

**Distribution Management**

***Functional Flow***

Open Systems Version 2011

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| --- | --- |
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INTRODUCTION

This document is designed to outline the WM functional processes for the Carter’s distribution centers in Stockbridge, GA and Hogansville, GA. The objective is to define the proposed process and scope from a Manhattan Associates’ perspective and to identify key extensions to the Manhattan Associates suite of products. This document serves as a reference throughout the process for confirmation of approach and definition of tasks

Statistics

|  |  |  |
| --- | --- | --- |
| Metric | Stockbridge | Hogansville |
| Warehouse size | 500,000 ft2 | 390,000 ft2 (250 + 140) |
| Average Size of Distribution Orders (lines/do) | 8 |  |
| Average Number of oLPNs/Day | 17,500 peak |  |
| Average Number of DOs/Day | 3650 |  |
| Number of actively managed items | -35000 | 25000 |

Technology

|  |  |  |
| --- | --- | --- |
| Metric | Stockbridge | Hogansville |
| Host | Omnia / Jesta / eSPS / | Omnia/Richter/e-SPS/Jesta (replaces Richter) |
| WM LM Version | WM / LM 2011 | WM / LM 2011 |
| RF Vendor | Symbol | Symbol |
| MHE vendor | Atronix | Atronix |
| Type of MHE | Zone Divert Conveyor, In-line Scale, Shipping conveyor including VAS & Audit divert | Some conveyors to move product within different parts of the WH, Shipping conveyor with 2 diverts (for QA and parcel), In-line weigh scale |
| Label Printer | -Zebra | Zebra |
| Internet Explorer Version | IE8 | IE8 |
| Voice | Voxware | Voxware |
|  |  | Tradelink 1 |

KEY DECISIONS / ASSUMPTIONS

1. iLPN level ASNs (Advanced Shipment Notices) are available from the Host system. Carter’s goal is to have one ASN per container, but current shipments may include multiple ASNs per container.
2. The receiving process is based on single Item cases. Stockbridge and Hogansville receive multi-item cases, LPNs are sorted and putaway as single item cases.
3. Receiving is done both at a case and pallet level.
4. Receiving at Hogansville is done at the case level only.
5. Assortments are tracked at the master-item level. If the assortment is broken, then each component is tracked as an individual item.
6. UPC Barcodes per item are unique. Some items might come in different sizes: small, medium and large. Each of these has a different item barcode.
7. Omnia currently releases store distribution orders (DO type = ‘Store Distributions’) for inventory in reserve and not for the inventory on the receiving dock.
8. All oLPNs shipped against store distribution orders to Carter’s existing stores, are shipped via Fed Ex and UPS. Only oLPNs for new stores are shipped via an LTL or FTL carrier. The new store oLPNs may be placed on a trailer with oLPNs from Carter’s wholesale business, but WM tracks the retail portion and wholesale portion of the shipment, each as a unique.
9. Hogansville flow has been referred in the document, but Hogansville upgrade to WM 2011 implementation in not in scope at this time.

# TERMINOLOGY

| Carter’s Terminology | WM Terminology | Definition |
| --- | --- | --- |
| eSPS, Omnia | Host (Order and Inventory Management) | Carter’s ERP |
| WM | WM | Warehouse Management for Open Systems |
| Load # | Shipment # | Shipment # can contain multiple PO# and ASN receipts. |
| Pallet or Case(s) | iLPN | A unique identifier is associated to a single item case/pallet. iLPN's are used to identify an Inbound Pallet or Case. iLPN’s are also applied to completed finished goods. |
| Pallet or Cartons | oLPN | A unique identifier is associated to an outbound pallet. oLPN’s are defined by the wave |
| Vendor | Business Partner | Supplier |
| Pickticket | Distribution Order | Distribution Order. A customer order, or a transfer order that is shipped from a facility |
| Distro | Distribution Order | Distribution Order. A store order that is shipped from a facility to Carters retail stores |
| Terminal/Desktop Application | UI / Fixed Station | User Interface – short for terminal based Web interface to WM for users |
| Wave | Wave | Order selection process. A WM wave follows selection, allocation, cubing, and documentation printing processes. |
|  | Wave Process Type (WPT) | A WPT determines from which buckets WM allocates inventory for a need. |
| EIS | MIF | Manhattan Integration Framework |
|  | Four – Wall Inventory | The four main types of inventory in WM are :   * Inbound iLPN inventory and Reserve Inventory * Pick Location (Active) inventory * Transitional inventory (Temporary state of inventory when it is not associated with an iLPN or an oLPN. Ex. If an outbound oLPN is cancelled, the contents of the oLPN are no longer linked to the oLPN number, and the inventory goes into a ‘transitional’ state until it is packed into an iLPN or transferred to a case pick location.) * oLPN inventory |
| Order Consolidation | Order Consolidation | Consolidation of Orders in Staging/Shipping Lane based on Ship Via |
| PM | SCI | Reporting and Dashboard tool |

# ACRONYMS

|  |  |
| --- | --- |
| Acronym | Definition |
| ASN | Advanced Shipping Notice |
| DO | Distribution Order |
| MIF | Manhattan Integration Frame Work |
| FIFO | First In, First Out |
| FS | Fixed Station |
| LM | Labor Management |
| LPN | License Plate Number |
| P&D | Pick & Drop |
| PIX | Perpetual Inventory Transaction |
| SCI | Supply Chain Intelligence |
| SKU | Stock Keeping Unit |
| UI | User Interface |
| WCS | Warehouse Control System |
| WM | Warehouse Management |
| WPT | Wave Processing Type |
| INT | Inventory Need Type |
| DM | Distribution Management (WM, LM, Slot and SCI) |
| DIF | Device Integration Framework |
| CBO | Common Business Object |

|  |  |
| --- | --- |
| Carter’s UOM Terminology | WM UOM Terminology |
| Pallet | **Physical Pallet** = Systematic WM Standard Full iLPN  \*Physical iLPN label can also be applied at the pack, sub-pack, and unit level. However, the WM unit of measure of iLPN references a standard full pallet quantity.  Carter’s maintains the value of the full iLPN quantity in the item master. This value is used in the outbound allocation process to determine whether to allocate iLPNs for shipping from reserve. |
| Case | **Pack**: Every box on the pallet is a pack in WM |
| Unit | **Unit**: One physical unit of a SKU |



,

**iLPN ID**

**(Loose boxes, less than full pallet quantities)**

**)**

**iLPN ID**

**(Full Pallet)**

**PALLET ID**

**(Nested iLPNs)**

I. INTERFACES

The sections below describe the common interface logic between WMOS and the host system. It provides some high-level information about the interfaces and does not represent the final interface design. More detailed interface designed documents will be developed separately.

# DOWNLOADS FROM HOST TO WM

The following interfaces are used from the host to the WM application. The host creates Common Business Object (CBO) files (in XML or flat files format) that are sent to WM. These download interfaces provide WM item, inbound order, and outbound order information for processing by the DC.

**HOST**

Item CBO

(BOM)

Facility

CBO

Business Partner CBO

ASN CBO

Distribution Order

CBO

Immediate Needs

**Manhattan Integration Framework**

**WM**

## Item Master (Item CBO)

The host system downloads a record into the WM Item CBO and Item Warehouse Master tables when an item is modified or created. If the item already exists in WM, then the record is replaced with the new record bridged from the host. The Item CBO table includes information such as item description, unit weight, unit volume, and critical dimensions. These values are maintained at the host level. The Item Warehouse Master table includes item information that is specific to a given distribution center (e.g. putaway type).

Most of the Item Master information is maintained in the Omnia system; however, some fields, such as putaway type, may be maintained inside WM. Carter’s configure these fields to be warehouse specific and they are protected from being over-written by the host in the ‘***Import Exclusions***’ option. When an existing item is re-downloaded to WM, these protected fields are copied into the new item record before the old item record is deleted. Protected fields can still be edited using the ‘**Items**’ option.

For certain types of items with similar characteristics, Carter’s uses the Item Master Profile functionality in WM. The UI - ***Item Profiles*** option allows the user to specify values for fields that may not have values in the host system (such as putaway type, etc) and apply these values to items with similar characteristics. The user assigns items with similar characteristics (i.e., fleece ware) to a category, and then assigns generic Item Master/Item Warehouse Master values (i.e., putaway type) to the category. The interface program references the item profile ID on the item and retrieves these field values from the matching item profile record instead of requiring the host to hard code these values.

Items are viewed using the ‘**Items**’ option. Carter’s uses roles and permissions in WM to allow users to view the Items transaction while also preventing users from changing item values.

An item may have multiple item barcodes (or UPC barcodes). If needed, additional Item Barcodes are downloaded from the host into the CBO Item Interface. When an item barcode is scanned, WM first checks the cross-reference to see if an entry is present for the indicated item barcode. If so, the primary item barcode is used to reference the item. Item Cross Reference entries can be viewed and maintained via the **Items** option under the **X-References** tab

Item CBO Breakdown:

* Enterprise Item Master (Dimensions, Weight, Volume, Item Mask, UOM Quantities
* Item Package Definition (Sub-Pack Quantity, Pack Quantity, iLPN Quantity)
* Item Cross Reference (Multiple UPCs to one Item UPC)
* Item Bill of Materials (Item Specific Kitting Requirements)
* Facility-Specific Item Master (Allocation Type, Putaway Type)
* Vendor-Specific Item Master

## Vendor Master (Business Partners CBO)

The Business Partner interface is downloaded from the host system in order to centralize the maintenance of vendors. Vendor records may also be created manually within WM using the **Business Partners** option. Business Partners contain information including address and phone number, and are used to validate PO, ASN, or Shipment data bridged to WM. Business Partner information can also dictate quality inspection measures on a vendor by vendor basis.

Business Partner Interface Breakdown:

* Business Partner Header (Vendor ID, Address)
* Business Partner Contact (Contact Name, Address)
* Relationship to the parent company

## Advanced Shipment Notice (ASN CBO)

Business partners provide Carter’s with iLPN level Advanced Shipment Notice (ASN) information through the use of Carter’s e-SPS system. These ASNs are then downloaded to WM and include the following components and corresponding information:

* 1. ASN Header (includes Shipment number, PO number, Vendor name, etc.)
  2. -iLPN Header (includes Case number, PO number, Status, etc.)
  3. -iLPN Detail (includes item and quantity)

As ASNs are downloaded, WM creates the ASN detail records that reflect the item and quantity information from the case detail records. The ASN is created in status ‘20’ (In Transit) and LPNs are created in status ‘00’ (In Transit).

WM also allows for local ASN creation, inquiry, and maintenance.

System Updates

|  |  |  |  |
| --- | --- | --- | --- |
| **Action** | **Type** | **Created In** | **Details** |
| Bridge iLPN Level ASN | ASN Header | ‘20’ In Transit | ASN created in “In Transit” |
| Bridge iLPN Level ASN | iLPN Header | ‘00’ In Transit | iLPN created in “In Transit”. ILPN is not in inventory until received. |

*Interface Maintenance Options –*

* *Add/Replace, only valid when none of the ASN has been received against. A second bridge of the ASN will completely replace old data*
* *Change – update, add, delete functionality at the line level.*
* *Cancel – only valid when none of the ASN has been received against, a cancellation can be downloaded from the host system.*

Furthermore, the ASN interface is configured to automatically create an appointment in WM. If the ASN is flagged to create an appointment (ASN.SCHED\_APPT=’1’), then WM creates an appointment in ‘00’ (Unscheduled) status with the shipment number, warehouse, and expected start date, and expected end date. The appointment is subsequently used in the *Appointment Scheduling* process.

## Store Master (Facility CBO)

The Stockbridge Carter’s facility ships to both Carter’s stores and other customers. To support shipping to the Carter’s store, the host downloads these stores into the WM Store Master Table. This table contains the store number, address information, ship via, and store status of each store. The store status, new store or existing store, is necessary for Carter’s wave selection in Retail distribution order processing. This value is tracked in a miscellaneous field on the store record, and is then also included in the wave selection rules, discussed in the *Outbound - Retail* section.

## 

## 

## Distribution order (DO CBO)

WM tracks orders sent to the warehouse via Distribution Orders. There are two types of Distribution Orders in WM: **Customer Orders** (distribution orders) and **Store Orders** (distros).

The Customer distribution orders (DO Type = ‘Customer’) is to allocate inventory to its customers. The Store distribution orders (DO Type = ‘Store Distributions’) is used to notify WM of the store allocations. Distribution order records are created in Released status ‘110’ and are assigned a distribution order number that is unique per order. Other fields also include the destination, item, and quantity to be allocated. Distribution Orders are downloaded from the Host into WMOS, but can be viewed and maintained via the ***Distribution Orders*** option.

Carter’s may update or cancel distribution orders once they are bridged into WM by re-sending the distribution order with the change (or Cancellation request) or manually update the order in WM itself.

*Interface Maintenance Options –*

* *WM allows orders to be cancelled or modified by the host only if the order has not yet been waved. However, Carter’s does not download cancellations to a DO after the order has been downloaded to WM. Any order cancellations are made in WM directly.*
* *Orders can be cancelled by the DC only if the order has not yet been shipped. If an order has been waved but not packed, all tasks associated with the order are cancelled.*
* *If the order is cancelled, by the DC, when it has been partially or fully packed (but not shipped), the DC personnel have to manually perform a clean-up of packed inventory from the transitional inventory.*
* *If the order quantity needs to be changed after the order has been downloaded to WMS, Carter’s can modify the current order if it has not been waved, and send a new order if it has already been waved.*

Prior to downloading a release of an order, known as a distribution order, to WM, the Host performs soft allocation on the order quantities, and only downloads order quantities to WM that are available to be fulfilled. The host backorders any short quantities or releases them at a later date for fulfillment.

Releases of customer orders are bridged from the Host to WM in the form of Distribution order Headers, Details, and Instructions. The Distribution order Header contains information such as distribution order status, ship to name/address and order type. For rush orders and other orders where the carrier has been determined by the customer service department, the host downloads the ship via on the distribution order header. In all other situations the distribution order header indicates that routing, or carrier determination, is completed within WM. In addition, the distribution order header contains various flags that determine how the distribution order is processed in the warehouse. One such field is the allocation percentage. The host downloads this value for use in the wave selection criteria. Another flag indicates if the order includes an assortment. Warehouse personnel monitor distribution order for this flag so that the assortment details may be updated appropriately prior to selecting the distribution order in a wave.

*Other data requirements are defined in the detail interface design discussions and documents.*

Distribution order Details contain the items and quantities for each order. Distribution order Notes contain miscellaneous order information that is displayed on the outbound documents, such as the pick labels or pack slip. In addition, specific VAS instructions are downloaded within the distribution order notes. Carter’s has VAS that applies only to specific items. For item specific VAS, the host downloads VAS instructions at the distribution order detail or item level.

WM is modified to update Ship to addresses (consolidators) in the facility table from DO Notes (***WM11: Ship to Address Bridge***)

For fields that cannot be bridged by the host system, WM pulls the information from the ***Distribution order Profile*** based on the Profile ID, similar to the item profile discussed in the item master download. A distribution order profile is available at the header level.

If a customer order changes, the host sends an updated distribution order to WM via the Distribution order interface. If the distribution order status is ‘Un-selected’, then WM performs the necessary updates. If the distribution order has been released in a wave, then WM errors the distribution order update and sends an alert indicating that changes to be made to an existing distribution order failed. The distribution order then requires manual intervention to determine the resolution process (change distribution order information in WM, cancel the distribution order, short ship the distribution order, etc.) To cancel a do, the host bridges the IS\_CANCELLED flag on the distribution order.

Certain distribution orders, such as exports, require updates to the distribution order (i.e., changes in the Not-Before Ship Date, Ship to, etc.) when the distribution order has already been selected for a wave. The current extension (***WM04*: Distribution order Mass Update**) may be necessary to accommodate this functionality. Please see the *Customizations* section for more details.

## Immediate Needs

Immediate needs are bridged by the host system (e-SPS) into WMOS. The needs are used to identify cases that need to undergo quality inspection.

All fields in the INPT\_IMMD\_NEEDS table are translated to the corresponding fields in the IMMD\_NEEDS table, with the exception of item components and the ‘Quantity Fulfilled’ column, which are updated by the actual Immediate Needs processing.

Immediate Needs can be Normal (Transactional) Needs, or Template Needs. Template Needs must be set up in WMOS- only Normal Needs may be bridged.

The Immediate Needs records can be bridged by either referencing a Template ID (for referencing a Template record), or if a Template ID is not passed, then by bridging in all columns. This process is similar to creating an Immediate Need using the Quality Inspection Tables.

An Immediate Need may also be cancelled through the bridge process.

# UPLOAD FROM WM TO HOST

The following interfaces are used from the WM to the host application. WM creates XML files that are sent to the host. These upload interfaces inform the host of any change in inventory levels and invoicing information.



## Perpetual Inventory Transactions (PIX)

PIX Breakdown:

* PIX Transaction (Transaction Type, Transaction Code, Transaction Number, Transaction Sequence, Item, Quantity Adjusted/Received, Adjustment Type, Reason Code, Reference Fields)

WM maintains 4-wall inventory at a detailed level, communicating changes in levels of inventory to the host through Perpetual Inventory Transactions (PIX). To simplify processing by the host, WM creates records with specific ‘types’ and ‘codes’ to specify the type of inventory adjustment. All inventory adjustments, except for shipping records, produce PIX transactions.

Inventory Transaction PIXs:

Inventory Adjustments

PIXs are generated for all inventory adjustments performed within the DC. This includes adjustments due to cycle counts, manual LPN or location adjustments via RF or UI, and tracking of product in a transitional state (cancelled oLPN or damaged inventory).

ASN Receipt

Upon verifying an ASN, WM sends PIX informing the host that a shipment has been fully received. Real-time PIXs are also generated at receipt of each iLPN.

