

How Your Organization Can Achieve 100 Percent Distribution Accuracy

And How Blue Vector Can Help

blue vector

The Situation

Distribution accuracy in retail was one of the big promises in the early days of RFID. Analysts and technologists envisioned product-level visibility from manufacturer to store and beyond. But the dream faded as implementers struggled with high RFID tag costs, inconsistent read rates, software immaturity, lack of standards, and an un-integrated smattering of products on the market. On top of that, the obligation of upstream and downstream supply chain partners to collaborate made RFID implementation a high-risk, long-term proposition with disproportionate costs and benefits among partners. Distributors and retailers inched along toward the goal of better accuracy in their distribution operations, but their adoption of RFID was slow and they made improvements largely through manual processes at outbound checkpoints.

However, today RFID technology has improved, costs have come down, and vendors have created partnerships to bring integrated solutions to customers. Now we are seeing measurable results, particularly as organizations seek to make their shipping and distribution operations more accurate and efficient.

Aren't We Already Pretty Accurate?

Do companies really need to improve their distribution accuracy? According to a Warehouse Education and Research Council (WERC) study conducted earlier this year, some companies report shipping accuracy as high as 99 percent. It all seems to be under control, right?

Maybe not. While you may hear of results as high as 99 percent, in reality even very large, well-managed corporations struggle to stay above 90 percent once they fully account for customer-reported shortages and end-of-month true-ups.

Those organizations that have achieved very high shipping accuracy rates have typically done so at great expense through a highly manual, people-intensive, and slow process of verifying and re-verifying orders as they leave distribution facilities. If a DC dispatches hundreds or thousands of orders in a given day and each order must be double- or triple-checked, that effort can be costly—both in terms of headcount as well as the opportunity cost of reduced efficiency.

Also, what this measure doesn't highlight is the high cost of those remaining errors in a supply chain. According to one of our customers, the cost to correct distribution mistakes can be ten times the value of the goods themselves. Take that across all of the products that are distributed in a year, and even at 99+ percent accuracy, that's still a pretty high cost.

A Case Study

A success story we point to for distribution accuracy and RFID-gone-right is one of the nation's top retailers and a Blue Vector customer. This company successfully implemented a large-scale RFID solution to achieve 100 percent shipping accuracy while improving DC productivity and achieving better asset utilization. The company did several things right, from building an internal business case that didn't depend on its supply chain partners to leveraging the investment for multiple business benefits. We can learn from this project to help other companies with distribution operations use RFID (and other wireless sensor technology) to its full potential for distribution accuracy.

The first thing the retailer did right was to build the business case on a closed-loop model, rather than rely on an elaborate network of partners to adopt the same technology on the same schedule in order to realize the benefits of investment. The retailer's argument that the cost savings associated with error-proofing its distribution operations for 100 percent shipping accuracy would make the investment pay off quickly. This ROI-based analysis made the project more palatable to management, while making it easier for the implementation team to control outcomes.

The second breakthrough the company made was to tag reusable assets – totes, dollies, and cages – rather than individual items. One of the struggles of making a business case for RFID (and a significant inhibitor to widespread adoption of the technology across the supply chain) is that tags are too expensive. Those responsible for placing the tags on items as part of the packaging process could never justify even a low cost tag for every item. Rather than fight this, the retailer's approach was to bypass the issue entirely by not tagging individual items. Instead they tagged reusable assets such as totes (stackable containers that hold many items). The tags are used over and over again until they physically wear out, not just once. The company can still track everything that ships without waiting for suppliers to tag the items for them.

The third smart decision the company made was to leverage its investment for multiple business benefits. Rather than solve just one use case – shipping accuracy – with RFID, the retailer uses the solution to support continuous process improvements in its DC. One way it does this is by streamlining the loading procedures in the DC to make those workers more efficient. The same system which detects loading errors can also take over much of the administrative overhead of checking each shipment for completeness and sending routine confirmations back to the warehouse management system.

In addition, the company can also use the system to achieve higher asset utilization of its totes, dollies, and cages now that it can automatically track them through its facilities.

Blue Vector: A Critical Component for Achieving Distribution Accuracy

Blue Vector's Distribution Accuracy solution has allowed the customer to dramatically simplify its operations, replacing the old way of doing things – paper-based systems and green-screen computer monitors – with more automated stations at each door. These stations automatically read and process RFID data, compare it to pre-downloaded shipping manifests, and provide immediate feedback to operators if a shipment is headed onto the wrong truck, if a shipment is headed onto a truck in the wrong order (since one truck can service multiple stores and therefore must take a first-in, last-out approach to loading and unloading), or even if the shipment loaded onto a truck is incomplete. This new process leads not only to error-proofed shipping but also a far more efficient DC.

