

Getting Started
With Apache OFBiz
Manufacturing & MRP
In 5 Easy Steps

“Apache OFBiz” (<http://ofbiz.apache.org>) is a trademark of the Apache
Software Foundation

Table of Contents

GETTING STARTED WITH OFBIZ MANUFACTURING & MRP.....	3
INTRODUCTION.....	3
GOALS OF THIS DOCUMENT.....	3
TARGET AUDIENCE.....	3
WHAT IS MANUFACTURING?.....	4
WHAT IS MRP?.....	4
THE 5 STEPS TO ‘GETTING STARTED’.....	5
STEP 1: UNDERSTAND YOUR MANUFACTURING PROCESSES.....	6
STEP 2: DECIDE WHICH PROCESSES YOU WANT TO USE OFBIZ FOR.....	7
<i>Basic Manufacturing Concepts and Processes</i>	7
<i>Example Scenario</i>	7
STEP 3: SETUP YOUR PRODUCT DATA.....	9
<i>Using Catalog Manager to Set up the Raw Materials</i>	9
<i>Using Catalog Manager to Set up the Manufactured Product</i>	12
STEP 4: SETUP YOUR MANUFACTURING DATA.....	15
<i>Using Manufacturing Manager to Set up the Bill of Materials</i>	15
<i>Using Manufacturing Manager to Set up the Routing Tasks</i>	18
<i>Using Manufacturing Manager to Set up the Routing</i>	20
STEP 5: RUN MRP AND REVIEW THE RESULTS.....	24
<i>Using Manufacturing Manager to Run MRP</i>	24
<i>Interpreting the MRP Report results</i>	26
<i>Using Order Manager to View the Requirements Generated by MRP</i>	27
<i>Using Manufacturing Manager to View Production Runs</i>	29
<i>Using Order Manager for Quick Purchase Order Entry</i>	31
<i>Using Manufacturing Manager to Run a Production Run</i>	36
THE “GETTING STARTED” RESULTS.....	38
BEYOND GETTING STARTED.....	39

Getting Started with OFBiz Manufacturing & MRP

Introduction

OFBiz Manufacturing & MRP is a highly functional seamless application that contains everything you need to run an efficient and successful manufacturing business.

Key features include:

- Bill of Materials
- Manufacturing Routing and Tasks
- Production Planning
- Production Costing
- Equipment Billing
- Raw Materials Procurement

Goals of this Document

This guide gives you the basics you need to get up and running with OFBiz for Manufacturing & MRP.

It contains a quick overview of some common manufacturing concepts, a list of the setup required and an example for you to work through.

By the end of the document you should have the enough information to begin your own manufacturing setup in OFBiz.

Target Audience

This document is written for the complete novice end user. No programming or technical experience is required.

What is Manufacturing?

Manufacturing is the “act of making something out of raw materials”. The 'something' that is manufactured is generally a product that can be on sold to customers.

Manufacturing is not only an industrial activity carried out in a factory, it can also be any range of tasks that result in an end product. So, even if you only assemble products you can still make use of OFBiz Manufacturing & MRP.

What is MRP?

MRP is a three-letter abbreviation that is always used in conjunction with manufacturing – so what exactly is it?

MRP stands for “Material Requirement Planning”. It’s a computer program that, when run regularly, helps a business to plan what to manufacture and when to manufacture it.

It also has the added benefit of letting you know when to buy raw materials to meet your manufacturing commitments.

The MRP tool comes with OFBiz ‘out of the box’.

The 5 Steps to ‘Getting Started’

This guide assumes you have read and performed the tasks in the “Getting Started with Apache OFBiz In 5 Easy Steps”¹ document and that you have already:

- Setup your workstation or laptop.
- Downloaded and installed a version of OFBiz with the demo data.

Tip: Login using the username “admin” and password “ofbiz” to perform all OFBiz tasks.

Step 1: Understand Your Manufacturing Processes

This first step involves taking a look at your business processes and what your manufacturing flows are. You need to be able to answer questions about when you manufacture your product, what triggers the process and how you manufacture.

Step 2: Decide which processes you want to use OFBiz for

If you are new to OFBiz you may want to look at starting with a simple process then when you’re more comfortable move onto your more complex processes.

Step 3: Setup your Product Data

Setup the product data you need; This will include your raw materials and your manufactured product.

Approximate Time Required to Complete: 15 minutes

Step 4: Setup your Manufacturing Data

Setup the data you need for manufacturing; This includes the Bill of Materials (BOM), Routing Tasks and a Routing.

Approximate Time Required to Complete: 15 minutes

Step 5: Run MRP and Review the Results

Run MRP and take a close look at the results.

Approximate Time Required to Complete: 20 minutes

¹ ‘Getting Started with Apache OFBiz in 5 Easy Steps’ by Ruth Hoffman is available free from myOFBiz.com

Step 1: Understand Your Manufacturing Processes

Take a look at your business processes. You need to know what your manufacturing flows are. You should be able to define and describe the type of manufacturing you do.

Typical questions that you should be able to answer are:

- What raw materials do you use?
- Who are your suppliers?
- How do you order your raw materials?
- How do you make your manufactured product?
- What are the actual manufacturing steps performed?
- Are there any specialist processes specific to your industry?
- Are there any regulatory or legal requirements to your manufacturing?
- What triggers your manufacturing? (Is it an order from a customer or low stock and/or inventory levels?)

Make sure to document all your responses and processes.

Step 2: Decide which processes you want to use OFBiz for

Decide on which manufacturing process (or processes) you'd like to use OFBiz for. Limiting your scope reduces your risk and makes it simpler to prototype and test.

If your initial process implementation is successful, then expand the prototyping to include additional processes.

Basic Manufacturing Concepts and Processes

There are generally the two main processes that trigger when you manufacture a product. They are as follows:

1. Make to Stock (MTS) – The manufacturing process is triggered by the need to maintain minimum stock levels of products so that you don't run out. This means that you'll always have stock on hand in a warehouse or shop to sell to customers whenever an order arrives.
2. Make to Order (MTO) – The manufacturing process is triggered by an order from a customer. The product is manufactured specifically for that customer. There is no stock held in a warehouse or shop.

Your business may use either one or a combination of these processes.

To support the above processes you also need to ensure that you have the right raw materials in stock at the right time to be able to manufacture. This additional process is called "Raw Materials Purchasing"

Make to Stock, Make to Order and Raw Materials Purchasing are all supported with OFBiz².

Example Scenario

Each manufacturing business will be different, so for demonstration purposes we will use an example scenario. Using our scenario we'll take you step by step through the manufacturing setup required.

Example Scenario: Manufacturing Tables

A carpenter runs a business making tables. To make one table he uses 5 pieces of wood, 20 nails and a bottle of varnish.

² Supported releases are 09.4 and above

To make a table he'll cut the wood to length, nail it together, sand it and finally varnish it. The completed table is then put in his shop, ready to sell to customers passing by.

He likes to keep a minimum of five completed, ready to sell tables in his shop.

He keeps track of the amount of wood, nails and varnish he has in stock to make sure that he doesn't run out.

If we do an analysis of his business processes then we see that our carpenter runs a "Make to Stock"³ manufacturing process supported by "Raw Material Purchasing"⁴.

His raw materials are:

- Wood
- Nails
- Varnish

His manufacturing process and sequence steps are:

- Cut Wood
- Nail Wood Together
- Sand Table
- Varnish Table

Our Objective for OFBiz

We will setup this manufacturing business in OFBiz and configure MRP to prompt us when we need to make tables and when to order more raw materials.

³ He likes to keep a minimum of 5 tables in stock so is not reliant on a customer order to make a table

⁴ He keeps track of his raw materials so that he doesn't run out

Step 3: Setup your Product Data

Approximately 15 minutes is required to complete this step.

Using Catalog Manager to Set up the Raw Materials

Our first task is to setup our raw materials within OFBiz.

Use the Catalog Manager and the table below to:

- Create new products of type “Raw Materials” for wood, nails and varnish (see **Figures 1, 2 and 3**)

Product ID	Product Name	Minimum Stock	Re-order quantity
10000*	Wood	25	100
10001*	Nails	100	500
10002*	Varnish	5	20

