

LOADS AND SHIPMENTS AND WAVES, OH MY!

This blog series will cover scenarios which represent several common practices used in today's warehouses. These scenarios will illustrate how key D3650 Warehouse Management concepts and configuration considerations are used to enable the desired process design to meet the most simple and complex requirements.

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Part 2 of 3 –
Multiple Orders:
One shipment to
many sales orders

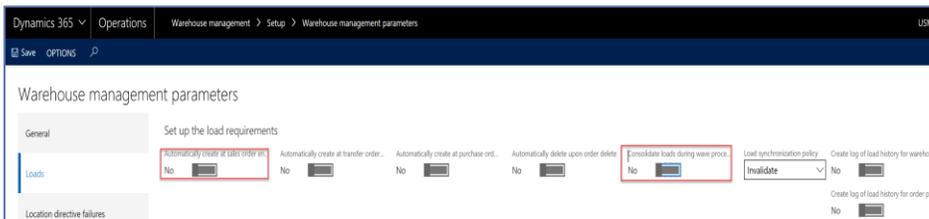
Loads and Shipments and Waves, Oh My!

Part 2 of 3 – Multiple Orders: One shipment to many sales orders

Manual Process

To make this happen, the following configuration parameter settings must be defined:

1. Warehouse management>Setup>Warehouse management parameters>Loads
 - a. Automatically create Load at SO entry: No
 - b. Consolidate loads during wave processing: No



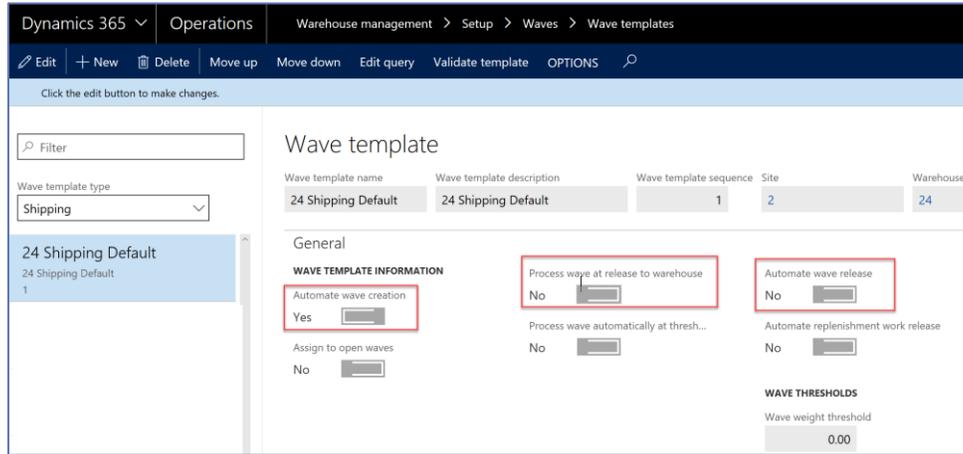
2. Warehouse management>Setup>Waves>Wave templates
 - a. Automate wave creation: Yes (this is optional for this scenario as a shipment with no wave can still be consolidated)
 - b. Process wave at release to warehouse: No
 - c. Automate wave release: No



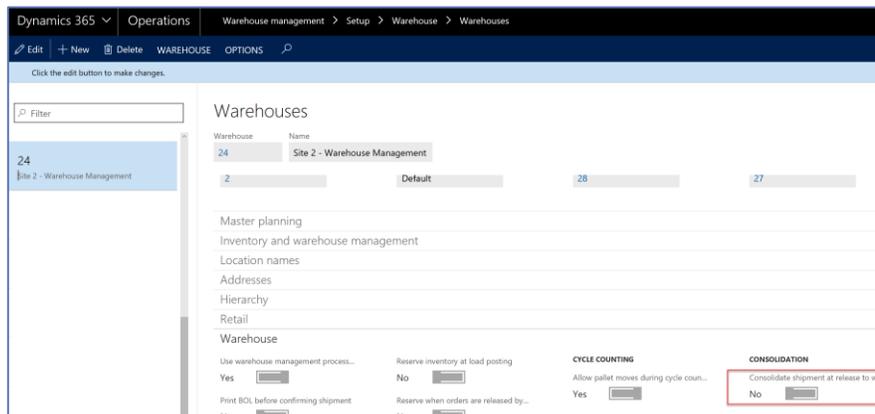
Scenario Summary



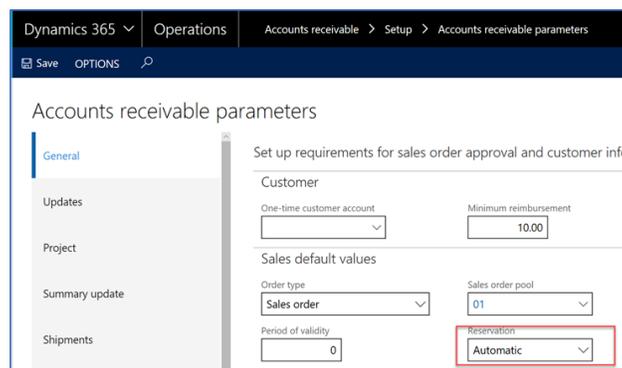
As with the single order picking process from Part 1 of this series, the automated functionality certainly creates a far from efficient process than the manual process. By manually consolidating shipments, the ties of a shipment to loads and waves was demonstrated. Without understanding how these relationships work, it is difficult to use an automated process effectively. While the shipment consolidation can easily be implemented with a single parameter change, it is important to understand the impact of that change. In this case, the impact of the change is all system-driven criteria (consolidation rules) to determine what can be consolidated.



