

Forecasting



ADVANCED DISTRIBUTION SYSTEM®

By Prelude Systems, Inc.

Tailored To Accommodate Growth

Revision History

October 2004
First Release



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ADS Version: 18

Documentation Version: 1.0

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Chapter 1

Forecasting Overview

The Forecasting module provides tools to help your company purchase and control inventory more efficiently. Forecast formulas are used to capture actual usage and to calculate forecasted usage. Sales trends and seasonal considerations are factored in as well.

You can use the formulas provided by ADS, or create your own in Forecast Formula Maintenance and then apply them to your products at the following levels:

- 1st - Product/warehouse level (Product Purchasing Parameters Maintenance).
- 2nd - Vendor level (Vendor Line Maintenance).
- 3rd - Product line level (Product Line Maintenance).
- 4th - Company level (Purchasing Parameters).

In addition to formulas, you can use trend factors to account for conditions in your business that could affect forecasting demand. In many situations, forecast cannot be based on usage, due to recessions, business requirements for the same month's last year usage vs. the same month's this year usage, or sales fluctuations due to marketing strategies or promotions. You can use two methods to establish trend factors:

- Trend Months: The system uses *Trend Months* to calculate the trend percent. This percent is used to calculate the trend quantity to add to the forecast. *Trend Months* in Product Purchasing Parameters Maintenance overrides the *Trend Months* in Forecast Formula Maintenance.
- Trend Percent: Trend % adjusts the demand for each month. This percent is used to calculate the trend quantity to add to the forecast. The *Trend %* in Purchasing Forecast Parameters Maintenance overrides the *Trend %* in Product Line Maintenance.

Once you establish the formulas and trends, you can use the Distribution Requirements Evaluation Inquiry along with the forecasting reports to evaluate the efficiency of each formula and to identify products where the actual usage deviates from the forecast outside an acceptable range. You can then modify the formulas as needed.

Refer to the following sections for information on implementing the forecasting module:

- "Setting Up Forecasting Formulas and Trends" on page 2-1.
- "Analyzing Forecasting Formulas" on page 3-1.



Chapter 2

Setting Up Forecasting Formulas and Trends

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Although the Forecasting module provides preset forecast formulas, you can use Forecast Formula Maintenance to modify or create formulas more applicable to your inventory. You can then assign the formulas to your products at different levels in the system. The first level, Product Purchasing Parameters Maintenance, overrides the second level, Vendor Line Maintenance, and so forth. The following hierarchy determines which level is used first:

- 1st - Product/warehouse level (Product Purchasing Parameters Maintenance).
- 2nd - Vendor level (Vendor Line Maintenance).
- 3rd - Product line level (Product Line Maintenance).
- 4th - Company level (Purchase Parameters Maintenance).

For information on setting up forecasting formulas and parameters, assigning the formulas to products, and generating forecasting data, refer to the following sections:

- "Creating Forecasting Formulas" on page 2-2.
- "Entering Formulas/Parameters by Company" on page 2-6.
- "Entering Formulas/Parameters by Product Line" on page 2-11.
- "Entering Formulas by Vendor Line" on page 2-13.
- "Entering Formulas/Parameters by Product/Warehouse" on page 2-14.
- "Establishing Trends and Safety Levels" on page 2-18.
- "Generating Forecasting Data" on page 2-20.

2.1 Creating Forecasting Formulas

You can create forecasting formulas in Forecast Formula Maintenance to calculate forecasts for each product, product line, vendor line, or warehouse. You can also determine how you want the system to weight each month. ADS provides several commonly used formulas; however, you can create additional formulas for situations unique to your business.



To print a listing of existing forecasting formulas and descriptions, select **Purchasing > Forecasting > Forecast Formula Listing**.

Forecast Formula Maintenance

To create or modify a forecast formula:

- 1 Select **Purchasing > Forecasting Subsystem > Forecast Formula Maintenance** to access the Forecast Formula Maintenance screen.

Month	Weight
1st	1.00
2nd	1.00
3rd	1.00
4th	1.00
5th	1.00
6th	1.00
7th	
8th	
9th	
10th	
11th	
12th	
13th	
14th	
15th	
16th	
17th	
18th	

Figure 2-1: Forecast Formula Maintenance Screen

- 2 Enter the *Formula Id* to be created or maintained or press **F3** to search for existing formulas.
- 3 Enter the *Description* of the formula.

- 4 Enter the number of *Trend Months* to use when calculating trend factor and trend quantity. Leave this field blank to calculate trends at other levels or if not using trends.

Trend Forecasting is used to forecast product demand based on past sales. The calculated trend quantity is added to or subtracted from the forecast thus affecting order point, line point, and purchasing quantity. *Trend Months* at this level can be overridden by *Trend Months* at the Product Warehouse level.

When calculating the *Trend Factor* using *Trend Months*, the following rules apply:

- If last year's usage is zero, the *Trend Factor* is zero.
 - If last year's usage is less than zero and the current year's usage is greater than zero, the *Trend Factor* is 100.00.
 - If the calculated Trend Factor is greater than 100, the *Trend Factor* is 100.00.
 - If the calculated Trend Factor is less than -100, the *Trend Factor* is set to -100.00.
 - If the trend is not always positive or always negative for the number months indicated, the *Trend Factor* is not used.
- 5 For *Seasonal Flag*, select one of the following:
 - **Yes** - To apply a seasonal pattern analysis by weighting months from last year (e.g., months 10-12).
 - **No** - To apply a non-seasonal pattern analysis by weighting months that just occurred (e.g., months 1-6).
 - 6 For *Forecast Analysis*, select **Yes** to include the formula in the "Comparison Forecast Report" on page 3-12 for analysis. This report reviews all formulas to recommend the formula with the lowest error rate.
 - 7 Enter the *Weight* to apply to each month's actual usage to calculate the upcoming forecast. Each *Month* listed indicates which previous months are used in the forecasting calculation. For example, 2nd denotes two months back.
 - 8 Press **F2-Save** to save the forecast formula.

Examples of Forecast Formulas

The forecast for the 6 Month Average formula and the Seasonal 3/1-0 Trend formulas are show below assuming monthly usage in the following table:

Month	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	Jan	Dec	Nov	Oct
Usage	43	37	22	40	80	60	55	57	65	90	97	99

Forecast Calculation for 6 Month Average Formula

Each of the 6 months of previous usage has a weight factor of 1. The usage multiplied by the weight factor is the total for each month. The sum of the totals, divided by the total weight factor, is the forecast for October:

- Actual usage x weight for the last 6 months: $(43 \times 1) + (37 \times 1) + (22 \times 1) + (40 \times 1) + (80 \times 1) + (60 \times 1) = \mathbf{282}$
- Total weight: $1+1+1+1+1+1 = \mathbf{6}$
- Forecast for October: $282/6 = \mathbf{47}$

Forecast Calculation for Seasonal 3/1-0 Month Trend Formula

The usage for 10, 11, and 12 months back is used for this calculation. The usage multiplied by the weight factor is the total for each month. The sum of the totals, divided by the total weight factor, is the forecast for October.

- Actual usage x weight for the 3 designated months: $(90 \times 1) + (97 \times 2) + (99 \times 3) = \mathbf{581}$
- Total weight: $1+ 2 + 3 = \mathbf{6}$
- Forecast for October: $581/6 = \mathbf{97}$

Field and Function Key Descriptions

Field/Function Key	Description
Formula Id	The code that identifies the forecast formula.
Description	The description of the formula.
Trend Months	<p>The number of months to calculate the trend factor and trend quantity.</p> <p>Trend Forecasting is used to forecast product demand based on past sales. The calculated trend quantity is added to or subtracted from the forecast thus affecting order point, line point, and purchasing quantity. <i>Trend Months</i> at this level can be overridden by <i>Trend Months</i> at the Product Warehouse level. When calculating the <i>Trend Factor</i> using <i>Trend Months</i>, the following rules apply:</p> <ul style="list-style-type: none"> • If last year's usage is zero, the <i>Trend Factor</i> is zero. • If last year's usage is less than zero and the current year's usage is greater than zero, the <i>Trend Factor</i> is 100.00. • If the calculated <i>Trend Factor</i> is greater than 100, the <i>Trend Factor</i> is 100.00. • If the calculated <i>Trend Factor</i> is less than -100, the <i>Trend Factor</i> is -100.00. • If the trend is not always positive or always negative for the number months indicated, the <i>Trend Factor</i> is not used.
Seasonal Flag	<p>Determines if the formula is for seasonal or non-seasonal products:</p> <ul style="list-style-type: none"> • Yes - To apply a seasonal pattern analysis by weighting months from last year (e.g., months 10-12). • No - To apply a non-seasonal pattern analysis by weighting months that just occurred (e.g., months 1-6).
Forecast Analysis	Determines if you want to include the formula in the "Comparison Forecast Report" on page 3-12 for analysis. This report reviews all formulas to recommend the formula with the lowest error rate.
Month	Indicates which previous months are used in the forecasting calculation. For example, 2 nd denotes two months back.
Weight	The weight to apply to each month's actual usage to calculate the upcoming forecast.
F2-Save	Saves the forecast formula.
F4-Del	Deletes the forecast formula.
Action Bar	
Copy	Allows you to copy an existing forecasting formula to create a new formula with similar features. You can then modify the new formula. This feature is only accessible from the <i>Formula Id</i> Field.

