

**Development solutions for device manufacturers,
service providers and enterprises**

October 2003



Extension Services for WebSphere Everyplace.

*Extending e-business beyond
traditional boundaries.*

Contents

- 2 Introduction**
- 3 Extension Services for WebSphere® Everyplace**
 - 3 – *What is it?*
 - 3 – *What does it do?*
 - 3 – *Why is it important?*
- 4 Opportunities for extending the enterprise**
 - 4 – *Personal mobile*
 - 4 – *Automotive electronics*
 - 5 – *Residential fixed*
 - 6 – *Commercial fixed*
- 6 Extension Services for WebSphere Everyplace key components**
- 7 Why the OSGi Service Platform**
- 8 Summary**
- 8 For more information**

Introduction

It's the next 'big thing' in anywhere, anytime communications – the extension of e-business applications and services to millions of pervasive devices. This natural evolution to e-business on demand is already bringing us more of what we need, when we need it, no matter where we are.

This market, estimated to be worth tens of billions of dollars over the next several years, holds enormous potential for makers of 'intelligent' devices and information service providers, both of whom can differentiate their products and drive revenues with extension capabilities. Enterprises, meanwhile, stand to reap huge rewards in mobile field force and customer relationship management (CRM) services and general workforce productivity gains. Likewise, consumers will see many new conveniences delivered to the myriad of embedded devices now populating the pervasive universe – everything from mobile phones and personal digital assistants (PDAs) to set-top TV boxes in the home and telematics systems in the car.

IBM is at the vanguard of extending e-business into the realm of pervasive computing. Using our expertise with complex information technology (IT), IBM has created a comprehensive software platform that enables on demand delivery of services and applications to the broad expanse of pervasive devices including those in mobile and wireless environments. Based on deep open standards, the IBM platform is designed to deliver more functions, more services, to more devices – and do it faster and at a lower development cost than competing proprietary solutions. Notably, IBM enables multiple applications and services to run on virtually any device, even when disconnected from the network.

This white paper discusses how IBM is helping enterprises, service providers, carriers, systems integrators and device manufacturers extend e-business applications to the edge of the network. It explains the role of Extension Services for WebSphere Everyplace and other key application development offerings in the WebSphere software family, and how these technologies can provide you with the right platform and the right tools to enable delivery and management of applications or services to millions of pervasive devices worldwide.

Extension Services for WebSphere Everyplace

What is it?

Extension Services for WebSphere Everyplace is an integrated middleware and tooling platform enabling connection independent delivery and management of applications or services, including extension of Java™ 2 Enterprise Edition (J2EE™) and portal services to pervasive devices.

What does it do?

Extension Services for WebSphere Everyplace extends e-business beyond traditional boundaries by allowing users to remotely download only required portions of the application and data such as business logic, Web pages, Web forms and XML forms needed to work offline and complete transactions over a secure virtual private network (VPN) connection – whether connected, disconnected or intermittently connected to the network. It provides an open standards-based platform, enabling partners and device makers to extend the J2EE/WebSphere programming model to wireless devices and leverage existing J2EE developer skills to create rich, powerful enterprise and subscriber applications for pervasive devices.

Why is it important?

No matter your business – device manufacturer, enterprise, carrier, service provider or platform integrator – Extension Services for WebSphere Everyplace offers many advantages. For starters, it extends new and existing J2EE applications to new devices using a common programming model, existing developer skills and Eclipse.org open source and WebSphere Studio software tools. Because Extension Services for WebSphere Everyplace is built on open standards and is operating system independent, it has a greater affinity to work with multiple platforms and more enterprises – expanding the market opportunity for device manufacturers, independent software vendors (ISVs) and service providers.

Also, because the components are standardized, less custom code needs to be written to deliver fully functioning Web services, thereby reducing development work and lowering costs dramatically.

Of significance, Extension Services for WebSphere Everyplace has broken through the 'browser barrier,' enabling the storing and forwarding of information on devices that are intermittently connected to the network. Now end users no longer have to worry about maintaining a persistent connection with the server. This platform will move a disconnected application to the device, allowing it to run on the device, with the same browser and tools, just as it did from the server.

Opportunities for extending services to devices

Personal mobile (in-hand)

PDA's, mobile phones and smart phones represent a growing market for extending personal convenience software, business applications and various services such as messaging, notification alerts, content aggregation, mobile portlets and location-based services. For the enterprise, the Extension Services for WebSphere Everyplace technology is capable of providing more functionality, more services and a more consistent and flexible user interaction model for personnel in the field. Likewise, device/equipment manufacturers use the technology to enhance and differentiate the capabilities of their devices, enabling them for higher value data services and driving the potential for higher sales and revenues.

