



6 Steps to Establishing Secure and Modernized Military Distribution Center and Warehouse Operations

Best practices for integrating mobile, data capture, and tracking technologies for faster, smarter, and more cyber-secure logistics performance



The Critical Need for Modernization in Military Warehousing and Distribution

Military warehousing and distribution systems are increasingly becoming integrated with enterprise-level operations. The distinctions between military and enterprise warehousing demands are disappearing; in most cases, the operational requirements are identical and the two need to operate as one seamless ecosystem. That said, Department of Defense agencies must modernize their supply chain operations, including warehouse, transportation, and logistics, to keep pace with today's accelerated supply chain requirements.

The reality is that **too many military warehousing and distribution centers are faltering, or are at best, not up to par.** Numerous military agency audits have uncovered tens of millions of dollars of inventory that the managing agencies were not even aware existed. Under increased budget and fiscal pressures, today's military distribution centers must operate with the same level of efficiency and accountability as their enterprise counterparts. In fact, 77% of warehousing professionals agree that they need to modernize their warehouse operation but admit they are slow to implement new devices and technology.*

More importantly, **outdated technologies and operating systems put military agencies increasingly at risk for cybersecurity breaches.** Too many agencies still operate systems like Windows Mobile and Windows CE, which are no longer supported. Instead, the 2021 Executive Order on the Nation's Cybersecurity, called on government agencies to "make bold changes and significant investments to defend the vital institutions that underpin the American way of life. The scope of protection and security must include systems that process data (information technology (IT)) and those that run the vital machinery that ensures our safety (operational technology (OT))."

The time for military agencies to re-establish their leadership role in warehousing, inventory, and distribution is now. The benefits are myriad and the process to transition to a modern warehouse operation is easier than you might imagine.

* Warehousing 2024 Vision Study, Zebra Technologies, 2019

77%

of warehousing professionals agree that they need to modernize their operations but admit they are slow to implement new devices and technology.*

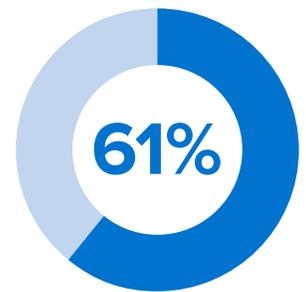


Secure Logistics and Mission-Critical Performance Drive the Need for Integrated Technology

The distribution center is the nucleus of your operation. It is the hub through which every mission-critical order must pass, from receiving to shipping. With the supply chain already under strain, more regulatory scrutiny of inventory levels, and the rise of an increasingly dispersed and remote government workforce, remaining responsive means filling orders faster and more accurately than ever. An integrated system of mobile, data capture, and tracking technologies will modernize your government warehouse operations.

The Impact of a Fragmented Logistics Operation

Technical fragmentation—the use of the right technology in only select operations—constrains overall logistics operations from keeping up with the demands of military supply chains. Warehouses feel the impacts of technical fragmentation at the operational, client relations, and financial levels. You are not alone: 61% say that IT/Technology utilization is their biggest operational challenge to modernize now and within the next five years.*



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* Warehousing 2024 Vision Study, Zebra Technologies, 2019

Operational Issues Resulting from Technical Fragmentation:

- Inaccurate Information
- Backlogged Order Fulfillment
- Reduced Productivity
- Lack of Visibility
- Increased Cost
- Data Security Risks
- Reduced Client Satisfaction



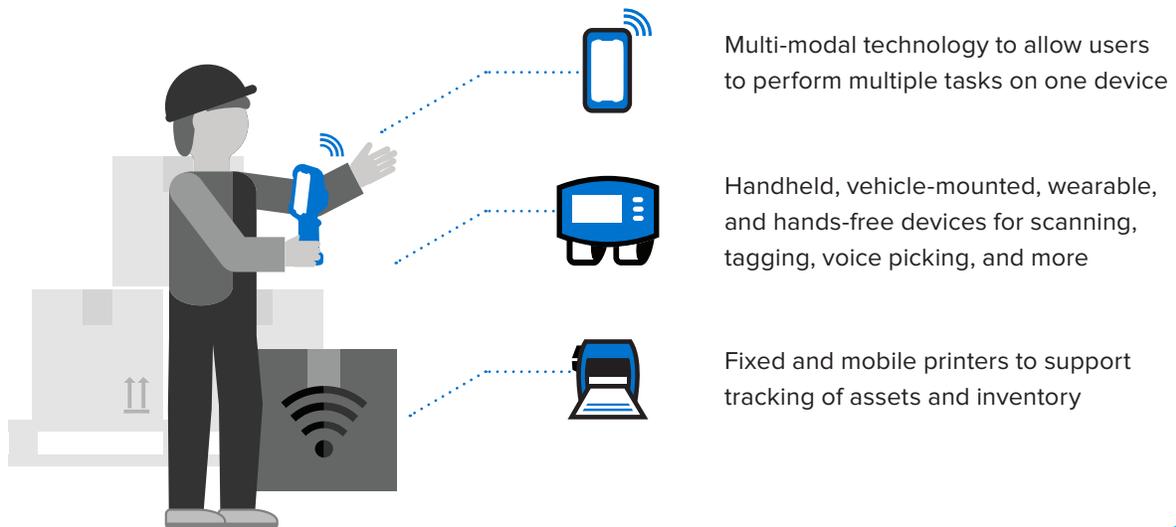
Integration as a Catalyst

To combat fragmentation and re-engineer operations for the faster pace of the military supply ecosystem, today's forward-looking distribution center and logistics professionals are integrating mobile, data capture, and tracking technologies throughout their operations. In addition to new levels of efficiency, accuracy, and visibility, integration brings:



