

# Master planning in Dynamics AX

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# Agenda

- Short Intro
- Master planning basics
- Master plan settings
- Time fences
- Coverage groups
- Misc.
- Forecasting
- Questions?

# Introduction

- Who am I?
- Which version are you on?
  - Pre- AX 4.0?
  - AX 4.0
  - AX 2009
  - AX 2012
    - R2
    - R3
- Who uses master planning in Dynamics AX
- Who trusts master planning results
- Who knows how to troubleshoot master planning behavior

# What is Master Planning?

- A grouping of business processes that includes the following activities: demand management, which includes the forecasting of sales, the planning of distribution, and the servicing of customer orders; sales and operations planning, which includes sales planning, production planning, inventory planning, backlog planning, and resource planning; master scheduling, which includes the preparation of the master production schedule and the rough-cut capacity plan.
  - APICS Dictionary

# Master planning basics



# Net requirements

Results of master planning / scheduling requirements

Show amount supply, demand, and planned supply

Form shows relationship between demand and supply (pegging)

Plan: DynPlan

Overview Setup Total

Warehouse	Site	CW minimum	Minimum	CW maximum	Maximum	Coverage group	Planned order type
13	1		0.00		0.00	Group	Production
24	2		0.00		0.00	Group	Purchase order

Overview General Action Futures Period

Update Inquiries Sorting

Reference	Reference	Number	Item number	Requirement date	Expiration date	CW req. qty	Req. quantity	Accumulated
	On-hand		D0001				11.00	11.00
	Sales order	000702	D0001	12/14/2012			-5.00	6.00
	Sales order	000721	D0001	12/14/2012			-5.00	1.00
	Sales order	000699	D0001	12/21/2012			-21.00	-20.00
	Sales order	000704	D0001	12/21/2012			-12.00	-32.00
	Sales order	000698	D0001	12/27/2012			-20.00	-52.00
	Sales order	000697	D0001	12/28/2012			-184.00	-236.00

Pegging

Reference	Reference	Number	Item number	Requirement date	Req. quantity	Settled quantity	Qty. change
	Planned production orders	019411	D0001	11/25/2015	799.00	12.00	

# One plan vs Two plans

## One plan

Same plan between static and dynamic

Ad-hoc updating of net requirements or explosions affect the main plan

Static plan changes throughout the day as users update net requirements

## Two plans

Different plans for static and dynamic

Ad-hoc updating of net requirements or explosions affect only the dynamic plan

Static plan remains static until nightly regeneration of plan creates new orders

# Master plan setup

## General

Inclusion of specific inventory transactions  
Consider shelf life  
Planned production scheduling parameters  
Sales forecast settings

## Time fences

Same time fences as coverage groups  
Used to override coverage groups

## Futures messages

Used to specify if requirement date should automatically update to calculated futures date

## Action messages

Used to specify if requirement date on planned order should be automatically updated to action date

## Safety margin

Receipt margin  
Issue margin  
Reorder margin

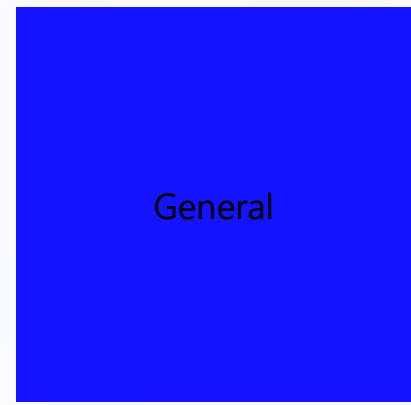


File

# Master planning parameters

## Set up Master scheduling options

- Planned orders
- Standard update
- Number sequences



Dynamic and static plan  
 Default coverage group  
 Dynamic negative days  
 Calendar



Find trade agreements  
 Planned receipt time



Defaults for firming  
 Find purchase agreements

### Plans

Current forecast plan:

Current static master plan:

Current dyn

Automatic

### Coverage

General cov

Futures tim

Use dynamic negative days:

### Safety margin

Find trade agreements  
 Planned receipt time

Working days:

### Update

Today's date calendar:

### Performance

Use of cache:

Number of tasks in hel

# Time fences

Firming

Freeze

Futures

Action

Capacity

Explosion

Coverage

Time



# Time fences, cont.

Based on requested ship date

Capacity and explosion time fences have most significant impact on performance

Past capacity time fence, inventory lead times are used to calculate order date

Recommendation for coverage time fence on purchased items: no longer than twice the longest lead time

