The Book of Movements

A Technical and Training Guide For iDempiere

Warehouse Management System

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This is part of the iDempiere Open Source Project Distro codenamed:

Canggih ERP

Usage is coupled with additional plugins, ***org.red1.wms*** and ***org.red1.wmsext*** and ***org.canggih.consignment***. For more information, refer to www.red1.org/adempiere.

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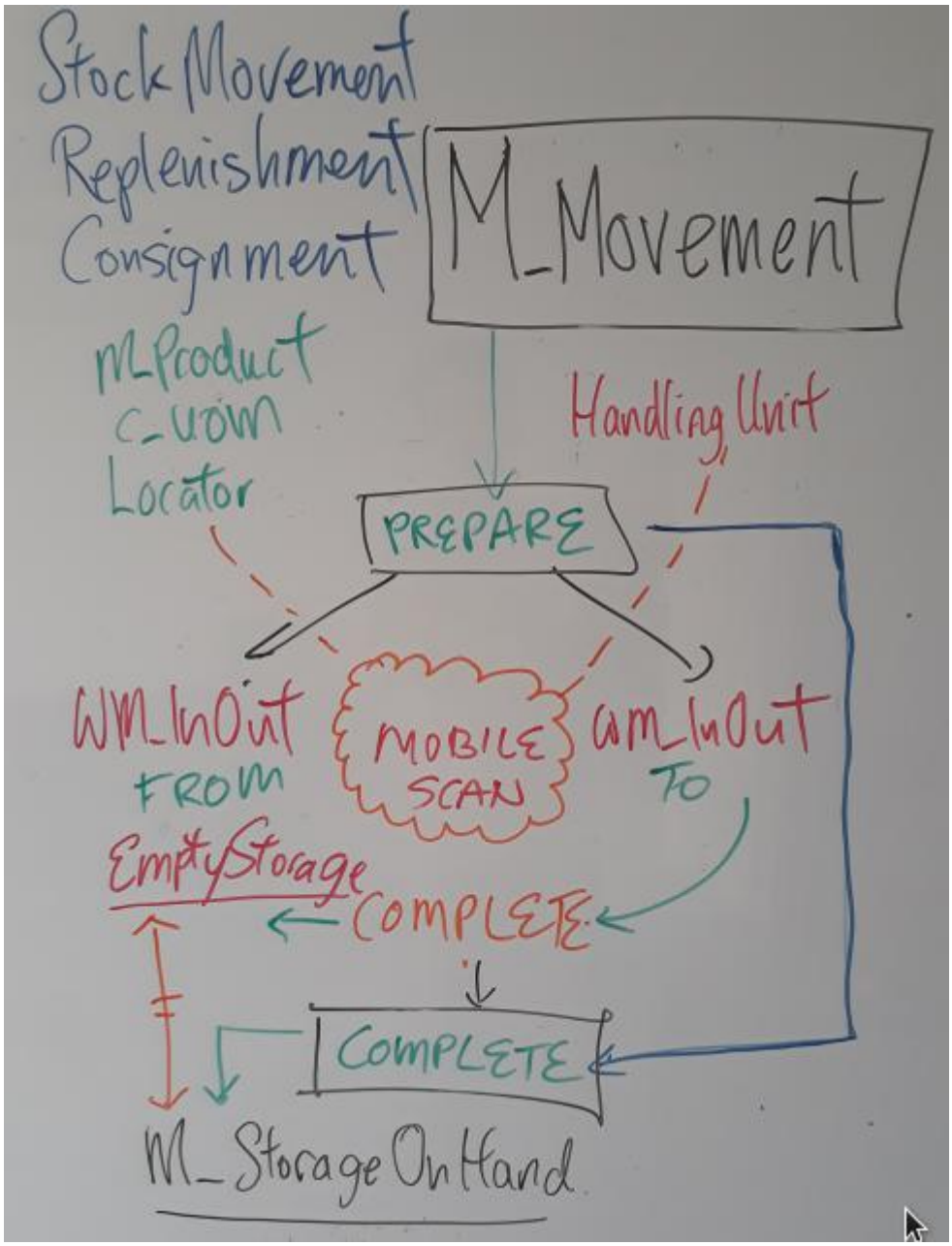
Please get educated first before asking what it really means - https://www.gnu.org/philosophy/selling.en.html



"Daring ideas are like chessmen moved forward: they may be beaten, but they may start a winning game."

– Johann Wolfgang von Goethe

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This guide is for the use of the following software applications:

1. iDempiere ERP from www.idempiere.com
2. Warehouse Management System from www.red1.org (initial sponsorship by SYSNOVA, Bangladesh and MotiveSolutions, Thailand)
3. Extension plugins from www.red1.org (sponsored by HPCS).
4. Source code of WMS and WMSExt and Consignment plugins at http://bitbucket.org/red1/
5. And compile binary plugins at http://sourceforge.net/projects/red1/files

This guide assumed you have a fully setup iDempiere ERP together with the WMS (Warehouse Management System). HPCS is the main company responsible for a major use case that implements such a system here in Malaysia. The guide begins with guidance how to move the storage around using the following concepts:

6. Stock Movement
7. Replenishment
8. Consignment

Users that are undergoing training just need to follow the STEPS in bold. The other notes is for deeper understanding.

VERSION 2 NOTE

A good application must allow easy ReverseCorrect or Void of any document. It is a convention in Compiere-iDempiere ERP application model. Thus we have incorporated such capability particularly to reverse Movements that will check linked Picking/Putaway documents to be reversed. If they are further linked to Storage lines, likewise reversed too. This shall then let the app and data stay in synch. We also written a 'SynchCheck' routine hidden in the Repair Movement process to make a comparison analysis between WMS Storage data and Core's StorageOnHand data.

We also have ReverseCorrect for the Sales/Purchase cycle. A big bonus is more user friendliness with direct Import Excel of Sales and Consignment listings. The SO/PO can also break up bulk orders into box or line qtys depending on each product's highest UOM's DivideRate.

Background of Client

The client is a nation-wide, leading, and large manufacturing & distribution company, providing schooling uniforms and accessories. It has a manufacturing production base of cloth sewing in Kota Bahru, on the east coast of Malaysia. Its HQ is on the west coast in Shah Alam. It has 300 sewing workers in the Kota Bahru factory, This ERP project is divided into 3 phases:

A. Warehousing
B. Manufacturing
C. Financials

It is also integrated into its E-Commerce platform, Point of Sales, and IoT mobile apps also provided by HPCS.

Client's main concern is to keep stock of its raw materials and finished goods kept in its warehouses and distributors and retailers that purchase from them either on cash or consignment basis. It has to provide timely information to the warehouse floor to make quick decisions on its stock exposures and nearest supply points to fulfill its 250 outlets all over the country.

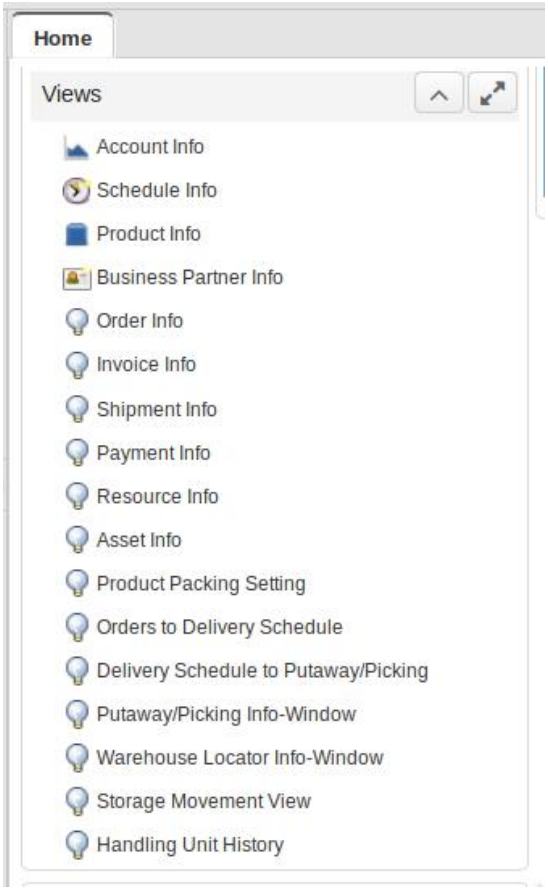
It also deal with suppliers of raw materials and accessories from local and overseas.

The client has freshly migrated all Purchases, Material Receipts and Stock information of its warehouses into the iDempiere ERP, where now we have also the other plugins installed. Note that these plugins follows strictly RED1's unique but critical best practice of non-core touching, and does not impact any core processes.

On the right, is the front panel view of ready Info-Windows, which shall appear when the plugins are fully active.

Please refer to the community forum or our paid consulting for implementation advice.

This guide assumes you already have a fully installed and data migrated instance of iDempiere + WMS plugins.



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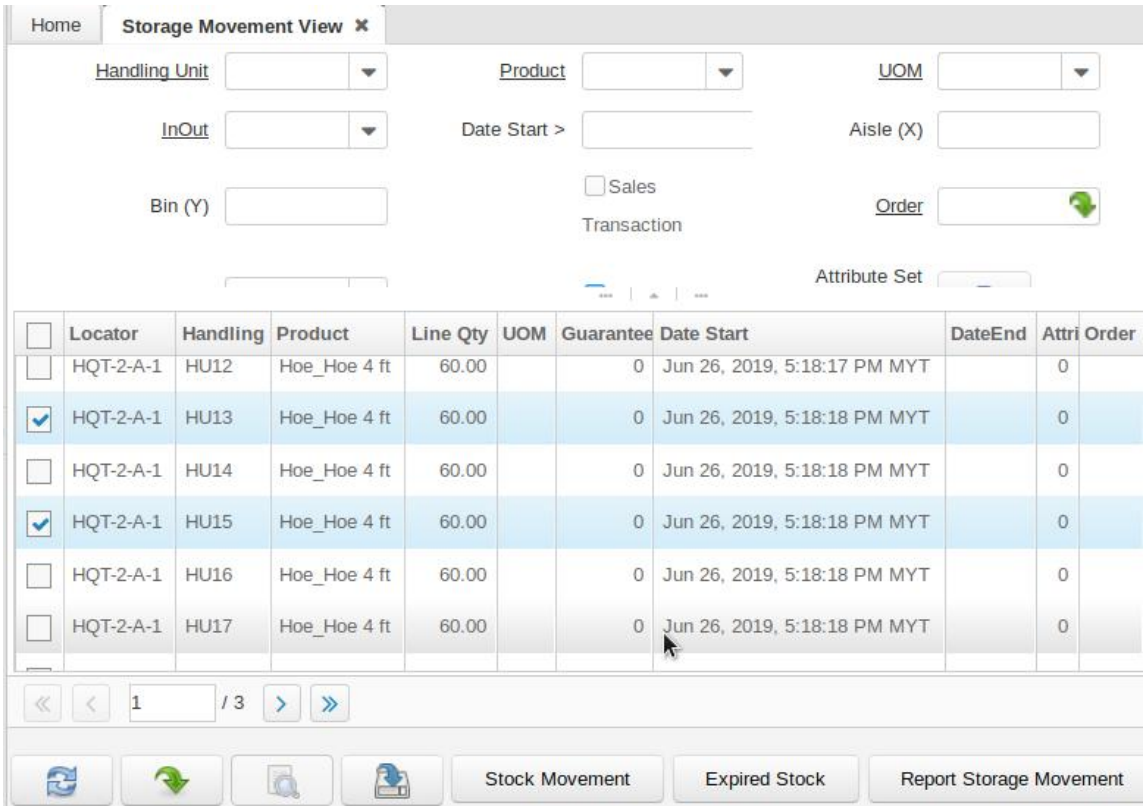
Storage Movement

This Info-Window, accessible from the front panel of iDempiere, is the first window of truth. This is because it shows that:
1) Your Warehouse Management System is working. Data in there are made a layer above the underlying core Material Management.
2) You have active data ready to be moved.

STEP A1 - Open Storage Movement View



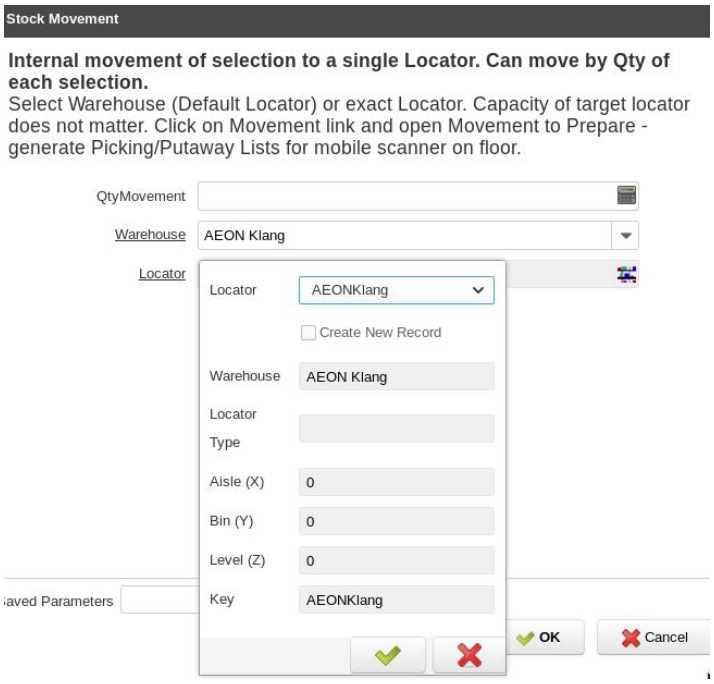
STEP A2 - Select Lines To Move

In this Storage Movement Info-Window View, select the items that you wish to move. Then press the Stock Movement button at the bottom.

STEP A3 - Click on Stock Movement

STEP A4 - Select Warehouse, Locator

Pull down the Locator list and select the Locator name you wish to send the items to. The selection of available Locators are restricted to the Warehouse chosen. If there is no Warehouse selected, it shall list down ALL locators in the WMS.

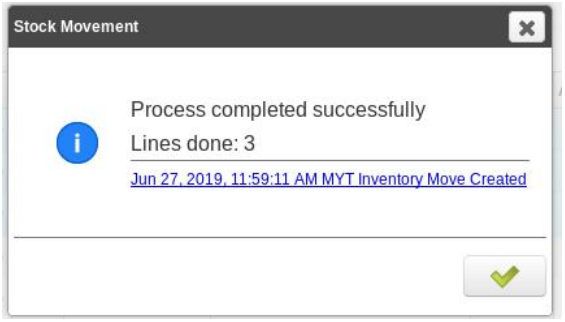


STEP A5 - Press

OK.

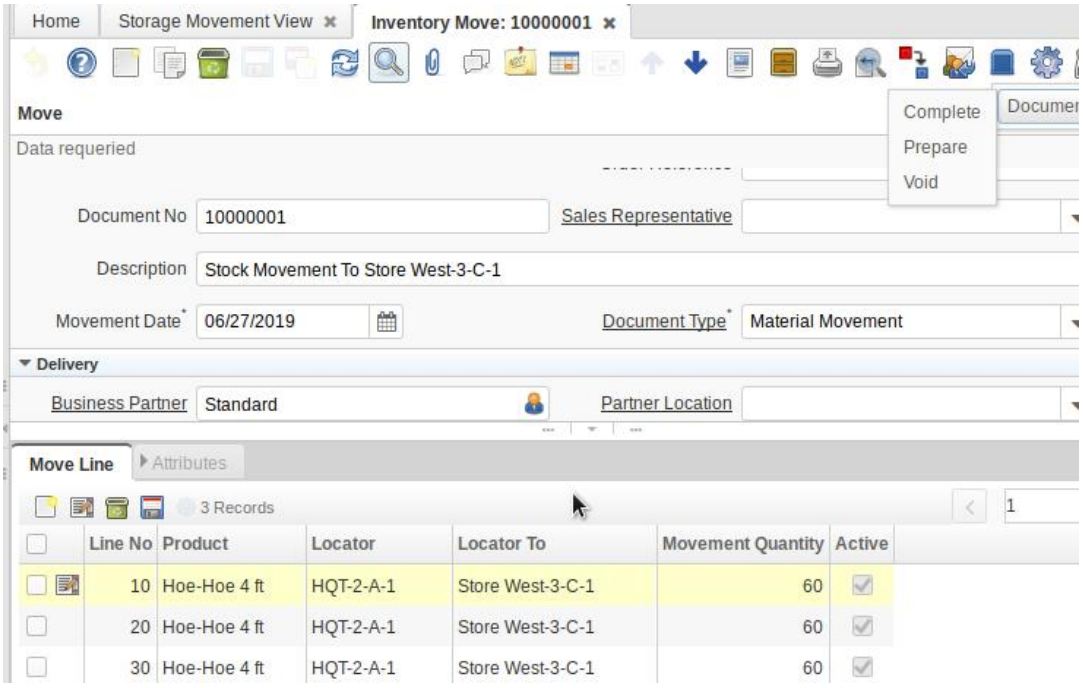
After a few seconds, a success dialog box shall open with a link to the newly created Inventory Movement record.

STEP A6 - Click on Link



STEP A7 - Process Prepare

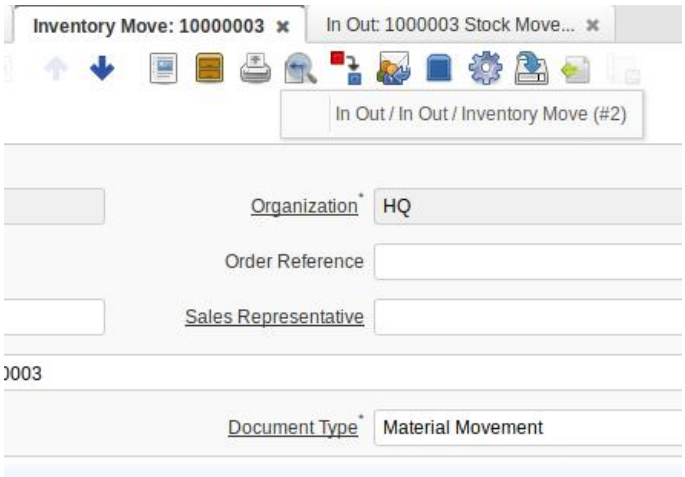
Click on the Gear icon to Document. Select the Process to Prepare.