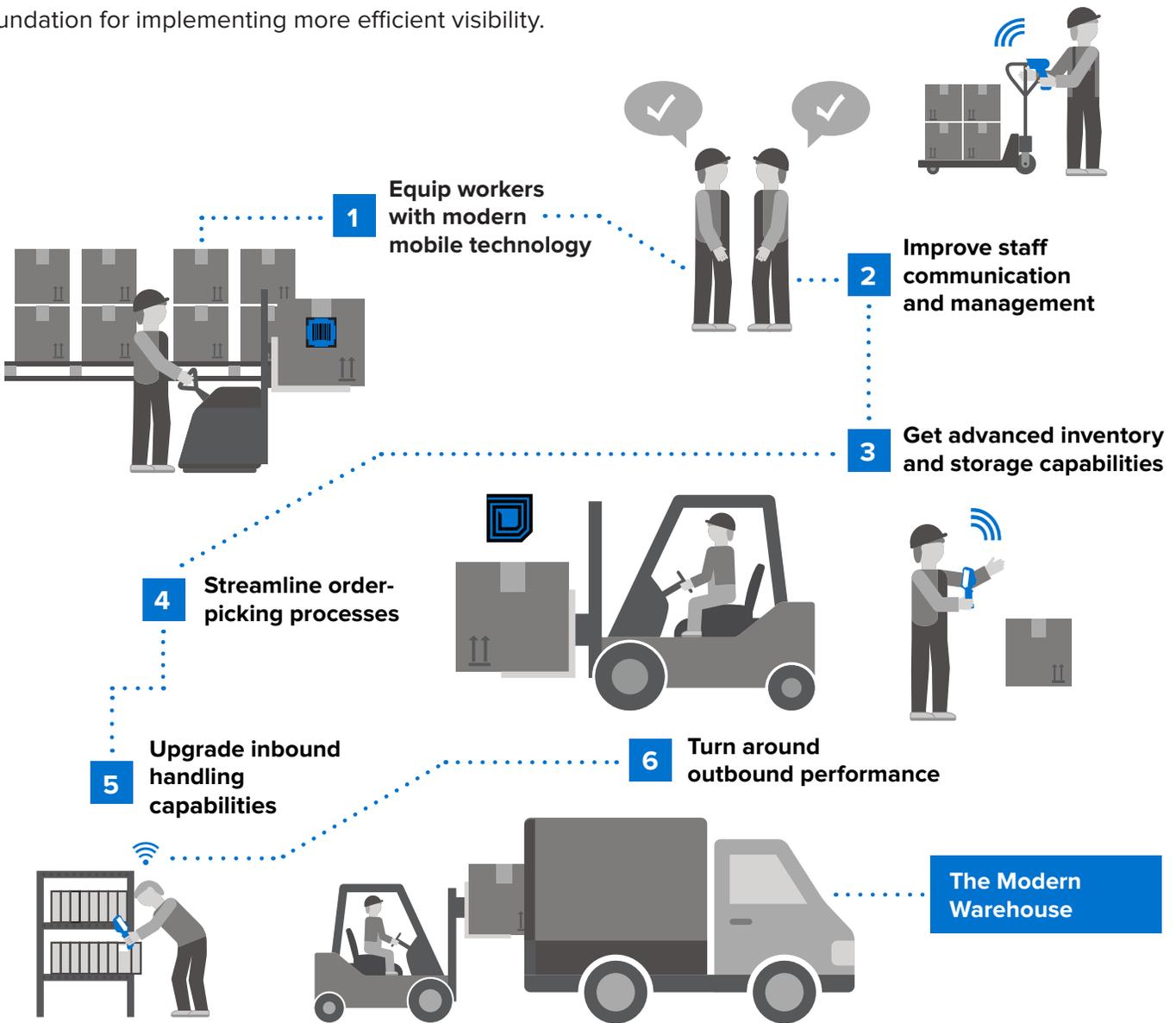
Given the impact of supply chain demands, military staff need devices designed to enable greater order-fulfillment speed and accuracy.

Modernize Your Operations by Taking Advantage of:



6 Steps to a Modern Warehouse

The path to the modern warehouse and distribution center begins by following six critical steps. Throughout the process, you integrate state-of-the-art warehouse technology for a more collaborative information architecture that not only enables a leaner, more flexible operation, but also a leaner more secure operation. Equally important, your enhanced distribution center mobility can serve as the foundation for implementing more efficient visibility.



Step

1

Equip Workers with Modern Mobile Technology

Greater efficiency starts with better front-line worker technology. To stock inventory and fill orders with greater speed and accuracy, your front-line workers need tools that facilitate efficiency and scanning precision, item-level picking, and timely inventory visibility. Upgrading to modern enterprise-grade mobile devices that combine scanning efficiency with touch-screen accuracy and ease of use enables them to validate data in real-time and instantly locate the correct items. Also, front-line worker connectivity offers real-time access to the Warehouse Management System (WMS) so they can share information and offer end-to-end solutions quickly during peak times. By integrating modern mobile technology, real-time optimization of your fulfillment operation is possible.

Modern mobile technology also **protects against unlawful data access which can cause devastating damage** including financial losses, legal and regulatory infractions, and harm to your agency's reputation. Whether you answer to taxpayers or the chain of command, you are expected—and often mandated—to safeguard sensitive information and the solutions that house them. Zebra, following a rigorous process of cybersecurity testing, has now earned the coveted STIG (Security Technical Implementation Guide) cybersecurity validation from the Defense Information Systems Agency (DISA) for entire portfolios of warehouse technology products.