Informational PIXs:

Inventory Sync

WM is the master record for inventory quantities so an inventory synchronization process is used to provide information to the host so it can update its quantities to match WM. This process generates summary inventory quantities for all items and communicates this information to the host by using a specific PIX type, 605. The process may also be run manually from the UI Generate 605 PIX option. The PIX includes snapshot information for allocable and unallocable inventory. This WM job is run during a quiet period when there is no WM activity. At the end of the Inventory Synchronization process, the host system can generate a variance report that shows inventory discrepancies along with the supporting details.

Order Status Changes

WM generates an order status change PIX transaction when the status is updated to Special Processing Pending, Printed, In Packing, Pack Complete, Weighed, Manifested, Loaded on Truck, Shipped/Invoiced, Cancelled.

Carter’s configures WM to suppress specific PIX to the host if they are not needed by the host system. For further information, please refer to the PIX Processing Matrix documentation. PIX can be viewed using the ***PIX Transaction Inquiry*** option.

## Shipment Confirmation

When inventory is shipped out of the DC against a distribution order (customer or store order), WM uploads invoice information to the Host. In instances where the entire distribution order is invoiced, the Invoice Header and Detail records mirror the information downloaded on the corresponding Distribution order Header and Detail records, including actual quantities shipped. For store distribution orders, the Invoice Header and Detail records mirror the information on the distribution order and the Store Master records, including actual quantities shipped. Distribution orders that were shorted are uploaded with a reason code detailing the cause for the shortage. OLPN level information (header and detail) is also sent to the host during this process.

Shipment Confirmation Breakdown:

* Output Orders (Order Number, Ship To, Shipped Date)
* Output Order Line Item (Order Number, Order Line Number, Item, Quantity Shipped)
* Output LPN (oLPN Number, Order Number, Shipment Number, Stop Number)
* Output LPN Detail (oLPN Number, oLPN Number Detail ID, Order Number, Item, Quantity Shipped)

In some instances distribution order may be partially invoiced. This occurs if only a portion of a distribution order is loaded onto a parcel truck and the loaded oLPNs are manifested and then invoiced, or the same is true of a non-parcel truck. In these instances WM sends Distribution Order, and oLPN Header and Detail records for the shipped oLPNs.

The WM Generate Invoicing functionality provides ways to split the invoice file by number of distribution order. Depending on the number of oLPNs in each distribution order, the XML file generated could be too large or too small for the Carter’s host system to handle. To alleviate this problem, the WM invoicing program is modified to generate XML files that are limited by the number of oLPNs.

At the time of generating invoice files, the WM program goes through all the unprocessed distribution order in the output distribution order header table. For each distribution order, all the oLPNs in the output oLPN header table are written into the same XML file. During this processing, a new counter is maintained to accumulate the total number of oLPNs added into the XML file. After writing the data into the file for each distribution order, if the total number of oLPNs accumulated is higher than the maximum number of oLPNs listed in the parameter, then the current XML file is closed. For the subsequent distribution order, a new XML file is generated and the oLPN count is reset. These steps are repeated until all the distribution order is processed ***(WM14: Gen Invoicing to break XML files by oLPN count)***.

II. INBOUND

# PRE-RECEIVING

## Appointment Scheduling/ Check In/ Check Out

Once the appointment is bridged (via the ASN bridge process), Carter’s schedules appointments for the inbound receipt. When the trailers arrive at the facility, the appointment is first checked into WM using the UI - ***Check In*** option. Operators access the appointment through the container number (provided in the PRO # field and as part of the shipment number.) WM records the time of the check in and stores it in the appointment record. The operator also enters comments at the time of check to indicate any special circumstances.

Once the product is unloaded, operators check out the appointment using the same UI - ***Check In/Check Out*** option. WM records the time of check out and holds it in the appointment record.

## Generate Inbound Receiving Report (Optional)

Personnel use the UI - ***ASNs*** option to print a receiving report prior to beginning the receiving functions. This report contains a shipment number barcode that receiving personnel use to initiate the receiving process for the shipment. This report also contains the item numbers and corresponding item number barcodes.

# IMMEDIATE NEEDS

Often, inventory received into the warehouse is needed immediately and should not be putaway in reserve or active locations. WM uses the Immediate Needs messages to notify receiving personnel to divert product to where it is needed. For instance, for items requiring quality inspection, Carter’s diverts these to an inspection area at the time of receipt. If multiple needs exist for the same case, then each need is given a priority. During the receiving process, WM applies product to fulfill existing immediate needs records in priority sequence.

## Quality Inspection (QI)

Carter’s operation utilizes the ‘QI’ (Quality Inspection) immediate need to divert product to be inspected based on user defined rules. All inbound product that qualifies for this immediate need is diverted to a QA location with a quality lock code, as discussed in the Receiving section, below.

# RECEIVING

## Receive and Palletize

Once a trailer arrives at a dock door cases are unloaded from the trailer onto a conveyor. From the conveyor, the operators unload the cases onto pallets using the RF –***Receive Palletize*** option in WM. Within the RF option, the operator is prompted to scan the dock door, bypass the ASN prompt, scan the pallet barcode, and scan cases to the pallet until the pallet is full. WM ties the case to the ASN to receive against, causing the status of the case to go from ‘00’ (In transit) to ‘10’ (Received).

Next, WM determines if weight or dimensional data is missing for the item. If so, WM applies a ‘WC’ (Weight Check) lock code to the case and beeps to notify the user of the WC case and is placed on a new pallet (***MD 06: Receive & Sort)***. If a case is flagged with a Quality Inspection immediate need, a message appears to the user and the QA case is place on a separate pallet.

Once all of the cases on the ASN are received, the QA cases are palletized together and the WC cases are palletized on another pallet using the RF – ***Palletize Cases*** option in WM.

1. Weight Check Needs – New items downloaded from the host that do not have certain WM fields such as critical dimensions, putaway type, etc. are sorted to a ‘Weight check’ location.
2. Quality Needs – Cases that meet a Quality Inspection immediate need are marked with a QA lock code during the receiving process. These cases are sorted to a ‘QA Sort’ location and are assigned a ‘QA’ (Quality Audit) putaway type.

In Hogansville, after the pallets are received, they are located using the ***RF – Locate Pallet*** option to a holding area adjacent to the receiving docks for the pallet drivers to pick up for putaway.

## FS Receiving

Sometimes, Carter’s uses the ***‘Fixed Station Receiving UI’*** option to receive inventory for an ASN that has not physically arrived in the D.C. This allows them to ‘build’ inventory in the D.C. and allows the host system to drop orders against this dummy inventory. The cases received this way are automatically located to the dock door specified by the users. Once the trailer physically arrives, users use the ***‘RF Palletize Cases’*** option to build pallets from the already received cases. The subsequent process is the same as for any other cases received in the warehouse.

## Receiving Updates

As a single item LPN is received, WM systemically updates the LPN status to ‘10’ (Received, not putaway) and applies a ‘pending allocable’ lock code to the LPN. WM subsequently updates the corresponding ASN to ‘30’ (In Receiving) and generates unallocatable receipt PIX (100 01) transactions to notify the Host of the receipt.

The Host recognizes the 100 01 PIX with the pending allocable lock code as inventory received, but unavailable for allocation (in WM). The inventory becomes available when the inventory is putaway into a location.

## Receiving Exceptions

Overages (Manual Creation of ASN)

If additional cases are found on the shipment and accepted for receiving, or if the e-SPS host cannot interface an ASN for the shipment, then the receiving supervisor must create an ASN manually in WM. The supervisor crea tes an ***iLPN level ASN*** in WM using the UI – ***ASNs*** option, and enters the key data elements such as shipment number, PO number, item, and quantity. The cases are generated by the next up counter and are then received using the RF - ***Receive Palletize***. The option first prompts for the dock door, and scan a pallet number. Next, WM prompts for an LPN and the associated item and quantity. The operator continues to scan cases to the pallet until the pallet is full. Once the pallet is full, the operator closes the pallet and begins scanning cases to a new pallet. The receiving PIX transactions that are sent to the host reference the PO number to apply the overage against.

Shortages

Shortages are shown for the shipment prior to the shipment being verified, as discussed below.

Case on Verified Shipment

If receiving personnel scan a case LPN that is on a shipment that has already been verified, then the RF receiving option gives an error message and the user cannot proceed. The receiving supervisor must create an ASN manually in WM. The supervisor creates an ***iLPN level ASN*** in WM using the UI – ***ASNs*** option, and enters the key data elements such as shipment number, PO number, item, and quantity. The cases are generated by the next up counter and are then received using the RF - ***Receive Palletize***.

Damaged Inventory

If, during receiving, an item is damaged, the operator overrides the location and scans the case to a problem or receiving supervisor location. Within this area the damaged inventory is split into a separate LPN using the option RF - ***Split/Move LPN***, and locked with a “vendor damaged” lock code.

Entire ASN with known Quality Problems

If an entire shipment is known or expected to have quality issues, then the ASN is marked with a quality lock code through the UI - ***ASNs*** option, so that all the cases received against the shipment have the same lock code. This lock code is applied and forces similar putaway action as the cases that meet quality inspection rules. Once the quality of the shipment has been confirmed, the lock may be removed from the shipment and the cases are received without the lock code.

Inventory to be stored in trailers (Hogansville)

Because of a lack of space, the HV facility periodically uses temporary storage in the form of trailers, the back wall and some aisles to store excess inventory. Users choose theRF ***-Locate Pallet*** option to manually locate these cases on a pallet to the storage trailer locations.

## Verify Receipt

Once a trailer is completely received, personnel notify the receiving supervisor. The receiving supervisor verifies the shipment using the ‘Verify’ link within the UI – ***ASN’s***. The supervisor selects the shipment to verify. WM displays those items that have variances between the shipped and received quantity. The user may choose to accept the variances or print a variance report and research the discrepancies through the option UI – ***ASNs***. Verifying a receipt closes the shipment within WM, which prevents future receipts against the shipment.

### 

System Updates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Action** | **Type** | **From** | **To** | **Details** |
| Verify Receipt | ASN | ‘30’ Receiving Started | ‘40’ Receiving Verified |  |
| Verify Receipt | PIX | N/A | N/A | 603 01 – Receipt Confirmation  603 02 – Variance Details |

# PUTAWAY - Stockbridge

## System-Directed Putaway Logic

Carter’s uses the directed putaway logic to locate the inventory to the quality area, weight check area, reserve or active locations. The quality and weight check areas are simply holding areas for those cases that have met a quality or weight check need within the receiving option. Active locations have assigned items, and the location maximums are defined by the number of units, weight, and volume. Items are also located in reserve locations. Reserve locations are not dedicated to an item and have a capacity of one pallet. The reserve locations are assigned to zones that distinguish one set of locations from others (i.e., pallet storage and case storage). The zone is also used to determine the various parameters for allocation, putaway, etc.

Each item has a putaway type that group’s items with similar characteristics (i.e., sleep wear, fleece, etc.). The following list summarizes the putaway types currently being used at Carter’s:

|  |  |
| --- | --- |
| **Putaway Type** | **Description** |
| WC | Weight Check |
| QA | Quality Audit |
| FLC | Fleece |
| SLP | Sleepwear |
| RTL | Retail Only items |
| PLA | Playwear |

WM has the ability to prioritize the assignment of a putaway type for a case based on the configuration in the UI – ***Putaway Type Determination Priority*** table:

1. WM uses the configured, user defined rules. The UI – ***Putaway Type Determination Rules*** option allows the user to specify a specific putaway type based on an attribute of the case (i.e., if the case is destined for quality, and has a ‘QA’ lock code, then WM assigns the case a putaway type of ‘QA’ instead of the putaway type of the item). This attribute is used for hot, weight check, and quality needs.
2. WM pulls the putaway type from the Active location (permanent active locations only) that already exists for the item in the case
3. WM uses the putaway type from the Item Master
4. WM uses the default putaway type in the Warehouse Master

WM determines the putaway type assigned to the case, through the logic above and WM attempts to find a destination location for the case. The UI - ***Putaway Method Priorities***option defines the sequence in which the system looks at locations for the case’s putaway type based on defined parameters:

* WM searches for a reserve location based on the priority of location zones defined in the UI – ***Putaway Zone Priority*** option.

Once a putaway location is determined WM sorts the case based on this location.

## Putaway Execution

Once a pallet is full or if a shipment has been received completely, the stager scans the, quality, weight check and reserves pallet in RF ***Warehouse Putaway***. WM determines if all of the LPNs on the pallet are destined for the same location. If so, then WM continues with putaway at the pallet level. If not, then another warning is displayed to the operator. If this warning is bypassed, then WM re-initiates putaway at the pallet level for any pallets where each LPN on the pallet does not have the same destination (this should be for reserve pallets only). The destination for the entire pallet is determined, as listed below, and the operator is directed to that specific location or to a drop zone to continue to the final destination. Active pallets are scanned in RF ***Warehouse Putaway Cases,*** as each LPN on the pallet is putaway independently. WM then directs the operator to either a drop zone for active or through the active locations required for the cases on the pallet.

1. Weight check Needs – Cases sorted to ‘Weight check’ pallets are sent to Weight check locations (***WM06 – Receive & Sort***)
2. Quality Needs – Cases that are sorted to ‘QA’ pallets are located to ‘QA’ locations
3. Reserve Locations – Full pallets are sent to the reserve locations based on putaway type. WM evaluates the putaway type based on the following configuration in UI – ***Putaway Method Priority*** and UI - ***Putaway Type Determination Priority*** as outlined above.

If the stager is directed to drop the pallet to a drop zone location, then a second operator is tasked to pick up the pallet and take the pallet to the final destination. For the Weight check, QA, and Full (single item) pallet putaway, the operator scans the pallet and is directed to the destination location. The operator scans the location and the pallet LPN to complete the putaway. While performing putaway to the reserve locations, the operator may use a control key to prompt the system for an alternate location if the current destination is damaged or otherwise unavailable. Likewise, an override control key can be used to override the directed location and allow manual (user determined) putaway. Both control keys can be disabled at the transaction level so that some users have the ability to use them and others do not.

The stager may also choose to combine partial pallets prior to initiating putaway. The LPNs on these pallets are then located to the case reserve area, instead of the full pallet area. Operators enter the option RF ***– Palletize Cases*** to combine pallets. If combining, then the operator scans the cases from another pallet to the current pallet, potentially creating a multi-item pallet. Once complete, the operator then scans the pallet within the option RF – ***Warehouse Putaway Cases***. WM calls putaway and determines a putaway location for each case, based on the putaway type of the item. WM finds a location within the case reserve area. This area is zoned by product type and locations may contain multi-items. (Note: *The putaway priorities and configuration need to first determine putaway at a case level ensuring each case is located to a different location in order to ensure that putaway is re-initiated at the pallet level when scanned by the stager. The next priorities then determine a location for the entire pallet, but then must return to case level putaway for partial pallet putaway*.)

***RF – Whse Putaway Cases (Pallet scan)*** of an Inbound Pallet with cases is modified to select cases in descending Modified Date time sequence of the cases. This allows the last cases in the pallet to be putaway first (***WM16*** **- Putaway Sequence**)

As pallets of cases are located, WM removes the ‘PA’ (Pending Allocable) lock code from the LPN record, thus making the inventory allocatable in WM. WM also writes inventory adjustment PIX (606 02 and 300 01 or 04) transactions to notify the host of the available inventory.

# PUTAWAY - Hogansville

## System-Directed Putaway Logic

Carter’s uses the directed putaway logic to locate inventory to the quality area, weight check area, reserve and active locations. The quality and weight check areas are simply holding areas for those cases that have met a quality or weight check need within the receiving option. Active locations have assigned items, and the location maximums are defined by the number of cases. Each permanent active location has a capacity of 9 cases. Items are also located in reserve locations. Reserve locations are not dedicated to an item and have varying capacities. The reserve locations are assigned to zones that distinguish one set of locations from others. The zone is also used to determine the various parameters for allocation, putaway, etc. All reserve locations are ‘case’ locations in that they do not track LPNs at the pallet level.

The item master does not specify the putaway type for an item. The putaway type is determined using the sequence of rules defined below. WM has the ability to prioritize the assignment of a putaway type for a case based on the configuration in the UI – ***Putaway Type Determination Priority:***

* + WM uses the configured, user defined rules. The UI – ***Putaway Type Determination Rules*** option allows the user to specify a putaway type based on an attribute of the case (i.e., if the case is destined for quality, and has a ‘QA’ lock code, then WM assigns the case a putaway type of ‘QA’ instead of the putaway type of the item). This attribute is used for hot, weight check, and quality needs.
  + WM pulls the putaway type from the Active location that already exists for the item in the case
  + WM uses the default putaway type in the Warehouse Master

WM looks to find the Putaway type for the case by going through these 4 rules in order.

Once a pallet is full in the Receiving area or there are no more cases to receive, the receiving personnel manually locate the pallet to a common drop area using the RF -***Locate Pallet*** option. A different user then initiates the putaway by manually scanning the cases on the pallet. Pallets are picked up from the drop area in the sequence in which they were putaway to adhere to FIFO as much as possible.

WM determines the putaway type assigned to the case, through the logic above and attempts to find a destination location for the case. Once a putaway type is established, the UI - ***Putaway Method Priorities***option defines the sequence in which the system looks at locations for the case’s putaway type. The parameters that are defined are:

* WM first looks at the Active location assigned to the item for available capacity
* If not found, WM searches for a reserve location within a pre-defined radius around the active location. This method of determining the destination location is called ‘***Direct to Radial around Active’.*** WH personnel are required to define the ‘location component’ (e.g. bay, aisle) and the ‘search radius’ for each putaway type for this method to work. Ex: if the location component is ‘Bay’ and the search radius is 2, WM will look for reserve locations in the same bay as the active location, and then for reserve locations with a bay value of ‘<current bay> +/- 2’.