It shall generate a set of 2 WMS InOut documents. One is for Picking and accessible by the mobile scanner app. The other is for the Putaway also accessible by the mobile scanner app.

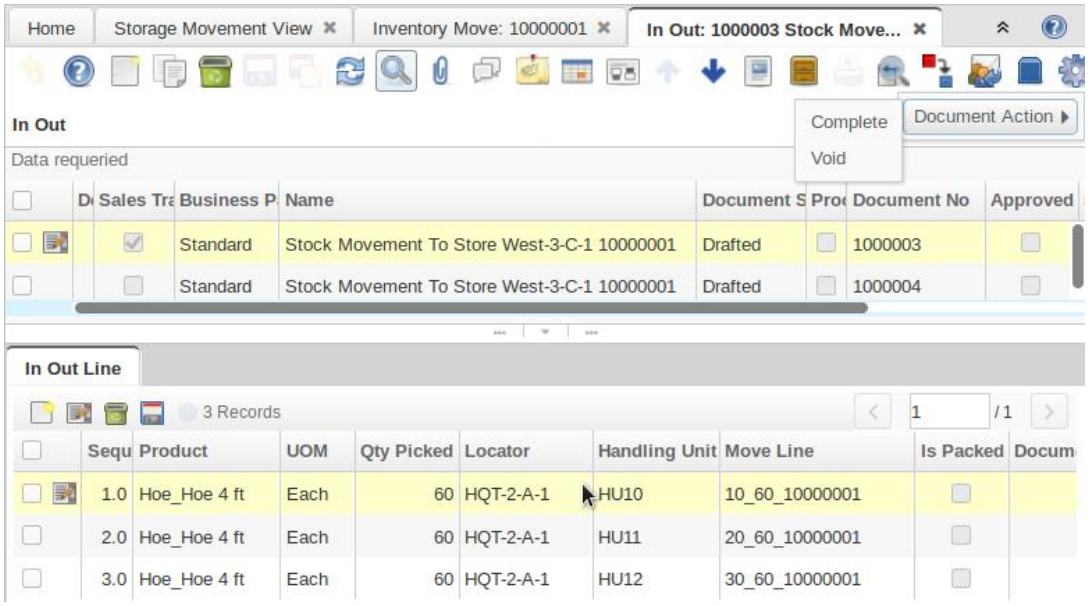
STEP A8 - Zoom Across to Picking/Putaway Records

After they are processed, you can just easily Zoom Across without leaving your Movement window or hunt them down at the Search Menu. Clicking on the In Out / Inventory Move (#2) shall open both records!



STEP A9 Edit the Picking/Putaway Details

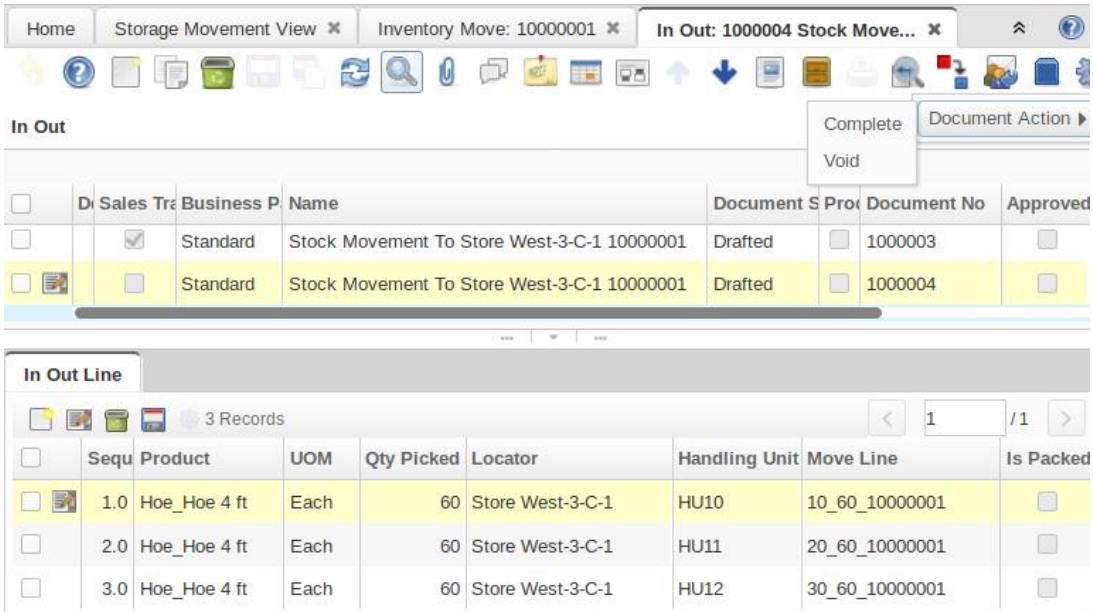
You may edit the Handling Unit change in the Picking (Sales Transaction - 1000003) record. Or the Putaway (1000004) if there is a Locator change. No other change is accepted.



Note the Sequence for Warehouse floor route. Complete the Picking WM InOut document. If the Handling Unit (box) are changed, They be noted automatically.

STEP A10 - Run Process Complete

Complete the Putaway WM InOut document.

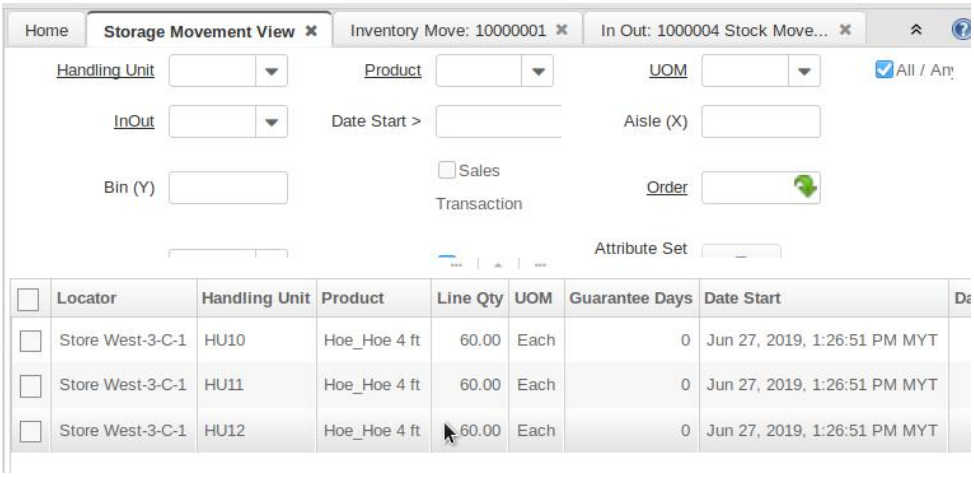


STEP A11 - Complete Movement Record

Return to the Inventory Move record and Complete it.

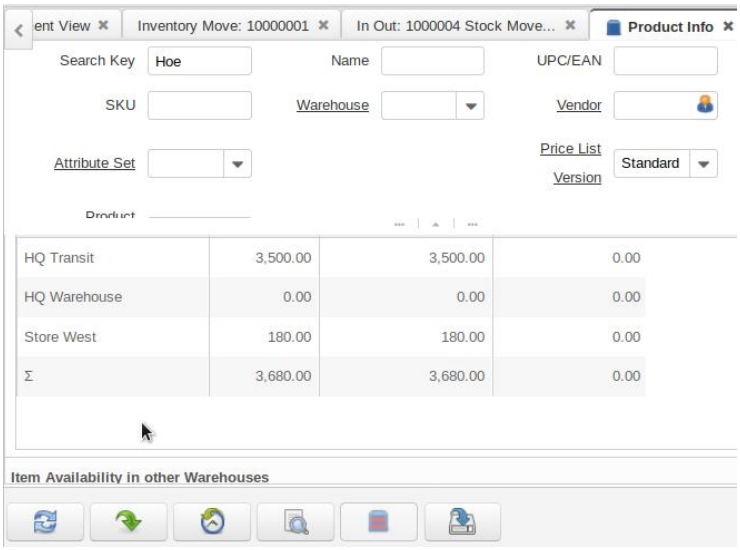
STEP A12 - Examine Results

Now, check the Storage Movement View, refresh it, and you will notice the 3 lines have disappeared and shall appear in a different Locator, i.e. Store West.



STEP A13 - Examine Product Info

Go to Product Info View and check for the product availability. They are reflected correctly in the core M_StorageOnHand data.

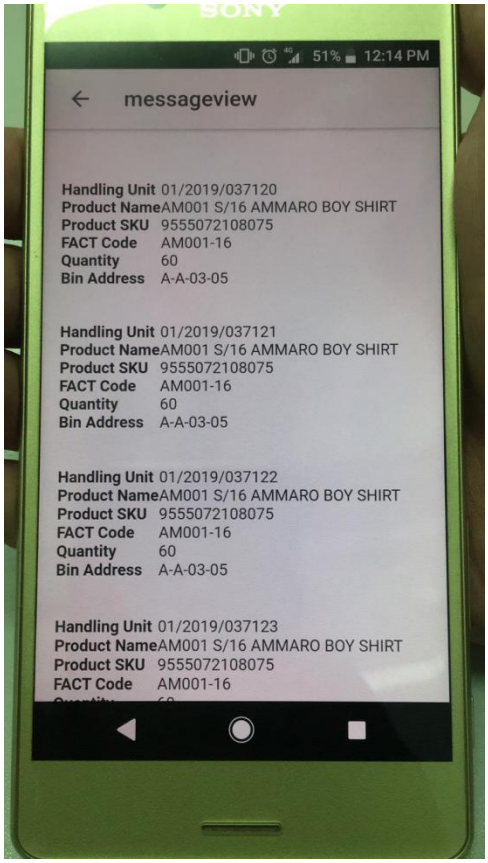


Note that the WMS layer of Picking and Putaway documents are controllable by the warehouse floor mobile app, also made available by HPCS in a separate application to be released separately also under the FLOSS policy.

The use of the mobile app give full traction and control of the completion of documents, which works with a background processor also done separately by HPCS to monitor the open documents and complete them when fully updated by the mobile app.

What is shown here is in lieu of such apps, the Stock Movements are still controllable and desktop manageable.

Note also the stocks moved by this method does not check the capacity constraint of the receiving Locator. This is for emergency and urgent relocation purposes. Other features of the software such as Replenishment and Consignment fully utilise the capacity control and flow of the stock picking and putaway.



Replenishment Movement

The Replenishment Process is a major feature in the Stock Movement design. It uses the following setup in the WMS:

- Zoning. The allocation of specific set of locators for a particular set of products
- Material Replenishment. A core function of iDempiere where Products are given Replenishment details such as Reorder Qty, Maximum and Minimum Levels, Order Pack Qty an type of Replenishment.
- Auto-Replenishment Setup. The Material Replenishment based on the Zoning information provided by the user.

The first and third feature above are part of the extra plugins capability. The second one is already present in the iDempiere project since Compiere, the parent project it forked from.

Type Table Setup

This is to setup the zoning information which Replenishment and Putaway reference to.

Below is how the Client sets up its Zoning information. The Excel sheet is easily imported into the Type Table via Red1's Ninja Tool into WM_TypeTable.

	A	B	C	D
1	M_Warehouse_ID	ProductValue	WM_Type_ID	X
2	SAWH-A	CP001	BOY SHIRT	A
3	SAWH-A	CP004	PRIMARY LONG PANTS	B
4	SAWH-A	CP014	SECONDARY LONG PANTS	C
5	SAWH-A	CP022-SBLS	CP BOY LONG SLEEVE WHITE	C
6	SAWH-A	CP021-BLS	CP BOY LONG SLEEVE BLUE	C
7	SAWH-A	CP009	BAJU KURUNG	D
8	SAWH-A	CP008	PRIMARY LONG SKIRTS	E
9	SAWH-A	CP018	SECONDARY LONG SKIRTS	F
10	SAWH-A	KT2002	TUDUNG	G
11	SAWH-A	CP009-LBR	PAKAIAN WARNA SEMUA ITEM	G
12	SAWH-A	CP009-LGR	PAKAIAN WARNA SEMUA ITEM	G
13	SAWH-A	CP009-LPK	PAKAIAN WARNA SEMUA ITEM	G
14	SAWH-A	CP009-LPL	PAKAIAN WARNA SEMUA ITEM	G
15	SAWH-A	CP009-LYL	PAKAIAN WARNA SEMUA ITEM	G
16	SAWH-A	CP014-	PAKAIAN WARNA SEMUA ITEM	G
17	SAWH-A	CP021-	PAKAIAN WARNA SEMUA ITEM	G
18	SAWH-A	CP008-	PAKAIAN WARNA SEMUA ITEM	G
19	SAWH-A	CP018-	PAKAIAN WARNA SEMUA ITEM	G
20	SAWH-A	CP007	PINAFORE	F

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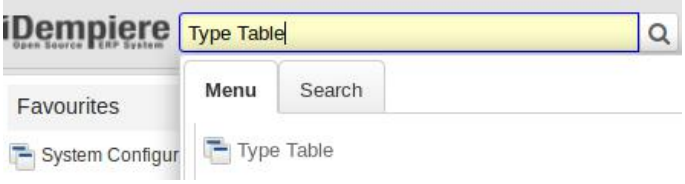
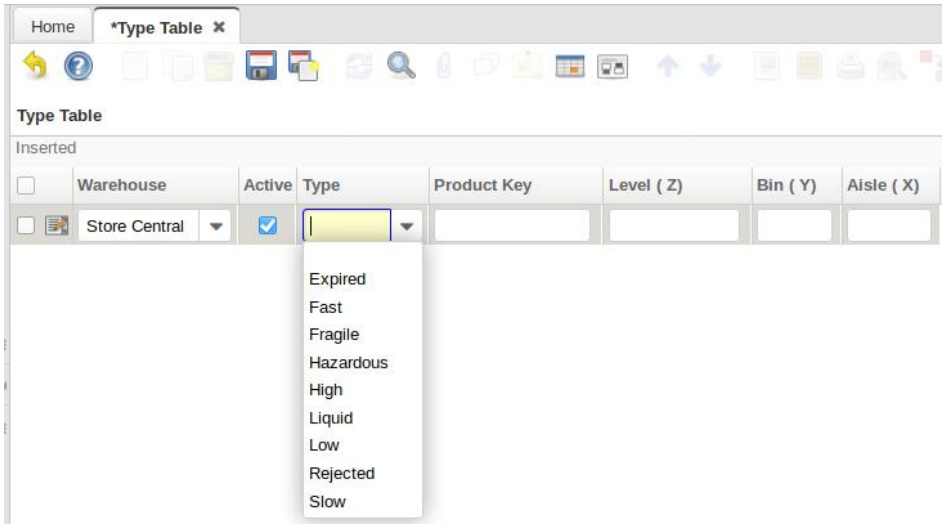
STEP B1 - Using Type Table

Search in the Menu field, for Type Table. Click on it. In the opened Type Table, fill in the Type, what product starting Value to be allocated that type, and the Locator zone to assign the type to.



You may create as many types, even overlapping a same locator. Or having many types to a certain product. Just remember this is up to your planning. Good news is that you can always reset this anytime and the WMS shall follow in all its future putaway and replenishment calculation



Product Key here is just the starting value that exists among the Product's Value Key. Example starting with Ho for Hoe and Holly Bush, then just key in 'Ho'.

STEP B2b - Set Product Locator

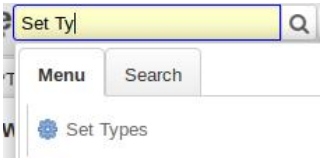
Option when using TypeTable, use process Set Product Locator to put in the Type information inside the Storage Type and Product Type tables. This basically are the Zoning information.

Later, we set up the M_Replenish data according to the capacities of the Locators defined by the Zoning information in Type Table. In our case above, we use the alternative smaller set Set Types.

These STEP 12 and 12b are used in the Client use case, as they have a large set of zoning information and they may not rely on Category but naming convention.. In our Garden World example we are going to setup 2 types only. So next page is how to do it alternatively.

STEP B3 - Setup Types

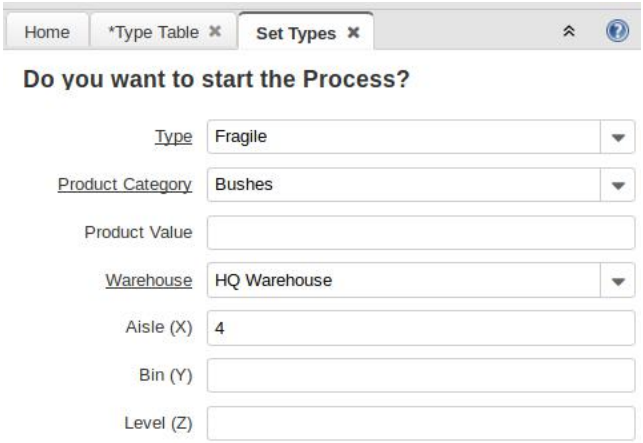
There is an alternative process if your products are mostly well categorised and few. For example we going to set 'Bushes' to whole of Aisle 4 at HQ Warehouse.



First you have to create new Types before we can use them. Go ahead and create Fragile and Fast types on your own. No screenshot shown. Try it. They are simple.