2.2 Entering Formulas/Parameters by Company

You can establish forecast formulas for seasonal and non-seasonal items at the company level in Purchase Parameters Maintenance. These formulas are overridden if forecast formulas are set up in Product Line Maintenance, Vendor Line Maintenance, or Product Purchasing Parameters Maintenance.

Purchase Parameters Maintenance

To enter a forecast formula at the company level:

- 1 Select **System Parameter > Maintenance > Purchasing Controls > Purchasing Parameters** to access the Purchase Parameters Maintenance screen.

Cost/Ordering	5.00	No./Mths Usage - Max	6
Cost/Work Order	5.00	Unusual Usage Class	5
Cost/Carrying Inv	0.25	Number Of Lead Times	4
ROAI	0.40	Cutoff Days For Lead Times	180
Dead Stock Value	\$100	Product Class Method	WV
Unusual Usage Min\$	2.00	#/Months Classification	9
Unusual Usage Max\$	500.00	Perform Pre Price Update	Yes
Forecast Formula	8MO		
Forecast Formula - Sea	SEA3		

Figure 2-2: Purchase Parameters Maintenance

- 2 For *Forecast Formula*, enter the formula for non-seasonal products or press **F3** to search for existing formulas. This formula is used if no formulas exist at the other levels (e.g., product, product line, vendor line).
- 3 For *Forecast Formula-Sea* enter the formula for seasonal products or press **F3** to search for existing formulas. This formula is used if no formulas exist at the other levels (e.g., product, product line, vendor line).



For information on setting up forecast formulas, refer to "Creating Forecasting Formulas" on page 2-2.

- 4 To further define company-wide forecasting information, press **F5-Forecasting** to access the Forecasting Parameters screen.

Figure 2-3: Forecasting Parameters Screen

- 5 For *Spikes Exception – High*, enter the multiple to use to calculate a spike if the actual usage is greater than the forecast. This works as an exception trigger to signal products whose actual usage is greater than forecasted usage.

Example: If *Spikes Exception -High* is 4, the system determines if actual usage is 4 times larger than the forecast for the month. If so, the product is placed on the Skipped Audit Report/Inquiry (with an **S** exception) for the buyer to review. The **S** exception does not stop the parameters from being recalculated at month-end; it is only a signal to allow you to determine if usage should be adjusted to reflect larger than expected sales.

- 6 For *Spikes Exception – Low*, enter the multiple to use to calculate a low spike. This works as an exception trigger to signal products with actual usage less than the forecast.

Example: If you enter .25 for the low spike, the system determines if actual usage is .25 times less than the forecast for the month. If so, the product is placed on the Skipped Audit Report/Inquiry (with an **S** exception) for the buyer to review. The **S** exception does not stop the parameters from being recalculated at month-end; it is only a signal to allow you to determine if usage should be adjusted to reflect lower than expected sales.

- 7 For *Spike Exception - Min/Max*, enter the multiple to use to calculate a spike for min/max items. This alerts the buyer when products flagged as min/max items have a usage of more than the maximum quantity settings. If a product has a spike by more than the multiple entered here, it shows up on the buyer's work queue under *Product Alerts*. Refer to the Product Alert work queue on the Buyer Queue Inquiry in the Purchasing Module.
- 8 For *Formula Comparison #/Mo*, enter the default number of months to use for the forecast comparison analysis. The "Comparison Forecast Report" on page 3-12 determines actual versus forecast error rates for a number of months and calculates an average error rate for each formula. The lowest error rate is then flagged as the suggested best formula.
- 9 For *Formula Comparison Max%*, enter a maximum percentage for deviation comparisons.
Example: Enter 1000 to cap the deviation percent at 1000% if the actual versus forecast amounts have a large deviation percent calculated.
- 10 Enter the *Rollup Satellite Usage* method to determine if usage from satellite branches is included in the usage calculation. If the replenishment method is T for all warehouses, usage is captured for the central warehouse when transfers are shipped. Choose from the following:
 - **Y** - Rollup all T replenishment warehouse usage to the supplying branch as the override usage during end of month processing.
 - **N** - Do not rollup usage.
 - **M** - Execute the process manually.
- 11 For *Sporadic Usage Analysis*, indicate if you want the system to flag products with sporadic usage and automatically define min/max settings. See the "Example of Sporadic Usage" on page 2-10. Choose from the following:
 - **Y** - To flag products with sporadic usage and automatically define min/max settings. The sporadic analysis is performed during end of month calendar close and determines if a product has sporadic usage patterns. If so, the product is automatically switched to use min/max settings based on the rules below.
 - **N** - To not flag products with sporadic usage and define the min/max settings.

- 12** For *#/MO W/Usage Activity*, enter the number of months of usage activity within a 12-month period that would classify a product as non-sporadic. If a product is in the system for more than 12 months, and has usage activity for this number of months, it is not sporadic.
Example: If the *#/MO W/Usage Activity* is set as 8 and the product was sold in 8 or more of the prior 12 months, it is considered recurring and is not flagged as sporadic.
- 13** For *#/MO Consecutive Usage*, enter the number of consecutive months usage activity that would classify a product as non-sporadic. If a product has usage in the number of consecutive months entered here, it is not considered sporadic.
Example: If the *#/MO Consecutive Usage* is set to 4 and the product has usage in 4 consecutive months, then it is flagged as recurring and is not flagged as sporadic. This usage indicates a seasonal usage pattern.
- 14** For *Target #/MO w/Usage*, enter the maximum number of months with usage that determines if an extra target quantity should be carried in stock.
Example: If *Target #/MO w/Usage* is set to 6 and a product was sold in 6 of the previous 12 months, then add an additional target to the min/max settings.
- 15** For *Target Leadtime*, enter the leadtime cutoff number of days to determine if you should carry an extra target order quantity if the leadtime is greater than this number of days. If the leadtime of the product exceeds this value, one extra target is added to the min/max settings.
Example: If *Target Leadtime* is set to 50 and you have a product with a 60+ day leadtime, you may want to keep an extra target order quantity of the product for safety stock.
- 16** Under *Target Min/Max Methods*, enter the methods to compare to calculate the min/max target value to determine the target order quantity. You can eliminate any of the methods you do not want to use. The greatest value of the following methods becomes the target quantity:
- **3** - 3rd highest. The actual 3rd highest quantity sold in months with usage activity.
 - **A** - Mean average. The average quantity sold in the months with usage activity.
 - **M** - Mode average. The most common quantity sold in months with usage activity.
- See the "Example of Sporadic Usage" on page 2-10
- 17** Press **F2-Save** twice to save all of the forecasting information at the company level.

Example of Sporadic Usage

The Warehouse Usage Maintenance screen within Product Purchasing Parameters Maintenance (F5-Usage) shows the usage pattern of a product over 12 months. In the following example, the item had usage activity in 5 of the previous 12 months. It is considered sporadic because the current *#Mo w/Usage Activity* flag is set to 8, and the current *#/Mo Consecutive Usage* flag is set to 4.

Month	S/O Usg	Override	W/O Usg	Override	T/R Usg	Override	Frcst	Formula	Exc
Dec04	25								
Nov04									
Oct04	5								
Sep04									
Aug04	50								
Jul04									
Jun04									
May04	50								
Apr04									
Mar04	75								
Feb04									
Jan04									
Total	205	0	0	0					

Figure 2-4: Warehouse Usage Maintenance Screen

- The target order quantity is calculated:
 - Mean Average = 41 (total units sold divided by the number of months with usage activity).
 - Mode Average = 50 (the most common quantity sold).
 - 3rd Highest = 50 (the month with the 3rd highest activity).

The greatest value of the target methods is 50, so the target order quantity is calculated as 50 units. The minimum quantity is set to the target order quantity.
- The system determines if you should carry 1 or 2 additional quantities for the maximum quantity:
 - The 5 months of usage activity exceeds the 4 month *Target #/Mo w/Usage* flag setting, so one more target order quantity is added to the maximum.
 - The product has a 60 day leadtime, but the *Target Leadtime* setting is 50, so one extra target order quantity is added to the maximum.
 - The maximum quantity is set to 3 order quantities, or 150 units.