## Putaway Execution

Once a pallet is full or if a shipment has been received completely, the receiver moves the pallet from the receiving dock or sorting area to a common drop location. The stager may also choose to combine partial pallets within the receiving or sort locations prior to initiating putaway. Operators enter the option RF ***– Palletize Cases*** to combine pallets. If combining, then the operator scans the cases from another pallet to the current pallet, potentially creating a multi-item pallet.

For all pallets, the fork lift driver then picks up the pallet from the drop location and determines the destination location for each case using the RF ***-Warehouse Putaway Case*** option. The user scans each case on the pallet and puts it away to its destination location, one case at a time. The quality and weight check pallets are directed to pre-designated area(s) of the WH based on the PA configuration. For all other pallets, this option determines the destination location for each case on the pallet. WM directs the operator to either an active or to a reserve location depending on the destination location for the cases.

1. Weight check Needs – Cases assigned the ‘WC’ lock code are sent to ‘Weight check’ locations
2. Quality Needs – Cases that are assigned the ‘QA’ lock code are directed to the Quality audit area.
3. Active Locations (Pick Modules) – Cases that are destined to active locations are directed to the permanent pick location.
4. Reserve Locations – Cases are sent to the reserve locations based on putaway type. WM evaluates the putaway type based on the configuration in UI – ***Putaway Method Priority*** and UI - ***Putaway Type Determination Priority*** as outlined above.

For cases destined for active locations, WM calls the option RF – ***Fill Active Directed*** and directs the user to the active locations for the cases in best location sequence. WM displays the location and the case to the user, and the operator simply scans the case to the location. Scanning the case to the active location updates the case to a status of ‘96’ (Consumed to active). The operator may opt to skip the putaway for a case using the CTRL-K function key. This happens most commonly when the operator is not close to the active location and wants to put away the case after the putaway to the reserve locations is complete. By doing so, the case is de-allocated from the active location and returned to a status of ‘10’ (Received). He has the option to re-scan the case and determine the destination location at any point.

While performing putaway to the reserve locations, the operator may use a control key to prompt the system for an alternate location if the current destination is damaged or otherwise unavailable. Likewise, an override control key can be used to override the directed location and allow manual (user determined) putaway. Both control keys can be disabled at the transaction level so that some users have the ability to use them and others do not. They can also be configured to require a supervisory override. In addition, WM can also be configured to generate a cycle count task for the location(s) that is skipped.

If the Putaway for all the cases (other than the ones that were de-allocated) is complete, WM returns to the Pallet ID prompt. At this point, if there are any remainder cases on the pallet (cases de-allocated as a result of the use of the CTRL-K key), the operator scans the pallet ID again. This determines the destination location for the cases one more time. The operator then puts these cases away to their active locations in best location sequence. Note: if in the interim, a different case(s) was sent to the active location, there is a chance that WM will direct the case to a reserve location this second time around.

## Putaway Updates

As pallets of cases are located, WM removes the ‘PA’ (Pending PA Available) lock code from the LPN record indicating the case is in a Reserve location. The status of the case updates or stays at ‘30’ (Putaway) depending on whether the case was putaway to a drop location previously. If the case is located to an active location, the status updates to ‘96’ (Consumed to active).

# QUALITY AUDIT AND WEIGHT CHECK

Pallets are directed to the quality audit area through directed putaway and system assigned tasks, as discussed above. All quality auditing is done outside of the WM. After the cases pass the audit, inventory control personnel use the option ‘Release ASN from Quality Hold’ through the UI - ***ASNs***. If only certain cases are released from quality hold, then users use the RF ***Unlock LPN*** option or UI - ***iLPNs*** to unlock specific cases.

Note: Stockbridge performs Weight Check before taking the LPNs to QA area. Hogansville performs QA first, and then the LPNs are moved to Weight Check area.

The items that have missing data elements are also moved to the weight check area through directed putaway and system assigned tasks. Within this area, critical dimensions and other key data elements must be captured for the item, such as assignment of an active location, the assignment of allocation attributes, putaway type, etc. The cube and weight data is owned by the host and entered onto the host system. Updates on the host trigger an update to the WM item master. Any fields maintained specifically in WM are updated in WM. Once the updates are made, the operator uses the RF – ***Unlock LPN*** to remove the WC (Weight Check) lock code from the case.

Cases that can be returned to reserve are palletized through the option RF – ***Palletize Cases***. Once complete, the operator then scans the pallet within the option RF – ***Warehouse Putaway Cases,*** and individual cases are putaway, as described above.

III. OUTBOUND – DISTRIBUTION ORDER PROCESSING

Summary of Order types: Carter’s uses the following order types: Wholesale, EComm (wholesale), Retail (Carter Stores), Export, Rework, Repackage (pre-pack), Offprice (Mark-downs), Transfers, Seconds, Discount.

# WAVE MANAGEMENT

Outbound orders (Distribution Orders) are sent from the host system (Omnia) to WM. The orders are *soft allocated* against host inventory prior to being interfaced to WM.

Waving is a process within WM of selecting a group of orders from the order pool and making the necessary updates to enable these orders to be fulfilled and shipped. A wave can be initiated from the web UI ***Run Wave*** option or from the UNIX command line under control of a job scheduler such as ‘cron’ to run waves at specific times with specific rules without user intervention. The wave releases orders to warehouse floor users for picking and packing. The Wave also assigns a Ship Via to the orders that are not downloaded with a Ship Via from the host, by using rate shopping logic to find the cheapest carrier.

This section describes the steps that WM goes through once a ship wave is selected to run. Once initiated, there is no user interaction during the process. The later sections describe how personnel process the output of the pick wave.

Some key order attributes imported in the Distribution Order (DO) CBO include:

* Ship To
* Customer information
* oLPN Type, oLPN Break Indicator
* Routing Attributes
* Stop Sequence
* Special Labeling Requirements

Carter’s runs the standard picking wave only. Replenishment waves are not run separately, and are done through picking waves / slotting interface.

**WM Wave Output**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Wave Type** | **Replenishments/ Allocations / Tasks** | **Picking / Allocations / Tasks** | **oLPN Creation** | **Print Labels** |
| Standard Picking | Y | Y | Y | Y |

Wave Queuing

If multiple waves are submitted in WM, WM may queue the waves to process them based on the wave priority. The web UI provides visibility into the current state of waves in the wave queue – their scheduling, status, and priority – and allows the user to suspend a wave or change its priority in the queue.

## Wave Templates

The option ***Picking Wave Parameters*** is used to configure different wave templates. Each wave template is a set of pre-defined configurable parameters that governs how the wave is processed, where inventory is allocated from, and how the order is picked and cubed. The option ***Ship Wave Templates*** is used to configure the different steps in the wave process (Picking, Routing, Order consolidation etc). Finally, the ***Run Wave*** option is used to define the logic (rules) used to select orders, based on information contained on the Distribution Order (e.g. order number, customer number, item, order type, expected shipping date, etc.). The selection sequence, print sequence, and wave capacities are also defined and saved as a wave rule. Wave rules are activated or deactivated before running a wave. Multiple wave rules may be active for a single wave.

Following Wave Templates are currently being used at Stockbridge:

|  |  |
| --- | --- |
| Wave Template | Wave Template Characteristics |
| JC Penny Waves | No Order consolidation performed |
| Static Pick WT | Picking through permanent locations - pick mods 2,3, & 4 |
| Pick Mod 1 WT | Picking through pick mod 1, bulk locations |
| Convey Bulk | Picking through MHE (Atronix) |
| Floor Bulk | Bulk pick, no information sent to MHE |
| Rework template | Rework orders (Assortments) |
| Retail Wave | executed through Put to Store |
| Retail Pick Pack | executed through picking module |
| Routing Wave | for JC Penny |

Following Wave Templates are currently being used at Hogansville:

|  |  |
| --- | --- |
| Wave Template | Wave Template Characteristics |
| JC Penny Waves | No Order consolidation performed |
| Bulk | Large volume orders are sent to bulk active locations – No order consolidation |
| Bulk with Consolidation | Same as bulk, but performs order consolidation. |
| Static Pick | Picking through static active locations |
| Rework | Rework orders |
| Dynamic Pick | Picking through dynamic active locations |
| Retail Wave | Picking through Put to Store |
| Retail Pick Pack | Picking through static or dynamic active locations |
| Routing Wave | Used to route JC Penney |

## Wave Monitoring

The wave manager uses the ***Waves*** option to monitor the status of wave-related activity (replenishment, picking, packing). WM shows the status of tasks (replenishment, picking) by type and area, orders, and oLPNs. The wave manager uses this information to determine when to release tasks or run more waves. .

If needed, the wave manager can undo a wave after it is run provided activity for that wave has not yet been started by operations. WM cancels all the tasks, allocation, item assignments, and returns the orders to an unselected status so they can be selected in future waves.

# CUSTOMER ASSORTMENTS

Customer specific assortments (runs for pre-pack) are bridged down in WM from the host system as distribution orders. Host bridges down the assortment details - pre-pack code, assortment #, and the quantity on the distribution order line. Operators access the UI - ***Distribution Orders*** option to access the appropriate distribution order detail.

# STANDARD PICKING WAVE

A standard picking wave is used to select orders to be processed through the facility. Once initiated, there is no user interaction during the wave process. During a wave, WM goes through the following processes:

* Selection and Sequencing of Orders
* Allocation of Inventory
* Cubing of oLPNs
* Generate Replenishment
* Order consolidation
* Determine Route and Create Loads
* Task Creation
* Assign Sorting lanes to oLPNs
* Print Documentation

## Selection and Sequencing

Personnel set up wave selection rules in the option UI - ***Run Wave***. These user defined rules control which distribution order should be included in the wave. Only distribution order in status ‘110’ (Released) is eligible for selection during a shipping wave. Selection rules are configured based on any field or fields in the distribution order header, distribution order detail, or item master.

For Carter’s, selection criteria may include customer, ship by date(s), wave capacity, and certain other distribution order header flags. The wave capacity constraints include the number of units and distribution order included in a wave.

## Inventory Allocation

The host bridges orders after inventory has been found to fulfill the need based on the host systems’ view of the inventory in the four walls of the warehouse. As part of the wave, WM can perform an inventory availability check prior to actually allocating the product. For regular waves, Carter’s configures the wave process to skip the inventory availability check, and directly proceed to “hard” allocation. During hard allocation, if a need cannot be fully met, the general wave templates are configured to short the distribution order and update the status to ‘120’ (Partially DC Allocated) or to ‘200’ (Cancelled). If an order is fully allocated, WM updates its status to ‘130’ (DC Allocated).

Allocation Configuration

A Wave Processing Type (WPT) determines from which location(s) WM allocates inventory for a distribution order. The WPT can be defaulted in the wave template or on the distribution order. Stockbridge uses the following WPTs:

* WPT 1 ‘All from Active’ - WM allocates as many units as possible from active locations to fulfill the need for the wave.
* WPT 5 ‘Full Cases from Reserve, Balance from Active’ – WM allocates as many full case quantities from reserve locations and the remaining balance from active locations.
* WPT 3 ‘Bulk Processing from Active’ – WM allocates all inventory (pallets or cases) from reserve to dynamic active locations in Pick Module 1. Cases are allocated in full quantities to fill dynamic active, with the potential to exceed the need by one LPN, if required.
* WPT 2 ‘Full Case Bulk from Reserve’ – WM allocates entire cases being pulled from reserve to go straight to shipping without having to go through the packing area.
* WPT 7 ‘Rework from Reserve’ – Rework wave processing type. WM allocates exact quantity cases that are locked with a lock code.
* WPT 9 ‘Retail Bulk from Reserve’ - Retail distro’s going to a bulk location with inventory being pulled from reserve.

Hogansville: Uses all the WPT’s used at Stockbridge and also uses the WPT define below:

* WPT 6 ‘Bulk from Reserve Cube to capacity’ - Bulk pulls from reserve with the cube to capacity flags set.  This is used for pre-pack and assortment orders

WPT 5 is used for the majority orders and WPT 3 is used when there are a large number of distribution orders requiring the same subset of items. A need has not yet been identified for WPT 1, although it is expected that some distribution orders may require this in the future.

For inventory allocated from active, WM references the specific pick determination zones where each type of order is to be allocated from. Specific distribution orders are allocated only from pick module 1 that contains only dynamic active locations. All other distribution orders are allocated from the pick modules 2, 3, & 4 that primarily contain pallet and LPN flow permanently dedicated active locations and some dynamic locations.

In allocating inventory only from Pick Module 1, WM first attempts to allocate from a location within pick module 1 with residual inventory from a previous wave. If enough inventory is not available, then WM assigns dynamic active locations to the required items and these locations are filled through replenishment, discussed below.

In allocating inventory from active for all other types of distribution orders, WM first determines if there is an active location assigned to the item within pick modules 2, 3, & 4. If a location exists for the item and the requirement is less than or equal to the overall capacity of the location, then WM allocates from this location and triggers replenishment, if necessary. If the need is greater than the location capacity or if an active location is not found, then WM performs the following based on the type of item required:

* For items classified as ‘high movers’, WM assigns a Hot Pick dynamic location.
* Once the product is picked clean from the Hot Pick location, the location is available to be re-assigned by a subsequent wave to another item.
* For items classified as ‘medium movers’, WM simply replenishes the permanent location assigned to the item. The task is released when the location quantity drops below a threshold during picking. Please see *Task Release Maintenance* for further details.

Hogansville:

* For items classified as ‘slow movers’, there is not a dedicated location for each item. WM assigns and replenishes to a Zone Zero dynamic location. Zone Zero locations are temporary locations assigned to the item and are allowed to have inventory after the initial pick (leaving residue). In this way Carter’s has the ability to pick slow movers from active without permanently assigning slow moving items to locations.

Active is also zoned along the pick modules so that the conveyor is used to divert oLPNs to only those picks zones where there are picks for the oLPN. Pick Module 1 is configured as a single zone, as there are not physical zone diverts on the conveyor. Pick Modules 2 and 3 are configured based upon the locations between each physical zone divert on the MHE.

Inventory Allocation Priority

For inventory allocated from reserve locations, WM uses the ***Inventory Allocation Priority*** configuration to determine the allocation method. Reserve locations are assigned pull zones, and the pull zones are given a priority. WM cycles through the pull zones in priority order until the need is fulfilled. In addition, within an allocation priority, WM is configured to apply a specific allocation algorithm ( minimum number of pulls, maximize pulls etc.), and an allocation unit of measure (cases or pallets) to complete the allocation. Carter’s allocation priorities are configured to perform allocation in the following sequence:

* 1. Allocate full pallets from reserve
  2. Allocate cases from case storage
  3. Allocate cases from pallet storage

Note: the allocation algorithms are based upon case quantities. For instance, in the 3rd priority if the allocation algorithm is to maximize number of pulls (emptying partially full locations), WM takes all the cases available for allocation and sequences these in descending quantity and then begins to allocate cases. Cases with the same quantity are sorted by location. Cases are allocated in this same sequence until the need is met, rather than allocating from a pallet with the lowest number of cases.

Inventory allocated to a distribution order receives an INT of ‘2’ (Full LPN pull) and the Full Container Allocated flag set to ‘Y’. WM updates the LPNs to status ‘50’ (Allocated). As pallets and cases are allocated, WM creates tasks to pull this inventory from reserve. Full pallet pulls are each assigned to their own task, while tasks to pull cases, may be broken by task capacity and specific areas within the warehouse.

Inventory Need Type

Inventory Need Types establish and maintain Inventory Need Type (INT) definitions for the current warehouse. INTs identify inventory needs for allocation or tasking (such as picking, replenishment, cycle count, and so on) and they indicate why the inventory is required (for instance, replenishment of case pick, and picking). The INTs also define the updates and actions that are required throughout the process. INTs are configurable through the ***Inventory Need Type*** option.

Examples of Inventory Need Types that are used –

|  |  |
| --- | --- |
| **INT** | **Description** |
| 1 | Replenish Active from Reserve |
| 2 | Full iLPN to Shipping |
| 11 | Putaway LPN |
| 40 | Slot Move A to A |
| 42 | Slot Move A to R |
| 43 | Slot Move C to R |
| 50 | Pick oLPN from Active |
| 53 | Retail Allocation from Reserve |
| 54 | Retail Allocation from Active |
| 70 | Anchor Carton |
| 100 | Cycle Count Reserve |
| 101 | Cycle Count Active |
| 303 | Recall |
| 503 | Rework |

## Cubing (Cartonization)

WM determines how each distribution order is to be separated into outbound oLPNs during the cubing process. Inventory allocated from active is cubed into standard shipping containers, using the oLPN type specified on the distribution order detail. Full case inventory from reserve is converted into oLPN inventory (i.e., one full inbound case = full outbound oLPN).

All inventory that is cubed into shipping containers is cubed using item weight, volume, and critical dimensions (OLPN Cubing Indicator ‘51’ – Cube to Capacity).

Examples of Cubin indicators that are used –

|  |  |
| --- | --- |
| Cubing Indicator | Description |
| 51 | Cartonize to Capacity |
| 61 | Single item, Cartonize to Capacity |
| 62 | Cube W/O mixed style/color |
| 63 | Single Style, Cartonize to Capacity |
| 65 | Single Style, Max 5 items |

Valid oLPN sizes and oLPN types are setup in the ***Container Type Table***. For customers with oLPN size restrictions, the valid oLPN sizes may be set up at the sold-to (customer) level. The oLPN type is bridged from the host in the distribution order detail file (the ***Distribution order*** ***Profile*** on the *Distribution order Interface* may also be used to set the oLPN type for a particular customer), or taken from the Item Master.

If there is no value in the distribution order or Item Master, a default warehouse value is used. WM accesses the appropriate oLPN sizes to use based on a combination of the sold-to and oLPN type or if records are not found for a specific sold-to, then oLPN sizes are found using just the oLPN type. During the cubing process, WM selects the size of the oLPN. Inventory is added to the oLPN item by item until either an oLPN maximum has been reached (volume or weight), or there are no more items for the current oLPN type.