STEP B4 Create New Type = Fragile and Fast

STEP B4b Set Fragile to Bushes / HQ / 4



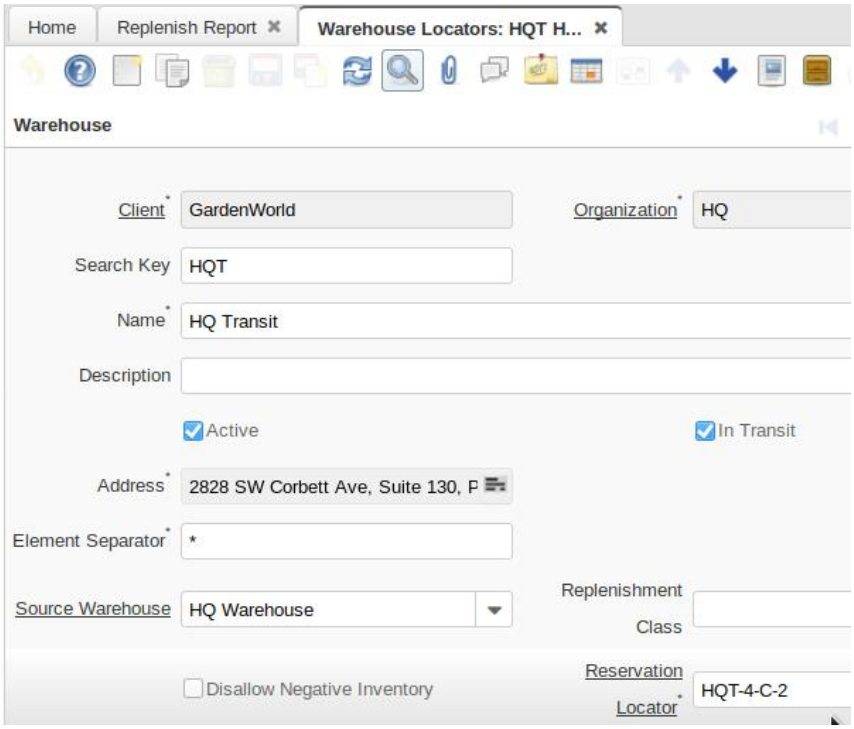
Click OK. Note the result that appears to confirm it worked.

Next setup another type, Fast for Tools Category, at Aisle 2 of both HQ Warehouse and Transit.

STEP B4c - Set Fast to Tools for HQ/Transit / 2

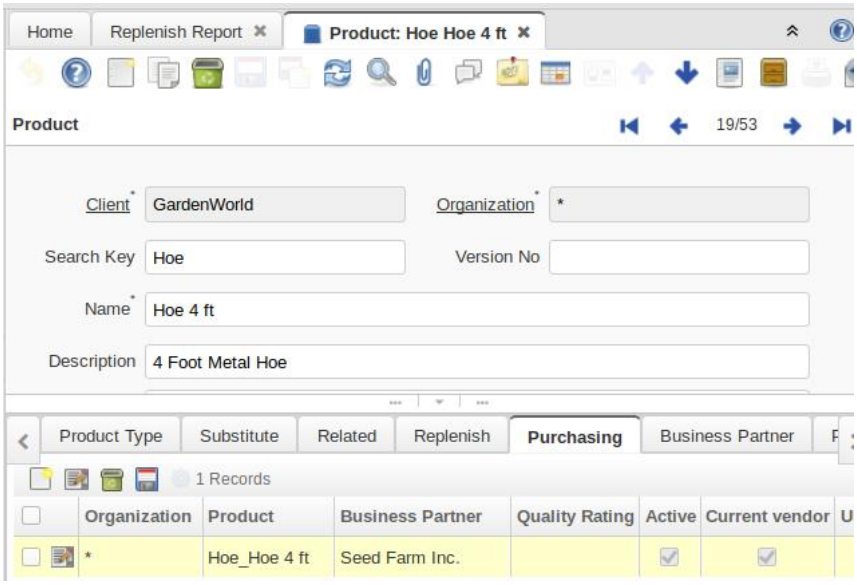
STEP B5 - Set SourceWarehouse

The following are only set one time. But they can be set again each time user wish to make changes to such setup. Before running Replenish Report Process, we have to set a Source Warehouse for the Warehouse that is going to be Replenished. Set it to another - HQ Warehouse. It shall fetch stock from there to the HQ Transit.



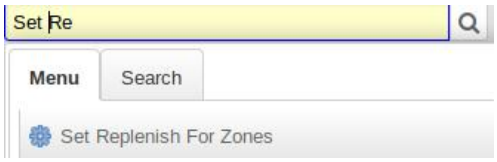
STEP B6 Setup Product PO

Make sure that the products have a Purchasing Vendor. This is stored in the M_Product_PO. Below is where to find such data on the Product Window, Purchasing Tab.



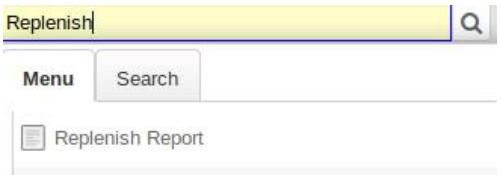
STEP B7 - Set Replenish For Zones

This process is to setup the M_Replenish table under the Product window. Instead of manually input the zones' capacities under the Replenish tab, as the Maximum Order Qty, this process does it automatically for you en bloc.



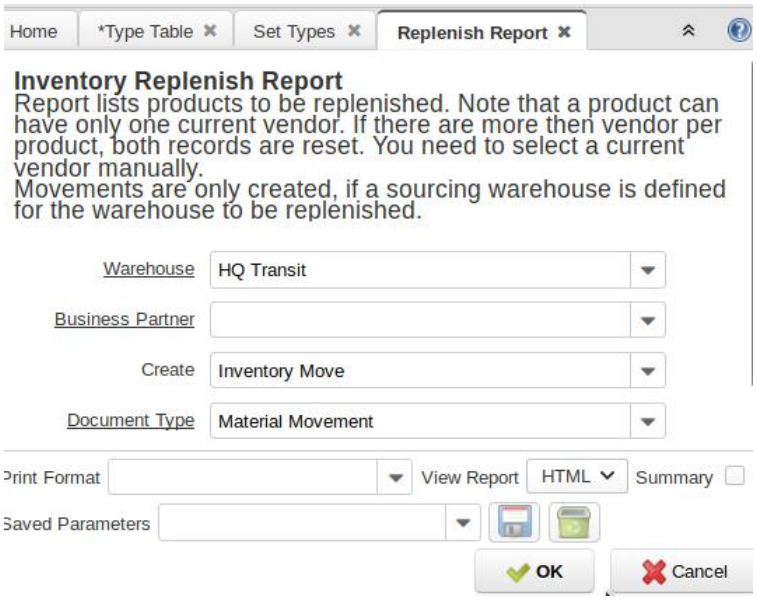
STEP B8 - Open Replenish Report

Now with the STEP 16 set done, we are ready to run the regular or periodic Replenish Report. From the Menu search box, key in Replenish and choose Replenish Report.

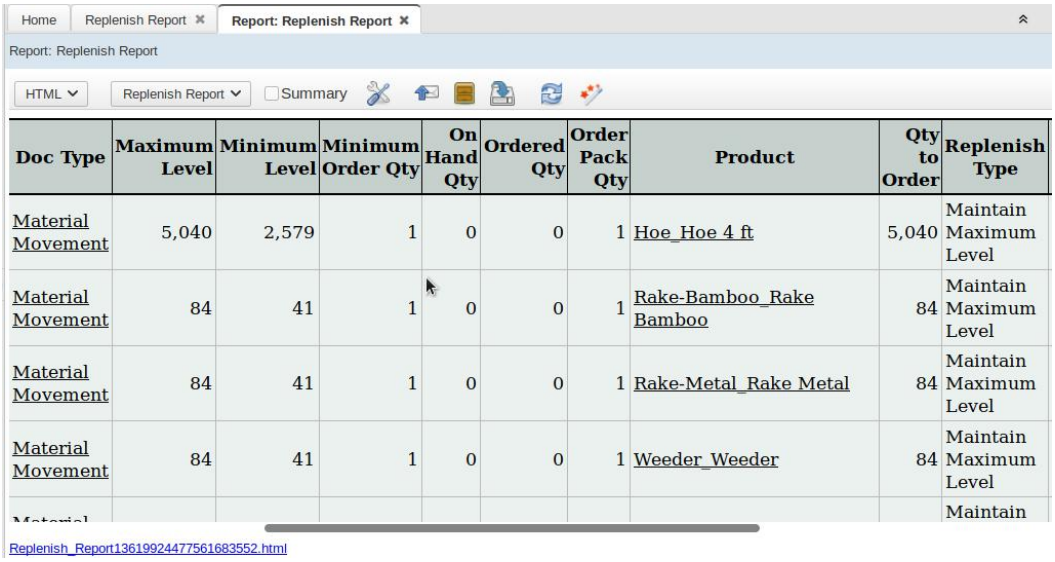


STEP B8b - Set HQ Transit, Inventory Move

Fill in the details as shown. Click OK and a Report will be generated. If the process is successful an Inventory Movement will also be linked.



The above creates a Replenish Report for HQ Transit, which will source from HQ Warehouse, according to the setting in the M_Replenish table.

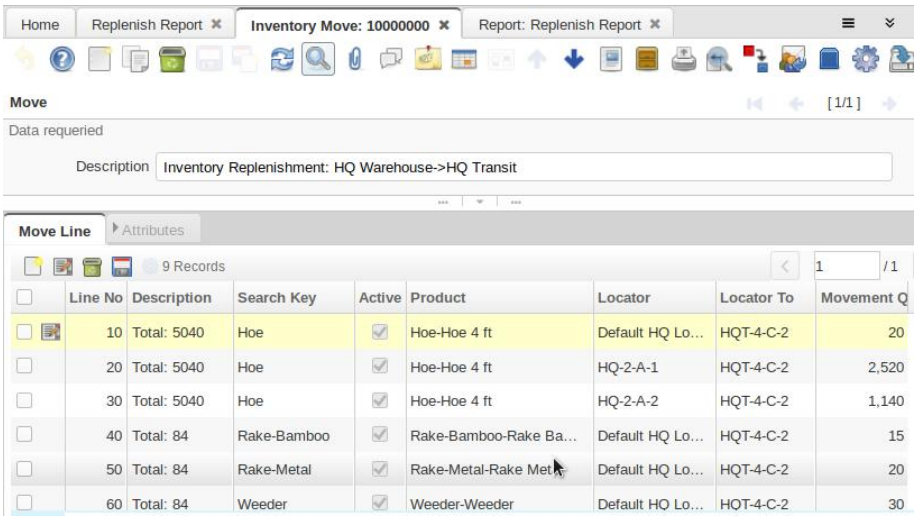


Doc Type	Maximum Level	Minimum Level	Minimum Order Qty	On Hand Qty	Ordered Qty	Order Pack Qty	Product	Qty to Order	Replenish Type
Material Movement	5,040	2,579	1	0	0	1	Hoe_Hoe 4 ft	5,040	Maintain Maximum Level
Material Movement	84	41	1	0	0	1	Rake-Bamboo_Rake Bamboo	84	Maintain Maximum Level
Material Movement	84	41	1	0	0	1	Rake-Metal_Rake Metal	84	Maintain Maximum Level
Material Movement	84	41	1	0	0	1	Weeder_Weeder	84	Maintain Maximum Level
Material									Maintain

STEP B9 - Click on Inventory Movement Link

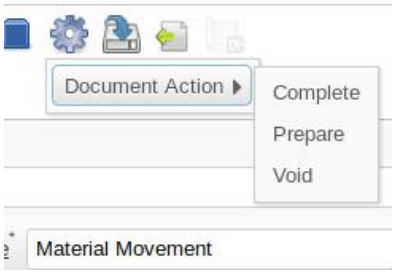
There is an Inventory Movement document also created and it is hidden by this report. Click back to the earlier tab, Replenish Report.

Click on the Inventory Move Created link. It shall open Inventory Move window.



STEP B10 - Movement Prepare

This shall generate a pair of Warehouse Picking and Putaway documents. At the Movement window, you may review and even edit the details in the Lines tab. Then all is OK, click on the Process icon on the top right and select Prepare. If it does not appear, that means the WMSExt plugin is not installed or active.



STEP B11 - Open WM Picking/Putaway Documents

Remember the Picking/Putaway documents are processed by the mobile app integrated to the WMS in our use case. But it still can be manually accessed and processed on a desktop as shown in the Stock Movement Zoom Across function earlier.

The In Out Picking can be edited by the Mobile App to change the box Handling Unit information, due to certain unforseen reasons such as the box is hidden or not accessible behind other boxes, and the warehouse floor picker wishes to replace that with a more convenient option of the same size, type and Locator. S/he cannot pick from another Locator or type of material. User just has to scan in the new Handling Unit, according to the instruction in the Mobile App (to be described in another document).

STEP B11b - Editing Picking/Putaway Details

Similarly, as in STEP 9b before, user may edit the records. In the Picking (Sales Transaction='Y') only the HandlingUnit change is accepted. It means a box has been swapped due to convenience of reaching it But it must be of equal quantity, size and product.

Under the Putaway record (Sales Transaction='N'), only the Locator can be changed, i.e. the box has to be put in another bin instead of the assigned one.

In box these cases, the mobile app can automatically update these details directly as it is integrated to the WMS.

STEP B12 - Complete Pick/Putaway Movement

Once the underlying WM InOut Picking and Putaway records connected to the Movement record are processed, and completed, the Movement record is automatically completed and the StorageOnHand details will be affected.

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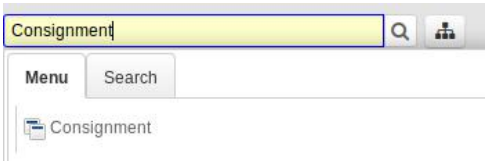
Consignment Movement

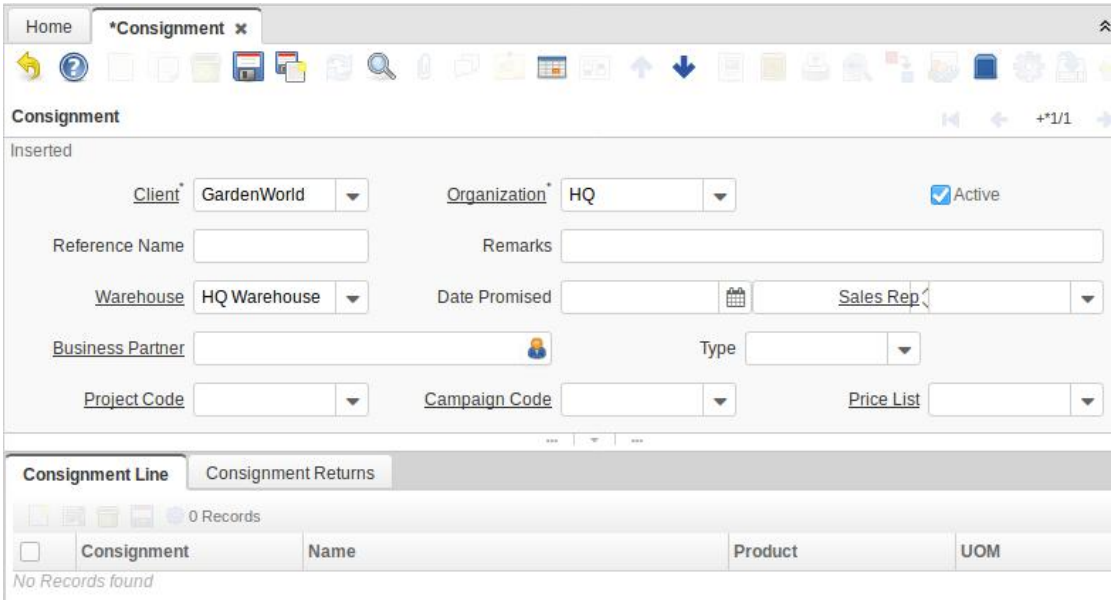
Now we come to the third part of the Warehouse system enhancement for Movement, which is Consignment. Depending on the country practice, usually a consignment is not an outright sale yet. It is merely a supplier sending goods to a retail outlet to sell, and at the end of a period charged only for the quantity sold and the rest are returned.

Such a sending and returning are actually movements by itself, and thus the outlet can be treated as a virtual Warehouse. And this is how our WMS module has setup this feature easily for the users to operate quite right away.

STEP C1 Open Consignment Window

In the main menu search box, key in 'Consignment'.





Consignment Window is a special window created to make it easy to manage the virtual Warehouse creation, sending goods to it, receiving returns from it, and issuing a nett Sales Order. All from the same window. There is also a Project Code and Campaign Code, to allow project costing and ABC - Activity Based Costing.

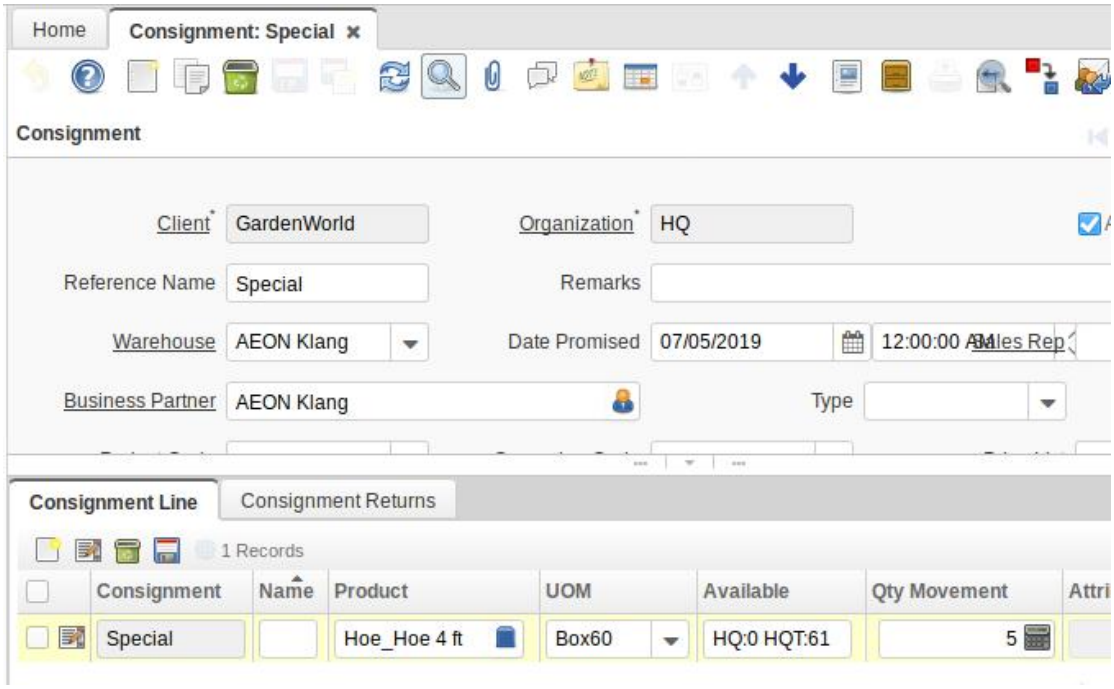
What is special about the new WMS plugins, is that, different packaging **Unit of Measures Conversions** can be used. For example Box of 60, and Plastic of 5. The plugin will automatically convert into Each.

