A next-generation integration platform optimized to support service-oriented architectures that extend and integrate your existing IT assets
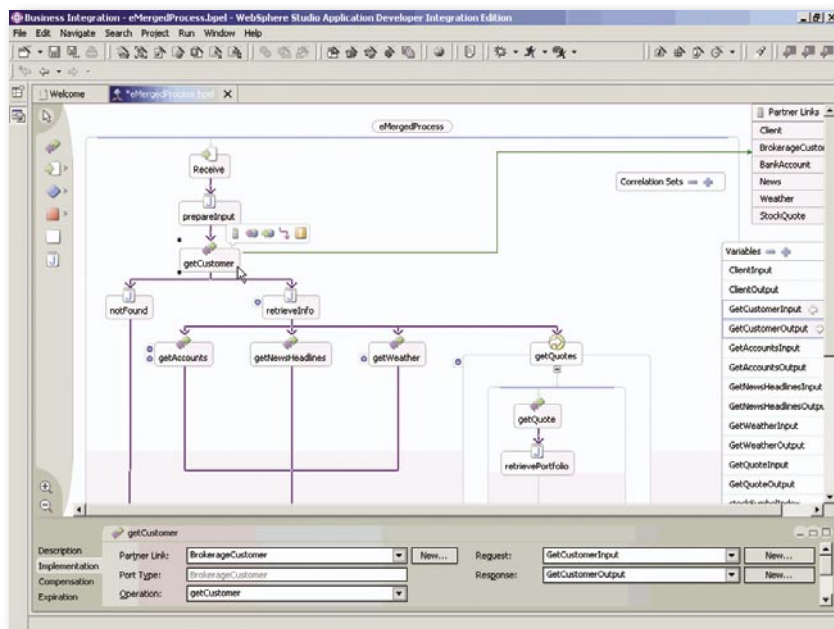
IBM

WebSphere® software

IBM WebSphere Business Integration Server Foundation and IBM WebSphere Studio Application Developer Integration Edition, Version 5.1 for Multiplatforms

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Highlights

■ *Maximizes your ROI by creating easily reusable services from existing Web services, Java assets, back-end systems and packaged applications*

■ *Improves your IT responsiveness by leveraging a service-oriented architecture to build modular applications designed to adapt quickly to change*

■ *Expands the reach of your existing systems using a broad portfolio of rich application and technology adapters*

■ *Maximizes productivity by enabling you to construct new process-based applications using drag-and-drop development tools*

■ *Minimizes your development, deployment, administration and training costs by building on the industry-leading, standards-based WebSphere platform*

Today's enterprises face constant pressure to create new applications that cut costs, build customer loyalties and help them gain competitive advantage. But companies also face a growing challenge as they explore new e-business initiatives. The past 40 years of IT evolution have left an enterprise-computing infrastructure that is heterogeneous, widely distributed and increasingly complex. Business logic and application data are often scattered throughout enterprises across multiple software assets. Much of this business logic can reside in databases, packaged applications, such as enterprise resource planning (ERP) systems, and back-end systems, like IBM CICS® applications. Or it can be found in existing Java™ and Java 2 Platform, Enterprise Edition (J2EE) applications and Web services.

WebSphere Business Integration Server Foundation and WebSphere Studio Application Developer Integration Edition can help you simplify your organization's integration tasks.

Companies also face constant pressure to create new applications that integrate business logic and application data—within the organization and with suppliers, partners and customers—to cut costs, build customer loyalty and gain competitive advantage. However, this integration remains complex, expensive and risky. Instead of reinventing the development process with every new application you build, you want to leverage open-standards-based technology and the flexibility of a service-oriented architecture. This enables you to build and deploy composite applications that make it easy to reuse your existing infrastructure—and that can adapt as your business needs change.

