

EX065 VISION Stock Difference[Warrington]

Extension Specification

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1 Document Revision History

Changed By	Date	Version	Notes
Andrea HiltonCarr	13/03/2023	V0.1	Document Creation
Andrea HiltonCarr	31/03/2023	V0.2	Updates following review, including on / off hold custom requirements.
Ben Berridge	20/04/2023	V0.2	Full document revision
Ben Berridge	15/05/2023	V0.3	Updates following feedback
Ben Berridge	24/05/2023	V0.4	Estimate added
Ben Berridge	13/06/2023	V0.5	Assumption 25 added
Andrea HiltonCarr	20/06/2023	V0.6	GF10 and GF12 Expected result updated.
Ben Berridge	17/07/2023	V0.6	Transaction call removed from design.
Ben Berridge	20/07/2023	V0.7	Update for invalid condition code entry and LogInID update.
Ben Berridge	27/07/2023	V0.8	Removing duplicate golden flow scenarios introduced in V0.6. Reason code table explanation added to support dynamic configuration settings.
Ben Berridge	03/08/2023	V0.9	Subpacks UOM conversion Extended attribute details updated
Ben Berridge	13/09/23	V1.0	Renumbered. Subpacks UOM conversion updated to use item facility when present else use item record.
Andrea HiltonCarr	21/09/2023	V1.1	EX2 Expected Result Corrected Removed reference to adjustment reason codes UI Section 3.3 Section 4 Updates Removed Stock adjustment Reason Codes 4.3 in MAWM Added DCI Message Level change in to 4.3. Added Extension Service Id 4.4 Added PIX Configuration 4.5

2 Summary Information

Customer Name	ASDA
Customer Code	ASDA
Subproject Code	EX065
Salesforce Case Number:	
Product:	Manhattan Associates Active Warehouse Management (MAWM)
Spec functional Area	DCInventory and Device Integration

2.1 Overview

2.1.1 Business Requirement

A manual stock adjustment can be made by either a colleague or the VISION system to the VISION managed pickable stock balance. Today, GLS is informed of the adjustment via the "StockDifference" VISION message which contains the quantity to adjust and a reason code.

The reason code could also be an instruction to put stock on hold or take it off hold.

Extension EX065 is therefore required to trigger custom events to either automatically adjust the iLPN quantity on MAWM by the positive or negative quantity detailed in the message from VISION or to automatically apply or remove a default condition code based on the reason code received in the message.

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The extension will require a custom MHE Inbound Payload Message and Inbound Message Type that will be mapped to the VISION "StockDifference" message via AIS. This message will trigger the custom events to check the reason code detailed in the message. The actions will then be to either automatically adjust the iLPN in MAWM by the quantity detailed in the message or to automatically apply or remove the default condition code to the iLPN.

This extension replaces VISION to GLS existing StockDifference process.

2.1.2 Functional Overview

VISION controls inventory from the point of receiving an iLPN onto the VISION infeed's, until the point of handover after picking and packing at the outfeeds.

Colleagues can make manual stock adjustments within VISION. VISION will then send the adjustment messages to MAWM.

VISION will inform MAWM about a stock adjustment on the VISION managed available stock balance. The differences are specific to stock adjustments and do not include differences because of allocated inventory in the picking and packing process and the handover of picked orders from VISION to MAWM.

The stock balance on VISION can be increased or decreased and will therefore have a positive or negative adjustment and quantity contained within the message. A negative adjustment will include the (-) sign and a positive adjustment will contain no sign value.

The need for the adjustment message is because of discrepancies between logical and physical stock. This could be because of a count process, a manual stock check process or because of damaged stock.

The colleagues will make the adjustments on the VISION system. VISION will generate the StockDifference message and map to the customer MAWM message STOCKDIFFERENCE via AIS.

A custom event will be triggered to take the adjustment detail from the message and automatically adjust the corresponding iLPN by the quantity indicated in the message so the new quantity on the iLPN matches VISION. The adjustment detail also contains a reason code and determines the action to be taken.

If the reason code is mapped to place the stock on hold an event will be triggered to apply the default condition code to the iLPN in MAWM so that it matches the status in VISION.

