Warehousing

User Guide

QAD

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Contents

QAD Warehousing User Guide Change Summary

The following table summarizes significant differences between this document and previous versions.

Date/Version	Description	Reference
January 2020 /v1.0	Initial release.	–

Chapter 1: Overview

This chapter discusses the following topics:

Introduction

This section describes the core aspects and integrations of warehousing.

Transactions and Programs

This section describes the transactions and programs related to Warehousing functions.

Introduction

QAD Automation Solutions: Warehouse Extension works alongside QAD Adaptive to extend the warehouse management capabilities in Automation Solutions. The solution provides the framework to design the warehouse layout and control the movement and storage of the material in the warehouse.

Integration with Other QAD Solutions

While not available in the legacy QAD Warehousing, the AS Warehouse Extension provides integration with the following:

- Serialization, which is now native in QAD EE (2016 and above)
- Production Orders
- QAD Automation Solutions: Data Collection
- QAD Automation Solutions: Label Printing
- Item Attributes (extended item and inventory characteristics)

Benefits

The AS Warehouse Extension provides clear warehousing definitions for various manufacturing and distribution environments by:

- Enabling seamless implementation by remaining non-invasive toward existing schema.
- Providing a scalable solution that can handle the complexities of several multi-site warehouses down to the simplicity of a single-site warehouse.
- Improving Automation Solutions to meet the customers' requirements in complex warehousing and material handling processes by providing a deeper system organization of a physical warehouse.
- Improving space and labor utilization.
- Minimizing the total travel distance in the warehouse while performing inventory movements.
- Enabling users to record large- and small-scale activity.
- Minimizing administration intervention.

Base and Advanced Functionality

The AS Warehouse Extension is made up of a base and advanced functionality. Base functionality includes extended layout functions that allow you to define a physical warehouse on a very detailed level. Advanced functionality includes event management, put-away and picking logic, and a rules engine and KPI reporting

Base	Advanced
Layout and simple capacity	Layout and robust capacity
Item layout associations	Item layout associations
	Material routing and algorithms
	Request programs Event/task status, history, metrics

Transactions and Programs

Transactions

Transactions resulting from AS Warehouse Extension functions are listed in the following table:

Table 1.1 Warehousing Extension Transactions

Request Type	Type Code	Description
Picking Request	PICK-SO	Picking Sales Order
	PICK-DO	Picking Distribution Order
Putaway Request	PUT-TR	Inventory Putaway requested in advance by Putaway Serial Request Program (3.25.8.1)
	OTF-TR	On the Fly Inventory Putaway (real-time inventory transfer on the shop floor)
Replenishment Request	PICK-RE	Replenishing Min-Max Points by Replenishment Request program (3.25.8.5)
	PICK-RE	Line-side replenishment request by Production Replenishment Request (3.25.8.7)

Task Types

The following task types are supported in the standard system:

Table 1.2 Warehousing Task Types

Source Demand	Task Type
Picking	PICKING
Replenishment	REPLEN
Putaway	PUTAWAY
Transfer	TRANSFER

Algorithm Types

The following warehousing algorithm types are included in the standard system:

Table 1.3 Warehouse Algorithm Types

Algorithm Type	Name	Details
Location Find	LF	Used for finding target locations, where the inventory will be transferred to, that are located within functional areas (noncapacity driven), such as shipping, receiving, and so on
Putaway	PA	Used for finding target locations, where the inventory will be transferred to, that are located within non-functional areas (capacity driven), such as stock.
Picking	PK	Used to find materials to be transferred.
Inspection	QA	Used to determine when inspection of items is required, as well as the frequency.

Algorithms

The following algorithms are provided with the standard system based on different types:

Table 1.4 Warehouse Algorithms

Algorithm Type	Algorithm
Location Find (LF)	101 - Find first functional location in first Storage Zone 102 - Find first empty functional location 201 - Merge with same Shipper/Picklist 202 - Merge with same Order 203 - Merge with same Shipping Address 204 - Merge with same Carrier 205 - Merge with same Ship Via
Putaway (PA)	101 - Find first storage location 102 - Find first empty storage location 103 - Find first location with same Item 104 - Find first location same Item/same Lot 111 - Find first dedicated storage location 112 - Find first dedicated empty storage location 113 - Find first dedicated location with same Item 114 - Find first dedicated location with same Item/lot
Picking (PK)	101 - Pick by Date 102 - Pick by Expire Date 103 - Pick by Lot/Serial 104 - Pick by Location 121 - Pick by Commission Date 122 - Pick by Commission Date Pick Full Packs only 123 - Pick by Commission Date Allow LTF Packs No other picks/tasks 201 - Pick by SZ Pick Level by Date 202 - Pick by SZ Pick Level by Expire Date 203 - Pick by SZ Pick Level by Lot/Serial 204 - Pick by SZ Pick Level by Location

	221 - Pick by SZ Pick Level by Commission Date 222 - Pick by SZ Pick Level Commission Date Pick Full Packs only 223 - Pick by SZ Pick Level Comm Date Allow LTF Picks Single Task Only
Inspection (QA)	101 - Always Inspect when inspection Required 102 - Inspect when inspection Required only every X days 103 - Inspect when inspection Required only every X receipts

Warehousing Views and Browses

The following table lists the Warehousing-related programs and browses:

- Warehouses
- Warehouse Areas
- Storage Zones
- Work Zones
- Warehouse Locations
- Warehouse Location Capacity
- Warehouse Location Items
- Storage Zone Lists
- Warehouse User Groups
- Warehouse User Assignments
- Warehouse User Work Zone Assignments
- Warehouse Items
- Warehouse Item Pack Code Exceptions
- Replenishment Lists
- Replenishment Locations
- Warehouse Algorithms
- Warehouse Algorithm Assignments
- Warehouse Transaction Types
- Material Routings
- Material Routings Assignments
- Warehouse Task Types
- Warehouse Alternate Task Types
- Warehouse Task Type Assignments
- Warehouse Pre-Shippers/Shippers
- Warehouse Jobs
- Warehouse Tasks
- Warehouse Job History
- Warehouse Task History
- Warehouse Production Picklists
- Warehouse Task Delete & Archive
- Warehouse Inventory Detail
- Warehouse Inventory Transactions
- Warehouse Serial History
- Warehouse Serials

- Warehouse Serialized Inventory

Chapter 2: Setup

This chapter discusses the following topics:

Setup Overview.

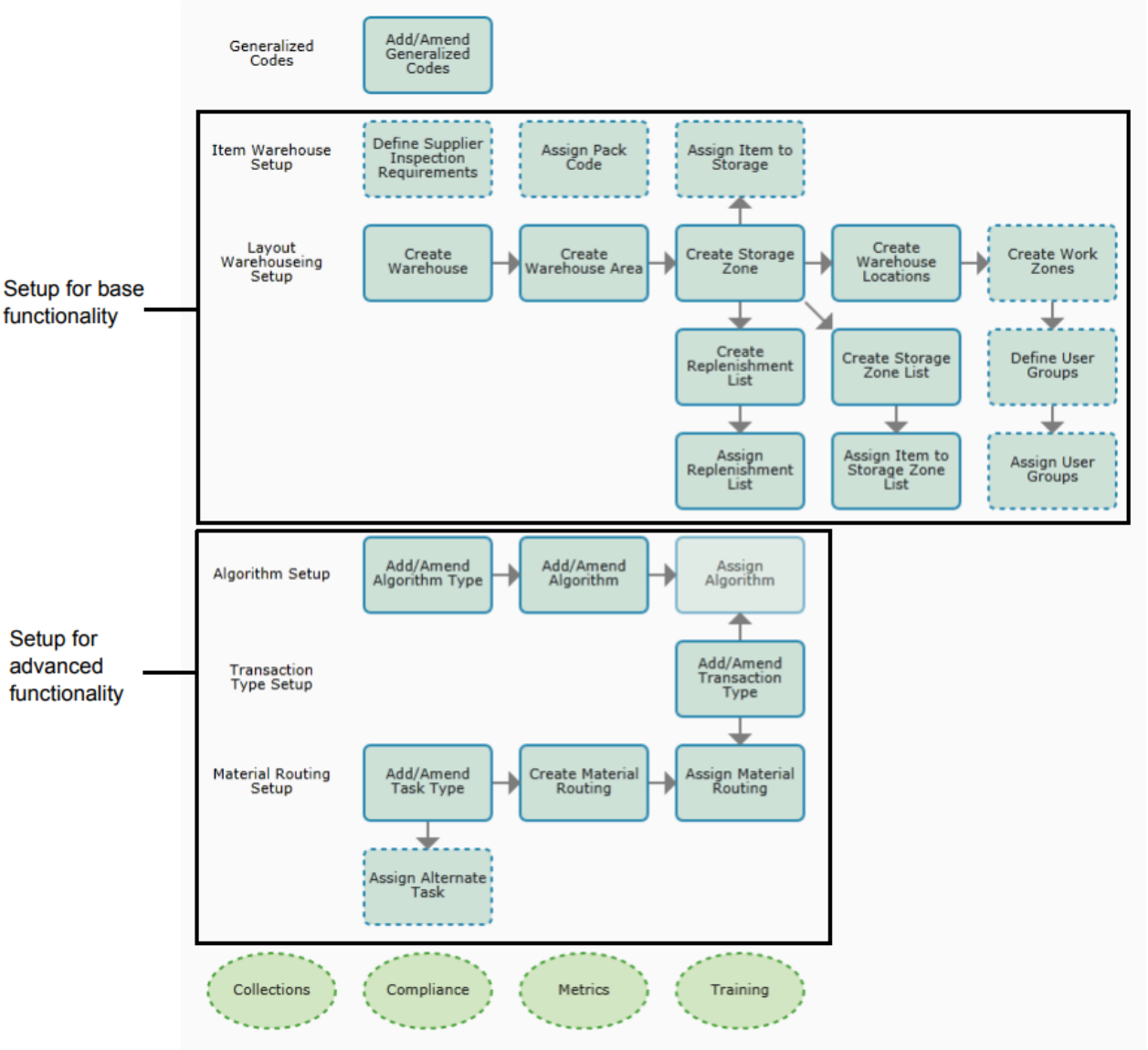
Setting up Base Functionality - Warehouse Layout

Setting up Advanced Functionality - Material Flow Management

Setup Overview

Warehousing is made up of a base and advanced functionality. Base functionality includes extended layout functions that allow you to define a physical warehouse on a very detailed level. Advanced functionality includes event management, put-away and picking logic, and a rules engine and KPI reporting. The following process map shows the setups required for Warehousing.

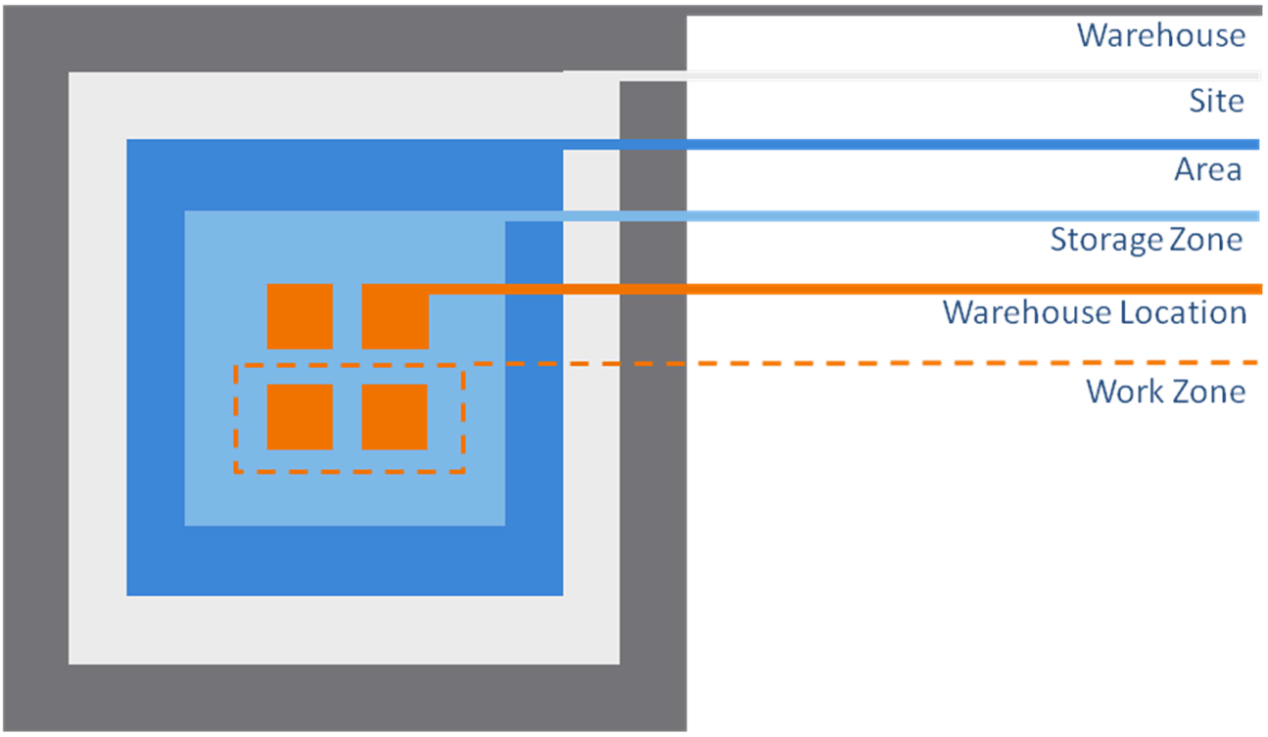
Fig. 2.1 Warehouse Extension Setup Process Map



Setting up Base Functionality - Warehouse Layout

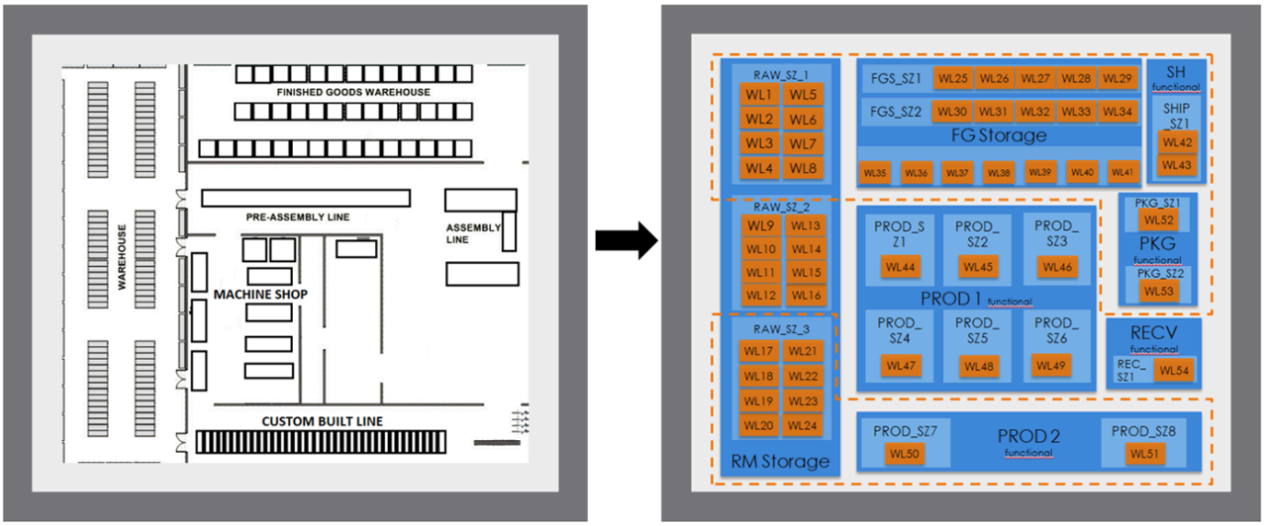
The base functionality in Warehousing provides an advanced system to organize the physical warehouse. QAD provides basic inventory management capabilities through the use of sites and locations.

Fig. 2.2 AS Warehouse Extension Layout Elements



In Warehousing, users are able to define physical warehouses on a more detailed level, which helps optimize material handling. Using the layout functionality, the user is able to define the layout levels, such as site/domain, warehouses, areas, storage zones, work zones, user groups, warehouse locations, and warehouse items, which work alongside the existing site and location architecture. With these advanced tools, companies have the foundation for organizing complex warehouse management and its inventory movement. These layout levels enable more intelligent, dynamic, and agile material handling. Ultimately, inventory will still be associated with a site and location; however, the additional layout levels will enable better organization.

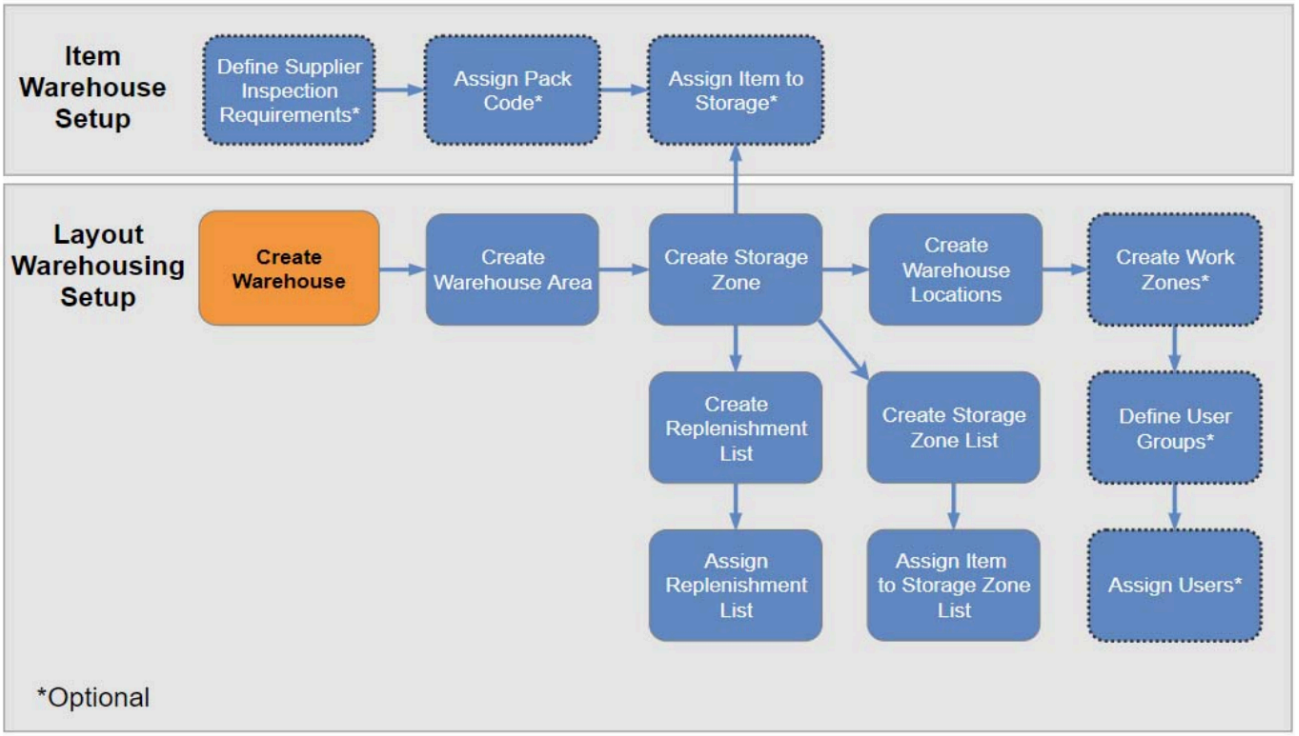
Fig. 2.3 Example of a Warehouse Layout Reflected in Warehousing



The following programs are used to define warehouses and warehouse locations:

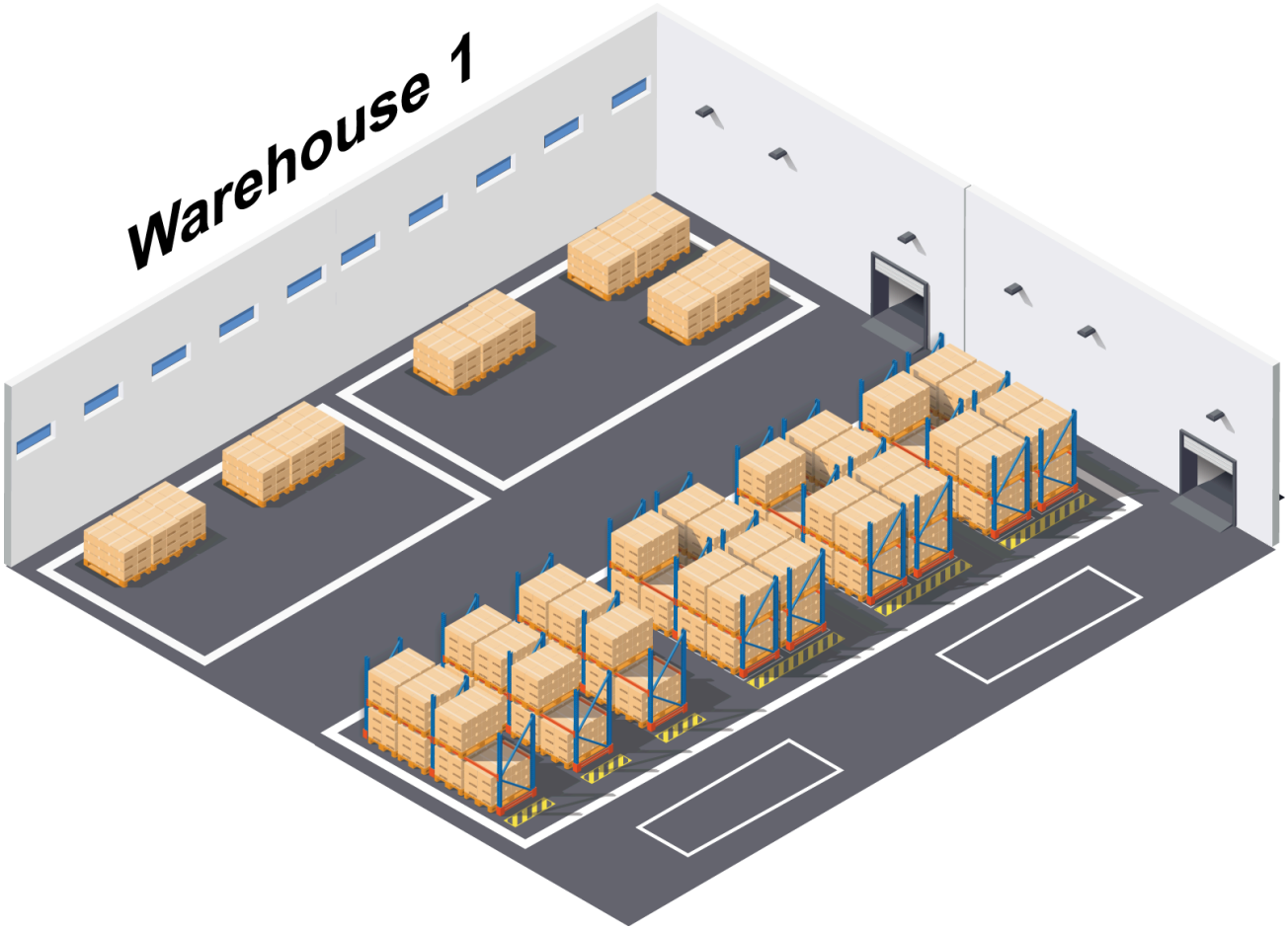
- Warehouses
- Warehouse Areas
- Storage Zones
- Replenishment Lists
- Replenishment Locations
- Storage Zone Lists
- Warehouse Locations
- Work Zones
- Warehouse User Groups
- Warehouse User Work Zone Assignments
- Supplier Items
- Pack Codes
- Items
- Item Storage Maintenance

Defining a Warehouse



A warehouse is defined as a physical building in which goods are stored and managed (received, moved, stored, and shipped).

