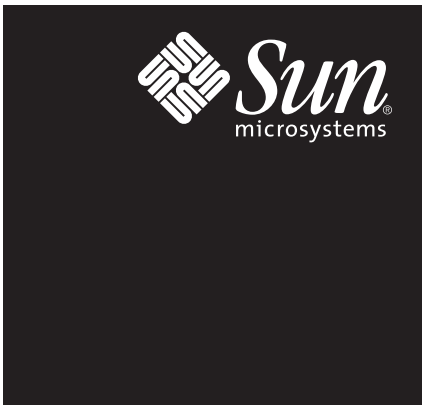
# Sun™ Open Net Environment in the Retail Industry

Whitepaper



# Table of Contents

## Executive Summary

Competition in the retail industry these days is ferocious. Companies are trying ever harder to keep costs down, retain existing customers, and gain new ones—all at a competitive cost. Massive investments by retailers in enterprise resource planning (ERP), customer relationship management (CRM), sales associates training, supply chain management (SCM), and customer service and support (CSS) systems during the last decade have resulted in improved customer service, while cycle times and costs have been squeezed to previously unthinkable levels. The Internet has accelerated the flow of information, so customers win, but more efficient supply chains, price pressures, and profit margins have increasingly challenged businesses. Faced with the challenges of deflationary pressure around the globe on everything from textiles to TVs, mobile phones to mushrooms,[1] many retailers have deployed so-called price-optimization software designed to generate the ideal price for every item, at each individual store, at any given time—the goal being able to boost revenues, unit volume, and net profit. Some leading retailers are also deploying radio frequency identification (RFID) technology to optimize supply-chain logistics.

For retailers attempting to control costs, boost supply-chain efficiency, increase employee productivity, and improve customer service, the Sun™ Open Net Environment (Sun™ ONE) architecture and platform provide an open, secure, flexible, scalable, integratable, and manageable framework that can allow them to deliver higher levels of services at a lower lifetime cost of ownership, while addressing the complex challenges involved in the development, deployment, and management of services on demand.

1 "Surge in Exports From China Gives a Jolt to Global Industry," by Karby Leggett and Peter Wonacott, *The Wall Street Journal*, October 10, 2002.

## Sun's Vision and Roadmap for the Retail Industry

Sun continues to build on its vision of network computing. Sun has articulated a vision of enabling access of information to anyone, anytime, anywhere on any device through networks based on its products and services. By now, most IT vendors, industry analysts, and the media technologists have adopted some permutation of this vision under a range of names including, but not limited to, *pervasive computing, Web services, utility computing* or *zero-latency enterprise*.

In order to bring such a network to fruition and thus realize its vision, Sun has developed an end-to-end, massively scalable systems and software architecture, based on Linux and the Solaris™ Operating Environment, that spans from micro-devices to mainframe-class systems. Sun's technologies, including the Sun ONE software architecture, enable retailers to solve their business needs. With this architecture leveraged by best-of-breed products and a world-class partnering model, Sun's mission is to enhance retailer choice by providing the framework upon which multi-vendor, best-of-breed solutions can be built—integrating the entire retail enterprise.

## Sun Retail Initiatives and Sun ONE Solutions

To deliver its vision into the retail industry, Sun has undertaken the following solution initiatives:

- Server-centric store systems
- Multichannel retailing
- Headquarters functions
- Distance learning

Sun can help retailers deploy these solutions through its Sun ONE initiative. Sun ONE is a software framework to deliver services to suppliers, partners, employees, and customers via multiple channels and devices using open standards-based technology. In addition, this framework helps you integrate and streamline systems across the enterprise to lower operating costs and increase efficiencies. Because Sun ONE is based on established and emerging open industry standards, such as the Java™ technology, SOAP, UDDI, and XML, it helps customers avoid technology lock-in by any single vendor and can be easily integrated with standards-compliant third-party products. Sun ONE provides key portal, identity management, and business and application integration capabilities that can be implemented together or selectively around new or existing open standards-based software infrastructure components.

The Sun ONE platform enables retailers to:

- Create an outstanding user experience by offering personalization, simplified sign-on, and role-based access to services on demand.
- Deliver high-quality services to any customer, employee, vendor, or partner—anywhere, at anytime, on any device.
- Integrate diverse systems, business processes, data, networks, and legacy assets to create a single view of customers, employees, vendors or suppliers and allow for seamless, real-time, cross-organizational business flow.

