☀ Sun
microsystems

THE NET EFFECT AND THE WIRELESS REVOLUTION

SUN'S END-TO-END PLATFORM, PROFESSIONAL SERVICES, AND ALLIANCES FOR WIRELESS INTERNET SERVICES

HEADQUARTERS

SUN MICROSYSTEMS, INC., 901 SAN ANTONIO ROAD, PALO ALTO, CA 94303-4900 USA
PHONE: 650 960-1300 OR 800 555-9SUN   INTERNET: www.sun.com

☀ Sun
microsystems

We're the dot in **.com**™

SALES OFFICES

AFRICA (NORTH, WEST AND CENTRAL): +9714-3366333 • ARGENTINA: +5411-4317-5600 • AUSTRALIA: +61-2-9844-5000 • AUSTRIA: +43-1-60563-0 • BELGIUM: +32-2-704-8000
BRAZIL: +55-11-5187-2100 • CANADA: +905-477-6745 • CHILE: +56-2-3724500 COLOMBIA: +571-629-2323 • COMMONWEALTH OF INDEPENDENT STATES: +7-502-935-8411
CZECH REPUBLIC: +420-2-3300-9311 • DENMARK: +45 4556 5000 • EGYPT: +202-570-9442 • ESTONIA: +372-6-308-900 • FINLAND: +358-9-525-561 • FRANCE: +33-01-30-67-50-00
GERMANY: +49-89-46008-0 • GREECE: +30-1-618-8111 • HUNGARY: +36-1-202-4415 • ICELAND: +354-563-3010 • INDIA: +91-80-5599595 • IRELAND: +353-1-8055-666
ISRAEL: +972-9-9513465 • ITALY: +39-039-60551 • JAPAN: +81-3-5717-5000 KAZAKHSTAN: +7-3272-466774 • KOREA: +822-3469-0114 • LATVIA: +371-750-3700
LITHUANIA: +370-729-8468 • LUXEMBOURG: +352-49 11 33 1 • MALAYSIA: +603-264-9988 • MEXICO: +52-5-258-6100 • THE NETHERLANDS: +00-31-33-45-15-000
NEW ZEALAND: +64-4-499-2344 • NORWAY: +47-2202-3900 • PEOPLE'S REPUBLIC OF CHINA: BEIJING: +86-10-6803-5588; CHENGDU: +86-28-619-9333; GUANGZHOU: +86-20-8755-5900;
HONG KONG: +852-2202-6688; SHANGHAI: +86-21-6466-1228 • POLAND: +48-22-8747800 • PORTUGAL: +351-21-4134000 • RUSSIA: +7-502-935-8411
SINGAPORE: +65-438-1888 • SLOVAK REPUBLIC: +421-7-4342 94 85 • SOUTH AFRICA: +2711-805-4305 • SPAIN: +34-91-596-9900 • SWEDEN: +46-8-631-10-00
SWITZERLAND: GERMAN: 41-1-908-90-00 FRENCH: 41-22-999-0444 • TAIWAN: +886-2-2514-0567 • THAILAND: +662-636-1555 • TURKEY: +90-212-335-22-00
UNITED ARAB EMIRATES: +9714-3366333 • UNITED KINGDOM: +44-1-276-20444 • UNITED STATES: +1-800-555-9SUN OR +1-650-960-1300 VENEZUELA: +58-2-905-3800

Contents

Sun for Wireless Services: A Natural Selection

INTRODUCTION

The wireless revolution is on, and it comes as no surprise that Sun is a major force behind the rapid growth of the market. As the thought leader of the Net Economy, a leader in network computing, a leading supplier of carrier-grade telecommunications network infrastructure, and a respected ally to technology vendors of all types and sizes, Sun belongs at the epicenter of the booming wireless market.

As the wireless market evolves, Sun is a natural selection as a strategic business ally, a trusted advisor, and a critical source of technology for creating complete and customized wireless solutions. For everyone in the wireless value chain — operators, service providers, network equipment providers, device manufacturers, content providers, and software vendors — Sun is the source for hardware, software, services and programs that will help ensure market success.

But there is a critical difference between a growth opportunity and a profit opportunity. Exploiting the full potential of the Net Effect requires more than the right strategy, more than the right infrastructure. It requires an all-encompassing, end-to-end approach to creating and delivering high-quality, differentiated, personalized services that can be accessed anytime, anywhere, by anyone, using any device.

In other words, it requires the expertise, products, programs, and alliances from Sun Microsystems. With a major presence in the networks of virtually all top global carriers, in the products of leading network equipment providers, and in the devices of major wireless manufacturers, Sun is the vendor of choice for complete wireless solutions.

Wherever you are on your road to success in the wireless arena, Sun can help you build your service-driven wireless network architecture, increase your revenue, deliver higher quality services, protect your investments, and partner with trusted advisors--all leading to higher profitability and reduced risk.

Sun: The Vendor of Choice for Wireless

• All major wireless operators use Sun™ systems in their network

• Sun is a leading provider to the top five network equipment providers

• The leading handset manufacturers are delivering products based on Java™ technology

• 80 percent of all Internet applications run on Sun

SECTION 1
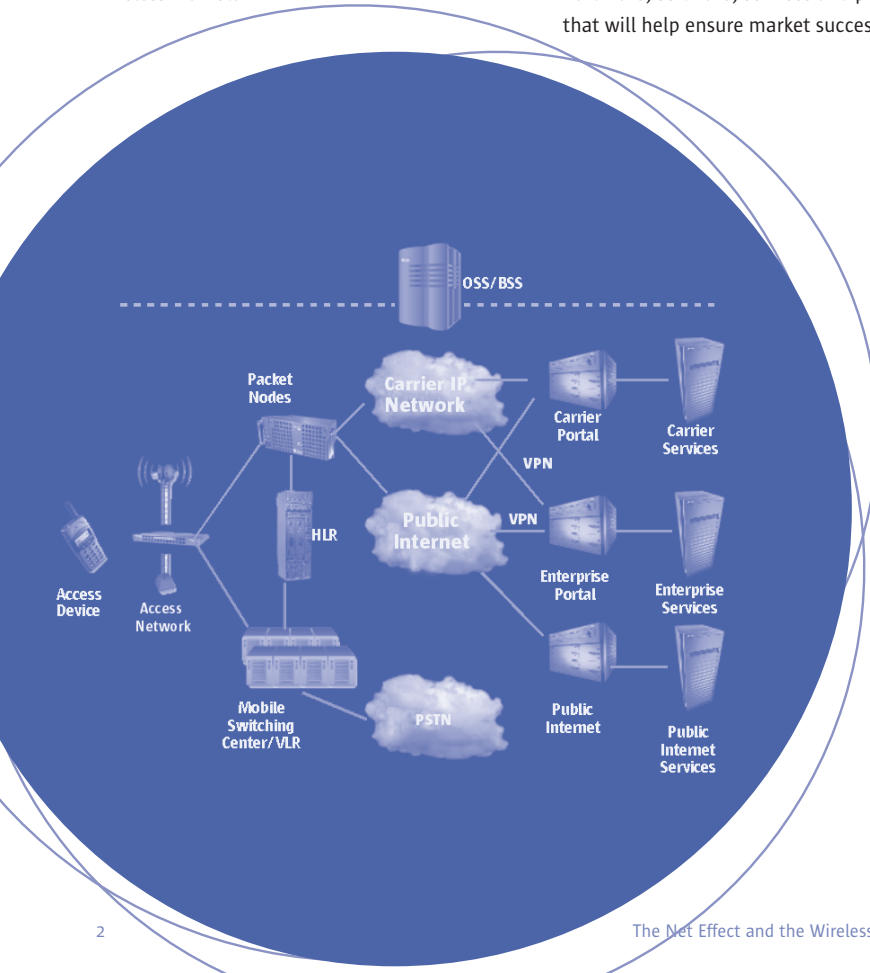
It's All About Services

In the wireless age, technology and infra-structure alone don't deliver competitive advantages. Services do. Sun's focus, there-fore, is on helping its customers maximize the quality and speed of service development and delivery.