* Use Product ID returned by the Catalog Manager

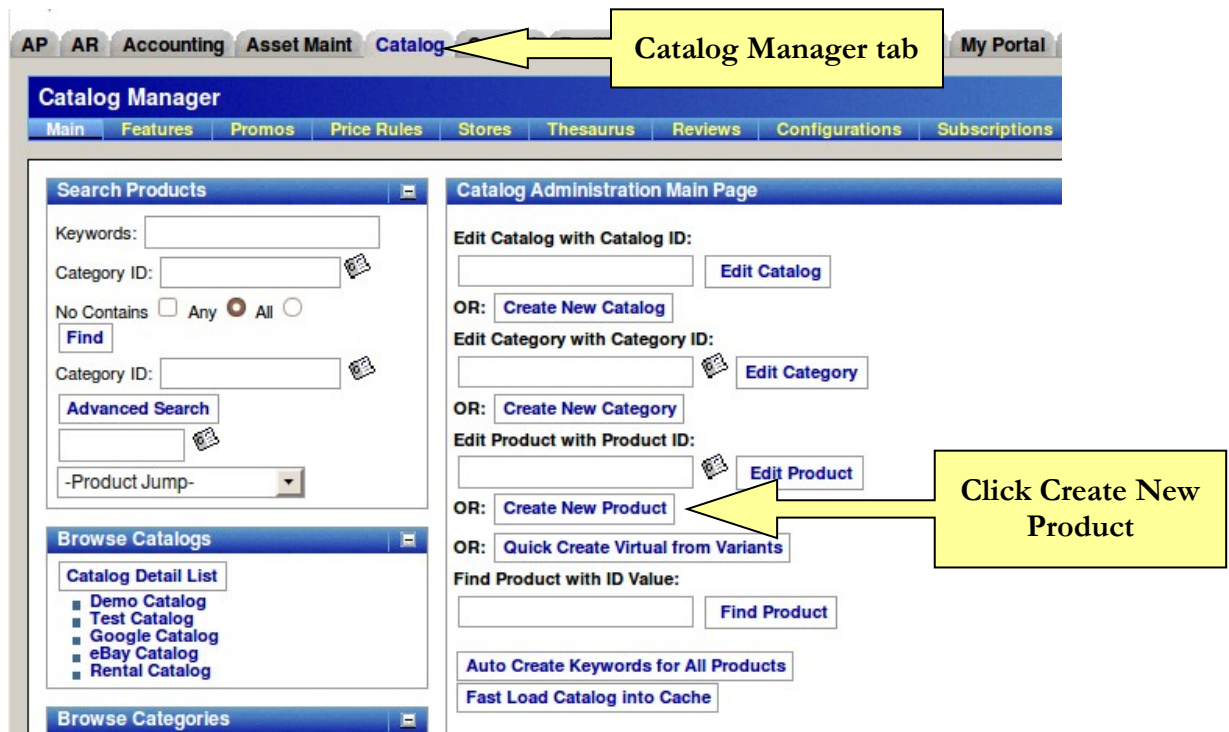


Figure 1: Creating a New Product using the Catalog Manager

- Make sure the “Requirement Method Enum Id”⁵ for each product is set to “When QOH Reaches Minimum Stock for Product Facility” as shown in **Figure 2**.

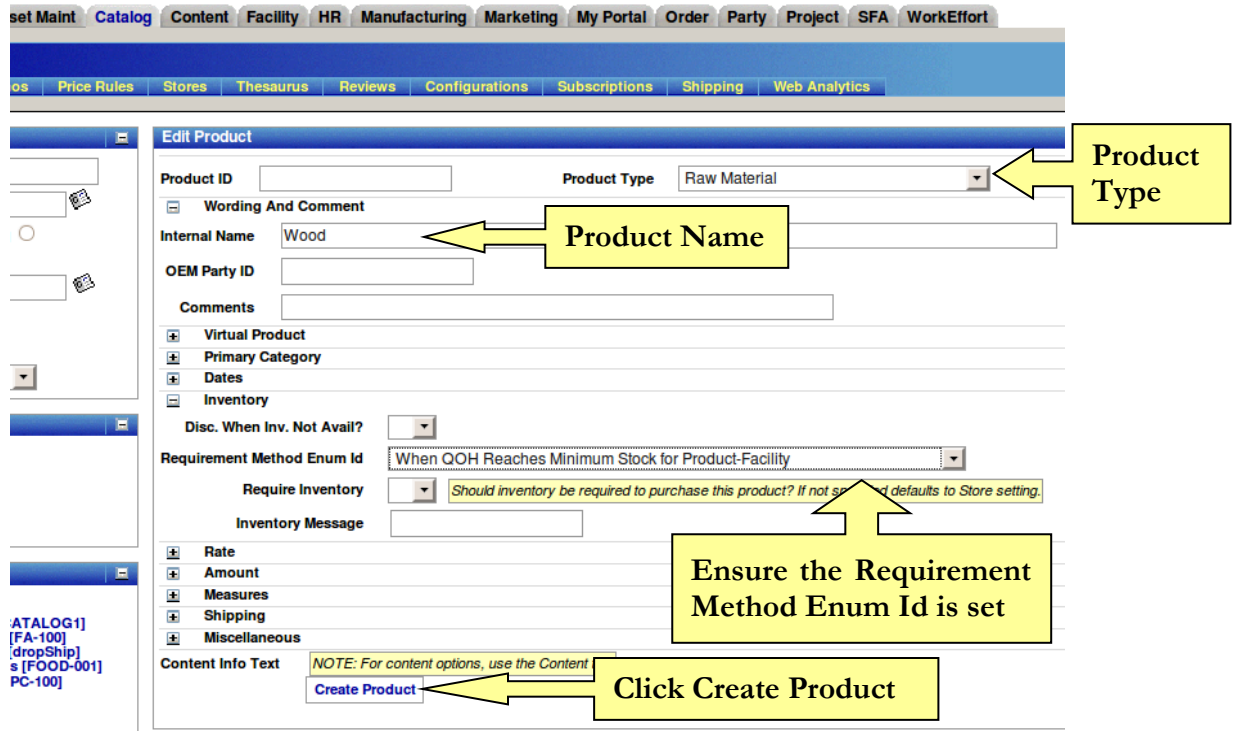


Figure 2: Setting the Requirement Method Enum Id

- Set the re-order quantity and minimum stock fields using the product “Facilities” tab as shown in **Figure 3**.
- Select the Web Store Warehouse as the “Facility Id”

⁵ This tells MRP that when the Quantity on Hand (QOH) gets to our minimum then you want to order more.

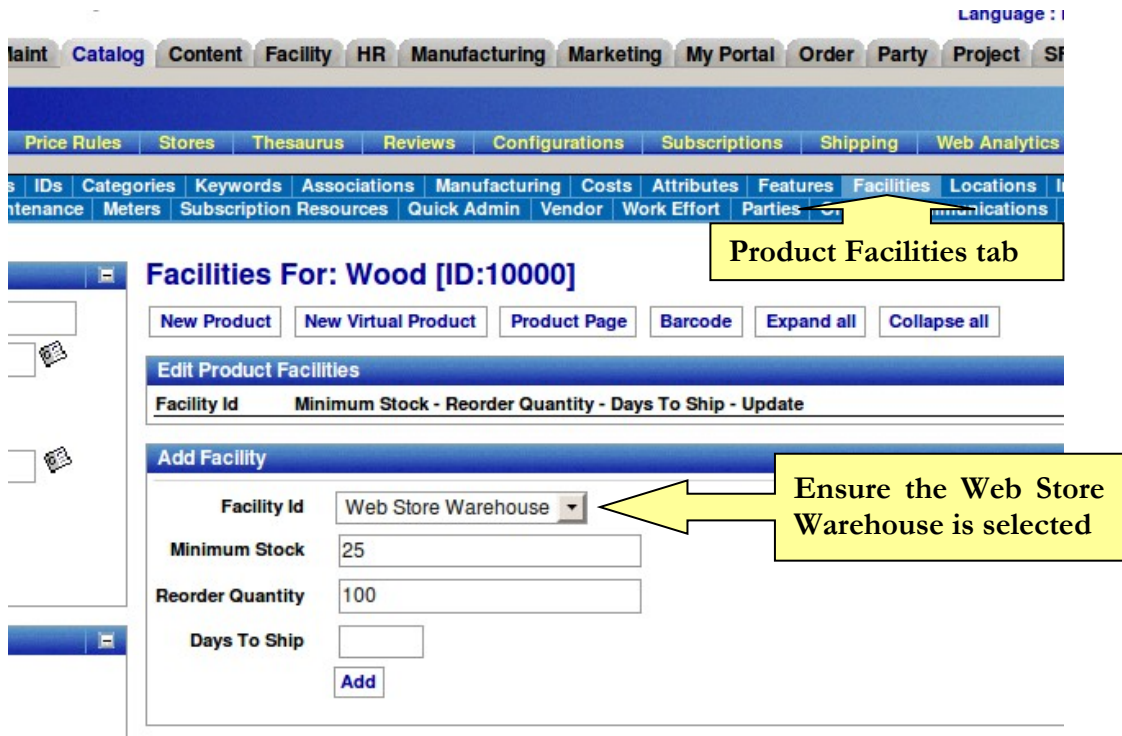


Figure 3: Setting Minimum Stock and Re-order Quantities for a Product

- Setup one supplier for each of the Raw Materials using the data from the following table:

Product	Supplier	Supplier Pref Order ID	Supplier Product ID	Last Price
Wood	DemoSupplier	Main Supplier	XYZWood	11.00
Nails	DempSupplier	Main Supplier	123Nails	4.00
Varnish	DemoSupplier	Main Supplier	ABCVarnish	5.00

- Suppliers for products are setup using the product “Suppliers” tab as shown in **Figure 4**.

nt Catalog Content Facility HR Manufacturing Marketing My Portal Order Party Project SFA WorkEffort

Price Rules Stores Thesaurus Reviews Configurations Subscriptions Shipping Web Analytics

IDs Categories Keywords Associations Manufacturing Costs Attributes Features Facilities Locations Inventory Suppliers Agreements
Finance Meters Subscription Resources Quick Admin Vendor Work Effort Parties Orders Communications

Suppliers For: Wood [ID:10000]

New Product New Virtual Product Product Page Barcode Expand all Collapse all

Edit Supplier Product

Supplier	Supplier Product Id	Minimum order quantity	Order qty increments	Supplier Pref Order Id	Available from date	Available thru date	Quantity Uom Id	Supplier Commission Perc	Last Price
----------	---------------------	------------------------	----------------------	------------------------	---------------------	---------------------	-----------------	--------------------------	------------

Add Product Supplier

Supplier: Demo Supplier [DemoSupplier] **Select Demo Supplier**

Available From Date: 2010-02-26 20:49:53.28

Min Order Qty: 0

Currency Uom Id: American Dollar - USD

Available Thru Date: [Calendar Icon]

Supplier Pref Order Id: Main Supplier **Set as Main Supplier**

Supplier Rating Type Id: [Dropdown]

Standard Lead Time Days: [Text Box]

Order Qty Increments: [Text Box]

Units Included: [Text Box]

Quantity UomId: [Dropdown]

Agreement Id: [Text Box]

Agreement Item Seq Id: [Text Box]

Last Price: 11 **Set Last Price**

Supplier Product Name: [Text Box]

Supplier Product Id: XYZWood **Set Supplier Product Id**

Supplier can drop ship?: N

Supplier Commission Perc: [Text Box]

Comments: [Text Box]

Create

Figure 4: Setting up a Supplier for a Product

Reminder: Before continuing make sure you have created new products for nails and varnish too.

