Reva Announces RFID Network Design

Venture-funded Reva Systems introduces a standards-based RFID network architecture and a reader-to-network standard, and is developing an RFID infrastructure product.

By Mary Catherine O'Connor

June 6, 2005—Reva Systems, a Chelmsford, Mass.-based startup, is developing an RFID infrastructure product that companies could use to manage RFID devices and software in order to scale their RFID deployments from small pilots to enterprise-wide systems. Reva Systems CEO and cofounder Ashley Stephenson says the company plans to make a product announcement within the coming months. In the meantime, the firm has announced what it calls the Tag Acquisition Network (TAN). The RFID infrastructure product Reva is developing would work in conjunction with the TAN, an architecture built on standardized interfaces between tags, readers and application software. The company says that as reader-to-network and RFID data access standards emerge, this architecture will enable companies to scale their RFID deployments more easily.

Stephenson and Reva Systems' cofounder and chief technology officer, David Husak, both have backgrounds in Internet and LAN networking systems. The duo have brought their experiences with standard-based elements of network design, such as layering and central management, to the creation of the TAN architecture.

Reva Systems is also involved in an effort to standardize a network-to-reader protocol, which would enable readers from different manufacturers to be used in the Tag Acquisition Network interchangeability without requiring special drivers or customized software.

Reva drafted a protocol called Simple Lightweight RFID Reader Protocol (SLRRP) and submitted it to both EPCglobal and the Internet Engineering Task Force (IETF), which develops standard Internet operating protocols such as TCP/IP. SLRRP defines how readers would convey configuration, control, status and tag information between RFID reader network device managers and RFID readers in an IP-based network. EPCglobal is also working on a reader protocol called RP1.0, but Husak says RP1.0 is an application-to-reader interface designed for a reader hooked directly to a server, rather than through a network. Once SLRRP works its way through the IETF standardization process, Husak says EPCglobal and the IETF could establish a liaison relationship so that EPCglobal would advocate the use of the SLRRP standard where it sees fit, just as EPCglobal does currently with some of IETF's Internet security protocols.

Stephenson believes that aside from enabling the RFID device management aspect of the TAN architecture, a reader standard would encourage more competition among reader manufacturers. It would foster competition by forcing all reader makers to build readers that offer a standard set of functions to provide a product for a specific application, such as UHF-based passive RFID systems. In addition, the passage of standards in any technology tends to encourage large companies to enter a market, says Stephenson. Increased competition and a larger field of reader manufacturers would benefit end users by driving costs down and product selection up.

Although those reader and data access standards do not yet exist, Reva chose to introduce an architecture

based on those proposed standards "to show the network-central principles needed to accelerate the rollout of scalable RFID systems," says Stephenson.He claims that while current RFID systems work well for small pilot tests and limited deployments, they can't be effectively scaled to the enterprise level unless RFID hardware and software can be easily and centrally managed. "RFID can't be a special, custom-developed solution on the side. It must be something that will fit into the corporate enterprise network," he says.

The Tag Acquisition Network would link into an enterprise's wired or wireless local area network (LAN). Individual readers would be administered through an enterprise network manager system or assigned IP addresses, just as devices such as printers are managed through an enterprise system today. A reader-to-network standard interface would allow users to add, remove and diagnose problems with readers through a centralized server software or a piece of equipment, just as a router is used to manage large banks of computers. "It would provide data to be sent to applications without requiring that the applications be a bound-in piece of the middleware," says Stephenson.

Last summer, ADT released its Sensormatic SensorID Device Commander, which functions in a manner quite similar to the device management function described in the TAN (see New RFID Reader Management App). Stephenson says he is not familiar with all of the functionality of the ADT system, but that Reva is developing a product that would be unlimited in terms of how many readers it could manage in each facility. In contrast, Device Commander can manage only up to 50 readers per server. Reva hints that the RFID network infrastructure product it is developing would not be an RFID device manager that runs as software on a general purpose server—instead, it would be a piece of hardware that would link, through Ethernet or wirelessly, to readers.

Despite the absence of reader and data interface standards, Stephenson says Reva is building its product around the basic principles of the TAN, which is an open architecture in the sense that any RFID network could run on it. Reva expects other companies will introduce RFID network infrastructure products based on the TAN, as well.

"We have the SLRRP protocol operating on readers here, and we do demos with it, and we also operate with first-generation readers that do not support SLRRP," says Husak. "There should be a few reader vendors announcing SLRRP support in the next few months, as well."