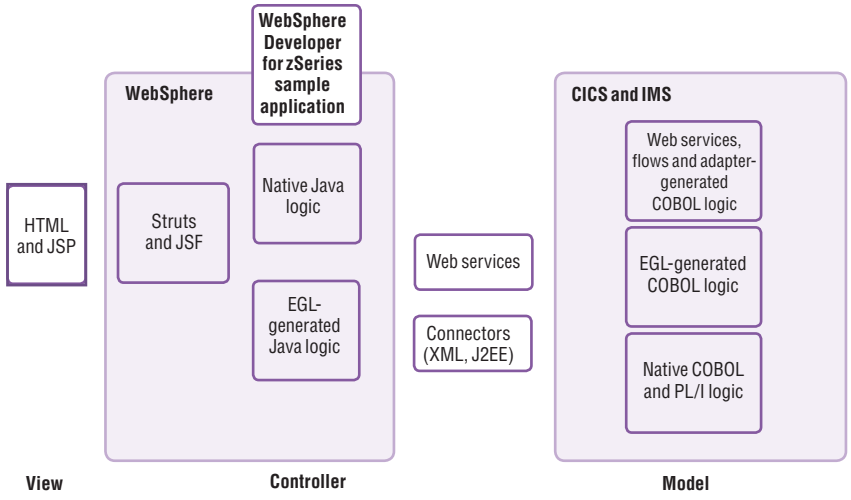
Simplifying Web services and extending the composite application model with tools for building SOAs in a zSeries environment

WebSphere® software

IBM WebSphere Developer for zSeries, Version 6.0.1

Highlights

- ***Provides developers with tools that enable them to rapidly create well-architected composite processing that integrates WebSphere software and traditional transactional environments***
- ***Helps developers quickly create modern dynamic Web applications and Web user interfaces by facilitating the construction of flexible client applications through visual construction facilities based on open JSF and Struts implementations***
- ***Promotes the reuse and transformation of existing applications by making them accessible as Web services to help reduce costs and shorten the development cycle***
- ***Includes a multifunctional service-flow modeler designed to support modern CICS application architectures, as well as the integration-developer role***
- ***Improves the productivity of developers creating and maintaining z/OS CICS, IMS and batch applications, while an organization's applications make the transition to services and service oriented architecture***
- ***Supports team-member collaboration across the process of development, testing and deployment of multitiered or composite applications, and facilitates skill and knowledge transfer***



WebSphere Developer for zSeries simplifies the composite application-development process by providing a JSF and Struts visual construction, linking with connectors and Web services, to support SOAs in a core transactional environment.

Building a service oriented architecture (SOA) is a key strategy for many of the largest IT organizations as they move to On Demand Business. SOA promotes modern interfaces, supports process improvements and enables application reuse—all to provide more rapid delivery of applications that support the highest quality-of-service environments.

Today's SOA can be complex, and often requires assembling teams of people with varying levels of technology backgrounds and areas of expertise. Ideally, everyone on these teams would be familiar with all the technologies necessary to construct SOA applications. However, the reality is that these teams include specialists, each with expertise in a different area, such as modern browser-based user-interface (UI) development in Java™ technology, connectivity development with Web services and business development with languages such as COBOL and PL/I. You want to extend these professional skills across your organization, and use both existing and new Web and Web services technologies—along with proven transactional technologies such as IBM CICS® and IBM IMS™—to speed your entire development and deployment processes.

ON DEMAND BUSINESS™

As IBM's premier enterprise application-development environment, IBM WebSphere® Developer for zSeries, Version 6.0.1 brings traditional development capabilities, the power of Java 2 Platform, Enterprise Edition (J2EE) and rapid application-development support to diverse enterprise application-development teams. With comprehensive development tools to help create, deploy and maintain traditional enterprise and composite applications, developers from different technical backgrounds can easily participate in On Demand Business projects together. As traditional programmers collaborate in the process of creating modern applications, their exposure to new technologies widens, as they continue to use their existing skills.

