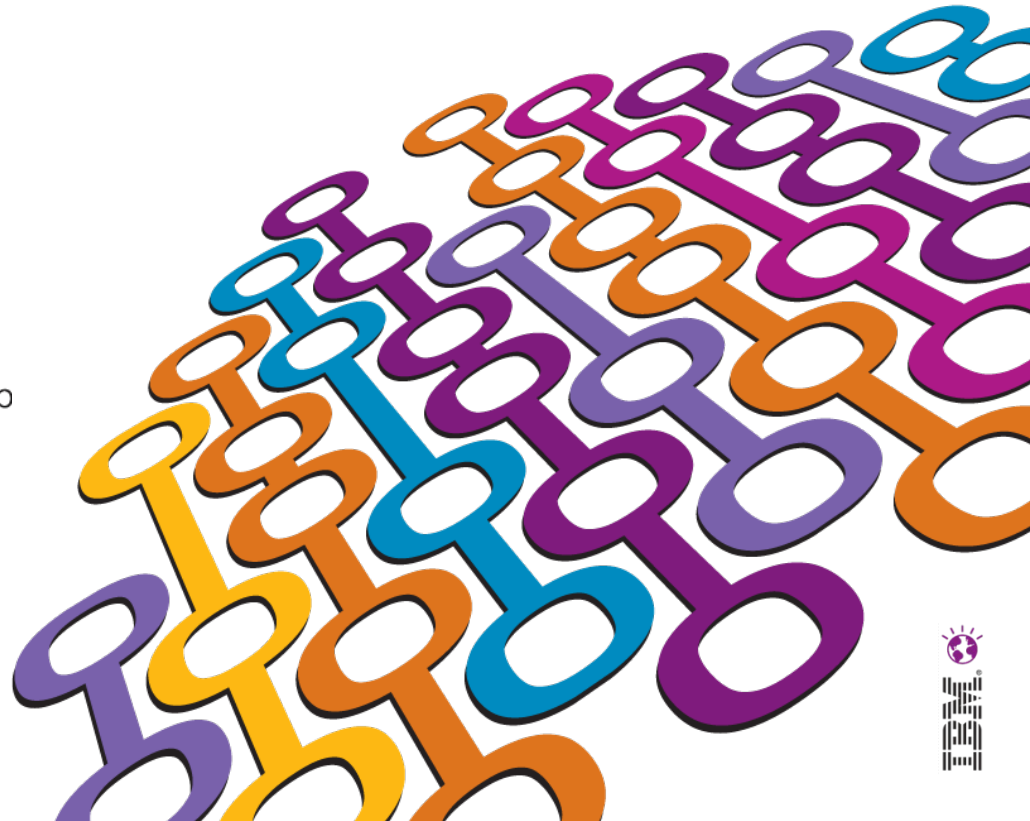


WebSphere Application Server v8.5 Overview

Impact2012

The Premier Conference for Business and IT Leadership

Innovate. Transform. Grow.





Please Note

- IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal at IBM's sole discretion.
- Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision.

The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

- Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.



Agenda



- Application Infrastructure Trends
- Overview of WAS 8.5
 - Developer Experience
 - Application Resiliency
 - Operations and Control





Application Infrastructure Trends

Rapid application development and delivery driving simplified, integrated and automated development and operations lifecycles

Explosion of mobile, social and cloud applications driving new demands on middleware infrastructures

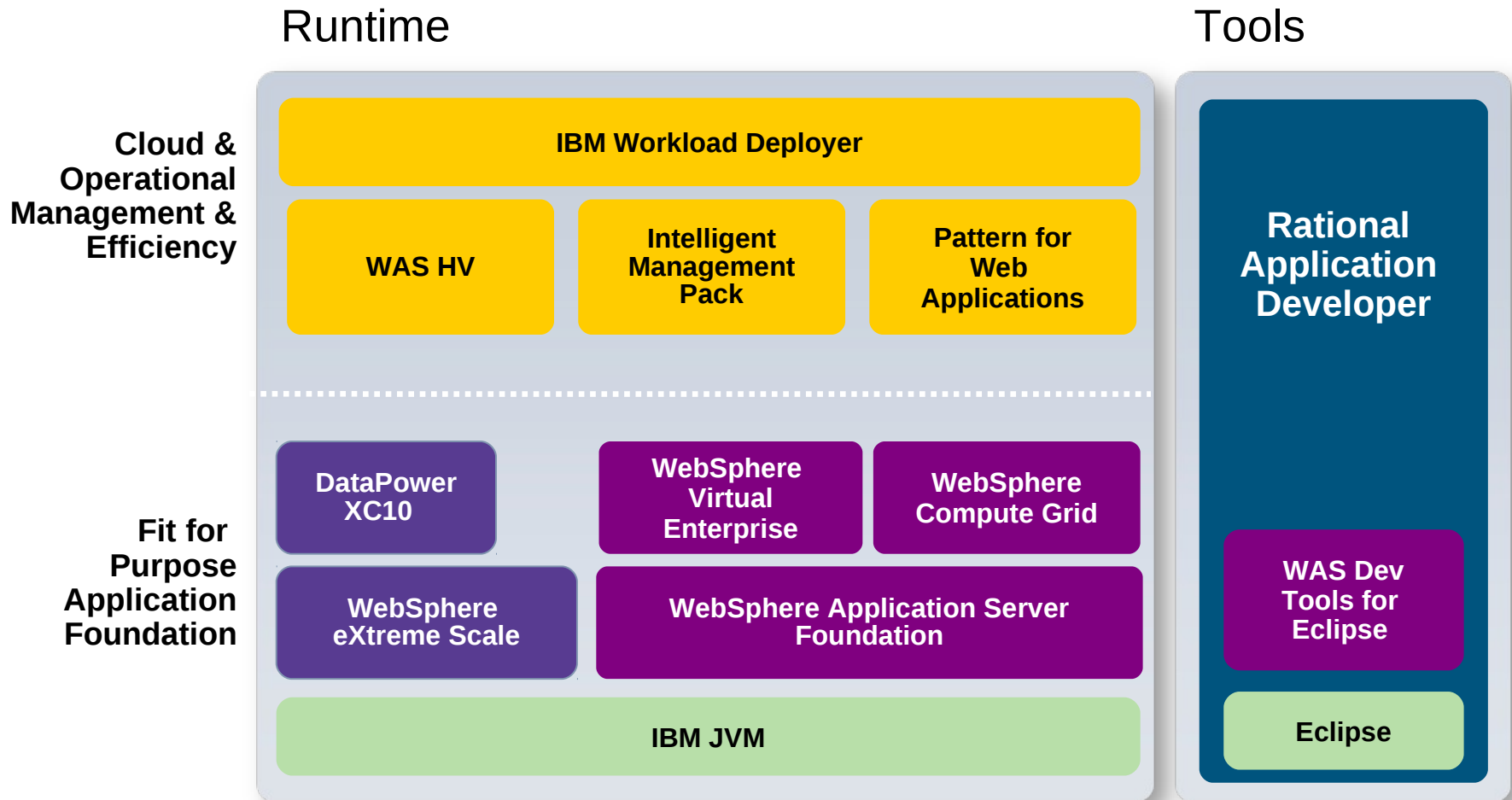
The combination of huge transaction volumes against massive amounts of data with little tolerance for delays is driving the need for **elastic caching** technologies