Once the final contents of an oLPN have been determined, WM checks whether the contents can fit into a smaller size box based on volume. If there is sufficient volume in the smaller size box, WM checks the critical dimensions. The process of selecting a smaller size container continues until the box fails on one of the set of oLPN maximums. If an item is too large for any defined oLPN size, then the item is cubed into the largest size container of the corresponding oLPN type. OLPNs are created in status ‘10’ (Printed).

For some waves, in addition to generating shipping cartons, Carter’s may chose to build pick carts. A pick cart is a collection of cartons combined for the purposes of picking. An extension is developed to automatically cube the shipping cartons into the pick carts.

If an item has been identified as part of an assortment, then WM does cube these items, as described above. Instead, WM cubes assortments with a single assortment per box. All items belonging to an assortment are associated to the same assortment or pre-pack name on the distribution order details. WM then cubes each assortment based on the quantity of each item contained in the assortment. This is also specified in the distribution order details.

WM determines the oLPN type from the distribution order detail and determines the appropriate size based on the item weight, volume, and critical dimensions of the assortment components. Cubing assortments in the wave process allows for assortments to be built on demand, rather than pre-built and stocked in inventory.

Waves generated solely from Pick Module 1, may be generated with a flag to pack all oLPNs complete with the wave, as these oLPNs are packed based on the oLPN content labels. These oLPNs are created in status ‘20’ (Packed) and the inventory is already decremented from the active locations and moved into the oLPN.

Through the cubing process, WM also creates VAS instructions at the oLPN level. Based upon the VAS instructions provided in the distribution order WM creates a VAS oLPN detail per VAS type for each item requiring VAS within an oLPN. Carters also needs the ability to skip VAS oLPN generation for any given wave, especially for distribution orders where VAS operations are performed outside of WM prior to oLPN packing ***(WM07: VAS OLPNs with Wave)***.

## Replenishment

Replenishment is generated for those locations where the current pick requirement exceeds the quantity within the location, takes the inventory below the minimum requirement on the active location or in order to fill a dynamic active location. Inventory is allocated for replenishment using the same inventory allocation priorities, as identify for reserve allocations against distribution orders, as discussed above.

The dynamic locations are chosen based on the pick assignment type (for non bulk waves) or the bulk assignment type.Both these values are defaulted in the wave templates, and can be modified at the time of running the wave.

Carter’s uses the slotting interface that generates move tasks (INT 40, 42, 43) to replenish inventory during the weekend.

## Order Consolidation - Stockbridge

The waving process assigns an order consolidation location to all non-parcel oLPNs to help merge distribution orders after packing. WM uses the Order consolidation profiles to define the criteria by which to consolidate distribution orders. Carter’s uses 3 different consolidation criteria or profiles based on the customer requirements:

* Consolidate distribution orders with Ship Group Id
* Consolidate distribution orders with the same sold to, ship to & not before ship date (Note: the not before date for a customer is adjusted to a specific day in the week prior to be downloaded from the host.)
* Consolidate distribution orders with the same sold to, ship to & PO
* Consolidate distribution orders with the same sold to, ship to, and shipment # (Carter’s Kohl’s)
* Consolidate distribution orders with the same sold to, ship to

The consolidation locations are set up as permanent locations (not cleared at the start of each wave), and are given a capacity based on weight, volume, and number of oLPNs.

A consolidation location is also assigned to parcel carriers based on the live load location for the ship via. The shipping sorter then diverts cartons with this parcel ship via to the parcel shipping area.

## Order Consolidation – Hogansville

The waving process assigns an order consolidation location to all non-parcel cartons to help merge distribution orders after packing. WM uses the Order consolidation profiles to define the criteria by which to consolidate distribution orders. Carter’s uses 3 different consolidation criteria or profiles based on the customer requirements:

* Consolidate distribution orders with the same sold to, ship to & not before ship date (Note: the not before date for a customer is adjusted to a specific day in the week prior to be downloaded from the host.)
* Consolidate distribution orders with the same sold to, ship to & PO
* Consolidate distribution orders with the same sold to, ship to, and shipment # (Carter’s Kohl’s)
* Consolidate distribution orders with the same sold to, ship to

A consolidation location is also assigned to parcel carriers based on the live load location for the ship via. The shipping sorter then diverts cartons with this parcel ship via to the parcel shipping area.

Consolidation locations are setup as permanent locations. This means that the locations are not cleared out after each wave, and remain assigned to the consolidation criteria until all cartons with the assigned criteria are moved out of the location. There are no diverts that can physically move the cartons based on the destination location, so the destination is printed on the content label for cartons that pass the shipping divert. This allows the shipping personnel to manually move the cartons to their appropriate destination location.

## Routing

The custom CH Robinson interface updates routing information for distribution orders that are not routed through WM.

For distribution orders that are routed through WM, the wave process next initiates the routing process, or carrier determination. In order to perform routing WM accesses the routing lane. (Note: In addition, individual routing waves can be generated before the shipping wave, during the wave, or after the wave depending on operational and other parameters.)

Routing Lane (Static Routing)

The routing lane maintains the rules that govern the carrier selection process. The option UI - ***Routing Lane*** is used to configure and maintain these rules.

During the routing wave, the routing attributes associated with the distribution order are used to select the appropriate route lane header. If configured to do so for this route lane, WM then groups together all of the distribution orders that have the same route lane number and routing attributes. This allows for potential transportation savings where if each distribution order was routed individually it may be routed FedEx, but by grouping the distribution orders within a route lane number these distribution orders may instead route as an LTL shipment.

The properties of the distribution order are then used to select the appropriate route lane detail. The following order attributes may be used to select a routing lane detail:

* Range of destination zip codes
* Maximum weight
* Maximum volume
* Maximum number of oLPNs
* Maximum value of the order

The matching route lane detail then identifies the appropriate carrier and service that should be used for the distribution order or group of distribution orders.

Dynamic Routing

Several retailers, including JC Penney, determine their suppliers’ POs’ routing instructions dynamically, rather than allowing the supplier to assign the ship via using static routing lanes. This requires that a supplier send PO level shipment information to the retailer where transportation optimization software determines the orders’ ship via(s) and sends the data back to Carter’s.

WM initiates dynamic routing based on a flag, defined on the matching route lane detail determined, as discussed above. Carter’s personnel use the dynamic routing flat file generated by WM to send an EDI 753 (Routing Request) transaction to JC Penney and other retailers. These transactions consist of data fields including the total number of oLPNs, weight, and volume on an expected shipment. Retailers, in turn, provide the routing instructions back to Carter’s through an EDI 754 (Routing Response) transaction, which includes information about the ship to location and carrier/service level to use, as well as other information regarding the expected shipment.

When the retailer responds to the routing request, response data is received into an input file from the EDI 754 transaction via Carter’s EDI translator. WM creates the dynamic routing response after validations are performed and generates a report that provides details on the routing response. The validations performed in WM upon receiving the routing response include verifying that all appropriate routing response information is populated, cross-referencing the SCAC/service level from the routing response with the appropriate WM ship via, and verifying that the assigned ship to is set-up in WM with the appropriate ship to address. If any routing responses do not pass the validation checks, then a maintenance option is used to manually correct the data. Updates are then made to the distribution orders (and oLPNs, if already created) with the returned routing instructions.

TMS-lite

At times, Carter’s changes the routing information on the Distribution orders. An EDI 753 message is send to JC Penny to communicate routing changes. This is a one way call to JC Penny and Carters do not receive EDI 754 back.

User assigns the distribution orders to a single shipment in WM using ***Manual Load Planning*** UI option. The shipment is then updated with the ship via chosen by the warehouse personnel using the ***Manual Load Planning UI***.

The AR Account Master is configured to handle dynamic routing related requirements that may vary when dealing with particular retailers including:

* Determine if dynamic routing is allowed for the AR account.
* Assign adjustment percentages for expected number of oLPNs, total weight, total volume, and total units communicated in a routing request to account for variances from estimated capacities.
* Generate the routing request information to the retailer automatically or manually.
* Assign ready to ship dates and times for routing requests on a daily basis.

## Divert Messaging to MHE - Stockbridge

After completion of the wave, WM downloads a record to the conveyor control system for each unique oLPN and required zone divert for Pick Modules 2, 3. Zone divert messages are not created for picks in Pick Module 1. For each oLPN in status ‘10’ (Printed) at the end of the wave, WM also sends a ‘OLPN In Packing’ divert message to send the oLPN to the VAS/Audit area in the event that the oLPN is not packed complete. A cancellation of this message is then sent once each oLPN is packed complete within WM. In addition, if the oLPN requires VAS, then WM generates a divert message to send the oLPN to the VAS processing area, after packing. WM also generates a QA divert message for all cartons that require audit as soon as the carton goes to a pack complete status.

## Divert Messaging to MHE – Hogansville

After completion of the wave, WM downloads a record to the MHE system for each unique carton. Since there is no MHE conveyor system to move the cartons within the different pick zones, no zone divert messages are generated. WM does send information regarding the destination location for the cartons.

WM also sends a ‘QA’ divert message to the MHE system for all cartons that are flagged for audit. Since QA needs are determined only after the cartons are packed, this message is generated only after the carton is packed complete.

## Print Shipping Labels

For full case pulls from reserve and picks from active, WM generates both a shipping label (includes a bar-coded tracking number) as well as, an oLPN label (includes bar-coded oLPN number) for each oLPN created during the cubing process.

Carter’s has a requirement to not display recurring quantities for pre-packs on the Carton Content Label ***(WM12: Carton Content Label Extension)***

WM is modified to support label printing and to add additional data elements required for certain labels (***WM05 – Label Substitution***)

## Summary of wave updates:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Action** | **Type** | **From** | **To** | **Details** |
| Wave | DO | ‘110’ Released | ’120’ Partially DC Allocated  OR  ‘130’ DC Allocated |  |
| Wave | oLPNs | N/A | ‘10’ Printed |  |
| Wave | Tasks | N/A | ‘10’ Released | iLPNs/units are allocated |
| Wave | Wave | ‘0’ Wave Scheduled | ‘50’ Wave Process Completed |  |
| Wave | iLPN | ‘30’ Putaway | ‘50’ Allocated |  |
| Wave | Shipment | N/A | Created | Shipment created with wave per routing configuration |

# TASK MANAGEMENT

Tasking is a system directed process, which assigns tasks to operators, based on task group, priority, and current location. Task groups are typically defined by job function and/or equipment type. Task groups are defaulted in the user master or entered by the user when first logging in.

Examples of task groups that are used at Stockbridge:

|  |  |  |
| --- | --- | --- |
| **Task group** | **Description** | **INT** |
| A7C | Annex Case | INT1-Case/ INT53-C |
| A7P | Annex Pallet | INT1-Pallet/ INT53-P |
| A7U | Annex Unit | INT1-Unit/ INT54 |
| BLC | Bulk Case | INT1-Case |
| BLP | Bulk Pallet | INT1-Pallet |
| BLU | Bulk Unit | INT1-Unit |
| CAS | Case | 1, 11, 53, 300, 303 |
| CC | Cycle Count | 100, 101 |
| FCS | Full Cases | INT2, INT502, INT503 |
| P1C | Pick Mod 1 Case | INT1-Case |
| P1P | Pick Mod 1 Pallet | INT1-Pallet |
| P1U | Pick Mod 1 Unit | INT1-Unit |
| P2C | Pick Mod 2 Case | INT1-Case |
| P2P | Pick Mod 2 Pallet | INT1-Pallet |
| P3C | Pick Mod 3 Case | INT1-Case |
| P3P | Pick Mod 3 Pallet | INT1-Pallet |
| P4C | Pick Mod 4 Case | INT1-Case |
| PA3 | Pack from Active PM3 | INT40/42 |
| PA4 | Pack from Active PM4 | INT40/42 |
| PCK | Packing Mod 4 & Wall | INT50 |
| PLT | Pallet Pull | 1, 11, 53, 300, 303 |
| PPL | Partial Pull | INT1 |
| PWP | Active to Pick Wall | INT40/42 |
| PWR | Reserve to Pick Wall | INT1 |
| ROC | OBG Retail Case | INT53-C |
| ROL | OBG Retail INT54 | INT54 |
| ROP | OBG Retail Pallet | INT53-P |
| RPL | Replenish to Active | INT1, 53, 54 |
| RTC | Carters Retail Case | INT53-C |
| RTL | Carters Retail INT54 | INT54 |
| RTP | Carters Retail Pallet | INT53-P |
| SHP | Shipping | INT81/82 |
| WGL | Wire Guided Lift | 1, 2, 11, 53, 300, 303, 503 |
| WGT | Wire Guided Turret | 1, 11, 53, 300, 303 |

Examples of task groups that are used at Hogansville:

|  |  |
| --- | --- |
| **Task group** | **Description** |
| ANC | Annex Case |
| ANP | Annex Pallet |
| CAB | Case Bulk |
| CAD | Case Dynamic |
| CAP | Case |
| CAR | Case Retail |
| CAS | Case |
| CC | Cycle Count |
| FCS | Full Case Pulls |
| FLR | Mezzanine Floor |
| MMH | Mezzanine Material Handler |
| PCK | Picking |
| PFA | Pack From Active |
| PLT | Pallet |
| PPL | Partial Pull |
| RPL | Replenishment |
| RTL | Retail Picker |
| SHM | Shipping Mezzanine |
| SHP | Shipper |
| WLC | West Lukin Case |
| WLP | West Lukin Pallet |

The warehouse locations are divided into work groups and work areas, where work area is a sub-set of work group. Using RF -***Select Task***, WM references the tasks eligible to the operator based on his/her assigned task group. The system assigns tasks based on the following sequence: hot task, task in current work group/work area, task in current work group, and lastly, any eligible task. Hot tasks have the highest priority over all tasks, regardless of an operator's location in the warehouse.

Once the operator completes the assigned task, the next priority task appears on the screen for the operator to perform. Tasking is used to assign putaway tasks, replenishment tasks, and full pallets for shipping tasks to the Carter’s operators.

Carter’s also utilizes the task group jumping functionality to mitigate instances where users are ‘out of work’. Task group jumping allows WM to automatically move users from their default task groups to other task groups to perform other high priority tasks. Warehouse personnel use the ‘Task Groups’ link from the ***‘User Profile Configuration UI’*** to configure this functionality. Here, they specify both the default task group as well as the other task groups that the user can ‘jump to’.

## Task Release Maintenance

The option UI – ***Task Release Determination*** allows the user to configure the release of different types of tasks (replenishments, pulls, etc) based on certain events (i.e., pick from location, etc.)

For active replenishments that do not fit in the active location at the time of waving, WM generates tasks in held status during the wave. WM is configured to release the tasks automatically when a picker causes the actual inventory in the location to fall below the ‘minimum to release held replenishment’ value on the location. In this manner, Carter’s controls, the replenishment tasks to avoid the operators bringing more inventory to the location than can fit in the location.

# ALLOCATIONS - STOCKBRIDGE

## Full LPNs from Reserve

If full cases are allocated for an order, then WM prints the shipping labels during the wave in best pick sequence. The operator takes a stack of labels and scans a pallet through the RF – ***Pull Case List*** to begin the packing process. The operator then scans the first oLPN label and WM directs the operator to the location of the case allocated for the oLPN. If the particular case is not readily available, the operator may substitute a similar case with the same item and quantity to complete the pick to label process. The operator repeats these steps until the pallet is full and takes the pallet to a drop zone next to the conveyor so that the case may be loaded onto the conveyor.

While pulling the case, operators can skip and/or de-allocate tasks using pre-defined function keys.

As each LPN is pulled, the oLPN is packed complete and the status is updated to ‘20’ (Packed). WM then initiates an ‘OLPN in Packing’ divert cancellation message to cancel the divert message sent in the wave process. This is to ensure that the oLPN is not diverted to the VAS/Audit area for packing discrepancies, but rather continues to travel to the shipping dock.

## Replenishment Pulls

Replenishment tasks are performed through the tasking process. The option RF - ***Select Task*** displays the next replenishment task for the operator to perform. There are two types of replenishment tasks generated, full pallets and cases. For full pallet tasks the operator is directed to the location, and scans the pallet to pull all cases on the pallet. The operator is then directed to either a drop zone or directly to the active location for the entire pallet. If the operator is directed to a drop zone, then a second operator is tasked to move the pallet from the drop zone to the active location.

For replenishment case pulls, WM is configured to assign multiple replenishment pulls to a single task. WM first displays the reserve location and the LPN number for the first allocated case. The operator scans the specified LPN to indicate pulling the case from the reserve location, and then scans the pallet id that the case is pulled to. If necessary, a substitute function key can be used to pull a different LPN from the same reserve location, as long as the item and quantity match the originally specified LPN.

If a substitute LPN cannot be found within the location, then the operator may enter CTRL B to request an alternate from WM. Once an LPN is pulled, WM then displays the next location and case on the task in location sequence. The operator continues until all of the LPNs on the task are pulled from their reserve location on to the pallet. When all LPNs are grouped together on the task have been pulled, WM displays the drop location or active location for the pallet.

If the inventory is tasked to a drop location, then a second operator picks up the pallet and scans the LPN. The system displays the next location (either an active location or a secondary drop location based on configuration), and then prompts the operator to scan the location barcode. This process is repeated until the active location is displayed on screen for the LPN.

When the LPN is ready for the active location, the operator uses the RF – ***Fill Active Directed*** option called from the tasking function. The operator takes the LPN to the active location displayed on the RF screen and scans the LPN to the location. WM completes the case, active location, and task updates for the case and proceeds to the next active location assigned to the pallet in best location sequence. WM updates the LPN to status ‘96’ (Consumed into Active), and updates the active location’s ‘actual’ and ‘to be filled’ quantities.

