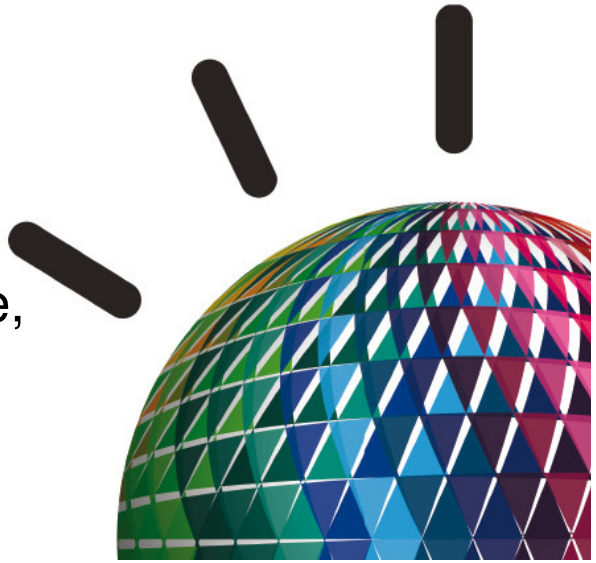
Impact2012

L'arte di rendere il business
più flessibile, agile e dinamico che mai.

Roma, 7 giugno 2012



Antonella Bertoletti

WebSphere Application Server v8.5: virtualizzazione, java batch in Health e Liberty

Application Infrastructure Trends

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

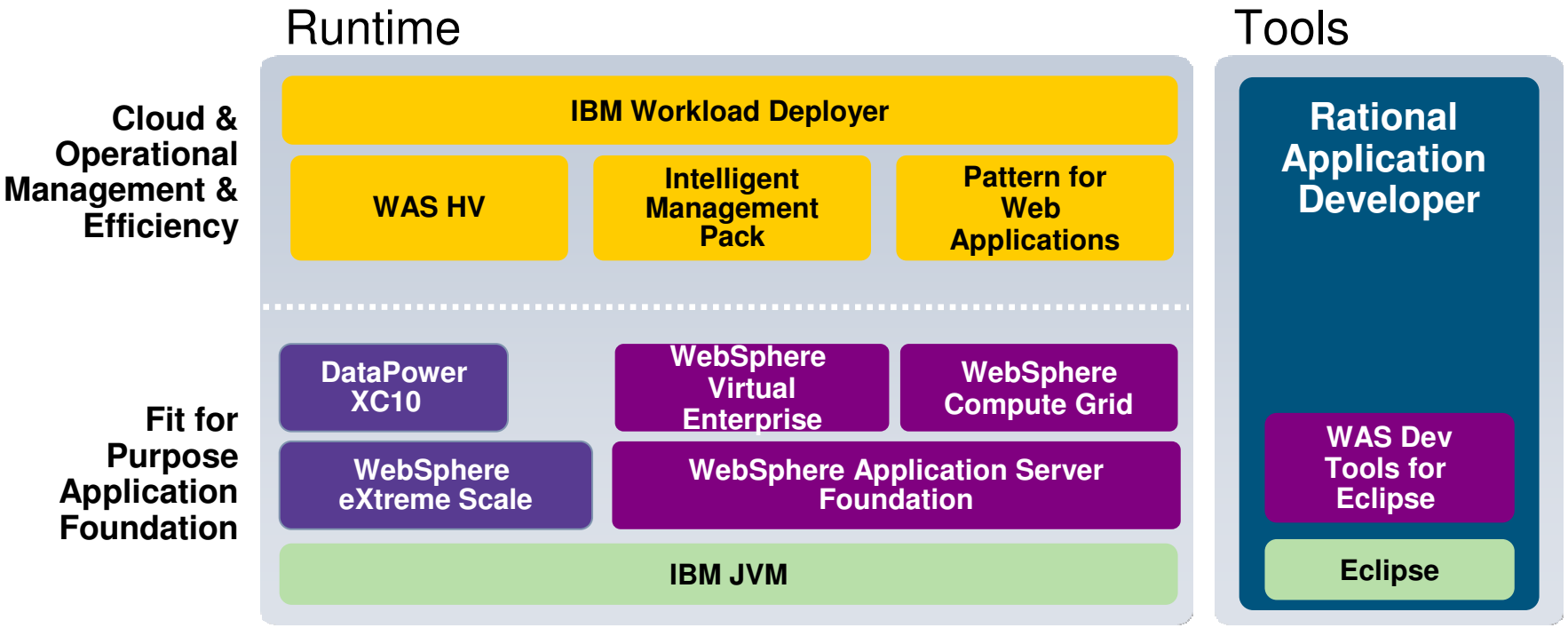
Explosion of mobile, social and cloud applications driving new demands on middleware infrastructures