Using Catalog Manager to Set up the Manufactured Product

Use Catalog Manager to:

- Create a new product for the manufactured product (the table) of type “Finished Good” using the details below:

Product ID	Product Name	Default Price	Minimum Stock
10003*	Table	75.00	5

* Take product Id returned by Catalog Manager

- Make sure the “Requirement Enum Id” is set for this product too as shown in **Figure 5**.

The screenshot shows the 'Edit Product' interface for Product ID 10003. The 'Product Type' is set to 'Finished Good'. The 'Internal Name' is 'Table'. The 'Requirement Method Enum Id' is set to 'When QOH Reaches Minimum Stock for Product-Facility'. Three yellow callout boxes with arrows point to these fields: 'Product Type', 'Product Name', and 'Ensure the Requirement Method Enum Id is set'.

Figure 5: Setting the Requirement Enum Id for the Manufactured Product

- Enter a “Minimum Stock” but don’t set a re-order quantity for the table since we manufacture it and don’t need to order them from a supplier as shown in **Figure 6**.

Language - English (U.S.)

[Home](#) [Catalog](#) [Content](#) [Facility](#) [HR](#) [Manufacturing](#) [Marketing](#) [My Portal](#) [Order](#) [Party](#) [Project](#) [SFA](#) [WorkE](#)

[Price Rules](#) [Stores](#) [Thesaurus](#) [Reviews](#) [Configurations](#) [Subscriptions](#) [Shipping](#) [Web Analytics](#)

[IDs](#) [Categories](#) [Keywords](#) [Associations](#) [Manufacturing](#) [Costs](#) [Attributes](#) [Features](#) [Facilities](#) [Locations](#) [Inventory](#) [S](#)
[enance](#) [Meters](#) [Subscription Resources](#) [Quick Admin](#) [Vendor](#) [Work Effort](#) [Parties](#) [Order](#) [Applications](#)

Facilities For: Table [ID:10003]

[New Product](#) [New Virtual Product](#) [Product Page](#) [Barcode](#) [Expand all](#) [Collapse all](#)

Edit Product Facilities

Facility Id	Minimum Stock - Reorder Quantity - Days To Ship - Update	Last In
Add Facility		
Facility Id	Web Store Warehouse	
Minimum Stock	5	
Reorder Quantity		
Days To Ship		
Add		

Product Facilities tab

Leave the Re-order quantity blank

Figure 6: Leave the Re-Order Quantity blank for the Manufactured Product

This step is now complete.

Step 4: Setup your Manufacturing Data

Approximately 15 minutes is required to complete this step.

Using Manufacturing Manager to Set up the Bill of Materials

The next task is to create a Bill of Materials (BOM).

The Bill of Materials is the list of raw materials or list of ingredients required to make our manufactured product. In the previous step we created the products, now we need to define the relationship between the table and its raw materials. This is done using the BOM.

One table is made up of 5 pieces of wood, 20 nails and 1 bottle of varnish so let's create a BOM to reflect this.

Use Manufacturing Manager to:

- Create a new Bill of Materials by pressing the 'Create Bom' in the Bill of Materials tab as shown in **Figure 7**.

The screenshot displays the Manufacturing Manager application interface. At the top, a navigation bar includes tabs for AP, AR, Accounting, Asset Maint, Catalog, Content, Facility, HR, and Manufacturing. A yellow callout box labeled 'Manufacturing Manager tab' points to the Manufacturing tab. Below this, a sub-menu for 'Manufacturing Manager' is visible, with 'Bill Of Materials' highlighted. A yellow callout box labeled 'Bill of Materials tab' points to this sub-menu. The main content area shows the 'Find Bill Of Materials' section, which includes a 'Create Bom' button. A yellow callout box labeled 'Click Create BOM' points to this button. Below the button are search options for Product Id, Product ID To, and Bom Type, with a 'Find' button. At the bottom, a 'Search Results' table is shown with three columns: Product ID, Product Name, and Bom Type. The table lists three entries: GZ-BASKET (Auto-Assembled Gizmo Basket), MOTHER_BOARD_ASS (Motherboard assembly), and PROD_MANUF (Demo Product for Costing), all with a Bom Type of 'Manufacturing Bill of Materials'.

Product ID	Product Name	Bom Type
GZ-BASKET	Auto-Assembled Gizmo Basket	Manufacturing Bill of Materials
MOTHER_BOARD_ASS	Motherboard assembly	Manufacturing Bill of Materials
PROD_MANUF	Demo Product for Costing	Manufacturing Bill of Materials

Figure 7: Creating a Bill of Materials (BOM)

- Enter the details for the Bill of Materials using the information in the table below.

Product ID	Product ID To	Bom Type	Quantity
10003	10000	Bill of Materials	5
10003	10001	Bill of Materials	20
10003	10002	Bill of Materials	1

- An example of how to enter the first product for a Bill of Materials is shown in **Figure 8**.

The screenshot shows the 'Manufacturing Manager' interface with the 'Create Bill Of Material' form. The form contains the following fields and values:

- Product ID: 10003
- Product ID To: 10000
- Bom Type: Bill Of Materials
- Quantity: 5
- From Date: (empty)

Yellow callout boxes with arrows point to the fields with the following instructions:

- Enter Product Id for the 'Table' (pointing to Product ID)
- Enter Product Id for 'Wood' (pointing to Product ID To)
- Enter Quantity (pointing to Quantity)

Figure 8: Adding the first product to a Bill of Materials (BOM)

- Once the first product (wood) is added a Bill of Materials (BOM) then additional products (nails, varnish) can be entered as shown in **Figure 9**.

AP AR Accounting Asset Maint Catalog Content Facility HR Manufacturing Marketing My Portal Order Party Project SFA WorkEffort

Manufacturing Manager

Main JobShop Routing Routing Task Calendar Costs Bill Of Materials MRP Shipment Plans Reports

The following occurred:
The action was performed successfully.

Find Bom Simulation Edit BOM Manufacturing Rules

Edit Product Bom Table [ID 10003]

Bom Simulation

Bom Type: Manufacturing Bill of Materials

Product ID: 10003

To Product ID:

Bom Type: Manufacturing Bill of Materials

Product ID: 10003 **Enter Product Id for the 'Table'**

Product ID To: 10001 **Enter Product Id for 'Nails'**

From Date: (Will be set to now if empty)

Thru Date:

Sequence Num:

Reason:

Instruction:

Quantity: 20 **Enter Quantity**

Scrap Factor %:

Formula:

Routing Task:

Click Add

Components of this Product

Product ID	Product Name	From Date	Thru Date	Sequence Num	Quantity	Scrap Factor %	Formula	Routing Task	
10000	Wood	2010-02-26 21:06:34.953			5				<input type="button" value="Delete"/> <input type="button" value="Edit"/>

First BOM Product

Figure 9: Adding an additional product to a Bill of Materials (BOM)

- Once the items have been added to the Bill of Materials then you should see a screen similar to the one shown in **Figure 10**.

AP AR Accounting Asset Maint Catalog Content Facility HR Manufacturing Marketing My Portal Order Party Project SFA WorkEffort

Manufacturing Manager

Main JobShop Routing Routing Task Calendar Costs Bill Of Materials MRP Shipment Plans Reports

The following occurred:
The action was performed successfully.

Find Bom Simulation Edit BOM Manufacturing Rules

Edit Product Bom Table [ID 10003]

Bom Simulation

Bom Type: Manufacturing Bill of Materials Product ID: 10003 Show BOM
To Product Id: Copy BOM

Bom Type: Manufacturing Bill of Materials
Product ID: 10003
Product ID To:
From Date: (Will be set to now if empty)
Thru Date:
Sequence Num:
Reason:
Instruction:
Quantity: 1
Scrap Factor %:
Formula:
Routing Task: Add

Components of this Product

Product ID	Product Name	From Date	Thru Date	Sequence Num	Quantity	Scrap Factor %	Formula	Routing Task	Delete	Edit
10002	Varnish	2010-03-02 15:12:17.918			1				Delete	Edit
10001	Nails	2010-03-02 15:12:03.730			20				Delete	Edit
10000	Wood	2010-03-02 15:11:43.697			5				Delete	Edit

Figure 10: All Raw Materials added to Bill of Materials (BOM) for Table

Using Manufacturing Manager to Set up the Routing Tasks

Next we need to create Routing Tasks. These are the individual steps that are needed to turn the raw materials into a finished product.

Reminder: The steps to make the table are: cutting the wood, nailing it together, sanding it and varnishing it so we'll need to create a routing task for each of these.

Use Manufacturing Manager to:

- Create a new Routing Task by clicking the 'New Routing Task' button in the Routing Task tab as shown in **Figure 11**.

