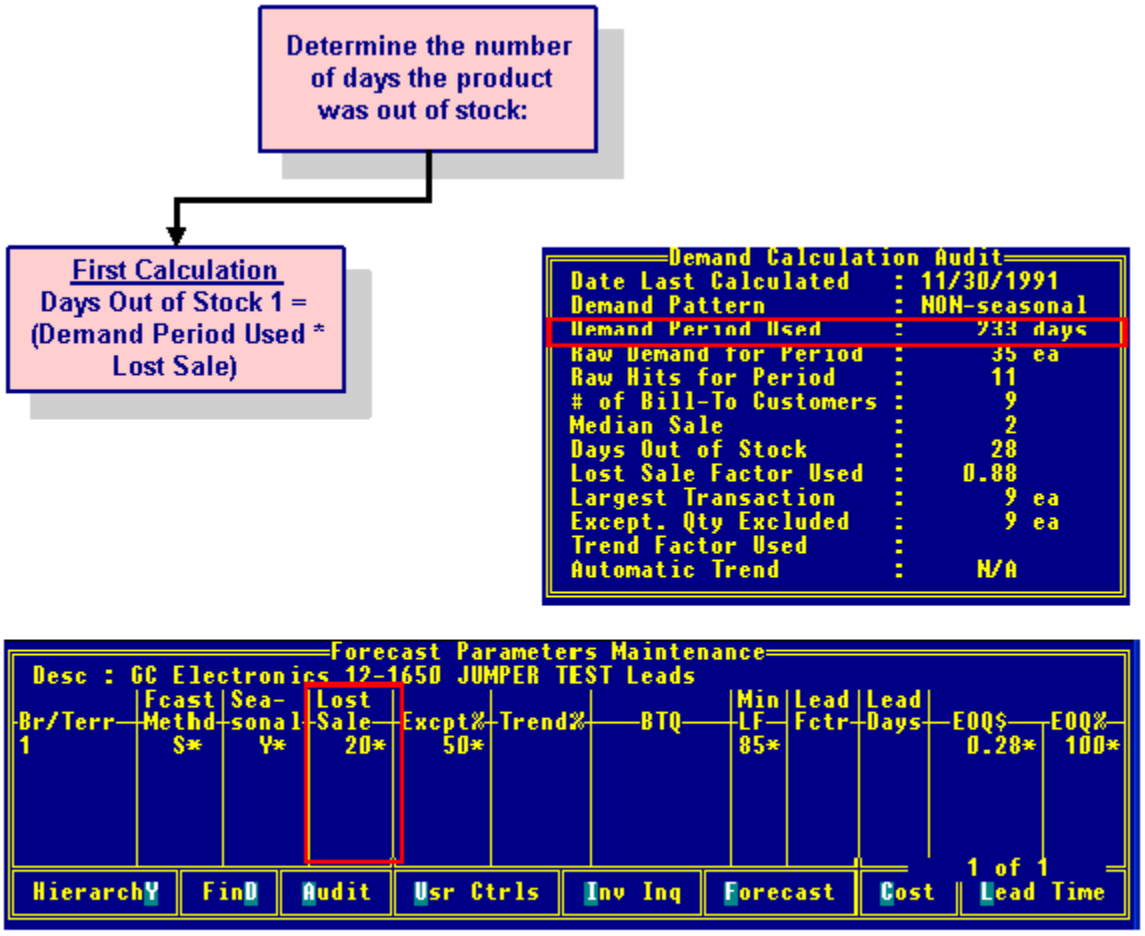
- The number of days that the item was out of stock during the forecast period.
- The **Lost Sale** percentage multiplied by the number of days in the forecast period.

Compare the effect of two different Lost Sale percentages for slow-moving items:

Days out of stock	Forecast period	Lost Sale percentage	Forecast period * Lost Sale %	Increase item demand by...
100 days	365 days	80	292 days	100 days
100 days	365 days	20	73 days	100 days

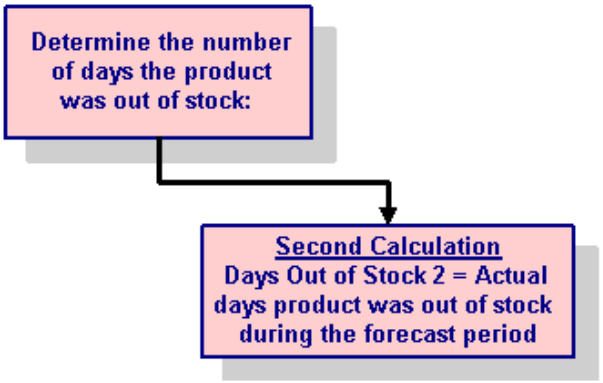
By setting the Lost Sale percentage to a lower value for slow-moving items, the system increases demand by a percentage of the forecast period, thereby avoiding a stock surplus.

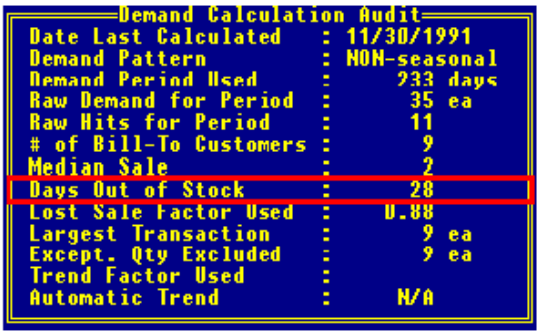
Lost Sales Calculation Example 1



(233 * .20) = 46.6
Days Out of Stock = 46.6

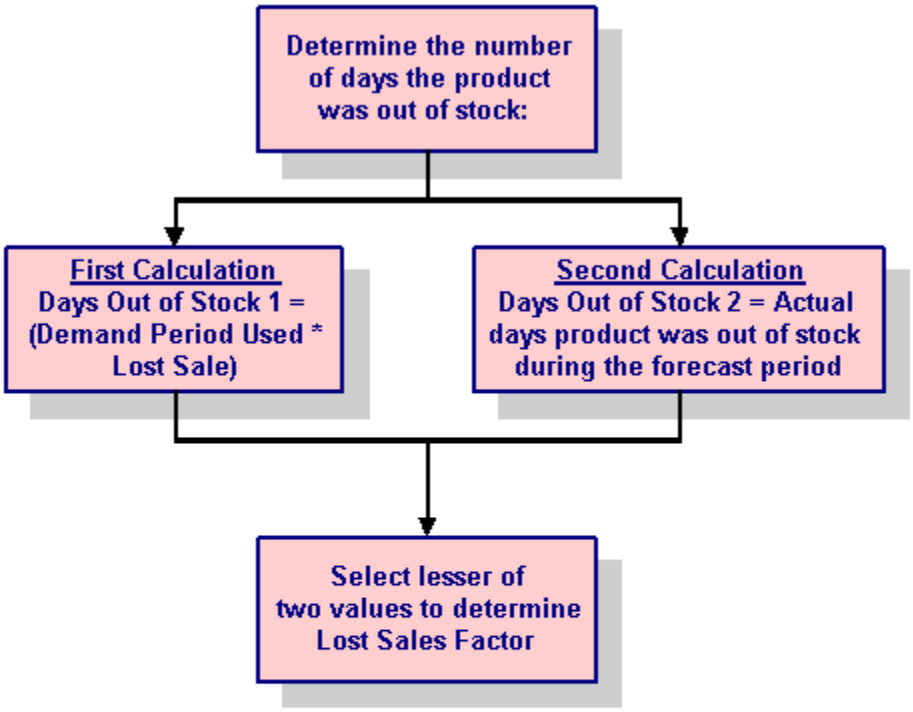
Lost Sales Calculation Example 2





Actual days product was out of stock during the forecast period = 28

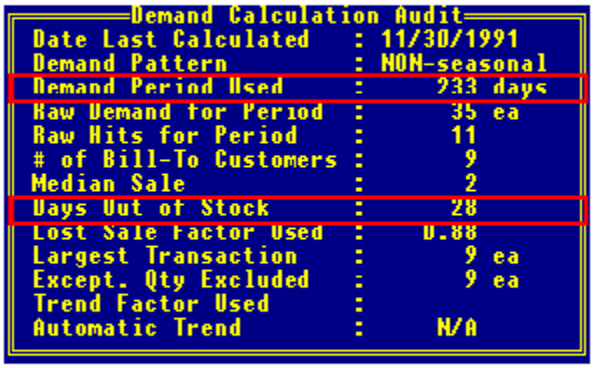
Lost Sales Calculation Example 3



(233 * .20) = 46.6
Days Out of Stock = 46.6

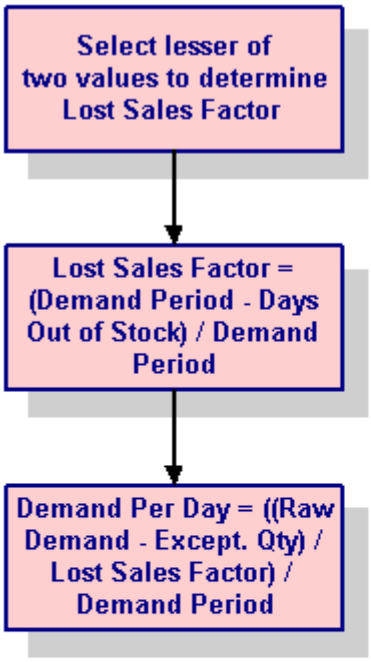
Actual days product was out of stock during the forecast period = 28

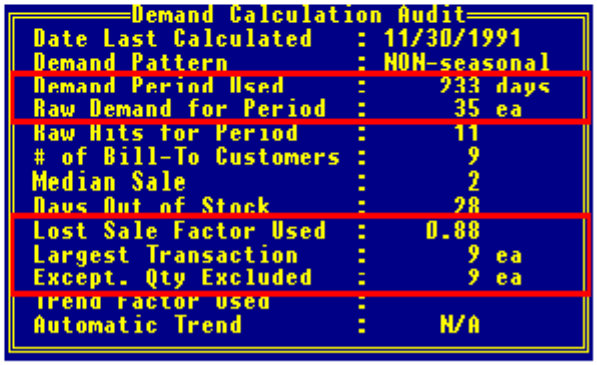
Lost Sales Calculation Example 4



(233 - 28) / 233 = .8799
Lost Sales Factor = .8799

Lost Sales Calculation Example 5





((35-9) / .8799) / 233 = .126
Demand Per Day = .126

Enabling Automatic Trend Calculations

For seasonal products, use an automatic trend calculation to regulate the demand forecast. The system calculates and applies a trend based on recent demand compared to the previous year's demand. Trend is represented as a percentage increase or decrease to the calculated demand.

Define the automatic trend parameters on the Auto Trend Percentage Maintenance screen.

In addition to setting automatic trend parameters at the product level, you can also set these parameters at the branch or buy line level. Parameters set at the product level override those set at the buy line and system level.

