

# Sun™ Network Services for SAP Solutions

An Executive Brief  
May 2005

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## Introduction

Today, companies around the world need the ability to make fast, accurate decisions and act upon them quickly in order to stay competitive in the face of dynamic new market forces. To do this, they need to extend their network to include prospects, customers, consultants, contractors, suppliers, partners, and other vendors. At the same time, there is a general mandate to lower total cost of ownership (TCO) and to leverage existing IT investments. These challenges are driving the need for flexible and extensible business processes that fully integrate people and information, which in turn is the catalyst to the on-going evolution of Web services.

SAP recognizes the need to extend the enterprise, creating a virtual enterprise of composite, Web services-based applications to solve specific needs. SAP addresses this evolution with SAP NetWeaver, an open integration and application platform. SAP NetWeaver allows businesses to build and manage composite, collaborative business services that are available whenever and wherever they are needed by a community of users that extends beyond corporate boundaries to suppliers, customers, and employees. With a virtual enterprise, companies can provide real-time access to sensitive enterprise IT resources, information, and applications to this broad range of users. For example:

- *Customer relationship management (CRM) systems* involve more users and departments, ranging from marketing to finance to customer service
- *Enterprise resource planning (ERP) systems* manage manufacturing and production processes
- *Human resources (HR) systems* enable employees to self-manage their benefit plans
- *E-business systems* empower customers and partners to learn about products, see inventory, order products, and check order status

As SAP customers take advantage of the benefits of the virtual enterprise, the need to remotely connect to business applications grows, and concerns about network security and identity management increase. The challenge is to open up the enterprise to new ways of conducting business and more users in a cost-effective manner while simultaneously ensuring that information assets remain secure. SAP addresses the need for enterprise IT integration through Web-based business services. Sun offers an infrastructure platform that complements this direction, delivering networked business services in a seamless, optimized, secure, and highly reliable manner.

## Managing Access and Identities

Computer security used to be all about managing the threat of hackers trying to access a company's network from the outside. With the continuous move toward Web services and the virtual enterprise, companies are increasingly worried about the employees and partners on the inside who might be able to access applications they should not be able to. Managing access for a community of users that extends beyond corporate boundaries demands effective access control.

There are several trends and factors that form challenges to internal security and are therefore shaping how companies approach the process of managing access to resources and data across the enterprise and the globe:

- *Regulatory compliance* — Due to the recent enactment of legislative initiatives such as Sarbanes-Oxley, Gramm-Leach-Bliley, the Health Information Portability and Accountability Act (HIPPA) the European Union (EU) Directive on Data Protection, and others, information security is now a non-negotiable mandate carrying stiff fines and even prison terms for non-compliance. The regulatory push for stronger identity management is coming mostly from Sarbanes-Oxley, which requires public companies to prove that their networks have safeguards to prevent tampering with financial numbers. Protecting the privacy of customers and patients and their sensitive personal information, as well as confidential

company information requires the ability to strictly manage access to IT applications in a process-driven manner to help ensure that only those who need access have permission to do so.

- *User diversity* — More than ever before, enterprise IT systems are accessed by more and different types of users who require varying levels of access to different applications. Users can belong to large groups, such as sales, or they could be individuals with unique access requirements. Users also have disparate needs in terms of the length of time they need access. For example, regular employees require long-term access while auditors or consultants might only require a week or a month. The temptation is to apply a one-size-fits-all rule that groups users into two or three broad categories, giving carte blanche to all but a few employees. Although this method is fast, simple, and inexpensive, it is also highly insecure.
- *Increased service levels* — Identity management solutions that incorporate automation, self service, and delegation enable enterprises to deliver increased levels of service to users without incurring excessive costs. To cost-effectively achieve the levels of security and user service that are necessary in the virtual enterprise, it is critical that an identity management solution secure the delivery of essential identity and application information, as well as enable single sign-on (SSO).
- *Constant change* — Another challenge for companies is the fact that users' relationships with the company change much more frequently than in the past. Employees are promoted and require different access privileges. For example, a customer service representative who is promoted to sales now needs access to sales forecasting applications and no longer needs access to customer service applications. Temporary workers cycle through companies rapidly and must be provisioned and deprovisioned on-the-fly. Executives frequently transfer to other locations. Or, a partner relationship ends and the partner now collaborates with the competition. This very dynamic environment creates a steady stream of access privilege and basic identity data changes that must be continually administered.
- *Scalability* — Change can also occur on a larger scale. For instance, new e-business models require businesses to serve millions of customers daily. Today's trend toward mergers, acquisitions, divestitures, and reorganizations can dramatically realign the dynamics of who needs access to particular IT resources. These events often require administrators to provision or modify provisions for thousands or millions of users or customers whose productivity and satisfaction lags with every hour they are without access to mission-critical IT applications or services. On the other hand, when the workforce is reduced, immediate de-provisioning is necessary, as is the ability to ascertain that all access points are permanently blocked for those users.

