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AS/400 and Java: Update

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Topics



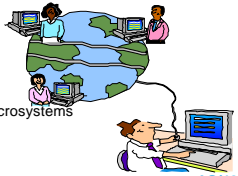
Java Refresher
Native Java
Toolbox for Java
Cool Java Customers

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What's Java?

Programming language and environment

- Simple, object-oriented
- Distributed and interpreted
- Robust and secure
- Architecture neutral and portable
- High-performance
- Multithreaded



"The Java Language: A White Paper" Sun Microsystems

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The Java Landscape

Your Apps / Shrink-wrap

Vendor Extensions

- ISV Component Beans
- Java Frameworks
- Java Middleware
- Workflow/Application/etc

Java Standard Extensions

- JDBC
- Beans
- Transactions

Java Specifications

Core Java

- Classes
- Objects
- Threads
- RMI
- I/O
- Networking

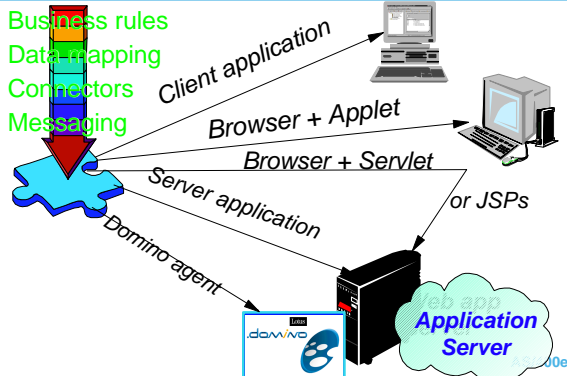
Java Specifications
Sun & Vendors Provide

JVM

Platform-specific hooks into OS and DB APIs
Transparent to developers

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Business Logic Components



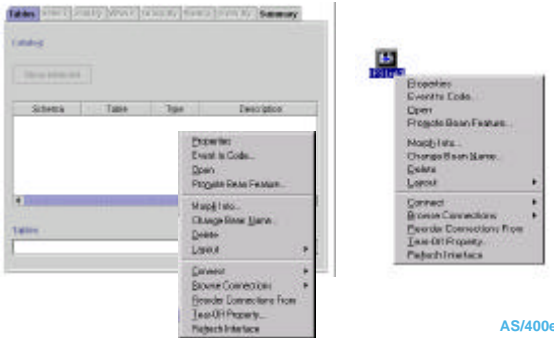
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JavaBeans

- Beans are a set of cooperating Java Objects that get bound and deployed within a single code module.
- Portable, platform-independent component model
- Reusable software components, manipulated visually in a builder
- Key Attributes
 - Introspection - enables builder tool to analyze how a Bean works
 - Customization - enables developer to use builder tool to customize appearance and behavior of Beans
 - Events - enables Beans to communicate and connect together
 - Properties - enable developers to customize and program with Beans
 - Persistence - enables developers to "save" the state of Beans for future use

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Example: JavaBeans

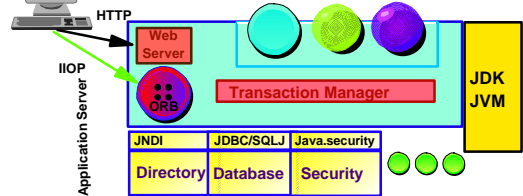


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Enterprise JavaBeans

Enterprise JavaBeans

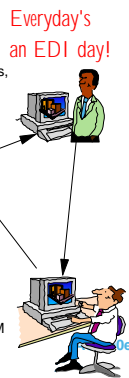
- Server-side of JavaBeans
- Provides runtime services such as threading, transactions, state management, and resource sharing
- Components are location independent and execute in a container which automates the use of shared resources.



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XML - portable data

- The missing piece of the e-business puzzle
- XML = eXtensible Markup Language
 - ▶ Structure and presentation of information/data
 - ▶ XML to the web; XML to EDI; XML between disparate languages, applications, platforms
 - ▶ Complementary technology to Java, Domino, Web application servers, etc.
- Provides a consistent way to:
 - ▶ Streamline Internet commerce
 - ▶ Define Internet standards for data interchange
 - ▶ Extend application functionality - formatting inputs and outputs with XML translators and mapping tools
 - ▶ Create new data formats (document type definitions DTDs)
 - ▶ Format content for tier 0 and tier 1 devices
- Recommendations
 - ▶ Start simple and expand to meet new demands as they emerge
 - ▶ Leverage standards as they emerge
 - ▶ Tie "vocabulary" to content exchange; agreed upon among ERM partners and suppliers



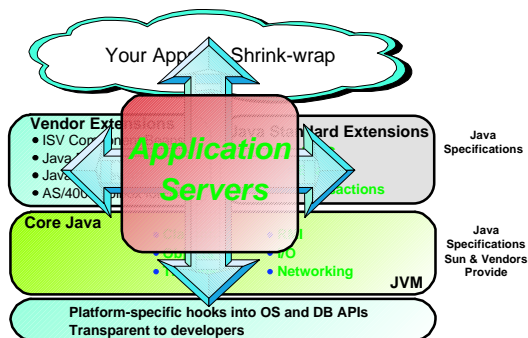
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Application Servers - Categories