Note: The following procedure is a manual process for a single product. Use the Mass Load program to enter inventory parameters to groups of products.

To enable the automatic trend calculation for a product:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **Forecast Params** hot key to display the Forecast Parameters Maintenance screen.
5. Use the **Forecast** hot key to display the Forecast Parameters screen.
6. Use the **Hierarchy** hot key to select a branch.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.

7. In the **Auto Trnd** column corresponding to the branch or territory where you want to calculate trend for seasonal products, type **Y**.
8. Use the **Auto Trend** hot key to display the Auto Trend Percentage Maintenance screen.
9. Complete the following fields for the branch or territory where you want to calculate trend:

Field	Value
Max Decrease%	The maximum negative trend to apply to the demand forecast for the product. This parameter only applies to seasonal products with the Auto Trend flag enabled.
Max Increase%	The maximum positive trend to apply to the demand forecast for the product. This parameter only applies to seasonal products with the Auto Trend flag enabled.

10. Press **Esc** to save changes and return to the previous screen.
11. Exit Product Maintenance for changes to take effect.

How Eclipse Calculates Demand for Seasonal Products

Demand patterns for products that sell an average of ten times a month are different than those for products that sell an average of ten times a year. Items that are seasonal have a greater demand at certain times of the year than others.

Non-Seasonal Products

The system calculates the demand history based on hits. The system defaults to the following conditions:

- If a product has 25 or more hits in 91 days or less, then the system uses the last 91 days of sales history to determine demand.
- If a products has less than 25 hits in 91 days, but more than 25 hits in the last 365 days, then the system uses the number of days back to the 25th hit to determine demand. For example, if the 25th hit occurred 180 days ago, the demand history uses the last 180 days.

  Note: If more than one hit occurred on the date of the 25th hit, all hits on that date are included.

- If a product has less than 25 hits in the last year, then the system uses 365 days for the demand history.

The more frequently sold items are statistically more predictable and demand calculations should, when possible, use shorter periods of time to reflect recent sales trends.

Seasonal Products

Seasonal products are those products that sell more often at certain times of the year. For example, heating products such as furnaces, sell more often during winter months. Seasonal forecasting lets you use the winter months only as the forecast period to determine appropriate demand.

- When forecasting the demand of a seasonal product in September 2000, the system checks from September 1999 forward to gauge the winter month demand.
- If there are 10 or more hits in a 45-day period, the system uses those 45 days of the product history for the calculation. For example, today is September 1, 2000. The system checks the history for Product A and finds 17 hits from September 1, 1999 to October 15, 1999. This 45-day period is used for the calculation.
- If there were less than 10 hits in a 45-day period, but more than 10 hits in a 122-day period, the system uses the date of the 10th hit as the end date of the period for the calculation. For example, today is September 1, 2001. The system checks the history for Product B and finds that 10 hits occurred between September 1, 2000 and November 1, 2000. This 60-day period is used in the calculation.

- If there are less than 10 hits in a 122-day period, the calculation is based on the full 122-day period. For example, today is September 1, 2000. The system checks the history for Product C and find that only 6 hits occurred between September 1, 1999 and January 1, 2001. The 6th hit occurred on December 15, 1999. The full 122-day period is used in the calculation.

How the System Calculates Trend for Seasonal Products

For seasonal products, use the automatic trend calculation to even out the demand forecast according to recent trends. The system calculates trend in a hierarchical order.

When you enable automatic trend calculation, the system calculates a trend factor by comparing the recent demand to that of the prior year, and then multiplies the current demand forecast by the automatic trend factor. Parameters set at the product level override those set at the buy line level. Parameters set at the buy line level override those set at the branch level.

For products with automatic trend calculation enabled, the system does the following, in this order:

1. Calculates the current demand forecast based on the as of date, and notes the number of days of sales history it took to meet the minimum days or minimum hits forecast parameters.
2. Determines the recent demand for the product, starting from the as of date and going *back* the number of days noted in Step 1.
3. Determines the product demand for the same period of time in the prior year, starting from 365 days before the as of date and going *back* the number of days noted in Step 1.
4. Calculates the trend factor by dividing the demand of Step 3 by the demand of Step 2 and subtracting the total from 1.

   If the system-calculated automatic trend percentage is higher or lower than the **Max Increase%** or **Max Decrease%** set on the Auto Trend Percentage Maintenance screen respectively, then the system uses these values.

   If the demand for step 3 is **0**, the Demand Calculation Audit screen displays **N/A** in the **Automatic Trend Factor** field.
5. Produces a revised demand forecast by multiplying the current demand determined in Step 1 by the automatic trend factor.

   Note: If the product uses non-seasonal forecasting or **Auto Trnd** is set to **N** on the Forecast Parameters screen the Demand Calculation Audit screen displays **N/A** in the **Automatic Trend Factor** field.

For example, the current demand based on the As of Date is 49 days. The recent demand for the product is 192.5 each. The product demand for the same period the previous year is 166.1 each. The system calculates the trend factor as follows: (1 - (166.1 / 192.5)) = 13.71 or 13.71%. For information on auditing demand, see Auditing Demand Calculations.

How the System Uses Manual Trend for Products

Use the **Trend%** field on the Forecast Parameters Maintenance screen to modify the demand forecast in anticipation of increases or decreases in demand. Apply a change to a product's calculated demand when you expect factors, such as economic conditions, to affect future demand for the product relative to past demand.

Trend is represented as a percentage increase or decrease to the calculated demand. For example, entering **20** causes the system to add 20% of the calculated demand to the product's demand. Entering **-20** causes the system to subtract 20% from the product's demand.

Seasonal Products

For seasonal products, use the automatic trend calculation feature on the Forecast Parameters screen rather than this field. For more information see, How the System Calculates Trend for Seasonal Products.

Non-Seasonal Products

In order to use this field for non-seasonal products, you must know your market well, monitor the product sales, and know when to remove the trend percentage.

Lead Time Overview

Lead time is the number of days it takes for you to prepare and process the purchase order, the vendor to ship the material, and your warehouse to receive the material. Every product requires a lead time for calculating:

- Order point / transfer points
- Line points / child branch surplus points
- Safety days

The Update Demand Forecast program calculates a product's lead time based on lead time parameters. In order for the system to calculate these items accurately, you must enter parameters for products or buy lines. If no parameter is set, the system uses a default setting through the control maintenance record program. You can also enter overrides for lead times at the product level and the buy line level.

Use the following control maintenance records to set parameters:

- **Default Lead Time Days If Product And Buy Line Have None**
- **Default Lead Time Factor If Product And Buy Line Have None**
- **Minimum Lead Samples**

How the System Calculates Lead Time

The Update Demand Forecast program updates each product's lead time, based on lead time parameters set at the system, buy line, or product level. Lead time is the number of days it takes for you to prepare and process the purchase order, the vendor to ship the material, and your warehouse to receive the material. The system also includes tagged purchase orders except when the orders are marked as exceptional.

Lead time parameters include the following:

- **Lead Factor** - Defines the maximum number of processed purchase orders in the forecast period.
- **Minimum Lead Samples** - Identifies the minimum number of processed purchase orders in the forecast period.
- **Default Lead Time Days** - Defines the default lead time set at the buy line and system level.

The system uses the following three steps when calculating the lead time:

1. Checks for an override and determines which lead time to use.
2. Determines the range of purchase orders to use for calculating the lead time.
3. Derives the median lead time from the purchase orders.

Determining Which Lead Time to Use

In order to calculate lead time, the system checks for overrides. Overrides can also be set at the system, buy line, or product level. For example, your vendor calls you to tell you they are snowed in and it will take an additional three days to get the items to you. You can use the override settings to change the lead time for those items.

The system makes several checks to determine the lead time:

- The system first checks for a lead time override at the buy line level or the product level.

If the product is...	Then...
in a buy line	If an override lead time is set in Buy Line Maintenance or Override Lead Time Maintenance, the system checks for an expiration date: • If no expiration date is set, then the days in the lead time equal the override lead time set at the buy line level. • If an expiration date is set and the date has not passed, then the days in the lead time equal the override lead time set at the buy line level. • If an expiration date is set, but that date has passed, the system checks for an override lead time at the product level. If an override lead time is not set at the buy line level, then the system checks for a lead time override at product level.

If the product is...	Then...
not in a buy line	The system checks for an override lead time at the product level.

- You can set a manual override in the **Lead Days** field in Forecast Parameters Maintenance, or in the **Ovrd LT Days** column in Override Lead Time Maintenance. Setting a value in one field or column causes the same value to display in the other field or column.

Is an override set at the product level?	Then...
Yes	The system checks for an expiration date: • If no expiration date is set, lead time days equals the override set in the **Lead Days** field, or in the **Ovrd LT Days** column. • If an expiration date is set and the date has not passed, lead time days equals the override set in the **Lead Days** field, or in the **Ovrd LT Days** column. • If an expiration date is set, but that date has passed, check the **Lead Fctr** field in Forecast Parameters Maintenance to determine how the system calculates the lead time.
No	The system checks the **Lead Fctr** field in Forecast Parameters Maintenance to determine how the system calculates the lead time.

- The **Lead Fctr** field in Forecast Parameters Maintenance controls how the system calculates the lead time for the product.

If the Lead Fctr field is set to...	Then...
null or blank	The system uses the default lead factor set in the **Dflt LFctr** field in Buy Line Maintenance.
0	The system checks for a value in the **Lead Days** field: • If **Lead Days** > 0 (zero) then lead time equals the value entered in the **Lead Days** field. The system *does not* calculate a new lead time for the product until **Lead Fctr** is set to a number other than 0. • If **Lead Fctr** = 0 (zero) and **Lead Days** = 0 (zero) or null or a blank, then lead time equals the value of the Default Lead Time Days If Product And Buy Line Have None control maintenance record.
> 0	The system determines the lead time by checking a sample of most-recent purchase orders. See Determining the Range of Purchase Orders to Use, below.

Determining the Range of Purchase Orders to Use

If there are no overrides at the product or buy line level, the system checks for a minimum and maximum number of purchase orders to sample for the lead time.

Because recent data is more accurate for estimating lead times, the system checks the lead time derived from recent purchase orders in the forecast period for the product. The system checks a range of purchase orders to derive an accurate median lead time value using the minimum samples up to the lead factor. If there are insufficient purchase orders within the forecast period, the program resorts to a default lead time. For more information, see How Standard and Median Forecasting Works and Entering Forecast Period Parameters to determine your forecast periods.

The system makes several checks to determine which range to use:

- The system determines the minimum number of purchase orders in the forecast period to use in calculating a product's lead time. If the **Min LF** field on the Forecast Parameters Maintenance screen is set to null, then, the system checks:

If...	Then the system...
Product is in a buy line	Uses the value of **Min Sample** in Buy Line Maintenance to determine the minimum number of purchase orders to use for calculating lead time.
Product is not in a buy line	Uses the value of the **Minimum Lead Samples** control maintenance record to determine the minimum number of purchase orders to use for calculating lead time.

