



# Demand Forecasting

for



## Microsoft Dynamics 365 for Operations

### User Guide

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## INTRODUCTION

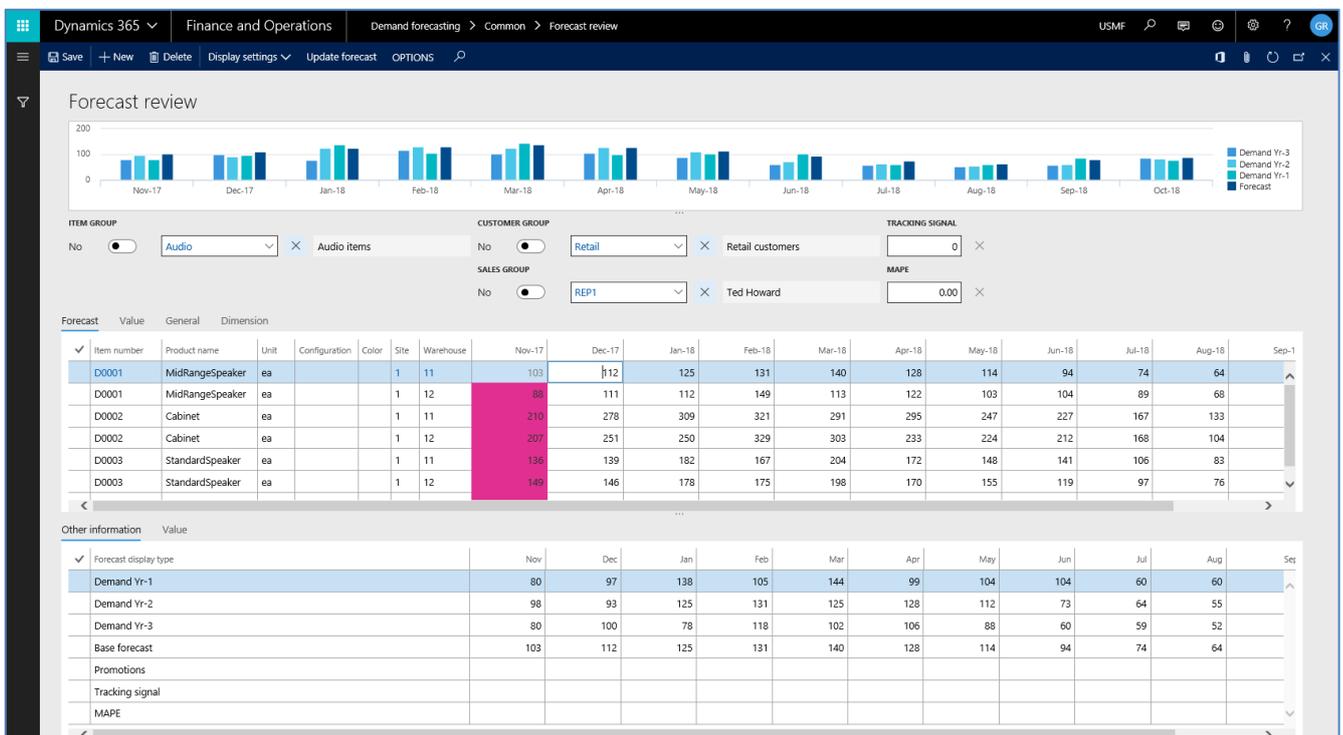
The purpose of Demand Forecasting is to generate forecasts of future demand for use by Dynamics 365 Master Planning to drive inventory replenishment, purchasing and production.

Demand forecasts can be generated automatically from sales invoice, sales order, production and/or projects demand, and adjusted manually or by entering promotions. Demand forecasts can also be entered manually if required.

Final forecasts are stored in the standard D365 Forecast Sales table to provide full integration with D365 Master Planning.

This document describes how to set up Demand Forecasting to:

- Create consolidated demand history for forecasting purposes
- Adjust demand history for abnormal demand
- Create a base forecast from this demand history
- Update this forecast manually
- Load future promotions into the forecast
- Make the forecast available for use by Master Planning.



## Forecast Groups

There are four types of groups that are critical to the successful implementation of Demand Forecasting.

These are:

- Forecast Item Groups
- Forecast Customer Groups
- Forecast Sales Groups (collaborative forecasting only)



# Demand Forecasting User Guide

- Forecast Dimension Groups.

## Forecast Item Groups

Forecast Item Groups are used to group items for ease of management of forecasts. Items in the same Forecast Item Group are displayed together and some forecasting parameters can be set at the group level to apply to all items in the group (unless they are overridden at item level). Forecasts can also be manually adjusted at a group level and distributed over the items in the group.

An example of the use of a Forecast Item Group would be to group products that are managed by the same product manager.

## Forecast Customer Groups

Forecast Customer Groups are used to group customers with similar characteristics to consolidate demand for forecast calculation purposes. Each customer that generates demand for items being forecast must be assigned a Forecast Customer Group otherwise the demand from that customer will be omitted from the demand history for the items.

An example of the use of a Forecast Customer Group is to group customers in a geographic region. Another example is to group stores from the same retail chain e.g. a supermarket chain.

## Forecast Sales Groups (Collaborative Forecasting only)

Forecast Sales Groups are used to group customers independently of Forecast Customer Groups to enable forecasts for different customers to be managed separately.

A typical use of Forecast Sales Groups is to define the sales representative who is responsible for a subset of customers within a Forecast Customer Group. A Forecast Sales Group may optionally be linked to an employee, in which case the employee can only view and alter forecasts for that Forecast Sales Group.

## Forecast Dimension Groups

Forecast Dimension Groups control the level at which forecasts are generated and manually adjusted by specifying the product and storage dimensions to be included. A single Forecast Dimension Group can be used for all items, or individual items and groups of items can have their own groups.

**Note:** The product and storage dimensions that are included in the forecast records in the 'Final forecast' model that is used to transfer forecasts to Master Planning are those that are flagged as Coverage dimensions for each individual item. In earlier releases of Demand Forecasting they were determined by an Output Dimension Group which no longer exists in the module.



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## Forecasting Level of Detail

Forecasts are calculated and stored at the following level of detail (referred to as the 'storage level' in this document):

- Forecast Item Group                      Mandatory
  - Forecast Customer Group              Mandatory
  - Forecast Sales Group                  Collaborative forecasting only (mandatory if this is activated)
  - Item    Mandatory
  - Configuration
  - Colour
  - Size
  - Style
  - Site
  - Warehouse
  - Period    Monthly, weekly or user-defined
- } Optional, determined by the Input Forecast Dimension Group (see above)

## Forecast Allocations

Forecast allocations are used to split forecasts where the forecasts passed to Master Planning need more dimensions than the forecasts generated by Demand Forecasting.

Forecast allocations are generated automatically from demand history by the Generate Forecast Allocations function and can be overridden using Forecast Allocation Rules (refer page 34 for details).

## Daily Rate Forecasting

Daily rate forecasting is an optional feature of Demand Forecasting that adjusts forecast quantities to take into account the number of working days in each period.

When calculating forecasts, demand history is first converted to a daily rate based on the working days specified for each period in a specified calendar. Forecasts are calculated based on the daily demand rate for each historical period and then adjusted for the number of working days in each future period.

## Collaborative Forecasting

Collaborative forecasting is an option that enables different users to manage forecasts for different customers within the same Forecast Customer Group. Each customer is assigned a Forecast Sales Group as well as a Forecast Customer Group and item forecasts are generated and maintained by both Forecast Customer Group and Forecast Sales Group.

Collaborative forecasting also enables forecasts to be exported to spreadsheets for offline updating of forecasts and subsequent re-importing. A different spreadsheet is generated for each Forecast Sales Group.



## Multi-company Forecasting

Multi-company forecasting enables forecasts from multiple companies to be consolidated and reviewed at an enterprise level.

Two views are provided:

1. The forecasts for each company are shown by company on a single form and can be reviewed without the need to change companies.
2. The forecasts for all companies are consolidated into a single forecast record which can be reviewed.

These views can be accessed from within any company.

This functionality still uses the Forecast Customer and Sales groups to determine the level at which forecasts are displayed, but if two companies have forecasts for the same item, Forecast Customer and Forecast Sales groups, these will be combined into a single forecast at the consolidated level, thus allowing for enterprise wide forecasting. Consolidated forecasts are also displayed by product dimension for items with Forecast Dimension Groups that contain them, but not by Site & Warehouse – they are summarised over all Sites & Warehouses.

If a consolidated forecast is updated the change will be apportioned over all the forecasts that make up the consolidated view. Multi-company collaborative spreadsheets can also be generated and imported at the consolidated level.

Demand history and forecasts are still stored within each company – they are just consolidated for the purpose of reviewing and updating forecasts.

### Key concepts:

Where forecast from multiple companies are to be consolidated the following criteria need to be met:

1. All Forecast Customer and Sales groups need to be consistent across companies.
2. The Forecast Dimension Groups for all items must be consistent across all companies, at least in terms of product dimensions.
3. All items should have the same Forecast Item Group in all companies. Where the Forecast Item Groups are not consistent across companies the filtering of products will not be consistent.
4. The forecasting mode and forecasting periods must be consistent across companies.

Where a company does not want forecasts to be consolidated they can achieve this by using different Forecast Customer and Sales Groups. These fields will still be displayed on the consolidated screens but data will not be consolidated unless another company is using the same combination of Forecast Customer and Sales Groups.

## Forecasting Formulas

There are currently 6 forecasting formulas provided to automatically generate forecasts from demand history.

1. Demand history +/- percentage
2. N periods moving average (simple average)
3. N periods moving average with trend (simple average with trend)
4. Average of same periods last 2 years
5. Average of same periods last 2 years with trend



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## 6. Expert selection

This option lets the system select the best option for the demand pattern from a list of industry-standard forecasting formulas:

- Simple Moving Averages
- Discrete Data Models
- Croston's Intermittent Demand Model
- 9 Exponential Smoothing Models
- Univariate Box-Jenkins Model
- Event Models
- 4 Curve Fitting Models
- Dynamic Multiple Regression

These formulas are described in more detail in Appendix A.

The forecasting formula used for each item is determined by the item, the item's Forecast Item Group or the Demand Forecasting setup parameters, in that sequence. If not specified at any level, the selection reverts to the next level in the sequence.

## Forecasting in Sales Units vs Inventory Units

When setting up Demand History you must select whether you wish to forecast in the Sales Unit or Inventory Unit of each item. The default option is Sales Unit.

Whichever unit is selected, all demand history and forecast quantities are correctly calculated in the unit selected, converted from the transactions used to generate demand history where required.

## Period Keys

Period keys on forecast records control how forecasts are distributed within periods. Demand Forecasting uses this standard D365 feature to optionally split the 'final' forecasts passed to Master Planning into smaller periods when Copy to Final Forecast is run e.g. monthly forecasts could be split into weeks or days.

Periods keys will only be used if the forecasting parameter 'Use periods keys' is active, in which case a default Period Key can be specified at system level and overridden by one set up at Forecast Item Group level or on an item's Coverage settings.

## Sales Prices and Costs on Demand History, Forecast & Budget Records

All demand history and forecast records have sales prices, sales amounts and cost prices automatically recorded against them when they are generated.

These are set as follows:

### Demand History:

Sales price = average sales price from the sales order or invoice lines that make up the demand history quantity (adjusted if the Inventory Unit is used for forecasting)

Cost price = the cost price from the latest active price version for the item and the site relating to the demand, or if no active price version exists, the unit cost price for the item.



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## Forecasts:

Sales price = average of the last n months' sales amounts and quantities for the item from all demand history records with the same item dimensions, Forecast Customer Group, Forecast Sales Group, where 'n' is a system parameter.

Cost price = the cost price from the latest active price version for the item and the site relating to the demand, or if no active price version exists, the unit cost price for the item.

## Budget:

Sales price = average of the sales prices on the forecast records that make up the budget record

Cost price = the average unit cost price for the item from the forecast records that make up the budget in the period.



## SYSTEM SETUP

### Forecast Models

Demand forecasting uses standard Dynamics 365 Forecast Models to hold the various different data types that are required to generate and store forecasts.

These data types are as follows

1. Base demand history
2. Demand history adjustments
3. Base forecast
4. Forecast adjustments
5. Promotional adjustments
6. Final forecast

D365 sales forecast models must be set up to hold each of these data types before Demand Forecasting can be used.

### Demand forecasting > Setup > Forecast models

The screenshot shows the Dynamics 365 interface for setting up forecast models. On the left, a list of models is visible, including Budget, CurrentF, DH\_Adjust, DH\_Base, DH\_Copy, DH\_Main, F\_Base, F\_Final, F\_Main, and F\_Manual. The 'Budget' model is selected, and its configuration is shown on the right. The configuration includes sections for 'Project' (Forecast Tax Invoice Date, Forecast with WIP), 'Automatic Forecast Reduction', 'Require Sufficient Remaining Budget', and 'Sub-model'.

8 different forecast models are required in total:

- |                                  |   |
|----------------------------------|---|
| <b>Main demand history model</b> | - Used to consolidate the demand history  |
| Base demand history              | - Used to store the base demand history   |
| Demand history adjustments       | - Used to store manually entered history adjustments and demand generated by Item Supersessions |
| <b>Main forecast model</b>       | - Used to consolidate the forecast  |
| Base forecast                    | - Used to store the base forecast   |
| Forecast adjustments             | - Used to store manually entered forecast adjustments   |



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Forecast promotions

- Used to store any manually entered promotions

**Final forecast model**

- This is the model used by Master Planning

## Fast Tab: Sub-model

Once the 8 models have been set up, attach the demand history sub-models to the demand history main model and the forecast sub-models to the forecast main model as shown below.

The screenshot shows the Dynamics 365 interface for configuring forecast models. The breadcrumb navigation is 'Demand forecasting > Setup > Forecast models'. The left-hand navigation pane lists various models, with 'F\_Main' (Forecast main) selected. The main content area displays the configuration for the 'F\_Main' model. It includes a table with columns for 'Model', 'Name', and 'Stopped'. Below this, there are sections for 'Project' settings, including 'FORECAST TAX INVOICE DATE', 'FORECAST WITH WIP', 'AUTOMATIC FORECAST REDUCTION', and 'REQUIRE SUFFICIENT REMAINING BUDGET'. Each setting has a 'No' option and a toggle switch. The 'Sub-model' section shows a table with columns for 'Sub-model' and 'Name', listing 'F\_Base', 'F\_Manual', and 'F\_Promo'. The 'F\_Base' sub-model is currently selected.



## Forecast Periods

Forecast periods define the length of each period in the system.

Three types of periods are available:

1. Monthly periods
2. Weekly periods

These can either all start on the same weekday, in which case the starting date of each period changes from year to year, or they can start on the same date each year, in which case the first weekday of each period changes from year to year. The choice between the two is controlled by the system parameter 'Start day of each week' (refer page 17).

3. User-defined periods

These can be created by adjusting the start and end dates of monthly or weekly periods, or they can be entered manually.

An option is provided to create weekly and monthly periods automatically, but user-defined periods must be manually specified.

The first forecast period in each year must always start or end in the same calendar month each year. This is controlled by the system parameter 'Forecast start month' (refer page 17).

### Demand forecasting > Setup > Forecast periods

Period number	Start date	End date	Top grid name	Bottom grid name	Number of days	Adjusted days
USMF-00000...	1/1/2012	1/31/2012	Jan-12	Jan	31	31
USMF-00000...	2/1/2012	2/29/2012	Feb-12	Feb	29	29
USMF-00000...	3/1/2012	3/31/2012	Mar-12	Mar	31	31
USMF-00000...	4/1/2012	4/30/2012	Apr-12	Apr	30	30
USMF-00000...	5/1/2012	5/31/2012	May-12	May	31	31
USMF-00000...	6/1/2012	6/30/2012	Jun-12	Jun	30	30
USMF-00000...	7/1/2012	7/31/2012	Jul-12	Jul	31	31
USMF-00000...	8/1/2012	8/31/2012	Aug-12	Aug	31	31
USMF-00000...	9/1/2012	9/30/2012	Sep-12	Sep	30	30
USMF-00000...	10/1/2012	10/31/2012	Oct-12	Oct	31	31
USMF-00000...	11/1/2012	11/30/2012	Nov-12	Nov	30	30
USMF-00000...	12/1/2012	12/31/2012	Dec-12	Dec	31	31
USMF-00000...	1/1/2013	1/31/2013	Jan-13	Jan	31	31
USMF-00000...	2/1/2013	2/28/2013	Feb-13	Feb	28	28
USMF-00000...	3/1/2013	3/31/2013	Mar-13	Mar	31	31
USMF-00000...	4/1/2013	4/30/2013	Apr-13	Apr	30	30
USMF-00000...	5/1/2013	5/31/2013	May-13	May	31	31
USMF-00000...	6/1/2013	6/30/2013	Jun-13	Jun	30	30
USMF-00000...	7/1/2013	7/31/2013	Jul-13	Jul	31	31
USMF-00000...	8/1/2013	8/31/2013	Aug-13	Aug	31	31
USMF-00000...	9/1/2013	9/30/2013	Sep-13	Sep	30	30
USMF-00000...	10/1/2013	10/31/2013	Oct-13	Oct	31	31

### Period number

A unique number assigned to each period based on a number sequence.

### Start date

The start date of the period.

### End date

The end date of the period.



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## Top grid name

The description of the period to be displayed in the top grid on the forecast display forms.

## Bottom grid name

The description of the period to be displayed in the bottom grid on the forecast display forms.

## Number of days

The number of calendar days in the period.

## Standard length

The number of days used to factor demand history up or down in the period when generating forecasts. This enables demand history to be artificially adjusted to allow for periods that are significantly different between years, for whatever reason (see the Note below).

## Action Pane Strip:

### Translation

This button will open the language form allowing the grid name to be specified in multiple languages.

