

Cisco and Datria UC Voice Picking for Manufacturing: Network-Based Order Fulfillment in the Warehouse

The UC Voice Picking Solution from Cisco and Datria is the industry's first enterprise-class warehouse solution, delivering voice-enabled supply chain solutions via VoIP and the network, and enabling manufacturing operations increase order accuracy while improving worker productivity. This innovative solution is the first to be completely open standards-based, enabling rapid ROI and establishing a voice resource that can be used throughout the enterprise.

In today's competitive manufacturing and supply chain operations, companies are increasingly focused on growing capacity, quality, and agility while reducing facility and labor costs. Logistics operations are challenged to increase volume without adding to existing square-footage, improve delivery speed while advancing order accuracy, and to enhance productivity while reducing dependency on labor-intensive costs. Competitive pressures also require an unprecedented level of flexibility in operational capabilities, in order to rapidly adapt to changing business needs.

The Cisco and Datria Unified Communications Voice Picking Solution for Manufacturing is a ground-breaking solution that integrates proven voice-over-IP (VoIP) and network-centric speech recognition technologies to connect mobile warehouse workers to ERP, WMS, IM, and SCM systems in real time. Results from existing installations include:

- Order fulfillment accuracy approaching 100%
- 10-30% productivity improvements, including ability to leverage advance ship notification (ASN) systems for speedy deliveries
- Regulatory tracing compliance
- Removal of redundant QA processes
- ROI payback in 3-9 months

With this powerful solution, manufacturers take advantage of a paradigm shift in thinking about warehouse management, based on a technology that provides better affordability, scalability, and conformity with third-party service-oriented architectures (SOAs), and a reduced total cost of ownership.

The Challenges of Order Fulfillment

Today's retailers demand a high level of accuracy in their orders from manufacturers and distribution centers. An especially powerful trend is the Advance Ship Notification (ASN), which gives preferential treatment on delivery if vendors conform to ASN policies. For example, the world's largest retailer, Wal-Mart, requires 99.8% shipment accuracy as part of its ASN policies. By meeting this standard, manufacturers gain preferential treatment for their trucks and faster processing on Wal-Mart's docks, significantly cutting the time needed for delivery. This faster time-to-shelf, in turn, results in improved sales and lower logistical costs.

Regardless of whether a manufacturer is using pallet, case, or piece-pick operations, it is challenged to optimize the order fulfillment process and minimize the amount of time it takes workers to find, load, check, and ship the correct items. It also means, however, that the seemingly simple task of picking a product off a warehouse shelf to match an order becomes a critical factor in order fulfillment. At the same time, business growth requires increasing warehouse capacity and agility without expanding facilities or staff.

In most warehouses today, the entry-level workers known as “pickers” receive a printed order, or pick sheet, physically look through the warehouse to locate each item, and load it onto a pallet. With only a few SKUs to choose from, this is not such a difficult task. However, in the case of manufacturers that produce hundreds or even thousands of different items, with a constant flow of new products in unfamiliar packaging, the warehouse becomes a much more challenging environment—labor-intensive, time-consuming, and prone to error.

Complicating matters is the fact that turnover for warehouse staff tends to be high, resulting in greater levels of inexperience among employees. Some pickers may be struggling with language differences. They can also often be distracted from their work by fellow workers, managers, and the need to repeatedly traverse the warehouse searching for products. As a result, there is no coordinated system to assure order accuracy, and additional time is spent double-checking each pallet.

Manufacturers require a flexible, powerful solution that provides the precision, ease-of-use, and ability to scale within the warehouse and throughout the extended logistical chain. They also need to improve cost-effectiveness by controlling operational expenses and lowering training costs, as well as improving worker retention.

The Cisco and Datria UC Voice Picking Solution for Manufacturing

Cisco and Datria's UC Voice Picking Solution meets these challenges by providing a flexible pick system designed for the needs of the mobile warehouse worker. Based on the existing IP network and standard Cisco Unified Communications platforms and networking capabilities, mobile workers equipped with Cisco wireless VoIP handsets or VoIP-capable multimodal devices leverage Datria's warehouse interface for real-time voice communications with enterprise warehouse and logistics management systems.

