



# **The 6 Technologies** You Need to Prepare for the Warehouse of the Future



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Update your Warehouse for the Future



## INTRODUCTION

### The 6 Technologies You Need to Prepare for the Warehouse of the Future

Over the past few decades, technology has continually advanced. Omnichannel shopping demand has steadily increased over time, especially in today's ecommerce times (i.e., Amazon and Walmart) and just-in-time (JIT) delivery. This could also mean you are expanding your current warehouse or building a new one.

Warehouses and manufacturers must be able to keep up with the technological advances and increasing omnichannel shopping. In fact, in today's climate, warehouse and manufacturing productivity and effectiveness are greatly affected by the ability to keep up with the demands.

**This helpful guide outlines the 6 technologies that can bring your warehouse facility into the future.**

Those technologies are wireless networks, ERP integration, terminals, warehouse labeling/signs, RFID, and barcode labels.



# ONE

## Wirelessly Connecting your Warehouse

Wireless connectivity throughout a warehouse is a basic necessity today, with all the wireless devices used to enhance productivity and traceability. While grabbing consumer grade routers may sound like a quick solution, it can leave your warehouse open to a number of problems. [Enterprise wireless network](#) systems enhance connectivity with regard to bandwidth, security, reliability, and management.

### Environmental Considerations

Consumer grade wireless routers are built based on typical housing conditions. Warehouses can be subjected to a variety of environmental conditions, from extreme heat to freezing conditions. There is also the particulate matter in the air to consider. The environmental condition of a warehouse can break down a typical consumer grade router rather quickly.

### Bandwidth

Your warehouse will most likely use a variety of data-intensive applications, sending and receiving large files and even using video. The wireless network needs to be able to support the quantity of employees that simultaneously use tablets, smartphones, mobile printers, scanners, handhelds, and more. To support this kind of volume, there should be specially configured enterprise-class access points.



## Security

By selecting an enterprise grade wireless network system, you are getting a platform to protect the data that is being transmitted. This keeps valuable corporate assets protected from potential hacking. Enterprise grade systems typically include features such as password protection, client access control, dynamic encryption keys, and data encryption.