- Transaction services (e.g. Tuxedo, JTS)
 - ▶ Handle most transactions, running the state of the business
- Connection services (e.g. MQSeries, JMS, Application/Platform-specific Toolboxes) and VPNs
 - ▶ Backend applications and database
- Decision support (e.g. Domino, Workflow Automation)
 - ▶ Dynamic, shifting variables across business' suppliers, customers, and operations
 - ▶ Applies filtering, correlation rules processing, transaction processing, workflow to a given set of conditions to determine the best course of action
 - ▶ Deal-based - individual transactions in response to the context of the deal, using information about the customer and the company's products and services, business rules and policies, information about the current state of the market and other inputs
- All-purpose
 - ▶ IBM WebSphere
 - ▶ BEA's WebLogic
 - ▶ Bluestone's Shappire
 - ▶ etc.

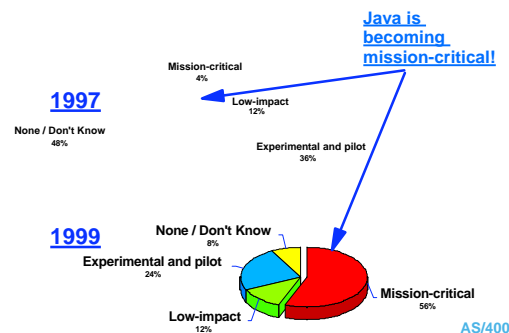
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The Java Landscape



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Java For Serious Applications



Source: Forrester Research, Inc.

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Why Customers Use Java

- **Web browser linkage:** 72%
- **Cross-platform compatibility:** 66%
- **Programmers' interest in Java:** 62%
- **Lower cost:** 49%
- **Centralized updating:** 43%
- **Improved application security:** 43%
- **Legacy data access:** 42%
- **Speed of development:** 35%
- **Robustness:** 30%
- **Open computing environment:** 29%
- **Ability to run on thin clients:** 28%
- **Universal client access:** 26%

Study conducted by Zona Research, 1997
http://www.zonaresearch.com/

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Topics

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Definition: Server Java

Java-based server is an application that executes in a networked environment, accepts connections from clients or other servers, and performs work in response to requests or interactions that come across these connections.

- Requirements:
 - ▶ High-performance
 - ▶ Reliable
 - ▶ Scalable
 - ▶ Transaction-intensive
 - ▶ Sophisticated relational database access
- Services:
 - ▶ Java-based HTTP services
 - ▶ Connection services
 - ▶ Application services
 - ▶ Static compilation with machine-independent and back-end specific optimizations
 - ▶ Distributed application support
- Tools, tools, tools
 - ▶ Developing, tuning, testing, deploying in distributed environment

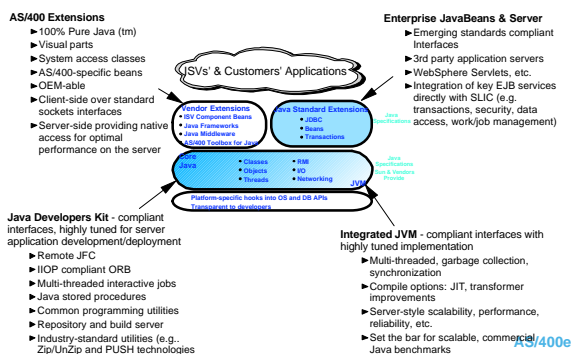
Source: Server-Side Java Arrives, by Robert Howard, Software Development, Nov. 1997. AS/400e

AS/400's Implementation Full Compliance

- Portability
 - ▶ Bytecodes allow portability of applets and applications
- Open
 - ▶ 100% Pure Java applications will run on AS/400 without recompilation
- Industry Standard
 - ▶ Compliant with Sun's specifications
- Tool Flexibility
 - ▶ VisualAge for Java for AS/400
 - ▶ Other workstation IDEs
 - ▶ Actively working with industry leading tool and middleware providers
- Industry-Driven
 - ▶ Adopt and contribute
 - ▶ JavaBeans, Internationalization, Enterprise Beans, Java Foundation Classes, Transactions, ..

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The Developing AS/400 Java Environment



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Key AS/400 & Java Differentiators

- Integrated Java Virtual Machine
 - ▶ JVM is tuned for AS/400 architecture
 - ▶ Garbage collection doesn't stop system
 - ▶ AS/400 leadership in scalability, reliability & performance
- AS/400 Developer Kit for Java
 - ▶ AS/400 Transformer provides optimized performance
 - ▶ Concurrent JDK install option
- AS/400 Toolbox for Java
 - ▶ Optimized access to AS/400 resources
 - ▶ Included in VA for Java, JBuilder/400 & Host on Demand
 - ▶ AS/400 includes WebSphere Standard
 - ♦ HTTP Server & Java Application Server
 - ♦ Servlets (today) & Enterprise Java Beans (future)
- Ready for new opportunities
 - ▶ Focus on compliance ensures broad scope of technology partners
 - ▶ SPCs certifying Java applications for IBM platforms
 - ▶ Full compliment of 3rd party technology partners