Fig. 2.4 Warehouse Layer



Usually, the concept of the warehouse is similar to the definition of a site. There are use cases where users manage inventory in a single site but in multiple physical buildings. Some of the use cases include:

- Companies that lack space so they require multiple physical buildings.
- Companies that have a dedicated building that stores incoming material and another building for outgoing finished products.
- Companies that leverage 3PL warehouses to handle excess inventory.

These use cases require a single site to simplify order management, costing, planning, and other core business processes.

There are also use cases where companies manage inventory in multiple sites yet the stock is received, stored, and consumed using the same buildings or production resources. Some of the use cases include:

- Companies that run joint venture projects in the same facilities.
- Companies that segregate P&L based on key markets served.
- Companies receiving subsidies for specific product lines.
- Companies that must satisfy specific insurance or industry regulations.

In some cases, these different entities are defined in different domains, but the goods are physically stored in the same warehouse.

Warehouses

Use Warehouses to define warehouses and associate them to sites. Each warehouse must be linked to at least one site. Users have the option of linking a warehouse to multiple sites, regardless of their domain. For example, users can link a warehouse to multiple sites in different domains or users can link a warehouse to multiple sites in a single domain.

This function also allows users to activate or deactivate warehouses that are no longer used.

Warehouse. Enter an ID that uniquely identifies the warehouse. When using warehouse programs, you are required to enter an existing warehouse ID to maintain information relating to a specific warehouse.

Description. Optionally, enter a brief description of the warehouse. The description displays in lookups and various reports so that users can identify it.

Address. Enter the address of the warehouse. This field is for reference only.

Note: Addresses for the company are set up using Addresses.

Default Priority. Enter the default priority that is assigned to the tasks in the warehouse. This value is used in cases when Material Routing does not have a priority set.

Complete Option

Fail Option

Fail Status

Active. Select the checkbox to activate the warehouse so that it uses all the warehouse functions. Clear the checkbox to deactivate the warehouse.

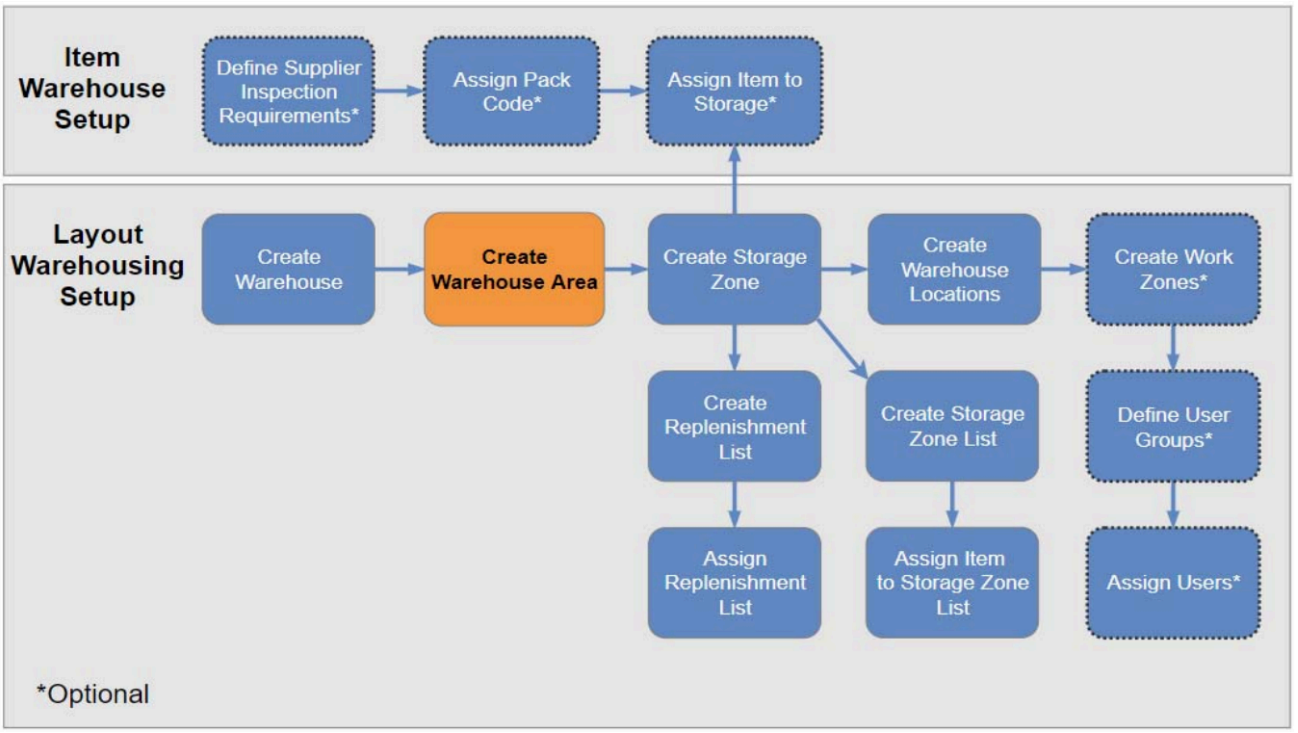
Task Type. Enter the default task type that will be assigned to the tasks in the warehouse. This value is used in cases when Material Routing does not have a Task Type set. It is recommended that you enter a generic task type, such as “Transfer.” This is a mandatory field.

Bulk Group

Site. Enter the site that will be linked to the warehouse.

Note: The warehouse can have one or more sites linked to it, and one site may be linked to one or more warehouses. The sites may belong to the same domain or different domains.

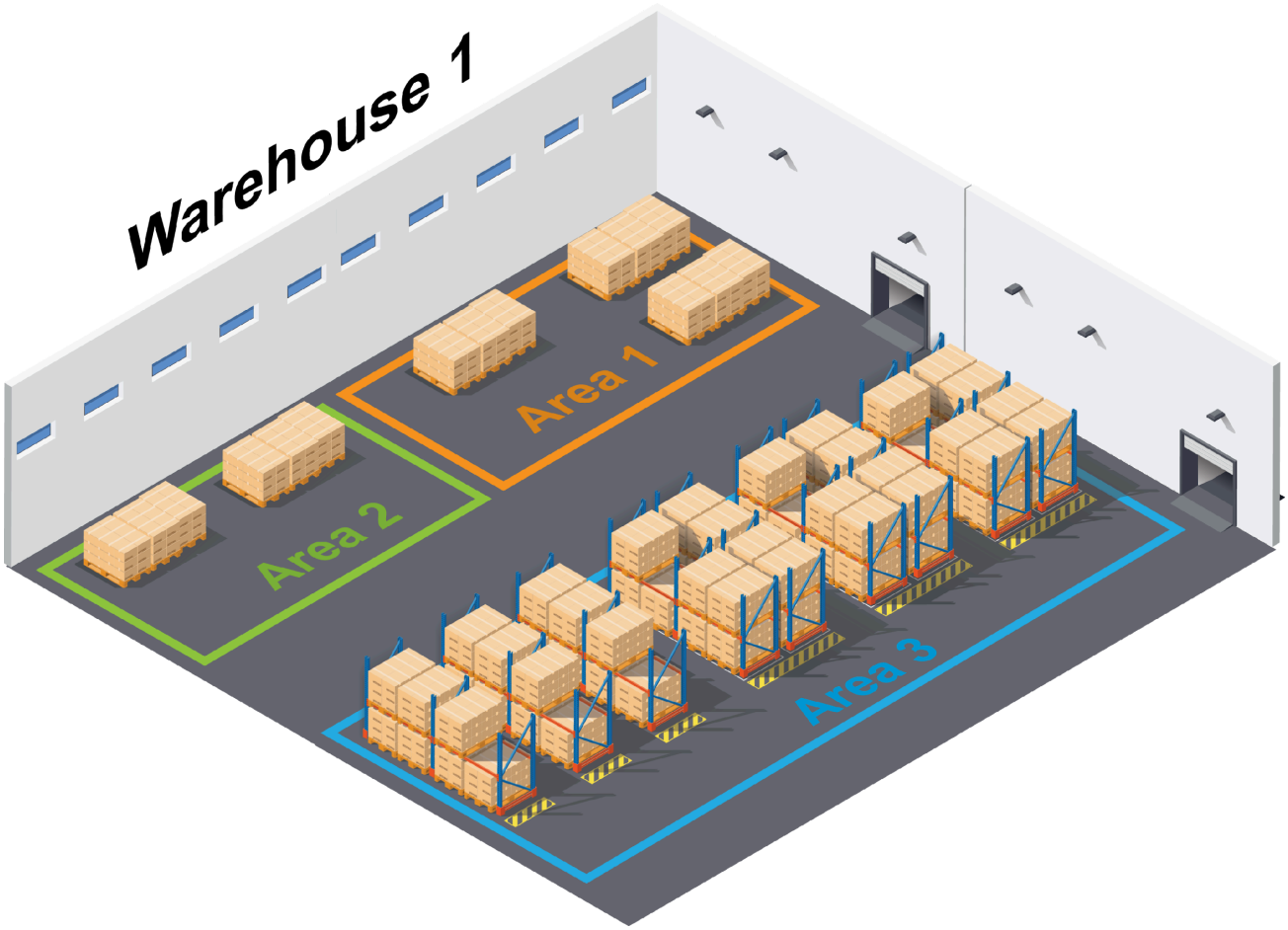
Defining a Warehouse Area



Warehousing allows you to designate warehouse areas, which reflect a physical space in the warehouse where specific actions are performed, such as storing in the storage area or producing items in the production area. This functionality allows users to define how materials move (flow) through the warehouse depending on what type of process is initiated.

Areas can be set as functional or non-functional to indicate if the area is driven by capacity or not. In a non-functional area, inventory might be initially stored for a longer period of time, such as a storage area. In a functional area, inventory is stored temporarily due to the nature of processes in the area, such as a shipping or receiving area.

Fig. 2.5 Warehouse Area Layer



Warehouse Areas

Use Warehouse Areas to define areas and associate them to warehouse IDs. When defining an area, users are able to:

- Specify if the area is non-functional and driven by capacity, such as storage.
- Specify if the area is functional and not driven by capacity, such as shipping, receiving, inspection, and so on.
- Enable or disable issues, receipts, inbound returns, outbound returns, picking, putaway, and mixed statuses for all zones.

Warehouse. Enter the ID that identifies the warehouse you want to update.

Area. Enter an ID that identifies the area you want to modify or create.

Note: You cannot associate an area to multiple warehouses.

Note: You cannot delete an area to which storage zones are assigned. Before deleting a toplevel area layer, all lower layers need to be unassigned or deleted.

Description. Optionally, enter a brief description of the area. The description displays in lookups and various reports so that users can identify it.

Functional. Specify if the area is functional or non-functional:

- Selected. Select the checkbox to define the area as functional and not driven by capacity, such as Shipping, Receiving, Inspection, and so on. In a functional area, the system uses locationfind algorithms to select locations when stock is moved into that area.
- Cleared. Clear the checkbox to define the area as non-functional and driven by capacity, such as storage. In a non-functional area, storage capacity and travel sequence considerations are important to optimize warehouse space and usage of labor in the warehouse. The system uses putaway algorithms to select locations when stock is moved into a non-functional area.

Allow Issues. Specify if inventory can be issued out of the system from locations in this area. Select the checkbox if stock can be issued from locations in this area. Generally, you limit issues to specially designated areas, such as goods-out.

Note: This setting applies to all of the lower-level storage zones for the area. Use Storage Zones to overwrite the default values.

Note: The actual setting of assigned zones is displayed in the Current field. For example, if “MIX” is displayed in the Current field for the Exclude from Picking setting, it means that some of the zones assigned to the chosen area allow for picking and other zones do not. If “YES” is displayed in the Current field, it means that all zones under the chosen area are excluded from picking.

Allow Receipts. Specify if inventory can be received from outside the system into locations in this area. Select the checkbox if stock can be received into locations in this area. Generally, you limit receipts to specially designated areas, such as goods-in.

Note: This setting applies to all of the lower-level storage zones for the area. Use Storage Zones to overwrite the default values.

Note: The actual setting of assigned zones is displayed in the Current field. For example, if “MIX” is displayed in the Current field for the Exclude from Picking setting, it means that some of the zones assigned to the chosen area allow for picking and other zones do not. If “YES” is displayed in the Current field, it means that all zones under the chosen area are excluded from picking.

Allow Inbound Returns. Specify if inventory can be received into locations in this area as part of a returned issue. Select the checkbox if stock returned from a customer can be placed in locations in this area. Generally, you limit incoming returns to specially designated areas, such as goods-out returns or rejects.

Note This setting applies to all of the lower level storage zones for the area. Use Storage Zones to overwrite the default values.

Note The actual setting of assigned zones is displayed in the Current field. For example, if “MIX” is displayed in the Current field for the Exclude from Picking setting, it means that some of the zones assigned to the chosen area allow for picking and other zones do not. If “YES” is displayed in the Current field, it means that all zones under the chosen area are excluded from picking.

Allow Outbound Returns. Specify if inventory can be issued from locations in this area as part of a returned receipt. Select the checkbox if stock to be returned to a supplier can be issued from locations in this area. Generally, you limit outgoing returns to specially designated areas, such as goods-in returns or rejects.

Note This setting applies to all of the lower-level storage zones for the area. Use Storage Zones to overwrite the default values.

Note The actual setting of assigned zones is displayed in the Current field. For example, if “MIX” is displayed in the Current field for the Exclude from Picking setting, it means that some of the zones assigned to the chosen area allow for picking and other zones do not. If “YES” is displayed in the Current field, it means that all zones under the chosen area are excluded from picking.

Exclude from Picking. Specify if inventory can be excluded from picking. Select the checkbox in order to exclude the area from picking.

Note This setting applies to all of the lower-level storage zones for the area. Use Storage Zones to overwrite the default values.

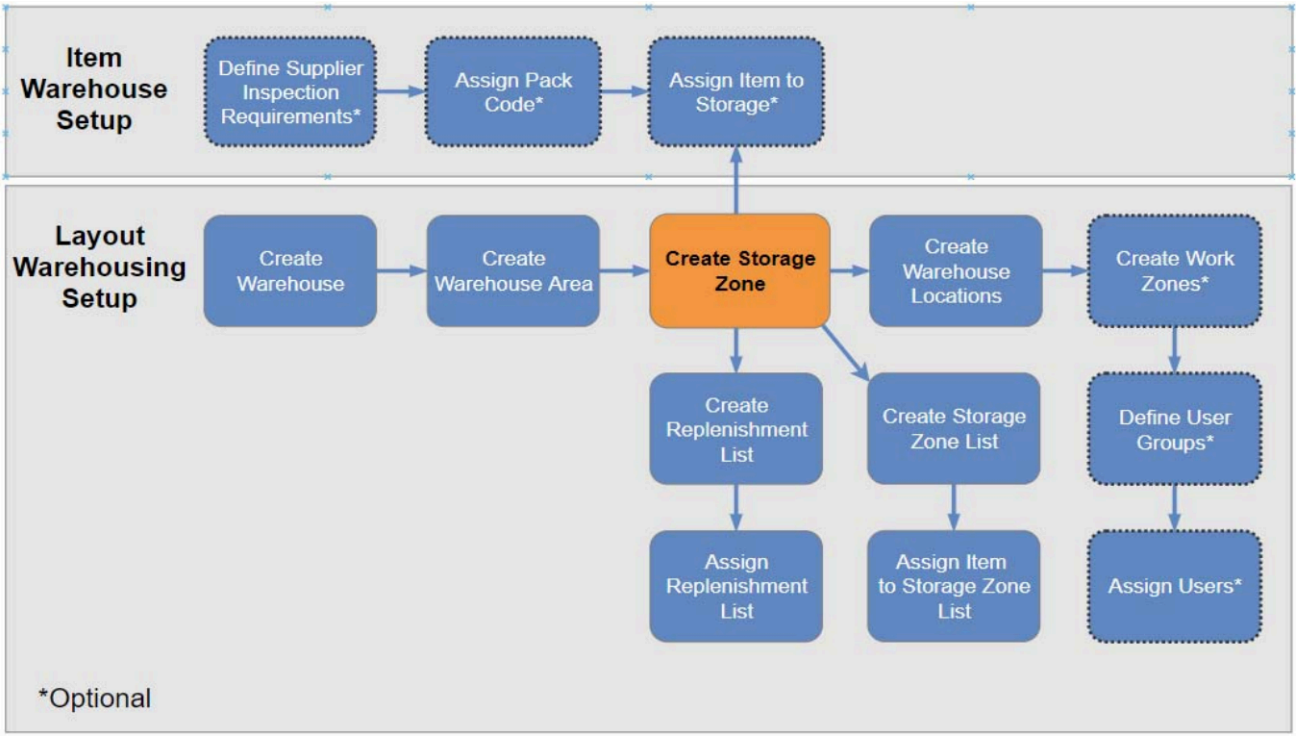
Note The actual setting of assigned zones is displayed in the Current field. For example, if “MIX” is displayed in the Current field for the Exclude from Picking setting, it means that some of the zones assigned to the chosen area allow for picking and other zones do not. If “YES” is displayed in the Current field, it means that all zones under the chosen area are excluded from picking.

Allow Mixed Status Codes. Specify if the area can contain inventory with a mixture of different status codes. Select the checkbox in order to allow mixed status codes.

Note This setting applies to all of the lower-level storage zones for the area. Use Storage Zones to overwrite the default values.

Note The actual setting of assigned zones is displayed in the Current field. For example, if “MIX” is displayed in the Current field for the Exclude from Picking setting, it means that some of the zones assigned to the chosen area allow for picking and other zones do not. If “YES” is displayed in the Current field, it means that all zones under the chosen area are excluded from picking.

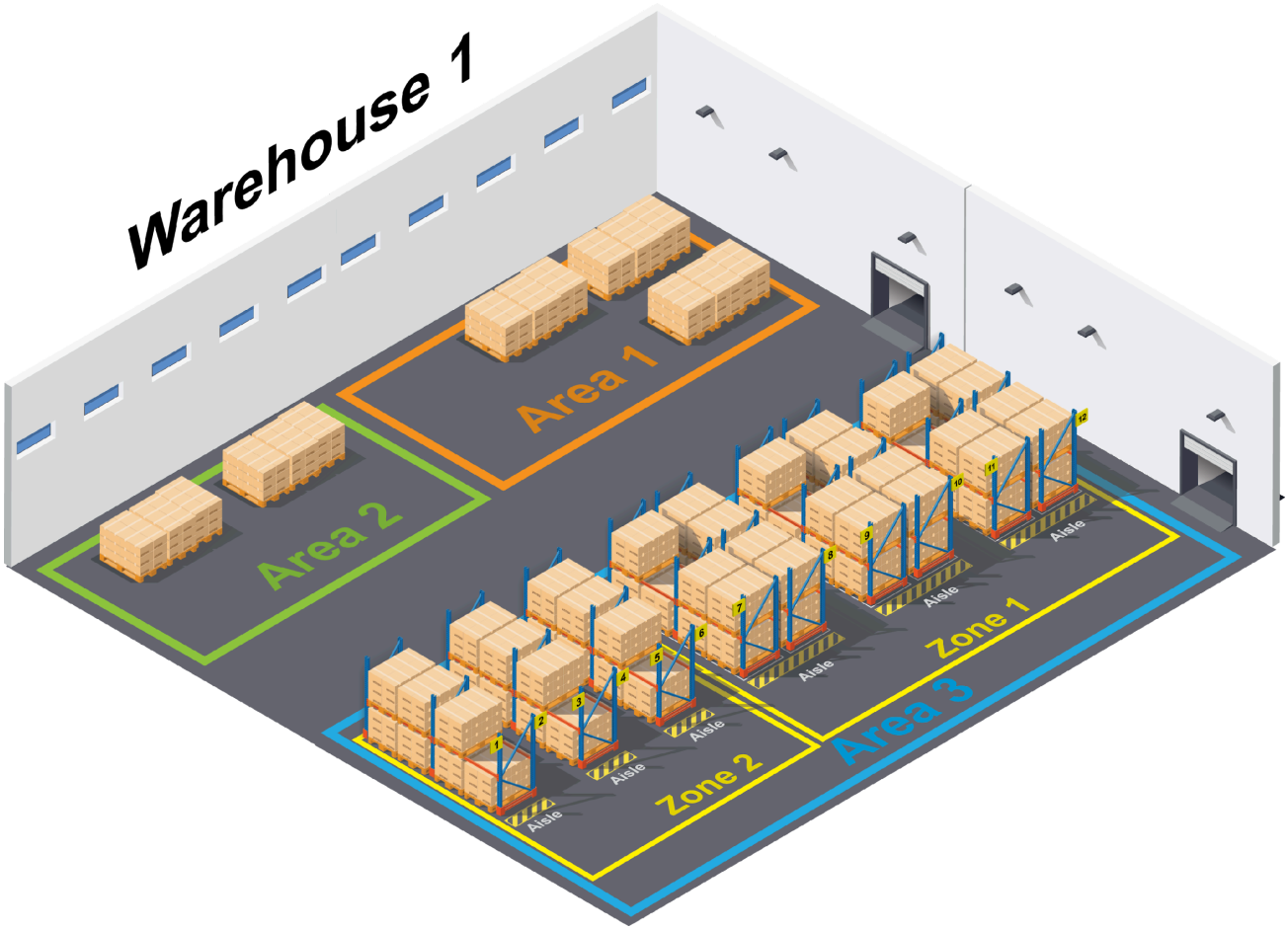
Defining a Storage Zone



A storage zone is a subelement of an area (storage/throughput/production zones/super markets). When defining a storage zone, users can create a set of requirements and rules within which the movement of inventory is managed.

For example, users can define specific actions to be performed in the storage zone, such as pack decommission. In this use case, when the pack enters this storage zone, the pack is automatically decommissioned. Users can also define specific transactions to be performed inside the storage zone, such as receipt transactions. Or, users can define a storage zone to allow for the mixing of item numbers, lots, or pack codes.

Fig. 2.6 Warehouse Zone Layer



Storage Zones

Use Storage Zones to define storage zones and associate them with warehouses and areas. When defining a storage zone, users are able to:

- Enable or disable issues, returns, inbound returns, outbound returns, picking, and over-picking (including setting the picking level).
- Enable or disable the mixing of inventory status codes, pack codes, items, and lots.
- Enable or disable opportunity counts.
- Establish count frequency.

Note: Whether a storage zone is functional or non-functional is determined by the area it is associated with.

Warehouse. Enter the warehouse you want to update.

Area. Enter the area to which the storage zone belongs.

Storage Zone. Enter the storage zone you want to create or modify. Note the following:

- The storage zone must be unique per warehouse and area.
- The storage zone can be assigned only to one area.
- Whether the storage zone is functional or non-functional is determined by the area it is associated with.

Storage Zone Description. Optionally, enter a brief description of the storage zone. The description displays in lookups and various reports so that users can identify it.

Storage Type. Enter the storage type for the storage zone. The storage type, which is set up in Generalized Codes, allows for the classifying of goods.

For example, the storage type can specify the storage temperature, such as cold, high, or medium. It can be set up to match the warehouse item type and be used to drive the Putaway transaction, such as pallets, boxes, or partials. The storage type can also be set to define tag/cycle counting rules, such as count masters or aggregated or count quantity or by serial.

Note: The Storage Type is not used by default and requires transaction adjusting in Automation Solutions: Data Collection.

Allow Issues. Specify if inventory can be issued out of the system from locations in this storage zone. Select the checkbox if stock can be issued. Generally, you limit issues to specially designated zones in an area, such as goods-out.

Note: This value is defaulted from the area that the storage zone is associated with and can be overwritten here.

Allow Receipts. Specify if inventory can be received from outside the system into locations in this storage zone. Select the checkbox if stock can be received. Generally, you limit receipts to specially designated zones in an area, such as goods-in.

Note: This value is defaulted from the area that the storage zone is associated with and can be overwritten here.