Our vision is called the Wireless Service-Driven Network, and every product and service we offer is aimed at facilitating the design, development, deployment, and management of services that maximize service-level quality at minimal cost and complexity. While each implementation of a Wireless Service-Driven Network will vary with business and technical objectives, the attributes of Wireless Service-Driven Networks are tangible and consistent:

• They are modular, dynamic networks based on Internet standards.
• They make network services available to any user, any time, from anywhere, using virtually any device.
• They adapt on demand to meet new user requirements and they evolve to accept new technologies.

By building a Wireless Service-Driven Net-work, you can help ensure that your wireless services deliver on end-user expectations for performance, availability, reliability, and security. You can scale your infrastructure on the fly to meet unpredictable spikes in demand. You can leverage your existing resources without locking yourself in to one platform or another. And you can deploy new services rapidly and reliably, giving your business a huge competitive advantage.

Equally important, you can begin to integrate services rather than simply provide connections to services. You can harness the convergence of video, data, and multimedia networks to offer customers innovative combinations of services, such as location-based m-commerce and assistance or traffic and calendar advi-sories. You can integrate services based on standard protocols. And you can deliver any combination of mobile wireless and fixed wireless services.

This guide describes the specific opportunities major networking trends are creating for everyone in the wireless value chain, and shows where and how Sun solutions apply within four key areas of the wireless market: at the device level, within the access and core network, at the wireless portal, and in applications and content services.

The Net Effect is Revolutionizing Wireless Opportunities

Everything that touches the network today is growing at an explosive rate: the number of users, the diversity of devices, the volume of data, the bandwidth being utilized, and the demand for wireless services. As a result, the value of network services is on an upward spiral. This trend, which Sun calls the Net Effect, creates unprecedented opportunities for all players in the wireless market.
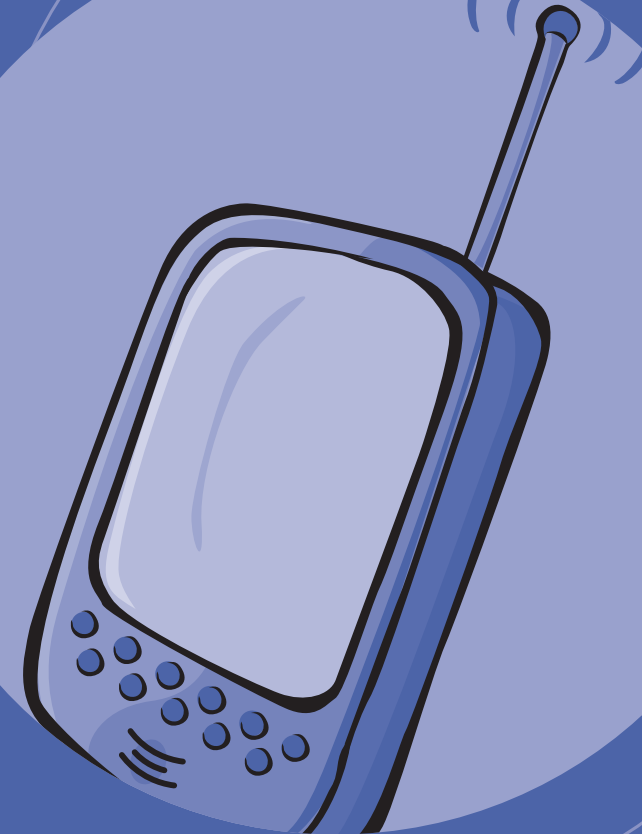
Smart Devices: Sun Answers the Call with Java Technology

As mobile devices grow in popularity, bringing e-mail, wireless Web access, and m-commerce to millions of people, wireless companies must solve several daunting challenges:
• Get creative, highly differentiated, personalized services to market quickly
• Help enable customers to access the billion or so available Web pages from their mobile devices
• Identify and embrace standards with long-term viability

Sun provides an answer to these issues through the Java™ 2 platform, Micro Edition (J2ME™) software platform.

The J2ME platform is a small-footprint version of Java technology that is optimized to run on mobile devices. It brings the full benefit of industry-standard, open, Java technology to any wireless device, regardless of form factor.

The J2ME platform contains key APIs that help you accelerate time to market for new services. For example, it includes the Java-Phone™ API that was developed by Sun and leaders of the telecommunications industry; a Mobile Information Device Profile (MIDP) for smart phones and pagers; as well as Java Card™ technology, which helps enable smart cards and other devices to run Java technology based applets. And we are working to create more Java technology based APIs to further simplify development under the JAIN™, OSS through Java, and MIDP initiatives. J2ME technology offers many benefits to the wireless community:
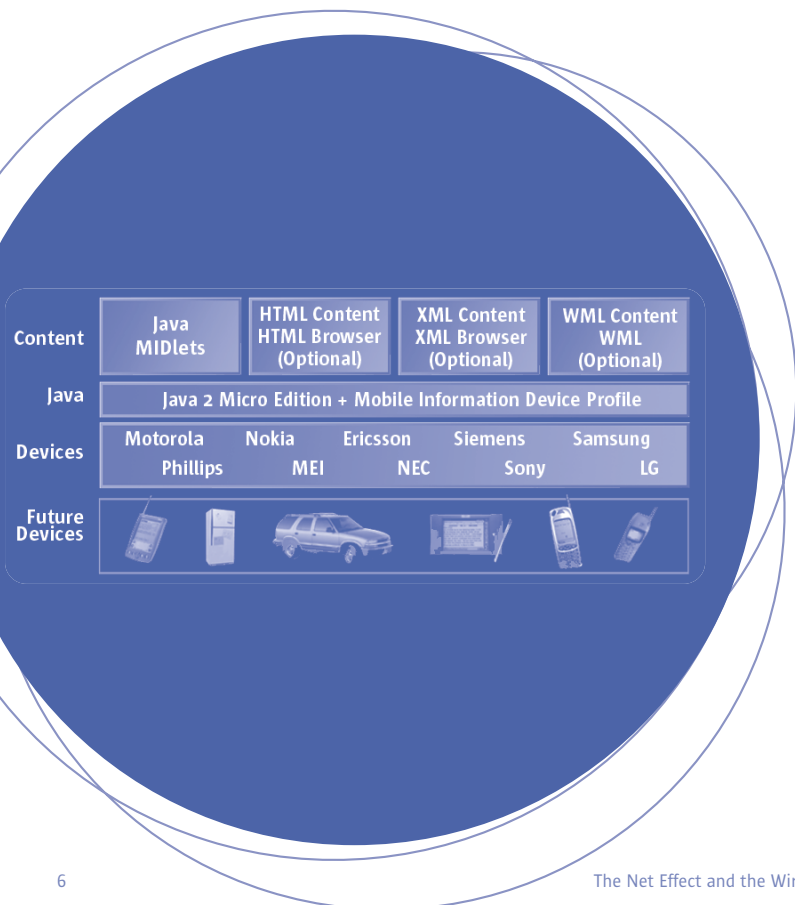• Deliver the same content to devices from multiple manufacturers over evolving technologies
• Easily brand and enhance services with online updates
• Help ensure safe and secure service delivery
• Help enable a rich, graphical, interactive device operating environment
• Give customers the ability to use services in off-line mode
• Leverage a pool of more than two million Java technology-based programmers

In addition, the combination of the J2ME platform and MIDP graphical development tools makes it easier to create multimedia, interactive applications. You can now include images, radio boxes, check boxes, and animations, and upgrade quickly and easily to deliver new capabilities.

Motorola and Sega to Deploy Entertainment Software For J2ME Enabled Technology on Motorola Wireless Devices

Motorola, Inc. and Sega Enterprises Ltd. are working together to bring a wide assortment of entertainment software to Java technology-enabled wireless phones, pagers and personal digital assistants (PDAs). The companies plan to collaborate to develop innovative wireless game solutions, including Application Programming Interfaces (APIs) compatible with J2ME technology.