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AS/400 Server Java

Java APIs

JDK 2 Core Library APIs as no charge LPP (5769-JV1)

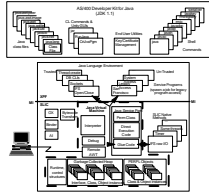
- java.io interface to IFS
- java.net interface to TCP/IP
- java.sql (JDBC) interface to DB2/400 CLI
- java.awt interface to Remote AWT

Skip Release Licensed Program Product

- New releases of JDK independent of OS/400 Version / Release

OS/400 V4R2+ (RISC Only)

- Kernel thread support



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V4R4 Enhancements - Overview

Concurrent support 1.1.6 & 1.1.7

- 1.2 now available by PTF

JDBC 2.0 and Static SQL (1.2)

JVM Enhancements

- AS/400 Security Manager
- JVMDI (1.2)
- Persistent DE, large Jar files

Secure Sockets

JNI for RPG & COBOL

Deployment Tools

- DMPJVM dump JVM debug support
- ajar utility (incremental support): distribution and maintenance

Performance and Scalability

- Light-weight synchronization
- Native Methods in User State
- Heap/Memory management
- File & Socket I/O
- Code generation/inlining

Usability

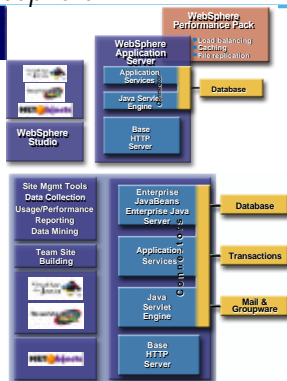
- Change Java Program (CHGJVAPGM) command
- SUBTREE parameters on CRTJVAPGM and DLTJVAPGM

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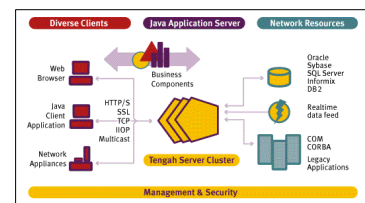
IBM's WebSphere™



- Java Web Application server
 - Stateful, conversational browser and server communications
 - Servlets and JSP in Std Edition
 - EJB available in Adv Edition
 - Commerce Server
- Application portability
- AD Tools
 - WebSphere Studio
 - VisualAge for Java Pro
 - NetObjects ScriptBuilder
 - NetObjects Fusion
 - NetObjects BeanBuilder
 - Web Workbench
- XML parser and DTD library



BEA/WebXpress WebLogic™



AD Tools

- Use of IDE of your choice
 - Graphical O-R mapping with TOPLink
- ### Application Models
- JHTML (Dynamic HTML)
 - Servlets
 - EJB – Session, Entity, CMP
 - JMS coming soon

Administration

- Graphical admin console
- ZAC, auto distribution of Java applets/applications to clients

Interoperability

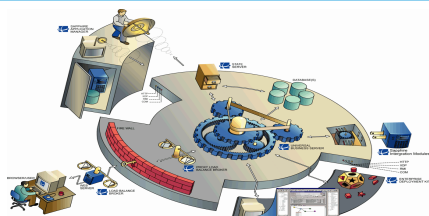
- HTTP server provided, plug into Netscape, IBM HTTP server
- Wrapper COM objects as RMI objects
- Support IIOP for interaction with CORBA

Scalability

- DB connection pooling, RMI connection pooling
- Java Transaction Server (JTS) for distributed transaction support
- Load balancing and failover

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Bluestone Sapphire/Web™



AD Tools

- Visual IDE (Sapphire/Developer)
- XML adapter
- read/write XML-based data sources

Application Models

- Generate Java server, servlet, EJB

Administration

- Graphical admin console
- Event notification via e-mail

Interoperability

- Any HTTP server
- Sapphire Integration Modules (SIMs)
 - SAP R/3, PeopleSoft, MQSeries, CICS, Tuxedo, CORBA, COM/DCOM, ...
- Enterprise Deployment Kit (EDK)
 - create new SIMs

Scalability

- Load balancing and failover
- Dynamic start/stop servers workload
- DB connection pooling

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Domino™

- Application models
 - Document-centric, e-mail, collaborative, workflow
 - Connection services to extend core business data and application resources
 - HTTP server to serve Domino database information to the web
- Integration point for:
 - Enterprises (Domino Enterprise Connection Services - DECS)
 - Technologies (Java, XML, web)
 - Business processes
 - Solution-specific connectors
- Key enabler for:
 - Sales force automation
 - Customer relationship management
 - Knowledge management
 - Click 'n mortar web sites
 - Forms-base customer-facing interfaces



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Topics



- Java Refresher
- Native Java
- Toolbox for Java
- Cool Java Customers



What is the Toolbox?

A set of reusable Java classes which provide easy access to AS/400 data and resources.

Any Java program can use the Toolbox classes.

Works with all Java programming models (applets, applications, servlets, etc.).

Certified 100% Pure Java! so it runs on any Java Virtual Machine.



- e.g. Microsoft Windows, OS/2, AIX, Solaris, AS/400, Netscape Communicator, Microsoft Internet Explorer and many more.

Java Beans provided for most components.

Fully NLS enabled.