Provide IBM development technology throughout your enterprise

Built on Eclipse open-source technology and written to J2EE specifications, WebSphere Developer for zSeries optimizes and simplifies application development today—and for the SOA that you're building to address future needs—through best practices, visual tools, templates, code generation and a comprehensive development environment. These capabilities enable your developers to share a common view of applications and resources accessible from linked environments. Employing the common services of an integrated development infrastructure helps facilitate reuse, better management and communication, and helps reduce requirements for manual integration—ultimately helping to shorten the development process. Eclipse plug-in technology also enables you to integrate complementary development tools to extend the functionality of the total platform so that it can interoperate with other Eclipse technology-based products.

Beginning with the application interface and user session, WebSphere Developer for zSeries includes tools for building the underlying business process and infrastructure for Web applications. These tools support the popular, open-source JavaServer Faces (JSF) and Struts run times. They also include a visual construction environment that allows a developer to quickly link views implemented as HTML and JavaServer Pages (JSP) with business logic implemented with a number of different technologies, such as Web services, J2EE Connector Architecture (JCA) adapters, COBOL and PL/I. This capability enables individuals with a variety of skill sets to contribute to the construction of sophisticated Web, traditional and composite applications.

Develop, maintain and reuse traditional application processes

Traditional applications and processes can participate in SOAs and new On Demand Business solutions while meeting your quality-of-service requirements as they handle vital business functionality. WebSphere Developer for zSeries provides an interactive workstation-based environment to help develop, maintain and reuse traditional COBOL and PL/I, CICS, IMS, and batch applications for traditional processing or for inclusion in an SOA. New features and feature enhancements include:

- *Local syntax-check upgrades that support remote IBM z/OS® artifacts and include dependency identification of copybooks.*
- *Enhancements to the visual basic mapping support (BMS) map and new job control language (JCL) generation capabilities to provide map assembly and build processing capabilities for BMS maps. (The BMS editor also generates JSF artifacts to simplify conversion from green screens to Web UIs.)*

- *Large partitioned data set (PDS) performance improvements to the remote system explorer (RSE) server, which provides a common view for z/OS datasets and queues with support for hierarchical file system (HFS) files*
- *A menu manager that helps simplify developer access to z/OS processing by enabling developers to create custom menu items associated with commands and scripts with configurable, customizable parameter substitution based on the currently selected artifact*
- *Simplified Interactive System Productivity Facility (ISPF) function access through IBM WebSphere Host Access Transformation Services (HATS), Version 6.0 to support developer access through HATS automated Web interfaces*
- *Common Access Repository Manager (CARMA)-enabled integrated remote artifact access to user customizable source-code management systems, which helps provide connection to configured repositories*
- *HATS, Version 6 developer technology to support integration to screen-driven interfaces*
- *Additional support in EGL to generate COBOL for IMS, DLI data access and IBM VisualAge® Generator Web transactions*

The preceding enhancements and new features add to an already comprehensive set of features, such as:

- *The ability to create and generate code to IBM Enterprise COBOL for z/OS and IBM Enterprise PL/I for z/OS compiler specifications*
- *Direct access to z/OS code without having to copy files from the host to your workstation*
- *Support for z/OS local and remote development to offer workstation-based development with project synchronization and management of z/OS system-based file structures*
- *A local CICS environment to syntax-check and unit-test CICS for Microsoft® Windows® applications*
- *Access to COBOL and PL/I, batch, CICS and IMS application code assist*
- *Color-coded editing of COBOL, PL/I and assembler (ASM) languages as well as JCL*
- *The ability to compare and recover source changes and define templates including variable substitution of parameters*
- *Remote syntax check through customizable procedures*
- *Remote compile-generation, build and deployment support*
- *Extensible build capabilities based on JCL procedures (JCL Procs)*
- *IBM DB2® COBOL and PL/I stored-procedure build and debug support*
- *Remote debug support for z/OS through IBM Debug Tool, which includes COBOL, PL/I and IBM Language Environment® technology-enabled and non-Language Environment technology-enabled high-level assembler (HLASM) support*
- *Integration with IBM Software Configuration Library Management (SCLM) to provide source-code access and management*
- *Wizards to help you create SOA-based Web services processes for CICS and IMS environments*

Using existing assets through an automated code-extraction process can help reduce development time and costs. IBM WebSphere Studio Asset Analyzer and IBM Asset Transformation Workbench, separately available, complementary products, provide analysis and assessment of traditional applications and their interrelationships to aid in extension and restructuring efforts.