Use of **cloud delivery models** to provide elasticity, scale, multi-tenancy and context across different form factors and access methods



WebSphere Application Infrastructure

Current Offerings





WebSphere Application Server Family

Today - - Before V8.5

WAS for Developers

Tools Edition

Enables efficient development of innovative apps that will run on WAS in production

Available as a no-charge edition for the developer desktop and includes Eclipse adapters

WAS Hypervisor Edition

Optimized to instantly run in VMware and other server virtualization environments

WAS ND

Tools Edition

Delivers near-continuous availability, with advanced performance and mgmt capabilities, for mission-critical apps

WAS for z/OS

Takes full advantage of the z/OS Sysplex to deliver a highly secure, reliable, and resource efficient server experience

WAS

Tools Edition

Provides secure, high performance transaction engine for moderately sized configurations with web tier clustering and failover across up to five application server profiles

WAS Express

A lower-cost, ready-to-go solution to build dynamic Web sites & apps

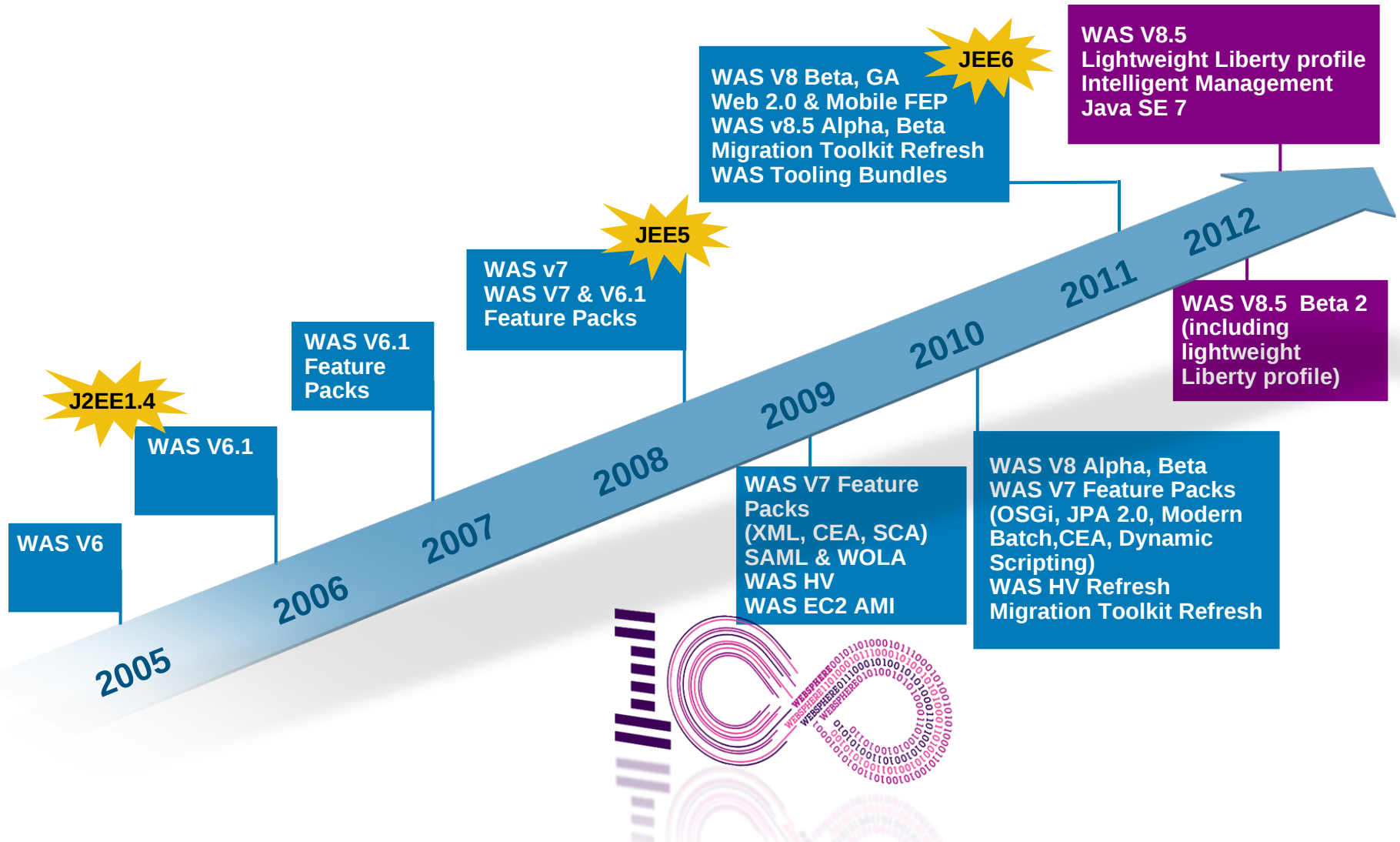
WAS CE

An open source-based, small footprint foundation with no up-front acquisition costs

 Built on a common code base



WebSphere Application Server: *Over 14 years of Leadership & Trusted Delivery*





We've been listening

You have given us lots of feedback about the need for:

- Improved developer productivity
- Simpler “low-end” app environments
- Platform fidelity between “low-end” and “high-end” WAS environments
- Higher levels of resiliency for mission critical applications
- Improved operational control
- Constant improvements in end user satisfaction
- Lowered costs of application environments





WebSphere Application Server V8.5

Addressing the needs of today's agile enterprises and their developers

■ For the **enterprise**

- The broadest range in choice of application server solutions in the industry – and the best fidelity across editions
- A new lightweight, powerful yet simple application server
- Increased scalability, resiliency and security for critical applications
- Flexibility to deploy new offerings quickly and efficiently