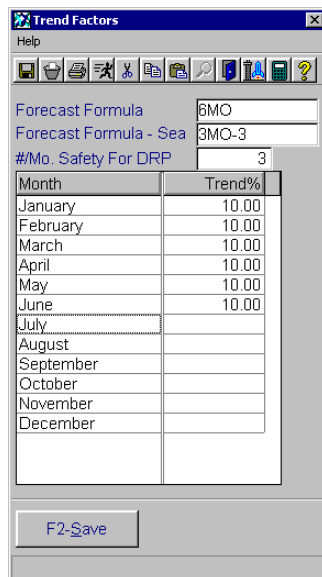
2.3 Entering Formulas/Parameters by Product Line

You can establish a default forecast formula for non-seasonal and seasonal items at the product line level in Product Line Maintenance. This formula overrides the formula at the company level, but can be overridden at the vendor level or product/warehouse level.

Product Line Maintenance

To enter a forecast formula at the product line level:

- 1 Select **Inventory > Maintenance > Product Control Files > Product Line**. Enter the product line number then press **F5-Add Info** to access the Trend Factors screen.



The screenshot shows the 'Trend Factors' window with the following fields and table:

Forecast Formula: 3MO
Forecast Formula - Sea: 3MO-3
#/Mo. Safety For DRP: 3

Month	Trend%
January	10.00
February	10.00
March	10.00
April	10.00
May	10.00
June	10.00
July	
August	
September	
October	
November	
December	

F2-Save

Figure 2-5: Trend Factors Screen

- 2 Enter the *Forecast Formula* to calculate usage for non-seasonal products for this product line or press **F3** to search for existing formulas.
- 3 Enter the *Forecast Formula-Sea* to calculate usage for seasonal products for this product line or press **F3** to search for existing formulas.



For information on setting up forecast formulas, refer to "Creating Forecasting Formulas" on page 2-2.

- 4 For *#/Mo. Safety for DRP*, enter the number of months for safety stock. This field is only for products that use the DRP purchase method. Use the "Distribution Requirements Planning Report" on page 3-8 and "Distribution Requirements Evaluation Inquiry" on page 3-2 for items with long lead times.

- 5 For *Trend %*, enter a trend percent between -100 and 100 for forecasting product demand for each corresponding *Month*. Remove this value once the trend stops. Trend quantity is calculated by multiplying the *Forecast* by the *Trend Factor*.

The calculated trend quantity is added to or subtracted from the forecasted demand to provide an adjusted forecast. The *Trend %* at this level can be overridden by the *Trend %* in Purchasing Forecast Parameters Maintenance.

Example of Trend Quantity and Overall Forecast

To calculate trend quantity:

Forecast x Trend Factor = Trend Quantity

Forecast + Trend Quantity = Overall Forecast

Example:

- Forecast: **4000**
- Trend factor: **10%**
- Calculated Trend Quantity: $4000 \times .10 = \mathbf{400}$
- Overall Forecast for the product: $4000 + 400 = \mathbf{4400}$

2.4 Entering Formulas by Vendor Line

You can enter a default forecast formula for non-seasonal and seasonal items by vendor line in Vendor Line Maintenance. This formula overrides formulas established at the company level and product line level, but can be overridden by formulas established at the product/warehouse level.

Vendor Line Maintenance

To enter a forecast formula at the vendor line level:

- 1 Select **Purchasing > Maintenance > Vendor Line Maintenance**. Enter a *Vendor Number*, *Warehouse Number* and *Vendor Line Number* then press **F5-Targets > F5-Add Info**. The Vendor Line Targets Additional Information screen appears.

Figure 2-6: Vendor Line Targets Additional Information Screen

- 2 Enter the *Forecast Formula* for non-seasonal products or press **F3** to search for existing formulas.
- 3 Enter the *Forecast Formula-Sea* for seasonal products or press **F3** to search for existing formulas.
- 4 Press **F2-Save** to save the forecast formula information.



For information on setting up forecast formulas, refer to "Creating Forecasting Formulas" on page 2-2.

2.5 Entering Formulas/Parameters by Product/Warehouse

You can create a unique formula for each product in a warehouse in Product Purch Params Maintenance. This formula overrides any formulas set up at the company, product line or vendor line level.

Product Purchasing Parameters Maintenance

To enter a forecast formula at the product/warehouse level:

- 1 Select **Inventory > Maintenance > Product Maintenance > Product Purch Params Maintenance** to access the Purchasing Parameters screen.
- 2 Enter the *Product Number* and the *Warehouse Number*.

The screenshot shows the 'Purchasing Parameters' window with the following data:

Product Number	2AD22	Whizard Cut S
Warehouse	10 Philadelphia Branch	Resistant Gloves Heavy Duty***
Replenishment Mtd	P 10 Philadelphia Branch	
Min / Max Flag	N Minimum	Maximum Sporadic
Frozen Controls	N	
Purchase Method	EOQ	EOQ
Forecast Formula	AVGSHIP	6MO Seasonal Flag N
Forecast	105	Trend Quantity Factor
Order Point	830	Trend Months
Line Point	679	Ann. Usage Override
Recommended Qty	55	W/O Mfg Production N
Surplus Threshold	734	
Safety Allowance %	50	
Safety Allow Qty	210	
Inventory Class	2	
Single Customer	N	
Distribution Ctr		
Last Stockout Date	05/31/04	Last Replenish Date 05/14/04

Buttons at the bottom: F2-Save, F5-Usage, F6-Calc. Purchase Parameters, F7-Status Inquiry

Figure 2-7: Purchasing Parameters Screen

- 3 Choose a *Purchase Method* to calculate usage for the product warehouse record:
 - **EOQ** - Economic Order Quantity.
 - **CLS** - Class.
 - **AWU** - Average Weekly Usage. Enter the override number of weeks to calculate average weekly usage in the next (unlabeled) field.
 - **DS** - Days' supply. For vendors that deliver frequently so that you only have to keep a few days' supply on hand.
 - **DRP** - Distribution Requirements Planning. Enter the number of months of safety stock in the next (unlabeled) field. This number overrides the number of months at the product line level. The **DRP** method is recommended for consistently long lead-time products. When you assign the **DRP** purchase method to products:
 - The recommended quantity is the *Order* value for the current month on the "Distribution Requirements Evaluation Inquiry" on page 3-2 and the "Distribution Requirements Planning Report" on page 3-8.
 - The Distribution Requirements Evaluation Inquiry screen displays when you press **F6 - Rec. Rev** to view products in Purchase Order Conversion Entry.
- 4 Enter a *Forecast Formula* established in Forecast Formula Maintenance or press **F3** to search. You can choose to have this field automatically updated when you run the "Comparison Forecast Report" on page 3-12. Once you override this field, the new formula remains until it is manually removed.
- 5 You can override current *Forecast* quantity, or enter a value in *Trend Months* and press **F6 - Calc Purchase Parameters** to calculate a new value.
 - The *Trend Quantity* shows the trend quantity calculated by the system if a value is entered in *Trend Months*.
 - The *Trend Factor* shows the trend factor calculated by the system if a value is entered in *Trend months*.
- 6 For *Trend Months*, enter the number of months to calculate *Trend Quantity* and *Factor* then press **F6 - Calc Purchase Parameters**. The *Trend Quantity* and *Factor* fields are recalculated ($\text{Trend Quantity} = \text{Forecast} \times \text{Factor}$). The *Trend Months* entered for a product overrides the *Trend Months* in Forecast Formula Maintenance. If this value is zero, no trend quantity is calculated for the product. Refer to the following "Examples:" on page 2-17.

Trend forecasting is used to forecast product demand based on past sales. The calculated trend quantity is added to or subtracted from the forecast to provide an adjusted forecast.

When calculating the *Factor* using *Trend Months*, the following rules apply:

- If last year's usage is zero, the *Trend Factor* is zero.
- If last year's usage is less than zero and the current year's usage is greater than zero, the *Trend Factor* is 100.00.
- If the calculated trend factor is greater than 100, the *Trend Factor* is 100.
- If the calculated trend factor is less than -100, the *Trend Factor* is -100.

7 Press **F2-Save** to save the purchasing parameter information.

Examples:

To calculate Trend Factor using Trend Months

Seasonal: If *Trend Months* is 3, *Trend Factor* is the percent difference between the last 3 months this year and the last 3 months last year.

- Current year usage for last 3 months: **1800**
- Last year's usage for same 3 months: **1500**
- Trend Factor = $(1800 - 1500) / 1500 = 20\%$

Non-Seasonal: If *Trend Months* is 3, *Trend Factor* is the percent difference between the last 3 months compared to the prior 3 months.

- Current year usage for last 3 months: **1800**
- Usage for the 3 months prior to the last 3 months: **1600**
- Trend Factor = $(1800 - 1600) / 1600 = 12.5\%$

To calculate Trend Quantity and Overall Forecast:

Forecast x Trend Factor = Trend Quantity

Forecast + Trend Quantity = Overall Forecast

Example:

- Forecast: **300**
- Trend factor: **20%**
- Calculated Trend Quantity: $300 \times .20 = 60$
- Overall Forecast for the product: $300 + 60 = 360$

2.6 Establishing Trends and Safety Levels

You can define trends or safety levels for DRP products at the product line/warehouse level in Purchasing Forecast Parameters Maintenance. You may want to do this when your warehouses have different purchasing requirements. These values override the values in Product Line Maintenance.