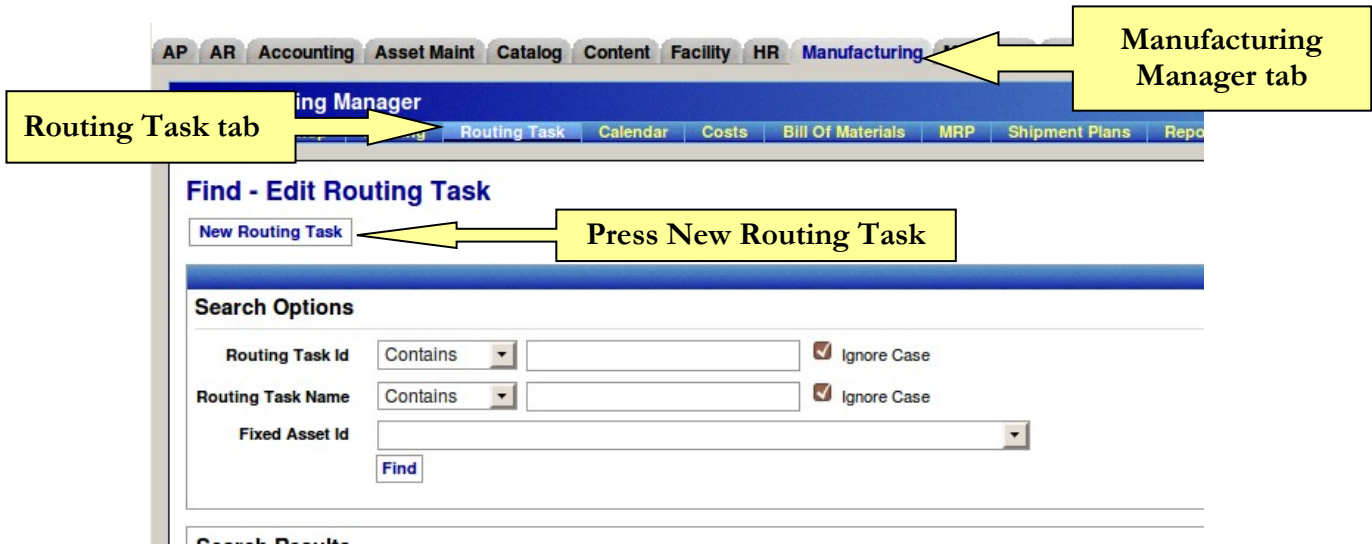


Figure 11: Creating a new Routing Task

- Create new routing tasks using the data in the table below:

Routing Name	Task	Description	Task Type
Cut Wood		Cut Wood to Length	Manufacturing
Nail Together		Nail Wood Together	Manufacturing
Sand Table		Sand the Table	Manufacturing
Varnish Table		Varnish the Table	Manufacturing

- An example of how to enter a Routing Task is shown in **Figure 12**.

The screenshot shows the 'Manufacturing Manager' application with the 'Edit Routing Task' window open for task '[ID 10000] Cut Wood'. The form contains the following fields:

- Routing Task Name:** Cut Wood
- Task Type:** Manufacturing
- Description:** Cut Wood to Length
- Fixed Asset Id:** (empty dropdown)
- Estimated Setup Time:** (empty text box)
- Estimated Unit Run Time:** (empty text box)
- Estimate Calc Method:** (empty dropdown)

Yellow callout boxes with arrows point to the 'Routing Task Name', 'Task Type', and 'Description' fields.

Figure 12: Entering Routing Task Details

Using Manufacturing Manager to Set up the Routing

The final pieces of the manufacturing setup are to:

- Link the tasks together in the sequence they need to be performed and;
- Make sure that all tables manufactured will default to this set of manufacturing steps.

This is done using a “Routing”.

The tasks required to manufacture our table need to be performed in the following sequence:

1. Cut wood
2. Nail wood together
3. Sand table
4. Varnish table

Use Manufacturing Manager to:

- Create a new routing by clicking the 'New Routing' button in the Routing tab as shown in **Figure 13**.



Figure 13: Creating a New Routing

- Enter the new routing details using the data in the table below (see **Figure 14**).

Routing Name	Description
Table Routing	Routing to Make Tables

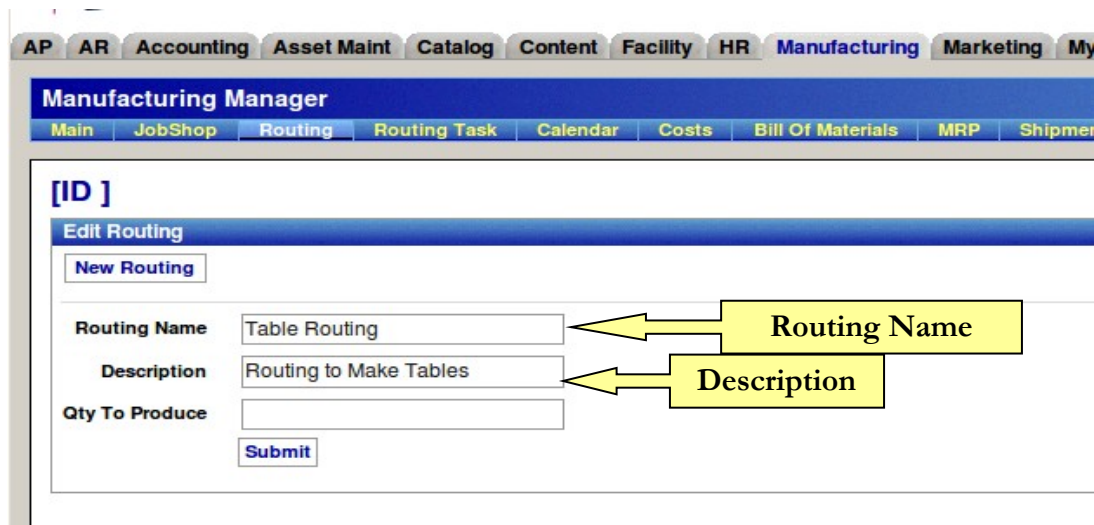


Figure 14: Entering Routing Details

- Use the “Edit Routing Task Assoc” tab to add the details from the table below as shown in **Figure 15**.

Routing Task Id	Sequence
10000*	10
10001*	20
10002*	30
10003*	40

*Use the Task Id generated by Manufacturing Manager for Cut Wood, Nail Together, Sand Table and Varnish Table

Tip: Use the “Add a existing Routing Task” to add the task and sequence to the routing

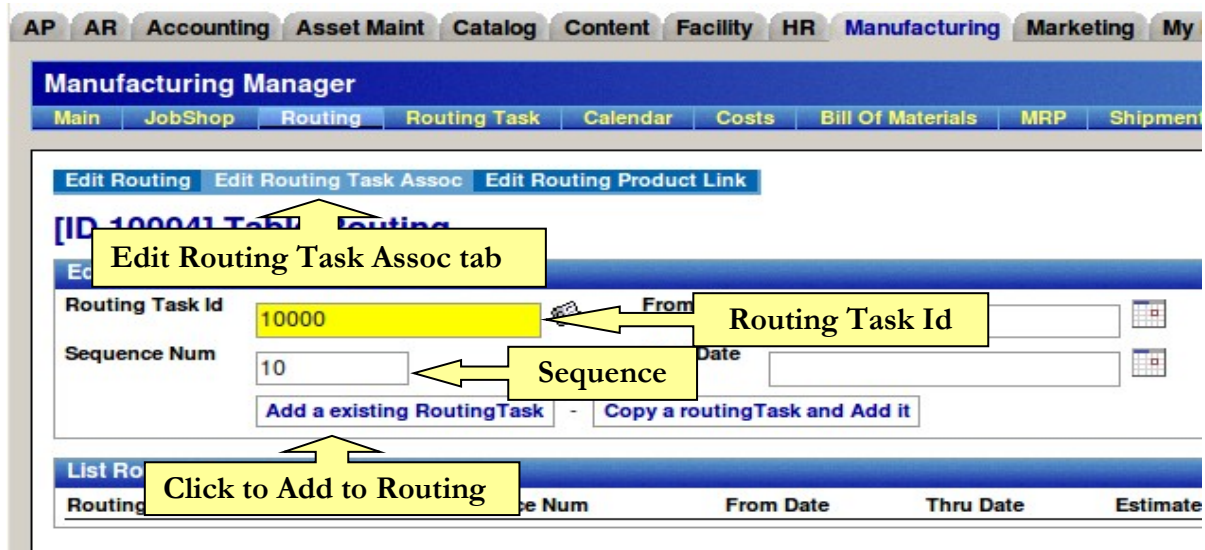





Figure 15: Adding a Routing Task Sequence to a Routing

- Once all tasks have been added you should see a screen similar to **Figure 16**.

[Edit Routing](#) | [Edit Routing Task Assoc](#) | [Edit Routing Product Link](#)

[ID 10004] Table Routing

Edit Routing Task Association

Routing Task Id:  From Date: 
 Sequence Num: Thru Date: 

[Add a existing RoutingTask](#) - [Copy a routingTask and Add It](#)

List Routing Task Assoc

Routing Task Name	Sequence Num	From Date	Thru Date	Estimated Setup Time
[10000] Cut Wood	10	2010-02-23 14:53:13.623		
[10001] Nail Together	20	2010-02-23 14:53:29.421		
[10002] Sand Table	30	2010-02-23 14:53:40.460		
[10003] Varnish Table	40	2010-02-23 14:53:50.767		

Figure 16: All Routing Tasks and Sequences added to a Routing

Next we need to make sure that every table that we manufacture will use this routing since all tables are made using the same steps.

- Click on the “Edit Routing Product Link” tab and add the table product ID as shown in **Figure 17**, then click the “Update” button




[AP](#) | [AR](#) | [Accounting](#) | [Asset Maint](#) | [Catalog](#) | [Content](#) | [Facility](#) | [HR](#) | **Manufacturing** | [Marketing](#) | [My Ports](#)

[Main](#) | [JobShop](#) | **Routing** | [Routing Task](#) | [Calendar](#) | [Costs](#) | [Bill Of Materials](#) | [MRP](#) | [Shipment Plan](#)

[Edit Routing](#) | [Edit Routing Task Assoc](#) | **Edit Routing Product Link**

[ID 10004] Table Routing

Edit Routing-Product Link

Product ID: 
 From Date: 
 Thru Date: 
 Quantity:
 Estimated cost:
[Update](#)

Product Id | Product Name | From Date

Figure 17: Adding the Manufactured Product to a Routing

This step is now complete.

Step 5: Run MRP and Review the Results

Approximately 20 minutes is required to complete this step.