The Cisco and Datria solution is unique in today's voice-based supply chain solutions: it is the only network-centric approach and the only solution to use VoIP capabilities. In conjunction with existing business process rules in ERP, inventory, supply chain or warehouse management systems, it enables speech recognition technologies to be applied across all of these work processes. The result is close to “perfect order” accuracy and optimal productivity in a very labor-intensive operation. The Cisco and Datria solution also permits voice technology to be seamlessly combined with other automation technologies, such as RF scanning and RFID.

Each Cisco and Datria UC Voice Picking solution includes:

- Configurable Datria application package: An open VoiceXML and Java-based application providing mobile workers with a real-time voice-user interface to existing corporate systems.
- Cisco Unified Customer Voice Portal (CVP): A flexible VoiceXML platform providing the

robust run-time environment for the Datria application.

- Cisco Voice Gateways: Integrated Services Routers (ISR) equipped as VoiceXML Gateways, acting as the integration point between VoIP callers, speech recognition technologies and VoiceXML applications.
- Mobility devices: Cisco wireless 792X VoIP handsets, equipped with extended batteries and ruggedized cases for manufacturing environment use.
- Cisco Unified Wireless Network, VoIP for wireless phones and other mobility devices.
- IP Telephony: Cisco Unified Communications Manager (or its Express version) to manage and support VoIP calling for mobile devices.
- Routing and Switching: Cisco's industry-leading wide area network (WAN) solutions, forming the manufacturing enterprise backbone from the warehouse and throughout the supply chain

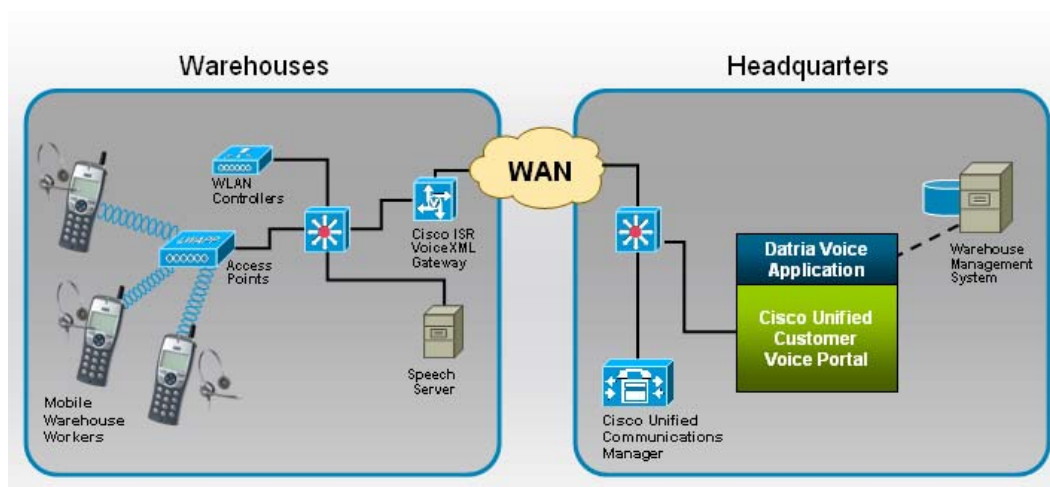
Voice-activated picking technologies in themselves are not new—this technology has been used for years in the grocery and automobile industry. However, the agile Cisco and Datria solution maximizes this proven functionality for manufacturing and warehouse applications based on its industry-leading, secure IP-based networks and UC platforms. By leveraging the eight-to-ten hour battery life of its 7921G wireless IP phone and existing VoIP infrastructures to assure constant wireless access point coverage, Cisco and Datria provide an affordable solution that improves order accuracy, streamlines the packing process, and increases employee productivity.

In this environment, unlike traditional client-based voice solutions, voice becomes a network resource within a standard, open IT web services architecture. This allows manufacturers to leverage voice automation technology as a shared resource on their preferred enterprise vendor platform. The Cisco and Datria UC Voice Picking Solution is based entirely on open industry standards and Internet protocols for voice such as VoiceXML, MRCP, Eclipse, and standard web services. It functions out of the box and is built using commercial, off-the-shelf components, including a voice engine from Nuance and the most advanced industry algorithms. The solution is available in various packages that can be configured to each manufacturer's particular needs.

