



## Multi-Level BOM Verification Report Blueprint

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**What is this document |** Accounting Seed is a flexible accounting platform where you can add, build and layer your own customizations on top of the platform. Accounting Seed Blueprints provide an example of a specific use case that can serve as a template to implement a feature for your organization, but also can be tweaked or modified in any way you need to achieve your exact requirements. Blueprints serve as a design template or starting spot for your own feature.



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## What is the feature?

A multi-level bill of materials (multi-level BOM), sometimes referred to as an indented BOM, is a bill of materials that lists the assemblies, sub-assemblies, components, and parts required to make a product in a parent-child, top-down method. It provides a display of all items that are in parent-children relationships. A multi-level BOM is essentially a nested list whose parts or items are listed in two or more levels of detail to illustrate multiple assemblies within a product's top level BOM. Multi-level BOMs are used to organize complex and highly configurable products to ensure that all assemblies, subassemblies, components, and parts required are captured.

This feature allows all levels of the multi-level BOM to be aggregated and viewed on a single page, enabling the validation of the Product's entire BOM. It also provides quantities available for manufacturing of the BOM.

A product that is organized into a multi-level BOM, enables flexibility. For example, updating a sub-assembly within a larger product assembly can be done much quicker, since a change order only needs to address a subset of the product. The sub-assembly can be revised and used in multiple higher-level assemblies as necessary.

It also allows for the improved management of Parts inventory by allowing one to see all of the available inventory required for the manufacturing of the final product. This reduces the risk of shortages of parts with long lead times, high inventory costs or single-source vendors.

Finally, the multi-level BOM can provide insights into the cost of the parts and sub-assemblies allowing for the identification of potential alternatives to expensive parts or sub-assemblies.

## When is this feature set used?

This feature set is used to validate the complete BOM of a manufactured product. It can also be used to identify current part inventory quantities available for all parts (direct and subassembly) required to build the manufactured product.

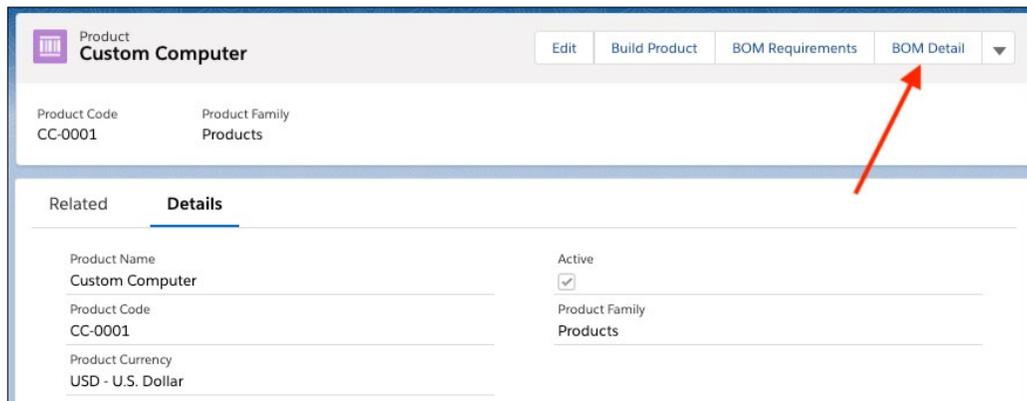
## What terms or definitions do I need to understand?

<b>BOM/Bill of Material</b>	A list of the materials with quantities used to create a manufactured product.
<b>M-BOM / Multi-Layer BOM / Nested BOM</b>	A list of the materials within nested subassemblies and quantities used to create a manufactured product.
<b>Inventory Balance / Inventory Quantity Available</b>	The quantity of a product that's physically on-site which can be shipped to a customer or used to manufacture another product.
<b>Purchase Order</b>	A formal communication sent to a seller of goods or services to purchase a set quantity of items with specific prices.

## Can you give me an overview of how this works?

Manufactured Products consist of product parts that are listed on a related list. Typically these product parts are purchased products, but in some cases, the product parts are themselves manufactured products or subassemblies. These multi-level BOMs can have many levels, with subassemblies having children subassemblies. The BOM Detail Report utilizes a custom visualforce page to display the full multi-level BOM.

A new lightning Action will be created that will execute the BOM Detail visualforce page. The Action will be added to the Product Page layout as shown below.