Next is the most exciting step – we’ll run MRP for the first time and see what it tells us. Before we do that, let’s do a quick recap of what our setup instructs MRP to do:

- When we make a table, use 5 pieces of wood, 20 nails and 1 bottle of varnish.
- Maintain a minimum stock of 5 tables and when we reach that minimum stock level then prompt me to manufacture some more tables.
- Maintain a minimum stock of 25 pieces of wood and when we reach that minimum stock level then prompt me to order 100 more pieces of wood.
- Maintain a minimum stock of 100 nails and when we reach that minimum stock level then prompt me to order 500 more nails.
- Maintain a minimum stock of 5 bottles of varnish and when we reach that minimum stock level then prompt me to order 20 more bottles.

Using Manufacturing Manager to Run MRP

Use Manufacturing Manager to:

- Go to the “MRP” tab and run the MRP report (see **Figure 18**) with the following parameters:

MRP Name	Facility Group	Facility	Default Year Offset
MRP1	leave blank	Web Store Warehouse	1

The screenshot shows the Manufacturing Manager interface. The top navigation bar includes tabs for AP, AR, Accounting, Asset Maint, Catalog, Content, Facility, HR, Manufacturing, and Reporting. The Manufacturing Manager section has sub-tabs: Main, JobShop, Routing, Routing Task, Calendar, Costs, Bill Of Materials, MRP, Shipment Plans, and Reports. The MRP sub-tab is selected. Below the sub-tabs are buttons for 'Run MRP' and 'MRP Log'. The 'Run MRP' button is highlighted with a yellow callout box. The 'Run MRP' form contains the following fields: 'Mrp Name' (text input with value 'MRP1'), 'Facility Group' (dropdown menu), 'Facility' (dropdown menu with value 'Web Store Warehouse [WebStoreWarehouse]'), and 'Default Years Offset' (text input with value '1'). A 'Submit' button is located below the 'Default Years Offset' field. Yellow callout boxes also point to the 'Manufacturing Manager tab' and the 'MRP tab'.

Figure 18: Enter Parameters to Run MRP

- Click on the “MRP Log” tab and determine if the program has finished running. When it has finished the report will appear with a “Status ID” of ‘Finished’ under the “Last Job” section of the screen.

The screenshot shows the Manufacturing Manager interface with the MRP Log tab selected. A yellow box labeled "MRP Log tab" points to the "MRP Log" button. Below it, a table shows a job with Status ID "Finished". Another yellow box labeled "MRP Finished Running" points to the "Finished" status. A third yellow box labeled "Click 'Find' for MRP Results" points to the "Find" button in the search area.

Job ID	Job Name	Run Time	Status ID	Max Retry	Auth User Login Id	Temporal Expression	Current Recurrence Count	Max Recurrence Count	Start Date Time	Finish Date Time
10023 1267173136747		2010-02-26 21:32:16.747	Finished	0	admin				2010-02-26 21:32:20.232	2010-02-26 21:32:22.691

Figure 19: MRP Run Completed

- View the MRP results by clicking the “Find” button.

The screenshot shows the Manufacturing Manager interface with the MRP Run Results displayed. The "Last Job" section shows a job with Status ID "Finished". Below it, the "Find inventory Event Planned" section shows a table of inventory events.

Job Id	Job Name	Run Time	Status ID	Max Retry	Auth User Login Id	Temporal Expression	Current Recurrence Count	Max Recurrence Count	Start Date Time	Finish Date Time	Cancel Date Time
10023 1267173136747		2010-02-26 21:32:16.747	Finished	0	admin				2010-02-26 21:32:20.232	2010-02-26 21:32:22.691	

Type	Description	Date	Quantity	Total Quantity
[10000] Wood	Facility: WebStoreWarehouse Minimum Stock: 25 Reorder Quantity: 100 Days To Ship:			0
Proposed Purchase Order receipt	*10000 (2010-02-26 21:32:20.386)*	2010-02-26 21:32:20.386	100.0	100
[10001] Nails	Facility: WebStoreWarehouse Minimum Stock: 100 Reorder Quantity: 500 Days To Ship:			0
Proposed Purchase Order receipt	*10001 (2010-02-26 21:32:20.386)*	2010-02-26 21:32:20.386	500.0	500
[10002] Varnish	Facility: WebStoreWarehouse Minimum Stock: 5 Reorder Quantity: 20 Days To Ship:			0
Proposed Purchase Order receipt	*10002 (2010-02-26 21:32:20.386)*	2010-02-26 21:32:20.386	20.0	20

Figure 20: MRP Run Results

Interpreting the MRP Report results

- Look for the following entry for wood (**Figure 21**) in the results.

Type	Description	Date	Quantity	Total Quantity
[10000] Wood	Facility: WebStoreWarehouse Minimum Stock: 25 Reorder Quantity: 100 Days To Ship:			
			No wood in stock	0
Mrp requirement		10003: 2010-02-23 15:04:08.664	2010-02-23 15:04:08.664	-25.0
Proposed Purchase Order receipt		*10000 (2010-02-23 15:04:08.684)*	2010-02-23 15:04:08.684	100.0
				-25
				75

Annotations:

- A yellow box labeled "No wood in stock" has an arrow pointing to the quantity 0 in the current stock row.
- A yellow box labeled "MRP Suggestion to order 100" has an arrow pointing to the quantity 100.0 in the "Proposed Purchase Order receipt" row.
- A yellow box labeled "25 needed to make 5 tables" has an arrow pointing to the quantity -25.0 in the "Mrp requirement" row.

Figure 21: MRP Results for Raw Material - Wood

MRP is telling us that we have no pieces of the raw material 'wood' in stock so, we will need to order these from a supplier before we can manufacture anymore tables.

The text 'MRP Requirement' tells us we need to maintain at least 25 pieces of wood in stock to manufacture our five tables.

The text 'Proposed Purchase Order receipt' tells us that MRP proposes that we order 100 pieces of wood. Of the 100 to be ordered, 25 of the pieces will be allocated to the manufacture of our minimum stock of five tables, and would leave us with 75 pieces in stock.

- Look at the entries for nails and varnish.
- You'll notice that these are similar to the wood entry but with different order quantities.

We'll look at some other entries MRP has created in a moment, but first let's take a look at what it tells us about the manufactured product, the table. Find the following entry as shown in **Figure 22**.

[10003] Table **Facility:** WebStoreWarehouse
Minimum Stock: 5
Reorder Quantity:
Days To Ship:

Proposed
Manufacturing Order
receipt

10007 (2010-02-22 15:58:11.128)

5 tables to be
manufactured

Figure 22: MRP Results for the Manufactured Product - Table

MRP is telling us that we have no tables in stock and we need to keep a minimum of five in stock.

The text “Proposed Manufacturing Order receipt” tells us MRP proposes that we manufacture five tables to put into stock.

Using Order Manager to View the Requirements Generated by MRP

As well as report details, MRP generates requirements. A 'requirement' is a recommendation to do something. We have the choice of whether to act on it or not.

Let's take a look at the requirements that MRP has created.

Use Order Manager to:

- Navigate to the Order Manager / Requirements tab as shown in **Figure 23**.
- Click the “Find” button

Order Manager tab

Requirements tab

Click 'Find'

Requirements created by MRP

Requirement Id	Status ID	Requirement Type Id	Facility Id	Product Id	Requirement Start Date	Required By Date	Quantity	Facility Quantity On Hand Total	Quantity On Hand Total	Requests Link	Orders Link	Remove
10006	Proposed	Product Requirement	WebStoreWarehouse	WG-5569 - Tiny Chrome Widget	2010-02-26 21:32:20.386	2010-02-26 21:32:20.386	40	0	0	Requests	Orders	Remove
10005	Proposed	Product Requirement	WebStoreWarehouse	GZ-8544 - Big Gizmo	2010-02-26 21:32:20.386	2010-02-26 21:32:20.386	50	0	0	Requests	Orders	Remove
10004	Proposed	Product Requirement	WebStoreWarehouse	GZ-1001 - Nan Gizmo	2011-02-25 09:30:00.000	2011-02-26 21:32:20.386	18	0	0	Requests	Orders	Remove
10003	Proposed	Product Requirement	WebStoreWarehouse	GZ-1000 - Tiny Gizmo	2011-02-25 09:30:00.000	2011-02-26 21:32:20.386	70	0	0	Requests	Orders	Remove

Figure 23: Viewing Requirements created by MRP in Order Manager

All the requirements created by MRP will be displayed here with the status “Proposed”.

A “Product Requirement” has been created for the nails, wood and varnish with a recommendation to order the amounts we specified earlier in the 're-order quantity' field during the product setup as shown in **Figure 24**.

Requirement Id	Status ID	Requirement Type Id	Facility Id	Product Id	Requirement Start Date	Required By Date	Quantity	Facility Quantity On Hand Total	Quantity On Hand Total
10007	Proposed	Product Requirement	WebStoreWarehouse	10002 - Varnish	2010-02-23 15:04:08.663	2010-02-23 15:04:08.663	20	0	0
10006	Proposed	Product Requirement	WebStoreWarehouse	10001 - Nails	2010-02-23 15:04:08.663	2010-02-23 15:04:08.663	500	0	0

Status and Requirement Type

Re-order quantities

Figure 24: Viewing Requirement Status and Quantities to Order

- An 'Internal Requirement' has been created by MRP for the manufacture of the five tables we need to keep our stock at its minimum level.

Let's approve the manufacturing requirement for the five tables.

- Click on the "Approve Requirements" tab
- Locate the 'Internal Requirement' line in the search results, check the box then click the 'Submit' button to approve it.

