ITSO System z Software Forum 2006

Powering SOA with IBM Software on System z

AD01 – Application Development Lifecycle Tools for SOA on z update

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The New Face of Application Development for System z

**Agenda:**

- Setting the scene
  - *Trends impacting enterprise development*
  - *Governing software development*

- Developing for System z
  - Review IBM’s tools and positioning for SOA on zSeries in Development life cycle
  - Discuss the SOA capabilities of the WebSphere Enterprise Transformation tools
What we see …

Geographic distribution of business - The new norm
- Work aligned to markets and customers
- Evolution of right-sourcing
- Leveraging distributed development

Accommodating compliance - The new necessity
- Management reporting, audit support
  - Sarbanes-Oxley, HIPAA, 21CFR11, Basel II, EASHW
- IT, systems, project and product level accountability
  - ITIL, COBIT, COSO, ISO 900x, Six Sigma
- Development compliance level
  - Change management of assets, traceability
  - CMM/CMMII, RUP, DODAF

Open computing - A new route to collaboration and innovation

Modular systems - Greater flexibility
- Maximize investments: Reuse components
- Increase flexibility: Interoperable systems
- Accelerate initiatives: Scalable and agile

Evolving enterprise software delivery

Business Driven Development
Enabling organizations to govern the business process of software and systems development

Including development for System z
Governing enterprise development

Enable predictable, integrated, cross-platform software delivery

Further Expanding the IBM Software Development Platform support for System z

- Improve developer productivity & drive down development cost
  - Common processes & tooling regardless of deployment platform
  - Fewer tools means lower support costs
  - Better lifecycle management of assets across the enterprise

- Leverage modern application architectures & tooling
  - Off-host model driven development
  - Tools to facilitate applications discovery, understanding and refactoring
  - Converge source code libraries to facilitate parallel and iterative development and code reuse
  - Component re-use for composite applications

- Govern enterprise development
  - Better identify and manage risk
  - Monitor and manage runtime environments

Enterprise Platform – zDevelopment Life Cycle
Governance & Best Practices

- Portfolio Management
- Software Configuration Management
- Asset Management
- Asset Identification
- Tooling Infrastructure
- Industry Models
- Methodologies and Tooling

Governance & Best Practices

- Rational Portfolio Mgr.
- SCLM AE, ClearCase, CQ, MF Conn.
- Rational Asset Mgt.
- WebSphere Services Registry & Repository
- Eclipse
- FAA & IAA
- RUP for z / SOA in RMC – Maturity Models – CBM - SOMA – SOA-IF
Software Configuration Management

- Rational ClearCase Common Repository with z/OS Extensions
- Assets stored both in z/OS and distributed repositories
- Rational ClearQuest coordinates build and promote activities between Rational ClearCase and SCLM AE
- Breeze, Administrator Workbench, EAC, Merge Tool, Developer Toolkit

Distributed Systems

- Intel Windows & Linux
- Unix
- Clear Quest
- Clear Case

Distributed Systems

- Intel Windows & Linux Clear Case
- Unix Clear Case
- Linux on zSeries

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WebSphere Service Registry and Repository

Discover and reuse services that could serve as building blocks for new composite applications.
Publish newly developed services.

WebSphere Service Registry and Repository

Operational Efficiency and Resilience

Manage efficiency by providing detailed information about service interaction endpoints being monitored.

Change and Release Management

Govern deployed services to ensure changes are authorized and service integrity is maintained.
Notify clients of changes.

Service Development Lifecycle

Model
Build
Assemble

Operational Efficiency and Resilience

Operational Efficiency and Resilience

Discover services from other registries or deployed environments ready for harvesting into the SOA lifecycle.

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Service Endpoint Registries / Repositories

Discover

Operational Efficiency and Resilience

Operational Efficiency and Resilience

Operational Efficiency and Resilience
Methodologies and Tooling

- Rational Method composer
  - RUP for SOA plugin
- CBM
  - Existing Industry maps available for customization
  - Continued enhancements to tooling (SOA-IF)
- Maturity Models
  - Service Integration Maturity Model (SIMM)
  - Component Infrastructure Roadmap (CIR)
    - Converging with SIMM
    - On-Demand Operating Environment (ODOE)
    - SOA Self Assessment (Web-based tool)
- SOMA
  - Continued enhancements to tooling (SOA-IF)
  - Enhancements planned around data componentization
- SOA-IF
  - Domain Analysis
  - Topology Modeling

WebSphere Business Integration Modeler
Rational Software Architect

Analyst models “as is” business process and explores alternative “to be” business processes

Analyst models “as is” and “to be” user interactions through use cases
Rational RequisitePro

Analyst defines business requirements and refines them into software requirements and use cases.

