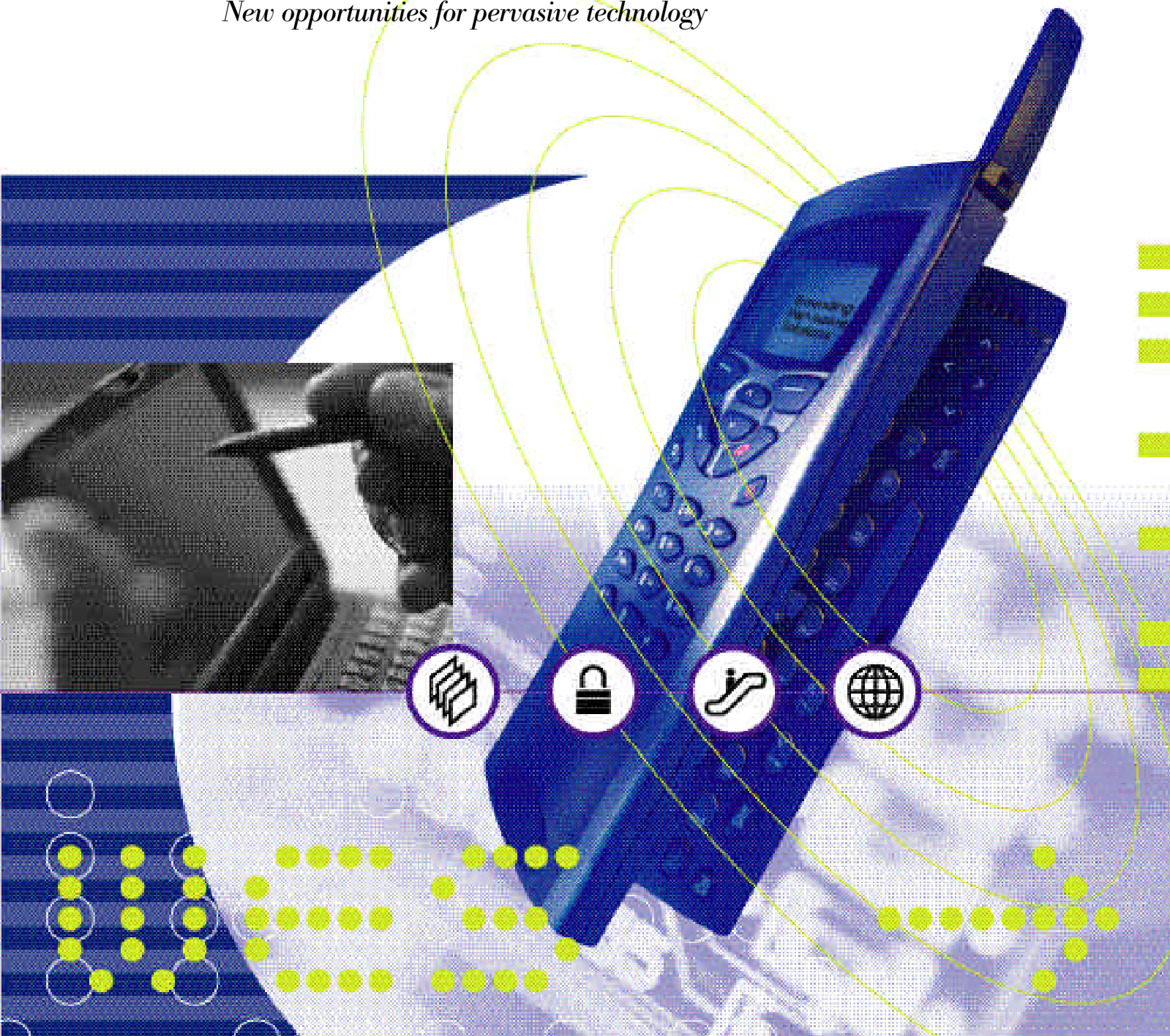




# *Information everywhere*

*New opportunities for pervasive technology*



## **The old vision of a global Internet economy was built around desktop PCs.**

The new vision adds a myriad of smaller, simpler devices — the smart phones and handheld companions carried by mobile workers; the in-vehicle information systems installed in cars; the Internet screenphones and set-top boxes in homes.