IBM WebSphere® Business Integration Server Foundation, Version 5.1 and IBM WebSphere Studio Application Developer Integration Edition for Linux and Windows, Version 5.1 provide a next-generation integration server and a development environment designed to deliver composite e-business on demand™ applications. These products can simplify integration tasks, accelerate large-scale application development and enable real-time application flexibility.

Maximize the return on your IT investments

Building new applications that integrate business logic and application data within your organization and with suppliers, trading partners and customers is critical to your company's success. Web services have revolutionized this process by providing an open, universal standard for integration, enabling you to reduce complexity and cost while minimizing your risk. In the past, integration was tightly coupled, so that an application that called a remote network was tied strongly to that network by the function call it made and the parameters it requested. This fixed interface offered little flexibility or adaptability in changing environments or needs.

A service-oriented architecture can leverage open standards to represent nearly all software assets as services, including legacy applications, packaged applications, J2EE components or Web services. This architecture provides integration flexibility by using XML to describe any and all data in a truly platform-independent manner to support exchange across systems—and moving toward loosely coupled applications. With

Web services and service-oriented architectures, you can represent and interact with software assets without having to spend time working with unique interfaces and low-level application programming interfaces (APIs). Individual software assets become building blocks that you can reuse to help reduce the time and costs of developing new e-business applications.

Using a service-oriented approach to integration, IBM WebSphere Business Integration Server Foundation and IBM WebSphere Studio Application Developer Integration Edition can help you get the most out of your existing IT infrastructure by reducing the complexity, cost and risk of integration. This single, simple Web services-based framework gives you a robust platform to build, deploy and manage composite on demand applications by combining an application server with a process engine and an enterprise service bus—supported by an integrated development environment (IDE).

Maximize developer productivity

Compounding the pressure you face to quickly build and deploy new business logic is the necessity to help your organization remain competitive by lowering costs and increasing operational efficiency. To do this, you must unite disparate applications, systems and people across your enterprise to improve business-process efficiency and effectiveness.

Once you've created services from your organization's software assets and back-end systems, the next logical step is to include these assets as part of a business process. Business Process Execution Language for Web Services (BPEL4WS) is an industry standard for orchestrating discrete services as end-to-end business processes. BPEL4WS defines a model and a grammar for describing the behavior of a business process based on interactions between the process and its partners. It provides a portable framework for implementing complex processes by creating and wiring together different activities that can, for example, perform Web services invocations, manipulate data, throw faults or terminate a process.

WebSphere Business Integration Server Foundation and WebSphere Studio Application Developer Integration Edition deliver native support for BPEL4WS, including:

- *Application assembly, deployment and run-time support for BPEL4WS language-based business processes.*
- *Intuitive drag-and-drop tools to visually define the sequence and flow of BPEL4WS business processes.*
- *A visual business-process debugger to step through and debug BPEL4WS business processes.*
- *Compensation support that provides transaction rollback, to support loosely coupled business processes that can't be undone automatically by the application server.*
- *Flexibility to develop processes using a top-down, bottom-up or meet-in-the-middle approach.*
- *A standards-based (XPATH/XSLT) transformation wizard to map data between nodes in a process.*
- *Integrated fault handling to provide an easy and integrated means of performing in-flow exception handling.*
- *A visual condition builder allowing you to easily direct the execution of BPEL4WS processes.*
- *Support for including Java snippets and artifacts as part of a business process.*

WebSphere Business Integration Server Foundation and WebSphere Studio Application Developer Integration Edition help you avoid coding with ready-for-execution process definitions. Enabling you to leverage this robust, BPEL4WS-based choreography function to unify and automate your business processes with a single integration run time and a common tooling environment based on open standards.

Improve your IT responsiveness

Maintaining competitive advantage in today's changing business environment requires your organization to respond quickly to customer demands, market opportunities and external threats. Very often this means making frequent updates to e-business applications to reflect changes in market conditions or to provide access to strategic information — a process that can take a great deal of time. Time to bring down the application, to make programming changes, to test the new application and then to redeploy.