Allow Outbound Returns. Specify if inventory can be received into locations in this zone as part of a returned issue. Select the checkbox if stock returned from a customer can be placed in locations in this storage zone. Generally, you limit incoming returns to specially designated zones in an area, such as goods-out returns or rejects.

Note: This value is defaulted from the area that the storage zone is associated with and can be overwritten here.

Allow Inbound Returns. Specify if inventory can be issued from locations in this storage zone as part of a returned receipt. Select the checkbox if stock to be returned to a supplier can be issued from locations in this storage zone. Generally, you limit outgoing returns to specially designated zones in an area, such as goods-in returns or rejects.

Note: This value is defaulted from the area that the storage zone is associated with and can be overwritten here.

Exclude from Picking. Specify if inventory can be excluded from picking. Select the checkbox to exclude the storage zone from picking. If you select the checkbox, the other picking parameters are not relevant. Generally, you exclude from picking the storage zones in your functional areas, such as receipt, inspect, pack and dispatch so that the system does not direct users to those storage zones for sales orders and distribution orders for picking, production, and warehouse replenishment.

Note This value is defaulted from the area that the storage zone is associated with and can be overwritten here.

Putaway Type. Enter the putaway type, which specifies how the capacity is measured. It can be Unit, Pack, or Volume.

Note If the associated area is functional (not capacity driven) the Putaway Type is blank and non-updatable.

Allow Mixed Status Codes. Specify if the storage zone can contain inventory with a mixture of different status codes. Select the checkbox to allow mixed status codes.

Note This value is defaulted from the area that the storage zone is associated with and can be overwritten here.

Allow Splitting. Specify if stock can be picked from locations in the storage zone in situations where the quantity required for the pick does not match the unit of measure in which the item is stocked in the location. Select the checkbox if this unit of measure can be split into smaller units.

For example, if a location contains boxes of an item in quantities of 100 and the required picking quantity is 70, the following table shows how stock is picked when the Allow Splitting and Allow Overpick fields are selected or cleared:

Allow Overpick	Allow Splitting	Result
Selected	Selected	Pick 70 by splitting a box.
Selected	Cleared	Overpick and pick a box of 100.
Cleared	Selected	Pick 70 by splitting a box.
Cleared	Cleared	Nothing is picked from this location.

Decomm Pack. Specify if packs can be decommissioned within the zone. Select the checkbox to enable decommissioning.

An example of a storage zone where the Decomm Pack checkbox is selected, is a supermarket that stores materials for production. In this use case, when material replenishment or a smart transfer is performed, the system automatically performs a pack decommission transaction.

Opportunity Counts. Select the checkbox to specify that staff can be requested to perform cycle counts while they are at locations within this storage zone.

Count Frequency. If the Opportunity Counts checkbox is selected, enter the frequency in days with which opportunity counts can be initiated. For example,

- Enter 0 to allow an unlimited number of opportunity counts.
- Enter 1 to set the opportunity count frequency to once a day.
- Enter 2 to set the opportunity count frequency to every two days.

The setting at storage zone level defaults to individual locations within each zone.

At the Warehouse Locations level, this field is used only if opportunity counts are in use for the zone to which this location belongs.

The system stores the last count date in the Last Opportunity Count field in Warehouse Locations. The system specifies that a count be performed only when the last count date in the Last OPC field plus the number you enter in the Count Frequency field is less than or equal to today. Otherwise, a count does not occur.

The following provides three examples of when the system counts, based on the number of days you enter:

- You set the frequency to 3. A count was performed four days ago. Since that day plus 3 is less than today, the system performed a count yesterday.
- You set the frequency to 1. A count was performed yesterday. Since yesterday plus 1 day is less than or equal to today, the system counts again today.
- You set the frequency to 0 (zero). The system specifies that a count be performed each time warehouse staff pick from the location and the threshold goes below the OPC count. This is because the last date of the count plus 0 equals the last date, which is always less than today.

Allow Overpick. Specify if you can pick more stock from locations in this storage zone than specified in the Task. Select the checkbox if overpicking is allowed.

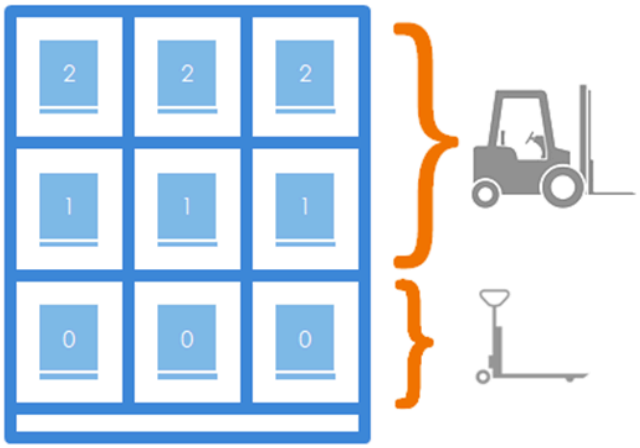
Note: This field works in conjunction with the Allow Splitting field to control whether stock can be picked from locations in the storage zone in situations where the quantity required for the pick does not match quantity on the Serial in which the item is stocked in the location.

For example, if a location contains boxes of an item in quantities of 100 and the required picking quantity is 70, the following table shows how stock is picked when the Allow Splitting and Allow Overpick fields are selected or cleared:

Allow Overpick	Allow Splitting	Result
Selected	Cleared	Pick 70 by splitting a box.
Selected	Cleared	Overpick and pick a box of 100.
Cleared	Selected	Pick 70 by splitting a box
Cleared	Cleared	Nothing is picked from this location.

Picking Level. Assign a Picking Level (rack level) to the storage zone. The picking level refers to the vertical position on a storage rack and whether it is a bottom, middle, or top shelf.

Fig. 2.7 Picking Level



Storage Pack Code. Specify the preferred pack code for the storage zone. For example, if items are stored in a specific bin or on a specific pallet in this zone, you would enter the pack code for that bin or pallet. This field only indicates which pack code is preferred. The system does not restrict the storage zone to the pack code that is entered.

Storage Pack UM. Specify the target pack UM for the storage zone.

Allow Mixed Pack Storage. Specify if mixed pack storage is permitted in this storage zone. This setting allows users to standardize a particular storage zone or if a mix of different pack codes can be stored in the same location that belongs to the storage zone.Select the checkbox to allow mixed pack storage.

Allow Mixed Items Storage. Specify if mixed items storage is permitted in this storage zone. This setting allows users to standardize a particular storage zone or if a mix of different item numbers can be stored in the same location that belongs to this storage zone. Select the checkbox to allow mixed items storage.

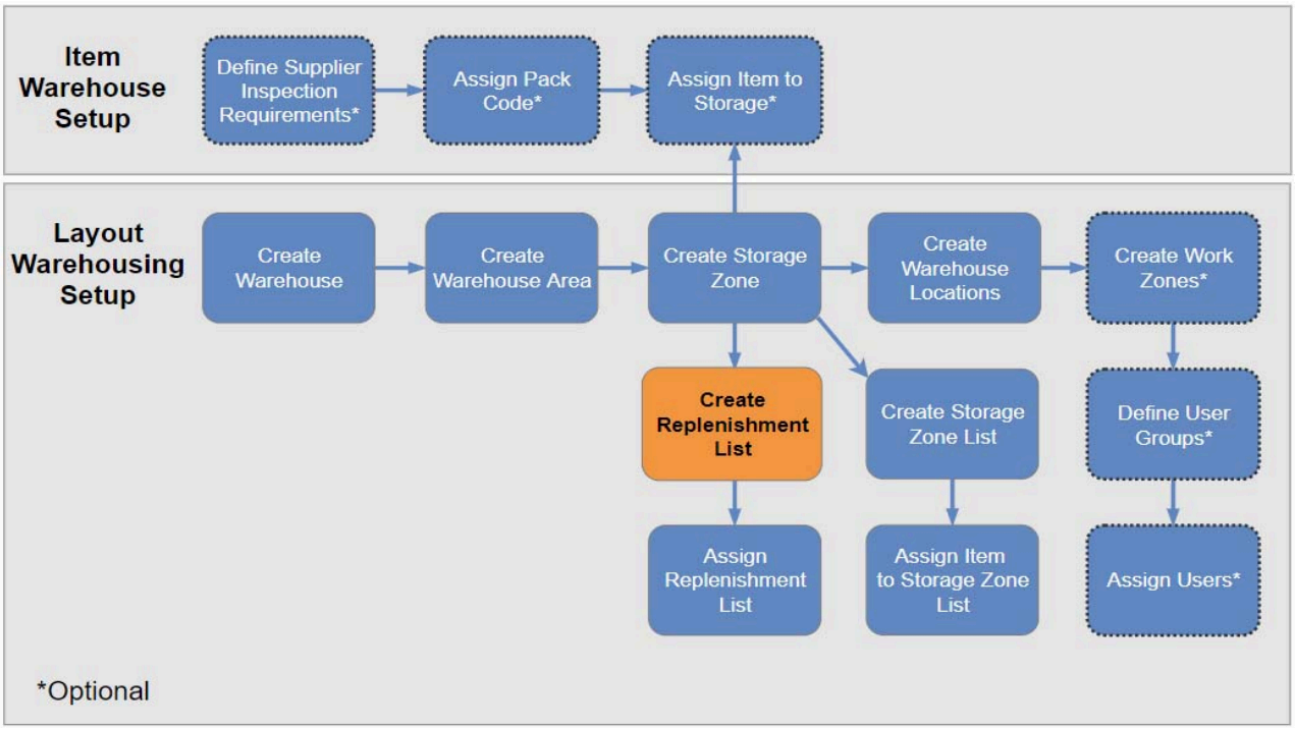
Allow Mixed Lots Storage. Specify if mixed lots storage is permitted in this storage zone. This setting allows users to standardize a particular storage zone or if a mix of different lots can be stored in the same location that belongs to this storage zone. Select the checkbox to allow mixed lots storage.

Remove Lot. Select the checkbox to remove the inventory lot (set to blank) when it is transferred into this storage zone.

Defining Groups of Target Storage Zones

Replenishment Lists

Use Replenishment Lists to create or modify a replenishment list.



The replenishment lists allows you to create a sequential list of storage zones that is used during the replenishment process to determine where to pick goods from.

Warehouse. Enter the ID that identifies the warehouse you want to update.

Replenishment List. Enter the name of the replenishment list that you want to create or modify. The replenishment list allows you to group storage zones in a sequential list by priority to determine where to pick goods from to replenish specific locations.

Description. Optionally, enter a brief description of the replenishment list. The description displays in lookups and various reports so that users can identify it.

Ignore Sequence. Indicate if you want the system to follow the sequenced list of storage zones or if you want the system to ignore the sequence.

This setting is important when inventory is picked by Commission Date, Expiry Date, or similar requirement.

- Selected. Select the checkbox to ignore the sequence and treat the list as a generic group. This ensures that rules like FIFO or FEFO are not broken because of the sequence.
- Cleared. Clear the checkbox to follow the sequenced list of storage zones. This can cause a problem when inventory, which matches the requirement better but is located in a storage zone at the bottom of the list, is considered last while inventory from a storage zone higher on the list is picked first.

Sequence. Enter the sequence number for the storage zone. The sequence number indicates the order that the system searches storage zones in order to pick inventory for the replenishment. The lowest sequence number is the first storage zone that the system searches.

To make it easier to add steps within the sequence later, standard practice is to number the sequences as 10, 20, 30 rather than 1, 2, 3.

Note: Each sequence number must be unique. You cannot list the same storage zone on two different sequences, but you can add the same storage zone to multiple storage lists. The sequence is not considered if the Ignore Sequence checkbox is selected.

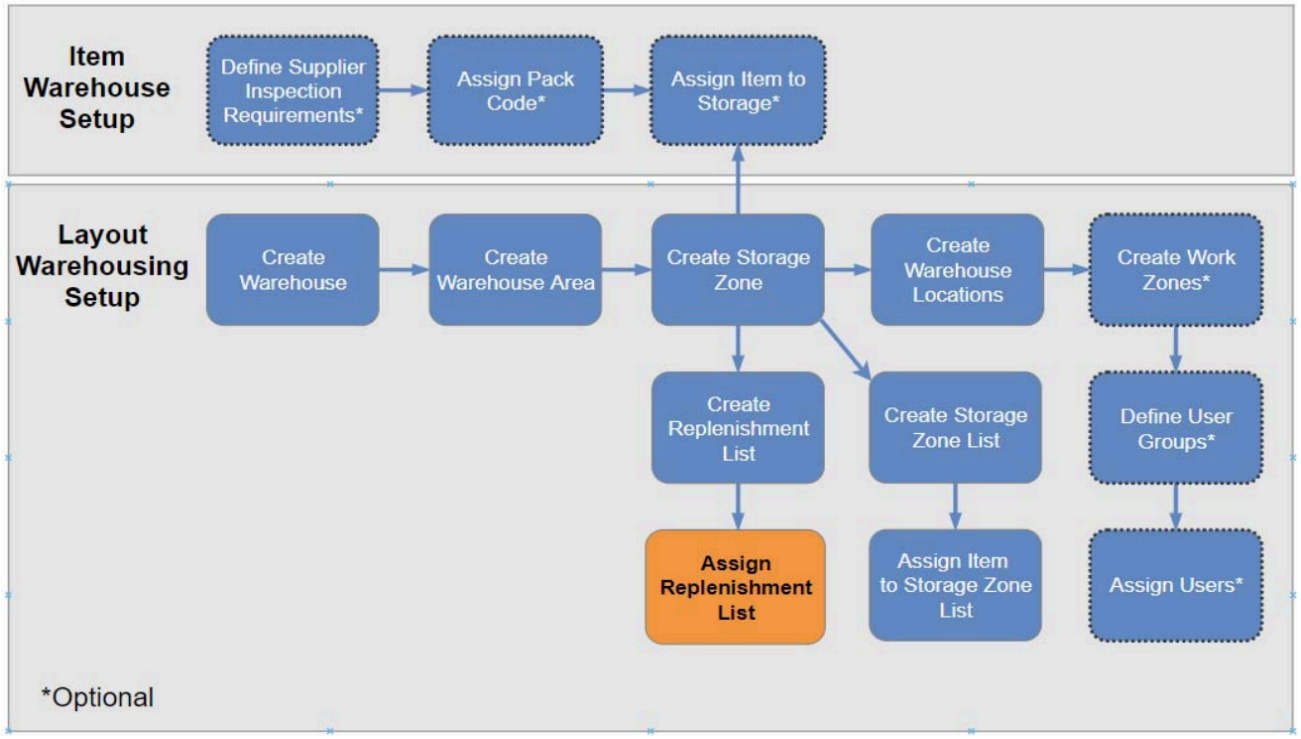
Warehouse. Enter the warehouse.

Storage Zone. Enter the storage zone.

Area. The area is automatically populated based on the warehouse and storage zone that is entered.

Replenishment Locations

Use Replenishment Locations to link a replenishment list with items, storage zones, and warehouse locations and to define the replenishment settings.



When defining the replenishment settings, you can:

- Specify the start and end dates the replenishment can occur.
- Specify the replenishment point, which is the quantity in stock that triggers the replenishment to occur.
- Specify the maximum quantity that can be replenished.

Warehouse. Enter the warehouse you want to link to the replenishment list.

Site. Enter the site you want to link to the replenishment list

Area. Enter the area you want to link to the replenishment list.

Storage Zone. Enter the storage zone ID you want to link to the replenishment list.

Warehouse Location. Optionally, enter the name of a warehouse location you want to link to the replenishment list. If left blank, the system considers the settings for the whole storage zone.

Item. Optionally, enter the item number you want to link to the replenishment list. The item is used to generate Tasks by Replenishment Request action.

If left blank, the record is considered for Task creation generated by Replenishment Requests action. .

Most reports can be selected by item number.

Replenishment Type. Enter a replenishment type, such as pallet, loose, or boxes. This is used to group items together with the same replenishment requirements. Replenishment can then be specified for a group of items or for an individual item.

Leave this field blank if the item does not belong to a particular replenishment type.

This setting is used when the Replenishment Locations function and Replenishment Requests action are performed.

Replenishment List. Enter the name of the Replenishment List to be used by replenishment functions.

Use Replenishment Lists to create a replenishment list.

Replenishment UM. Enter the UM to use for replenishment.

Start Date. Enter the first date that the replenishment should be carried out. When a date is entered in this field, this record cannot be used to generate Tasks before that date. If left blank, the replenishment can occur at any time.

This date is used by the Replenishment Requests action found in the Replenishment Locations browse.

End Date. Enter the last day the replenishment can be carried out. When a date is entered in this field, this record cannot be used to generate Tasks after that date. If left blank, the replenishment can occur without any deadline.

This date is used by the Replenishment Requests action found in the Replenishment Locations browse.

Replenishment Point. Enter the quantity of stock at which the location should be replenished.

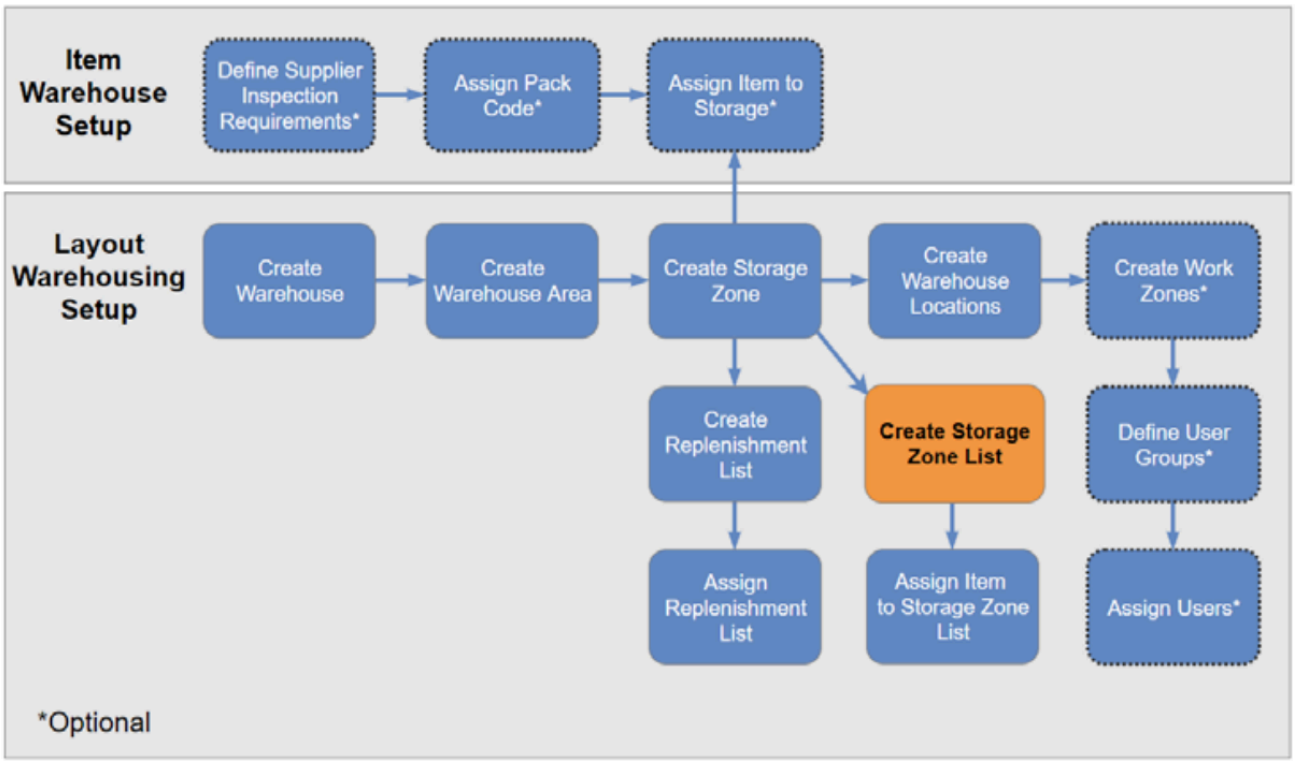
For Task creation, this point can be adjusted using Replenishment Requests action.

Maximum Quantity. Specify the maximum quantity by which the location or item may be replenished. Leave this field blank to allow any quantity.

This value is only considered when creating Tasks in Replenishment Requests action.

Storage Zone Lists

Use Storage Zone Lists to create a sequenced list of storage zones. During the putaway process, the system uses this list of storage zones to find the preferred location for the items to be put away.



For the system to use the storage list for the putaway transactions, it is required that you assign the storage list to an item in Warehouse Items. When attaching a storage list to an item in Warehouse Items, you select the required list by entering its name and based on that assignment, the putaway algorithms find a location within these storage zones.

Each storage list must have at least one storage zone assigned with an associated area. Users are able to assign the storage zones in a certain order using the Sequence field.

Warehouse. Enter the warehouse you want to update.

Storage List. Enter the name of the storage zone list.

Description. Enter a description of the storage zone list. Optionally, include more details and explain the use or purpose of the list.

Sequence. Specify a number that indicates the order in which the system should use this storage zone in this list of storage zones. The lowest sequence number is the first storage zone that the system uses. You can add multiple sequence numbers, each with a different associated storage zone. The sequenced list of storage zones is later used as a Putaway preference.

To make it easier to add steps within the sequence later, standard practice is to number the sequences as 10, 20, 30 rather than 1, 2, 3.

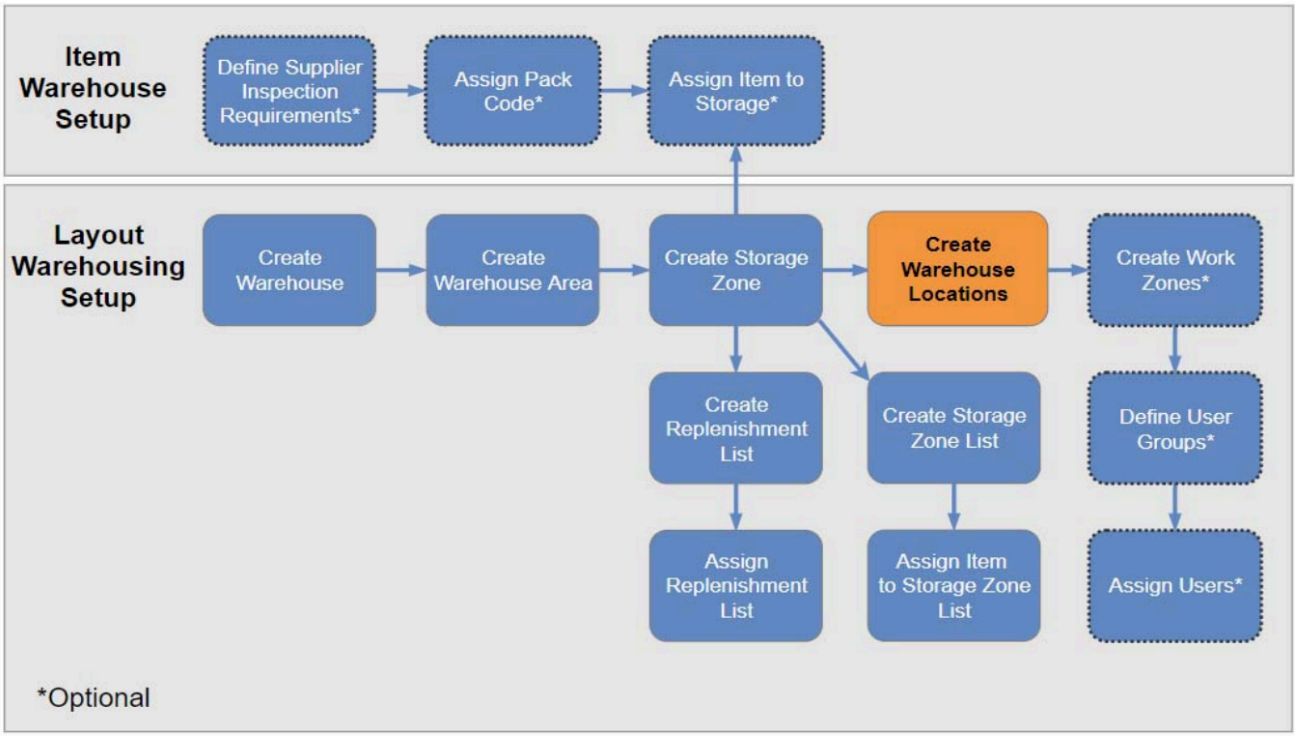
Note: Each sequence number must be unique. You cannot list the same storage zone on two different sequences, but you can add the same storage zone to multiple storage lists.