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 (pre-Impact announcements)



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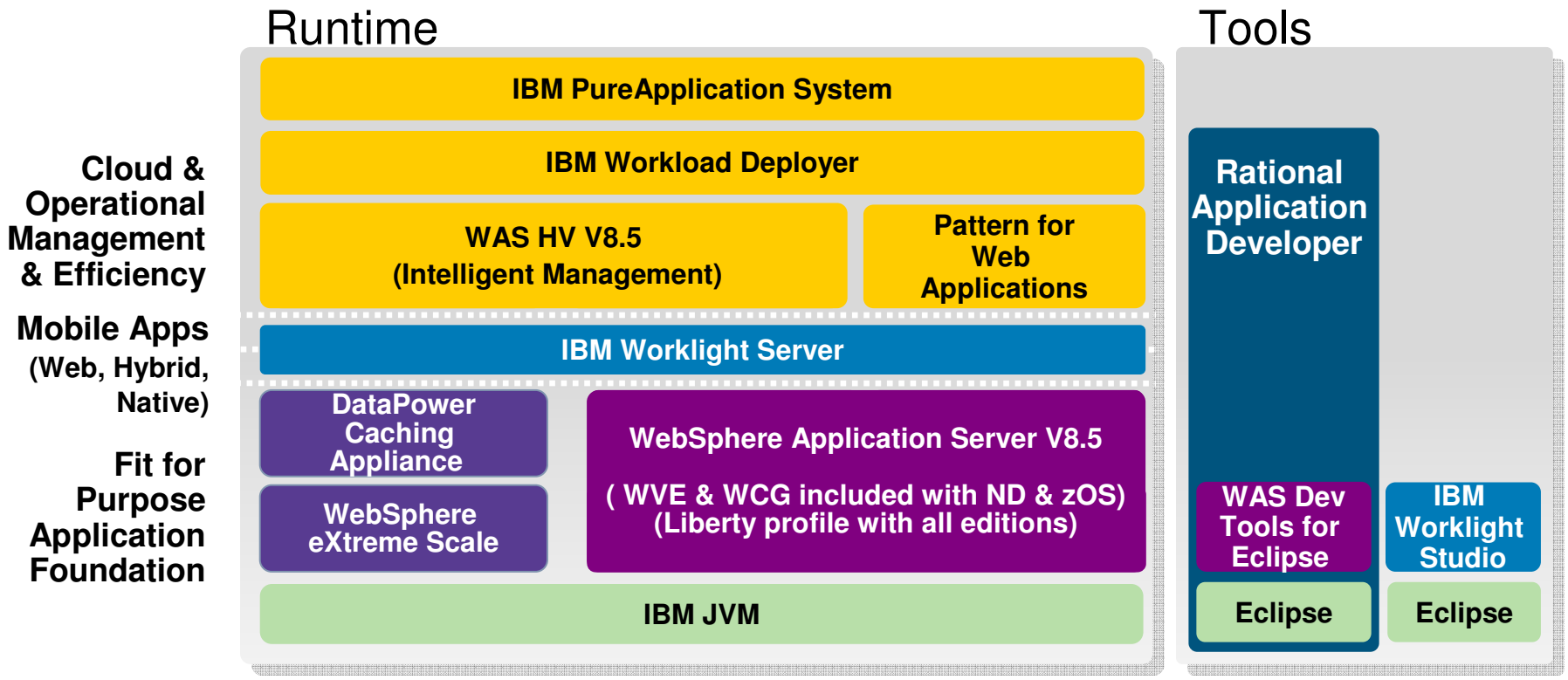
WebSphere Application Infrastructure

