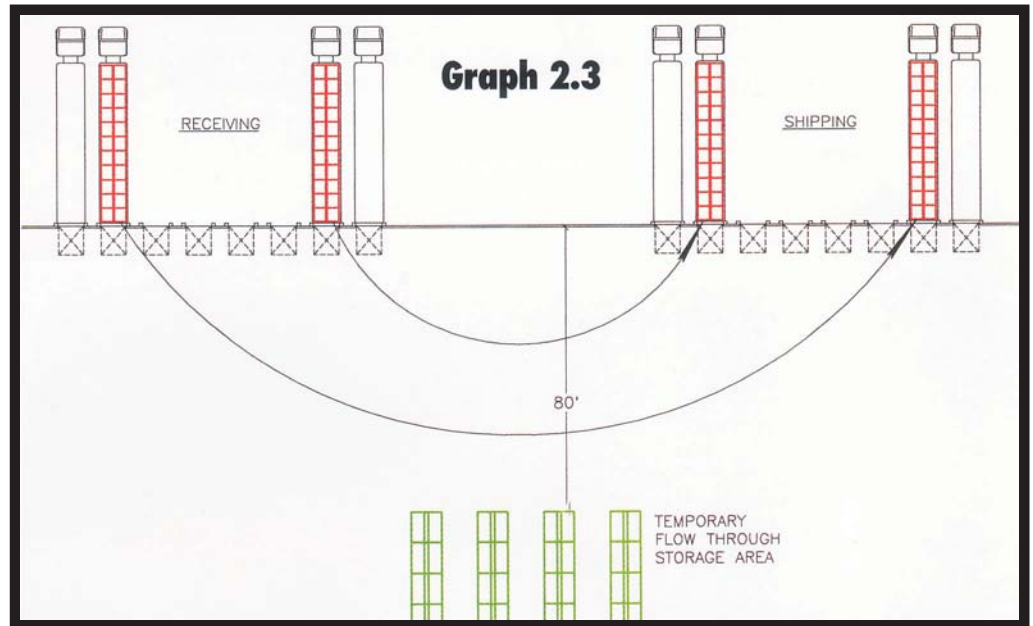
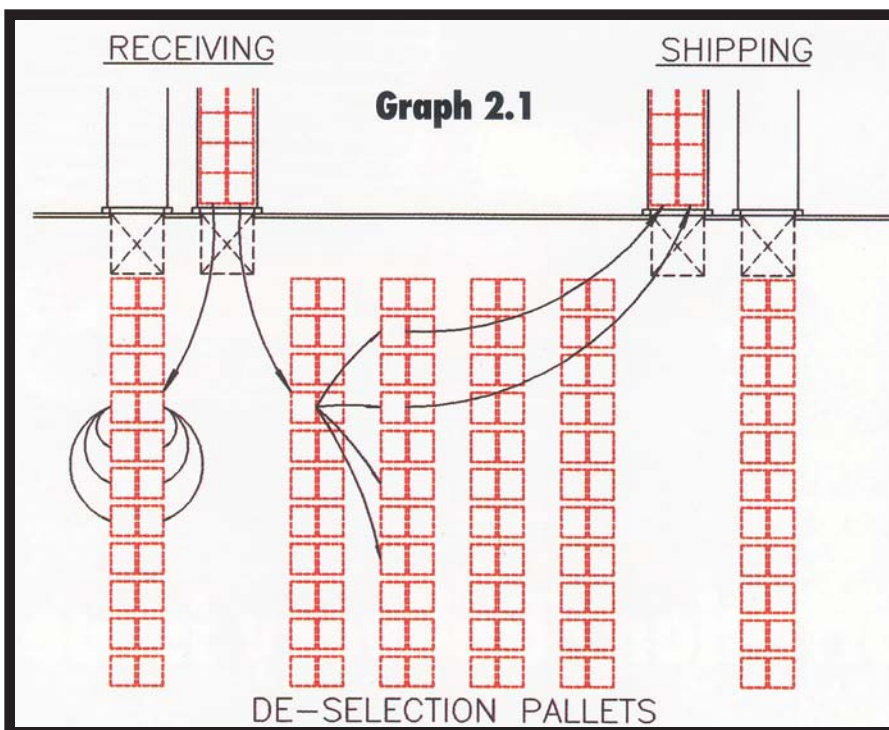