Build J2EE, traditional and composite applications using EGL

WebSphere Developer for zSeries includes Enterprise Generation Language (EGL), a proven high-level fourth-generation language (4GL) that procedural developers unfamiliar with Java can use to quickly build data-driven Web applications and business logic. The platform-neutral, high-level EGL syntax shields developers from the intricacies of coding to low-level programming interfaces. And using EGL enables developers with diverse technical backgrounds to write fully functional applications in a fraction of the time.

Using EGL and its tools, developers familiar with Structured Query Language (SQL), COBOL, Report Program Generator (RPG), VisualAge Generator and IBM Informix® 4GL can easily write and debug their applications. The developer can then generate and deploy these applications to be run as Java programs under an application server, such as IBM WebSphere Application Server, and as COBOL programs to be run under IBM **@server**® zSeries® CICS, IMS and batch environments. Without having to learn Java or object-oriented programming, a new class of developers can use EGL to apply their business domain expertise and reuse their skills as procedural developers.

New EGL features include:

- *Support for accessing IMS data and deploying EGL programs in IMS run times*
- *Support for migrating Web transactions from VisualAge Generator*
- *IDE upgrades designed to support enhanced EGL development*
- *The addition of the EGL service type that enables EGL developers to create and access different kinds of Web services*
- *The ability to take advantage of CICS threadsafe implementation through a program temporary fix (PTF) to IBM Enterprise Developer Server, Version 5.0*

Other applications patterns and support functions in EGL include:

- *Terminal user interface (TUI) applications accessing DB2, Virtual Storage Access Method (VSAM), IBM WebSphere MQ and CICS data stores deployed to IBM CICS Transaction Server*
- *Batch applications accessing DB2, VSAM, WebSphere MQ and sequential files*
- *JSF user-interface component actions that can be coded in EGL instead of Java*
- *JSF user-interface components integrated with EGL-generated callable CICS services through a simple call interface*
- *An integrated debugger for the EGL source*
- *Creation of Web services artifacts for callable EGL programs*
- *Integration with callable existing programs running on CICS Transaction Server through a simple call interface*
- *Built-in communications support that uses both CICS external call interface (ECI) and CICS JCA technologies*
- *A conversion utility to enable conversion of IBM VisualAge Generator, Version 4.5 z/OS platform-based applications to the EGL syntax*

WebSphere Developer for zSeries, Version 6.0.1 EGL features also include:

- *Capabilities designed to improve productivity, such as a wide range of data types; built-in date, time and string manipulation functions; and SQL processing functions especially for list processing*
- *Integration of Jasper reports to develop Web or Java applications that need to produce reports in multiple formats*

- *Capabilities designed to increase process efficiencies, such as a wizard to automatically generate data and logic parts in EGL based on an existing relational-table definition*
- *Tools for program understanding, such as a visual layout editor for EGL forms (3270 and print forms), a hierarchical view of a program and its components, and robust search capabilities*
- *A conversion utility to support those who currently use Informix 4GL for development to convert Informix 4GL source into the EGL syntax*

Support for the generation and deployment of EGL programs to zSeries batch, IMS and CICS environments is provided through the separate IBM EGL for zSeries COBOL generation feature for WebSphere Developer for zSeries. This feature also requires IBM Enterprise Developer Server for z/OS to be installed on the zSeries systems to support deployment.