If the reason code is mapped to make the stock available an event will be triggered to remove all current condition codes from the iLPN in MAWM so that it matches the status in VISION.

Extension Specification

2.2 Assumptions

Dof	Accounting
Ref 1	Assumption MHE Base Configuration and Installation is present.
2	EX065 is enabled in Warrington MHE Warehouse Only.
	,
3	All MHE messages, both outbound (MAWM to VISION via AIS) and inbound (VISION to MAWM via AIS) will use REST and be in JSON format.
4	The mapping of fields for Integration has been defined between MAWM and AIS.
5	A new Inbound PAYLOAD message STOCKDIFFERENCE will be configured. The message will use the same source transport and endpoints as all inbound messages. The endpoints used are not linked to any specific message.
6	A new corresponding Inbound Message type will be configured in Proactive.
7	Only one item and iLPN will be included in each STOCKDIFFERENCE message that is sent to MAWM.
8	Messages will be received and adjusted real time in MAWM once received from VISION.
9	Colleagues can make stock adjustments in VISION. VISION will confirm the adjustments to MAWM in the MHE interface message.
10	For outbound messages the No OpParser Template is selected in the SOURCE Endpoint and Subscriber configuration. The Endpoint links the transport to the Message Type and defines the parser to be used. As we are using JSON format no parser is required.
11	The Quantities sent in the message will be a positive value (surplus inventory) or a negative value (inventory shortage). This will be the amount to add or deduct to/from the current MAWM total iLPN quantity and adjust to the new quantity.
12	For any required positive adjustments, where there is no iLPN in VISION for the item a manual process will be used to create the iLPN. Within MAWM, Create iLPN followed by LPN disposition will be used to create the iLPN and trigger the putaway message to VISION. The iLPN is then placed on to the Infeed and received into the VISION storage area. There is no requirement to accommodate this in this extension.
13	This StockDifference message relates to differences on iLPNs on hand and available quantities. It does not account for difference in iLPNs that are in warehouse processes and allocated for picking and packing.
14	Both iLPNs have the same total iLPN quantity prior to the colleagues making the adjustments to VISION. If the quantities do not match the adjustment sent from VISION will not bring both systems in line.
15	Only single item iLPNs will be adjusted.
16	An iLPN that is at allocated status in MAWM can be adjusted.
17	If there are differences in the LPN quantity between VISION and MAWM and the adjustment quantity would take the MAWM iLPN quantity below zero, the adjustment on the MAWM iLPN will be for the remaining iLPN quantity only. The process will not adjust MAWM into negative inventory quantities. The iLPN in MAWM will become consumed.
18	The purpose of this message is to complete the VISION adjustments in MAWM or the on hold /off hold requests. The purpose of the message is not to align inventory.
19	All reason codes detailed in section 3.3 will exist in MAWM so that the received reason code in the message can be recorded against the inventory adjustment.
20	The LogInID does not need to exist in MAWM for the adjustment to be processed.
21	The LogInID value to be recorded in the Reference text field of the PIX record when the adjustment is processed.
22	Adjustments can be made that take the total iLPN quantity above the Maximum LPN Quantity value set on the item record.
23	If the iLPN included in the stock difference message does not exist or is at consumed status in MAWM the message will fail and the error will be recorded in the MHE journal.
24	Where a request is received to apply the default condition code or remove all condition codes and the iLPN state already matches the required outcome no update to the condition codes will be performed and processing will move to 3.1.4 of the process flow.

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Ref	Assumption
25	Inventory adjustments will not adjust the iLPN below zero if the adjustment quantity is greater than the on hand quantity. To prevent this scenario the following logic will be applied before the adjustment is processed: Where adjustment quantity > on hand quantity – the difference from the adjustment quantity before processing inventory adjustment.
26	When EX065 is requested to remove all condition codes from an iLPN both the iLPN condition codes and inventory condition codes will be removed from the iLPN if any are present. When the update is complete the "Ilpn Condition Code Count" and "Inventory Condition Code Count" will be zero.
27	An extended attribute on the iLPN will be used to temporally hold the LogInID when condition code updates are performed so that can be written to the PIX record.
28	If the default condition code set on the config store is not a valid MAWM inventory condition code it will not be applied to the iLPN.
29	The Quantity value received in the STOCKDIFFERENCE message will be in subpacks. The value will then be converted into the MAWM base UOM of units. (Quantity x ItemFacility ItemPackage.Quantity where UomId = "subpacks")
30	All information contained in this document is subject to change. In case of change, the document will be updated accordingly and the changes will be logged in Document Revision History (section 1).
31	This change extends the base functionality and therefore it cannot be guaranteed that all of the existing or future base capabilities are supported.