Purchasing Forecast Parameters Maintenance

To enter trends and safety allowances at the product line/warehouse level:

- 1 Select **Purchasing > Forecasting Subsystem > Purchasing Forecast Parameters Maintenance** to access the Purchasing Forecast Parameters Maintenance screen.

Month	Trend%	Class	# Months/Safety
January	5.00	New	1
February	5.00	1	1
March	5.00	2	1
April	5.00	3	1.5
May	5.00	4	1.5
June	10.00	5	1.5
July	10.00	6	1
August	15.00	7	1
September	10.00	8	1
October	5.00	9	1
November	5.00	10	1
December	5.00	11	1
		12	1

Figure 2-8: Purchasing Forecast Parameters Maintenance Screen

- 2 Enter the *Warehouse Number* for establishing purchasing forecast parameters.
- 3 Enter the *Product Line* for establishing purchasing forecast parameters or press **F3** to search for existing product lines.
- 4 For each *Month* listed, enter the *Trend%*, which is a factor between –100.00% and 100.00% for adjusting the demand for each month. Remove the trend factor once the trend levels off.

Trend quantity is calculated by multiplying *Forecast* by the *Trend Factor*. The calculated trend quantity is added to or subtracted from the forecasted demand to provide an adjusted forecast. This value overrides the *Trend %* in Product Line Maintenance.

- 5 For each *Class* enter the *#Safety* (number of months of safety stock). Based on the class of the item, you can establish different amounts of safety stock. This information appears on the "Distribution Requirements Planning Report" on page 3-8 and "Distribution Requirements Evaluation Inquiry" on page 3-2.
- 6 Press **F2-Save** to save the purchasing forecast parameter information.

Field and Function Key Descriptions

Field/Function Key	Description
Warehouse Number	The warehouse number for establishing purchasing forecast parameters.
Product Line	The product line for establishing purchasing forecast parameters.
Month	The month of the year.
Trend %	For each <i>Month</i> listed, the <i>Trend%</i> , is a factor between -100.00% and 100.00% for adjusting the demand for each month. Trend quantity is calculated by multiplying <i>Forecast</i> by the <i>Trend Factor</i> . The calculated trend quantity is added to or subtracted from the forecasted demand to provide an adjusted forecast. This value overrides the <i>Trend %</i> in Product Line Maintenance.
Class	Available product classifications.
#Safety	The number of months of safety stock. Based on the class of the item, you can establish different amounts of safety stock. This information appears on the "Distribution Requirements Planning Report" on page 3-8 and "Distribution Requirements Evaluation Inquiry" on page 3-2.
F2-Save	Saves the purchasing forecast parameter information.

2.7 Generating Forecasting Data

Forecasting data is regenerated by Nightly Processing, inventory end of month procedures, and by generating historical forecasts.

Nightly Processing

Menu Path: Purchasing > Processes > Nightly Processing

Nightly Processing evaluates the replenishment status of all products in each warehouse and recommends the purchasing requirements for the next business day. This process, normally run at the end of the day, reviews all open purchase orders, sales orders, work orders and inventory transfers to calculate the net available inventory for each product. If the net available is below the order point, line point, or minimum (whichever purchase method is being used), a recommended purchase order, direct purchase order, or inventory transfer is created depending on the product's replenishment method.

For more information, refer to Nightly Processing in the Purchasing Module.

Inventory End of Month Calendar Close

Menu Path: Inventory > Processes > End of Month Calendar Close

The Inventory End of Month Calendar Close analyzes the forecasting data for each product to calculate a forecast quantity. The hierarchy levels described in "Setting Up Forecasting Formulas and Trends" on page 2-1, determine the appropriate formula. The forecast, formula, and exception fields displayed on the "Warehouse Usage Inquiry screen" on page 3-6 are updated. Files relating to inventory control including forecast, line point, order point, and EOQ are also updated.

Generating Historical Forecasts

Menu Path: Systems > System Parameter > Processes > ADS Utilities > Inventory Utilities > Generate Historical Forecasts

You can generate historical forecasts to capture each month's forecast and store it to compare against actual usage. The Warehouse Usage Inquiry screen in "Distribution Requirements Evaluation Inquiry" on page 3-2 shows the traditional usage information along with the forecast to compare forecasting performance. You can go back in time and calculate the forecast for previous months to compare actual usage to forecasted usage. Forecast updates are calculated based on warehouse, product line, and the number of previous month's usage.



The Generate Historical Forecasts process could take a long time to run based on the number of months chosen and the database size. Execute the procedure one warehouse at a time (possibly by product line) and calculate using 12-24 months.



Chapter 3

Analyzing Forecasting Formulas

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Once you set up formulas and trends for your products, product lines, vendor lines, and warehouses, you can run the forecasting inquiry and reports to analyze and fine-tune your forecasting data. You can compare formulas, identify sales trends, and evaluate slow moving inventory or products with long lead times.

The following functions and reports allow you to optimize your forecasting ability and buying efficiency:

- "Distribution Requirements Evaluation Inquiry" on page 3-2.
- "Distribution Requirements Planning Report" on page 3-8.
- "Comparison Forecast Report" on page 3-12.
- "Forecast Formula Utilization Report" on page 3-16.
- "Dynamic Trend Analysis Summary Report" on page 3-18.
- "Minimum / Maximum Report" on page 3-21.
- "Customer Usage Adjustment Procedure" on page 3-24.

3.1 Distribution Requirements Evaluation Inquiry

This inquiry is commonly used for products that use the DRP purchase method. You can change the information to explore different scenarios. Changing any of the fields affects the overall analysis of the product but does not update the product record.

Using the Distribution Requirements Evaluation Inquiry

To view the Distribution Requirements Evaluation Inquiry:

- 1 Choose **Purchasing > Forecasting Subsystem > Distribution Requirements Evaluation Inquiry** to open the Distribution requirements Evaluation Inquiry.
- 2 Enter the *Product Number* to evaluate.
- 3 Enter the *Warehouse* number associated with the product number.
- 4 For *Ldt*, enter the default lead time. You can enter a new value to calculate the forecast using a different lead time.
- 5 Enter the number of months of *Safety* stock. You can enter a new value to calculate a different safety stock level.
- 6 Enter the default forecast *Formula* for the product. You can enter a new formula to calculate the forecast using a different formula.

Detailed forecasting information for the product/warehouse appears. You can change the *Ldt*, *Safety* or *Formula* to explore different forecasting possibilities. You can also change values in the *Beg Avail*, *Fut+B/O's*, *In Trans*, *On Order*, *Frcst P/O* and *Forecast* columns to see how it affects forecasted quantities.

Distribution Requirements Evaluation Inquiry											
Reset Frcst Comparison Corporate View Notes Help											
Product Number: AF 18772 Flat Washers Stainless Steel											
Warehouse: 10 Philadelphia Branch 1/4 Diameter (in.)											
Ldt	Safety	Formula	Cost	Class	Package	Weight	Last12	Prev12	Max2Mo		
123	1	SEA2/1-3	3.624	3	100	0.0010	148614	106662	33668		
Heading	Jul'04	Aug'04	Sep'04	Oct'04	Nov'04	Dec'04	Jan'05	Feb'05	Mar'05		
Beg Avail	333	4972	528	2913	-8199	-18745	12001	12048	13096		
Fut+B/O's											
In Trans	5000										
On Order		5000	10000								
Frcst P/O						42300	12000	13000	13900		
Forecast	361	9444	7615	11112	10546	11554	11953	11952	13056		
End Avail	4972	528	2913	-8199	-18745	12001	12048	13096	13940		
Safety	315	7615	11112	10546	11554	11953	11952	13056	13879		
Net Avail	4657	-7087	-8199	-18745	-30299	-42252	-11904	-12960	-13839		
Order	42300	12000	13000	13900							
Order\$	1533	435	471	504							

