



WebSphere Foundation Update and Technical Direction



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WebSphere Foundation



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WebSphere Has Evolved to Meet the Demands of Business Agility



40+ Years Ago

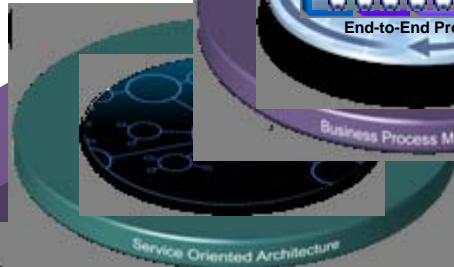
Transaction Processing
CICS is Born

Messaging
MQ is Born

15+ Years Ago

12+ Years Ago

Transaction Processing for the Web
WebSphere Application Server is Born



3-5+ Years Ago

SOA is Born
BPM is Born

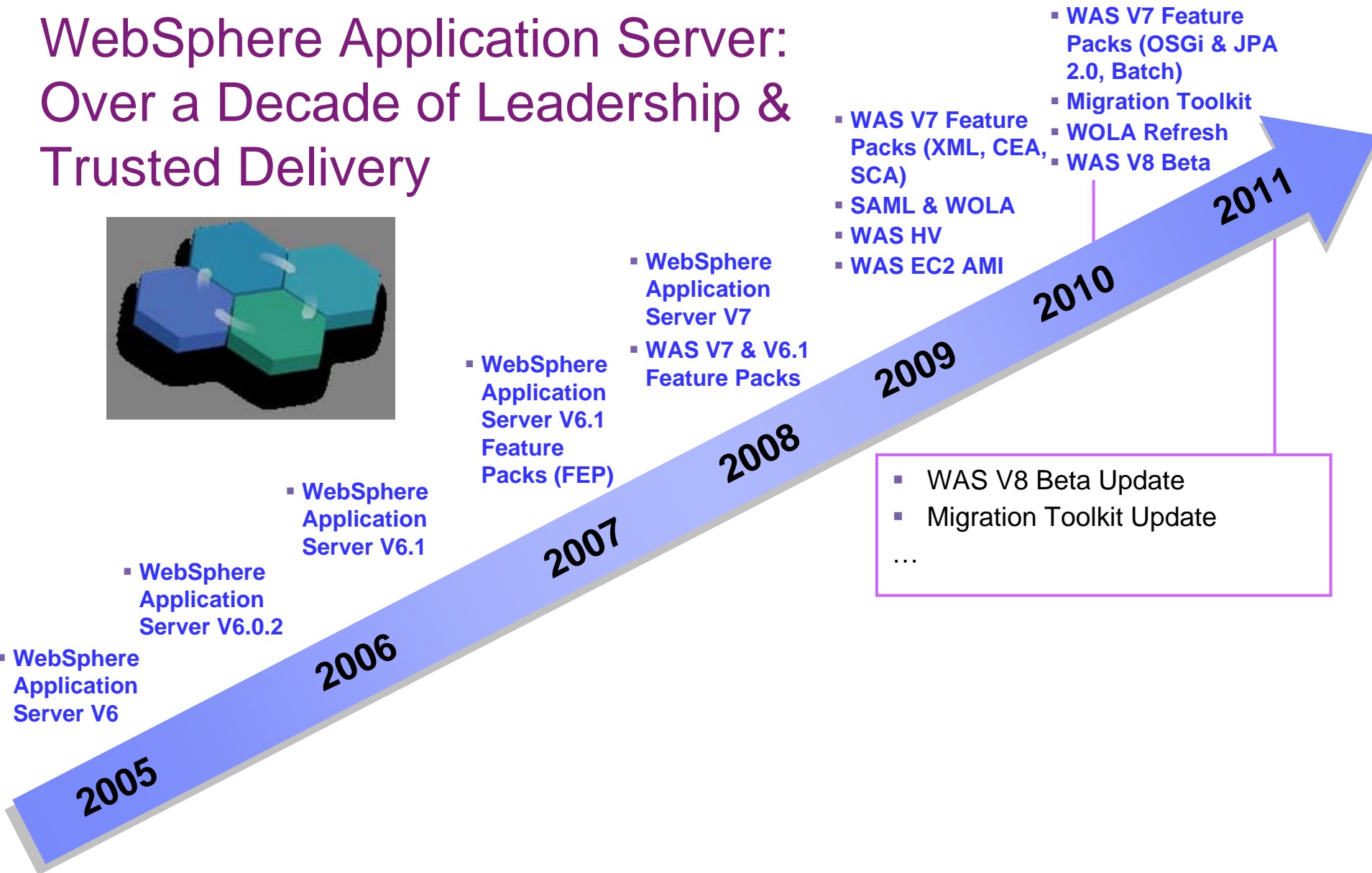
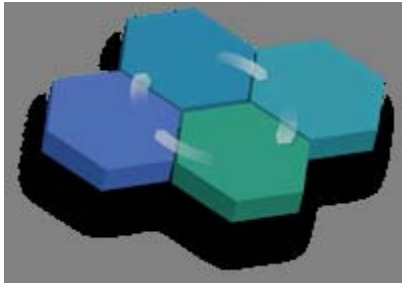