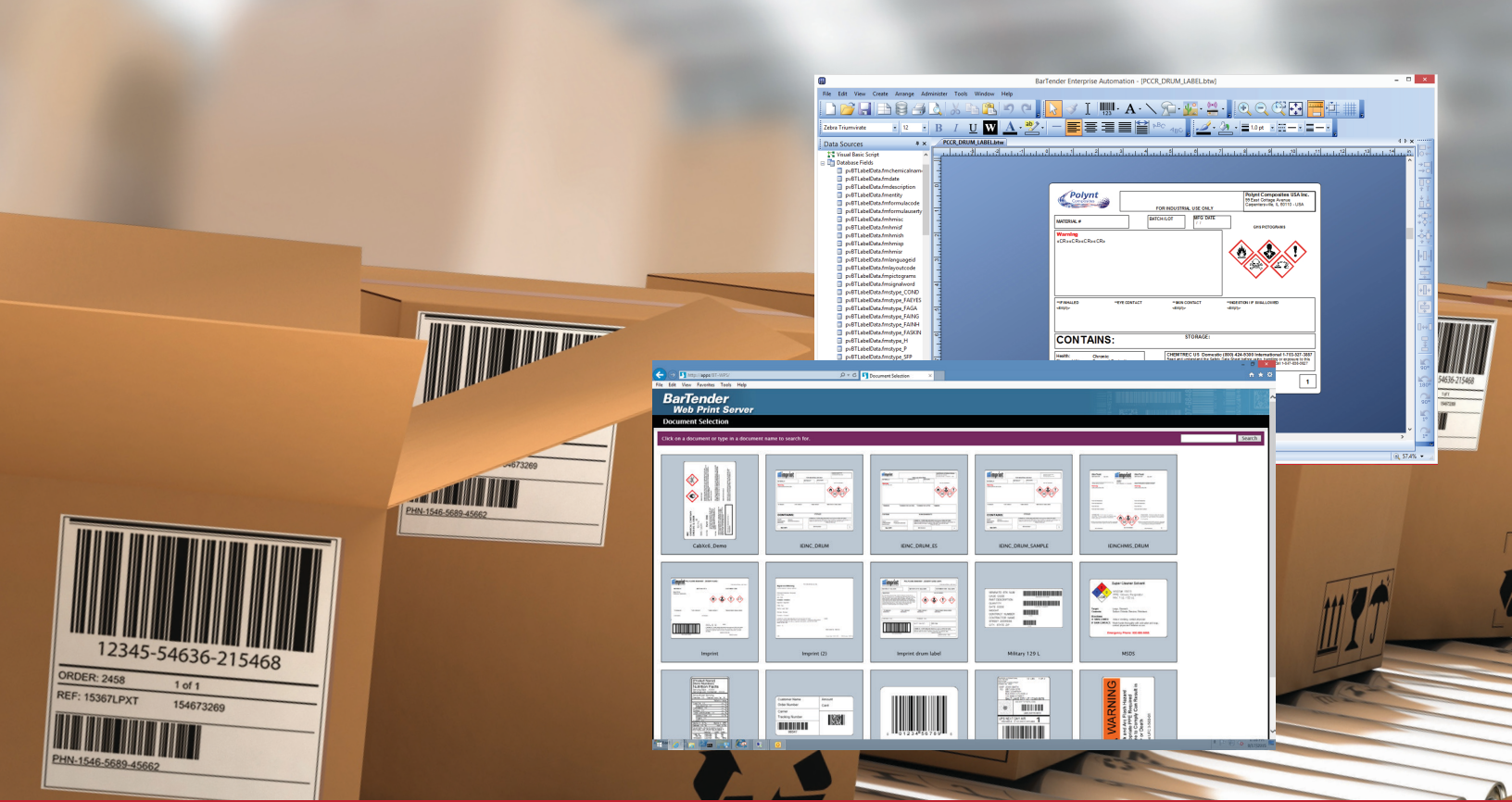
## Reliability

As the employees roam all corners of the warehouse, they will need consistent, reliable coverage. There's nothing more frustrating, or time-consuming, than a dropped signal. Enterprise grade wireless networks offer seamless connectivity and continuous authentication for employees.

## Management

If your company needs multiple access points, the warehouse will need a controller that can centrally configure and manage each device. Enterprise networks usually include management software with user-friendly dashboards to simplify operations.





# TWO

## ERP Integration

**Enterprise Resource Planning (ERP) systems** provide a direct interface between barcode label printing, relevant supply chain software, and back-end systems. Connecting an ERP system to a barcode labeling system can reduce costs, improve accuracy, and provide better inventory tracking and visibility.

There are several [benefits of integrating](#) a barcode labeling system with an ERP system. *You can save a substantial amount of money in labor costs when barcode data is automatically gathered and immediately available.* There is no more wasted time manually entering data or generating reports. ERP systems are also user-friendly, providing an easy experience for your employees.

Give your print operators an intuitive end-user experience with a direct link from the mobile computer to the barcode scanner to the ERP system. This real-time information helps with product lookups, shipment information, and locating inventory in other locations.

Successfully manage printer errors to keep production moving while improving customer satisfaction. Barcode labeling systems can be configured to automatically generate labels and launch print jobs based on specific ERP transactions, minimizing data entry error and user intervention.

*Imprint has developed partnerships with some of the most trusted barcode label software options in the industry.*



## THREE

### Terminals and Devices

Warehouses will typically use a variety of [wireless devices and computers](#), depending upon the job function and application. Employees will push these gadgets to the extreme in the typically punishing warehouse environment. As such, devices should be selected that can withstand long-term wear and tear. Some of the most commonly used mobile devices include:

#### Handhelds

[Handheld devices](#) enable data collection while on the move. They're available in a variety of keypad configurations to accommodate your business needs, and they support several different wireless technologies. Handhelds, manufactured by companies like **Honeywell** and **Zebra Technologies**, are commonly used for barcode scanning, RFID and more. They usually leverage the **Windows CE** operating system, which aids integration with your enterprise systems and software, but other operating systems are also available.