As the next logical step in the adoption of Web services, service-oriented development of applications (SODA) leverages the universality of Web services to reduce the cost and complexity of large-scale application development, enabling IT to respond at the speed of business change. SODA uses Web services to give you a standard way of representing and interacting with all your software assets. As a result, these software assets can become building blocks you can reuse to create complex systems from simple components, enabling you to maximize your company's existing IT investments.

The resulting loosely coupled composite applications are independent of language and separate from implementation, and can easily adapt to changes in systems or business conditions. You can develop and modify individual software assets independently without affecting their ability to interoperate — so you can focus on your core competencies. You can use a CICS service without having to understand the underlying implementation. And you can build complex applications without having to spend valuable time working with unique interfaces and low-level APIs.

WebSphere Business Integration Server Foundation and WebSphere Studio Application Developer Integration Edition take advantage of open standards and the flexibility of a service-oriented architecture to help you build and deploy composite applications. The applications assemble and choreograph many existing and reusable application components or services, such as a remote SAP application, an IBM DB2® database or a local Java program, from inside and outside the enterprise.

To further enhance real-time application flexibility, WebSphere Business Integration Server Foundation and WebSphere Studio Application Developer Integration Edition offer business-rule beans that can provide a powerful real-time framework to define, execute and manage business rules. Rules that encapsulate business policies, which can vary based on changes in the business environment. For example, a simple business rule might be, "If a customer's shopping cart is greater than $X, then offer a Y percent discount." You also have the option to define start and end dates,

establishing the time period that the rule will be in effect. Once the business rule is defined, a developer or a business analyst can update the business rule at run time, using a straightforward user interface without the need to shut down the server.

Automate workflow processes to streamline operations
WebSphere Business Integration Server Foundation and WebSphere Studio Application Developer Integration Edition human-workflow support expands the reach of BPEL4WS to include activities that require human interaction as steps in an automated business process. Business processes involving human interaction are interruptible and persistent (a person may take a long time to complete the task), and resume when the person completes the task. Human workflow support includes:

- *Staff activity nodes to represent a step in a business process that is performed manually.*
- *The ability to assign people to specific instances of a process through staff queries that can be resolved at run time using an existing enterprise directory.*

- *A GUI to query, claim, work with, complete and transfer work items to another user.*
- *Work-item management support that enables you to create, transfer and delete work items.*
- *Setting of duration and calendar attributes for staff activities.*

Robust back-end system connectivity

Often the biggest obstacle to creating a unified business process is the need to reuse the business logic contained in existing applications. Since its inception, the J2EE platform has made huge strides in providing enterprise-level support for messaging, security and database-access integration. Now, the Java Connector Architecture (JCA), Version 1.0 standard offers support to integrate packaged and legacy applications. WebSphere Studio Application Developer Integration Edition provides integrated, open-standards-based support for building Web applications and BPEL4WS business processes that integrate with back-end systems, including:

- *Integrated tool support for using JCA resource adapters to access back-end systems.*
- *Enhanced tool integration for JCA adapters with tool plug-in extensions (available from IBM and IBM Business Partners).*
- *Easy-to-use tools that let you create services from JCA resource adapters and include these services as part of a BPEL4WS process.*
- *Enhanced JCA resource adapters included for CICS, IBM Host On-Demand and IBM IMS™ (for development use only).*
- *Sophisticated wizards to manage the low-level data-handling requirements for JCA resource adapters.*
- *Wizards to quickly and simply expose CICS or IMS programs as enterprise services, including the ability to import definitions from COBOL, C structures, CICS basic mapping support (BMS) and IMS Message Format Service (MFS) definitions.*
- *Support for the entire suite of WebSphere Business Integration Adapters and a rich partner ecosystem providing hundreds of additional JCA resource adapters.*
- *Support for standard Web services.*

WebSphere Business Integration Server Foundation and WebSphere Studio Application Developer Integration Edition minimize your risk by letting you more easily extend service-oriented processes to your existing systems, using open-standards-based application adapters for popular enterprise information systems, such as SAP and CICS. Leveraging the service-oriented architecture, you can create services from application adapters for inclusion in a composite application or business process.

