

Inventory planning module

Documentation

V3.0

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# Introduction

This document describes the inventory planning module of frePPLe. This module allows the calculation of the optimized reorder quantities and safety stocks for all buffers.

This is an important aspect of your planning process, as safety stocks are required to:

* Safety stocks are required to meet the expected service level of your customers.  
  When customer delivery times are shorter than the production or purchasing lead times, inventories are required to cover the expected demand over the lead time and its variability.
* Safety stocks covers for variability on the supply side.  
  Supplier purchasing lead times and manufacturing times have a level of variability that needs to be planned for to support a smooth progress of all activities.

This module computes these safety stock and reorder quantities, which are then used by the planning algorithm to generate matching replenishment plans.

# User guide

Three screens can be used in the

* Distribution planning screen
* Inventory planning parameter report
* Execution screen

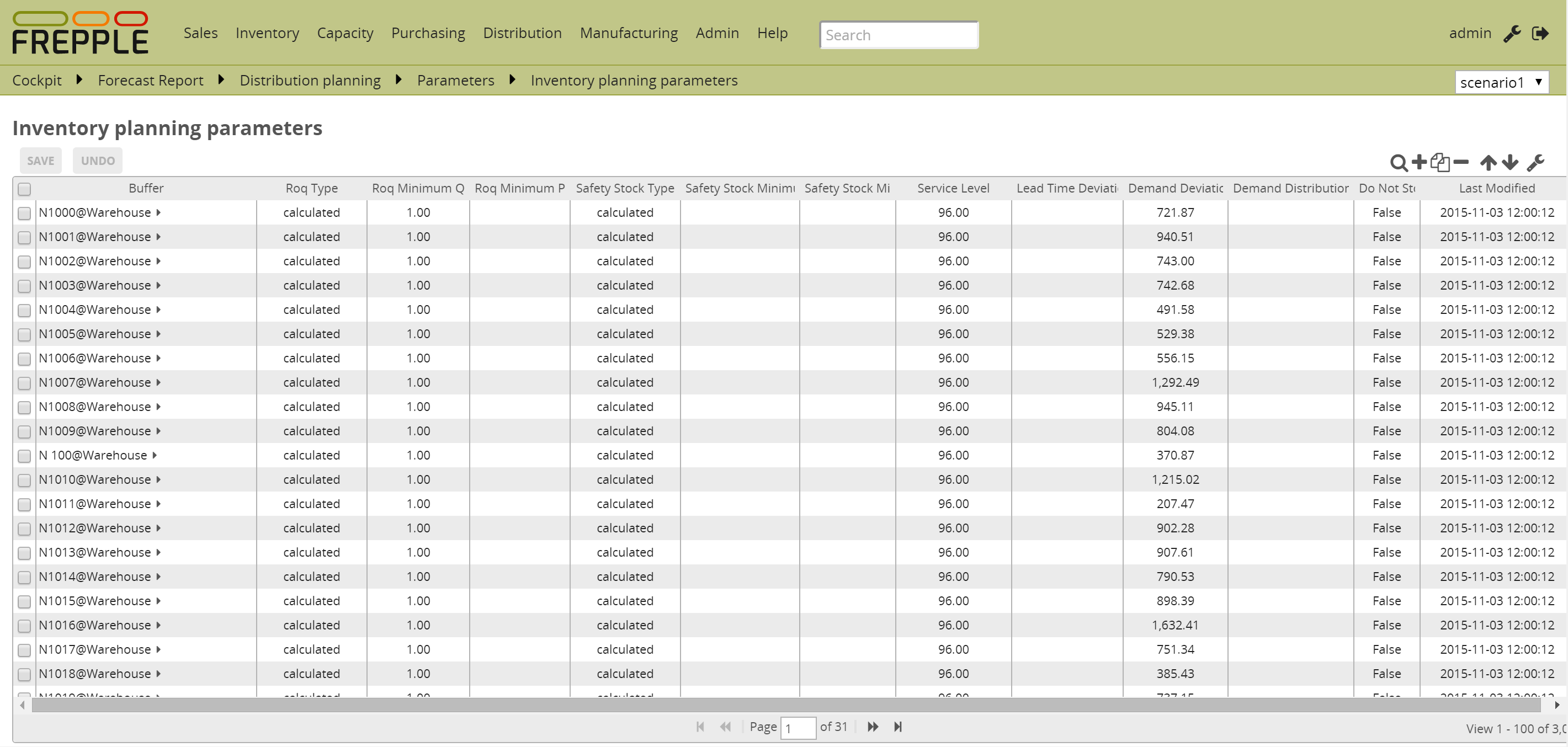
## Distribution planning screen

ddd

## Inventory planning parameter report

This report allows easy mass-maintenance of all inventory planning parameters.

You can directly edit the values in the data grid. Alternatively you can upload them as an excel spreadsheet.



