sage ERP

Provida
Empowering Business

Goods Flowing Through an Automated Warehouse

Ideas for a more efficient distribution centre from Provida

August 2010

Contents

How goods flow through an automated warehouse

HIGH LEVEL BENEFITS TO IMPLEMENTING ACCELLOS ONE WAREHOUSE

- Accellos One Warehouse seamlessly integrates with Sage ERP to provide real-time, accurate warehouse information to the enterprise.
- Accellos customers achieve fast ROI through the development of streamlined warehouse processes.
- Accellos One Warehouse processes include the production of warehouse related documentation like item labeling, customer specific shipment labeling (including EDI/ASN specific labels), shipment manifests, bills of lading, etc.
- Accellos One Warehouse enables compliance with industry, government and customer requirements like detailed pallet and carton level ASN data collection, Batch Tracking, etc.
- Improved warehouse processes increase customer retention through better fill-rate management, improved accuracy and faster turn-around times.

GOOD FLOW THROUGH THE WAREHOUSE

From order entry to fulfillment, Sage ERP and Accellos One Warehouse provide the end-to-end solution for the materials handling management and real-time inventory visibility throughout the enterprise.

This document highlights a high-level process flow, derived from a subset of available functionality within Accellos One Warehouse:

- Advanced multi-warehouse, multi-zone and multi-bin management
- Automated goods-receipt PO processing
- Order management including advanced allocation and pick document distribution
- Pick bin replenishment
- Advanced pick and pack strategies for optimal warehouse performance
- Shipping

RECEIVING

Once a purchase order has been entered into Sage ERP, it is seamlessly transferred to the WMS (warehouse management software) where receivers await shipment. They are armed with wireless mobile computers that have integrated bar code scanners.

After an inbound shipment arrives at the warehouse, the receiving team will typically unload the truck and grab the paperwork to identify which purchase orders are being received.

The first job of the WMS software is to receive items accurately into the warehouse and then reconcile the shipment against the original purchase orders entered into Sage ERP.

Rather than using pen and paper to reconcile physical receipts, the receiver will bring up the purchase orders on a handheld computer. Once this is done, the receiver only needs to start identifying the product that is being unloaded (in no particular sequence).

With Accellos One Warehouse, the receiver counts down against items being received right off of the container. It validates items against multiple purchase orders in the background, and then seamlessly updates Sage ERP. No more paperwork.

Because a receipt is recorded as soon as items are entered into the handheld, stock may be immediately put away to a bin location.

Bin location assignment following receipt may be automatic; stock can be transferred to a temporary receiving location if receipts are to be staged prior to put-away.

Most of the time, stock will be put-away following goods receipt. If there are backorders waiting for product (standard or non-stock) or there is a “low stock alert,” stock may be put away directly to pick locations. Otherwise, stock handlers will move pallets into bulk locations (typically up in the pallet racks or on floor stacks).

Whether you receive floor loaded containers from overseas or small shipments by common courier, Accellos One Warehouse has tools to enable accurate, efficient receiving:

- Receive multiple orders simultaneously in no sequence, without paperwork
- Scan product bar code or use quick lookup functions to identify products as they are being received
- Print carton or pallet-ID labels as product is being received
- Receive multiple pack-sizes on the fly
- Cross-dock non-stock items to forward pick locations
- Immediately put product away without staging

ORDER MANAGEMENT

Sales orders placed by phone, fax or email are typically entered into Sage ERP manually using the Sales Order Entry function. Orders may also be placed using a B2B (Business to Business) e-commerce web-site, remote sales through mobile devices or by EDI.

As a result of sales orders being entered into Sage ERP, the warehouse management software is immediately updated.

