First-to-Last Mile Optimization

# Blue Yonder Warehouse Execution System

BlueYonder

## Business context

Warehouse requirements are rapidly changing with the need to efficiently support an array of shifting customer demands. Omni-channel fulfillment can increase order volume and result in smaller orders that need to be delivered in shorter time frames.

Workforce dynamics are also evolving due to higher employee turnover and labor shortages, which increases hiring and trainig costs. Traditional WMS solutions require additional capabilities to effectively support increasing order volume and customer demands for delivery, and to manage disruptions due to labor shortages or unexpected changes in daily operations.

The changing technology landscape is driving higher adoption of autonomous mobile robots (AMRs) and other new automation. Warehouse operations need technologies to manage the variety of tasks and orchestrate the combination of humans and robots more efficiently towards a common warehouse goal.

## The Blue Yonder Solution

Blue Yonder's Warehouse Execution System (WES) is an intelligent cloud-native solution that can unlock opportunities for greater efficiency, improved performance, and reduced costs across the warehouse. WES achieves this through task prioritization, predictive work assignments, and seamless robotics onboarding. WES enhances WMS capabilities by coordinating work across humans, dynamic robots, and static automation to assign work to the right resources at the right time based on your requirements. This increases efficiency and capacity and drives excellence in operations with first-time quality.

As your labor and automation strategies change, the solution is adaptive to changing labor and automation strategies and is automatically updated with enhancements, meaning you will always be on the current version.

## Real results

Reduce administration costs by

# 80%

Reduce new robot vendor onboarding by

# 50%

Increase units-per-hour (UPH) by up to

# 12%

Improve pallet pick operations by up to

# 6%

## Key benefits

- Optimize labor usage with improved workforce labor planning. Reduce overhead and manual task intervention by orchestrating warehouse processes with their preferences.

- Increase efficiency through improved orchestration of warehouse tasks by using algorithms to anticipate the best outcomes.

- Increase throughput by improving dock utilization and prioritizing nearly completed shipments based on service levels, dock door availability, and inventory levels.

- Centralize control of multiple automation vendors within the same distribution center.

- Improve visibility across an automated DC through a single operational dashboard.

# Capability details

## Autonomous orchestration

Tasks are assigned to robot or human resources and interleaved based on proximity, priority, and permissions to maximize efficiency and service. This includes predictive task assignment to assign future activity to the best resource to perform the work at the right time to maximize performance.

## Balance priority and proximity

During dynamic task assignment, a balance between priority and proximity is established to ensure that high-priority demands are met on high-volume days, and proximity efficiencies are utilized during typical operations.

## Streamlined automation onboarding

Standardized and public APIs provide flexibility and accelerate onboarding of one or more robotic vendors through a vendor-agnostic solution. WES provides an all-in-one onboarding approach to showcase multiple metrics and deliver advanced troubleshooting features to expedite issue resolution across multiple robotics vendors.

## Advanced visibility

Site managers have visibility into performance, throughput and bottlenecks, and future needs based on the resource schedule.

## Actionable analytics

Analytical tools define the right parameters for maximum efficiency so you can employ the right number of workers based on demand.

## Agile task assignments

Tasks are assigned based on parameters you define, and the optimization engine tracks task-related shift lengths to position labor resources in near real-time.

## Flexible allocation

Flexible allocation capabilities enable you to reduce travel time and ensure items are picked in the most effective way as new assignments are created, even in ever-changing operating conditions.

## Cost state engine & dynamic tour assignment

This sophisticated assignment method intelligently plans, re-plans, and dynamically allocates human and robot resources to the optimal tasks based on configurable input. This ensures that the correct work is efficiently executed based on each customer's unique priorities.

## Key features

- **Priority tie break**
  Prioritizes an appointment trailer higher than a drop load with all other conditions being equal.

- **Outbound loading dock capacity utilization**
  Prioritizes picking tasks with the least amount of effort required to complete a load (outbound) or to empty a staging lane (inbound).

- **Ship to address priority**
  Prioritizes tasks differently based on whether a shipment is international or domestic to ensure customer SLAs are met.

- **Multi-layer visibility**
  Offers high-level operational views down to the individual task as well as lagging and leading views.

- **Vendor-agnostic robotics hub**
  Enables onboarding of multiple robotics vendors in a warehouse.

- **Comprehensive analytics**
  Reports across robotics and manual operations.

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