

Wi-Fi Asset Tracking – Frequently Asked Questions

About G2 Microsystems

What does G2 Microsystems do?

G2 Microsystems develops systems that leverage the global Wi-Fi infrastructure to locate, monitor and track assets across the supply chain. Our systems track not only location, but critical asset characteristics such as temperature, tamper, tilt, shock and light exposure.

What are the unique benefits of your system?

We empower companies by letting them own their tracking process, rather than depending on third parties to capture critical data. This eliminates potential “blind spots” in a company’s supply chain information.

What are the key capabilities of G2’s Wi-Fi Asset Tracking System?

There are three major elements to the system: Data Capture, Secure Transport and Semi-automatic Response:

- **Data Capture.** G2 provides the Wi-Fi Asset Tags that enable the capture of location and asset condition data at the supply chain edge. The G2 Tag Engine enables the remote configuration and monitoring of the tag status, including power consumption.
- **Secure Transport.** Cisco Systems® is the most pervasive provider of wireless infrastructure. G2 has partnered with Cisco to tightly integrate with the Cisco® Unified Wireless Network technology. When the tag arrives at specified supply chain nodes, data is sent securely across the Internet to the Tag owner via the Cisco Unified Wireless Network.
- **Semi-Automatic Response.** G2’s Wi-Fi Asset Tag is continuously monitoring product conditions and recording when critical or out-of-tolerance events have occurred. This data is put into action with SAP® Event Management software. SAP Event Management creates process exceptions, orchestrates necessary escalation workflows and automatically responds with process adjustments.

What technology does a G2 Wi-Fi Asset Tag utilize?

The G2 Wi-Fi Asset Tag is based on an ultra-low power Wi-Fi system-on-chip (SoC), enabling tags that can be in continuous operation for several years. This same SoC is equipped with a general sensor interface allowing it to be used to monitor the state of the asset. For instance, it is used to detect motion, shock, temperature, humidity, security, light or other environmental factors.

What are some key characteristics of the G2 Wi-Fi Asset Tag?

- The low-power G2 Wi-Fi Asset Tag can last as long as 5 years while delivering frequent reports.
- Over-the-air tag configuration allows tag parameters to be changed without removal from the asset.
- For applications like airline travel, the Wi-Fi can be disabled to prevent transmission in restricted environments.
- The G2 Wi-Fi Asset Tag supports a number of industries like food, personal care, cold chain, chemicals, pharmaceuticals, medical equipment, hi-tech equipment and aerospace, by capturing hard-to-get supply chain data like location, arrival time, temperature, security, light exposure, shock and tilt.
- The tag is a computer and can be configured to work with most supply chain designs. Therefore, the 32-bit processor with 4 MB flash memory make the G2 Wi-Fi Asset Tag a powerful and flexible extension to your computer network.

What other components besides the Wi-Fi Asset Tags are required for the complete supply chain system?

Since G2's system relies on existing Wi-Fi access points at each supply chain node, the only other component in the system is the Tag Engine, a telemetry server which can be hosted by G2 or installed at the tag owner's site. All communication from the tag (location or telemetry information) is directed to the Tag Engine and stored in a database. The Tag Engine provides full visibility of tag events and supply chain node activity through a web interface. Additionally, via standard interfaces, the Tag Engine will pass the data to SAP Event Management to orchestrate the response and closure of the events.

How prevalent is Wi-Fi across the supply chain?

Wi-Fi is everywhere, Wi-Fi access points have grown exponentially over the last 5 years. As a market leader with more than 65% market share, the Cisco Unified Wireless Network is running in most of the worldwide facilities along the supply chain. Growth has been driven by demand to support various wireless appliances such as barcode readers, PDAs, tablet PCs and has therefore extended Wi-Fi beyond traditional office space into the manufacturing floor, warehouses, ports, distribution centers, etc.

What value do the G2 Wi-Fi Asset Tag and Tag Engine deliver?

