

ADLINK Edge IoT Use Case Spotlight

Maintaining superior customer service and on-time delivery while also increasing employee productivity can be very difficult for any warehouse to achieve. It becomes even more difficult when shipping high volumes of packages per day. ADLINK's Edge IoT solution for machine vision has been used to make packages and pallets themselves intelligent so they can detect where they're supposed to be, when they're supposed to be there, in real-time, yielding improved warehouse logistics and productivity, while also decreasing incorrectly shipped packages and theft.

Warehouse Challenges

The number of packages per day shipped from warehouses around the world continues to grow which is increasing challenges among supply chain and logistics processes.

Business Challenges

- Increased pressure to keep up with competitors' productivity
- Satisfying increasing demands from customers for excellent service and on-time deliveries
- Creating more ergonomic, safe, and inclusive work environments for warehouse employees
- Reducing shrink, theft, misplaced, and “missing in action” items
- Having seamless working relationships with 3rd party logistics, suppliers, and OEMs



Information and Operational Technology Challenges

- Ensuring foolproof infrastructure, network, and device security
- Eliminating mission-critical interdependency of IT systems and technologies
- Connecting different automation systems and back-end IT systems
- Managing physical hardware and secure remote industrial software environments
- Reducing latency of machine and system communication to/from cloud(s) and employees
- Generating useful data that can generate insight and be acted upon in the moment

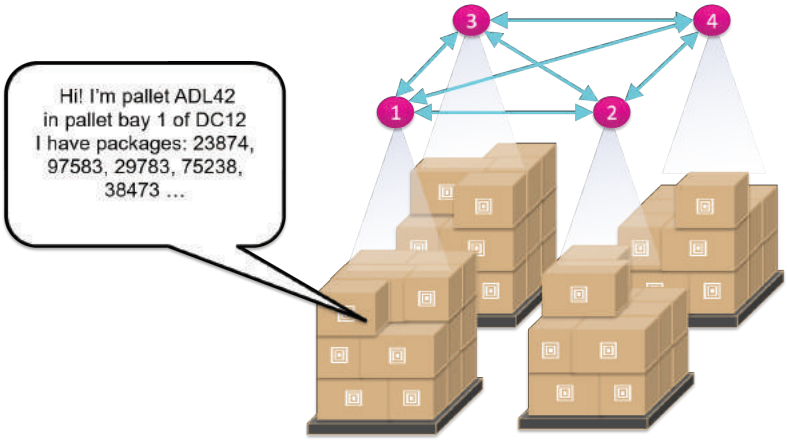
ADLINK
Leading EDGE COMPUTING

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The Solution Edge IoT with ADLINK Edge®

With ADLINK Edge®, the Edge IoT solution designed to easily solve vision-based Internet-of-Things initiatives, uncommunicative pallets are now smart pallets in the warehouse.