The screenshot shows the 'Order Manager' interface with the 'Requirements' tab selected. The 'Approve Requirements' sub-tab is also active. The search results table is as follows:

Requirement Id	Requirement Type Id	Facility Id	Product ID	Requirement Start Date	Required By Date	Quantity	Select
10007	Product Requirement	WebStoreWarehouse	10000 - Wood	2010-02-26 21:40:00.738	2010-02-26 21:40:00.738	100	<input type="checkbox"/>
10008	Product Requirement	WebStoreWarehouse	10001 - Nails	2010-02-26 21:40:00.738	2010-02-26 21:40:00.738	500	<input type="checkbox"/>
10009	Product Requirement	WebStoreWarehouse	10002 - Varnish	2010-02-26 21:40:00.738	2010-02-26 21:40:00.738	20	<input type="checkbox"/>
10010	Internal Requirement	WebStoreWarehouse	10003 - Table	2010-02-26 17:29:59.995	2010-02-26 21:40:00.738	5	<input checked="" type="checkbox"/>

Figure 25: Approving the Requirement to Manufacture Tables for Stock

Using Manufacturing Manager to View Production Runs

Once you approve the "Internal Requirement" for the tables OFBiz will automatically create a "Production Run" for us to make them.

“Production Runs” are the to do or work lists of the manufacturing department. Each manufacturing job, batch, or run is done based on a production run. By creating a production run for the tables, OFBiz is telling you that more tables need to be made.

Let's look at the production run that has been created.

- Navigate to Manufacturing Manager tab and click the “Jobshop” tab to view the newly created Production Run as shown in **Figure 26**.

The screenshot shows the Manufacturing Manager interface. At the top, there are navigation tabs: AP, AR, Accounting, Asset Maint, Catalog, Content, Facility, HR, Manufacturing, Marketing, and Sales. The Manufacturing Manager tab is highlighted. Below it, there are sub-tabs: Main, JobShop, Routing, Routing Task, Calendar, Costs, Bill Of Materials, MRP, Shipment Plans, and Reports. The JobShop tab is selected. The main area contains search options for Production Run ID, Status, Product ID, Production Run Name, Start Date, and Facility ID. A 'Find' button is located at the bottom of the search options. Below the search options, there is a 'Search Results' table with the following data:

Production Run ID	Production Run Name	Product ID	Quantity	Status	Start Date	Description	Facility ID
10005	MRP_MRP1	10003	5	Created	2010-03-02 15:23:17.000		WebStoreWarehouse

Annotations in the image include: 'Manufacturing Manager tab' pointing to the top navigation bar, 'JobShop tab' pointing to the sub-tab, 'Click 'Find'' pointing to the search button, and 'MRP created Production Run' pointing to the first row in the search results table.

Figure 26: Viewing the Automatically Created Production Run

- Click on the “Production Run ID” number to view the details of that Production Run. A screen similar to **Figure 27** will be displayed.

The Production Run details show the routing tasks, manufacturing steps and also the list of materials to be used.

By default all raw materials are removed from stock in conjunction with starting the the first routing task. So in our production run for five tables, once we start the ‘Cut Wood’ task 25 pieces of wood, 100 nails and 5 bottle of varnish will be removed from stock.

Language - English (United States) Visual Theme

AP AR Accounting Asset Maint Catalog Content Facility HR Manufacturing Marketing My Portal Order Party Project SFA WorkEffort

Manufacturing Manager

Main JobShop Routing Routing Task Calendar Costs Bill Of Materials MRP Shipment Plans Reports

Edit Production Run Tasks Materials Fixed Assets Assocs Content Actual Costs

[ID 10005]

Create a Production Run

Print
Schedule
Confirm
Quick Complete
Quick Close
Cancel

Production Run ID 10005

Product Name Table [10003]
Current Status Id Created
Facility ID Web Store Warehouse [WebStoreWarehouse]
Quantity 5
Start Date 2010-03-02 15:23:17.000
Calculated Completion Date 2010-03-02 15:23:17.020
Production Run Name MRP_MRP1
Description
Update

Order Items

Order Id

Tasks

Sequence Num	Routing Task Name	Fixed Asset	Start Date	Calculated Completion Date	Estimated Setup Time	Estimated Total Run Time
10	Cut Wood [10006]		2010-03-02 15:23:17.000	2010-03-02 15:23:17.005		
20	Nail Together [10007]		2010-03-02 15:23:17.005	2010-03-02 15:23:17.010		
30	Sand Table [10008]		2010-03-02 15:23:17.010	2010-03-02 15:23:17.015		
40	Varnish Table [10009]		2010-03-02 15:23:17.015	2010-03-02 15:23:17.020		

Materials

Routing Task Id	Product Name	Quantity
Cut Wood [10006]	Wood [10000]	25
Cut Wood [10006]	Nails [10001]	100
Cut Wood [10006]	Varnish [10002]	5

Figure 27: Viewing the Production Run Details

Important Note: You cannot start or execute this production run because MRP has indicated that we have no raw materials in stock to make the tables. So, before we can start this manufacturing production run we need to buy more raw materials.

Using Order Manager for Quick Purchase Order Entry

OFBiz makes it easy to create a Purchase Order based on the details from an MRP run especially if we have linked our preferred suppliers to the products.

A Purchase Order is a document used to order things from a supplier.

As part of our raw material product setup we included a “main supplier” for each

product. This detail will now be used to generate a Purchase Order to that supplier.

Use Order Manager to:

- Navigate to the Order Manager, click the “Requirements” tab and then click on the “Approve Product Requirements” tab
- Check the boxes for all our raw materials (wood, nails and varnish) and then click the “Submit’ button to approve the requirements as shown in **Figure 28**.

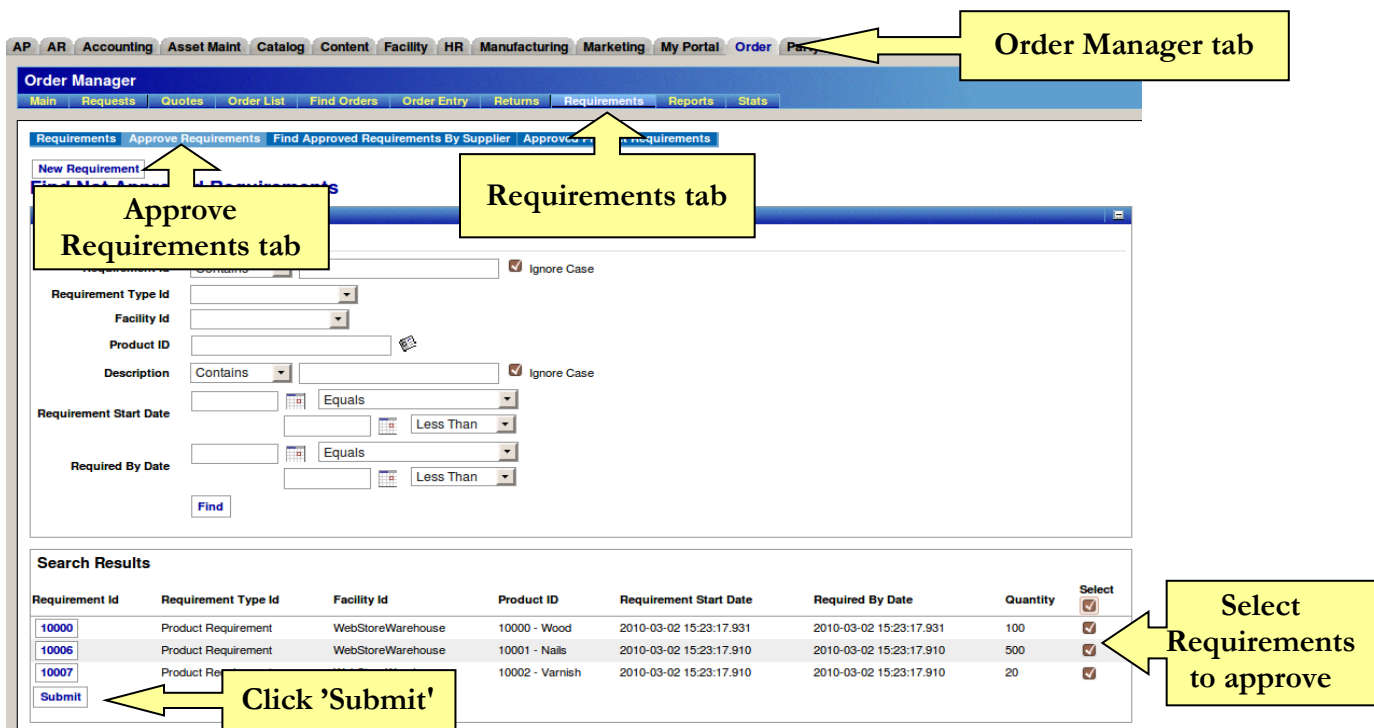


Figure 28: Approving Requirements for Raw Materials

- Click on the “Find Approved Requirements by Supplier” tab to select the details based on the table in **Figure 29** below:

Bill to Customer Party ID	Facility Id
Your Company Name Here (Company)	Web Store Warehouse

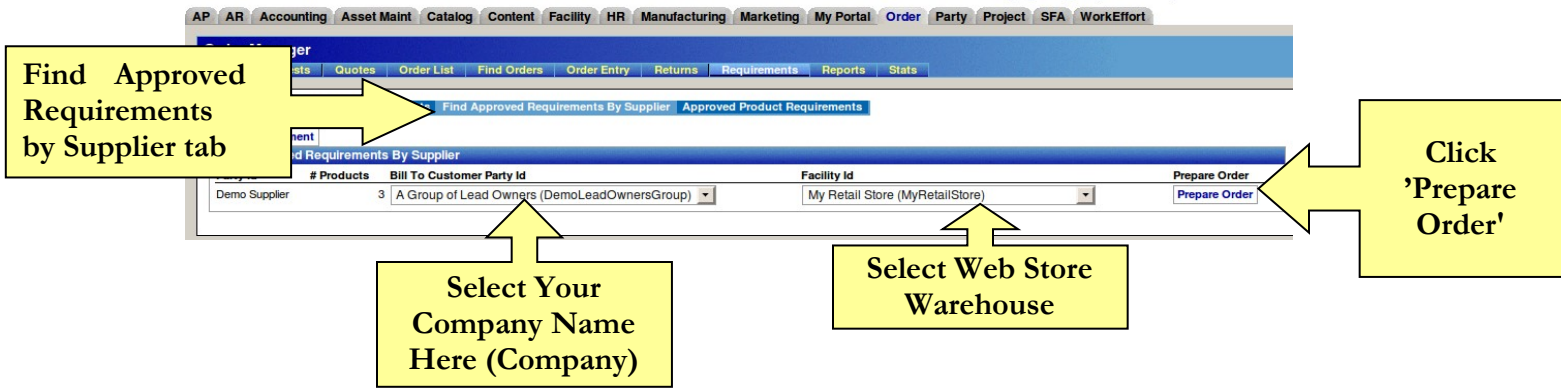


Figure 29: Approving Requirements for Raw Materials

- Click the “Prepare Order” button and then the “Purchase Order Quick Entry” button to enter and create the order to the supplier for the raw materials as shown in Figure 30.