The Sun ONE platform is well integrated with Sun's products and is also integratable with standards-compliant, third-party products, and can thus offer the best-of-breed solutions without vendor lock-in. The overall Sun ONE architecture includes the products shown in Table 1 and Figure 1.

| Product | What it does |
|---|---|
| Sun™ ONE Portal Server | Helps deploy e-commerce portals that include membership management, aggregated and personalized presentation, security, integration, and search services. |
| Sun™ ONE Identity Server | Manages secure access to Web-based resources, provides an identity system that includes access management, identity administration, directory services, security, authentication, authorization, access control. |
| Sun™ ONE Directory Server | Integrated into the Solaris™ 9 Operating Environment; stores and manages identity profiles, access privileges and application and network resource information. |
| Sun™ ONE Integration Server | Provides Sun ONE integration for Web services through SOAP messaging, which can export a service definition via WSDL to UDDI or other SOAP clients. |
| Sun™ ONE Application Server | Provides developers with a J2EE™-certified platform including JavaServer Pages™ (JSP™), Java™ Servlet, and Enterprise JavaBeans™ (EJB™) technology support, and an integrated transaction monitor for managing distributed transactions. |
| Sun™ ONE Message Queue | High-performance message-oriented middleware, with a 100% Java™ Message Service implementation. |

**Table 1. Sun ONE Products**

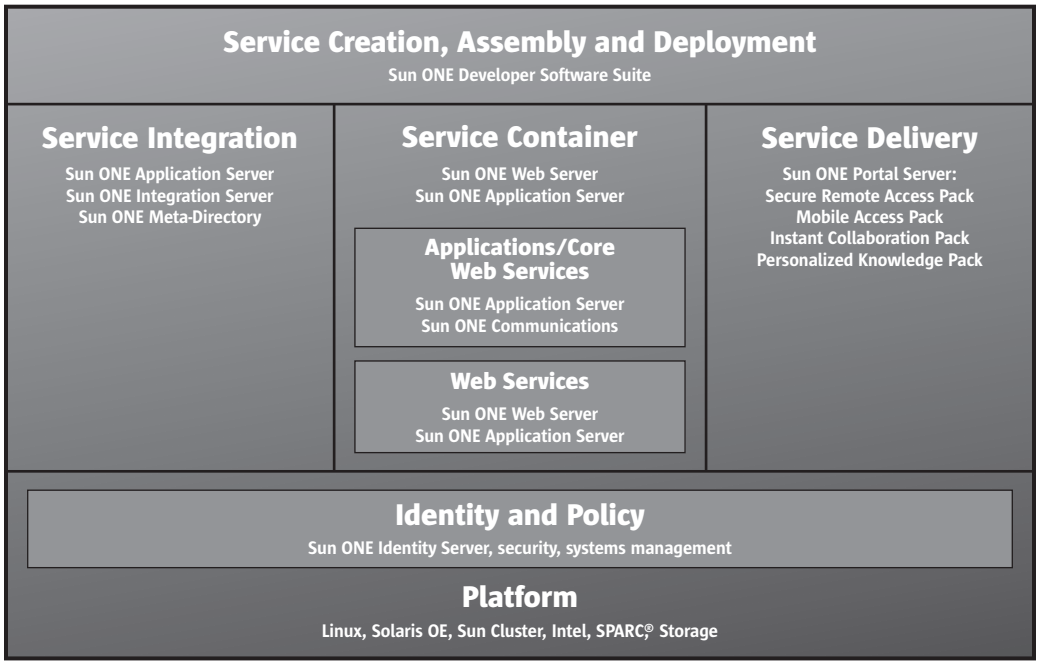



**Figure 1. Sun ONE Products**

## Sun Retail Initiative: Server-Centric Store Systems

For retailers with hundreds or thousands of stores, replacing or upgrading point-of-sale (POS) and store systems is too costly and time consuming unless they can gain significant and timely return on their investment. With increasingly competitive pressures, retailers must glean more and more real-time data from the POS systems to influence collaborative planning, forecasting, replenishment, and pricing throughout the enterprise. Many retailers are finding that their current store systems are not flexible enough to support these new requirements. Whether because of proprietary, locked-in systems and/or lack of functionality in legacy systems, retailers are looking to new and innovative solutions based on open standards such as Java technology, XML, and Linux to provide these solutions at a lower cost with increase flexibility and no vendor lock-in.

Sun developed Java technology, has made significant contributions to XML, and has donated millions of lines of code to the Open Source community instrumental in the growing popularity and adoption of Linux. In fact, Linux is consistent with Sun's computing vision of employing open standards and nonproprietary interfaces to develop products and services that address the needs of a variety of environments. Sun recommends Linux for low-end systems, and the Solaris OE for robust, scalable, secure, high-end systems. Because all the Sun ONE products are ported to both Linux and the Solaris OE, customers have a choice of choosing the right platform to meet their needs.