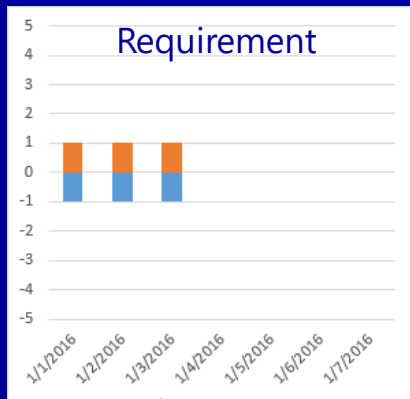
# Coverage groups

Used to plan similar items similar ways

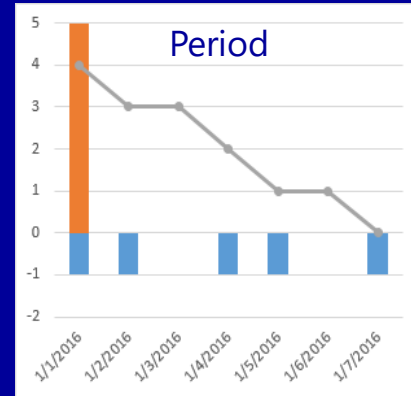
Determine time fences and planned order behavior

Negative days and positive days

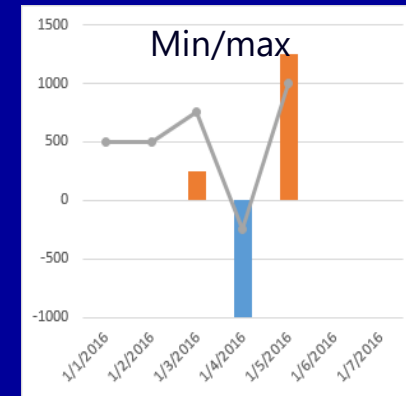
# Coverage codes



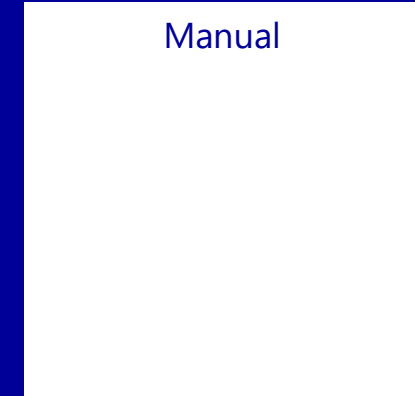
Each uncovered demand drives a planned supply  
Can use order multiples to optimize



Coverage period of 6 days  
Demand is satisfied on the first requirement date and looks out entire coverage period



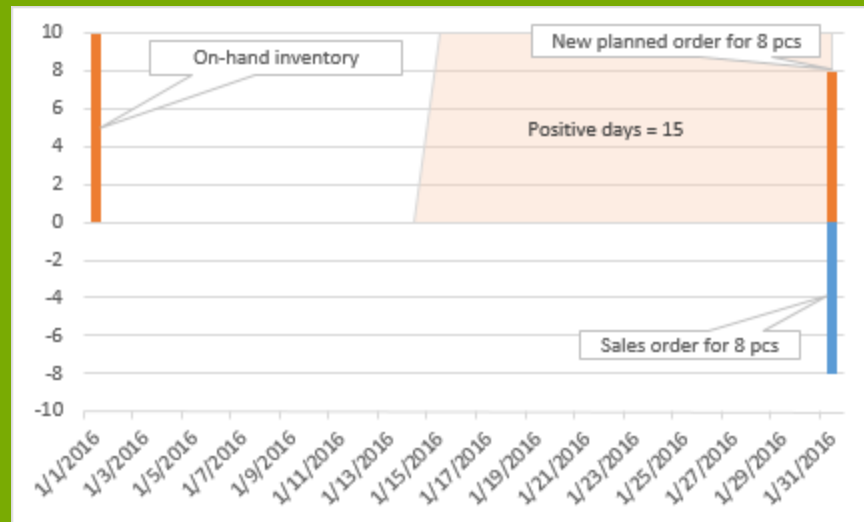
Min of 250, max of 1000  
Once accumulated value falls below min, an order big enough to bring accumulated up to the max is generated