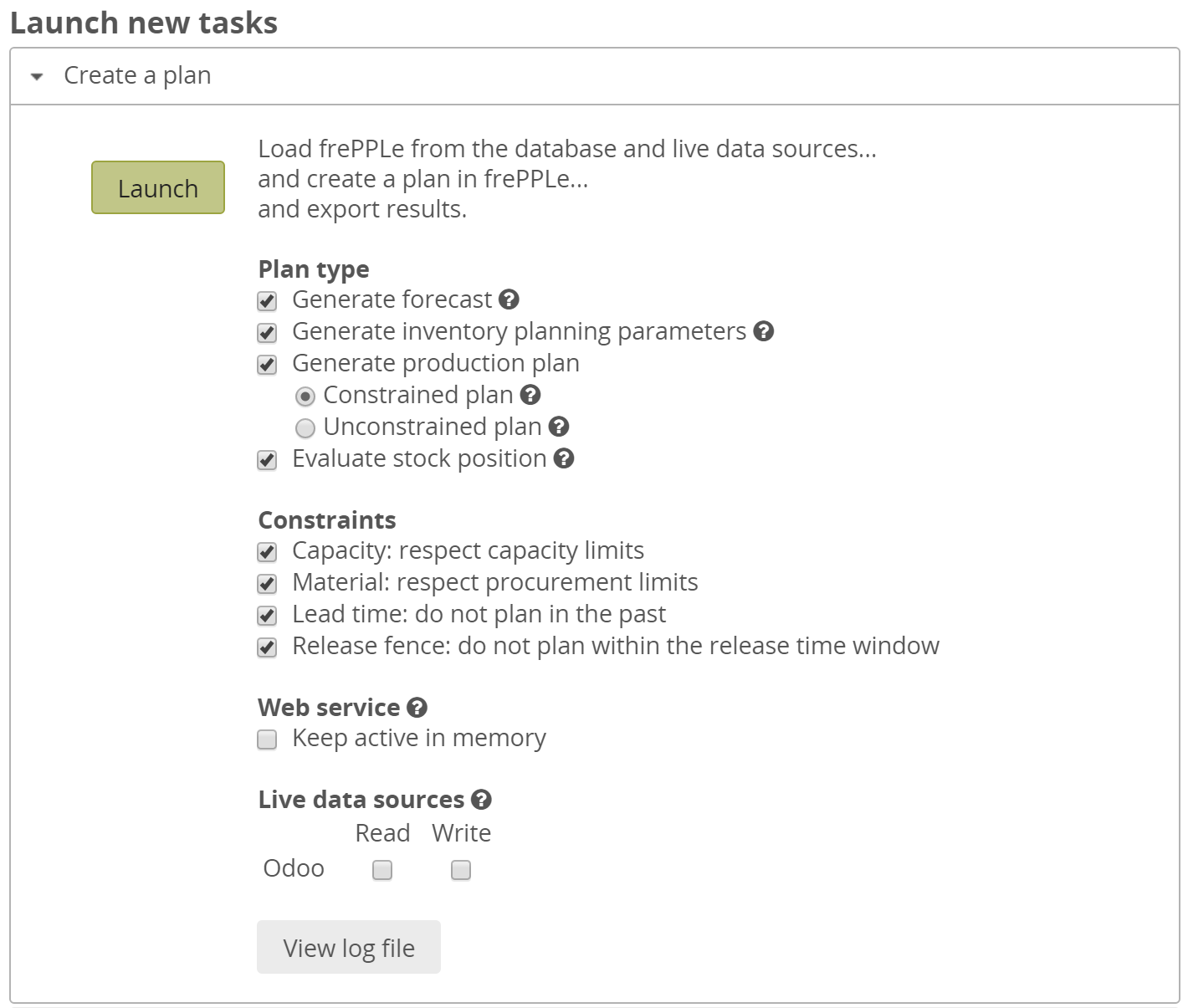
## Execution screen

The execution screen has an extra option in the plan generation task:

* **Generate inventory planning parameters**

This task calculates the reorder points and safety stocks.   
It is common to run different planning cycles.   
For instance:

* + A monthly planning cycle which recomputes the forecast and inventory planning parameters.
  + A daily planning cycle which replans the production plan with the forecast and inventory planning parameters set earlier in the monthly cycle.  
    This avoids unnecessary nervousness in the plans.
* **Evaluate stock position**  
  This task evaluates the performance of each item-location combination and stores the results in the database. This pre-computed evaluation allows good performance for the distribution planning screen, also in big models.  
  This task should be run whenever the plan or inventory data are being updated.



# Configuration

The following extra parameters are introduced by this module.

|  |
| --- |
| **Parameter inventoryplanning.calendar:** Name of a calendar model to define the granularity of the time buckets for inventory planning.  This parameter is mandatory.  The calendar needs to have a specific structure:   * The parameter forecast.calendar needs to have the same value. A mismatch will result in unintuitive planning results. * It needs a calendar bucket for every bucket. * The start and end date of subsequent buckets must match exactly without any time gap in between. |
| **Parameter inventoryplanning.fixed\_order\_cost:** Holding cost percentage to compute economic reorder quantity.  Default value: 0.05 |
| **Parameter inventoryplanning.holding\_cost:** Fixed order cost to compute the economic reorder quantity.  Default value: 20 |
| **Parameter inventoryplanning.horizon\_end:** Specifies the number of days in the future for which we generate safety stock and reorder quantity values.  Default: 365 |
| **Parameter inventoryplanning.horizon\_start:** Specifies the number of days in the past for which we generate safety stock and reorder quantity values.  Default: 0 |
| **Parameter inventoryplanning.loglevel:** Controls the verbosity of the inventory planning solver.  Accepted values are 0(silent - default), 1 and 2 (verbose) |
| **Parameter inventoryplanning.service\_level\_on\_average\_inventory :** Flag whether the service level is computed based on the expected average inventory. When set to false the service level estimation is based only on the safety stock.  Default value: true |