### *Store Servers*

Sun recommends Linux- or Solaris OE-based servers supporting the POS application. These servers can also function as store operations server (back office) in smaller stores. The increasing industry momentum towards the adoption of JavaPOS™ devices gives retailers a choice over expensive, proprietary solutions.

### *Back Office Functionality*

The Solaris OE-based servers running Sun ONE Portal Server, Sun ONE Directory Server, and Sun ONE Calendar Server—all part of the Sun ONE framework—and best-of-breed third-party applications can provide portal, network identity management, directory, mail, calendaring, and content. Thin clients utilizing a browser as a front end with easy-to-use Web-based applications running off a back office server or supported at headquarters can be deployed to access these applications.

### *Portal Computing*

Sun believes a portal is the core platform for delivering services to a specific community of users on the Web. Portal is a tool for communication, as is the telephone. Typical portals in the retail industry include:

- **Customer portals** that enable customers to browse electronic catalogs, order merchandise online, get coupons redeemable online or in physical stores, and check their order status.
- **Employee portals** that enable employees to check their medical, stock, and retirement benefits, conduct multi-party transactions, and provide distance-learning capabilities.
- **Operational portals** where their sales people can use the retailer's data warehouses to find the most up-to-date product and customer information—regardless of which systems actually contain the data—and use that information for sales promotions.
- **Supplier portals** that provide suppliers with a single view of their accounts, order status, portfolios, access to real-time information, and secure online transactional capabilities.

Given supply-chain complexities and geographically dispersed stores, it is easy to see that portals are relevant for retailers to get information out to their suppliers. Portals can also be used to provide online training directly to employees in the store. In addition, retailers can use portals in at least two other ways:

- **Portals as real-time management tools** See live video feeds from stores, analyze real-time data such as labor utilization, get comparative store performance at your finger tips, and read your e-mail alerting you to an upcoming safety inspection or budget forecast meeting—all from the same, Web-based portal, accessible from a browser anywhere.
- **Portals as self-service vehicles** Use portals to reduce customer calls about basic product information or to provide HR forms, information, and support to disperse employees, retirees, and contractors.

The Sun ONE Portal Server can be used to build highly secure and highly scalable, business-to-business, business-to-employee, and business-to-customer portals. It can provide the core required to build portal sites, including user and community management, personalization, aggregation, security, integration, and search. The Sun ONE Portal Server also includes integratable identity management. The Sun ONE Portal Server creates a VPN in a way that blurs the line between a public and a private network in a more secure way, thus enabling users to create a virtually secure, private session over a public network such as the Internet.

The Sun ONE Portal Server is one of the first enterprise portal platforms delivered on all three of the most widely deployed J2EE™ Application Servers on the market—Sun ONE Application Server, BEA WebLogic, and IBM WebSphere. It is available on the three most popular operating environments on the market—the Solaris OE, Linux, and Windows 2000.

In summary, portal computing can help retail organizations in deploying:

- Portals and meta-portals that can aggregate information from different suppliers, franchisees, and customers.
- Electronic procurement (supply chain management, dynamic auctions, etc.).
- CRM, ERP, and SCM systems.
- Call center solutions.
- Employee-focused information, such as distance learning and human resources.

Additional benefits include:

- The opportunity to increase revenue due to the ability to up-sell and cross-sell based on offering a one-to-one marketing campaign through a portal.
- The ability to increase revenue by expediting time to market through the ease of marketing with a portal.
- The possibility of increasing revenue by selling to a widened market through the continuous availability and global reach offered by a portal.
- The ability to reduce selling costs by providing a less expensive selling channel via a portal.