If the operator wishes to skip a pull during the task, the operator enters CTRL K. WM continues to the next pull on the task and once all other pulls on the task are complete, directs the operator to the skipped pulls. If inventory to fulfill a pull cannot be found, then the operator can cancel the pull by entering CTRL G.

## Pick Module 1

Within Pick Module 1 packing is performed based on the printed oLPN shipping and corresponding content label. Operators perform unit picking based on the pick location and item/unit quantity details provided on the content label.

Some Pick Module 1 waves are generated with oLPNs packed complete, meaning at the end of the wave process the oLPN contents have automatically been transferred from the pick location to the oLPNs. For other waves the oLPNs are created in status ‘10’ (Printed). Once oLPNs are packed complete manually, use the option RF - ***Cubed Packing (Directed),*** then the oLPNs are placed on the conveyor for transport. The oLPNs for a ‘Pack Complete’ wave divert to the VAS/Audit area only if the oLPN requires VAS or auditing. OLPNs for ‘Non-pack complete’ waves always divert to the VAS/audit area as the oLPNs remain in a status less than packed, as packing is not complete on WM.

Carter’s may also use RF packing in Pick Module 1. This operates the same as described for Pick Modules 2 & 3, below, except Pick Module 1 is only a single divert zone.

## Pick Modules 2 & 3

OLPNs to be packed in Pick Modules 2 & 3 are erected and inducted on the conveyor. The conveyor control system diverts the oLPNs to the appropriate zones, based on the wave zone download provided previously. Operators within the zone, use the *Voxware-based voice picks to perform picking. As a back-up alternative to Voxware based voice picking, Users may* use the option RF - ***Cubed Packing (Directed)*** configured for zone picking. The operator first signs onto a specific picking zone within the active pick modules and then scan the oLPN label. WM displays only the picks for the oLPN within the zone. WM directs the operator to the pick location and prompts the operator to scan the item and enter the number of packs picked. This option may also be configured to require the operator to scan the item barcode of each bundle quantity packed.

If the pick empties the location, then WM prompts the operator if the location is empty. If the operator confirms that the location is empty, then this is tracked as a complete cycle count task. If the operator does not confirm that the location is empty, then a cycle count task is automatically created to direct another operator to cycle count the location. Once all of the picks in the zone are completed, WM displays an end of zone message to the operator. The operator places the oLPN back on the conveyor where it is transported to the next pick zone. If the oLPN is packed complete (based on an ‘End of OLPN’ message from WM) and the customer typically does not require VAS, then the operator also seals the box.

If an oLPN requires picks in both Pick Modules 2 and 3, then once the picks are complete in Pick Module 2 the conveyor control system diverts the oLPN to the Audit/VAS/In-packing Area. The operator recognizes the remaining picks are required from Pick Module 3 and the oLPN is re-inducted onto the conveyor in Pick Module 3. Alternatively, oLPNs may be broken by pick module, so that items from both Pick Modules 2 & 3 are not in the same oLPN.

During the packing process, the operator may skip a pick in their zone by entering, CTRL K. WM continues to the next pick for the operator’s zone and once all other picks are complete for the zone, directs the operator back through the skipped picks. The operator does not perform shorts at this time. If only short exists for the oLPN, then the operator enters either CTRL W to back-up to scan another oLPN or CTRL X to exit the option. The oLPN status is updated to ‘15’ (In Packing) status when the first pick is completed. Once the remaining items are picked, the oLPN is then updated to ‘20’ (Packed) status.

WM updates the active location based on the inventory that is picked into the oLPN (i.e., both the ‘to be picked’ and actual inventory quantity are decremented on the location). WM then initiates an ‘OLPN in Packing’ divert cancellation message to cancel the divert message sent in the wave process. This is to ensure that the oLPN is not diverted to the VAS/Audit area for packing discrepancies, but rather continues to travel to the shipping dock. In addition, any parcel oLPN, as well as, oLPNs for specific customers must have the actual weight on the oLPN. WM sends a MHE divert message to send these oLPNs over the weigh scale. The shipping lane divert message is also sent for every oLPN at the end of the wave process.

There may also be times when RF packing is not used in Pick Modules 2 & 3, although this is an exception process. Operators complete picking within each zone based on the oLPN content label printed with the wave. Once all picks are complete, then the operator packs the oLPN using the option *RF* ***Confirm Packed OLPN***and scans the oLPN. The oLPN is then packed complete and placed on the conveyor for transport to the VAS/Audit area or the shipping dock.

Labor Management interface with RF picking

Integrated with RF Pack Cube Directed / or non-directed, Labor Management serves as a means of tracking throughput (oLPN/hour) and standard time of a user in performing RF picking functions. The user(s) involved in the RF picking process is timed from his/her first task, until the user ends the assigned task (using RF) or exits the option. Data from events are captured within LM, and it is available to generate throughput and performance reports.

During the picking process the RF Picking option touch point program stores and sends the following type of information to Labor Management:

* Start date and time, User ID, Vehicle, and Activity name.
* oLPN(s), item information, quantity, and location information.
* Through the use of application criteria the following information is configured:
  + Location attributes
  + Item/Item attributes
* End date / time for packing the oLPN in Retail.
* The first LM detail message will be created to send the previous known location of the user to enable travel calculations.
* A detail message record is written for every location visited by the user in travel sequence, even if no item/qty was actually pulled
* If a location is visited more than once by a user (i.e. skipped and revisited), then a 010 record is created for each visit indicating the item and qty packed at each visit.

As part of the configuration, the following Elements will need to be configured to give the proper throughput and standard time credit:

* Travel
* oLPN
* Units
* Dozens
* Task ID
* Item Type
  + Flat
  + GOH
  + Multi

**Potential Extension:**

If the ability to discern Carter’s versus OshKosh RF Picking is a requirement, then either a extension will be required to handle changing the activity name (Dynamic Activity), or a separate WM transaction is required, one for Carter’s and one for OshKosh that the user must decide to sign into the proper transaction. Each WM transaction will then be configured with a separate Labor Activity. The capability to track voice over Voxware may not be a base Labor Message hook, and will require an extension on the WM transaction to send over the proper data for items, locations, and cartons.

## Pick Module 4

Carter’s uses Voxware terminals to execute some picks from active locations.

The picking transaction is executed via the Voxware terminal. Voice picking consists of messages initiated by the Voxware terminal and corresponding responses from WM (with potential WM updates and/or a response message). *As a back-up alternative to Voxware based voice picking, users may* use the option RF - ***Cubed Packing (Directed)*** configured for zone picking.

Voxware sign on:

When the user turns on a Voxware terminal, the message sequence begins with a request configuration message sent from the Voxware terminal to WM. This transaction returns all system-level configuration parameters to the terminal in a single record and modifies terminal behavior based on these settings. The user selects his/her User ID and speaks the password which is validated on the system. (The password must be numeric). Once the password is confirmed, Voxware gets the available regions for the user. The region corresponds to WM task groups. The user selects the region to begin working in and WM validates the user’s desired region against the eligible task groups for the user. The user is now ready to ask for assignments. WM is configured to assign tasks/assignments to users based on work group, work area, task priority and task release date/time. WM responds to the Voxware request for assignment with a summary of the assigned task.

Picking on Voxware

* User signs onto Voxware unit
  + confirms the user
  + confirms the equipment by voicing the name of the device
  + confirms the assignment by voicing the 9 digit Task ID or by scanning / voicing the Carton Number
    - System directs the user to the location and gives the units on the task
* User confirms the aisle
* System directs to location.
* User confirms arrival at location with 3 digit check digit.
* System directs Size / UPC to pick.
* User confirms Size / UPC.
* System directs units to pick for the Size / UPC
* User confirms the units picked of the Size / UPC.
* System directs the user to put the item in the Slot #.
* User confirms Slot #.
* System rejects overages and asks for re-confirmation of shortages
* System directs user to next location

Labor Management (LM) Interface with Voice Picking

No integration exists in Base to handle LM messages being created off of the WM extension to handle Voxware. Options that exist are listed below:

1. As part of the WM extension for Voxware, include LM hook updates to send the appropriate data to LM.
2. Carter’s creates a similar integration layer to populate LM with the appropriate LM messages.
3. Voice Picking becomes off-standard or reflective.

Labor Management serves as a means of tracking throughput (oLPN/hour) and standard time of a user in performing voice picking functions. The user(s) involved in the voice picking process is timed from his/her first sign on, until the user ends the assigned task (using Voxware) or exits the option. Data from events are captured within LM, and it is available to generate throughput and performance reports.

During the picking process the option chosen should store and send the following type of information to Labor Management:

* Start date and time, User ID, Vehicle, and Activity name.
* oLPN(s), item information, quantity, and location information.
* Through the use of application criteria the following information is configured:
  + Location attributes
  + Item/Item attributes
* End date / time for packing the oLPN in Retail.
* The first LM detail message will be created to send the previous known location of the user to enable travel calculations.
* A detail message record is written for every location visited by the user in travel sequence, even if no item/qty was actually pulled
* If a location is visited more than once by a user (i.e. skipped and revisited), then a 010 record is created for each visit indicating the item and qty packed at each visit.

As part of the configuration, the following Elements will need to be configured to give the proper throughput and standard time credit:

* Travel
* oLPN
* Units
* Dozens
* Task ID
* Item Type
  + Flat
  + GOH
  + Multi

**Other Potential Extension:**

If the ability to discern Carter’s versus OshKosh Voice Picking is a requirement, then either a Extension will be required to handle changing the activity name (Dynamic Activity), or a separate WM transaction is required, one for Carter’s and one for OshKosh that the user must decide to sign into the proper transaction. Each WM transaction will then be configured with a separate Labor Activity.

The picking process used varies based on the pick module in the warehouse. The table below summarizes the picking strategy used.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pick Module | Pick Module Type | Picking process | Comments | Steps done by user |
| Pick Module 1 | Dynamic | Pick by RF/ Virtual Zone Pick. 1 Carton at a time | Shortage – approved by supervisor  Ctrl+D or wait for inventory to drawn at location. Missed scans, In-packing cartons on conveyor | Display location:  Carton # / Scan item / Qty |
| Pick Module 2 | Dynamic + Permanent | Current voice pick ‘zone’. Back up – Zone Pick RF. |  | Same as pick module4 |
| Pick Module 3 | Dynamic + Permanent | Same as pick module 2 |  | Same as pick module4 |
| Pick Module 4 |  | Voice Pick.  Back up – Zone Pick RF. |  | 3 digit location check digit / Size / UPC / Qty / User confirms Slot # |
| Bulk Pick | Dynamic | Large Prod. Similar to pick module1. RF pick |  | Same as pick module 1 |
| Pick Wall | Dynamic + Permanent | Like Pick module 4 |  | Item / Qty / Carton # |
| Full Case from Reserve |  | RF – Pick Task in background | Auto Substitute  System Substitute (Ctrl+B)  If not inventory, move LPN to location & pick  Future: Create Chase Task | Scan LPN |

# ALLOCATIONS – HOGANSVILLE



Hogansville runs waves using these Wave Processing Types (WPTs):

* WPT 5: Waves run with this WPT allocate full cases from reserve locations and allocate the remainder inventory from the permanent pick locations.
* WPT 2: Waves run with this WPT also allocate full cases from reserve, but the remainder inventory is allocated as a bulk requirement from dynamic pick locations.
* WPT 3: This is the classic Bulk WPT and allocates all inventory as a bulk requirement from dynamic (bulk) pick locations

For Bulk Waves, users choose the ‘Bulk Assignment Type’ instead of the ‘Bulk Assignment Zone’ at the time of waving.

3 types of allocations (or 3 different INTs) can result from running these waves. The following sections refer to each of these in detail.

## Full LPNs from Reserve (INT 2)

If full cases are allocated for an order, then WM prints the shipping labels during the wave in best pick sequence. The operator takes a stack of labels and scans a blind pallet through the RF – ***Pull Case List*** to begin the packing process. The operator then scans the first carton label and WM directs the operator to the location of the case allocated for the carton. If the particular case is not readily available, the operator may substitute a similar case with the same item and quantity to complete the pick to label process. The operator repeats these steps until the pallet is full and takes the pallet to a drop zone next to the conveyor so that the case may be loaded onto the conveyor.

While pulling the case, operators can skip and/or de-allocate tasks using pre-defined function keys.

As each LPN is pulled, the carton is packed complete and the status is updated to ‘20’ (Packed). The status of the LPN is updated to ‘95’ (Consumed).

## Replenishment Pulls (INT 1)

Replenishment tasks are initiated through the tasking process. The option RF – ***Select Task*** displays the next replenishment task for the operator to perform. WM is configured to assign multiple replenishment pulls to a single task. WM first displays the reserve location and the LPN number for the first allocated case. The operator scans the specified LPN to indicate pulling the case from the reserve location, and then scans the pallet id that the case is pulled to. If necessary, the substitute function can be used to pull a different LPN from the same reserve location, as long as the item and quantity match the originally specified LPN.

If a substitute LPN cannot be found within the location, then the operator may enter CTRL-B to request an alternate from WM. Once an LPN is pulled, WM displays the next location and case on the task in location sequence. The operator continues until all of the LPNs on the task are pulled from their reserve location on to the pallet. When all LPNs are grouped together on the task have been pulled, WM displays the drop location or active location for the pallet. If the operator wishes to skip a pull during the task, the operator enters CTRL-K. WM continues to the next pull on the task and once all other pulls on the task are complete, directs the operator to the skipped pulls. If inventory to fulfill a pull cannot be found, then the operator can cancel the pull by entering CTRL-G.

If the inventory is tasked to a drop location, then a second operator picks up the pallet and scans the LPN. The system displays the next location (either an active location or a secondary drop location based on configuration), and then prompts the operator to scan the location barcode. This process is repeated until the active location is displayed on screen for the LPN.

When the LPN is ready for the active location, the operator uses the RF – ***Fill Active Directed*** option called from the tasking function. The operator takes the LPN to the active location displayed on the RF screen and scans the LPN to the location. WM completes the case, active location, and task updates for the case and proceeds to the next active location assigned to the pallet in best location sequence.

As the cases are replenished to active, the LPN status is updated ‘96’ (Consumed into Active), and updates are made to the active location’s ‘actual’ and ‘to be filled’ quantities.

## Picking from Active (INT 50)

Static Picks

Carter’s has permanently assigned active locations for most of the items. These locations are configured to hold a maximum of 63 cases. For the small ‘Mom & Pop’ types of orders, Carter’s utilizes the WPT of 5 to generate INT 50 picking tasks from these permanent locations.

Picking to a Pick Cart

The pick wave groups cartons based on the capacities configured into one or more pick carts. ***RF - Pack Pick Cart*** is used to pack the oLPNs assigned to the pick cart.  After entering the pick cart number, the user is directed through the pick locations of the oLPNs.  If two oLPNs require inventory from the same location, WM directs the user to pick the units for the first oLPN and then the second.  The user places the inventory into the respective oLPNs.  In this way the user makes one pass to the location, yet is able to pack inventory for both oLPNs.  By packing inventory from the required locations, the user is able to pack multiple oLPNs.

The Item verification methods are determined by the menu parameters.  For example, verification from active/case pick can be at the quantity, Item/quantity, Item barcode, or location level.  The verification from reserve can occur by verifying the iLPN or the iLPN / quantity and this depends on whether the pick is for a full iLPN or if it is for a partial quantity of an iLPN.

Users can log into the appropriate task group or scan the pick cart number to invoke the actual picking for the pick cart.

If the pick empties the location, then WM prompts the operator to confirm if the location is empty. If the operator confirms that the location is empty, then this is tracked as a complete cycle count task. If the operator does not confirm that the location is empty, then a cycle count task is automatically created to direct another operator to cycle count the location.

Users scan the carton number to pack the inventory into the carton. Users may also choose to short a pick using the CTRL-D function key. Scanning the carton updates the packed quantity into the carton and updates the status of the carton to ‘15’ (In-packing). If the carton is completely packed, the status updates to ‘20’ (Packed).

After packing, if any of the cartons require VAS (based on the VAS indicator on the shipping label), operators take such carton to the VAS processing area. If the Carton does not require VAS, operators take the carton to a common area for palletization (see *Palletize Cartons* section for details).

Dynamic Picks

For the larger orders, Carter’s assigns dynamic pick locations during the wave. Dynamic locations are set up as temporary locations in WM. Each location is configured to hold a single item.

The actual picking is done using the RF – ***Cubed Packing (Directed)*** function. This option is configured to perform zone picking. The shipping labels are printed with the wave and indicate the size and type of the carton for packing. The operator signs into a specific picking zone within the active pick modules and then scans the shipping carton label. WM only displays the picks for the carton within the zone. WM directs the operator to the pick location and prompts the operator to scan the item and enter the number of units picked. This option may also be configured to require the operator to scan the item barcode of each bundle quantity packed.

If the pick empties the location, then WM prompts the operator if the location is empty. If the operator confirms that the location is empty, then this is tracked as a complete cycle count task. If the operator does not confirm that the location is empty, then a cycle count task is automatically created to direct another operator to cycle count the location.

Once all of the picks in the zone are completed, WM displays an ‘End of Zone’ message to the operator. The operator places the carton back on the conveyor where it is transported to the next pick zone. If the carton is packed complete (based on an ‘End of Carton’ message from WM), then the operator seals the box (if it does not require VAS) in addition to placing it on the conveyor.

During the packing process, the operator may skip a pick in their zone by entering, CTRL K. WM continues to the next pick for the operator’s zone and once all other picks are complete for the zone, directs the operator back through the skipped picks. The operator does not perform shorts at this time. If shorts exist for the carton, then the operator enters either CTRL W to back-up to scan another carton or CTRL X to exit the option.

WM updates the active location based on the inventory that is picked into the carton (i.e., both the ‘to be picked’ and actual inventory quantity are decremented on the location).