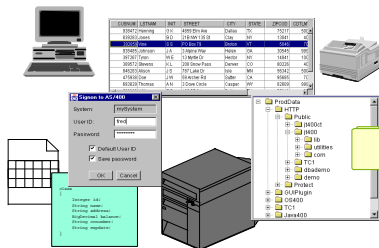
Does not require Client Access/400 or Java on the server AS/400.

Access classes require JDK 1.1 greater, GUI classes require Swing 1.0.3 or later.

Now OpenSource!

AS/400 Toolbox for Java

What is the Toolbox?



AS/400 Toolbox for Java

Access Classes: Low-level Java APIs to Access Data

- User Authentication and Identification
- Command Call
- Data Area
- Data Description
- Data Conversion
- Data Queues
- IFS
- JDBC
- Jobs
- Messages
- Print
- Permissions
- Program Call
- Record-level Database Access
- System Status
- System Values
- Users and Groups
- User Space

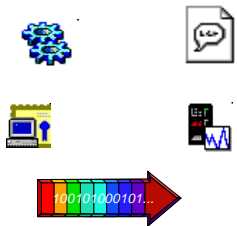
Now In Beta Test:

- FTP
- Java Application Call
- Service Program Call

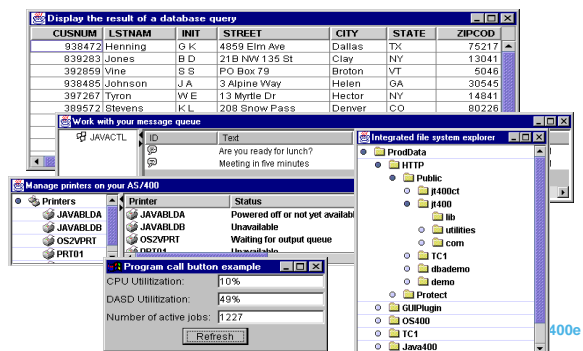
Other components

The list keeps growing!

- Digital certificates
- Installer
- JarMaker
- AS/400 Messages
- Message files
- System status



Examples: AS/400 Toolbox for Java Visual Parts



New Support in V4R4

Improved Classes

- JDBC 2.0 support
- Additional job attributes
- Additional user attribute
- IFS class extends java.io.File

New Classes

- Message file
- Data area
- System status
- System value
- Object authority

New Functions

- SSL support
- Spooled file viewer
- JarMaker

Graphical Toolbox

- ProgramCall via XML
- GUI via XML
- GUI builder

= Both access and GUI components available

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New Enhancements in V4R4

Enhancements to existing classes / new classes

- The Toolbox JDBC driver now supports JDBC 2.0.
- The Job classes return additional job attributes.
- The User/Group classes return additional user attributes.
- IFSJavaFile extends java.io.File. With very little change an application that uses java.io.File can now access files on the AS/400.
- The MessageFile class provides easy access to messages in AS/400 message files.
- The DataArea classes provide easy access to AS/400 data areas.
- The SystemValue classes provide easy access to AS/400 system values and network attributes.
- The SystemStatus classes provide information such as processor usage, memory pool sizes, and the number of active jobs.
- The ObjectAuthority classes allow you to view and change the authority of AS/400 objects.

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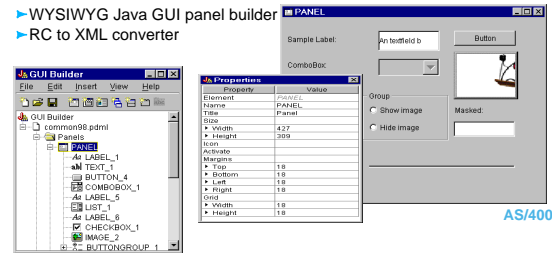
New Functions in V4R4

- Secure Sockets Layer (SSL) Support** helps ensure secure communication between client and server.
 - Provides encryption and client authentication
 - Requires SSL-enabled servers which are available starting in v4r4
 - Requires encryption 'engine' which ships with 5769CE1, 5769CE2 and 5769CE3
- Spooled File Viewer** is a GUI class for displaying the contents of spooled files on the AS/400.
 - Requires server changes which are available starting in v4r4
- AS400ToolboxJarMaker** is a utility to reduce the size of the Toolbox jar file.
 - You provide a list of Toolbox components you use. JarMaker removes unused classes from j400.jar

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Totally New in V4R4

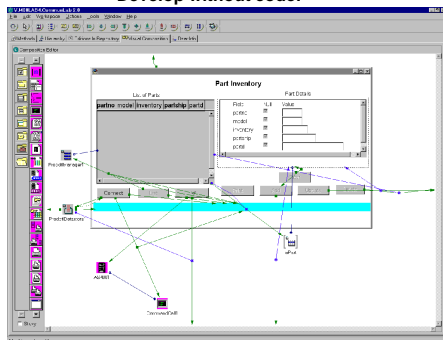
- Graphical Toolbox - a set of tools and runtime frameworks to easily build GUIs using XML that are rendered using Java. The Graphical Toolbox consists of:
 - PCML - an XML language for building Toolbox ProgramCalls
 - PDML - an XML language for building Graphical Interfaces and a pure Java technology for rendering these GUI definitions using JFC (Swing).
 - Based on Java Beans
 - WYSIWYG Java GUI panel builder
 - RC to XML converter