Storage Zone. Enter the name of the storage zone that you want to add to the list.

Area. Enter the name of the area to which the storage zone belongs.

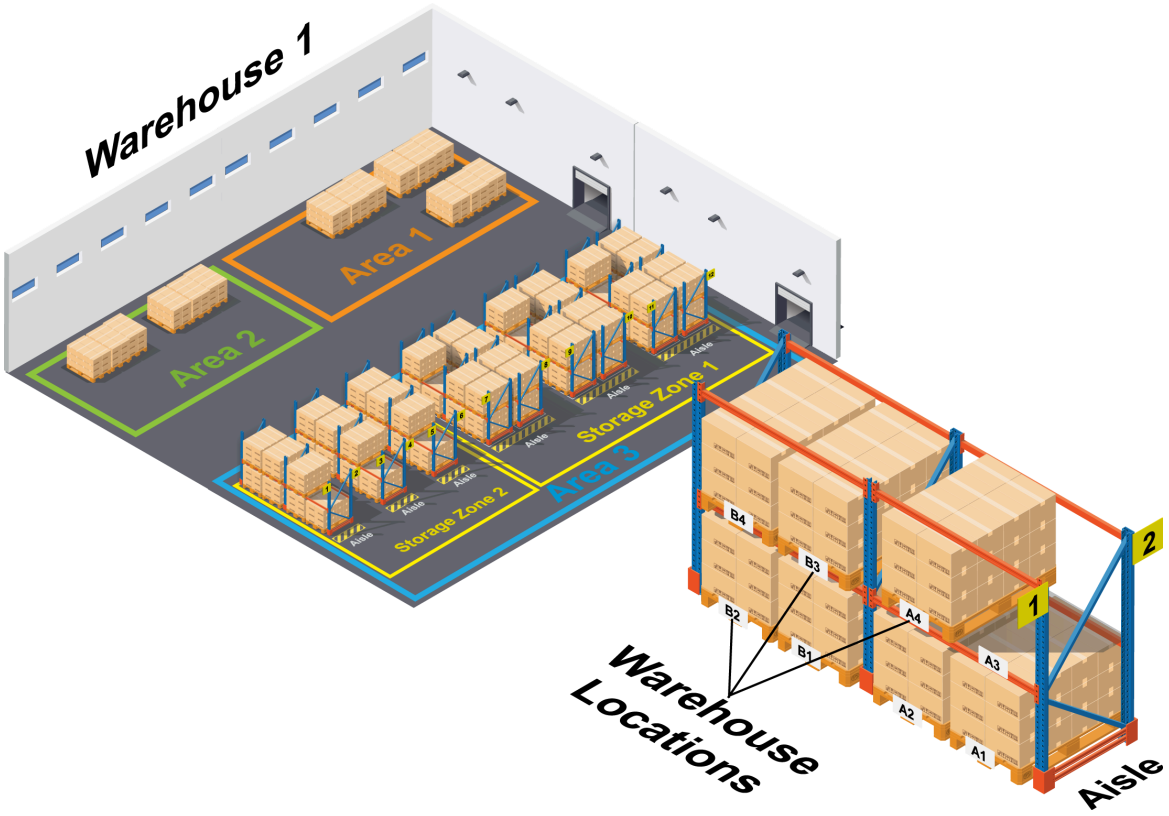
Area Description. This field displays the description of the storage zone.

Defining Warehouse Locations



Warehousing allows you to define warehouse locations, which are used to specify a location within a particular site where inventory is stored. As shown in the graphic below, a warehouse location can be an aisle, rack, or shelf, bin, and so on.

Fig. 2.8 Warehouse Locations Layer



Warehouse Locations

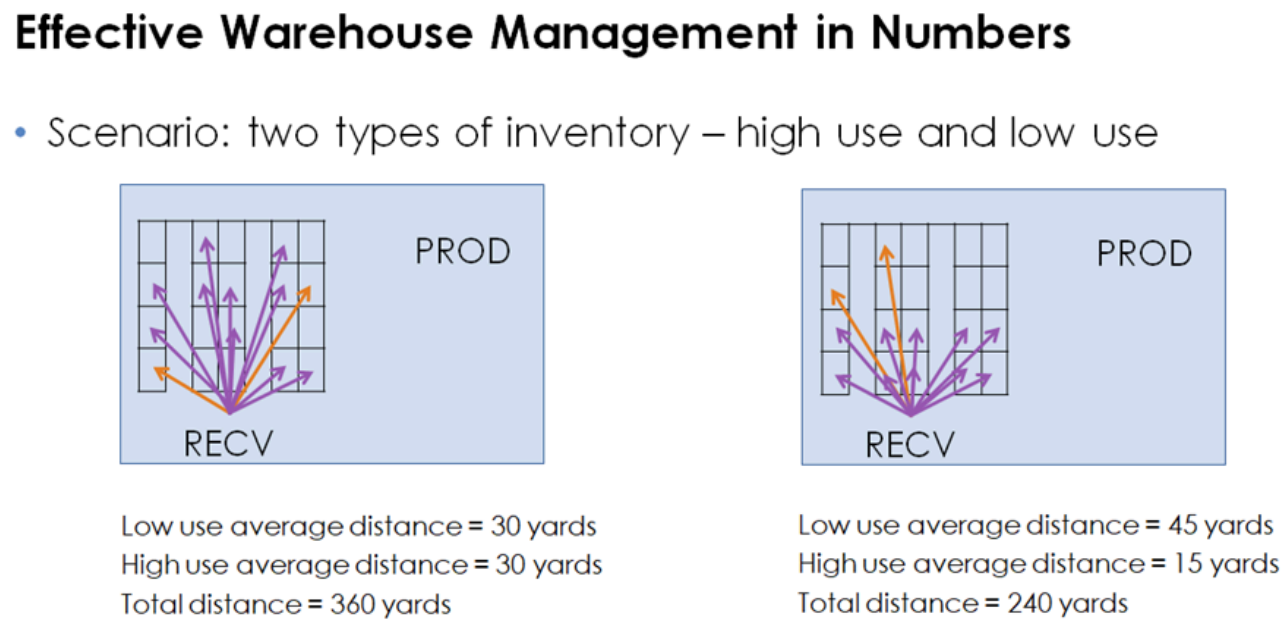
Use Warehouse Locations to create or modify a warehouse location.When defining a warehouse location, users are able to:

- Assign the location to a specific warehouse and storage zone.
- Determine if the location is dedicated to a specific item number and pack code or if it is for general use.
- Specify where the location physically exists, whether it is an aisle, rack, or shelf.
- Specify the dimensions of the location (length, width, height, volume, maximum weight).
- Specify how the capacity for the location is determined, whether it is by number of units, packs, or by volume. Capacity is only taken into consideration if the warehouse location is within a non-functional area that is driven by capacity, such as stock.
- Specify an Alternate ID for the location. This unique ID is assigned to a location so that warehouse managers can create hidden location values. This ensures that when employees confirm the movement of inventory, they are scanning location tags instead of manually entering the known location names.
- Specify Stage In location. This represents a temporary warehouse location, which exists in the system, where inventory resides prior to arriving in the current location.
- Specify Stage Out location. This represents a temporary warehouse location, which exists in the system, where inventory resides after it is moved out the current location.
- Specify the Popularity of the location, which indicates the ease of access to the inventory. The system matches the popularity of items with the popularity of locations. For example, fastmoving items can be set up to be stored in the most accessible locations.
- Assign a travel sequence number to this location, which is used in conjunction with the numbers assigned to other locations to define a travel sequence within the warehouse. This feature allows

you to minimize travel within the warehouse because the system searches for the location that has a travel sequence number closest to the value of the current location's travel sequence number.

- While performing the activities in the warehouse, the system provides the activities to the user in an intelligent way by sequencing them in an effective manner. This means that the total travel distance is minimized and inventory is moved in the most optimized way.

Fig. 2.9 Travel Sequence Numbers



The following browses are associated with Warehouse Locations:

- Warehouse Locations
- Warehouse Location Capacity
- Warehouse Location Items

Warehouse. Enter the warehouse that you want to update.

Warehouse Location. Enter a warehouse location that you want to create or modify.

A warehouse location specifies the physical location within a particular site where inventory is stored.

Every item in inventory is associated with a standard QAD location. The Location must be specified on every inventory transaction, issues, receipts, transfers, and counts. Warehouse Locations naming conventions are used only within the Warehousing.

When assigning locations, keep in mind that they are alphanumeric and sorted in alphabetic sequence. For example, if you set up locations 1, 2, and 10, they will sort as 1, 10, 2. Well-devised schemes can make life easier in the stockroom.

A Warehouse Location must be linked to at least one specific location master in ERP.

Note: The lookup displays the Location that currently exists in ERP. If you enter a location that is not listed, the system will display a message asking if you want to create the specified location. Click Yes to automatically create the location master in ERP.

Description. Enter a short description of the warehouse location, usually describing where to look for it. The description prints on most reports, as space permits.

Dedicated. Select this checkbox to indicate that this warehouse location is dedicated to store a specific item number. You are able to specify which item is stored in the warehouse location in the last frame of the program.

Active. Select this checkbox to activate the warehouse location.

Note: When a warehouse location is inactive, the location is not considered for Task creation and it cannot be used by Data Collection transactions.

Storage Zone. Enter the name of the storage zone to which the warehouse location belongs.

Note: If a warehouse location is assigned to a particular storage zone, then the rules for the zone apply for all transactions being processed there.

Work Zone. Specify the name of the work zone to which the warehouse location belongs.

Note: When a warehouse location is assigned to a particular work zone, then only the user groups assigned to it are able to perform transactions within those locations. If transacting between locations, a user must be assigned to the From and To work zones in order to perform the task.

Warehouse Location Type. Specify the storage type for the warehouse location. The storage type, which is set up in Generalized Codes, allows for the classifying of goods.

For example, the warehouse location type can be set up to match the warehouse item type and be used to drive the Putaway transaction, such as pallets, boxes, or partials.

This field is used for reference purposes only. The system does not perform any validation on this field. It can be used to suggest a certain behavior for material movements.

Alternate ID. Enter a unique ID for the warehouse location. This unique ID is assigned to a location so that warehouse managers can create hidden location values. This ensures that when employees confirm the movement of inventory, they are scanning location tags instead of manually entering the known location names.

The Alternate ID must be a unique string, and cannot be equal to any other Location, Warehouse Location, or Alternate ID.

Travel Sequence. Optionally, enter a travel sequence number to this location. This is used in conjunction with the numbers assigned to other locations to define a travel sequence within the warehouse.

This feature allows you to minimize travel within the warehouse because the system searches for the location that has a travel sequence number closest to the value of the current location's travel sequence number.

You can assign the same travel sequence number to multiple warehouse locations but it is recommended that the sequence numbers be unique for each warehouse to ensure the best optimization.

Stage In Location. Specify the stage in location, which represents a temporary Warehouse Location where inventory resides prior to arriving in the current location.

Stage in and out locations are useful when certain fork-lift trucks or engines are used within the aisle while other equipment is used from another area to the aisle itself. For example, when you make a

putaway, you must find the destination location, but the RF terminal shows the movement from the receipt area to the stage in first and then another task is created to move goods from the stage into the destination location.

The stage in and out locations must be defined as warehouse locations.

Stage Out Location. Specify the stage out location, which represents a temporary Warehouse Location where inventory resides after it is moved out the current location.

Stage in and out locations are useful when certain fork-lift trucks or engines are used within the aisle while other equipment is used from another area to the aisle itself. For example, when you make a putaway, you must find the destination location, but the RF terminal shows the movement from the receipt area to the stage in first and then another task is created to move goods from the stage in to the destination location.

For issues, when picking goods out of the location to the dispatch area, the first movement is from the location to the stage out and the second is from the stage out to the dispatch area.

The stage in and out locations must be defined as warehouse locations in the system.

Aisle. Optionally, specify the physical location in the aisle. This field is used for informational purposes only.

Rack. Optionally, specify the physical location on the rack. This field is used for informational purposes only.

Shelf. Optionally, specify the physical location on the shelf. This field is used for informational purposes only.

Popularity. Popularity is an indicator describing turnover. Enter a code to define the relative priority for choosing this location when the system has a choice of locations in which to put away inventory. Low alphanumeric values for the Popularity code indicate greater popularity. For example, a popularity code of AAA indicates a popular location that is easily accessed, while a code of ZZZ indicates an unpopular location that is perhaps difficult to access.

You typically put fast-moving stock in the low-value Popularity locations, and slowmoving stock in the higher ones.

You can base the popularity codes on an ABC analysis of the number of transactions. Use Item ABC Status Update to review ABC details.

You can also assign popularity codes to items in Warehouse Items.

Last Opportunity Count. Displays the date the latest count was performed in this warehouse location.

Total Counts. Displays the total number of opportunity counts performed in this warehouse location.

Allow Mixed Dates. Specify if inventory with mixed dates, such as expiration or commission dates, can be stored in this location.

If this checkbox is selected, then if any inventory has different dates, such as commission dates, the system allows the items to be stored in this location. If this checkbox is cleared and Item A has a different commission date than Item B, the system will not allow them to be stored in this location together. During the putaway process, the system will search for the next location where the other item can be stored.

Allow Mixed Lot/Serial ID. Specify if more than one Lot or Serial ID may be stored in this warehouse location. Select the checkbox to allow the receipt or transfer of more than one lot or Serial ID.

Note: If you clear the checkbox, you will prevent the receipt or transfer of more than one lot or serial ID in this location. This is especially useful in situations where ingredients are stored in tanks or silos and must never mix. Or, when different dye lots, potencies, or grades of an item should not be mixed.

Site. Enter a site. This field is mandatory and allows users to link a specific warehouse location with a site.

A warehouse location can be linked to multiple site and location combinations.

Capacity Utilization Option. Specify the capacity utilization option for this warehouse location. The system uses this information to calculate the capacity using simple quantities by unit of measure or using available volume remaining. Select from the following options:

- Unit. When Unit is selected, the capacity is measured by the number of items in a warehouse location. Specify the item number, UM, and Utilization % in the last frame of the program.
- Pack. When Pack is selected, the capacity is measured by the number of master serial IDs in a warehouse location. You will specify the item number, pack code, and Utilization % in the last frame of the program.
- Volume. When Volume is selected, the capacity is calculated as a percentage of volume, which is based on the dimensions defined for a warehouse location and the dimensions defined for the particular inventory.
- Blank. If the warehouse location belongs to a functional area, the capacity utilization option is blank and cannot be updated and in such cases, the capacity does not get calculated.

Current Utilization %. Displays the current utilization %, which is automatically generated by comparing the maximum capacity with the inventory on hand. This field is for reference only.

Preferred Pack Code. Optionally, specify the preferred pack code that can be stored in this warehouse location.

For example, if items are stored in a specific bin or on a specific pallet in this location, you would enter the pack code for that bin or pallet. This field only indicates which pack code is preferred. The system does not restrict the storage zone to the pack code that is entered.

Maximum Weight. Enter the maximum weight that can be stored in this warehouse location. For example, if this location is a shelf or rack that has a maximum load capacity, you would enter that specification in this field.

Current Weight. Displays the current weight in the warehouse location. This is an automatically generated value calculated by comparing the maximum weight with the inventory on hand. This field is for reference only.

Weight UM. Enter the unit of measure in which the weight is displayed.

Enforce Weight. Select the checkbox to prevent users from transferring items/pallets that weigh more than maximum weight.

Length. Optionally, enter the length of the warehouse location.

The location dimensions are used for reference purposes only, so you do not have to enter values. If you do enter dimensions, the values are all in terms of the dimensional unit of measure that is specified in the Size UM field, below the three dimensions.

Height. Optionally, enter the height of the warehouse location.

The location dimensions are used for reference purposes only, so you do not have to enter values. If you do enter dimensions, the values are all in terms of the dimensional unit of measure that is specified in the Size UM field, below the three dimensions.

Width. Optionally, enter the width of the warehouse location.

The location dimensions are used for reference purposes only, so you do not have to enter values. If you do enter dimensions, the values are all in terms of the dimensional unit of measure that is specified in the Size UM field, below the three dimensions.

Size UM. Enter the unit of measure for all the dimensions entered in the Length, Height, and Width fields.

Maximum Volume. This field displays the total volume of the warehouse location. The total volume is calculated based on the parameters entered in the Length, Height, and Width fields. If necessary, you can manually enter a value and overwrite the calculation.

This is a mandatory field if the Capacity Utilization Option is set to Volume.

Current Volume. Displays how much volume is currently being used in this location.

Volume UM. Enter the unit of measure for the location volume.

Enforce Volume. Select the checkbox to prevent users from transferring inventory into this location if it exceeds the maximum volume entered in the Volume field.

Item. Enter the item number if a specific assignment for this warehouse location is required. You can leave this field blank if this warehouse location is used for general use.

If the Dedicated checkbox is selected, enter the item number that is stored in this warehouse location.

If the Capacity Utilization Option field is not blank, the item number entered in the field defines the specific rules for capacity calculation. Capacity Calculation logic works in the following manner:

- **Packs.** The system checks the inventory that is being transferred into warehouse locations and finds a location that has a matching combination of Item and Pack Code, Item itself, Pack Code itself, or blank (if the location is set to general use).
- **Units.** The system checks the inventory that is being transferred into warehouse locations and finds a location that has a matching combination of Item and UM, Item itself, UM itself, or blank (if the location is set to general use).

Multiple combinations of Item Number, Pack Code/UM and Utilization % can exist.

Description. This field displays the description of the item.

Pack Code/UM. Specify the pack code or unit of measure for the item if a specific assignment for this warehouse location is required. You can leave this field blank if this warehouse location is used for general use.

If the Dedicated checkbox is selected, enter the pack code of the item that is stored in this warehouse location.

If the Capacity Utilization Option field is not blank, the pack code entered in the field defines the specific rules for capacity calculation. Capacity Calculation logic works in a following manner:

- **Packs.** The system checks the inventory that is being transferred into warehouse locations and finds a location that has a matching combination of Item and Pack Code, Item itself, Pack Code itself, or blank (if the location is set to general use).
- **Units.** The system checks the inventory that is being transferred into warehouse locations and finds a location that has a matching combination of Item and UM, Item itself, UM itself, or blank (if the location is set to general use).

Multiple combinations of Item Number, Pack Code/UM and Utilization % can exist.

Utilization %. Enter the utilization % to indicate how much space is taken by a certain Item Number, Pack Code/UM, or combination of both.

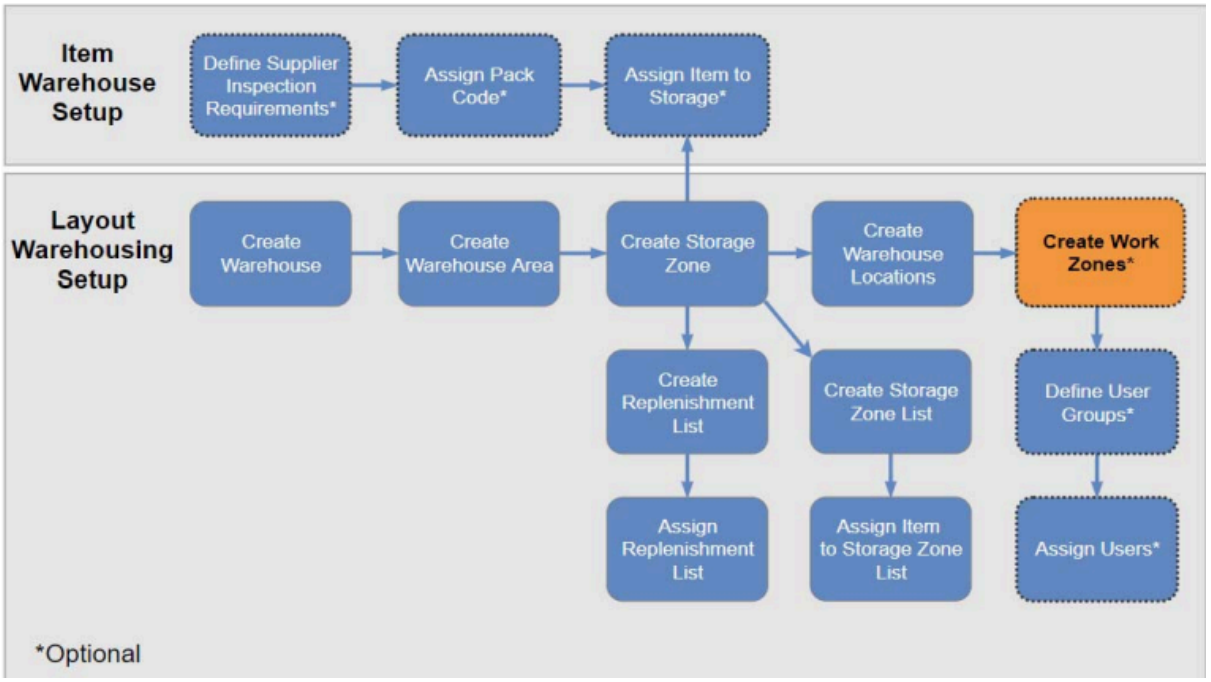
For example, if this location can only store 2 pallets (Pack Code PL01), the Utilization % should be 50% (100% / 2)(Pack Code BX01), the Utilization % should be 2% (100% / 50). If the same location can store 50 boxes.

Capacity Calculation logic works in the following manner:

- **Packs**. The system checks the inventory that is being transferred into warehouse locations and finds a location that has a matching combination of Item and Pack Code, Item itself, Pack Code itself, or blank (if the location is set to general use).
- **Units**. The system checks the inventory that is being transferred into warehouse locations and finds a location that has a matching combination of Item and UM, Item itself, UM itself, or blank (if the location is set to general use).

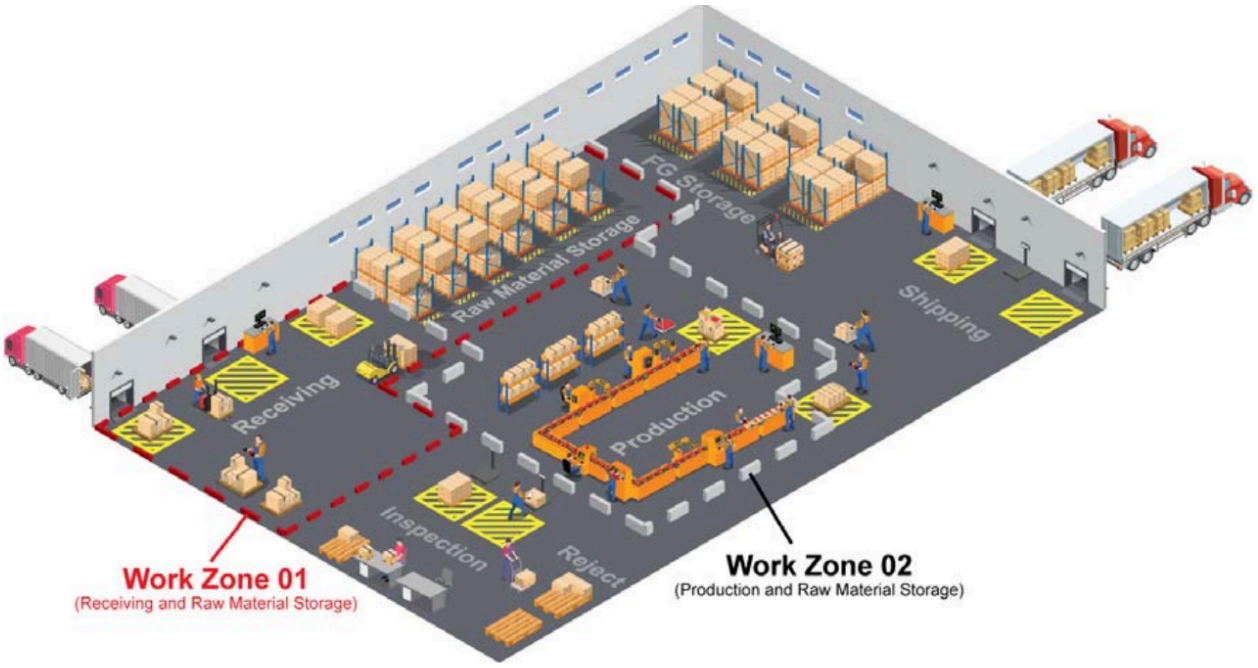
Note: Under most circumstances, the Utilization % should be entered as a number between .01 and 100. In the special scenario when the warehouse location record has Capacity Utilization Option = Pack and the Dedicated checkbox is selected, the system allows the Utilization % be set to blank to specify the warehouse location to item association, without requiring capacity input.