F2-Finish F5-Review F6-Detail Usage F7-Summary Usage F8-Invty Inq

Figure 3-1: Distribution Requirements Evaluation Inquiry Screen

Field and Function Key Descriptions

Field / Function	Description
Cost	The unit cost of the item from the product warehouse record.
Class	The inventory classification.
Package	The quantity per package.
Weight	The weight of one unit of the product.
Last12	The quantity sold in the last 12 months.
Prev12	The quantity sold in the last 12 months of the previous year.
Max2Mo	The maximum quantity of this product sold in a two month period.
Heading & Months	
Beg Avail	The beginning balance for each month. Each month after that is increased/decreased by the data in the other rows (<i>Fut+B/O's, In Trans, On Order</i>).
Fut+B/O's	The total quantity of sales orders entered that are scheduled for release in future months. For example, if a sales order is entered with a September 2004 date, the sales order quantity in the Sep '04 column is updated. The quantity in this column is subtracted from the <i>Beg Avail</i> quantity.
In Trans	The total quantity in transit for the item. All OTW (on the water) type 12 purchase orders created from the On The Water Maintenance process and in-transit transfers are included in the total. The quantity in this column is added to the <i>Beg Avail</i> quantity.
On Order	The total quantity of open purchase orders, transfers and work orders for the item. The quantity is added to the <i>Beg Avail</i> quantity.
Frcst P/O	The expected delivery of suggested purchase order quantities. For example, if the purchase order is placed today with an expected 3 month leadtime, you can expect a purchase order placed in August to be received in November.
Forecast	The forecast quantity calculated from the assigned forecast formula. Represents the forecast projection for each of the 9 months. The column for the current month is pro-rated based on today's date.
End Avail	The ending balance is calculated as follows: $End\ Avail = Beg\ Avail - (Fut+ B/Os) + In\ Trans + On\ Order - Forecast$.
Safety	The safety amount to keep in stock calculated by multiplying the number of months of safety by the forecast for the next month.
Net Avail	The net available balance for each month ($End\ Avail - Safety$).
Order	The recommended purchase order quantity. The order quantity is placed in the earliest possible month in which you can purchase an item to handle the negative available minus the current lead time period. For example, if the product has a lead time of 90 days, the earliest the product could be received is 3 months from today. Therefore, the net available status 3 months from today is evaluated to determine if material should be ordered. Order quantities are only recommended to manage a negative net available.

Field / Function	Description
Order\$	Displays the dollar value of the recommended purchase order.
F5-Review	<p>Opens the "Document Review screen" on page 3-5 to display the activity for a month or all months, based on whether the cursor is in the Heading column or the Month column. Only available if the cursor is on the <i>Fut+B/O's, In Trans, or On Order</i> rows.</p> <p>For example, if you press F5-Review when the cursor is on the heading column for <i>Fut+B/O's</i>, the system displays all future sales orders for the item. If you press F5-Review when the cursor is on one of the individual month columns, the system displays future sales orders for that month only.</p>
F6-Detail Usage	Opens the "Warehouse Usage Inquiry screen" on page 3-6, to display monthly product usage information for the product.
F7-Summary Usage	Opens the "Usage Summary screen" on page 3-7, to view usage and forecast information for the current year, the previous year and the year before last.
F8-Invty Inq	Displays the Inventory Inquiry screen for the product.
Action Bar	
Reset	Resets the inquiry screen to the original default forecast information.
Forecast Comparison	Executes The "Comparison Forecast Report" on page 3-12 for the product/warehouse displayed. The report includes information on the forecast formulas vs. the current forecast for the product warehouse record.
Corporate View	Displays the combined Distribution Requirements Evaluation for all warehouses in the company that use the DRP purchase method for this product.

3.1.1 Document Review screen

The document review screen lists documents with products on backorder, in transit, or on order. It appears when you select **F5-Review** in the DRP Evaluation Inquiry.

Field and Function Key Descriptions

Field/Function Key	Description
Document#	The document number containing the product that is on backorder, in transit, or on order.
Type	The document type.
Date	The date of the transaction.
Customer/Vendor/Whse	<ul style="list-style-type: none"> • The customer if the document is a sales order. • The vendor if the document is a purchase order. • The warehouse if the document is a transfer.
Quantity	The quantity on backorder, on order, or in transit.
F2-Finish	Closes the screen.
F5-Review	Depending on the location of the cursor, one of the following screens opens: <ul style="list-style-type: none"> • The Purchase Order Display screen if the cursor is on a purchase order. • The Sales Order Display screen if the cursor is on a sales order. • The Transfer Display screen if the cursor is on a transfer.
F9-Goto Line	Allows you to enter a reference number for quick access. Valid codes are order number, page number, line number, B (bottom), and T (top).

3.1.2 Warehouse Usage Inquiry screen

The Warehouse Usage Inquiry screen displays monthly product usage information. It appears when you press **F6-Detail Usage** in the DRP Evaluation Inquiry.

Field and Function Key Descriptions

Field/Function Key	Description
Product Number	The product number and description.
Warehouse	The warehouse number and description.
Month	The month to display usage.
S/O Usg	Sales order usage for the month.
Override (S/O Ov)	Sales order override amounts.
W/O Usg	Work order usage for the month.
Override (W/O Ov)	Work order usage override amounts.
T/R Usg	Transfer usage for the month.
Override (T/R Ov)	Transfer usage override amounts.
Frcst	The forecast quantity calculated by the system.
Formula	The forecast formula currently in place for this item.
Exc	Indicates if the product's usage created an exception: <ul style="list-style-type: none"> • U - Unusual usage. • O - Out of stock. • S - High or low spike.
F2-Save	Saves any override information you entered.
F6-Summary	Opens the "Usage Summary screen" on page 3-7 to allow you to view usage and forecast information for the current year, the previous year, and the year before last.
F7-Audit	Opens the Usage Audit Inquiry screen to view the detail transactions that make up the usage numbers.
F8-Prd Hits	Opens the Warehouse Hits Inquiry screen to see how many times this product was sold for each month.
F9-Weekly Usage	If Weekly Usage is activated, you can view usage by week.
Action Bar	

Field/Function Key	Description
Graphs	Allows you to view the following information in a graph: <ul style="list-style-type: none"> • Current Year Total Usage. • Current Year Sales Order Usage. • Current Year Work Order Usage. • Current Year Transfer Usage. • Previous Year Total Usage. • Previous Year Sales Order Usage. • Previous Year Work Order Usage. • Previous Year Transfer Usage.
Parameters	Opens the Purchasing Parameters screen for this product. Refer to "Purchase Parameters Maintenance" on page 2-6.
Output	Allows you to print, email, or fax a copy of the screen.

3.1.3 Usage Summary screen

The Usage Summary screen allows you to view usage and forecast information for the current year, the previous year and the year before last. It appears when you press **F7-Summary Usage** in the DRP Evaluation Inquiry.

Field and Function Key Descriptions

Field/Function Key	Description
Product Number	Product number and description.
Warehouse	Warehouse number and description.
Mth	The month for displaying usage.
CYUsage	The usage quantity of the item for the current year.
CTFrcst	The forecast quantity calculated for the current year.
PYUsage	The usage quantity from the previous year.
PYFrcst	The forecast quantity calculated for the previous year.
P2Usage	The usage quantity from 2 years' previous.
P2Frcst	The forecast quantity calculated from 2 years' previous.
OK	Closes the Usage Summary screen.

3.2 Distribution Requirements Planning Report

This report is similar in structure and information to the "Distribution Requirements Evaluation Inquiry" on page 3-2. The resulting spreadsheet provides a projected forecast for the upcoming 9 months based on selected records. You would typically use this report for long lead time or early purchase products.

Menu Path: Purchasing > Forecasting Subsystem > Distribution Requirements Planning Report

Selection Criteria

Use the following criteria to limit the information to print on the report:

- **Division Number.** The highest possible grouping in your company (e.g., Eastern Division, Western Division).
- **Region Number.** A subset of Division - if Division is used. (e.g., Southeast Region, Northwestern Region).
- **Warehouse Number.** The warehouse where the material is stocked.
- **Department Number.** A subset of Warehouse. Typically used to separate expenses within a warehouse (e.g., accounting, sales, warehouse).
- **Cost Center.** A subset of Department - if Department is used. Typically used to separate expenses within a warehouse or department (e.g., shipping, receiving, outside sales, inside sales).
- **Purchase Method.** The purchase method to be reviewed (e.g., EOQ, DRP, CLS, AWU). Established in the product warehouse record.
- **Primary Vendor Number.** The primary vendors to include. Primary vendors are assigned in Product Vendor Maintenance.
- **Product Line.** The product lines to include in the report.
- **Product Number Range.** The beginning and ending product numbers to limit the report to a set of product numbers.
- **Class.** The product classifications of the items to include.
- **Override Lead Time Horizon.** The number of months to use to determine how far ahead to evaluate a purchase for today. Overrides all products selected for the report.