G2's Asset Tracking System provides access to critical supply chain information that was previously impossible or hard to acquire. The system best applies to those assets or products of high value that require monitoring and tracking. G2's Asset Tracking System is highly reliable and leverages existing infrastructure to ensure the lowest total cost of ownership. Within a few weeks the system can be in operation, generating results and high ROI.

Will G2's Wi-Fi Asset Tracking System bury me in useless data?

No. G2's Wi-Fi Asset Tracking system is programmable and can easily be configured by the Tag Owner to capture data at specified intervals, locations or during critical events like product tampering. Therefore only the most important information is gathered by G2, and transported by Cisco to SAP® for a response.

How did G2 Microsystems become involved in this field?

As a partner at Ernst & Young, our CEO was a founding member of the Supply Chain group, where for eight years he experienced first-hand the supply chain problems that companies face. G2 Microsystems applied the talents of a first-rate engineering team (developers of the first CMOS Wi-Fi solution) to these supply chain issues. The result is a low-power Wi-Fi system designed specifically to locate, monitor and track assets across the supply chain.

About Deployment

How can network access be assured at each supply chain node? Will this system require an open access point?

Network access at each supply chain mode can be guaranteed in one of two ways:

1. By doing a one-time configuration of the Cisco RADIUS proxy server at the supply chain node, the location and telemetry information from the Wi-Fi Asset Tag will be transmitted as part of the EAP network protocol. The tag will never actually access the network at the supply chain node, as all of the tag's information is included in the RADIUS request.
2. A VLAN with restricted access can be set up at the supply chain node. In this case, the tag sends a UDP packet directed at the G2 Tag Engine.

What about access points that require a key, such as WEP or WPA-PSK?

Although the G2 Wi-Fi Asset Tag supports 802.11i and can work with these types of authentication keys, we do not think it is a practical system for supply chain visibility. Key distribution and key management across the supply chain would be very difficult and network access can more easily be controlled with the VLAN or RADIUS approach.

Does this system require any additional infrastructure or back-office integration?

No. G2's system leverages existing Wi-Fi access points and RADIUS proxy servers for seamless transport across the Internet. G2's Tag Engine provides data feeds via standard interfaces directly to SAP Event Management as well as other event management and reporting packages.

Does your system integrate with SAP?

Yes. G2's ultra-low power Wi-Fi Asset Tags capture critical location and condition data that is transported to SAP Event Management. The data is sent to SAP via standard interfaces for semi-automatic response and closed loop resolution.

About the G2 Wi-Fi Asset Tag

How do we know when the battery is getting low on the G2 Wi-Fi Asset Tag?

The G2 Wi-Fi Asset Tag's battery status is communicated to the G2 Tag Engine allowing the tag owner to remotely monitor power levels. Since the G2 Wi-Fi Asset Tag is completely programmable, the battery threshold can be set to a level that ensures it can go through maintenance prior to running out of power.

What is required to maintain the G2 Wi-Fi Asset Tracking System?

Very little care is required. The is a powerful and flexible computer that can be programmed and updated remotely, when combined with long multi-year battery life the G2 Wi-Fi Asset Tag requires little handling and care.

How can I evaluate this system for deployment?

Following SAPHIRE®, G2 Microsystems is offering a Quick Start program, where G2, Cisco Systems and SAP will work with a limited number of companies on pilots or proof-of-concepts. Pilots will run through the end of 2007 approximately with full deployments rolling out in 2008.

About our Partnerships

What is Cisco's involvement in this system?

Cisco is the leading provider of Wi-Fi infrastructure. The Cisco Unified Wireless Network is the backbone of data security and transport across the Internet. Throughout the pilot and deployment stages, companies will turn to Cisco for validation of this approach to supply chain visibility. G2 Microsystems and Cisco are working closely to architect and deploy this system.

What is SAP's involvement in this system?

SAP has recognized that G2's innovative Wi-Fi Asset Tracking System will provide hard-to-get data from the supply chain edge. When combined with SAP Event Management, customers will be provided with a unique capability to act on events that were previously impossible to manage. G2 will pass the data via standard interfaces to SAP Event Management, where SAP will execute semi-automated responses and orchestrate the closure process.

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