Defining a Work Zone



Work zones are sections of the warehouse that share common activities by labor, devices, or other devices required to manage activities. Work zones can be independent from areas or storage zones because they are related to the type of workers (skills) and/or the type of devices required to handle materials in the work zone, such as a cart, forklift, and so on. When defining a work zone, you are able to assign specific groups of users to that zone so that those groups who perform activities in a specific space will not be able to see any activities from other spaces or will not be sent to perform activities at any other than assigned spaces.

Fig. 2.10 Warehouse Work Zones



Work Zones

Use Work Zones to create a work zone. A work zone is a set of locations that specific users and equipment, such as RF scanners, can be assigned to. For example, if a company has a special type of equipment that is located in several locations and requires trained operators, work zones can be used to define this equipment (transporter, device) and a region that the trained operators should focus on while keeping the business-to-system integrity of an area.

Note: To assign users to a work zone, use Warehouse User Groups to first assign users to a user group and then use Warehouse User Work Zone Assignments to assign a user group to the work zone. To assign locations to a work zone, use Warehouse Locations

Note: It is not mandatory to assign users to work zones. If a user is assigned to a specific user group, then that user can work only within that specific work zone. If not, the user is able to work in all work zones.

Warehouse. Enter the warehouse you want to update.

Work Zone. Enter the work zone you want to create or modify.

Note: A work zone is used to specify a set of locations an employee is responsible for

Description. Optionally, enter a brief description of the work zone. The description displays in lookups and various reports so that users can identify it.

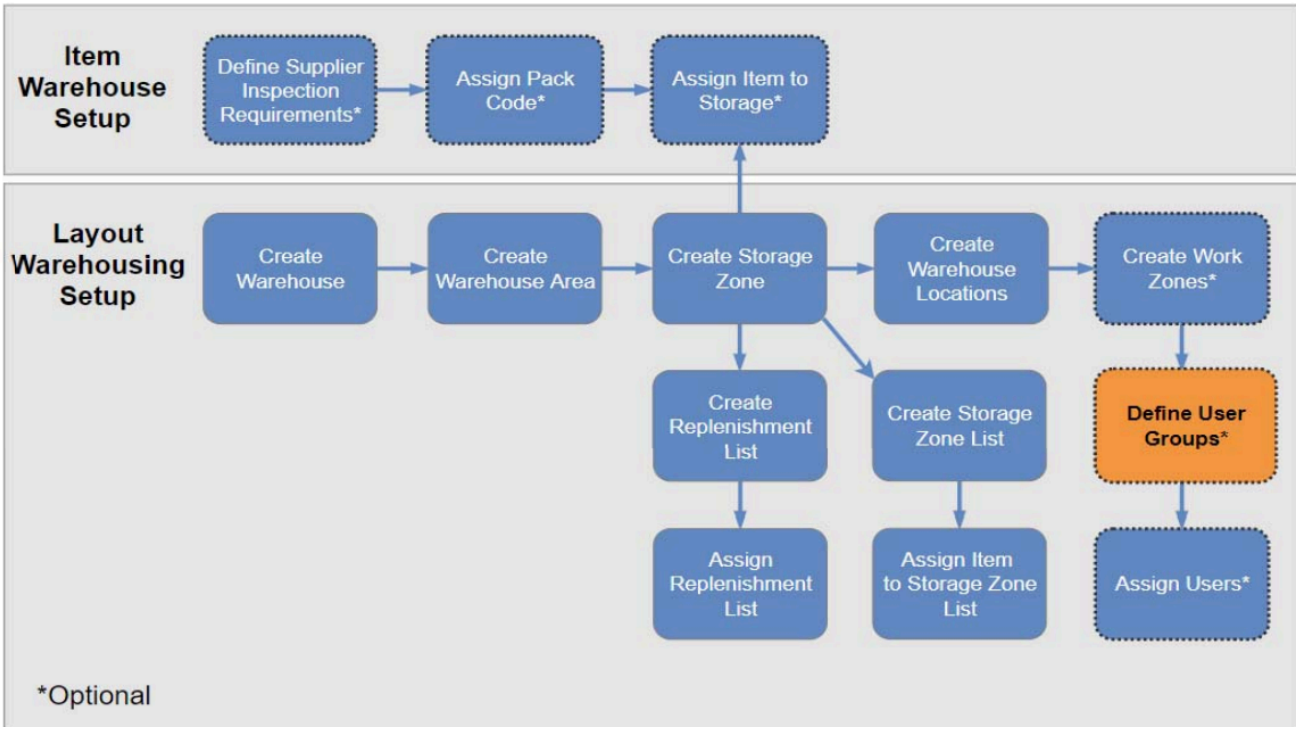
Device Type. If applicable, enter the device type to be used within this work zone, such as an RF/RDT terminal. You can assign multiple devices to a work zone and the same device type can be assigned to multiple work zones. If no single device type is applicable, leave this field blank.

Note: To create a device, use Devices.

Transport Type. Enter the transporter type to be used within this work zone. You can assign multiple transporter types to a work zone and the same transporter type can be assigned to multiple work zones.

Warehouse User Groups

Use Warehouse User Groups to create a user group, assign users who have common functions to the group, and assign a default printer that can be used by the group.



Warehouse. Enter a warehouse for the user group.

User Group. Enter the name of the user group you want to create or modify.

Description. Enter a brief description of the user group.

Default Printer. Specify the default printer for the user group. You can assign only one printer to a user group.

Note When the user is assigned to this user group, the printer specified in this field is displayed on the RF device assigned to this group.

User. This field is mandatory. Enter the user you want to assign to a warehouse user group. You can only assign one user for each warehouse and user group combination.

User Name. The user name is displayed.

Enabled. This checkbox is a read-only field. Indicates whether the user has access to the warehouse.

Active. This checkbox is a read-only field. Indicates if the user has an active record.

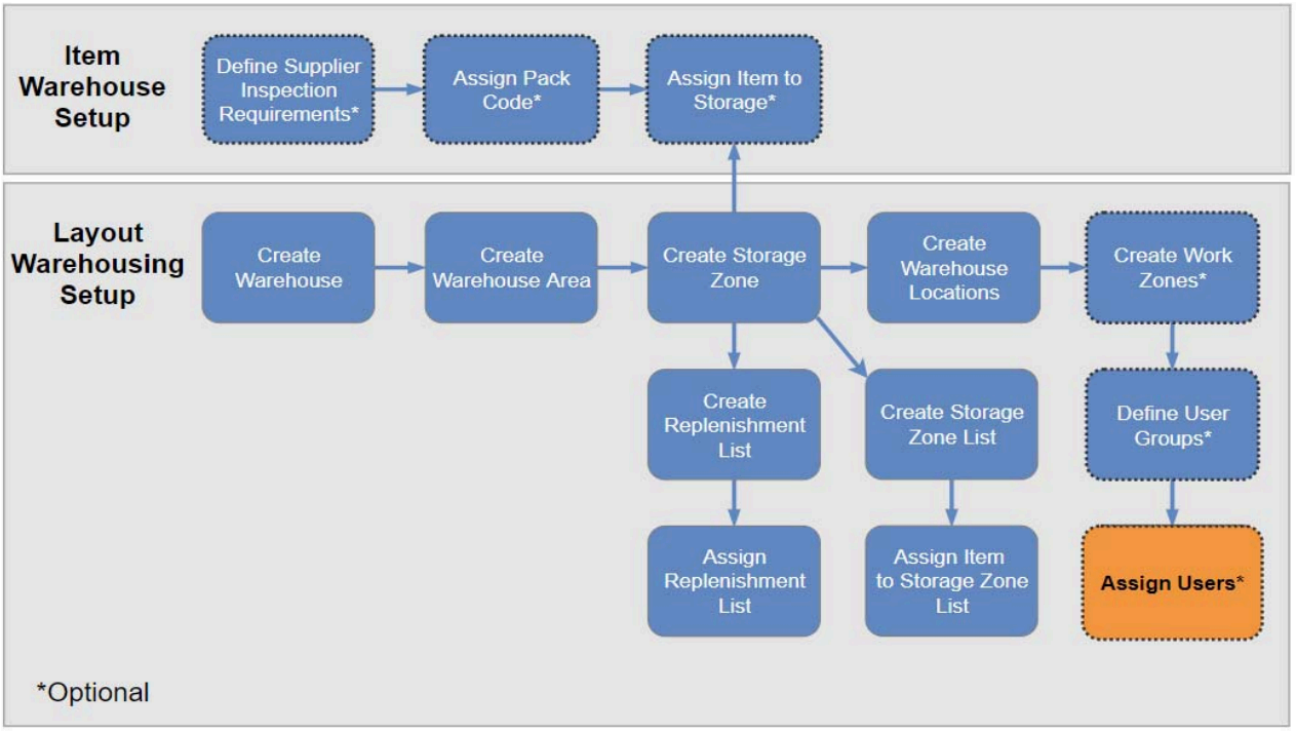
Work Zone. This is a mandatory field. Enter the work zone.

Description. Displays the description for the work zone.

Device Type. Displays the device type information.

Warehouse User Work Zone Assignments

Use Warehouse User Work Zone Assignments to assign a user group to a work zone. Once user groups are assigned to a work zone, the users will see demand in the groups of locations (work zones) they are responsible for.



A user group can be assigned to multiple work zones. For example, this allows different people to perform different activities within different locations and areas of the warehouse.

A work zone can have multiple user groups assigned to it.

Note: It is not mandatory to assign users to work zones. If a user is assigned to a specific user group, then that user can work only within that specific work zone. If not, the user is able to work in all work zones.

Warehouse. Enter the warehouse you want to update.

User Group. Enter the name of the user group you want to assign to a work zone. A user group can be assigned to multiple work zones. For example, this allows different people to perform put-away and picking on the same location.

Description. Optionally enter a brief description of the warehouse user work zone assignment.

Default Printer. Specify the default printer you want to assign. You can assign only one printer to a user group.

User. Enter the user to link to the user group. A user can be assigned to only one warehouse and user group combination.

User Name. Displays the user name. This is a read only field

Enabled. Indicates whether the user has access to the warehouse. This is a read only field.

Active. Indicates if the user is an active record. This is a read only field.

Work Zone. Enter the name of the work zone to which you want to assign the user group. A work zone can have multiple User Groups assigned to it.

Description. Displays the description of the work zone. This is a read only field.

Device Type. Displays the device that you are using in this work zone. This is a read only field.

Defining Warehouse Items and Its Associations

QAD Core functionality allows users to handle key item information for inventory management, such as unit of measure for all receipts, movements and issues, shipping and net weight, volume, and so on. There are additional details required to define material storage and handling activities in a warehouse that Warehousing provides functionality for.

For example, if goods are stored in different packages, you can define the capacity parameters for an item in a certain pack code, such as length, width, height, weight, and volume. If goods are stored on pallets, you can define the maximum pallet height or the maximum stacking levels. You can define how common materials may be grouped together for common handling rules. For example, you can define the warehouse item type, which groups materials together, such as cold chain or hazardous materials. A warehouse location can be assigned to only store a specific item.

You can assign a warehouse item type within material routing assignments to help identify activities and movements to be performed with specific components.

You can also use the popularity functionality to find a location for items. By assigning popularity to an item and to a specific warehouse location, the engine compares the assignments to locate an item in the most accessible location.

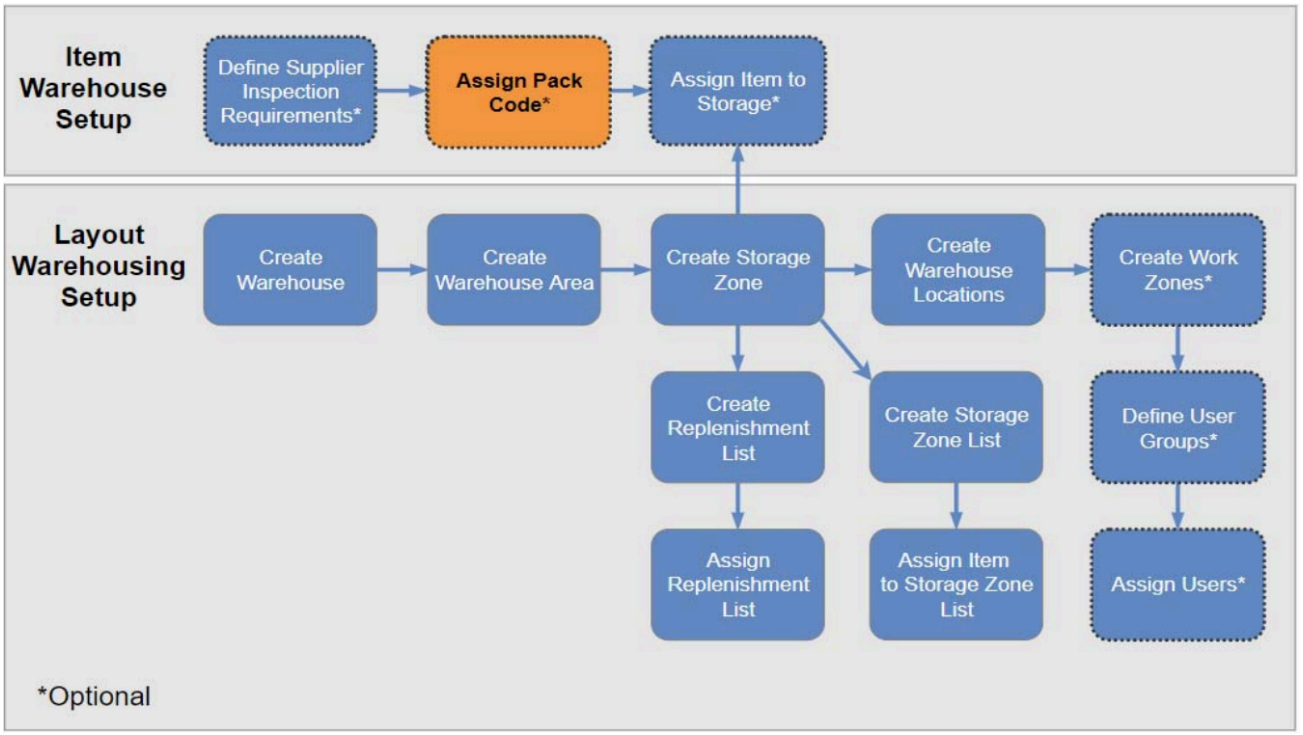
You can also define the data required for specific material handling activities. For example, if there is a specific item that flows in one direction in the warehouse, from receiving to warehouse locations that are dedicated to the component, then Warehousing allows users to assign warehouse items to a storage list. A storage list is a sequenced list of storage zones used for putaway activity, where items are put away according to its prioritized setup.

Supplier Item Inspection Maintenance

Warehouse Item Pack Code Exceptions

Use Warehouse Item Pack Code Exceptions to specify capacity parameters for an item in a certain pack code.

Note: Using Warehouse Item Pack Code Exceptions during the setup process is optional.



Item. Enter the item number you want to update.

Warehouse. Enter the warehouse you want to update.

Site. Enter the site.

Pack Code. Enter the pack code that the item is packaged in. Pack codes help define the way items and inventory are stored to facilitate warehouse and logistics activities.

Storage List.

Length. Specify the length of the pack.

Width. Specify the width of the pack.

Height. Specify the height of the pack.

Pallet Maximum Height. Specify the maximum height of the pallet for the item in the storage zone.

This field modifies the capacity calculation for the corresponding item to consider the stacking of pallets. When the location capacity is defined in referenced units of measure such as pallets, the result of the capacity calculation is the multiplication of the height, width, and length. When the maximum pallet height is defined for a given item, the multiplication is made using this maximum height and not the location height.

Size UM. Specify the size unit of measure for length, width, and height.

Maximum Stacking Levels. Specify the maximum stacking levels for the item in the storage zone.

Volume. Specify the volume of the pack.

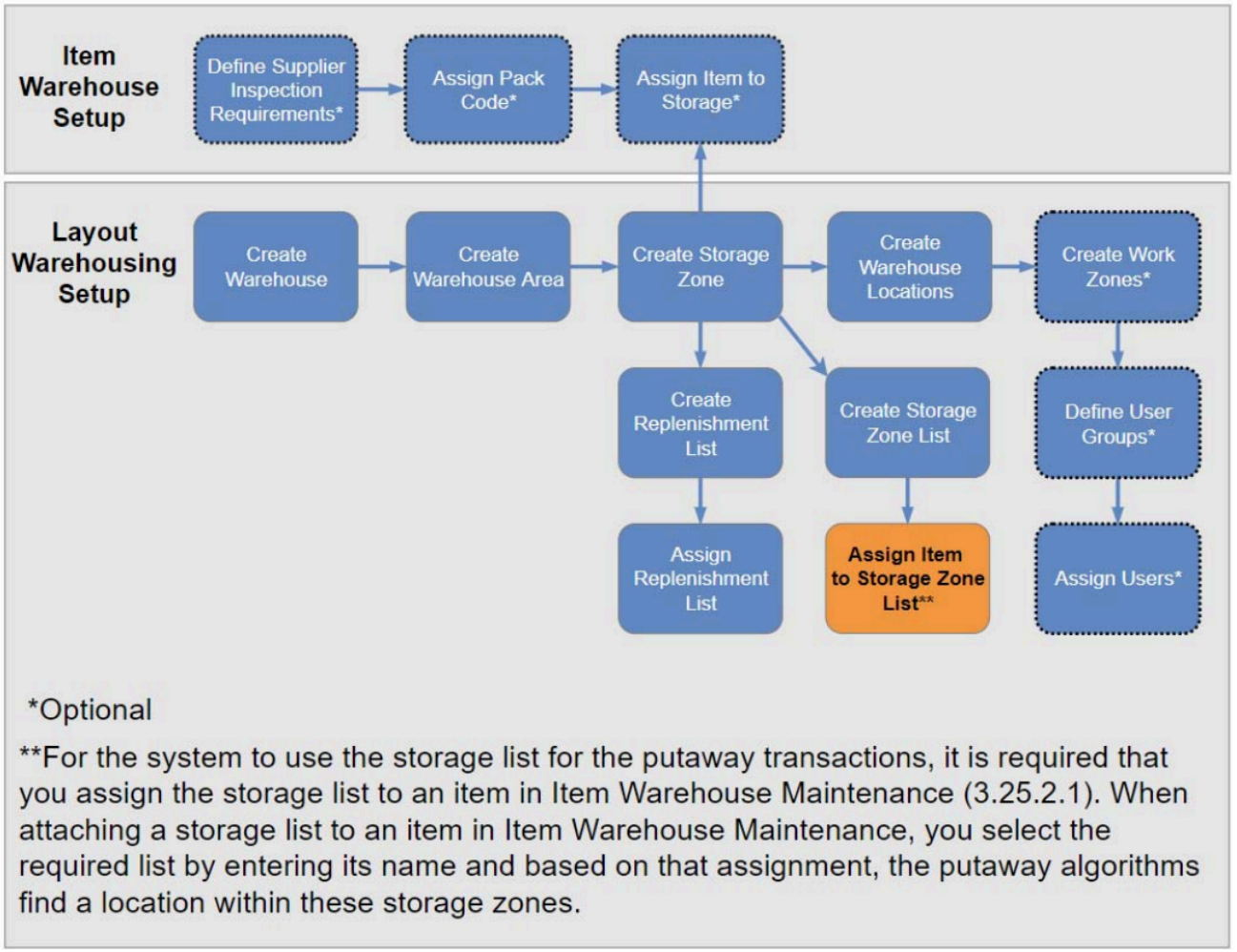
Volume UM. Specify the unit of measure for volume.

Full Pack Weight. Enter the total weight of the full pack, which includes the weight of items in the pack and the weight of the pack.

Weight UM. Specify the unit of measure for weight.

Warehouse Items

Use Warehouse Items to define generic warehouse item attributes that apply to assigned locations/sites. This function allows users to define warehouse-related characteristics for an item and how to handle certain kinds of inventory.



Item. Enter an item from the lookup window. The system displays the description of the item to the right. This field is mandatory.

Warehouse. Enter an active warehouse from the lookup window. The system displays the description of the warehouse to the right. This field is mandatory.

Site. Enter a site to associate to the item from the lookup window. The system displays the description of the warehouse to the right. This field is mandatory.

Storage List. Enter a storage list from the lookup window. The system displays the description of the warehouse to the right. This field is mandatory.

Storage Zone. Enter a storage zone from the lookup window. This field is mandatory.

Warehouse Item Type. Enter a warehouse item type from the lookup window. You can enter up to 3 digits in the field. This field is mandatory.

Replenishment Type. Enter a replenishment type, such as pallet, loose, or boxes from the lookup window. This is used to group items together with the same replenishment requirements. Leave this field blank if the item does not belong to a particular replenishment type.

Shelf Life. Enter the shelf life for the item, that is the length of time in days that an item may be stored in the zone without becoming unfit for use, consumption, and sale.

Allow Splitting. Specify if stock can be picked from locations in the storage zone in situations where the quantity required for the pick does not match the unit of measure in which the item is stocked in the location. Click the checkbox if this unit of measure can be split into smaller units. Otherwise, leave it unchecked.

Inspection Required. This checkbox specifies if an inspection is required for the item.

Receipt Inspection Frequency. Enter the frequency in which inspections must take place during receipt of the item.

Sample Quantity. Enter the quantity to be inspected on this sample, expressed in the item's unit of measure.

Destructive Test. Specify if the test applied to the sample is a destructive test. If checked, the sample must be issued using an unplanned issue transaction. If unchecked, when the inspection does not fail, the system generates a new transaction based on a new internal routing to put the sample back in stock.

Receipts since last inspection. Displays the number of tasks created for Inspection Location since the last inspection was done.

Inspection Days. Enter the frequency in days that an inspection should take place. If an inspection has not occurred in the number of days entered in this field, the system will determine that an inspection should be performed.

Sample Percentage. Specify a percentage of the quantity being received to be inspected. The system rounds the result to the closest integer value if the percentage of the received quantity is not an integer.

Random Inspection. Specify if the inspection should occur randomly.

Last Inspected. Displays the date when the last transfer to the inspection location occurred.

Inspection Required. This checkbox specifies if an inspection is required for the item.

Receipt Inspection Frequency. Enter the frequency in which inspections must take place during receipt of the item.

Sample Quantity. Enter the quantity to be inspected on this sample, expressed in the item's unit of measure.

Destructive Test. Specify if the test applied to the sample is a destructive test. If checked, the sample must be issued using an unplanned issue transaction. If unchecked, when the inspection does not fail, the system generates a new transaction based on a new internal routing to put the sample back in stock.

Receipts since last inspection. Displays the number of tasks created for Inspection Location since the last inspection was done.