# Crossdocking



## Multiple faces of crossdocking

*Four methods of crossdocking allow distributors to find best way to minimize put-away and replenishment times. Process targets slow-moving product lines and high cube, fast-moving goods.*



**By Ian Levitan and David Abecassis**

**T**here has been a resurgence of interest in a major phenomenon that is reshaping the way manufacturers and distributors view logistics. This phenomenon, referred to as crossdocking, is helping companies reduce their levels of inventory and lower their inventory carrying costs. Crossdocking also facilitates faster inventory turns, thereby removing cost from the pipeline, while achieving the corporation's ultimate goals of shorter lead times and greater fill rates. For companies to achieve optimum returns from a crossdock operation, synergy needs to occur between the following four categories: information flow, product flow, storage and order selection.

This article outlines four crossdock methods using these categories,

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and ultimately exemplifies industry leaders through the best practices that have been successfully implemented.

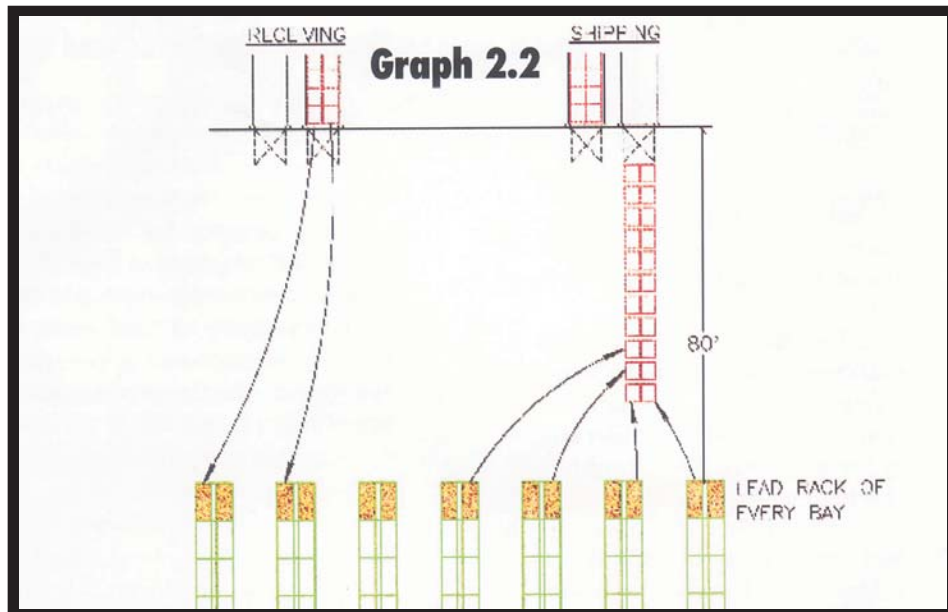
## Crossdocking defined

Crossdocking is a distribution method structuring the relationship between suppliers and distributors at any given stage in the supply chain. Crossdocking defines a physical exchange of inventory between two parties, whereby goods are sorted on or near the docks without ever going into storage. As a key element of ECR (Efficient Consumer Response), crossdocking offers an alternative method of handling product, which can lead to greater distribution efficiency and cost effectiveness in a distribution network. This, in return, leads to a stronger relationship between manufacturers, distributors and retailers.

As part of an overall strategy, buyers and distributors need to identify which vendors, product lines and individual SKUs are to be crossdocked versus *turn* inventory items. Usually, this means, determining which items are *ultrafast* and which items are *ultraslow*. In determining FastSlow criteria, item movement must be considered and analyzed according to cubic volume as well as amount of cases and dollars being shipped.