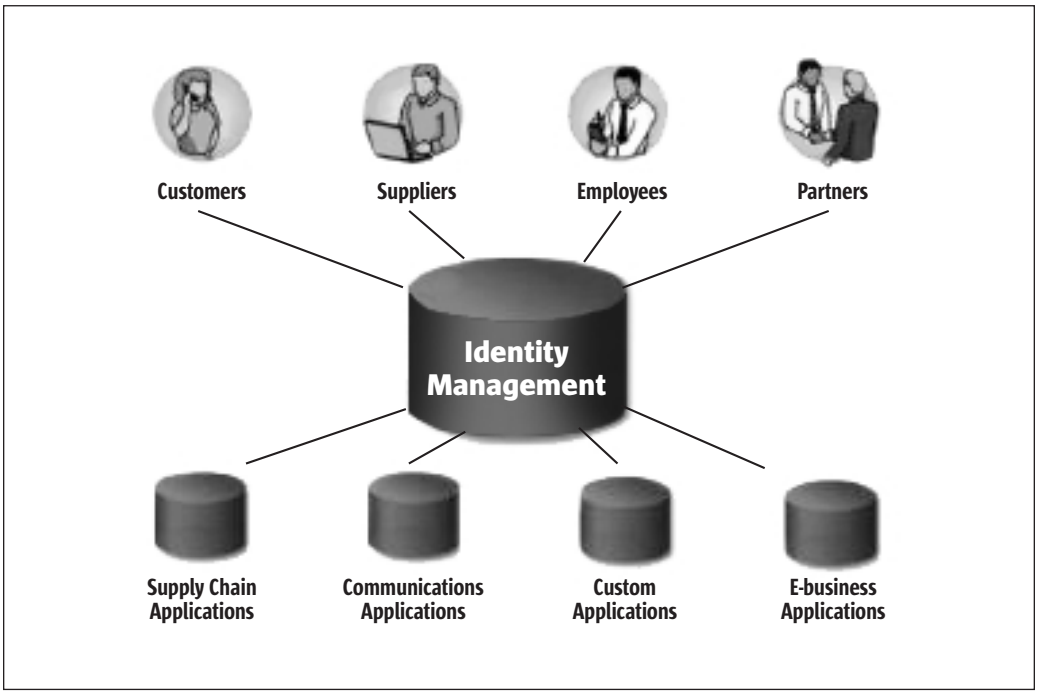



**Figure 2. Identity Management**

*Network Identity Management*

Identity management is the ability to manage the access, authorization, and authentication of users on the Internet or in a corporate network. Figure 2 shows Sun's concept for identity management.

The key identity management products from Sun include:

- **Sun ONE Directory Server:** Helps enable a single, centralized directory of suppliers, distributors, franchisees, customers, employees, and other users.
- **Sun ONE Identity Server:** Helps enable Web-simplified sign-on, delegated administration, auditing, and privacy.
- **Sun ONE Meta-Directory:** Helps join and synchronize identity data with databases, applications, and other directories.
- **Sun ONE Certificate Server:** Helps provide a high-level infrastructure security layer with digital certificates.

In its tradition of supporting open, interoperable standards, Sun fully endorses the critical need for federated network identity environments. Sun has been a key driver and participant in the vision of building interoperable federated network identity systems. Along with an alliance of companies, representing over a billion customers, Sun helped found the Liberty Alliance *(www.projectliberty.org)* in 2001 with the objective of promoting greater use and growth of the Internet. The Phase I Liberty Specification was released in July 2002.

An identity management solution provides one piece of a privacy and security framework and is essential when conducting business over the Web. It is critical for retailers to provide appropriate levels of privacy and security to foster trust so that implementations can be successful. A security framework

must address authentication, authorization, provisioning, and access control using some combination of digital certificates, encryption, a Public Key Infrastructure solution, firewalls, and smart cards.

Sun recommends a six-step incremental plan to deploy a network identity-enabled environment, as shown in Figure 3. Steps 1 and 2 are focused on creating a foundation for enabling a network identity environment. Subsequent steps help retailers to be outward looking, leveraging business processes and technology infrastructure for increased opportunities and revenues. Retailers need not wait for full deployment of the six steps to realize tangible benefits. Measurable gains can appear along the way—the entities can save money on application administration and development costs, centralized identity management and enhanced security.