### Forecast period create

This button will run a function to automatically create monthly or weekly periods for 5 years of history, plus the current year and any number of future years. This function can be run again in the future to add more periods.

### Validate

This button will validate the periods which have been added to confirm the number of periods each year is consistent.

**Note:** The number of forecast periods in each year must be the same (the system enforces this). When the system generates weekly periods, it will generate 52 periods each year. If the periods all start on the same weekday, the 52<sup>nd</sup> period every 4<sup>th</sup> year will be two weeks in length.

This could distort forecasts generated using the demand history in this period so an option is provided to automatically adjust demand history in this (or any) period to prevent this by adjusting the 'Standard length' of the period. The longer 52<sup>nd</sup> week every 4<sup>th</sup> year is automatically generated with the Number of Days set to 14 and the Standard Length set to 7.

The demand history in the period is automatically factored up or down by the ratio Standard Length / Number of Days when generating forecasts, and the same process happens in reverse for forecasts in each period. If no factoring is required, the Standard Length should be set equal to the Number of Days.



## Forecast Item Groups

Forecast Item Groups are used to group items for display and to allow for forecasts to be manually adjusted at a group level and distributed over the items in the group.

Some forecasting parameters may also be optionally specified at this level and any values entered will override the values specified in the Demand Forecasting setup parameters.

**Note:** At least one Forecast Item Group must be set up.

### Demand forecasting > Setup > Forecast groups > Forecast item groups

Forecast item...	Name	Unit
Audio	Audio	ea
CarAudio	CarAudio	ea
Config	Config	ea
Television	Television	ea
Test	UOM Test FIG	pr

**IDENTIFICATION**

Forecast item group: Audio

Unit: ea

Name: Audio

**DEMAND**

Dependent production demand: No

Dependent project demand: Yes

Forecast start date: 3/1/2017

**FORECAST FORMULA SETTINGS**

Forecast formula: [Empty]

Number of period's average: [Empty]

Demand %: 0.00

**DIMENSION GROUPS**

Forecast dimension group: [Empty]

**FORECAST SPLIT**

Period key: [Empty]

### Field group: Identification

**Forecast Item Group**

The code for the Forecast Item Group.

**Name**

The description for the Forecast Item Group.

**Unit**

This is the base unit of measure for the Forecast Item Group to be used when displaying and adjusting forecasts at group level.

### Field group: Demand

**Dependent production demand**

This parameter determines if demand from issues to production orders or from BOM Report as Finished journals is to be included in demand history for items in this group.

**Note:** Selecting this option automatically activates the capture of production demand for all items in the group, so the option must be switched off for individual items if not required.



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## Field group: Project

### Dependent project demand

This parameter determines if demand from projects is to be included in demand history for items in this group.

**Note:** Selecting this option automatically activates the capture of project demand for all items in the group, so the option must be switched off for individual items if not required.

### Forecast start date

The start date of the latest period that forecasts have been generated for this group.

## Field group: Forecasting formula settings

### Forecasting formula

This sets the default forecasting formula to be used for this group of items unless overridden for individual items. If not specified, the default forecasting formula specified in the setup parameters will be used.

### Number of period's average

This parameter is only available when either the 'N periods moving average' or the 'N periods moving average with trend' formula has been selected in the forecasting formula field. It specifies the number of periods used to calculate averages.

### Percentage change to demand history

This parameter is only available when the 'Demand history' formula has been selected in the forecasting formula field. It enables a percentage change to be applied to demand history values when calculating base forecasts. This percentage can be positive or negative.

## Field group: Dimension groups

### Forecast Dimension Group

This parameter sets the default Forecast Dimension Group to be used for all items in this Forecast Item Group unless overridden for individual items. If not specified, the default Forecast Dimension Group specified in the setup parameters will be used.

## Field group: Forecast Split

### Period key

This parameter specifies the period key to be used to split forecasts for all items in the group unless overridden by a period specified on an item's Coverage settings.

### Number of forecasting periods

This parameter specifies the number of periods in the future that the Forecast Item Group period key is to be used to split forecasts.



## Forecast Customer Groups

Forecast Customer Groups are used to group customers with similar characteristics to consolidate demand for forecast calculation purposes.

If demand forecasts are to be generated for individual customers, the customers should each be assigned their own Forecast Customer Group.

**Note:** At least one Forecast Customer Group must be set up.

### Demand forecasting > Setup > Forecast groups > Forecast customer groups

Click the edit button to make changes.

### Forecast customer groups

Forecast cust...	Name
Retail	Retail
Wholesale	Wholesale

**IDENTIFICATION**

Forecast customer group  
Retail

Name  
Retail

#### Forecast Customer Group

The Forecast Customer Group identifier.

#### Description

The Forecast Customer Group description.



## Forecast Sales Groups

Forecast Sales Groups are used to group customers for collaborative forecasting purposes where different users manage forecasts for different customers within the same Forecast Customer Group.

If collaborative forecasting is activated, each customer must be assigned a Forecast Sales Group as well as a Forecast Customer Group. The two parameters are independent of each other, so customers in different Forecast Customer Groups may be assigned the same Forecast Sales Group.

Where an employee is assigned to a Forecast Sales Group this user will only see records for that Forecast Sales Group when they log into Dynamics 365. This is a security feature which prevents employees from changing other users' forecasts.

### Demand forecasting > Setup > Forecast groups > Forecast sales groups

Forecast sale...	Description	Employee
REP1	Sharon Stone	
REP2	Charlie Sheen	
REP3	Julia Funderbunk	Julia Funderburk

**IDENTIFICATION**

Forecast sales group  
REP3

Description  
Julia Funderbunk

Employee  
Julia Funderburk

#### Forecast Sales Group

The Forecast Sales Group identifier.

#### Description

The Forecast Sales Group description.

#### Employee

The employee who will be responsible for managing forecasts associated to this Forecast Sales Group.



## Forecast Dimension Groups

Demand Forecasting supports the generation and review of forecasts by different combinations of product & storage dimensions than those required by Master Planning.

These dimension combinations will be determined by the Forecast Dimension Group specified on the forecast parameters unless overridden by Forecast Dimension Groups specified for a Forecast Item Group or an individual item.

The Forecast Dimension Group controls the level at which forecasts are generated and which dimensions must be specified when manually creating or importing forecasts.

**Note:** The product and storage dimensions included in the forecast records in the 'Final forecast' model that is used to transfer forecasts to Master Planning, are those that are flagged as Coverage dimensions for each individual item (see below).

The screenshot displays the Dynamics 365 interface for configuring 'Storage dimension groups'. The navigation pane on the left shows a filter and a list of items, with 'SiteWH' (Site, Warehouse) selected. The main content area shows the configuration for 'SiteWH'. The 'Storage dimensions' section includes a table with the following data:

Name	Active	Blank receipt all...	Blank issue allo...	Physical inventory	Financial invent...	Coverage plan...	For purchase pri...	For sales prices
Site	✓			✓	✓	✓	✓	✓
Warehouse	✓			✓		✓	✓	✓

The 'Warehouse specific setup' section includes the following settings:

- Use warehouse management process...: No
- WAREHOUSE SPECIFIC SETUP
- Mandatory: No
- Primary stocking: No

There are six item dimensions supported by Demand Forecasting:

1. Configuration
2. Colour
3. Size
4. Style
5. Site
6. Warehouse.



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## Demand forecasting > Setup > Forecast groups > Forecast dimension groups

The screenshot shows the Dynamics 365 Operations interface for configuring 'Forecast dimension groups'. The breadcrumb navigation is 'Demand forecasting > Setup > Forecast groups > Forecast dimension groups'. The main content area is divided into two sections: a table of dimension groups and a configuration panel.

Forecast dim...	Name
ALL	ALL
None	None
Site	Site
SW	Site, warehouse
SWC	Site, warehouse, colour
SWCn	Site,warehouse, configuration

The configuration panel on the right includes the following settings:

- IDENTIFICATION**
  - Forecast dimension group: SW
  - Name: Site, warehouse
- DIMENSIONS**
  - Configuration: No
  - Colour: No
  - Size: No
  - Style: No
  - Warehouse: Yes
  - Site: Yes

### Dimension group

The Forecast Dimension Group identifier.

### Name

The description for the Forecast Dimension Group.

### Configuration

This determines if forecasts are to be generated by item configuration.

### Colour

This determines if forecasts are to be generated by colour.

### Size

This determines if forecasts are to be generated by size.

### Style

This determines if forecasts are to be generated by style.

### Warehouse

This determines if forecasts are to be generated by warehouse.

### Site

This determines if forecasts are to be generated by site.



## Forecast Parameters

The forecast parameters control the behaviour of the system.

**Demand forecasting > Setup > Parameters**

### Tab: General

The screenshot shows the 'Forecast parameters' setup page in Dynamics 365. The 'General' tab is selected. The page is titled 'Set up demand forecasting'. It contains several sections with various input fields and controls:

- Forecasting period:** Includes 'Forecasting period mode' (Monthly history), 'Forecast start month of year' (January), 'Start day of each week' (empty), and 'Number of days in previous year' (One).
- General:** Includes 'Number of forecasting periods' (12), 'Number of allocation calculation periods' (12), 'Forecasting unit' (Sales unit), 'Number of decimals displayed in quant...' (0), 'Number of forecast display periods' (12), 'Number of sales price calculation periods' (12), 'Consolidated data entry' (Yes), and 'Note type' (Note).
- Forecast accuracy tracking:** (Section header)
- Dimension groups:** Includes 'Forecast dimension group' (SWC).
- Forecast split:** Includes 'Use period keys' (Yes), 'Period key' (10), and 'Number of forecasting periods to split' (3).
- Collaborative:** Includes 'Collaborative forecasting' (Yes) and 'Offline spreadsheets demand history ye...' (Two).
- Customer and sales group matrix selections:** Includes 'Customer group 1' (Segment) and 'Customer group 2' (Sales district).

The action pane strip has one button:

**Info:** This enables the user to view details of the Demand Forecasting version number.

### Field group: Forecast period

#### Forecasting period mode

This parameter controls whether the system is running in weekly or monthly mode i.e. whether periods are defined as weeks or months.

#### Forecast start month of year

This parameter controls which month will be the first month in each year. This is important to enable comparison of forecasts against demand over different years.

**Note:** The first period in each year must always start or finish in this month.

#### Start day of each week (weekly mode only)

This parameter controls which weekday every weekly period starts on. If not specified, each period will be automatically generated to start on the same date as the previous year.

#### Number of days in previous year (weekly mode only, and with weeks starting on the same day)

This parameter controls how many days into the previous year the first weekly period can start when the periods are generated by the system. For example, if the first month in the year is January and this parameter is set to 3, the first week in the year can start in December, but no earlier than December 29<sup>th</sup>.



# Demand Forecasting User Guide

## Field group: General

### Number of forecasting periods

This parameter controls the number of periods into the future for which forecasts are generated.

### Number of forecast display periods

This parameter controls the number of periods into the future that forecasts are displayed on forms.

**Note:** The introduction of this parameter enables forecasts to be generated for more periods in the future than are displayed on forms. This is important when creating a budget for the next fiscal year because the end of the fiscal year may be beyond the number of periods displayed and forecasts will be required for the additional periods through to the last period in the fiscal year if the budget is to be created by copying forecasts.

### Number of item distribution periods

This parameter controls the number of prior periods of demand history to be used when calculating Item Allocation Keys.

### Number of sales price calculation periods

This parameter controls the number of periods of demand history to be used when calculating the sales price to be assigned to forecast records. The sales price is calculated as the  $\Sigma\text{Amount}/\Sigma\text{SalesQty}$ , totalled over the demand history records dated within this number of periods immediately prior to the first period from which forecasts are generated (the 'Forecast from' date selected in Generate Base Forecast). Only the demand history records used to generate each forecast are used to calculate its sales price.

### Note type

This parameter specifies the document type to be used when storing notes for promotions and adjustments to demand history.

### Number of decimals displayed in quantities

This parameter specifies the number of decimal places in which quantities are displayed.

**Note:** Forecasts are calculated to the smaller of the number of decimals displayed in quantities and the number of decimals in each item's sales or inventory unit, depending on which unit is selected for forecasting (see below).

Also, this parameter can only be changed by a member of the admin group as a table synchronisation is required. Any change will only be visible after you log out of D365 and back in.

### Forecast unit selection

This parameter specifies if forecast and demand history quantities are in each item's Inventory Unit or Sales Unit (which is the default).

**Note:** This parameter can only be changed after the system has been in use by removing all demand history and forecast records and regenerating them, so that the records are updated with the new unit selected.

### Consolidated data entry

This parameter specifies whether forecasting can be done at a legal entity consolidation level or only by individual legal entity.



# Demand Forecasting User Guide

## Field group: Forecast accuracy tracking

Number of tracking calculation periods

This parameter controls the number of periods in the past to be used for calculating the Tracking Signal for each set of forecast records.

## Field group: Dimension groups

Forecast Dimension Group

This parameter sets the default Forecast Dimension Group to be used unless overridden by a Forecast Dimension Group specified at Forecast Item Group level.

## Field group: Forecast Split

Use period keys

This parameter specifies if period keys are used during final forecast creation to split forecasts into smaller time buckets other than those specified in the Forecast Periods.

Period key

This parameter specifies the default period key to be used to split forecasts unless overridden by a period specified at Forecast Item Group level or on an item's Coverage settings.

This field is optional – if left blank, forecasts for an item will only be split if a period key is specified on the item's Forecast Item Group level or on its Coverage settings.

Number of forecasting periods to split

This parameter specifies the number of periods in the future that the default period key is to be used to split forecasts.

This field is mandatory if a period key is selected.

## Field group: Collaborative

Collaborative forecasting

This parameter specifies if collaborative forecasting is active for this company. If this is active the Forecast Sales Group field will be activated for customers.

**Note:** If collaborative forecasting is activated, all customers with sales demand must be assigned a Forecast Sales Group otherwise consolidated demand history will not be generated.

Offline spreadsheets demand history years

This parameter specifies the number of demand history years which will be included in the collaborative spreadsheets.

## Field group: Customer & sales group matrix selections

These fields determine which fields on the customer form are used to group customers on matrix records.

Customer Group 1

This is the first field on the Customer table used in the Forecast Customer and Sales Group matrix to assign a Forecast Customer Group and a Forecast Sales Group to a customer. This parameter is mandatory and defaults to the Customer Group.

Customer Group 2

This is the second field on the Customer table used in the Forecast Customer and Sales Group matrix to assign a Forecast Customer Group and a Forecast Sales Group to a customer. This parameter is optional.



# Demand Forecasting User Guide

Customer Group 1 and Customer Group 2 may be set to any two of the following fields from the Customer table:

- Commission group
- Company chain
- Country/region
- Customer account
- Customer classification group
- Customer group
- Item - customer group
- Sales district
- Sales order pool
- Segment
- State/province
- Subsegment

## **Field group: Update information**

These fields are information fields only.

Forecast display periods

The number of forecasting periods over which forecasts were last generated.

Forecast display update date

The date forecasts were last generated.

Forecast display update time

The time forecasts were last generated.

Number of periods per year

The number of forecasting periods in each year

Forecast period history start date

The start date forecast demand history will start.



## Tab: Forecast

This is where the user sets the parameters relating to the forecasts created by the module.

### Field group: Main model

#### Main

Select the forecast model that combines the base, manual & promotion forecasts.

### Field group: Sub-models

#### Base

The forecast model that holds automatically generated forecasts.

#### Manual

The forecast model that holds manual adjustments to forecasts.

#### Promotions

The forecast model that holds promotions.

### Field group: Final model

#### Final

The forecast model that holds the final forecasts to be used by Master Planning.

### Field group: Forecast tracking models

#### Tracking signal

The forecast model that holds the Tracking Signal values for each set of forecast records.

#### MAPE

The forecast model that holds the MAPE values for each set of forecast records.



# Demand Forecasting User Guide

## Field group: Other

### Freeze time fence

This parameter controls the number of forecast periods that cannot be changed either manually or via the periodic functions

**Note:** 0 means no periods are blocked.

### Freeze period colour

This parameter enables the user to choose the colour to represent the freeze time fence.

### Display all items in a Forecast Item Group

This parameter determines if all items in a Forecast Item Group are to be displayed even if they have no forecasts.

**Note:** An item must have demand history in at least one forecasting period to be displayed. The period can be any period from the start of the Forecast Period table and the demand quantity can be zero – there just has to be a demand history record.

### Update statistical forecasts

This parameter determines if the statistical base forecast is updated even when a manual forecast adjustment exists. If this parameter is set the base forecast will be changed to match the latest statistical value and the manual adjustment will be changed to keep the total the same. This does not affect promotions as these will still be added to the result.

e.g.

	Base forecast	Manual forecast	Promotions	Total
<b>Before</b>	100	50	25	<b>175</b>
<b>After</b>	90	60	25	<b>175</b>

## Field group: Forecasting formula settings

### Forecasting formula

This parameter sets the default forecasting formula to be used where no formula has been specified at the Forecast Item Group or item levels.

### Number of period's average

This parameter is only available when either the 'N periods moving average' or 'N periods moving average with trend' formulas has been selected in the forecasting formula field and will then allow the user to input the number of periods they require the average to be calculated over.

### Percentage change to demand history

This parameter is only available when the 'Demand history' formula has been selected in the forecasting formula field. It enables a percentage change to be applied to the demand history values when calculating the base forecast. This percentage can be positive or negative.

## Field group: Expert selection formula settings

### Number of demand history years

This specifies the number of years of demand history to be used by the 'Expert selection' forecasting formula. A maximum of 5 years history can be used for monthly forecasting and 2 years for weekly forecasting.



# Demand Forecasting User Guide

## **Field group: Daily rate**

### Daily rate

This parameter converts demand history to a daily rate based on working days specified in each period according to the calendar selected in the next parameter. Forecasts are calculated based on the daily demand rate and then each forecast is multiplied by the number of working days in its respective period.

### Calendar

This calendar is used to specify the working days per period for use in the daily rate calculation.