### What object model changes are required?

No object model changes are required as only existing data objects and fields are used. Two new Lightning buttons would be created and added to the product page layout. The Buttons would be BOM Detail and BOM Requirements. Each button would launch a visualforce page that would create and display the appropriate report.

### What code is needed for this process?

One visualforce page will be created for the BOM Detail report. The logic will follow the process described above. An example of the BOM detail visualforce page is below. The BOM Requirements is launched when the user clicks the BOM Requirements button. The scripts' logic will follow the process described above in the overview section.

This visualforce page data will display the selected top manufactured product's product parts, listing the product parts name, its inventory type, the quantity required to manufacture the parent product, and the parent product. Each data element will be a separate column as detailed below.

If a product part type equals purchased, the page will display the description. If a product part type equals manufactured product, the page will list out the respective product parts for that manufactured product. This method will continue as many levels deep as required to fully identify parts of a product. When the last product part has been completed, the visualforce page will return to the previous level and display the next product part of that product. The final results of this page will be a comprehensive listing of all the product parts and sub-assemblies of the parent product selected.

#### Column 1 - Level

The visualforce page will track and assign what level the product is. Each product part for a specific parent product will add a new dot level that will be incremented by 1 for each product part added for that parent. For example, the first product will have a level of 1, with each of its product parts assigned levels of 1.1, then 1.2 until there are no more parts.

If a product part is a manufactured product, an additional dot level will be added for its parts. For example, the first product part, 1.1, is a manufactured product. Each of its product parts assigned levels of 1.1.1, then 1.1.2 until there are no more parts.

#### Column 2 - Product/Product Part

This column will display the product name of each of the products/product parts. Each time a new level is added, the name will be indented with an additional 3 spaces. For example level 2, will be indented 3 spaces, level 3 will be indented 6 spaces, level 4 will be indented 9 spaces, and so forth.

**Column 2 - Product/Product Part (Continued)**

The first product, level 1, displayed will be the active manufactured product, also called the top product. Next each of its products parts names will be listed. If the product part type equals manufactured, the page will display the next product part for that parent. If a product part type equals manufactured product, the page will list out the respective product parts for that manufactured product as a new level. When the last product part has been displayed, the visualforce page will return to the previous level and display the next product part of that product.

Finally, each product/product name will be linked to its object record, so that when clicked a new tab with that product will be displayed.

**Column 3 - Inventory Type**

The column will show the inventory type of the product/product part.

**Column 4 - Quantity to Build Parent**

The column will show the Quantity of the product part.

**Column 5 - Parent Product**

The column will show the parent product of the product part.

The BOM Detail report below shows an example of what the output might look like.

Level	Product/Product Part	Inventory Type	Quantity to Build Parent	Parent Product
1	<a href="#">Manufactured Product 1</a>	Manufactured		Top Level
1.1	<a href="#">Product Part 1</a>	Purchase	2	Manufactured Product 1
1.2	<a href="#">Product Part 11</a>	Manufactured	1	Manufactured Product 1
1.2.1	<a href="#">Product Part 2</a>	Purchase	3	Product Part 11
1.2.2	<a href="#">Product Part 12</a>	Manufactured	2	Product Part 11
1.2.2.1	<a href="#">Product Part 4</a>	Purchase	2	Product Part 12
1.2.2.2	<a href="#">Product Part 5</a>	Purchase	3	Product Part 12
1.2.2.3	<a href="#">Product Part 6</a>	Purchase	2	Product Part 12
1.2.2.4	<a href="#">Product Part 7</a>	Purchase	1	Product Part 12
1.2.3	<a href="#">Product Part 3</a>	Purchase	1	Product Part 11
1.2.4	<a href="#">Product Part 4</a>	Purchase	1	Product Part 11
1.3	<a href="#">Product Part 8</a>	Purchase	2	Manufactured Product 1
1.4	<a href="#">Product Part 13</a>	Manufactured	2	Manufactured Product 1
1.4.1	<a href="#">Product Part 9</a>	Purchase	1	Product Part 13
1.4.2	<a href="#">Product Part 7</a>	Purchase	1	Product Part 13
1.4.3	<a href="#">Product Part A</a>	Purchase	3	Product Part 13
1.4.4	<a href="#">Product Part B</a>	Purchase	2	Product Part 13

**What does a successful outcome look like?**

With the successful run of each report, the report will be displayed formatted similarly to the examples above.

**What process or policy changes should I consider with implementing this solution?**

Once the BOM Requirement report is created, you may consider automating the creation of a purchase order using the quantity to purchase.



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