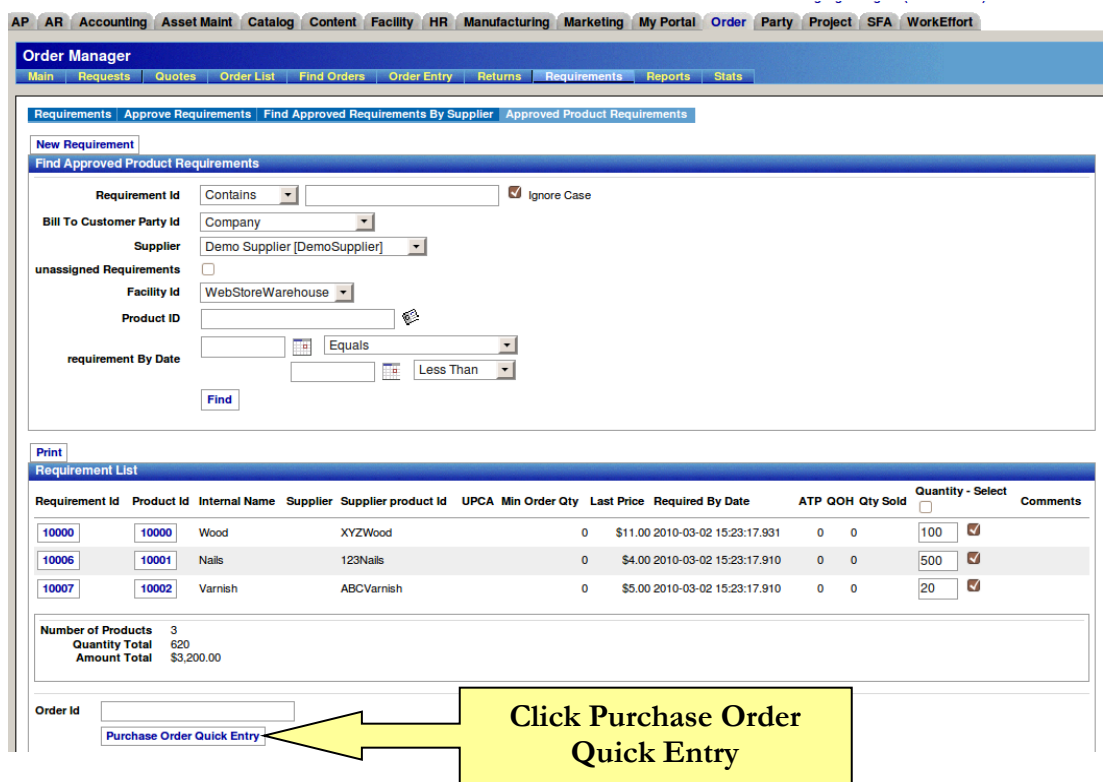


Figure 30: Preparing Purchase Order for Raw Materials

In a normal business situation the Purchase Order would be approved and sent out to the supplier. Let's fast track through this so we can demonstrate the production run execution.

- In the Purchase Order details screen and click on the “Approve Order” button to approve the Purchase Order as shown in **Figure 31**.

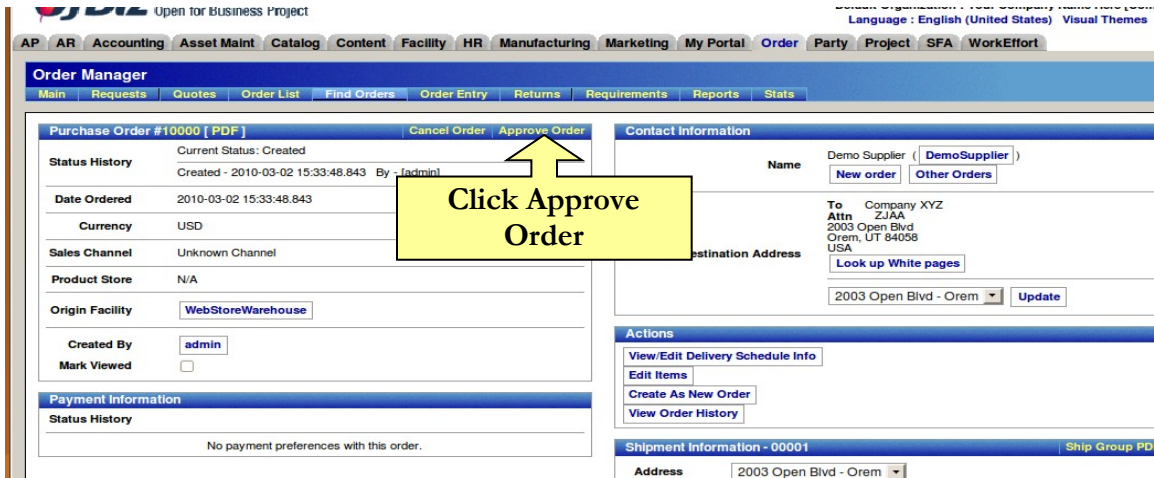


Figure 31: Approving the Purchase Order

- Next click the “Quick Receive Purchase Order” to receive the shipment of raw materials items into the WebStoreWarehouse. (see **Figure 32**).

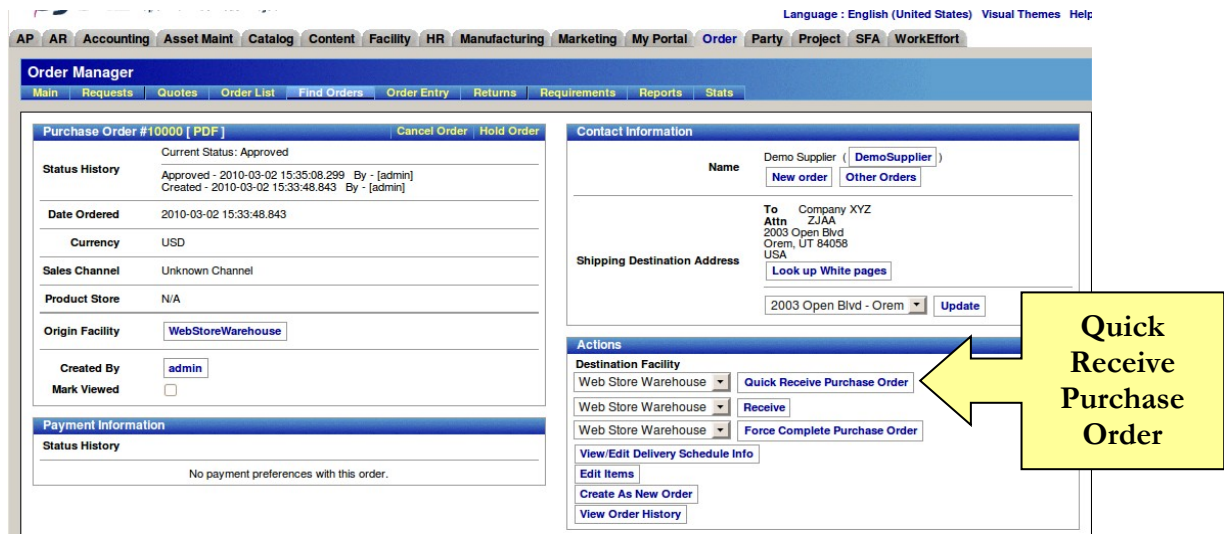


Figure 32: Receiving the Purchase Order for Raw Materials

- Click on the 'Purchase Shipment' radio button and click on the 'Receive Selected Shipment' button as shown in **Figure 33**.