Open communication amongst partners involved should ease the intrawarehouse and interwarehouse flow of goods. Product should be picked and shipped from the shipping warehouse in such a way that labor in the entire process is minimized.

There are several versions of crossdocking, ranging from *vendor/third party pre-assembled orders*, which may create additional invoice and paperwork handling, to hightech *conveyor sortation systems*, which can require expensive initial outlays. All have the benefits of reduced inventories and accelerated product flow.



## Four crossdocking methods

The *vendor/third party preassembled orders* method requires the manufacturer or a third party to pre-build store pallets based on actual retailer and distributor orders. This method is usually used in high cube/low value product lines that are consuming valuable warehouse space, or for slow moving SKUs. This method presumes a third party will process store orders that can be labor intensive to administer.

The *reverse line picked* method requires the crossdock pallets be deselected from the received pallets onto empty pallets by case. This method involves selecting orders at the source warehouse in total ordered quantity so that they can be deselected at the distribution center one order at a time until all store orders are fulfilled and inventory is down to zero. For example, the pallets can be sorted by store, by customer or by carrier. In this method SKUs tend to be slow, or with short shelf life and low in cubic volume.

*Flow through* involves identifying crossdock items to be stored in a flow through location within the warehouse. As orders are released for selection, flow through SKUs are matched to *turn* inventory items, usually in pallet or half-pallet (layer) quantities. If no match is necessary then orders can simply flow through from receiving onto shipping trailers.

Using the *high speed conveyor*

*sortation* method requires a high level of automation within the warehouse management system in order to allow the manufacturer to manage its inventory in the distributors' facility. Inbound pallets are robotically depalletized onto a mechanized conveyor sortation belt and ultimately routed to each store's shipping door via an applied bar code that indicates store destination. Critical to this method is the availability of an Advanced Shipment Notification (ASN).

There are many solutions that will optimize the four methods of crossdocking. Nevertheless, prior to adopting any crossdocking method as an organizational strategy, logistics must ensure the following criteria are researched and answered to ensure operational excellence.

## Information and product flow

Information technology is essential for crossdocking to be successful. However, depending on the type of crossdocking performed, information and product flow can be simple or extremely complex.

Using the *vendor/third party preassembled orders* method of crossdocking, the following key considerations need to be followed: Product should be matched manually or within system capabilities and purchase orders and Bill of Lading should be consolidated manually. Volume and cube of items

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can be either small SKUs or a few large high cube SKUs. Also, manufacturers or thirdparty distributors are requested to prebuild pallets based on the recipient need. For example, a distributor might request pallets be built by carrier, customer or product. This requirement varies for every distributor.

With this method, crossdock orders may be transmitted via EDI or fax. If EDI is operational, then the third party can respond with an ASN of the exact line content of the incoming shipment. However, if EDI is not available, then bar codes can be valuable to increase accuracy and receiving time at the receiving warehouse

When a reverse line pick crossdocking method is used, orders arrive into the *order well* and crossdock lines are segregated until the product is received into the facility. At this point, product is deselected onto empty store pallets and merged with *turn* inventory. WMS keeps track of the incremental cube on each pallet and issues instructions to transfer pallets to the shipping doors once a cube break is reached. This is a relatively hightech solution, if cube of items are included in fixed pickline.

In the flow through method WMS directs all crossdock items to be staged in a pre-designated flowthrough storage location, or to an available trailer lane directly for shipment (see Graphic 2.3). This method is very flexible and can be used in combination with Continuous Replenishment Programs (CRP).

In high speed conveyor sortation crossdocking replenishment from the manufacturer or distributor is generated off Point of Sale systems or from historical sales data. Demand is sent via an EDI transmission to the replenishment site, which then ships the required volumes. An advanced shipment notice is then sent via EDI to the recipient prior to the release of the *LOAD*. This is an extremely hightech crossdocking solution that can be

## Crossdocking: pros and cons

**Pros:** Crossdocking reduces product handling by lowering inventory levels. This minimizes put-away and replenishment times, hence reducing the costs associated with labor, damages and returns. Costs of owning and maintaining lift trucks are also minimized due to reduced activities. Also, by crossdocking, with its reduced levels of inventory, the amount of valuable storage space that may be required for labor-intensive, slow-moving product lines and high-cube fast-moving goods is reduced.