The need for scalability also applies to the IT infrastructure. A user directory suitable for a mid-size company might meet current needs, but those requirements can escalate exponentially as a result of an acquisition or a change in business strategy that includes collaborating over an extranet.

- *Faster provisioning* — Enterprises today typically employ fragmented and manual processes for managing the full user lifecycle, greatly increasing the time it takes to get users up and running productively, to change access privileges as their roles change, and to instantly and securely revoke their accounts when their relationship with the company ends.

Efficiently and cost-effectively managing access and identities to provide secure access for this extensive community requires a centralized approach. To maintain or increase productivity, users need a single point of entry and sign-on capability, which implies a single point of administration for all users, including operating systems, SAP solutions, databases, and other applications. IT managers need the ability to quickly and automatically add users to all of the applications and services they require, as well as the ability to modify access and privileges and delete users from all systems when they leave, in order to deal with the diversity of users and their changing roles.

In addition, businesses must also comply with security-related regulations such as controlling access to sensitive financial information. This requires the ability to detect dormant accounts, enforce consistent corporate security policies, and ensure that data is accurate and consistent across applications and data stores. Another critical issue for IT managers is TCO. In a large environment, supporting technology that addresses all of these needs, but increases costs by requiring additional staff and training, can offset the benefits of the solution itself.

### **Providing Secure Remote Access**

As the need grows to allow employees, partners, and customers to remotely connect to business applications through the SAP Enterprise Portal component of SAP NetWeaver, concerns about network security also grow. To address these needs, companies are connecting remote locations or a mobile work force through secure, encrypted network links over the public Internet. These virtual private networks (VPNs) come at the cost of extending the corporate network to laptops, which means users and administrators must take on the time-consuming and difficult task of managing remote client software portfolios. And, because the software is client-based, there is a greater possibility that a virus can compromise the integrity of the installed VPN software, and thus the entire corporate network. In addition, users need the ability to access applications and data from anywhere, be it an airport kiosk, customer site, Internet cafe, hotel Internet TV, or from home — making software VPNs even more impractical.

### **Sun Network Services for SAP Solutions**

SAP NetWeaver opens up new opportunities for competitive advantage, increased revenue, and more efficient operations, as well as new challenges. Sun Network Services for SAP Solutions is designed to meet the challenges of the virtual enterprise by allowing organizations to open access to employees, partners, and customers. It provides a comprehensive set of identity services and secure access that make it possible to reap the benefits of collaborative business while protecting mission-critical systems and data.

To secure the infrastructure for SAP Solutions, Sun starts from a strong foundation with a proven and tested reference — an architecture that is cost-effective to implement, use, and manage and is designed to meet today's demands for access security and compliance. Sun Network Services of SAP Solutions includes the right mix of services, technologies, and products to help companies assess the current environment, design an appropriate architecture to suite that environment and business requirements, and then deploy and manage the solution using industry best practices.