#### Rugged computers

Built for the most demanding environments, [rugged handhelds](#) offer the same computing power as their less robust counterparts (mentioned above), but are built with superior protection against dust, moisture and other particulate matter. Some of these devices are designed for either cold chain applications or for use as workers move between both cold and warm environments.



## Vehicle-mounted computers

If you operate forklifts and other industrial vehicles in your new warehouse, you'll likely need to deploy [vehicle-mount computers](#). Available as wireless computers or batch terminals, these devices usually operate on **Windows CE or Windows 7** and come with either half or full-size screens.



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## Mobile power carts

In addition to mobile terminals, [mobile power carts](#) are essential to building an efficient and productive warehouse. Stationary workstations hinder productivity because they require employees to walk back and forth throughout the workday. These steps add up over time; although walking can feel productive, the use of mobile power carts is the best way to ensure optimum efficiency is reached.

Mobile power carts empower employees by allowing them to access valuable warehouse data from anywhere in the facility. These workstations come with a power supply that can be swapped out when needed, providing power to printers, computers, scales, and whatever else your warehouse needs constant access to. Mobile power carts reduce downtime, minimize inefficient actions, and keep warehouse operations moving through multiple shifts.



**NEWCASTLE SYSTEMS**

## Zebra Intelligent Cabinets with Access Management System

Maximize mobile device performance and management with the [Intelligent Cabinets](#). Cabinets can be equipped to charge the batteries of the mobile devices and manage software updates while the devices are docked. After the devices are checked out through secured distribution access, a remote program monitors the battery change and the health of the device.

The traceability and authorized only access reduce lost devices. The increased accountability also saves your company money by minimizing unnecessary repairs and replacements. The enhanced software-driven management reduces the human error rate while more accurately allocating devices.



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## FOUR

### Warehouse Labeling and Signs

Installing smart labels for easy scanning and enhancing the visibility of your signs will **boost productivity** and expedite order fulfillment. Barcode scanning will increase in use by as much as 67% for greater efficiency. *Is your warehouse designed to keep up with that demand?*

Warehouse management systems need to keep up with the changing times and increasing demands. From the rack and bins to the shelves to the aisles, here are some solutions that will work for you and your warehouse.

#### Retro-Reflective Labels for long range scanning

[Long-range retro-reflective labels](#) can increase productivity by make it much easier for scanners to read the labels as far as 50 feet away. This is achieved by using a polyester-based material that is blended with microscopic glass beads to reflect a scanner's laser.



The retro-reflective labels reduce the amount of time it takes to scan, pick, and pack items in your warehouse. The MIL size can be adjusted to meet your needs and come in your choice of graphics and colors. The retro-reflective labels are human-readable, using text and characters combined with popular scanning symbology, graphics, and logos.

## Rack & Bin Labels

Racks and bins help keep your warehouse and the items in it organized which **increases efficiency**. Our [warehouse rack labels](#) maximize long-range scanning with clearly labeled racks and shelves. This allows forklift drivers to see what they need on different levels without having to take the added time to get out and look, **increasing productivity and decreasing accidents**.

Vertical totem rack labels can solve your limited space issues. These labels can be color coded, with directional and barcode symbologies, while still being readable by the eye. Totem labels can minimize scanning and picking errors and provide an alternative solution on beams and rack ends.

The labels incorporate multi-colored graphics, directional references, barcode symbologies, and are human-legible. You can get labels meant for cold storage with an acrylic-based adhesive that stays put as low as -20 degrees Fahrenheit. There are magnetic labels, cover-up labels, and polyester labels. These last longer in tough warehouse environments.

Bin labels come in different sizes to match the variety of shapes and sizes of your bins, helping you keep track of the inventory in them. They have a heavy-duty adhesive for bonding to any type of container. You can order pre-printed labels or obtain blank labels for you to print on-site.