  Otherwise, the system uses the value of **Min LF** as the minimum number of purchase orders to use for calculating lead time.

- The system determines the maximum number of purchase orders in the forecast period to use in calculating a product's lead time. If the **Lead Fctr** field on the Forecast Parameters Maintenance screen is not **0**, then the system checks:

If the Lead Fctr is ...	And the product is in a buy line...	And the product is not in a buy line...
null or blank	if the **Dflt LFctr** in Buy Line Maintenance is null or 0, lead time is equal to the value of the **Default Lead Time Days If Product And Buy Line Have None** control maintenance record. otherwise, use the **Dflt LFctr** in Buy Line Maintenance to determine the number of purchase orders within the forecast period to use for calculating the product's lead time.	use the value of the **Minimum Lead Samples** control maintenance record to determine the number of purchase orders within the forecast period to use for calculating the product's lead time.

  Otherwise, use the value of **Lead Fctr** on the Forecast Parameters Maintenance screen as the maximum number of purchase orders to use for calculating lead time.

Deriving Median Lead Time from Purchase Orders

The system then calculates a final lead time based on the determined range of purchase orders. After determining the minimum and maximum samples of purchase orders to check, the system calculates the median lead time for the product.

The system then does the following:

- Compares the number of purchase orders in the forecast period with the minimum lead samples and lead factor parameters to be used for the product:

If the number of purchase orders in the forecast period is...	Then...
less than the minimum lead samples	if the product is in buy line, the lead time is equal to the default lead time listed in the **Dflt Ld Tm** field of Buy Line Maintenance.
	if the product is *not* in a buy line, the lead time is equal to the value of the **Default Lead Time Days If Product And Buy Line Have None** control maintenance record.
equal to the minimum lead samples	the system calculates the lead time days using a number of purchase orders equal to the minimum lead samples.
more than the minimum lead samples but less than the lead factor	the system calculates the lead time days using the available purchase orders within the forecast period.
equal to or greater than the lead factor	the system calculates the lead time days using a number of purchase orders equal to the lead factor.

Note: The values selected for the lead factor and minimum lead samples can be determined at two different levels. For example, the lead factor can be determined at the product level and the minimum lead samples can be determined at the buy line or system level.

- Calculates and records the lead time of the selected purchase orders:

  Purchase Order Lead Time = Purchase Order Create Date - Purchase Order Receive Date

- Selects the median lead time.

  This value is the calculated lead time entered on the **Lead Days** field in Forecast Parameters Maintenance.

Entering Lead Time Parameters

Lead time is the number of days from the placement of a purchase order to date of its receipt. Lead time affects order points, line points, and safety stocks; therefore, accurate lead times are critical to accurate purchase planning.

You can override the lead time by changing the calculated lead days, changing the lead factor used to calculate the lead time, or by entering a manual override at the product or buy line level.

> **Note:** Seasonal products use a lead time for the season.

Enter lead time parameters for a defined product on the Forecast Parameters Maintenance screen. In addition to setting lead time parameters at the product level, you can also set these parameters at the system or buy line level.

The following procedure is a manual process for a single product. Use the Mass Load program to enter inventory parameters to groups of products.

To enter lead time parameters for a product:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **Forecast Params** hot key to display the Forecast Parameters Maintenance screen.
5. Complete the following fields:

Field	Description
Mn LF	Enter the minimum number of most-recent purchase orders the system samples to calculate the lead time for the product.
Lead Fctr	Enter a value to control the automatic calculation lead time for the product. Seasonal products use a calculated lead time for the ”season” of the product. • If null or blank, the system uses the lead factor set for the product's buy line. • If you enter a number greater than 0, this is the maximum number of most-recent purchase orders the system samples to estimate the lead time for the product. • If you enter 0, the Update Demand Forecast program uses the current value of the **Lead Days** field as the lead time. The program will *not* calculate a new lead time until **Lead Fctr** is set to a number other than 0. **Note:** If you do not enter a lead time in the **Lead Days** field, the program uses the current value of the **Default Lead Time Days If Product And Buy Line Have None** control maintenance record.
Lead Days	The lead time for the product. This field updates when the **Lead Fctr** field is set to a value greater than 0. To override the calculated lead time, enter a user-defined lead time in the **Lead Days** field and set the **Lead Fctr** field to 0.

6. Press **Esc** to save changes and return to the previous screen.
   Exit Product Maintenance for changes to take effect.

Overriding Product Lead Times

Normally, the system uses a median calculation to determine the lead time for products. For more information, see How the System Calculates Lead Time.

However, there are circumstances in which the lead time must be manually adjusted. For example, a storm comes through the city where your manufacturing supplier has a factory. The building and several machines are damaged. The supplier tells you that the products' lead times will be pushed out three weeks until repairs can be made. Use the Override Lead Time Maintenance screen to adjust and enter an expiration date. The override is in effect until the expiration date is met.

Overrides set at the product level take precedence over those set at the buy line level.

You must have the PRODUCT.MAINT.LEVEL authorization key set to edit the override lead time.

To override the product lead times:

1. Select a product.
2. Use the **Inven** hot key to display the Primary Inventory Maintenance screen and then the **Forecast Params** hot key to display the Forecast Parameters Maintenance screen.
3. Use the **Lead Time** hot key to display the Override Lead Time Maintenance screen.
4. Use the **Hierarchy** hot key to select a branch.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.

5. In the **Ovrd LT Days** column, enter the number of override lead time days to use.
6. In the **Ovrd LT Expiration Dt**, enter the date the lead override lead time expires. Press **F10** to display a pop-up calendar.

   The system resumes calculating the lead time for the product on this date.
7. Press **Esc** to return to the previous screen.
8. Exit Product Maintenance for changes to take effect.

Economic Order Quantity Overview

The Economic Order Quantity (EOQ) is the most cost-effective quantity of a product for you to purchase and hold in inventory. The EOQ balances the acquisition cost of your products and the carrying cost. The EOQ is the point at which these two pieces intersect.

The EOQ calculation considers the product's:

- Daily demand – How much you sell it.
- Cost – How much you sell it for.
- Acquisition costs – How much you paid for it.
- Carrying costs – How much is costs you to keep it in inventory.

Note: The EOQ is based on approximations. It is only an estimate and one of many factors to be considered when determining order quantities.

How the System Calculates the Economic Order Quantity

The formula for the Economic Order Quantity (EOQ) is:

Square root of (24* Monthly Demand of Product * Acquisition Cost) / (Carrying Cost * Cost of Product)

Important: The system uses the REP-COST is recorded in Price Line Maintenance. If there is no REP-COST recorded, then the system uses the value listed in the Basis Line #6 on the Price Line Maintenance screen.

If both the REP-COST and the Basis Line #6 are blank, the system uses a zero (0) value. So, you must ensure that you have a value in one of the two fields in Price Line Maintenance.

Example

Product A has a demand per month of 5 and a unit cost of $12.00. The cost of processing a purchase order has been determined to be $1.75 and the cost of carrying the item in inventory is 30%.

$$EOQ = \sqrt{(24 \times Avg\ Mthly\ Demand \times EOQ\ \$) \div (EOQ\ \% \times REP\text{-}COST)}$$

$$EOQ = \sqrt{(24 \times 5 \times 1.75) \div (0.3 \times 12)}$$

$$EOQ = \sqrt{(210 \div 3.6)}$$

$$EOQ = \sqrt{58.33}$$

$$EOQ = 7.64$$

In the above example, considering the cost of processing a purchase order and the cost of carrying the item in inventory, the most cost-effective quantity of Product A to order at one time is 8 units.

Economic Order Quantity Acquisition Cost

The Economic Order Quantity (EOQ) calculation considers the cost to acquire a product. For example:

- Clerical/labor cost of processing orders
- Cost of inspecting and returning products
- Transportation costs
- Handling costs

To estimate the acquisition cost of the item, total the costs to acquire an average product, divide by the number of items on a typical purchase order.

> **Note:** The actual acquisition cost varies per item. For the purpose of calculating and using an EOQ, apply the purchasing method used most often for most products within your company.

Set the EOQ acquisition cost using the **EOQ $** field on the Forecast Parameters Maintenance screen.

Economic Order Quantity Carrying Cost Percentage

The Economic Order Quantity (EOQ) calculation considers the cost to hold a product in inventory. This value is known as "carrying cost." For example:

- Rent on warehouse.
- Depreciation and obsolescence of inventory.
- Heating, lighting, security overhead.
- Money tied up in inventory investment (lost opportunity cost).
- Obsolescence cost.

The carrying cost ranges from 10% to 30% of the cost to replace an item per year.

> **Note:** The actual carrying cost varies per item. Products that are more subject to damage or that require special storage considerations would have higher carrying costs. Lower interest rates also lower carrying costs.

Set the EOQ carrying cost using the **EOQ %** field on the Forecast Parameters Maintenance screen.

How the System Uses the Economic Order Quantity

The system uses the Economic Order Quantity (EOQ) in suggesting quantities to purchase or transfer. It also places restrictions on the use of the EOQ so it does not distort the reality of product demand:

- The EOQ appears on a suggested purchase orders, but the Suggested P/O program will only suggest ordering the EOQ if: the EOQ exceeds the calculated line point for the product, less the current projected inventory level.
- The system does permit an EOQ to exceed six times the monthly demand of a product.
- If the low sale quantity for an item is greater than the EOQ, the system uses the low sales quantity in place of the EOQ.

  This calculation ensures that products sold in logical quantities are not purchased in quantities less than what the customer is likely to request. For example, tires are sold in sets of four, although the EOQ might suggest three.

Hits Control Maintenance Overview

The system uses the frequency of sales, known as the number of hits, to determine:

- The forecast period to use for calculating demand.
- Whether an item is stock or nonstock.
- When a parent branch needs to replenish a child branch.

The **Demand Hit Definition** control maintenance record, set by your system administrator, defines a hit for your company. It can be defined as one ordered line item regardless of quantity, one order regardless of multiple line items for the same product, or one shipped/invoice generation.

Hits Control Maintenance Parameters

Use the Hits Control Maintenance screen to define hits-related inventory parameters for each branch. You can define hit control maintenance parameters at three levels:

- **System** - Applies to all products unless overridden at the buy line or product level.
- **Buy Line** - Applies to all products assigned to the defined buy line and overrides the system default parameters.
- **Product** - Applies to the product and overrides the buy line and system default parameters.

In a multi-branch network, the Hits Control Maintenance screen to define the central warehouse type you want to use for multi-branch stock/nonstock determination and branch replenishment.

Defining Hits

The Demand Hit Definition control maintenance record defines how the system calculates hits when running the update demand program. The system bases hits on the entries on a sales order. There are three choices:

- Order
- Generation
- Line item

The system also uses this parameter to recalculate hits when there are credits and returns.