3. Warehouse management>Setup>Warehouse>Warehouses
 - a. Consolidate shipment at release to warehouse: No

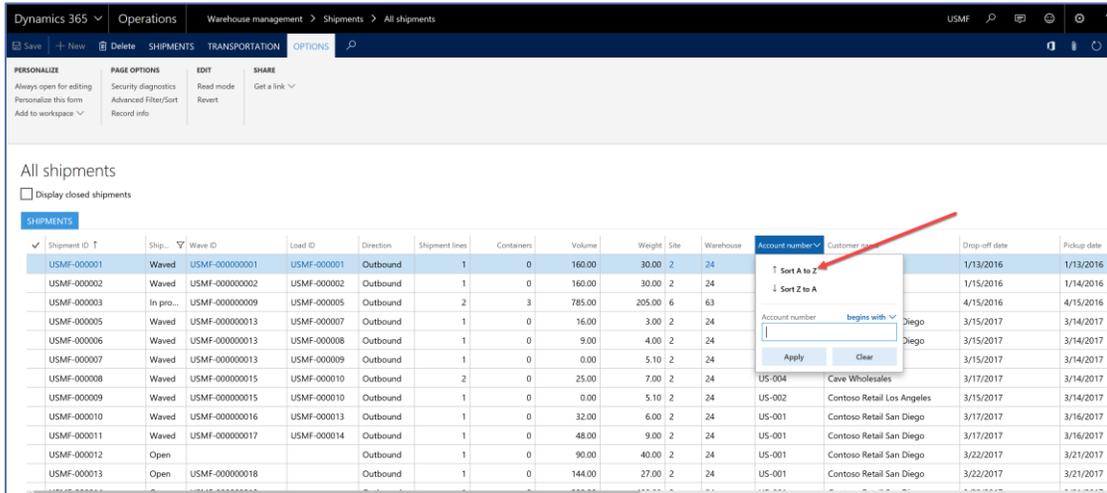


4. Accounts receivables>Setup>Accounts receivables parameters>General>Sales default values>Reservation
 - a. NOTE: This is not a required setting. However, for loads and shipments to be created, reservations must exist for the sales order lines. By setting the Reservation parameter to Automatic, the reservation is made at SO line creation if the quantity is available.



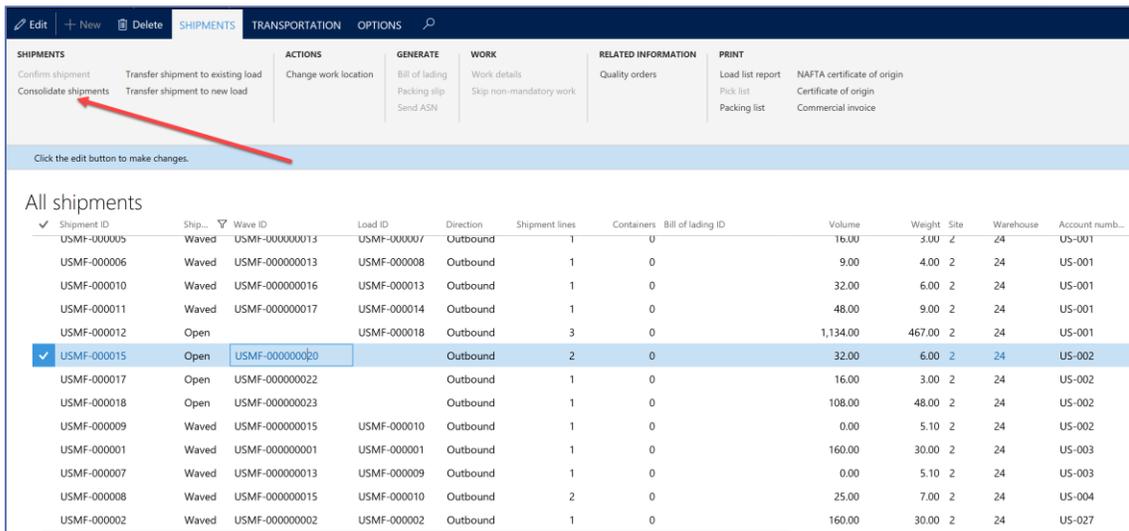
The steps below demonstrate manual shipment consolidation:

1. Create multiple sales orders for the same customer and same delivery date and release to warehouse.
2. Go to Warehouse Management>Shipments>All Shipments and sort by customer.