2009+

Integrated platform to accelerate
client success

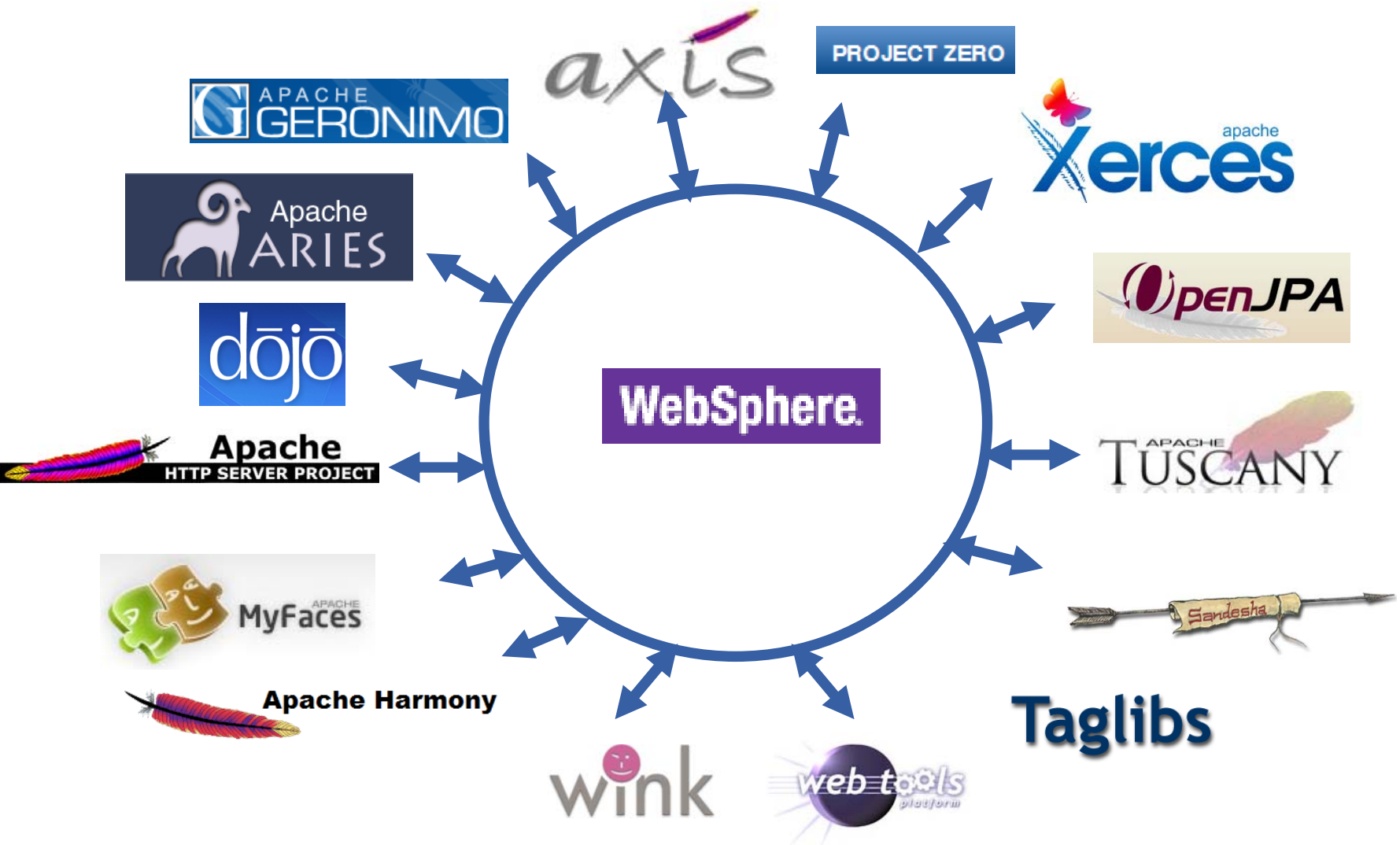


WebSphere Application Server: Over a Decade of Leadership & Trusted Delivery





Enabling Developers to Start With Open Source/Community Software & Benefit from IBM Value Add in Production





Lowering Barriers to Adoption with No Cost WAS for Developers

- A no-charge offering that satisfies the need for a no-cost WebSphere Application Server development runtime for projects that don't warrant the expense of a priced and supported runtime on the developer desktop.
- Reduce testing effort and develop with confidence using a runtime environment that is identical to the production runtime environment your applications will eventually run on.

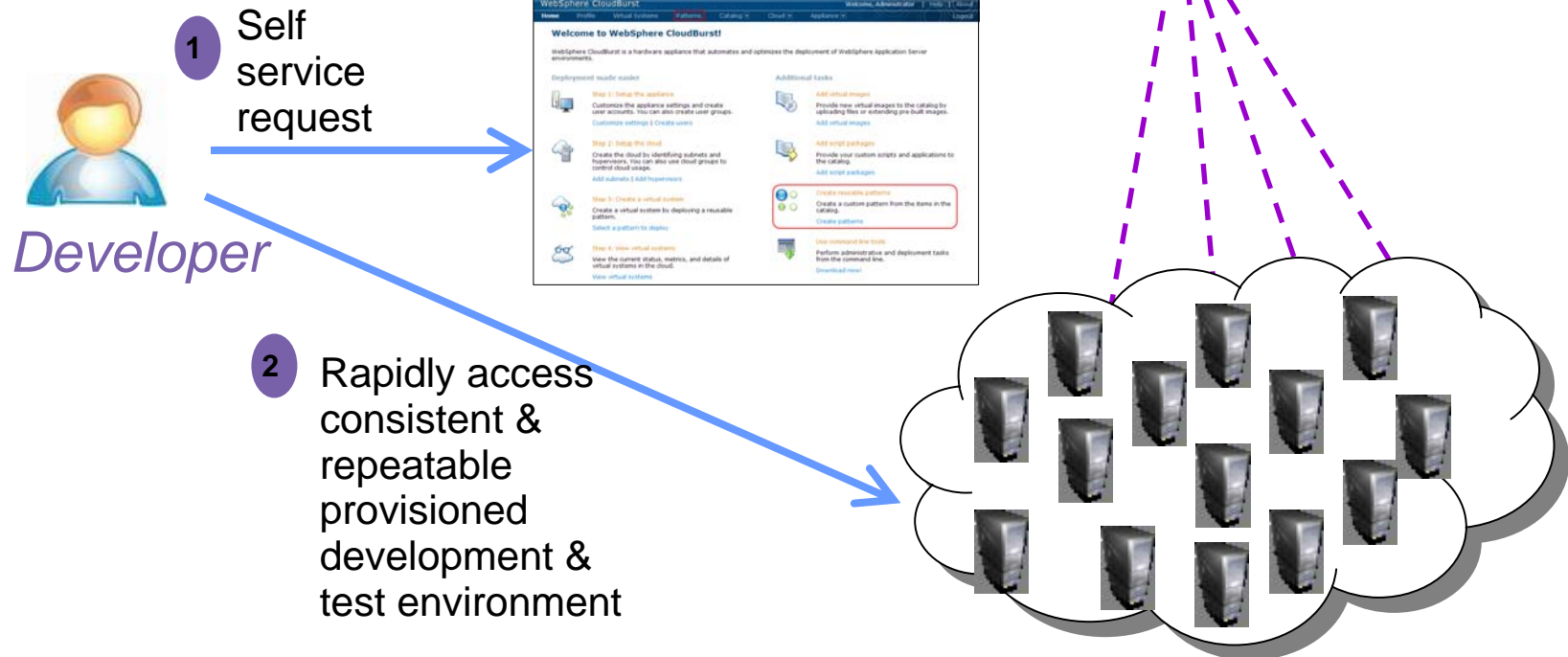
<http://www.ibm.com/developerworks/downloads/ws/wasdevelopers/index.html>