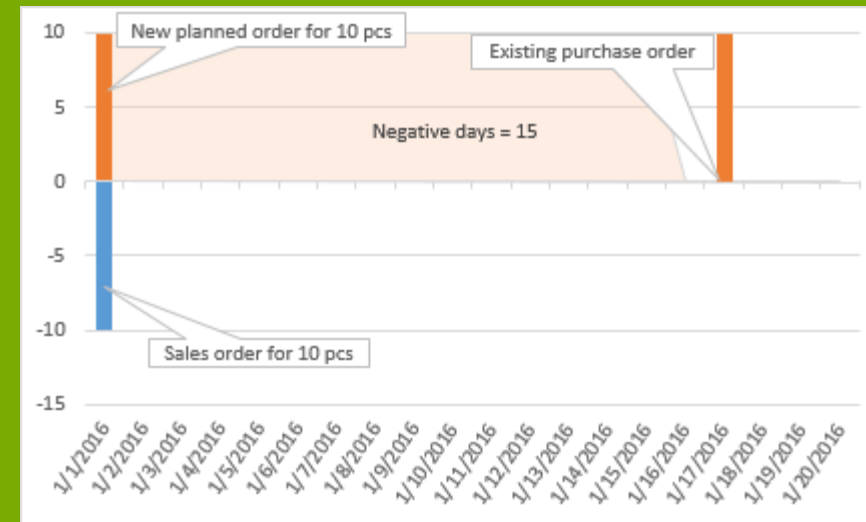
Net requirements are not calculated for these items