M-commerce promises to revolutionize the way business is done by providing a new channel for existing services and extending the reach of products to customers, wherever they are, 24 hours a day, seven days a week.

Automotive electronics (in-vehicle)

The in-cabin automotive electronics marketplace is active and growing (telematics, and other in-vehicle information and entertainment systems). New generations of vehicle information systems are merging entertainment functions with traditional telematics functions, such as roadside assistance, to deliver an integrated, uncluttered yet powerful interface to drivers and their passengers. Today's automotive industry is looking to Extension Services for WebSphere Everyplace to refine in-vehicle information systems as a way to deliver more value to their customers and generate new revenue streams. This platform helps developers build – and service providers deploy and manage – embedded telematics applications and services with more functionality at less cost.

Diagnostics provides another excellent example of the value of Extension Services for WebSphere Everyplace. Instead of having your car towed in when the 'check engine' light comes on, the vehicle can contact the diagnostic service center, download diagnostic routines to better pinpoint the issue and determine whether immediate service is needed. In the future, issues associated with embedded control units may be resolved with new software bundles delivered over the network and installed via Extension Services for WebSphere Everyplace.

The ability to provide future enhanced features and services, including corrective service, is helping fuel growth of the telematics market. Extension Services for WebSphere Everyplace will help telematic service providers and vehicle manufacturers deliver more value to their customers and generate new revenue streams.

Residential fixed (in-home)

The in-home market for pervasive computing includes entertainment, home automation and small office/home office (SOHO) and home automation applications. Extension Services for WebSphere Everyplace enables service providers to incorporate new functionality for set-top boxes or service gateways that aid the delivery of applications and services for specific markets. Extension Services for WebSphere Everyplace can allow broadband service providers to deploy a single framework for the on demand management, billing and provisioning of entertainment, communications and home automation applications into residences.

Commercial fixed (in-machine)

Extension Services for WebSphere Everyplace supports more effective and efficient data collection, data analysis and report-by-exception-messaging to WebSphere software back-end systems. Such capabilities deliver intelligent integration of the operational IT and business knowledge environments. This Extension Services for WebSphere Everyplace technology enables developers of embedded commercial devices to leverage high feature tooling capabilities to rapidly develop, deploy and update commercial applications based on open standards.

Extension Services for WebSphere Everyplace key components

Extension Services for WebSphere Everyplace is an integrated combination of embedded middleware, tools, the IBM WebSphere Micro Environment Java Virtual Machine and the IBM Service Management Framework. Some of these components are:

- IBM WebSphere Micro Environment is an embedded Java runtime environment that enables the efficient execution of Java applications on small devices and act as the foundation for extending e-business to these devices
- IBM Service Management Framework is an implementation of the OSGi™ Service platform for remotely deployed service applications
- IBM WebSphere MQ Everyplace extends robust messaging to fragile mobile and wireless networks to address the problem of intermittent network connectivity
- IBM DB2® Everyplace is a relational database and enterprise synchronization server that enables enterprise applications and enterprise data to be extended to mobile devices such as personal digital assistants (PDAs) and smart phones
- WebSphere Studio tools including IBM WebSphere Studio Device Developer and IBM WebSphere Studio Application Developer support the development of end-to-end solutions. The tools are built on the Eclipse architecture that allows for a plugin environment across vendors and products for the development of server, device and distributed applications.

Why the OSGi Service Platform?