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Visual development environments

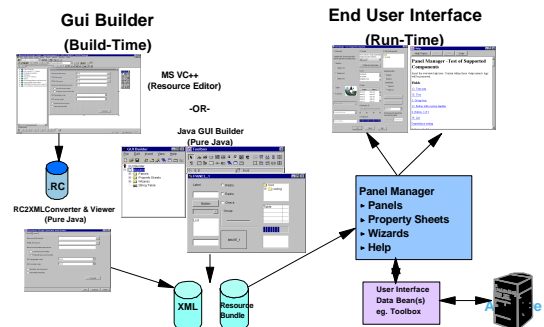
Develop without code!



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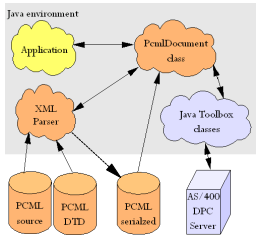
The Future of Java and the AS/400

V4R4 Enhancements - XML Graphical Toolbox



The Future of Java and the AS/400

V4R4 Enhancements - Program Call



PcmDocument

setValue()
callProgram
getValue()

```
File name: qsysset.pcm
<?xml version="1.0"?>
<!DOCTYPE pcm SYSTEM "pcm.dtd">
<pcm>
  <cmcl name="jobInfo">
    <data name="jobName" type="char" length="10"/>
    <data name="jobUser" type="char" length="10"/>
    <data name="jobNumber" type="char" length="8"/>
    <data name="jobAssistLV" type="char" length="10"/>
    <data name="jobQCC" type="char" length="11"/>
  </cmcl>
  <program name="qsysset" path="QSYS.IBQGY.IBQGYSETG.pgm">
    <data name="caller" type="char" length="11" usage="input"/>
    <data name="jobInfo" type="struct" usage="input" struct="jobInfo"/>
    <data name="rvCode" type="char" length="11" usage="input" int="XXXX"/>
    <data name="dataFormat" type="char" length="11" usage="input/output" int="MDY"/>
    <data name="dateSig" type="char" length="11" usage="input/output" int=""/>
    <data name="timeSig" type="char" length="11" usage="input/output" int=""/>
    <data name="errorCode" type="int" length="32" usage="input" int="0"/>
  </program>
</pcm>
```

```
String pcmPath = "users\\valen\\qsysset.pcm";
PcmDocument doc = new PcmDocument(as400, pcmPath);
doc.setValue("qsysset caller", "J1");
doc.callProgram("qsysset");
String jobName = doc.getValue("jobInfo.jobName");
String jobUser = doc.getValue("jobInfo.jobUser");
String jobNumber = doc.getValue("jobInfo.jobNumber");
```

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Modification 3 Beta

Now available at <http://www.ibm.com/as400/toolbox>

HTML and servlet classes

- Set up HTML forms and tables from Java
- Quickly build servlets to access AS/400 data and resources



Other new classes

- FTP (File transfer protocol)
- Service program call
- Remote Java application call

Plus

- Java 2 officially supported
- GUIs now use Swing 1.1
- Linux Support

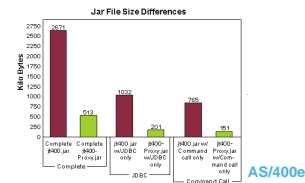
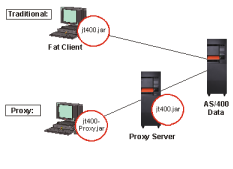
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Modification 3 Beta

Now available at <http://www.ibm.com/as400/toolbox>

Proxy Support

- Three-tier solution
- Set of lightweight classes runs on client
- Full set of Toolbox classes runs on middle-tier
- Full jt400Proxy.jar about 550KB (JDBC about 250 KB); full Toolbox jar about 2.5 MB



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Open Source

- Toolbox source for many components available soon at <http://www.ibm.com/developerworks/opensource>
 - Part of IBM's open source development community
 - Use source as a debug tool
 - Submit new function
 - Modify source for your use
 - Submit problem reports and bug fixes
- Two versions of the Toolbox:
 - Licensed program
 - Only IBM developed code
 - Supported by IBM
 - Open source version
 - Source from many non-IBM contributors
 - Supported by open source community

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Language Interoperability

Overview

Numerous ways to make program-to-program calls

- Sockets
- Runtime.getRuntime().exec() (Java to RPG/Cobol)
- QCMDEXC (RPG/Cobol to Java)
- Distributed program call (via Toolbox)
- Stored procedures (via native or Toolbox JDBC)
- Data queues/User spaces (via Toolbox)
- Java Native Interface (JNI)