Private Cloud: Speed the Development & Test Lifecycle Through Self Service Access to Repeatable Environments

WebSphere CloudBurst Appliance & WAS Hypervisor Edition



V2 Firmware includes
Intelligent Management Pack





WebSphere Application Server: Driving Developer & Administrator Productivity to Reduce TCO and Improve Business Agility

Reducing Barriers to Adoption

- Open Source/Community to Enterprise Production Ready
- No Cost WAS for Developers
- Self Service Development Environments with WebSphere CloudBurst Appliance & WAS Hypervisor Edition

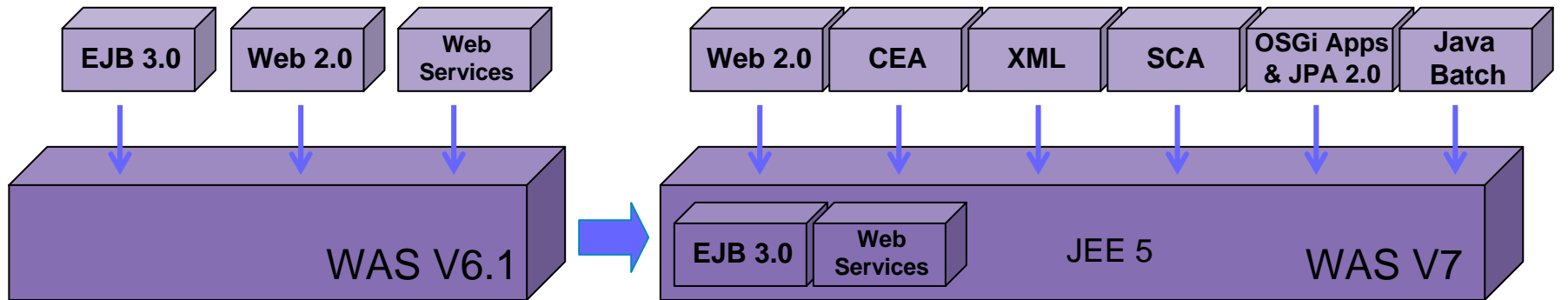
Fit for Purpose Programming Models to Jumpstart Development

- Java EE
- Web 2.0
- SIP & CEA
- Web services
- XML
- SCA
- OSGi Applications
- Java Batch

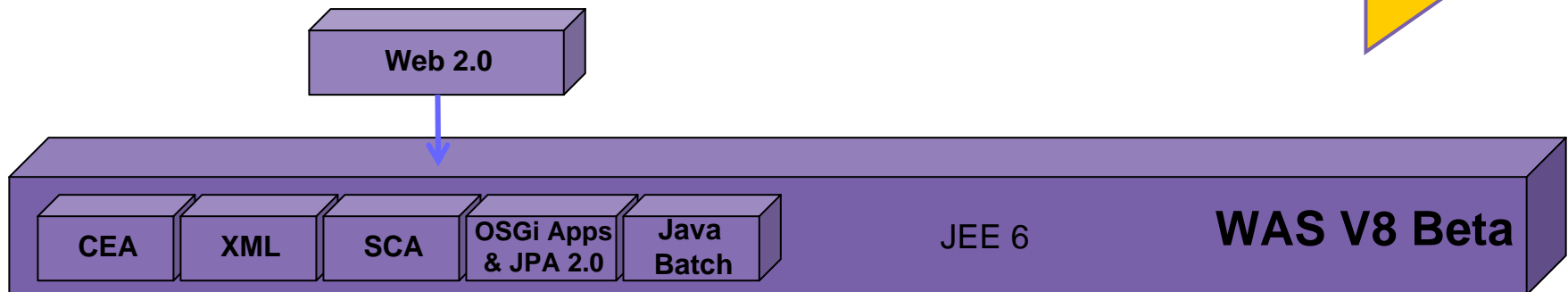
Fit for Purpose Application Foundations & Tooling

- High Performance
- Transactional Strength
- Scalability & HA
- Security
- Administration, Management & Migration
- Integrated Tooling

WebSphere Application Server Feature Strategy



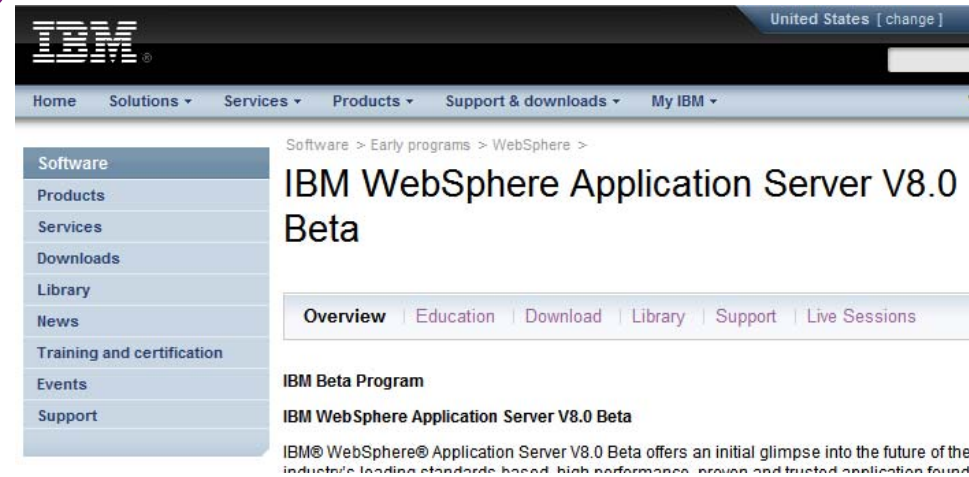
*As new technology evolves, so does WebSphere –
Feature Packs enable you to selectively take advantage of new
standards and features on the current release.*



WebSphere Version 8.0 Agile Beta

- New Agile Alpha/Beta approach:

- Better leverage Agile devt
- Improve feedback
- Reach a broader range of clients
- Increase Development teams' involvement in the programs



- Beta available Since July 2010, refreshed **March 14**.

