Putaway and Removal Strategies in WM Application

- Strategies are used in the warehouse process for creating transfer orders.
- Provide the most efficient search technique for storage bins in the warehouse.
- Each Storage type in the warehouse can be customized with a Putaway and (or) Picking strategy.
- Control indicator's: defined for putaway and picking per storage type in order to provide specific putaway or removal control per storage type.

Putaway Strategies:

" " - Manual stock placement

- No strategy is used.
- During transfer order processing, for placement into a storage type with manual stock placement, the storage bin will be selected and entered manually by the user.
- Recommended for interim storage types.
- Can also be used in conjunction with Storage Unit Management.

B - Bulk storage

- Used for cases where the material in question occurs in large quantities.
- The storage strategy ensures fast access to storage bins by using a more organised structure within the storage bin.
- Also be use Storage Unit Management and mixed storage.

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  You cannot use mixed storage without Storage Unit management for bulk storage.
- Addition to existing stock must be allowed if Bulk storage is used.

  ⚠️ For all putaways with SU managed bulk storage, the system will attempt to putaway as per "addition to existing stock" by searching for bins with the same material, before attempting to putaway as per "mixed storage" .

  Please read SAP Note 88450: VL32N: Incorrect quantities for goods receipt with BS

- Extra customizing for bulk storage may be necessary in the "Storage type control" screen for bulk storage.

- Partial Pallet Management: Unless otherwise indicated, only full pallets of stock can be putaway in storage types with bulk storage and storage unit management (As Storage Units may be a partial amount of the full pallet size).
- You can indicate in the "Storage type control" screen whether partial pallets are allowed to be placed in the storage type.

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  Please note, for cases where partial pallet management is not allowed, you must define a pick point storage type in the stock removal storage type for the remaining quantities. Pick point storage types cannot be bulk storage types; they must have putaway strategy "Q"
  (See below for more details).

- For cases where bulk storage is defined with mixed storage indicator 'X' partial pallet management must also be allowed.

- Block Structures: For bulk storage types you can define Block Structures in the "Strategy for bulk storage" customizing transaction.
- For bulk storage with storage units, you need to define:
- How many storage units will fit into a block (or row).
- You are allowed to define the number of stacks (columns) the maximum stack height and this will calculate the number of storage units. For example, 6 stacks of maximum height 4 will allow 24 SUT's in the row.

Diagram 1.1. Illustrates bulk storage in WM:

C - Open storage

- System searches for a bin on an open storage type.
- The mixed storage indicator should be used for all open storage types.
- Usually, one or more open storage sections are defined for open storage type. Then one mixed storage bin is defined per section.

F - Fixed bins

- Used when a material is to be stored in one storage bin in the warehouse.
- Defined in the material master and for all putaways of this material the system determines the fixed bin.
- The user can override the fixed bin determination and enter a manual bin.

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The addition to stock indicator must be flagged so that quants can be added to.

If a user tries to add a material without a fixed storage bin into a fixed storage bin, the system will issue an error message.

I - Addition to existing stock

- System will search firstly for a storage bin where the material can be added to an existing quant.
- Providing there is enough capacity for the material to be added, this is where it will be placed. It is important for this strategy that the capacity check is correct.
- The system will check the capacity allowed in the bin before adding the material.
- If there are no bins in the storage type with the same material or enough capacity, then the system will switch to strategy "Next Empty Bin" (see below).

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Material must be exactly the same as the material in the bin in order to be added to the quant, for example, If the material is batch managed, the material to be added, must be from the same batch as the material which already exists in the bin. (See SAP help on "Definition of a quant")

- Flagging the control indicator "addition to stock" with another putaway strategy for example "F" – fixed bins, the outcome will not be the same. The indicator allows additional stock to be added to storage bins that contain material, but the putaway strategy will determine how bins are found, the putaway strategy "I" searches first for bins with existing material.

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The indicator addition to stock can be x – if you want addition to stock generally allowed, or m – if you want addition to stock only if the addition to stock indicator is flagged on the material to be putaway.

The addition to stock strategy and the addition to stock indicator, both violate the "FIFO" principle.

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It's not recommended to use addition to stock if you want a "First in First out" principle in the warehouse, as FIFO requires that you keep track of Goods Receipt dates.