Shipment ID	Ship...	Wave ID	Load ID	Direction	Shipment lines	Containers	Volume	Weight	Site	Warehouse	Account number	Customer name	Drop-off date	Pickup date
USMF-000001	Waved	USMF-000000001	USMF-000001	Outbound	1	0	160.00	30.00	2	24			1/13/2016	1/13/2016
USMF-000002	Waved	USMF-000000002	USMF-000002	Outbound	1	0	160.00	30.00	2	24			1/15/2016	1/14/2016
USMF-000003	In pro...	USMF-000000009	USMF-000005	Outbound	2	3	785.00	205.00	6	63			4/15/2016	4/15/2016
USMF-000005	Waved	USMF-000000013	USMF-000007	Outbound	1	0	16.00	3.00	2	24			3/15/2017	3/14/2017
USMF-000006	Waved	USMF-000000013	USMF-000008	Outbound	1	0	9.00	4.00	2	24		Diego	3/15/2017	3/14/2017
USMF-000007	Waved	USMF-000000013	USMF-000009	Outbound	1	0	0.00	5.10	2	24			3/15/2017	3/14/2017
USMF-000008	Waved	USMF-000000015	USMF-000010	Outbound	2	0	25.00	7.00	2	24	US-004	Cave Wholesales	3/17/2017	3/14/2017
USMF-000009	Waved	USMF-000000015	USMF-000010	Outbound	1	0	0.00	5.10	2	24	US-002	Contoso Retail Los Angeles	3/15/2017	3/14/2017
USMF-000010	Waved	USMF-000000016	USMF-000013	Outbound	1	0	32.00	6.00	2	24	US-001	Contoso Retail San Diego	3/17/2017	3/16/2017
USMF-000011	Waved	USMF-000000017	USMF-000014	Outbound	1	0	48.00	9.00	2	24	US-001	Contoso Retail San Diego	3/17/2017	3/16/2017
USMF-000012	Open			Outbound	1	0	90.00	40.00	2	24	US-001	Contoso Retail San Diego	3/22/2017	3/21/2017
USMF-000013	Open	USMF-000000018		Outbound	1	0	144.00	27.00	2	24	US-001	Contoso Retail San Diego	3/22/2017	3/21/2017

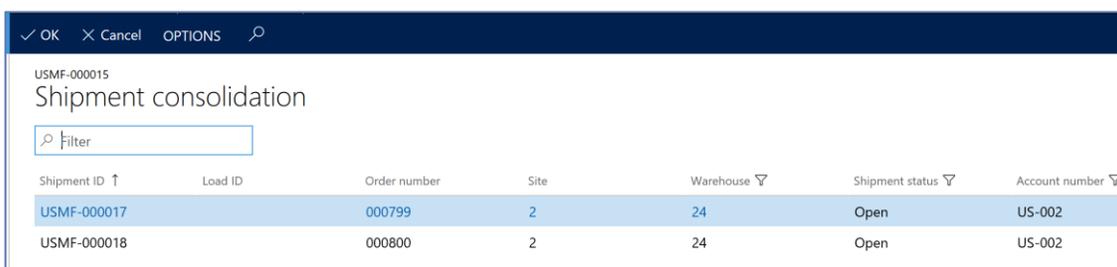
3. Identify the shipments to consolidate and select ONE of the shipments and click Consolidate shipments.



SHIPMENTS	ACTIONS	GENERATE	WORK	RELATED INFORMATION	PRINT
Confirm shipment	Transfer shipment to existing load	Change work location	Bill of lading	Quality orders	Load list report
Consolidate shipments	Transfer shipment to new load		Work details		NAFTA certificate of origin
			Packing slip		Pick list
			Send ASN		Packing list
			Skip non-mandatory work		Certificate of origin
					Commercial invoice

Shipment ID	Ship...	Wave ID	Load ID	Direction	Shipment lines	Containers	Bill of lading ID	Volume	Weight	Site	Warehouse	Account num...
USMF-000005	Waved	USMF-000000013	USMF-000007	Outbound	1	0		16.00	3.00	2	24	US-001
USMF-000006	Waved	USMF-000000013	USMF-000008	Outbound	1	0		9.00	4.00	2	24	US-001
USMF-000010	Waved	USMF-000000016	USMF-000013	Outbound	1	0		32.00	6.00	2	24	US-001
USMF-000011	Waved	USMF-000000017	USMF-000014	Outbound	1	0		48.00	9.00	2	24	US-001
USMF-000012	Open		USMF-000018	Outbound	3	0		1,134.00	467.00	2	24	US-001
USMF-000015	Open	USMF-000000020		Outbound	2	0		32.00	6.00	2	24	US-002
USMF-000017	Open	USMF-000000022		Outbound	1	0		16.00	3.00	2	24	US-002
USMF-000018	Open	USMF-000000023		Outbound	1	0		108.00	48.00	2	24	US-002
USMF-000009	Waved	USMF-000000015	USMF-000010	Outbound	1	0		0.00	5.10	2	24	US-002
USMF-000001	Waved	USMF-000000001	USMF-000001	Outbound	1	0		160.00	30.00	2	24	US-003
USMF-000007	Waved	USMF-000000013	USMF-000009	Outbound	1	0		0.00	5.10	2	24	US-003
USMF-000008	Waved	USMF-000000015	USMF-000010	Outbound	2	0		25.00	7.00	2	24	US-004
USMF-000002	Waved	USMF-000000002	USMF-000002	Outbound	1	0		160.00	30.00	2	24	US-027

4. The Shipment Consolidation form will display the shipment eligible to be consolidated with the shipment selected in step 3. Select the shipment to consolidate and click OK to accept the consolidation.



USMF-000015
Shipment consolidation

Filter

Shipment ID	Load ID	Order number	Site	Warehouse	Shipment status	Account number
USMF-000017		000799	2	24	Open	US-002
USMF-000018		000800	2	24	Open	US-002

5. Repeat steps three and four to consolidate additional shipments.
6. Now, in the All Shipments form, the shipments selected in the Shipment Consolidation form are no longer displayed. Those sales orders are now part of the shipment selected in step 3. Additionally, the sales order lines are now part of the shipment wave of the consolidated shipment.