"By demonstrating compelling entertainment content on the J2ME platform, Sega and Motorola are making a significant statement about the direction they are taking as leaders in the exploding wireless entertainment market," said Hideki Sato, corporate senior vice president of Sega Japan.

|				
Content	**Java MIDlets**	**HTML Content HTML Browser (Optional)**	**XML Content XML Browser (Optional)**	**WML Content WML (Optional)**
Java	Java 2 Micro Edition + Mobile Information Device Profile			
Devices	Motorola Nokia Ericsson Siemens Samsung			
	Phillips MEI NEC Sony LG			
Future Devices				

SECTION **2**

For device manufacturers, adding support for Java technology makes your offerings capable of running a whole new generation of applications and network services—attracting customers and selling product lines. For operators, Java technology makes it easy to extend traditional Internet functions such as e-commerce, stock trading, and banking into the wireless space—while at the same time opening up opportunities to add entirely new types of services, such as games, maps, financial reports, weather, interactive books, and more. With Java technology, you can update features, graphics, applications, and logos on the fly. And for application developers and content providers, the cross-platform nature of Java technology can deliver greatly reduced time to market and new opportunities among a whole new set of customers.

The J2ME architecture is open to innovation from all sources, and accommodates various types of devices through "profiles," which are defined for each device type by industry experts through the Java Community Process℠ program.

Simply put, Java technology is the force that will fuel the growth of wireless services, and the J2ME platform is the implementation of Java technology that will help you maximize your opportunities in this fast-growing marketplace.
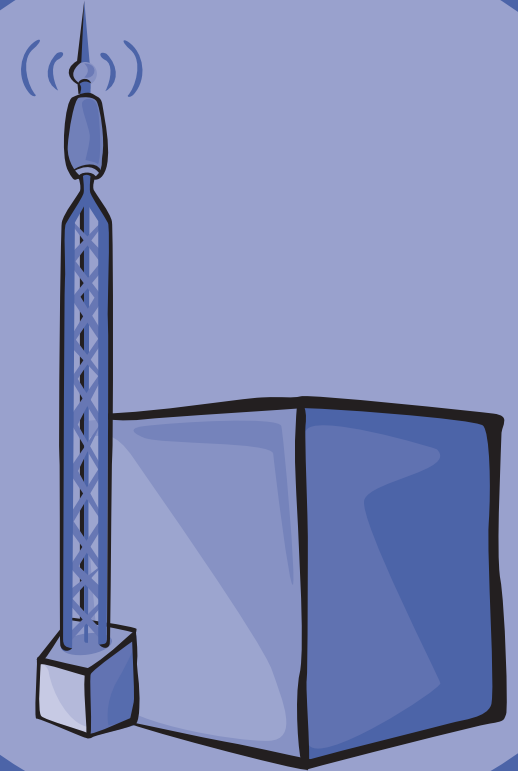
Smart Networks: Carrier-Grade, Future-Ready Infrastructure

Telecommunications service providers today urgently need a combination of products, services, and technologies to help them capitalize on the fast-growing wireless market. Specifically, they need:

• Off-the-shelf, carrier-grade infrastructure products that can help them quickly and cost-effectively implement new value-added services tailored to their customers' demands

• Efficient deployment of wireless services to retain and expand their customer base

• The ability to deliver high levels of availability, performance, and accessibility to virtually any number of users simultaneously

Network equipment providers that can supply network infrastructure equipment that facilitates continuous provisioning of such services will enjoy a tremendous competitive advantage in the months and years ahead. Infrastructure that is scalable, flexible, and modular—as well as highly reliable—will capture the market.

No other company comes close to Sun in providing a future-ready arsenal of massively scalable, continuously available hardware and software products that work together to increase uptime while also reducing the cost and complexity of deploying and maintaining network infrastructure.

Sun's integrated hardware and software stack is based on industry standards, and thus is open to interoperating with multiple products from multiple vendors. That means you can tailor your service-driven wireless network, leveraging best-of-breed products made by third-party companies and focusing your development effort where it counts: developing applications and services that will help your capture more share and earn more revenue. See Part B, Section 1 for product details.

Lucent, Sun, and iPlanet Team Up to Deliver Audio E-mail, Calendar, and More

For the growing army of road warriors and nomadic workers, the ability to read e-mail and check the calendar with the cell phone is good. But the ability to listen to e-mail and calendar information—that would be great. No more stopping to focus on the small screen, no more straining to read tiny text.

Thanks to a collaborative effort between Lucent, Sun, and iPlanet™ e-Commerce Solutions, a Sun-Netscape Alliance, text-to-speech conversion for wireless services is now a reality. Drawing on technology from Bell Labs, Lucent has developed a "voice browser" that lets users access their e-mail and calendar using spoken commands, and have that information read out to them over the phone.

The browser is just one element of the Intuitive Applications Access (IAA) suite, an end-to-end solution for wireless service providers. A variety of technologies from the allies come into play:

• Sun's carrier-grade Netra and Sun Enterprise servers run the whole thing

• Lucent's Internet Message Management and Voice Browser applications, combined with the iPlanet software, makes it possible to listen to messages via text-to-speech technology

• iPlanet™ Wireless Server software converts Internet content into a suitable format for small wireless devices

• iPlanet™ Messaging and iPlanet™ Calendar Server software allow e-mail and other information to be retrieved on the fly in the most convenient medium

The IAA solution offers carriers a cost-effective way to deliver Internet-based services over wireless networks, and will also help them compete for corporate business by offering differentiated services.
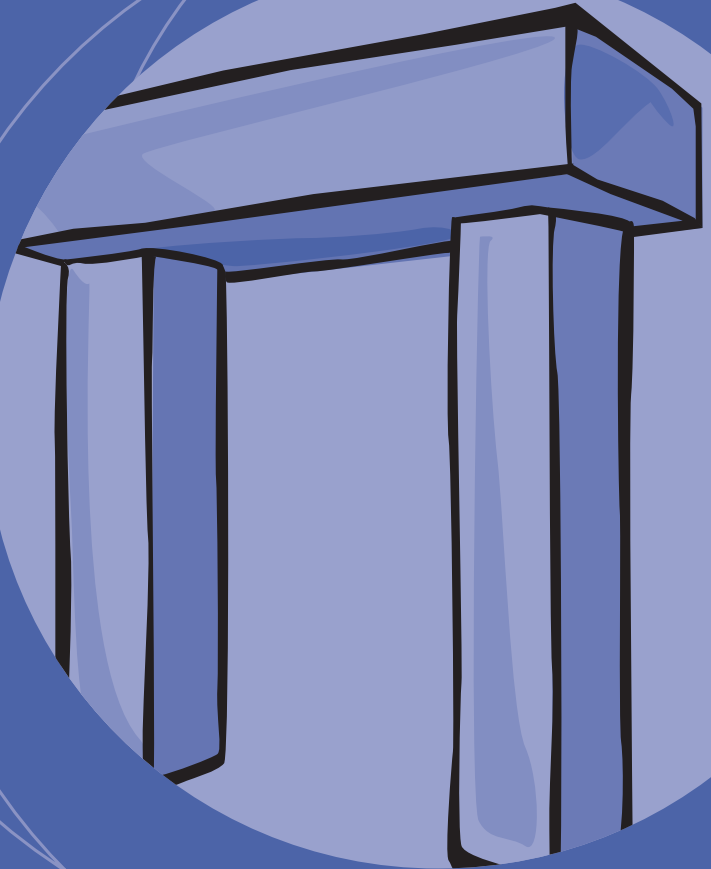
Smart Portals:iPlanet Wireless Solutions

For wireless service providers, the portal or gateway can be a distinct competitive advantage—or it can be a bottleneck to service delivery and competitiveness. Your customer loyalty may hinge on how well you deliver on four aspects of portal and gateway services:

- The baseline services subscribers signed on for initially, such as e-mail, calendar, and short messaging
- Enhancements to baseline services through consolidation and integration of content and services (portals)
- The ability to scale wireless services over time
- The ability to deliver personalized, high-QoS services

Through wireless-ready e-commerce solutions from iPlanet E-Commerce Solutions, you can deploy outstanding baseline services, grow and enhance them as your customer base grows, aggregate them for even higher value through portals, personalize them, scale them to meet unpredictable spikes in demand, and infuse them with bullet-proof reliability to any device.

iPlanet solutions for wireless are based on the iPlanet™ Internet Service Deployment Platform. This foundation technology offers the essential software environment needed to develop, deploy, and deliver future-ready wireless services. The platform includes the following products and capabilities:

- To simplify user management for operators, Sun offers iPlanet™ User Management

Services. This suite of applications includes core services such as certificate management, meta directories, and policy management, and can be used to consolidate and manage everything you know about your subscriber into a single view—saving you and your customer time and personalizing the experience.