■ For the **developer**

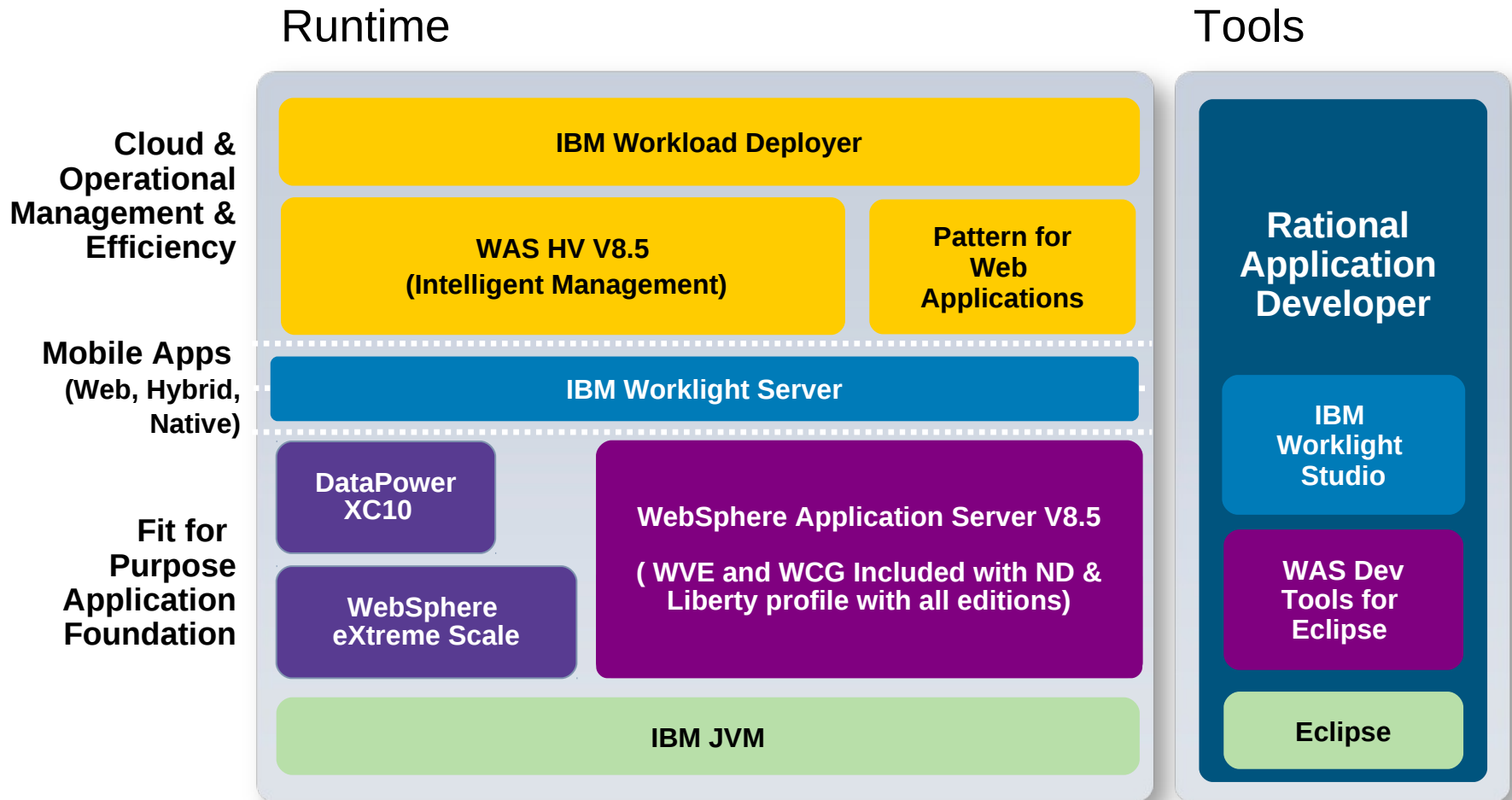
- Liberty profile with improved developer experience
- No charge, frictionless download
- Server start up in less than five seconds
- Simplified server configuration that can be versioned and maintained in source control along with the applications





WebSphere Application Infrastructure V8.5

What's Changed



WebSphere Application Server Family

V8.5



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Tools
Edition

+Liberty
Profile

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WAS V8.5 Delivers

Unparalleled Application Development and Management Environment, Rich User Experiences...Faster

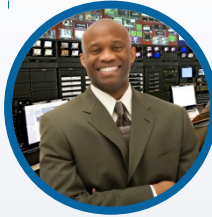
Developer Experience



**Fast, flexible,
and simplified
application
development**

- New Liberty Profile

Application Resiliency



**Intelligent
Management
& Enhanced
Resiliency**

- Enhanced WAS ND

Operations and Control



**Improved
Operations,
Security, Control
& Integration**

- Improved Operations





WAS V8.5 Delivers

Unparalleled Application Development and Management Environment, Rich User Experiences...Faster

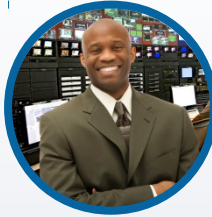
Developer Experience



Fast, flexible, and simplified application development

- Liberty Profile
- Expanded Tooling and WAS Tooling Bundles
- OSGi programming model enhancements
- EJB support in OSGi apps
- JDK7 Support
- Migration toolkit
- Web 2.0 & Mobile Toolkit; IBM Worklight Integration
- SCA OASIS programming model

Application Resiliency



Intelligent Management & Enhanced Resiliency

- Application Edition Management
- Application Server Health Management
- Dynamic Clustering
- New Intelligent Routing capabilities
- Messaging infrastructure resiliency
- Memory leak detection & protection in WAS