Implications of Equipping Workers with Outdated Technology



Extensive training requirements

Workers are accustomed to using highly functional touch screens and user-friendly applications on their smartphones. But training them to use outdated mobile devices with green screens, multi-step processes and keystrokes can add weeks to training time—and during peak hours and mission-critical demands, time is of the essence.



Limited inventory visibility

Paper-based systems or fragmented mobility utilization and reliance on “systems of record” might have been adequate for managing order fulfillment in the past, but today the speed of fulfillment requires an inventory “system of reality”—and that means greater and more timely stock visibility.



Security compromises and disruptions

A lack of maximum enterprise-grade digital security and control on each device can cause warehouse operations to shut down, leading to a significant monetary impact on the agency, or worse... an entry point for cyber threats to government systems.



Data double-touches

Before e-commerce disrupted retail in the private sector—and, by extension, warehousing—most warehouses could manage operations from a desktop computer. In today's higher volume warehouse, though, this technology configuration reduces flexibility and accuracy, slows down productivity, and often means manually re-entering data.



Order backlogs

Outdated or fragmented hardware supports slower manual workflows—not the faster, more streamlined workflows required for keeping up with higher order volume that can cause backlogs.



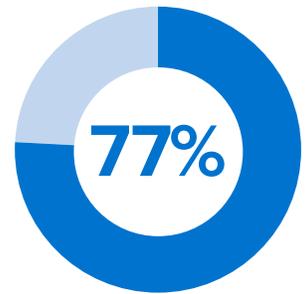
Sluggish order fulfillment

Older, outdated warehouse technologies running on legacy platforms do not have the memory, processing speed or scanning capabilities that today's intelligent, data-powered fulfillment requires.

Benefits of Equipping Military Supply Chain Staff with Modern Mobile Technology

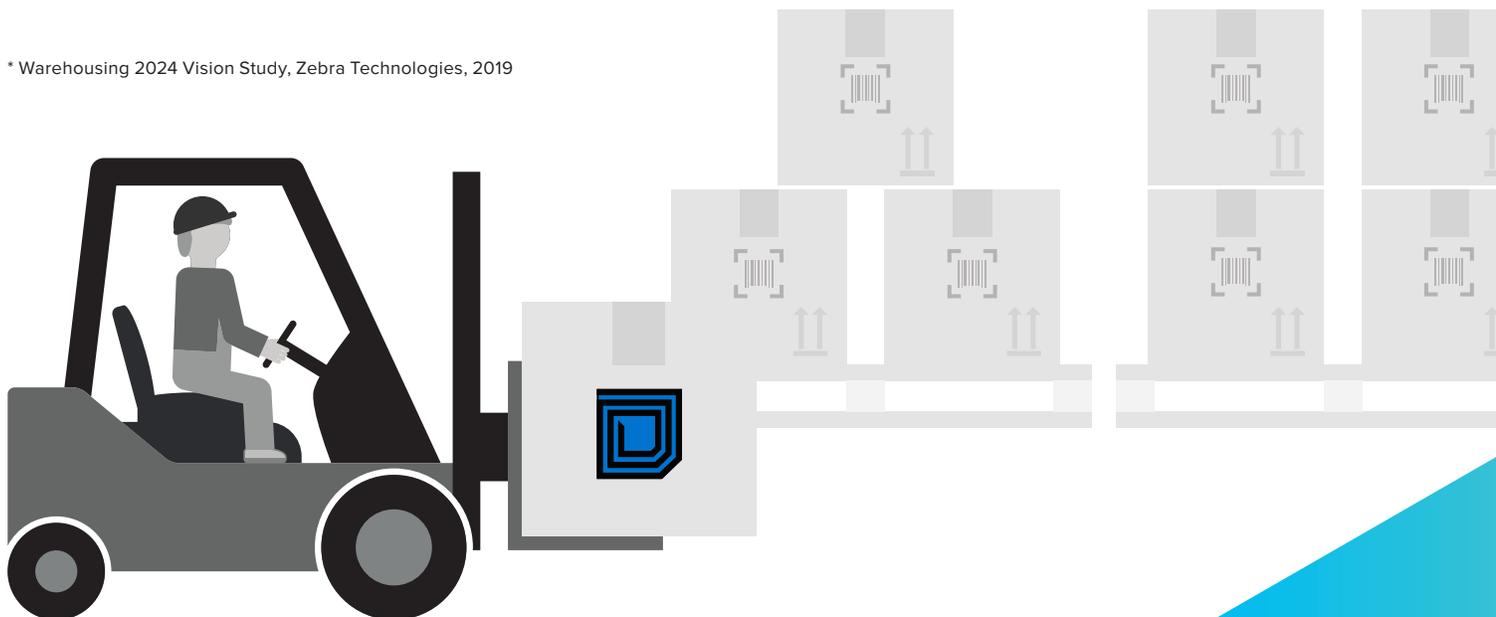
Modern touch-screen devices that enable fast data entry, scanning, and worker training enable you to avoid common barriers to new device adoption. These devices enable you to seamlessly connect your front-line personnel to the data they need to optimize your operation for today's greater speed and accuracy demands. More than three-quarters (77%) of supply chain decision-makers agree that augmenting workers with technology is the best way to introduce automation in the warehouse.*

- Decrease staff training time with an intuitive touch-screen interface and provide consistent support with on-screen instructions and single-button commands.
- Automate workflows to gain speed and efficiency by connecting each worker to enterprise systems.
- Increase productivity with faster processing power and applications that save seconds off every scan by capturing multiple barcodes, text, images, and signatures in a single scan.
- Achieve real-time visibility by giving front-line workers a “system of reality” to work from that provides actionable insights for real-time decision making.
- Ensure security threats do not make your government operation vulnerable to unexpected downtime or data breaches with modern enterprise mobile devices that have extended support for operating systems.
- Get real-time data by empowering front-line workers to help manage warehouse activities and track goods and assets right from the warehouse aisles, receiving and shipping docks.



