Assigning Fixed and Random Locations in Warehouse Management

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Editor's Notes: Doug continues his series on Warehouse Management with an in-depth review of the assignment of fixed and random locations and the impact these decisions have on Replenishment, Pick and Putaway transactions in the warehouse. Another very informative article from a seasoned pro.

Previous articles in this series have discussed the initial setup considerations for WMS including location characteristics and attributes. Once these location parameters are determined, you are ready to define which locations are Fixed and which are Random.

What is a Fixed Location?

Fixed locations are assigned when a particular Item is always stored in the same location. Since this determination is made for each location, more than one location can be assigned as a fixed location for the same item. Since the location is fixed, you can plan adjust the size of the location to fit your normal inventory requirements at that location, assign locations in a certain sequence or locate frequently needed items close to the point of use. Fixed locations are useful for storeroom items, consistent volume items and for manufacturing consumption locations. A single location can be both a fixed putaway location and a fixed pick location.

What is a Random Location?

A Random Location is space within your facility that can store any item that is appropriate for that location. Random locations allow more flexibility by using a particular location for different items as the need arises and space is available. By placing items in your warehouse at random rather than in fixed locations, you can often utilize space more efficiently. When items can be stored in any available location space that is appropriate to store the item, or when your objective is to maximize warehouse capacity, random locations should be used. They are especially useful in seasonal industries where the quantity of items vary by time.

The decision as to how to allocate Fixed or Random locations within your warehouse depends upon the variability of inventory items and quantities and the warehouse goals of the enterprise.

How are Locations Selected?

For all warehouse movement transactions, a location must be selected. A feature called Movement Processing controls how WMS determines where to suggest items be moved within the warehouse. This decision is based on two factors—process selection rules and movement instructions.

Process Selection Rules determine which Movement Instruction tables should be used for the item involved in the transaction. Process Selection rules can also be defined to maximize either warehouse space or employee productivity.

Movement Instructions control which locations are suggested for a particular item. During setup, you defined the item in one or more Warehouse Process Groups (WPG). The combination of the type of warehouse request and the WPG determines the set of Movement Instructions to use for a transaction. Movement Instructions are stored in tables and determine the sequence of locations that WMS considers for a given warehouse transaction. These instructions also are used to select the smallest possible number of locations from all potential locations to speed processing. Within Movement Instructions, you determine whether to use Fixed or Random locations.

Why Does Fixed or Random Matter?

The decision of how to allocate Fixed or Random locations within your warehouse depends upon the variability of inventory items and quantities and the warehouse goals of the enterprise.

For example, a storeroom manager may need to provide quick response to workers who need tools or consumables at random times on the shop floor. She may choose to stock individual items rather than cartons so items are ready for

use and place the frequently needed items near the entrance or group similar items together so they are easily found. The storeroom manager might assign specific locations for these items and replenish them from excess material stored in the warehouse. Here, the ease of access and consistency of location provided by Fixed Locations will save time for the storeroom personnel. When more goods are needed in the storeroom, replenishment requests can be automatically generated to move goods from outside the storeroom to the fixed locations inside the storeroom.

A frozen foods manufacturer, on the other hand, may need to maximize capacity in his freezer storage. Because inventory levels of any particular item will vary depending upon the season or date when the product is harvested, fixed locations would tie up large section of the freezer with empty locations when the item is not in season. Random locations are a better choice. For every item that requires "freezer" storage, WMS will find an available location with adequate capacity to store the item. If the enterprise has certain freezer locations designated for shipment and others for long-term storage, a recent enhancement of WMS allows for replenishment of random locations. (See JD Edwards SAR #3156529.) In this case, the shipment freezer locations could be replenished at random from the long-term storage freezers ensuring that enough goods are located in the shipment freezer and ready for quick delivery at all times.

Matching Items to Random Locations using Rules

Each item you store introduces storage requirements. WMS allows you to define characteristics that represent your particular operational requirements. Storage requirements can represent temperature, lighting, safety, weight, security, item cost, height from floor, spill containment and other specific needs as you determine based on what is required to properly store you item. Items with the same requirements can be assigned to a Warehouse Process Group or WPG.

You assign characteristics to a location using the Location Characteristics program. For ease of entry, you can assign characteristics to groups of locations.

You also define location profile information to create attributes about the location that further define the location's proximity to other locations, the location dimensions, the maximum capacity of the location, whether the location can mix container types and other attributes. These attributes are used to further refine the potential locations that can be suggested for a given warehouse transaction.

The process of matching item requirements to acceptable warehouse locations at random using rules is represented by the graphic in Figure 1. A rule structure is created to define combinations of location characteristics that are required for the proper storage of a given item. These rules are called Random Rules because they apply to the selection of Random locations.

In a random rule definition, some characteristics are required while other characteristics can be optional. A location that meets all the required parameters is considered to conform to the random rule.

A typical random rule definition is shown in Figure 2. In this example, a random rule EXPLO is created for explosive materials. Locations that meet this rule must have characteristics for Explosive, Dry, and Hazardous but the location must not be assigned to High

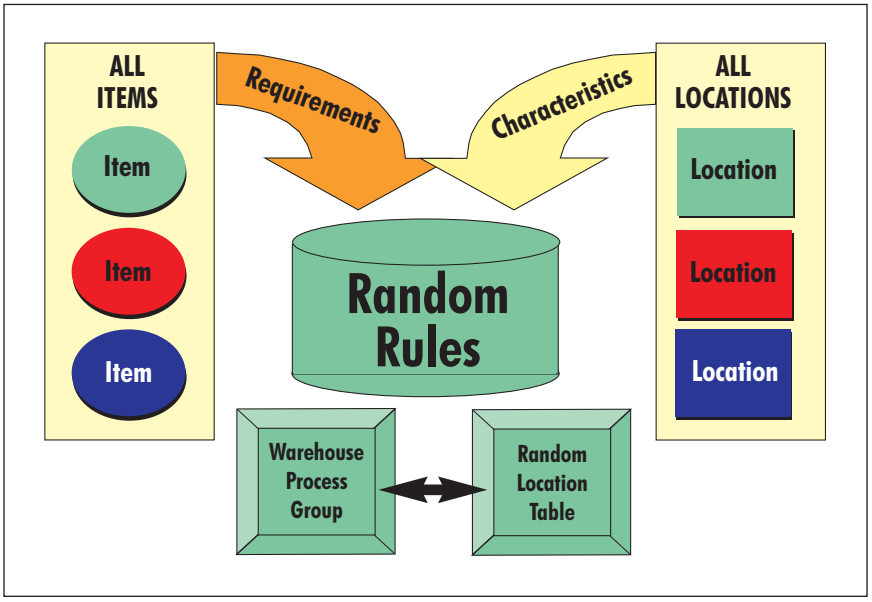


Figure 1: Random Rules

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