- To improve the time to market and scalability of your wireless services, the iPlanet™ Web, Application, and Integration Services Platform gives developers a high-performance, highly scalable, standards-based environment for building innovative applications and accessing legacy data. It also provides rich base services, saving developers significant time and effort creating services. And when you deploy those services on the iPlanet platform, you get instant scalability, load balancing, and failover of service components, increasing uptime and reliability.
- The iPlanet™ Communication Services Platform offers core communication services such as e-mail and calendar, with an open platform for integration of voicemail, fax, and video for unified communication.
- Through the iPlanet™ Portal Services Platform, you can create portals that deliver more and better services to more devices. The iPlanet Portal Services Platform lets you aggregate content, communication, and commerce and deliver and personalize it for a wide variety of devices. It's a convergence of information made easier for you and more valuable to your customers.

SECTION **4**
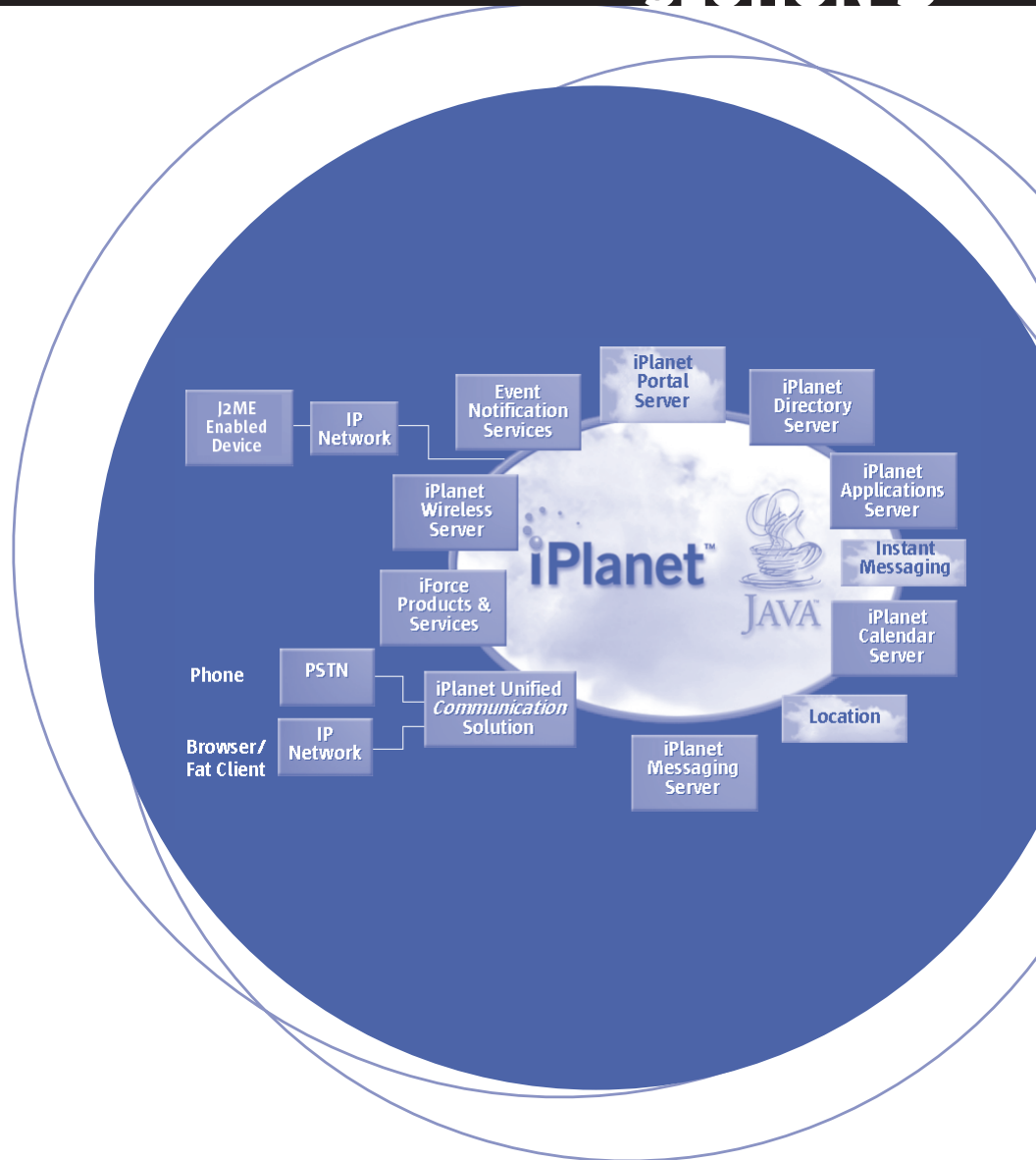
• iPlanet™ Commerce Services can help you manage the services that you and your allies deliver to your customers, giving you a jump start on the quickly emerging m-commerce market and helping you attract more customers along the way.

In addition to the iPlanet products, Sun gives you access to portal and gateway solutions from other vendors. For example:

• Wireless portal infrastructure solutions from Oracle help enable you to transform, manage, and publish Web content into wireless format.

• Wireless gateways solutions from Phone.com, Nokia, and Peramon help you bridge wireless networks and the Web for content delivery.

Sun and Airflash Collaborate to Deliver Complete Mobile Portal Solution

iPlanet™ e-Commerce Solutions, a Sun-Netscape Alliance, and AirFlash, Inc., the premier ASP of wireless location and mobile-Commerce infrastructure, are working together to architect mobile Internet solutions for content, commerce, and communication services. By linking together the communication strengths of the iPlanet Messaging Server and iPlanet Calendar Server products with the location-based content and commerce services offered by AirFlash, the two companies will make it easy for mobile operators and portals to offer powerful, profitable mobile Internet services to their customers and users.

"By synthesizing messaging and wireless services from iPlanet into an integrated solution, we can increase the reach and frequency of these services while improving the appeal to the user. It's a win-win for both mobile carriers and their customers," said Rama Aysola, founder and CEO of AirFlash.

Smart Services: A Complete Portfolio of Solutions

For service providers, the wireless revolution represents a unique opportunity for generating incremental revenue and creating additional customer "touchpoints" by making their proprietary commercial content available to mobile users. Examples include anything from online trading services through mobile phones to electronic auction participation on a PDA.