Once set, the system does not further adjust the demand hit definition. Therefore, choose the variable based on how your company runs its business.

The demand hit definition affects how the system calculates exceptional sales and usage for items split amongst multiple orders. More exceptional sales are possible when calculating hits on a per order basis, than when set to the generation or line item level.

Order Level

The system calculates hits on a "per sales order" basis, regardless of how or when the items are shipped, or how the material is separated on the order.

For example, a customer purchases 45 lengths of 1-1/2" x 10' PVC pipe and schedules delivery on three different dates (or the system schedules three different dates due to back ordering). In this example, 15 lengths are sold on three generations of sales order S1267176 (S1267176.001, S1267176.002, and S1267176.003).

Because the Demand Hit Definition is set to "order," the system counts 1 hit of 45 items. If 10 of the 15 items ordered on S127176.003 are returned, the system would still count 1 hit, but now of (45-10=35) 35 items.

More exceptional sales are possible when calculating hits on a per sales order basis than when using the "generation" or "line item" level.

Now, consider the effect of the Demand Hit Definition of "order" on exceptional sales. If the **Excpt%** field for the 1-1/2" x 10' PVC pipe product was 50%, and the second largest sale to date happened to be 20, then the sale of 45 would be considered exceptional.

Generation Level

The system calculates hits on a "per sales order generation" basis. Each scheduled shipment or generation produces a separate hit occurrence. Credits and returns apply to the sales order generation.

Using the previous example of Sales Order S1267176, the system would now count 3 hits of 15 items each.

Now, consider the effect of the Demand Hit Definition of "generation" on exceptional sales. With the **Excpt%** field for the product at 50%, the largest sale is 20 and the second largest sale happened to be 15. Twenty is not 50% or more than 15, so there is no exceptional sale excluded.

Line Item Level

The system calculates hits on a "per line item" basis. Each line item produces a separate hit occurrence.

For example, a customer requests a blanket order, separated by room or tool crib, and shipped on different dates. Product A appears 10 times on Sales Order S0001234.001, 3 items per occurrence. The system counts 10 hits of 3 items each. If one "room" worth of Product A was returned, the system would count 9 hits of 3 items per occurrence.

Entering Hits Control Maintenance Parameters

Use the Hits Control Maintenance screen to define hits-related inventory parameters for each branch in a multi-branch network. The Update Demand Forecast, automated purchasing, and automated branch transfer programs use this information in their calculations.

You can set these parameters at the product and buy line level. Use the **Global Hits Definition** control maintenance record to set system defaults.

The following procedure is a manual process for a single product. Use the Mass Load program to enter inventory parameters to groups of products.

To enter Hits Control Maintenance parameters at the product level:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Display a product record.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **User Controls** hot key to display the User Inventory Controls screen.
5. Use the **Hits/Supply** hot key to display the Hits Control Maintenance screen.
6. In the **Central Whse Type** field, select one of the following central warehouse types:
   - **Bottom-up** - The selling branches central warehouse dictates branch replenishment and automatic stock/nonstock determination.

     In a bottom-up central warehouse scheme, the system analyzes and reports the needs of the child branches back to the parent branch (central warehouse) so that stock can be purchased to bring the child branch back to the greater of its transfer point or its economic order quantity (EOQ).
   - **Top-down** - The central warehouse dictates branch replenishment and automatic stock/nonstock determination.
7. Use the **Hierarchy** hot key to select the branch.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.
8. Enter the following information:

Field	Value
Branch Hits	Minimum hits a product needs at a branch to be considered a stock item.
Network Hits	Minimum hits a product needs throughout the branch network to be considered a stock item. This field does not apply to single-branch warehouses.

Field	Value
Max Days	The maximum number of days' supply of a product (the projected inventory level (PIL) of the item divided by its demand per day) that your company permits to be stocked in the warehouse through adjustment, purchase order, sales order or transfer order entry. A warning message displays if one of the above actions causes the maximum days' supply to be exceeded. If no maximum days' supply is set at the product level, the system uses the value set at the branch and buy line level. If no value is set at the branch and buy line level, the system uses the value set under the **Maximum Days Supply** control maintenance record. **Note:** The maximum days' supply check does not apply to "Misc Charge" products. **Note Also:**When an item is added to an order, the system checks the PIL at that moment and stores the value. Later, if an item is removed, or an order deleted, the system compares the PIL at the time of the removal or deletion to the stored PIL. If the removal or deletion does not make the PIL higher then it was at the time of the addition, no maximum days' supply warning displays.

9. Press **Esc** to save changes and return to the previous screen.
10. Exit Product Maintenance for changes to take effect.

Order Points and Line Points Overview

Order points and line points determine the amount of inventory to stock in your warehouse. In a multiple branch warehouse company, transfer points and transfer surplus points determine the quantities for replenishing branches.

- **Order point** - The minimum amount of stock you want to have on the shelf for a given item so a warehouse can meet demand while waiting vendor replenishment.

  The order point considers the vendor lead time and safety days for the product. When a product's projected inventory level (PIL) falls below its order point, the system suggests purchasing back to the line point.

  When calculating the order point for a child branch in a parent/child relationship, the lead time for the child branch is the greater of the lead time of the parent branch or the transfer cycle from the parent branch to the child branch. This method protects the child branch from running out of material during the transfer cycle.

  Note: You can set a minimum-only order point for a product to make sure the system uses the largest line point available.

- **Line point** - The upper limit to the amount of stock you want to have on the shelf for a given item so a warehouse can meet demand during the order cycle of the product.

  The line point considers the vendor lead time, safety days, and order cycle for the product. The line point can vary as the order cycle changes.

  When calculating the line point for a child branch in a parent/baby relationship, the lead time for the child branch is the greater of the lead time of the parent branch or the transfer cycle from the parent branch to the child branch. This method ensures that the child branch's order point is not higher than its line point.

- **Order cycle** - The time it takes to sell enough of a product to contribute to meeting the vendor target for the product's buy line. The order cycle can vary when some products in a buy line sell faster than others.

Demand Samples

Before the system calculates order points, line points, transfer points, and transfer surplus points, it needs to start with a "clean" demand sample. To create a clean demand sample, the system uses inventory parameters to do the following:

- Use the correct forecast period
- Eliminate exceptional sales
- Compensate for lost sales
- Consider trends in demand

Reviewing Product Order Points and Line Points

Use the Product Order Points/Line Points screen to view or adjust information related to the product's order point and line point.

The screen is divided into two sections:

- The upper portion of the screen enables you to change the safety factor and the projected gross margin for the product at an individual branch.
- The lower portion of the screen displays the components of the product's order point and line point calculation.

When the product's status is **NonStock**, you can view this screen, but the order point and line point are *not* calculated.

To review a product's order point and line point:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Position the cursor on a branch and use the **Order Points** hot key to display the Product Order Points/Line Points screen.
5. If you select an individual branch, change either of the following fields, as needed, to adjust the order point and line point:

   Note: If you select a summary branch, all fields are view-only.

Field	Description
Safety Factor	A value that adjusts the hits related safety coefficient (HRSC) applied to a product at an individual branch. For example, if the value in the **Hits Adjusted Safety Factor** field is **0.85**, entering **0.8** in the **Safety Factor** field reduces the HRSC by 80 percent, or a value of **0.68**. The HRSC affects the order point safety days and line point safety days, resulting in the system suggesting either more or less safety stock for the product. The default value is **1**.
Projected Gross Margin	Used to change the adjusted gross margin for a product at an individual branch. Changing the projected gross margin updates the adjusted gross margin.

6. Review the adjusted amounts and other information in the following fields, as needed:

Field	Description
Projected Service Level	The estimated service level (SL), based on the value in the **Safety Factor** field. For example, if the Safety Factor (SF) is: • < or = 0.5, SL = 60% + 40 x SF • > 0.49 but < 1.00, SL = 68% + 24 x SF. • > 0.99 but < 1.50, SL = 82% + 10 x SF. • > 1.49 but < 2.00, SL = 91% + 4 x SF. • > or = 2.00, SL = 99%.
Hits Adjusted Safety Factor	The hits related safety coefficient (HRSC) for the product at the branch multiplied by the value in the **Safety Factor (SF)** field. The hits adjusted safety factor affects the adjusted gross margin, projected service level, projected turns, order point safety days and line point safety days.
Adjusted Gross Margin	The estimated gross margin, using the value in the **Projected Gross Margin** field, and the estimated turns calculated in this field, and the carrying cost percentage on file. The system calculates it as follows: **ADJ. GM = GROSS MARGIN - (CARRY COST% / TURNS)**
Projected Turns	The estimated number of turns, based on the current demand per day annualized. It is calculated as: **TURNS = (365 x annualized demand / day) / average onhand**

7. Review the components used in the calculation of order points and line points for parent branches, and for transfer points and transfer surplus points in child branches:

   For the order point or transfer point:

In a Parent Branch:	In a Child Branch:
Lead time days	Transfer cycle days
Order point safety days	Transfer cycle days safety
Order point days	Transfer point days
Average daily demand	Average daily demand
Service stock or manual safety stock	Service stock or manual safety stock
Order point	Transfer point

   For the line point or transfer surplus point:

In a Parent Branch:	In a Child Branch:
Lead time days	Transfer point days
Order cycle	Transfer grace days
Line point safety days	Transfer surplus days
Line point days	Average daily demand
Average daily demand	EOQ

In a Parent Branch:	In a Child Branch:
Service stock or manual safety stock	Service stock or manual safety stock
Line point	Transfer surplus point

Note: If a minimum or maximum amount of quantity to stock is set on the User Inventory Controls screen and the setting has not expired, then the minimum amount setting overrides the order point calculation and the maximum amount setting overrides the line point calculation.

8. Press **Esc** to exit the screen.

Adding Customer Service Stock

Customer service stock, also called manual safety stock, is a quantity added to the normal stocking level of a product for a period of time, based on:

- Running a promotion on items, guaranteeing that you will have them in stock.
- Contractors requesting that you keep an item in stock in case then need one in an emergency.
- Branches using items, but not wanting this use to count towards the demand calculation.

When you assign service stock for a customer, the system adds additional quantities to the order point and line point calculations. You can also set service stock at set service stock at the branch level using the User Inventory Controls screen.

Note: The system does not convert nonstock items with customer service stock set to stock items.

Note: The effective and expiration date are for reporting purposes only. They do not affect the order point and line point calculations. For more information, see Running the Customer Service Stock Report.

To add service stock for a customer:

1. Set user control parameters for a product.
2. On the User Inventory Controls screen, use the **Hrchy** hot key to select the branch that maintains the additional stock for the customer.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory.