- All WebSphere platforms since March refresh.
- Download WAS V8 Beta Refresh
www14.software.ibm.com/iwm/web/cc/earlyprograms/websphere/wsaso/index.shtml
- Interactive Forum led by Development Teams
www.ibm.com/developerworks/forums/forum.jspa?forumID=2180
- RAD V8.0.1
<http://www.ibm.com/developerworks/downloads/r/rad/>

WebSphere Customer Experience Program (CEP)

- Agile Open Beta
 - Anyone can download and exercise the Beta code
 - Anyone can participate in forum discussions with focused attention from IBM architects and developers
- Increased Interaction via Customer Experience Program (CEP)
 - Regular and frequent interactions offered during Feature Focus weeks
 - Milestone demos and feedback sessions to gather on-going client input
 - Consumability validation sessions with clients
 - Send a note to cep@us.ibm.com

WebSphere Application Server V8 Beta InfoCenter:

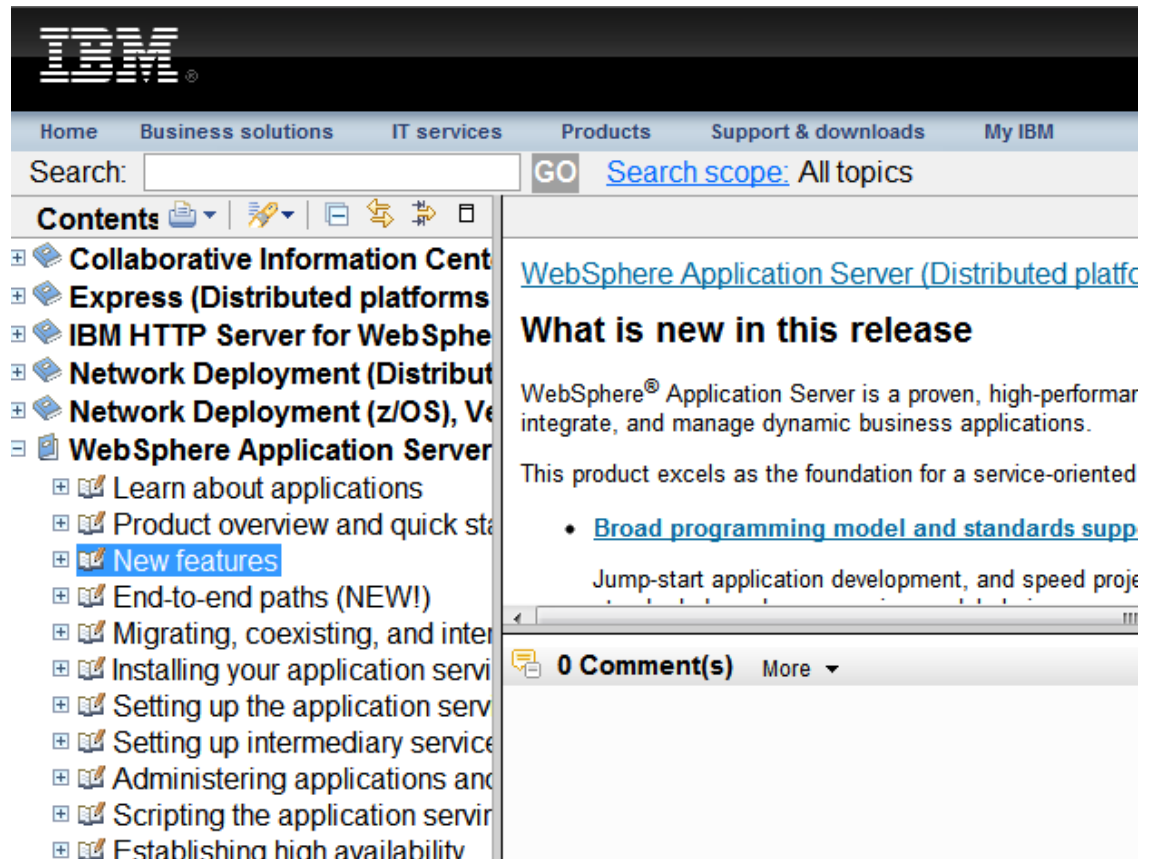
<http://publib.boulder.ibm.com/infocenter/wasinfo/beta/index.jsp>

Details of product features

“New features” section identifies Beta capabilities

Icon highlights new features in the Beta refresh: 

Provide feedback directly on the pages





WAS V8 Beta Themes

| Theme | Provides |
|--|---|
| Broadest Programming Models & Standards | Evolve WAS to become the home for customers' programming models of choice, and deliver the standards that underpin these programming models |
| Fast, Flexible & Simplified | Deliver a fast and more flexible runtime environment that improves the productivity of developers and administrators and reduces TCO |
| Extensive Deployment Environments | Support and optimize performance and administration/management for the broadest range of deployment options |
| Integrated Tooling | Developer ease-of-use and productivity tools across all programming models |
| | <i>Future plans subject to change without notice.</i> |



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Broad programming model and standards support

- Java™ Enterprise Edition 6.0 specification
- REST and Web 2.0
- OSGi
- Service Component Architecture (SCA)
- XML and Web Services
- Java Batch
- Communications Enabled Applications
- Session Initiation Protocol

Java EE 6.0 - EJB 3.1

- No-interface local Session beans
- EJB timers
 - Container created timer via `@scheduled` or `timerType` attribute in the `ejb-jar.xml` rather than programmatic creation
 - Add non-persistent timers
 - Calendar-based timer expression (using cron syntax).
- Singleton session beans
 - useful for JVM cache patterns, statistics/RAS aggregators, ...
- Embeddable Container
 - Unit test EJB 3.1 on stand-alone J2SE
- Packaging EJB modules in WARs
- Asynchronous EJB method invocation
 - `@Asynchronous` annotation - Two modes: (i) Fire and forget (ii) Fire and return results.

Java EE 6.0 - JPA 2.0

WAS implementation extends Apache OpenJPA and includes:

- Type-safe, dynamic Criteria API and associated Metamodel API
 - An alternative to untyped JPQL
 - Enables compiler to validate the query and produces a typed result.
- Bean Validation integration
 - Annotation-based constraints on properties – like a type extension
- Object relational mapping enhancements for associated JPQL updates
- L2 cache provider and performance improvements
 - Entities not found in the persistence context are loaded from L2 cache
 - New OpenJPA plug-in for dynamic cache service as an L2 cache provider
 - DynaCache OpenJPA plugin provides:
 - Advance monitoring and administration of data and query caches
 - Multi-JVM caching leveraging the data replication service.



Java EE 6.0 - Servlet 3.0

- Extensibility
 - Dynamically add servlets and filters
 - Configuration extensibility through Web Fragments
 - Contribute fragments to web.xml in extensions (e.g. frameworks)
- Ease of Development
 - Annotations
 - @WebServlet, @WebListener, @WebFilter, @WebInitParm
- Asynchronous processing support
 - Useful for AJAX polling or Dojo-Comet patterns.