All shipments

Shipment ID	Ship...	Wave ID	Load ID	Direction	Shipment lines	Containers	Bill of lading ID
USMF-000005	Waved	USMF-000000013	USMF-000007	Outbound	1	0	
USMF-000006	Waved	USMF-000000013	USMF-000008	Outbound	1	0	
USMF-000010	Waved	USMF-000000016	USMF-000013	Outbound	1	0	
USMF-000011	Waved	USMF-000000017	USMF-000014	Outbound	1	0	
USMF-000012	Open		USMF-000018	Outbound	3	0	
USMF-000009	Waved	USMF-000000015	USMF-000010	Outbound	1	0	
USMF-000015	Open	USMF-000000020		Outbound	4	0	
USMF-000001	Waved	USMF-000000001	USMF-000001	Outbound	1	0	
USMF-000007	Waved	USMF-000000013	USMF-000009	Outbound	1	0	
USMF-000008	Waved	USMF-000000015	USMF-000010	Outbound	2	0	
USMF-000002	Waved	USMF-000000002	USMF-000002	Outbound	1	0	
USMF-000003	In pro...	USMF-000000009	USMF-000005	Outbound	2	3	

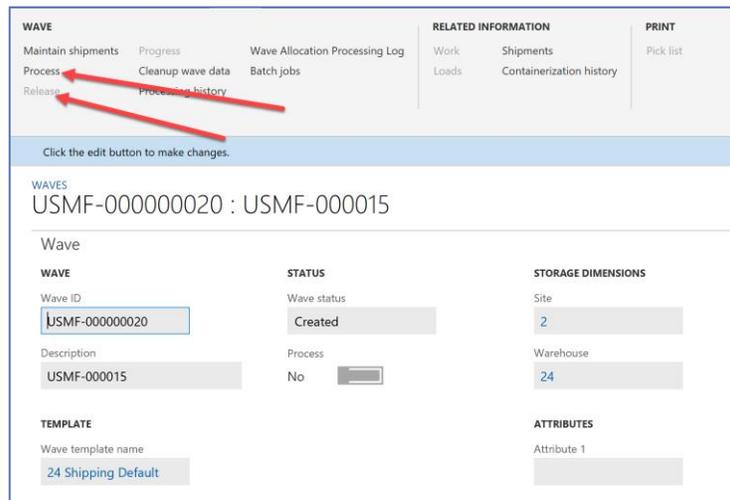
LOAD DETAILS

000797	USMF-000015	A0001	1.00	pcs
000798	USMF-000015	A0001	1.00	Pcs
000799	USMF-000015	A0001	1.00	Pcs
000800	USMF-000015	A0002	12.00	Pcs

Note that the shipment selected in the Shipment Consolidation form are no longer in the shipment list but the orders in those shipments are now displayed in the load details of the consolidated shipment.

Now that the shipments have been consolidated, the wave will need to be processed and released to provide a pick list. Click on the wave ID from the shipment line to access the wave or you can go to Warehouse Management> Outbound Waves>Shipping Waves>Pending Waves and select the relevant wave to process. NOTE: In Part 1 of this series, manual creation of a wave is demonstrated. This step could be applied here if desired. To avoid redundancy that procedure is not included in here. Please refer to [Part 1](#).

7. Once in the wave, click Process then Release.



WAVE

Maintain shipments Progress Wave Allocation Processing Log

Process Cleanup wave data Batch jobs

Release Processing history

RELATED INFORMATION: Work, Shipments, Loads, Containerization history

PRINT: Pick list

Click the edit button to make changes.