3. Use the **Cus Serv Stock** hot key to display the Product Inventory Customer Service Stock screen.
4. In the **Service** columns, complete the following for each customer:

Field	Setting
Customer	The name of the customer requiring the service stock.
Quantity	The quantity of service stock the customer requires.
Eff Date	The date to start using service stock. This field is for reporting purposes only and does not affect automatic purchasing or automatic transfers.
ExpireDt	The date to stop using service stock. This field is for reporting purposes only and does not affect automatic purchasing or automatic transfers.

5. View service stock for contracts, as needed.

6. Press **Esc** to save changes and return to the previous screen.

   The system populates the **Customer Service Stock** field with the total quantity required by customers.

7. Exit Product Maintenance for changes to display on this screen.

Setting the Percentage of Parent Order Point to Protect

When calculating the order or line point for a baby branch in a parent/baby relationship, the lead time for the baby branch is the greater of the lead time of the parent branch or the transfer cycle from the parent branch to the baby branch. This method protects the baby branch from running out of material during the transfer cycle and ensures that the baby branch's order point is not higher than its line point.

When the system determines the quantity of products to transfer from the parent branch to the child branch, it does not transfer a quantity that takes the parent branch below its order point, unless there is an immediate need in the child branch. For non-immediate need suggested transfers, the parent branch will, by default, not transfer a quantity that takes the parent branch below its order point.

In regards to non-immediate need suggested transfers to child branches, you can modify how much of the parent branch's order point the system "protects." You can set this parameter at the system, buy line, and product level.

The following procedure is a manual process for a single product. Use the Mass Load program to enter inventory parameters to groups of products.

To set the percentage of a parent branch order point to protect for suggested transfers:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen and the **AddL** hot key to display the Additional Inventory Parameters screen.
4. Use the **Hierarchy** hot key to select the branch.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.

5. For a branch or territory, press **Tab** to move to the **%OP** field.
6. In the **%OP** field, enter a percentage of the parent branch's order point to be protected in suggested transfers for non-immediate needs. For example, if the calculated order point is 12 and the **%OP** is 50, the system reads the parent branch order point as 6 for calculating suggested order quantities.

   - A value set at the product level overrides that set at the buy line level. If no percentage is set at the product level, but one is set at the buy line level, the value at the buy line is used.

- A value set at the buy line level overrides that set at the system level. If no percentage is set at the buy line level, but one is set at the system level, the value at the system level is used.
- If no percentage is set for the parent branch, meaning that the field is left blank, the system uses the default of 100%.

Note: The calculated order point at the parent branch includes manual service stock.

7. Press **Esc** to return to the previous screen.
8. You must exit Product Maintenance for the changes to take effect.

Using Minimum-Only Order Points

You can set up an order point or transfer point for a product using a *minimum-only order point*. The system uses the value entered for the minimum as both the order point and the line point until the demand of the product exceeds the minimum value. When the value exceeds the minimum value, the system uses the calculated line point. The system still pulls and displays products on the Suggested Purchase Order Queue regardless if the product uses minimum-only or minimum-maximum order points.

For example, you want to have at least three of a product in a branch, but if the true demand would result in a line point of more than three, you want the system to use the greater line point.

> **Note:** Order points and transfer points are the same. The system considers order points in a child branch to be transfer points.

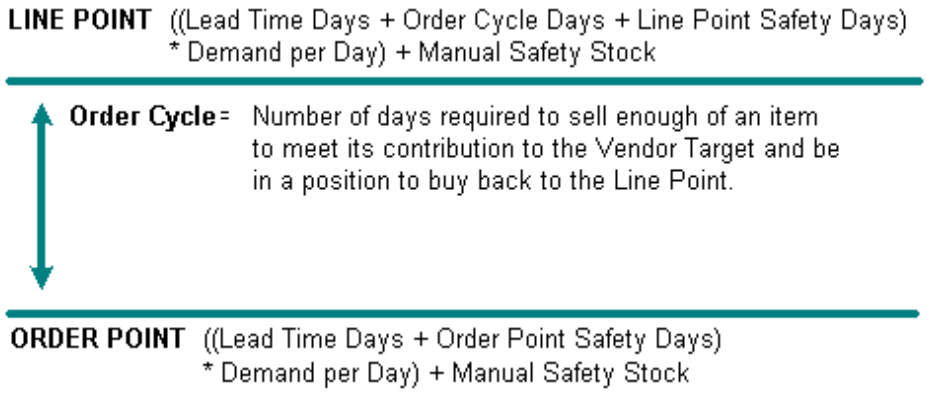
Use the User Inventory Controls screen to set up an order point with only a minimum value. The following are true for this screen for this scenario:

- The **Exp Date** field and **Calc Dmnd** field functions do not change.
- The value in the **Min** field displays as the value for the order point and transfer point (**OP/XP** field) on the Primary Inventory Maintenance and Product Order Points/Line Points screens.
- A lowercase m, such as 15m, next to the **EOQ** (Economic Order Quantity) field's value indicates that it is a minimum-only order point. An uppercase M, such as 15M, indicates that the system must consider both minimum and maximum values from the User Inventory Controls screen.
- A minimum-only value acts as an order point for a purchasing branch and a transfer point for the child branch.
- After you have loaded a minimum value for a branch, the system stops checking hits at this location because the item is considered stock. You must set the product file in Product Maintenance to be Stock.
- The system uses the value entered for the minimum as both the order point and the line point until the demand of the product exceeds the minimum value. When the value exceeds the minimum value, then the system uses the calculated line point. The system uses the greater value.
- If a product has a minimum setting but no maximum setting, the order point and the line point quantity are equal to the value in the **Min** field unless the system calculated line point quantity is greater than the minimum. In this case, the system uses the calculated line point quantity.

How the System Calculates Line Points

A product's line point is the upper limit to the amount of stock you want to have on the shelf for a given item. It includes enough stock to carry you through the order cycle, plus an amount of safety stock. When an item's projected inventory level (PIL) falls below its order point, the Suggested P/O program suggests that you purchase enough stock to bring all items in the buy line up to their adjusted line points. The line point adjusts up or down to meet the vendor target, depending on where you are in the order cycle when the Suggested P/O program runs.

A product's line point is the sum of the lead time days plus order cycle days, plus line point safety days, multiplied by the average demand for the item per day. If you define manual safety stock, this stock is added as a last step in determining the item's line point.



Note: If a maximum amount of quantity to stock is set on the User Inventory Controls screen and the setting has not expired, then that amount overrides the line point calculation.

Components of the Line Point

- **Lead Time Days** – The time it takes to replenish a product. You do not want your stock levels to fall below the amount that you can sell during the time it takes the vendor to ship the material to you.
- **Order Cycle Days** – The time it takes to sell enough of an item to meet its contribution to the vendor target. The normal order cycle for a buy line is the vendor target for the buy line, divided by the cumulative demand of all the products in that buy line.
- **Line Point Safety Days** – To ensure against possible out of stock periods, you also want to consider safety days in the line point calculation. Safety days translate into safety stock, which provides a cushion when daily sales exceed the average daily sale quantity.
- **Demand per Day** – Product demand drives the automated purchasing and transfer system. Formulas built into the safety day calculation compensate for the differences between fast-moving, high demand items, and slow-moving, low demand items.
- **Manual Safety Stock** – Also known as service stock, this is a quantity added to the order point to honor a commitment to keep a quantity of stock on the shelf.

Parent/Child Branches

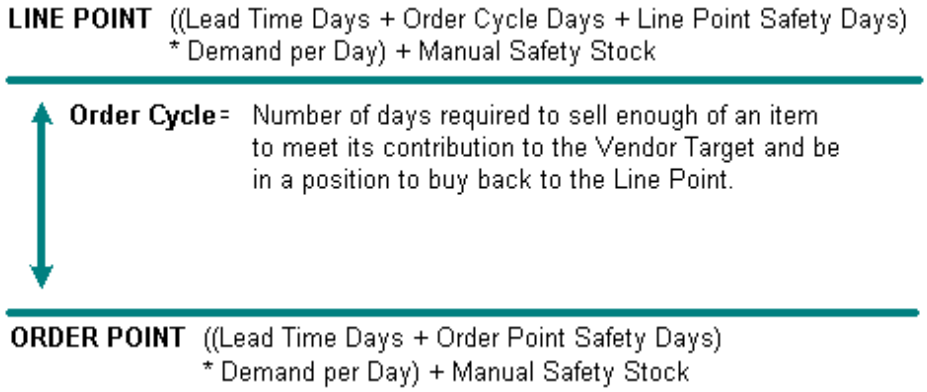
When calculating the line point for a child branch in a parent/child relationship, the lead time for the child branch is the greater of the lead time of the parent branch or the transfer cycle from the parent branch to the child branch. This method ensures that the child branch's order point is not higher than its line point.

How the System Calculates Order Points

A product's order point indicates the minimum amount of stock you want to have on the shelf for a given item. When an item's projected inventory level (PIL) falls below its order point, the Suggested P/O program suggests that you purchase enough stock to bring all items in the buy line to their adjusted line points. That is, the line point adjusted up or down to meet the vendor target.

The Suggested P/O report can include products that were not below their order points.

A product's order point is the sum of the lead time days plus order point safety days, multiplied by the average demand for the item per day. If you define manual safety stock, this stock is added as a last step in determining the item's order point.



Note: If a minimum amount of quantity to stock is set on the User Inventory Controls screen and the setting has not expired, then that amount overrides the order point calculation. You can set a minimum-only order point for a product to make sure the system uses the largest line point available.

Components of the Order Point

- **Lead Time Days** – The time it takes to replenish a product. You do not want your stock levels to fall below the amount that you can sell during the time it takes the vendor to ship the material to you.
- **Order Point Safety Days** – To ensure against possible out of stock periods, you also want to consider safety days in the order point calculation. Safety days translate into safety stock, which provides a cushion when daily sales exceed the average daily sale quantity.
- **Demand per Day** – Product demand drives the automated purchasing and transfer system. Formulas built into the safety day calculation compensate for the differences between fast-moving, high demand items, and slow-moving, low demand items.
- **Manual Safety Stock** – Also known as service stock, this is a quantity added to the order point to honor a commitment to keep a quantity of stock on the shelf.

Parent/Baby Branches

When calculating the order point for a baby branch in a parent/baby relationship, the lead time for the baby branch is the greater of the lead time of the parent branch or the transfer cycle from the parent branch to the baby branch. This method protects the baby branch from running out of material during the transfer cycle.

How the System Calculates Order Point Safety Days

The system calculates safety days for each product's order point, based on lead time and the following equations:

- Using lead time days to determine base lead time safety days.
- Applying the hits related safety coefficient (HRSC) factor to base lead time safety days to calculate order point safety days.

How the System Calculates Base Lead Time Safety Days

The system first applies an inverse relationship to the length of the lead time and the number of safety days. That is, for shorter lead times, the system recommends more safety stock to protect customer service levels. For longer lead times, the system recommends less safety stock to protect against carrying costs on the extra inventory.