At the Movement and Picking / Putaway level the base UOM of Each is used, after any conversion from the higher packing sizes.

STEP C2 Fill in Consignment Window

Provide the following information:

- Reference Name - this is referred to in sub detail tab and generated documents.
- Business Partner - this is the outlet or retailer that you are sending the consignment to.
- Warehouse - if this is not present, just Save the window twice and it shall create automatically.
- Date Promised - this shall be used for Movement Date.
- PriceList - optional at this moment
- Sales Rep - optional at this moment
- Project/Campaign Code - this is to associate this activity with a particular Project or Campaign.



STEP C3 Fill in ConsignmentLine

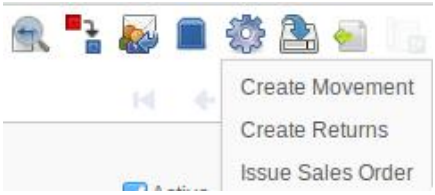
At the Consignment Line tab, you can fill in:

- Product
- UOM - Different packaging can be defined under Unit of Measure Conversion
- Qty Movement - i.e. quantity of boxes, or qty of plastics or qty in pieces.

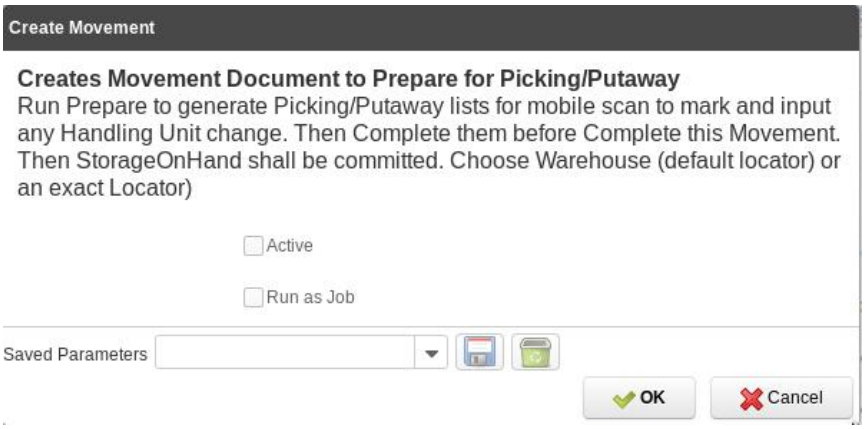
Note the Available column, after saving the line, will show the available converted quantities under each warehouse that is defined under the same Organization. In this case, it is HQ Main, and HQ Transit. HQ has zero and HQT has 61 available boxes of 60.

STEP C4 - Create Consignment Movement

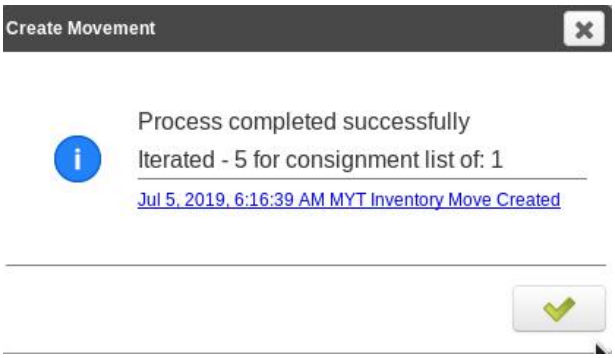
At the upper tool bar, at the gear icon for available processes, you can find 3 items. Choose the first one, Create Movement.



A dialog window shall appear.



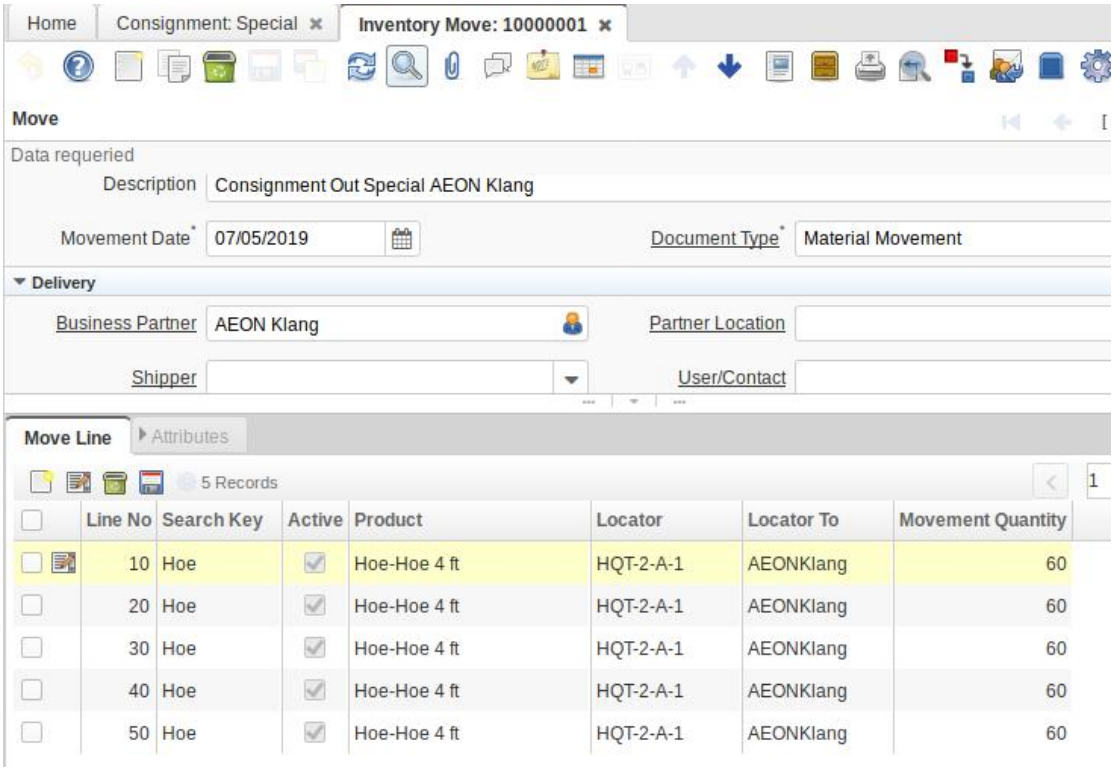
It's help description explains what will happen after the Movement record is created. Do not need to fill in anything. Just press OK. A result box will open with description of what been created, in this case, 5 boxes for a single line defined in the Consignment Line. A link to the generated Inventory Move is also provided.



STEP C4b Click on Inventory Move link

Click on the Inventory Move link, and the Inventory Movement window shall open.

STEP C5 Review Consignment Movement



Check the newly opened Movement record. Note that all the details of who the Business Partner is, and where the Locator (from) and Locator To is referring to are correct. Also note the assumed box quantity based on the conversion formula of 60 is used.

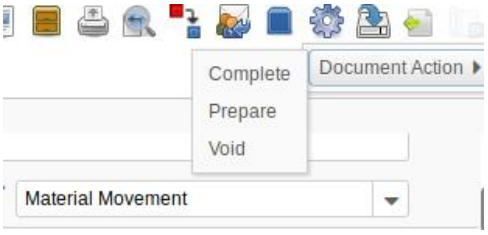
This should exist as line quantity in the storage as captured in the Empty Storage Line table. If not, the system will look for larger ones and break them up. Those such break-ups will be prompted in the mobile app on the warehouse floor, so that it can return the exact boxes as well as broken up, and their Handling Unit number/labels as scanned of their barcodes.

New boxes for broken up quantities will be assigned new Handling Unit number label during the floor pick up and relayed back to the Picking document automatically.

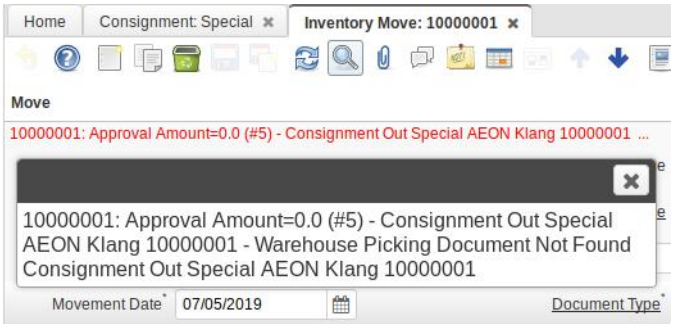
During pickup, the mobile scanner can also scan a different box of the same type and size and same Locator but different Handling Unit. This is because a particular given box maybe blocked inside a bin and another box is in front of it that is the same. Later we shall examine this in detail.

STEP C6 Prepare Movement Creates Picking/Putaway

At the top tool bar, at the process gear icon, click on it to show a list of processes, and select **Prepare**. You may not complete the Movement document at the moment because it shall check and finds out that the Picking/Putaway has not happened and reports an error.

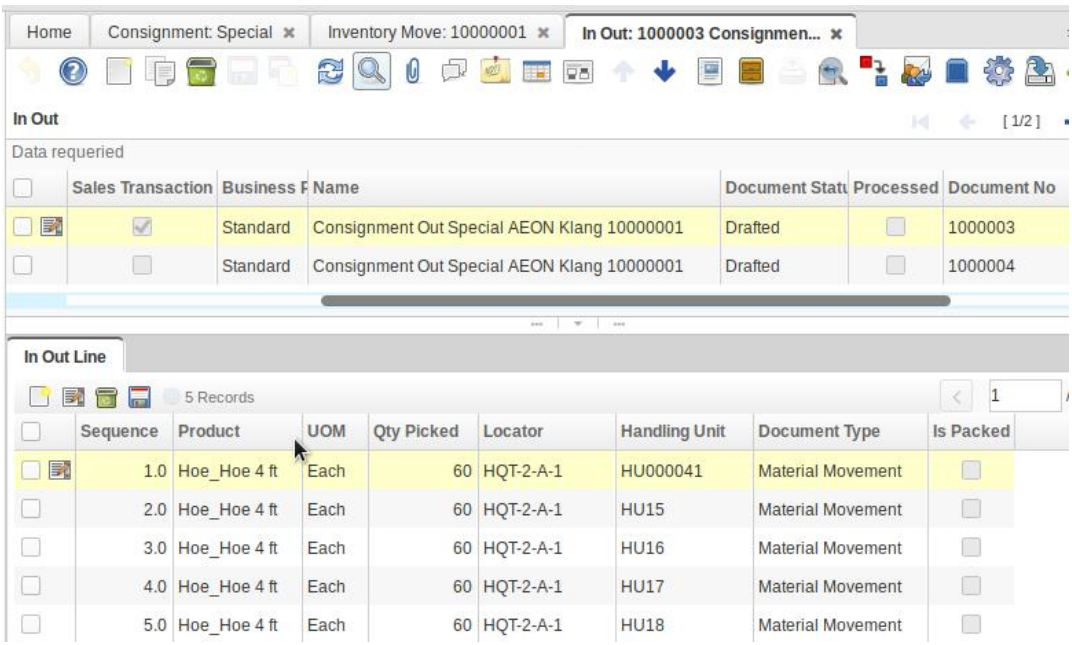


This is the error that appears when you press Complete. However it will automatically create the Picking/Putaway right away too. So you cannot go wrong.



STEP C7 Open Picking Document

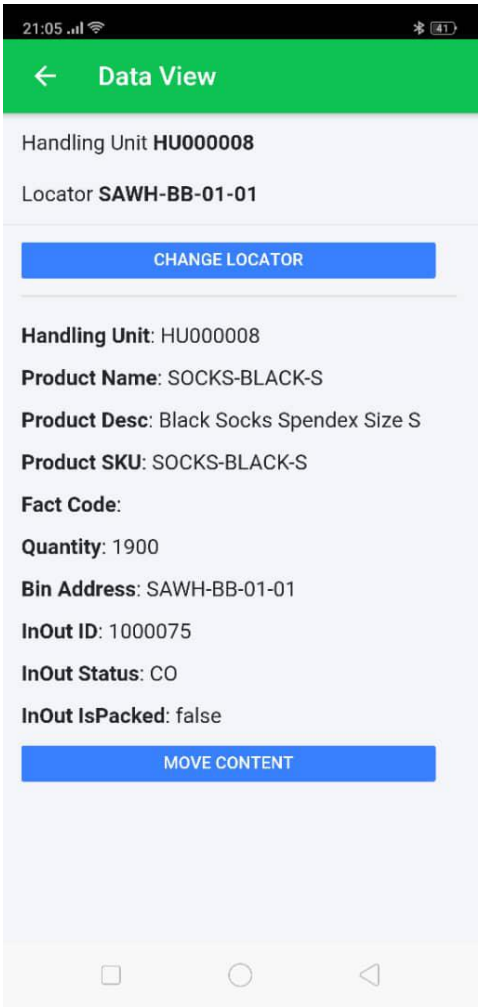
Open the Picking document by Zooming Across from the Movement window as shown in previous Stock Movement.
The window will then show just the set of Picking/Putaway records. Click on the first one that has Sales Transaction checked. That is the Picking record. Examine its contents. Note the Sequence and Handling Unit number label as well as the Locator they are to be picked.



STEP C7b Mobile App Scan to Pick Up

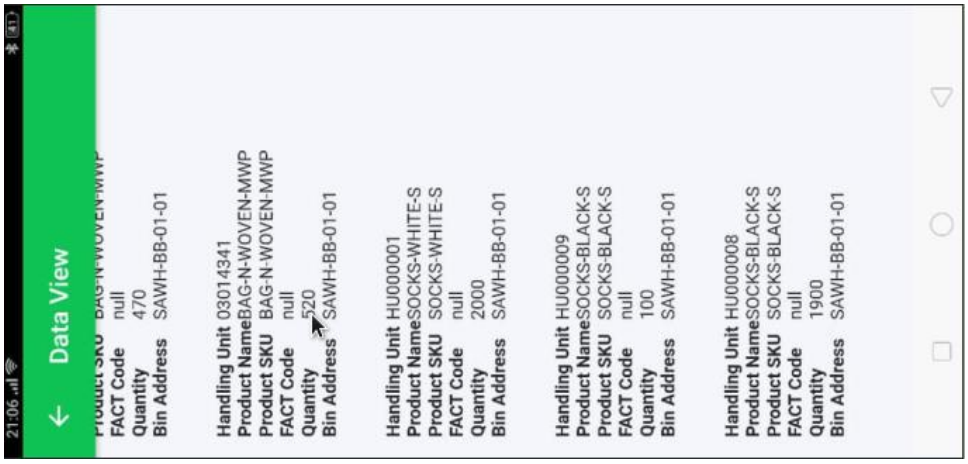
The mobile app (source repository link will be provided later), comes in handy for a couple of reasons:

1. To capture bar-code labels of boxes and items labeled and referenced in picking and put-away lists generated by the WMS.
2. The user has the convenience of a common mobile phone app instead of a dedicated and expensive scanner. Any mobile phone can use this.
3. The user can opt to input data by manual keypad input in lieu or a bar-code.
4. The user has options to make floor decisions without wasting time such as:- change of box handling unit due to a certain box been not pick-able either due to be hidden or missing; the ability to change Locator during put-away, as the location bin maybe blocked or full; and make quick Movements on its own.



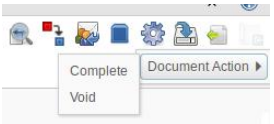
Even though the system calculates and estimates best to its programmed ability to ensure a locator is available there maybe mistakes or miscalculations due to human or physical conditions. Thus the system is both flexible and also fast in allowing a normal mobile phone to scan in via bar-code and let the system respond to its status instantly.

The messaging between the mobile phone app and the server is via Active MQ that is asynchronous and thus allows gathering of input independently of the server.



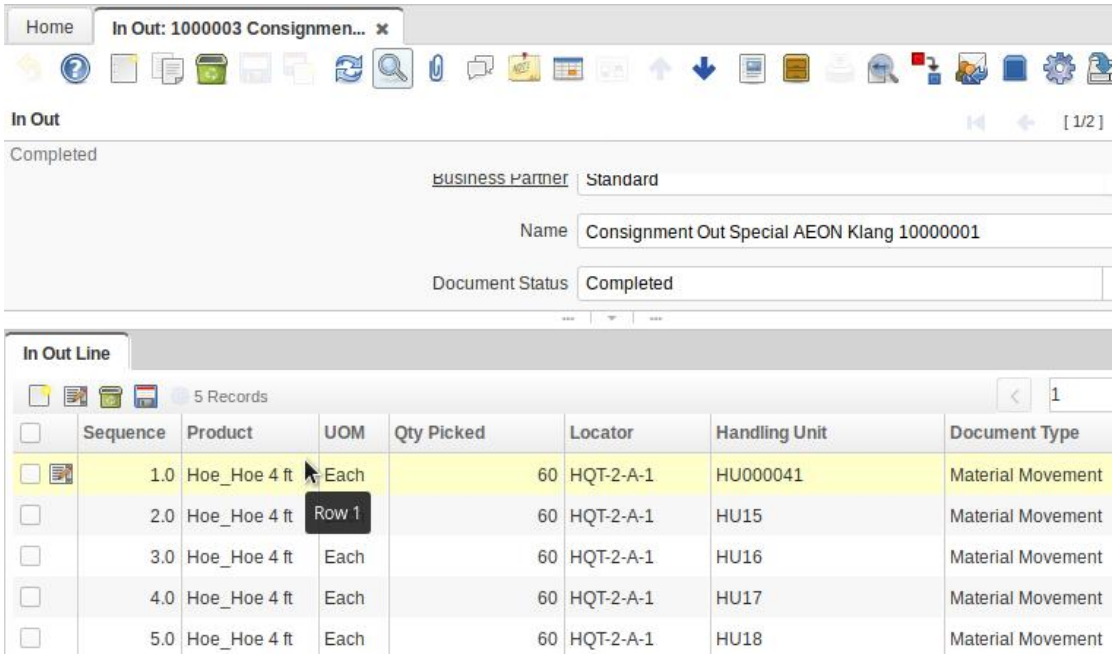
The mobile phone app also can query data quickly by scanning Locator (return contents), Handling-Unit (returns locations and content), or Product SKU (returns availability and locations).