Minimize development, deployment, administration and training costs

Leveraging open-standards-based technology lets you connect and integrate disparate systems — and allows IT resources to become more modular. You can connect your enterprise with other enterprises, other business processes, other applications and billions of pervasive computing devices. You also have the flexibility to choose from best-of-breed solutions and to have your systems work with infrastructures from a range of vendors.

WebSphere Business Integration Server Foundation builds on best-in-class IBM WebSphere Application Server to deliver a robust, standards-based integration platform. A platform that exploits the common WebSphere software platform, development tools and administration model to minimize development and administration costs, and protect your infrastructure investments.

Common installation and management tools offer easy-to-manage administration and varied workloads from within a single environment. Unprecedented scalability makes it easy to expand or reduce your server workload capacity with minimal or no effort. And IBM provides access to leading-edge expertise through a flourishing ecosystem of solution providers and developers that enables you to capitalize on the IT and industry best practices built into all WebSphere software offerings.

WebSphere Studio Application Developer Integration Edition builds on the industry-leading WebSphere Studio development environment to provide a single, integrated, extensible application-development platform for building, testing and deploying e-business on demand applications.

Founded on open technologies and built on Eclipse, WebSphere Studio provides a flexible, portal-like integration of multilanguage, multiplatform and multidevice application-development tools that can help you maximize developer productivity, increase potential return on investment (ROI) and improve overall time to value.

WebSphere Business Integration Server Foundation and WebSphere Studio Application Developer Integration Edition support open-standards-based technologies, such as Web services, XML, BPEL4WS and J2EE, to provide interoperability and portability of implementations and skills across platforms. You can leverage this function to minimize your training and development costs, maximize your choice of solutions and protect your infrastructure investments.

WebSphere Business Integration Server Foundation, Version 5.1 includes all of the features available in IBM WebSphere Application Server Network Deployment, Version 5.1.

- J2EE, Version 1.3 support (support for some features planned for J2EE, Version 1.4)
- Full XML support
- Full Web services support
- Support for private Universal Description, Discovery and Integration (UDDI) registries
- Web Services Gateway
- Database connectivity
- Embedded HTTP server
- Web server plug-ins
- Authentication and authorization for highly secure access to Web resources
- Single sign-on and support for Lightweight Directory Access Protocol (LDAP)
- Java Message Service (JMS) support
- Dynamic caching
- IBM Tivoli® Performance Viewer
- Integration with third-party performance management tools
- Browser-based administration and workload management
- Intelligent workload distribution across a cluster
- Failure bypass
- Clustering support
- Migration support

WebSphere Studio Application Developer Integration Edition, Version 5.1 provides a set of cohesive tools in a single development environment for service-oriented business process applications.

- Eclipse technology-based workbench
- Team development support
- BPEL4WS process designer
- Web services tools
- XML tools
- Relational database tools
- Web-site development tools
- Java programming to support the J2EE specification
- Application testing and debugging tools
- Application assembly and deployment tools
- Tracing, monitoring and performance-analysis tools
- All features available in WebSphere Studio Application Developer, Version 5.1.1

Enable next-generation application development

One of the primary benefits of J2EE technology is the functionality that each revision of the specification brings. However, developers often require more control over their applications than J2EE specifications provide. For these developers, WebSphere Business Integration Server Foundation, combined with WebSphere Studio Application Developer Integration Edition, enables next-generation development by leveraging the latest J2EE innovations to provide greater control over application development, execution and performance than ever before possible. These innovations include:

Asynchronous beans support

Offers exceptional performance enhancements for resource-intensive tasks by allowing execution of a single request as multiple tasks, or threads, processed in parallel within the J2EE environment. Asynchronous scheduling facilities can also be used to process parallel processing requests in batch mode at a designated time.