The key issues that must be addressed in exploiting this opportunity are:
• Security and privacy for network services and content
• Development tools for "wireless enabling" existing applications and content
• Business office resources such as billing and customer management software
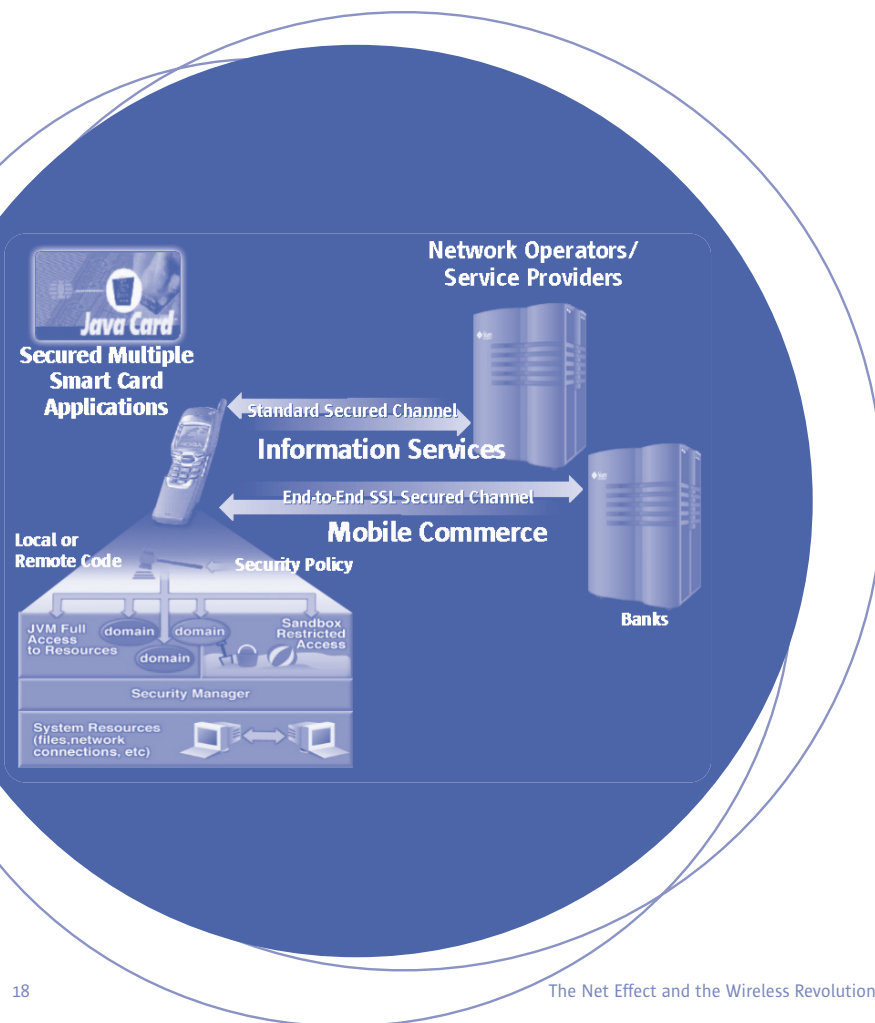
Sun and its allies fully deliver on the demands of the wireless age with a broad spectrum of solutions.

In the security arena, the Java technology "sandbox" restricts access to services and content, helping to enable users and operators to keep personal and system information separate—preventing transparent system access to a local address book for example—and insulating the device and the system from a malicious download that could crash the system and inconvenience the user.

On the development side, using Java technology lessens the burden of re-writing existing services and content to WAP. By developing in Java technology, services and content are made accessible to any device, regardless of platform, without recompiles or porting.

To handle the requirements of the business office, Sun and its allies offer a wealth of wireless service infrastructure solutions, including:
• Wireless personalization solutions from Broadvision, ATG, and Vignette: Provide content and services personalization for wireless
• Wireless billing and customer care solutions from Portal and Siebel help enable customers to develop and deliver flexible billing and e-care support capabilities
• Wireless location services from SignalSoft, CPS, and Airflash: Provide the location information for wireless devices
• Wireless content distribution solutions from Inktomi and AlterEgo: Help enable quick and on-time access to wireless content and applications
• Wireless security solutions from iPlanet and Entrust: Provide for end-to-end security in wireless services
• Wireless ASP/CSP solutions from 724 Solutions, Everypath, Aether, 2Roam, and OracleMobile: Provide application and content hosting services

See Part B, Section 2 for information on more than 50 solution vendors.

The Net Effect and the Wireless Revolution
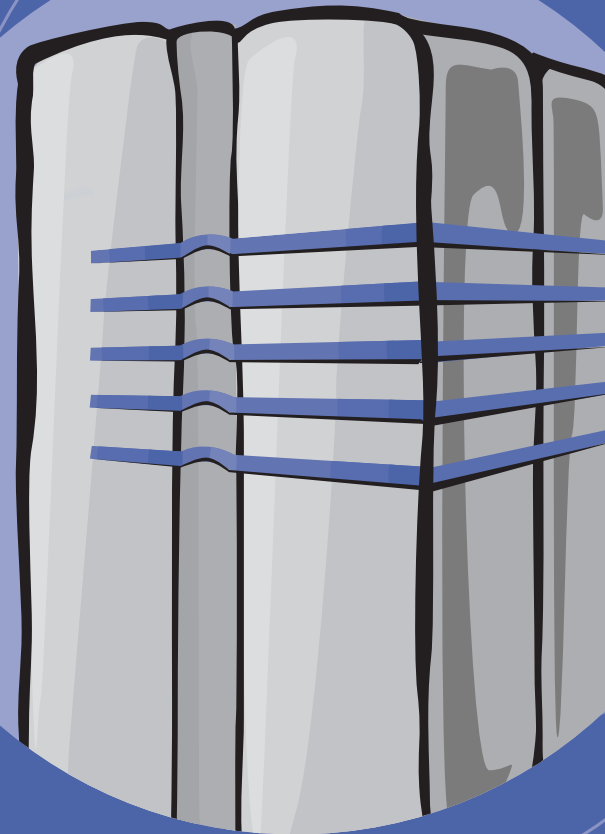
Smart Operations: Management Tools

Cutting across the four key categories of the wireless market are a series of Sun and third-party solutions that address operation and management of wireless services, including:

• Sun™ Enterprise Manager platform: Helping to ensure consistent quality of service requires constant management of all network assets. The Sun Enterprise Manager platform is already the choice of many leading wireless operators and equipment vendors for monitoring, diagnosing, and configuring their radio access networks and core networks. The Sun Enterprise Manager product brings wireless operations management centers (OMCs) into the next generation, allowing them to capitalize on the benefits of Java™ and CORBA technologies for a truly scalable, reliable management framework foundation. The Sun Enterprise Manager product's high-capacity infrastructure, support for TMN, Java technology, and CORBA standards—along with rich, easy-to-use developer APIs—have made it the management platform of choice for many radio and core network wireless infrastructure providers.

• Sun™ Management Center software: Next-generation networks also require robust management platforms for the IP infrastructure, including the management of servers and storage. Sun Management Center software brings together the best technology for managing Sun systems, instant integration with industry-leading management platforms, and a powerful

development environment that makes it easy to unite thousands of system components under a single management console.

• Forte™ for Java™ development tools: The Forte for Java integrated development environment is the first IDE that fully lives up to the scalability, extensibility, and ease-of-use of the Java platform itself. Now, with Forte for Java Community Edition software, Sun offers (for free downloading) an IDE that truly embodies the object-oriented paradigm of the Java platform. Forte for Java software offers unparalleled ease of development—including integrated visual design, editing, compiling, and debugging. And because Forte for Java software is also based upon an open API technology, it presents an infinitely extensible platform, helping enable you to extend the environment through plug-in modules provided by Sun and other third-party vendors.

Sun and NTT DoCoMo: The Sky's the Limit

Last year, NTT DoCoMo, Inc., the largest cellular phone carrier in Japan, launched the i-mode service, which offers a continuous connection to the Internet via mobile phones. Today, over 10 million subscribers use the pocket-sized phones to check e-mail and surf the Internet. The company is now looking to Java technology to help drive the i-mode service into the next phase of its development.

NTT DoCoMo currently plans to release a new handset called the 503i that will use J2ME technology. J2ME is expected to make the i-mode service even more compelling by providing enhanced security for online banking and stock trading and better capabilities for video game downloading. Ultimately, J2ME technology will deliver far more entertaining and engaging capabilities to cellular phone users. Services are expected to be introduced starting in 2001.

