



The Mainstream

An article from the IBM @server zSeries software newsletter

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Discover, Develop, Deploy: z/Series Application Development tools can help you navigate the on demand lifecycle

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How does a business become an on demand e-business? It starts by learning about the current systems you're using to run business functions, then identifying and reusing legacy components in e-business implementations.

Successful on demand development teams collaborate throughout the life of an application—from the Discovery phase, where goals and requirements are learned and captured...to the Development phase, where these requirements are implemented...to the Deployment phase, where final testing, maintenance and monitoring occurs.

IBM® has zSeries® development solutions to help professional development teams throughout the three primary phases of the application development process: Discover, Develop and Deploy.

Discover: Understanding and Using (and reusing) solutions for mixed-workload applications

Studies have shown that creating new code can be significantly more costly than reusing existing code. Much of this relates not just to programming, but also to the costs of verifying compliance to specification (analysis), testing, deploying, verifying the scalability and functionality, and performance tuning.

When an organization can reuse existing code that has provided business value for years—code that is already tuned and deployed—the savings can be potentially dramatic. IBM uses the term “Discovery” to refer to the process of understanding, preserving, evolving and integrating current applications with new on demand e-business applications.

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IBM's portfolio of Discovery application development solutions includes:

WebSphere Studio Asset Analyzer

IBM WebSphere® Studio Asset Analyzer helps IT personnel maintain and extend existing assets through impact analysis and application understanding. It also helps enterprise users to modernize existing enterprise assets and skills for on demand development, by providing:

- Knowledge about their static environments (finding and reusing application code and the components connecting that code)
- Knowledge about their dynamic environments (understanding what code is executing in run-time environments)
- An enterprise-scale repository of asset information that is integrated with both mainframe and distributed source change management (SCM) environments

CICS Interdependency Analyzer

When documentation is lost or incomplete, or when source code is unavailable, IBM CICS® Interdependency Analyzer automates the collection of runtime resource interdependency data across CICS regions. This includes CICS calls to IBM DB2®, IBM IMS™ and WebSphere MQ. It can help you determine resource usage in CICS applications, analyze their interdependencies, and quickly and efficiently assess the impact of application changes.

Develop: Tools for creating new e-business applications

Once you understand your current business assets and the impact of changes to them, you can use IBM Development tools to more effectively create new e-business applications. These tools offer:

- Easy-to-use Web application definition, flow and assembly
- Fast, simple extension of existing applications to the Web
- A development portal that provides a single tool set to both Java™ and non-Java programmers
- The ability to combine new and existing applications to develop new e-business solutions

A key part of IBM's Development solutions strategy is a concept called "enterprise-scale rapid application development." This refers to simplifying the definition and reuse of existing processing

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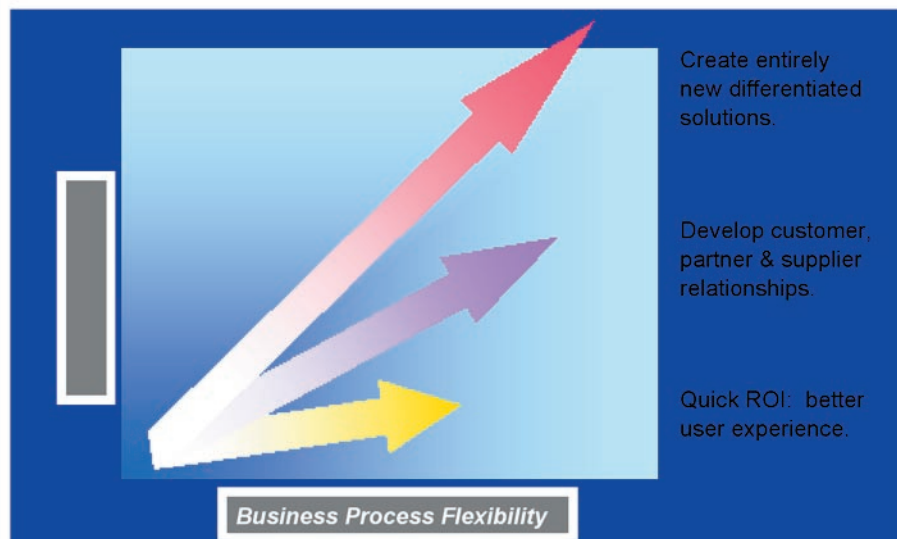
and code in service-oriented architectures (SOAs)—that is, the collection of services that provides sharable processing to applications.