Operations and Control



Improved Operations, Security, Control & Integration

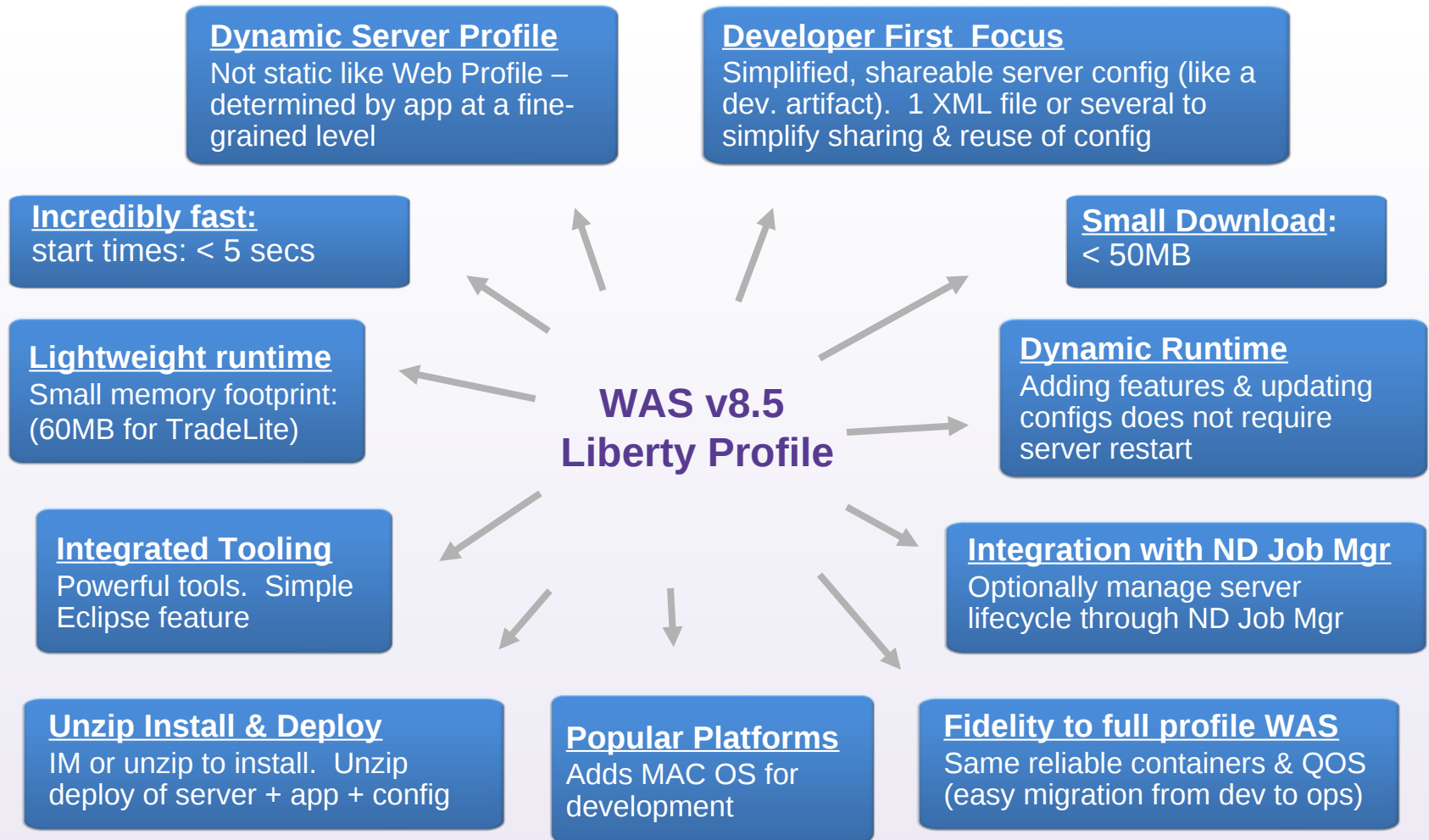
- Selectable JDK
- WebSphere Batch enhancements
- Admin Security Audit
- OSGi Blueprint security improvements
- Cross Component Trace (XCT)
- Enhanced IBM Support Assistant
- Better log and trace filtering





WAS v8.5: Introduces the Lightweight “Liberty” Profile – For Web, OSGi and Mobile Apps

A highly composable, dynamic Server profile





No Hurdles to Install – 2 minutes from “Nothing” to “Done”

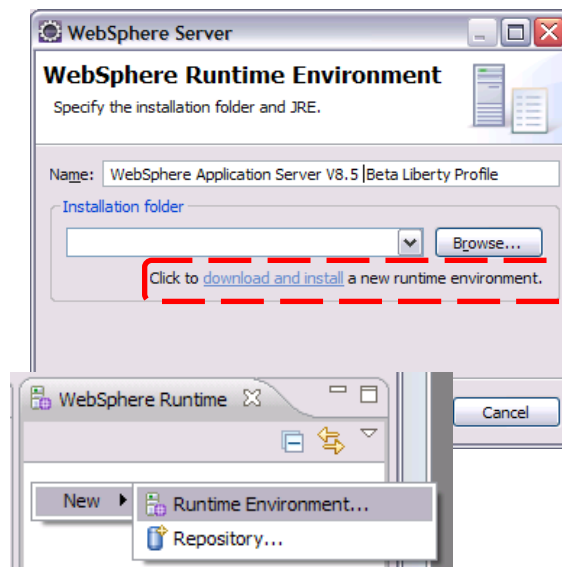


- Tools and runtime are **no-charge** for development. No time limit.
- Eclipse feature install for tools; 40MB zip download for server profile.
 - Installation Manager also supported → same installed result.

1. Install WAS Developer Tools for Eclipse Feature



1. Use the Tools to download the WAS Liberty Profile or download 30MB zip from WASdev.net



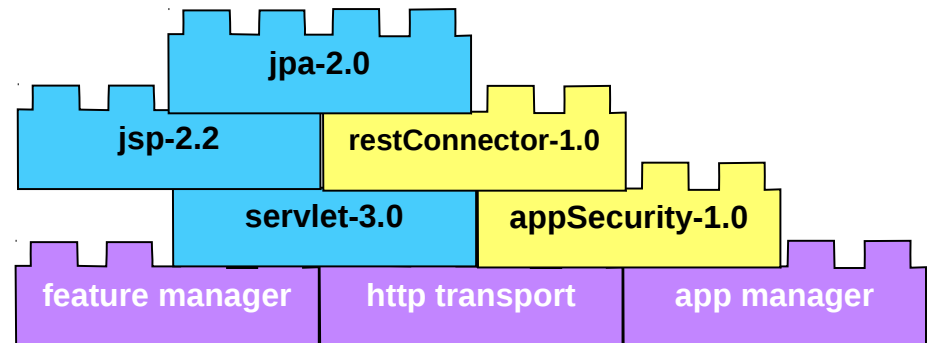
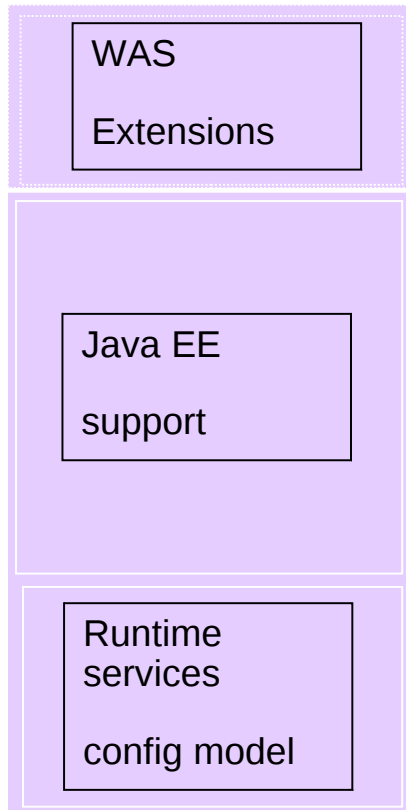


What This Means For Developers

- Support for Liberty Profile in Rational Application Developer
 - Enterprise development - advanced programming, cloud, collaboration, and quality tools
 - Available standalone or bundled in WAS - Tools Edition and WAS ND - Tools Edition
- Support for Liberty Profile in WAS Developer Tools for Eclipse (WDT)
 - Subset of RAD focused on core programming models
 - Simple Eclipse feature update for WTP 3.6 (Helios) and 3.7 (Indigo)
 - Available unsupported at no charge, or supported for a fee through WAS for Developers – Tools Edition for Eclipse
- Lightweight WAS Liberty profile runtime for dev/test
 - Focused on the development and operations experience
 - Small footprint test server runtime
 - Simplified, shareable config
 - Fastest possible server start-up
 - Fidelity with full-profile WAS editions
 - Free for developer ! No Expiration
 - Initially focused on web apps (including JPA, transactions, security...)
- Accelerate development time to value
 - Develop/test with RAD or WDT and WAS v8.5 Liberty server type
 - Deploy applications unchanged to full profile WAS for production