## **Field group: Master planning**

### Calendar

This calendar is used to calculate the first working day in each period when generating final forecasts for use by Master Planning. It ensures that Master Planning doesn't ignore forecasts dated on non-working days.



## Tab: Demand history

This is where the user sets the parameters relating to the demand history created by the module.

### Field group: Demand

#### Independent demand source

This parameter is used to set the independent demand type to be used for demand history calculation within module. The options are sales orders or sales invoices.

**Note:** Sales orders will only include sales orders of type “Sales order” or “Returned order”.

### Field group: Production

#### Activate production demand

This determines if demand from issues to production orders or from BOM Report as Finished journals is to be included in demand history for any items.

**Note:** Selecting this option enables production demand to be activated for individual Forecast Item Groups and items, it doesn't do anything else.

### Field group: Projects

#### Activate projects demand

This parameter determines if project demand is to be included in demand history for any items.

**Note:** Selecting this option enables project demand to be activated for individual Forecast Item Groups and items, it doesn't do anything else.

### Field group: Main model

#### Main

The model that combines the Base and Adjustments demand history models.



# Demand Forecasting User Guide

## Field group: Sub-models

### Base

The demand history model that holds the calculated demand history.

### Adjustments

The demand history model that holds manually adjustments made to demand history, as well as any demand history records generated by Item Supersessions.

## Field group: Other

### Sales warehouse selection sequence

This replaces the 'Use despatch warehouse' parameter in previous releases of Demand Forecasting.

Two options are provided:

#### 1) Customer default/sales order

If this option is selected the default warehouse specified for the customer is used. If the customer doesn't have a default warehouse, the warehouse on each sales order line or, for sales invoices the delivery note line, is recorded against the demand history.

#### 2) Sales order/customer default

If this option is selected the warehouse on each sales order line or, for sales invoices the delivery note line, is recorded against the demand history. If there is no warehouse on the sales order line, the default warehouse specified for the customer is used.



## Tab: Display

Forecast display type	Sorti...	Display in grid
Demand Yr-1	100	<input checked="" type="checkbox"/>
Demand Yr-2	200	<input checked="" type="checkbox"/>
Demand Yr-3	300	<input type="checkbox"/>
Demand Yr-4	400	<input type="checkbox"/>
Demand Yr-5	500	<input type="checkbox"/>
Base forecast	900	<input checked="" type="checkbox"/>
Manual adjustment	1000	<input checked="" type="checkbox"/>
Promotions	1100	<input checked="" type="checkbox"/>
Forecast Yr-1	1300	<input checked="" type="checkbox"/>
Tracking signal	1400	<input type="checkbox"/>
MAPE	1500	<input checked="" type="checkbox"/>

This is where the user sets the display settings for the Other Information grid in the item forecast entry and item group forecast entry forms.

### Forecast display type

The name of the forecast data type to be displayed in the grid.

### Sorting order

A number to control the sequence of data types displayed in the Other Information grid.

### Display in grid

A flag to control whether the data type is displayed in the grid.

**Note:** Changing these settings will require you to run the 'Refresh forecast maintenance table' function before the changes will take effect in the item forecast entry and item group forecast entry forms.



## Tab: Budgeting

The screenshot shows the 'Demand forecasting parameters' setup page in Dynamics 365. The 'Budgeting' field group is selected in the left-hand navigation pane. The main content area displays the following settings:

Select to use budgeting and set the budget model			
<b>Budgeting</b>			
Budgeting	Budget model	Fiscal year start month	Budget update date
Yes <input checked="" type="checkbox"/>	Budget	January	1/1/2018

This is where the user activates the budgeting functionality within the module.

### Field group: Budgeting

#### Budgeting

This parameter determines if the budgeting functionality is active.

#### Budget model

The forecast model used to hold budget figures.

#### Fiscal year start month

The first month of the fiscal year – this is derived from the first period in the General Ledger Fiscal Calendar.

#### Budget update date

The date that the next fiscal year's budget was last updated using the Copy Forecast to Budget function.



## Tab: Number sequences

Forecast parameters

General

Forecast

Demand history

Display

Budgeting

Number sequences

Set up number sequences for demand forecasting

Reference	Number sequence code
Collaborative Id	CollId
Period number	FPeriod

This is where the user sets up number sequences used by the module.

### Reference

The function that will use this number sequence.

### Number sequence code

The number sequence to use for this function.



# Demand Forecasting User Guide

## Item Setup

Use this form to set forecasting parameters directly for the items to be forecast. Other than the Forecast Item Group, these parameters are optionally specified at this level and any values entered will override the values specified at the Forecast Item Group and module parameter levels.

**Note:** For an item to accumulate demand history it must have a Forecast Item Group.

**Product information management > Common > Released products**

**Fast tab: Forecast**

## Field group: Demand Forecasting

### Forecast Item Group

This is the Forecast Item Group for this item. An item is not available for forecasting until it has been assigned a Forecast Item Group.

**Note:** An item cannot be assigned a Forecast Item Group that has a different unit from the item's forecasting unit.

### Field group: Demand

#### Full demand history rebuild required

This enables the user to rebuild the demand history for this item for all demand periods.

**Note:** This parameter must be manually set – it isn't automatically set by any function.

#### Dependent production demand

This parameter determines if demand from issues to production orders or from BOM Report as Finished Journals is to be included in demand history for this item.

#### Dependent project demand

This parameter determines if demand from issues to projects is to be included in demand history for this item.

## Field group: Forecasting formula settings

### Forecasting formula

This sets the forecasting formula to be used for this item.



# Demand Forecasting User Guide

## Number of period's average

This parameter is only available when either the 'N periods moving average' or the 'N periods moving average with trend' formula has been selected in the forecasting formula field. It specifies the number of periods used to calculate averages.

## Percentage change to demand history

This parameter is only available when the 'Demand history' formula has been selected in the forecasting formula field. It enables a percentage change to be applied to demand history values when calculating base forecasts. This percentage can be positive or negative.

**Note:** If the Forecast Item Group for an item is changed, the item's demand history and forecasts will be automatically updated to reflect the new group.

## Period Keys

Period keys can be specified on an item's Coverage settings if a different period key is required for the item. Otherwise the default period key specified on the forecasting parameters, or the period key specified for the item's Forecast Item Group, will be used. If no period keys have been specified at system, Forecast Item Group or item coverage level, the forecasts for the item won't be split.

## Product information management > Common > Released products

### Plan tab > Coverage > Item coverage

#### Tab: General

The screenshot shows the 'Item coverage' settings for item D0001: MIDRANGESPEAKER. The 'GENERAL' tab is selected. The 'FORECAST SPLIT' section is highlighted with a red box. It contains the following fields:

- Period key: Weeks (dropdown menu)
- Number of forecasting periods: 2 (text input)

## Field group: Forecast split

### Period Key

This parameter specifies the period key which will be used to split forecasts created by the Copy to Final Forecast function that relate to this item's Coverage settings.

### Number of forecasting periods

This parameter specifies the number of periods of final forecast records that will be split using the period key.



# Demand Forecasting User Guide

## Customer Setup

The Forecast Customer and Sales Groups Matrix is used to assign Forecast Customer Groups and Forecast Sales Groups to customers.

In previous releases of Demand Forecasting the Forecast Customer and Sales Groups Matrix only enabled Forecast Customer Groups and Forecast Sales Groups to be assigned to customers by creating matrix records that applied to individual customers, customer groups, or all customers and for all sources of demand.

It is now possible to use any 2 of up to 12 fields on the customer table to determine the Forecast Customer Group and Forecast Sales Group to be assigned to a customer. These fields are specified in the forecasting parameters (see page 17).

It is also possible to set up different records for the various types of demand (sales, production and projects) to assign different Forecast Customer and Sales Groups for the same item/customer combinations.

## Forecast Customer and Sales Groups Matrix

The matrix provides very flexible mapping of Forecast Customer Groups and Forecast Sales Groups to the two fields on the customer table that have been selected for use in the matrix.

The screenshot shows the Dynamics 365 Forecasting interface. The breadcrumb navigation is: Demand forecasting > Setup > Forecast groups > Forecast customer and sales group matrix. The table has the following data:

Source	Item code	Item relation	Segment	Sales district	Forecast customer group	Forecast sales group
✓ Sales	All			40	Retail	REP1
Sales	All		20	40	Wholesale	REP2
Sales	Group	Audio				REP3
Sales	Group	Audio	20		Wholesale	REP2
Sales	Table	D0001	20		Retail	REP2
Sales	All					
Production	All				Production	10
Projects	All				Project	20

### Demand forecasting > Setup > Forecast groups > Forecast customer and sales group matrix

#### Source

The source of demand (sales, production or projects) that the record is to be used for.

#### Item code

Select All, Group or Table.

#### Item relation

The options are based on the selection made in Item code and allow for the selection of an Item, Forecast Item Group or All Items.

#### Customer Group 1 (Segment in the above example)

Select a value or leave blank.



# Demand Forecasting User Guide

Customer Group 2 (Sales District in the above example)

Select a value or leave blank.

Forecast Customer Group

The Forecast Customer Group to be recorded against demand history.

Forecast Sales Group

The Forecast Sales Group to be recorded against demand history.

The following rules are used to determine the Forecast Customer Group and the Forecast Sales Group (if collaborative forecasting is active) for a customer:

- If Customer Group 1 is not specified, the rule applies to all customers that have the selected value for Customer Group 2
- If Customer Group 2 is not specified, the rule applies to all customers that have the selected value for Customer Group 1
- If neither Customer Group 1 nor Customer Group 2 is specified, the rule applies to all customers
- If the Forecast Customer Group is specified, it is assigned to each customer covered by the matrix record, otherwise it is automatically set to the value of the Customer Group 1 for each customer; if it is automatically set and doesn't already exist on the Forecast Customer Group table, it is automatically created on this table
- If the Forecast Sales Group is specified, it is assigned to each customer covered by the matrix record, otherwise it is automatically set to the value of the Customer Group 2 for each customer; if it is automatically set and doesn't already exist on the Forecast Sales Group table, it is automatically created on this table.

The following table shows the sequence in which the matrix records are processed to determine which Forecast Customer Group and Forecast Sales Group is assigned to a demand history record:

Priority	Item	Customer Group 1	Customer Group 2
1	Item Number	Customer Group 1	Customer Group 2
2	Item Number	Customer Group 1	
3	Item Number		Customer Group 2
4	Item Number		
5	Forecast Item Group	Customer Group 1	Customer Group 2
6	Forecast Item Group	Customer Group 1	
7	Forecast Item Group		Customer Group 2
8	Forecast Item Group		
9	All	Customer Group 1	Customer Group 2
10	All	Customer Group 1	
11	All		Customer Group 2
12	All		



# Demand Forecasting User Guide

## Notes:

- 1) If Customer Group 2 is not specified in the forecasting parameters it won't be available for selection in the matrix at all (and won't affect the selection of customers).
- 2) If Customer Group 2 is not specified in the forecasting parameters and collaborative forecasting is active, every matrix record must have a Forecast Sales Group selected.
- 3) If a single record is set up in the matrix for all items with all the other fields left blank, every customer is automatically assigned a Forecast Customer Group equal to its Customer Group 1 and a Forecast Sales Group equal to its Customer Group 2.

This enables Forecast Customer Groups and Forecast Sales Groups to be set up using standard fields already on the customer table.

- 4) For records with Source = 'Production', no customer applies, so Customer Group 1 and Customer Group 2 are disabled for selection and the Forecast Customer Group and Forecast Sales Group must both be specified. If there are no Production records that apply to an item, production demand will not be captured for the item even though it has 'Dependent production demand' selected.
- 5) If projects demand is being captured for any items and there are internal projects with no customer assigned from which demand is to be generated, a record with Source = 'Projects' must be created for the items with both Customer Group 1 and Customer Group 2 set to blank.
- 6) If the Forecast Customer Group and/or the Forecast Sales Group for a customer are ever changed on a matrix record, demand history must be regenerated for all demand history periods, and forecasts regenerated. Forecast Allocations must also be regenerated.



## Forecast Allocation Rules

### Demand Forecasting > Setup > Forecast Allocation Rules

Forecast Allocation Rules are used to set up percentage allocations that override those calculated from demand history in the Forecast Allocations table. They are particularly important for new items where insufficient or no demand history is available to calculate percentage allocations.

Item selection	Item relation	Name	Customer group relation	Forecast customer group	Sales group relation	Forecast sales group	Configuration	Size	Colour	Style	Site	Warehouse	Percent
Table	D0004	HighEndSpeaker	All		All		000005				1	11	50.00
Table	D0004	HighEndSpeaker	All		All		000026				1	11	30.00
Table	D0004	HighEndSpeaker	All		All		000065				1	11	20.00

This function enables the user to manually create item allocations for a single or all Forecast Customer Groups and for any combination of valid dimensions for an item. If Collaborative Forecasting is enabled, allocations are also able to be set up for a single or all Forecast Sales Groups.

The percentage allocations across the additional item dimensions must add to 100%.

These records are used in the Copy to Final Forecast function when an item has more product and/or storage dimensions than those specified in its Forecast Dimension Group.

Copy to Final Forecast will use will use these two sets of rules in the following order:

- 1) An item-specific Forecast Allocation Rule exists
- 2) Item-specific Forecast Allocation records exists for the item
- 3) A Forecast Allocation Rule exists for the item's Forecast Item Group
- 4) A Forecast Allocation Rule exists for all items.

**Note:** If none of these three options returns any allocations for an item's forecast record, the Copy to Final Forecast will skip copying the forecast to the Final forecast and the forecast won't be available to Master Planning.

#### Item relation

Select Table, Group or All to determine for which item or items the line is valid.

#### Item selection

The item number or Forecast Item Group to which this Forecast Allocation rule applies.

#### Customer group relation

Select Table or All to determine for which Forecast Customer Group or Groups the line is valid.

#### Forecast customer group

The Forecast Customer Group to which this rule applies.

#### Sales group relation

Select Table, or All to determine for which Forecast Sales Group or Groups the line is valid.

#### Forecast sales group

The Forecast Sales Group to which this rule applies.



## Demand Forecasting User Guide

Dimensions (Style, Configuration, Colour, Size, Style, Site & Warehouse)

The active dimensions specified by the Forecast Dimension Group of the item

Percentage

The percentage of the forecast to be applied to this forecast record by the Copy to Final Forecast function.

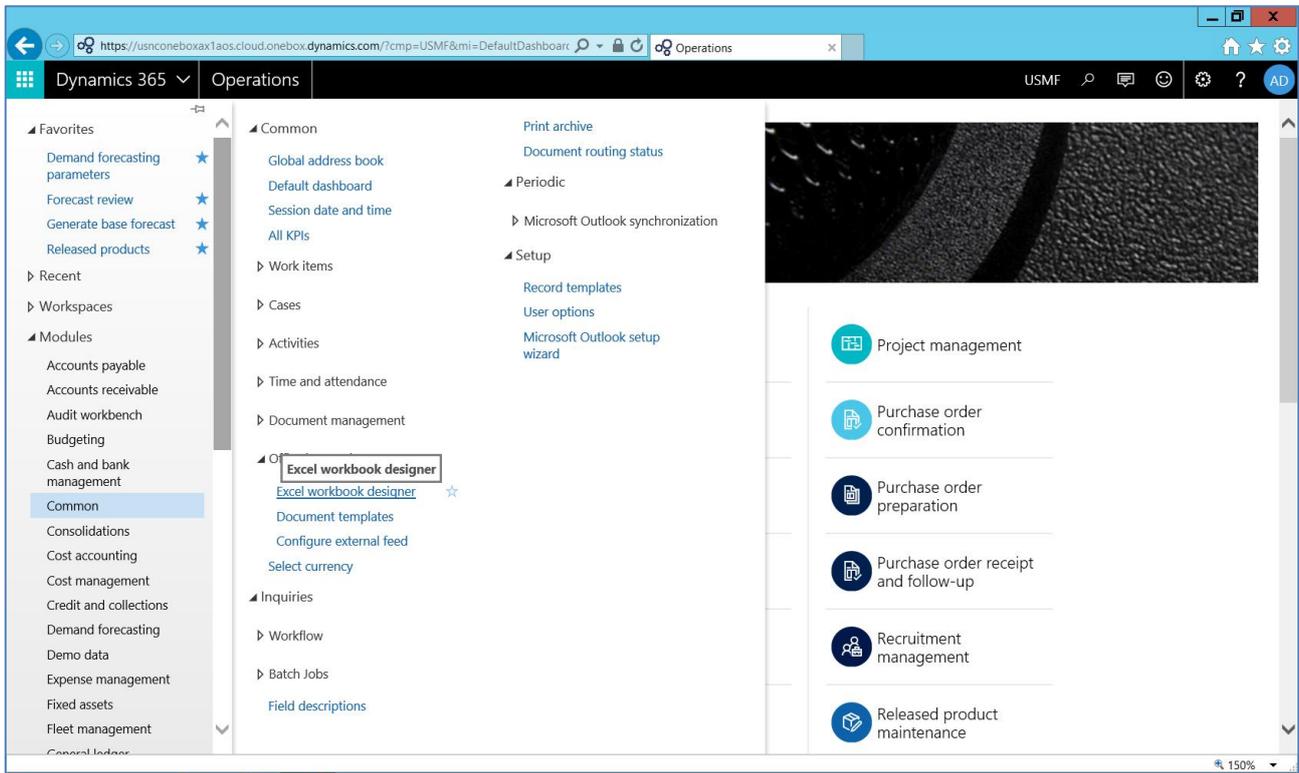
Other Storage Dimensions

If any item has any other storage dimensions that are flagged as Coverage dimensions, allocation rules must be set up for each item with values for each dimension recorded against each rule on the Inventory Dimensions tab.