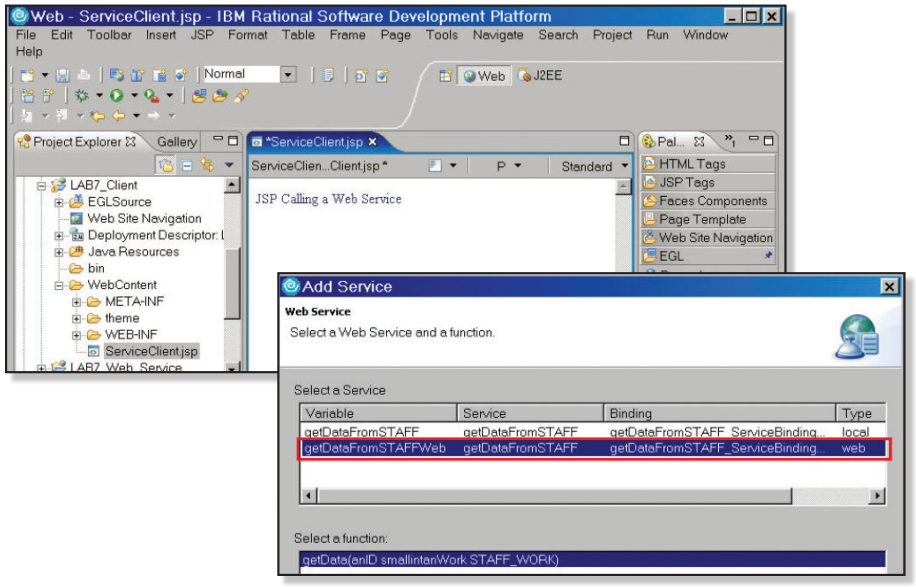
Visually define Web application interfaces and workflow

A comprehensive view of the Web application flow can help ease maintenance requirements and promote a greater understanding of unfamiliar application construction and components. To help support the JSF and Struts frameworks, WebSphere Developer for zSeries includes both a user-interface-oriented development paradigm and a Web diagram editor that maps applications to help you quickly recognize the flow, structure and components of JSF and Struts technology-based Web applications.

Architects, analysts and developers have quick access to a point-and-click design tool and wizards throughout the development process, including wizards to help quickly generate JSP and Java syntax. As a result, team members can separate responsibilities and improve productivity and focus.

Enhance development capabilities with leading-edge servlet, JSP and EJB tools

You have existing applications that you want to keep and important data residing in existing systems. You need advanced tools to build Web applications that include business logic to preserve investments and reduce development time. With WebSphere Developer for zSeries, you can define JSP components and servlets, and map entity beans to databases. And you can generate Enterprise JavaBeans (EJB) components and access transaction-processing systems to better use your investments and lower the cost of retooling, integrating and updating existing applications.



WebSphere Developer for zSeries helps you quickly define the flow, structure and components of JSF and Struts technology-based Web and Web services applications.

WebSphere Developer for zSeries offers a fully supported EJB development environment to create and test applications for rapid deployment to application servers. To provide a robust unit-test environment, WebSphere Developer for zSeries integrates tightly with other WebSphere software and enables easy deployment to WebSphere Application Server. A robust query engine supports deployed code by creating SQL strings to be generated into persister classes. WebSphere Developer for zSeries also provides tools to create, edit and validate enterprise archive (EAR) files and editors to format deployment descriptors.

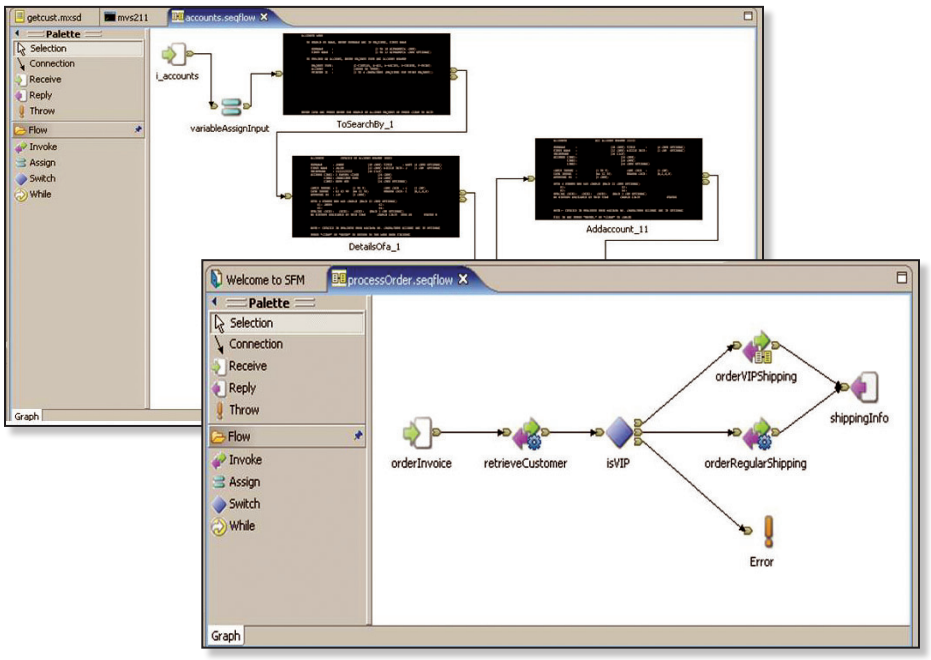
Other Web and J2EE capabilities include:

- *Portal tools that enable you to visually develop portal applications*
- *Automated J2EE code-analysis and component-testing tools to improve code quality*
- *Robust J2EE run-time analysis tools to identify and fix performance problems early in the development cycle*
- *Built-in Business Objects Crystal Reports tools to build interactive data reports*
- *The WebSphere Application Server rapid-deployment feature to accelerate application deployment and simplify system testing on WebSphere Application Server*
- *Eclipse, Version 3.0.2 support to enable a more responsive, attractive and customizable user interface that increases developer productivity*

Build Web services quickly with a robust XML z/OS tool set

Web services give global businesses a common language with shared definitions to discover each other's resources, connect dynamically and conduct transactions in real time with minimal human input. WebSphere Developer for zSeries provides wizards and tools to help you rapidly develop Web services in distributed and z/OS environments. You can use these standards-based applications—accessed through XML—individually or combine them to perform complex transactions with minimal programming.

WebSphere Developer for zSeries, Version 6.0.1 includes a *service-flow modeler*, a multifunctional tool designed to support modern application architectures, and the transformation and reuse of existing application processes. With the service-flow modeler, you can use your investment in, and the quality of service of, existing enterprise information systems (EISs), CICS Transaction Server run time and HATS, while at the same time helping your organization move toward implementing an SOA.



This example shows the flow model for an order process, implemented with underlying CICS transactions, that segments and routes customers through a flow after determining the regular or preferred status.

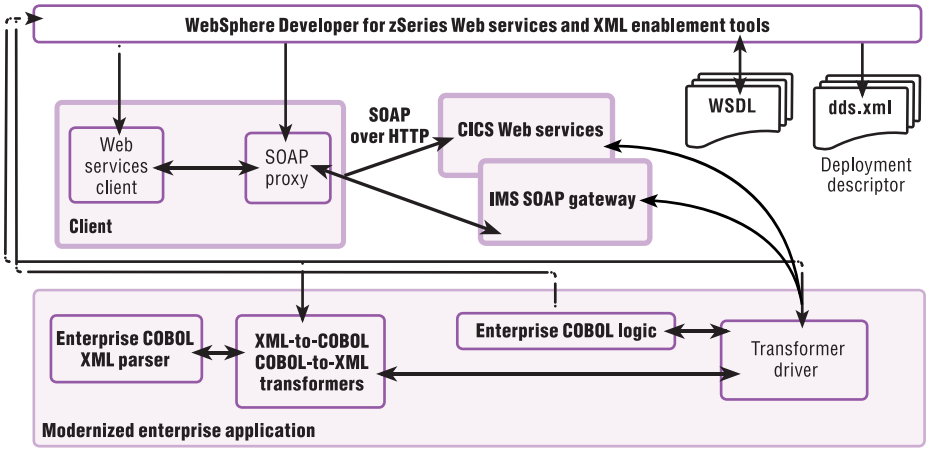
The service-flow models enable you to:

- *Model a newly composed business service—or flow—by defining an interface and outlining implementation steps.*
- *Capture existing EIS (screen or communication area) interfaces to implement steps in the flow.*
- *Map data between elements in the flow and the request-response messages used in its invocation.*
- *Expose business flows as services or Web services.*

The generated output of the service-flow modeler is supported by the CICS service-flow run time, as part of the CICS service-flow feature of CICS Transaction Server, Version 3.1 and HATS run times. The CICS service-flow run time provides server adapters that are supported for distributed program link (DPL), communications area (COMMAREA), WebSphere MQ, and front-end programming interface (FEPI), along with the Link3270 adapter.