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Step

2

Improve Staff Communication and Management

Enabling seamless collaboration is essential to the modern military distribution center. This requires fast and efficient task management enabled by real-time voice and data communications between supervisors and employees everywhere in the facility. Managers can proactively direct work orders and assign tasks that are not currently driven by the WMS, as well as monitor the efficiency and progress of work as it is being performed. Also, better communication and real-time information beyond the four walls enhances collaboration with supply partners and vendors, which improves the warehouse's omnichannel fulfillment capabilities.

Implications of Ineffective Staff Communications



Slow problem-solving

Without the option of mobile connectivity, warehouse managers may be "chained" to their desktop computers, preventing them from spotting and resolving issues on the warehouse floor in real-time.



Delayed reactions

Too often, workers cannot communicate effectively with each other, supervisors, or managers in real-time, making immediate issue resolution and higher productivity all but impossible.



Slower operations

Without high-speed mobile voice and data access, procedures such as automation, cross-docking, and task interleaving are not feasible.



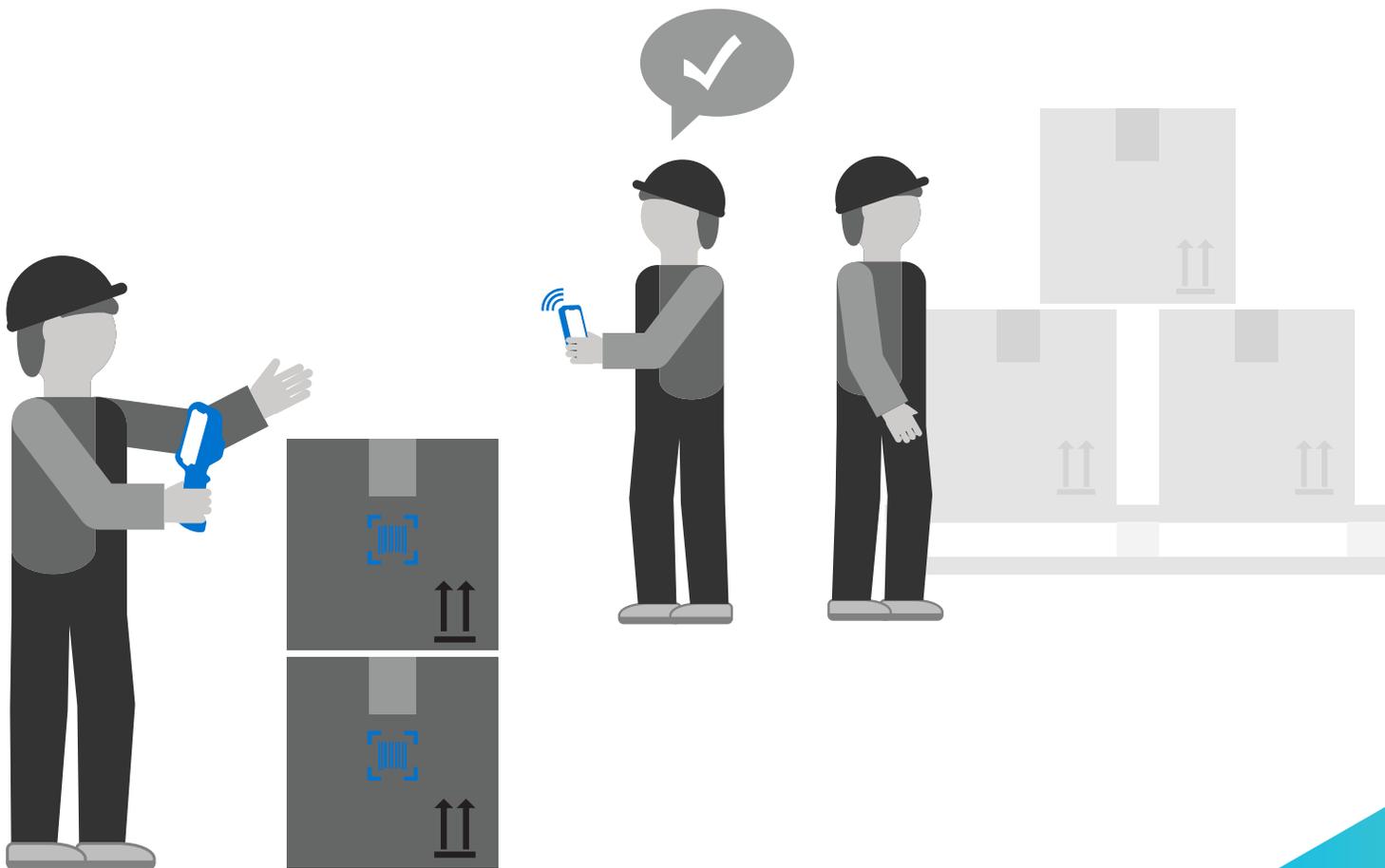
Inefficient workflows

Using an inefficient pager system for manager-to-staff-to-shipper communications can create delays in interactions—a barrier to work efficiency.