After packing, if any of the cartons require VAS (based on the VAS indicator on the shipping label), operators take such carton to the VAS processing area. If the Carton does not require VAS, operators take the carton to a common area for palletization (see *Palletize Cartons* section for details).

## Bulk Picks

Large orders like Kids ‘R’ Us, BJs, etc. are waved to dynamic bulk locations. This wave is commonly used in instances that require VAS processing. Bulk locations are setup as very large locations in WM that can hold up to 999 items. Users choose the ‘Bulk Assignment Type’ instead of the ‘Bulk Assignment Zone’ at the time of waving.

Once the entire product is pulled to the Bulk area (by completing the INT 1 replenishment tasks), users choose the RF –***Pack Cubed Directed*** option to pack the cartons. WM prompts the user to scan the Carton number. It then prompts the users to scan the item barcode and key the quantity required for each item. This option may also be configured to require the users to scan the item barcode for every unit picked. Operators can skip a pick or part of a pick using the CTRL-K function key. They may also short the pick using the CTRL-D function key. Users are displayed the ‘End of carton’ message once all items for the carton are packed.

If the pick empties the location, then WM prompts the operator if the location is empty. If the operator confirms that the location is empty, then this is tracked as a complete cycle count task. If the operator does not confirm that the location is empty, then a cycle count task is automatically created to direct another operator to cycle count the location.

As soon as the first unit is packed into the carton, the status updates to ‘15’ (In packing); as soon as the last unit for the carton is packed, the status updates to ‘20’ (Pack complete).

After packing, if any of the cartons require VAS (based on the VAS indicator on the shipping label), operators take such carton to the VAS processing area. If the Carton does not require VAS, operators take the carton to a common area for palletization (see Palletize Cartons section for details).

VAS may also be performed outside of WM, prior to packing. Since base WM only allows Vas to be performed after the cartons are packed, an extension is made to give the option to the wave operator of not generating VAS cartons on a wave-by-wave basis (***MD 18 – VAS Cartons***).

# PALLETIZE CARTONS – Hogansville

Once cartons are packed in any area of the warehouse and VAS is performed on the cartons that need VAS, personnel use the RF –***Palletize Cartons*** function to build shipping pallets. The function prompts for a blind Pallet ID and for the cartons to put on the pallet. Once a pallet is complete, they use the CTRL-E function key to return to the next pallet prompt.

If any of the Cartons need to be audited (see Audit requirements section for details), WM displays a message to the users who in turn palletize these cartons separately. An extension is made to also display a message to the users if any of the cartons that require VAS (***WM07 – Lock VAS Cartons***). This will allow personnel to ‘catch’ any cartons that needed VAS, but for which the VAS is not complete. Users use this warning to complete the VAS before returning the cartons for palletizing and shipping.

# oLPN VAS/AUDITING PROCESSING

## Audit Requirements

Carter’s configures oLPN-auditing requirements in order to audit a certain percentage of oLPNs based on the customer. OLPNs packed from pack module 1 are typically audited at a higher frequency than pack modules 2 & 3, but this varies based upon the season. The audit rules are configured within the UI – ***OB Quality Audit Inq/Maint*** option. Through this option Carter’s configures the oLPN selection rules used for audit. OLPNs can be selected based on either (not a combination of values) the item, customer, or packer. Within the selection criteria the operator also indicates the percentage of oLPNs that meet specific criteria that should be audited. This percentage is indicated by a 1 of Y value, where Y is user-defined.

Stockbridge: Once packing is complete, WM automatically checks the audit requirements to determine if the oLPN just packed requires auditing. If the oLPN is flagged for auditing, then WM automatically generates an audit divert message to the conveyor control system.

Hogansville: Once packing is complete, WM automatically checks the audit requirements to determine if the carton just packed requires auditing. If the carton is flagged for auditing, then WM automatically generates an audit divert message to the conveyor control system. If the carton requiring audit was packed from the Bulk area, personnel complete the audit on the cartons in the bulk area itself. For all other areas of the Warehouse, personnel induct the cartons on the shipping conveyor. The conveyor then diverts these cartons to the audit area for the actual audit.

Current WMOS functionality of the Audit Carton only creates one Activity Tracking record per carton. This does not allow Carter’s to report correctly on variances found and who is responsible for those variances. Therefore, a extension to the existing Audit Carton functionality is requested that would write an activity tracking record for each detail within the carton (***WM13: Audit carton at Detail Level***)

## OLPN VAS/Audit Area

Stockbridge: OLPNs are diverted to the VAS/Audit area based on the messages sent by WM to the conveyor control system. An oLPN may be diverted for one or multiple of the following reasons:

* 1. The oLPN is in ‘10’ (Printed) status and is from Pick Module 1 where no packing has been performed on WM.
  2. The oLPN is in ‘15’ (In Packing) status and there were items not picked in Pick Modules 2 & 3, as they were not available.
  3. The oLPN has been flagged for audit.
  4. The oLPN requires VAS processing.

Hogansville: oLPNs that are locked with the QA lock code are diverted to the QA area by the Shipping divert. There is no divert for VAS cartons. Users perform VAS in the packing areas based on the VAS indicator that prints on the shipping labels.

Once an oLPN arrives in the VAS/Audit area the operator scans the oLPN in the option RF***VAS Tracking (WM08)*** option. The option is configured to allow skipping of any of the functions that are called upon by this function based on the transaction parameter setup (WM08b). Ex: If audit is performed in a separate area of the D.C. in Hogansville, then the audit check is not performed when the carton is scanned using this option. If the oLPN is in status ‘10’ (Printed), then WM automatically calls the option RF ***Cubed Packing (Non-Dir)*** and the operator scans each item in the oLPN. The operator may short an item using CTRL D, and WM automatically generates a cycle count task for the active location the item was allocated from. The operator then ends the oLPN and continues through VAS/Audit processing. If the oLPN is in status ‘15’ (In Packing), then WM automatically calls the option RF ***Cubed Packing (Dir)***and WM directs the operator through the remaining picks for the oLPN. The operator may confirm the picks or short the items using CTRL D. If the item is shorted, then WM automatically creates a cycle count task for the active location the item was allocated from. The operator then ends the oLPN and continues through VAS/Audit processing.

Next, the WM determines if the oLPN has been flagged for audit. If the oLPN has been flagged for audit, then WM automatically calls the option RF – ***Audit OLPN***. The operator scans the oLPN LPN, followed by the first item in the oLPN. As each item is scanned, WM increments the count by the bundle quantity of the item. This is repeated until all items have been scanned. The operator indicates the end of oLPN and WM determines if the scanned items are the same as the expected items in the oLPN. If there is no variance, then WM returns to the next VAS task required for the oLPN. If a variance exists, then WM displays a message to the operator and generates a variance report.In Hogansville, the audit function is performed separately (not called from the Special Processing option while performing VAS/packing) in the Quality Audit area.

Operators may then research any discrepancies and corrects these through the option FS – ***Modify Container Contents*** before continuing with the remaining VAS tasks. If all of the items cannot fit into the largest container, the operator may use the RF – ***Split OLPN Contents*** option to create two shipping containers. Similarly, if the shipper must be changed for the oLPN, the operator may use the FS – ***Distribution order Inquiry*** to make the change. Whenever an oLPN is modified in this manner, new shipping/oLPN labels must be printed to reflect the changes.

For oLPNs that do not require audit or once the audit is complete, then WM continues with the remaining VAS instructions for the oLPN. WM walks the operator through each VAS instruction required by item and prompts the operator for the quantity completed of the VAS. WM tracks internally the number of VAS steps, and only allows completion of the oLPN after all of the VAS steps have been performed. Once the VAS is complete, the oLPN is placed on the takeaway conveyor for transport to the shipping dock.

# CONSOLIDATION

Stockbridge: OLPNs arrive from the packing station to the staging/loading area via the conveyor system to the staging/loading area and are diverted to the appropriate shipping spur based on valid consolidation criteria (store, Ship via, etc.).

Hogansville: The operator unloads the oLPNs and ‘pre-sorts’ the cartons based on the destination location that prints on the content label. The next step is to build an outbound pallet by scanning the oLPN with the option RF ***Palletize LPNs***. User then locates the pallet to a pack and hold location by using ***RF Locate Pallet*** option.

WM is modified to search for all oLPNs with the same destination location each time a staging location is scanned using the ***RF Anchor OLPN*** option

# PARCEL MANIFESTING

## OLPN Manifesting

Stockbridge: OLPNs that are sent using parcel carriers (FedEx, etc.), oLPNs that require the actual weight based on the customer requirements and all oLPNs that pass through the VAS/audit area, pass over an in-line scale and the actual weight is sent back to WM at the time of weight capture (divert confirmation). .

Hogansville: Cartons that are shipped using parcel carriers (FedEx) are diverted by the shipping conveyor to the parcel shipping area. There they pass over an in-line scale. The actual weight of the carton is then sent back to WM.

WM processes the divert confirmation and calls the – ***Weigh and Manifest OLPNs*** option behind the scenes. WM accepts the oLPN number and weight and for parcel oLPNs WM calculates the freight charges based on the origin zip code, weight, destination zip code, and parcel carrier service type. WM adds the oLPN to the appropriate manifest and updates the oLPN to status ‘40’ (Manifested). OLPNs that are not placed on the conveyor can be weighed in manifested by simply accessing the UI – ***Weigh and Manifest OLPNs*** option. Non-parcel oLPNs are updated simply to status ‘30’ (Weighed).

Labor Management (LM) Interface with Parcels

Integrated with RF Parcel transaction, Labor Management serves as a means of tracking throughput (oLPN/hour) and standard time of a user in performing Scale Operator functions. The user(s) involved in the Scale Operator process is timed from his/her first RF interaction, until the user ends the assigned task (using RF) or exits the option. Data from events are captured within LM, and it is available to generate throughput and performance reports.

During the Scale Operator process the RF option touch point program stores and sends the following type of information to Labor Management:

* Start date and time, User ID, Vehicle, and Activity name.
* oLPN(s), item information, quantity, and location information.
* Through the use of application criteria the following information is configured:
  + Location attributes
  + Item/Item attributes
* End date / time for packing the oLPN in Retail.
* The first LM detail message will be created to send the previous known location of the user to enable travel calculations.
* A detail message record is written for every location visited by the user in travel sequence, even if no item/qty was actually pulled
* If a location is visited more than once by a user (i.e. skipped and revisited), then a 010 record is created for each visit indicating the item and qty packed at each visit.

As part of the configuration, the following Elements will need to be configured to give the proper throughput and standard time credit:

* oLPN
* Carton Audit Flag
* Labels printed
* Item Type
  + Flat
  + GOH
  + Multi

**Potential Extension:**

If the ability to discern Carter’s versus OshKosh Scale Operator is a requirement, then either a Extension will be required to handle changing the activity name (Dynamic Activity), or a separate WM transaction is required, one for Carter’s and one for OshKosh that the user must decide to sign into the proper transaction. Each WM transaction will then be configured with a separate Labor Activity.

The capability to track Carton Weight Freight Manifest UI does not exist within the WM/LM 2010 Base Hooks. An extension will be required to handle a user interaction within the UI be sent to Labor Management for performance and throughput purposes.

## Close Manifest

The UI- ***Manifests*** option is used to select, close, and print a parcel manifest. The electronic manifests are created in a directory so that they can be uploaded to the host system. All subsequent oLPNs are assigned to a new manifest. Close Manifest automatically triggers invoicing for all distribution orders on the manifest and generates the outbound shipping documents (i.e., shipping manifest, etc).

# PACK & HOLD/STAGING

Pack & Hold locations are used to stage large orders that cannot be picked in one day, or used if “working ahead” so orders are picked and packed but not shipped until a later date. The orders are palletized using RF ***Anchor OLPN*** as described above, and then manually located to staging locations within the warehouse using the option RF ***Locate Pallet***. The user scans the oLPN/pallet id and then scans the pack & hold location. Each oLPN’s staging indicator updates to status ‘10’ (Located) as the location barcode is scanned.

Export Orders are large quantity orders and are staged in Pack and Hold Area. The export order information is extracted from WM to print export documentation.

1V. SHIPPING

## Shipment & Appointment Creation

OLPN are assigned to a shipment/load in WM using the fixed station option UI – ***Manual Load Planning***. The user may assign one or multiple distribution orders to a load. The user first filters the loads they want to work with, and then filters the distribution orders that have not been added to a shipment. The user may assign/group the distribution orders to a shipment for various reasons.

WM is modified to change the distribution order information displayed on the Select Data tab of the ‘View – Load / Distribution order’ on the UI – ***Manual Load Planning*** option.

The ***Manual Shipment Planning*** screen is divided into two sections with unassigned orders on the left side and shipments on the right side. To assign an available order to a shipment, the user clicks the check box near the order, then clicks the check box beside the desired shipment, then clicks ***Assign***. To assign an order to a new shipment, the operator clicks the available order’s check box and then selects ***Single***. Multiple orders and shipments can be selected at once by clicking multiple check boxes. Operators can also split order lines across more than one shipment or un-assign orders after they have been assigned. WM does not perform any updates until the operator clicks ***Accept Workspace***. Changes can be cancelled by clicking ***Cancel Workspace***. Individual order lines, oLPNs, and stops can be viewed from the screen as well.

Distribution orders can be assigned to shipments either before or after waving. If assigned before waving, the distribution order is updated with the shipment number and future oLPNs for the order are also assigned the shipment. If assigned after waving, both the order and its oLPNs are assigned to the shipment.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Action** | **Type** | **From** | **To** | **Details** |
| Accept Workspace | Shipment | N/A | ‘10’ – Planned |  |
| Accept Workspace | DO | N/A | N/A | Shipment number assigned |

In addition, the left and right sections of the UI are modified to be able to jump to the record specified instead of a single page at a time. The information is utilized by personnel to aid in the selection of adding distribution orders to shipments and to view distribution order information for distribution orders already assigned to a shipment(***MD12: Change Distribution order Data Displayed in Manual Load Planning)***.

Carter’s is looking for functionality to manage the shipping of different merchandise divisions separately (***WM09: Create Outbound Shipment & Load Extension***)

During the day, supervisors monitor the loads and maintain appointments for outbound shipments using the UI- **Shipments**. The Shipments transaction is also used to:

* Manage shipments during shipping operations
* View shipments and Stops
* Enter and maintain outbound shipment header columns (such as Seal number)
* Print shipping documents (BOL or manifest)
* Close shipment and shipment confirmation

Carter’s uses custom Bill of lading (BOL) print program to look at the first DO on the BOL to determine the ADDR\_CODE ***(WM15: Modify BOL Print Program)***

Through the UI – ***Shipments*** option operators also schedule an appointment for the shipment. Once this is complete the shipping company is given the appropriate appointment number.

## Check-In/Check-Out

When the trailers arrive at the facility for load pick-up, the appointment is first checked into WM using the UI – ***Check In*** option. Operators access the appointment through the appointment number, carrier or load number. WM records the time of the check in and stores it in the appointment record. The operator also enters comments at the time of check to indicate any special circumstances.

Once the product is loaded, operators also check out the appointment using the same UI – ***Check In/Check Out*** option. WM records the time of check out and holds it in the appointment record.

## RF Load Trailer

Once the trailer is ready to be loaded, the operator uses the UI – ***Shipments*** to enter the trailer, seal # to the shipment and to create loading tasks for all pallets on the load that are in the staging area. Tasks are completed through the RF option ***Select Task***. Operators are directed to pick up pallets within the staging area and are directed to the appropriate dock door for the shipment. As oLPNs are loaded onto the trailer, WM updates the oLPNs status to ‘50’ (Loaded on Truck). Once all the oLPNs for a distribution order are loaded, WM updates the distribution order status to ‘70’ (Loaded on Truck.)

## Close Shipments

After all oLPNs are loaded and the trailer door closed the supervisor selects Close shipment through the ***Shipments screen***. Close Shipments automatically triggers invoicing for all distribution orders on the shipment and generates the outbound shipping documents (i.e., bill of lading, etc). WM generates shipment confirmation records to the host that include:

* Outbound shipment File
* Outbound Stop File
* Distribution order Headers and Details with corresponding shipped quantities updated
* OLPN Headers and Details

If the Ship Via field is not populated (ship\_via is null), this extension will display a message that Ship Via cannot be blank on the Shipment UI ***(WM10: Close Load UI – ShipVia Extension)***

Status Updates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Action** | **Type** | **From** | **To** | **Details** |
| Close Trailer | Shipment | Shipment Closed Indicator = ‘0’ | Shipment Closed Indicator = ‘1’ |  |
| Close Trailer | oLPN- removed from shipment | No status change; shipment number removed |  |  |
| Close Trailer –Ship Confirm | oLPN | ‘50’ Loaded | ‘90’ Shipped |  |
| Close Trailer –Ship Confirm | PIX |  |  | 500 01 |

In base WM, when a user submits an invoice via ‘Shipments’ or ‘Ship Confirm Rules’ UI the ‘submitted time stamp’ is not recorded or sent as part of the invoice records. WM is modified to record the invoice submitted timestamp in the following two places Shipments UI Screen and Ship Confirm Rules UI Screen ***(WM02: Invoice Submission Date/Time Capture)***

V. OUTBOUND – RETAIL PROCESSING

Retail processing is the fulfillment of store distributions to Carter’s stores. The process is similar to Outbound – Distribution order processing in the wave and allocation processes, but differs in the packing and shipping processes**.**

# RETAIL SHIPPING WAVES

The selection of store distribution orders is similar to that of distribution order selection. Once wave rules are configured and activated, operators initiate a wave using the option UI – ***Run Wave***. When the defined capacity limits for the wave are reached, no additional store distribution orders are selected.