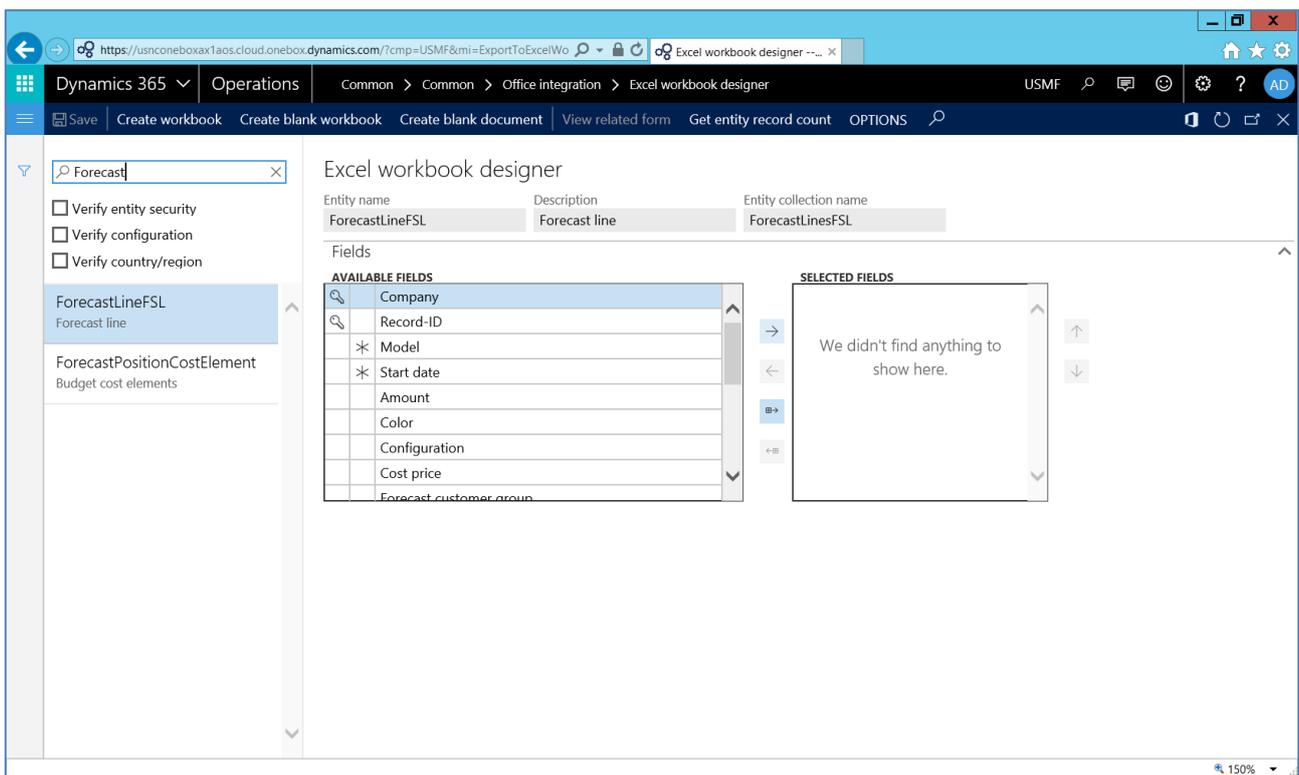


## Importing Demand History

You can use Dynamics 365 Office Integration to import demand history for new customers.



A 'ForecastLineFSL' Entity is provided with Demand Forecasting to enable this.





# Demand Forecasting User Guide

Just select all the available fields, create a workbook and the contents of the ForecastTableFSL & ForecastLineFSL tables are merged and exported to Excel.

	A	B	C	D	E	F	G	H	
1	Company	Record-ID	Model	Start date	Forecast customer group	Forecast item group	Forecast sales group	Item number	Color
77	usmf	5637155827	DH_Adjust	2/1/2012	Retail	Audio	REP1	D0001	
78	usmf	5637155886	DH_Adjust	2/1/2012	Retail	Audio	REP2	D0001	
79	usmf	5637155946	DH_Adjust	2/1/2012	Retail	Audio	REP1	D0001	
80	usmf	5637156006	DH_Adjust	2/1/2012	Wholesale	Audio	REP3	D0001	
85	usmf	5637155828	DH_Adjust	3/1/2012	Retail	Audio	REP1	D0001	
86	usmf	5637155887	DH_Adjust	3/1/2012	Retail	Audio	REP2	D0001	
87	usmf	5637155947	DH_Adjust	3/1/2012	Retail	Audio	REP1	D0001	
88	usmf	5637156007	DH_Adjust	3/1/2012	Wholesale	Audio	REP3	D0001	
93	usmf	5637155829	DH_Adjust	4/1/2012	Retail	Audio	REP1	D0001	
94	usmf	5637155888	DH_Adjust	4/1/2012	Retail	Audio	REP2	D0001	
95	usmf	5637155948	DH_Adjust	4/1/2012	Retail	Audio	REP1	D0001	
96	usmf	5637156008	DH_Adjust	4/1/2012	Wholesale	Audio	REP3	D0001	
101	usmf	5637155830	DH_Adjust	5/1/2012	Retail	Audio	REP1	D0001	
102	usmf	5637155889	DH_Adjust	5/1/2012	Retail	Audio	REP2	D0001	
103	usmf	5637155949	DH_Adjust	5/1/2012	Retail	Audio	REP1	D0001	
104	usmf	5637156009	DH_Adjust	5/1/2012	Wholesale	Audio	REP3	D0001	
109	usmf	5637155831	DH_Adjust	6/1/2012	Retail	Audio	REP1	D0001	
110	usmf	5637155890	DH_Adjust	6/1/2012	Retail	Audio	REP2	D0001	
111	usmf	5637155950	DH_Adjust	6/1/2012	Retail	Audio	REP1	D0001	
112	usmf	5637156010	DH_Adjust	6/1/2012	Wholesale	Audio	REP3	D0001	
117	usmf	5637155832	DH_Adjust	7/1/2012	Retail	Audio	REP1	D0001	
118	usmf	5637155891	DH_Adjust	7/1/2012	Retail	Audio	REP2	D0001	
119	usmf	5637155951	DH_Adjust	7/1/2012	Retail	Audio	REP1	D0001	
120	usmf	5637156011	DH_Adjust	7/1/2012	Wholesale	Audio	REP3	D0001	
125	usmf	5637155833	DH_Adjust	8/1/2012	Retail	Audio	REP1	D0001	
126	usmf	5637155892	DH_Adjust	8/1/2012	Retail	Audio	REP2	D0001	
127	usmf	5637155952	DH_Adjust	8/1/2012	Retail	Audio	REP1	D0001	
128	usmf	5637156012	DH_Adjust	8/1/2012	Wholesale	Audio	REP2	D0001	

Add new demand history records for the items and forecast customer/sales groups you wish to create demand history for, publish the workbook and the records will be added to the database.

## Note:

- 1) We recommend that you always import demand history records under the Demand History Adjustments forecast model, otherwise they could be deleted when Generate Demand History is next run.
- 2) If you delete any existing records that were exported from the database when you created the worksheet, they will be automatically deleted from the database when the workbook is published.





## GENERATING FORECASTS

There are four steps required to generate forecasts from demand history and make them available for use by Master Planning:

- Generate demand history
- Generate allocation keys
- Generate base forecasts
- Finalize forecasts
  - Copy to final forecast

### Generate Demand History

Demand forecasting > Periodic > Generate demand history

Generate demand history

Parameters ^

Filter

Periods of history to rebuild: 0

**SALES ORDERS**

Line status: !Cancelled

Site: [ ]

Warehouse: [ ]

**PRODUCTION**

Transaction type: [ ]

Issue status: [ ]

Site: [ ]

Warehouse: [ ]

Run in the background v

At the beginning of each new period this periodic function must be run to update the demand history with at least the latest data for the new period. The user will be asked to specify the number of periods of history to recalculate, in which case past periods can be refreshed as well.

This function will delete the base demand history records for the number of periods specified and recreate the demand history for these periods. It will also recreate demand history for all periods for items which have had the 'Full demand history rebuild required' flag set in the inventory table.

Demand history will be summarized by Forecast Customer Group, Forecast Sales Group (if collaborative forecasting is active), Forecast Item Group, item, and period.

This function will assign warehouses to demand history based on the parameter 'Sales warehouse selection sequence' on the Demand history tab of the forecast parameters.



# Demand Forecasting User Guide

## Options:

### Periods of history to rebuild

The number of past periods of demand history which are to be recalculated. If zero periods is selected demand history will be generated for current period only.

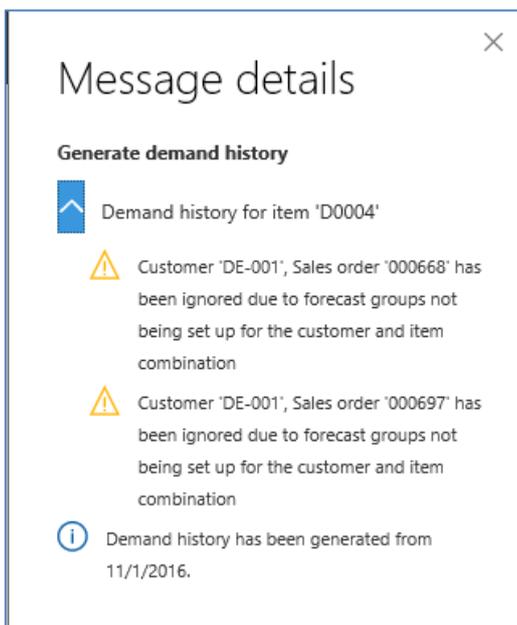
**Note:** The period in which demand history is recorded is determined by the following fields for each transaction type:

- Sales orders lines – Requested ship date
- Sales invoice lines – Invoice date
- Production issues – Physical date on the inventory transaction
- Project issues – Physical date on the inventory transaction

### Selection fields

The selection fields will depend on the demand history parameter settings that control the sources of demand. These can be changed to suit the requirements of individual organisations. For example, all sales orders placed on a specific warehouse may be excluded from demand history.

When generating demand history, if source transactions are found with a customer and item combination not covered by a record in the Forecast Customer & Sales Group Matrix, an Infolog error message will be generated.





## Generate Forecast Allocations

Demand forecasting > Periodic > Generate forecast allocations

Generate forecast allocations ?

---

Run in the background ^

[Recurrence](#) [Alerts](#)

Batch processing

Yes

Task description

Generate forecast allocations

Batch group

Private

No

Critical Job

No

Monitoring category

Start date: 3/14/2017 (09:03:47 pm) (GMT-08:00) Pacific Time (US & Canada)

This function updates forecast allocation quantities using demand history from previous periods. Allocation quantities are recalculated based on the forecasting parameter 'Number of item distribution periods'.

Forecast allocations are required by the Copy to Final Forecast function if forecasts for any item are being generated or entered at a higher level (fewer item dimensions selected on the item's Forecast Dimension Group) than the level required by Master Planning (determined by the item's product and storage dimensions that are flagged as Coverage dimensions).



## Generate Base Forecast

Demand forecasting > Periodic > Generate base forecast

### Generate base forecast

Parameters

Forecast from date  Forecasting period start  
3/1/2017

Forecast item group  
Audio

Run in the background

Recurrence Alerts

Batch processing  
No

Task description  
Generate base forecast

Batch group

Private  
No

Critical Job  
No

Monitoring category

Start date: 3/14/2017 (07:22:44 pm) (GMT-08:00) Pacific Time (US & Canada)

There are two options on this form:

### Forecast from date

This determines the range of periods over which forecasts will be generated. The start date of first period is derived from this date and is displayed alongside it. If no date is entered the current date is assumed.

The date can be set to any date in the current or prior forecast periods, but can't be set to a date in a future period. This is because demand history may not yet exist for all periods leading up to a date in the future so the forecasts generated will be meaningless.

**Note:** If a date in the past is selected, forecasts will be regenerated only for periods prior to the forecast period defined by the Forecast Start Date on each item's Forecast item Group. This protects forecasts for the current and future periods from being overwritten.

### Forecast item group

One or more Forecast Item Groups may be selected, in which case forecasts will only be generated for items in these groups. A blank selection means forecasts will be generated for all items.



# Demand Forecasting User Guide

**Note:** This selection is always left blank and not retained from the previous forecast generation run unless it is being run via a recurring batch job. Forecasts will therefore be generated for all items unless one or more Forecast Item Groups are specifically selected each time the function is run.

At the beginning of each new period this function should be run to update the base forecasts based on the latest demand history now available.

This function will delete and then recreate all future forecasts for each item for the number of periods specified by forecasting parameter 'Number of forecasting periods', starting with the period containing the 'Forecast from date'.

Forecasts are generated at the following level of detail:

- Forecast Customer Group
  - Forecast Sales Group (Collaborative forecasting only)
  - Forecast Item Group
  - Item
  - Configuration
  - Colour
  - Size
  - Style
  - Site
  - Warehouse
  - Period Monthly, weekly or user-defined
- } Optional, determined by the item's Input Forecast Dimension Groups

The forecasting formula used for each item is determined by the item, the item's Forecast Item Group or the Demand Forecasting setup parameters, in that sequence. If not specified at any level, the selection reverts to the next level in the sequence.

The forecast generation will not alter the following data:

- Any forecasts within the freeze time fence specified in the forecast parameters
- Forecasts in any period where the forecast has been manually changed.

If demand history exists for a blank Forecast Customer Group, no forecast will be generated.





## FINALISING FORECASTS

### Check Forecast Allocations

It is sensible to always run Check Forecast Allocations before running Copy to Final Forecast to avoid the chance of forecasts not being copied to the Final forecast model.

**Demand Forecasting > Periodic > Finalise forecast > Check forecast allocations**

Item number	Product name	Forecast customer group	Forecast sales group	Configuration	Size	Colour	Style	Site	Warehouse
4401	Proseware 50W Car Radio	Retail	REP1					2	21
T0005	TelevisionHDTVX59052	Wholesale	REP2					2	21

This function enables the user to view forecast combinations that can't be copied to the Final forecast model. If a forecast needs to be split over an item's dimensions and doesn't have the necessary Forecast Allocation records, the forecast won't be copied so won't be available to Master Planning.

The following information is displayed:

**Item number**

The item number of the forecast record that requires a forecast allocation

**Forecast customer group**

The forecast customer group of the forecast record that requires a forecast allocation

**Forecast sales group**

The forecast sales group of the forecast record that requires a forecast allocation

**Dimensions (Configuration, Colour, Size, Style, Site, Warehouse)**

The active dimensions specified by the Forecast Dimension Group of the item for the forecast record that requires a forecast allocation

**Percentage**

The percentage of the forecast to be applied to this forecast record by the Copy to Final Forecast function.

**Other Storage Dimensions**

If any item has any other storage dimensions that are flagged as Coverage dimensions, allocation rules must be set up for each item with values for each dimension recorded against each rule on the Inventory Dimensions tab.

The screen has two buttons:

**Refresh**

The data is refreshed to display forecast combinations that require a forecast allocation.



## Forecast allocation rules

A link to the Forecast Allocation Rules function.

One or more Forecast Allocation Rules must be set up to avoid any loss of forecasts for combinations displayed by Check Forecast Allocations. This is particularly important for new items with no demand history where forecasts have been manually entered because demand history is required to generate the Forecast Allocations.

Refer to page 34 for information on the Forecast Allocation Rules function.

## Copy to Final Forecast

**Demand forecasting > Periodic > Finalise forecast > Copy to final forecast**

Copy to final forecast

Run in the background

Recurrence Alerts

Batch processing  
No

Task description  
Copy to final forecast

Batch group

Private  
No

Critical Job  
No

Monitoring category

Start date: 3/14/2017 (07:29:00 pm) (GMT-08:00) Pacific Time (US & Canada)

This function must be run to transfer forecasts into the Final forecast model that is used by Master Planning.

The function will delete and then recreate the final forecasts for each Forecast Customer Group, Forecast Sales Group, item, item dimensions and period.

There are two possible scenarios:

1. If the item's Forecast Dimension Group contains more dimensions than its Coverage dimensions, the forecasts will be aggregated over the extra dimensions before being written to the Final forecast model.
2. If the item's Forecast Dimension Group contains fewer dimensions than its Coverage dimensions, the forecasts will be split to include all the Coverage dimensions using forecast allocations before being written to the Final forecast model.

Forecasts will not be updated within the freeze time fence specified in the forecast parameters.



## Apply Period Keys

Demand forecasting > Periodic > Finalise forecast > Apply period keys

### Apply period keys

Run in the background

Recurrence Alerts

Batch processing  
No

Task description  
Apply period keys

Batch group

Private  
No

Critical Job  
No

Monitoring category

Start date: 3/14/2017 (09:27:16 pm) (GMT-08:00) Pacific Time (US & Canada)

This function splits the final forecast quantities for each period over multiple shorter periods using standard D365 Period Keys. Forecasts will only be split for items that have been assigned a period key directly in the item's Coverage settings, via the item's Forecast Item Group or via a default period key specified in the forecasting parameters. If no period keys have been specified in any of these three places, the function will do nothing.

**Note:** Apply Period Keys is automatically run by Copy to Final Forecast, so doesn't need to be run separately, but it can be run at any time and will correctly split the forecasts even if they have been already split previously.