2.3 Dependencies

2.3.1 Extension Dependencies

N/A

2.3.2 Interface Dependencies

The new MHE Custom Message will need to be mapped to VISION Message StockDifference via AIS. Reference needs to be made to the Integration document for data types, field lengths and mapping fields as detailed in the MAWM MHE Message Configuration.

The VISION adjustment reason codes will need to be mapped to MAWM Reason Codes that have been configured on the Adjustment Code UI.

2.4 Glossary

Active WM Term	AH Term	Description
WCS		Warehouse control system
VISION	VISION	Vanderlande WCS (warehouse control system), controls all picking and packing activity from the point of Inbound Receipt
GLS	GLS	Global Logistics System – the legacy warehouse management system
AIS	AIS	Integration layer sitting between VISION (MHE) and MAWM.
MAWM		Manhattan Active Warehouse Management system
MHE	MHE	Material Handling Equipment

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Active WM Term	AH Term	Description
Item	SKU (Stock Keeping Unit)	Sellable product, usually item name, item description, and item barcode are three unique values.
ILPN	Stock reference number	Inbound License Plate Number A unique barcode used in MAWM to track inbound inventory. A traceable moveable unit in the warehouse (case, pallet, tote).
Payload Message Type		Unique Message Type for MHE Message and Process
Condition Codes		Can be applied to an iLPN to prevent use. Inventory with an applied condition code can appear allocable or un-allocable to the host, depending on configuration (Formerly Lock Codes)

2.5 Performance Expectations

The expectation is that no existing or newly introduced MHE Messages will be impacted by the introduction of the new message and trigger.

The updates to the iLPNs on MAWM will be made in real time in sequence of receipt of the STOCKDIFFERENCE/StockDifference Messages.

3 Extension Detail

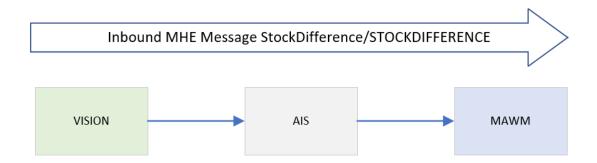
3.1 Process Flow

- 1. STOCKDIFFERENCE message is received and Config Store Id "EX065 VISION Stock Difference" is checked to confirm if extension is enabled:
 - a) Reference Field 1 = "N" End processing.
 - b) Reference Field 1 = "Y" proceed to step 2.
- 2. Check if ReasonCode value is listed UI-Config Store entry "EX065 Vision Stock Difference apply condition code":
 - a) ReasonCode value does not match Config Store Data value proceed to step 4.
 - b) ReasonCode value matches Config Store Data value proceed to step 3.
- 3. Check if default condition code value listed UI-Config Store entry "EX065 Vision Stock Difference apply condition code":
 - a) Default condition code value is not present in MAWM do not apply and proceed to step 4.
 - b) Default condition code value is present in MAWM apply the default condition code listed in reference field 1 to iLPN and proceed to step 5.
- 4. Check if ReasonCode value is listed UI-Config Store entry "EX065 Vision Stock Difference remove condition code":
 - a) ReasonCode value does not match Config Store Data value proceed to step 5.
 - b) ReasonCode value matches Config Store Data value remove all condition codes from iLPN and proceed to step 5.
- 5. Check if Quantity value is a positive value and ReasonCode value is listed UI-Config Store entry "EX065 Vision Stock Difference positive adjustment":
 - a) Quantity value is negative proceed to step 6.