Take the Next Step. Get the Details

The move is on to the new world of media-rich, interactive wireless services. For network operators, service providers, innovative enterprises, network equipment providers, device manufacturers, ISVs, content providers, and integrators, Sun has emerged as the strategic advisor and platform technology vendor of choice to help you fully exploit the potential of this dynamic, growing market. As the thought leader of the Net Economy, an experienced player in wireless and telecommunications markets, and a respected and trusted vendor worldwide, Sun is uniquely qualified to help you transform the potential of this market into profits.

So get the full details on our products, services, partnerships, and programs for the wireless market. Call your local Sun representative today or visit our Web site at *http://www.sun.com/wireless*.

Part B

Products

Core solutions from Sun include:

- **Java Technology for Wireless Devices**: Java™ technology is perfectly suited for wireless devices, providing such benefits as built-in security, rich user interface, and the ability to dynamically deploy interactive wireless services.

- **Sun Enterprise™ servers**: From the single-processor Enterprise™ Ultra 5S workgroup server to the world's most powerful UNIX server, the 64-way Enterprise™ 10000 server, Sun Enterprise servers deliver the scalable horsepower you need for virtually any wireless application.

- **Sun Netra™ systems**: Sun's carrier-grade Netra servers are the ONLY NEBS-certified product family for the radio access network, and deliver unprecedented levels of availability and space-efficiency, enabling you to deploy cost-effective, standards-compliant power in any increment with full binary compatibility across the product family.

- **Sun StorEdge™ storage devices**: Sun has transformed storage from a passive resource into a strategic weapon. Our Sun StorEdge arrays and tape libraries enable you to implement Managed Storage Networks that are highly scalable, available, and manageable; that easily incorporate third-party products; and that remain open to innovation from multiple sources.

- **Solaris 8 Operating Environment**: In Solaris 8 software, Sun delivers a trustworthy, universal operating platform to meet the needs of the wireless community and their customers. The Solaris operating environment brings 64-bit computing and mainframe-class reliability, availability, and serviceability to mission-critical environments.

- **ChorusOS Operating Environment**: The ChorusOS Operating Environment provides one of the most reliable, feature-rich, real-time operating systems and development environments in the industry. Its unique componentized OS architecture allows ChorusOS configurations to scale seamlessly from very small, embedded instances (10KB) to high functionality, transparently distributed platforms.

- **Sun Cluster software**: Sun's clustering software brings a new dimension of availability to Sun systems through advanced failover techniques. Now customers can achieve extremely high levels of availability in clustered systems with a proven, cost-effective software solution.

- **cPCI products**: Sun's CompactPCI (cPCI) product line, the SPARCengine CP family, merges the benefits of the CompactPCI specification, UltraSPARC processor technology, and the Solaris operating environment. Now wireless OEMs can take advantage of volume silicon, a high-performance processing platform, and a robust, proven software environment.

Programs and Alliances

SunTone

The Symbol of Quality for Outsourced Service Delivery and Web Applications

Sun instituted the SunTone℠ Certification and Branding Program to provide customers of Web-based services, applications and integrator services with a means for identifying suppliers who meet defined high standards for providing quality service over the Internet.

The market for the delivery of business applications over the Internet is growing rapidly, with new services being delivered at an ever-increasing pace. With such growth comes the need to differentiate among the offerings. That's why Sun created the SunTone Certification & Branding Program, a first-of-a-kind collaborative industry effort to define and audit service provider infrastructure, operational practices, hardware, software, and ultimately, overall service delivery.

As customers outsource an increased variety of business applications to service providers, especially those that are mission-critical, they are demanding guaranteed security, reliability, and predictability. Wherever the SunTone Certified seal is displayed, customers can feel confident that the service or application has met the highest standards of service quality. Why? Because SunTone Certified services, applications, and integrator services

have met the stringent requirements detailed in the SunTone specifications and guidelines developed to ensure best practices are followed. Using the SunTone Certified seal as a guide, customers can quickly and confidently choose service providers that have met quality standards aimed at making Web tone as reliable as dial tone.

For Applications

The SunTone Certified program for applications is a certification and branding program that identifies quality applications that are designed to run effectively on a SunTone Certified service platform. The program specifies how to architect, develop, implement and deploy software for quality delivery over the Web in order to achieve increased availability, reliability, and performance.

For Services

Sun created the SunTone℠ Certified service certification and logo program to recognize and promote service providers' investments in process, methodology, and infrastructure — elements that enable the delivery of secure, reliable, and predictable Internet services. Using the SunTone Certified logo as a guide, customers can quickly and confidently choose service providers that have met high standards — quality standards aimed at making Web tone as reliable as dial tone.

For Integrator Services

This program certifies an Integrator's practice or professional service offering that specializes in architecture, implemenation and management design and activation of dot-com and Service Provider solutions consistent with the SunTone Service Delivery Specification. For more information, please see *www.sun.com/suntone*

iForce Initiative

For carriers launching attention-grabbing data services, content service providers defining the mobile Internet's information base, and enterprises mobilizing their work force and their business processes, the iForce initiative is a roadmap to getting the job done. A complete set of end-to-end solutions for the next iteration of wireless data services, the iForce initiative consists of a community of partners supplying best-of-breed platforms, technologies, and solutions for key segments of the wireless Internet market.

At the center of this new community are more than 50 infrastructure solutions vendors, application service providers (ASPs), content service providers and wireless e-Integrators that together comprise the complete, end-to-end capabilities required for delivering mobile commerce, communications, content and enterprise services. Based on a common

interest in solutions developed to Internet and wireless standards and an important part of Sun's strategy in the wireless market, Sun's iForce Wireless Initiative enables customers to quickly and reliably develop and deploy new and differentiated wireless Internet services. Many of these services will be simulated in Sun's iForce Ready Center in Menlo Park, Paris and Tokyo, which were designed to help customers build their online businesses and conduct proof-of-concept demonstrations of Sun and its industry partner solutions. An important part of Sun's iForce Wireless initiative is its web site (*http://www.sun.com/iforce/wireless/*), which includes a wireless partner support center and a wireless solutions guide for customers.

These segments below and the vendors represented in each are part of the current iForce Wireless Essentials solutions portfolio:

Applications and Portal Infrastructure

Art Technology Group (ATG)
ATG is a leading provider of online customer management and electronic commerce software and services. ATG offers an integrated suite of Java technology-based products, as well as related application development, integration, and support services. *www.atg.com*

blue-silicon

blue-silicon and Sun Microsystems are positioned as strong leaders of Extended Enterprise Messaging, integrating voice, fax, video, and email messages with existing corporate communication infrastructure-all delivered to wireless devices in a seamless fashion. *www.blue-silicon.com*

BroadVision

BroadVision develops and delivers an integrated e-business application suite focused on creating and extending customer relationships. Global enterprises and government entities use these applications to sell, buy, and exchange information over the Web and on wireless devices. *www.broadvision.com*

Chrystal Software

Chrystal Software provides high-performance content management solutions and software for Web and wireless-based applications. Chrystal Software's key focus is data transformation for device-independent data delivery. *www.chrystal.com*

Entrust Technologies, Inc.

Entrust is a global leader in solutions that bring trust to e-business relationships by securing and managing the transactions that constitute e-business. Through the industry's most comprehensive portfolio of trusted e-business infrastructure solutions, Entrust enables customers to secure their B2B, B2C and internal enterprise transactions and communications, as well as to manage the e-business portals through which these transactions take place. *www.entrust.com/products/wireless/index.htm*

Interwoven

Interwoven's wireless products provide a flexible framework that allows enterprises to leverage industry-leading, "intelligent" content management and delivery for wireless communications. Going forward, Interwoven will extend its existing partnerships with leading run-time delivery partners like iPlanet™ e-Commerce Solutions, a Sun-Netscape™ alliance, BEA, and ATG to empower customers to reap the benefits of the open, Java™2 Platform, Enterprise Edition (J2EE™) technology-compliant solutions for multi-device personalization needs. *www.interwoven.com*

Mediasurface Limited

Mediasurface Limited is a leading provider of integrated e-business content management software for Web sites, intranets, extranets, and emerging digital networks. *www.mediasurface.com*

NetPost, Inc.