WAVES
USMF-000000020 : USMF-000015

Wave

WAVE

Wave ID: USMF-000000020

Description: USMF-000015

Wave template name: 24 Shipping Default

STATUS

Wave status: Created

Process: No

STORAGE DIMENSIONS

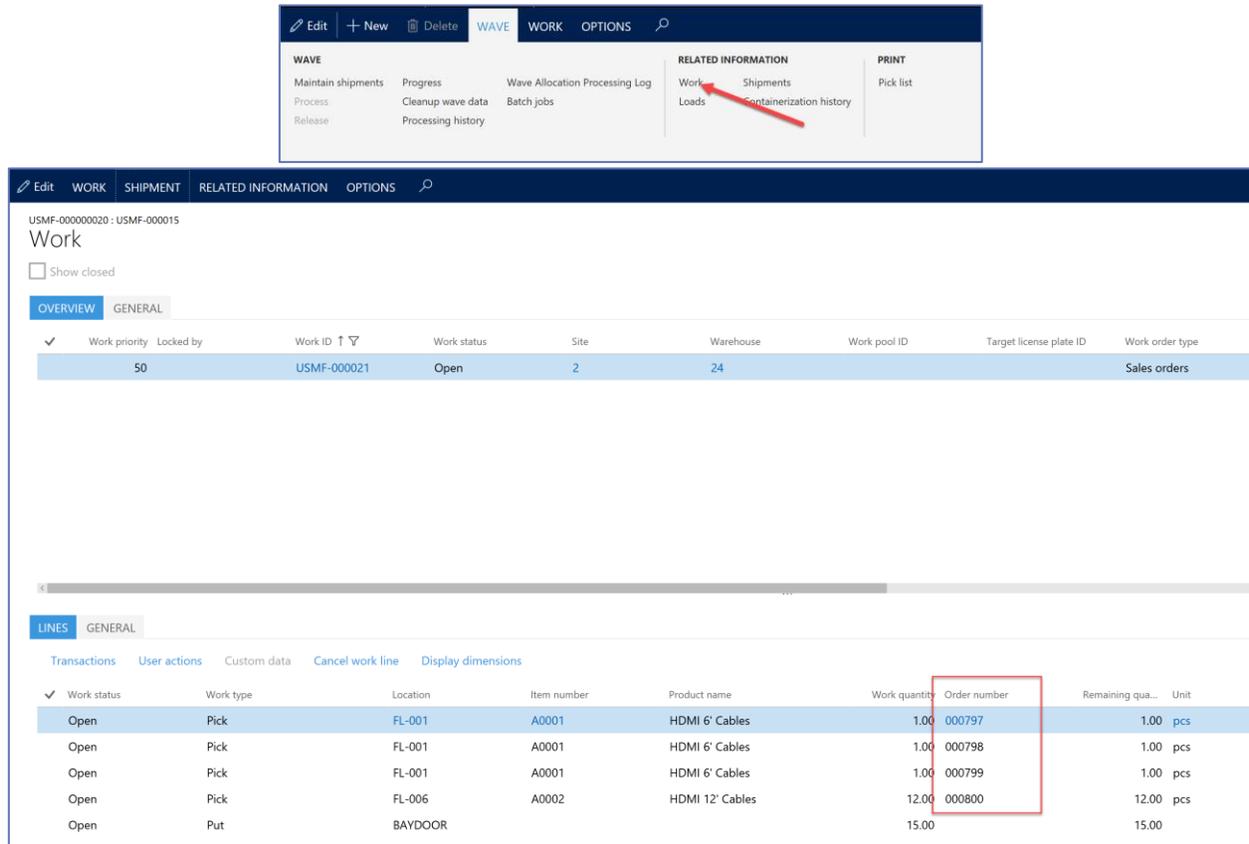
Site: 2

Warehouse: 24

ATTRIBUTES

Attribute 1:

8. The wave has now created work as defined by the Work Template. The work is in the form of a Pick list. You will notice, by clicking on Work in the "Related information" area that all lines from all sales orders in the shipment are on the pick list.



USMF-00000020 : USMF-000015

Work

Show closed

OVERVIEW GENERAL

Work priority	Locked by	Work ID ↑ ▾	Work status	Site	Warehouse	Work pool ID	Target license plate ID	Work order type
50		USMF-000021	Open	2	24			Sales orders

LINES GENERAL

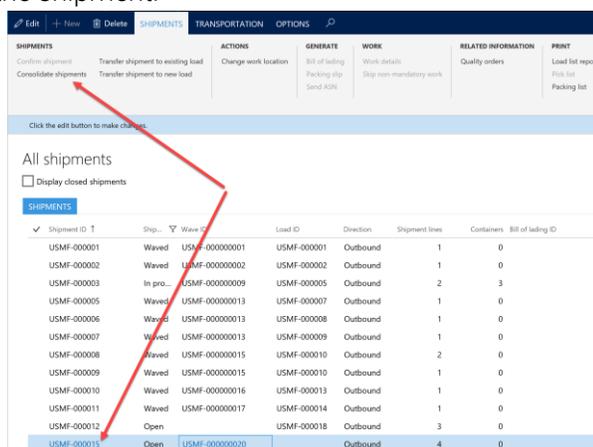
Transactions User actions Custom data Cancel work line Display dimensions

Work status	Work type	Location	Item number	Product name	Work quantity	Order number	Remaining qua...	Unit
Open	Pick	FL-001	A0001	HDMI 6' Cables	1.00	000797	1.00	pcs
Open	Pick	FL-001	A0001	HDMI 6' Cables	1.00	000798	1.00	pcs
Open	Pick	FL-001	A0001	HDMI 6' Cables	1.00	000799	1.00	pcs
Open	Pick	FL-006	A0002	HDMI 12' Cables	12.00	000800	12.00	pcs
Open	Put	BAYDOOR			15.00		15.00	

9. Now the wave/order is ready to be picked. Click Print>Print Picklist to print the picklist. The picklist will then be picked using the Dynamics 365 for Operations Warehousing App on a mobile device. Once the picking work is complete the shipment must be confirmed.

10. The shipment confirmation can be done in either the shipment itself or the load/load planning workbench.

a. Confirm a shipment from the shipment:



USMF-000015

SHIPMENTS TRANSPORTATION OPTIONS

Confirm shipment Transfer shipment to existing load
Consolidate shipments Transfer shipment to new load

Click the edit button to make changes.

All shipments

Display closed shipments

SHIPMENTS

Shipment ID ↑	Shp...	Wave #	Load ID	Direction	Shipment lines	Containers	Bill of lading ID
USMF-000001	Waved	USMF-000000001	USMF-000001	Outbound	1	0	
USMF-000002	Waved	USMF-000000002	USMF-000002	Outbound	1	0	
USMF-000003	In pro...	USMF-000000009	USMF-000005	Outbound	2	3	
USMF-000005	Waved	USMF-000000013	USMF-000007	Outbound	1	0	
USMF-000006	Waved	USMF-000000013	USMF-000008	Outbound	1	0	
USMF-000007	Waved	USMF-000000013	USMF-000009	Outbound	1	0	
USMF-000008	Waved	USMF-000000015	USMF-000010	Outbound	2	0	
USMF-000009	Waved	USMF-000000015	USMF-000010	Outbound	1	0	
USMF-000010	Waved	USMF-000000016	USMF-000013	Outbound	1	0	
USMF-000011	Waved	USMF-000000017	USMF-000014	Outbound	1	0	
USMF-000012	Open		USMF-000018	Outbound	3	0	
USMF-000015	Open	USMF-000000020		Outbound	4	0	