The solution is made up of software and hardware components that work together in a distribution operations facility to manage the RFID and other wireless sensor infrastructure, such as readers and antennas, and serve as the conduit from that infrastructure to core business applications such as WMS and ERP systems. Importantly, Blue Vector enables two-way data integration between the edge and core applications, delivering contextual business intelligence – information and instructions – to workers and machines at the edge, or where the work is done, whether in a pick-and-pack area, at a shipping dock door, or even in transit. This intelligence empowers workers with the visibility and instructions they need to make decisions and correct errors rapidly, and stay within the constraints of their operational processes and service-level agreements.

The solution differs from others on the market in that most processing is conducted as close as possible to the goods being examined, not back in the data center. This provides the best performance even for systems with thousands of stations, and doesn't rely on 100 percent network uptime and optimum bandwidth for great performance. Only a small subset of messages (such as "Here is the shipping manifest to check against" and "Load complete") needs to be passed between the scanning stations and centralized business applications.

The Benefits of the Blue Vector System

With our Distribution Accuracy solution we enable customers to make decisions quickly and correct errors when and where they occur

for 100 percent distribution accuracy and more efficient distribution operations. Key benefits we deliver include:

- **Error-proof shipping**

The Blue Vector solution ensures that your shipments are 100 percent accurate – we let your workers know as soon as an error has occurred and empower them with the information to correct those errors in real-time. In outbound operations, if a pallet is being loaded onto the wrong truck, our system will alert the worker doing the loading and offer instructions for how to fix the error (for example, if your worker is about to load a pallet onto the wrong truck, the LED display on the "smart" portal will display the message "Take pallet to dock door 27"). If items are loaded in the wrong order or an order ready to ship is incomplete, we provide similar alerts and instructions.

- **Drastic reduction of manual checks**

Many distributors have accurate distribution operations—at a cost. They must employ workers to double- and triple-check shipments before those shipments leave the DC. Because Blue Vector automatically verifies outbound shipments and only requires human intervention when there is an error that needs attention, you can reduce the number of workers required to do manual checks in outbound shipping operations, redeploying those workers to more productive (and valuable) tasks.

- **Reduction of physical bottlenecks**

Interacting with paper-based and centralized computing systems can cause bottlenecks in your physical operations. Any time a worker has to fill out a form or download order data, he or she interrupts an otherwise efficient, streamlined set of processes, thus slowing order fulfillment and sales cycles. By automating those processes and providing your operators with instructions, Blue Vector removes those bottlenecks and makes workers more productive.

- **Reduction of IT bottlenecks**

Relying on centralized applications to process edge data and enable edge decision-making not only reduces worker productivity but also increases the load on your network and centralized application. Because Blue Vector contains processing at the edge and only sends key messages to core business applications (such as those indicating completed transactions), we support your diverse and distributed processes with no additional burden on IT systems.

- **Scalability and performance**

For the same reason that Blue Vector reduces IT system burden, we also enable you to scale horizontally. Whether you have a few or thousands of points of automation, and whether you do one business process at many edges or many different business processes at many edges simultaneously, Blue Vector's unique architecture enables you to scale without impacting performance.

- **Lower initial and ongoing costs**

Because Blue Vector offers pre-software loaded, plug-and-play appliances, configurable, modular business logic, and an array of form factors, our customers realize lower initial costs and faster time-to-deployments than with alternative solutions. Furthermore, because our solution is administered, maintained, and configured (or re-configured) simply and easily through a central console, our customers also see the benefit of greatly reduced cost and effort associated with ongoing system maintenance.

- **More value from core business applications**

Finally, unlike alternative edge management solutions which feature one-way data communication (from the edge to centralized applications), Blue Vector features two-way integration (with data flowing from edge to central and from central to edge). By doing this, we enable you to extend the value of those core applications.

Certainly, as RFID matures, more distributors will make the business case for harnessing this (and other wireless) technology to achieve better accuracy in their distribution operations. They will do this not only to reduce the cost of mis-shipments but also to streamline their DCs and take manual effort out of the equation. Blue Vector helps our customers error-proof their distribution operations while reducing bottlenecks and extending the value of their core business applications.