## Selection & Allocation

For each store distribution or portion of a store distribution selected and allocated, WM adds the order as an aggregate distribution order for the store. If an aggregate distribution order is not found, then one is generated. All of the information reflected in the ORDERS table is updated on the Distribution order detail. The allocated quantity is updated as the Distribution order quantity. Fully allocated DO’s are updated with the allocated quantity, a remaining quantity of zero, and a status of ‘130’ (Allocated). Partially allocated DO’s are updated with the allocated quantity, remaining quantity, and a status of ‘120’ (Partially Allocated).

Allocation is completed in bulk (typically WPT 3). The wave process sums the total need across all distributions for an item and attempts to allocate as many full LPNs as possible, exceeding the need if necessary, in order to only allocate full LPNs. Exceeding the need sends additional inventory to the store packing area.

## Task Creation

Tasks are then created to pull LPNs from reserve locations to take to the store packing area. Tasks are built to include pulls from multiple reserve locations up to the capacity of a pallet and may break based on physical locations constraints, such as area or zone in the warehouse.

Once a wave is generated, its progress through the distribution center is monitored through the UI – ***Waves***.

# RESERVE PULLS

Retail bulk allocation tasks are completed through the tasking process, as highlighted in the *Outbound – Distribution order processing* section. The option RF – ***Select Task*** assigns the operator to the next available task and directs the operator to the location for the first LPN on the task. The operator scans the specified LPN to indicate pulling the case from the reserve location, (or may enter a function key to scan a substitute LPN of the same item and quantity within the location) and then scans the pallet ID the case is pulled to. WM then displays the next location and LPN on the task in location sequence. The operator continues until all of the LPNs on the task are pulled from their location onto the pallet and WM then directs the operator to drop the pallet to the Put-to-Zone (PTZ) staging area.

# PUT TO ZONE (PTZ)

The retail packing area is organized such that each unique store and department combination is assigned a put to store (PTS) packing location. Groups of PTS locations are logically assigned to pack zones, typically based on the physical layout of the packing area. Put to Zone (PTZ) is then the process of sorting the inventory, within the pulled LPNs from reserve, onto carts based on the specific requirements within each specific store pack zone. These carts are then eventually distributed to the store pack locations in the zone.

Once LPNs arrive to the PTZ staging area, the operator scans the LPN in the RF ***Put to Zone*** option. WM then directs the user to build carts based on the requirements for the item within the LPN for each pack zone. WM displays the first zone that requires the item and the quantity required and prompts for a location to build a cart for that zone. The operator scans a location and then WM prompts for a cart in the location or a new cart for the specific zone. WM then transfers the required quantity from the original LPN, to the scanned cart. This process continues until all items in the original LPN have been distributed to carts. Once the operator decides a cart is full, the cart is transferred to the put to store (PTS) area for distribution to the required store pack locations.

Overage quantities may be sorted to a multi-item tote for putaway (Retail Out location). The overages are then putaway in active by scanning the tote in RF ***Fill Active (Directed)***.

Alternatively, overages may be palletized using RF ***– Palletize Cases***. Once a pallet is complete, the operator scans the pallet with the option RF ***– Warehouse Putaway Cases***. WM then executes putaway as described in the *Inbound – Putaway Execution* section.

Labor Management (LM) Interface with PTZ

Integrated with RF Put to Zone transaction, Labor Management serves as a means of tracking throughput (oLPN/hour) and standard time of a user in performing Put to Zone functions. The user(s) involved in the Put to Zone process is timed from his/her first RF interaction, until the user ends the assigned task (using RF) or exits the option. Data from events are captured within LM, and it is available to generate throughput and performance reports.

During the Put to Zone process the RF option touch point program stores and sends the following type of information to Labor Management:

* Start date and time, User ID, Vehicle, and Activity name.
* oLPN(s), item information, quantity, and location information.
* Through the use of application criteria the following information is configured:
  + Location attributes
  + Item/Item attributes
* End date / time for packing the oLPN in Retail.
* The first LM detail message will be created to send the previous known location of the user to enable travel calculations.
* A detail message record is written for every location visited by the user in travel sequence, even if no item/qty was actually pulled
* If a location is visited more than once by a user (i.e. skipped and revisited), then a 010 record is created for each visit indicating the item and qty packed at each visit.

As part of the configuration, the following Elements will need to be configured to give the proper throughput and standard time credit:

* Pick Truck/Cart
* oLPN
* Units
* Travel Time

**Potential Extension:**

If the ability to discern Carter’s versus OshKosh Put to Zone is a requirement, then either an Extension will be required to handle changing the activity name within LM (Dynamic Activity), or separate WM transactions are required. One for Carter’s and one for OshKosh, which means the user must decide to sign into the proper transaction. Each WM transaction will then be configured with a separate Labor Activity.

The capability to track Retail out Case Count, Short Pick, and Skip Pick will require the use of application criteria. Skip and Short will use the task details to determine if quantity picked was the quantity tasked. Retail out Case Count will require criteria against the number of cases that go back to the original location.

# PUT TO STORE

Once a cart arrives in the put to store (PTS) area, the operator scans the cart in the RF ***Put to Store*** option. This function directs the user to each store location that requires a unit(s) from the case. WM directs the operator to the first store pack location with a requirement for the item. WM displays the item, required quantity and location and prompts the operator to scan the oLPN in the location. WM reduces the inventory from the cart/LPN and adds the inventory to the oLPN scanned. Once an oLPN is full the operator enters a CTRL E to end the current oLPN. All retail oLPNs are populated with the default oLPN size/type when the oLPN is closed with the value stored in the FS ***Facility*** option for the particular store **(*WM03: Retail OLPN Type-Size)***. A new oLPN is started within a store pack location by simply scanning a pre-printed oLPN label for the store at the time the first item is packed into the oLPN through the ***Put to Store*** option.

WM is modified to add a function key to the Put to Store process which allows the user to scan any valid store pack location. Once the location is scanned, the program will find the next put on that location or upstream from that location (***WM01: Put to Store Enhancement***)

Once oLPNs are packed complete WM determines the route for the oLPN and based on the route assigns a ship via to the oLPN. Carter’s utilizes 2 primary routes. The first route is for existing oLPNs and assigns FedEx Ground as the ship via. The second route is for new stores and an LTL carrier is assigned to these oLPNs. Through the packing and carrier determination updates, WM also initiates a divert message to the conveyor control system indicating the appropriate shipping divert lane assigned to the carrier. Packed oLPNs are transported on a conveyor from the PTS area to the sealing and weigh station.

Labor Management (LM) Interface with PTS

Integrated with RF Put to Store transaction, Labor Management serves as a means of tracking throughput (oLPN/hour) and standard time of a user in performing Put to Store, or distro, functions. The user(s) involved in the Put to Store process is timed from his/her first RF interaction, until the user ends the assigned task (using RF) or exits the option. Data from events are captured within LM, and it is available to generate throughput and performance reports

During the Put to Store process the RF option touch point program stores and sends the following type of information to Labor Management:

* Start date and time, User ID, Vehicle, and Activity name.
* oLPN(s), item information, quantity, and location information.
* Through the use of application criteria the following information is configured:
  + Location attributes
  + Item/Item attributes
* End date / time for packing the oLPN in Retail.
* The first LM detail message will be created to send the previous known location of the user to enable travel calculations.
* A detail message record is written for every location visited by the user in travel sequence, even if no item/qty was actually pulled
* If a location is visited more than once by a user (i.e. skipped and revisited), then a 010 record is created for each visit indicating the item and qty packed at each visit.

As part of the configuration, the following Elements will need to be configured to give the proper throughput and standard time credit:

* Carton Open Flag
* oLPN
* Units
* Travel Time
* Item Type
  + Flat
  + GOH
  + Multi
* PFD
* Location

**Potential Extension:**

If the ability to discern Carter’s versus OshKosh Put to Store is a requirement, then either an Extension will be required to handle changing the activity name within LM (Dynamic Activity), or separate WM transactions are required. One for Carter’s and one for OshKosh, which means the user must decide to sign into the proper transaction. Each WM transaction will then be configured with a separate Labor Activity.

Labor Management (LM) Interface with DCB (New Store)

Integrated with RF Put to Store – DCB transactions, Labor Management serves as a means of tracking throughput (oLPN/hour) and standard time of a user in performing Put to Store – DCB, or distro, functions. The user(s) involved in the Put to Store –DCB process is timed from his/her first RF interaction, until the user ends the assigned task (using RF) or exits the option. Data from events are captured within LM, and it is available to generate throughput and performance reports

During the Put to Store – DCB process the RF option touch point program stores and sends the following type of information to Labor Management:

* Start date and time, User ID, Vehicle, and Activity name.
* oLPN(s), item information, quantity, and location information.
* Through the use of application criteria the following information is configured:
  + Location attributes
  + Item/Item attributes
* End date / time for packing the oLPN in Retail.
* The first LM detail message will be created to send the previous known location of the user to enable travel calculations.
* A detail message record is written for every location visited by the user in travel sequence, even if no item/qty was actually pulled
* If a location is visited more than once by a user (i.e. skipped and revisited), then a 010 record is created for each visit indicating the item and qty packed at each visit.

As part of the configuration, the following Elements will need to be configured to give the proper throughput and standard time credit:

* Carton Open Flag
* oLPN
* Units
* Travel Time
* Item Type
  + Flat
  + GOH
  + Multi
* PFD
* Location

**Potential Extension:**

If the ability to discern Carter’s versus OshKosh Put to Store – DCB is a requirement, then either an extension will be required to handle changing the activity name within LM (Dynamic Activity), or separate WM transactions are required. One for Carter’s and one for OshKosh, which means the user must decide to sign into the proper transaction. Each WM transaction will then be configured with a separate Labor Activity.

# OLPN WEIGHING

OLPNs arrive from PTS to the sealing and weigh station. The operator weighs the oLPN and enters the UI option ***Weigh and Manifest OLPNs.*** The operator scans the oLPN and the scale updates the weight. For a parcel oLPN, WM updates the actual oLPN weight, calculates the shipping charges for the oLPN, adds the oLPN to the current open manifest and generates a FedEx shipping label for the oLPN. The oLPN status is updated to ‘40’ (Manifested). For non-parcel oLPNs, WM simply updates the actual oLPN weight and updates the oLPN status to ‘30’ (Weighed).

OLPNs continue on the conveyor from the weigh station to the shipping dock diverts.

# PARCEL PROCESSING

Parcel oLPNs are diverted to the appropriate FedEx fluid load-shipping lane and are loaded on the trailer. Parcel manifests are closed through the UI – ***Manifests***, as discussed in the *Non-Retail Outbound Processing* flow. For each store with oLPNs on the manifest, WM creates a shipping distribution order and moves the shipped oLPNs from the perpetual distribution order for the store to the shipping distribution order. WM generates invoice records for the oLPNs when the manifest is closed.

# NEW STORE PROCESSING

## Anchor Retail OLPNs

Stockbridge: OLPNs for new stores are diverted down a specific shipping lane based on the carrier assigned to the oLPN. Once the oLPN arrives, the operator scans the oLPN in the RF option ***Anchor OLPN***. If the oLPN is the first to arrive for the store route, WM prompts the operator for an anchor location, and then prompts for a pallet within the location. Each additional oLPN is then directed to this location.

Full pallets for the route are moved to the staging area through the RF option ***Locate Pallet***.

Hogansville: The operator unloads the oLPNs and ‘pre-sorts’ the cartons based on the destination location. The next step is to build an outbound pallet by scanning the oLPN with the option RF ***Palletize LPNs***. User then locates the pallet to a pack and hold location by using ***RF Locate Pallet*** option.

## Create Retail Load

To prepare for a store opening, the distribution center sends the pallets staged within the pack & hold area in a single shipment to the store. Operators create loads by entering the ‘Load Route’ action within the UI – ***Retail Route Maintenance***. WM then creates a route header, the load and assigns the oLPNs in staging to the load. The ship via may also be changed at this time. Load creation also creates tasks to pull the pallets from pack & hold. This is similar to the *Outbound – Distribution order processing*, but please note retail loads are unique from non-retail loads.

## Load Trailer

Load tasks are completed through the RF option ***Select Task.*** Operators are directed to pick up pallets within the staging area and are directed to the appropriate dock door for the load. As oLPNs are loaded onto the trailer, WM updates the oLPNs status to ‘50’ (Loaded on Truck).

## Close Retail Load

After all oLPNs are loaded and the trailer door closed the supervisor selects Close shipment through the ***Shipments*** screen. Close Load automatically triggers invoicing for all distribution orders on the load and generates the outbound shipping documents (i.e., bill of lading, etc). For each store with oLPNs on the load, WM creates a shipping distribution order and moves the shipped oLPNs from the perpetual distribution order for the store to the shipping distribution order. WM generates invoice records to the host that include:

* Outbound Load File
* Outbound Stop File
* Distribution order Headers and Details with corresponding shipped quantities updated
* OLPN Headers and Details

VI. INVENTORY CONTROL

# CYCLE COUNT

## Cycle Count Task Rules

Cycle counts may be performed on a regular basis. The option ***Cycle Count Task Rules*** is used to setup a cycle count schedule and to generate cycle count tasks for a range of reserve locations, case pick locations, or items based on how long it has been since the items in the group were last counted. For example, high value or velocity items may be configured to be counted more frequently than other items in the warehouse. When the rules are initiated, cycle count tasks are generated for any location that satisfies the rule criteria.   As with other WM rule-based transactions, rules can be enabled or disabled as needed.

## Cycle Count Triggers

WM generates cycle count tasks as a function of configured “triggers” which are based on pre-defined warehouse events. The UI – ***Cycle Count Triggers*** option is used to configure which triggers are activated (directed putaway alternate, skipped replenishment pull, etc.). Carter’s needs the ability to configure the RF ***Cycle Count*** option with different transaction parameters when cycle counting pallets versus cases in reserve locations. In order to do this when the Cycle Count Triggers generates a cycle count reserve task, a different task type and task priority is created for both types of reserve locations

## Cycle Count Reserve

Operators use the WM option RF – ***Cycle Count Reserve***or RF – ***Select Task*** to perform cycle count tasks on Reserve inventory. An operator scans the location being counted, followed by each LPN. If the operator enters an LPN different than what WM believed to be in the location, a variance message is displayed to the operator. Once the operator counts the same quantity twice, WM logs the count, allowing the operator to proceed to the next count.

## Cycle Count Active

To perform a cycle count task on active inventory, the operator uses the RF ***Cycle Count Active***or RF ***Select Task*** option to scan the Active location and item, and key the number of packs in the location. If a variance exists, WM displays a message to the operator. Once the operator counts the same quantity twice, the system logs the count variance.

## Suspend Cycle Count Results

From within the ***Cycle Counts*** option the operator can view cycle counts by either location or item. After reviewing, the operator can either reject or process the cycle count records. This gives the reviewer the ability to make sure that the cycle counts performed are within defined unit or value limits before final updates are sent to the host and updated in WM.

For reserve location cycle counts, WM locks any LPN not scanned when a location is cycle counted with a ‘Lost in Cycle Count’ lock code. If an LPN with a ‘Lost in Cycle Count’ lock code is counted in a location, the lock code is removed and the location is updated with the new LPN. WM generates inventory adjustment (300 01 and 606 02) PIX transactions for updates in allocatable and unallocatable LPN inventory.

For active location cycle counts, adjustments to active inventory create an inventory adjustment PIX (300 04).

System Updates

WM makes the following system updates as a result of cycle count.

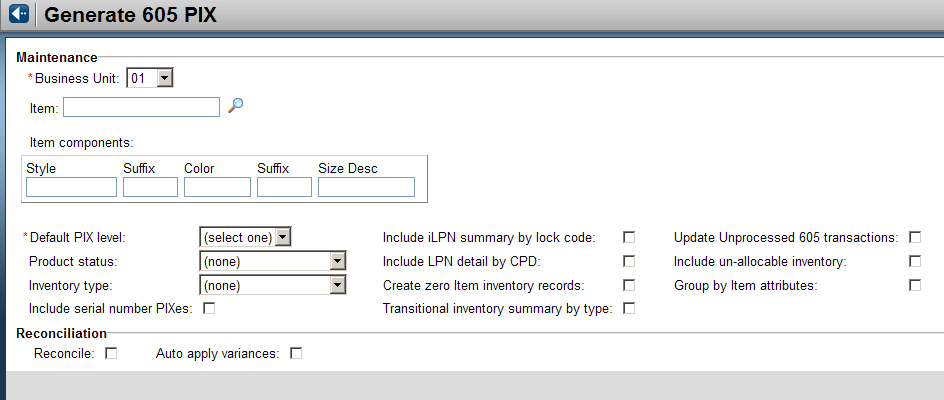
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Action** | **Type** | **From** | **To** | **Details** |
| Cycle Count | Location |  |  | Last Cycle Count date |
| Cycle Count-Active; variance | Location |  |  | Inventory increased or decreased |
| Cycle Count-Active; variance | PIX |  |  | 300 04 14 -/+ |
| Cycle Count-Resv; variance-lost iLPN | iLPN | ‘30’ Putaway | ‘10’ In Inventory Not Putaway | Locked |
| Cycle Count-Resv; variance-lost iLPN | PIX | Allocable | Unallocable | 300 01 05 –  606 02 05 + |
| Cycle Count-Resv; variance-found iLPN | iLPN | ‘10’ In Inventory Not Putaway | ‘30’ Putaway | Unlocked |
| Cycle Count-Resv; variance-found iLPN | PIX | Unallocable | Allocable | 300 01 05 +  606 02 05 – |

# OTHER INVENTORY CONTROL FUNCTIONS

## Inventory Synchronization

During this process, WMOS writes 605 PIX records for every item with inventory. These PIX record the available (605 97) and unavailable inventory (605 98) in 2 separate “Summary” PIXs. The program is also configurable to create a “Detail” PIX to show the inventory by bucket (LPNs, Pick Location, and Transitional) *Please note that this snap shot and its comparison to Carter’s inventory levels is dependent on the verification all open ASNs.*

Carter’s host system (Omnia) and WM accomplish inventory synchronization using PIX transactions, in particular the 605 summary level PIX (currently run once a day). WMOS may initiate this process using either the UI option *Generate 605 PIX* or using a scheduled command line process. When executed from the UI, the options available to the user are shown below: (these options can be configured as part of the scheduled command line process as well)



Zero quantity PIXs (for items existing in the item master but not having inventory in the warehouse) can be suppressed in WM.