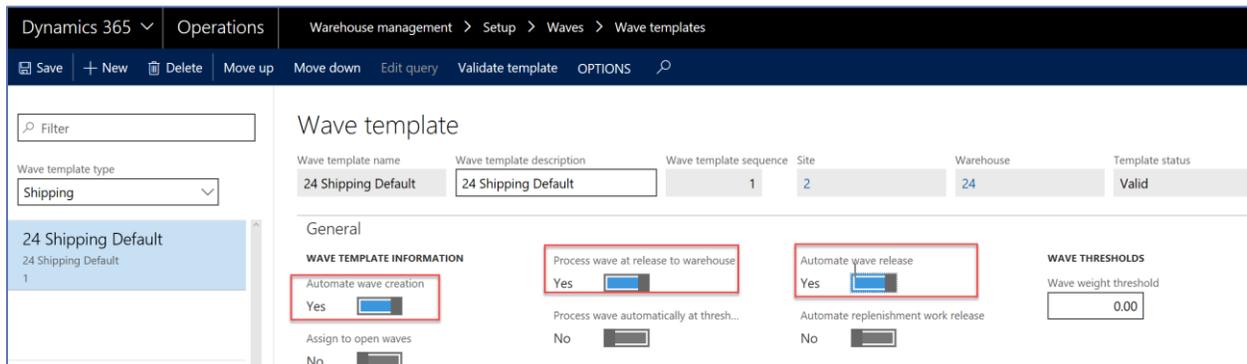
b. Confirm a shipment from the Load:

Automatic Process

Now let's take that same scenario but change settings in the Warehouse parameters, wave template, and the step-by-step process.

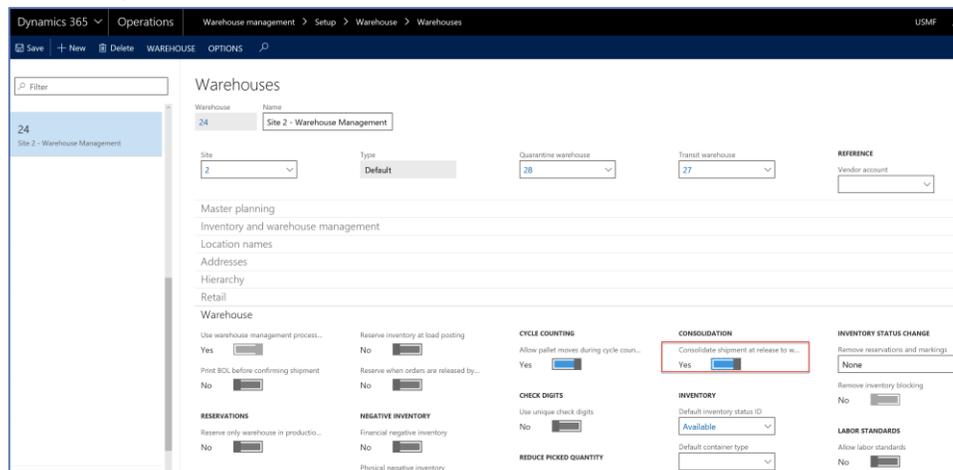
To make this happen, the following configuration parameter settings must be made:

1. Warehouse management>Setup>Waves>Wave templates
 - a. Automate wave creation: Yes (this is optional for this scenario as a shipment with no wave can still be consolidated)
 - b. Process wave at release to warehouse: Yes
 - c. Automate wave release: Yes



The screenshot shows the 'Wave template' configuration page in Dynamics 365. The breadcrumb navigation is 'Warehouse management > Setup > Waves > Wave templates'. The page title is 'Wave template'. The 'Wave template name' is '24 Shipping Default'. The 'Wave template description' is '24 Shipping Default'. The 'Wave template sequence' is '1'. The 'Site' is '2'. The 'Warehouse' is '24'. The 'Template status' is 'Valid'. Under the 'General' section, there is a 'WAVE TEMPLATE INFORMATION' section. 'Automate wave creation' is set to 'Yes'. 'Process wave at release to warehouse' is set to 'Yes'. 'Automate wave release' is set to 'Yes'. There is also a 'WAVE THRESHOLDS' section with 'Wave weight threshold' set to '0.00'.