Column Descriptions

Column Heading	Description
Product Number	Line 1: The product number. Line 2: The product description. Line 3: The second line of the product description.
Weight	The weight of one unit of the product.
Onhand	The quantity currently on hand.
Forecast Formula	Forecast formula assigned to the product.
# Months/Safety Stock	The number of months of safety stock established for the product.
Last 12 Months Usage	The quantity sold in the last 12 months.
Prev 12 Months Usage	The quantity sold in the previous 12 months.
Max. 2 Months Usage	The maximum quantity of this product sold in a consecutive two month period.
Whse	The warehouse where the product is stocked.
Cost	The unit cost of the item from the product warehouse record.
Pkg	The quantity per package.
Ldt	The lead time for the item.
Cls	The inventory classification.
Last 12 Months	
Mth	The last 12 months including this month.
Actual	The quantity sold in each of the last 12 months.
Frcst	The quantity that was forecasted for each of the last 12 months.
Beg Avail	The beginning balance for each future month. Each month after that is increased/decreased by the data in the other rows (<i>Fut+B/O's, In Trans, On Order</i>).
Fut+B/O's	The total quantity of sales orders entered that are scheduled for release in future months. For example, if a sales order is entered with a September 2004 date, the sales order quantity in the Sep '04 column is updated. The quantity in this column is subtracted from the <i>Beg Avail</i> quantity.
In Trans	The total quantity in transit for the item. All OTW (on the water) type 12 purchase orders created from the On The Water Maintenance process and in-transit transfers are included in the total. The quantity in this column is added to the <i>Beg Avail</i> quantity.
On Order	The total quantity of open purchase orders, transfers, and work orders for the item. The quantity is added to the <i>Beg Avail</i> quantity.
Frcst P/O	The expected delivery of suggested purchase order quantities. For example, if the purchase order is placed today with an expected 3 month leadtime, you can expect a purchase order placed in August to be received in November.

Column Heading	Description
Forecast	The forecast quantity calculated from the assigned forecast formula. This represents the forecast projection for each of the 9 months. The column for the current month has a pro-rated value based on today's date.
End Avail	The ending balance calculated as follows: $End\ Avail = Beg\ Avail - (Fut + B/Os) + In\ Trans + On\ Order - Forecast$.
Safety	The safety amount to keep in stock calculated by multiplying the number of months of safety by the forecast for the next month.
Net Avail	The net available balance for each month ($End\ Avail - Safety$.)
Order	The recommended purchase order quantity. The order quantity is placed in the earliest possible month in which you can purchase an item to handle the negative available minus the current lead time period. For example, if the product has a lead time of 90 days, the earliest the product could be received is 3 months from today. Therefore, the net available status 3 months from today is evaluated to determine if material should be ordered. Order quantities are only recommended to manage a negative net available.
Order\$	Displays the dollar value of the recommended purchase order.

Sample Report

Prelude Demo Customer
 Distribution Requirements Planning Report As Of 16:06:08 On 06/02/04
 WHSE.NUM = "10" AND PUR.METH = "DRP" AND PRIM.VEND.NUM = "100111"

User SEM Page 1

Product Number	Whse	Ldt	Cls	Mth	Last 12 Months			Jun'04	Jul'04	Aug'04	Sep'04	Oct'04	Nov'04	Dec'04	Jan'05	Feb'05
					Actual	Frcst										
AF 18777	10	110	1	May	0	16781	Beg Avail	544	-5341	-8404	-10987	-13068	1790	1734	1685	1659
Flat Washers Stainless Steel				Apr	17485	15613	Fut+B/O's									
3/4 Diameter (in.)				Mar	15466	16130	In Trans									
Weight 0.0010	Cost	27.930		Feb	15887	16613	On Order				10					
Onhand 550	Pkg	1		Jan	15798	15931	Frcst P/O					16797	1734	1685	1659	1641
Forecast Formula	WSTD5-3			Dec	15208	13168	Forecast	5885	3063	2583	2091	1939	1790	1734	1685	1659
# Months/Safety Stock	1			Nov	13540	12462	End Avail	-5341	-8404	-10987	-13068	1790	1734	1685	1659	1641
Last 12 Months Usage ->	151008			Oct	12529	13730	Safety	2859	2583	2091	1939	1790	1734	1685	1659	1641
Prev 12 Months Usage ->	102154			Sep	12587	11219	Net Avail	-8200	-10987	-13078	-15007	-16797	-1734	-1685	-1659	-1641
Max. 2 Months Usage ->	32951			Aug	11874	10002	Order	16797	1734	1685	1659	1641				
				Jul	9749	10440	Order\$	4691	484	471	463	458				
				Jun	10885	9604										
AF 18778	10	115	1	May	0	16798	Beg Avail	613	-5182	-11146	-14578	-18318	3833	3851	3859	3854
Flat Washers Stainless Steel				Apr	16664	16584	Fut+B/O's									
3/4 Diameter (in.)				Mar	16344	16566	In Trans									
Weight 0.0010	Cost	27.930		Feb	15764	15248	On Order				10					
Onhand 633	Pkg	1		Jan	15716	14545	Frcst P/O					26098	3851	3859	3854	3855
Forecast Formula	WSTD5-3			Dec	15023	13473	Forecast	5795	5964	3432	3750	3947	3833	3851	3859	3854
# Months/Safety Stock	1			Nov	13360	13699	End Avail	-5182	-11146	-14578	-18318	3833	3851	3859	3854	3855
Last 12 Months Usage ->	154644			Oct	14526	12257	Safety	5566	3432	3750	3947	3833	3851	3859	3854	3855
Prev 12 Months Usage ->	103169			Sep	11933	12487	Net Avail	-10748	-14578	-18328	-22265	-26098	-3851	-3859	-3854	-3855
Max. 2 Months Usage ->	33008			Aug	13095	11434	Order	26098	3851	3859	3854	3855				
				Jul	12199	10086	Order\$	7289	1076	1078	1076	1077				
				Jun	10020	10652										
AF 18779	10	105	1	May	0	19182	Beg Avail	628	-5639	-12085	-15795	-19839	4144	4164	4172	4167
Flat Washers Stainless Steel				Apr	17993	16577	Fut+B/O's									
7/8 Diameter (in.)				Mar	17732	14741	In Trans									
Weight 0.0010	Cost	43.194		Feb	15038	14295	On Order				10					
Onhand 633	Pkg	1		Jan	13877	14719	Frcst P/O					28250	4164	4172	4167	4168
Forecast Formula	WSTD5-3			Dec	14980	15558	Forecast	6267	6446	3710	4054	4267	4144	4164	4172	4167
# Months/Safety Stock	1			Nov	15014	12392	End Avail	-5639	-12085	-15795	-19839	4144	4164	4172	4167	4168
Last 12 Months Usage ->	152551			Oct	12820	11688	Safety	6016	3710	4054	4267	4144	4164	4172	4167	4168
Prev 12 Months Usage ->	98851			Sep	11939	11161	Net Avail	-11655	-15795	-19849	-24106	-28250	-4164	-4172	-4167	-4168
Max. 2 Months Usage ->	35725			Aug	11160	10942	Order	28250	4164	4172	4167	4168				
				Jul	11490	10175	Order\$	12202	1799	1802	1800	1800				
				Jun	10508	9557										

3.3 Comparison Forecast Report

This report compares the efficiency of each formula to actual usage by:

- Re-forecasting actual usage for each product using each formula.
- Calculating the deviation rate for the last 12 months. The number of months is a variable depending on company settings.
- Identifying the formula that provides the lowest deviation rate based on the actual usage vs. forecast.
- Providing a method to update the product with the suggested formula.

The report displays the current formula and forecast for each product, and the recommended formula and forecast for the best performance.

For a forecast formula to be included in the report, the *Forecast Analysis* flag in Forecast Formula Maintenance must be set to **Y**. Refer to "Creating Forecasting Formulas" on page 2-2.



When first using this report, start by using just one product line to determine how the formulas work.

Menu Path: Purchasing > Forecasting Subsystem > Comparison Forecast Report

Selection Criteria

Use the following criteria to limit the information to print on the report:

- **Enter Month End Closing Date.** The date of the month end to include in the report. For example, if today is May 10, use April 30 as the month end date.
- **Division Number.** The highest possible grouping in your company (e.g., Eastern Division, Western Division).
- **Region Number.** A subset of Division - if Division is used. (e.g., Southeast Region, Northwestern Region).
- **Warehouse Number.** The warehouse where the material is stocked.
- **Department Number.** A subset of Warehouse. Typically used to separate expenses within a warehouse (e.g., accounting, sales, warehouse).
- **Cost Center.** A subset of Department - if Department is used. Typically used to separate expenses within a warehouse or department (e.g., shipping, receiving, outside sales, inside sales).
- **Purchase Method.** The purchase method to be reviewed (e.g., EOQ, DRP, CLS, AWU). Established in the product warehouse record.
- **Product Line.** The product lines to include in the report.
- **Product Number Range.** The beginning and ending product numbers to limit the report to a set of product numbers.
- **Product Class.** The product classifications of the items to include.