Mobile Communications Solutions

Benefits of Mobile, Voice, and Data Communications Solutions

- Empower managers to get out of the office and onto the floor, maximizing on-the-job efficiency and effectiveness.
- Give military supply chain officers access to all business systems and workers with the push of a button.
- Eliminate lost time walking to a phone station with each employee able to communicate right from their own device on the warehouse floor.
- End distracting, unintelligible overhead pages.
- Introduce critical security measures by providing electronic employee access, identification, and locationing via physical ID badges with embedded RFID.



Step

3

Get Advanced Inventory and Storage Capabilities

In the modern military warehouse, properly stocked, “mission-critical” inventory is a requirement. Traditionally, cycle counts conducted manually or with older or fragmented technology have been fraught with errors and are time-consuming. But the perception of cycle-counting value is changing: In the most recent Zebra® Warehousing Vision Study, respondents reported that the top two cycle-count motivating factors are reduction of out-of-stock conditions and ensuring WMS accuracy. Accurate barcode or RFID tag data capture makes these outcomes possible—it is a question of choosing the right form factor for the workflow, such as a mobile computer with a built-in, state-of-the-art barcode scanner or RFID reader. It is interesting to note that, in another Zebra® survey on fulfillment, 91% of respondents said they plan to implement RFID-based inventory management systems by 2022. Government adoption of such advanced tools provides front-line workers with inventory visibility throughout the supply chain.

Implications of Keeping Manual or Low-Tech Cycle Counting



Inventory inaccuracies

Manual cycle counting is costly, time-consuming, and error-prone—and a major reason for a lack of accurate, timely inventory availability, and control.



Out-of-date reconciliation

Manual or low-tech cycle counts may take days or weeks, during which thousands of picks or putaways may occur, creating more inaccuracies.



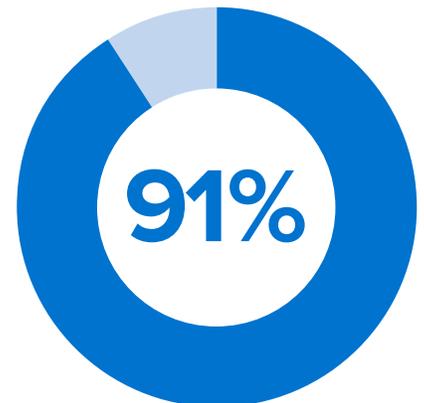
Elevated regulatory risk

To meet increasingly stringent regulations, military agencies must keep accurate inventories. No military agency wants the major disruption of a shutdown required to do a complete physical inventory.



Out-of-balance sheets

A lack of real-time visibility into inventory and storage affects inventory valuation, adversely impacting your department's balance sheet.



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Cycle-Counting and Asset-Tracking Solutions

Benefits of Real-Time Inventory Data Collection and Analysis

- Reduce full inventory and cycle counting time to dramatically improve efficiency and accuracy—cycle counts can be reduced from an average of three to four weeks to just one and a half days.
- Schedule more regular and routine cycle counts to ensure accuracy.
- Improve ordering processes with better real-time trend data.
- Reduce out-of-stock conditions with reliable WMS data.
- Decrease capital expenditures for over-stocked inventory.
- Utilize warehouse space more efficiently with right-sized inventory.

Benefits of Automated Asset Tracking Using RFID

- Reduce downtime by knowing the exact location and condition of assets in the warehouse.
- Optimize processes and improve planning and efficiencies by utilizing analytics from real-time and historical asset usage.
- Improve return on investment (ROI) and reduce the total cost of ownership (TCO) by extending the life of your assets.



Step 4 Streamline Order-Picking Process

Updating picking processes has become a major concern for most warehouses and distribution centers. In Zebra Technologies' recent warehouse survey, almost 60% of respondents indicated plans to increase automated processes, and 76% plan to equip staff with more technology within the next 3 years. These initiatives are especially valuable in these functions because costs are high, and errors can easily yield dissatisfied military clients. A future-ready warehouse is likely to use wearable mobile computers or scanners to dramatically increase the efficiency of the specialized workflows within this process.

Implications of Out-of-Date Picking Processes



Inefficient product locating

With legacy pick-and-fill processes, workers can spend up to 70% of their time walking to locate the right product, wasting time, and reducing productivity.



Costly disappointments

Inefficient picking and filling operations cause inventory inaccuracies that all too often lead to costly out-of-stocks, lost orders, disappointed clients, and lost revenues.



One-at-a-time order processing

The linear nature of manual order picking means workers must process one item at a time, resulting in costly, ineffective, and inaccurate inventory visibility and higher carrying costs.



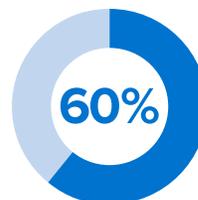
Inefficient labor utilization

The rising volume of orders flowing through the military warehouse causes the relative labor expense for filling each order to rise, tapping already lean budgets.

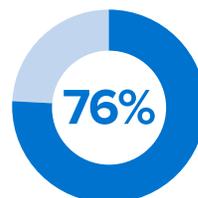


Unknown errors

With manual processes and fragmented solutions, products cannot be automatically verified when picked, leading to unrecognized errors and inaccurate staging, packing, and shipping.