NetPost, Inc. is pioneering e-content solutions that rapidly integrate and publish valuable content across multiple media types, such as the Web, television, Internet appliances, mobile phones, and print. Using NetPost's patent-pending TrueView solutions, e-businesses can painlessly leverage a wide range of corporate information assets, extend their customer reach, and assure high-quality company exposure. *www.net-post.com*

PeopleSoft

Together, PeopleSoft and Sun Microsystems are providing the perfect platform to transition your business into the networked dot-com age. *www.peoplesoft.com*

Phone.com

Phone.com, Inc. is a leading provider of software, applications, and services that enable the delivery of Internet-based information and voice services to mass-market wireless telephones. Using its software, wireless subscribers have access to Internet- and corporate intranet-based services, including email, news, stocks, weather, travel, and sports. In addition, subscribers have access via their wireless telephones to network operators' intranet-based telephony services, which may include over-the-air activation, call management, billing history information, pricing plan subscription, and voice message management. *www.phone.com*

Tantau Software, Inc.

TANTAU Software is a leading provider of software and services that enable enterprises to conduct high-volume, secure, mobile e-commerce transactions, while maintaining direct access to their customers. *www.tantau.com*

ThinAirApps

ThinAirApps develops a Java technology-based wireless Internet software platform and toolkit to enable secure, real-time access to data from wireless devices (Palm, Pocket PC, Symbian, and RIM handhelds; and mobile phones). ThinAirApps also provides full-featured email and groupware access products for enterprises, consumers, ISPs, ASPs, and carriers to use. *www.thinairapps.com*

Vignette Corporation

Vignette's V/5 eBusiness Platform provides a seamlessly integrated suite of mobile e-business applications that enables businesses to efficiently manage relationships with customers, partners, and employees via multiple touchpoints-including closed loop interactions via email, pages, mobile phones, PDAs, and fax machines. *www.vignette.com*

WebMethods

webMethods, Inc. is a leading provider of software solutions for business-to-business integration (B2Bi). webMethods provides Global 2000 companies and B2B marketplaces with a complete, end-to-end solution for integrating customers, suppliers, and partners into real-time B2B trading networks, while also increasing internal operational efficiencies. *www.webmethods.com*

Yospace

Yospace is a wireless Internet engineering company that employs a twenty-person engineering staff in Staines, UK and a four-person business development staff in Boston, Stockholm, and Staines. They have successfully launched several products and are known worldwide to the wireless Internet development community. *www.yospace.com*

Content and Application Services

2Roam

2Roam is a wireless Web platform provider that helps companies extend their existing content and e-commerce to all wireless devices quickly and profitably. The scalable 2Roam platform is designed to address the revenue and business goals of its customers by easily integrating wireless e-commerce, advertising, and e-marketing programs and services, while providing them with complete control of their brand.2 *www.2roam.com*

724 Solutions

724 Solutions provides an Internet infrastructure solution to financial institutions that allows them to offer personalized and secure mobile banking, investment, and e-commerce services across a wide range of Internet-enabled wireless and consumer electronic devices. *www.724.com*

Aether Systems

For Fortune 2000 businesses that demand access to vital information anywhere and anytime, Aether Systems provides end-to-end mobile and wireless solutions. Aether provides comprehensive hosting services, vertical market solutions, and infrastructure software product offerings-enabling businesses to achieve the freedom to grow in a dynamic and mobile environment. www.aethersystems.com

AirFlash

AirFlash is one of the leading application service providers (ASP) of location-relevant wireless content, community, and commerce services. Designed for carriers and portals, AirFlash provides a robust platform called SmartZone for delivering location-based services with an integrated set of easy-to-use, "Find it, Buy it, Share it" applications tuned for the mobile medium. AirFlash Wireless Services drive adoption and usage of mobile services, while providing a strategic platform for future, value-added, revenue-generating services. *www.airflash.com*

AlterEgo Networks

AlterEgo Networks is one of the leading wireless adaptive Internet service companies, offering customers for both Sun and AlterEgo the industry's most reliable, available, and highest quality of user experience in mobile access to intranet/Internet content and applications. AlterEgo offers a worldwide, multi-node wireless content adaptation and delivery network, based on XML and XSL standard technologies. *www.aego.com*

Brience

The Brience 2.0 Framework is a scalable software platform that allows companies to leverage current e-business infrastructure for mobile computing and broadband access. *www.brience.com*

Everypath

Everypath enables companies to do business with customers, partners, and employees anytime, anywhere, by mobilizing real-time, complex, transactional Web content, database information, and traditional business applications for customized interaction with the widest array of wireless, broadband, and voice devices-from PDAs to smart phones to interactive TV to plain old telephones. Everypath's patent-pending technology enables businesses to maintain a single infrastructure, regardless of what device their customers choose to access information from, now-or in the future. *www.everypath.com*

MapInfo

MapInfo offers a robust combination of location-based software and content to wireless equipment manufacturers, carriers, and business-to-business application vendors seeking to provide location-based services to their customers. *www.mapinfo.com*

OracleMobile

OracleMobile is a leading wireless application service provider that creates and hosts wireless Web sites, making them accessible from any device, including Web-enabled phones, PDAs, paging devices, digital cell phones, or voice-activated phones. *www.oraclemobile.com*

iForce Wireless e-Integrators

Agency.com

AGENCY.COM builds core applications accessed by Java™ 2 Platform, Micro Edition (J2ME™) technology-compliant devices using iPlanet™ software, supported by the Solaris™ Operating Environment, and running on Sun™ hardware. *www.agency.com*

Answerthink

As an eIntegrator, answerthink provides customized "enterprise to anywhere" mobile and wireless solutions that deploy content, network applications, security, messaging, and transactions to handheld devices for mobile and wireless users. answerthink's marketing and strategy focus can extend a company's brand experience and marketing messages to the wireless channel for customers, suppliers, and employees who demand access to information anytime and anywhere. *www.answerthink.com*

Cap Gemini Ernst & Young, Telecom, Media & Networks

Cap Gemini Ernst & Young (CGEY) and Sun Microsystems, together with CGEY's key industry business alliances, are delivering technology, service, and programs that are empowering companies working with Java™ technology to develop solutions in the wireless space. The relationship is built, and will continue to combine resources to match the needs of a diverse portfolio of customers. *www.capgemini.com/telco*

Idea Integration

Idea Integration is a leading Internet solutions provider, and has the industry and technical expertise to develop e-business solutions that allow its clients to maintain their competitive edge in today's connected economy. Idea Integration specializes in solution areas, including e-business strategy, creative design, e-application development, B2B solutions, enterprise application integration (EAI), business intelligence, customer relationship management (CRM), and enterprise solutions to deliver innovative, end-to-end, e-business solutions to Fortune 1000 companies and global businesses. *www.idea.com*

iXL's Mobile & Wireless Solutions Group
As a Sun iForce℠ eIntegrator, iXL is a global consulting firm providing the professional services necessary to implement a wide range of Sun solutions. iXL's Mobile & Wireless Solutions group helps clients use wireless technology to transform the way business gets done. *www.ixl.com*

Lante Corporation
Lante Corporation, a leading e-market builder, is developing new applications on the Internet Services Deployment Platform of iPlanet™ e-Commerce Solutions, a Sun-Netscape™ Alliance, with a special emphasis on new applications using the iPlanet Wireless Server. The initiative is focused on improving information presentation and retrieval, two of the critical building blocks for effective wireless services. *www.lante.com*

Marchfirst
marchFIRST is a leading global professional services firm that creates winners in the new digital economy by helping companies build visionary brands, business models, systems, and processes. This multidisciplinary approach empowers companies to transform their businesses, drive innovation, and become market leaders. Headquartered in Chicago, the Company has approximately 10,000 employees in 14 countries worldwide. *www.marchfirst.com*