Java EE 6.0 - JSF 2.0

- Ease of Development
 - ViewDeclarationLanguage API for integrating view technologies (e.g. other than JSP)
 - Facelets as a standard View Declaration Language
 - Native Ajax integration
 - ManagedBean annotations through CDI
 - EJBs as managed beans: including transactional behaviour
 - Bean Validation
- Default Implementation has changed
 - WAS v7
 - Default implementation – JSF SUN RI 1.2
 - Can Configure – MyFaces 1.2
 - WAS v8 Beta
 - Default implementation – MyFaces 2.0
 - Can Configure – JSF SUN RI 1.2

REST and Web 2.0

Quickly deliver compelling and integrated Desktop and Mobile Web applications that leverage the company's SOA investments

Business Value: Improve user experiences & extend reach to mobile devices to help increase revenue potential and customer satisfaction.

Key Features:

Web 2.0 to SOA Connectivity:

- **Web Remoting:** Simple configuration vs. having to rewrite the original Java objects, EJBs or Web services to expose methods & map via HTTP GET/POST
- **Web Feeds:** ATOM & RSS libraries for exposing JEE resources as Web 2.0 style “data feeds”
- **Ajax Proxy:** Browser access to cross-domain services (proxy makes all target URLs appear from the same origin as the Javascript application)
- **JAX-RS** programming model and client-side REST libraries

Ajax Messaging:

- Pub/sub messaging which connects the browser to WAS for pushing server-side events to the browser

Ajax Development Toolkit & Samples:

- A supported distribution of the Dojo Toolkit with IBM enhancements to simplify working with different protocols, data formats and connectivity options & IBM sample apps

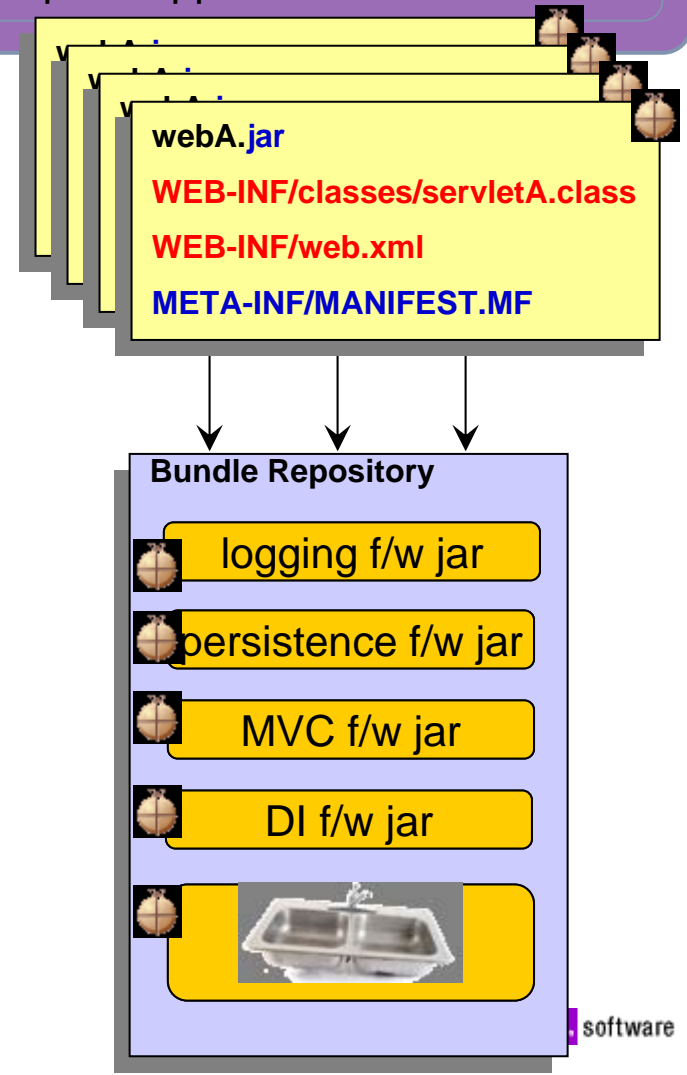
Better Application Modularity through OSGi

Speed development, increase ease of use and reuse through the modularity, dynamism, and versioning capabilities of OSGi applied to web & enterprise applications

Business Value: Reduce development and operational complexity through advanced modular deployment and management system

Key Features:

- **Modular deployment and management:** Separate common libraries from application archives; manage them centrally and across many versions, concurrently.
- **Standards Based DI Framework:** POJO development model, with a container that manages injection of configuration, and controls activation & deactivation, integrated with the server.
- **In-place update:** Update applications modules without restarting the application.
- **SCA Integration:** Components can be decorated as SCA components to provide coarse grain SOA services



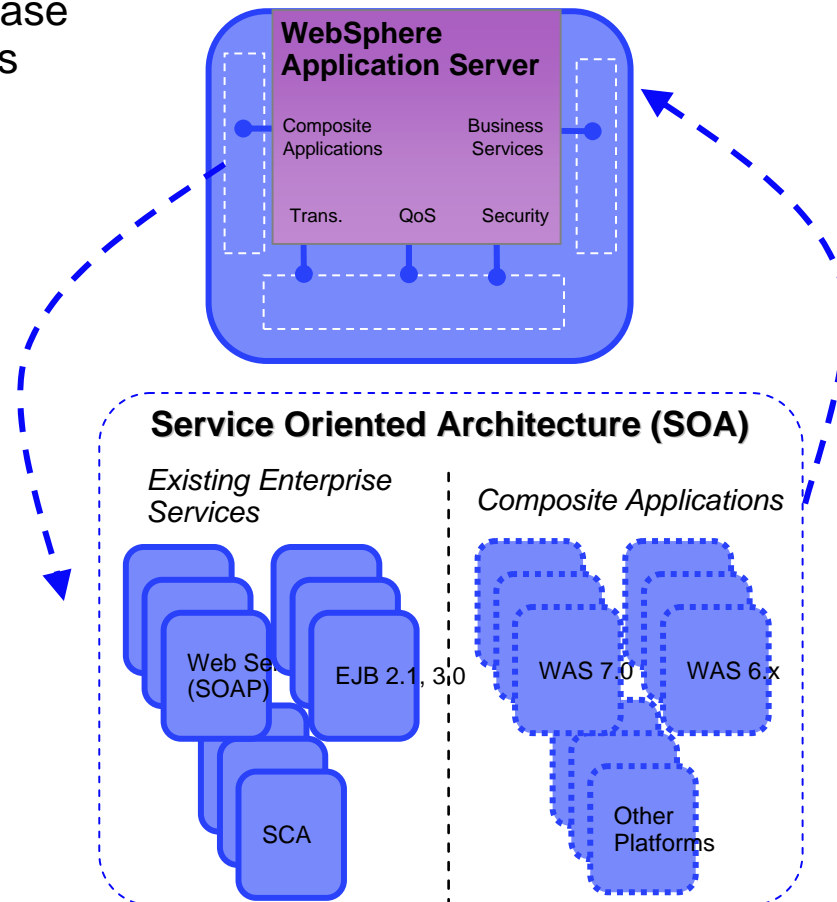
SCA

Speed application delivery and customization by separating business logic from implementation considerations