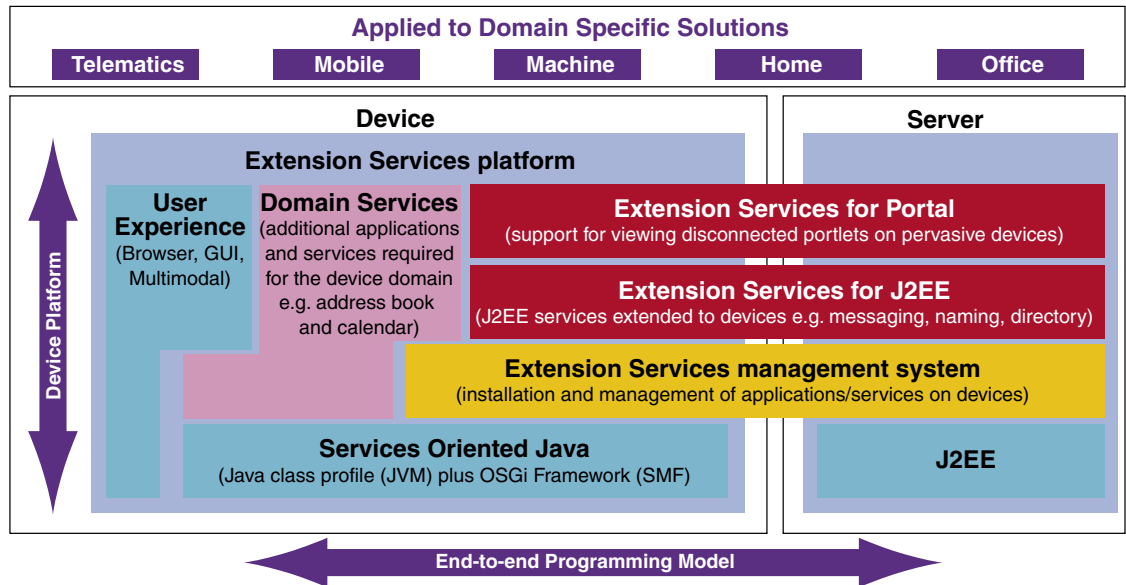
The future growth of the e-business marketplace depends on open standards. As the Internet and the business IT infrastructure keep growing, and as the number of devices to be connected continues to multiply, their integration and maintenance are critical needs.

In effect, standards create common platforms, and when organizations like the OSGi Alliance create truly open and useful specifications, reference implementations and test suites, the entire value chain – application developers, device developers, service providers and enterprise customers – benefit from the playing field established. Openness creates flexibility. Flexibility creates the freedom to develop new solutions, services and devices.

The OSGi Service Platform is an industry plan for a standard way to deliver, install and maintain applications and services on devices that can connect to the Internet. In the world of application developers, the OSGi framework provides the maintenance architecture to update and deploy applications to continually running devices, where applications may have to be swapped in and out or updated on-the-fly. The framework also includes guidelines for how applications are updated in a structured and dependable way.

Extension Services for WebSphere Everyplace

An integrated middleware and tooling platform enabling connection independent delivery and management of applications or services, including extension of J2EE and portal services to pervasive devices



More than 30 leading technology companies, including IBM, worked within the OSGi Alliance and developed the OSGi Service Platform specifications working together to define open standards for the delivery, installation and maintenance of software over networks.

IBM has created an open, standards-based architecture to span multiple device platforms—enabling the extension of many new services to billions of devices.

Summary

The extension of networked-based applications and services to a new class of 'intelligent' devices enables millions of people to gain convenient access—anytime, anywhere—to important information, on demand. And do more things with these devices and appliances, in the home, on the road, at work or leisure.

But extending e-business to millions of devices does not happen in a vacuum. It takes integrated servers, middleware, device software, education and support from business associates, system integrators and a development community.

Today IBM is focused on providing the embedded community with infrastructure and enablement middleware that simplifies the work of developers. We bring to market a compelling device platform that is an industry-leading, best-of-breed technology. And we support open standards that create a level playing field and stimulate innovation. With Extension Services for WebSphere Everyplace, we can provide all the tools you need to create an appealing Web services portfolio and capture a share of today's multi-billion-dollar pervasive opportunity.

For more information

Extension Services for Websphere Everyplace technology is available now and will be implemented in various WebSphere offerings. If you would like an evaluation license or trial code for review, please contact your IBM representative. To learn more, please visit:

ibm.com/pvc/embedded



© Copyright IBM Corporation 2003

IBM Corporation
8051 Congress Avenue
Boca Raton, Florida 33487
U.S.A.

Produced in the United States of America
11-03
All Rights Reserved

DB2, the e-business logo, IBM, the IBM logo and WebSphere are trademarks of International Business Machines Corporation in the United States, other countries, or both.

Java and J2EE are trademarks of Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Other company, product and service names may be trademarks or service marks of others.

References in this publication to IBM products or services do not imply that IBM intends to make them available in all countries in which IBM operates.

This paper discusses strategy and plans which are subject to change because of IBM business and technical judgments.

All statements regarding IBM future direction or intent are subject to change or withdrawal without notice and represent goals and objectives only.