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## Profile: Sun Turns Up the Heat

As many large technology vendors eye RFID deployments in the supply chain as a new source of revenue, Sun Microsystems believes it has the technology and expertise to get a jump-start on its rivals. The Santa Clara, Calif.-based company, which had \$11 billion in sales for the year ended June 30,

built its business around its core Unix systems and software. Its products run many Web sites, and the company's slogan is: "the network is the computer." Sun maintains that its heritage enabled the company to immediately see the potential of RFID. In particular,



Jonathan  
Schwartz

Sun was drawn to the Auto-ID Center's Electronic Product Code (EPC) initiative and the center's promise to create an "Internet of things" by tagging all goods and devices with an EPC number that uniquely identifies the object.

"We believed that everything connected to an electricity supply would be connected to the network," says Jonathan Schwartz, executive VP for Sun Software, the unit responsible for the company's software development and sales. "Automatic identification proves that objects don't even have to have electricity [to be connected]."

Sun's belief in the potential benefits of RFID goes hand in hand with its confidence that it can profit by selling the computers needed to handle the crush of information that will stream in from RFID tags, cell phones and many other connected objects. It is also developing specific EPC software products and a business model for partnering with RFID software and hardware suppliers.

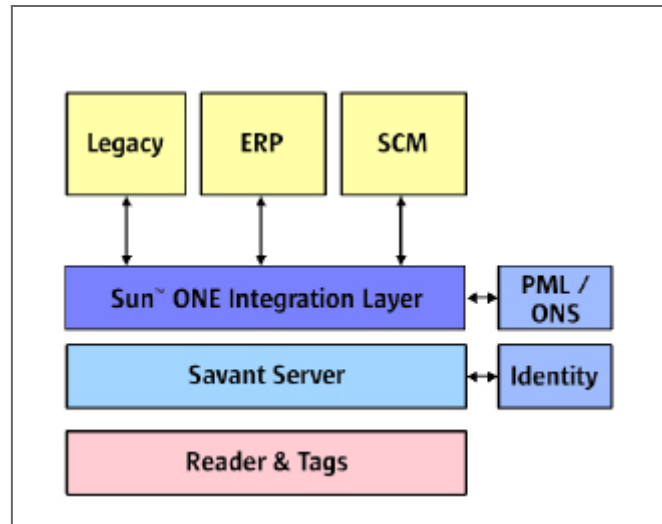
The company likes to point out that back in 1999, it was the first technology vendor invited to become a member of the

Auto-ID Center, which was established to develop the standards and basic software needed to create a new network for tracking items using low-cost RFID tags. Sun provided the center with free use of its software developer kits—primarily Java—as well as access to software architects and additional support to aid in the development and testing of EPC technology. Sun also says it donated 60 percent of the hardware and software, some of it custom developed, used by the center to create the EPC platform. Dirk Heyman, global head of life sciences and consumer products industry at Sun, became chairman of the Auto-ID Center's Technology Board, which has overseen the technical development of the EPC standard.

Sun's involvement with the Auto-ID Center has closely tied the company's technology to the development of the EPC network. Java programming expertise helped the center develop the original Savants—software that gathers, stores and acts on information collected by RFID readers and manages the flow of data in an EPC network.

Sun also believes its connection with the Auto-ID Center gives the company an advantage when it comes to developing and providing its customers with an EPC-based RFID deployment. "Sun stands out [from other IT vendors] because our experts were involved in MIT and the Auto-ID Center from the start," says Julie Sarbacker, director of Sun's auto-ID business unit, which was recently formed to focus on the development and sales of EPC-related products and services.

Analysts agree that Java's use in the EPC framework should certainly help Sun's push into the market. "Sun has a very good platform [the company's line of UNIX computers, its Solaris operating system and Sun ONE software] to run Java on," says Jeff Woods, a principal analyst at Gartner. "Now it has to find a way to uniquely tie the software advantage to hardware sales."



In addition to exploring RFID as a potential market Sun has been testing the technology in its own manufacturing operations. The company's manufacturing plants in California and Scotland are piloting RFID to track parts in inventory. "The Sun team implementing RFID started work before it ever thought of creating an RFID product offering, because they recognized the potential for savings through improved product quality," says Sarbacker.

The company is also using RFID to streamline the testing of components used in the computers it sells, by putting RFID tags on the components to track which tests were done and what the results were. Sun claims the pilots have already delivered significant cuts in paperwork and labor and determined that RFID can increase efficiency in the factory by improving inventory visibility. Now the company would like to extend its limited RFID project by having some of its suppliers tag components prior to their arrival at Sun's production facility, although no time for the pilot has been set.