How it Works

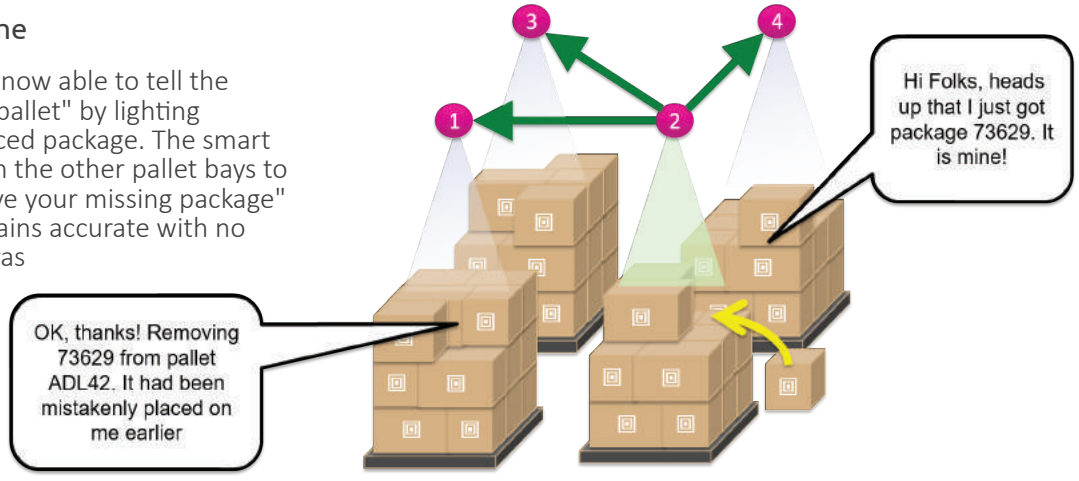


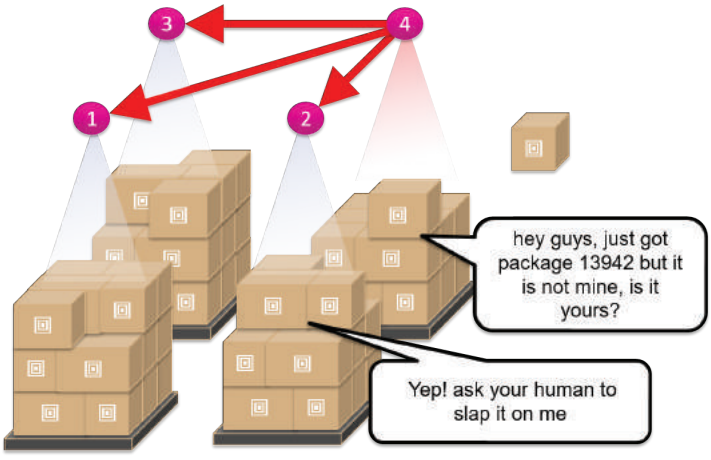
1. Connect the Unconnected

The warehouse management system (WMS) communicates with ADLINK Smart Cameras giving each camera a manifest of the days packages so each individual camera knows the correct lane and correct pallet each individual package belongs to. The Smart Camera then reads the barcode labels on the packages as they travel on material handling systems to their correct pallets, determining if the package is valid or not for its assigned lane and pallet. Previously unconnected pallets are now connected.

2. Stream Data Anywhere Real-time

If a package is incorrectly stacked, it is now able to tell the warehouse worker "I'm on the wrong pallet" by lighting spotlights which illuminate the misplaced package. The smart pallet is also able to communicate with the other pallet bays to say, "this package belongs to you, I have your missing package" and ensure the shipping manifest remains accurate with no misplaced packages. The Smart Cameras are also able to determine if the barcode label on a package is fraudulent, and intercept the package before misrouting takes place. Data is now streaming real-time between the edge devices, the WMS, ERP, cloud, and warehouse employees.





3. Control the Edge

The ability for each system and device to communicate with one another is all made possible by the ADLINK Edge Data River™, the simple way to subscribe and publish IoT data to, from and between devices and systems without having to do heavy engineering. ADLINK Edge® is architected with open-standards based technologies, a mesh distributed system, modular components, and real-time connectivity between OT systems, IT systems, and machines making connected warehouse logistics easier to achieve. With a variety of vision-based Edge IoT apps-analytics, security, device management, and visualization-at the edge are now possible for easy control.

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Benefits Making IoT Simple

- Real-time communication between pallet, warehouse employee, and back-end systems
- Non-invasive approach allows for implementing without disturbing existing environment
- No single point of failure, operations continue even if one component fails
- Modular architecture allows for easy upgrading and changing as needs evolve
- Fast responsive experience allows for in-the-moment decision making
- Multisensory experience with audio and visuals

Value Edge IoT Enabling New Experiences

ADLINK Edge® enables new warehouse experiences between workers, pallets, packages, IT and operational technology. Adding value by:

- Reducing incorrectly shipped packages due to worker error, accidental no-scans of boxes, and missplaced items
- Increasing productivity and the number of items that are able to ship daily
- Decreasing spoilage and sunk costs of replacing items that are incorrectly shipped
- Removing points of failure so that operations can continue even if connetivity goes down
- Keeping customers happy with quick, correct and on-time deliveries
- Increasing worker safety and ergonomics

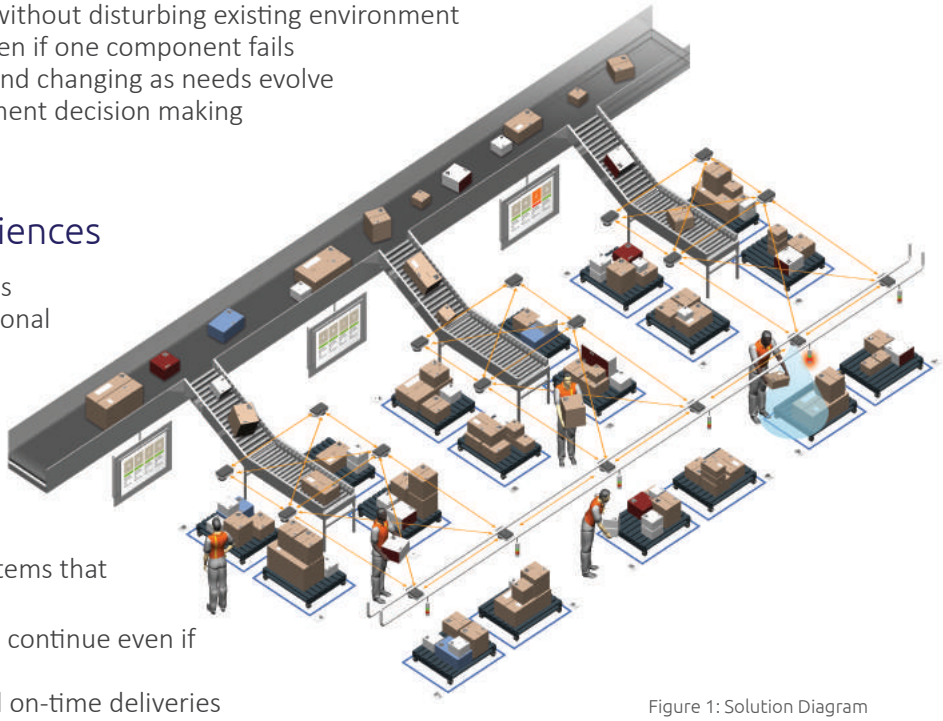


Figure 1: Solution Diagram

ADLINK Solution Components

ADLINK's Edge IoT Solution for Vision includes:

Edge Hardware

- ADLINK NEON Smart Cameras
- ADLINK MXE Intelligent IoT Gateway

Edge IoT Software

- ADLINK Edge® and real-time data streaming on the ADLINK Edge Data River™

Edge IoT Apps

- ADLINK Edge® Vision Service
- ADLINK Edge® Visualization
- ADLINK Edge® OT Connect
- ADLINK Edge® Cloud Connect

ADLINK has great investment around accessibility and how to use Edge IoT to make the world more inclusive. ADLINK is proud to offer colored lighting signals and audibles within the ADLINK Edge solution for warehouses who want to bring an inclusive work environment to employees who may experience difficulty with vision, recognizing colors, or who may be hearing impaired.



Figure 2: ADLINK NEON Smart Camera

Existing IT and OT Components Can Include

- Pallet lanes including high lane and low lane
- Pallets, boxes, conveyors and automation systems
- Customer Relationship Management (CRM)
- Enterprise Resource Planning (ERP)
- Warehouse Management System (WMS)
- Any cloud provider and more*

*ADLINK's Edge IoT solutions are all vendor-agnostic, built on open standards, and architected with modular components which allow for easy integration with any existing IT and OT infrastracture.

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