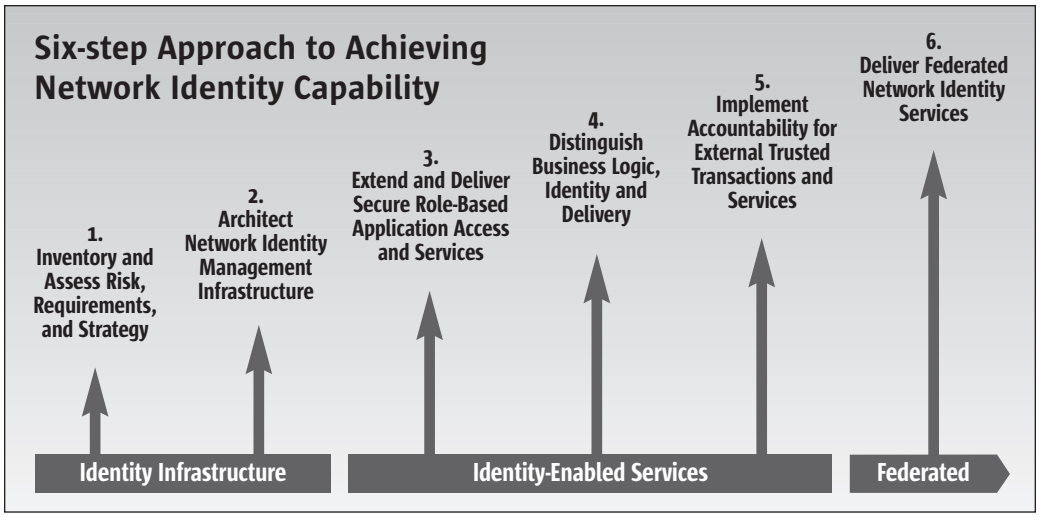



**Figure 3. Phased Implementation of Network Identity**

The Sun ONE framework can provide identity management services for role-based access as well as control and integration services necessary to integrate information across agency silos. Sun ONE can help retailers deploy comprehensive online services for their employees, partners, and suppliers. Typical Web/portal-based applications and services include travel and expense accounting, computer-based distance learning systems, human resources and benefits systems, and retirement planning systems.

The Sun ONE Directory Server supports LDAP and can deliver a user-management infrastructure for enterprises that manage high volumes of information—for technology partners, customers, suppliers, and others. It can integrate with existing systems and act as a central repository for the consolidation of user profiles.

In summary, retail organizations deploying a comprehensive identity infrastructure can derive the following benefits:

- Reduce the time that employees spend looking for information on other employees.
- Reduce complexity of user administration by maintaining a unified identity profile.
- Strengthen security by centralizing access control.
- Lower user administration costs by improving the accuracy of identity information.
- Provide enterprise-wide economies of scale that improve operational efficiencies.

- Help ensure that online customers, employees, and partners can only access data that is relevant to them and for which they are authorized.
- Offer customers, suppliers, and employees simplified sign-on for their convenience, thus lowering administrative costs.
- Reduce time for processing of invoices and purchase orders.
- Facilitate virtual inventory control, resulting in lower inventories across the supply chain.
- Reduce turnaround time on orders and contract negotiation.

### Sun Retail Initiative: Multichannel Retailing

As retailers become multichannel, their ability to coordinate activities across different channels (store, kiosk, PDA, call center, catalog) becomes crucial. Successful strategies must integrate offline and online business processes and develop a single, detailed, and consistent view of the customer across all channels. This is one of the reasons that many leading retailers in the U.S. combined their click-and-mortar online operations with their respective brick-and-mortar operations in 2000–2001. Sun has successfully established a Multichannel Centre of Excellence in London, integrating stores, the Web, call center, and mobile devices. This has been done in conjunction with our partners ATG, Brience, Retek, Nettec, and Wincor Nixdorf.

A typical solution would include commerce software, document management, campaign management, CRM—all running on a Sun infrastructure comprising Sun ONE Platform for Network Identity, Sun ONE Application, Directory, and Integration servers, Sun workgroup, midrange, and high-end servers, and storage. The benefits of such a solution include:

- **Lower operating costs:** Sun can help reduce operating costs by increasing customer self-service, improving order accuracy, and decreasing personnel time. For example, in a major department store chain located throughout the southern part of the United States bridal consultants saved approximately 35 percent of their time, thanks to adding an online bridal registry.
- **Increasing convenience for consumers:** Sun enables retailers to create an online store where consumers can access product information and make purchases any time of day. The Sun ONE environment ensures reliable service that translates into more sales and more repeat customers.
- **Personalized shopping experience:** Sun enables retailers to personalize the online shopping experience of their customers. This generally results in improved customer loyalty and repeat business.

### Sun Retail Initiative: Headquarters Functions

Mainframes and legacy applications still dominate the retail industry sector. Data warehouses based on valuable customer information collected over the last several decades have been built and are being mined to target customers and for mass customization. But, mainframes are still expensive, mainframe skills are dwindling, and very few new applications are being ported to the mainframe.

Sun Enterprise™ servers offer an attractive, affordable alternative to mainframe systems even in the most demanding environments. They are part of a single, scalable, integratable, binary-compatible environment. This approach means easier integration with existing systems and other Sun products and investment protection for Sun's customers. For optimal scalability, flexibility, and performance at a low total cost of ownership (TCO), Sun servers use a balanced system design. By committing to a seamless,

smooth upgrade path with a common UltraSPARC™ architecture, common Solaris OE, and binary compatibility, Sun also provides excellent investment protection for applications and hardware—from a sub-$1,000 workstation to a multimillion dollar Sun Fire™ 15K system. Recognizing the growth of Linux systems in the retail arena, Sun is now offering Sun™ LX50 entry-level server with the option of either Linux or the Solaris OE for under $3,000 and award-winning Sun server appliances. Sun ONE applications make this server an ideal solution for building out network-edge environments, compute farms or custom application deployment.