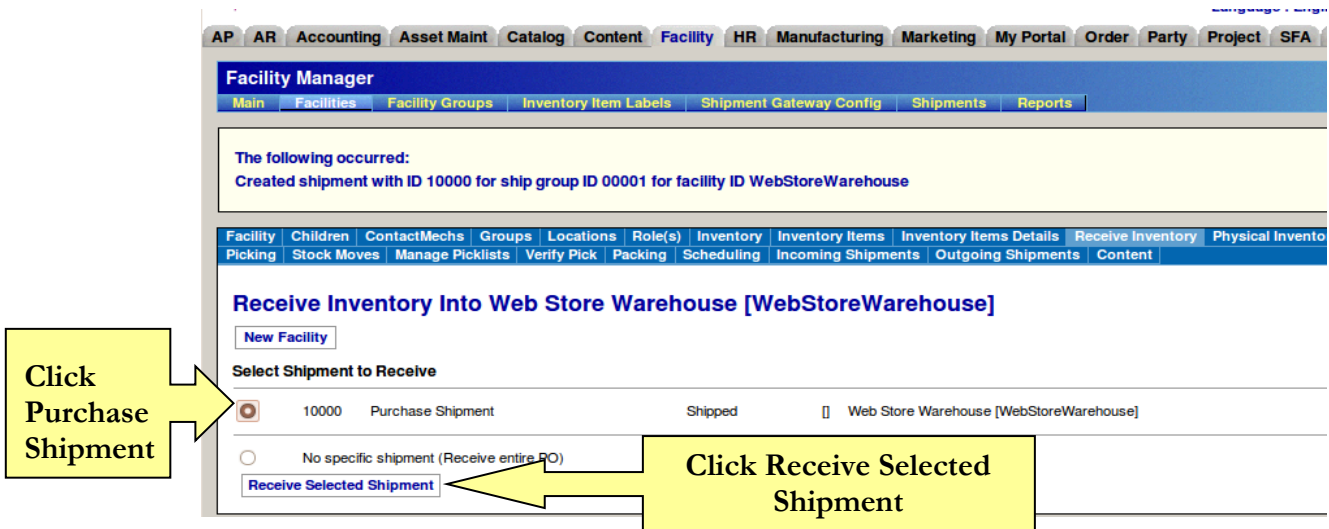


Figure 33: Selecting the Purchase Shipment to Receive

- Click the “Receive Selected Products” products button to receive all the raw materials into the Web Store Warehouse as shown in **Figure 34** below

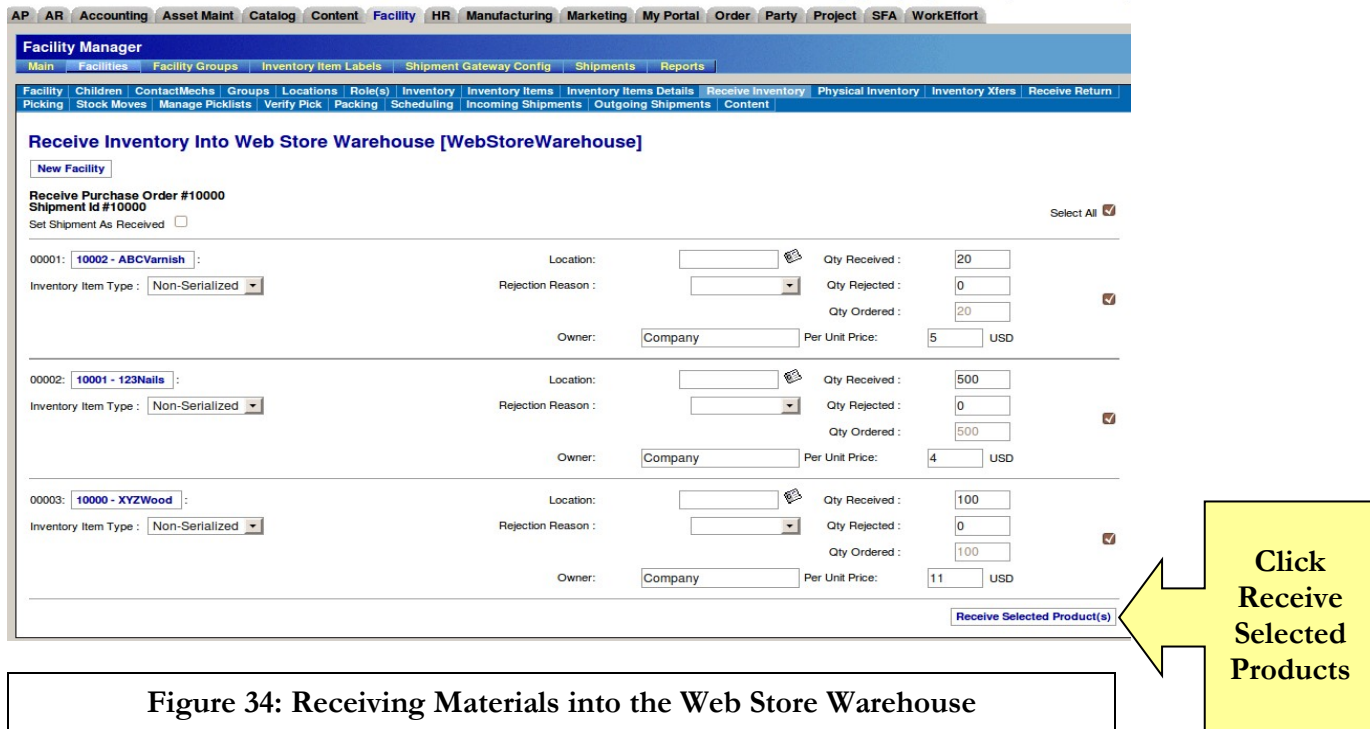


Figure 34: Receiving Materials into the Web Store Warehouse

The raw materials are now available for our Production Run to execute.

Using Manufacturing Manager to Run a Production Run

Use Manufacturing Manager to:

- Locate our Production Run and change the status to 'Confirmed'.
- Click on the “Quick Run all Tasks” to run each task quickly.

Note: The ‘Quick Run all Tasks’ feature assumes that all 5 tables have been made and there were no problems during manufacturing

The screenshot shows the Manufacturing Manager interface. At the top, there is a navigation bar with tabs for AP, AR, Accounting, Asset Maint, Catalog, Content, Facility, HR, Manufacturing, and Marketing. The Manufacturing tab is selected. Below this, there is a sub-menu with tabs for Main, JobShop, Routing, Routing Task, Calendar, Costs, Bill Of Materials, MRP, and Ship. The main content area displays the Production Run ID 10005. A yellow callout box labeled 'Production Run ID' points to the ID. Below the ID, there is a 'Create a Production Run' button and a list of actions: Print, Quick Start All Tasks, Quick Run All Tasks, Quick Complete, Quick Close, and Cancel. A yellow callout box labeled 'Quick Run all Tasks' points to the 'Quick Run All Tasks' button. Below the actions, there is a table with the following data:

Production Run ID 10005	
Product Name	Table [10003]
Current Status Id	Confirmed
Qty To Produce	5
Estimated Start Date	2010-03-02 15:23:17.000
Actual Start Date	
Calculated Completion Date	2010-03-02 15:23:17.020
Completion Date	
Production Run Name	MRP_MRP1
Description	
Produced	0
Rejected	0

Figure 35: Running a Production Run using Quick Run

The Production Run has completed successfully.

At the end of a production run you are prompted to “declare and produce”. This is where you enter the number of products that have been manufactured by the production run. We created 5 tables so that’s what we’ll declare.

- Declare the 5 tables produced and add them into stock as shown in **Figure 36**.

The screenshot shows the 'Manufacturing Manager' interface. At the top, there are navigation tabs: AP, AR, Accounting, Asset Maint, Catalog, Content, Facility, HR, Manufacturing, Marketing, and M. Below this is a sub-menu: Main, JobShop, Routing, Routing Task, Calendar, Costs, Bill Of Materials, MRP, and Shipme. The main content area is titled 'Production Run Declaration' and includes sub-tabs: Actual Materials, Assocs, Content, and Actual Costs. The production run ID is [ID 10005].

Buttons for 'Create a Production Run', 'Print', and 'Close Production Run' are visible. The 'Production Run ID 10005' section displays the following details:

Product Name	Table [10003]
Current Status Id	Completed
Qty To Produce	5
Estimated Start Date	2010-03-02 15:23:17.000
Actual Start Date	2010-03-02 15:43:26.307
Calculated Completion Date	2010-03-02 15:23:17.020
Completion Date	2010-03-02 15:43:27.962
Production Run Name	MRP_MRP1
Description	
Produced	0
Rejected	0

The 'Production Run Produce' section contains the following fields:

- Stock in: 5
- Inventory Item Type Id: Non-Serialized
- Lot Id: (empty)
- Add button

Yellow callout boxes provide instructions: 'Zero showing after completion of Production Run' points to the 'Produced' and 'Rejected' values, and 'Press 'Add' to declare the 5 tables manufactured' points to the 'Add' button.

Figure 36: Declaring what was produced by a Production Run

This step is now complete.

The “Getting Started” Results

We have setup and run our sample scenario using the manufacturing and MRP functionality in OFBiz “out of the box”.

It has successfully provided us with the information that we wanted. MRP recommends when to manufacture products based on low stock levels and also when to order raw materials from suppliers to meet a commitment to manufacture.

Here’s a quick summary of what we’ve done in this ‘Getting Started’ guide. We:

1. Identified the main processes of a manufacturing business
2. Setup the raw materials and manufactured product
3. Created a Bill of Materials, Routing Tasks and a Routing
4. Ran the MRP program and reviewed the report
5. Reviewed the requirements proposed by MRP
6. Approved the manufacturing requirement and automatically created a production run
7. Approved the raw materials requirements and generated a purchase order to the supplier
8. Received the raw materials into the warehouse and made them available to use in our manufacturing process
9. Ran the Production Run and made five tables
10. At the end of the production run, we entered five manufactured tables into stock, ready to sell to customers.

A lot of material has been covered in this document and we hope it’s given you a good insight into the enterprise standard MRP & Manufacturing functionality that’s available in OFBiz “out of the box”.

We welcome your feedback on this document. Please send any comments or suggestions to sharan.foga@openbiz.co.nz.

Beyond Getting Started

Now that you've been through our sample scenario, the next step for you is to have a go at setting up the OFBiz manufacturing component up for your own business.

We have only shown you a small part (the basics) of the OFBiz MRP and manufacturing functionality available. OFBiz can also be configured to support more complex manufacturing and assembling processes.

Refer to and try out our '5 steps' for your business and then review your results.

Look for the complete 'Getting Started with Apache OFBiz™ – Manufacturing & MRP' ebook available soon from myOFBiz.com.