2. Warehouse Management>Setup>Warehouse>Warehouses
 - a. Consolidate shipment at release to warehouse: Yes

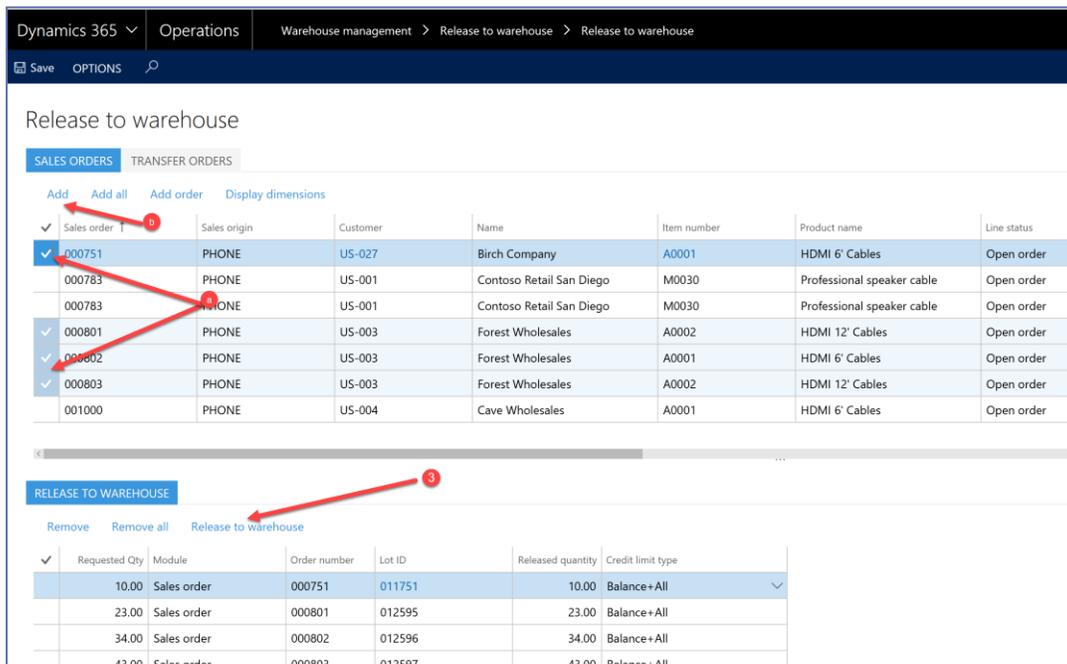


The screenshot shows the 'Warehouses' configuration page in Dynamics 365. The breadcrumb navigation is 'Warehouse management > Setup > Warehouse > Warehouses'. The page title is 'Warehouses'. The 'Warehouse' is '24'. The 'Name' is 'Site 2 - Warehouse Management'. The 'Site' is '2'. The 'Type' is 'Default'. The 'Quarantine warehouse' is '28'. The 'Transit warehouse' is '27'. The 'REFERENCE' section has 'Vendor account' set to 'None'. Under the 'CONSOLIDATION' section, 'Consolidate shipment at release to warehouse' is set to 'Yes'.

1. Process Change: Shipments will not be released to the warehouse from the sales order by the order taker. Shipments will be released by warehouse personnel using the "Release to Warehouse" functionality in Warehouse Management>Release to Warehouse>Release to Warehouse (NOTE: this same process also applies to the "Automatic release of Sales Orders" functionality. For demonstration purposes, we will use the "Release to Warehouse" function)

The steps below demonstrate automated shipment consolidation:

1. Create multiple sales orders for the same customer with the same delivery date and warehouse. DO NOT "Release to Warehouse"
2. Go to Warehouse Management>Release to Warehouse>Release to Warehouse. Select the sales order to release. For this demonstration, sales orders other than the orders to be consolidated will be selected for release to illustrate how D3650 uses consolidation criteria to avoid consolidating mismatching orders.
 - a. Select the orders to release
 - b. Click "Add"
 - c. Click "Release to Warehouse"



The screenshot shows the Dynamics 365 interface for "Release to warehouse". The top navigation bar includes "Operations" and "Warehouse management > Release to warehouse > Release to warehouse". The main area has tabs for "SALES ORDERS" and "TRANSFER ORDERS".

Under "SALES ORDERS", there are buttons for "Add", "Add all", "Add order", and "Display dimensions". A table lists several sales orders with columns for Sales order, Sales origin, Customer, Name, Item number, Product name, and Line status. Red arrows point to the "Add" button (labeled 'a'), the first row (labeled 'b'), and the "Release to warehouse" button (labeled 'c').

Below the table, there is a "RELEASE TO WAREHOUSE" section with buttons for "Remove", "Remove all", and "Release to warehouse". A summary table shows the results of the release process:

Requested Qty	Module	Order number	Lot ID	Released quantity	Credit limit type
10.00	Sales order	000751	011751	10.00	Balance+All
23.00	Sales order	000801	012595	23.00	Balance+All
34.00	Sales order	000802	012596	34.00	Balance+All
43.00	Sales order	000803	012597	43.00	Balance+All

3. Upon releasing to warehouse, shipments and waves will be created, processed and released in accordance to the warehouse parameters and wave template parameters.
4. In the All Shipments form the shipments created in step three are displayed in the list. (**BONUS CONTENT:** Note this scenario created a shipment for an additional order that was not combined with the shipment to Forest Wholesales. However, because the order is for an item that is included in the other shipment, both shipments are included in the same wave. Therefore, the item can be picked as part of the same trip for the picker.)

Dynamics 365 > Operations > Warehouse management > Shipments > All shipments

SHIPMENTS TRANSPORTATION OPTIONS

SHIPMENTS ACTIONS GENERATE WORK RELATED INFORMATION PRINT

Confirm shipment Transfer shipment to existing load Change work location Bill of lading Work details Quality orders Load list report NAFTA certificate of origin
 Consolidate shipments Transfer shipment to new load Send ASN Skip non-mandatory work Packing list Certificate of origin
 Packing list Commercial invoice

Click the edit button to make changes.