Business Value: Reduce costs via reuse and increase business agility across heterogeneous environments

Key Features:

- **Compose:** Create SCA service compositions using POJOs, EJB 2.1 or EJB 3.x components, Java Servlets, and AJAX/JavaScript
- **Wire Services:** Bindings for Web Services, JMS, SCA and EJB 2.x and EJB 3.x
- **Spring & EJB 3.x Support:** Expose EJB 3.x & Spring components for composition re-use
- **Web 2.0 Support:** Expose business logic to Web 2.0 apps through JSON-RPC and ATOM Web feeds
- **Data Support:** Support for data as Java Architecture for XML Binding (JAXB) or SDO 2.1
- **Simplified Deployment:** Flexible service deployment as a JAR
- **SCA sample applications**



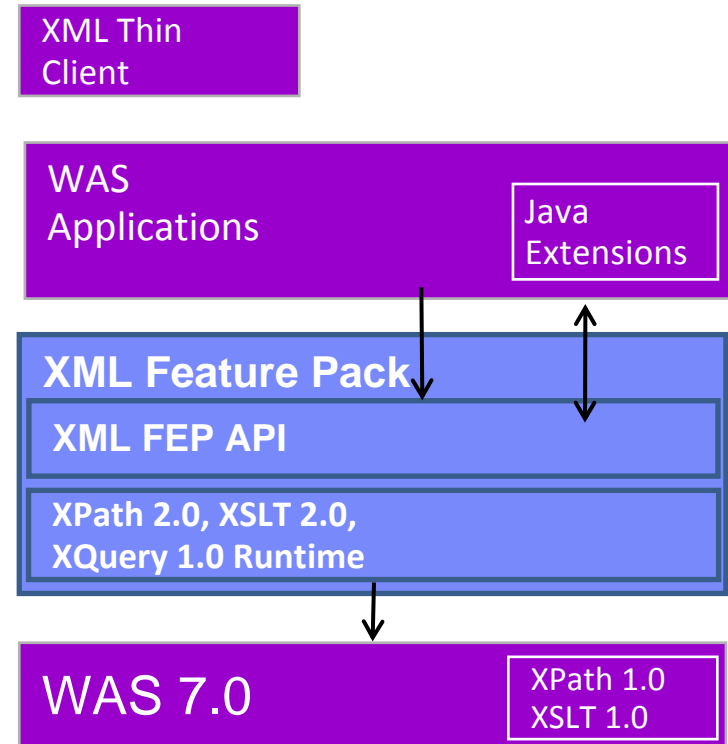
XML

Reuse Java skills & improve ease of use while developing applications to process structured data

Business Value: Unlock business insights hidden in data & simplify data interoperability across the enterprise & with partners

Key Features:

- **Standards Based:** Support for the XPath 2.0, XSLT 2.0, and XQuery 1.0 W3C standards
- **Consistency:** XML runtime API that offers consistent execution and data navigation API while allowing access to existing Java logic
- **Enterprise grade:** Enterprise class multi-threaded scalability & serviceability with IBM support
- **Samples:** 40+ samples including 4 end to end scenarios



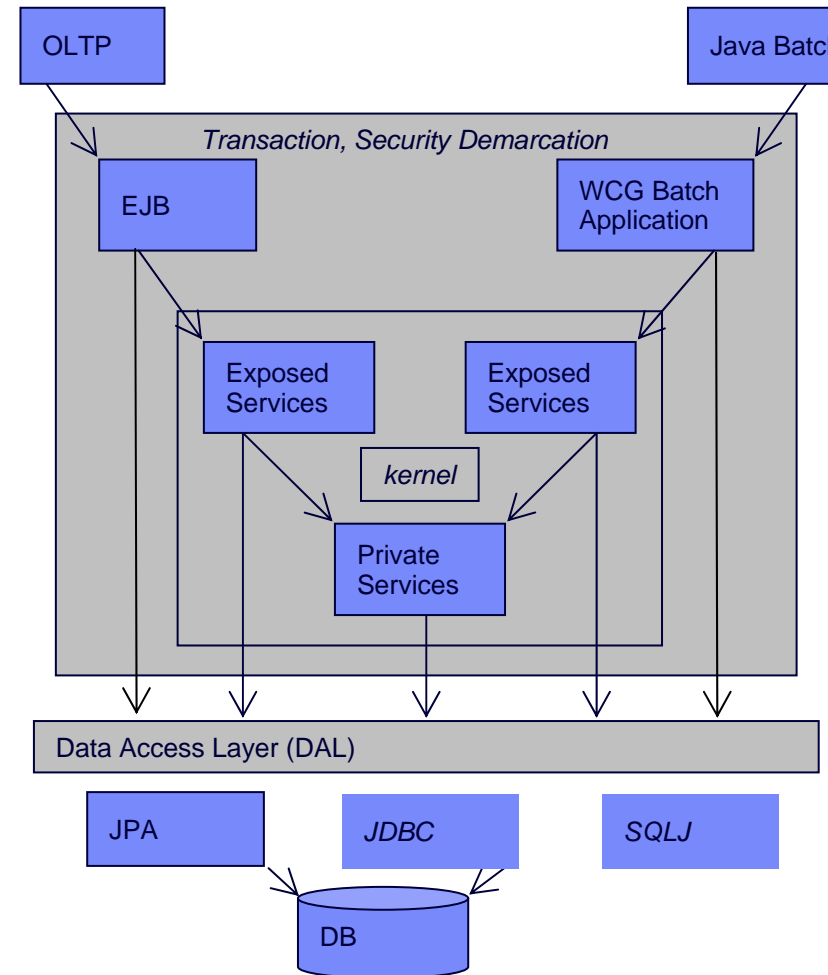
Java Batch

Reuse Java skills to process batch workloads

Business Value: Extend IT asset life, improve business responsiveness by reducing the “batch window” and minimize costs through modernizing batch workloads