### **Lifecycle Services for Sun Network Services for SAP Solutions**

Sun understands that all environments are different and have distinct needs. Sun offers a comprehensive portfolio of consulting services and workshops that leverage Sun's vast experience with SAP, identity management, and network security to help design, implement, and manage optimal solutions that meet the robust access and security requirements of unique SAP environments.

#### **Assessment Service**

The Assessment Service is a one to two day initial evaluation to determine the suitability of the Sun Network Services for SAP Solutions to the specific SAP environment. Senior Sun technical staff evaluate both business and technical aspects and provide a qualified recommendation to proceed with the Sun Network Services for SAP Solutions, or to explore other avenues. The service gathers information about the existing and proposed network solution, in terms of security, directory services, identity services, and single sign-on requirements. It also investigates the existing SAP R/3 landscape, portal

requirements, sizing, and any additional application connectivity requirements. Deliverables for the service include a presentation summarizing the results and recommendations for going forward, as well as a document detailing the analysis.

### **Feasibility Study**

The Feasibility Study is a 5 to 15 day on-site engagement designed to provide input data to the architecture phase and to review potential business or technical roadblocks. The study focuses on directory services requirements, access requirements in terms of users, applications, devices, etc., network security configuration, software configuration, and operational policies and procedures. The results of the study are a summary of key findings and recommendations, as well as an initial high-level architecture and a project plan of actions required in order to implement the architecture.

### **Architecture Service**

The main objective of the 5 to 10 day Architecture Service is to provide a solid design for the implementation team. The design team focuses on the application landscape, security recommendations, hardware and network design, operations architecture, and a project plan of implementation tasks and testing procedures. Deliverables of this service include a presentation summarizing the hardware and software architectures and the project plan, as well as an architectural design document providing all of the information required by the implementation team to build the environment.

### **Implementation Service**

The scope of the Implementation Service is to install, configure, and test the Network Services Solution recommended and designed in the Architecture Service. This can be a phased approach in which each phase is independently implemented, tested, and handed over, as documented in the project plan. Tasks include installing and configuring hardware and software, users, security, and functional and acceptance tests, as well as production go-live. Deliverables include an installed and tested platform, sizing and configuration documents, procedure documents, and knowledge transfer to IT staff.

### **iForce<sup>SM</sup> Competency Center for SAP**

iForce Centers, located at SAP's headquarters in Walldorf, Germany and around the globe, provide a unique environment to develop, test, and evaluate solutions — risk free. Using their own workloads, businesses can try out design concepts, size systems, test performance, see working prototypes, and perform proof-of-concepts (PoCs) on Sun's equipment. Sun shares its SAP best practices during the design and tuning phases to help companies make the most of their SAP deployments.