Startup beans support

Allows automatic execution of business logic when an application starts or stops. For example, startup beans might be used to prefill application-specific caches, initialize application-level connection pools or perform other application-specific initialization and termination procedures.

Scheduler service capabilities

Minimizes IT costs and increases application speed and responsiveness by maximizing existing computing resources. Scheduler service provides the ability to process workloads using parallel processing, set specific transactions as high priority and schedule less time-sensitive tasks to process during low-traffic or off hours.

Object pools support

Increases application performance by allowing reuse of object instances, potentially reducing overhead. Creating an object pool allows an application to obtain an instance of a Java object and return the instance to the pool when the application has finished using it.

Last participant support

Provides automated coordination for transactions to help eliminate manual coding necessary to include one-phase commit resources — common for many legacy and package applications — in real transactions.

Internationalization service

Allows you to automatically recognize a client's time-zone and location information, so your application can act appropriately. This technology helps you deliver the right date and time information, the appropriate currencies and languages, and the correct date and decimal formats.

Work areas
Provide a global-variable ability to efficiently share information across a distributed application. For example, you might want to add profile information as each customer enters your application. By placing this information in a work area through numerous application interfaces, it becomes available throughout your distributed application and eliminates the need to hardcode a solution or to read and write information to a database.

Activity session services support
Provides the ability to extend the scope of multiple local transactions and group them so that they can then be committed based on deployment criteria or through explicit program logic. This ability helps reduce the complexity of handling commitment rules and limitations associated with one-phase commit resources.

Dynamic query service
Delivers unprecedented application flexibility by allowing you to dynamically build and submit queries that select, sort, join and perform calculations on application data at run time. Dynamic query service provides the ability to pass in and process Enterprise JavaBeans Query Language (EJBQL) queries at run time, eliminating the need to hardcode required queries into the deployment descriptors during development.

Web services gateway filters
Allow you to write filters, such as those that select a target service and port, capture Web service invocation information or handle exceptions, for the Web Services Gateway.

Container managed messaging
Offers automated support for outbound (as well as inbound) messaging.

Distributed map
Offers an interface to enable J2EE applications and system components to cache and share Java objects by storing a reference to the object in the cache to improve performance.

Container managed persistence (CMP) over anything
Extends the existing J2EE CMP framework to support any back-end system or service that supports create, retrieve, update and delete methods.

Application profiling
Lets you carefully optimize the performance of your Enterprise JavaBeans (EJB) CMP, Version 2.0 applications without affecting application source code by delivering a mechanism for instructing the same component to interact differently with the run-time infrastructure, such as a database, depending on the application that calls it.

Backup cluster support
Enables you to automatically configure your system to set up a back-up cluster of servers if the primary cluster fails — without having to write additional code.

WebSphere business integration portfolio
IBM offers a wide range of middleware and operating systems for virtually every computing platform, to give you the right tools to be an on demand business. The IBM WebSphere business integration portfolio delivers market-leading middleware that allows you to unite applications, people and business processes to work as one. Built on open standards, like J2EE, XML and new Web services standards, this robust portfolio offers reliability, scalability and a security-rich environment — the core strengths you've come to expect from IBM.

With a WebSphere business integration solution, your business managers can effectively model and simulate business processes — and refine these processes to increase efficiencies as needs arise. Your IT staff can quickly and easily integrate previously disparate systems within your existing infrastructure — and with new applications and systems. Your systems can connect seamlessly with your customers' and trading partners' systems to deliver immediate, dynamic — and personalized — information.