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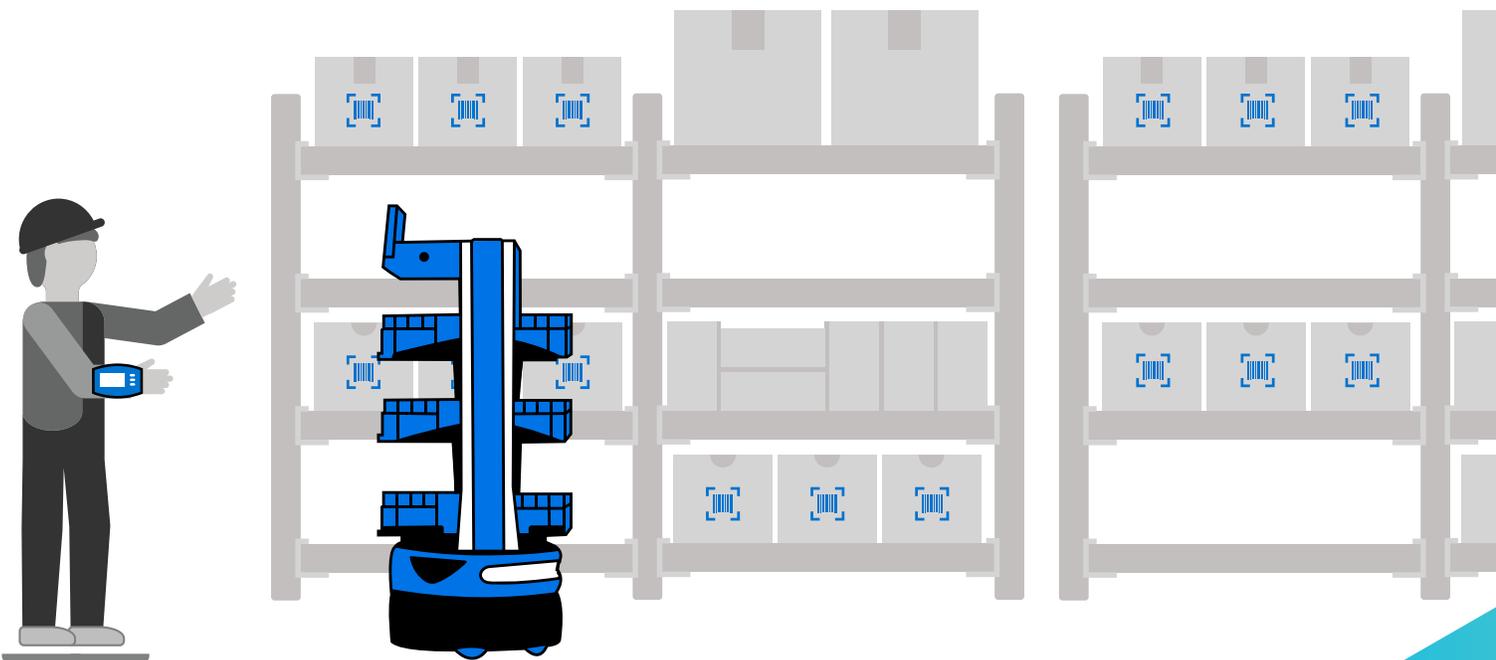
Pick-and-Fill Solutions

Benefits of Mobility for Picking Operations

- Increase the number of orders processed and reduce errors to lower cost per order.
- Eliminate lost time navigating to empty or wrong bin locations with real-time on-hand inventory quantity and exact location.
- Get faster pick times and safer workflows with hands-free, multi-modal picking solutions.
- Help downstream operations verify orders by ensuring damaged or missing barcodes are replaced at the point of picking.

Benefits of Real-Time Order and Inventory Data

- Conserve time with an automatic pick list along with the fastest route to each item.
- Enhance existing pick schemes such as pick-to-tote, pick-to-light, and carousels.
- Receive instant verification that the right item has been picked.
- Eliminate out-of-stocks by instantly deducting items from inventory as they are picked.
- Receive granular picking information that enables LIFO/FIFO for improved inventory management.



Use Automation to Increase Pick Productivity by 3X

Ready to go even further? Take charge of your distribution facilities with Autonomous Mobile Robots (AMRs) that can integrate with your staff to optimize order picking, batch picking, replenishment, and more. 73% of supply chain professionals believe the most optimal balance in warehousing includes human and automation or robotic interaction.* The Fetch fulfillment solution from Zebra can be the workforce multiplier you have been looking for.

Benefits of Dynamic Orchestration Between Both Humans and Robots

- Order, batch, and case picking optimized workflows using vision or handheld devices, or on an AMR.
- Aggregate pick data from WMS across numerous orders and enable collaborative picking for faster fulfillment.
- Automatically accommodate new rush orders and instantly update the work order in process. Identifies the worker or AMR closest to items in the new order.
- Reduce wasted travel in the pick zone combined with eliminated travel outside the pick zone.
- Determine best-next-move for each worker and robot based on their real-time location, tasks, and task priority.

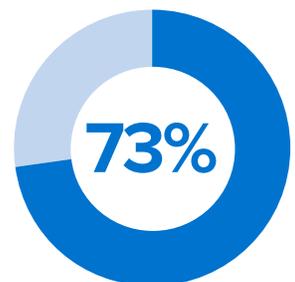
Other Military Distribution Center Solutions Using Fetch and Zebra ABMs Include

- **Each & batch picking** - Dynamically deliver orders to workers and keep workers in a specific zone to reduce congestion in aisles.
- **Case picking** - Build mixed pallets onto AMRs to increase productivity, reduce reliance on forklifts, and eliminate wasted travel time.
- **Pallet picking** - Fetch AMRs can transport palletized loads up to 48" x 48" with 2,500 lbs. capacity for pallet picking applications.
- **Putaway and replenishment** - Prioritize putaway and replenishment tasks through WES and leverage picking staff with replenishment task interleaving.
- **Returns** - Streamline returns process using AMRs to transport returns to restock, repack, refurbishment, liquidation stations, or areas.