Until recently, Sun had remained quiet about what RFID products or services it would offer. But in September at the EPC symposium held in Chicago, the company unveiled its enterprise auto-ID initiative, with first software shipments set for the first quarter next year. Under the initiative, Sun plans to carve out a clear role for itself while leaving

partner companies to deliver much of the technology and services.

“We are not doing business applications such as ERP; we are leaving that to ISVs,” says Sarbacker. “We are not in business consulting, either; we’ll leave that to the big systems integrators and local and regional systems integrators.”

Sun’s partners include tag and reader maker Alien Technology, middleware vendor ConnectTerra, network service provider Verisign, and software application companies Manhattan Associates and Provia Software. Sun is confident that customers will want a single vendor to take overall responsibility for designing, implementing and maintaining their EPC deployments. “What companies are looking for is one throat to choke,” says Sarbacker.

Sun admits that this “federated” approach is certainly a new one for the company. “We have had to adopt a very different sales model. Sun has not done a lot of reselling in the past. Our sales force has traditionally been focused on selling IT. Now we need to sell a line of business and concentrate on solving business problems,” says Sarbacker. While serving as project leader, Sun also will be selling its own technology, including hardware, software and services, such as architecture design, support and training that will be required to get any EPC deployment up and running.

But analysts remain skeptical Sun’s approach to the RFID market, because in the near term, the bulk of the money spent by companies on RFID deployments is expected to go to business process re-engineering specialists—a business Sun admits it will not go after. “We don’t see significant RFID outlays to Sun over the next few years,” says Gartner’s Woods. “Right now RFID deployment is a business-process question, and Sun can’t help with that.”

Nonetheless, Sun has won a high-profile role for its services

in the EPC deployment plans at Gillette, which is working with a number of technology providers, including Alien Technology and OATSystems, to develop the architecture needed to track its goods with RFID tags. In addition, Sun says that a lot of other companies have expressed significant interest in what it has to offer—and not just existing customers. “Around 130 companies have contacted us regarding our EPC initiatives, and over half are new users to Sun—and that’s not including companies that have come to us just looking for education [about implementing EPC and Sun’s approach to that deployment],” says Sarbacker.

At the heart of Sun’s EPC offering is the Java EPC Event Manager, an enhanced Savant that adds additional functionality on top of the basic Savant framework developed by the Auto-ID Center. Currently in its pilot phase, the Java EPC Event Manager is slated for commercial availability by first quarter 2004. Other companies, including OATSystems, are also offering enhanced Savants.



Julie  
Sarbacker

Sun’s Java EPC Event Manager will feed collected data into the Sun ONE Integration server—the company’s middleware platform that integrates packaged, custom, legacy and new Java applications from across an enterprise. That server will be

responsible for formatting data collected from the RFID readers in a consistent manner and then making the data available to other applications.

“We leveraged existing products but also took the opportunity to think outside the box. A lot of companies are pushing a client-server Savant model, but we have a genuine peer-to-peer distributed environment,” says Sean Clark, product architect for the Sun auto-ID team headed by Sarbacker.

Because of the sheer volume of data traffic that RFID readers will create, Sun believes that a peer-to-peer Savant network is superior to a client-server platform, where readers and other network edge equipment connect to more centralized servers. With the peer-to-peer Savant platform, the bulk of the data can stay local and take up network bandwidth only when it's essential to communicate to the rest of the infrastructure. Also, by being able to reconfigure itself around the problem, the distributed processing of RFID data will enable the network to better deal with any reader or network edge equipment failure.

Sun certainly believes its platform will offer companies a strong way to manage the huge amounts of data that EPC readers will gather. “This will be head and shoulders above other offerings, even in its first release,” says Clark. Sun maintains that the platform's superiority stems not only from its distributed architecture, but also from the fact that the company has been working with the Auto-ID center far longer than its rivals.

In addition to creating the EPC Event Manager, Sun is writing a software component that will implement its version of the EPC Information Service, the database system that the Auto-ID Center developed for storing and retrieving information on tagged objects. Running on top of Sun's J2EE server, that component will act as the track-and-trace database for a network of EPC users. “Companies can raise queries and get

information back from a 'circle of trust' network created by companies that participate in the exchange of data," says Clark.

To bring greater security to EPC deployments, Sun is working to integrate RFID with its Identity Server, Sun's enterprise software for managing secure access to Web and non-Web-based applications both on a company's intranet and extranet. Sun also plans to rework its Sun ONE Integration Server EAI Edition software and its Sun ONE Integration Server B2B Edition software, both of which enable companies to exchange business documents securely and reliably over the Internet with a variety of protocols and data types, including EDI and XML. Overall, the goal is to tightly integrate RFID data with applications and data from across the enterprise.