For base Lead Time Safety Days, three equations apply:

If the Lead Time is...	the base Lead Time Safety Days is...	The formula is...
less than 15	the lead time plus seven days.	If LT < 15 Then LTSD = LT + 7.
greater than 15 but less than 60 days	one half the lead time plus 15 days.	If LT > 15 and < 60, Then LTSD = (LT/2) + 15.
greater than 60	the lead time divided by 4 plus 30 days.	If LT > 60, Then LTSD = (LT/4) + 30.

How the System Adjusts Base Lead Time Safety Days by the HRSC Factor

The system next adjusts the base lead time safety days to consider whether the item is a fast-moving, high demand item or a slow-moving, low demand item using the Hits Related Safety Coefficient (HRSC) factor. This adjustment enables the system to compensate for the relative unreliability of demand forecasting for slow-moving items compared to fast-moving items.

The system uses the following equation:

((4 / Total Hits on Product in Last 365 Days) + 0.6) * Safety Factor

The result of this equation displays in the **Hits Adjusted SF** field on the Product Order Points/Line Points screen. You can change the HRSC by changing the **Safety Factor (SF)** field on the Product Order Points/Line Points screen. The default value is 1.0.

How the System Calculates Line Point Safety Days

The system calculates safety days for each product's line point, based on lead time and the following equations:

- Using the sum of lead time days plus order cycle days to determine base line point safety days.
- Modifying base line point safety days using the hits related safety coefficient (HRSC) factor.

How the System Calculates Base Line Point Safety Days

The system first applies an inverse relationship to the sum of the lead time and the order cycle and the number of safety days. That is, for shorter the lead time and order cycle, the more safety stock the system recommends. For longer lead times and order cycles, the system recommends less safety stock to protect against the carrying costs of the extra inventory.

For base Line Point Safety Days, three equations apply.

If the sum of Lead Time plus Order Cycle is...	the base Line Point Safety Days is...	The formula is...
less than 15	the sum of lead time plus order cycle plus seven days.	If (LT + OC) < 15, Then LPSD = (LT + OC) + 7.
greater than 15 but less than 60 days	one half the sum of lead time plus order cycle plus 15 days.	If (LT + OC) > 15 and < 60, Then LPSD = ((LT + OC)/2) + 15.
greater than 60	the sum of lead time plus order cycle divided by 4 plus 30 days.	If (LT + OC) > 60, Then LPSD = ((LT + OC)/4) + 30.

How the System Adjusts Line Point Safety Days by the HRSC Factor

The system next adjusts the base line point safety days to consider whether the item is a fast-moving, high demand item or a slow-moving, low demand item using the Hits Related Safety Coefficient (HRSC) factor. The system uses this to compensate for the relative unreliability of demand forecasting for slow-moving items compared to fast-moving items.

For example, an item that sells an average of once a day for a month is a fast-moving item. An item that sells an average of once a month for a year is a slow-moving item.

The HRSC is 4 divided by the total number of hits in the last 365 days, plus 0.6. Products with less than 4 hits in the past year use 4 as the number of hits in the calculation. The highest HRSC is 1.6 while the lowest HRSC approaches 0.6. The HRSC value displays in the **Hits Adjusted SF** field on the Product Order Points/Line Points screen.

You can change the HRSC by changing the value of the **Safety Factor (SF)** field on the Product Order Points/Line Points screen.

Updating Product Demand Overview

Demand indicates how often a product sells per day or the average number of units sold per day. When calculating demand, the system looks at what was sold, compensates for lost sales, ignores exceptional sales and considers other demand filtering parameters. All demand parameters use system defaults but can be tailored to customer needs. The system calculates demand for every product in every warehouse each time the demand calculation is run. Demand determines the quantities the system suggests to purchase and to retain as safety stock. The calculation is as follows:

Demand per Day =

Total Demand in Forecast Period X Days in the Demand Period

Use the Update Demand Forecast program to forecast the demand of products in your inventory. The system consults the branch zip code table when calculating demand. If demand does not display as anticipated, ensure the zip code table is accurate and no changes have been made. Changes to Branch Zip Code table should be made with the assistance of Eclipse Support personnel. For more information, see Zip Codes Overview.

This program serves four primary functions. By product by branch, it updates the:

- Demand per day
- Economic order quantity (EOQ)
- Lead time
- Buy line's average lead time

Several programs use the demand forecast data:

- The plenty date calculation uses the lead time and buy line average lead time data.
- The order point and line point calculations use the demand per day and lead time data.
- The Maximum Days' Supply for a product is based on the demand per day.
- The Product Ranking program uses the demand per day data for ranking products.
- The Suggested P/O and Suggested Transfer programs rely on order point, line point, and product ranking calculations for suggesting purchases and transfers.

Running the Update Demand Forecast Program

Use the Update Demand Forecast program to forecast the demand of one, some, or all products in your inventory.

You can run the program for a single product or buy line during the day, when necessary. When using the "All" or "Changes" option, schedule the program to run overnight because it can take a long time to complete.

To run the Update Demand Forecast program:

1. From the **Purch > Forecasting** menu, select **Update Demand Forecast** to display a selection list.
2. Select one of the following options to indicate the products for which to run the program:

Option	Selects...
All	All products in inventory.
Changed	Only those products that have sold since the last time you ran the Update Forecast Demand program. The system also tests products that, in a given period of time, have decreased in sales activity as compared to the average period between past sales. The system does this to include products in the "changed" group that might be experiencing a decrease in demand.
Buy Line	Only those products within a buy line. This option activates the **Line/Product** field, where you define the buy line. Use this option when you know that significant changes have been made to the products in a given buy line.
Product	Only a specified product. This option activates the **Line/Product** field, where you define the product. For example, if you correct an error on a transaction that affects a product's sales history, use this option to recalculate the product's demand.

   The system populates the **Select Group** field on the Update Demand Forecast screen with your selection.
3. In the **Branch/Tr** field, enter a branch or territory to define the branches for which to run the update. To run the report for all branches and territories, enter **All**.
4. If you selected either **Buy Line** or **Product** in the **Select Group** field, in the **Line/Product** field, enter the corresponding buy line or product.
5. In the **As of Date** field, enter the actual or system variable date on which the forecast is based.

   Note: When using the Phantom Scheduler to run a program at regular intervals, enter a variable date in this field. Otherwise, each time the program runs, it will use the same as of date.

6. Use a hot key to run the program:
   - **Begin** runs the program immediately.
   - **Schedule** displays the Phantom Scheduler, where you can schedule the program to run at a defined date and time.

Viewing Product Demand Information

Use the Primary Inventory Maintenance screen to view product information related to inventory management.

- The system continually updates the product's projected inventory level (**PIL**) and order/transfer point (**OP/XP**) in real time.
- The system updates the remaining fields in the window each time you run the Update Product Demand Forecast program for the product.

When you assign a product the product status of **Stock**, the Primary Inventory Maintenance window displays a summary of the product's current demand information.

When you assign a product the status of **NonStock**, the system does *not* calculate the order point, line point, Economic Order Quantity (EOQ), and monthly demand.

To view product demand information:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Display a product record.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. In the **Br** column, review the branch numbers and types.

   Branch or warehouse identifiers with letter suffixes indicate the warehousing scheme used for replenishing that product. These lines display calculated information for all branches combined under the defined warehouse scheme.

Suffix	Defines a...	Which...
P	Central purchasing branch	Purchases for other branches.
W	Central distribution branch	Warehouses for other branches.
C	Central warehousing branch	Purchases and warehouses for other branches.

5. In the **Stk** column, review whether the item is a known stock (**Y**) or nonstock (**N**) item, or whether the system calculates (**-**) the stock or nonstock status based on the number of hits the product receives in a branch warehouse network.
6. In the **Buy Pkg (unit of measure)** column, review the quantity multiple in which stock is purchased or transferred. For example, if set to 6, stock is purchased or transferred in quantities of 6, 12, 18, 24, and so forth.
7. In the **Div** column, review whether the buy package can be divided either by the vendor when purchasing or by the warehousing branch before transfers occur.

8. Review the following fields, as needed, for each parent branch and child branch:

Field	For a parent branch, shows the...	For a child branch, shows the...
PIL	projected inventory level.	projected inventory level.
OP/XP	order point. **Note:** The order point displays as a whole number.	transfer point and surplus point. **Note:** The transfer point displays as a whole number.
Low Sale (unit of measure)	the lowest sale in the branch within the forecast period.	the lowest sale in the branch within the forecast period.
EOQ	the Economic Order Quantity, based on the combined demand of the multi-branch network. When the low sale quantity exceeds the calculated EOQ, the system uses the low sale quantity in place of the EOQ in associated calculations. In this case, the field displays with an asterisk to indicate the exception.	the Economic Order Quantity for the item in the branch.
Monthly Demand	the monthly demand for the item in the branch.	the monthly demand for the item in the branch.
Monthly Hits	the monthly hits for the item in the branch.	the monthly hits for the item in the branch.
Leadtime XF Cyc	the product's lead time for a purchasing branch.	the transfer cycle days for selling (child) branches.
Safety LT Day	the number of lead time safety days for the item in the branch.	the number of lead time safety days for the item in the branch.

9. When you have finished reviewing the information, press **Esc** to exit the screen.

More Options on the Primary Inventory Maintenance Screen

The Primary Inventory Maintenance screen also offers these options:

To...	Use this hot key...
view product demand calculation information	**Audit** The Demand Calculation Audit screen displays.
view product order point and line point calculation information	**Order Points** The Product Order Points/Line Points screen displays.
change the safety factor and projected gross margin for an individual branch	**Order Points** The Product Order Points/Line Points screen displays.
set the parameters used to forecast product demand	**Forecast Params** The Forecast Parameters Maintenance screen displays.

To...	Use this hot key...
enter specialized product-level user inventory control parameters	**User Controls** The Product User Controls Parameters screen displays.
view inventory details for the product in all branches	**Inv Inq** The Inventory Inquiry screen displays.
flag the product as vendor-managed inventory (VMI) for EDI	**EDI** The EDI/VMI screen displays.
define whether the item is stock and nonstock determination, by branch, and determine the buy package and divisibility overrides for branches and territories	**Addl** The Additional Inventory Parameters screen displays.

Auditing Demand Calculations

View the components of the demand forecast calculation for an individual product on the Demand Calculation Audit screen.

These values update each time you run the Update Demand Forecast program for the product.

To audit the demand calculation:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **Audit** hot key to display the Demand Calculation Audit screen.

