

Introduction to WAVE

WAVE is an RFID-enabled Warehouse Management System and Transportation Management System. WAVE is fully configurable and scalable and allows you to streamline the warehouse workflow to best suit the business requirements and mandates.

WAVE is built with proven technology and runs on IBM iSeries, computers. It can be seamlessly integrated with host ERP and order processing systems regardless of platform or operating system as well as used standalone.

WAVE can be configured and scaled to control any warehouse workflow processes. WAVE tracks multiple warehouses and each one can be configured independently by rules. WAVE rules controls receiving, putaway, replenishment, transaction logging, purges, order selection, allocation, cubing, routing, cycle counts and freight rating.

WAVE has multiple levels of securities: Database Level, Application Level, Menu Level, User Level and Operating Level.

WAVE supports:

Advance Shipping Notices (ASNs) importation

- Receiving of the inventory against the ASNs
- Putaway of cases and pallets
- Replenishment of the forward picking location
- Palletize cases
- Cycle count
- Physical count
- Logging of inventory changes and movement
- Fulfillment of sales orders
- Picking, packing, weighing, and shipping
- Compliance, including:
 - o Retail
 - o Carrier (VICS BOL, shipping label, manifest)
 - o Customer routing (VICS)
- Shipments, including:
 - o Parcel manifests
 - o Truck loads (TL)
 - o Less-than-truck loads (LTL)
 - o Fluid truck loads (FL)
- Freight rate shopping
- Dynamic routing

Facts about WAVE:

- Tiered architecture and independent layers allow it to adopt any presentation technology
- Runs on 5250-terminals, terminal emulsions, and RF devices
- WAVE-Connect Module connects WAVE with other systems using industry standard protocols

WAVE is designed for the following industries:

- Apparel
- Pharmaceutical
- Third-party logistics (3PL)
- Direct to consumer (D2C)
- Food
- Automotive
- Electronics

WAVE – An RFID-Ready Warehouse and Transportation Management System

WAVE-Connect

The WAVE-Connect Module communicates with ERP, MRP, OPS, MHE (conveyor, sorter, pick to light) and financial system, in batch or real-time. WAVE-Connect communicates with other systems regardless of the platform and operating system using industry standard protocols.

WAVE receives ASNs, sales orders, and items and sends inventory transactions, parcel manifests, bills of lading, invoices, e-mails and alert messages.

WAVE-Connect communicates using Socket(s), HTTP(s), FTP, Data queue, User queue, Message queue, E-mail, XML and Fixed format data.

Inbound Processes

WAVE can receive **Inbound** and **Return** Advance Shipment Notices (ASNs) from any ERP system using its WAVE-Connect Module. Alternatively, ASNs can also be directly entered into WAVE.

WAVE handles ASN of **item level** as well as **case level** details. The cases can be created from item level ASNs before the actual receipt of items.

Receiving

WAVE supports three receiving processes: **Trusted Receiving**, **Verified Receiving**, and **Blind Receiving**.

- **Trusted Receiving.** WAVE receives cases based on ASN data. This is the fastest method of receiving, and depends on trusted ASN information and vendors. Trusted receiving also can be used for warehouse transfers. It is used where speed is more important than accuracy.
- **Verified Receiving.** WAVE receives cases based on ASN data and verifies the items, item attributes and quantities. Verified receiving provides the highest level of inventory accuracy. It allows a damaged or defective product to be flagged for disposition.
- **Blind Receiving.** WAVE receives cases with or without ASNs. It captures the items, item attributes, and quantities and then creates the case. It also receives returned items without any return ASNs as well as warehouse transfer cases without accompanying transfer orders.

As cases are received against an ASN, WAVE updates the ASN line by line and then reconciles the receipt. When the ASN is verified, WAVE sends the detailed receiving information to the ERP using the WAVE-Connect Module.

WAVE logs user activity and inventory level by item, case, and shipment number.

Putaway Inventory

WAVE supports rule-based putaway of inventory with two putaway processes: **System-Directed Putaway** and **User-Directed Putaway**.