Discovery and Understand tooling

Benefits:
- Automated discovery of application code and CICS runtime relationships
- Higher quality of application change management
- Reduce or eliminate intensive efforts to create components
- Position for evolution SOA
WebSphere Studio Asset Analyzer

资产分析与理解

控制流

数据流

影响分析

指标和评分

程序详细信息

结构图

数据流

运行时分析

Asset Transformation Workbench

业务规则发现和管理

发现与理解

代码改进通过重构和组件化

Before

After

AD01 - Application Development
Lifecycle Tools for SOA on z - Update
Next Tooling in SOA perspective

- **Process Integration**
  - WebSphere Integration Developer (WID)

- **Service Enablement**
  - WebSphere Developer for zSeries (WD4z)
  - Rational Application Developer (RAD) (part of WD4z)

- **Service Integration**
  - WebSphere Integration Developer (WID)
  - WebSphere Message Broker Toolkit V6

**Workbook**
IBM’s commercially supported version of the Eclipse Workbench

**Eclipse Modelling Framework**

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WebSphere Integration developer

**Streamlining process design hand-off between business and IT**
- Import and work with business process models directly from the business analyst (WebSphere Modeler)

**Simplifying and speeding development**
- Easy to use tools where everything can be done through the GUI

**Maximizing re-use**
- Ability to leverage existing services & save components for future service reuse
WebSphere Developer for zSeries

Eclipse-based integrated development environment for developing enterprise-level, multi-tier applications (composite applications)

- Builds core stack zOS applications
  - COBOL, PL/I, HLASM
  - TSO/Batch, CICS, IMS, DB2
  - DB2 Stored Procedures – COBOL, PL/I, Java, SQL

- Creates COBOL/CICS/JSF/Java/J2EE Multi-tier apps
  - Built on Rational Application Developer
    - Includes all of the J2EE web development tools
    - Generate JSF/EGL/J2EE web front ends
    - COBOL backends running on zSeries

- Enables CICS and IMS applications for Web services and SOA
  - Provides tooling to make it easy to integrate existing applications into an SOA

- Application Pattern Generator (preview)

Enable Web Services and XML access to existing CICS and IMS transactions
- WD4z - XML Services for the Enterprise (XSE)
  - Quickly maps existing COBOL interfaces to XML and Web Services.
  - No code changes for the COBOL application
  - Supports IMS, CICS BMS (terminal-based) & CICS commarea applications

Model and deploy complex CICS processes to support SOA
- WD4z - Service Flow Modeler (SFM)
  - Aggregate CICS transactions into high-level business processes through visual (drag n drop) modeling
  - Highly optimized CICS COBOL runtime to increase overall throughput
  - Supports COBOL commarea-based applications and terminal-based applications
Host Access Transformation Services (HATS)

Automatically transforms 3270 & 5250 green screen applications into HTML interfaces
Extends terminal applications as Web Services
Low skills requirement – no zSeries skills required
Rules-based, highly customizable
Iterative, eclipse-based development environment

SOA infrastructure on z – transaction environments

WebSphere Application Server V6
Extend existing Java assets with support for Web Services standards and standards-based messaging
Help ensure 24x7 availability of business-critical applications with clustering and high availability
Build and deploy Web Services quickly and easily with rapid development and deployment features

CICS Transaction Server V3.1
Exploit provider/requestor Web service support for CICS assets, based on full Web service standards
Extend the value of CICS transactions in a mixed language environment
Build Web services from CICS transactions with no change to existing applications.

IMS Transaction and Database V9
Exploit Web service support for IMS assets, based on full Web service standards
Extend the value of IMS transactions in a mixed language environment
Build Web services from IMS transactions with no change to existing applications

Enterprise Languages (e.g. Cobol XML support)
Employing mediation to enable every kind of application and data to participate in SOA

**WebSphere Process Server**
(A deployment environment for composite applications to ensure maximum flexibility at the speed of business)

- Built on top of an open standards based ESB
- Flexible connectivity infrastructure for integrating applications, data, and services to power your SOA

**WebSphere Message Broker**
(the advanced ESB for high performance integration of Web services and non-Web services assets)

- Provides Web Services connectivity and non standard interface connectivity
- Unmatched in integrating many platforms, devices, and APIs
- Advanced message transformation, enrichment, and routing

Unit and System Test

**Remote debug mode in WDZ**
**Code Coverage**
**COBOL conversion aid**

- Batch, CICS, DB2, or IMS application
- IBM Debug Tool
- IBM Debug Tool Advanced Utilities
- Rational Purify