Highly composable runtime based on 'features'

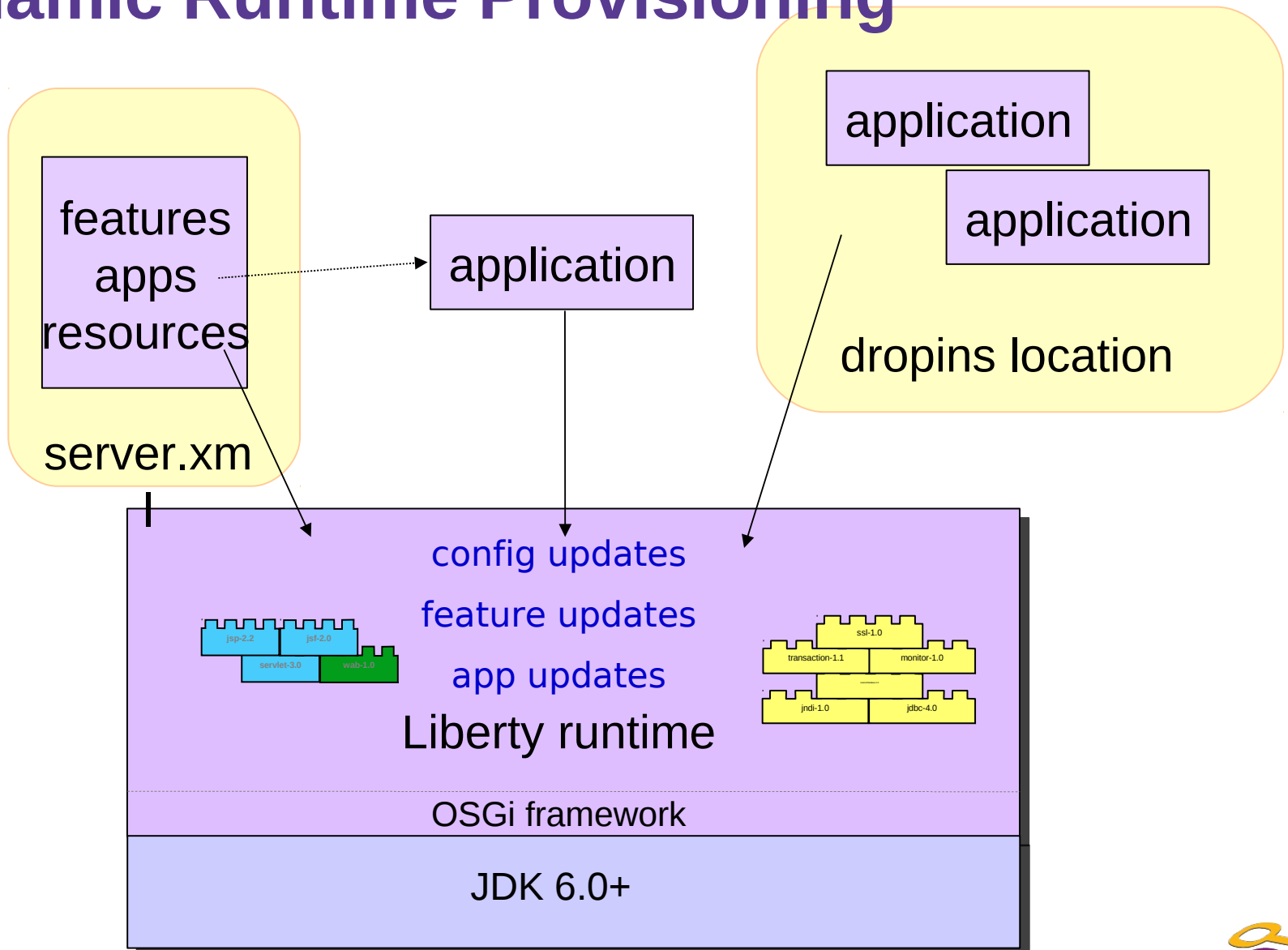


Traditional Full WAS Profile

WAS v8.5
Liberty Profile



Dynamic Runtime Provisioning





What This Means for Production

- An “Embedded Server” profile is a production instance of the configured Liberty server type.
 - Think of zipping up the application, configuration and server type you just tested on.
 - Application centric – the server is pre-configured for a specific application(s).
- **Deployment options:**
 - Unmanaged unzip install
 - Managed ND deployment of standalone instances
 - “Light-touch” ND management: start and stop server
 - Server configuration remains via the same simplified XML config created in the development environment.

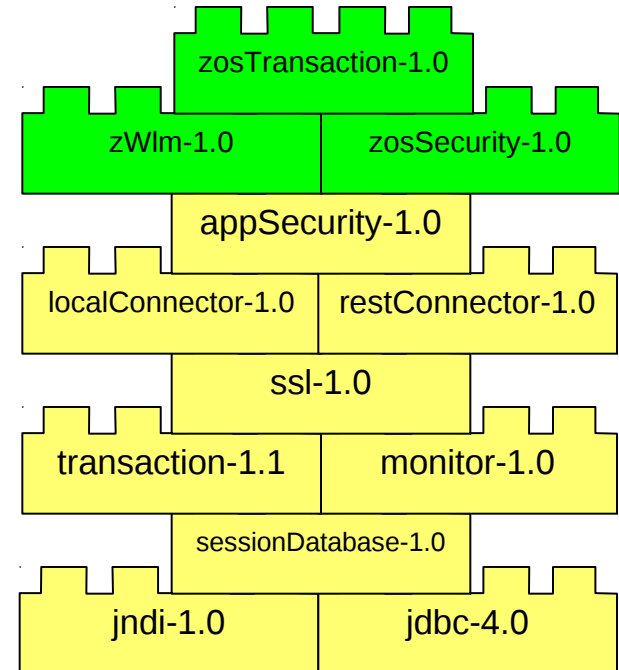


WebSphere for z/OS – Liberty Profile



The **Liberty Profile** introduces patterns of usage that **accelerate application development and deployment**, while leveraging **z/OS qualities of service**

- The Liberty profile with *optional*, independently enabled extensions that exploit z/OS facilities
 - z/OS transaction management, workload management, and security
- Simplified and reduced configuration for both WebSphere and z/OS
- Fast startup and small footprint
- Extremely lightweight single process runtime
- Ability to package and distribute applications and associated configuration
- Easily test applications in a z/OS environment



Customer Feedback (zBLC)

"It has to be a demo trick, it can't start that fast. Its like the moon landing, it never happened"

"I can see how I can include WAS for z/OS in my cloud now"





z/OS Specific Features

■ z/OS Transactions

- Native transaction context management via MVS context services and resource recovery services (RRS)
- Implements 2PC across JTA/XA resource managers and RRS

■ z/OS Workload Manager

- Classify HTTP requests with z/OS WLM to ensure prioritization of work to meet response time goals
- RMF reports for completed transactions, response times, etc

■ z/OS Security – Authentication and Authorization

- Two implementations of a user registry that perform authentication with z/OS SAF interfaces
- SAF Authorization in Liberty allows a server to use the z/OS security product for access control checks





Why Liberty on z/OS?