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- b) Quantity value is positive and ReasonCode value does not match Config Store Data value End processing.
- c) Quantity value is positive and ReasonCode value matches Config Store Data value –
 Convert Quantity value from subpacks to units (Quantity x ItemFacility
 ItemPackage.Quantity where UomId = "subpacks") and make positive adjustment and
 end processing.
- 6. Check if Quantity value is a negative value and ReasonCode value is listed UI-Config Store entry "EX065 Vision Stock Difference negative adjustment":
 - a) Quantity value is negative and ReasonCode value does not match Config Store Data value End processing.
 - Quantity value is negative and ReasonCode value matches Config Store Data value— Convert Quantity value from subpacks to units (Quantity x ItemFacility ItemPackage.Quantity where UomId = "subpacks") and make negative adjustment and end processing.
- 7. VISION and MAWM iLPN adjustments and iLPN on / off hold are aligned.
- 8. The adjusted iLPN detail can be viewed in the Activity Tracking and PIX Visibility UI screens.

3.2 MHE Message Diagram



3.3 Custom Events for MHE Message STOCKDIFFERENCE

A new custom Inbound Message Type of STOCKDIFFERENCE will be configured within DCINVENTORY Component on Proactive.

VISION will send the following entries in the VISION StockDifference Message mapping to fields contained within the MAWM payload message – STOCKDIFFERENCE.

VISION Identifier	MAWM Json Custom Message Type	MAWM Definition
MessageID	STOCKDIFFERENCE	MessageId
Matchcode	STOCKDIFFERENCE	ItemId
Quantity	STOCKDIFFERENCE	Quantity
ReasonCode	STOCKDIFFERENCE	Reason Code
StockReferenceNo	STOCKDIFFERENCE	iLPN
LogInID	STOCKDIFFERENCE	UserId

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VISION will use the following reason codes. If required AIS will transform the reason code value before sending to MAWM so this list should be considered as an example and not a fixed list. All extension functionality should be dynamic and allow updates to the reason codes specified in the config store.

Reason Code	Meaning	Allowed in Negative Adjustment	Allowed in Positive Adjustment
STOCK_COUNT	Stock difference has been detected during stock count. The reason code will be used by the VISION counting functionality	Yes	Yes
STOCK_ON_HOLD	Stock has been put on hold. VISION will always put all stock of a stock reference (iLPN) number on hold. If there are multiple TSU in VISION assigned to the stock reference number, then VISION will summarise the total quantity of the TSUs in one stock difference message.	No	Yes
STOCK_OFF_HOLD	Stock has been put off hold. VISION will always put all stock of a stock reference number off hold. If there are multiple TSU in VISION assigned to the stock reference number, then VISION will summarise the total quantity of these TSUs in one stock difference message.	No	Yes
STOCK_DIFFERENCE	Reason code can be selected during manual stock adjustments,	Yes	Yes
STOCK_DAMAGED	Reason code can be selected during manual stock adjustments.	Yes	No

The custom events will look at the reason codes and determine if the iLPN will have the default condition code applied to the iLPN or all condition codes are to be removed and if a positive or negative adjustment is to be processed.

As the iLPN's are stored within VISION there is no requirement as part of this process to reprint any iLPN label.

When the adjustments are made in MAWM, MAWM will subsequently update the host with the new inventory quantities via PIX configuration.

In addition, PIX configuration will update the host with the on hold / off hold quantities.

The new payload message STOCK DIFFERENCE will utilise the Inbound Source Transport and Inbound Source Endpoint.

A new STOCKDIFFERENCE event with inventory details adjust option will be created. This will enable MAWM to make the adjustments and adjust the iLPN automatically.

When the message has been received successfully, the iLPN will be adjusted in line with the message details and the MHE Message record with unique Id will be displayed in the MHE Journal UI.

The adjustments will be made in real time from receiving StockDifference Message in MAWM.

4 Configuration

4.1 Custom Inbound MHE Message STOCK DIFFERENCE

The Custom MHE Message STOCKDIFFERENCE will need to be configured – [Refer to latest Version ASDA Warrington MAWM MHE Message Guide: Message Types: Legacy: StockDifference: MAWM: STOCKDIFFERENCE]

The configuration required is:

Payload Message	STOCKDIFFERENCE is a custom payload message type so will need to be added. The message type for StockDifference is STOCKDIFFERENCE
SOURCE Transport	Utilise existing SOURCE Transport for INBOUND Messages
SOURCE Endpoint	Utilise existing SOURCE Endpoint for INBOUND Messages
SOURCE Subscriber	The source subscriber links the STOCKDIFFERENCE Message with the INBOUND_SOURCEENDPOINT
DESTINATION Transport	New Custom STOCKDIFFERENCE_DESTINATIONTRANSPORT Here the New Extension Point Id will be selected.
DESTINATION Endpoint	The STOCKDIFFERENCE_DESTINATIONTRANSPORT is associated to the STOCKDIFFERENCE_DESTINATIONENDPOINT
DESTINATION Subscriber	The STOCKDIFFERENCE_Destination_Subscriber links to the Transformer Template to format the message.
Message Routing Strategy	One message routing strategy is set up per payload. A new routing strategy STOCKDIFFERENCE will be created.

4.2 Inbound Message Types

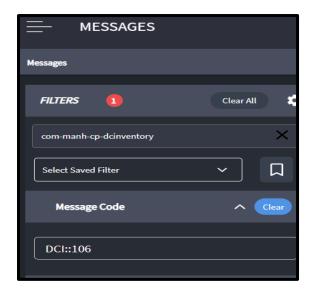
A new custom Inbound Message Type will need to be configured within Proactive. Note unlike Outbound Messages this does not require specific enablement.

For the custom Inbound Message Type configuration detail STOCKDIFFERENCE – [Refer to latest Version ASDA Warrington MAWM MHE Message Guide: Message Types: Legacy: StockDifference: MAWM: STOCKDIFFERENCE]

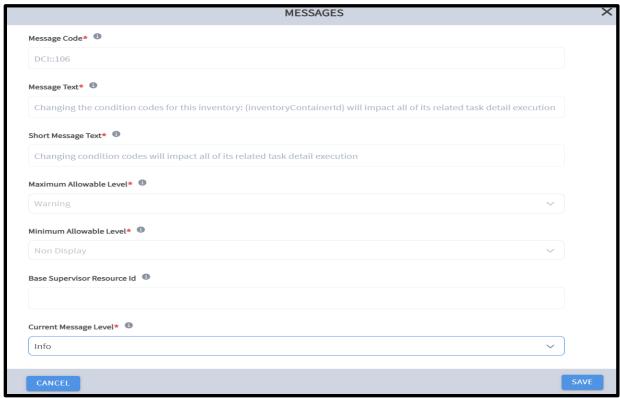
4.3 DCI Message Level Change

DCI::106 Message "Changing the condition codes for this inventory: {inventoryContainerId} will impact all of its related task detail execution" needs to be adjusted to be an Info Message from an Error Message.

Select Messages UI in MAWM and select Component DC Inventory and search for Message Code DCI::106

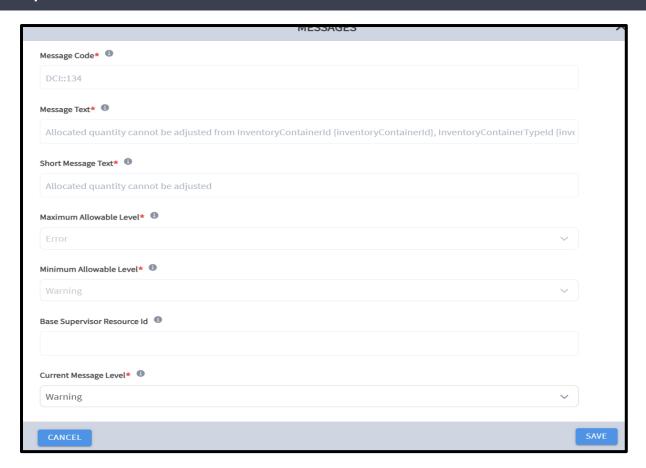


Edit the message and change the current level message to Info and save.



Edit DCI::134 Message Allocated quantity cannot be adjusted from InventoryContainerId {inventoryContainerTypeId {inventoryContainerTypeId} and ItemId {itemId}" and change to a Warning message.

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4.4 Destination Subscriber

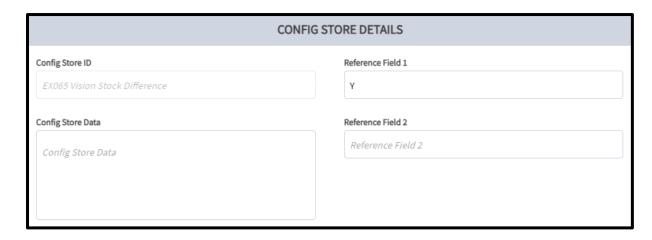
Update the Extension Service Id in the Destination Subscriber of the MHE Message STOCKDIFFERENCE Config.