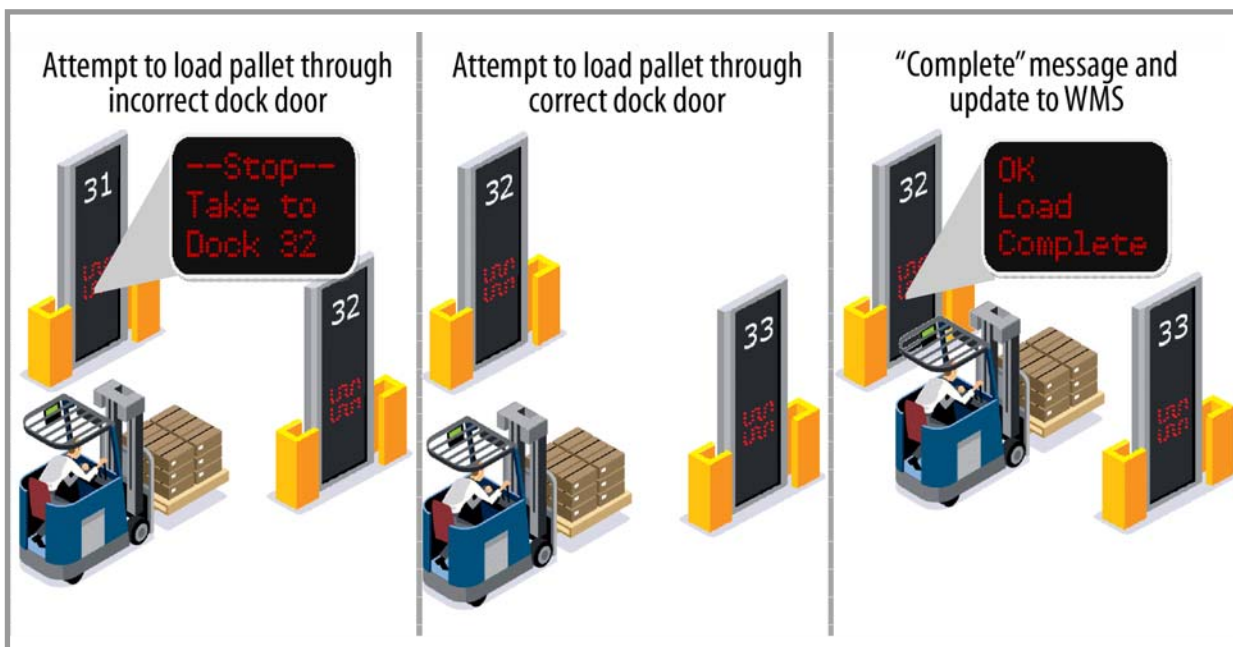
How Blue Vector Works: An Example

Components of the Blue Vector System and Their Functions

Blue Vector's solution requires no software installation, because it is hosted on a family of convenient plug-and-play appliances that perform different functions, but work together to enable edge processing and back-end integration. The appliances include:

- **EdgeManager Appliances:** EdgeManager Appliances sit at the point in an operational facility at which work is performed (for example, within "smart" shipping dock doors, where goods leave a distribution facility). They not only perform the basic function of managing the system of wireless readers (including RFID readers, 1D/2D barcode scanners, and other wireless sensors such as temperature and even GPS), but they also contain centrally managed, automatically-delivered data and business logic that enable them to perform specific functions locally, such as match a shipping manifest to RFID data that are being read as items leave a facility, take an action based on a condition (such as sounding an alarm if there is an error), and provide instructions to the operator via a user interface.

- **SiteManager Appliances:** SiteManager Appliances sit centrally at each operations center and manage the two-way data integration that must occur for EdgeManager Appliances to do their jobs as well as for back-end systems to receive information confirming that work has been done. SiteManager Appliances receive plan data (such as a shipping manifest) and, based on context (where each EdgeManager Appliance sits and what processes each is intended to perform), deliver the right data and business logic to the right EdgeManager Appliances. They also receive upstream data (from the EdgeManager Appliances) and deliver those data (typically confirmation of valid transactions) back to core business applications.



- **GlobalManager Appliance:** The GlobalManager Appliance sits centrally across the Blue Vector system, even in geographically dispersed operations, and provides a single point of administration. It has a Web-based user interface, gives the administrator a consolidated view of the entire system, and enables him or her to centrally configure, manage, and change the system, down to determining the specific business logic that will be delivered to each EdgeManager Appliance (or to groups of EdgeManager Appliances). The GlobalManager Appliance is also responsible for monitoring the continuous health of all Blue Vector system components via network heartbeats.

While the appliances work together, they are not interdependent, meaning that they neither rely on each other for processes to occur nor do they represent a single point of failure. EdgeManager Appliances work independently from each other, and while they send information back and forth with the SiteManager Appliance, they can perform their function without connection to the latter, enabling time-critical operations to continue even if the IT network experiences downtime. Likewise, the SiteManager Appliance is not dependent upon the GlobalManager Appliance for it to perform its operations.

- **Business Logic Extenders.** An important component of the Blue Vector solution – and one that enables centralized management of such distributed systems – is our business logic, which we call

BLoX (Business Logic eXtenders). BLoX are applets of programmatic functionality that encapsulate the various processes at the edge, including picking and packing, aggregation, shipping, special handling, etc. These diverse processes are deployed automatically to the various edges across a system so they can operate independently and simultaneously.

- **Form factors.** To make deployment and management easier for our customers, Blue Vector delivers our solution in a variety of form factors. These integrated form factors (for example, a set of “smart” portals) contain our EdgeManager Appliance with the appropriate business logic, as well as devices such as RFID readers, sensors such as a photo eye, and feedback mechanisms such as a touch screen, LED display, or light stack, that make up an edge solution. These form factors enable our solution to integrate into our customers’ operations smoothly without adversely impacting productivity.

Summary

It is now practical to drive towards 100 percent distribution accuracy and lower costs. The key is to effectively apply proven automation solutions that detect and correct mistakes as they occur and can support your continuous improvement programs. If you would like to learn more about how Blue Vector can help, please contact us at info@bluevector.com.

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