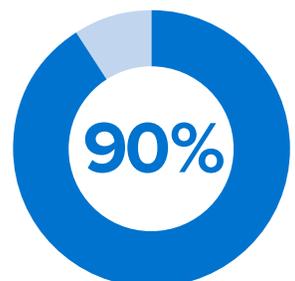
While warehouse robotics may seem like “future stuff,” 90% of supply chain decision-makers expect automation to be involved in completing non-repetitive tasks in the next five years.*



ZEBRA



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Step

5

Upgrade Inbound Handling Operations

Receiving and sortation are critical steps in government fulfillment. Issues in receiving too often morph into other issues throughout the warehouse. A future-ready warehouse uses barcode scanning and RFID to operationalize and streamline inbound processes. Zebra Technologies' warehousing survey found that warehouse managers plan to expand the use of barcode scanning by 67% in the next 3 years. Increasingly, a future-ready warehouse also includes technology that accommodates RFID, integrated advanced shipping notices and global data-sharing standards. Sound receiving processes are the origin of goods visibility throughout the entire supply chain.

Implications of Using Outdated Receiving and Sorting Technology

**Paper-driven inefficiency**

Using paper-based systems or fragmented manual technology results in lost time, reduced order accuracy, decreased productivity, and higher operational costs.

**Poor visibility**

Slow and inaccurate receiving and put-away are barriers to timely inventory visibility and control, as well as to effective cross-docking, task interleaving, traceability, and tracking processes.

**Inventory on idle**

Product sitting on a dock or misplaced in inventory is more than simply idle, it is also unavailable, which can mean dissatisfied clients, unnecessary replenishing, and unfavorable inventory audit results for your agency.

**Slow dock-to-stock**

Delays caused by paper-based processes and fragmented technological solutions reduce inventory control and lead to false out-of-stocks.

**Clogged aisles**

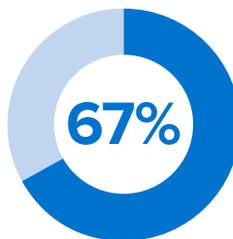
Slow, inaccurate manual processes and the limited throughput of older technology can cause congestion in your aisles, wasting time and decreasing productivity.

**Equipment misuse**

Poor visibility and inefficient management of material handling equipment (MHE) like forklifts and crawlers reduce MHE availability and productivity and increase maintenance costs.

**False out-of-stocks**

Put-away errors and delays can create inventory inaccuracies, which can result in erroneous out-of-stock situations and unnecessary product replacement costs.



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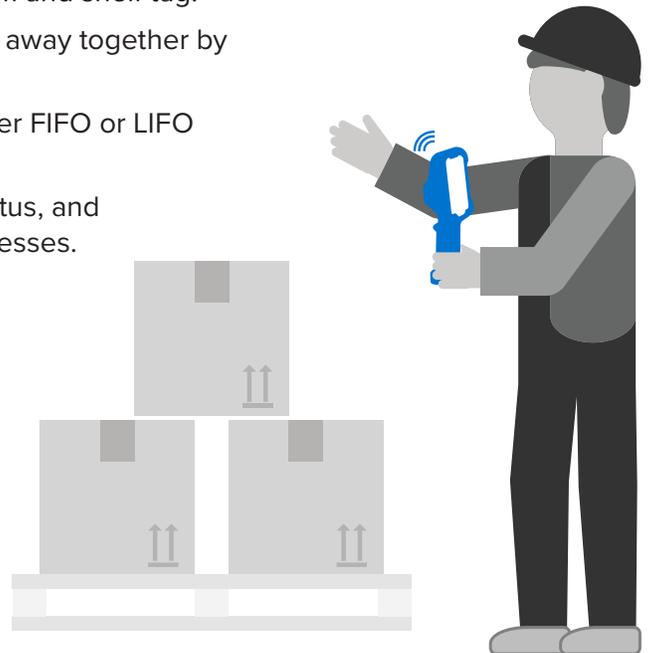
Receiving and Sortation Solutions

Benefits of Mobility at the Receiving Dock

- Process more inbound shipments with increased accuracy and productivity.
- Identify incoming shipments in real-time automatically by reading emitted data from an RFID tag or with a simple barcode scan of a shipping label or return merchandise authorization (RMA label).
- Quickly validate and update returns and issue client or departmental credits automatically.
- Identify shipment errors by electronically receiving goods against system purchase orders.
- Prioritize put-away of low-stock or out-of-stock items with more timely inventory visibility.
- Reduce handling time and costs of cross-docking operations with improved efficiency of forklift driver assignments.
- Ensure efficient put-away and picking by replacing missing or damaged barcode labels with mobile printing on the receiving dock.

Benefits of Real-Time WMS Access

- Verify location matches WMS with a barcode scan of item and shelf tag.
- Ensure all cartons and pallets are accounted for and put away together by accessing WMS for the exact location of all inventories.
- Reduce waste by ensuring proper stock rotation for either FIFO or LIFO inventory management.
- Quickly respond to changes in inventory, production status, and client requests with automated lean replenishment processes.
- Drive improved inventory audit performance.