**Cons:** Additional paperwork and clerical task for reconciliation of purchase orders (accounts payable (AP) and vendor invoice) with bills of lading can be tedious. This can be eliminated when proper systems support the crossdock operation. Secondly, storage and selection of crossdock items require dock and rack space locations for higher match capabilities at the receiving warehouse. Crossdocking is reactionary by nature; failure to meet crossdock matches can result in a reduction in overall service levels. The key ingredient here is discipline in timing. To avoid a decrease in customer service levels, it may be necessary to dedicate a receiving clerk exclusively to handle crossdocks. By using the Advanced Shipment Notice, the clerk can minimize any errors, as well as optimize matching of crossdock items with turn inventory items.

managed inventory. As all receiving is done with RF scanning, a prerequisite should be to have all cases pre-labeled by the vendor (paperless receiving).

## Storage and order selection

Staging of inbound receipts and handling of the crossdocked products is a critical task that will ensure that matching opportunities are maximized at the receiving warehouse. The crossdock items need to be pooled with the turn inventory items going to the same consignee or "ship to" in order to make crossdocking effective. As a rule of thumb, all temporary staging areas should reside close to the shipping dock to minimize horizontal travel distance of crossdock pallets. The following are common methods of storage and order selection used at the receiving warehouse (i.e. crossdock warehouse).

Crossdock pallets are received pre-assembled with store label on the pallets. They are then immediately shipped out with the active billing run, or if timing is not appropriate, they are temporarily staged prior to shipment.

The staging work area can be a pallet grid pattern painted on the floor where cases are deselected from the received pallet onto the empty pallets (see graphic 2. 1). The same method can be used with a one door per store approach

Another option commonly used is

one that dedicates temporary flow-through storage locations within close proximity to the outbound doors. For example, the lead rack of every bay can be the chosen area to stage crossdocks (see graphic 2.2). The items are then selected by a forklift operator, who transfers them to a working area where they are married to turn inventory items based on order quantities. As volumes and quantities increase, permanent drive-in or drive-through racks can be dedicated close to the shipping doors.

In high-tech implementations, inbound pallets are robotically depalletized onto a mechanized conveyor system. Cases are then sorted automatically and are routed to their respective shipping doors (by store).

Note: If crossdocking is part of your strategy when laying out a facility, it is essential that the design of the shipping and receiving docks be at least 80 ft. deep.

## Best practice in crossdock operations

As this article has mentioned, there are various methods of crossdocking products in the supply chain. In the world of food distribution, world-class distributors have brought to perfection the art of crossdocking.

In one national facility, which is centrally located, the FastSlow method operates in the various departments in the following ways.

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All slow movers are shipped to the regional distribution centers (RDC). Multi-item store orders are picked and packed so that they can enter the RDC and go straight to a waiting trailer or a staging store area. For example, prepared dinners, cheese and small, dry SKUs are candidates for this type of crossdock. Suppliers receive store order information on delivery cutoffs, therefore the orders arrive and wait less than three hours before they are selected. This is similar to the vendor/third-party preassembled method.

The method typically used for high-volume perishable items such as 2% milk is as follows: One item is brought to the receiving dock or left in the area of the docks. This item is then distributed among other trailers as different store orders are being loaded. Full pallet quantities are unloaded from the suppliers' trailer and loaded onto the distributor's trailer. When the supplier trailer is empty, another trailer waiting in the yard (i.e. with 2% milk) pulls in full and is ready for crossdocking. This is similar to the flow through method.

The method typically used for very high volume items such as Coca Cola, beer, tea and wine involves receiving these goods three to four times per day. Manufacturing is tied into the warehouse computer-aided store ordering, and trucks are sent as volume is dictated by POS data. Inventory of high volume items never reaches more than six hours, and safety stock is not necessary anymore.