Three types of SOAs

Depicted in the chart below, there are three distinct types of service-oriented architectures that support application development. You can use any of the three types to:

- Improve the user interface of mission-critical applications, reducing training costs and increasing end-user productivity.
- Integrate new processes and applications to develop differentiated front-end capabilities, with lower risk than more ambitious replacement strategies.
- Componentize existing mission-critical applications, so core processes can be independently modernized and flexibly integrated, on demand.

Develop: Three styles of service based architectures



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Among the IBM portfolio of Development tools are:

WebSphere Host Access Transformation Services

WebSphere Host Access Transformation Services lets you create Web services from programmatic interaction with 3270 applications. Native CICS and IMS terminal display interfaces can easily be extended as new Web services, Web pages, JavaBeans or EJB code, allowing you to tap into and extend 3270 system information without extensive programming.

WebSphere Studio Enterprise Developer

By reducing the barriers to modern application development and architecture, IBM WebSphere Studio Enterprise Developer helps application architects to get started faster. It provides a single interface to define high-level application processes and architectures and promote best practices, so individual developers have clearly outlined tasks and can work more intelligently. Application assemblers can quickly connect existing business or screen processes to new application code in a visual environment.

WebSphere Studio Enterprise Developer can also improve team-wide efficiency with broader skills sets, including HTML, JavaServer Pages (JSP) and Java technology, Struts visual application assembly, COBOL, PL/I, and 4GL/EGL coding and scripting capabilities.

JCA (Java Connector Architecture) and Web services connectivity are included with WebSphere Studio Enterprise Developer, so developers can identify, describe and document Web services. You can then transform specifications into WSDL (Web Services Definition Language), create XML schemas and generate connectors to gain access to existing transactional environments. You can also generate code to unload an XML payload into a COBOL data structure and re-populate a response XML message.

IBM Enterprise COBOL and IBM Enterprise PL/I

IBM's enterprise COBOL compiler supports XML parsing of messages to facilitate open, high-performance access to IBM z/OS® system-based components. With newly added verbs, such as

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XML PARSE and XML GENERATE, messages can be easily turned into COBOL data structures for business processing, and XML response messages can then be sent back to the requesting application. Similar facilities exist in Enterprise PL/1.

Deploy: Determining problems, managing performance

In mixed-workload e-business environments, business processes rely heavily on IT infrastructure for availability and performance. But an IT infrastructure can become complex when dealing with mixed-workload or service-based applications. Many different components can be involved, including client- and server-side presentation, session management, business logic and database access. If an enterprise ignores performance management, that neglect can lead to serious business and IT problems and, ultimately, lost business.

- IBM offers a broad array of Deployment tools, covering two primary areas: Application problem determination, which addresses the problems that are most likely to occur in the applications and what can be done proactively to avoid them—or if a problem exists, how it can be corrected quickly and with minimal disruption
- Application performance management, which determines how many resources the applications will consume, and how to analyze historical data, fine-tune applications and assess needs for future growth

IBM's Deployment tools provide key functions for the application life cycle, helping transform applications into on demand applications by supporting mixed-workload environments. Among these tools are:

WebSphere Studio Application Monitor

WebSphere Studio Application Monitor is a problem-determination and performance-management tool for J2EE applications. It enables application developers and application support analysts to perform deep drill-down analysis against J2EE applications in realtime, and provides application and business context surrounding the data that it collects.

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Unlike traditional legacy systems such as CICS, J2EE application servers can make it difficult to understand the behavior and flow of applications at any given time. WebSphere Studio Application Monitor solves that problem, non-intrusively and cost-effectively, through its application-centric problem determination and performance analysis capabilities. It can also monitor, correlate and profile “composite” transactions—such as a J2EE transaction branching off into CICS—to give developers visibility into both subsystems.

