

Cisco Demand-Driven Supply Chain: The Wi-Fi Asset-Tracking Solutions

Cisco Systems® Wi-Fi Asset-Tracking solutions help to manage and control all the material goods, people, and products created within and throughout the supply chain. Integrated with Cisco networking technologies, this powerful solution helps manufacturers to control costs, streamline processes, operate more profitably, and respond rapidly and flexibly to new demands. The Wi-Fi Asset-Tracking solution is part of the Intelligent Networked Manufacturing platform from Cisco Systems.

The Challenges

Manufacturing industries have undergone profound changes over the past five years. Traditional supply chain management—from product development, production, and supply to sales and service—no longer dominates the business model. As expanding international manufacturers relocate facilities in countries around the world, the business assets that make up the supply chain—people, products, equipment, and raw materials—are increasingly on the move.

Manufacturers can no longer measure success simply by the ability to produce a good product at a good price; they must also compete based on their overall value chain—those solutions that help to make their business more efficient and effective in a fast-paced, mobile world. One of the most critical of these solution areas is asset management.

Today, aerospace, semiconductor, and other manufacturers misplace mobile toolkits, machinery, parts, and work-in-process inventory at a cost of as much as \$1 million per incident. Still worse, workers can lose their lives in accidents (like mine collapses) if they cannot be found and rescued quickly enough. Such critical breakdowns significantly affect the supply chain as a whole. All too often, they stem from the many challenges that confront today's manufacturing value chain, including:

- Lack of visibility into the location of valuable assets and important people
- Inefficient allocation and use of people and equipment
- Excessive cost of leasing and purchasing equipment to offset losses and theft
- Security and safety issues linked to the lack of insight into the location and movement of people and assets
- Unsatisfactory service resulting from long waits and wasted time searching for assets

In its Wi-Fi Asset Tracking solutions, Cisco® offers a family of mission-critical technologies that help manufacturers to increase visibility and minimize losses resulting from theft, management inefficiencies, damage, and loss. These solutions track the presence and real-time location of high-value manufacturing assets through 802.11 WLANs and location services technologies. By relying on these powerful solutions offered by Cisco and its partners, manufacturers can increase operational efficiency, safety, and asset utilization throughout the supply chain.

The Cisco Wi-Fi Asset Tracking Solutions

RF identification (RFID) asset tracking has been available for many years; until recently, however, it

required a separate, proprietary wireless infrastructure. Today, Cisco offers asset-tracking systems integrated with its industry-leading, end-to-end networking architectures, delivering valuable data throughout the enterprise. Because Cisco solutions are based on open Wi-Fi standards, they make use of existing Wi-Fi access points and hardware, eliminating the need to purchase a new network infrastructure and dramatically improving deployment times.

Manufacturers have been leading adopters of RFID for asset tracking and management, as well as for security and regulatory purposes. Gartner reports that active RFID is in the “early mainstream” in manufacturing and has already reached up to 20 percent of industrial enterprises. The Yankee Group analysts predict that active RFID tags will track 10 million high-value assets by mid-2009.

The Controller-Based WLAN Solution

Cisco has revolutionized Wi-Fi networking by providing advanced location tracking in the WLAN infrastructure through the use of Wi-Fi-enabled active RFID tags. When these tags pass within the range of a mounted reader, their identity is registered. Each query or look up is processed via the Cisco Wireless Control System (WCS) with embedded location. For larger systems, users can add a Cisco Wireless Location Appliance, which uses advanced RF fingerprinting technology to track wireless devices to within a few meters.

This solution simultaneously tracks the locations of thousands of 802.11 wireless devices, including Wi-Fi clients and Wi-Fi-enabled active RFID tags. It can also be used for security purposes to locate and track rogue access points and devices.

The WLAN Autonomous Access Point Solution

The Cisco WLAN Autonomous Access Point-Based solution uses today’s RFID technologies to deliver three separate location modes: real-time location for accurate positioning, presence mode for active RFID zone detection, and choke-point detection for use in doors and gateways using an RFID reader. Active RFID tags emit a continuous signal that is passed via Wi-Fi to integrated corporate networks to show each item’s location at a predefined rate. The solution includes a centralized management tool, which allows you to configure the system with alerts and notifications from a single console.

Cisco’s real-time location system is the industry leader, offering up-to-the-minute asset location, vehicle telemetry, automated inventory, and personnel tracking for large-scale solutions.