What's Changed – Impact 2012



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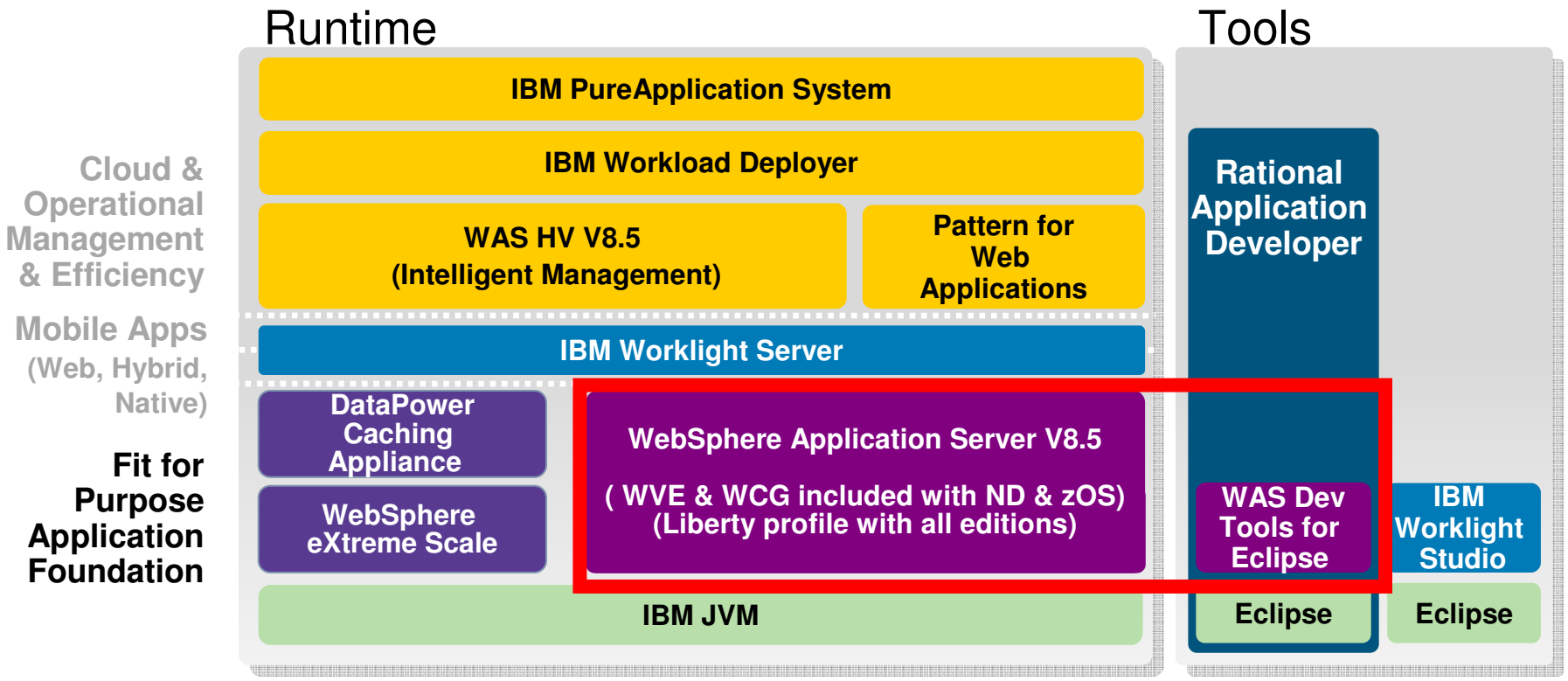
WebSphere Application Infrastructure

WebSphere Application Server V8.5



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WebSphere Application Server 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