## Warehouse Magnets

[Warehouse magnets](#) can be convenient when you have to constantly change labels in your warehouse. Ideal for constantly moving inventory for optimization needs, magnets do not leave a gooey residue. They come in a variety of sizes, colors, and symbologies for whatever you need. You can even obtain some you can write on with dry-erase markers.



Magnetic labels can be customizable to fit your needs, are barcode compatible and human readable. The magnetic labels have directional symbols and color-coding for quick identification purposes. You can even get cardholder warehouse magnets to print barcodes or text to slide into the magnetic holder.

## Warehouse & Isle Signs

Warehouse and isle signs improve visibility in the warehouse for quicker navigation. Increasing visibility **increases productivity**. Choose from hanging signs, bent signs, and flat/long-range [warehouse signs](#). Hanging signs are perfect for those difficult areas. Bent signs can be configured for easy scanning at all times. Flat/long-range signs are cost-effective and easy to mount. All signs can have custom barcode labels for efficient long-range scanning.

**Other warehouse signs are vital for safety and are often required by OSHA and ANSI.** We have a variety of safety/injury signs for preventative measures. Traffic signs can prevent accidents and improve traffic flow. Forklift warning signs help keep people alert and safe. Floor signs can be used in place of hanging or mounted signs to alert employees to hazards, directions, and safety requirements. Door dock signs can direct drivers to where they need to be.

[Warehouse aisle signs](#) improve the ability to locate products and provide directional assistance. Aisle signs can also provide warnings, safety notices, and general information. Aisle signs help to increase navigation, **saving time increasing productivity**.

There is no one-size-fits-all, so we work to find the most cost-effective solution for your needs. The aisle signs can be vinyl, color-coded letters on PVC signs, retro-reflective, and in color or white. You can also get them with magnetic, aluminum, acrylic, or coroplast substrate.





## FIVE

### RFID

Living in an on-demand economy, everyone wants super speedy fulfillment, delivery, and return/exchange yesterday. *Is your warehouse already equipped to handle the extreme asset and production identification, tracking, and management that comes with the on-demand landscape?*

**Radio Frequency Identification (RFID)** is commonly used in various application for traced, from production through the supply chain. *RFID uses a chip and tag combination for optimal reading, making it superior to barcodes with the ability to be read from long distances and storing significantly more information.*

**RFID technology** can increase operational efficiency, eliminate human error, and reduce capital costs.

**RFID technology** also provides access to real-time data, offering insight for better decision making and precise asset management. Each tag has its own unique serial number.

**RFID readers** can be [fixed](#) for maximum visibility and pinpointing location throughout the warehouse. Readers also come as [handheld readers](#) and mobile computers to extend a network's visibility beyond the walls of the warehouse.

# SIX

## Barcode Labels

Barcode labels identify products and assets, which is critical to your business. Compliance, brand identity, and effective data/asset management require effective and accurate labeling. The quality of the labeling and printing effects operational efficiency.

Knowing the type of barcode you need will also determine the supporting technology you need (integration systems, printers, scanners, readers). And like with any equipment, repair service and proactive maintenance to keep printers making labels with scannable barcodes is essential.

### 1D vs 2D

1D barcodes are linear and can only hold approximately 20-25 characters. 2D barcodes can have a higher data density in a smaller space and can use patterns, shapes, dots, images, website addresses, and binary data.

Types of 2D codes include **PDF417, DataMatrix, QR code, MicroPDF, and Aztec Code**. These types of codes increase the integrity of the information contained in the 2D barcode, minimizing human error in data entry.



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## The right scanner for the job

2D barcodes are scanned only with imager-based scanners. However, these imagers are practically indestructible and come in a better variety than just a wand. The [Honeywell Granit Series](#), [Honeywell Xenon 1900 Series](#), [Zebra DS3500 Series](#), and [Zebra 3600 Series](#) are some of the best options for handheld scanners.

[Fixed mount barcode scanners](#), such as the [Cognex](#), can scan the labels without having to halt production to realign the barcodes.