- Simplification
 - Minimal z/OS configuration and customization
 - Liberty runs in a single process instead of 3+ started tasks
 - Server instances can be quickly created or cloned
- Application portability and stack consistency
 - Liberty behaves *exactly the same* on all platforms out of the box
 - Administration is the same for all platforms out of the box
 - Existing server configurations can be brought to z/OS from distributed without modification
- Performance
 - Startup time – 3.2 seconds!
 - Memory footprint – 80% reduction!
 - Throughput – Up to 35% improvement!





Liberty for z/OS – Key Use Cases

Accelerate application development and deployment while leveraging z/OS qualities of service

- **Test Web Applications using z/OS Resources** – Easily perform z/OS platform testing of web applications regardless of development platform
- **Lightweight Production** – Where a lightweight application server is appropriate for production web applications, leverage the rapid startup and small footprint of Liberty profile based applications
- **Incremental adoption of unique z/OS extensions** – Enable incremental exploitation of optional z/OS extensions to leverage z/OS qualities of service
- **Efficient packaging and deployment of applications** – Create and deploy Liberty profile applications as packages that include both the application and configuration
- **Advance DevOps initiatives** – Enable simple and efficient development of web applications on WebSphere, thereby reducing the risk of errors during verification by operations



WAS Developer Tools for Eclipse (WDT) V8.5 & RAD V8.5



RAD

Install: IM

WebSphere Integration

- Support for WAS v6.1
- Test Environments for WAS v7.0, v8.0, v8.5
- Portal Tools / Portal Svr supt
- Profile applications on WAS
- Deploy to WebSphere or Portal instances in IBM SBDT cloud
- IWD 3.1, 3.0

Problem Determination

- Code visualization - class, sequence and topic diagrams
- Static analysis (code review)
- Code coverage: optimize unit testing
- Profiling

Team Productivity

- RTC integration
- Collaborative debug
- Collaborative code analysis

Extended Programming Model Support

- Advanced support for J2EE 1.4 and earlier:
 - EJB & Web Services deploy
 - DD editors
 - JAX-RPC
- Web:
 - Page designer
 - Struts, JSF support
 - iWidget support

Programming Model Support

- SCA
- Java (WAS) Batch
- SIP/CEA
- XML (feature pack)

Enterprise Connectivity

- J2C (EIS) tools
- CICS, and IMS Adapters
- Adapters for SAP, Siebel, JDE, Oracle, PeopleSoft

WDT

Install: Eclipse update site or IM

JEE Tools

- Advanced support for JEE 5+
- DD editors, enhanced project explorer, additional validation

Web Tools

- Advanced web development tools
- Rich page (WYSIWYG) editor for HTML, JSP
- Web 2.0 and Mobile support

WebSphere Integration

- Support for WAS v7.0, v8.0, v8.5
- Publish, start/stop the server
- Debug Jython/wsadmin scripts

WAS Extensions Support

- Binding and extension editors
- Support for non-spec extensions

OSGi Tools

- Full creation and editing support
- Blueprint editor and validation
- Visual Bundle Explorer

Liberty Integration

- Publish, start/stop the server
- Edit & manage server configuration

Eclipse (WTP, DTP)

Programming Model Support

- Basic creation, editing, and validation support for JEE applications:
 - Web, XML, JPA, EJB, EAR
- Database tools

WDT adds support for Mac, possibly with exception of WebSphere Integration



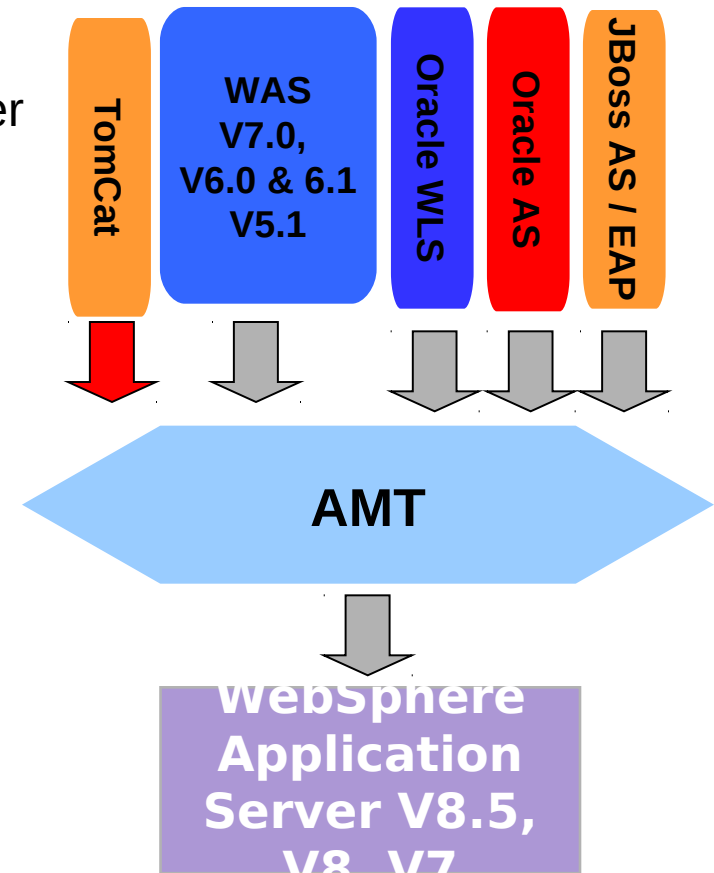
Application Migration Tooling v3.0

Enhanced!



Migrate applications from WebSphere & other Java EE application servers to WebSphere faster with minimized risk

- Migrate apps from older vers to WAS V8.5, V8, V7
- Migrate from Oracle, TomCat, JBoss faster & easier
 - ▶ Migrate applications up to 2x as fast
 - ▶ Migrate web services up to 3x as fast
- Application Migration Tool
 - ▶ Analyzes source code to find potential migration problems:
 - Removed & deprecated features
 - Behavior changes
 - JRE 5 & JRE 6 differences
 - Java EE spec changes or enforcements
 - ▶ Capable of making some application changes
 - ▶ Provides guidance on how to make required changes
 - ▶ Works with Eclipse or RAD (RAD)



Get the Tool at No Charge: <http://ibm.co/hqfkdj>



Day 1: Elastic Caching with Liberty!

