RFID Users Want Clean Data

Companies strongly desire accurate, relevant and timely data from their RFID deployments but lack the ability to make this happen, suggesting the need for effective middleware.

By Mary Catherine O'Connor

Nov. 11, 2004—Natick, Mass.-based technology market research firm Venture Development Corp. (VDC) says that obtaining clean and well-synchronized data from an RFID system is a top priority for end users. Clean data is accurate product information that has been filtered to remove things like multiple or false reads from RFID devices. Data synchronization makes sure that all of a company's data users, no matter where they are in the country or world, are all seeing the most up-to-date data pulled from RFID devices.

During July, VDC surveyed 100 CIOs, CTOs and other senior and mid-level IT executives and managers, mainly from manufacturers of consumer packaged goods and from the pharmaceutical, automotive industries, as well as military contractors, located across the globe but mostly in North America and Europe. All 100 of those surveyed currently use RFID technology or have plans to use RFID to track product in the supply chain, where other parties will also read the RFID tags on the products. Of the 82.7 percent of the survey respondents that are currently using, or planning to use or evaluate RFID technology in the next 12 to 18 months, nearly 60 percent said they are highly concerned with the quality of the data generated by RFID devices and nearly 55 percent are highly concerned with the synchronization of that data. Generally, the respondents said they are ill-prepared to deal with the influx of data they're facing with current or planned RFID installations, according to "Radio Frequency Identification (RFID) Middleware Solutions: Global Market Opportunity," a report based on the survey.

In the survey, respondents pointed to problems with RFID devices sending false or multiple reads of tags that are not being accurately filtered out by RFID middleware. They expressed concerns about the tight deadlines being enforced by retailers like Wal-Mart and whether they'll be able to get RFID hardware and software successfully deployed in time. They also indicated that they need more time to test RFID hardware and middleware, in order to feel secure that items are being properly read and that data is being accurately processed in accordance to a defined set of business rules.

The report notes that while concerns over RFID hardware costs and ramping up a basic RFID hardware system in order to meet RFID mandates from retailers and government are valid, end users need to focus on ensuring that the data generated from those devices is processed accurately using some type of RFID middleware. Otherwise, the RFID hardware won't give end users any real or long-lasting value.

Some closed-loop applications for RFID technology are proving effective and profitable, according to the report, but users who need to integrate RFID as part of a larger supply chain, involving suppliers and/or retailers, will require middleware to collect, aggregate, filter and integrate the data generated by RFID devices. Many survey respondents, especially those in the consumer goods, pharmaceutical and military supply chains, indicated that it was difficult for them to expand their RFID pilots into full deployments involving their daily operations because the RFID devices being used are generating more data than their legacy data management systems can handle.

Regarding the two core functional areas of RFID middleware, data management/monitoring (how information gathered from RFID devices is handled) and device management/monitoring (how RFID devices are configured and controlled), survey respondents gave data management/monitoring an average ranking of 6.7 on a scale of 1 to 7 (where 1 is not at all important and 7 is extremely important), and gave device management/monitoring an average ranking of 6.3.

Within data management/monitoring, respondents said that data aggregation and integration, or the process of collecting the data from RFID devices and merging it with the company's existing IT infrastructure, was the most desired feature, followed by data filtering, in which a set of rules devised by the end users is used to filter out redundant or unneeded information, and data routing, which is the process by which the clean data is sent to all of the members of the RFID network. And in device management/monitoring, respondents ranked device drivers, which is the operating software that run the RFID devices and is housed in RFID readers, and control systems diagnostics, alerts and notifications as the most desirable features, followed by device health monitoring, which is a means of sending information about the functionality of specific readers within a network to network administrators, and remote device service, which allows administrators to fix RFID device malfunctions remotely.

The report describes four main types of RFID middleware vendors and notes the advantages and disadvantages of each vendor type. The four types of vendors are third-party middleware/integration and Web services vendors; application vendors; enterprise resource planning (ERP) vendors; large systems integrators and boutique systems integrators. VDC says that RFID middleware licenses cost, on average, between $50,000 and $100,000 for a distribution center. The firm also estimates that the global RFID middleware market will reach a$16.4 million, surging to a$43.1 million in 2005.

Effective RFID middleware is a growing concern to end users of RFID in the supply chain because middleware can ensure the accuracy of inventory data and validity of RFID-tagged items. Retailers such as Wal-Mart will need to eventually return wrongly tagged items, and charge vendors for the returns, as it does for wrongly bar-coded items today. Middleware is also a top priority to end users because it will enable them to migrate from a slap-and-ship approach, where items are tagged right before being sent to a retailer or whatever organization is mandating that items be tagged, to a more integrated approach, where RFID is used to track goods and help maintain inventories before products are shipped out. This has the potential of bringing end users value through more efficient manufacturing and warehousing.

With so many types of middleware vendors and middleware products emerging in the RFID market, people within the industry are starting to raise questions about whether a standards body is needed for RFID middleware. "People say it'll happen," says Mike Liard, VDC's RFID research program director and the author of the report. "But not yet. I think maybe as we see more [RFID] deployments, it could develop. But it would be very complicated because there are so many intellectual property issues."

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