WebSphere Developer for zSeries, Version 6.0 includes features to facilitate composite-application development, such as:

- *Robust XML and Web services support, enabling SOA access to CICS Transaction Server, Version 3.1 and IMS, Version 9. Support is also included for integrated Web Services Description Language (WSDL) generation.*
- *Support for top-down COBOL copybook and XML conversion module generation for CICS Transaction Server, Version 3.1 Web services.*
- *Support for generating services (logic and WSDL), as well as consumption of Web services using EGL.*
- *The HATS toolkit, which is included and runs in the workbench development environment as a perspective. HATS transforms the screens of a host application into Web pages that can be accessed through a Web browser or through IBM WebSphere Portal software.*



WebSphere Developer for zSeries enables you to create dynamic Web applications.

WebSphere Developer for zSeries also facilitates Web services development tasks to help you build and deploy Web services-enabled applications for your On Demand Business goals across a broad range of software and hardware platforms. These Web services include development tasks such as:

- *Using a Web services explorer to discover, browse, invoke and publish WSDL in a Universal Description, Discovery and Integration (UDDI) registry.*
- *Creating Web services from existing artifacts, such as Java beans, EJB components, URLs that take and return data, IBM DB2 XML Extender calls, DB2 stored procedures and SQL queries.*
- *Wrapping existing artifacts as SOAP and HTTP GET and POST method-accessible services and describing them in WSDL.*
- *Creating Web services, Web services clients and test environments, and deploying them into WebSphere Application Server.*
- *Using the WSDL editor, a graphical tool used to edit WSDL files and embedded XML schemas.*

WebSphere Developer for zSeries includes a comprehensive XML tool set to help you build document type definitions (DTDs), XML schemas and files, and integrate relational data with Web services. You can quickly and easily transform and combine IBM Enterprise COBOL code into XML-based applications to redeploy them as Web services. The Web services you create with WebSphere Developer for zSeries conform to UDDI, Simple Object Access Protocol (SOAP) and WSDL standards.

Specialized z/OS system-based Web services support includes mapping XML schema files, WSDL files, DTDs and other XML documents to and from COBOL data structures, the ability to generate the underlying transformers, and high-speed parsing in the IBM Enterprise COBOL language environment. Specific options support deployment to various z/OS run times, including specialized support for the CICS Web services and IMS SOAP gateway features.

Test and debug during run time on local or remote servers

With the WebSphere Developer for zSeries unit-test environment, you can configure local or remote servers to perform cross-platform interactive testing and debugging live in WebSphere, CICS, IMS and DB2 transactional environments, and in z/OS batch environments. The testing and debugging process begins early in application development, with a break-point and monitor-testing capability available in the visual-assembly environment. This capability enables each aspect of the flow and the associated connections to perform as required.

WebSphere Developer for zSeries includes a validation framework to identify errors on the fly—helping programmers save time and their companies money by enabling them to immediately identify and correct errors. Troubleshooting options include traditional debugging in composite environments, and distributed code profiling and unit testing in J2EE environments. WebSphere Developer for zSeries enables you to edit, test, check syntax and compile the source code locally. Then recompile the source, build a load module, and test and debug it on a remote z/OS system. You can take advantage of remote debugging capabilities through the product's integration with IBM Debug Tool and IBM Debug Tool Utilities and Advanced Functions software.

Technology previews available with this release

With this release of WebSphere Developer for zSeries, IBM announces a technology preview of *zSeries Application Pattern Generator*. This feature is designed to support the generation of composite application patterns deployed as Web interfaces linked with data access and business processing delivered through COBOL-generated CICS services. This support is implemented through JSF and EGL technology-based Web processing, session management and controller functions that interfaces with create, read, update, delete and browse processing delivered through COBOL-generated CICS services.

To gain early experience with this support by participating in this technology preview, visit **ibm.com**/software/awd-tools/studioenterprisedev/support to find out about availability dates, and terms and conditions.

IBM also announces a technology preview of integrated application understanding using a Windows technology-based asset-analyzer component (for workstation and single-user usage only). You can also choose to gain early experience with this support by participating in this technology preview. To do so, visit **ibm.com**/software/awd-tools/studioenterprisedev/support for detailed information about availability dates, and terms and conditions.