4.5 Extensions Enablement

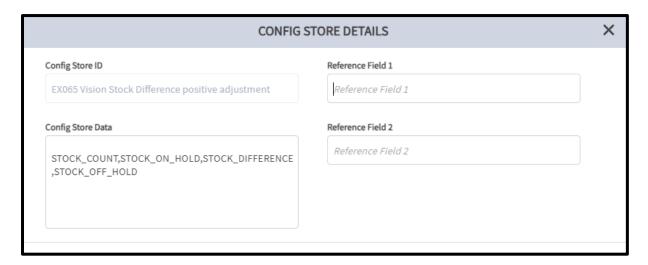
The extension is enabled based on UI-Config Store configuration when Config Store Id "EX065 VISION Stock Difference" has Reference Field 1 = 'Y'.





To enable positive adjustments for a reason code the UI-Config Store entry "EX065 Vision Stock Difference positive adjustment" will be updated with the list of valid reason codes.

Config Store Data = Valid reason codes



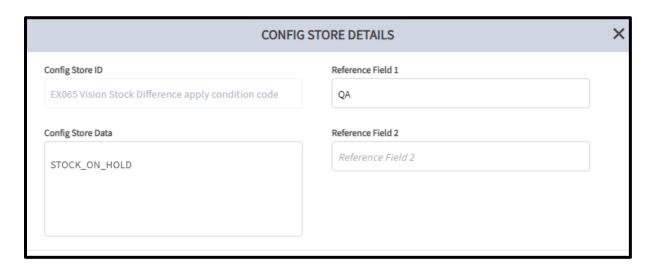
To enable negative adjustments for a reason code the UI-Config Store entry "EX065 Vision Stock Difference negative adjustment" will be updated with the list of valid reason codes.

Config Store Data = Valid reason codes



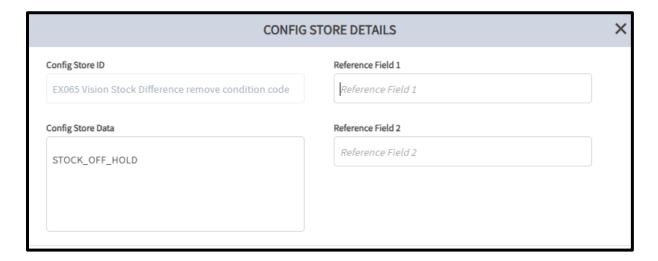
To enable apply condition code for a reason code the UI-Config Store entry "EX065 Vision Stock Difference apply condition code" will be updated with the list of valid reason codes and the default condition code that will be applied to the iLPN.

- Reference Field 1 = Default condition code that will be applied
- Config Store Data = Valid reason codes



To enable removal of condition codes for a reason code the UI-Config Store entry "EX065 Vision Stock Difference remove condition code" will be updated with the list of valid reason codes.

Config Store Data = Valid reason codes



4.4 Extended Attributes

Extended Attributes are delivered with the Extension. No UI configuration is required for this.

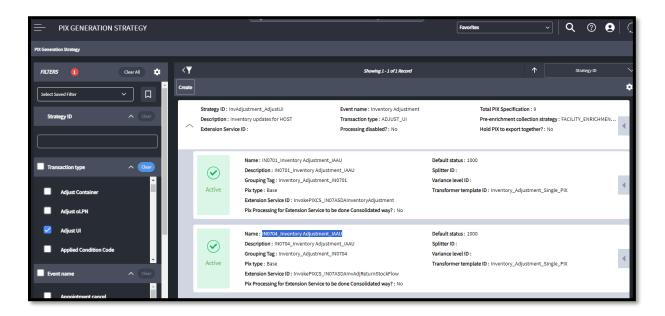
Entity	Attribute	Type	Value
iLPN	EX065LoginId	String	Used to allow writing of the
			LogInID to the PIX records