Inspection Days. Enter the frequency in days that an inspection should take place. If an inspection has not occurred in the number of days entered in this field, the system will determine that an inspection should be performed.

Sample Percentage. Specify a percentage of the quantity being received to be inspected. The system rounds the result to the closest integer value if the percentage of the received quantity is not an integer.

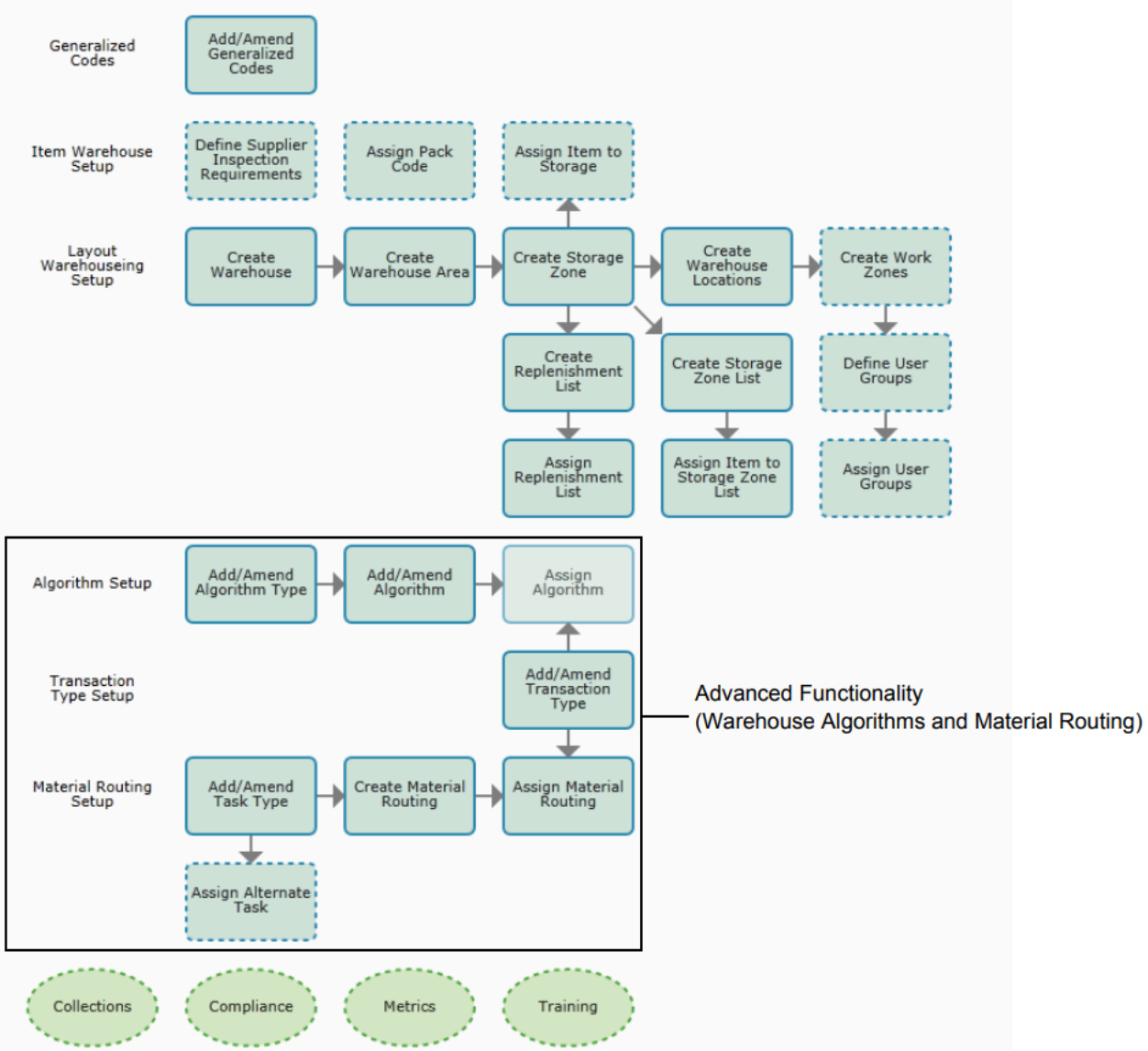
Random Inspection. Specify if the inspection should occur randomly.

Last Inspected. Displays the date when the last transfer to the inspection location occurred.

Setting up Advanced Functionality - Material Flow Management

Advanced functionality includes event management, putaway and picking logic, and a rules engine and KPI reporting.

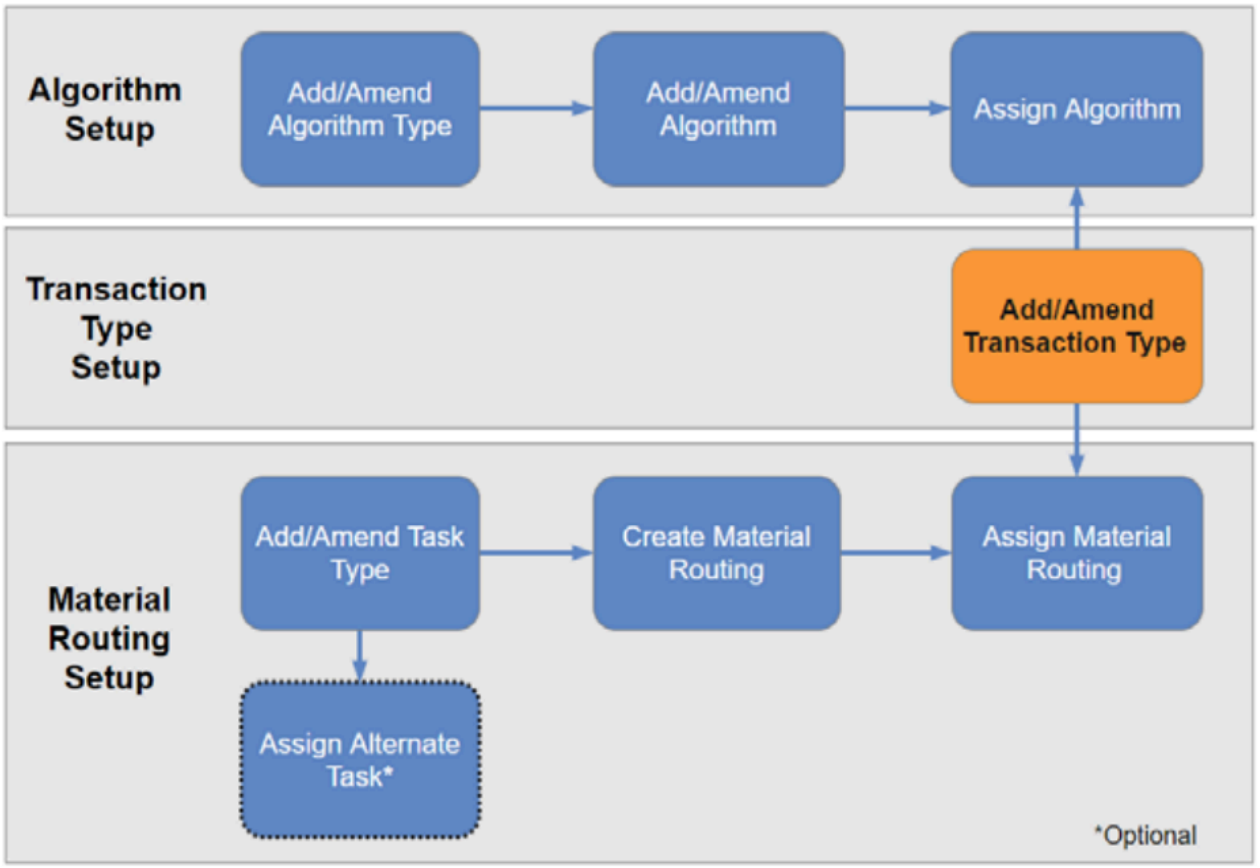
Fig. 2.11 Warehouse Extension Setup Process Map



Setting up Warehouse Transaction Types

Warehouse Transaction Types

Use Warehouse Transaction Types to add new features to standard transaction types so that the system processes the transactions in the way you require. Users can also use this program to define new transaction types for special types of inventory transactions that are not covered by the standard types.



The transaction type defines types of inventory transactions that are related with specific requests and orders. The following transaction types are specific to Request programs:

- Picking Requests
  - PICK-SO – Picking Sales Order
  - PICK-DO – Picking Distribution Order
- Putaway Requests
  - PUT-TR – Inventory Putaway requested in advance, by Putaway Serial Request Program
  - OTF-TR – On the Fly Inventory Putaway (real-time inventory transfer on the shop floor)
- Replenishment Requests
  - PICK-RE – Replenishing Min-Max Points, by Replenishment Requests program
  - PICK-RE – Line-side replenishment request, by Production Replenishment Request

Transaction Type. Enter a name that uniquely identifies the new transaction type.

Description. Enter a description for the transaction type.

Auto. This checkbox specifies how processes defined by material routings are initiated. If checked, the next process in the material routing sequence is started automatically as soon as the previous process is complete; otherwise, if the checkbox is cleared, the next process will start when you manually select it for processing with an engine workfile.

Standard Type. This field is read only and cannot be modified. The checkbox is selected when the transaction type entered is one of the standard transaction types provided in the system. If cleared, the transaction type is custom and user-defined.

Pick Control Level Storage. This checkbox determines if the picking details are controlled by the settings at the storage zone level when enabled. It is cleared by default.

Overpicking. This checkbox specifies if you can pick more stock in this particular type of transaction. It is cleared, or set to not allowed, by default.

Setting up Warehouse Algorithms

The following programs are used to set up warehouse algorithms:

- Warehouse Algorithm Types
- Warehouse Algorithms
- Warehouse Algorithm Assignments

A warehousing algorithm is a rule providing a specific output as a product of inputs that is related to a certain type of program that consists of a sequence of instructions that will provide output as a result based on those instructions. In other words, it is a rule that helps to identify locations or inventory that are subject of transfer, picking, or putaway tasks.

Examples of warehousing algorithm types include:

- Location Find
- Putaway
- Picking
- Inspection

Each type has several distinct warehousing algorithms that will provide their own result. An example of a result might be an empty location. Warehousing algorithms can be sequenced to give warehouse managers the ability to prioritize the order in which results are presented so that operations can be optimized. To expand on the previous example, a warehouse might be set up so that a high-turn material's storage is optimum when it is: first, placed at the lowest travel sequence (set up low to high based on distance from consumption point); if a close location is not found then, second, placed with like items.

Warehouse Algorithms

At a high level, warehousing algorithms are used for either putting inventory away in locations or finding locations to take inventory out of. Depending on its engine they consist of different rules corresponding to the functionality. The following warehousing algorithms types are included in the standard system:

Moreover, for each algorithm type, the system provides the standard algorithms to optimize the Warehouse Engine. Use the standard algorithms provided by the system, shown in the following table.

Algorithm Type	Name	Details
LF	Location Find	Used for finding target locations, where the inventory will be transferred to, that are located within functional areas (non-capacity driven), such as shipping, receiving, and so on.
PA	Putaway	Used for finding target locations, where the inventory will be transferred to, that are located within non-functional areas (capacity driven), such as stock.
PK	Picking	Used to find materials to be transferred.
QA	Inspection	Used to determine when inspection of items is required, as well as the frequency.

Algorithms, depending on their type, are specifically looking for the optimal location, finding the right inventory to pick, or determining whether the inventory or location will be checked with additional requirements, such as checking for shortages, checking if inventory should be additionally inspected, and so on. The following algorithms are provided with the standard system according to different types:

Algorithm Type	Algorithm
Location Find (LF)	101 - Find first functional location in first Storage Zone 102 - Find first empty functional location 201 - Merge with same Shipper/Picklist 202 - Merge with same Order 203 - Merge with same Shipping Address 204 - Merge with same Carrier 205 - Merge with same Ship Via
Putaway (PA)	101 - Find first storage location 102 - Find first empty storage location 103 - Find first location with same Item 104 - Find first location same Item/same Lot 111 - Find first dedicated storage location 112 - Find first dedicated empty storage location 113 - Find first dedicated location with same Item 114 - Find first dedicated location with same Item/lot
Picking (PK)	101 - Pick by Date 102 - Pick by Expire Date 103 - Pick by Lot/Serial 104 - Pick by Location 121 - Pick by Commission Date 122 - Pick by Commission Date Pick Full Packs only 123 - Pick by Commission Date Allow LTF Packs No other picks/tasks

	201 - Pick by SZ Pick Level by Date 202 - Pick by SZ Pick Level by Expire Date 203 - Pick by SZ Pick Level by Lot/Serial 204 - Pick by SZ Pick Level by Location 221 - Pick by SZ Pick Level by Commission Date 222 - Pick by SZ Pick Level Commission Date Pick Full Packs only 223 - Pick by SZ Pick Level Comm Date Allow LTF Picks Single Task Only
Inspection (QA)	101 - Always Inspect when inspection Required 102 - Inspect when inspection Required only every X days 103 - Inspect when inspection Required only every X receipts

Note If custom rules are required, users can use Warehouse Algorithms to create a new algorithm but only if the customized program is created first in accordance with the required output/input parameters by developers. The only requirement for customized programs is that algorithm type must already exist in the system so that it can be assigned to the algorithm.

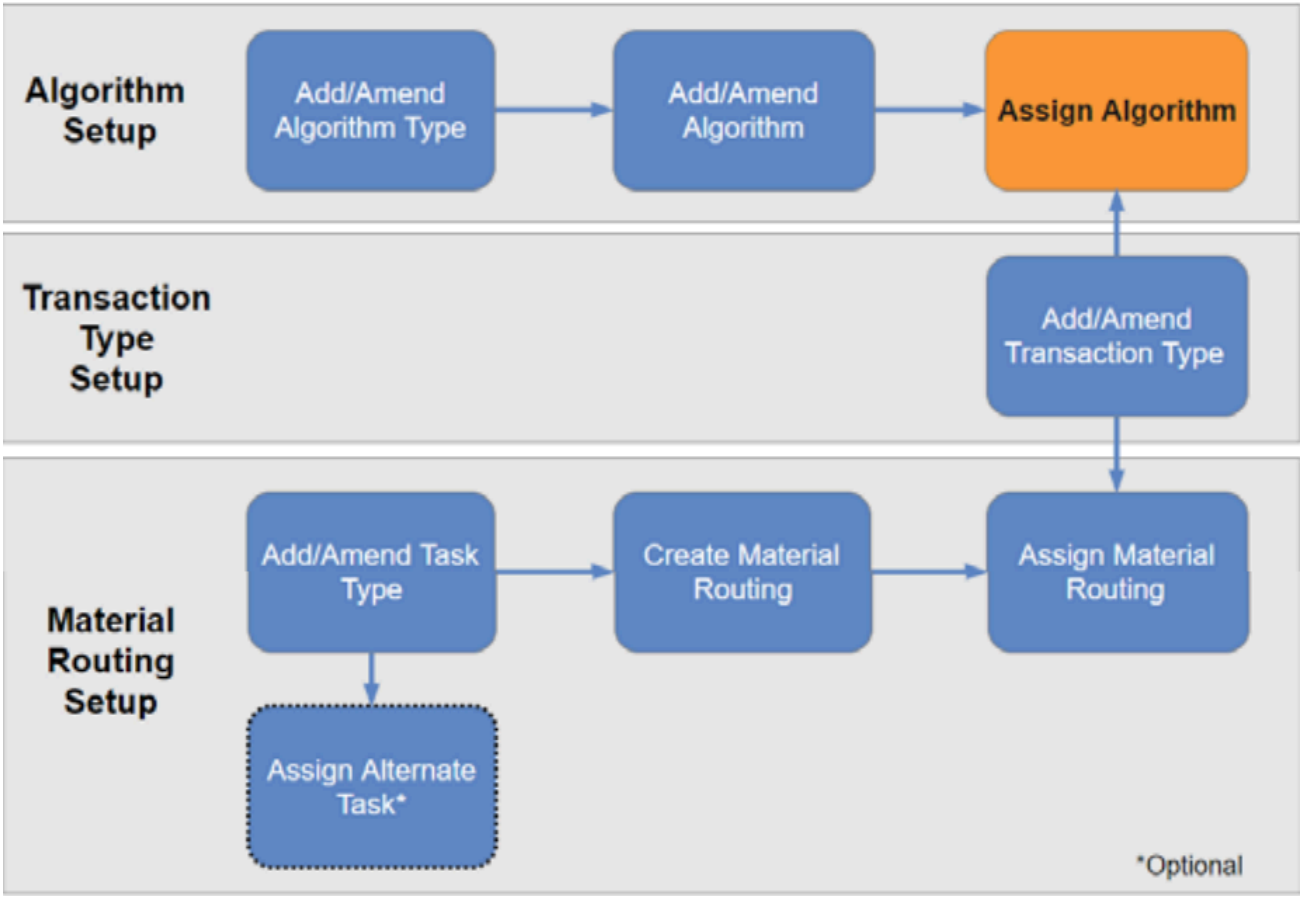
Type. Select the type of algorithm you want to maintain. Algorithm type refers to the type of material handling activities like put away or picking.

Algorithm. Enter the algorithm ID to assign to the selected algorithm type. The algorithm must exist in the system.

Description. Optionally, enter a brief description of the record you are creating or modifying. The description displays in lookups and various reports so that users can identify it.

Warehouse Algorithm Assignments

Use Warehouse Algorithm Assignments to create a prioritized list of warehousing algorithms that are assigned to specific transaction types in order to satisfy certain process needs.



Setting up a sequence of algorithms is useful so that users can specify the ideal method for selecting locations in a prioritized manner, starting with most preferable. For example, if the system cannot meet the full putaway or picking requirements after running the first algorithm on the list, the system then runs the next algorithm in the sequence until the requirement has been met.

When creating a list of algorithms to fulfill certain needs, the user can link the specified sequence of algorithms per its single type to the desired combination of Transaction type, Site, Warehouse, Item Number or Warehouse Item Type, and Address (supplier for received inventory or customer for shipped inventory). This program provides flexibility by letting the users set up as many combinations of all elements as required.

The following table lists the algorithm and transaction type combinations that come in the standard system.

Algorithm Type	Transaction Type	Details
LF	PICK-SO / PICK-DO	Identifies where material should be transferred within functional areas.
LF	PUT-TR / OTF-TR	Identifies the most optimal location to send inventory within functional areas.

LF	PICK-SO / PICK-DO	Identifies where materials should be transferred within non-functional areas.
PA	PUT-TR / OTF-TR	Identifies the most optimal location to send inventory within non-functional areas.
PA	PICK-SO / PICK-DO	Identifies Inventory to be transferred.
PK	PICK-RE	Identifies the location from where the inventory is to be replenished.

Algorithm Type. Select the type of algorithm you want to maintain or assign. Algorithm type refers to the type of material handling activities like put away or picking.

Site. Enter a code identifying a site. Item Number. Enter the code identifying an inventory item defined in Items.
Note This field is optional and should be used in certain cases where an item requires specific handling.

Address. Currently, this field is not functional and is for reference only. In the future, this field will support the following functionality: Enter a code uniquely identifying address record. This address can be a supplier for received inventory or a customer for shipped inventory.

Transaction Type. Specify the transaction type to assign to the algorithm sequence. This field is mandatory. To set up transaction types, use Warehouse Transaction Types. The transaction type defines types of inventory transactions that are related with specific requests and orders.

The following transaction types are specific to Request programs:

- Picking Request
  - PICK-SO – Picking Sales Order
  - PICK-DO – Picking Distribution Order
- Putaway Request
  - PUT-TR – Inventory Putaway requested in advance, by the Putaway Requests action
  - OTF-TR – On the Fly Inventory Putaway (real-time inventory transfer on the shop floor)
- Replenishment Request
  - PICK-RE – Replenishing Min-Max Points, by Replenishment Requests
  - PICK-RE – Line-side replenishment request

Warehouse. Enter the warehouse you want to associate with the algorithm sequence.

Warehouse Item Type. If you want to assign a sequence of algorithms to a combination of transaction type and warehouse item type, enter the item type here. If you leave this field blank, the assignment is valid for all item types. Warehouse Item Type can be defined for each item using Warehouse Items.
The Assignments panel grid displays the sequence for each algorithm. This grid allows you to create, modify, or delete sequence assignments and includes the Sequence, Algorithm, and Description columns.

Sequence. Each algorithm assignment consists of a number of individual algorithms, in order, identified by a sequence number. You can assign an individual sequence of algorithms that are required to be used in order to fulfill demand. For a new assignment, the Sequence defaults to 0. The best practice is to set up number sequences by 10's (10, 20, 30, and so on) so that additional steps can be inserted easily later, if required.

Algorithm. Assign algorithms of the type you selected at the top of the frame.

Description. The description of the algorithm will be displayed.

Setting up Material Routing

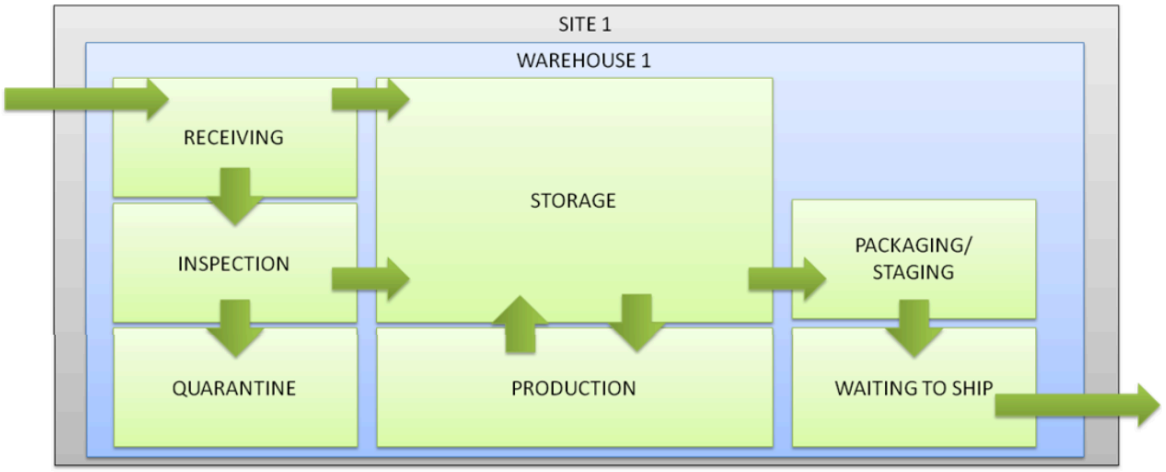
The following programs are used to set up material routing:

- Warehouse Task Types
- Warehouse Alternate Task Types
- Material Routings
- Material Routing Assignment
- Warehouse Task Type Assignments
- ASRS Task Processing

Material routings define how goods flow through a warehouse, distribution center, or manufacturing facility. Certain regions of a warehouse may have their own unique characteristics, and material routings assist in automatically guiding users to perform the correct action (physical or in the system) as goods are moved. Some examples of parameters include: checking for shortages, adjusting packaging (from pallet to box), and indicating a change in status.