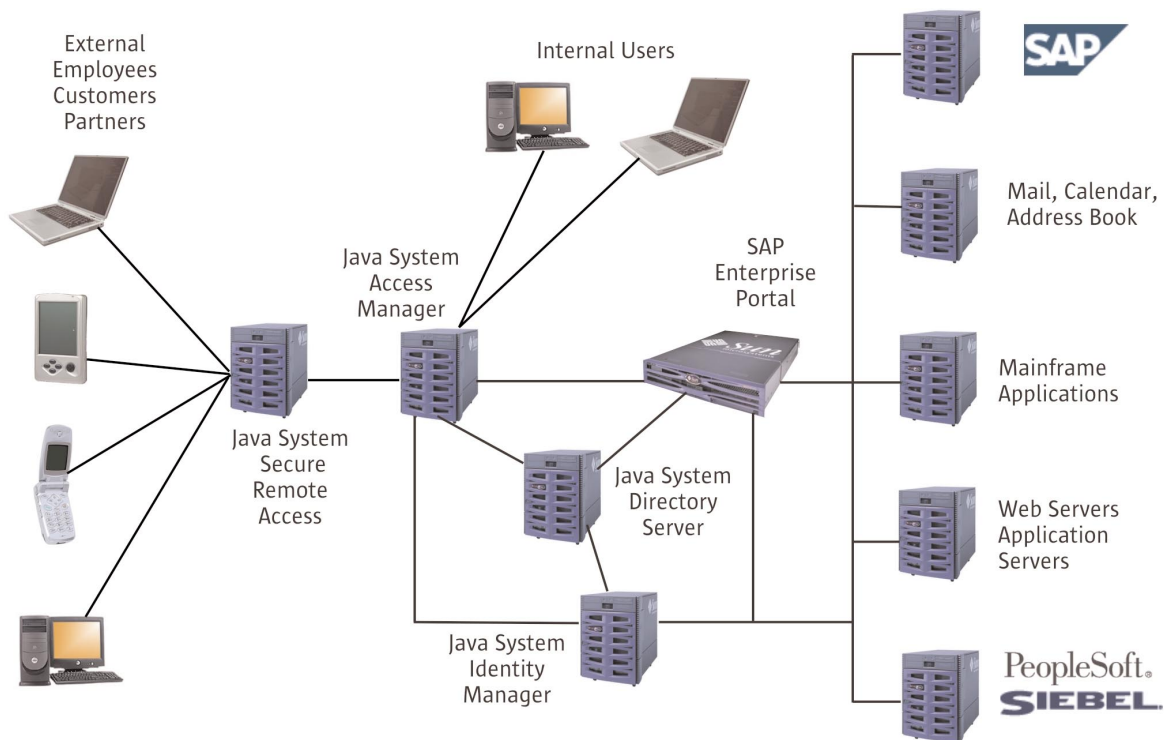
### **Joint Support**

The Sun and SAP Joint Support Center (JSC) provides 24/7 worldwide support for rapidly resolving interoperability issues between Sun server platforms and SAP software. A step beyond the Sun Vendor Integration Program (SunVIP<sup>SM</sup>), the JSC provides SunSpectrum Platinum<sup>SM</sup> and SunSpectrum Gold<sup>SM</sup> customers with specific SAP expertise in resolving complex issues related to the integrated software stack running on Sun systems. Support teams are located on-site at SAP headquarters in Walldorf, Germany to streamline information transfer and problem resolution. In addition, SAP trained support teams are located in the United States and Asia to offer faster, more specialized problem resolution worldwide.

## Solution Components

Sun Network Services for SAP Solutions includes portions of the Sun Java™ Enterprise System to provide end-to-end identity management and secure access. Sun's suite of identity management products allows the easy integration and exchange of identity data between applications. The Sun Java System Identity Manager, the Sun Java System Access Manager, and the Sun Java System Directory Server Enterprise Edition interoperate with other business systems, as well as with third-party security and identity management solutions. In addition, Sun Java System Secure Remote Access software delivers secure Internet or extranet access to both internal portals and intranet applications through any Java technology-enabled browser. All of the solution components for the Sun Network Services for SAP Solutions are illustrated in Figure 1. More than 40 out-of-the-box resource adapters enable provisioning and identity synchronization with directory servers, databases, mainframes, operating systems, messaging platforms, Web access control products, and enterprise applications from leading companies such as SAP, BEA Systems, Entrust Technologies, IBM, Microsoft, Netegrity, Novell, Oblix, OpenNetwork, Oracle, PeopleSoft, and RSA Security. More than 30 policy agents enable SSO and access control across multiple platforms and applications.

Figure 1. Sun Network Services for SAP Solutions



## Sun Java System Directory Server Enterprise Edition

The first step in providing identity management is to centralize identity data. The Java System Directory Server delivers a secure, highly available, scalable and easy-to-manage directory infrastructure for storing and using identity data. It centralizes identity information and makes that data available to multiple applications including Microsoft Active Directory, rather than requiring applications to store and maintain data in multiple locations, thus providing consistency

and lowering costs. Password synchronization with Microsoft Active Directory increases security by helping to ensure password policies enforced on the network operating system are also enforced in key strategic directories in the enterprise. Its extreme scalability helps reduce costs by decreasing the number of systems deployed.

In addition, proxy services provide firewall-like protection against denial-of services and unauthorized access. Multimaster replication, load balancing, and automatic failover help provide directory services around the clock. With over 1.5 billion entries, the Java System Directory Server is the most widely deployed general-purpose, LDAP-based directory server in the marketplace.