   The screen displays the following information:

Field	Description
Date Last Calculated	Date when the Update Demand Forecast program was run.
Demand Pattern	Whether the product is seasonal or non-seasonal.
Demand Period Used	Number of days in the forecast period.
Raw Demand for Period	Total quantity sold during the forecast period.
Raw Hits for Period	Number of hits recorded during the forecast period. The system uses the number of sales occurrences to determine the amount of sales history to review.
# of Bill-To Customers	Number of individual customers billed for the raw hits during the forecast period. This value demonstrates whether the market or individual customers drive a product's demand.
Median Sale	Quantity sold on the median sale from the forecast period.
Days Out of Stock	Number of days the product's on-hand quantity was zero or less during the forecast period. **Note:** This calculation uses transactions only as far back as when the item was created.
Lost Sale Factor Used	Lost sale factor used by the demand calculation.
Largest Transaction	Largest quantity sold on a single transaction during the forecast period.
Except. Qty Excluded	Quantity excluded from the demand calculation due to exceptional sales.
Trend Factor Used	Trend factor, if any, used by the demand calculation.
Automatic Trend Factor	Indicates whether automatic trend calculation is enabled for this product's demand calculation. **Note:** Use this figure to compare to the **DEMAND (PER DAY)** field on the Product Order Points/Line Points screen to ensure that the audit demand is calculating correctly.

How the System Calculates Demand per Day

Demand is how often a customer requests a product, whether that product is on the shelf ready to be sold, or whether it must be ordered and direct shipped from a vendor, or transferred in from another branch. To provide for the needs of your customers, you want to have enough product on the shelf. How much you purchase, and how often, often depends on how often a sold in the recent past.

The basic formula for calculating a product's demand per day is:

Total Demand in Forecast Period / Days in the Demand Period = Demand per Day

However, past performance is not always an accurate predictor of future sales. For this reason, the system uses different inventory control parameters as part of the demand calculation.

To calculate daily demand for each product, the system does the following:

1. Determine whether to do the demand calculation.
   - If the product status is **Stock** or **NonStock**, calculate demand.
   - Otherwise, do not calculate demand.
2. Determine whether product is seasonal or non-seasonal and whether to use product, buy line or system forecast parameters, and then determine the product's forecast period.
3. Within the product's forecast period, scan the sales and work order transactions, but not returns or transfers, for **Stock** and **Tagged,** *not* Direct, Overship, Exceptional or Review quantity types.

   For each qualifying transaction, collect the:
   - Transaction date
   - Number of hits
   - Bill-To ID
   - Order quantity

   Continue collecting data until the number of transactions reaches the minimum number of hits required for forecasting (as defined on the Forecast Parameters screen at the product, buy line or system level) or the end of the forecast period.
   - If the total number of hits collected is less than the minimum number of hits required for forecasting, check to see whether the product is set up to add the demand of other products to its demand. If so, repeat step 3 to gather the same information for the additional items.
   - If, after all sales transaction information has been gathered, the total hits is still less than the minimum hits requirement as defined in the **Minimum Hits** control maintenance record, then discontinue the demand calculation for this product.
4. Remove the exceptional sales, if they exist.

5. Sort the new transaction list by quantity and identify the order quantity of the median sale. That is, the quantity of the middle transaction in the data sample.
6. For a seasonal product with automatic trend enabled, adjust the demand according to the system-calculated trend percent.
7. If a lost sale percentage exists for the product, increase the demand to account for lost sales.
8. If it exists for a non-seasonal product, adjust the demand by the manual trend percent.

Setting Product User

Use the User Inventory Controls screen to enter specialized product-level inventory parameters, to.

- Estimate product demand for a new branch.

  When you have a new branch that has no product history, use the **Min**, **Max**, **Exp Date**, and **Calc Dmnd** columns to define minimum and maximum stocking levels for the products until there is sufficient product history for the demand calculation to take over.

  You can estimate the minimum and maximum stocking levels for a new product until the product accrues enough demand history for the system to begin forecasting. As the system monitors a product's demand, you can set an expiration date after which the system will stop using estimated minimum and maximum levels for suggested purchasing, and begin forecasting demand for regular product order points and line points.

- Add service stock to the demand.

  Use the **Service Stock** and **Serv Stock Exp Date** columns to add service stock to the product's order point and line point calculations. This adjustment, also known as manual safety stock, is a quantity of stock above your normal stocking level that you have committed to keep on the shelf at a branch for a set period.

  For example, assume the following is true:

  - You run a promotion on an item, guaranteeing that you will have it in stock.
  - A contractor requests that you keep an item in stock in case he or she needs one in an emergency.
  - Your branch utilizes items for its own maintenance and you do not want your use of the items to count towards the item's demand.

    When you assign service stock, the system assigns the additional quantities to the order point and line point calculations. When you reach the expiration date of the service stock the system removes the additional quantities from the order point and line point calculations.

    You can set service stock for a branch or for a customer at a branch using the User Inventory Controls screen.

    Use the **Cus Serv Stk** hot key to add customer service stock to the product's normal demand. Customer service stock is a quantity of stock above your normal stocking level that you have committed to keep on the shelf for a set period, as a courtesy to a customer. After entering customer service stock information for a product, the total requirements display in the **CusServ Stock** column. The system adds the additional stock requirements to the product's order point and line point calculations.

The following procedure is a manual process for a single product. Use the Mass Load program to enter inventory parameters to groups of products.

To set User Control Parameters for a product:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Display a product record.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **User Controls** hot key to display the User Inventory Controls screen.
5. Use the **Hrchy** hot key to select the branch that maintains the additional stock.
6. Complete the following fields:

Field	Setting
Min	The estimated minimum quantity to stock: • Purchasing branches use this quantity in place of a calculated order point until the expiration date. • When the **Respect Item Min/Max For Suggested Transfers** control maintenance record is set to **Y**, child branches use this quantity in place of a calculated transfer point until the expiration date. • Enter **0** (zero) if the branch does not stock the item, or enter the actual quantity that should ever be stored at the child branch when using this field with the **Calculate Demand** field. If a product has a min setting but no max setting, the order point and the line point quantity are equal to the value in the **Min** field unless the system calculated line point quantity is greater than the min. In this case, the system uses the calculated line point quantity.
Max	The estimated maximum quantity to stock: • Purchasing branches use this quantity in place of a calculated order point until the expiration date. • When the **Respect Item Min/Max For Suggested Transfers** control maintenance record is set to **Y**, child branches use this quantity in place of a calculated transfer point until the expiration date. • Enter **0** (zero) if the branch does not stock the item, or enter the actual quantity that should ever be stored at the child branch when using this field with the **Calculate Demand** field. If a product has a min setting but no max setting, the order point and the line point quantity are equal to the value in the **Min** field unless the system calculated line point quantity is greater than the min. In this case, the system uses the calculated line point quantity.
Exp Date	The date after which the values in the **Min** and **Max** fields are no longer valid. We recommend that you use an expiration date six months from the current date.
Calc Dmnd	Whether to calculate demand from dependent selling branches for use at purchasing branches.

Field	Setting
No Rt (Non-Returnable)	As you work with your vendors to return products, select this check box if the vendor indicates that you cannot return the product. You might also select this check box for products, such as remnants, that you know you cannot return. The setting only applies to the branch you selected in step 6. If you have the same product in a different branch, select the check box for that branch as well. Products flagged as non-returnable are not included in the Suggested PO Return Queue.
Service Stock	The quantity of the product to reserve as service stock.
Service Stock Exp Date	The date the system stops adding the service stock quantity to the product's order point and line points.
CusServ Stock	The system populates this field with the total quantity of service stock reserved for selected customers. The total quantity only includes those quantities within their respective effective date and expiration date. The effective and expiration dates are for reporting purposes only and do not affect automated purchasing or automated transfers. For more information, see Running the Customer Service Stock Report. When a branch or territory appears on the User Inventory Control screen without a value in the **CusServ Stock** field, this indicates that a customer contract stock quantity is set. For more information, see Viewing Customer/Vendor Specific Part Number Details. **Note:** This field is view-only.

7. Press **Esc** to save changes and return to the previous screen.
8. Exit Product Maintenance for changes to appear on this screen.

More Options for the User Inventory Controls Screen

The User Inventory Controls screen also offers these options:

To...	Use this hot key...
add the demand history of discontinued products to their replacements	**Add Demand**
view information pertaining to the calculation of the product's demand	**Audit**
view inventory details about the product in all branches	**Inv Inq**
define hits-related inventory parameters for each branch	**Hits/Supply**
toggles between prompting for a branch to display branch-specific parameters and displaying all branches	**Hrchy**
prompts for a branch or territory to locate in a long list of branches and territories	**Find**
add customer service stock to the product's normal demand	**Cus Serv Stock**

Viewing Contract Stock Quantities

You can view customer or vendor contract quantities and their effective dates on the Product Inventory Customer Service Stock screen.

A customer or vendor can have contract quantities independent of service stock quantities. The system does not add contract quantities to the demand calculation; they are used for reporting purposes only.

Assign contract stock quantities using the Customer/Vendor Part Number Detail screen.

Use the Customer Service Stock report to track demand for contract items.

To view contract quantity information for a product:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **User Controls** hot key to display the User Inventory Controls screen.

   When a branch or territory appears on the User Inventory Controls screen without a value in the **CusServ Stock** column, a contract stock quantity is set.
5. Use the **Hrchy** hot key to select the branch to which the customer is assigned.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area.
6. Use the **Cus Serv Stock** hot key to display the Product Inventory Customer Service Stock screen.
7. Under the **Contract** heading, review the following fields, which pertain to contract stock quantities. This information is view-only:

Field	Setting
Customer	The customer assigned to the contract stock quantities.
Quantity	The contract quantity. This field is for reporting purposes only.
Eff Date	The date the contract goes into effect. This field is for reporting purposes only. It does not affect automatic purchasing or automatic transfers.
ExpireDt	The date the contract expires. This field is for reporting purposes only. It does not affect automatic purchasing or automatic transfers.

   As contract quantities are used for reporting purposes only, the system does not include them in the customer service stock totals in the **CustServ Stock** field of the User Inventory Controls screen.
8. Press **Esc** to return to the previous screen.

Adding Demand History to Products

You can copy demand history - in units, weight, or load factor - from one or more products to a new product. This allows you to do the following:

- Add the demand history of one or more discontinued products to their replacement.

  For example, Product A Model 200 replaces Product A Model 100. Use the demand for the old product to predict the demand of the new product.

  Note: Change the discontinued item's product status to something other than **Stock**. Otherwise, the system continues suggesting that you purchase both items.

- Add the demand history of several individual products to a single new product that represents a combined set.

  For example, you sell individual tools and you want to provide three tools in a single set. Use the demand for each unit to calculate a baseline demand history for the set.

- Copy the demand history of component parts to a finished product.

  For example, you manufacture ductwork and you need to determine how much sheet metal to order. By combining the monthly demand - in weight - of your ductwork components, you can estimate how much sheet metal to order each month.

- Add a product's demand history in one branch to another branch.
- Add or subtract a customer's demand history from one product to another.

To display the Add Demand screen:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **User Controls** hot key to display the User Inventory Controls screen.
5. Use the **Hrchy** hot key to select the branch to receive the demand history.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.