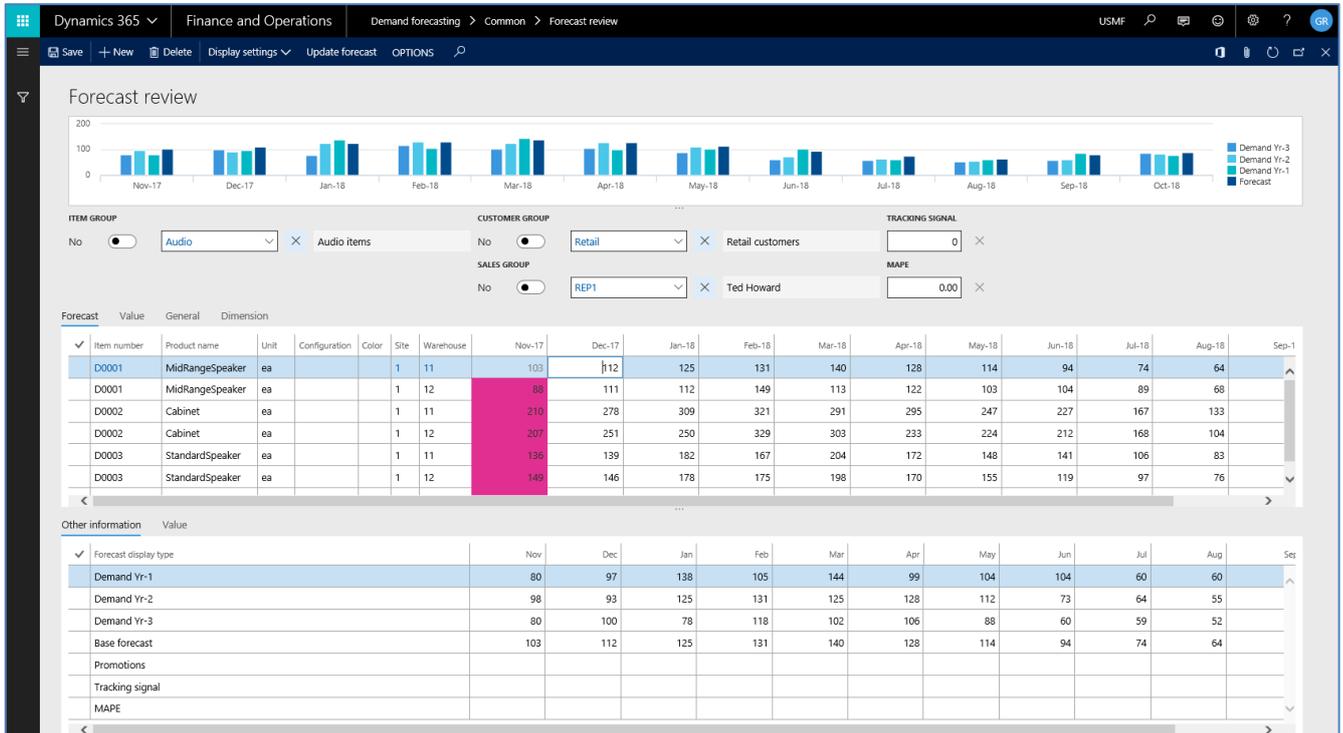




## MANUALLY REVIEWING FORECASTS

### Forecast Review

Demand forecasting > Common > Forecast Review



This function enables the user to view and change the system-generated forecasts by Forecast Item Group (FIG), item, item + dimensions, and grouped by any combination of Forecast Customer Group (FCG) and Forecast Sales Group (FSG), as shown in the following matrix.

FIG/item level	Single FCG & single FSG	Total over all FCG's, single FSG	Total over all FSG's, single FCG	Total over all FCG's & FSG's
Forecast Item Group (total over any or all items dims)	View only	View only	View only	View only
Item (total over any or all items dims)	✓	✓	✓	✓
Item + dimensions	✓	✓	✓	✓

Forecasts can also be changed by quantity or value and the two will automatically reconcile.

If a freeze time fence is specified in the system parameters, the frozen periods will display in a different colour indicating that changes are not permitted.



# Demand Forecasting User Guide

The form is made up of four sections:

1. The graph, which shows the forecasts compared to up to 5 years of demand history (the years to be displayed are selected on the Display tab in the Setup Parameters).
2. The selection area which enables the user to choose the Forecast Item Group, Forecast Customer Group and Forecast Sales Group for controlling the information displayed in the grids.

**Note:** The Forecast Sales Group is only displayed if collaborative forecasting is active.

3. The top grid, which enables the user to change forecasts in any period beyond the freeze time fence.
4. The bottom grid, which displays up to 5 years of demand history, the makeup of the forecasts, and last year's forecasts for the currently selected item. The rows that are displayed are selectable in the Setup parameters.

## The Selection Area

Forecasts can be displayed to any level of detail using the 3 groups and the display settings (these control the display of item dimensions).

Four fields are displayed for each group:

1. The group itself
2. A checkbox to the left of the group.

For the Forecast Item Group:

If checked, the group is also displayed in the top grid and forecasts are displayed by Forecast Item Group. If no group has been selected, forecasts are displayed by group for all groups that have forecasts.

If not checked, forecasts are displayed by item for each item in the group. If no group has been selected, forecasts are displayed by item for all items.

For the Forecast Customer and Sales groups:

If checked, the group is also displayed in the top grid. If no group has been selected, forecasts are displayed by group for all groups that have forecasts.

If not checked, the forecasts are displayed in the top grid filtered by the selected group. If no group has been selected, forecasts are summarised over all values of the group that have forecasts.

3. A 'clear filter' button to the right of the group. This sets the group to blank so no group is selected.
4. The field name/description.

## Filtering Forecasts using the Forecast Accuracy parameters

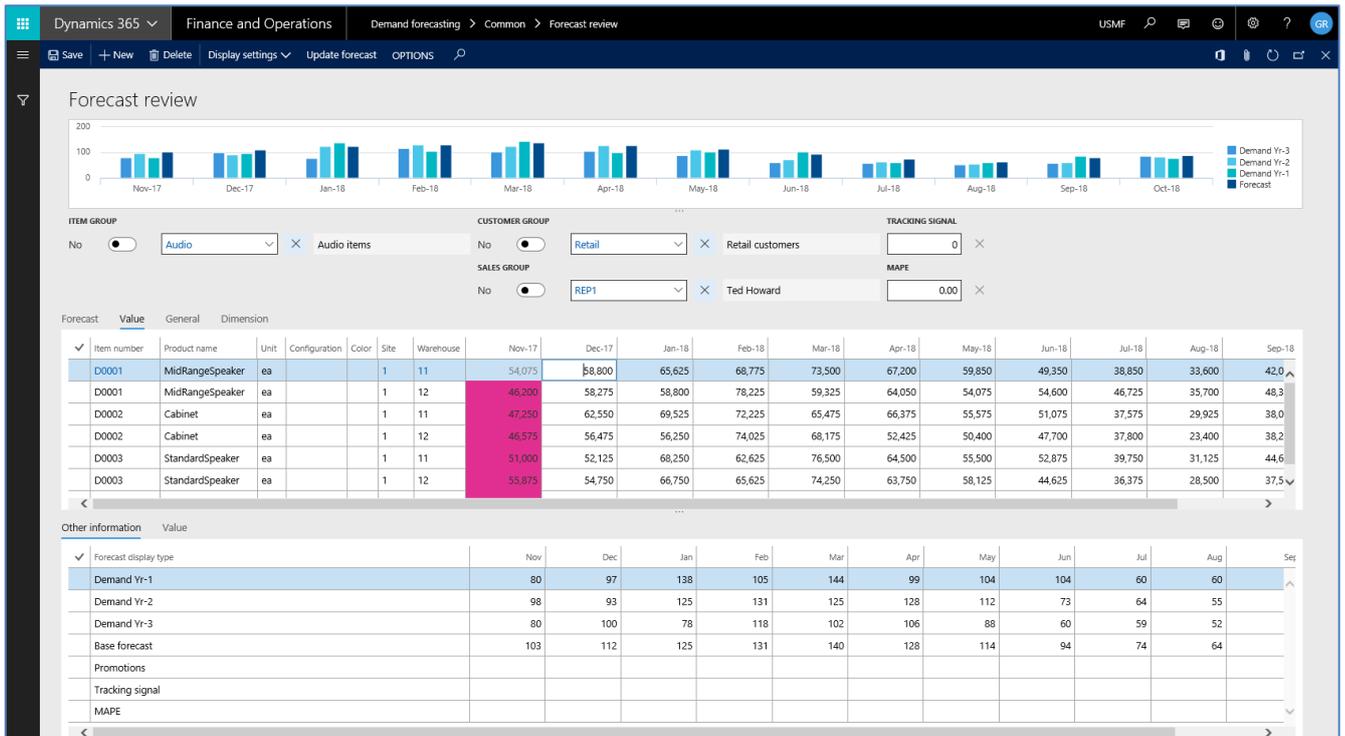
Forecasts displayed at the Forecast Storage Level can also be filtered using one or both of the, Tracking Signal and Mean Average Percentage Error (MAPE) forecast accuracy parameters.

For further details on these parameters please refer to the Forecast Accuracy Tracking function later in this document.



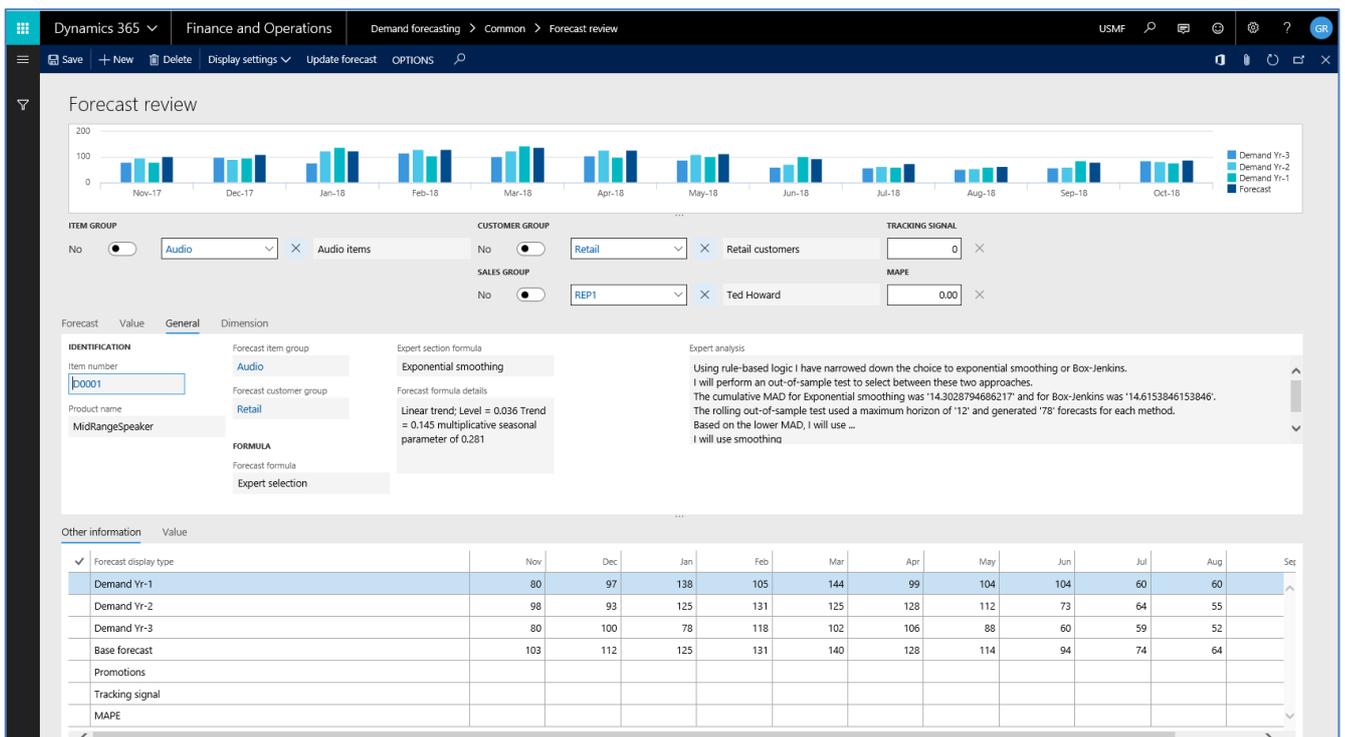
# Demand Forecasting User Guide

## Top & Bottom Grid Tab: Value



The Value tab on the top grid displays forecasts by value. The Value tab on the bottom grid displays demand history values and values that make up the forecast value in each period. The two Value tabs display independently of each other so must be selected separately.

## Top Grid Tab: General



The General tab enables the user to view the actual formula used to calculate the base forecast. This tab is important where the forecasting formula for this item is 'Expert selection' as it displays



# Demand Forecasting User Guide

the details of the formula chosen by the Forecast Pro forecasting engine as well as an explanation for the selection of the formula.

## Action Pane Strip:

### New

Creates a new forecast record at the storage level. If a new record is created at group level, it won't be accepted unless the group fields are displayed in the top grid.

### Delete

Deletes a new forecast record that hasn't yet been saved. This button is disabled for any forecast record that has already been saved. To remove a forecast record, or group of records, set each forecast quantity or value to zero.

### Display settings

Allows the user to choose:

- Which sections on the form are displayed (the only section which must be displayed is the top grid)
- The graph type to be displayed; the options are Column graph, Line graph and Line Smooth graph
- Which item dimensions are displayed in the top grid
- Whether an item's unit of measure and name are displayed in the top grid
- Whether the filter field names are displayed following each filter field in the selection area

## Changing a Forecast

Forecasts may be changed by quantity or value. A forecast change made above the storage level is automatically allocated back down to the storage level and re-totaled back to the display level when it is saved.

The change is allocated to the storage level using the ratio of existing forecast quantities at that level. The displayed forecast is automatically updated (at whatever level the change was made).

### Example:

An item has a total forecast quantity of 100 for a specific Forecast Customer Group over two Forecast Sales Groups. If the user increases the forecast quantity to 180, the additional 80 will be allocated as follows (assuming all units have zero decimal precision):

	Forecast before	Increase	Forecast after
All Forecast Sales Groups	100	80	180
Forecast Sales Group 1	70	$80 \cdot 70 / 100 = 56$	126
Forecast Sales Group 2	30	$80 \cdot 30 / 100 = 24$	54

**Note:** Changing a group forecast value will almost certainly see the display value changed when it is saved if any items affected have forecasting units with zero decimal precision. This is because forecast quantities are rounded to the smaller of the number of decimals displayed in quantities and the decimal precision of each item's forecasting unit, and the forecast values are recalculated using the sales price on each forecast record at the storage level. These values are then re-totaled to produce the displayed value.



# Demand Forecasting User Guide

To update a forecasts in multiple periods, click on a cell in the row to be updated and press the 'Update forecast' button. This will display the following form.

The screenshot shows the Dynamics 365 'Forecast review' interface. The main window displays a bar chart and a table of forecast data. The 'Update forecast' dialog box is open, showing the following parameters:

- Forecast/Value: Forecast
- Number of forecasting periods: 5
- Period: Jan-18
- Update forecast: Update forecast by this %
- Forward or backward: Forward
- Value: 10

The dialog box also has 'OK' and 'Cancel' buttons at the bottom right.

This will allow you to select:

## Period

The first period in the row to be updated.

## Direction

The direction across the grid row to apply the adjustment (forwards or backwards).

## Number of forecasting periods

The number of periods to change; this is in addition to the first period.

## Update forecast

The type of adjustment that should be applied (either update by a % or set to a value).

## Value

The value for the change based on the type selected above.

**Notes:** 1) If "Update forecast by this %" is selected the current field value will be multiplied by the % entered.

2) If "Update forecast to this value" is selected the current forecasts will be replaced by the value entered.

Press OK to process the update.



## Entering a new forecast

New forecast quantities or values (i.e. a forecast in a period where there is no existing forecast) may be entered at group level only if there are already forecasts displayed in other periods in the same row in the top grid.

The new forecast is allocated down to the storage level using:

- a) either the storage level totals of the other group forecasts displayed in the same row (for all storage level records that make up the group forecasts), or
- b) the totals of the quantities from the forecast allocation records corresponding to each of the storage level records that make up the group forecasts.

## Creating a new forecast record

A new forecast record can only be manually created at the storage level because there is no mechanism for allocating forecasts from a new record created at any other level.

Forecast values for new forecast records are calculated using the Base Sales Price for each item. Unit costs are calculated using the cost price from the latest active price version for the item and the site relating to the forecast, or if no active price version exists, the unit cost price for the item.



## Company Forecast Entry

### Demand forecasting > Common > Company forecast entry

Item number	Product name	Unit	Company	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18
D0001	MidRangeSpeaker	ea	USMF	167	247	290	234	291	254	255	214	199	159	124	165
D0002	Cabinet	ea	USMF	408	451	575	576	679	622	544	486	453	347	242	350
D0003	StandardSpeaker	ea	USMF	214	270	268	344	327	387	327	287	245	187	142	203
D0008	Licensed High End Sp...	ea	DEMF	60											

Forecast display type	Product name	Unit	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Demand Yr-1	MidRangeSpeaker	ea	167	184	217	233	253	247	221	194	205	143	118	166
Demand Yr-2	MidRangeSpeaker	ea	147	166	189	213	253	213	222	203	155	133	107	138
Demand Yr-3	MidRangeSpeaker	ea	115	159	204	179	245	196	197	158	137	128	95	128
Base forecast	MidRangeSpeaker	ea	167	197	230	234	291	254	255	214	199	159	124	165

This function enables the user to manually change the forecasts for all companies in the D365 database from a single screen. The current forecast for each company is displayed as a separate record on the screen. The user can manually change the forecast for any company. If a freeze time fence is specified, the frozen periods will display in a different colour indicating that changes are not permitted.

The item screen is made up of five parts:

1. The action pane strip which has two buttons:

Dimensions display

Allows the user to choose which dimensions are displayed in the grid.

Default settings

Include name in grid

This enables the user to choose if the item name is displayed.

Include unit of measure in grid

This enables the user to choose if the item sales unit of measure is displayed.

Graph type

This enables the user to choose the graph type which will be displayed. The options are Column graph, Line graph and Line Smooth graph.

2. The graph which shows the forecasts versus the number of years of demand history selected on the display tab in the setup parameters.
3. The selection area which enables the user to choose the Forecast Customer Group, Forecast Sales Group, Forecast Item Group and Company to be displayed.

