

Intelligent Network Services Can Make RFID More Productive

By condensing raw RFID data into meaningful business events, an intelligent network service can help you implement EPCglobal RFID applications without overloading your supply chain.

Dec. 11, 2006—Companies that implement a radio frequency identification (RFID) network to track material movement through a global supply chain risk being flooded with massive amounts of RFID data. Much of this data is not necessarily useful, and may actually reduce productivity and destabilize business operations.

The solution is an intelligent network service linking the RFID network with the EPCglobal Network. The intelligent network service condenses raw RFID data into meaningful business events and uses the EPCglobal Network to communicate those events securely to appropriate supply chain members. Reducing the amount of data transmitted and limiting transmissions to appropriate parties increases network performance, improves worker productivity and decreases RFID costs. With these benefits, organizations can utilize the EPCglobal Network to achieve practical supply chain visibility.

RFID Network Issues

One of the fundamental network challenges of RFID is managing the increased data volume generated by RFID tag reads without reducing network performance. Within an organization, this challenge can be addressed by fine-tuning the network foundation for availability, performance and security (see [Dispelling RFID Network Performance Concerns](#)). Once the network foundation is tuned for RFID, an RFID implementation can be expanded to display the location of goods moving throughout the supply chain.

Expanding an RFID network to the entire supply chain, however, requires slightly different network considerations. Administrators within a single enterprise control the internal network and can securely communicate data between devices, as needed. However, communicating with other businesses in the supply chain necessitates the transcending of firewalls and other security measures. To accomplish this, a common data format all devices can understand must be used.

The EPCglobal Network provides a starting point for sharing information about RFID between separate companies in a standardized format. Until recently, physical networks implementing these standards needed individually managed, point-to-point connections supported by server-based software or a dedicated network appliance. This approach called for an investment in equipment and management beyond the network foundation.

Now, by adding intelligent network services, administrators can expand the benefits of RFID more cost-effectively to the entire supply chain. Intelligent network services optimize the distribution of RFID data between the trusted network devices of separate organizations. Embedded at various points along the supply chain, these services coordinate such activities as filtering and routing data, which have traditionally been managed by servers.

The use of an intelligent network service can reduce the cost of deploying RFID because no dedicated servers

or network appliances are needed. Moving functionality into the network also centralizes management so changes in network policy or upgrades can be implemented in one place, disseminated automatically throughout the network. This increases the ability of RFID deployments to adapt to changing business requirements.

Integrating intelligence into the network fabric is an accepted network-management solution. Many value-added services, such as storage management and load balancing that were previously performed by individual server or appliance solutions, are now managed at a lower cost within the network itself. Using this approach for RFID will help increase the adoption of RFID technology by supporting affordable, easily manageable solutions.

An Intelligent Network Service for RFID

The intelligent network service is installed throughout the physical network to capture and filter RFID events at the network edge, and to provide additional data filtering and data authentication and aggregation in the data center. The service understands the content and context of such application messages as advance shipping notices (ASNs), stock allocations and purchase orders, and it processes those messages according to business policies. The service can secure RFID data, provide a standard format for data communication and filter the raw data so only relevant information can pass through the network.

The intelligent network service starts the process of managing RFID data by collecting and filtering data from the reader. Filtering includes correlating, aggregating and transforming the data into meaningful business-level events.

The service then securely routes the filtered RFID messages to the appropriate parties, based on content and any rules created by the administrators. Using content-based routing, for example, the service can automatically direct messages about a particular product to the appropriate product-line manager. This intelligent routing increases network performance by reducing the amount of data propagated through the supply chain.

Filtering data also improves network performance by reducing the volume of data necessary to disseminate relevant information. For example, if a tag remains in the interrogation RF field for an extended period of time, most readers will simply continue reading the tag and pass its data along to the network. They do not have the intelligence to realize they are reading the same tag over and over again in the same location, clogging up the network with redundant data.

An intelligent network service would recognize that multiple reads of the same tag in the same location need not all be propagated throughout the supply chain. Administrators could use the intelligent service to create a policy defining how often a tag should be read in the same location, and to set a threshold for how long a tag can remain stationary before triggering an alert.

Policy-based management is useful in securing RFID data, as well. For example, a policy can be used to determine whether a message has originated from an authorized source. Source authentication may be accomplished by interpreting digital signatures or checking identification against a database of users. This type of security helps ensure that legitimate members of the supply chain send messages to one another, reducing network traffic by preventing unauthorized messages.

Intelligent Network Service in Action

As such government entities as the U.S. Department of Defense (DOD) and major retailers such as Wal-Mart require suppliers to use RFID, more suppliers are turning to intelligent network services to address this obligation efficiently. The telecommunications division of Vtech, a leading supplier of corded and cordless telephones, is using an RFID solution from Cisco Systems and Intel. This solution incorporates an intelligent

network service as part of its pilot participation in the Hong Kong EPCglobal Network initiative directed by EPCglobal Hong Kong (see RFID's Silk Road and Largest Global Pilot Yet' in the Works for EPCglobal). By implementing this solution, VTech became the first firm in the Asia Pacific region to participate in EPCglobal Hong Kong's EPC network and fulfill Wal-Mart's request that its main suppliers and supply chain business partners become RFID-compliant.

The Hong Kong EPCglobal Network project lets VTech use RFID technology to track telecommunications products from its factory in the city of Dongguan, located in southern China's Guangdong province, to Wal-Mart's U.S. distribution centers. Using the EPC Information Service (EPCIS) and EPC-based RFID tags and readers, VTech has created a technology infrastructure that will increase warehouse efficiency through better inventory management, as well as improve global supply chain visibility. Until now, information between manufacturers in China and retailers around the world was communicated through electronic data interchange (EDI), or via phone and fax.

Like VTech, businesses implementing RFID with an intelligent network service component can expect to achieve practical, end-to-end supply chain visibility. This powerful benefit is helping RFID gain momentum as a critical technology for helping manufacturers of all sizes maintain a competitive posture.

Smart Networks Critical to RFID Future

As RFID becomes a standard element of global supply chains, the ability to transform raw RFID data into meaningful business information cost-effectively, and to deliver that information securely to appropriate recipients, will become critical. Intelligent network services can meet this need by creating an efficient partnership between the raw transport mechanisms of the network and the logical communication of the EPCglobal Network.

This combination can cost-effectively increase supply chain visibility by providing an enterprise-wide view into RFID events across distributed deployments. Using this view, organizations will be able to respond more quickly to RFID events throughout the supply chain, while maintaining high network performance and streamlined business operations.

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