For more information

To learn more about IBM WebSphere Business Integration Server Foundation, Version 5.1, visit:

ibm.com/software/integration/wbisf

To learn more about IBM WebSphere Studio Application Developer Integration Edition, Version 5.1, visit:

ibm.com/software/integration/wsadie

IBM WebSphere Business Integration Server Foundation, Version 5.1 at a glance

Operating environment: IBM AIX®

Hardware requirements

System
- IBM @**server**® pSeries® at 375MHz or faster
- CD-ROM drive

Storage
- Hard disk: 2GB (including temporary space for installation)
- Main memory: 512MB recommended

Software requirements

Operating system
- AIX, Version 5.1 with the 5100-04 recommended maintenance package and PTF U484272
- AIX, Version 5.2 with the 5200-01 recommended maintenance package and APAR iY44183, and PTF U484272

Java
- IBM 32-bit Java Development Kit (JDK), Version 1.4.1 SR1

Operating environment: HP-UX

Hardware requirements

System
- PA-RISC at 440MHz or faster
- CD-ROM drive

Storage
- Hard disk: 2GB (including temporary space for installation)
- Main memory: 512MB recommended, 256MB minimum

Software requirements

Operating system
- HP-UX, Version 11iv1 with June 2003 Quality Pack and patch PHCO_29109

Java
- HP 32-bit JDK, Version 1.4.1_05

IBM WebSphere Business Integration Server Foundation, Version 5.1 at a glance (continued)

Operating environment: Linux on Intel

Hardware requirements

System
- Intel® x86 processor at 500MHz or faster (32-bit support only)
- CD-ROM drive

Storage
- Hard disk: 2GB (including temporary space for installation)
- Main memory: 512MB recommended, 256MB minimum

Software requirements

Operating system
- Red Flag Advanced Server, Version 4.0 (supported in China only)
- Red Hat Enterprise Linux WS for Intel, Version 2.1, Red Hat Enterprise Linux ES for Intel, Version 2.1 and Red Hat Enterprise Linux AS for Intel, Version 2.1
- Red Hat Linux, Version 3.0 with Update 1
- UnitedLinux, Version 1.0 with Service Pack (SP) 2a (all distributions)

Java
- IBM 32-bit JDK Version 1.4.1 SR1

Operating environment: Linux on iSeries

Hardware requirements

System
- IBM @server iSeries™ models that support logical partitioning (LPAR) (62-bit only) with minimum 640 commercial processing workload (CPW) in Linux partition
- CD-ROM drive

Storage
- Hard disk IBM OS/400® partition: 16GB minimum
- Hard disk Linux partition: 2.6GB minimum
- Main memory: 512MB recommended, 256MB minimum

Software requirements

Operating system
- Red Hat Linux, Version 3.0 with Update 1
- UnitedLinux, Version 1.0 (64-bit only; all distributions)

Java
- IBM 32-bit JDK, Version 1.4.1 SR1

IBM WebSphere Business Integration Server Foundation, Version 5.1 at a glance (continued)

Operating environment: Linux on pSeries

Hardware requirements

System
- @server pSeries models that support Linux (64-bit only)
- CD-ROM drive

Storage
- Hard disk: 2GB (including temporary space for installation)
- Main memory: 512MB recommended, 256MB minimum

Software requirements

Operating system
- Red Hat Linux, Version 3.0 with Update 1
- UnitedLinux, Version 1.0 (64-bit only; all distributions)

Java
- IBM 32-bit JDK, Version 1.4.1 SR1

Operating environment: Linux on zSeries

Hardware requirements

System
- IBM @server zSeries® G5, G6 or higher processor
- CD-ROM drive

Storage
- Hard disk: 2GB (including temporary space for installation)
- Main memory: 512MB recommended, 256MB minimum

Software Requirements

Operating system
- UnitedLinux, Version 1.0 (all distributions)
- Red Hat Linux, Version 3.1 with Update 1

Java
- IBM 32-bit JDK, Version 1.4.1 SR1

Operating environment: Sun Solaris operating environment

Hardware requirements

System
- Solaris Sparc workstation at 440MHz or faster
- CD-ROM drive

Storage
- Hard disk: 2GB (including temporary space for installation)
- Main memory: 512MB recommended, 256MB minimum