With Sun, retailers can easily load the data residing on an existing mainframe to one or more Sun servers, helping to enable a seamless transition from the legacy system to Sun—for manageability, ease of use, and agility that retailers need to succeed in today's crowded market space. Sun Enterprise servers offer mainframe-class features, benefits, and performance at a fraction of the cost. Major back-end headquarters functions that can be re-hosted on Sun servers include CRM, data warehouse, ERP, HR, logistics, merchandising, and SCM. These are just a few of the major functions retailers rely on daily to maintain a competitive advantage. Sun's Headquarters Functions initiative also addresses these opportunities and core operations such as ERP, data warehousing, and general business infrastructure that include application integration, calendaring, directory, mail, portal, and security. The Sun ONE products listed in Table 1 (page 5) provide all these services.

*Business and Application Integration*

Sun is very actively involved in the development of the Electronic Business XML (ebXML) framework that will enable setting up global electronic marketplaces where retail enterprises of any size, anywhere can find each other electronically and conduct business through exchange of XML-based business messages. ebXML, the work of UN/CEFACT, builds on the experience of electronic data interchange (EDI), and takes advantage of XML and the Internet. Sun believes ebXML will fulfill the need, and enable automation of ad hoc, business collaboration. Sun also believes that ebXML is needed in addition to SOAP, WSDL, and UDDI, because:

- WSDL does not address business collaboration.
- SOAP does not provide secure and reliable message delivery.
- UDDI does not provide repository.

Further, existing frameworks are not adequate:

- EDI is too heavy weight and rigid.
- RosettaNet does not provide machine-readable business collaboration documents, such as Peer Information Protocol (PIP) definitions. Further, PIP definitions are somewhat rigid and cannot be discovered on a per-partner basis.
- BizTalk is proprietary, single-vendor, and single-platform.

Finally, Sun has played a key role in developing a set of Java APIs for Web Services. These include Java™ API for XML Messaging, Java™ API for XML Processing, Java™ API for XML Registries, and Java™ API for XML-based RPC.

Sun also provides integration with legacy applications through tools such as:

- Sun ONE Mainframe Transaction Processing tool that provides CICS functionality.
- Sun ONE Integration Server, EAI Edition and Sun ONE Integration Server, B2B Edition that provide integration with legacy applications.

Integration and application servers simplify the complex task of integrating disparate enterprise applications, databases, and legacy and transaction systems. Integration servers play a key role in the development of distributed systems that span supplier networks, the Web, and partner systems. They help organizations integrate packaged applications, custom software, and legacy systems.

Prime candidates for EAI solutions in retailing include organizations that:

- Need to rapidly and cost-effectively interoperate over the Web with partners, customers, and suppliers.
- Need to Web-enable applications that integrate and interoperate with legacy systems.
- Need to increase competitiveness using new business applications.
- Want to offer employees and customers faster and more ubiquitous access to valuable information.
- Are involved in mergers and acquisitions.

Retailers will also have heavy needs to transact business electronically with their customers, suppliers, and other trading partners. They will find that there are many different standards and protocols for communications. The retailers will need to use integration technology focused on business-to-business (B2B) integration, to effectively link to their external partners. A full-featured B2B integration server solves this challenge.

Sun offers two integration server products for EAI and B2B transactions.

**Sun ONE Integration Server, EAI Edition**

The Sun ONE Integration Server, EAI Edition is a standards-based integration broker that can enable packaged, custom, legacy, mainframe, and Web applications or Web services to be interconnected into a workflow (business process management) using Web services. With end-to-end business process management capabilities, this product helps organizations to quickly change and to adapt to new business conditions while leveraging data assets in the applications, systems, and business processes that they have invested in over the years. This product can provide full-featured integration broker capabilities, including business process management, message transport, data transformation, and adapters.

**Sun ONE Integration Server, B2B Edition**

The Sun ONE Integration Server, B2B Edition is a software application that helps companies to conduct commerce with technology partners and customers over the Internet and on private networks. It can automatically broker communications between business partners, managing the necessary data transformation and translation of information between the retailer and its partners. The Sun ONE Integration Server, B2B Edition enables companies to communicate with partners of any size and any level of technological sophistication, enhancing business relationships and extending the reach of trading communities.