STEP C8 - Complete Picking Document



The scanner or user may take a different Handling Unit. By scan input the new Handling Unit, the system will take note of the change and update the Empty Storage Line accordingly so that the system knows that the previous tagged box is now free, and another one has taken its place.

After the floor has done the pickup, the supervisor can check the Picking Document and execute the Document Action to Complete it.



This action shall commit the Warehouse Storage Lines to the exact box Handling Unit labels.

The WMS also ensure that any open Storage Line that is tagged to a Picking document is not open to any other Picking activity. The Calculate Available Capacity for each storage is also based on pending Picking and pending Putaway that are not yet completed and closed and committed to storage data.

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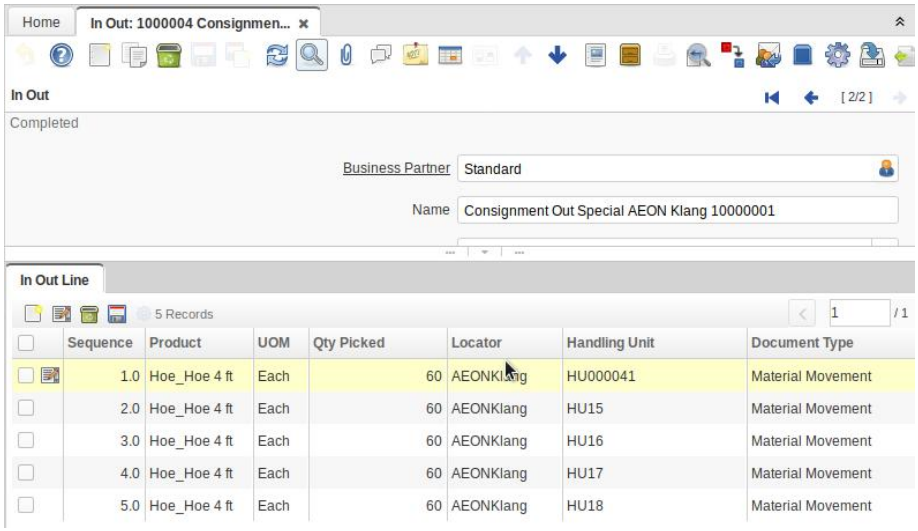
STEP C9 - Complete Putaway Document

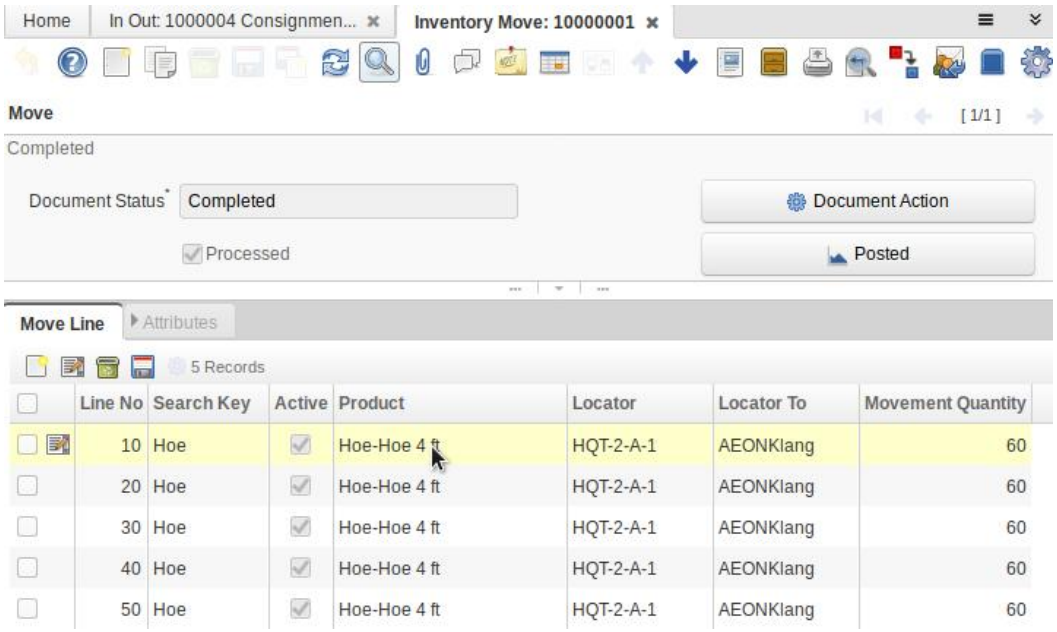
The scanner or user may put the box at a different Locator in the target warehouse. In this case it is more related to the Stock Movement and Replenishment Movement. This is because, the Retail Outlet usually has only one large locator as it is outside the system. However if the outlet happens to tie in or outsource its warehousing to the Client, then this is also possible and very useful.



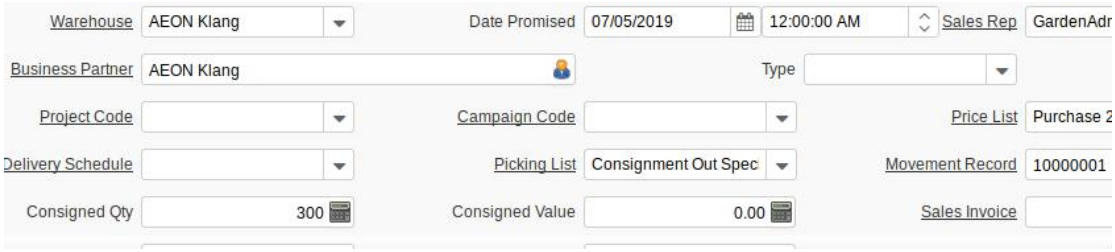
From here, the Inventory Move originating document has to be completed immediately. In our implementation, we are considering an event handler process that automatically do that, when both Picking and Putaway documents are complete.

STEP C10 - Consignment Movement Completes

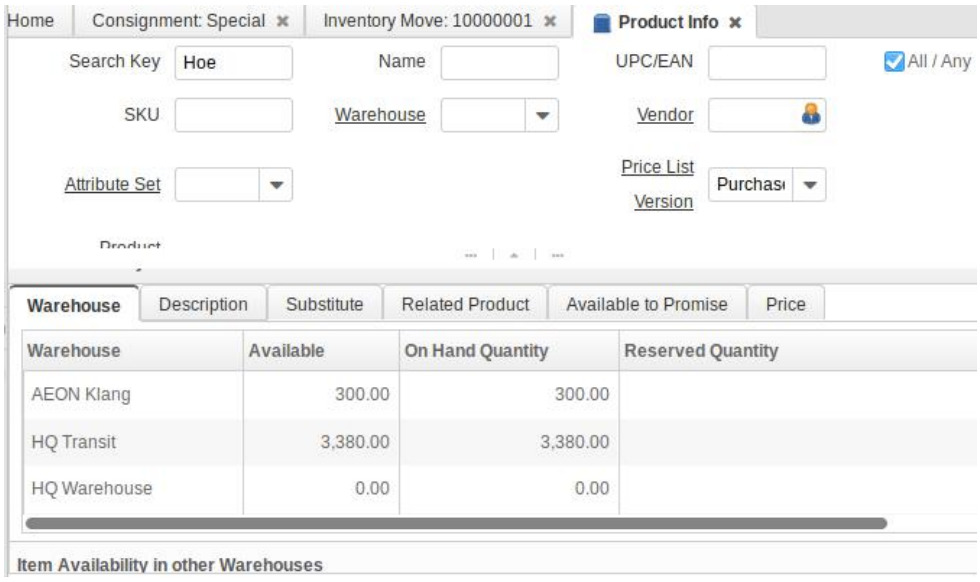
You will notice that once the Picking and Putaway records are completed, the Movement is automatically completed too. This is to maintain close synchronicity as the final Putaway ends the whole chain.



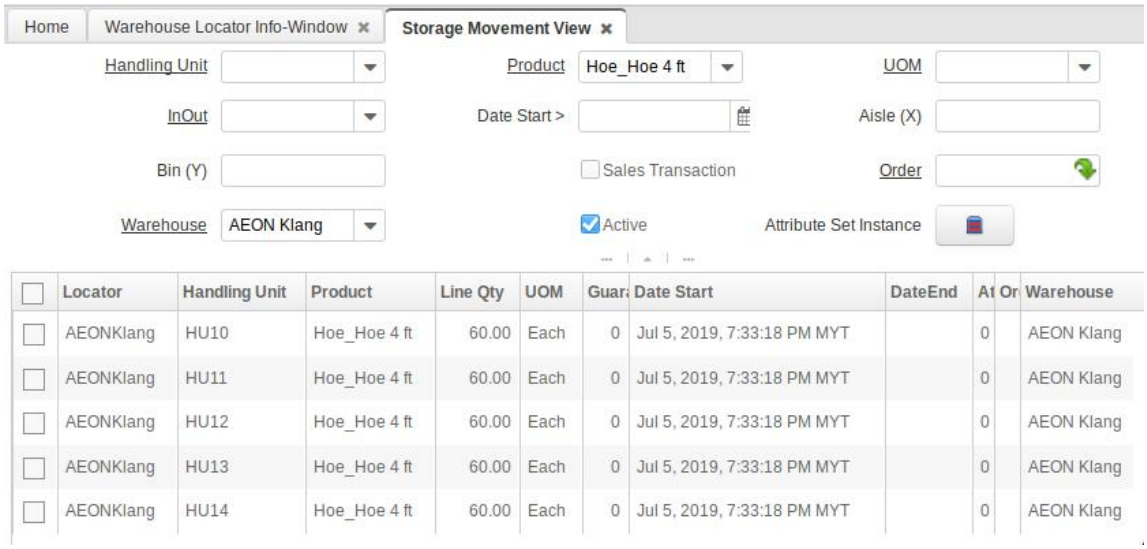
Note back the Consignment record and you can see it has also been updated with the Picking List link. Later when the Putaway is completed, that will be replaced with the latest putaway link. This is to let you keep track at what stage you are at. Note that the Consigned Qty is also updated.



STEP C11 Inspect Storage Views

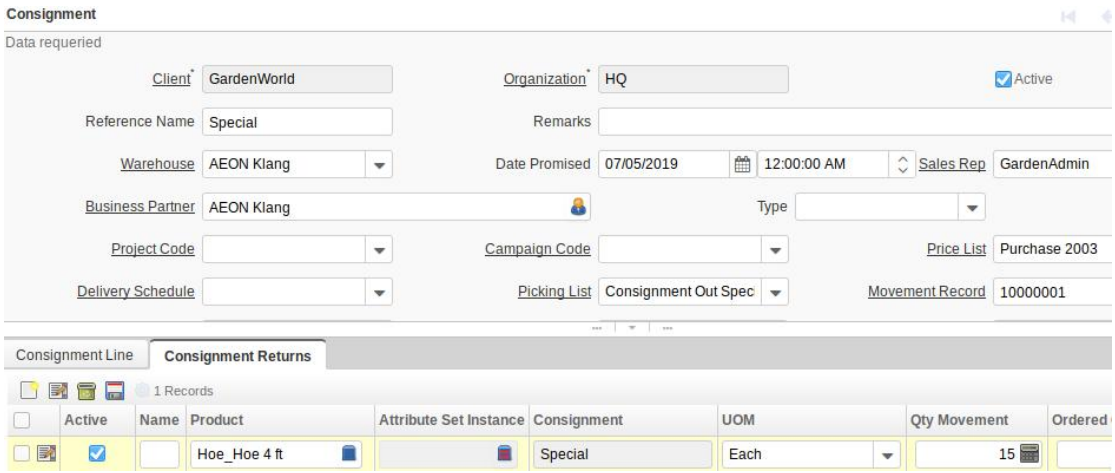


You can view the latest changes to the storage data from the above Product Info or below via the Storage Movement View that gives a box breakdown view.



STEP C12 - Consignment Returns

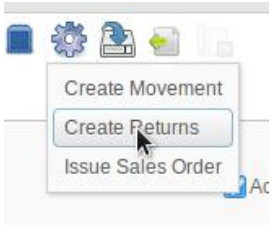
Note that during returns the boxes may be used up and everything is lumped together. For example let's say a return is 200 pieces. That will be equivalent to 3 boxes and a box of only 20. So let us see if this following process can handle that. First we go to the Returns tab.



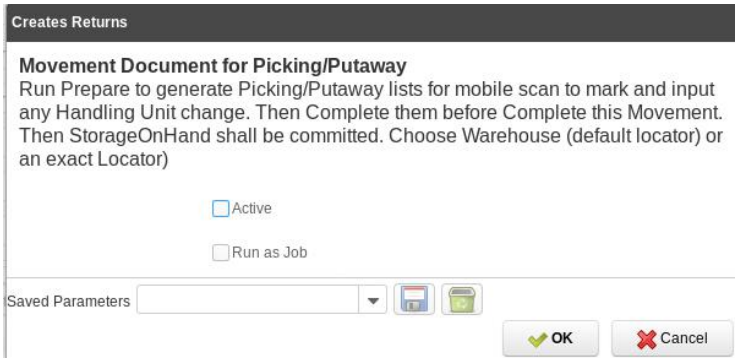
We fill in the detail of 200 for Qty Movement.

STEP C13 Create Returns

Go to the process icon and select Create Returns.

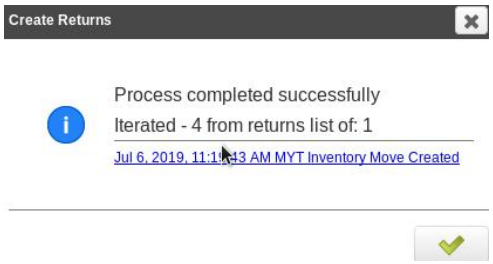


The process will automatically set the Consignee warehouse as the From warehouse and the login location as the To warehouse. In this case, it shall be from AEON Klang to HQ Warehouse.



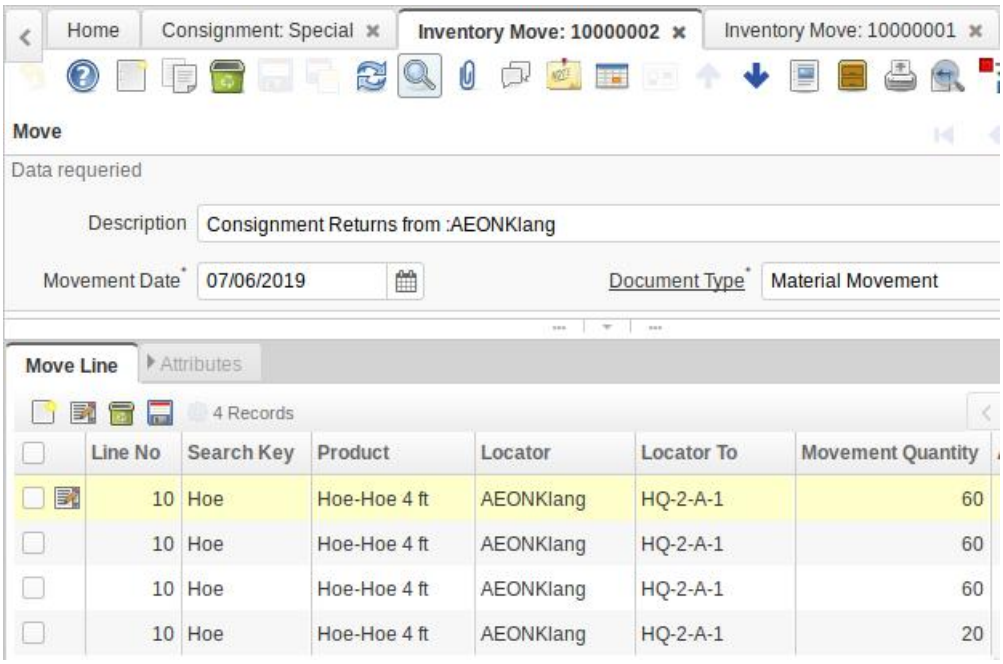
A new Movement record will be linked to the Consignment. Note it is 4 lines as expected.

Click on the given link to open the Inventory Movement record.

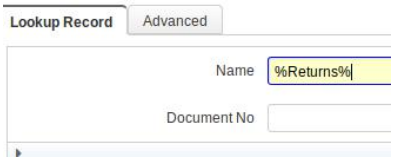


STEP C14 Process Movement and Floor Documents

Check the details in the Inventory Move record. Description identifying it correctly.
Note the lower tab line detailing the product and accurate 4 'boxed' quantities and the target locator. Note that the final locator to is chosen based on earlier zone and preferred product setting and the available space to take it. In this case it is HQ-2-A-1.



Same as the earlier Movement out document, we also Document Action > Prepare this and complete the In Out for them. Search for the new warehouse floor records with %Returns%

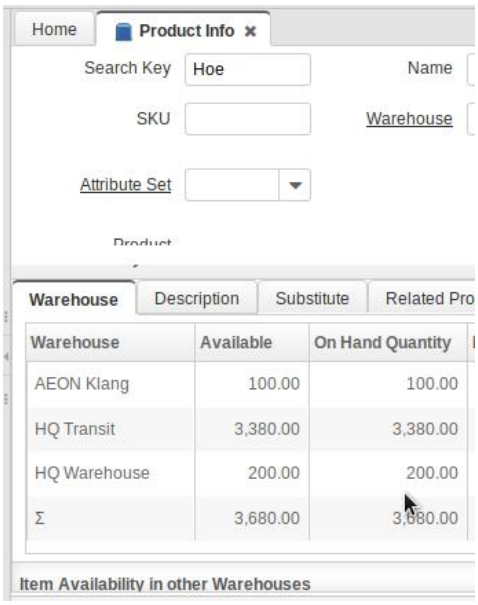


After processing through all these documents, in sequence ending with the Movement In, you can examine the Product Info View again and note the changing results for Hoe's availability in all the Warehouses.