6. Use the **Add Demand** hot key to display the Add Demand screen.

   Note: When the **Customer Demand** hot key on the Add Demand screen is highlighted, it indicates that a customer's demand is being added or subtracted from a product. The customer's name appears on the Add Demand Customer Information screen.

7. In the **Include the following products' demand with the product above based on** field, enter one of the following measurement types:
   - **Units -** Includes demand based on the number of items.
   - **Weight -** Includes demand based on the weight, in pounds, of the item.
   - **Load -** Includes demand based on the size of the item in cubic inches.
8. Complete the following fields for each product from which to add demand:

Field	Description
Products	The product from which to copy demand history to the new product
Expire Date	The date after which to stop adding the demand of the product to the demand of the new product.
To Branch	The branch that will use the demand history.
From Branch	The branch from which to obtain the demand history.

9. Add or change a customer's demand for a product, as needed.
10. Press **Esc** to save the information and exit the screen.

Adding Demand from Dependent Selling Branches to Purchasing Branches

A dependent selling branch is a branch that does not warehouse the stock that it sells. Instead, it relies on a separate purchasing or warehousing branch to ship items that the selling branch has sold to customers. For example, your selling branch is a showroom branch without a warehouse. When you sell items, your purchasing branch or warehousing branch is responsible for shipping or transferring those items "as needed."

- If a selling branch does not stock an item, but transfers it in "as needed" to fulfill a customer request, you will want to add the demand to the purchasing branch. If the Min/Max settings are less than the actual demand in the selling branch, the purchasing branch buys and keeps in reserve sufficient inventory based on demand and transfers it to the selling branch.
- If the selling branch is closing out of the item at their location, you would not want to add the demand to the purchasing branch. If the Min/Max settings are more than the actual demand in the selling branch, the purchasing branch buys and keeps in reserve the specified amounts.

To add demand from a selling branch to a purchasing branch:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **User Controls** hot key to display the User Inventory Controls screen.
5. Use the **Hrchy** hot key to select the selling branch.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.

6. Complete the following fields:

Field	Setting
Min	Enter the actual quantity that should ever be stored at the child branch when using this field with the **Calc Dmnd** field. In this case, the minimum value must equal the maximum value.
Max	Enter the actual quantity that should ever be stored at the child branch when using this field with the **Calc Dmnd** field. In this case, the maximum value must equal the minimum value.
Exp Date	Leave blank.

Field	Setting
Calc Dmnd	This field determines whether to add the demand for the item back to the purchasing branch when the selling branch does not stock the item. This option is intended for situations wherein a selling branch does not normally stock an item, but transfers the item in "as-needed" from another location. • **Y** - Includes sales of the item at the selling branch in the calculation of demand at the purchasing branch. For example, when the selling branch does not stock the item, but transfers it in "as needed" to fulfill a customer request. If the Min/Max settings are less than the actual demand in the baby branch, set this field to **Y** so the purchasing / parent branch buys and keeps in reserve sufficient inventory based on demand and transfers it to the child branch according to Min/Max. • **N** - Excludes sales of the item at the selling branch from the calculation of demand at the purchasing branch. For example, when the selling branch is "closing out" of the item at their location. If the Min/Max settings are more than the actual demand in the child branch, set this field to **N** so the purchasing / parent branch buys and keeps in reserve the specified amounts.

7. Press **Esc** to save changes and return to the previous screen.
8. Exit Product Maintenance for changes to appear on this screen.

Estimating Demand for a New Branch

When you add a new branch to your company, you must estimate demand for the products sold at the branch. There are two ways to add demand for a new branch:

- If you expect the new branch to be similar to an existing branch, you can add the product demand history of another branch to the new branch.
- If you do not have suitable product demand to use for the new branch, you can set minimum and maximum stocking levels for products at the branch.

Changing Customers' Demand for Products

When customers change their buying habits, the change can affect product demand:

- If a customer decides to start purchasing Brand A rather than Brand B products, you want to add the demand of Product B to Product A to assist the demand calculation.
- If a customer decides to purchase products from a different branch, you want to add the demand of those products from the old branch to the new branch.

Add or subtract a customer's demand for a product on the Add Demand Customer Information screen.

To change a customer's demand for a product:

1. Add demand history to the product.
2. From the Add Demand screen, use the **Customer Demand** hot key to display the Add Demand Customer Information screen.
3. Complete the following fields:

Field	Setting
Customer	Enter the customer whose demand you are adding to or subtracting from the product.
Opt	Press **F10** and select whether to add or subtract the customer's demand for this product.

4. Press **Esc** to save changes and return to the previous screen.
5. Exit Product Maintenance for changes to appear on this screen.

   Note: When you access this product record in the future, the **Customer Demand** hot key on the Add Demand screen highlights, indicating that the Add Demand Customer Information screen contains settings.

Setting Minimum and Maximum Stocking Levels for New Products

Until a new product accrues enough demand history for the system to begin forecasting demand, you can enter estimated minimum and maximum stocking levels for the product. You can also set an expiration date, after which the system stops using estimated stocking levels for suggested purchasing. On this date, the system begins forecasting demand using the accumulated demand history and established order points and line points.

Note: You can set a minimum-only order point for a product to make sure the system uses the largest line point available.

The following procedure is a manual process for a single product. Use the Mass Load program to enter minimum and maximum levels for all the products in a buy line.

To set minimum and maximum levels for suggested purchasing of a new product:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Display a product record needing minimum and maximum stocking levels.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **User Controls** hot key to display the User Inventory Controls screen.
5. Use the **Hrchy** hot key to select the branch to receive the demand history.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.

6. Complete the following fields:

Field	Description
Min	Enter the estimated minimum quantity to stock. • Enter **0** (zero) if the branch does not stock the item. • Purchasing branches use this quantity in place of a calculated order point until the expiration date. • When the **Respect Item Min/Max For Suggested Transfers** control maintenance record is set to "Y" child branches use this quantity in place of a calculated transfer point until the expiration date. • Enter the actual quantity that should ever be stored at the child branch when using this field with the **Calc Dmnd** field. **Note:** You can set a minimum-only order point for a product to make sure the system uses the largest line point available.

Field	Description
Max	Enter the estimated maximum quantity to stock. • Enter **0** (zero) if the branch does not stock the item. • Purchasing branches use this quantity in place of a calculated line point until the expiration date. • When the **Respect Item Min/Max For Suggested Transfers** control maintenance record is set to "Y" child branches use this quantity in place of a calculated surplus point until the expiration date. • Enter the actual quantity that should ever be stored at the child branch when using this field with the **Calc Dmnd** field.
Exp Date	The date after which the system no longer uses the values in the **Min** and **Max** fields. We recommend that you use six months.
Calc Dmnd	Indicates whether to calculate demand for dependent selling branches.

7. Enter service stock parameters, if needed.
8. Press **Esc** to save changes and return to the previous screen.
9. Exit Product Maintenance for changes to appear on this screen.

Defining the Maximum Days' Supply for Products

Define a maximum number of days' supply of a product that your company permits to be maintained in inventory. Defining a maximum number of days' supply keeps your inventory at an efficient level so that you do not keep unnecessary stock in your warehouse.

The system checks whether a product's current maximum days' supply is greater than a limit set for the individual product, buy line, or all products. This check also prevents you from bringing unnecessary stock into your warehouse and moving inventory in quantities greater than what you sell. The system makes this check whenever a product is placed on an sales order, purchase order, transfer order, or inventory adjustment.

The system uses the following calculation to determine the product's projected maximum days' supply:

> Product Projected Maximum Days' Supply = Product's projected inventory level (PIL) / Demand per day

You can define maximum days' supply at three levels:

- **System** - Applies to all products, unless overridden at the buy line or product level. The **Maximum Days Supply** control maintenance record defines the maximum days' supply default for each branch. The branch default is used when products do not have maximum days' supply set at the product or buy line level.
- **Buy Line** - Applies to all products assigned to the defined buy line, unless overridden at the product level. The buy line level overrides the branch default parameters.
- **Product** - Applies to the defined product and overrides the buy line and branch default parameters. The maximum days' supply checking logic does not apply to products with a status of MiscCharge.

When you add items to a transaction, the system checks the PIL. If an item fails the check, the system warns that you are about to affect inventory levels set to the maximum days' supply limit. The warning displays the item's part number, description, PIL, daily demand, and its projected maximum days' supply. If you have the corresponding PIL override authorization key assigned (AOE.PIL.DAYS.OVRD, POE.PIL.DAYS.OVRD, SOE.PIL.DAYS.OVRD or TOE.PIL.DAYS.OVRD), the message has a **Continue (Y/N)** prompt. Otherwise, the message prompts you to enter the password of another user who is authorized to override the maximum days' supply limit.

For example, you set the system default for maximum days' supply to be 456. Product A has a daily demand of 0.03 and a PIL of 12. The system calculates that the maximum days' supply is 400. This product is not in violation of the maximum days' supply limit. A purchasing agent attempts to meet a vendor target by manually adding 3 more of Product A to a purchase order. Product A's PIL increases to 15 and its maximum days' supply to 500. The system warns the purchasing agent that including this product on the purchase order in this quantity violates the maximum days' supply limit.

If an item is removed from a transaction, or the transaction is deleted, the system compares the PIL at the time of the removal or deletion to a stored PIL. If the removal or deletion does not

make the PIL higher than it was at the time of the addition, no maximum days' supply warning displays.

To define the system default maximum days' supply:

1. From the **System > System Files** menu, select **Control Maintenance** to display the Control Maintenance screen.
2. In the **Keyword** field, enter **max day supply** to display the Maximum Days Supply control maintenance record screen.
3. In the **Br/Tr/All** field, enter the branch or territory you want to select. Enter **All** to select all branches and territories.
4. For each branch, enter the maximum days' supply that your company permits to be stocked for all products in the warehouse.

   Note: We recommend setting the system default to 99999. This causes the system to warn users when they attempt to purchase or transfer nonstock items that have a daily demand of 0.

5. Press **Esc** to save changes and exit the screen.

To define the maximum days supply for a product:

1. From the **Files** menu, select **Product** to display the Product Maintenance screen.
2. Select a product.
3. Use the **Inven** hot key to display the Primary Inventory Maintenance screen.
4. Use the **User Controls** hot key to display the User Inventory Controls screen.
5. Use the **Hits/Supply** hot key to display the Hits Control Maintenance screen.
6. Use the **Hierarchy** hot key to select a branch.

   Note: Use the **Find** hot key as necessary to locate a branch that is in the list, but not in the viewable area. Use **Alt-Insert** to add a branch or territory to the list. The new branch or territory inherits the settings of the previous entry. Use **Alt-Delete** to remove a branch or territory from the list.

7. In the **Max Days** field for a branch or territory, enter the maximum days' supply of the product that your company permits to be stocked in the warehouse.
8. Set hits control parameters, as needed.
9. Press **Esc** to save changes and exit the screen.

Index