■ WebSphere eXtreme Scale and WebSphere DataPower XC10

- Integrates seamlessly with Liberty Runtime and its dynamic feature model
- WXS Container servers can now run on Liberty profile
- Standalone Liberty Servers can maintain HTTP Session failover and high availability by leveraging an WXS Grid
- Simple for customer to make use of WXS Use cases!

■ For Developers, easy to develop WXS applications using Liberty within Eclipse

- Start up a WXS grid, start up a WXS client, & start up the Liberty server all within a single runtime environment!

■ Additional Tooling for WXS supported for Liberty

- Very easy for customers to develop & configure WXS applications right in the Eclipse tool!

Elastic Cache

1



DataPower XC10 for simple data oriented scenarios

2

WebSphere. software

eXtreme Scale for maximum flexibility



Mobile Application Development



Worklight takes WAS mobile web applications to the next level

WAS

Enterprise Web Applications

- Java EE programming
- Build, deploy and manage Enterprise applications and services
- Server-side & Client-side development

Desktop Web Applications

WAS + Web 2.0 and Mobile Toolkit

Mobile Web App development based on standard web technologies:

- Run application in mobile browser
- Based on HTML5, CSS3, JavaScript
- Native look and feel
- Advanced mobile UI components

**Feature Pack for WAS v6.1/7/8
Toolkit in WAS v8.5**

Mobile Web Applications

Worklight

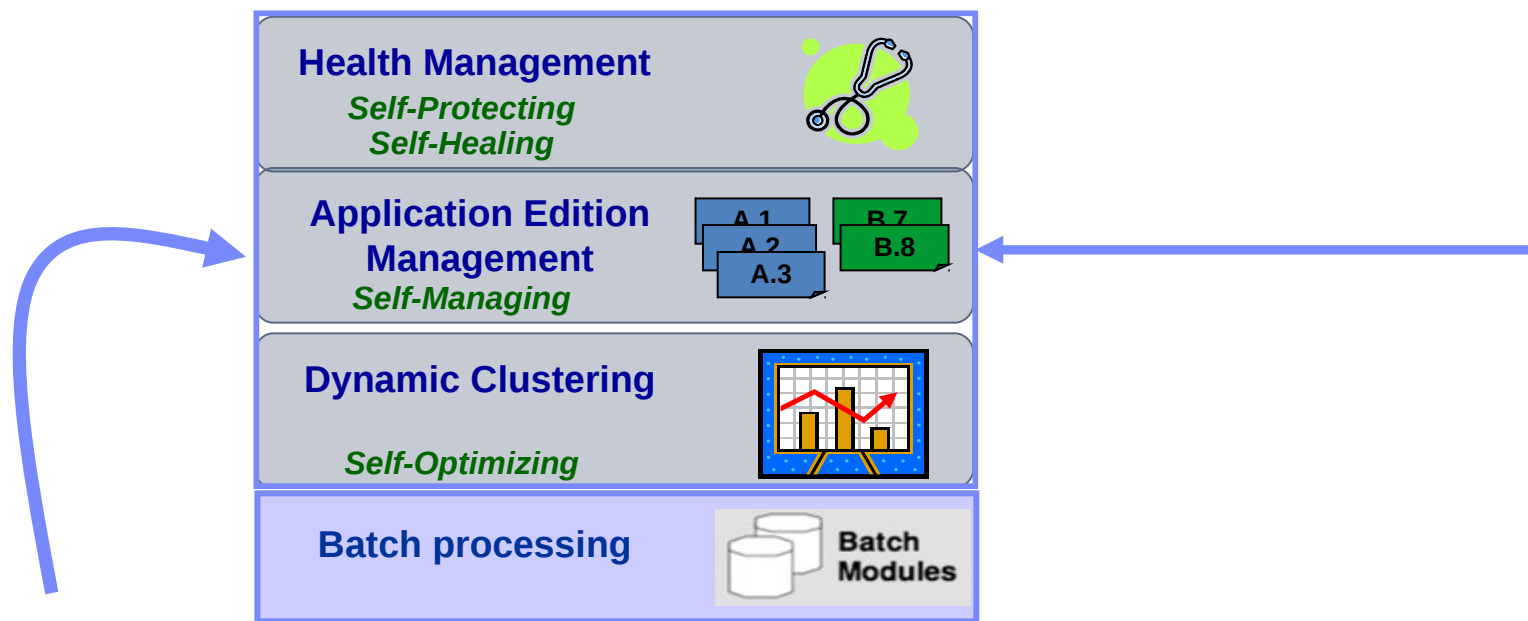
Application delivery in a variety of forms:

- Hybrid application
- Native
- Install through App Store
- Access to native services

Mobile Applications



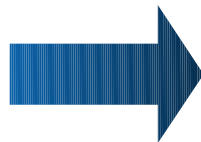
WAS ND V8.5: Resiliency enhancements – WebSphere Virtual Enterprise & WebSphere Batch



Install WebSphere
Virtual Enterprise

Install WebSphere
Compute Grid

Install WAS V8 or earlier



Install WAS ND V8.5

Before

After



Sense and respond to problems before end users suffer an outage

- Automatically detect and handle application health problems
 - Without requiring administrator time, expertise, or intervention
- Intelligently handle health issues in a way that will maintain continuous availability
- Each health policy consists of a condition, one or more actions, and a target set of processes
- Includes health policies for common application problems
- Customizable health conditions and health actions

**Comprehensive
Health
Policies**



**Customizable
Health
Conditions**



**Customizable
Health
Actions**



Application Edition Management

Applications can be upgraded without incurring outages

- Upgrade Applications without interruption to end users
- Concurrently run multiple editions of an applications
 - Automatically route users to a specific application
- Multiple editions can be activated for extended periods of time
- Rollout policies to switch from one edition to another without service loss
- Easily update OS or WebSphere without incurring down time
- Easy-to-use edition control center in admin console, plus full scripting support

**Validation
Mode**



**Rollout
Policies**



**Concurrent
Activation**



Dynamic Clustering

Proactively provision and start or stop application servers based on workload demands to meet Service Level Agreements

- Associate service policies with your applications
 - Let WebSphere manage to the service goals
- Programmatically respond to spikes in demand
 - Add or reduce application server instances as appropriate
- Automatically recover from infrastructure problems
- Includes automatic start and stop of cluster members based on load for MQ-driven applications
- Decrease administrative overhead required to monitor and diagnose performance issues



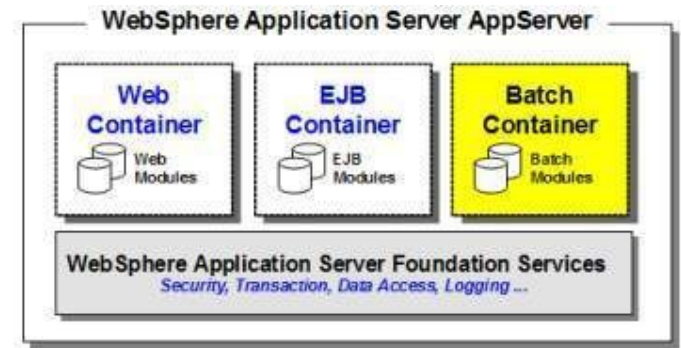
WebSphere Batch



WebSphere Application Server v8.5 integrates capabilities from WebSphere Compute Grid and delivers a complete **enterprise level Java batch** processing solution