There is a Note field which can be used to record a note against a period. This will be redisplayed on returning to this period in the future. If the same note is to be applied to multiple



## Demand Forecasting User Guide

forecasting periods, a right click menu option 'Copy notes' is available which will allow the message in the current period to be copied forward or backward across multiple periods.

4. The forecast grid, which enables the user to change forecasts in any period beyond the freeze time fence.
5. The Other Information grid, which displays the last n years demand history selected in the setup parameters, and the makeup of the forecasts for the currently selected item.



## Consolidated Forecast Entry

### Demand forecasting > Common > Consolidated forecast entry

Item number	Product name	Unit	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18
D0001	MidRangeSpeaker	ea	167	247	290	234	291	254	255	214	199	159	124	165
D0002	Cabinet	ea	408	451	575	576	679	622	544	486	453	347	242	350
D0003	StandardSpeaker	ea	214	270	268	344	327	387	327	287	245	187	142	203
D0008	Licensed High End Sp...	ea	60											

Forecast display type	Product name	Unit	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Demand Yr-1	MidRangeSpeaker	ea	167	184	217	233	253	247	221	194	205	143	118	166
Demand Yr-2	MidRangeSpeaker	ea	147	166	189	213	253	213	222	203	155	133	107	138
Demand Yr-3	MidRangeSpeaker	ea	115	159	204	179	245	196	197	158	137	128	95	128
Base forecast	MidRangeSpeaker	ea	167	197	230	234	291	254	255	214	199	159	124	165

This function enables the user to manually change the system-generated forecasts for all companies in the D365 database from a single screen. The current forecast consolidated from all company is displayed as a separate record on the screen. The user can manually change the consolidated forecast which will then be apportioned over all the company forecasts which made up the consolidated record. If a freeze time fence is set up, the frozen periods will display in a different colour indicating that changes are not permitted.

The item screen is made up of five parts:

1. The action pane strip which has two buttons:

Dimensions display

Allows the user to choose which dimensions are displayed in the grid.

Default settings

Include name in grid

This enables the user to choose if the item name is displayed.

Include unit of measure in grid

This enables the user to choose if the item sales unit of measure is displayed.

Graph type

This enables the user to choose the graph type which will be displayed. The options are Column graph, Line graph and Line Smooth graph.

2. The graph which shows the forecasts versus the number of years of demand history selected on the display tab in the setup parameters.
3. The selection area which enables the user to choose the Forecast Customer Group and Forecast Item Group to be displayed.

**Note:** If collaborative forecasting is active the Forecast Sales Group will also be included in this area.



## Demand Forecasting User Guide

There is a Note field which can be used to record a note against a period. This will be redisplayed on returning to this period in the future. If the same note is to be applied to multiple forecasting periods, a right click menu option 'Copy notes' is available which will allow the message in the current period to be copied forward or backward across multiple periods.

4. The forecast grid, which enables the user to change forecasts in any period beyond the freeze time fence.
5. The Other Information grid, which displays the last n years demand history selected in the setup parameters, and the makeup of the forecasts for the currently selected item.

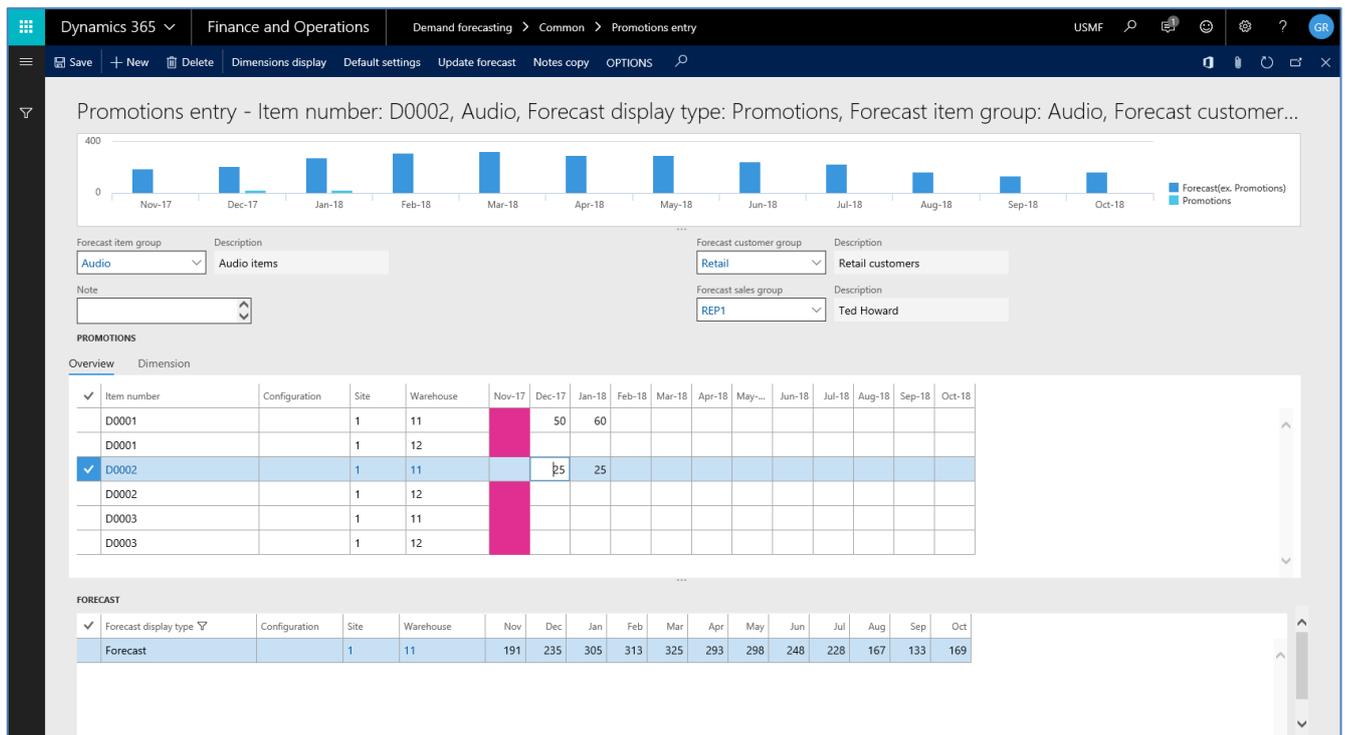
### Notes:

1. The number of years of demand history displayed in the graph and lower grid will be determined by the current company's setting.
2. The names of the products will be determined by the current company's setting except where the products has not been released into that company in which case the name will be based on the product or product master.
3. The forecasting unit (sales or inventory) for the product will be determined by the user's current company setting.
4. The freeze time fence will be determined by the user's current company setting.



## Promotions

### Demand forecasting > Common > Promotions



There may be occasions where a forecast needs to be increased to allow for a promotion.

The Promotions screen enables the user to change the forecast for promotional activities. These changes will then be automatically included in the final forecast, but are held separately from both the automatically generated forecast figures and any manual adjustments made to the forecast.

The Promotions screen is made up of five parts

1. The action pane strip which has two buttons:

Dimensions display

Allows the user to choose which dimensions are displayed in the grid.

Default settings

Include name in grid

This enables the user to choose if the item name is displayed.

Include unit of measure in grid

This enables the user to choose if the item sales unit of measure is displayed.

Graph type

This enables the user to choose the graph type which will be displayed. The options are Column graph, Line graph and Line Smooth graph.

2. The graph which shows the forecast makeup, split between promotions and base forecast.
3. The selection area which enables the user to choose the Forecast Customer Group, Forecast Sales Group and Forecast Item Group for the forecasts affected.

There is a Note field which can be used to record a note against a period. This will be redisplayed on returning to this period in the future. If the same note needs to be applied to multiple periods, a right click menu option 'Copy notes' is available which will allow the message in the current period to be copied forward or backward across multiple periods.



## Demand Forecasting User Guide

4. The Promotions grid, which enables the user to change the promotions values.
5. The Forecast grid, which displayed the total forecast for the currently selected item.

The record will be saved and the graph updated either when the user presses the save button or by moving to another record in the promotions grid



## Adjusting Demand History

### Demand forecasting > Common > Demand history adjustments

The screenshot shows the Dynamics 365 interface for 'Demand history adjustments'. The title bar indicates 'Dynamics 365', 'Finance and Operations', and the current path 'Demand forecasting > Common > Demand history adjustments'. The main content area is titled 'Demand entry - Item number: D0001, Audio, Forecast display type: Demand, Forecast item group: Audio, Forecast customer group: Retail'. Below the title is a bar chart showing demand history from Nov-16 to Oct-17, with a legend for 'Base demand' (blue) and 'Adjustments' (light blue). The chart shows a significant spike in demand in Jan-17. Below the chart are several filter fields: 'Forecast item group' (Audio), 'Description' (Audio items), 'Forecast customer group' (Retail), 'Description' (Retail customers), 'Forecast sales group' (REP1), and 'Description' (Ted Howard). There is also a 'Note' field. Below the filters are two tables: 'DEMAND' and 'DEMAND HISTORY'. The 'DEMAND' table has columns for Item number, Product name, Configuration, Color, Size, Site, Warehouse, and months from Nov-16 to Oct-17. The 'DEMAND HISTORY' table has columns for Forecast display type, Product name, Configuration, Color, Size, Site, Warehouse, and months from Nov to Oct. The 'DEMAND' table shows data for items D0001, D0002, and D0003. The 'DEMAND HISTORY' table shows 'Base demand' and 'Adjustments' for item D0001.

There may be occasions where there is abnormal demand that needs to be corrected for the forecasting calculations e.g. where there has been a stock-out and demand in one or more periods is affected.

The demand history adjustments screen enables the user to change the demand history to remove such abnormal occurrences that would otherwise affect the calculation of future forecasts.

The adjustments screen is made up of five parts:

1. The action pane strip which has two buttons:

Dimensions display

Allows the user to choose which dimensions are displayed in the grid.

Default settings

Include name in grid

This enables the user to choose if the item name is displayed.

Include unit of measure in grid

This enables the user to choose if the item sales unit of measure is displayed.

Graph type

This enables the user to choose the graph type which will be displayed. The options are Column graph, Line graph and Line Smooth graph.

2. The graph which shows the demand history split between adjustments and base demand history.

3. The selection area which enables the user to choose the Forecast Customer Group, Forecast Sales Group and Forecast Item Group combination to be displayed.

There is a Note field which can be used to record a note against a period. This will be redisplayed on returning to this period in the future. If the same note is to be applied to multiple



## Demand Forecasting User Guide

periods, a right click menu option 'Copy notes' is available which will allow the message in the current period to be copied forward or backward across multiple periods.

4. The Demand grid, which displays the total demand history including adjustments and enables the user to change the demand history.
5. The Demand history grid, which displays the base demand history for each period generated from transactions and the adjustments made to the demand history in each period.

**Note:** Demand history is adjusted at the item dimension level at which it is generated, which could include storage dimensions other than site & warehouse. If so, the other dimensions are displayed on the Dimension tab in the Demand grid.

If new demand history is being entered for an item that has no existing demand history, and any storage dimensions other than site & warehouse are flagged as Coverage dimensions, they will be enabled on this tab and a value for each must be recorded against the demand history.



## ITEM SUPERSESSIONS

### Demand forecasting > Common forms > Item supersessions

This function enables users to set up rules for automatically copying all or some of the demand history from old items to new items so that forecasts can be calculated for the new items.

During the demand history generation run all item supersession records with 'From' dates prior to the run date and 'To' dates that fall within or after the periods for which demand history is being generated will be processed. Any such records which have a 'To' date prior to the current period will be marked as completed.

All demand history records generated by item supersessions are stored against the 'Adjustments' demand history model.

Item supersession records can be altered as follows:

#### 1) Records that have been marked as completed

If a supersessions record has been completed it can't be changed but it can be deleted. If deleted, the demand history for the new item will be deleted if it is ever regenerated for any period covered by the supersession.

If all demand history for the new item is to be deleted immediately, the 'Full demand history rebuild required' flag must be manually set for the item, in which case all demand will be deleted automatically the next time demand history is generated.

Where item supersession records have been created in a chain e.g. A -> B -> C so that the demand for A has been copied to B and the demand for B has been copied to C, deleting the item supersession record A -> B will mean that the demand for C will also change if demand history is regenerated over the period covered by the B -> C supersession record. The demand for B will have been reduced because the A -> B item supersession record has been removed.

#### 2) Records that have not been marked as completed

If a record has not been completed it can be changed and/or deleted as required.

If demand history is ever rebuilt for past periods, item supersession records will be processed after the standard demand history has been built so that the latest demand history is always used.

Supersession records can be limited to apply only to a specified Forecast Customer Group, Forecast Sales Group and/or selected item dimensions. Where any of these fields are not specified all demand history records for the fields are copied. The item dimensions can also be changed when the demand history is copied to the new item.

**Note:** The old item and new item must both have a Forecast Item Group and must have the same item dimensions active to be included in a supersession record.



## Tab: Overview

Old item number	New item number	From warehouse	To warehouse	Forecast customer group	Forecast sales group	From date	To date	Demand %	Forecast start date
D0001	D0003	12	13	Retail	REP1	1/1/2015	3/31/2017	100.00	3/1/2017
D0001	D0011	11				1/1/2017	1/31/2017	40.00	3/1/2017
D0001	D0011	11				1/1/2017	2/28/2017	30.00	3/1/2017
D0001	L0002					1/1/2013	2/28/2017	87.33	3/1/2017

### Old item number

The item number from which the demand history will be copied.

### New item number

The item number to which the demand history will be copied.

### Forecast customer group

If specified, only demand history records for this Forecast Customer Group will be copied.

### Forecast sales group

If specified, only demand history records for this Forecast Sales Group will be copied

### From date

The date from which the demand history is to be copied.

### To Date

The date to which the demand history is to be copied. May be blank, in which case demand history is copied indefinitely.

### Demand %

The percentage of the old item's demand history to be copied to the new item.

### Forecast start date

The date from which forecasts are to be generated for the new item.

**Note:** If multiple supersessions records are created for a new item, the system will check that they all have the same Forecast Start Date.



## Tab: General

The screenshot shows the Dynamics 365 interface for the 'Item supersessions' form. The breadcrumb trail is 'Demand forecasting > Common > Item supersessions'. The form has three tabs: 'OVERVIEW', 'GENERAL' (selected), and 'DIMENSIONS'. The 'GENERAL' tab contains the following fields:

IDENTIFICATION		DETAILS	
Old item number	D0001	From date	1/1/2015
New item number	D0003	To date	3/31/2017
Forecast customer group	Retail	Demand %	100.00
Forecast sales group	REP1	Forecast start date	3/1/2017

Below the fields, there is a 'STATUS' section with two toggle switches:

- Demand copy complete: No (checked)
- Active: Yes (checked)

### Field Group: Identification

See the field descriptions for the Overview tab.

### Field Group: Details

See the field descriptions for the Overview tab.

### Field Group: Status

#### Demand copy complete

The 'To' date for this record is prior to the current period so unless demand history is regenerated for a period covered by the record, it will no longer be used.

#### Active

If set, demand history has previously started to be copied using this record so will only be copied for periods covered by a demand history generation run, otherwise demand history will be copied for all periods from the 'From date' and this flag will be set.



## Tab: Dimensions

The screenshot shows the 'Item supersessions' form in Dynamics 365, specifically the 'DIMENSIONS' tab. The form is divided into two main sections: 'FROM INVENTORY DIMENSIONS' and 'TO INVENTORY DIMENSIONS'. Each section contains a list of dimension fields with corresponding input boxes. The 'FROM' section fields are: Configuration, Colour, Size, Style, Site (value: 1), and Warehouse (value: 12). The 'TO' section fields are: Configuration, Colour, Size, Style, Site (value: 1), and Warehouse (value: 13).

### Field Group: From inventory dimensions

#### Configuration

The configuration of the old item.

#### Colour

The colour of the old item.

#### Size

The size of the old item.

#### Style

The style of the old item.

#### Site

The site of the old item.

#### Warehouse

The warehouse of the old item.

### Field Group: To inventory dimensions

#### Configuration

The configuration of the new item.

#### Colour

The colour of the new item.

#### Size

The size of the new item.

#### Style

The style of the new item.



## Demand Forecasting User Guide

Site

The site of the new item.

Warehouse

The warehouse of the new item.





## COLLABORATIVE FORECASTING

Collaborative forecasting is an option that enables different users to manage forecasts for different customers within the same Forecast Customer Group. Each customer is assigned a Forecast Sales Group as well as a Forecast Customer Group and item forecasts are generated and maintained by both Forecast Customer Group and Forecast Sales Group.

Collaborative forecasting also enables forecasts to be exported to spreadsheets for offline updating of forecasts and subsequent re-importing. A different spreadsheet is generated for each Forecast Sales Group and all spreadsheets are uniquely named and numbered to identify them.

The spreadsheets are generated in a user-defined shared network folder for subsequent distribution to, or manual retrieval by, the individual users responsible for reviewing them.

After reviewing the forecast values in the spreadsheets and updating them as they wish, these users will then place the spreadsheets in another user-defined network folder from where they will be periodically retrieved and updated back into the forecasting database by a central administrator. All changes made to forecast values are automatically recorded as manual forecast adjustments within the forecasting database.

The system maintains tight audit control over the spreadsheets, recording the date & time they are exported and re-imported. Only the last exported spreadsheet can be re-imported at any time and all earlier versions of spreadsheets are automatically cancelled if they haven't been previously imported.

**Note:** The system doesn't provide any transmission mechanism for distributing spreadsheets to users and retrieving them back other than as described above.

## Export Offline Spreadsheets

[Demand forecasting](#) > [Periodic](#) > [Collaborative forecasting](#) > [Export Offline Spreadsheets](#)

Export offline spreadsheets

Parameters

Generate consolidated spreadsheets

No

This function is used to generate an Excel spreadsheet for each Forecast Sales Group set up within the module. As the spreadsheets are generated they must each be manually saved into a network folder for subsequent processing.