Key Features:

- **Skills Reuse:** Pojo-based Batch application development.
- **Rapid Development:** End-to-end productivity enhancing tooling, including: a J2SE development environment, application development frameworks & libraries, single-server local unit-test environment & packaging/deployment tools with pre-packaged connectors for enterprise schedulers
- **Modeling:** Automatically recognize and model bulk processing tasks in business processes



Communications Enabled Applications (CEA)

Simply and rapidly add communications capabilities, like Click to Call and Cobrowsing, to any Web Application leveraging existing skills and an SOA approach

Business Value: Improve user experience & satisfaction to help increase revenue potential & reduce costs

Key Features:

- **Simplicity:** 4 lines of code to enable any CEA widget onto an existing or new web application
- **Existing Skills:** Java & JavaScript
- **Telephony Access:** REST & Web service interfaces to Make call, disconnect call & incoming call notifications
- **Widgets:** Customizable & extensible Web 2.0 widgets
 - Click to Call
 - Call Notifications
 - Collaboration Dialog
 - Contact Center Cobrowsing
 - Peer to Peer Cobrowsing
 - Two-way Synchronized Forms





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Fast, flexible and simplified application foundation

- Faster time to value through a simplified product install, update and uninstall with integrated prerequisite and interdependency checking
- Enhanced security and governance capabilities
- Continued focus on high performance
- Enhanced problem determination and application manageability through the new High Performance Extensible Logging (HPEL) log and trace framework, with support for command line and administrative console interactions.



Install, Update, Uninstall via IBM Installation Manager

- Using IBM Install Manager as the install technology for the WebSphere Application Server and associated products
 - Faster installation
 - More customer control
 - Including z/OS
 - Use remote or local repositories
- Centralized Installation Manager (CIM) functions are integrated with and performed by the Job Manager

Install Packages

Select the packages to install.

Installation Packages

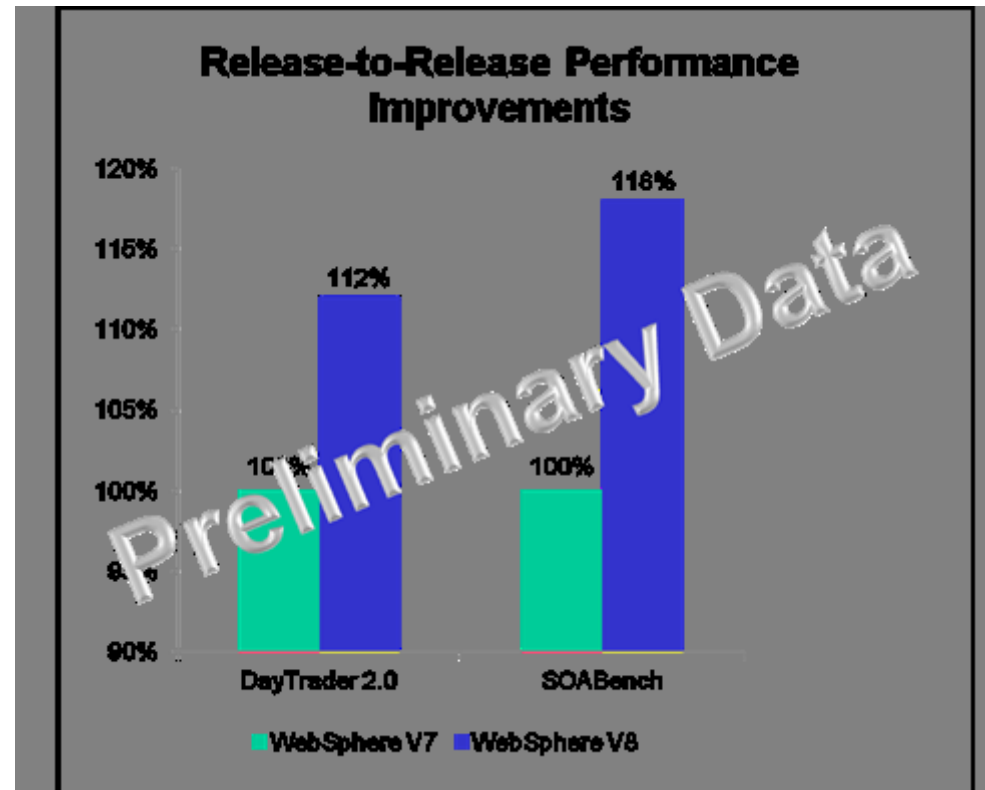
- ☐ Application Server
 - ☐ Version 8.0.0.0
- ☐ Application Server - Express
 - ☐ Version 8.0.0.0
- ☐ Application Server Network Deployment
 - ☐ Version 8.0.0.0
- ☐ Application Server Network Deployment for z/OS
- ☐ DMZ Secure Proxy Server
 - ☐ Version 8.0.0.0
- ☐ IBM HTTP Server
 - ☐ Version 8.0.0.0
- ☐ IBM HTTP Server
 - ☐ Version 8.0.0.0
- ☐ IBM WebSphere Edge Components: Load Balancer for IPv6
 - ☐ Version 8.0.0.0
- ☐ Web server plug-ins for IBM WebSphere Application Server
 - ☐ Version 8.0.0.0
- ☐ WebSphere Customization Tools
 - ☐ Version 8.0.0.0

Enhanced Security

- Secure by Default improvements
 - SSL-required communication for EJB/CSlv2 communication by default
 - Enable session security integration by default
 - Enable cookie protection via HttpOnly attribute to reduce cross-site vulnerabilities
- Support for Java EE6 security standards
 - Java Authentication SPI for Containers (JASPI) extends the pluggable JAAS authentication concepts to allow 3rd party providers to handle the authentication of HTTP request and responses destined for web applications
 - WS-Security API (WSS API) and WS-Trust support in JAX-WS to enable customers building single sign on Web services-based applications
 - generic JAAS login modules for common types of security token now support WS-Trust
- Multiple security domain setups can create a unique instance of a federated repositories user registry.
- Web Services security support for Security Assertion Markup Language (SAML) security token for exchange of user identity and attributes
 - Configured through PolicySets