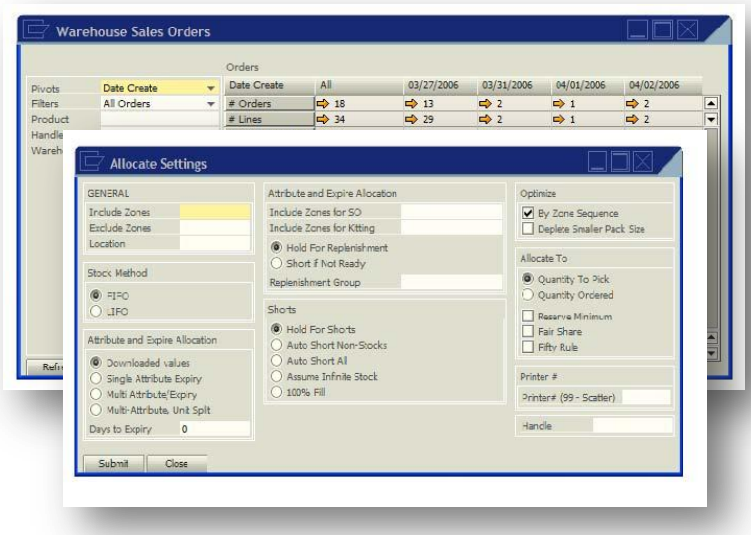
Accellos One Warehouse is now responsible for orchestrating the order management activities. This is the prioritization of stock allocation and the assignment of work in the warehouse. The effectiveness of these tasks is critical to the efficiency of the warehouse and the service level that it provides.

Order management is a dynamic process that requires the flexibility to accommodate many different warehousing styles. Some sales orders need to be immediately released for todays pick run. Some may be held for a future date with or without stock reservations. Orders may be prioritized by backorder status, preferred customer status, fill rate, pick-up time, truck route or by date. There are countless criteria by which orders are prioritized, allocated and released for picking.

THE WAREHOUSE SALES ORDER GRID

Typically, the warehouse manager will select orders in meaningful groups before applying the allocation function (for assignment of product to order) or the Wave function (selecting orders for picking).

The Warehouse Sales Order Grid (right) is a dynamic pivot table. Each column and row intersects to provide data that is useful for decision making. If the user clicks on an arrow next to a number, the corresponding orders are viewed so as to perform a function (like order allocation, waving, shipping, etc.).



PIVOTS

Using the row along the top of the grid, pivots allow the warehouse to sort orders based on specific criteria. This is usually the information that is provided within the Sage ERP sales order.

Oftentimes, orders are first sorted by **date required** to ensure that the warehouse effectively maintains its service levels. Then, orders may be sorted by **carrier** to determine the workload required to get orders picked in time for specific carrier pick-ups. The sort criteria used will depend on the individual warehouse operation.

FILTERS

There is a subtle difference between pivots and filters. Pivots dissect the data on a sales order, giving the user a sorted view (Show me orders sorted by date). Filters narrow the data to a specific subset (Show me only orders filtered for my favorite customer). The two may be used in combination to create some powerful views (Show me only orders for my favorite customer, sorted by date).

Filters are created by the customer using a configuration template. Any data subset that can be queried by SQL can be written to reflect order subsets. Examples of include specific customers, regions of customers, customer types, order types, orders with hazmat products, one-line orders, today's orders, etc.

ALLOCATION

Warehouse allocation is responsible for the logical reservation of product for sales orders. Allocation may be based on specific criteria such as FIFO, LIFO, FEFO, batch, pack-size, zone and warehouse.

As items are received into the warehouse, they are immediately available for order allocation, eliminating any time delay or sequencing issues between receipt, receipt confirmation and pick-list creation.

While orders may be allocated on a first come first serve basis, the warehouse manager will more likely want to assert control over the warehouse process by prioritizing which orders are selected for allocation using the Sales Order Grid.

After an order is allocated it will fall into one of several statuses, depending on the availability of inventory and where the inventory is located in the warehouse. A few common examples include:

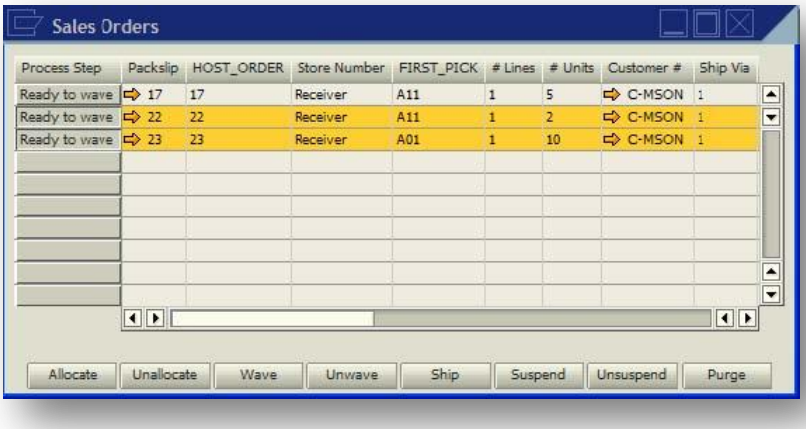
- **Held Short** – There is not enough stock to satisfy the order
- **Ready to Wave** – There is enough stock and the order is ready for picking
- **Held for Replenishment** – There is enough stock, but there is not enough units in pick locations to fill the order, a replenishment task needs to be completed before the order can be picked.

WAVING & PICKING

Once an order is ready to pick, it may be issued for picking using the Wave function.

The warehouse manager will typically sort and select order groups for picking using the Sales Order Grid, then issue the orders for picking using the Wave function. As a result, warehouse managers have unlimited flexibility when determining their picking strategies:

- Order lines may be split by pack-size for optimal productivity (pallet quantities picked from pallet locations, units from pick-bins).
- Customer specific labels may be printed for EDI / ASN compliance and integrated into the pick process. UCC128 serial container codes are created and scanned to build a detailed pallet or carton level ASNs.
- Orders may be grouped together for picking directly into serialized shipping cartons.
- Batch pick documents may be issued to enable the picking of multiple orders simultaneously with subsequent break-down in an order staging area.
- Paper pick-tickets may be printed for paper picking, with scan-pack validation.
- Pick documents may be printed in multiple zones for simultaneous zone picking.
- One label per unit/carton/pallet may be printed with a bin location for 'label picking'



Once the pick strategy has been determined, Accellos One Warehouse will print picking documents according to the configured rules; pickers will be directed to the pre-assigned pick locations that were automatically assigned during the allocation process.

To guarantee accuracy, hand held computers should be used during the picking process to validate the picked product and its bin location as well as the shipping container / sales order.

Finally, packing slips are printed as a result of the workflow defined in Accellos One Warehouse. Packing slips may be printed after the last item on the order has been picked or once the shipment has been scanned before loading on to a truck.

PICKING

The Accellos One Warehouse picking process needs to remain flexible to accommodate widely differing environments. No two warehouse operations are exactly the same.

Warehouses come in different shapes and sizes. Some are “wide open” in a square shaped space. Others are contained in buildings on multiple floors, utilizing elevators to transport materials. Warehouses will have varying ceiling heights. Some might have yard space.

Materials handling will differ by product shape and size. As a result, the warehouse racking infrastructure will vary by product size. Many warehouses keep large products in bulk stacks or pallet racks. While with small products, picking efficiency may be increased by storing smaller products in flow racking or static shelving.

Product velocity and order types also affect warehouse layout and consequently the picking strategies. Companies that ship single-sku pallets of product to customers will have significantly different warehouse operations than ones that ship trailer loads of mixed-sku pallets (grocery is a good example of this).

Even subtle differences in customer requirements for consumer products wholesalers will have substantial effects on the materials handling and picking. Operations that ship to retail distribution centres will have different fulfillment requirements than those that ship directly to stores.

Accellos One Warehouse has an abundance of picking styles that will accommodate a warehouse manager’s fulfillment strategy independent of warehouse layout, product size, velocity and order characteristics.

WAVE PICKING

The Wave Picking function allows a picker to gather multiple orders simultaneously on a pick run. Orders are picked directly into serialized shipping cartons.

The advantage of Wave Picking is that orders are picked and packed and checked in a single handling step using bar code scanners.

Wave picking is very effective for operations that pick to cart when there is an average of one or two shipping cartons per order. It is also effective for high volume operations that pick product out of flow racking to conveyor belts that whisk away boxes after they have been filled.