None of these will replace the PC. Rather, they broaden the total marketplace for the delivery of information. These are the devices of pervasive computing. Wired or wireless, they answer the demand for universal access to information you need.

**Pervasive computing creates a vast new market. For service providers, a market rich with opportunities to increase revenues and profits. For enterprises, an opportunity to reap even more benefits from their e-business investments and to improve the productivity of their constantly growing mobile workforces. For consumers, an opportunity to reduce complexity and improve their quality of life.**

Gartner Group predicts that by 2002, over 25% of all workers will be mobile workers. Over 108 million employees worldwide will work regularly outside their offices.

International Data Corporation (IDC) predicts that by 2002, more than half of World Wide Web traffic will be through intelligent appliances.



**Pervasive Computing: Who and what is driving the market?**

The need for simplicity and the number of people using a variety of devices to get the information they need are driving the pervasive computing market. Access to both personal and corporate information from a spectrum of devices, products that are intuitive, and network access that is invisible to the end user make up the demand.

The companies that provide services, content and applications, who have invested in e-business and clearly understand the benefits, are responding to the growing numbers of employees and consumers who want to simplify their lives.

Away from the office, mobile workers need the same corporate data they use at their desks. Wireless access is stretching the technology of corporate nets. Many companies will look to outside service providers to manage the complexities of this new environment.

Consumers use their cell phones for professional work and their household chores. They now expect to use the same pocket tools for access to the World Wide Web. The center of consumer e-commerce will shift from home PCs to easy-to-use intelligent appliances. Basic Internet services — e-mail, shopping via the Web, mobile banking and trading — will take place through Internet screenphones, set-top boxes, smartphones, PDAs (personal digital assistants) and cell phones.

Service providers who package subscriber conveniences will need to differentiate themselves. An enterprise that extends its e-business presence will grow revenue faster, improve customer satisfaction and improve mobile employee productivity.

Intelligent home appliances will popularize Internet services, particularly in countries where PC prices and complexity have been a barrier to widespread Internet use.



## Extend your reach.

The pervasive computing market is not merely a variation on existing Internet services. It's a natural extension of e-business. Pervasive devices create an opportunity to deliver new services to your existing customers and to attract new ones.

IBM WebSphere Everyplace Suite will be a solid foundation for your expansion into this market.

The services these workers and consumers need all add up to one simple thing: the ability to access important information and act on it, no matter where they are, any time they choose.

That one simple end product — information everywhere — has many components: personalized information, personalized information storage, device and subscriber management, and security and intelligent content adaptation that is smart enough to match the restrictions of the device being used, as well as its location.

These are all part of a solution that can help to build customer loyalty. The key is to bring your network and communications infrastructure into the pervasive computing era.

### **The intelligence is in the network.**

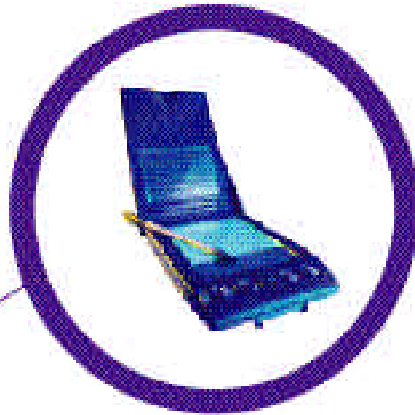
The convenience of pervasive computing devices carries several trade-offs. Screens tend to be smaller and less brilliant than PCs. Processing power and memory are traded for weeks of battery life. Wireless network connections can be slower and less dependable than LAN or standard POTS connections — making it necessary to add intelligence into the network to enable and manage the customer experience. This provides an opportunity to capture new revenue for value-added services and increase network usage at the same time.