## **Java System Identity Manager**

Java System Identity Manager provides the core user provisioning and identity synchronization services of Sun's identity management solution, as well as password management and profile management. It uses role-based access control mechanisms to centrally create and manage users. Through the use of automation, delegation, and self-service, it reduces operating costs and relieves overburdened administrative and help desk personnel.

### **Centralized Management**

Using a common identity infrastructure, administration that normally occurs across many applications by multiple administrators, including OS, database, and SAP, can be consolidated into a single management console. This makes it possible to consistently delegate management tasks and self-service functionality to partners, customers, and internal company departments based on business requirements. And, by replacing ad hoc manual processes with fully automated management of the user lifecycle process, Java System Identity Manager greatly reduces the time it takes to get users up and running, to change access privileges as roles change, and to instantly and securely revoke accounts when relationships are terminated.

Role- and rule-based provisioning provides the flexibility to set provisioning rules on users, organizations, resources, roles, or groups, which helps ensure that policies are enforced and also provides the granularity to handle individual needs. Dynamic workflow supports multistep, complex provisioning and automates the process of making changes in identity data to provide the scalability required for large changes such as mergers and acquisitions.

Java System Identity Manager automatically synchronizes identity data across a wide range of heterogeneous applications, databases, and other data stores such as Java System Directory Server, Microsoft Directory, and Lotus Domino. This helps ensure that identity data is accurate and consistent both within and outside the boundaries of the SAP NetWeaver environment. It uses transformation rules, data flow mapping, and data joins so that dissimilar schemas can be mapped to any type of data source, thereby protecting existing infrastructure investments in the enterprise. Administrators can define the authoritative data source for any identity, which accommodates the real world need for distributed ownership of data without sacrificing up-to-date information across the enterprise. As more and more enterprises adopt directory-centric architectures to simplify their IT environments, Java System Identity Manager also automates migration of identity data from existing data sources into a directory-based infrastructure.

### **Audits and Compliance**

Java System Identity Manager provides comprehensive audit and reporting of profile data, change history, and user permissions enterprise-wide, to detect security risks so that administrators can respond proactively. With active risk scanning, Java System Identity Manager automatically scans for orphan or dormant accounts that may pose a security risk.

These accounts can then be eliminated, if necessary, to provide an accurate picture of the enterprise's activities. The ability to review the status of access privileges at any time improves audit performance and helps achieve compliance with governmental mandates. In addition, reporting on usage of self-service password resets and time to provision or deprovision users provides visibility into key operational metrics and operational improvements. Furthermore, reports reflecting changes to authorized access may be generated and automatically sent to managers at predefined intervals. This enables administrators to compare previous and/or current access records and make the changes necessary to preserve the required knowledge of accountability within the enterprise.

## Java System Access Manager

Java System Access Manager is a security foundation that helps organizations manage secure access to Web applications. It is designed to provide authentication and authorization services across internal and external computing domains and helps ensure that appropriate authentication credentials are required of users depending on the value of the protected resources. It also presents streamlined navigation across Web applications through single sign-on capabilities.

Java System Access Manager is integrated with the SAP Enterprise Portal component of SAP NetWeaver through a Sun developed and supplied policy agent. The policy agent enables application servers to enforce authentication and authorization defined in the application and the identity server. By using a central point of authentication, role-based access control, and single sign-on, it provides a scalable security model for SAP NetWeaver, other Web-based applications, and enterprise-wide single sign-on. In this way, it simplifies exchange of information and transactions while protecting the privacy and security of vital identity information. It also allows administrators to audit any intrusion or unauthorized access in real time.

The SAP Enterprise Portal supports authentication using Java Authentication and Authorization Services (JAAS) login modules. JAAS is an open standard tool that enables anyone to develop secure login modules. Java System Access Manager comes with an out-of-the-box JAAS login module for SAP EP 6.0 that is developed, tested, and supported by Sun. The login module checks the validity of the Sun logon and then issues a valid SAP logon transparently to the user, without the need to re-input user IDs or passwords.