Software requirements

Operating system
- Sun Solaris operating environment, Version 8 with the recommended patch cluster of July 2003
- Sun Solaris operating environment, Version 9 with the recommended patch cluster of July 2003

Java
- IBM 32-bit JDK for Solaris, Version 1.4.1 (based on Sun JDK, Version 1.4.1_05)

Operating environment: Microsoft Windows

Hardware requirements

System
- Intel Pentium® processor at 50MHz or faster
- CD-ROM drive
- Support for a communication adapter

Storage
- Hard disk: 2GB (including temporary space for installation)
- Main memory: 512MB recommended, 256MB minimum

Software requirements

Operating system
- Microsoft® Windows® 2000 Server with SP3 or SP4
- Windows 2000 Advanced Server with SP3 or SP4
- Windows Server 2003, Datacenter
- Windows Server 2003, Enterprise
- Windows Server 2003, Standard

Java
- IBM 32-bit JDK, Version 1.4.1 SR1

On all of the above platforms, WebSphere Business Integration Server Foundation, Version 5.1 extends and builds on the WebSphere Application Server, Version 5.1 Network Deployment product to provide a premier J2EE and Web services technology-based application platform. Also included in WebSphere Business Integration Server Foundation are the following resource managers.
- Database: IBM DB2® Universal Database™ Enterprise Server Edition, Version 8.1 with Fix Pack 4a
- LDAP Servers: IBM Directory Server, Version 5.2
- JMS Provider: IBM WebSphere MQ, Version 5.3

Note 1: *For more details and for information about other hardware and software configurations, visit:* **ibm.com**/integration/wbisf/requirements.

Note 2: *The BPEL4WS workflow client is a Web application supported as a J2EE application client on WebSphere Application Server, Version 5.1 Network Deployment. For more details about supported configurations of WebSphere Application Server clients, visit*

ibm.com/software/webservers/appserv/doc/v50/prereqs/client_v51.htm.

Supported Web browsers
- Microsoft Internet Explorer, Version 5.5 with Service Pack 2 or higher
- Microsoft Internet Explorer, Version 6.0
- Netscape Communicator, Version 4.79

IBM WebSphere Studio Application Developer Integration Edition, Version 5.1 at a glance

Hardware requirements

System
- Intel Pentium III 500MHz, or faster, recommended; Intel Pentium II processor minimum
- CD-ROM drive
- Support for a communication adapter

Storage
- Hard disk: 4.0GB maximum, with additional disk space for development resources
- Main memory: 768MB recommended, 512MB minimum
- Display:
  - Windows — 1024x768 recommended at a color setting of High Color (16 bit); 800x600 minimum
  - Linux — 1024x768 minimum at a color setting of High Color (16 bit)

Note: *Disk space can be reduced if optional features and run-time environments are not installed.*

Software requirements

Microsoft Windows NT®, Windows 2000 and Windows 2003

Operating system
- Windows NT Workstation or Server, Version 4.0 with Service Pack 6a or higher
- Windows 2000 Professional with Service Pack 2 or higher
- Windows XP Professional with Service Pack 1
- A Web browser to view read-me files, and installation and migration guides

Linux on Intel

Operating system
- Red Hat Linux, Version 7.2 (based on kernel 2.4)
- Red Hat Linux, Version 8.0
- SuSE Linux, Version 7.2 (based on kernel 2.4)
  - Not supported with Korean, Simplified Chinese and Traditional Chinese languages.
- SuSE Linux, Version 8.1
  - Not supported with Korean, Simplified Chinese and Traditional Chinese languages.
- A Web browser to view read-me files, installation and migration guides

Note 1: *Double-byte character set (DBCS) support requires GNU Image Manipulation Program (GIMP) Tool Kit (GTK) 2.2.2 or later.*
Note 2: *Limitations apply for Korean, Simplified Chinese and Traditional Chinese.*

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