The price of admission to this market is a secure, reliable, flexible IT infrastructure that can scale to the enormous number of new network-connected pervasive devices that are coming. IBM WebSphere Everyplace Suite for pervasive computing is designed to provide that and much more. It will be an extension of the foundations of e-business allowing you to:

- Preserve your existing infrastructure assets.
- Extend your existing applications to support new services and new devices.
- Continue to leverage open standards.
- Integrate new technology gracefully.

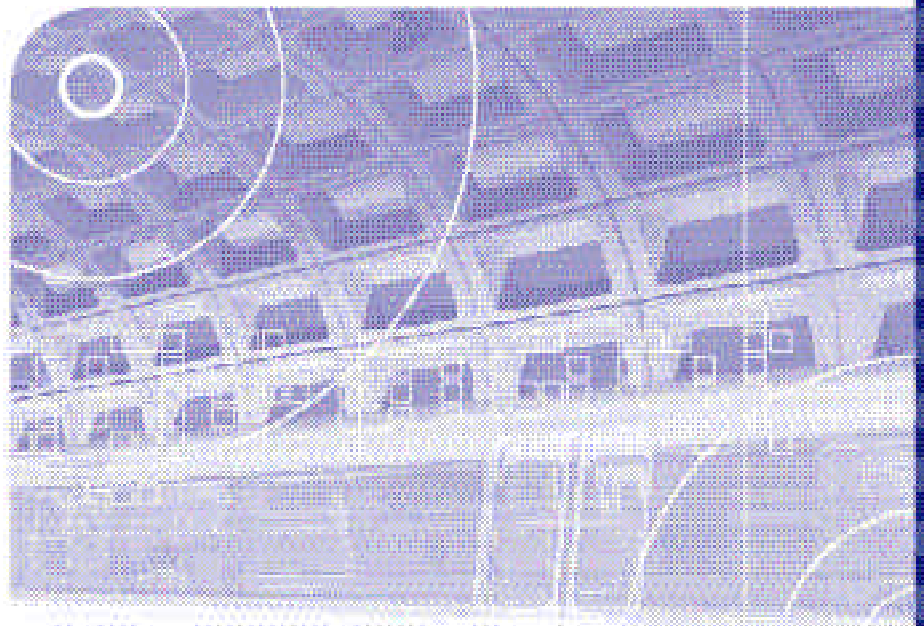
“For large organizations that need to address complex application development needs that encompass the Web, there remains only one alternative: IBM.” — *International Data Corporation*

“The common goal is everybody's software, running on everybody's hardware, over everybody's network.” — *Lou Gerstner, Chairman and CEO, IBM*



IBM WebSphere Everyplace Suite will bring together a comprehensive set of technologies to help enable clear access to pervasive services. It's an open, modular solution that will leverage your existing assets. It will offer a controlled, managed way to give your customers and employees access to your information, services and products.

Because of the modular architecture of IBM WebSphere Everyplace Suite, IBM can work with you to identify the components that will work best with your existing infrastructure, giving you the ability to preserve your investment in legacy assets and optimize their use.



**IBM Systems Management**

**IBM Secure Transaction**



## A growth strategy for the explosion

IBM WebSphere Everyplace Suite will help extend IBM's Application Framework for e-business to the exploding market for pervasive devices.

The IBM WebSphere Everyplace Suite will accommodate multivendor, multi-platform solutions as well as a broad range of IBM offerings. Its foundation is the use of cross-platform languages and methodologies, such as Java™ and Enterprise JavaBeans™, support for common Internet protocols, and other standards such as the Wireless Application Protocol (WAP).

### IBM WebSphere Everyplace Suite: a foundation for extending e-business

#### Connectivity Gateways

The connectivity gateway is the first entry point to the network for pervasive devices. The IBM WebSphere Everyplace Suite will accommodate a variety of wireless connectivity gateways, including WAP, GSM, CDMA, TDMA and TCP/IP.