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## Barcode verifiers

Using [barcode verifiers](#) can make sure barcodes are readable. Verifiers are designed for accuracy and repeatability, checking your barcodes for the highest ANSI or ISO quality using a pass/fail or letter grade.

The [Honeywell PX940](#) is a barcode label printer with a built-in barcode verifier. This first-of-its-kind industrial printer and barcode verifier combined into one device, produces defect-free barcodes with 100% accuracy every time. The printing system has the built-in verifier to verify EVERY barcode, regardless of the direction.

Certain types of barcode symbols are designed to be readable even when damaged, such as a Data Matrix 2D symbol. [Cognex DataMan 2-D Data Matrix Verifiers](#) increase productivity and enhance accuracy. can be read even if as much as half the code is damaged. You can also use a [fixed mount barcode scanner](#), mounted in different areas on the line. Some of the mounted devices can communicate to a diverter to move a product to the side for further verification.



**Honeywell**



**COGNEX**

## Printing your barcodes

When a shipment is rejected because of defective labels, the company rejecting the order will often demand the return of their money and tack on fees to that. You need a barcode label machine that is consistent, is suited to your need, and is user-friendly.

[Industrial barcode label printers](#) range from specialty thermal printers, including barcode label printers, [mobile](#) barcode printers, print-and-apply systems, auto-bagger solutions, RFID printers, and card printers. Printers are adaptable to meet your evolving business and technology needs, from black-and-white labels to [color](#).

Printing barcode labels from your facility provides 24/7 reliability to eliminate downtime. Micro-consistent printing provides top-quality labels. From large labels to small, you can find a barcode printer that is right for you.

Barcode printers can be connected wirelessly or through a standard connection for flexible configuration within your warehouse. Industry-leading technology is available for unparalleled visibility throughout the warehouse and remote management. The user-friendly designs of barcode printers simplify maintenance and troubleshooting.

## Right label construction for the job/application

Direct thermal fuses ink onto the label material while the thermal transfer method prints images via wax or resin ribbons. Off-the-shelf labels come in myriad sizes, shapes and colors to serve numerous industries and applications.

Custom labeling solutions are available for companies that have very specific needs in a new warehouse. Choose from a wide array of options, from tamper-proof solutions and UV coatings and lamination to retro-reflective tags and coupon labels.



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## Right ribbon for the job/application

Food and beverage companies will need to consider pressure-sensitive prime labels. These items leverage flexographic and digital offset printing technologies to deliver professional, polished graphic treatments. Digital printing for prime labels enables you to adjust specifications as needed, change labels according to seasonality, print multiple SKUs, and personalize offerings according to location or client.





## CONCLUSION

### Update your Warehouse for the Future

As outlined in this eBook, there are 6 technologies that can advance your warehouse facility into the future, helping you gain ground against the competition. **The 6 technologies are wireless networks, ERP integration, terminals, warehouse labeling/signs, RFID, and barcode labels.**

**Keeping up with technological advancements enhances your operational effectiveness and productivity.** In turn, this increases profits while keeping up with omnichannel shopping demand and JIT delivery.

One of the things Imprint does as an integrator is understand all the parts involved in bringing your facility into the future. *Specialists come to you and help you understand what you need through an evaluation.* An optimization of your warehouse is created, taking into consideration your future. Together, we can plan, design, implement, and upgrade your warehouse.

**Contact**

Imprint **today.**





Imprint Enterprises has been in business since 1975 and is focused on providing customers the highest quality products with the most comprehensive service. Whether you're looking to purchase new barcode equipment and supplies, or need best-in-class installation and service for your barcode products, we have a solution for you. We specialize in nationwide barcode printer service, site surveys and end-to-end barcode solutions. Imprint's Barcode and Custom Labeling Division focuses on the following industries: manufacturing, distribution, logistic centers, food processing, co-packagers, beverage, and pharmaceuticals.



## Download Our Product Catalog

View our complete line of labeling, barcode, RFID, and mobility products.

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