- **System-Directed Putaway.** System guides the user to putaway the case based on the rules and the priority of the rules as configured. Putaway types can be defined for both item and case levels.
- **User-Directed Putaway.** The user puts the case into his choice of location. WAVE can be configured to check a location's capacity and to verify if the location can accommodate the case.

For both putaway processes, WAVE logs user action and inventory movement.

Putaway Rules

A putaway rule is configured for a putaway type that is defined at the item or the case level. The system guides the user from the most desired to the less desired location out of all eligible locations for a putaway type. The system also can be configured to link the rules in sequence so that the system can go from one set of rules to the next set of rules in the event there are no location available by the first set of rules. The rules can be configured to:

- Direct an item/case to a specific location
- Find the best location out of a range of consecutive locations
- Direct an item/case to the best location out of a group of locations having the same putaway group
- Refer to another set of rules in the chain

Inventory Adjustment

WAVE tracks all space availability continuously in order to manage warehouse capacity. It generates directives for the movement of items from one location to another based on:

- User-defined maximum, reorder, and minimum quantity criteria of the location
- Replenishment rules

WAVE can notify the warehouse manager and others (depending on configuration) when inventory drops below reorder and minimum levels. In addition, WAVE allows hot replenishments for spot replenishing.

WAVE supports nested pallets to ease the inventory movement and can be broke up of as needed. WAVE preserves all characteristics of cases and pallets throughout their existence.

WAVE also logs every inventory change and movement. These transaction logs can be archived and then sent to the host system using the WAVE-Connect Module. The log shows a detailed online record of all transactions that affect the inventory balance.

The WAVE log allows inventory tracking by batch, lot, country of origin, attribute, manufacturer, manufacturing date, expiration date, package quantity, box quantity, and case quantity. Real-time inventory levels and status can be viewed by:

- Bulk storage
- Case pick, box pick, and loose pick location
- On ASN
- In receiving and received
- Picking and packing stations
- Lost and found location
- Quality control location
- Damaged location

Cycle count

WAVE cycle counts can be:

- User initiated
- System initiated
- Based on ABC rules

WAVE also gives you the choice of locking or unlocking inventory during cycle counts.

Physical count

The WAVE physical count process includes:

- Locking inventory
- Capturing the inventory count
- Reconciling the inventory count
- Recording the results
- Uploading the results to the host system

Outbound Processes

WAVE allows you to receive orders, create a pick list from those orders, and track the status of orders and shipments as items are picked, packed, and shipped.

Order Fulfillment

The **Fulfillment Rules and Run Wave** feature processes items for shipping. This feature can be configured to:

- Create a pick list of items for your inventory
- Select items from the most eligible inventory locations (**Allocation**)
- Select the best dimensions for cartons in which to pack items (**Cubing**)

WAVE – An RFID-Ready Warehouse and Transportation Management System

Automatically select the lowest freight rates for sending the items (**Routing**)

Allocation

The allocation process ensures that items or cases selected satisfy criteria specified in the order, while at the same time selecting from the most eligible inventory locations. This process alerts you to shortages in inventory.

Cubing

The cubing process uses the dimensions of items to be picked and then determines the type of cartons needed as well as carton quantities. When this process ends, you can view the total number and size of the cartons needed.

Routing

The routing process uses shipping and item information from orders without a specified ship via to determine the carrier and freight rates. The process can also calculate the freight rate when the ship via is specified.

Picking

WAVE can batch pick by carton, order, aisle, or range of locations. For directed picking, WAVE can pick by minimal travel and minimal picking.

Packing

WAVE supports two packing methods:

- System-determined—WAVE decides how to pack cartons (**cubed**)
- User-determined—You scan the order and then build the carton (**non-cubed**)

Transportation

The WAVE Transportation Module allows you to weigh cartons and ship them on less-than-truckload (LTL) or parcel carriers.

The Transportation Module can:

- Capture carton weight
- Create shipments
- Manifest cartons for parcel carriers
- Assign and load cartons for truckloads, less than truckloads, or fluid loads
- Calculate freight costs
- Shop for the most economical freight rate
- Determine dynamic routing