- **Primary Vendor.** The primary vendors to include. Primary vendors are assigned in Product Vendor Maintenance.
- **Average Error Rate.** The error rate cutoff that the current forecast formula for the product must not exceed. Allows you to focus on products where the current forecast formula is not working as well as it should.
- **Output Presentation.** Indicates whether you want a summary or a detail report. **D** prints a detail report to show each formula and how it performed based on a deviation percent. **S** prints a summary report to show the current and suggested formula. **U** prints a summary to show current and suggested formulas and usage for the past 12 months.
- **Display Changes Only?.** Indicates if you to print all formulas or only those where a change is recommended. **Y** displays products for which the comparison analysis suggests a different formula than what is assigned to the product. **M** displays all results regardless of changes.
- **Update Best Formula.** Indicates whether or not you want to update the formulas. **N** prints the comparison forecast report without updating the product. **Y** updates each product with the best calculated formula and prints the report for audit purposes. **U** updates each product with the best calculated formula but does not print the report.
- **# Of Months For Evaluation.** The number of months to evaluate the deviation error rate when comparing actual to forecasted usage for the formulas evaluated. For example, enter 12 to compare the formulas for the last 12 months of history versus the forecasts to determine the best performing formula over the 12-month period.

Column Descriptions

Column Heading	Description
Product Number/Description	Line 1: The product number. Line 2: The product description.
Whse	The warehouse where the material is stocked.
Est-Date	The date the product was created for this warehouse.
CFormula	The current formula assigned to the product.
Cfrcst	The current forecast for the product.
Bformula	The best formula recommended for the product for the best performance.
Bfrcst	The forecast quantity if using the best formula recommended.
Diff	The difference between the current formula or the recommended best formula.
Cost	The cost of the product.
Investment	The dollars that would be invested if you used the recommended best formula.
Formula	List of formulas in your system.
Frcst	The forecast quantity that would be recommended if using each of the corresponding formulas.
Dev %	The percent deviation between actual and forecasted usage.
Low	The lowest deviation percent or best formula.

Sample Report

Prelude Systems, Inc. User Id SEM Page 1
 Comparison Forecast Report As Of 09:31:47 On 07/30/04
 WHSE.NUM = "40" AND PROD.NUM >= "4CP16" AND PROD.NUM <= "4CP19" [Enter Month End Closing Date = "05/30/04" AND Output
 Presentation = "D" AND Display Formula Change Only? = "Y" AND Update Best Formula? = "N" AND # Of Months For Evaluation = "6"]

Product Number/Description	Whse	Est-Date	CFormula	Cfrcst	BFormula	Bfrcst	Diff	Cost	Investment
4CP16	40	04/11/02	6MO	62	60DAY	29	-33	23.660	-780.78
Cooper Xcelite Hard Wire 4" Cutter Cushion Handle									
Formula	Frcst	Dev %	Low	May/04	Apr/04	Mar/04	Feb/04	Jan/04	Dec/03
6MO	62	123.2		184.3	22.2	68.1	152.6	45.5	266.7
3MO	93	166.1		184.3	1.9	146.9	173.7	73	416.7
3MO-3	93	166.1		184.3	1.9	146.9	173.7	73	416.7
60DAY	29	64.7	*	95.9	223.5	2.6	0	7.8	58.3
6MO-3	62	123.2		184.3	22.2	68.1	152.6	45.5	266.7
AVGSHIP	53	128.0		173.6	3.8	49.1	178.9	20.8	341.7
COMBO1	46	125.3		178.8	5.5	19.7	178.9	52.4	316.7
COMBO2	48	119.3		150	7.3	14.5	163.2	64.1	316.7
SEA1-3	18	136.3		145.8	41	8.2	89.5	33.3	500
SEA2/1	22	112.1		190	5.8	1.3	200	42.2	233.3
SEA2/1-3	30	181.7		237.2	19.6	31.7	189.5	45.5	566.7
SEA3	26	127.5		262.5	31	14.5	210.5	4.9	241.7
SEA3-3	35	199.8		314.3	48.6	49.1	194.7	8.5	583.3
SEA4/1-3	24	162.9		195.9	25	19.7	147.4	39.1	550
WSTD3	82	143.7		184.3	7.8	107.9	163.2	48.8	350
WSTD3-3	82	143.7		184.3	7.8	107.9	163.2	48.8	350
WSTD5	114	178.9		154.4	12.7	172.4	178.9	113.3	441.7
WSTD5-3	114	178.9		154.4	12.7	172.4	178.9	113.3	441.7

4CP19	40	04/11/02	6MO	81	COMBO2	65	-16	12.344	-197.50
Cooper Tools Curved Thin Nose Pliers Cushion/foam 5"									
Formula	Frcst	Dev %	Low	May/04	Apr/04	Mar/04	Feb/04	Jan/04	Dec/03
6MO	81	121.0		173.7	48.6	47.7	102.6	193.1	160
3MO	85	166.1		160	117.1	16.9	46.3	214.8	441.7
3MO-3	85	177.7		239.1	117.1	16.9	36.7	214.8	441.7
60DAY	60	145.8		188.9	40	66.7	97.5	372.2	109.7
6MO-3	81	117.5		254.5	48.6	47.7	1.3	193.1	160
AVGSHIP	53	66.7		194.3	51.4	22.6	49.1	60.4	22.6
COMBO1	61	41.3		188.9	0	32.7	11.3	13.3	1.6
COMBO2	65	37.2	*	160	16.7	30	1.3	11.8	3.2
SEA1-3	77	94.6		43.1	337.5	58.5	12.9	49.1	66.2
SEA2/1	34	51.2		136.4	12.9	109.7	16.2	7.6	24.6
SEA2/1-3	67	57.0		73.3	0	124.1	33.9	49.1	61.5
SEA3	38	72.4		231.9	20	51.2	79.5	26.9	24.6
SEA3-3	75	80.4		143.8	37.1	58.5	107.9	73.5	61.5
SEA4/1-3	71	54.3		59.2	40	91.2	25.4	46.6	63.1

Prelude Systems, Inc. User Id SEM Page 2
 Comparison Forecast Report As Of 09:31:47 On 07/30/04
 WHSE.NUM = "40" AND PROD.NUM >= "4CP16" AND PROD.NUM <= "4CP19" [Enter Month End Closing Date = "05/30/04" AND Output
 Presentation = "D" AND Display Formula Change Only? = "Y" AND Update Best Formula? = "N" AND # Of Months For Evaluation = "6"]

Product Number/Description	Whse	Est-Date	CFormula	Cfrcst	BFormula	Bfrcst	Diff	Cost	Investment
WSTD3	89	125.8		151.6	91.4	8.3	68.1	174.2	261.1
WSTD3-3	89	131.0		231.9	91.4	8.3	19	174.2	261.1
WSTD5	114	157.5		225	102.9	21.5	11.3	93.2	490.9
WSTD5-3	114	185.0		321.6	102.9	21.5	79.7	93.2	490.9

Total For Warehouse Dallas Branch -978.28

Total Investment Difference -978.28

3.4 Forecast Formula Utilization Report

This report lists the forecast formulas available for your company, and illustrates the percentage breakdown of the formulas used versus the formulas recommended for each warehouse. Only products with a *Forecast Formula* generated from the "Comparison Forecast Report" on page 3-12 appear on this report. The percent and number of products in each warehouse that use each formula also display.

Menu Path: Purchasing > Forecasting Subsystem > Forecast Formula Utilization Report

Selection Criteria

Use the following criteria to limit the information to print on the report:

- **Division Number.** The highest possible grouping in your company (e.g., Eastern Division, Western Division).
- **Region Number.** A subset of Division - if Division is used. (e.g., Southeast Region, Northwestern Region).
- **Warehouse Number.** The warehouse where the material is stocked.
- **Department Number.** A subset of Warehouse. Typically used to separate expenses within a warehouse (e.g., accounting, sales, warehouse).
- **Cost Center.** A subset of Department - if Department is used. Typically used to separate expenses within a warehouse or department (e.g., shipping, receiving, outside sales, inside sales).
- **Purchase Method.** The purchase method to be reviewed (e.g., EOQ, DRP, CLS, AWU). Established in the product warehouse record.
- **Product Line.** The product lines to include in the report.
- **Product Number Range.** The beginning and ending product numbers to limit the report to a set of product numbers.

Column Descriptions

Column Heading	Description
Formula	List of formulas in your system.
Description	The description of the formula.
Percent	The percent of products in the selected warehouses that are using each formula.
Count	The number of products in the selected warehouses that are using each formula.