The form has a single parameter:

- Generate consolidated spreadsheets

This parameter controls whether the spreadsheets are to be generated with data consolidated across all companies or for the current company only.

Each spreadsheet is created in a format that reflects the information displayed on the Forecast Review form so that forecasts can be easily compared with demand history from previous years.



# Demand Forecasting User Guide

The number of year's history displayed in the spreadsheet is determined by the forecasting parameter 'Offline spreadsheets demand history years'.

Each spreadsheet is also automatically created with data filtering for ease of locating items and is protected so that only 'New forecasts' can be altered. Forecasts within the freeze time fence are also protected.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Forecast item group	Forecast customer group	Item number	Product name	Sales unit	Site	Warehouse	Config	Color	Size	Style	Data type	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18
2 Audio	Retail	D0001	MidRangeSpeaker	ea	1	12					Original Forecast	71	80	106	104	155	108	11
3 Audio	Retail	D0001	MidRangeSpeaker	ea	1	12					Demand History - 1	67	74	97	95	148	103	11
4 Audio	Retail	D0001	MidRangeSpeaker	ea	1	12					Demand History - 2	61	68	96	88	122	88	11
5 Audio	Retail	D0001	MidRangeSpeaker	ea	1	12					New Forecast	71	80	106	104	155	108	11
6 Audio	Retail	D0001	MidRangeSpeaker	ea	1	12					New Adjustment	0	0	0	0	0	0	11
7 Audio	Retail	D0002	Cabinet	ea	1	11					Original Forecast	191	235	305	313	325	293	21
8 Audio	Retail	D0002	Cabinet	ea	1	11					Demand History - 1	147	168	271	292	340	309	34
9 Audio	Retail	D0002	Cabinet	ea	1	11					Demand History - 2	167	177	214	285	317	216	21
10 Audio	Retail	D0002	Cabinet	ea	1	11					New Forecast	191	235	305	313	325	293	21
11 Audio	Retail	D0002	Cabinet	ea	1	11					New Adjustment	0	0	0	0	0	0	21
12 Audio	Retail	D0002	Cabinet	ea	1	12					Original Forecast	217	216	270	263	354	329	24
13 Audio	Retail	D0002	Cabinet	ea	1	12					Demand History - 1	217	173	261	217	340	339	21
14 Audio	Retail	D0002	Cabinet	ea	1	12					Demand History - 2	179	214	244	261	287	316	21
15 Audio	Retail	D0002	Cabinet	ea	1	12					New Forecast	217	216	270	263	354	329	24
16 Audio	Retail	D0002	Cabinet	ea	1	12					New Adjustment	0	0	0	0	0	0	24
17 Audio	Retail	D0003	StandardSpeaker	ea	1	11					Original Forecast	99	121	123	166	151	188	11
18 Audio	Retail	D0003	StandardSpeaker	ea	1	11					Demand History - 1	114	124	145	191	182	135	14
19 Audio	Retail	D0003	StandardSpeaker	ea	1	11					Demand History - 2	96	119	121	164	149	190	11
20 Audio	Retail	D0003	StandardSpeaker	ea	1	11					New Forecast	99	121	123	166	151	188	11
21 Audio	Retail	D0003	StandardSpeaker	ea	1	11					New Adjustment	0	0	0	0	0	0	11
22 Audio	Retail	D0003	StandardSpeaker	ea	1	12					Original Forecast	115	149	145	178	176	199	11
23 Audio	Retail	D0003	StandardSpeaker	ea	1	12					Demand History - 1	114	147	117	146	188	189	14
24 Audio	Retail	D0003	StandardSpeaker	ea	1	12					Demand History - 2	89	142	125	176	164	187	11
25 Audio	Retail	D0003	StandardSpeaker	ea	1	12					New Forecast	115	149	145	178	176	199	11
26 Audio	Retail	D0003	StandardSpeaker	ea	1	12					New Adjustment	0	0	0	0	0	0	11
27 Config	Retail	D0004	HighEndSpeaker	ea	1	13	Default				Original Forecast	30	32	35	40	43	42	4
28 Config	Retail	D0004	HighEndSpeaker	ea	1	13	Default				Demand History - 1	30	24	26	38	39	35	4
29 Config	Retail	D0004	HighEndSpeaker	ea	1	13	Default				Demand History - 2	34	29	34	25	36	36	3
30 Config	Retail	D0004	HighEndSpeaker	ea	1	13	Default				New Forecast	30	32	35	40	43	42	4
31 Config	Retail	D0004	HighEndSpeaker	ea	1	13	Default				New Adjustment	0	0	0	0	0	0	4
32 Config	Retail	D0004	HighEndSpeaker	ea	1	11	Default				Original Forecast	191	210	280	313	325	293	21
33 Config	Retail	D0004	HighEndSpeaker	ea	1	11	Default				Demand History - 1	147	168	271	292	340	309	34
34 Config	Retail	D0004	HighEndSpeaker	ea	1	11	Default				Demand History - 2	167	177	214	285	317	216	21
35 Config	Retail	D0004	HighEndSpeaker	ea	1	11	Default				New Forecast	191	210	280	313	325	293	21
36 Config	Retail	D0004	HighEndSpeaker	ea	1	11	Default				New Adjustment	0	0	0	0	0	0	21

After the user has finished reviewing a spreadsheet and adjusting forecasts, the spreadsheet must be saved into a specific network folder for re-importing the forecasts back into the system.

**Note:** If a spreadsheet is saved in filtered mode i.e. some data is hidden from view, all data in the spreadsheet will be imported including hidden data by the import function described below.



## Import Offline Spreadsheets

Demand forecasting > Periodic > Collaborative forecasting > Import Offline Spreadsheets

Import offline spreadsheets

Parameters

**IMPORT**

Select a file to upload.

USMF-000000029\_REP...

This function is used to import the spreadsheets back into the forecasting database after they have been reviewed by the users responsible for doing so.

The user must browse to manually select the folder into which the adjusted spreadsheets have been placed.



## Collaborative Forecasting Audit

Demand forecasting > Periodic > Collaborative forecasting > Collaborative forecasting audit

The screenshot displays the Dynamics 365 interface for the Collaborative Forecasting Audit. The breadcrumb navigation is: Demand forecasting > Periodic > Collaborative forecasting > Collaborative forecasting audit. The main area is titled 'Collaborative forecasting audit' and contains a table with two columns: 'Collaborative Id' and 'Forecast sales group'. The record with Collaborative Id 'USMF-000000034' and Forecast sales group 'REP1' is selected. To the right, a detailed view for this record is shown, including sections for IDENTIFICATION, IMPORTED, and EXPORTED.

Collaborative Id ↓	Forecast sales group
USMF-000000036	REP3
USMF-000000035	REP2
USMF-000000034	REP1
USMF-000000033	REP3
USMF-000000032	REP2
USMF-000000031	REP1
USMF-000000030	REP3
USMF-000000029	REP2
USMF-000000028	REP1
USMF-000000027	REP3
USMF-000000026	REP2
USMF-000000025	REP1
USMF-000000024	REP3
USMF-000000023	REP2
USMF-000000022	REP1
USMF-000000021	REP3
USMF-000000020	REP2
USMF-000000019	REP1
USMF-000000018	REP3
USMF-000000017	REP2

**IDENTIFICATION**

Collaborative Id: USMF-00000...

Forecast sales group: REP1

**IMPORTED**

File imported: Yes

Imported by user: Admin

Imported Date time: 3/5/2017 11:30:45 AM

**EXPORTED**

File exported: Yes

Exported by user: Admin

Exported Date time: 3/5/2017 11:27:12 AM

This function provides an audit trail of all spreadsheets generated by the system, showing for each spreadsheet:

- The date and time it was exported and the user who exported it.
- Whether or not it has been imported back into the system, or if it has been cancelled due to a later version of the same spreadsheet being exported.
- The date and time it was imported and the user who imported it.



## BUDGETING

### Copy Forecast to Budget

Demand forecasting > Periodic > Budgeting > Copy forecast to budget

### Copy forecast to budget

Run in the background

[Recurrence](#) [Alerts](#)

Batch processing  
Yes

Task description

Batch group

Private  
No

Critical Job  
No

Monitoring category

Start date: 3/15/2017 (12:56:10 pm) (GMT-08:00) Pacific Time (US & Canada)

This function copies the current main forecast to the Budget model specified in the forecasting parameters. All three models which make up the main forecast are combined into one model for budgeting.

The function will delete and recreate the next financial year budget for each item, item dimension, Forecast Customer Group and Forecast Sales Group. Budget quantities, unit prices and unit costs will be created for each forecasting period in the financial year based on the average of the unit prices and costs in each period from the original forecasts.



## Budget Entry

### Demand forecasting > Common > Budget entry

This function enables the user to manually change the budget values and quantities generated by the Copy Forecast to Budget function. Any changes made using this function do not affect the forecasts originally copied.

The budget is made up of three values - quantity, unit price and cost price for each item & period. All three figures can be changed for any period to provide a flexible means of creating a budget based on a set of forecast figures, but allowing for variations from these and for price & cost changes in the future.

The budget entry screen is made up of four parts:

1. The action pane strip which has two buttons:

- Dimensions display

- Allows the user to choose which dimensions are displayed in the grid.

- Default settings

- Include name in grid

- This enables the user to choose if the item name is displayed.

- Include unit of measure in grid

- This enables the user to choose if the item sales unit of measure is displayed.

2. The selection area which enables the user to choose the Forecast Customer Group, Forecast Sales Group and Forecast Item Group for which items are to be displayed.
3. The Budgeting grid, which enables the user to change the budget figures by period.
4. The Other Information grid, which displayed the Amount, Gross Margin and Gross Margin Percentage.



# Demand Forecasting User Guide

To alter the budget for an item, select the item and budget data type in the budget grid then select the period to be updated, enter a new value and save the record.

To update a budget figure for multiple periods, click on a cell in the grid row to be updated and press the 'Update budget' button. This will display the following form.

The screenshot shows the Dynamics 365 interface for 'Budget entry'. The main window displays a grid of budget data for various items. The 'Update budget' dialog box is open, showing the following parameters:

- Period: Apr-18
- Update budget: Update budget by this %
- Forward or backward: Forward
- Value: 5
- Number of forecasting periods: 9

Item number	Budget display type	Unit	Site	Warehouse	Jan-18	Feb-18	Mar-18	Apr-18
D0001	Sales quantity	ea	1	11	127.00	105.00	140.00	70.00
D0001	Sales price	ea	1	11	525.00	525.00	525.00	525.00
D0001	Cost price	ea	1	11	302.71	302.71	302.71	302.71
D0001	Sales quantity	ea	1	12	107.00	51.00	80.00	102.00
D0001	Sales price	ea	1	12	525.00	525.00	525.00	525.00
D0001	Cost price	ea	1	12	302.71	302.71	302.71	302.71
D0001	Sales quantity	ea	1	13	26.00	26.00	26.00	26.00
D0001	Sales price	ea	1	13	480.00	480.00	480.00	480.00
D0001	Cost price	ea	1	13	302.71	302.71	302.71	302.71
D0003	Sales quantity	ea	1	13	60.00	22.00	40.00	40.00
D0003	Sales price	ea	1	13	250.00	250.00	250.00	250.00

Forecast display type	Budget display type	Unit	Site	Warehouse	Jan	Feb	Mar	Apr
Budgeting	Amount	ea	1	11	66,675.00	55,125.00	73,500.00	36,750.00
Budgeting	Gross margin	ea	1	11	28,231.44	23,340.95	31,121.27	15,560.64
Budgeting	Gross margin %	ea	1	11	42.34	42.34	42.34	42.34

This will allow you to select:

**Period**

The first period in the row to be updated.

**Direction**

The direction across the grid row to apply the adjustment (forwards or backwards)

**Number of forecasting quantity periods**

The number of periods to be changed; this is in addition to the currently selected period.

**Update budget**

The type of adjustment to be applied

**Value**

The value for the change based on the type selected above

- If you have selected "Update budget by this %" the current field value will be multiplied by the % entered
- If you have selected "Update budget to this value" the current field value will be replaced by the value entered

Press OK to process the update.



## Refresh Budget Maintenance Table

Demand forecasting > Periodic > Update > Refresh budget maintenance table

Forecast maintenance table type budget build ?

---

Run in the background ^

[Recurrence](#) [Alerts](#)

Batch processing  
No

Task description

Batch group

Private  
No

Critical Job  
No

Monitoring category

Start date: 3/15/2017 (01:05:52 pm) (GMT-08:00) Pacific Time (US & Canada)

This function will populate the Budget Maintenance table used by the Budget Entry form.

**Note:** This function should not need to be run under normal circumstances.



## FORECAST ACCURACY TRACKING

Demand forecasting > Periodic > Update > Forecast accuracy tracking

### Update forecast accuracy tracking

Parameters

Forecast item group

Periods back

Run in the background

Recurrence Alerts

Batch processing  
No

Task description

Batch group

Private  
No

Critical Job  
No

Monitoring category

Start date: 3/15/2017 (01:07:56 pm) (GMT-08:00) Pacific Time (US & Canada)

This function compares forecasts with demand history over a user-selectable number of previous periods and calculates two forecast accuracy measurements for each set of forecasts:

- 1) Tracking Signal
- 2) Mean Average Percentage Error (MAPE)

### Tracking Signal Calculation

The Tracking Signal for each period is calculated as:

Tracking Signal = Sum of forecast errors/Mean Absolute Deviation (MAD).

Sum of forecast errors =  $\Sigma(\text{Demand History Qty} - \text{Forecast Qty})$  over N periods where N is the smaller of:

- The 'Number of tracking calculation periods' on the forecasting parameters
- The number of periods from the first period that has a non-zero forecast<sup>2</sup>.

MAD =  $\Sigma\text{ABS}(\text{Forecast Qty} - \text{Demand History Qty})/M$ , summed over M periods where ABS is the absolute value of the difference and M = 12 for monthly forecasting or 52 for weekly forecasting, or the number of periods starting from the first period with a non-zero forecast<sup>2</sup>, whichever is smaller.



# Demand Forecasting User Guide

## MAPE Calculation<sup>1</sup>

The MAPE for each period is calculated as:

$MAPE = 100 * \frac{\sum ABS(\text{Forecast Qty} - \text{Demand History Qty})}{\text{Total Demand History Qty}}$ , summed over M periods, where M = the value of the 'Number of distribution periods' parameter, or the number of periods starting from the first period with a non-zero forecast<sup>2</sup>, whichever is smaller.

### Notes:

1. This MAPE calculation is a variation on the standard MAPE calculation and is often referred to as the 'Modified MAPE' calculation. It is not as sensitive to periods of zero demand as the standard MAPE calculation.
2. Leading zero forecasts are ignored in the MAD & MAPE calculations. Any zero forecasts after the first period with a non-zero forecast are however included.



## OTHER FUNCTIONS

### Forecast Model Copy

#### Demand forecasting > Periodic > Update > Forecast model copy

This function enables a user to copy the records from any forecast model to another model over a date range and either append or replace the existing records with the same item, dimensions, forecast customer group, forecast sales group and date in the 2<sup>nd</sup> model.

**Note:** This function cannot be used to copy records to the Final forecast model, and a warning is issued if the 'To' model is any other model from the forecast parameters.

Forecast model copy

Parameters

From model: F\_main

To date: 12/31/2018

To model: F\_Jan18

Copy method: Append

From date: 1/01/2018

Copy new records only: Yes

Run in the background

#### From model

The forecast model from which the records will be copied.

#### To model

The forecast model to which the records will be copied. This cannot be the Final forecast model.

#### From date

The date from which the records will be copied.

#### To date

The date to which the records will be copied.

#### Copy method

Records can either be overwritten or new records can be added to existing records when copied.

#### Copy new records only

This option is only enabled if the 'Append' copy method is selected. It prevents records being copied twice when the function is run multiple times with overlapping date ranges. It enables the same date range to be used for multiple batch runs without any danger of data being duplicated in the destination model.

**Note:** If a forecast model with sub-models is copied, the data from each sub-model is copied and records with the same item, dimensions, forecast customer group, forecast sales group and date are merged into a single record in the destination model.



## Item Demand History Copy

Demand forecasting > Periodic > Update > Item demand history copy

This function enables a user to copy the demand history for a period of time from one item to another. This can include the item's configuration, colour, size and style. If these fields are not populated, the data for all combinations will be copied.

### Old item number

The item number from which the demand history will be copied.

### Configuration

The configuration of the old item.

### Colour

The colour of the old item.

### Size

The size of the old item.

### Style

The style of the old item.

### New item number

The item number to which the demand history will be copied.

### Configuration

The configuration of the item to which the demand history will be copied.

### Colour

The colour of the item to which the demand history will be copied.



## Demand Forecasting User Guide

### Size

The size of the item to which the demand history will be copied.

### Style

The style of the item to which the demand history will be copied.

### Start date

The start date for the demand history period to be copied.

### End date

The end date for the demand history period to be copied.

### Percentage change

The percentage change to be applied to the demand history (a percentage change of 0.00 means the demand is copied as is).

The primary purpose of this function is to provide new items with demand history based on the items they are superseding.

**Note:** The function merges the base demand history & the demand history adjustments of the old item and copies the resultant demand figures as demand history adjustments for the new item. These adjustments are not then overwritten if the 'Generate demand history' function is run for prior periods where the new item has no demand.



## Refresh Forecast Maintenance Table

Demand forecasting > Periodic > Update > Refresh forecast maintenance table

### Refresh forecast maintenance table

Parameters

Forecast item group  
Audio

Run in the background

Recurrence Alerts

Batch processing  
No

Task description  
Refresh forecast maintenance tabl

Batch group

Private  
No

Critical Job  
No

Monitoring category

Start date: 3/15/2017 (01:07:00 pm) (GMT-08:00) Pacific Time (US & Canada)

This function will refresh the Forecast Maintenance table which is used by all the forecast entry and display forms. It may be run for one or multiple Forecast Item Groups.