Because it is difficult for enterprises to forecast which systems and solutions their company might implement in the future, it is critical that their identity management vendor delivers support for the current and latest standards, and takes a strong role in creating future standards. Java System Access Manager supports the latest federation standards and provides interoperability across different vendor platforms, protecting enterprises' existing technology investments. It also allows organizations to protect the privacy and security of their financial information while providing the ability to integrate business applications and linking the access to these applications across divisions or business networks.

Java System Access Manager supports the latest federation standards, including the Liberty Alliance Phase 2 (ID-WSF) and SAML 1.1. Federated identity support helps provide increased revenue opportunities by enabling trusted networks between existing and new partners for faster decisions and results, reducing costs through integration efficiencies, and providing a strong framework for regulatory compliance.

Real-time audit is possible with Java System Access Manager as well. It provides up-to-the-minute auditing of all authentication attempts, authorizations, and changes made. With real-time audit capability, Java System Access Manager improves security and internal control by providing instant auditing of critical information.

### **Biometrics for Highly Secure Environments**

As organizations need to distribute sensitive information to authorized parties over the network, they are increasingly adopting biometrics as a necessary component for authentication. Biometric authentication is based on an inherent physical trait or a characteristic such as fingerprints, retinal patterns, hand geometry, voice recognition or facial recognition, and offers a high degree of assurance that a person actually is who they claim to be.

Biometrics are difficult to fabricate, which makes them much harder to share or steal than traditional authentication mechanisms such as passwords, tokens, certificates or smartcards, which have potential vulnerabilities due to credentials that are shared, forgotten, stolen or used without the consent of the owner. For robust security, the recommended approach is often to combine two or more authentication methods — a process called multi-factor authentication. For example, a highly secure installation could use three-factor authentication based on password (what the user knows), smartcard (what the user possesses), and fingerprints (who the user is).

JAAS implements a Java technology version of the Pluggable Authentication Module (PAM) framework. Using JAAS facilitates a pluggable solution for integrating with different authentication providers that are based on biometrics, smartcards, or other custom mechanisms. JAAS also provides a single sign-on security model for delivering a unified access-control solution for securing multiple Java 2 Platform, Enterprise Edition (J2EE™) or Java technology-based applications. Sun works with several vendors, such as AC Technology with its BiObex solution, that supply JAAS login modules for biometrics.

### **Java System Secure Remote Access**

The Java System Secure Remote Access enables mobile employees, telecommuters, business partners, suppliers, and customers to access a meta portal — and thus the SAP Enterprise Portal and a varying number of SAP systems all residing on SAP NetWeaver — from anywhere outside the corporate network. It enables users to access their organization's network, as well as applications and services that are available within the organization, in a secure manner over a public network (the Internet). In addition, it provides secure access to file systems that reside within the organization's network, irrespective of their type.

Because Java System Secure Remote Access is Internet or extranet based, it does not require client-software installation, freeing administrators from time-consuming distribution, configuration, maintenance, and management of client-side, remote access applications. This gives IT managers more control over external clients accessing internal systems, and therefore, provides less opportunity for external intrusion via remote clients or viruses. By providing a solution based on an Internet connection as opposed to a costly virtual private network (VPN) or private dial-up line, the Java System Secure Remote Access helps lower remote access costs and minimizes investments in dedicated modems, remote access appliances, WATS (800 toll-free number) calls.

It also helps reduce costs by virtually eliminating related management and support calls associated with client-based access software. And, with a minimum client and connectivity investment, an SAP NetWeaver environment can be easily, quickly, and securely extended to employees, partners, and customers.

Java System Secure Remote Access uses Java System Identity Server software to store all its configuration information. The configuration information stored in the Java System Identity Server is administered through the plug-in console modules. This presents a single point of administration for all the components of the Java System Secure Remote Access.