Each has advantages and disadvantages

Except for JNI, all are inter-process

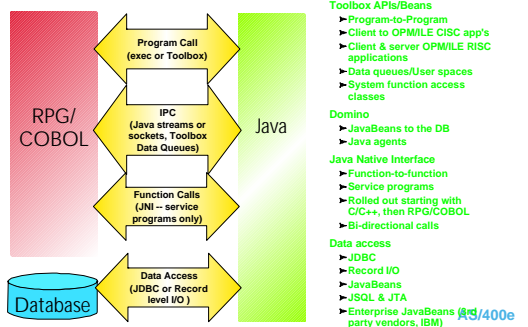
- JNI is intra-process

Improvements coming to many in future releases

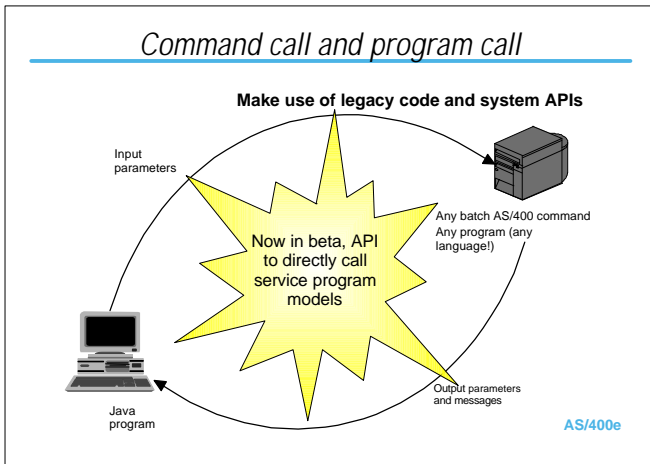
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Language Interoperability

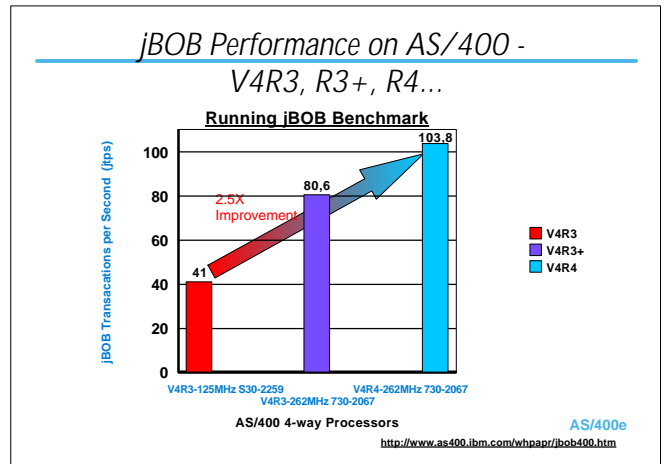
Integrating with Existing Applications and Data



Command call and program call



jBOB Performance on AS/400 - V4R3, R3+, R4...



Performance: Comparing RPG and Java

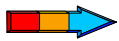
- No Standard "commercial" benchmark (ala TPC-C)
 - Enterprise Java Beans being developed
 - Various Industry and IBM initiatives in progress
 - "Typical" RPG applications are not "equivalent"
 - JDBC = Dynamic SQL (JSQL and record I/O in progress)
 - Java integrity: type checking, class loader, verification
 - Platform portability
 - Sun's JDK = C application
 - Java runtime = layer on C runtime
 - Designed for portability vs integrated and tuned to a platform (redundant sync points, parameter validation, etc.)
 - Integrated into OS/400, now in the process of tuning (expect significant improvements)
 - Java is Object-Oriented
 - Call indirection enabling subclassing
 - Type checking and enforcement
 - Method calls for data access and update
 - Hotspot optimization technology will reduce impact
 - Industry target = C++ performance
 - Today's Java matches RPG for business logic, still slightly slower for data access, recommend stored procedures
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Performance Tips

- Major Factors
 - Memory contention
 - pool size and thread limits (MPL slots)
 - WRKSYSSTS will report "thrashing"
 - Garbage Collection (object creation)
 - much improved in V4R4
 - "problem" vs. "privilege"
 - thread-level heap space caching
 - Direct Execution (optimization level)
 - Transform time vs. run-time trade-off
 - Synchronization ("monitor" locks)
 - Inherent overhead, especially on N-way
 - much improved in V4R4
 - Strings
 - Issue is inherent in the Java language
 - Data Base Access
 - JVM Startup
 - JAR files are better than directories
 - Loading is done "below the MI"
 - Inter-class binding is very tight
 - "Minor" Factors
 - Array Bounds Checking
 - Part of the Java language specification
 - Optimization possible when bounds are known
 - Data Conversion (EBCDIC and Decimal)
 - Method Call
 - Much improved in V4R4
- However, there's no substitute for good programming!
-
- AS/400e
- AS/400-specific performance tips:
<http://www.as400.ibm.com/developer/java/faq/perfaq.html>

Topics

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Top 10 Reasons Java on AS/400