Business Benefits

With powerful Cisco asset-tracking solutions, manufacturers can better serve customers while operating productively and profitably. The most significant benefits include:

- Fast, cost-effective deployment, because Cisco solutions can integrate with existing WLANs
- Reliable signal coverage, without interfering with sensitive equipment, in the most demanding manufacturing environments, including through solid rock and in the presence of large metal masses

Controller-Based Wireless LAN Solution

- Cisco 2710 Series Wireless Location Appliance
- Cisco Wireless Control System (WCS) 2006 Lightweight Access Point Controller
- Cisco Aironet 1000 Series Lightweight Access Point
- T2 Active RFID Tags
- MobileView Software
- Windows 2003 VMWare Servers

WLAN Autonomous Access Point Solution

- Cisco Aironet Autonomous Access Points 1100 or 1200 Series
- Location Appliance
- T2 Active RFID Tags
- MobileView Software
- Windows 2003 VMWare Servers

- Secure, accurate inventory management systems capable of locating and monitoring thousands of tagged items, even in very large areas
- Improved efficiencies throughout the supply chain, due to faster, more accurate, automated exchanges of information for projects in process
- Tracking of products to improve usability and regulatory compliance
- Safer working environments through improved security and monitoring
- Reduced shrinkage/theft and therefore lower costs for leasing and replacing equipment
- Open integration with corporate networks to enable company-wide information sharing and asset management

Manufacturers in a variety of products areas already benefit from the powerful capabilities of Wi-Fi asset tracking, including:

- **The semiconductor industry**—In the semiconductor industry, constant monitoring of valuable materials and equipment is essential. Cisco asset-tracking technologies can be used to help facilitate work-in-process cases in the mask shop, fabrication, and advanced test manufacturing facilities. Real-time location of manufacturing lots helps managers take advantage of improved capital equipment utilization as well as labor savings and increased throughput. Such solutions provide rack-level accuracy of parts, materials, and project to assure completion and minimize waste.
- **The aerospace industry**—The aerospace industry deals with a unique array of expensive systems, equipment, and materials in order to complete its projects on time and on budget. Each case of a misplaced part can cause assembly to stop, having a negative impact on direct labor costs, capital equipment utilization, and cycle time. In addition, manufacturers may have to pay large fines for late deliveries. Using advanced technologies to track airplane parts through the building process—from the factory floor to final assembly of each craft—helps to curtail process delays and costs.
- **The mining industry**—Recent events have made it clear that better management of tools and people underground is increasingly critical to the mining industry. Cisco Wi-Fi asset tracking provides a clear signal underground, helping to maintain miner safety while speeding ore production. Offering a technology that is intrinsically safe for explosion-sensitive environments, RFID tags provide better visibility not only of trucks, containers, and other equipment, but miners as well, assuring continuous tracking of all the mine's assets, at all times.
- **The automotive industry**—Cisco asset-tracking technologies can minimize the amount of offline work-in-progress by providing vehicle tracking during production, helping to ensure that quality issues are appropriately addressed. By tracking high-value tools throughout the manufacturing process—from tools, dies, and jigs to test equipment—Cisco can help ensure the rapid, cost-effective production of vehicles in this highly competitive industry.

Supporting Solutions and Partners

Cisco and its partners work with manufacturers to install their asset-tracking solution from planning to deployment and can even manage the Cisco network on an ongoing basis. In addition to a global network of qualified resellers, Cisco provides comprehensive design and support through CCIE® professionals and the award-winning Cisco Technical Assistance Center, both recognized as industry leaders.

Cisco's Leadership Advantage

Cisco is the worldwide leader in networking technologies, with a 20-year track record in working with manufacturers of all sizes, around the globe. Cisco asset-tracking solutions form part of the Cisco Intelligent Networked Manufacturing platform, a suite of collaborative solutions that integrate information and processes, spanning the entire manufacturing work flow and giving companies a secure, customer-centered view of their organizations. These powerful solutions are founded on the Cisco Service-Oriented Network Architecture (SONA), a conceptual framework that outlines how service-integrated enterprises can accelerate applications, processes, and resources to maximize business opportunities.

By working with the established industry leader, manufacturers benefit from:

- Proven performance, reliability, and security
- A broad range of technical experts and engineers who understand the requirements of the manufacturing industry
- Award-winning customer support services that help manufacturers get the most out of their investments and extend the life of their network assets
- Ongoing investments in R&D initiatives benefiting the manufacturing industry
- Sustained value with upgradeable, standards-based solutions
- A phased approach to support integration of new technologies or response to new mandates
- Best practices based on showcased network deployments

Next Steps

Manufacturing organizations all over the world are making widespread use of the solutions in the Cisco Intelligent Networked Manufacturing program. For more information, visit:

<http://www.cisco.com/go/manufacturing>

You may also contact your Cisco account manager or partner. To locate your Cisco partner, visit:

<http://www.cisco.com/go/partnerlocator>



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