The Java System Secure Remote Access delivers encrypted communications through Secure Sockets Layer (SSL) or Transport Layer Security (TLS), and is supported on the Solaris™ Operating System, Linux, and Windows. Users log on to the portal from any available browser, enter the Web URL address, then their user identification. User authentication is handled over an encrypted SSL or TLS channel between the Web browser and the Java System gateway. Authentication is then proxied by the gateway, which uses the Java System Access Manager to request and confirm authentication of users. For Personal Digital Certificate (PDC) authentication, the gateway obtains the client certificate and passes it to the Java System Identity Server for authentication. Once authenticated, the users is presented with a personal role-based SAP portal. To help ensure privacy and data protection, all communication between the user and the Java System Secure Remote Access continue to be encrypted.

### **Rewriter**

In a secure environment, when a user is trying to access intranet pages from outside, direct access may not be possible. Patented Java technology called the rewriter enables users to browse the intranet by making links and other URLs references on those pages operate correctly. Rewriter allows existing applications, content, files, and services to go online without the need to re-write or modify code, which helps lower maintenance costs.

The basic premise of URL (universal resource locator) rewriting is that browser requests always come back to a single location (the gateway in the case of Java System Secure Remote Access) when the request is for internal content. When content is passed through the rewriter, it rewrites it by pre-pending the gateway URL to any URL it encounters in the content so that browser requests always come back to the gateway. And, with the obfuscation feature, the host path details are never seen by the end user. To do all of this, it needs a set of rule definitions. Java System Secure Remote Access includes a rewriter rule set for SAP EP 6.0.

### **Secure Access to Applications**

Java System Secure Remote Access also enables users to access applications and services that are available within the organization in a secure manner over a public network (the Internet). Netlet — a Sun patented technology — plays an important role in this by giving secure, on-demand virtual private network (VPN) functionality to the intranet from a public network.

Netlet enables a secure connection between an arbitrary client on a system that is running a Java technology-enabled browser and a network resource behind a corporate firewall. The client can be behind a remote firewall and SSL Proxy, or directly connected to the Internet. Netlet can provide secure access to fixed port applications and some dynamic port applications that are available on the intranet from outside the intranet. All secure connections made from outside the intranet to intranet applications through Netlet are controlled by Netlet Rules, which are a set of rules that contain all the information needed for the Netlet connection between the client and destination server.

### **Secure Access to Files**

NetFile is a Java System Secure Remote Access file manager application that allows remote access to file systems and operations on them. NetFile uses standard protocols — NFS, FTP, and Server Message Block (SMB) — to connect to various file systems. Using NetFile, it is possible to access file systems on servers running the UNIX® OS, Microsoft Windows, and Novell NetWare platforms, as well as any server that supports the NFS, FTP, or SMB protocols.

The administrator can configure NetFile to allow or deny access to file systems at any level — organization, sub-organization, or user. It is also possible to deny access to file systems for users depending on the type of host — Microsoft Windows, FTP, or NFS. For example, all users in an organization can be denied access to NFS hosts. It is also possible to specify a set of common hosts at an organization or role level. This means that all users in that organization or role can access those hosts, without having to configure them individually for each user in the organization or role.

NetFile is internationalized and provides access to file systems irrespective of their locale (character encoding). It uses Java System Identity Server to store its own profile as well as user settings and preferences, and can be administered using the Java System Identity Server administration console.

## Sun and SAP

With proven expertise, a long track record of product and service excellence, and a close working relationship with SAP, Sun offers a comprehensive set of consulting services, products, and support to help ensure SAP NetWeaver environments are secure, cost-effective to manage, and scale with changing business demands. Customers can turn to the Sun Excellence Center for SAP NetWeaver for help in creating a Sun Network Services for SAP Solution and derive more business value from SAP applications on Sun systems.