- The Goods Receipt date field is stored on the Quant (LQUA) table, with addition to stock you are adding new stock all the time to the quant, so the goods receipt date will not be unique to each movement.

K - Near picking bin

- Similar customizing to "F" fixed bin.
- If there is a fixed bin indicated on the material master of the material to be putaway, with this strategy, of the material cannot be moved to the fixed bin, the system will search for the nearest bin to the fixed bin.
- It important with this strategy that the storage bin structure is correct.
- The system will first try to search for the nearest bin in the column (stack) where the fixed bin is located, working from the bottom up, if no bin is found here, then the system will search to the right of the bin and then to the left (rows).

L - Next empty bin

- Suited to more randomly organised Warehouse.
- The system will search within the storage type for the next empty bin.

P - Storage unit type

- Used in conjunction with storage bin sectioning.
- With this putaway strategy, you can section off the storage type for different SUT's.
- It is important define capacity checks and storage bin types and also check the SUT check flag in the control indicators for the strategy.
- You can define bin sections in the customizing transaction for strategy P.

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When creating storage bins, you must also define the storage bin type. When setting up bin sectioning each section will have a key (usually A, B, C for example) you can define more than one SUT for each key, thus allowing different type of pallet's to be stored in one bin. The following illustrates this:

WhN Typ SecKey No.Secs 1 2 3 4 5 6 .... (Sections)
001 007 A 2 A B
001 007 B 3 1 2 3

Q - Dynamic coordinate quant number

- Each time stock is moved to the storage type a dynamic bin (using the quant number with leading zero's) is created.
- Used to fully utilize the capacity of a warehouse.
- Temporarily store incoming stock (Until it is putaway in a more permanent location such as the ID point) if the putaway is to take up a longer time than usual.
- By doing this you prevent the putaway bin from being unnecessarily blocked for further putaways.

- For this reason its mostly used in conjunction with a relevant ID point storage type.

R - Dynamic coordinate reference number

- removal type on a storage type is also "R".
- It's used mostly for 2-step picking.

Storage unit management is not allowed for this storage strategy.

- An example of how the strategy is used:
For the pick step of a 2-step pick you assign the material that you have picked to an interim storage area with putaway strategy "R", a dynamic storage bin number is created (group number with leading zero's). The stock will stay in this location until the allocation step of the 2-step pick takes place.

Removal Strategies:

" " - No stock removal strategy (Stringent FIFO across all storage types)

- You can leave the entry for stock removal strategy blank and additionally add the wildcard characters *** to the relevant storage type search which will allow the system to search for the oldest quant in the entire warehouse.
- Interim storage types and some restricted storage types can be restricted from this search in customizing.

A - Partial quantity management

- Especially useful with storage unit management.
- You would like to reduce the number of partial storage units in a warehouse to as few as possible.
- Standard storage unit types must be used for stock placement (i.e. where a specific number per pallet has been defined in the material master WM tab).

The partial quantity in a storage unit must be less than the standard storage unit quantity.

Quants which contain the same amount of stock	quants with less amount of stock
defined in the palletisation data for the relevant storage unit type	defined for the standard storage unit type

Situations where quants exist which contain more stock than the standard storage unit type should not occur.

With this stock removal type, 4 specific rules are followed in order to ensure optimum management of stock in the storage type:

required quantity in the transfer order is the => quantity of a standard storage unit	If no standard storage units are available	required quantity in the transfer order is < the quantity of the standard storage unit	No partial storage unit quantities are available
remove a standard storage unit from stock	partial storage unit quantities are used	system first tries to remove partial storage unit quantities from the stock	full storage units are broken. If the transfer order is for 1 full storage unit then the standard FIFO principle is used to search for a relevant quant.

F - FIFO (First in first out)

- This is the most common picking strategy in warehouse management.
- System will propose the oldest quant in the storage type for picking (using the GR date to define the oldest quant).
- every goods receipt posting from IM the goods receipt date will be adopted by the transfer requirement, at transfer order creation this field is copied to the quant table (LQUA) and stored with the quant.
- Each time new stock is added to a quant the GR Date is updated, so this picking strategy alone may not be suitable for perishable goods.