**Note:** This function will need to be run whenever:

- 1) Data is imported directly into the ForecastTableFSL and ForecastLineFSL tables without regenerating the base forecasts.
- 2) The display options in the forecast parameters are changed.

In such cases information will not be displayed correctly by the Forecast Review form and other forecast display forms until this function is run.



## Demand History and Forecast Clean Up

Demand forecasting > Periodic > Clean up > Demand history and forecast clean up

### Demand history and forecast clean up

Parameters

**CLEAN UP**

Demand history and adjustments	Yes	<input checked="" type="checkbox"/>	Base, manual and promotional forecast
No	No	<input type="checkbox"/>	Final forecast
	Yes	<input checked="" type="checkbox"/>	

Run in the background

The purpose of this function is to delete demand history and forecast records from the system for items which are no longer being forecast.

Options are provided to delete demand history records, 'Main' forecast records and/or 'Final' forecast records. This provides flexibility over which types of records are to be deleted.

To remove records for an item, simply remove the Forecast Item Group from the item using the Released Products form. When this function is next run the selected types of records for the item will be removed.

**Note:** Once an item has its Forecast Item Group removed, no future forecasts will be generated again for the item but all existing forecast records in the future will remain and can only be deleted using this function.

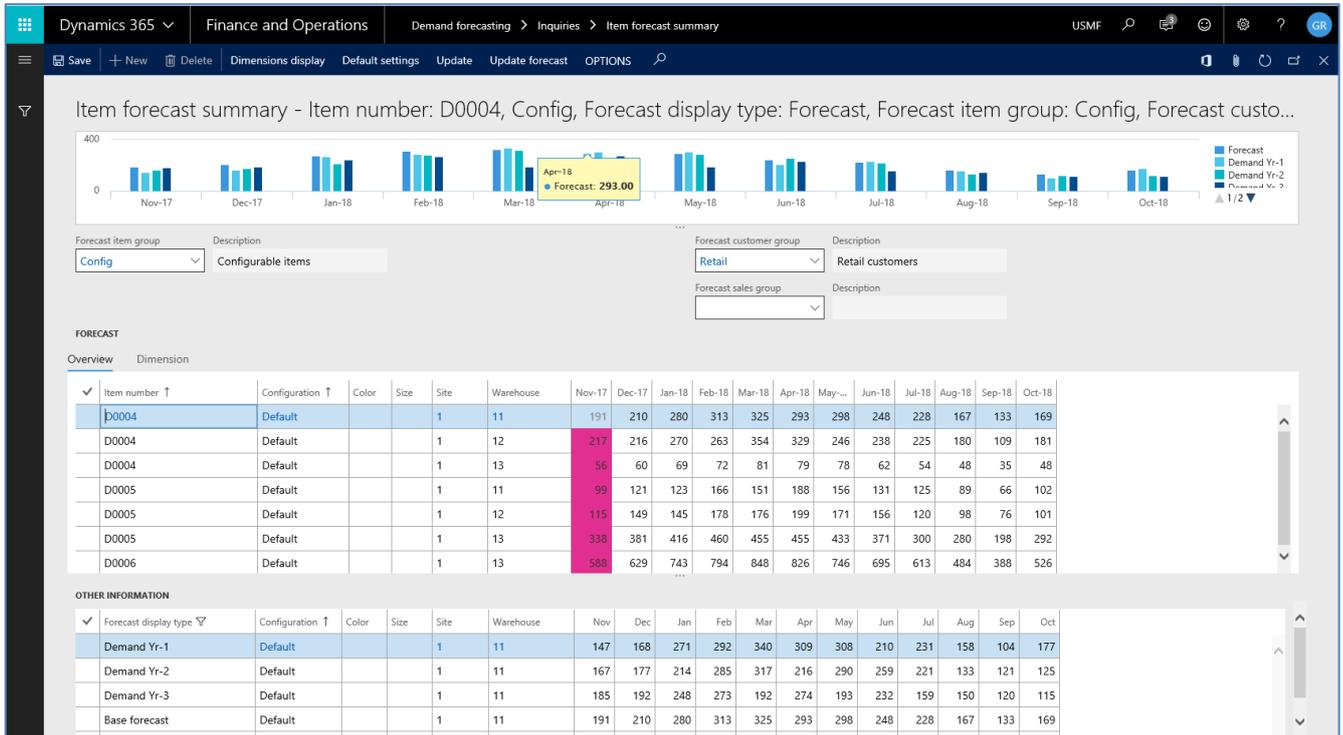




## INQUIRIES

### Item Forecast Summary

Demand forecasting > Inquiries > Item forecast summary



This function enables the user to view forecasts and demand history for a product summarized over all Forecast Customer Groups and/or Forecast Sales Groups e.g. the production planner wants to check the total forecast by period for a product to confirm the production requirements.

This summarized view will also apply to whichever inventory dimensions are selected. This allows for the checking of the total forecast for a product across all warehouses for example.

Forecasts and demand history can be summarized by simply removing the Forecast Customer Group and/or the Forecast Sales Group filters.

Inventory dimensions can be summarized by simply removing them using the dimensions display button.

This screen is view only. If a forecast needs to be adjusted the user has the option of pressing the Update button and being taken to the normal item forecast entry screen with all the records which made up the summary displayed and available for update.

The Item Forecast Summary screen is made up of five parts:

1. The Action Pane strip which has three buttons:

Dimensions display

Allows the user to choose which dimensions are displayed in the grid.

Default settings

Include name in grid

This enables the user to choose if the item name is displayed.

Include unit of measure in grid

This enables the user to choose if the item sales unit of measure is displayed.



# Demand Forecasting User Guide

## Graph type

This enables the user to choose the graph type which will be displayed. The options are Column graph, Line graph and Line Smooth graph.

## Update

Allows the user to switch to the Item Forecast Entry screen for the currently selected record and update the forecast.

2. The graph which shows the forecasts versus demand history totalled.
3. The selection area which enables the user to choose the Forecast Customer Group, Forecast Sales Group and Forecast Item Group combination to be displayed.
4. The Forecast grid, which enables the user to view forecasts.
5. The Other Information grid, which displays the last n years demand history selected in the setup parameters, and the makeup of the forecasts for the currently selected item.



## REPORTS

### Forecast Accuracy

Demand forecasting > Reports > Forecast accuracy

### Forecast accuracy

Parameters

Start date	Forecast model B
<input type="text" value="1/1/2016"/>	<input type="text" value="F_Base"/>
End date	Group by customer group
<input type="text" value="12/31/2016"/>	Yes <input checked="" type="checkbox"/>
Error pct.	Group by sales group
<input type="text" value="10.00"/>	Yes <input checked="" type="checkbox"/>
Forecast model A	Group by item group
<input type="text" value="F_Main"/>	Yes <input checked="" type="checkbox"/>

Destination

[Change](#)

Screen

Records to include

Run in the background

This report can be run to identify how much the different forecasts or forecast components differ from actual demand values over a range of periods.

The report enables forecasts from one or two forecast models to be compared with the demand history over a selected time period. The user also has the option of setting a percentage error value to filter the report to display only forecasts that vary from demand history by the specified percentage.

This report permits the user to select the

- 1) The date range for analysing forecasts
- 2) The minimum absolute forecast error percentage included in the report
- 3) The forecast models to be compared
- 4) The level of totals required

Standard Dynamics 365 selections can also be added to reduce the volume of information reported.



# Demand Forecasting User Guide

When the report is run it will compare the quantities of the selected models versus the actual quantity over the date range and provide a total percentage error as shown in the example below.

**Note:** The actual quantities include both the base demand history and demand history adjustments.

Forecast accuracy

Go to | Find | Zoom | Export

**Forecast accuracy** Page 1 of 2  
15/03/2017  
12:00 PM

Contoso Entertainment System USA

Forecast customer group		Forecast item group		Difference %	F_Main quantity	Actual demand quantity	F_Base quantity	Difference %
Retail		Audio						
Forecast sales group		Forecast item group						
REP1		CarAudio						
Item number	Product name	Difference %	F_Main quantity	Actual demand quantity	F_Base quantity	Difference %		
D0003	StandardSpeaker	100.00	0.00	557.00	0.00	100.00		
D0007	Speaker Pro Kit	39.43	2,396.00	3,956.00	2,396.00	39.43		
D0011	Laser Projector	100.00	0.00	1,664.00	0.00	100.00		
L0002	Midrange Speaker Lean	100.00	0.00	1,056.62	0.00	100.00		
Forecast sales group		Forecast item group						
REP2		CarAudio						
Item number	Product name	Difference %	F_Main quantity	Actual demand quantity	F_Base quantity	Difference %		
4401	Proseware 50W Car Radio	100.00	0.00	1,190.00	0.00	100.00		
Forecast sales group		Forecast item group						
REP3		Audio						
Item number	Product name	Difference %	F_Main quantity	Actual demand quantity	F_Base quantity	Difference %		
D0011	Laser Projector	100.00	0.00	925.00	0.00	100.00		
L0002	Midrange Speaker Lean	100.00	0.00	505.20	0.00	100.00		
Forecast sales group		Forecast item group						
REP3		Config						
Item number	Product name	Difference %	F_Main quantity	Actual demand quantity	F_Base quantity	Difference %		
D0005	Car Audio System	83.23	184.00	1,097.00	184.00	83.23		
Forecast sales group		Forecast item group						
REP3		Television						
Item number	Product name	Difference %	F_Main quantity	Actual demand quantity	F_Base quantity	Difference %		
T0001	SpeakerCable	32.38	3,306.00	4,869.00	3,306.00	32.38		
T0002	ProjectorTelevision	31.63	2,071.00	3,029.00	2,071.00	31.63		
T0003	SurroundSoundReceive	31.37	1,927.00	2,808.00	1,927.00	31.37		



## DEMAND FORECASTING VERSION INFORMATION

### Demand forecasting > Setup > Parameters

The Info button on the Action Pane Strip displays the Demand Forecasting release number, the version of the Demand Forecasting assembly that is installed, the current active number of Dynamics 365 Full users, the number of Dynamics 365 Full users for which the module is licensed and the expiry date of the Demand Forecasting license.

The screenshot shows the Dynamics 365 interface with the 'Forecast parameters' page open. An information dialog box is displayed in the center, containing the following text:

**i** FSL Demand forecasting for AX7 version 7.1.0.0  
Solution assembly  
information:AXDemandForecastingFSL version:  
6.2.2.0 with ForecastPro version: 6.0.0.15 ©  
Farsight Solutions Limited 2017 . All rights  
reserved. © Portions copyright Business Forecast  
Systems, Inc. Number of Full users: 64 Number of  
licensed Demand Forecasting users: 100 License  
key hash: 656887154 Demand Forecasting license  
expiry date: None

A 'Close' button is located at the bottom right of the dialog box. Below the dialog box, the 'Forecast parameters' page is visible, showing options for 'Use period keys' (Yes), 'Period key' (10), and 'Number of forecasting periods to split' (3).

If the number of Dynamics 365 Full users is greater than the number of licensed Demand Forecasting users some Demand Forecasting functions will no longer operate.



## APPENDIX A: ADDITIONAL FUNCTIONAL INFORMATION

### Demand Forecasting Formulas

The following formulas are currently supported.

#### Demand history + / - percentage

Each period's forecast is set equal to the demand history for the same period last year plus or minus a percentage change entered in the percentage change to demand history field.

#### N periods moving average (simple average)

Each period's forecast is the average of the last N periods of actual history i.e. the forecast for each period will be identical.

#### N periods moving average with trend (simple average with trend)

This is very similar to the previous model except that after calculating the n period average the trend over the last year is applied incrementally.

The trend is the difference between the average of the last 6 months of history and the average of the previous 6 months of history is deemed to be the trend for 6 months, and this divided by half the periods in the year to give the trend for one period.

#### Average of same periods last 2 years (seasonal, no trend)

Each period's forecast is equal to the average of the same periods from the last 2 years.

#### Average of same periods last 2 years with trend (seasonal with trend)

This is similar to the previous model except that after calculating the average of the same period from the last 2 years, the trend based on the increase or decrease in demand over the last 2 years is applied incrementally.

### Expert selection

The Expert selection option will determine the best formula to be used by the Forecast Pro forecasting engine for each item's demand history pattern. It will select the formula from the following list of industry-standard forecasting models:

- Simple Moving Averages
- Discrete Data Models
- Croston's Intermittent Demand Model
- 9 Exponential Smoothing Models
- Univariate Box-Jenkins Model
- Event Models
- 4 Curve Fitting Models
- Dynamic Multiple Regression

A brief explanation of why a particular formula was selected is displayed by the Forecast Review function for each set of forecasts generated by the Expert selection option.



## Changing Customer & Item Forecast Groups

### Changing a Customer's Forecast Customer Group

If a Forecast Customer Group is ever added or changed for a customer:

- All demand history must be rebuilt and forecasts regenerated
- Any manual adjustments made to demand history, forecast and promotions must be reviewed.

**Note:** Data held against forecast models other than those currently in use may become obsolete.

### Changing a Customer's Forecast Sales Group

If a Forecast Sales Group is ever added or changed for a customer:

- All demand history must be rebuilt and forecasts regenerated
- Any manual adjustments made to demand history, forecast and promotions must be reviewed.

**Notes:**

- 1) This field is only available if the Collaborative Forecasting is active.
- 2) Data held against forecast models other than those currently in use may become obsolete.

### Changing an Item's Forecast Item Group

Changing the Forecast Item Group for an item will cause all demand history and forecast records in the forecast tables to be automatically updated with the new Forecast Item Group.

**Note:**

Changing an item's Forecast Item Group has no effect on its forecast allocations.

## Changing Forecasting Mode

This section details the steps that are required to change from monthly to weekly forecast periods or back.

The number of periods of demand to rebuild will be determined by the volume of demand history within the system. All demand history must be rebuilt to reset the dates to the new period structure. New forecasts must then be calculated using the new period structure.

- Step 1.** Delete all periods from the periods form
- Step 2.** Change the Forecast Mode and Start Month in the forecast parameters
- Step 3.** Delete all records from the ForecastTableFSL & ForecastLineFSL tables. All data in all models selected in the forecasting parameters must be cleared.
- Step 4.** Recreate the periods based on the new parameters
- Step 5.** Generate demand history for all periods
- Step 6.** Generate allocations
- Step 7.** Generate base forecasts



## Activating Collaborative Forecasting

This section details the steps that are required to activate collaborative forecasting where it was not activated during the initial system configuration.

- Step 1.** Activate collaborative forecasting in the forecast parameters
- Step 2.** Add a Forecast Sales Group to each customer that has sales demand (otherwise demand history will not be rebuilt)
- Step 3.** Delete all records from the ForecastTableFSL & ForecastLinesFSL tables. All data in all models selected in the forecasting parameters must be cleared.
- Step 4.** Generate demand history for all periods
- Step 5.** Generate allocations
- Step 6.** Generate base forecasts

## Changing Demand Sources

The following section details the steps that are required to change the source of demand from that specified during the initial system configuration.

The number of periods of demand to rebuild will be determined by the volume of demand history within the system. All existing demand history must be rebuilt.

- Step 1.** Change the demand history setup parameter settings shown on page 24.
- Step 2.** Change the settings for individual Forecast Item Groups and/or items as required to include production and/or projects demand
- Step 3.** Delete all records from the ForecastTableFSL & ForecastLinesFSL tables. All data in all models selected in the forecasting parameters must be cleared.
- Step 4.** Generate demand history for all periods
- Step 5.** Generate allocations
- Step 6.** Generate base forecasts

## Changing Unit of Measure

The following section details the steps that are required to change Unit of Measure from that specified during the initial system configuration.

The number of periods of demand to rebuild will be determined by the volume of demand history within the system. All existing demand history must be rebuilt.

- Step 1.** Change the Unit of Measure parameter setting
- Step 2.** Delete all records from the ForecastTableFSL & ForecastLinesFSL tables. All data in all models selected in the forecasting parameters must be cleared.
- Step 3.** Generate demand history for all periods
- Step 4.** Generate allocation keys
- Step 5.** Generate the base forecast



## New & Obsolete Items

### New Items

When a new item is added it has no demand history so forecasts cannot be generated automatically.

This can be overcome in three ways:

1. Use Item Supersessions to automatically create demand history for the new item from an existing item whenever Generate Demand History is run.
2. Use the Item Demand History Copy function to copy the demand history of another item to the new item
3. Use the Forecast Review function to manually enter forecasts for the new item until enough demand history exists for the automatic calculation to be used.

### Obsolete Items

Obsolete or end of life items will continue to have forecasts generated until the demand history becomes too old for an item's forecasting formula to generate values. To stop forecasts being generated for an obsolete item either set the forecasting formula for the item to 'Skip' or set the Forecast Item Group for the item to blank.



## Batch Journal Setup

The following section details the setup of a batch job for the running of the forecasting process.

The forecasting process can be run in batch mode using the batch journal functionality provided in standard D365

**Step 1.** Create a batch journal

**Basic > Inquiries > Batch job**

Create a new record in the batch job table adding a Job description.

**Step 2.** Step 2 – Add the tasks to the batch journal

Press the “View tasks” button.

Add the following tasks to the batch job

**Generate demand history (ForecastDemandHistoryCreateASL)**

Parameters: Periods of history to rebuild: 1

**Generate forecast allocations (ForecastAllocationKeysCreateASL)**

Parameters: None

**Generate base forecast (ForecastBaseCreateASL)**

Parameters:	Forecast from date:	Leave blank
	Forecast item group:	Leave blank for all groups, otherwise select the groups required

Add conditions to each task so that it is dependent on the previous task.

Close the task form.

**Step 3.** Step 3 – Add recurrence

Press the “Recurrence” button.

Set the recurrence to be the first morning of each period.

**Step 4.** Step 4 – Add alerts

Press the “Alerts” button.

Set the alerts if they are required.

**Note:** This does not include the Copy to Final Forecast function as this would normally be run separately after the forecasts are reviewed.