## Sun Solutions — Transforming Technology into Business Results

Solving challenging problems and getting IT assets under control requires a solid infrastructure that optimizes resources, yet can evolve to meet changing business demands. Infrastructure — the network computing foundation on which business applications and services are delivered — is more important than ever. Choosing the right combination of architecture, hardware, software, storage, methodology, and services is paramount if IT infrastructures are to change from being reactionary to strategic and proactive. Complexity is the enemy of any IT infrastructure, and organizations must find ways to deploy the right technologies and methodologies with consistency and simplicity.

Understanding this, Sun has created a series of solutions that organizations can use to meet these challenges head-on. Sun Solutions are the essential system elements of the enterprise and network, and provide simple solutions to complex problems. Sun Solutions are architected, implemented and managed to reduce deployment risks. Using the SunTone<sup>SM</sup> Architecture methodology and tested in Sun iForce Centers and customer environments around the world, each Sun Solution includes a reference architecture, best-practices methodology, sizing guide, financing and technology refresh services, and a potent combination of Sun Lifecycle services and support.

### Sun Reference Architectures

Sun's Reference Architectures combine technology products from Sun and best-in-class hardware and software providers to deliver an infrastructure that is tested and proven to meet specific business needs. Designed, tested, sized, and documented, Reference Architectures help to reduce the cost, complexity, and risk associated with designing and deploying new network infrastructures and revenue-generating services. By using a Sun Reference Architecture as a starting point for a customized solution, businesses can speed time-to-deployment and significantly reduce their TCO.

### The SunTone Initiative — Helping Achieve Service Quality Goals

Sun Solutions give companies a solid solution design, architecture, and implementation. The final step in the quality of any solution is the operational management practices to meet service level agreements. Disciplined operations

management practices, such as change management controls, are critical to service quality and availability. The SunTone Initiative certifies service delivery and management practices to validate quality against demanding service level agreements. The program provides best practices for IT service management that helps companies streamline operational practices and drive efficiencies up front, while addressing people and process requirements to meet on-going service delivery and management quality goals, such as availability, reliability, response times, and security.

### iForce Partners

Sun Solutions can be extended through the addition of components, applications, and services from Sun's market-leading, best-of-breed iForce Partners — independent software vendors (ISVs), original equipment manufacturers (OEMs), service providers, integrators, systems providers, solution resellers, and value-added resellers of Sun systems and Sun platform-based solutions. Sun understands the value of partners, and works with them to co-create, market, and deliver network computing solutions that reduce costs and increase customer satisfaction.

### For More Information

To learn how to get the most out of Sun Network Services for SAP Solutions, sign up for an Assessment Service that can help customize a specific solution and provide direction on tailoring a solution to specific business environments. Table 1 identifies other sources of information related to Sun products and service offerings. Organizations can also contact a local Sun sales representative to learn how Sun can help build competitive advantage with Sun Solutions that match application delivery needs from the workgroup to the data center.

Table 1. For More Information

Web Site URL	Description
<a href="http://www.sun.com/sap">http://www.sun.com/sap</a>	Sun and SAP Global Alliance Home Page
<a href="http://www.sun.com/nws4sap">http://www.sun.com/nws4sap</a>	Sun Network Services for SAP Solutions Home Page
<a href="http://www.sap.com">http://www.sap.com</a>	SAP Home Page
<a href="http://www.sun.com/software/javaenterprisesystem">http://www.sun.com/software/javaenterprisesystem</a>	Java Enterprise System and Sun Java System Suites
<a href="http://www.sun.com/sap/service">http://www.sun.com/sap/service</a>	Sun Service Offerings for SAP Solutions
<a href="http://www.sun.com/suntone">http://www.sun.com/suntone</a>	SunTone Certification and Branding Program
<a href="http://www.sun.com/iforce">http://www.sun.com/iforce</a>	Sun's iForce Initiative
<a href="http://www.sun.com/servers">http://www.sun.com/servers</a>	Sun Servers
<a href="http://www.sun.com/solaris">http://www.sun.com/solaris</a>	Solaris Operating System
<a href="http://www.sun.com/storage">http://www.sun.com/storage</a>	Sun Storage Solutions
<a href="http://www.sun.com/security">http://www.sun.com/security</a>	Sun Security Solutions

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