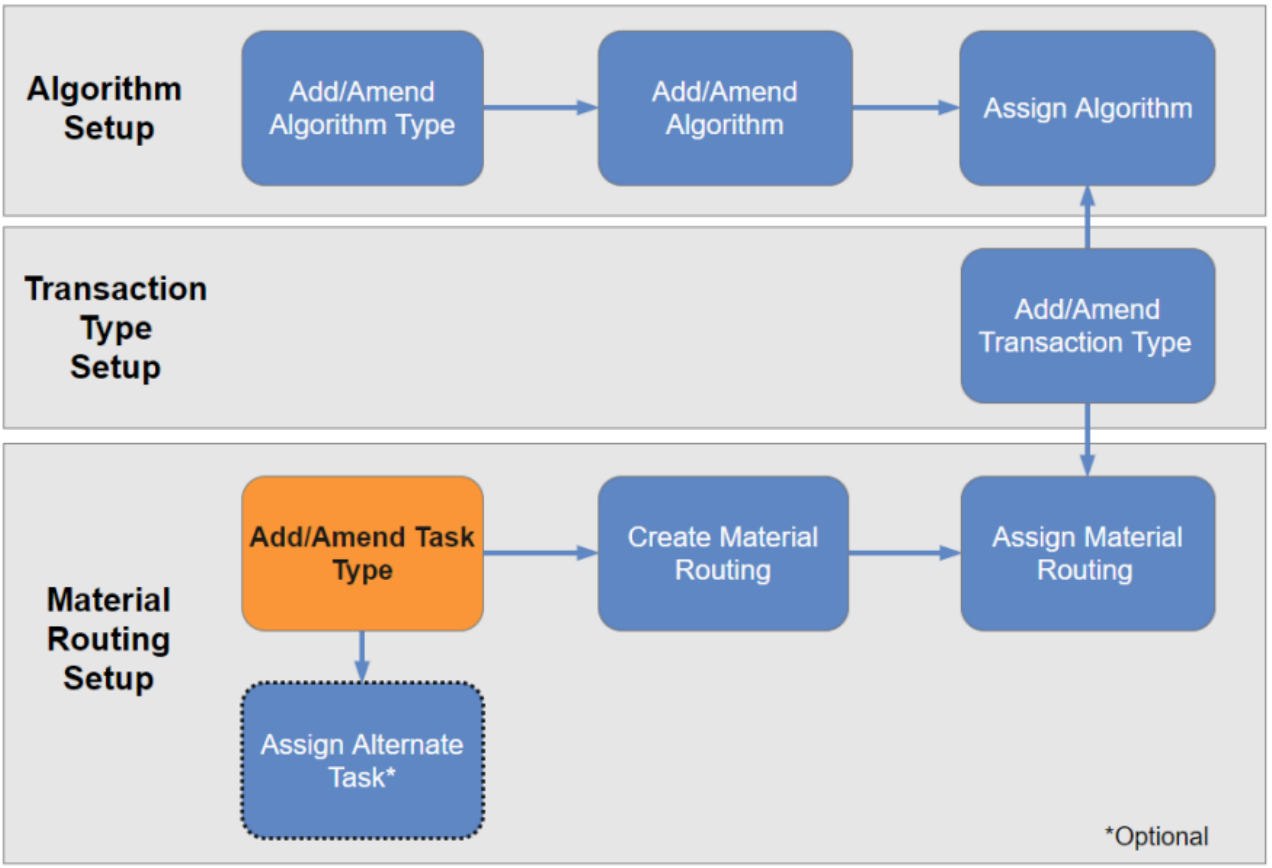
Note Material routing is similar to “Internal Routing” within legacy QAD Warehousing (WMS). The naming convention has been changed to more accurately reflect the purpose of it.

Fig. 2.12 Warehouse Extension Setup Process Map



Warehouse Task Types

Use Warehouse Task Types to create task type characteristics and maintain existing task types.



Tasks cover an individual action that must take place to move inventory appropriately. Tasks can have different types that describe the action taking place. These types coincide with material handler duties and can be assigned in a certain priority to a user. The following task types are supported:

Source Demand	Task Type
Picking	PICK
Replenishment	REPLEN
Putaway	PUTAWAY
Inventory Transfer	TRANSFER

Task Type. Enter the name of the task type.

The task type describes the action taking place during the task. Examples of task types include PICKING, PUTAWAY, REPLENISHMENT, and TRANSFER.

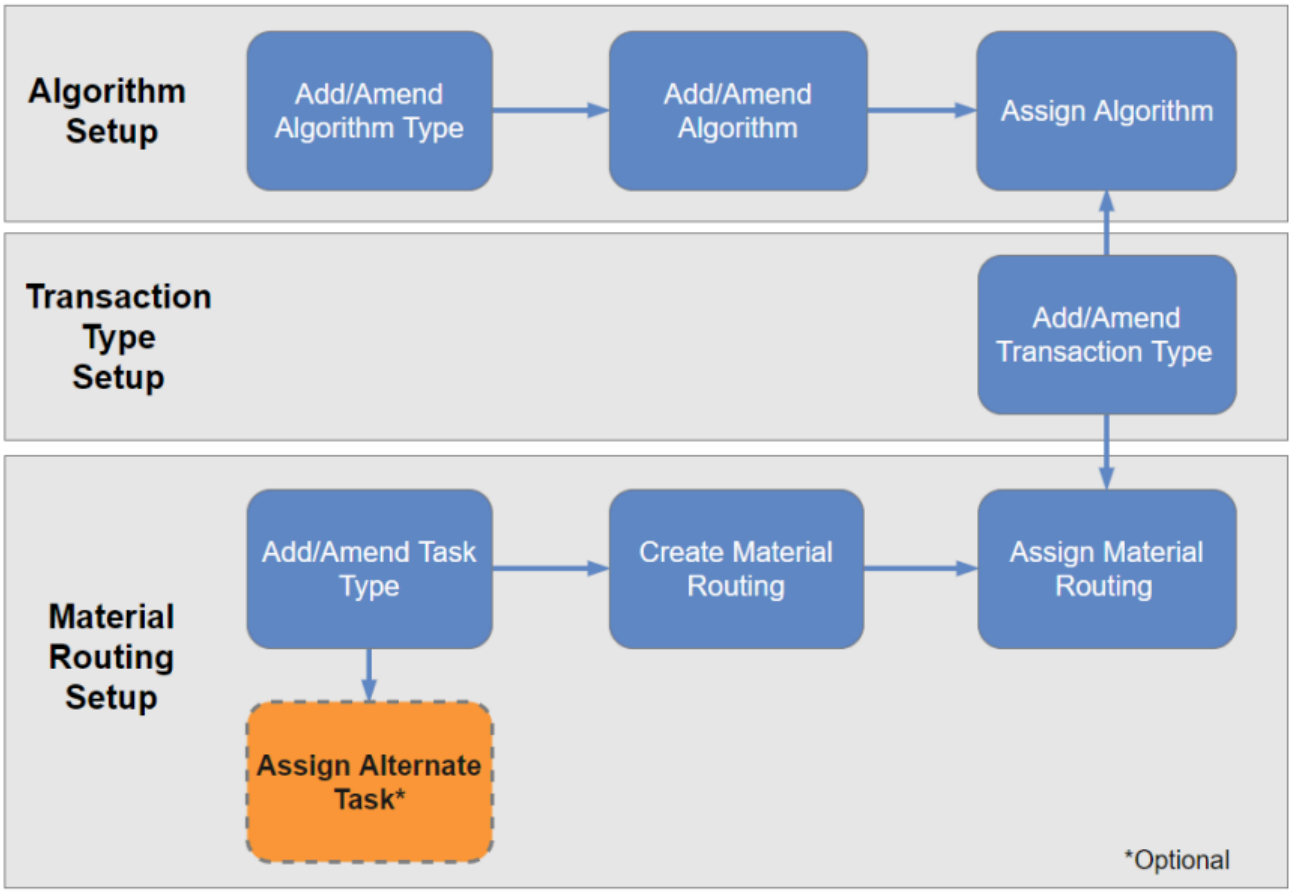
Description. Optionally, enter a description of the task type.

Confirmation Mode. Specify the default confirmation method for this task type:

- Auto. The movement confirmation is performed automatically.
- Manual. The task must be confirmed manually be a user.

Warehouse Alternate Task Types

Use Warehouse Alternate Task Types to create alternate task type characteristics and to specify special circumstances in which the alternate task type should be used instead of the standard task type.



When creating an alternate task type, users will link the alternate task type with a standard task type and then specify the circumstances when the alternate task type will be used, such as when material is being moved from one specific location to another.

Note Standard task types are created and managed using Warehousing Task Types.

Note Using Warehouse Alternate Task Types during the setup process is optional.

Alternate Task Type. Enter the name of the alternate task type. For example, enter Transfer if the task involves transferring items from one location to another.

Description. Optionally, enter a brief description of the alternate task type. The description displays in lookups and various reports so that users can identify it.

Task type. Enter the name of the standard task type that will be linked to this alternate task type. Standard task types are created and managed using Warehouse Task Types.

Sequence. Specify the sequence in which the alternate task should be considered,

From Site. Enter the site where inventory is being transferred from.

To Site. Enter the site where inventory is being transferred to.

From Warehouse. Enter the warehouse where inventory is being transferred from.

To Warehouse. Enter the warehouse where inventory is being transferred to.

From Area. Enter the area where inventory is being transferred from.

To Area. Enter the area where inventory is being transferred to.

From Work Zone. Enter the work zone where inventory is being transferred from.

To Work Zone. Enter the work zone where inventory is being transferred to.

From Location. Enter the location where inventory is being transferred from.

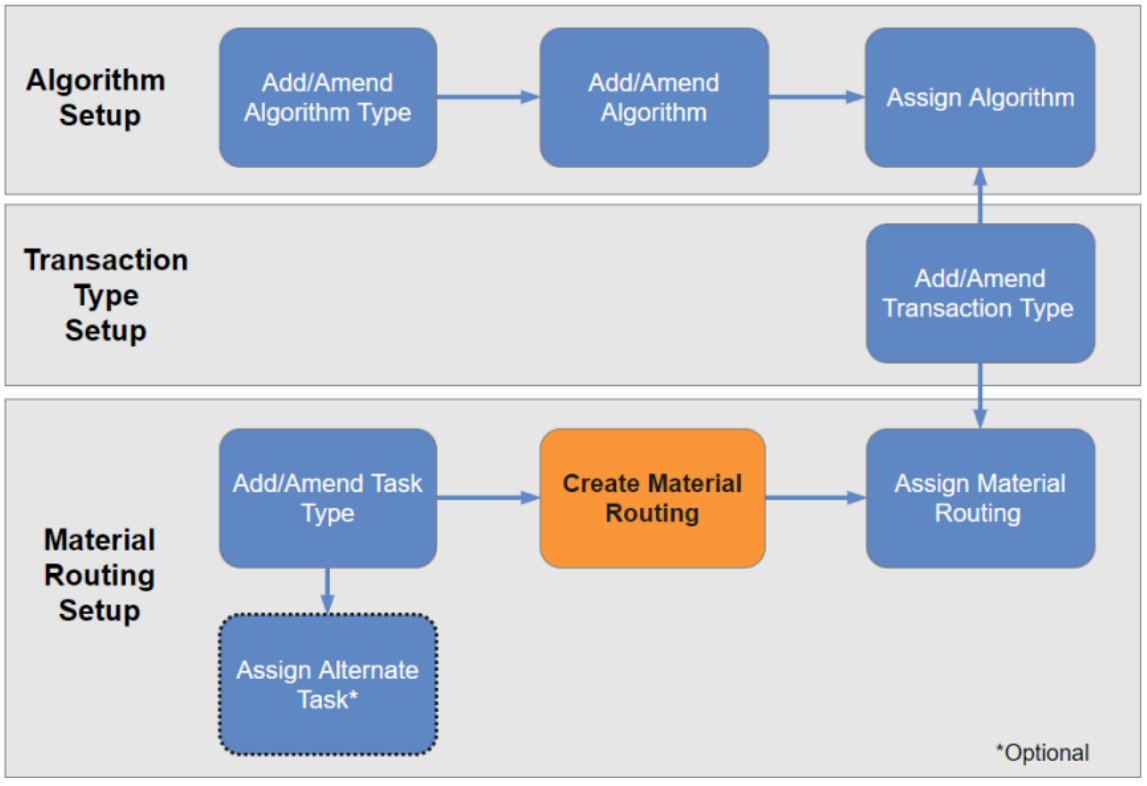
To Location. Enter the location where inventory is being transferred to.

Confirmation Mode. Specify the default confirmation method for this task type:

- Auto. The movement confirmation is performed automatically.
- Manual. The task must be confirmed manually by a user.

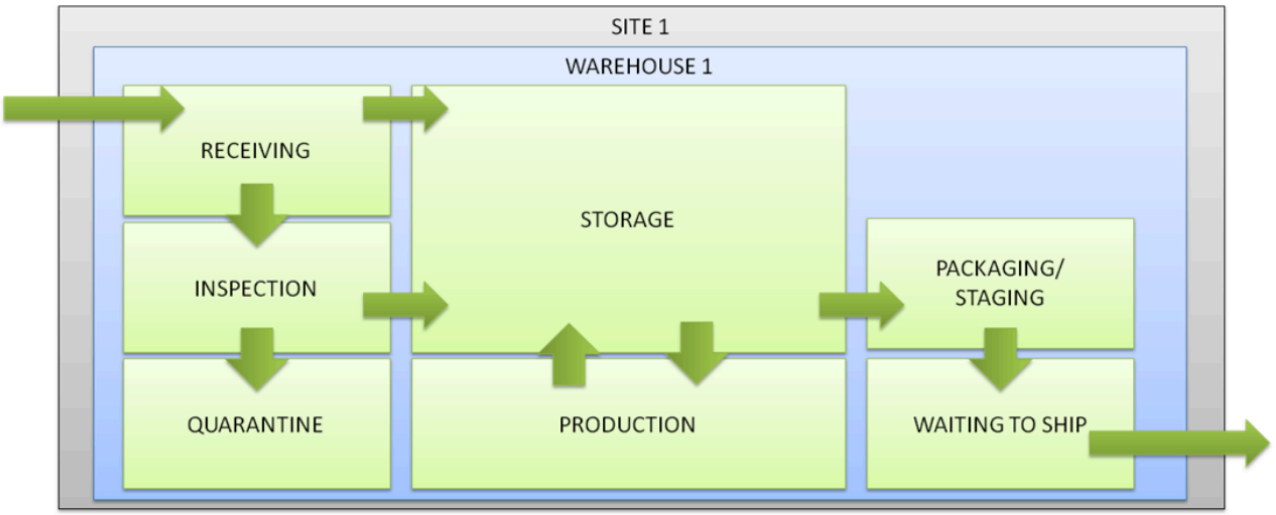
Material Routings

Use Material Routings to modify or create a material routing.



In this program you create a sequenced list of steps that specifies the path inventory should follow through the warehouse. Each step (sequence) within the material routing defines the warehouse area where the inventory is moved next and the warehouse area where the inventory is moved from. For each step within the internal routing, you specify the number of fields that control how the inventory is processed as it reaches that point in the sequence. The parameters are controlled at the point where inventory is taken from.

Fig. 2.13 Material Routing Through Warehouse Locations



While setting up sequences in Material Routing Maintenance, the first sequence indicates the warehouse area where inventory is moved from and the second sequence number indicates the warehouse area where the inventory is moved to. Accordingly, the next sequences indicate next areas where inventory is to be moved.

Demand	Sequence 10	Sequence 20
Picking	STORAGE	PACKAGING
Replenishment	STORAGE	PRODUCTION
Putaway	RECEIVING	STORAGE

In the example below, the first sequence indicates that inventory will be moved from Receiving to Inspection and the next sequence indicates that inventory will be moved from Inspection to Storage.

Sequence	Warehouse Area
10	Receiving
20	Inspection
30	Storage

Warehouse. Enter the warehouse where you want to create or modify the material routing.

Material Routing. Specify the code that identifies the material routing you want to maintain.

Description. Optionally, enter a brief description of the record you are creating or modifying. The description displays in lookups and various reports so that users can identify it.

To access the Warehouse Material Routing Detail view, click Details. Here you can access the routing sequences, transactions, and picking panels, and edit the information of the material routing.

Area. This field is mandatory. Enter the area in which the inventory should be considered.

Sequence. This field is mandatory. Specify the sequence in which the alternate task should be considered.

Task Type. Enter the name of the standard task type.

Task Priority. Assign a default priority value to transactions in the material routing.

Task Priority Increment. Specify the increment that is added to a transaction's priority as time elapses.

Create Shipper. Select the checkbox to create standard shippers. You can use standard shipping functions to consolidate and print these shippers as shippers, containers, or bills of lading. Standard shipping functions can also be used for bulk shipment of, for example, multiple sales orders that have been combined onto a single shipper.

Check Inspection. Select the checkbox to determine whether inspection must take place.

Check Shortages. Select the checkbox to verify the shortage clearance before a location is identified to receive the inventory. This option looks for orders that were not fully satisfied in the original picking because of insufficient inventory levels.

Keep Inventory Status. Specify how the system sets the status of transferred inventory. Select this checkbox to allow the inventory status of the transferred inventory to retain its original value.

From Location Option. Select the location where inventory is being transferred from. Choose a number to define whether warehouse staff can modify the From Location aspect of inventory transactions. The options below determine how the transaction functions and which action you might need to take:

• 0: No change allowed

• 1: Issue a warning if the field is changed

• 2: Request confirmation if the field is changed

• 3: Require re-entry if the field is changed

To Location Option. Select a number to define whether warehouse staff are allowed to modify the destination location aspect of inventory transactions. The options below determine how the transaction functions and which action the user might need to take:

• 0: No change allowed

• 1: Re-prompt; must be different location

• 2: Re-prompt; can be same location

• 3: Re-prompt; can be same location, warn if different

• 4: Re-prompt; can be same location, confirm if different

• 5: Re-prompt; can be same location, re-enter if different

From Lot Option. Enter a number to define whether warehouse staff can modify the From Lot/Serial value to one that is different from the value assigned by the system. The options are the following:

• 0: No change allowed

• 1: Issue a warning if the field is changed

• 2: Request confirmation if the field is changed

• 3: Require re-entry if the field is changed

To Lot Option. Enter a number to define whether warehouse staff are allowed to modify the destination Lot aspect of inventory transactions, and, if so, which action is required. The options are as follows:

• 0: No change allowed

• 1: Blank the Lot/Serial field

• 2: Re-prompt. Non-blank Lot/Serial required

• 3: Re-prompt. Allow old L/S. Blank not allowed

• 4: Re-prompt. Any Lot/Serial value allowed

• 5: 3+ Warning if changed

• 6: 4+ Warning if changed

• 7: 3+ Confirmation of change required

• 8: 4+ Confirmation of change required

• 9: 3+ Re-entry required if changed

• 10: 4+ Re-entry required if changed

From Reference Option. Enter a number to define whether warehouse staff are allowed to modify the From Reference aspect of inventory transactions, and, if so, which action is required. The options are the following:

• 0: No change allowed

• 1: Issue a warning if the field is changed

• 2: Request confirmation if the field is changed

• 3: Require re-entry if the field is changed

To Reference Option. Enter a number to define whether warehouse staff are allowed to modify the destination reference aspect of inventory transactions, and, if so, which action is required.The options are the following:

- 0: No change allowed
- 1: Blank the reference field
- 2: Re-prompt. Non-blank reference required
- 3: Re-prompt. Allow old references. Blank not allowed
- 4: Re-prompt. Any reference value allowed
- 5: Automatically regenerate a new Reference
- 6: 3+ Warning if changed
- 7: 4+ Warning if changed
- 8: 3+ Confirmation required if changed
- 9: 4+ Confirmation required if changed
- 10: 3+ Re-entry required if changed
- 11: 4+ Re-entry required if changed
- 12: 5+ Re-prompt

From Pack Option. Enter a number to define whether warehouse staff are allowed to modify the From Pack Code aspect of inventory transactions, and, if so, which action is required. The options are the following:

- 0: No change allowed
- 1: Issue a warning if the field is changed
- 2: Request confirmation if the field is changed
- 3: Require re-entry if the field is changed

To Pack Option. Enter a number to define whether warehouse staff are allowed to modify the destination pack code aspect of inventory transactions, and, if so, which action is required. The options are as follows:

- 0: No change allowed
- 1: Issue a warning if the field is changed
- 2: Request confirmation if the field is changed
- 3: Require re-entry if the field is changed

Adjust Packaging. Select from the following options to adjust the packaging when a transaction is performed:

- Decomm All

• Decomm Master

• Pack Build

• Remove

• Repackage

• Split

Quantity Change Option. This field defines the action to be taken if the quantity is changed, as controlled by the Allow Quantity settings. The options are as follows:

• 0: Accept the change

• 1: Accept the change and display a warning

• 2: Accept the change if in the form of a quantity, otherwise re-enter

Allow Quantity Increase. Select the checkbox if warehouse staff are allowed to increase the quantity when a transaction is performed.

Note If the checkbox is enabled, then the transaction takes into consideration the quantity change option.

Allow Quantity Decrease. Select the checkbox if warehouse staff are allowed to decrease the quantity when a transaction is performed.

Note If the checkbox is enabled, then the transaction takes into consideration the quantity change option.

Repick Type. Enter the transaction type that should be used if a re-pick is required.

Note This re-pick transaction type must start with PICK-, and must be defined in Warehouse Transaction Types. If you leave the Repick Type field blank, the re-pick will use the same transaction type as the original picking.

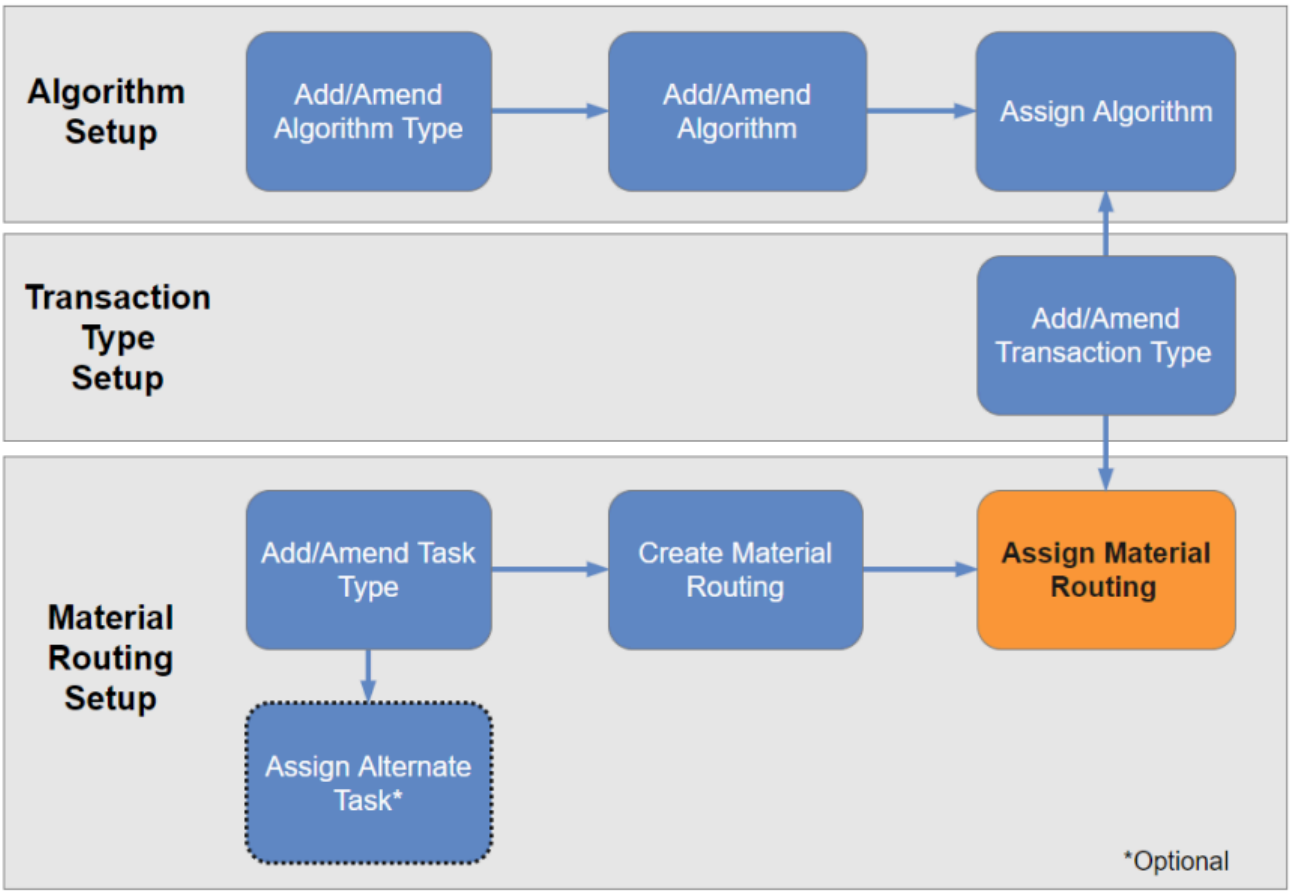
Direct Pick. Select the checkbox if you want to allow direct picks for the material.