## Reserve Pallet Consolidation

During slower work periods in the warehouse, Carter’s may choose to perform some re-warehousing within the reserve areas. This involves identifying locations with the same item in pallet reserve and case reserve locations where the item may be combined into a single pallet and putaway in a single location, providing better utilization of reserve storage.

To identify consolidation opportunities Carter’s personnel generate reports that sort the inventory in pallet locations and case locations based upon the item number. Carter’s also provides the standard number of LPNs per pallet for an item in the item master. This is used to determine where there may not be a fully utilized location. Through these reports operators identify consolidation opportunities.

Operators drive to the appropriate location of a pallet to combine and scan the pallet in RF – ***Locate Pallet*** and locate the pallet to their equipment, temporarily. This prevents WM from allocating the inventory while it is in-transit and also allows visibility into what is currently being consolidated. If individual LPNs are scanned then the operator scans the LPNs to their equipment. The operator then drives to the location of the inventory that the pulled inventory is being consolidated with. The operator scans the cases from the pallet on their equipment to the consolidation pallet through the option RF ***Palletize Cases***.

WM transfers the LPNs from their existing pallet to the consolidation pallet and locates the LPNs to the location of the pallet. If the consolidation pallet has been pulled out of its location the operator may place the pallet back in the same location or alternatively scan the pallet in RF – ***Warehouse Putaway*** to initiate the directed putaway process.

## Maintain/Adjust LPN

Operators make LPN adjustments based on quality audit, damaged inventory, incorrect receipts, and many other miscellaneous purposes within the DC. Operators enter the fixed station option ***iLPNs*** to systematically perform these adjustments. The operator enters the LPN, item number, keys a quantity to adjust, and enters a reason code. Once confirmed, WM updates the LPN record and writes the appropriate inventory adjustment (300 01 and 606 02) PIX transactions.

## Adjust Active Inventory

Operators use the fixed station option ***Pick Locations*** to increase or decrease active inventory. This option allows the operator to select the active location, enter the adjustment, and enter a reason code. Once confirmed, WM updates the active location record and writes the appropriate inventory adjustment (300 04) PIX transaction.

## Consume LPN

Operators use the RF –***Consume Case*** option to remove an LPN from WM inventory. This option prompts the operator for an LPN number. After scanning the LPN barcode, WM updates the LPN record to status ‘95’ (Consumed) and writes inventory adjustment PIX (300 01 or 606 02) transactions.

## Create LPN

Personnel use the RF***Create LPN*** option to create an LPN within WM. An operator uses this function to create inbound LPN inventory within WM. This option prompts the operator for the blind LPN number, item number, and quantity. Upon confirmation, this option creates the corresponding LPN record in status ‘10’ (Received) and generates the appropriate inventory adjustment PIX (300 01 or 606 02).

## Recall LPN

In scenarios where existing LPN records that are located in reserve storage need to be pulled for inspection or other reservations, operators use WM ***Recall Inventory*** function to create tasks to pull the LPN records to a predefined inspection area. Personnel can recall inventory based on item number, shipment number, vendor number, etc.

## Allocate Inventory w/ Tasking

In exception scenarios, Carter’s uses the Allocate Inventory w/Tasking option to allocate inventory from reserve locations. Operators enter the specific INT (inventory need type), each required item and the associated quantity. WM then creates tasks to assign operators to pull the inventory to a specific staging location.

## Lock/Unlock Inventory

Personnel use the fixed station ***iLPNs*** option to lock/unlock a group of existing LPNs. This option allows personnel to select ranges of LPNs and the operator may filter a specific LPN range, status range, location or item number. Upon entering the selection criteria for the LPNs to lock/unlock, WM displays a list of LPNs that match the criteria entered. Personnel may select all LPNs or may select specific LPNs to lock/unlock. Upon confirmation, WM adds/removes the lock code and generates the inventory adjustment PIX transactions (606 02 and 300 01).

To unlock a specific LPN, personnel use RF *–* ***Lock/Unlock LPN***.This option prompts the operator for the lock code and the LPN to lock/unlock. Upon confirmation, WM adds/removes the lock code and generates the inventory adjustment PIX transactions (606 02 and 300 01).

Personnel use the fixed station option ***Pick Locations*** to lock/unlock specific active locations. As part of the process, WM writes inventory adjustment PIX transactions (300 04 and 606 06).

## Pack LPN from Active

Operators use the option RF***Active Pack Case from Primary*** to pack units from active locations into LPN records for relocation in reserve locations. Using a blind LPN label, the operator scans the label, active location, and keys in a quantity. Upon confirmation, WM decrements the active inventory and moves the inventory into a new LPN record represented by the blind LPN label. If the newly created LPN is to be putaway to reserve, the RF *–* ***Locate Case*** option is used as described in section 6.2.

## Audit OLPN

Outbound oLPNs in status ‘20’ (Packed) or above can be audited at random using the option RF – ***Audit OLPN***. The operator scans the oLPN barcode, and then performs a blind count of the contents of the oLPN by scanning each item barcode and entering the quantity. Upon completion, the system alerts the operator if there is a variance and prompts for a re-count. If a variance still exists after the re-count, a variance report is generated. The fixed station option ***Modify OLPN Contents*** is then used to correct any variances.

## Modify OLPN Contents

The fixed station ***Modify OLPN Contents*** option is used to adjust the contents of an oLPN that is in status ‘20’ (Packed) or above. Using this option, the operator can adjust up or down adjust the contents of the oLPN. A reason code must be specified for any adjustments. Inventory that was shorted due to a packing variance is systematically moved to a specific transitional inventory bucket, which is monitored by inventory control.

VII. MISCELLANEOUS

# RETURNS PROCESSING

The process of receiving a returned order is initiated by creating returns ASN manually in WM. The user enters the option UI – ***ASNs*** and clicks on ‘Add’ button to create ***ASN*** function from the UI. The user keys in pertinent information such as the shipment number, ship date, etc. In addition, the user must specify ‘Returned from Customer’ as the valid Inbound Shipment Origin. The user proceeds to enter item information and then saves the record. Returns ASN is created in status ‘20’ – In Transit. User then creates iLPNs for the ASN by selecting the ‘Create iLPNs’ option from the **ASN** UI.

The disposition of the returned product is done outside of WM and is a manual process. Cases are manually sorted before starting with the receiving process. The items are sorted by the following categories:

* 1st grade: for restocking in retail inventory
* 2nd grade: for shipping to seconds facility
* Product is destroyed

Receipt of returned products utilizes the option RF – ***Receive Palletize.*** Within the RF option, the operator is prompted to scan the dock door, bypass the ASN prompt, scan the pallet barcode, and scan cases to the pallet until the pallet is full. WM ties the case to the ASN to receive against, causing the status of the case to go from ‘20’ (In transit) to ‘30’ (Receiving Started).

The post receiving process involves the following:

* 1st grade inventory: The iLPNs on a pallet for this grade are putaway to active or reserve using either ***RF Locate Pallet*** (for reserve) or ***RF Fill Active*** (for active).
* 2nd grade inventory: The LPNs are taken to the QA area, where a rework lock code is applied to the LPNs. Host bridges down a Distribution order for the rework items to be shipped to second’s facility.

## RETURN TO VENDOR / DC TRANSFERS

If possible, the host sends Return to Vendor or DC-to-DC transfers to WM through the distribution order interface. These distribution orders may have a different Order Type or some other distinguishing mark. Once interfaced, the distribution orders are handled in a similar manner to traditional distribution orders in WM.

# PREPACK / ASSORTMENT CREATION / BREAKDOWN

## Assortments Tracked in WM

Assortments are tracked as a unique item, rather than as a box of the individual components of the assortment. As assortment inventory is monitored, and it is determined that additional assortments need to be assembled, Carter’s personnel allocate the required components by releasing a dummy distribution order (repackage) for the items. These component items are picked, and are shipped out via dummy shipments. Note: Reconciliation of items on the shipment in Omnia is outside the scope of the flow. The host system (e-SPS), then releases a Case Level ASN for the assortment item (parent item). The parent item (components included) is received back in the warehouse using the ***RF-Receive Palletize*** option. Operators first scan a pallet ID and then scan a case LPN, followed by the item and quantity in the case. This is repeated for each LPN of the assortment. Once a pallet is complete, operators scan the pallet in RF ***Warehouse Putaway*** and the same putaway logic is initiated as for received product.

The host system, then releases the DO for the assortment item. The actual assortment is allocated from reserve and pulled to a staging or processing area. The sorting of items to single-item cases is performed outside of WM and the RF ***Pack Case*** option is again performed to create the single-item cases of the component items.

# LEAN TIME REPLENISHMENT

Stockbridge: Lean time Replenishment is not done at Stockbridge.

Hogansville: Carter’s can choose to manually trigger ‘Lean Time’ replenishment through the fixed station option ***Lean Time Replenishment***. Personnel select a range of active locations or a range of items to replenish, and the percent full a location has to be to be considered eligible. The program triggers WM to perform the minimum/maximum analysis for each location in the specified range to determine how much inventory (if any) is needed. WM then allocates inventory to satisfy the requirements, and generates priority ‘70’ pull tasks accordingly. Prior to running a wave, personnel must cancel any outstanding lean time replenishment tasks with the fixed station option ***Cancel Task***. ***Replenish Active Pick Sites*** is setup to allocate inventory for replenishment in ascending quantity sequence (maximum number of pulls), to clear out as many reserve locations as possible.

# WAVE EXCEPTION PROCESSING

## Undo Wave

The undo wave function should be used sparingly and prior to completing picks into oLPNs associated with the wave. In order to undo an entire wave, operators use the Undo Wave button on the UI – ***Ship Wave Inquiry.***This triggers WM to undo all of the updates associated with all distribution orders in the wave, including:

* Distribution order Selection
* Distribution order Consolidation
* Inventory Allocation
* Cubing/ Cartonization
* Order Consolidation
* Routing
* MHE Downloads

## Undo Distribution order(s) for Wave

In the instance where a specific distribution order or distribution orders need to be un-selected from a wave the operator enters the UI – ***Distribution order*** option and searches for the appropriate distribution order or distribution orders. The operator then selects the Undo Distribution order from Wave action. This triggers WM to undo all of the updates associated with the specific distribution order selected, including:

* Distribution order Selection
* Distribution order Consolidation
* Inventory Allocation
* Cubing/ Cartonization
* Order Consolidation
* Routing
* MHE Downloads

Replenishment updates due to the specific distribution order(s) are not canceled, as replenishments are associated to the wave, not to specific distribution orders. It is also recommended that undo distribution order for wave is performed prior to any packing updates, as the canceled oLPNs may be difficult to locate on the MHE equipment. Any inventory packed against the oLPN must be packed into cases from transitional inventory.

## Cancel Tasks

Operators may cancel tasks by selecting the appropriate task through the UI – *Task Inquiry* and selecting the action ‘Cancel Tasks’. WM allows all tasks, except picking tasks to be canceled. Once a task is canceled, WM de-allocates the inventory and closes the task. It is not recommended to cancel tasks that are in progress, as the inventory may be difficult to locate.

# MISCELLANEOUS OLPNS

Carter’s may wish to ship items, such as supplies, that are not tracked in the distribution center to their stores, with other inventory to their stores. This is accomplished through miscellaneous oLPNs. Operators create miscellaneous oLPNs through the UI – ***OLPN Inquiry***. The operator may have WM generate the oLPN number and then associate the oLPN to a specific distribution order. If the oLPN is not associated to a distribution order, then the operator enters the ship to address information and WM creates an address only distribution order. The oLPN can then be shipped through WM’s parcel shipping process or if attached to other inventory on the distribution order through LTL and FTL shipping processes.

# ERROR MESSAGING

User can type CTRL-X, CTRL-W, CTRL-A key to get past an RF error message.

VIII. CURRENT ENHANCEMENTS

The enclosed sheet below lists out all the extensions and the current status:



| **New**  **Customization#** | **Old Customization#** | **Description** | **Functional Flow Section** |
| --- | --- | --- | --- |
| WM01 | MD34 | Put to Store Enhancement | 24 |
| WM02 | MD46 | Capture Invoice Submission | 19.4 |
| WM03 | MDX3 | Retail oLPN Type/Size – a default oLPN / type size is stored in the Facility table and all retail oLPNs are populated with the default oLPN type/size at point of closing the oLPN within the RF *Put to Store* option. | 23 |
| WM04 | MD04 | Distribution Order Mass Update – These fields include the ship dates, ship to addresses (routing will not be performed on these oLPNs during the wave), ship to DC number and freight terms. Quantity and cubing changes cannot be made after a distribution order has been waved. This option allows for individual distribution order updates and mass updates | 1.5 |
| WM05 | MD02 | OLPN and Contents, Label Substitutions – Format changes required for specific customer labels | 11.10 |
| WM06 | MD06 | Receive & Sort – Auto apply lock code to those items missing critical data elements that trigger a message to the operator. | 6.2 |
| WM07 | MD18/ MD21 | VAS oLPNs with wave – for distribution orders where Carters performs the VAS operations outside of WM before packing the oLPNs, WM allows VAS\_OLPN generation during the wave to be skipped. | 11.3 / 15 |
| WM08 | MD07 | RF VAS Tracking – Prior to initiating VAS processing determine the status of the oLPN and initiate the appropriate packing function, if required. Then if audit is also required, auto call RF Audit OLPN if this has been added as a VAS instruction. Next, continue with base VAS processing | 16.2 |
| WM09 | M026 | Changes to Create Shipments for Merchandise Div-specific assignment | 20.1 |
| WM10 | M033 | Close Load – Ship-via Validation | 20.4 |
| WM11 | MD09 | Update Ship to-addresses from distribution order notes (for consolidators) | 1.5 |
| WM12 | M031 | OLPN Content Label – Suppress Qty for Recurring Pre-pack | 11.10 |
| WM13 | MD36 | Audit OLPN – Activity Tracking at Detail Level | 16.1 |
| WM14 | MD13 | Generate Invoicing by OLPN Break Count | 2.2 |
| WM15 | M027 | BOL Print – Obtain address code from first distribution order | 20.1 |
| WM16 | MDX4 | Putaway Sequence – Last in first out from Receive and Palletize | 6.2 |

IX. REMOVED ENHANCEMENTS

| **Customization** | | **Description** | | **Functional Flow Section** | | **Comment** | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| MD08 | | VICs Bill of Lading – Provide support at the customer level (rather than warehouse level) for both the old 9 digit BOL number format and the new 17 digit VICs standard. | |  | | 18.4 | |
| MD05 | | Partial Invoicing | |  | | Base feature | |
| MD11, MD11b | | Allocation PIX Transactions | |  | | Not used | |
| MD14 | | RF Error Messages | |  | | Base feature | |
| MD16 | | End Carton Message | |  | | Base feature | |
| MD17 | | Start and End Label | |  | | Base Feature | |
| MDX1 | | Cycle count trigger tasks | |  | | Base Feature | |
| MDX2 | | Hot Pick Exception allocation | |  | | Base Feature | |
| M028 | | Pre-pack Cubing | |  | | Not used | |
| M030 | | Multi-Item Case Thread config | |  | | Base Feature | |
| M032 | | Archive Database | |  | | Not used | |
| MD22 | | Bulk Assignment Type | |  | | Base Feature | |
|  | |  | |  | |  | |
| M037 | | UI Stop Load and Freight Terms | |  | | Not used | |
| M039 | | UI Close Load user restriction | |  | | Not used | |
| M041 | | UI Carton Inq Maint Add to Customize | |  | | Not used | |
| M043 | | Kohls Masterpack | |  | | Not used | |
| M029 | | BOL Counter Type Extension | |  | | Not used | |
| M047 | | Extend the ITEM\_SECOND\_DIM field from 3 bytes to 5 bytes. | | 1.1 | | Carter’s to split DEC\_DIM into 2 fields | |
| M025 | | Store Master Bridge update – Update territory and address code as part of store master bridge | | 1.4 | | Part of Facility bridge | |
| MD23 | | Create Pack Pick Cart | | 11.11, 14.3 | | Not needed | |
| VXWR M0001 | | Pack Wave send pick messages | | 11.11 | | Not used | |
| MD48 | | Print labels for manifested cartons | | 11.10 | | Not needed for STK | |
| MD15 | | De-allocate message for RF Pull Case List – a message is displayed when the user selects any of the de-allocate keys. | | 13.1 | | Not used | |
| MD10 | | RF Anchor Carton – searches for all cartons with the same destination location each time a staging location is scanned. A custom message if there are no other cartons with the same destination location. | | 17 | | Not used | |

X. OPEN QUESTIONS

1. Distribution Order Profile – Carter’s uses distribution order profile at header, detail, and order notes levels. Base WM 2011, supports order profiles at header level only. This functionality is currently being enhanced, and will be part of WM 2012 release.

XI. REVISION HISTORY

| **Changed By** | **Date** | **Version** | Notes: |
| --- | --- | --- | --- |
| Nishant Chopra | 10/28/2011 | 1.0 | Initial Draft version |
| Nishant Chopra | 11/15/11 | 1.1 | Incorporated comments identified during the FF review with Carter’s |
| Nishant Chopra | 12/22/11 | 1.2 | Updated Section VIII of the document with updated extension numbers |
| Nishant Chopra | 01/11 | 1.3 | Updated Section IX, and updated Section 11.3, 11.10, 13.3, 13.4, and 13.5, 14.3 of the document |