WebSphere Application Server V8 Beta Performance

- DayTrader 2.0 EJB3 Performance Improvements to V8 Beta
 - ▶ Performance improvements by moving to V8 Beta next generation JEE applications
 - ▶ Improved JVM/JIT performance
 - ▶ Pathlength reduction and fine-grained locking mechanisms in EJB3/OpenJPA code base combine to give significant throughput improvement
- SOABench JAX-WS WebServices Performance Improvements in WAS V8 Beta
 - ▶ Large performance improvements by moving to V8 Beta from V7 for both light and heavy weight web services Applications
 - ▶ Common scenario 10kin10kout gives 18% higher throughput
 - ▶ Improved Java performance along with JAXB marshalling optimization, enabled by default, produce higher throughput



* Results will vary by application and environment



High Performance Extensible Logging (HPEL)

HPEL is a new way of handling log and trace

- **Speeds up logging and tracing**
 - Log primitive over 6x faster than WAS v7 log primitive
 - Trace primitive 3.8x faster than WAS v7 trace primitive
- **Provides more flexible access to log and trace data**
 - Command-line access to filter and format logs and trace
 - Administrative console GUI to filter and format local or remote logs and trace, even when the remote server is down
 - Programmatic access to filter, format, and merge local or remote logs and trace
- **Works with existing application log and trace instrumentation**
- **Provides a common solution for z/OS and distributed platforms**

View only warning and higher msgs for this one application:

```
logViewer.sh -minLevel warning -includeLoggers "com.acme.app1.*"
```

View msgs from 07/11/2010 onward beginning with SEC on thread 0x0000000c:

```
logViewer.sh -startDate 07/11/2010 -message "SEC*" -thread 0c
```



WAS V8 Beta Themes

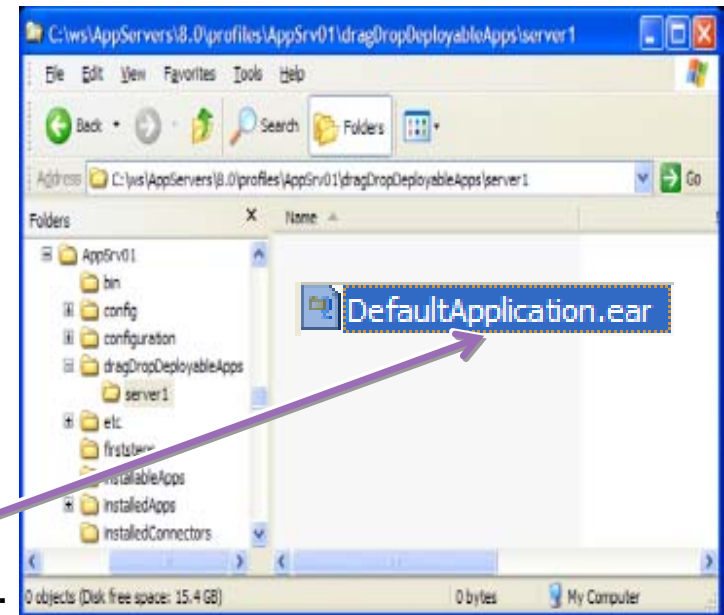
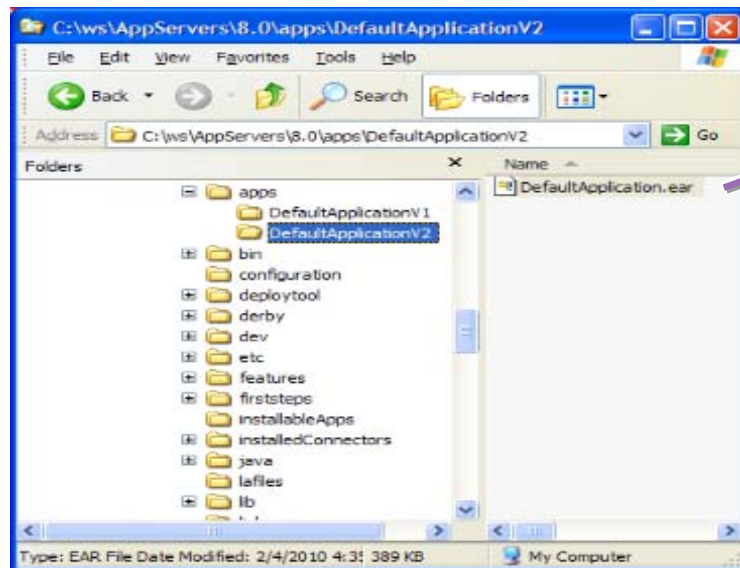
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Extensive Deployment Environments

- Improved administration capabilities to support a range of deployment environments
 - Job Manager support for remote server install/update and profile management
 - Agentless registration of remote hosts to Job Manager
 - New jobs for installing IM, IM content (e.g. WAS) and managing profiles
 - Add a node based on an existing configuration (addNode –asExistingNode):
 - Improved ability to recover a previously configured federated node
 - Move a node to a different machine or operating system
 - Modular deployment of OSGi applications
- Enhanced developer productivity during the edit-compile-debug cycle through directory-based drag and drop application install, uninstall and update
- Assisted migration support for applications deployed to WebSphere Application Server 6.0, 6.1 and 7.0

Drag & Drop Application Deployment

Users can drag/drop contents in and/or out of a monitored directory. Configuration through property-based config file.



File types:

- EAR (Enterprise Archive)
- WAR (Web Application Archive)
- JAR (Java Archive)
- SAR (SIP Application Resource)
- Properties file

Actions:

- Install - drag in a file
- Uninstall - drag out a file
- Update - drag over existing file

Migration

- WAS Configuration Migration Management Tool
 - From WAS v6.x and v7 to V8 Beta
 - Including Feature Packs
- Assisted Application Migration: WAS Server Migration Toolkit
 - Applications typically do not require migration: Java, Java EE and WAS API aim to be backward compatible.
 - WAS deprecation policy: support for at least 2 full releases after deprecation.
 - WAS Server Migration Toolkit assists with analysis of apps – since Dec 2009.
 - Free download – a plugin for Eclipse or RAD.
http://www.ibm.com/developerworks/websphere/downloads/migration_toolkit.html
 - Analyzes application source code (Java, JSP, deployment descriptors) for:
 - Removed features
 - Behavior changes
 - JRE differences
 - Java EE specification changes or enforcements
 - Supports application migrations from:
 - WAS V5.1, V6.x to V7
 - WAS V6.x, V7 to V8 Beta
 - WebLogic, JBoss to WAS





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Rational Application Developer (RAD)