IBM Enterprise COBOL
IBM Enterprise PL/I
Functional testing for Web/JAVA and 3270/5250 Host Applications

- IBM Rational Functional Tester Extension for Terminal-based Applications
  - Integrate traditional and mixed workload function testing
  - Single point of control to manage testing of legacy applications & web front-end components
  - Single solution to manage development and testing across mainframe and distributed platforms

- Key Product Differentiators
  - Supports TN3270/5250 host applications
  - Leverages Rational solution
  - Based on Eclipse or .Net

IBM Rational Functional Tester
Rational Test Manager
Rational ReqPro

Test Using WebSphere Developer for zSeries Web Services Explorer

WD4z Web Services Test explorer

Test the Web Services created calling CICS/SOAP
Load Testing Applications

Console (Windows or Linux) → Agent running on z/OS → Web Server(s) on Any Platform → Middle and back tier(s)

Tests to execute → Simulated Load via HTTP

App Server, DBMS, MQ Series, etc

IBM Rational Performance Tester
IBM Rational Manual Tester
IBM Workload Simulator

IBM Rational Test Manager

Problem Determination Tooling

Pinpoint cause of failed application abends
Fault Analyzer
Failure Analysis

Data management tool supporting VSAM, DB2, and IMS
File Manager
Data Management

Isolate cause of application performance bottlenecks and drill down to source code
Application Performance Analyzer
Performance Analysis

Source code debugging to improve productivity
Debug Tool
Code Debugging

Application stress testing and regression testing
Workload Simulator
Stress Testing

WD4z integration point

Data management tool supporting VSAM, DB2, and IMS
File Manager
Data Management

Isolate cause of application performance bottlenecks and drill down to source code
Application Performance Analyzer
Performance Analysis

Source code debugging to improve productivity
Debug Tool
Code Debugging

Application stress testing and regression testing
Workload Simulator
Stress Testing

WD4z integration point
End to End monitoring perspective

RPT, ITCAM used to drive and monitor J2EE performance on both WAS and traditional servers enabling rapid problem determination and reduced downtime

- CICS PA/OMEGAMON provide CICS and IMS resource monitoring enabling rapid response to problems
- System z WS and PA are used to drive and monitor CICS transactions and DB2 performance for COBOL/PLI applications enabling high throughput in System z environments

Application Performance Analyzer for z/OS

- **Non-intrusive Performance Analyzer for z/OS applications to**
  - Improve response time in online applications
  - Improve batch turn around time
  - Identify excessive I/O activity
  - Identify excessive CPU usage
  - Test the effects of increasing workload
  - Isolate performance problems in new and existing applications

- **Types of Observation Sessions**
  - Real-Time
  - Scheduled
  - Via Batch Submission

- **Environments Supported**
  - CICS, DB2, IMS, JES/Batch, Sysplex, MQ Series
  - Assembler, COBOL, PL/I
WebSphere Business Monitor

Verify delivery of expected benefits; fine-tune business processes and iteratively improve business performance.

Analyst compares projected to actual improvement in business performance, and fine-tunes business process to optimize results.
Creating SOA composite applications … product summary

Model a new business process that builds on your current capabilities …
WebSphere Rational Software Architect

Wrap programs as services, creating composite apps from core assets …
WebSphere Developer for zSeries, XSE, SFM and more …

Choreograph and deploy your new composite applications …
WebSphere Process Server

Monitor the processes across your SOA, and intervene if necessary …
WebSphere Business Monitor

… and assemble the services across multiple platforms
WebSphere Integration Developer
WebSphere Service Registry

… using an advanced ESB to power your SOA
WebSphere Message Broker
WebSphere Enterprise Bus

… Optimize implementation both J2EE and MF business services.
ITCAM for WebSphere
Application Performance Analyzer

Model the Business & Applications

Top down
- Business Process Modeling
- Application Modeling

Meet in the Middle
- Start Top Down AND Bottom Up

Bottom Up
- Start from what you already have and rely on

Where to start
The IBM Software Development Platform for zSOA

Committed to Enterprise Development

The most complete, open, modular, and proven development solution for enterprise development

… that lets you leverage existing runtime development infrastructure as well as new technologies when building applications

... that enables business-driven development by unifying business, operations and development teams across the organization

… with a comprehensive strategy for improving application quality and availability post-deployment

Thank You

شكرا
Danke
Bedankt
多謝
ありがとうございます

Thank You

Thank You

Thank You

Thank You

Thank You

Obrigado
Merci
Gracias
Спасибо
Thank You

Thank You

Thank You

Thank You

Thank You