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4.5 PIX Configuration

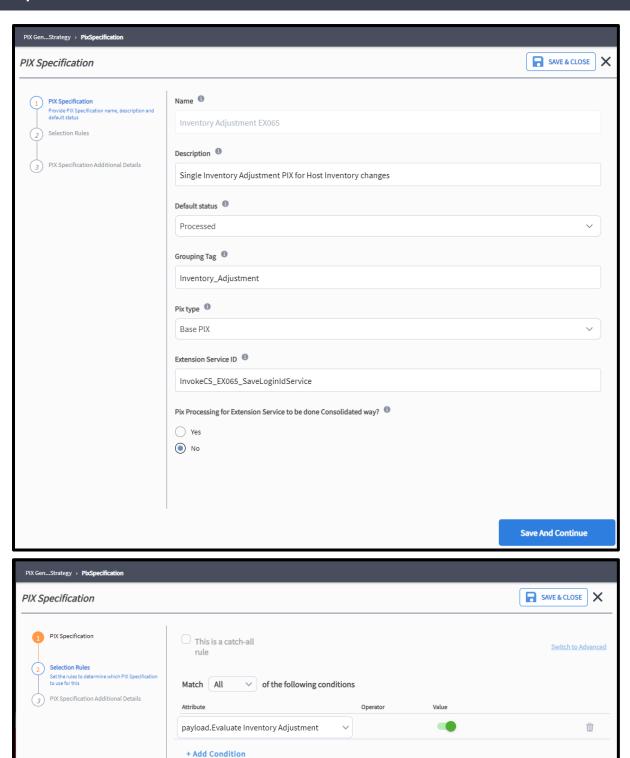
Validate the PIX Generation Strategy for Adjust UI

IN0701_Inventory Adjustment_IAAU and IN0704_Inventory Adjustment_IAAU is configured as per Legacy



Inventory Adjustment EX065 is specific to Warrington. This needs to be added.

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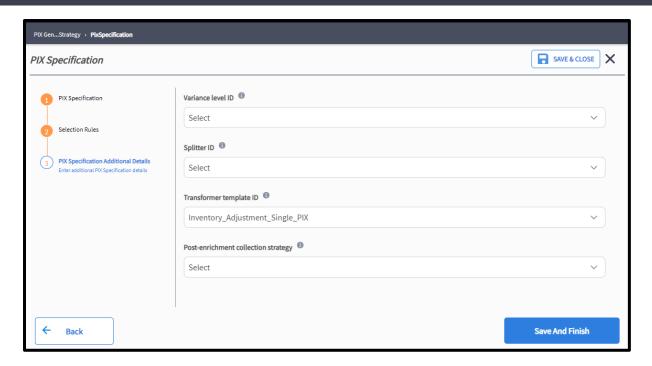


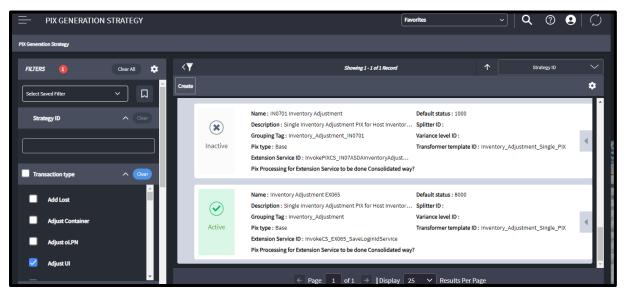
+ Add New Grouping

Back

Save And Continue

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5 Key Test Scenarios

The following section details the key golden flow test scenarios and key exception scenarios. This is not an exhaustive list and is aimed to provide both the MA development and QA teams a view of the expected golden flow of the functionality and the key exception conditions.