Allow Switch Lot/Serial. Select the checkbox to activate the switch lot/serial and reference functionality by material routing.

Expire Date (Days). Indicates the date to use when you select expired call quotes to be deleted or archived.

Material Routing Assignments

Use Material Routing Assignments to assign a material routing to a specific warehouse and transaction type.



You can also specify a combination of a transaction type with an item, a warehouse item type, or an address relating to a supplier or customer, so that the material routing is used when that particular combination occurs.

Transaction Type. Specify the transaction type to link to a material routing. To set up transaction types, use Warehouse Transaction Types. The transaction type defines types of inventory transactions that are related with specific requests and orders.

The following transaction types are specific to Request programs:

- Picking Requests
  - PICK-SO – Picking Sales Order
  - PICK-DO – Picking Distribution Order
- Putaway Request
  - PUT-TR – Inventory Putaway requested in advance.
  - OTF-TR – On the Fly Inventory Putaway (real-time inventory transfer on the shop floor)
- Replenishment Request
  - PICK-RE – Replenishing Min-Max Points,
  - PICK-RE – Line-side replenishment request,

Site. Enter a site. A site represents a place where inventory is manufactured or stored, such as a distribution center, a warehouse, a manufacturing facility, or any combination of these.

Warehouse. Enter the code that identifies the warehouse you want to update.

Item. If you want to assign a material routing to a combination of transaction type and item, enter the item number here. If you leave this field blank, the assignment is valid for all items.

Item Warehouse Type. If you want to assign a material routing to a combination of transaction type and warehouse item type, enter the item type code here. If you leave this field blank, the assignment will be valid for all item types.

Address. If you want to assign a material routing to a combination of transaction type and address, enter the address code here. If you leave this field blank, the assignment will be valid for all addresses. For receipt types of transactions, the address will relate to the supplier of the item being received. For issue types of transactions, the address will relate to the customer to whom the goods are to be dispatched.

From Area. Optionally, enter the area where inventory should be transferred from. Leave this field blank to specify all areas.

From Zone. Optionally, enter zone where inventory should be transferred from. Leave this field blank to specify all zones.

From Location. Optionally, enter location where inventory should be transferred from. Leave this field blank to specify all locations.

Destination Location. Optionally, enter the destination location. Leave this field blank to specify all locations.

Sequence. Specify the sequence in which the alternate task should be considered. This is a mandatory field.

Material Routing. Specify the code that identifies the material routing you want to assign to a particular transaction type. The material routing must exist in the system. A Material Routing can be created or modified in Material Routings.

Warehouse Task Types Assignments

Use Warehouse Task Type Assignments to assign task types to the specific resources that perform actions of this type. This program allows users to create a prioritized list of task types and group them into queues. The queue can contain a number of sequences that are checked first before going to the second queue. If there are alternate task type records, then the task type is replaced by its alternative.

When performing task types, the priority of what is performed is based on the queues and its sequences. For example, the following picking and putaway tasks types have been set up to be performed by a user in the warehouse:

- Queue 1
    - Sequence 1: Picking
    - Sequence 2: Putaway

In this use case, the user is prompted to perform the picking task first because of its higher priority in the queue. After the picking task is complete, the user is prompted to perform the putaway task. If there are multiple queues, the system first checks all the sequences in queue 1 before going to queue 2.

Another common use case is splitting the picking task types into two:

- PICKLOW (Picking task type performed on the ground level)

- PICKHIGH (Picking task type performed from racks)

The system allows you to set it up so that some users can only be assigned to the PICKLOW tasks types.

- Queue 1
    - Sequence 1: PICKLOW

Because those users will only be able to see those tasks to be performed, they will not have access to the other types of tasks, preventing users from performing tasks that are not assigned to them. If more task types are assigned to the same user, then by its assignment in queue and sequence, it is certain that they will be performed by its prioritized list.

User ID. Enter the ID of the user who will be assigned the tasks.

The assignments panel grid displays the queue order for each task type. This grid allows you to create, modify, or delete queue assignments and includes the Queue, Sequence, Task Type, and Confirmation Mode columns.

Queue. Tasks are grouped in queues, with the lowest number having priority. Enter the number of the queue to which you want to assign the task.

Sequence. Tasks are grouped within queues by sequence, with the lowest number having priority. Enter the number of the queue sequence to which you want to assign the task.

Task Type. Specify the task type. The task type describes the action taking place during the task. Examples of task types include PICKING, PUTAWAY, REPLENISHMENT, and TRANSFER.

Note If you enter a task type that is already assigned to the same User ID, when attempting to save or upon leaving the field, the system notifies you the combination already exists.

Confirmation Mode. Specify the default confirmation method for this task type:

- Auto. The movement confirmation is performed automatically.
- Manual. The task must be confirmed manually by a user.

Chapter 3: Warehouse Extension Engine

This chapter discusses the following topics:

Events and Tasks

Warehouse Extension Process Steps

Events and Tasks

Events and tasks organize activities that occur in the warehouse on a high level (events) and low level (tasks). Events and tasks are records that account for the required movement of inventory around a warehouse.

Most often, events cover a group of actions that need to occur. The actions are related to orders, either sales or distribution orders. As each order can have different information (order lines), those details are reflected in an event as the event details, which describe the overall requirements for items. Tasks cover an individual action that must take place to move inventory appropriately.

Tasks can have different types that describe the action taking place. These types coincide with material handler duties and can be assigned in a certain priority to a user.

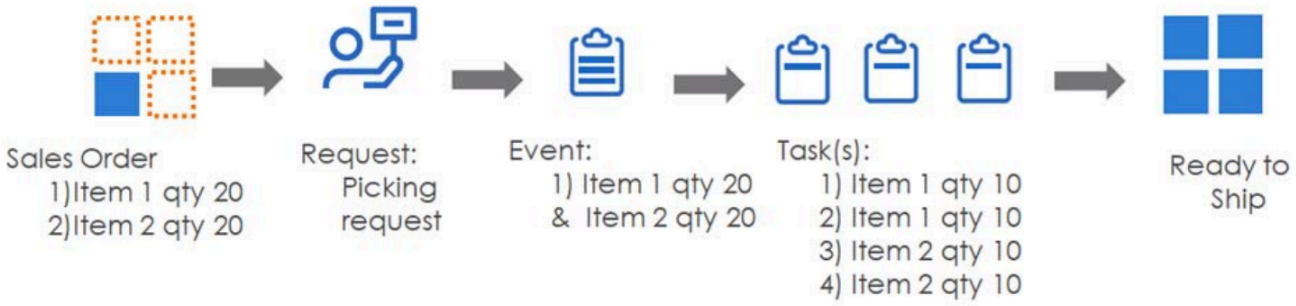
Fig 3.1. Events and Tasks Flow

The following table displays the different information that is provided at different levels, from Events, to Event Details, to Tasks.

Demand	Event Request	Event Detail	Task
Picking	PICKING	Order Line	Serial ID/Item & Location To
Replenishment	(PRODUCTION) REPLENISHMENT	Item & Location To	Serial ID & Location To
Putaway	PUTAWAY	Serial ID	Serial ID & Location To

Example As shown in the graphic below, there is a sales order with two items (lines), each with a quantity of 20, that need to be shipped today. This represents the demand for picking. Both items are stored in boxes, each box containing a quantity of 10. To simultaneously collect the proper requirements for this order, a picking request is placed and the requirements are released as an event. The event reflects what is required for the sales order, and only one event is created to pick the two items. The details of the event describe the requirements for demand, such as the type of the event, total quantity required, sales order number, the order lines, and the user reference that is assigned to perform this action. Then, at the lower level of the event the tasks are generated, which reflect what needs to be performed according to the generated task. It indicates the action necessary to be taken to fulfill the demand. In this case, the tasks reflect activities to pick each of the boxes from one location and to transfer them to a destination location. The sum of all required inventory to be picked on the tasks is equal to the required quantity on the event.

Fig 3.2. Events and Tasks Example



Checking Setup and Simulating the Creation of Events and Tasks

The following programs are used to simulate the creation of events and tasks and to check if the setup has been created properly to allow the tasks to be created:

-
- Putaway Simulation

e

Putaway Simulation

Use Putawa Simulation to test the putaway algorithm assignments without altering inventory records. After the user inputs the mandatory parameters that would be passed to the algorithm in a real-life scenario, the system generates a report that lists all the locations that would have been used if the program had been carried out as a real transfer/putaway.

Site. Enter a site.

Warehouse. Enter the warehouse for this function to consider.

Area. Enter the name of the area where the simulated inventory will be transferred to.

Item. Enter the item number for which you want to run simulation. The item number that is specified will be picked in the simulation in accordance to preset rules. Because multi-item serial IDs are not considered in warehouse picking, you are only allowed to enter one item.

Location. Enter the location for this function to consider.

Lot/Serial. If applicable, enter the item's lot/serial to use for the simulation.

Reference. If applicable, enter the item's reference information to use for the simulation.

Serial. Enter the Serial ID for which you want to run the simulation. This simulation checks the serial ID item number and quantity and other characteristics to simulate a real scenario.

Transaction Type. Specify the transaction type to use for testing the putaway and location find algorithm assignments. This simulation does not influence current activities or change actual inventory records.

The following transaction types are specific to the Putaway Request program:

- PUT-TR – Inventory Putaway requested in advance (by Putaway Serial Request Program)
- OTF-TR – On the Fly Inventory Putaway (real-time inventory transfer on the shop floor)

Detail Report. You can select to print the simulation in Detail mode, which includes transaction lines, or in Summary mode.

Creating Events and Tasks

The following actions are used to create events and tasks:

- Putaway Requests
- Replenishment Requests
-
- Picking Requests

Putaway Requests

Use Putaway Serial Request to create putaway requests for serial IDs.

Putaway Serial Request generates a report with potential serial ID putaway demand based on inventory availability. Running this report results in Event and/or Tasks generation to move the serial IDs into

designated warehouse locations. Users can indicate the specific warehouse locations where the serial IDs are transferred to or they choose to have the system determine the locations based on available warehouse locations that are set up in Material Routing, Algorithm Assignment, and Storage Lists.

Replenishment Requests

Use Replenishment Request (3.25.8.5) to create requests for replenishment.

Use Replenishment Request to generate a report with potential replenishment demand based on inventory availability and the settings in Replenishment Location/Storage Maintenance (3.25.3.3). This report generates events and/or tasks to fulfill the Replenishment demand. Note Setup in Replenishment Location/Storage Maintenance (3.25.3.3) is required prior to running the report, including the assignment of a replenishment list, which is created using Replenishment List Maintenance (3.25.3.1). The Replenishment Request report analyzes this setup and checks the inventory details for the specified warehouse locations or storage zones. If the level of inventory available on hand in each warehouse location/storage zone is below the Replenishment Point defined in Replenishment Location/Storage Maintenance (3.25.3.3), a Replenishment Request is generated. Note If there are already some tasks for this specified demand, then the report will be blank and no event/task will be generated. The following is an example of the Replenishment Request report.

Picking Requests

Modifying Events and Tasks

The following programs are used to modify existing events and tasks and its records:

- Warehouse Tasks
- Warehouse Jobs
-
- Warehouse /Task History Delete & Archive
-

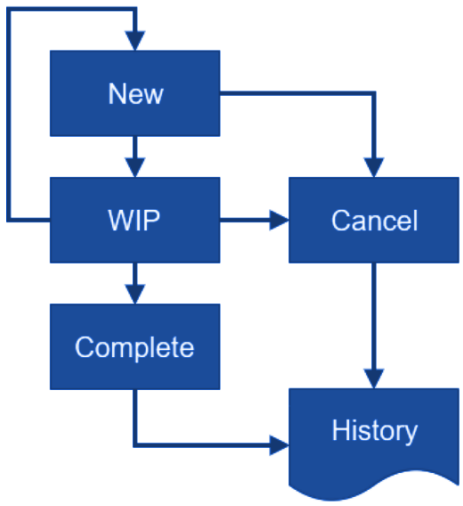
Warehouse Tasks

Use Warehouse Tasks to modify existing tasks. A task covers an individual action that must take place to move inventory appropriately.

Users are also able to change the status of a task. For example, if a job does not need to be performed anymore, a supervisor with access to this program can change the status to Cancel so that the task does not appear in the scanner and the task is no longer performed.

The following graphic displays the flow of task statuses.

Fig 3. .Warehouse Task Status Flow



- New. The task had been created and is ready to be performed by the user. Users can change the status of a task from New to either WIP or Cancel.
- In Process. The task is being performed by the user. Other users who are allowed to perform the same tasks types are not able to see it on the display and work on it. Users can change the status of a task from In Process to either Cancel or Complete.
- Completed. The task has been completed by the user. All requirements existing in the task details have been performed, and it is moved to its history records.
- Cancelled. The Task had been canceled and it is moved to its history records.
- Exported?

The following browses enable users to view events and tasks:

- Warehouse Event Task Browse Collection. Use this collection to view New, WIP, or Pending events and their associated tasks. Events that have been completed or canceled are not displayed in this collection. Users can view the historical records of tasks that have been completed or canceled only if the associated event ID is in New, In Process, or Pending status.
- Warehouse Event Task History Browse Collection. Use this collection to view historical records of events and their associated tasks after they have been completed or canceled.
- Event History Browse (3.25.7.22). Use this browse to view historical records of events after they have been completed or canceled.
- Warehouse Task History. Use this browse to view the historical records of tasks and tasks details. Users can view the event ID associated a task but not the event details.

The following browses provide users with KPIs associated with the performance of tasks, such as total time tasks are performed, how long tasks are open, pending time, and so on:

- Open Tasks Performance KPI Browse
- Closed Tasks Performance KPI Browse

Job. Displays the job number.

Task. Displays the task number assigned when the task was created.

Priority. Enter a priority for the task.

Status. Enter the status of the task, such as New, In Process, Completed, Exported or Cancelled.

- New. The task had been created and is ready to be performed by the user. Users can change the status of a task from New to either In Process or Cancelled.
- In Process. The task is being performed by the user. Other users who are allowed to perform the same tasks types are not able to see it on the display and work on it. Users can change the status of a task from In Process to either Cancelled or Completed.
- Completed. The task has been completed by the user. All requirements existing in the task details has been performed and it is moved to its history records.
- Exported. The task has been exported.
- Cancelled. The Task has been canceled and it is moved to its history records.

For example, if a job does not need to be performed anymore, a supervisor with access to this program can change the status from In Process/New to Cancelled so that the task does not appear in the scanner and the task is no longer performed.

Assigned User. Assign a user for the task.

Wave. Enter a wave for the task.

Reason. Enter a reason for the task.

Remarks. Enter remarks for the task.

Job Line. Displays the job line for the task.

Sequence. Displays the sequence assigned to the task.

Priority Increment. Enter the priority increment for the task.

Material Routing. Displays the material routing assigned to the task.

Hard Assign. Select the checkbox to assign a fixed user.

Task Type. Enter a task type for the task. This is a mandatory field.

Transaction Type. Displays the transaction type assigned to the task

Expected Quantity. Displays the expected quantity for the task.

From Warehouse. Displays the warehouse from where the inventory will be moved during this task.

From Site. Displays the site from where the inventory will be moved during this task.

From Storage Zone. Displays the storage zone from which the inventory will be moved during this task.

From Work Zone. Displays the work zone from which the inventory will be moved during this task.

From Location. Displays the location from which the inventory will be moved during this task.

From Item. Displays the From Item. If there are multiple items in the pack, this field is blank.

From Lot/Serial. Displays the From Lot/Serial.

From Reference. Displays the From Reference.

From Serial. Displays the From Serial number.

From Pack Code. Displays the pack code of the From Serial.

Confirmed Quantity. Displays the confirmed quantity for the task.

To Warehouse. Displays the warehouse where the inventory will be moved after this task.

To Site. Displays the site where the inventory will be moved after this task.

To Storage Zone. Displays the storage zone where the inventory will be moved after this task.

To Work Zone. Displays the work zone where the inventory will be moved after this task.

To Location. Enter the Final Location for the task. This is a mandatory field.

Note When entering the To Location, the To Work Zone, and To Storage Zone fields will be populated accordingly.

To Item. Displays the To Item.

To Lot/Serial. Displays the To Lot/Serial.

To Reference. Displays the To Reference.

To Serial. Displays the To Serial number.

To Pack Code. Displays the pack code of the To Serial.

Warehouse Jobs

Warehouse Jobs allows you to manage and edit the existing jobs, updating priorities, grouping jobs, or releasing jobs to the warehouse to fulfill.

Warehouse Jobs cover a group of actions that need to occur like picking a production order picklist, picking a Sales Order Pre-Shipper, or putting away inventory received from a supplier and a specific PO Receiver.

In the Warehouse Jobs details the information of the specific items/order lines to pick/put away or replenish are captured as well as the exact quantities needed. Some fields in the main panel and job details may be visible or not depending on the Transaction Type configuration you select.

Job. This is a read only field. Displays the ID of the job.

Status. Enter the status of the job, these are the following options:

- New: Indicates the job is created and is ready to perform.
- In Process: Indicates the job is being performed. You can perform the same tasks but you are not able to see it on the display and work on it.
- Exported: Indicates the Job and its associated Job Lines and Tasks are being exported to a Third Party software and does not need to be maintained in this QAD software.
- Completed: Indicates the job and all the requirements existing in the jobs details are completed or canceled by the user, then it is moved to the history records.
- Canceled. Indicates that the job is canceled and it is moved to the history records.

Note The only value to which the Status can be changed to is Canceled. If the job line status is set in completed or canceled all fields are read only.

Wave. Enter the wave ID or leave blank to have the system automatically generate the ID.

Priority. Enter the priority of the job.

Reason. Enter the reason associated with the specified job.

Remarks. Optionally enter the remarks associated with the specified job.

Transaction Type. This is a read only field. Displays the job type associated with the specified job. Depending on the job type selected some fields may be visible or not, these are the following options:

PICK-SO

▪Shipper field should be visible.

▪Picklist field should not be visible.

◦PICK-WO

▪Picklist and Sequence fields should be visible.

▪Shipper filed should not be visible.

◦PICK-RE

▪Shipper and Picklist fields should not be visible.

◦PICK-DO

▪Shipper and Picklist fields should not be visible.

◦PUT-TR

▪Shipper and Picklist fields should not be visible.

See more detailed information about transaction type at Warehouse Transaction Types.

Warehouse

This is a read only field. Displays the warehouse associated with the specified job.

Site

This is a read only field. Displays the site associated with the specified job.

Priority Increment

Indicates the priority increment associated with the specified job.

Shipper

This is a read only field. Displays the shipper associated with the jobs. This field is visible only if the PICK-SO option is selected in the Transaction Type field.

Picklist

This is a read only field. Displays the picklist number of the job. This field is visible only if the PICK-WO option is selected in the Transaction Type field.

Created By

This is a read only field. Displays the user who creates the job.

Created Date/Time

This is a read only field. Displays the date and time when the job was created.

Last Modified By

This is a read only field. Displays the user who was the last to modify the record.

Last Modified Date/Time

This is a read only field. Displays the last date and time when the record was modified.

Closed By

This is a read only field. Displays the user who performed the job and closed it.

Closed Date/Time

This is a read only field. Displays the date and time when the job was closed because the user successfully performed all tasks created on it or the date the job was closed because it was canceled.

Job Line

This is a read only field. Displays the number job line associated with the event.

Item

This is a read only field. Displays the item.

Description

This is a read only field. Displays the description of the job.

Status

This is a read only field. Displays the job line status associated with the specified job ID.

Note If Job Status in the Main Panel was changed, from New, In Process or Exported to Canceled and Job Line Status is New, Pending or In Process, then the Job Line Status must update to Canceled.

Quantity Required

Enter quantity required.

Quantity Canceled

Enter quantity canceled.

Quantity Completed

Indicates quantity completed.

Quantity Open

Indicates quantity opened.

Order

This is a read only field. Displays the order number associated with the job.

Order Line

This is a read only field. Displays the order line associated with the job.

Requisition

This is a read only field, indicating the requisition number.

Replenishment Storage Zone

This is a read only field. Displays the storage zone associated with the job.

Replenishment Location

This is a read only field, indicating the replenishment location associated with the job.

Last Modified By

This is a read only field. Displays users who modified the event.

Last Modified Date/Time

This is a read only field. Displays the date and time when the job was modified.

Closed By

This is a read only field. Displays the users who modified the sub event.

Closed Date/Time

This is a read only field. Displays the date and time when the job was closed because the user successfully performed all tasks created on it or the date the job was closed because it was cancel.

Warehouse Task History Delete & Archive

Use Warehouse Task History Delete & Archive to delete or archive a task and its existing history records.

The system does not automatically delete historical information at period or year-end. You can delete this information as frequently or infrequently as you prefer. How often you should run this function depends on how long you need to retain historical information in your database. Most companies keep historical data for at least one year or longer, depending on availability of disk space.

You should run this function twice. First, run it with Delete set to No and review the report. Then, run it with Delete set to Yes.

When you set Delete to Yes, event and task records that satisfy the selection criteria are deleted from the database. If you set Archive to Yes, deleted data are copied to an ASCII file that can be reloaded using Archive File Reload. Otherwise, deleted data cannot be recovered. When Archive is Yes, selected data is stored in a file named xxYYMMDD.hst where xx is the record type and YYMMDD is the file creation date. If this file does not exist in the system, it is created. If it does exist because you already ran delete/archive the same day, the system adds the additional archived records to the end of the file.

Since the generated file has no internal label or content description, you should keep a record of the file name and contents, in case you need to reload the data. Also, remember that you cannot selectively reload data from archive files. If an archive file contains data for an entire year and you need to access records for one month, you must reload all the data in the file to access the records you need.

Note Date and time in the stored data are formatted based on the country code associated with the user who archived the data. If a user with a different date and time format reloads the data, load errors and corrupted data can occur.

To avoid these problems, use the same settings when archiving and reloading the data. Before loading data, use Users to temporarily change your country code to match that of the user who archived the data.

Site. Enter a range of sites associated with the tasks that will be deleted and/or archived.

Warehouse. Enter a range of warehouses associated with the events and/or tasks that will be deleted and/or archived.

Task. Enter a the initial task that will be deleted and/or archived.

Task. Enter a the final task that will be deleted and/or archived.

Status.

Created Date. Enter a range of created dates associated with the events and/or tasks that will be deleted and/or archived.

Delete. Indicate whether to delete the selected records or to generate a report only.

- No. The selected records are not deleted. A report is generated listing the selected records.
- Yes. The selected records are deleted from your database and listed in a report. If you set Archive to Yes when Delete is Yes, the selected records are copied to an ASCII file before deletion. Use Archive File Reload to reload the data, if needed.

Note It is recommended that you run this function twice. First, run it with Delete set to No and review the report. Then, run it with Delete set to Yes. Archive. Indicate whether to archive the selected records.

Archive. Indicate whether to archive the selected records.

- No. The selected records are not copied to an ASCII file.
- Yes. The selected records are copied to an ASCII file. The system creates a file name in the following format: xxYYMMDD.hst, where xx identifies the module code or record type and YYMMDD is the file creation date. If this file does not exist, it is created. If it does exist, records are appended to the end.

Archive File. Enter the name of the file that will contain the exported data. Although the system generates a comma-delimited file, it does not add an extension. For example, if you want the file to be accessible to an external application that recognizes comma-separated value files, add .csv to the file name.

Capacity Recalculation