How the Voice Picking Solution Works

The Cisco and Datria UC Voice Picking Solution has a very simple but powerful topology (see Figure 1), and can be deployed at a single site or decentralized across a large number of remote sites. At the start of each shift, a worker simply clips on a Cisco wireless phone and puts on a headset. They then press a speed dial button to initiate their login request to begin working. The worker's dialogue is two-way: Speech recognition is used to understand worker requests and current status, while the worker hears natural-sounding human speech in response. The system sets a pace for the work to be accomplished, yet the worker has flexibility for breaks or other interruptions as required. The Datria application can also manage different pick situations as they arise, such as stock shorts or out-of-inventory. It can also blend cycle-counting with picking or put-away activities.

Figure 1. The Cisco and Datria UC Voice Picking Solution



Improved Worker Productivity with Less Training

Mobile warehouse workers rapidly accept the Cisco and Datria UC Voice Picking Solution, as it requires them to simply use a familiar, lightweight cell phone rather than being trained on an expensive, custom handheld. As a result, managers spend less time in training sessions and monitoring inexperienced staff members, and find it much easier to bring in temporary or seasonal workers for busy periods.

By using state-of-the-art speech recognition technologies from the market leading vendors, there is no need to have each user spend 30-40 minutes training the system to their voice. The trainer and the worker use standard telephone features for three-way calling, to work together in real time on the same order fulfillment, to ensure in a matter of 10-15 minutes that the full process is understood and repeatable. Given the diversity in the manufacturing workforce, this is a critical and powerful model that ensures that nothing is lost in translation. The solution also provides a facility for self-run tutorials, which can be used with new workers or, to introduce new work processes.

Putting on the headset helps to keep pickers in the “picking zone,” keeping them less easily distracted by outside conversations while they communicate directly with the system. Employee safety is improved as workers avoid pitfalls such as poor lighting, dirty air, protective clothing, or damaged labels. They also feel more effective and take greater pride in their work as “perfect order” accuracy is achieved, increasing job satisfaction and reducing churn.

An Open Standards-Based Infrastructure

Cisco and Datria have shattered prior notions that speech recognition in manufacturing and the warehouse requires custom technology. By complying with global standards for speech solutions, the UC Voice Picking Solution delivers optimal performance while being based entirely on commercial off-the-shelf (COTS) technologies. A key advantage to this approach is that it leverages existing IT investments in IP telephony, routers, and network infrastructure, thus simplifying integration and ongoing management while speeding ROI. Based on proven, network-based technologies, the open system reduces costs and resource drains associated with constant technology refreshes. This permits scarce resources to be focused on other strategic projects, while reducing the total cost of ownership (TCO) compared to less mature mobility technologies.

Compliance with Enterprise SOA Resources

A key differentiator of an enterprise-class solution is that voice user interfaces (VUI) are established as a company-wide resource, supporting automation of any business process transaction via strategic enterprise service-oriented architectures (SOA). The Cisco and Datria UC Voice Picking Solution is compatible with SOAs such as SAP, giving it a broad application reach both within and outside the company. Linked with enterprise systems via the IP network, the solution can be used to support a wide range of applications,

A broad range of surrounding inventory and fulfillment processes relate to the success of accurate and effective order fulfillment, including receiving and put-away, storage transfers, replenishment, returns, cross-docking, load building and packing, yard management, and inventory or cycle-counting. However, the Cisco and Datria solution can also be utilized for field and sales force automation, regulatory compliance and reporting, plant maintenance, and management of assets, parts, outage, crisis situations, human capital, and more. The solution complements the use of bar code scanning, pick to light, and RFID technologies for multi-mode, enterprise-wide systems.

Powerful Financial & Productivity Benefits

The Cisco and Datria UC Voice Picking Solution for Manufacturing transforms warehousing processes into a single, efficient workflow. Mobile workers take advantage of accurate, real-time information to enhance fulfillment and assure optimal distribution of manufactured products. This innovative solution offers benefits including:

- Increased fulfillment accuracy (close to 100%), reducing costs and invoice payment delays while enhancing customer relationships
- Ability to leverage Advance Ship Notification (ANS) for more productive shipping
- Increased item/lot tracking, meeting increasing regulatory requirements for traceability
- Added agility for warehouse operations
- Open, standards-based solutions (100% off-the-shelf technologies)
- Improved worker productivity and eliminating some QA steps, reducing labor costs
- Reduced injuries and improved worker safety, while reducing insurance costs
- Improved affordability and speed to ROI – typically installs in 1-2 months with a payback in 3-9 months
- Creating a SOA resource that can be reused across the enterprise for other voice-based applications



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

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