5.1 Golden Flow Scenarios

Reference	Scenario Description	Tran Parm Setting	Expected Result
GF1	Validate that EX065 VISION Stock Difference event has Reference Field 1 set to 'N'	Extension Disabled	Event is not triggered.
GF2	Validate that EX065 VISION StockDifference event has Reference Field 1 set to 'Y'	Extension Enabled	Fields should be populated with the correct values saved.
GF3	VISION sends positive adjustment with reason code allowed to complete positive adjustment.	Extension Enabled	Positive adjustment is processed on iLPN. User ID and reason code is recorded in MAWM.
GF4	VISION sends negative adjustment with reason code allowed to complete negative adjustment.	Extension Enabled	Negative adjustment is processed on iLPN. User ID and reason code is recorded in MAWM.
GF5	VISION sends positive adjustment with reason code not allowed to complete positive adjustment.	Extension Enabled	Adjustment is not processed for iLPN.
GF6	VISION sends negative adjustment with reason code not allowed to complete negative adjustment.	Extension Enabled	Adjustment is not processed for iLPN.
GF7	VISION sends reason code to put stock on hold.	Extension Enabled	Default condition code is applied to iLPN. User ID is recorded in MAWM.
GF8	VISION sends reason code to make stock available.	Extension Enabled	All condition codes are removed from iLPN. User ID is recorded in MAWM.
GF9	VISION sends reason code to put stock on hold with positive adjustment with reason code not allowed to complete positive adjustment.	Extension Enabled	Default condition code is applied to iLPN. Positive adjustment is not processed for iLPN. User ID and reason code is recorded in MAWM.
GF10	VISION sends reason code to put stock on hold with negative adjustment with reason code not allowed to complete negative adjustment.	Extension Enabled	Default condition code is applied to iLPN. Negative adjustment is not processed for iLPN. User ID and reason code is recorded in MAWM.
GF11	VISION sends reason code to put stock on hold with positive adjustment with reason code allowed to complete positive adjustment.	Extension Enabled	Default condition code is applied to iLPN. Positive adjustment is processed for iLPN. User ID and reason code is recorded in MAWM.

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GF12	VISION sends reason code to put stock on hold with negative adjustment with reason code allowed to complete negative adjustment.	Extension Enabled	Default condition code is applied to iLPN. Negative adjustment is processed for iLPN. User ID and reason code is recorded in MAWM.
GF13	Change the default reason code and test	Extension Enabled	New condition code is used.
GF14	VISION sends negative adjustment with reason code allowed to complete negative adjustment where the adjustment quantity is greater than the remaining quantity.	Extension Enabled	Negative adjustment is processed on the iLPN for the remaining iLPN quantity only and does not adjust to a minus figure. User ID and reason code is recorded in MAWM.

5.2 Exception Scenarios

Reference	Scenario Description	Tran Parm Setting	Expected Result
EX1	User ID does not exist in MAWM. Test positive and negative adjustments. Test applying the default condition code and removing condition codes.	Extension Enabled	User ID is record in the PIX Reference text field.
EX2	Process positive adjustment where iLPN does not exist or is consumed in MAWM.	Extension Enabled	MHE Journal message status is recorded. Status Completed
EX3	Process positive adjustment where final iLPN quantity exceeds Maximum LPN Quantity value set on the item record.	Extension Enabled	iLPN quantity is updated without error.
EX4	Process positive adjustment against allocated iLPN.	Extension Enabled	iLPN quantity is updated without error.
EX5	Process negative adjustment against allocated iLPN.	Extension Enabled	iLPN quantity is updated without error.
EX6	Process negative adjustment where adjustment quantity is greater than the current iLPN quantity.	Extension Enabled	Only the remaining iLPN quantity is adjusted and the iLPN does not go to a negative value.

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6 Estimates and Acknowledgement: EX065 VISION Stock Difference

All services provided are pursuant to the terms and conditions of the Acknowledgement for Consulting Services or the Software Services Agreement previously entered into between our respective companies and these Agreements provide that such services are billed at the hourly billing rates in effect at the time services are rendered. This acknowledgement is to cover the estimate given below. Please note that the estimate below is good for only 60 days from the date the quote is provided.

6.1 Acknowledgement: EX065 VISION Stock Difference

Your signature is required as proof of acceptance of the extension described above and the estimated cost in order for programming to begin. Please review the extension and estimated cost for services. Upon acceptance, please sign, date, and fax this form to Lisa Tudor-Williams at +44 (0)1189 22 8099 or scan and email to ltudorwilliams@manh.com

MOD	Dev Total	QA Total	Functional Testing	Deploy	Total	Cost
EX065	72	45	12	4	133	£18,886

	ASDA	
By: Signature		
Name: Printed		
Title:		
Date:		

ACDA