Noblestar
Noblestar accomplishes the most difficult, highly valued dimensions of e-business transformation. By taking e-business strategies

operational, they help their clients harness Disruptive Technologies to create a competitive advantage. Noblestar experts adeptly link business and brand strategy to user experience and, ultimately, to enterprise-wide and wireless solutions. At the same time, they help clients realign processes and mine business data for intelligence to support strategic decisions. The results? Performance breakthroughs in top-line growth, cost containment, brand dominance, and employee satisfaction. *www.noblestar.com*

Proxicom, Inc.
Proxicom, Inc. is a leading e-business consulting and development company that delivers innovative multi-channel solutions, including Internet and wireless applications for Fortune 500 companies and other global, forward-thinking businesses. Proxicom's more than 1,000 strategy, creative, and technology professionals provide specialized e-business development expertise for their multiple global practices. *www.proxicom.com*

Rare Medium
Rare Medium Pervasive Solutions Group delivers end-to-end mobile and wireless solutions to its clients. Leveraging Java technology, Rare Medium provides strategic services, custom application development, integration, and content delivery to any device, any time, anywhere. *www.raremedium.com*

Sapient
Sapient is a leading creator of "New Economy" businesses, providing Internet strategy consulting, sophisticated end-to-end solutions,

and launch support to Global 1000 and startup companies. As architects for the new economy, Sapient helps clients define their Internet strategies and design, architect, develop, and implement solutions to execute those strategies. *www.sapient.com*

Zefer
ZEFER provides strategy-led Internet consulting and implementation services to Global 2000 companies and new ventures to help them achieve a sustainable competitive advantage in the new economy. ZEFER services include business strategy, user experience design, technical architecture, program management, and development of wireless solutions-multi-channeled, network-enabled solutions designed to meet clients' business requirements. *www.zefer.com*

IP Based Network Solutions

Hughes Software Systems
Hughes Software Systems (HSS) provides one of the most extensive, scalable, and portable software solution to OEMs to reduce their time to market in the high-speed wireless domain (GPRS/EDGE/UMTS). *www.hssworld.com*

Incomit
Incomit's mission is to provide "The Secure Sluice" for opening up the telecom network and for making it programmable in an Internet environment. *www.incomit.com*

Kasenna, Inc.
Kasenna develops software that enables streaming media ventures to build networks

and applications optimized for video management, distribution, delivery, and commerce. *www.kasenna.com*

Natural MicroSystems
Natural MicroSystems (NMS) provides core data and telephony technologies (line interfaces, DSP voice processing resources, integrated software API sets, and protocol stacks) to OEM telecom network equipment providers worldwide. Combined with Sun's computing and server products, NMS creates carrier-grade communications infrastructure or service delivery platforms that span today's TDM-based public switched telephone network and tomorrow's IP packet/cell-based wireless or wireline telecommunications and data communications networks. *www.nmss.com*

Performance Technologies, Inc
Performance Technologies, Inc. (PTI) is a leading supplier of innovative telecommunications and networking products that enable the convergence of wireline, wireless, and next-generation Internet Protocol networks. The company provides enabling carrier-grade technology solutions, including telecom network access adapters, Ethernet switching products, and Signaling System 7 (SS7) solutions to network operators, equipment manufacturers, and systems integrators worldwide. *www.pt.com*

SBE, Inc.

SBE, Inc., offers the HighWire family of carrier-class PCI and CompactPCI (cPCI) communications controllers for network servers. The HighWire products deliver flexible, high-density solutions that can play a key role in signaling gateways, media gateway controllers, and Softswitch systems that are critical network elements in wireline, wireless, and converging PSTN/IP network platforms. *www.sbei.com*

TimesTen Performance Software

TimesTen Performance Software delivers the real-time data infrastructure that powers next-generation networks and e-business innovation. TimesTen Performance Software's data caching and in-memory database products speed time-to-market, shrink response times, and maximize the throughput and uptime of the most time-critical applications, such as wireless infrastructures, VoIP, e-CRM, and e-commerce. *www.timestem.com*

Ulticom, Inc.

Ulticom Inc. provides service-enabling software for wireless, wireline, and Internet communications in Intelligent and Converged Networks. Ulticom's Signalware software and interface board product line is used worldwide on Sun™ platforms to manage thousands of networks, connect millions of subscribers, and process billions of transactions. Signalware includes wireless libraries to enable a full range of mobility applications deployed in TDMA, CDMA, GSM, and analog networks, and in the 3G environment of the future. Prototypes of Ulticom's new Nexworx products

expand service delivery models and may make possible the joining of wireless service providers and application service providers to achieve a Programmable Network. *www.Ulticom.com*

Xybridge

Xybridge is the leader in creating the wireless industry's first carrier-class mobility management and applications solutions for next-generation networks. Xybridge offers mobility management, call control, and features over a distributed, open IP-core infrastructure. Xybridge and its offerings empower service providers to rapidly develop and deploy differentiated, revenue-generating services in today's converging environment. *www.xybridge.com*

Java™ Enabled Handset Technologies

Bonita

Bonita Software's ToGo Mobile Solutions mobilize information and applications across all devices. The ToGo Provisioning Platform enables service providers to remotely administer, manage, and track application usage, and allows end users to download a personalized set of applications. Its ToGo Applications offer enterprise-grade security, operate in disconnected mode, and provide real-time data-eliminating the need for synchronization. *www.bonitasoftware.com*

Espial

Espial is an emerging leader in infrastructure software for the Pervasive Internet. The company offers a universal service-management solution for service providers and device manufacturers based on Sun's Java™ 2 Platform, Micro Edition (J2ME™) and Java 2 Platform, Enterprise Edition (J2EE™) technologies. *www.espial.com*

Eliad Technologies, Inc.

Eliad Technologies focuses on extending Web applications to wireless devices supporting the Java™ 2 Platform, Micro Edition (J2ME™) technology. Eliad provides table, grid, and spreadsheet components, fully compatible with Sun specifications and open architecture requirements. *www.eliad.com*

Motorola

Motorola is a global leader providing integrated communications and embedded solutions for business and consumer applications. Sun Microsystems has licensed Motorola to use and distribute the full family of Java™ platform technologies. Motorola has incorporated various Java products into their total solutions portfolio, and is collaborating with Sun Microsystems to develop Java technology standard platforms. *www.motorola.com/java*

Research In Motion Limited

Research In Motion Limited is a leading designer, manufacturer, and marketer of innovative wireless solutions for the mobile communications market. Through development and integration of hardware, software, and

services, RIM provides solutions for seamless access to time-sensitive information, including email, messaging, Internet, and intranet-based applications. RIM technology also enables a broad array of third-party developers and manufacturers around the world to enhance their products and services with wireless connectivity. *www.rim.net*

Wireless OSS/BSS

Nuance

Nuance develops, markets, and supports a voice interface software platform that makes information and services of enterprises, telecommunications networks, and the Internet accessible from any telephone. *www.nuance.com*

Portal Software

Portal Software builds the business infrastructure for the Internet by providing customer management and billing software for Internet and next-generation communication services. *www.portal.com*

Solect, A Division of Amdocs

Amdocs' Solect Division provides carrier-grade customer care, billing, and service management to ASPs, broadband, mobile IP, and next-generation service providers. *www.amdocs.com or www.solect.com*

Services

Wireless Service Offering

Sun's integrated service solutions and experi-
enced professionals can assist you with every
aspect of planning, designing, architecting,
deploying, and operating your wireless
infrastructure–24 hours a day, 7 days a week,
365 days a year. Sun works with you to help
accelerate revenue through faster deployment
of innovative, highly differentiated services;
help ensure continuous service availability to
your customers; reduce your time-to-market
and business risks; improve your ability to
mange change; maximize new investments
in technology while maximizing previous
investments; achieve and maintain SunTone
certification for your wireless infrastructure;
and grow your customer base and your
infrastructure simultaneously.