H - Shelf life expiration date

- Works from the same general principle as FIFO except that instead of the GR date used to identify the oldest quant, a SLED (Shelf Life Expiration Date) is used instead.
- Storage Data view needs to be activated in material management
- Need to activate SLED management in the control data for the warehouse in order for this strategy to work.
- There are 2 ways that the SLED date is retrieved for the transfer order creation providing the requirements above are fulfilled.
- From the batch record – For materials which are batch managed the SLED date is kept in the batch record and cannot be changed in WM.
- For non-batch managed materials - required to enter the SLED date on the "Stock Preparation" screen during transfer order creation.

Also use the SLED for stringent FIFO. In customizing you define that the system should search for the oldest quant by SLED in the entire warehouse.

L - LIFO (Last in first out)

- Used when the FIFO principle is not suitable.
- Cases you can have a storage type with fast-moving and slow-moving items in the storage bins (same or different materials).
- The fast moving items are stored on top of already stored slow-moving items and will be required first. For this situation the LIFO (Last In First Out) storage strategy is used.
- GR Date is used to determine the age of the quants.
- The last quant placed in storage will be proposed for picking for the next transfer order.

M - Large/small quantities included (Cascading Storage)

- Cases there may be different requirements for a material per transfer order.
- Example some customers may require a pallet, box or pair of a certain material, where there are 10 pairs per box and 5 boxes' per pallet.
- If the material can be sold in pallets, boxes and pairs and all are stored in the same warehouse, it may make sense to use this strategy.
- So, using the example above, you could set up 3 different storage types one each for Large, Medium and Small quantities.
- Depending on the transfer order requirement for stock, the system should find the most relevant storage type for picking.
- In order to identify which type is required, the system checks the "Control Quantity" field in the material master.
- In the Storage Type Search Table in customizing, each storage type also needs to be defined per size so that first small, then medium, then large is searched. (Movement type 603 is the standard movement type for this strategy)

The illustration below shows an example of this strategy using two storage types:

System will propose the fixed bin storage type if the quantity to be picked is less than or equal to the control quantity in the material master.

P - Fixed bin from material master

- Similar in principle to the fixed bin strategy for stock removal.
- A fixed bin, which has been maintained for a storage type in the warehouse, is defined in the material master as the picking storage bin.
- Each time this material is to be picked the system will propose this storage bin. As with the placement strategy, users can override the proposal and enter a different bin.
- It is highly recommended to set up replenishment control for storage types where this strategy is used.
- Replenishment: For instances where high levels of stock are frequently picked from a fixed bin, you can customize the system so that each time stock is taken out of the fixed bin, stock is replenished from another replenishment storage type.
- To do this you must set up capacity check, control and min/max quantities in the material master, so that stock in the fixed bin cannot go below a certain level without a replenishment taking place.

R - Dynamic coordinate reference number

- Please see explanation for Dynamic coordinate reference number in the Placement Strategies section.

Customising:

Customising for stock placement and stock removal strategies is added at storage type level. Whatever strategy has been defined here is applicable to all bins in that particular storage type.

The relevant customising menu paths are as follows:

> Menu-path for storage type definition:
IMG > Logistics Execution ◊ Warehouse Management > Master Data > Storage Type Definition

> Menu-path for storage type search:
IMG > Logistics Execution > Warehouse Management > Strategies > Activate Storage Type Search

> Menu-path for material master:
Logistics > Logistics Execution > Master Date > Material > Material > Display
In here on the WM1 tab, you can view if specific stock placement or removal indicators have been added which will further influence the storage type search strategy used.

Technical:

LQUA – Quant table
LAGP – Storage bin table
T331 – Storage type control table
T331B – Storage type control for bulk storage
T331L – Storage classes allowed per storage type

- Forms VONDATEN_ERMITTELN (Stock removal strategies)
- NACHDATEN_ERMITTELN (Stock placement strategies)
- STRATEGIEN are useful for tracking the strategy determination.
  (See SE80, function group L03A).

Useful Hints:

During TO creation, after the system has proposed a bin, you can see how the system came to the proposal by going to the top menu bar and selecting option:

- Environment
- Storage Bin search log

This menu path can only be accessed during TO creation – not during TO display (LT21) or TO confirm/cancel (LT12, LT11, LT15).