The Sun ONE Integration Server, B2B Edition includes support for XML, EDI, SMTP/SMIME, HTTP/SSL, FTP, and the Java Message Service protocol. Sun's implementation of Java Message Service, the Sun ONE Message Queue, is now built into the Sun ONE Integration Server so that Java applications may exchange data through messaging across a network and communicate with the legacy applications needed in transactions.

The main difference between the EAI and the B2B editions is that the EAI Edition can provide visibility into business, linking packaged and custom applications, whereas the B2B Edition can provide visibility into the supply chain, linking partners.

Finally, data warehousing is a core requirement in retail, because the intelligence gathered through data analysis concerning sales, customers, inventory, suppliers, and other business functions is critical to making successful decisions. Sun's Data Warehouse and Business Intelligence Reference Architecture can provide an essential infrastructure technology layer to complete end-to-end data warehousing solutions. Databases utilized by data warehousing tools can easily run into terabytes and thus require a massively scalable systems and software architecture. This is precisely where Sun Enterprise servers running the Solaris OE have demonstrated their strength. Sun and its technology partners offer professional services to incorporate this infrastructure layer into customers' business models and applications to create a complete data integration solution.

In summary, retail organizations deploying a comprehensive business and application integration solution can derive the following benefits:

- Increased productivity and efficiency resulting from the automation of business processes across distributed heterogeneous information systems.
- Improved communications with partners of any size and any level of technological sophistication, enhancing business relationships and extending the reach of trading communities.

### Sun Retail Initiative: Distance Learning/Staff Training

Sun and the National Retail Federation (NRF) have collaborated on an initiative to deliver online learning solutions to retailers. Working together, Sun and NRF can provide a one-stop learning solution, integrating courseware and content (educational and professional development) to help provide a reliable communications vehicle and consistency in baseline retail training, while helping to establish a quality standard in retail education. Based on open standards, the NRF and Sun distance learning service allows content to transfer easily among systems, and scales to support a virtually unlimited number of users in many locations. This flexibility provides retailers with an online learning solution that can eliminate the up-front investment in hardware, software, and course assessment. The new distance learning service also enables retailers and suppliers to offer employees new product information in a timely manner.

The Sun Enterprise Learning Platform includes:

- Content from vendors such as Digital Think, MOHR, the NRF and Sun.
- ERP integration from PeopleSoft, Oracle, SAP, and other vendors.
- Portal and Web-enabled integration platform consisting of Sun ONE Portal, Application, Integration, and Directory servers or any standards-compliant third-party products from other vendors.
- Systems such as the Sun server appliances for delivering video content in stores to midrange and high-end servers and storage options for headquarters or hosted central systems.

With this solution, retailers can provide anytime, anywhere access to learning for retail employees through a customized and highly scalable learning portal. This enables targeted training of distributed workforce—particularly important to major retailers who have stores in diverse locations. This also reduces time to productivity, because training classes can be made available in the store as needed. Managers can structure programs around the individual training needs of each employee.

Another benefit of this solution is that employees can spend more time in front of customers with industry-approved training. Online learning solutions speed the training process, immediately reaching a global or distributed sales force. This speeds up product development and human development cycles. For example, retailers can leverage this advantage to launch products just days before the event to reduce off-floor employee time.

Finally, retailers can reduce training costs with this solution, as it helps eliminate the upfront investment in hardware, software, and course assessment. Also, it eliminates the expense of sending employees in disparate locations to classrooms and using difficult-to-manage video training tapes. Instead, 100 percent of training is delivered via the Internet using a consistent and easy to use platform. In addition, this Web-based solution helps retail businesses to better track the educational and professional growth of their employees through closer management of the training process and certification, helping to increase employee loyalty and retention, thus decreasing employee replacement costs.

In summary, Sun delivers the following benefits through its distance learning initiatives:

- Lower training costs.
- Scalable and customized learning portal to a distributed workforce.
- Reduced time to employee productivity.
- Immediate communication to employees on sales promotions, new-product launches, product changes, product-recall notices, management changes, and other important corporate news and developments.
- Management/employee training and certification.

### Summary of Sun Retail Initiatives

Retailers implementing Sun's retail initiatives by deploying Sun ONE architecture—especially the Directory Server, Integration Server, network identity infrastructure, and Portal Server—benefit by integrating disparate enterprise applications, controlling costs, boost supply-chain efficiency, increase employee productivity, and improve customer service.