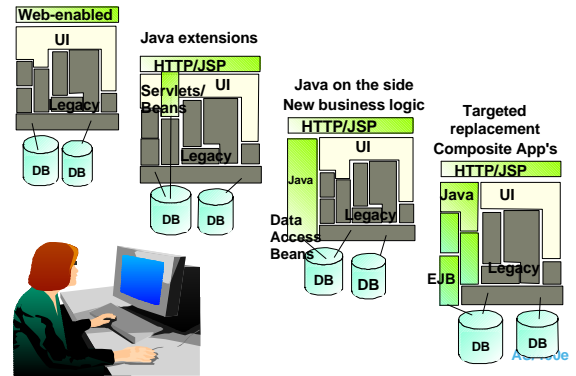
- Integrated Java Virtual Machine (JVM)**
 - AS/400 JVM runs below in the hardware (below TIMI) providing better performance, scalability and security than other platforms
 - Java Transformer**
 - Direct compiling of Java code on AS/400 means applications run faster and can support more users than other platforms
 - Hundreds of Threads, Thousands of Users, Millions of Objects!
 - Write Once, Run Anywhere**
 - 100% Pure Java applications written on ANY platform can be run on the AS/400 - and vice versa
 - Software Deployment Technology for the Next Millennium**
 - JavaOne - 20,000 attendees - new market for programming resources
 - Premier technology to leverage the internet, provide access to enterprise IT resources and enable business for next century
 - Availability**
 - AS/400 99.9% availability provides a more reliable platform for Java applications than other alternatives
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Top 10 Reasons Java on AS/400

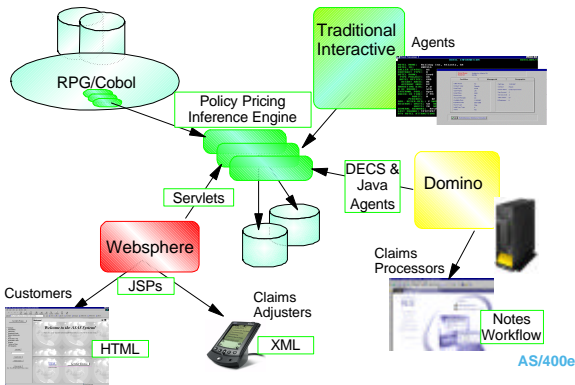
- True Cooperative Development**
 - VisualAge for Java offers an integrated environment for editing, debugging and browsing Java applications. 100% Pure Java can be generated on the AS/400 executed on any Java compatible system
- AS/400 Toolbox for Java**
 - Access AS/400 enterprise resources from Java compatible clients (Java front-end to existing applications)
 - JDBC - DB2/400, Client/Server interfaces for Java programs
- AS/400 Java Development Kit**
 - AS/400 version of Sun's JDK 1.1.X (4,6,7) - produce Java programs
 - Collection of tools, help files, documentation for Java programmers
- San Francisco Frameworks**
 - Cross platform commercial frameworks to rapidly build critical cross platform applications - GL, AR/AP, Sales/Purchasing, Order Management, Warehousing
 - Reduced expense - increased time to market (ISVs)
- Java is KEY to IBM e-business strategy**
 - AS/400 is premier e-business platform - advanced technology at the lowest cost of ownership

AS/400e

Staging Decisions



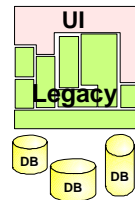
Econets: Insurance Application Transformation



AS/400e

Internet: Lesco

- ▲ No need to change screens
- ▲ Combine menu choices, data entry from multiple screens
- ▲ Direct access into live data
- ▲ Tools, HTML and Java



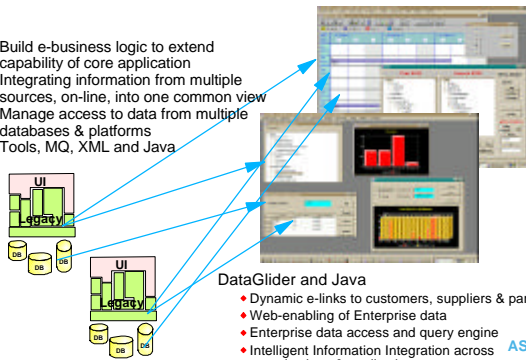
Lesco with Jacada and Java

- Lowered costs and increased inventory turns
- Customer calls have been dramatically reduced
- Revenues have doubled, productivity has increased 300+, transactions have risen 400+%

AS/400e

Intranet: DataGlider

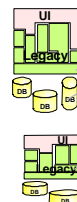
- ▲ Build e-business logic to extend capability of core application
- ▲ Integrating information from multiple sources, on-line, into one common view
- ▲ Manage access to data from multiple databases & platforms
- ▲ Tools, MQ, XML and Java



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Intranet: Business Logic

- Add "new economy" functions
- Leverage collaborative and remote access technologies
- Wrapper existing logic to incorporate into new application models
- Security, encryption
- Tools, Domino and Java



Ford, UK: SFA, Triangle, Domino and Java to applications

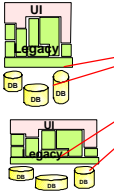
- Integrated central customer database and marketing activities, linking vehicle ordering and financial services
- Collaborative working environment between a mobile sales force and central sales and marketing infrastructure
- Reduced duplication of marketing and associated costs, increased number of incremental sales
- Accurately identify customer purchase intentions

AS/400e

Internet: Oriental Trading & WebSphere

- Leader in the sale of value-priced toys, novelty gifts, crafts materials and home decor with one of the largest inventories in the industry

- Business Issues
 - Needed to transition site from informational site to online ordering
 - 5,500+ visitors/day so scalability was key
 - Needed to easily integrate into existing order fulfillment systems