The IBM WebSphere Everyplace Suite will support products from IBM, products from our industry partners and products from wireless switch suppliers. IBM will offer a WAP Gateway and our SecureWay Wireless Gateway to handle all wireless and wired (including dial-up) connectivity requirements. With SecureWay Wireless Gateway, access to existing and new applications is secure, immediate and optimized — therefore dramatically reducing the cost, complexity and time required to implement comprehensive solutions.

#### Content Handling

##### *Content transformation*

Pervasive devices come in all shapes and sizes with different keyboard/key-pad configurations, different display capabilities and different amounts of memory. Rewriting the data being sent to all these different devices IS NOT the answer ... at least not manually rewriting it. WebSphere Transcoding Publisher recognizes the capabilities or limitations of the device which is accessing the data and modifies/customizes the screen content sent to each type of device.

Intelligent content handling is one of the most important technologies of the pervasive era, especially as the content in question expands to include voice and video information.

##### *Data synchronization and messaging*

The IBM WebSphere Everyplace Suite will provide data synchronization as well as asynchronous communications (including reliable messaging), in order to enable off-line productivity. It will manage the automatic exchange and updating of e-mail, scheduling information, corporate databases and business applications such as order taking, order confirmation and inventory control with all the devices which might be used to access this information. This is a key technology for corporate customers, with a high level of demand to keep mobile workers productive with the information they need.

## Device & Subscriber Management

In the world of pervasive computing, a single device may have multiple users, such as family members sharing a screenphone or set-top box, and some people using multiple devices, such as a mobile user connecting from one of several different devices.

A key function of IBM WebSphere Everyplace Suite will be to manage devices separately from subscribers. Device management includes monitoring usage and provisioning access. In the IBM WebSphere Everyplace Suite, these processes will be based on Tivoli Subscription Manager™ (TSM) technology which frees your network administrators from the details of routine, maintenance operations. This technology lets you upgrade services, or download new applications by a single action from a single management point.

Subscriber management is the means by which ISPs, NetGen companies, carriers and enterprises can enroll, authenticate and service individual subscribers. It includes Web-based customer support tools and features to personalize services as well as usage information for off-line billing applications. Tivoli Subscriber Manager (TSM) technology helps you build loyalty by providing each user with an authenticated personal space with individual mail services, bookmarks and other features.

The software also incorporates a subscriber information database. Because it supports targeted content delivery and profile-based ad insertions, you can mine the data to generate added revenue from advertisers.

## Security

Security matters because it is about *trust*. When the public Internet is used to convey confidential information, security becomes even more important. And when that information is transmitted from a highly portable device, security becomes critical.

The IBM Websphere Everyplace Suite will provide for integration of firewall and virtual private network (VPN) technology to make secure use of the public Internet back-bone in your data communications network. VPNs also need to support the Internet Protocol Security (IPSec) standard to maintain interoperability between multiple vendors and multiple platforms. The IBM eNetwork VPN solution is an open, standards-based model that effectively reduces security risks associated with remote access.

## Optimization

With the exponential growth in pervasive devices, scalability is an absolute requirement for handling heavy traffic, peak hit rates and future growth. WebSphere Performance Packs are part of the solution, as well as load-balancing software that distributes traffic dynamically among multiple systems. They enhance Web server performance, improve availability, decrease your network bandwidth demands and accelerate end-user response time.



## The future is open.

Open communications standards and protocols are essential to the future of the entire industry. IBM has joined forces with other leaders in the IT and Telecom industries to develop and promote key standards initiatives, and IBM products support open standards. We have built cross-platform versatility into every component of the computing and networking infrastructure.

### The early bird...

IBM is recognized worldwide for its technology leadership. In the world of e-business, IBM started early as one of the first to create a comprehensive, open, cross-platform framework for getting real work done over the public Internet.

In addition to our hardware and software offerings, IBM delivers experience and expertise in:

- Consulting
- e-business application development
- Systems integration
- Hosting and outsourcing

### IBM is ready and able to help you enter the world of pervasive computing.

We can help you develop the right strategy and the right infrastructure to extend your e-business presence, providing universal access to information anytime, anywhere.



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