WebSphere Studio Workload Simulator

WebSphere Studio Workload Simulator leverages your z/OS environment to conduct tests for load, stress, performance, regression and capacity planning. WebSphere Studio Workload Simulator lets you create virtual or simulated users, helping reduce the costs of manual load and performance testing, verifying application performance and scalability before production or live business processing.

WebSphere Studio Workload Simulator:

- Simulates multiple Internet browsers to test Web servers
- Helps validate a Web-serving environment against production-level loads
- Enables simplified setup and testing from a single-server environment
- Is integrated with WebSphere Studio Application Monitor

CICS Performance Monitor

In concert with the traditionally strong performance management technologies in CICS Transaction Server, CICS Performance Monitor provides facilities for online threshold management and monitoring, real-time problem determination and correction, and historical task data collection for improved troubleshooting. It:

- Uses the CICSplex System Management infrastructure for performance data collection
- Offers an easy-to-use comprehensive graphical interface for threshold and history management
- Helps ensure fast problem determination by managing multiple regions from a single point of control

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CICS Performance Analyzer

In conjunction with CICS Transaction Server, CICS Performance Analyzer facilitates processing performance information recorded in System Management Facility (SMF). CICS Performance Analyzer:

- Provides an easy-to-use interface to run supplied performance analysis reports, or to easily create customized reports
- Evaluates SMF data recorded not only for CICS, but also CICS-related data for DB2, WebSphere MQ and MVS System Logger
- Creates a complete picture of a CICS transaction performance across multiple systems
- Selects and records this data in a database for trend analysis

The results: ongoing performance analysis, flexible reporting with supplied reports or customizable reports, and historical data processing for trending and capacity planning.

Together, CICS Performance Monitor and CICS Performance Analyzer can help you reduce the cost of downtime and improve the ability to meet service level agreements by enabling:

- Continuous monitoring and fast problem determination to control and prevent downtime
- A proactive approach to CICS systems tuning
- Use of proven CICS performance management technologies to improve the availability and integrity of CICS systems

Debug Tool and Debug Tool Utilities and Advanced Functions

Debug Tool is a robust, interactive, multi-language, source-level debugging tool. It helps you examine, monitor and control the execution of programs written in C/C++, COBOL, PL/I or Assembler (each compiled or assembled with appropriate IBM compilers or HLASM) on z/OS. Debug Tool supports debugging of applications in various subsystems, including CICS, IMS and DB2. The Debug Tool Utilities and Advanced Functions provide auto-monitor, stepback, COBOL code conversion, IMS application dependent region support and code coverage.



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Fault Analyzer

Fault Analyzer helps you find the cause of ABENDs in z/OS application programs. It can be used to determine problems during the development and testing phases, or during execution in production. Fault Analyzer works across a broad range of environments (including TSO, CICS, IMS and WebSphere), languages (including COBOL, PL/I and C/C++) and types of ABENDs. It supports new application development platforms through Interactive Problem Control System (IPCS) exits.

File Manager for OS/390

File Manager for IBM OS/390® provides powerful functions—such as data browsing, editing, copying and comparing—for use by application developers, system support personnel, system administrators or system operators. Application programmers can quickly build data files for application development, quality assurance testing, or both.

Application Monitor

IBM Application Monitor can be used with Debug Tool, Fault Analyzer and File Manager to provide z/OS application developers with a powerful suite of productivity tools. With Application Monitor, application performance can be analyzed during the application build process, as part of pre-production staging, or in production.

Workload Simulator

Providing powerful stress and regression functions, Workload Simulator helps application developers and system support personnel improve quality assurance of deployed traditional z/OS applications. A test manager can be used to automate the building and execution of workload scripts.

Providing IT support, driving business success

Throughout the development cycle, from requirement to retirement, all members of your team share responsibilities for maintaining best practices and for the specific expertise each contributes



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to the team. IBM zSeries application development tools can help you and your team navigate the on demand Discovery–Development–Deployment lifecycle. By providing the support that professional IT teams need throughout this cycle, these tools can help drive business success.

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