# Positive and negative days

## Positive days



## Negative days

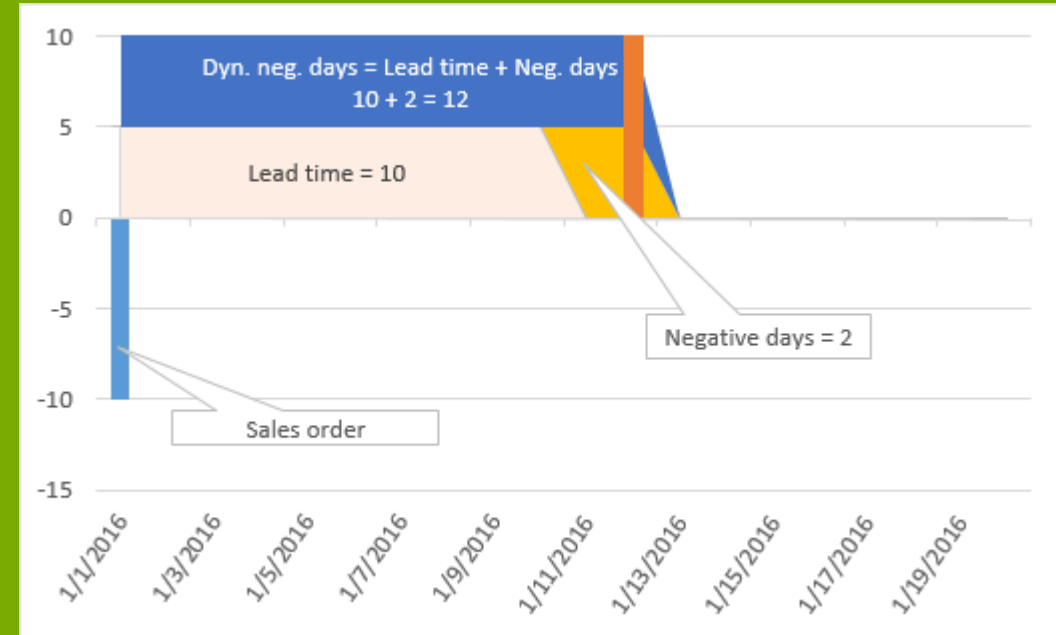


# Dynamic negative days

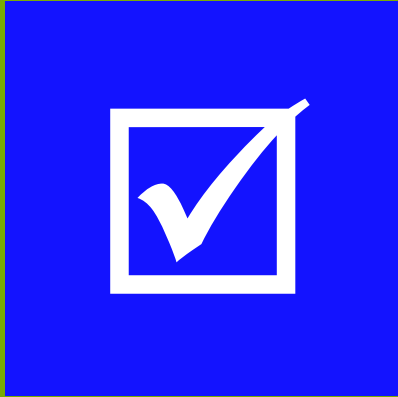
Available in versions 2009 and after

Reduce need for coverage groups for different lead times

$\text{Dyn. neg. days} = \text{Lead time} + \text{neg. days}$



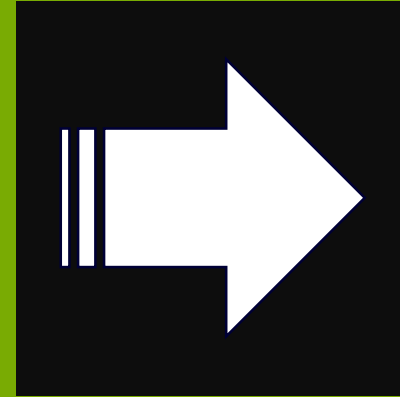
# Approved planned orders



Used to indicate orders that have been reviewed and should be acted on



Are not deleted by "Delete plan" or "Regenerate"



Intermediate step between planned order and firmed order



# Fulfill minimum

Changes requirement date of safety stock

Can negatively impact sales order explosions and futures dates

By default, set to "Today's date"

The screenshot shows the SAP Item Coverage configuration window for Site 1, Warehouse 11, Item number 1000. The 'Min./Max.' tab is selected. The 'Fulfill minimum' dropdown menu is highlighted with a red box and is set to 'Today's date'. Other visible settings include 'Planned order type' as 'Purchase order', 'Main warehouse' as a dropdown, 'Coverage group' as 'Manual', 'Coverage code' as 'Manual', 'Coverage period' as '1', 'Coverage time fence' as '100', 'Negative days' as '2', 'Positive days' as '100', 'Firming time fence' as '0', 'Freeze time fence' as '0', and 'Explosion time fence' as '100'. The 'Min./Max.' section shows 'Minimum' as '10.00' and 'Maximum' as '0.00'. The 'Formula priority' section shows 'Default priority' and 'Current priority' both set to '99'.

For a detailed example, check out this blog post:  
<http://dynamicconsulting.com/frontpage/i-have-on-hand-inventory-let-me-use-it>

# Forecasting

## Intermediate forecast

- Forecasts can be reduced at intermediate levels
- Use "All transactions" reduction key on coverage group

**Forecast plan**

Forecast plan time fence:

Reduction key:

Reduce forecast by:

Include intercompany orders:

Include customer forecast in the demand forecast:

## Dynamic reduction principle

- "Transactions – dynamic period"
- Creates dynamic periods based on forecast date
- Controlled on master plan parameters

**Forecast**

Inventory forecast model:

Include supply forecast:

Include demand forecast:

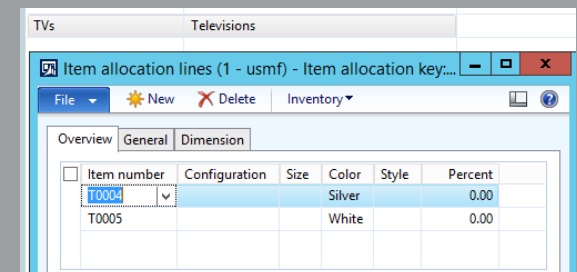
Reduction principle:

**On-hand inventory**

Consume on-hand inventory:

## Item allocation keys

- Used to forecast at a "product family" level
- Important with new R3 forecasting functionality
- Interesting for reporting / viewing stats on "Supply schedule" form



Item number	Configuration	Size	Color	Style	Percent
T0004			Silver		0.00
T0005			White		0.00

# Questions?

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# Questions

## Lead times

- Where should lead times go? Trade agreements, item coverage, default order settings?
- What's the "disregard lead time" check box for?

## Calendars

- Which calendars control how master planning works?
- What about closed days or working days?

## Safety stock journal

- What are safety stock journals for?
- How are calculations performed?

# Links

Dynamic negative days – Roxana Diaconu (Program manager – Microsoft)

<http://blogs.msdn.com/b/axmfg/archive/2015/02/19/more-about-dynamic-negative-days.aspx>

Using multiple plans / recommended time fences – Conrad Volkmann (Program manager – Microsoft)

<http://blogs.msdn.com/b/axmfg/archive/2012/10/12/separating-tactical-and-operative-planning-for-master-scheduling.aspx>

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