We sent 5 boxes of 60 each to AEON Klang = 300 pieces. 200 return, leaving a balance of 100. if you check Storage Movement View, you can see the breakdown. HandlingUnits will be reassigned.

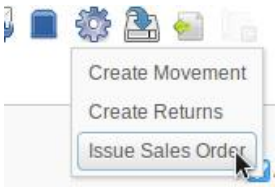
Locator	Handling Unit	Product	Line Qty	UOM
AEONKlang	HU14	Hoe_Hoe 4 ft	60.00	Each
AEONKlang	HU13	Hoe_Hoe 4 ft	40.00	

Locator	Handling Unit	Product	Line Qty	UOM
HQ-2-A-1	HU10	Hoe_Hoe 4 ft	60.00	Each
HQ-2-A-1		Hoe_Hoe 4 ft	20.00	Each
HQ-2-A-1	HU12	Hoe_Hoe 4 ft	60.00	Each
HQ-2-A-1	HU11	Hoe_Hoe 4 ft	60.00	Each

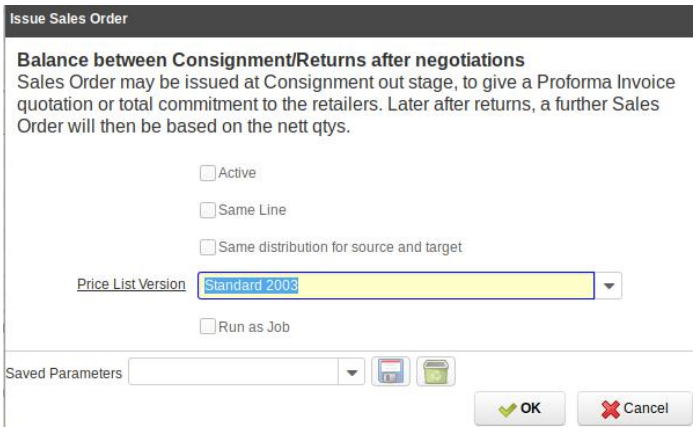


STEP C15 - Issue Sales Order

Now that you have finally received the last returns from the consigned outlet, you are ready to issue an Invoice for the balance sold. Here you need not calculate again. Just click on the Issue Sales Order process in the same Consignment window.



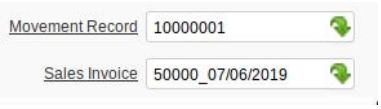
This process can be run at anytime even before the returns are made so as to give the customer outlet a proforma Invoice of the goods issued.

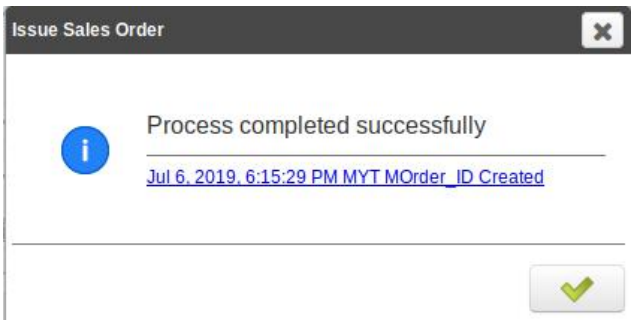


In our client use case, they use this to negotiate further with the large outlets, who wants further discounts. So this Sales Order acts as a reference before finally framed and process into an Invoice.

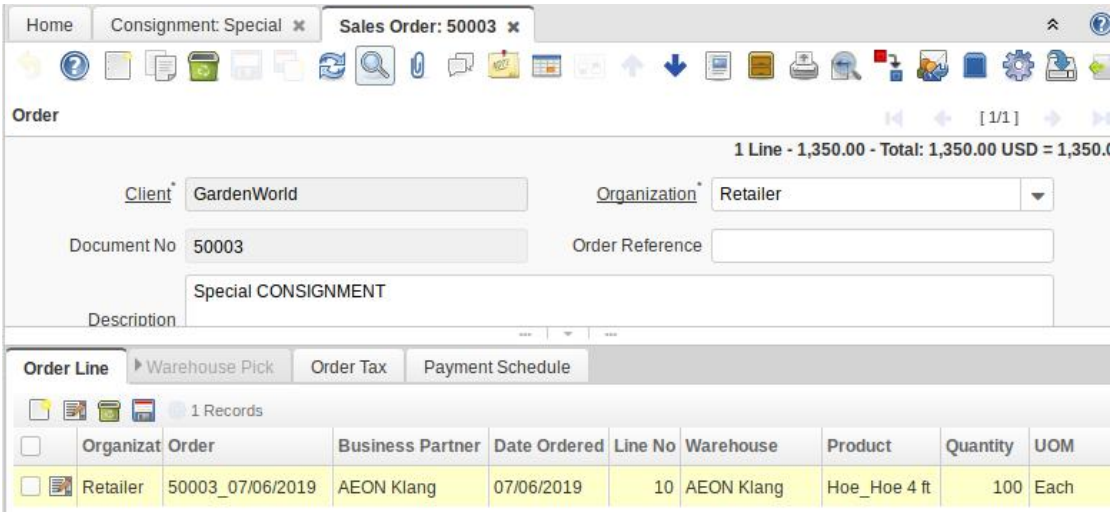
AI Project and Campaign IDs are also conveniently copied over to the Order. In the end, the client can keep track with full ABC accounting and reporting.

Select a price list in the dialog box and click OK. Right away a link in the Sales Invoice box appears. A link to it is also given in the Consignment record.





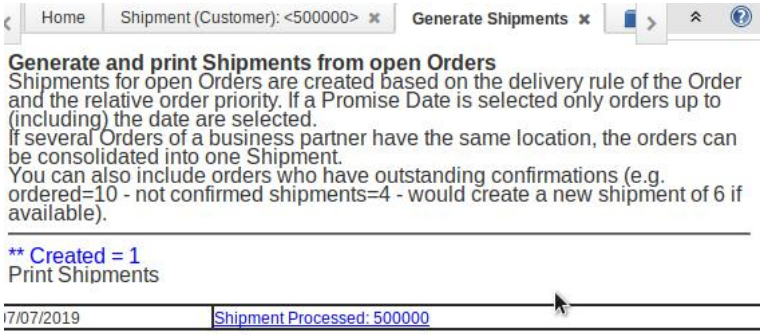
Note that you can run this as often as possible but only the latest draft will be linked. Those older ones as long they are draft or voided can be discarded.



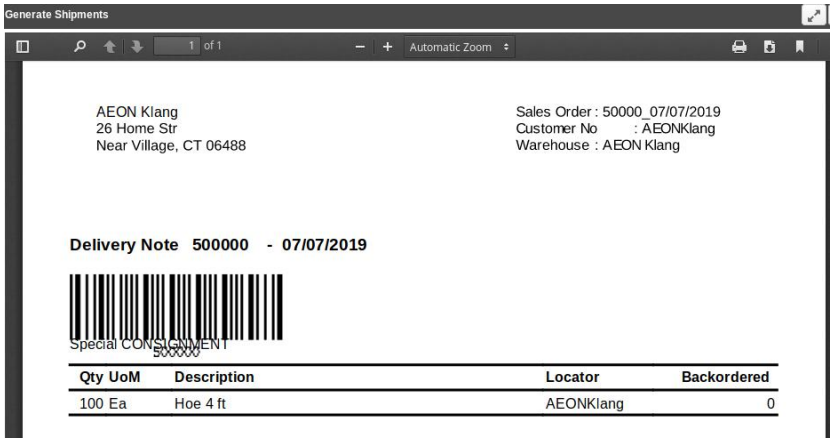
Note that the Sales Order is assigned under the Retailer organization and Warehouse of the consignee. So that when this is processed and DeliverySchedule to Picking completed, it shall reflect correctly as deducted from the 100 pieces at the virtual AEON Klang as sold.

STEP C16 - Clear Consignment

Now we need to clear the virtual warehouse at AEON Klang from its 100 pieces balance as sold. So by processing Complete the Sales Order, and then Generate Shipments for AEON Klang, and Complete then at the same time.



You can then send the Shipment Delivery Note as a confirmation that the stock is cleared.



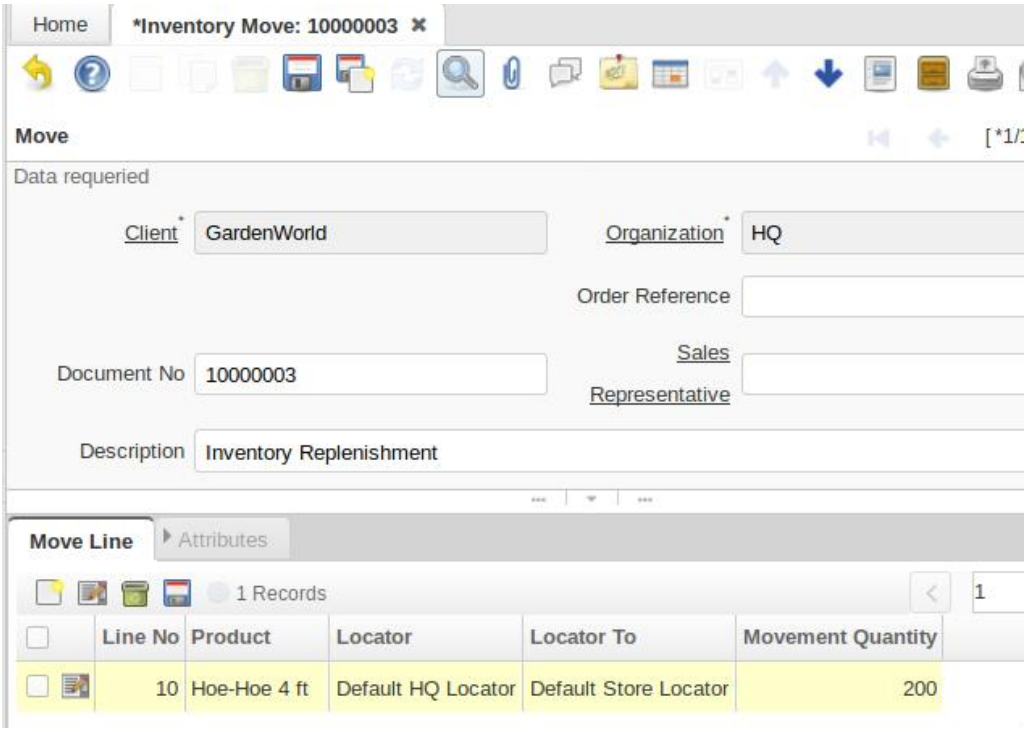
You can check the Product Info view again to see the final stock standing where AEON Klang is cleared at zero.

Simple Bulk Movement

There maybe cases, where the user needs to make an Inventory Move that just state items in bulk quantities and not knowing which locators they are exactly at and which locators they can go to. The solution is simple because the Inventory Replenishment Movement handles that.

However a pre-requisite is that you need to define Putaway zones for the products that are to be moved. Otherwise this will not work as the code cannot find zone to putaway.

Once that is done, without going through the Replenish Report, just open a new Inventory Move and put the words 'Inventory Replenish' as the start of the Description field. You may add your own additional after that.



After this, just Process > Prepare so that you can then Zoom Across to the generated Picking and Putaway - In Outs.

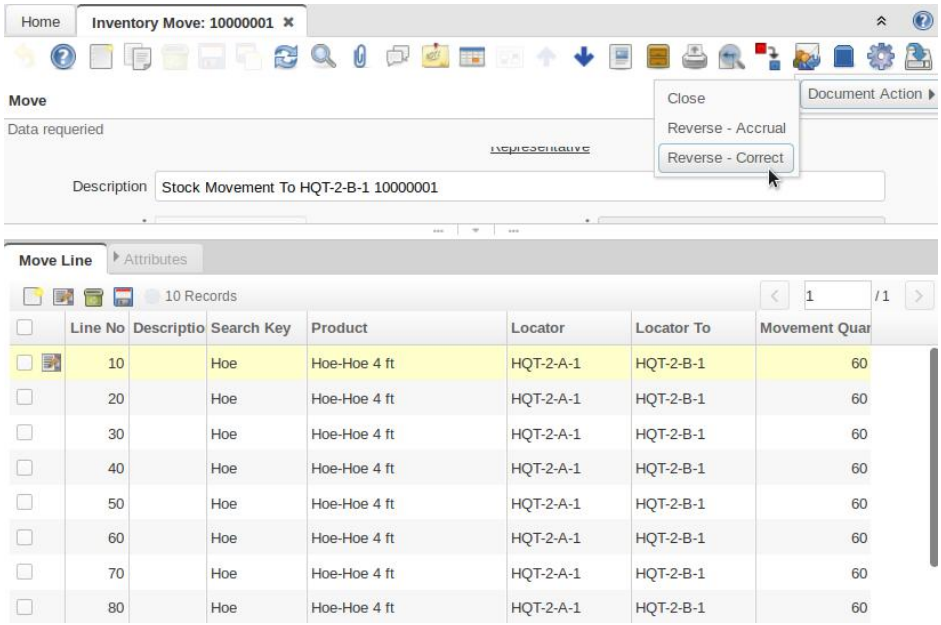
In those documents, you shall find the Qtys and Lines are adjusted to be from corrected ones.

Reverse of Movement

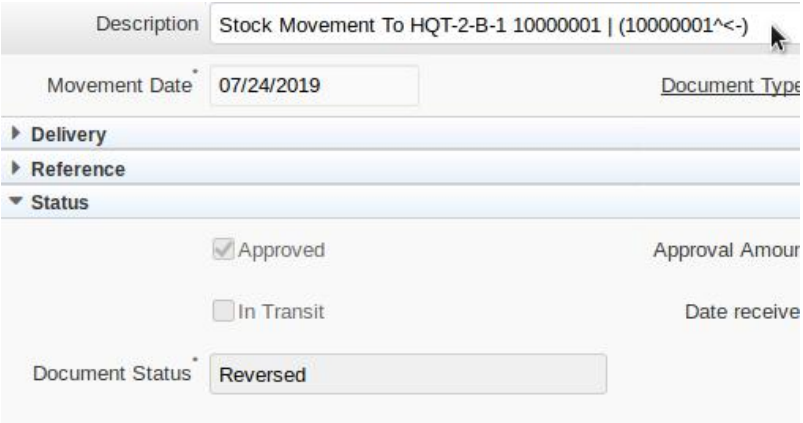
ReverseCorrect

As with any document, there maybe a need to reverse due to human error. For Movement, ReverseCorrect is an option but what about the associated Pick and Putaway documents? Now, we can also have them affected. To ReverseCorrect means you are abandoning the just completed Picking/Putaway Movement process and nullified their transactions.

That means the Picking will be put back and the putaway creations will be deleted. To do this, go to the Inventory Move record and choose ReverseCorrect.

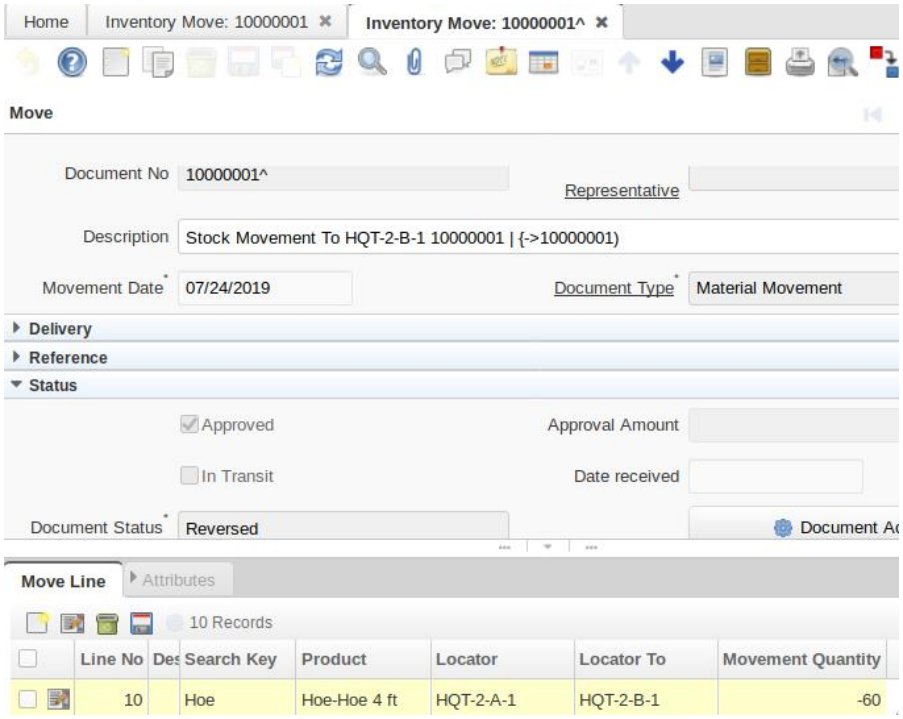


Right away after the successful message of Completed appearing in the top left corner, you will notice the Description box showing a new document in brackets (1000001^<-). You can search for it as a newly created Inventory Move but also showing Reversed in the Document Status as this one.