All shipments

Display closed shipments

SHIPMENTS

Shipment ID ↑	Ship...	Wave ID	Load ID	Direction	Shipment lines	Containers	Bill of lading ID	Volume	Weight	Site	Warehouse	Account number
USMF-000003	In pro...	USMF-00000009	USMF-000005	Outbound	2	3		785.00	205.00	6	63	US-027
USMF-000005	Waved	USMF-00000013	USMF-000007	Outbound	1	0		16.00	3.00	2	24	US-001
USMF-000006	Waved	USMF-00000013	USMF-000008	Outbound	1	0		9.00	4.00	2	24	US-001
USMF-000007	Waved	USMF-00000013	USMF-000009	Outbound	1	0		0.00	5.10	2	24	US-003
USMF-000008	Waved	USMF-00000015	USMF-000010	Outbound	2	0		25.00	7.00	2	24	US-004
USMF-000009	Waved	USMF-00000015	USMF-000010	Outbound	1	0		0.00	5.10	2	24	US-002
USMF-000010	Waved	USMF-00000016	USMF-000013	Outbound	1	0		32.00	6.00	2	24	US-001
USMF-000011	Waved	USMF-00000017	USMF-000014	Outbound	1	0		48.00	9.00	2	24	US-001
USMF-000012	Open		USMF-000018	Outbound	3	0		1,134.00	467.00	2	24	US-001
USMF-000015	Waved	USMF-00000020	USMF-000022	Outbound	4	0		156.00	57.00	2	24	US-002
USMF-000023	Waved	USMF-00000026	USMF-000023	Outbound	1	0		160.00	30.00	2	24	US-027
USMF-000024	Waved	USMF-00000026	USMF-000024	Outbound	3	0		1,138.00	366.00	2	24	US-003

Newly created shipments

Note the Shipping Status is "Waved" meaning the Wave has been processed and released.

Note the waves for shipment 23 and 24 are the same

5. In the wave, you will notice there are two lines. One line notes the order number while the other line's order number is blank. That is merely because the field cannot store multiple order numbers. Click on Work in the wave to review orders in the wave/shipment if desired.

Dynamics 365 > Operations > Warehouse management > Shipments > All shipments

WAVE WORK OPTIONS

WAVE RELATED INFORMATION PRINT

Maintain shipments Progress Wave Allocation Processing Log Work Shipments Pick list
 Process Cleanup wave data Batch jobs Loads Commercialization history
 Release Processing history

Click the edit button to make changes.

WAVES

USMF-00000026 : Multiple Shipments

Wave

WAVE	STATUS	STORAGE DIMENSIONS	Attribute 2
Wave ID USMF-00000026	Wave status Released	Site 2	
Description Multiple Shipments	Process No	Warehouse 24	Attribute 3
			Attribute 4

TEMPLATE

Wave template name
24 Shipping Default

ATTRIBUTES

Attribute 1

Wave lines

Shipment

Shipment ID	Load ID	Work order type	Order number
USMF-000023	USMF-000023	Sales orders	000751
USMF-000024	USMF-000024	Sales orders	

Dynamics 365 > Operations > Warehouse management > Shipments > All shipments

Click the edit button to make changes.

USMF-00000026 : MULTIPLE SHIPMENTS

Work

Show closed

OVERVIEW GENERAL

Work priority	Locked by	Work ID ↑	Work status	Site	Warehouse	Work pool ID	Target license plate ID	Work order type
50		USMF-000022	Open	2	24			Sales orders

LINES GENERAL

Transactions User actions Custom data Cancel work line Display dimensions

Work status	Work type	Location	Item number	Product name	Work quantity	Order number	Remaining qua...	Unit
Open	Pick	FL-001	A0001	HDMI 6' Cables	10.00	000751	10.00	pcs
Open	Pick	FL-006	A0002	HDMI 12' Cables	23.00	000801	23.00	pcs
Open	Pick	FL-001	A0001	HDMI 6' Cables	34.00	000802	34.00	pcs
Open	Pick	FL-006	A0002	HDMI 12' Cables	43.00	000803	43.00	pcs
Open	Put	BAYDOOR			110.00		110.00	



6. At this point the pick list is ready to be printed. There are multiple ways to print the picklist. The pick list can be printed from within the shipment or wave. To stay with the automation theme, pick list printing can be run in a batch either on-demand or at scheduled times in Warehouse Management>Inquiries and Reports>Pick List Reports.

Shipping pick list ?

Destination ^
Change

Screen

Records to include ^
Filter

WORK LINES	Load ID
Work status	<input type="text"/>
Open, In process	<input type="text"/>
	Shipment ID
	<input type="text"/>

Run in the background ^
Recurrence Alerts

Batch processing	Task description
No <input type="checkbox"/>	<input type="text" value="Shipping pick list"/>
	Batch group
	<input type="text"/>
	Private
	No <input type="checkbox"/>
	Critical Job
	No <input type="checkbox"/>
	Monitoring category
	<input type="text"/>

Start date: 3/16/2017 (08:55:11 pm) (GMT) Coordinated Universal Time

7. Now the wave/order is ready to be picked. Click Print>Print Picklist to print the picklist. The picklist will then be picked using the Dynamics 365 for Operation Warehousing App on a mobile device. Once the picking work is complete the shipment must be confirmed.
8. To confirm the shipment, refer to options step 11 in the Manual process above.

Scenario Summary

As with the single order picking process from Part 1 of this series, the automated functionality certainly creates a far from efficient process than the manual process. By manually consolidating shipments, the ties of a shipment to loads and waves was demonstrated. Without understanding how these relationships work, it is difficult to use an automated process effectively. While the shipment consolidation can easily be implemented with a single parameter change, it is important to understand the impact of that change. In this case the impact of the change is all system driven criteria (consolidation rules) to determine what can be consolidated.