Key to Sun's EPC framework is a belief in distributed computing, where much of a network's intelligence can reside at its edge. This opinion is in keeping with the company's long-standing philosophical position toward computing environments. It is also born of the nature of large complex EPC deployments.

Sun believes that the emerging deployed EPC network will have to be self-healing, meaning that if a reader fails or reports incorrect data, the network must be able to detect the problem and work around it. That ability will be the real differentiator in the market for EPC deployment.

To accomplish this, Sun's Savants will offer a Java software layer that filters data from RFID readers, gathers information about the items associated with the tags and passes the information along to enterprise applications. In addition, its Savant software will enable dynamic provisioning of software components across a distributed network. If a server routing RFID data goes down, data should be rerouted on the fly. It will also reduce the computing and traffic strain on the rest of the network by filtering out as much extraneous data at the



edge of the network as possible.



Sean Clark

“A huge amount of data can be collected, but 90 percent is just noise,” says Clark. “We will drive down filtering of noise as close to the edge as possible.”

While the goal may be laudable, some analysts are unconvinced about the efficacy of Sun’s planned platform. “No one has been able to explain to my satisfaction how to manage thousands of Savants across a distributed system,” says Gartner’s Woods, who believes that to make accurate sense of all the data recorded by an RFID system, Savants will need to be in constant communication with a centralized system.

Proving that a peer-to-peer system can be just as capable as a client-server model will be essential for Sun. “Savants are only valuable to Sun if the company can produce this distributed computing model,” says Woods. “Otherwise, it’s not certain how much additional value Sun can provide [to RFID customers].”

Sun’s distributed concept will be competing with client-server platforms, where readers and other network edge equipment connect to more centralized servers through less complex Savants. If companies decide to deploy a client-server RFID

systems instead of a peer-to-peer system like Sun's, they would be able choose from an array of Savants offered by different software vendors. "In that model, Savants become a commodity offering, and there is limited money for Sun to get anything out of the ecosystem," says Woods.

Sun maintains that a great deal of the interest companies have shown in its EPC plans has been spurred by Wal-Mart's recent announced deadline. The world's largest retailer has dictated that, starting in January 2005, its top 100 suppliers must put RFID tags on pallets and cases shipped to Wal-Mart distribution centers and stores. "We saw a need to develop and produce a solution, and we are engaging customers looking to get EPC-compliant for the Wal-Mart deadline," says Sarbacker.

But analysts question whether companies will really be interested in Sun's potentially more complex distributed computing model for their initial deployments. "Over the next few years, enabling supply chains with RFID will not be a challenging process. Wal-Mart's demands do not require an RFID-centric approach but merely for its suppliers to be RFID-enabled," says Woods. "That's quite easy to do by buying new labeling equipment. You don't need Savant software for Wal-Mart."

Sun disagrees. By merely deploying new labeling equipment to apply RFID tags, a company would incur additional expense with little return, whereas Sun's offerings can bring additional benefits. "Once we talk to customers, they can see that the benefit and return is there," says Clark. "Some customers say they are swallowing the pain and doing this. But when we demonstrate the business case—that it's not just another label on the box but visibility that can allow 20 percent of inventory to be cut, so they don't need safety stock and can reduce shrinkage by 15 percent to 20 percent—those customers see there are big dollar savings and they go directly to the bottom line."

Even so, according to Gartner forecasts, there will be no market for distributed-computing Savants until at least 2007, because that technology will take at least three more years to develop and there will be little demand for that level of complexity.

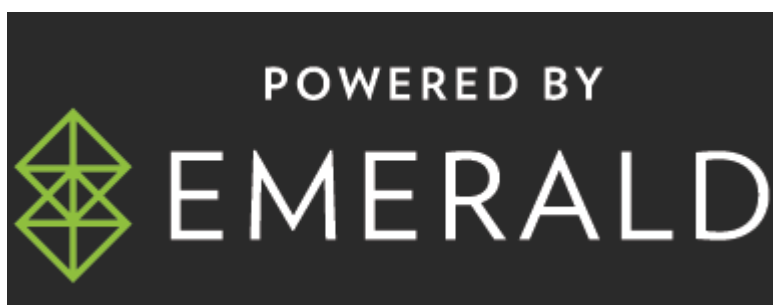
But Sun has the option to change its approach for the short term. Says Woods: "If Sun evolves Savants to be more of a general development framework and not solely about edge processing—hedging its bets—then the company may become more and more relevant."



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