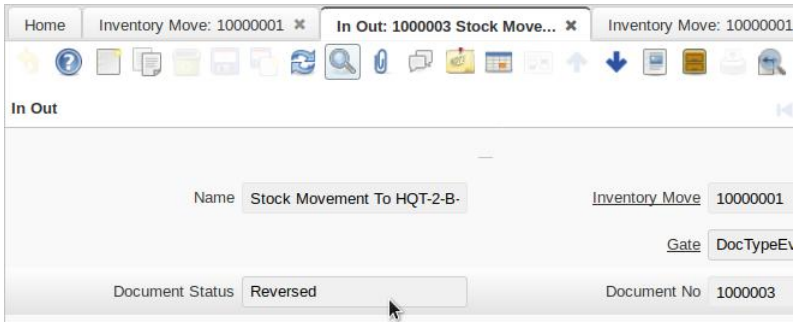


Reversed Movement

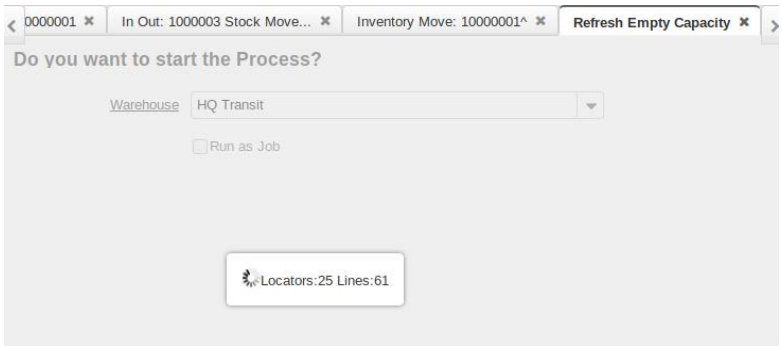
In the new document notice the same reference, Reversed status and negative quantities.



Back to the original document, you can Zoom Across to the underlying Picking/Putaway documents and view their status as Reversed.



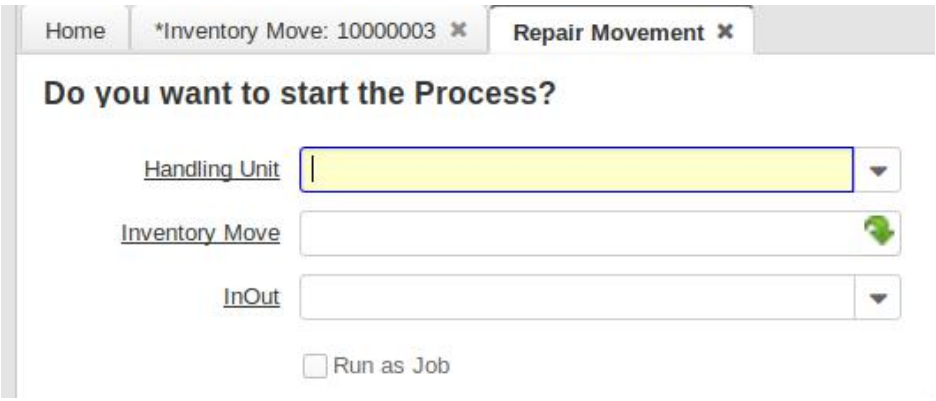
Lastly, you have to do Refresh Empty Capacity so that the whole Warehouse is recalculated its Vacant Available Capacities. This is because the ReverseCorrect at the moment does not recalculate for you. Do it for both the source and target Warehouses.



Repair Movement

Sometimes something went wrong and you cannot reverse a Movement easily. For example some picking is stuck and you have to repair or reset the Empty Storage Lines to be freed from the Picking IDs. Then only can another fresh picking does its job.

For that, we have a Repair Movement process to do just that.

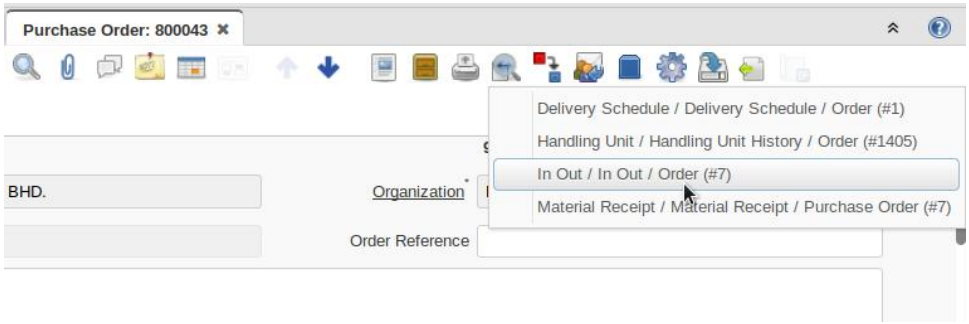


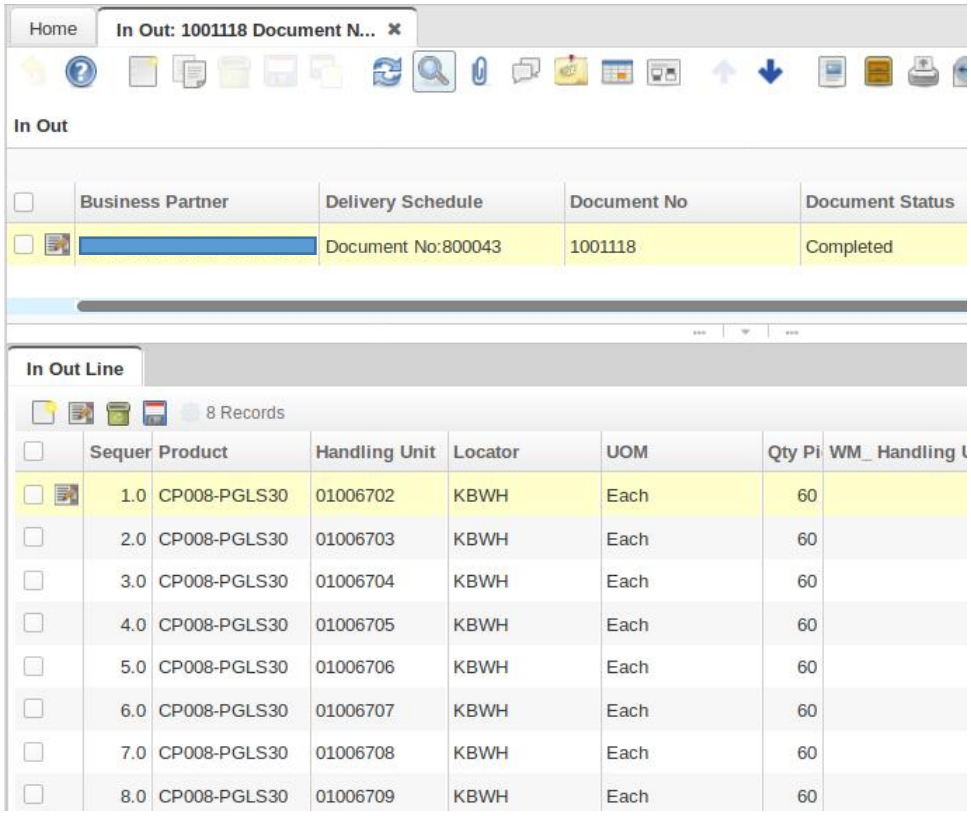
Specify the Picking document or Movement record in question, and this process shall Close and Void all their records.

Remember to use this on a copy of the live data (copied on to your localhost) to test out first to examine the results to be what is desired. Then only do it on the actual instance.

Reverse of Sales or Purchase

When a Sales or Purchase is reversed, the linked Picking or Putaway is not. It has to be reversed at the linked Putaway/Picking document. Below is an example that is opened by Zooming Across from its original Purchase Order DocumentNo: 800043.





At the top right of the menu, drag the process selection to choose Reverse - Correct. The process will execute and you can see the status of the Putaway document below.

Home | Purchase Order: 800043 | In Out: 1001118 Document N...

In Out

Completed

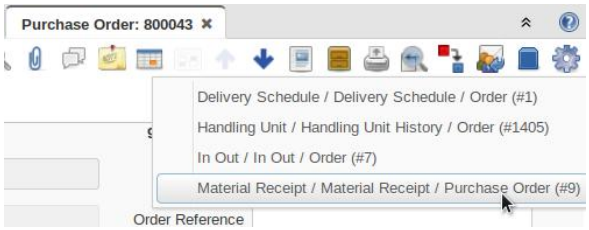
Business Partner	Delivery Schedule	Document No	Document Sta
[redacted] ...	Document No:800043	1001118	Reversed

In Out Line

8 Records

Sequer	Product	Handling Unit	Locator	UOM	Qty Pi
1.0	CP008-PGLS30	01006702	KBWH	Each	60
2.0	CP008-PGLS30	01006703	KBWH	Each	60
3.0	CP008-PGLS30	01006704	KBWH	Each	60
4.0	CP008-PGLS30	01006705	KBWH	Each	60
5.0	CP008-PGLS30	01006706	KBWH	Each	60
6.0	CP008-PGLS30	01006707	KBWH	Each	60
7.0	CP008-PGLS30	01006708	KBWH	Each	60
8.0	CP008-PGLS30	01006709	KBWH	Each	60

This will reverse the underlying Material Receipt too. Examine by Zooming Across from the Purchase Order to select.



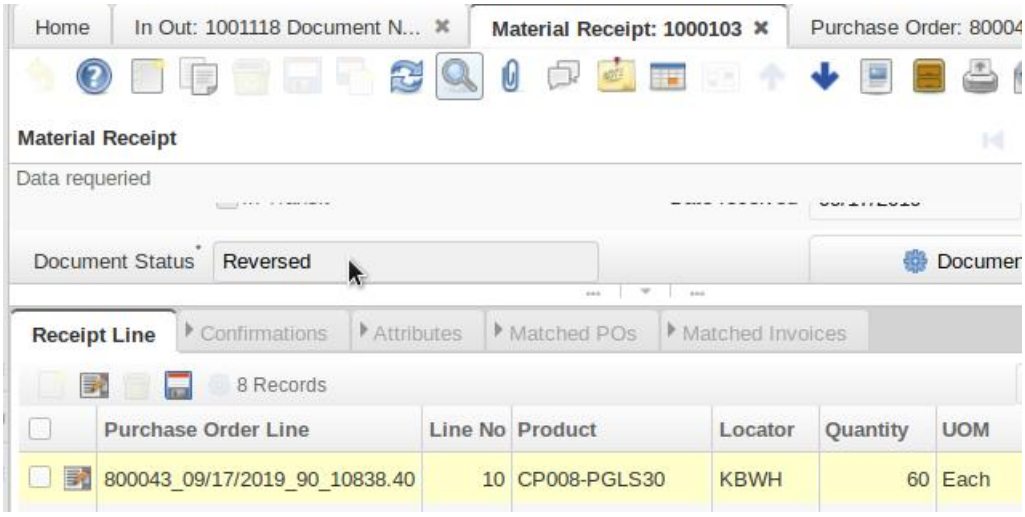
But if there are too many issuance of Putaways from a large Purchase as in this real life scenario here, a better shortcut will be to go into the In Out Line detail of the Putaway and click on any Shipment/Receipt line link.

Home | In Out: 1001118 Document N... | Material Receipt: 1000103 | Purchase Order: 800043

In Out > In Out Line 1/8

Client*	[redacted]	Organization*	KBWH - KOTA BHARU WAR
Active			
Delivery Schedule Line	1022273	Document Type	Purchase Order
Handling Unit	01006702	In Out	Document No:800043
Is Packed		Locator	KBWH
Move Line		Product	CP008-PGLS30
Qty Picked	60	Sales Order Line	800043_09/17/2019_90_10838
Sequence	1.0	Shipment/ Receipt Line	10_60_CP008-PGLS30_10001
UOM	Each	WM_ Handling Unit Old_ ID	

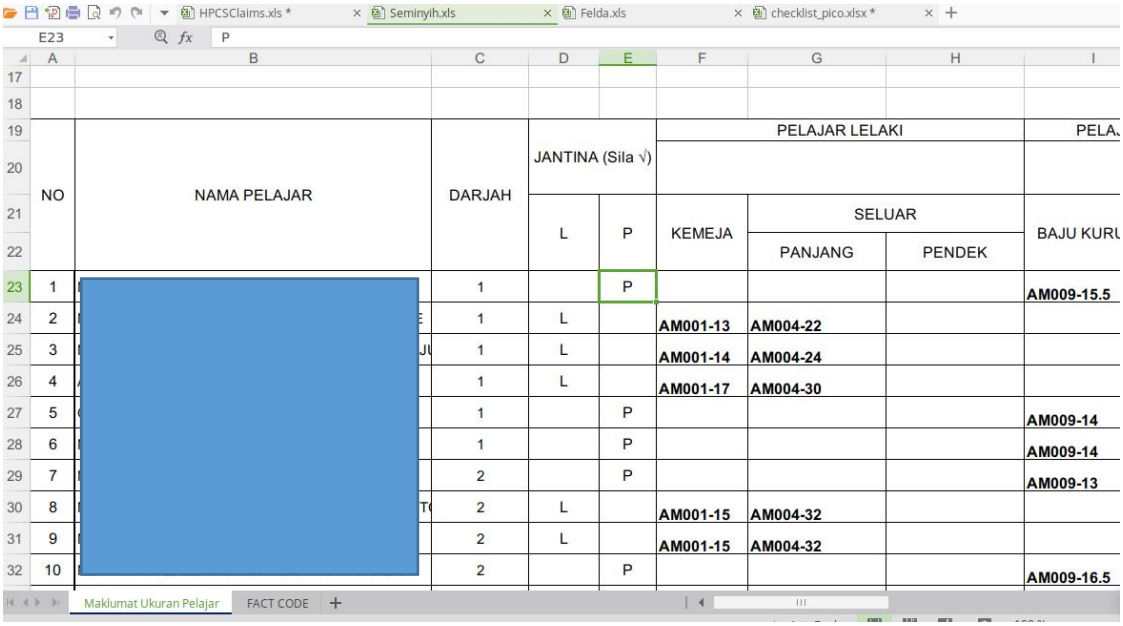
Then go the parent tab of the Document. Notice the Reversed status at the Document Status.



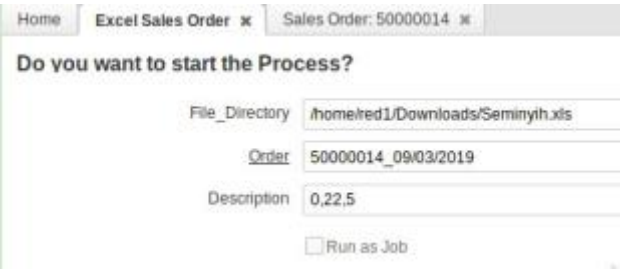
User can then return to the DeliverySchedule to Putaway Info-Window to redo the Putaway again if desired as it shall reappear there.

Excel Importer

Our particular use-case requires lots of data from external sources given in Excel format that has to be imported into the Sales Order or Consignment Line tabs without redo or input again. So now that is easy. Here is an example of an Excel where the items are stated all over the sheet/s without qty. The Excel Sales Order will group the occurrence of the items and calculate its total qty. If there is an error, those lines can be easily deleted. Each run will accumulate their occurrence where encountered.

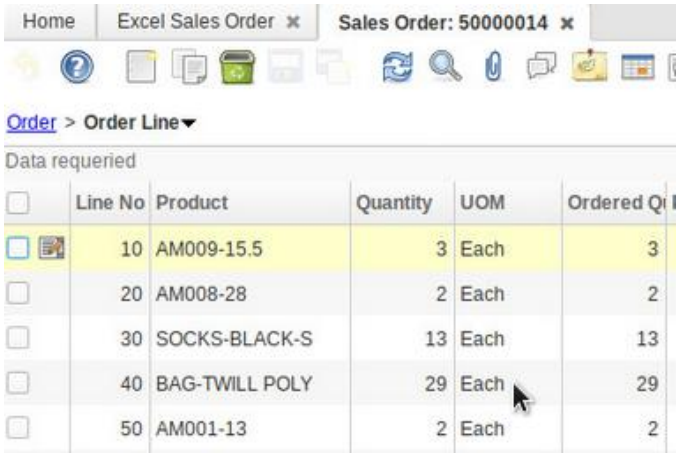


NO	NAMA PELAJAR	DARJAH	JANTINA (Sila √)		PELAJAR LELAKI			PELA
			L	P	KEMEJA	SELUAR PANJANG	SELUAR PENDEK	BAJU KURU
1		1		P				AM009-15.5
2		1	L		AM001-13	AM004-22		
3		1	L		AM001-14	AM004-24		
4		1	L		AM001-17	AM004-30		
5		1		P				AM009-14
6		1		P				AM009-14
7		2		P				AM009-13
8		2	L		AM001-15	AM004-32		
9		2	L		AM001-15	AM004-32		
10		2		P				AM009-16.5



There are two ways to get this Excel into the system. First is via a File_Directory path which is useful particularly in localhost or sharing of files in FTP site. Second, is by attaching to the Sales Order itself.

If no File_Directory is given, then the Sales Order must have an attachment.



Description field is to give offsets i.e. Sheet 0, at Starting Row 22, and Starting Cell 5. If lazy, just put in 0,0,0. But if you want to access a second sheet, then put in 1,0,0.

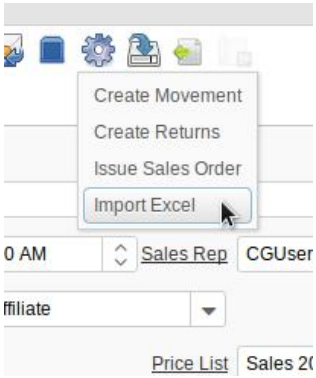
The result is almost instantenous.

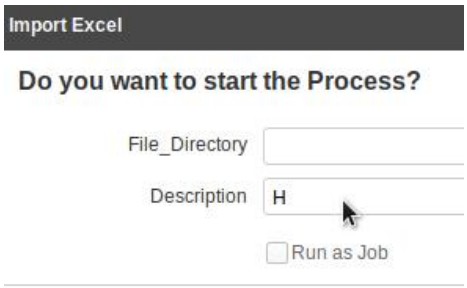
Consignment Excel Import

For the Consignment window, it uses an almost similar approach. However its line details may be more organised with quantities.