A comprehensive integrated development environment

WebSphere Developer for zSeries, Version 6.0 supports a broad range of developers with added flexibility and the ability to integrate with existing applications. With WebSphere Developer for zSeries, you can:

- *Create Web applications by melding diverse employee skills sets and extending existing systems.*
- *Develop, maintain and integrate CICS and IMS transactional applications and batch applications.*
- *Take advantage of proven run-time environments, using SOAs and Web services, while helping reduce your deployment risks.*

WebSphere Developer for zSeries offers an IDE with advanced, easy-to-use tools and features to help diverse developers rapidly design, code and deploy complex composite and traditional applications.

For more information

To learn more about IBM WebSphere Developer for zSeries, Version 6.0.1, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/software/awdtools/devzseries

To join the Global WebSphere Community, visit:

www.websphere.org

IBM WebSphere Developer for zSeries, Version 6.0.1 at a glance

Hardware requirements

- Intel® Pentium® III 800MHz processor minimum; faster recommended
- 1024x768 display resolution required
- 768MB RAM minimum or higher; 1GB recommended
- A visual graphics array (VGA) display of 1024x766
- 1.92GB minimum available disk space; 3.0GB maximum for full installation, depending on the optional features selected for installation and in addition to space for the resources you develop

Software requirements

- One of the following operating systems:
  - Microsoft Windows XP Professional with Service Pack (SP) 1 or later
  - Windows 2000 Professional with SP3
  - Windows 2000 Server with SP3
  - Windows 2000 Advanced Server with SP3
  - Windows Server 2003 Standard
  - Windows Server 2003 Enterprise
  - z/OS, Version 1.4 or later with appropriate program temporary fixes (PTFs)
- TCP/IP installed and configured
- Microsoft Internet Explorer with SP1 or later

Note: For more details about WebSphere Developer for zSeries software requirements, such as the required components and PTFs for the programs listed here, refer to the softcopy publication Prerequisites for WebSphere Developer for zSeries *(SC31-6352).*

IBM WebSphere Developer for zSeries, Version 6.0.1 at a glance (continued)

Corequisites

The following products and other stated software are required to support specific features of WebSphere Developer for zSeries. The workstation client can be successfully installed without these corequisites; however, a stated corequisite must be installed and operational at run time for the corresponding feature to work as designed.

- CICS service-flow feature of CICS Transaction Server, Version 3.1
- To compile COBOL programs developed or edited within WebSphere Developer for zSeries (one of the following):
  - IBM COBOL for OS/390® and VM, Version 2.1 with appropriate PTFs
  - IBM Enterprise COBOL for z/OS, Version 3.1 with appropriate PTFs
  - IBM Enterprise COBOL for z/OS, Version 3.2 or later
- To support COBOL run-time support for z/OS: IBM Enterprise Developer Server for z/OS, Version 5.0 with appropriate PTFs
- To compile PL/I programs developed or edited within WebSphere Developer for zSeries (one of the following):
  - IBM PL/I for MVS™ and VM, Version 1.1
  - IBM VisualAge PL/I for OS/390, Version 2.2
  - IBM Enterprise PL/I for z/OS, Version 3.1 or later with appropriate PTFs
- To support remote debugging of COBOL and PL/I programs from WebSphere Developer for zSeries (one of the following):
  - IBM Debug Tool for z/OS and OS/390, Version 3.1 with appropriate PTFs
  - IBM Debug Tool for z/OS, Version 4.1 with appropriate PTFs
  - IBM Debug Tool for z/OS, Version 5.1 or later with appropriate PTFs
- To support applications with embedded CICS statements (one of the following):
  - IBM CICS Transaction Server for OS/390, Version 1.3
  - IBM CICS Transaction Server for z/OS, Version 2.2 or later
  - IBM CICS Transaction Server for z/OS, Version 3.1
- To support applications using IMS database and data communications: IBM IMS/ESA®, Version 7.1 or later
- To support applications using RSE server: IBM SDK for z/OS Java 2 Technology Edition, Version 1.4
- To support IBM DB2 Universal Database™ for z/OS or OS/390 (one of the following):
  - DB2 Universal Database, Version 6.1 or later
  - DB2 Universal Database, Version 7.1 or later with appropriate PTFs
- To support access to SCLM: IBM Restructured Extended Executor Language (REXX)/370 Library, or Alternate Library, Version 1.3
- To support the optional EGL for COBOL Extension feature: Enterprise Developer Server for z/OS, Version 5.0 with appropriate PTFs

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