CARTONIZATION

The cartonization function is a companion to wave picking. Cartonization automatically determines the number of shipping cartons required for a single order based on product and carton dimensions. It also takes into account the weight tolerance of both cartons and shippers. Pickers are then instructed to place product into the specific shipping carton that was pre-determined by the cartonization function.

The advantage of cartonization is that orders being shipped by common carriers like UPS or FedEx can be picked into their final, labeled shipping containers. Even if there are multiple boxes on a shipment, there is no need to consolidate the order in a staging area prior to shipment. In addition, Accellos One Warehouse may be configured to automatically ship and manifest sales orders without any additional physical handling by shipping staff.

BATCH PICKING

There is a subtle difference between Batch Picking and Wave Picking. Rather than picking multiple orders directly into shipping cartons, Batch Picking does not prompt the picker to specify the sales order during the gathering process. The result is a “Batch” of product for multiple orders is gathered, and then sits in a staging area until distributed into the individual order pallets or cartons for shipment.

The advantage of Batch Picking is that more product cube can be gathered in a single pass of the warehouse. However, warehouses need to ensure that they have enough space to stage the orders that have been batch picked.

Batch picking is effective for operations that will benefit from maximizing order consolidation, especially in larger warehouses where the amount of travelling required to gather orders would be substantially decreased by maximizing the cube gathered in a single pass.

Operations with limited picking equipment resources (like man-up or narrow-aisle equipment) should consider batch picking to maximize equipment utilization.

SIMULTANEOUS AND SEQUENTIAL ZONE PICKING

Warehouses may be broken down into logical areas or zones. The picking function can be set up to span multiple zones, allowing the operation to have multiple pickers picking the same orders either simultaneously or sequentially.

Zones may be set up in Accellos One Warehouse for many different reasons.

- Materials handling infrastructure -Pallet racks in one zone, static shelving in another
- Product Classification – Flammables in one zone, durables in another
- Item Segregation – Customer specific packaging configurations, defective products, refurbished product.
- ABC stratification – Separate fast moving items from slower moving items to allow multiple picking styles (Batch pick 'C&D' items, Wave pick 'A' items).
- Load balancing – Multiple zones set up across a stretch of picking area (like flow-racking).

EFFECTIVE ZONE PICKING IN THE VIDEO DISTRIBUTION INDUSTRY

Videos are typically fast moving when newly released, and then slow down to a trickle over time. Setting up a zone with pallet stacks or flow-racking to manage the distribution of newly released videos in volumes through Wave Picking allows pickers to effectively manage a small amount of SKU in a contained area.

Once the volume of sales on a video slows down, the remaining stock (usually a handful) is put into static shelves with many thousand other titles. It is more effective to have a separate zone laid out to handle a batch picking strategy for "catalogue" titles.

EFFECTIVE ZONE PICKING IN "NON-FOOD" GROCERY

This non-food grocery example is a distributor of "grocery accessories" that would be shipped to a grocery store including utensils, bottle openers, batteries, scissors, tape, pens, etc. Thousands of SKU are stored and picked for orders that have hundreds of line items.

If one picker were tasked with picking an entire order, it would take a minimum of 2-3 hours per order. Instead, multiple zones are set up to span across 5 rows of flow racking (behind rows of conveyor) where pickers are using Simultaneous Zone and Wave picking features to divide the picking task across as many pickers as required to get an order out the door in the allotted amount of time. The additional benefit is that pickers are not required to travel more than a few feet across the zone (minimizing travel time, increasing lines/hour picked).

CONCLUSION

If you are contemplating a Warehouse system and are thinking about business process improvement, this high-level overview is intended to provoke ideas. Provida are available to work with you to further define how you can benefit from implementing a complete solution that includes improved warehouse management processes.

We hope to work with you on this project!

ABOUT PROVIDA

Since 1999, Provida Pty Ltd has been implementing enterprise wide software solutions with a particular emphasis on warehousing and distribution. Provida and its reliable team of highly trained professionals will deliver your warehouse software implementation project on time and on budget. Provida has fully staffed offices in Sydney, Brisbane and Melbourne.

*To find out more information please visit **www.provida.com.au**.*