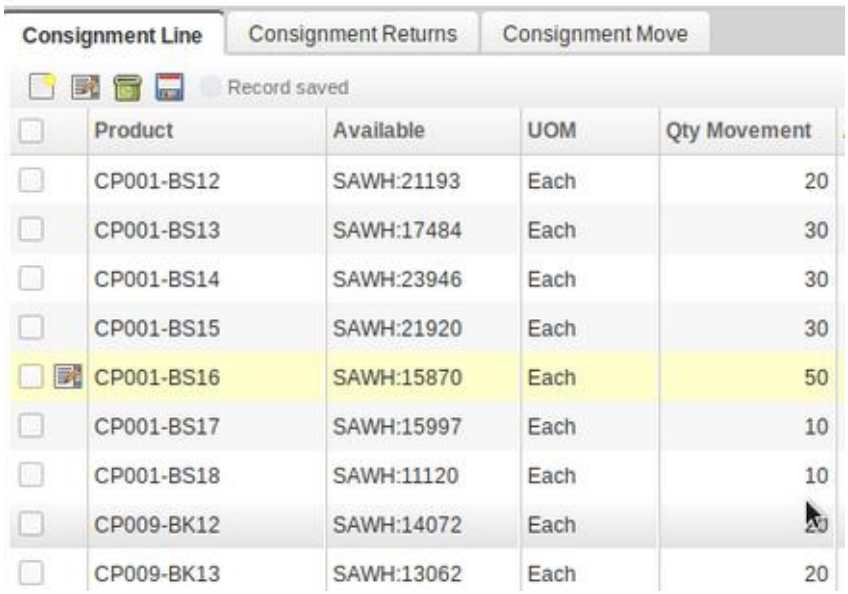
5	Agent		Y/O Numb	Y/O Date	Proforma N	Proforma D	Cash/Bank
6							0
7	SI #	Item	Description				Quantity
8	1	CP001-BS1	CP Boy Shirt (12)				20
9	2	CP001-BS1	CP Boy Shirt (13)				30
10	3	CP001-BS1	CP Boy Shirt (14)				30
11	4	CP001-BS1	CP Boy Shirt (15)				30
12	5	CP001-BS1	CP Boy Shirt (16)				50
13	6	CP001-BS1	CP Boy Shirt (17)				10
14	7	CP001-BS1	CP Boy Shirt (18)				10
15	8	CP009-BK1	CP Baju Kurung (12)				20
16	9	CP009-BK1	CP Baju Kurung (13)				20
17	10	CP009-BK1	CP Baju Kurung (18.5)				20
18	11	CP014-SBL	CP Sec. Boy L/Pants (26)				20
19	12	CP014-SBL	CP Sec. Boy L/Pants (27)				10
20	13	CP014-SBL	CP Sec. Boy L/Pants (28)				10

In this example, the Qtys are all along Cell H. So just attach this to the Consignment window and run from its Process icon, Import Excel. You can also have the alternative of using File_Directory to access the Excel file. In the Description it only accepts a single value of the Cell Column Address, H.





Giving this an OK, will also be magical.



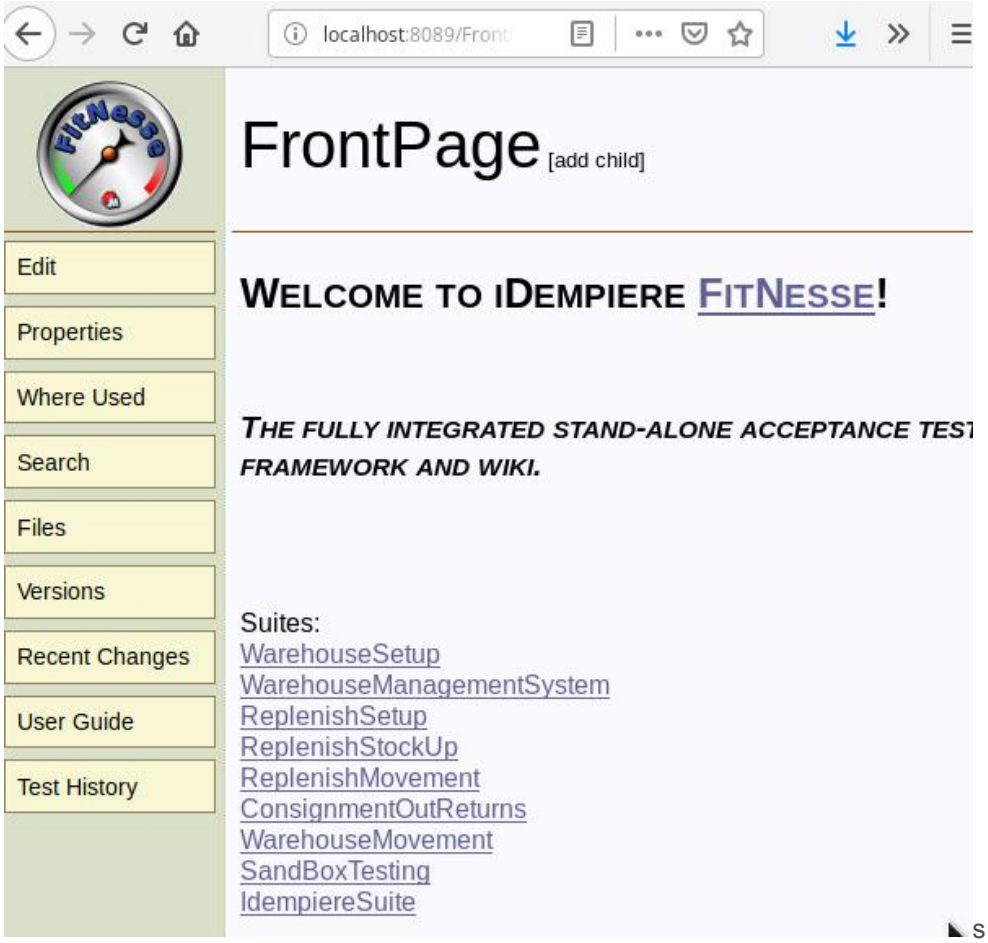
Product	Available	UOM	Qty Movement
CP001-BS12	SAWH:21193	Each	20
CP001-BS13	SAWH:17484	Each	30
CP001-BS14	SAWH:23946	Each	30
CP001-BS15	SAWH:21920	Each	30
CP001-BS16	SAWH:15870	Each	50
CP001-BS17	SAWH:15997	Each	10
CP001-BS18	SAWH:11120	Each	10
CP009-BK12	SAWH:14072	Each	20
CP009-BK13	SAWH:13062	Each	20

Quality Assurance

This suite of plugins has a strong FitNesse Testing Suite that goes thru all the main logic and weed out creeping bugs. I run them each time i made a change to the code. It has helped me more often than once. I am next going to place them in a robot Jenkins service so that they run autonomously whenever we made a change.

Below are the series of screenshots of the testing. The story script is committed to https://sourceforge.net/projects/red1/files/Testing/ in the `FitNesseRootForWarehousing.zip`

You have to apply my modification to the FitNesseFixture plugin as described in `iDempiereFitNesse.pdf`



WarehouseManagementSystem

SUITE RESULTS [history]

Test Pages: 6 right, 0 wrong, 0 ignored, 0 exceptions **Assertions:** 74 right, ignored, 0 exceptions (10.062 seconds)

TEST SUMMARIES

FIT:FITNESSE.CLIENT.FITSERVERSERVLETINVOKER

13 right, 0 wrong, 0 ignored, 0 exceptions	AddPurchases (2.301 seconds)
8 right, 0 wrong, 0 ignored, 0 exceptions	AllPurchaseToPutaway (4.648 seconds)
17 right, 0 wrong, 0 ignored, 0 exceptions	AlwaysPurchaseResults (0.062 seconds)
14 right, 0 wrong, 0 ignored, 0 exceptions	CompleteSalesPickingProcess (1.270 seconds)
2 right, 0 wrong, 0 ignored, 0 exceptions	LogInto (0.002 seconds)
20 right, 0 wrong, 0 ignored, 0 exceptions	ReadResults (0.203 seconds)

TEST OUTPUT

ReplenishSetup

SUITE RESULTS [history]

Test Pages: 3 right, 0 wrong, 0 ignored, 0 exceptions **Assertions** ignored, 0 exceptions (1.784 seconds)

TEST SUMMARIES

FIT:FITNESSE.CLIENT.FITSERVERSERVLETINVOKER

10 right, 0 wrong, 0 ignored, 0 exceptions	CreateForReplenish (0.383 seconds)
5 right, 0 wrong, 0 ignored, 0 exceptions	ExecuteReplenish (0.700 seconds)
2 right, 0 wrong, 0 ignored, 0 exceptions	SubLogin (0.011 seconds)

TEST OUTPUT

ReplenishStockUp

SUITE RESULTS [history]

Test Pages: 4 right, 0 wrong, 0 ignored, 0 exceptions **Assertio** ignored, 0 exceptions (17.231 seconds)

TEST SUMMARIES

FIT:FITNESSE.CLIENT.FITSERVERSERVLETINVOKER

10 right, 0 wrong, 0 ignored, 0 exceptions	DoPurchasing (2.065 seconds)
9 right, 0 wrong, 0 ignored, 0 exceptions	DoPutaway (14.318 seconds)
7 right, 0 wrong, 0 ignored, 0 exceptions	ReadEmptyStorage (0.078 seconds)
2 right, 0 wrong, 0 ignored, 0 exceptions	SubLogin (0.002 seconds)

TEST OUTPUT

ReplenishMovement.

ReplenishReport

TEST RESULTS [history]

Assertions: 4 right, 0 wrong, 0 ignored, 1 exceptions (0.316 seconds)

Included page: SubLogin (edit)

CREATES M_MOVEMENT LINES FROM M_REPLENISH ITEMS

RunProcess	
ProcessValue	RV_T_Replenish
M_Warehouse_ID	@Ref=M_Warehouse[Name='HQ Transit'].M_Warehouse_ID 50000
ReplenishmentCreate	MMM
C_DocType_ID	@Ref=C_DocType[Name='Material Movement'].C_DocType_ID 143
	#1 - 10000000 Jul 6, 2019, 12:00:00 AM MYT Inventory Move Created java.lang.Exception: Report not supported yet at org.idempiere.fitnesse.fixture.RunProcess.doStaticTable(RunProcess.java:280)

ReplenishMovement.

StartMovement

TEST RESULTS [history]

Assertions: 6 right, 1 wrong, 0 ignored, 0 exceptions (8.804 seconds)

Included page: SubLogin (edit)

PREPARE MOVEMENT

Read Record	
Table	M_Movement
DocStatus	'DR'
Read	X_M_Movement[1000000]
M_Movement_ID	1000000

Run Process	
ProcessValue	M_Movement_Process
RecordID	@M_Movement.M_Movement_ID@ 1000000
DocAction	PR
Run	Completed Expected PR Received IP

Read Record	
Table	M_StorageOnHand
M_Product_ID	@Ref=M_Product[Value='Hoe'].M_Product_ID 138
QtyOnHand	2520.0
Read	MStorageOnHand[M_Locator_ID=1000006,M_Proc
M_Locator_ID	1000006

Read Record	
Table	M_Locator
M_Locator_ID	@M_StorageOnHand.M_Locator_ID@ 1000006
Read	HQ-2-A-1
Value	HQ-2-A-1

RollBack	
Commit	TRUE

ReplenishMovement.

ZebraMovement

TEST RESULTS [history]

Assertions: 13 right, 0 wrong, 0 ignored, 0 exceptions (4.800

Included page: SubLogin (edit)

COMPLETE MOVEMENT

Mobile Scan Completes the Warehouse Movements first

Read Record	
Table	WM_InOut
DocStatus	'DR'
IsSOTrx	'Y'
Read	X_WM_InOut[1000001]
WM_InOut_ID	1000001

Set DocAction	
Table	WM_InOut
WM_InOut_ID	@WM_InOut.WM_InOut_ID@
	1000001
docAction	CO
Save	DocStatus=CO expected CO - IP - WP - WC

Read Record	
Table	WM_InOut
DocStatus	'DR'
IsSOTrx	'N'
Read	X_WM_InOut[1000002]
WM_InOut_ID	1000002

Read Record	
Table	M_Locator
M_Locator_ID	@M_StorageOnHand.M_Locator_ID@
	1000030
Read	HQT-2-A-1
Value	HQT-2-A-1

Read Record	
Table	WM_EmptyStorage
M_Locator_ID	@Ref=M_Locator[Value='HQ-2-A-2'].M_Locator_ID
	1000007
VacantCapacity	42
AvailableCapacity	42.0
Percentage	100.000
IsFull	'N'
Read	X_WM_EmptyStorage[1000008]
WM_EmptyStorage_ID	1000008

Read Record	
Table	WM_EmptyStorage
M_Locator_ID	@Ref=M_Locator[Value='HQT-2-A-2'].M_Locator_ID
	1000031
VacantCapacity	42
IsFull	'N'
AvailableCapacity	22.00
Percentage	52.000
Read	X_WM_EmptyStorage[1000033]
WM_EmptyStorage_ID	1000033

RollBack	
Commit	TRUE

Set DocAction	
Table	WM_InOut
WM_InOut_ID	@WM_InOut.WM_InOut_ID@
	1000002
docAction	CO
Save	DocStatus=CO expected CO - IP - WP - WC

M_Movement Complete It and Close

Read Record	
Table	M_Movement
DocStatus	'IP'
Read	X_M_Movement[1000000]
M_Movement_ID	1000000

Run Process	
ProcessValue	M_Movement_Process
RecordID	@M_Movement.M_Movement_ID@
	1000000
DocAction	CO
Run	Completed

Read Record	
Table	M_StorageOnHand
M_Product_ID	@Ref=M_Product['Value='Hoe'].M_Product_ID
	138
QtyOnHand	2460.0
Read	MStorageOnHand[M_Locator_ID=1000030,M_P
M_Locator_ID	1000030

ConsignmentOutReturns

SUITE RESULTS [history]

Test Pages: 6 right, 0 wrong, 0 ignored, 0 exceptions **Assertions:** right, 0 wrong, 0 ignored, 0 exceptions (3.883 seconds)

TEST SUMMARIES

FIT:FITNESSE.CLIENT.FITSERVERSERVLETINVOKER

2 right, 0 wrong, 0 ignored, 0 exceptions	AdminLogin (0.002 seconds)
3 right, 0 wrong, 0 ignored, 0 exceptions	ConsignmentOut (0.050 seconds)
9 right, 0 wrong, 0 ignored, 0 exceptions	ConsignmentOutProcess (2.121 seconds)
2 right, 0 wrong, 0 ignored, 0 exceptions	ConsignmentReturn (0.024 seconds)
9 right, 0 wrong, 0 ignored, 0 exceptions	ConsignmentReturnProcess (0.361 second
6 right, 0 wrong, 0 ignored, 0 exceptions	ReadResults (0.030 seconds)

TEST OUTPUT

WarehouseMovement

SUITE RESULTS [history]

Test Pages: 4 right, 0 wrong, 0 ignored, 0 exceptions **As**
right, 0 wrong, 0 ignored, 0 exceptions (5.973 seconds)

TEST SUMMARIES

FIT:FITNESSE.CLIENT.FITSERVERSERVLETINVOKER

2 right, 0 wrong, 0 ignored, 0 exceptions	AdminLogin (0.002 seconds)
1 right, 0 wrong, 0 ignored, 0 exceptions	BeginStorageInfo (1.041 secon
8 right, 0 wrong, 0 ignored, 0 exceptions	ProcessMovement (3.179 seco
6 right, 0 wrong, 0 ignored, 0 exceptions	ReadResults (0.046 seconds)

BeginStorageInfo

RUN THIS AFTER ZEBRA MOVEMENT IS COMPLETE

ReadInfoWindow	
InfoWindow	Storage Movement View
WHERE	a.WM_HandlingUnit_ID<1000010

RunProcess	
ProcessValue	StockMovement
M_Locator_ID	@Ref=M_Locator[Value='HQT-2-A-2'].M_Locator_ID 1000031
Run	Lines done: 10 Jul 6, 2019, 7:32:36 PM MYT Inventory Move Created

ProcessMovement

OPEN MOVEMENT

Read Record	
Table	M_Movement
DocStatus	'DR'
Read	X_M_Movement[1000004]
M_Movement_ID	1000004

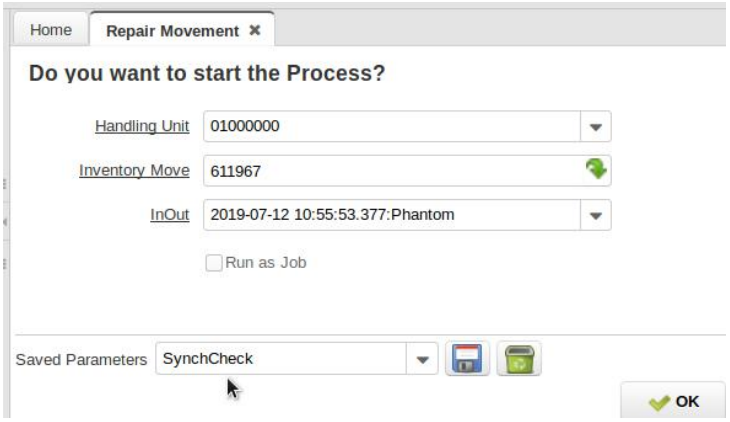
PREPARE MOVEMENT

Set DocAction

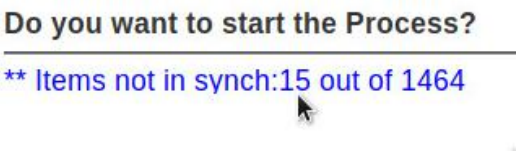
Synch-Check

There is a secret trap door in the QA arsenal of the WMS which is the Synch-Check to verify that the WMS EmptyStorageLine data is in synch with the core StorageOnHand.

You can execute that by calling up Repair Movement but fill in all three parameters, which is a bypass code to do just Synch-Checking. The parameter settings can be saved. Here I named it as SynchCheck for easy recall.



After executing it, at the real life client system, we get the baseline of 15. This is run daily or after some heavy processing of Ins and Outs. If the baseline increases, then there must be an unfinished In-Progress Picking or Putaway. Otherwise it be a code fault and must be raised to the developer.



The End