## End-to-End Security, Privacy, and Trust

Retail portals require exceptional levels of privacy, security, and trust. It is critical for an organization to foster trust for the portal implementation to succeed. A successful security framework must deploy sufficient technologies for authentication, authorization, digital certificates, Public Key Infrastructure, encryption, firewalls, and smart cards as dictated by the specific nature of the services, applications, and access control required by a given implementation. Security must be addressed across the end-to-end architecture and in each layer of the stack to maintain a secure, private, and trustworthy environment. Sun's iForce™ Integrated Security Solution uses best-of-breed security solutions from third-party vendors to provide comprehensive coverage for attack prevention, detection, and response.

## Sun's Portfolio of Services for the Retail Industry

Sun's technology consulting, in-depth learning, and proactive support services can help customers architect, implement, and manage Sun ONE solutions—quickly, correctly and cost-effectively.

- **Sun™ ONE Services Suite** is a set of services that helps customers architect, implement, and manage a complete Sun ONE platform architecture. Our service experts can help you manage costs, improve time to market, and protect past and future IT investments.
- **Industry-leading Technology Consulting Services** help customers architect and implement Sun ONE solutions right the first time. Services are delivered through our Sun ONE consulting specialty and Java Centers of Excellence, giving customers access to Sun's global Java technology expertise and field-proven best practices.
- **Educational Services** can accelerate and enhance your Sun ONE deployment through customized skills analysis, training and certification solutions, and complete learning management solutions needed to align your IT organization's skills for success.
- **SunSpectrum℠** and **Software Support Programs** offer technical support and proactive services to ensure availability. With a range of support levels, product updates, multi-vendor support agreements, and Sun experts, Sun helps prevent problems before they happen and manages your Sun ONE solution.
- **SunTone℠ Program** represents a collaborative effort to bring industry best practices to companies in all areas of the networked world—from infrastructure to security and overall service delivery. Originally designed for the service provider industry, the SunTone program enables you to identify best-of-breed solutions for online business and retail marketplaces.

## Working with Sun for Complete Solutions

No single vendor has the expertise or depth of resources to provide total solutions for each customer's specific requirements. Since its inception, Sun has focused on providing industry-leading platform infrastructure, and working with best-of-breed solution providers whose products complement and add value to the Sun platform. Today, Sun works collaboratively with hundreds of established and up-and-coming systems integrators (SIs) and independent software vendors (ISVs). Together, Sun and its best-of-breed technology partners can address a customer's specific needs and tailor a complete, cost-effective solution.

SIs and other technology partners in the retailing sector include companies such as Accenture, CGEY, and BearingPoint. Global SIs such as these have extensive experience in addressing the specific needs of retailers and their global value chain partners and in deploying the Sun ONE platform to address such needs.

Sun's Software Developer Network software partners in the retail sector include vendors such as i2, Manugistics, Oracle, PeopleSoft, Retek, SAP, and Siebel to ensure that top-quality applications and services are integrated into Sun's platform. Additional ISVs and partners include, 360Commerce, ATG, Broadvision, DigitalThink, Epson, GERS, JDA, Manhattan Associates, MarketMax, Timera, Tomax, Triversity, and Wincor Nixdorf.

Sun's iForce initiative provides a rich array of products, programs, solutions and partners to deliver targeted, customer-driven vertical and horizontal solutions which help customers improve business processes such as decision support systems, supply chain management, product design and development, e-mail and communications. As part of this initiative:

- Sun has established iForce Centers, designed to help Sun's customers and partners utilize the company's iForce methodology as the basis for building and deploying individualized, best-of-breed solutions. The global network of iForce Centers includes three types of centers:
  - **iForce Competency Centers** Sun and software partners focus on a particular application or market segment, providing sizing and tuning, proof-of-concepts, scaling, testing, and more.
  - **iForce Solution Centers** Run by Sun, these global centers of technology expertise give you focused assistance with everything from brainstorming to proof-of-concepts to pilot programs.
  - **Authorized iForce Solution Centers** A worldwide network of facilities run by Sun's partners, who help you build, test, deliver, and implement proven business solutions.

Sun has also developed iForce solutions for the retail industry in partnership with systems integrators such as Answerthink, CSC, EDS, and Noblestar. These solutions include Mobile Order and Payment System, Mobile Customer Community of Services, Field Force Automation, and Mobile Workflow Extensions.

The iForce advantage can be experienced by visiting an iForce Center in your region. Please contact your local sales representative for further details.

## For More Information

For more information about any of the products, services, programs, and customer success stories related to Sun ONE, please visit *http://www.sun.com/software/sunone/*

For more information on Sun in the retail industry, please visit *http://www.sun.com/retail*

**Sun Microsystems, Inc.** 4150 Network Circle, Santa Clara, CA 95054 USA **Phone** 1-800-555-9SUN or 1-650-960-1300 **Web** sun.com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