Step 6 Turn Around Outbound Performance

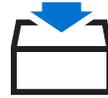
Efficient packing, staging, loading, and shipping lead to timely deliveries. To serve today's more demanding government ecosystem, the future-ready warehouse enables front-line workers with reliable item-tracking technologies such as barcode or RFID technologies and mobile data capture devices to complete these processes efficiently. These essential functions are critical to setting the stage for order verification, real-time visibility, and dependable tracking while goods are in transit—resulting in streamlined delivery, enhanced competitive advantage and increased client, and partner satisfaction.

Implications of Manual Outbound Processes for Packing, Staging, Loading, and Shipping



Sluggish turnaround

Manual order verification in the final stages of fulfillment can lengthen turnaround times, causing significant shipping delays and carrier detention charges.



Packing inefficiency

In packing operations, the lack of complete order information can easily result in orders that are incomplete, inaccurate, and packed in the wrong size cartons or containers.



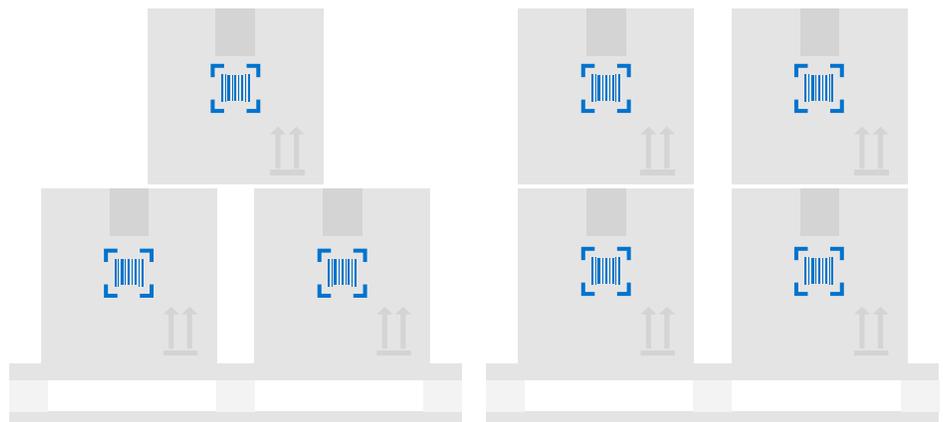
Customer dissatisfaction

Manual data processing and paperwork can cause delays and errors in manifest creation and shipping labels that lead to client dissatisfaction.



Change resistance

Often, manual processes cannot accommodate last-minute order modifications and emergency orders.



Packing, Staging, Loading and Shipping Solutions

Benefits of Real-Time Data for Outbound Operations

- Ensure greater order accuracy with a final electronic verification and on-the-spot printing of necessary labels or paperwork.
- Notify packers in real-time of arrival of back ordered items to include in shipment before shipping.
- Control packing material costs by accessing item's dimensional data with mobile computers to select the right size carton.
- Reduce mis-ships by scanning items while loading to verify the right carton or pallet is on the right truck.
- Reduce driver dwell time with real-time visibility of staged goods for fast and accurate loading.
- Maximize client satisfaction and retention with on-time and accurate orders.



Zebra® Warehouse Technology At-A-Glance

In addition to being the global leader in rugged solutions and enterprise-level software, Zebra offers the broadest portfolio of secure rugged devices on the DoDIN APL for your complete warehouse modernization needs.

In the table below, view the technologies that enable the warehouse to operate at a modernized level.

| | Staff Communications | Inventory & Materials Management | Order Picking | Receiving & Sortation | Put-Away & Replenishment | Returns Management | Cross-Docking | Packing & Staging | Shipping |
|--|----------------------|----------------------------------|---------------|-----------------------|--------------------------|--------------------|---------------|-------------------|----------|
| Handheld Mobile Computers | ● | ● | ● | ● | ● | ● | | ● | ● |
| Wearable Mobile Computers and Scanners | | | ● | ● | | ● | | ● | |
| RFID Handheld Readers | | ● | ● | ● | ● | ● | | | |
| Vehicle-Mounted Computers | | ● | ● | | ● | | ● | | ● |
| Enterprise Tablets | ● | | ● | | | ● | | ● | ● |
| Mobility DNA: Enterprise Mobility software | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Rugged or Ultra-Rugged Scanners | | ● | ● | ● | ● | | ● | ● | ● |
| Fixed RFID Readers and Antennas | ● | ● | | ● | ● | ● | ● | | |
| Location Solutions | ● | ● | | | ● | | ● | | ● |
| Mobile Printers | | | ● | ● | ● | ● | | ● | ● |
| Desktop Printers | | | | ● | | ● | | ● | |
| Industrial Printers | | | | ● | | ● | | ● | |
| RFID Printers | | ● | | ● | ● | ● | ● | | |
| Card Printers | ● | | | | | | | | |
| Autonomous Mobile Robots | | ● | ● | ● | ● | ● | ● | ● | |



Zebra: The Data Foundation of the Secure, Modernized Military Warehouse

Our complete array of rugged enterprise mobile devices improves warehouse communications and mobile data capture in the warehouse, delivering visibility of goods, assets, and people—not just inside the four walls but also across the entire military supply chain.

Our entire Android 11 portfolio has achieved “Common Criteria Certification” as well as being listed on the Department of Defense Information Network (DoDIN) Approved Product List making your warehouse modernization technology acquisition easy.

Everything Zebra can bring to your military supply chain solution, from devices to software, is both **future-ready and cyber-secure.**

About Zebra

Zebra empowers the front line of government operations to achieve a performance edge. We deliver industry-tailored, end-to-end solutions that intelligently connect people, assets, and data to help our customers make mission-critical decisions.



For more information on how to transform your federal, state, or local government warehouse to be future-ready, **visit zebra.com/futurereadywarehouse**



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