Sample Report

Prelude Systems, Inc. User Id SP Page 1
 Forecast Formula Utilization Report As Of 09:26:05 On 07/30/04
 WHSE.NUM = "10"

Formula	Description	Percent	Count
AVGSHIP	Average Sale - Max 12 months	24.63	118
WSTD5	Weighted 5/2/1	8.77	42
SEA1-3	1 Mo Seasonal w/3 Mo	8.35	40
SEA3	3 Mo Seasonal Average	7.52	36
SEA3-3	3 Mo Seasonal Average w/3 Mo	7.31	35
SEA2/1	Weighted Seasonal 2/1	6.47	31
SEA2/1-3	Weighted Seasonal 2/1 w/3 Mo	6.05	29
WSTD5-3	Weighted 5/2/1 w/3 Mo	5.85	28
60DAY	6 Mo Avg Every Other Month	5.64	27
COMBO2	Weighted 2 - Seasonal 1/6/1	4.59	22
3MO	3 Mo Average	3.97	19
SEA4/1-3	Weighted Seasonal 4/1 w/3 Mo	2.92	14
COMBO1	Weighted 3 - Seasonal 2/9/3/1	2.92	14
WSTD3	Weighted 3/2.5/2/1.5/1	2.51	12
6MO-3	6 Mo Average w/3 Mo	1.46	7
3MO-3	3 Mo Average w/3 Mo	0.63	3
WSTD3-3	Weighted 3/2.5/2/1.5/1 w/3 Mo	0.21	1
6MO	6 Mo Average	0.21	1

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3.5 Dynamic Trend Analysis Summary Report

This report helps you to identify products whose forecast formula may need to be adjusted. The report displays the *Total Actual Usage* vs. *Total Forecast* for a product warehouse record. You can enter a deviation percentage to display only items whose actual versus forecasted usage is above/below this percent.

Menu Path: Purchasing > Forecasting Subsystem > Dynamic Trend Analysis Summary Report

Selection Criteria

Use the following criteria to limit the information to print on the report:

- **Division Number.** The highest possible grouping in your company (e.g., Eastern Division, Western Division).
- **Region Number.** A subset of Division - if Division is used. (e.g., Southeast Region, Northwestern Region).
- **Warehouse Number.** The warehouse where the material is stocked.
- **Department Number.** A subset of Warehouse. Typically used to separate expenses within a warehouse (e.g., accounting, sales, warehouse).
- **Cost Center.** A subset of Department - if Department is used. Typically used to separate expenses within a warehouse or department (e.g., shipping, receiving, outside sales, inside sales).
- **Purchase Method.** The purchase method to be reviewed (e.g., EOQ, DRP, CLS, AWU). Established in the product warehouse record.
- **Product Line.** The product lines to include in the report. Product lines are used to group products together for sales functions.
- **Product Number Range.** The beginning and ending product numbers to limit the report to a set of product numbers.
- **Class.** The product classifications of the items to include.
- **Number of Months For Review.** The number of months for comparing actual usage versus forecast usage to determine the deviation percentage to evaluate.
- **Deviation Percentage.** The deviation percentage to display only items whose actual usage versus forecast usage is above/below this percent.

Column Descriptions

Column Heading	Description
Product Number	The product number.
Product Description	The product description.
Pline#	The product line number.
AUsage	The actual recorded usage of the product for the selected warehouse.
FUsage	The forecasted usage of the product for the formula in use.
Dev%	The percent deviation between the actual usage and the forecasted usage of the product.
Last12	The quantity sold in the last 12 months.
Prev12	The quantity sold in the previous 12 months.
Max2mo	The maximum quantity sold in a two-month period.
YTDUsg	The year to date usage for the product.
Onhand	The current on-hand balance of the product.
Avail	The current quantity available to sell.
Intran	The current quantity of the product in transit to the warehouse.
On-Ord	The current quantity of the product on order.

Sample Report

Prelude Systems, Inc.
 Dynamic Trend Analysis Summary Report As Of 09:35:26 On 07/30/04
 WHSE.NUM = "10" [Number Of Months For Review = "3" AND Deviation Percentage = "150"]
 Warehouse Philadelphia Branch

User SEM Page 1

Product Number	Description	Pline#	Cls	AUsage	FUsage	Dev%	Last12	Prev12	Max2Mo	YTDUsq	Onhand	Avail	Intran	On-Ord
3JT63	3/8" 50' Air Hose	26000	0	13	3	333	13	0	13	13	6	6		
PZ 300	OIL 30W	17002	0	20	2	900	20	0	15	20	10	10		
28-619	Scraper Paint 2-1/2 2 Edge Bld	10004	13	8	1	700	23	100	14	8		0		
3ZK55	Coaxial Cable - Type RG58;	28001	13	12	4	200	18	113	12	14	990	978		
3ZK59	Coaxial Cable - Type RG6; PVC	28001	13	125	39	221	226	115	113	165	1900	1900		
6LR37	Fiber Optic Cable - Fiber 2; -	28000	13	159	28	468	223	92	140	178	368	368		
6LR38	Fiber Optic Cable - Fiber Six	28000	13	67	15	347	108	111	66	82	440	440		

Information Above For Warehouse Philadelphia Branch

3.6 Minimum / Maximum Report

This report includes products flagged as min/max items and displays the min/max settings along with the last 12 months of usage. It also shows the forecast quantity and indicates if the usage is sporadic.

Menu Path: Purchasing > Forecasting Subsystem > Minimum / Maximum Report

Selection Criteria

Use the following criteria to limit the information to print on the report:

- **Division Number.** The highest possible grouping in your company (e.g., Eastern Division, Western Division).
- **Region Number.** A subset of Division - if Division is used. (e.g., Southeast Region, Northwestern Region).
- **Warehouse Number.** The warehouse where the material is stocked.
- **Department Number.** A subset of Warehouse. Typically used to separate expenses within a warehouse (e.g., accounting, sales, warehouse).
- **Cost Center.** A subset of Department - if Department is used. Typically used to separate expenses within a warehouse or department (e.g., shipping, receiving, outside sales, inside sales).
- **Product Number.** The product numbers to include on the report.
- **Product Type.** The product types to include on the report. Choose one or more of the following: **F** - finished, **R** - raw, **B** - both, **E** - expense, **U** - used or **N** - rental.
- **Stocking Status Code.** The product status codes to include on the report. Choose from the following: **S** - stock, **N** - nonstock, **C** - consigned.
- **Primary Vendor.** The primary vendors to include on the report.
- **Product Line.** The product lines to include in the report. Product lines are used to group products together for sales functions.
- **Minimum.** The min/max products to exclude that do not have a minimum value greater than or equal to this value.
- **Maximum.** The min/max products to exclude that do not have a maximum value greater than or equal to this value.

Column Descriptions

Column Heading	Description
Product Number	The product number and description.
Cls	The inventory classification.
Frcst	The forecast quantity for this item.
Sp	Sporadic usage: <ul style="list-style-type: none">• Y - The product has sporadic usage• N - The product does not have sporadic usage.
Min	The minimum quantity to stock for this item.
Max	The maximum quantity to stock for this item.
Thaw Dte	The thaw date. The date the frozen controls are removed.
Months	The quantity sold in each of the corresponding past 12 months. ?

Sample Report

Prelude Demo Customer
 Minimum/Maximum Report As Of 12:21:39 On 06/03/04
 WHSE.NUM = "10" AND MINIMUM >= "10" AND MAXIMUM >= "10"
 Warehouse Philadelphia Branch

User Id SEM Page 1

Product Number	Cls	Frcst	Sp	Min	Max	Thaw	Dte	May04	Apr04	Mar04	Feb04	Jan04	Dec03	Nov03	Oct03	Sep03	Aug03	Jul03	Jun03
4CP30	3	50	Y	125	125			0	125	50	0	0	125	0	0	75	0	0	0
Cooper Tools Multi Long Nose Pliers Cushion/spring 4"																			
4CP53	3	32	Y	58	116			8	70	50	0	0	70	0	60	0	50	50	0
Cooper Needle Nose Fine Pt Serrated Jaw Pliers 5"																			
5MC39	3	15	Y	30	60			10	30	30	0	27	0	0	0	25	30	0	0
Cooper Tools 6 Pc. Electronics Pliers Kit																			

3.7 Customer Usage Adjustment Procedure

The Customer Usage Adjustment Procedure allows you to remove or restore a customer's product usage. You can use this procedure when you have lost a customer and want to remove the usage recorded for a vendor or product line, so that forecasting numbers no longer reflect the customer's usage. Once the customer's usage is removed, you can restore it if you regain the customer's business.

Adjusting Customer Usage

To remove or restore historical customer usage information:

- 1 Choose **Purchasing > Forecasting > Customer Usage Adjustment Procedure**.
- 2 Enter the *Customer Number* for whom you want to remove/restore product usage.
- 3 Enter the *Primary Vendor Number* that you want to remove/restore the selected customer's usage for.
- 4 Enter the *Product Line* that you want to remove/restore the selected customer's usage for.
- 5 For *Remove/Restore Usage?*, Choose one of the following:
 - **R** - To remove the historical usage for the selected customers.
 - **T** - To restore previously removed usage.
- 6 For *Adjust Override Usage?*, choose one of the following:
 - **Y** - To back out the calculated customer usage values from any override usage as well as system calculated usage.
 - **N** - To not back out calculated customer usage values.

Once the above selection criteria is entered, the customer usage is adjusted behind the scenes.



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