- Business Results
 - Leveraged existing code in new ways, added "new economy" functions
 - 50% of site visitors are new
 - 11,000+ shoppers per day, with 9-13% of those ordering
 - Reduce telemarketing and mailing costs, while increasing sales
 - Improve ability to target customer wants through ability to interrelate the unique characteristics of each shopper, providing customized experience

Intranet: Safety Insurance & VisualAge RPG

- Third largest insurer in Massachusetts with network of 600 agents
- Business Issues:
 - Move agents rapidly to the web



- Great RPG programmers but needed great "web" programmers - how to leverage existing skill base?
- Extend existing client/server application while leveraging existing capabilities
- Business Results
 - Web-enable all agent data entry applications
 - Agents have free internet access via secure AS/400 server
 - Building Agent Virtual Community
 - VA RPG gave developers fast track to Java - Java-enabled all agent inquiry modules with writing any Java code!!!
 - Customer service successes due to the excellence of their people and technology support provided to exceed the expectations of customers

AS/400e

Internet: REALXpress.com

Vision

- Be the leader in online software sales
- Provide "one-stop shopping" web site for AS/400 community

"The AS/400 is a wonderful platform. It can beat the other servers hands down when it comes to scalability, security & overall reliability"

— Tony Coppola,
General Manager, REALXpress.com

Challenge

- Merchandise new way of doing business for AS/400 community

Solution

- AS/400e - 170 & 150
- WebSphere Standard Edition
- Servlet-based application

Value

- 150 products on site today
- Expects short-term growth to 500
- Interactive web screens aid the buyer with decision process
- "Live" support also available, if needed



AS/400e
www.realxpress.com

Intranet: Welch's Foods

Vision

- Deliver decision support systems to suppliers and brokers
- Retain customers by providing high quality products & services
- Provide HR information to employees

Challenge

- Measuring success of promotions was a complex process

"We wanted to run our new web-based application on our AS/400 because that's where our company data resides. Java was the obvious answer for our programming environment."

Solution

- AS/400e - 720
- WebSphere Standard Edition
- Servlet-based application

— Deepak Mohapatra,
Manager of Operations & Networks

Value

- Improved promotion management system will yield 10-20% savings
- Provide 24/7 day access for human resources web site for employees



Internet: HMV Media Group

Vision

- Roll-out a secure, robust and scalable web site for worldwide access
- Use existing AS/400 infrastructure and skills

Challenge

- Integrate e-commerce applications with HMV's physical stores

"We chose the AS/400 because we believe it has a long-term future - a very scalable solution with a high level of security and availability"

— Brad O'Dell
Directory of e-commerce at OTC

Solution

- AS/400e & WebSphere Standard Edition
- Servlet-based application

Value

- Providing round-the-clock ability for customers to purchase products on-line
- Offer additional services to existing customers
- Generate more business by attracting new customers
- 50% of site visitors are new customers



HIS MASTER'S VOICE De

Tools Network for AS/400



- AS/400 stamp of approval
- Technical support via PartnerWorld for Developers
- Go-to-market support
 - Tools Catalog
 - Tools Network web site
 - Tools road shows
 - Joint marketing campaigns
 - Help with show presence
- Help with problem resolution
- Technical reviews & influence on direction

http://www.as400.ibm.com/developer/tools AS/400e

Java & AS/400 Summary Messages

- Java = future of AS/400 application development
- Modernize existing applications
 - ▶ RPG of the Future
 - ▶ Migration from RPG to Java will occur over many years
 - ▶ Java can tie into existing AS/400 applications
- Java applications "opens up AS/400"
 - ▶ Port Java applications to/from NT, Unix, S/390 & AS/400!
- How to get started
 - ▶ Modernize existing RPG applications with Java GUI
 - ▶ Use Java IDE to build applets, JavaBeans, Servlets & EJB's
 - ▶ Develop & deliver server-side applications using a Java application server
 - ▶ ISV's & customers need to get started with Java NOW!
 - ▶ Migrating RPG skills to Java requires significant investment

AS/400e

Building the Total e-business Solution Some of our Technology Partners



Helpful Java & AS/400 Web Sites

- AS/400 Home Page
 - ▶ <http://www.as400.ibm.com/java>
 - ▶ Or go main AS/400 site to Products, then Java
- Partners In Development & SDM
 - ▶ PID = www.ibm.com/as400/developer/java
 - ▶ SDM = <http://www.ibm.com/developer>
- AS/400 Java & Websphere References
 - ▶ <http://www.as400.ibm.com/developer/java/solutions/jem.html>
- VisualAge for Java for AS/400
 - ▶ <http://www.software.ibm.com/ad/as400/vajava/>
- San Francisco Project
 - ▶ <http://www.ibm.com/java/sanfrancisco>
- IBM Java Home Page
 - ▶ <http://www.ibm.com/java>
- WebLogic/BEA - Enterprise JavaBeans for AS/400
 - ▶ <http://www.weblogic.com>
- Aldon Computer Group - SCM for AS/400
 - ▶ <http://www.aldon.com>
- Bluestone Software
 - ▶ <http://www.bluestone.com>



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APPN	Integrated Language Environment	PowerPC AS
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