Key Features:

- **Java Batch programming model**
- **Java Batch container built on WAS QoS**
- **Development and deployment tooling**
- **Batch execution environment**
- **Concurrent OLTP and batch workloads**
- **Enterprise scheduler integration**
- **Parallel processing of batch jobs**
- **Container based checkpoint and restart**
- **Mixed batch workloads**
- **COBOL support on z/OS**



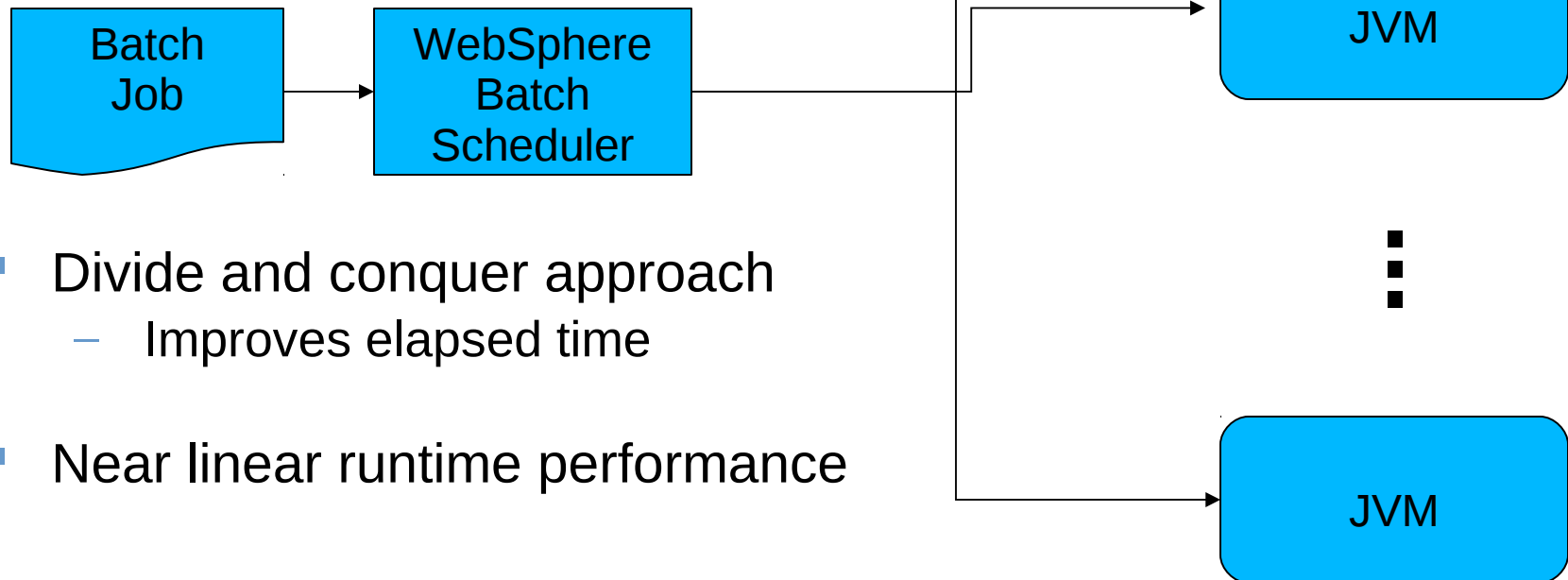
Compute Grid
capabilities
integrated
into
WAS 8.5





Parallel Batch

- Container-managed parallelization
- Exploit multiple cores for efficiency
- Simple “one job” operational control



- Divide and conquer approach
 - Improves elapsed time
- Near linear runtime performance

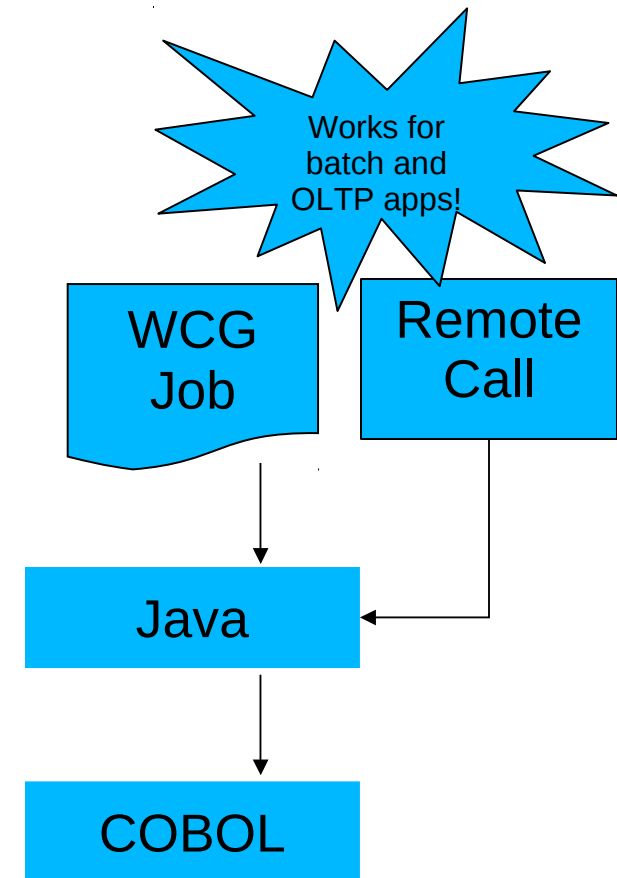


COBOL Support



- Call standard COBOL¹ modules from Java on same thread in same process
- Java and COBOL run in same transaction scope
- WAS-managed DB2 connections shareable with COBOL
- COBOL working storage isolation per job step or remote call
- RAD tooling for Java call stub generation

Reuse COBOL modules in WebSphere Applications!





Cross-Component Trace (XCT) for Problem Determination

Improve your ability to diagnose & debug SW problems in order to minimize and eliminate application downtime

- XCT log viewer - available for the IBM Support Assistant, can render log and trace content from multiple log / trace files grouped by request
 - View that detailed information on HTTP and JMS requests and responses to easily debug complicated application problems.
- High Performance Extensible Logging (HPEL) now has log / trace entry extensions
 - Filter entries by application name, by request ID or by other custom fields





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- WebSphere Batch enhancements
- Admin Security Audit
- OSGi Blueprint security improvements
- Cross Component Trace (XCT)
- Enhanced IBM Support Assistant
- Better log and trace filtering





Thank
You