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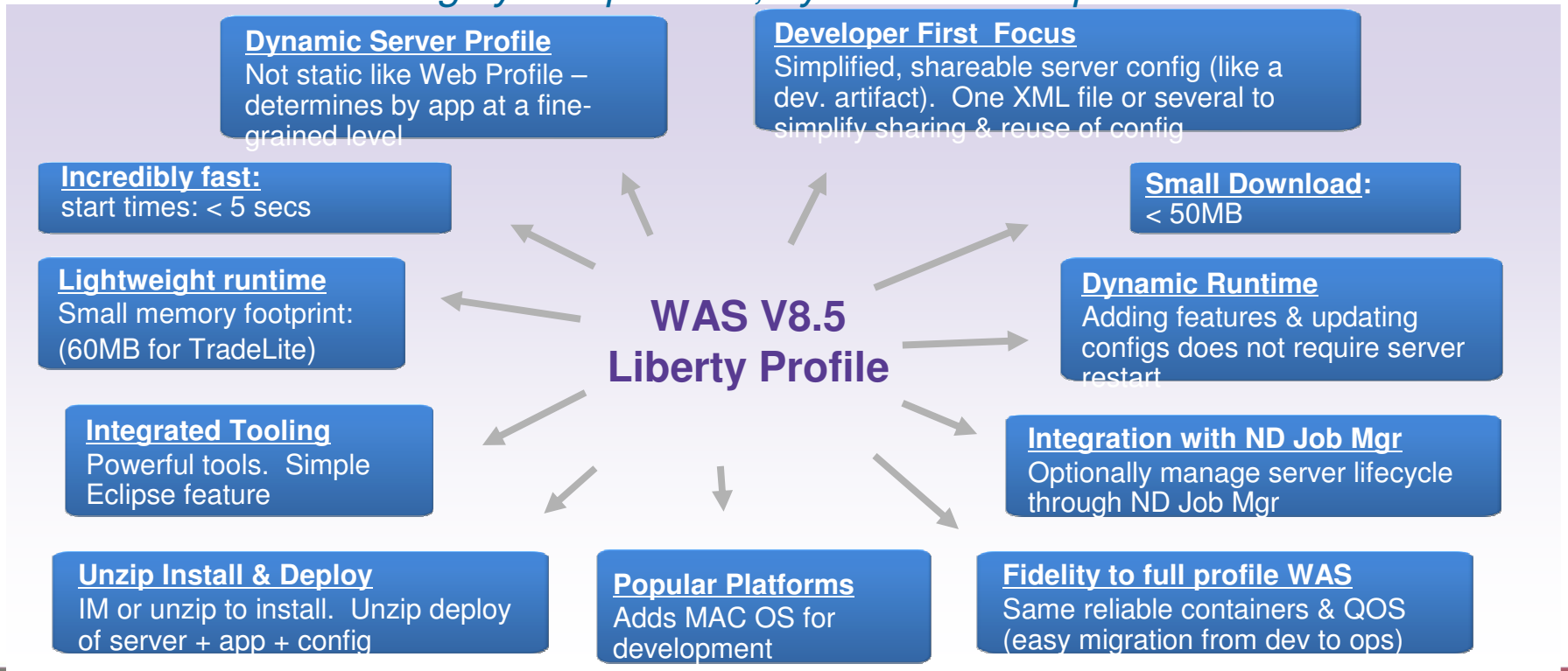
WAS V8.5 introduces the lightweight Liberty profile

For web, OSGi, and mobile apps

A highly composable, dynamic server profile



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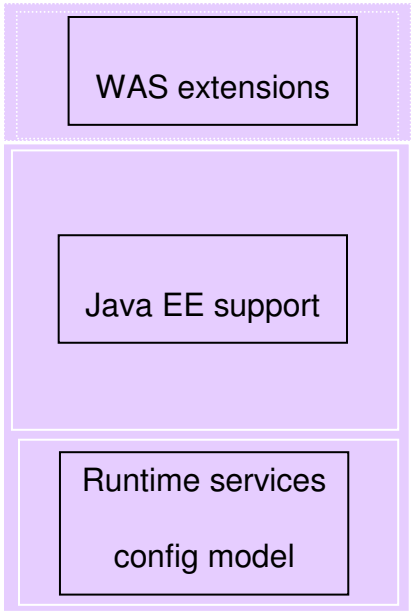
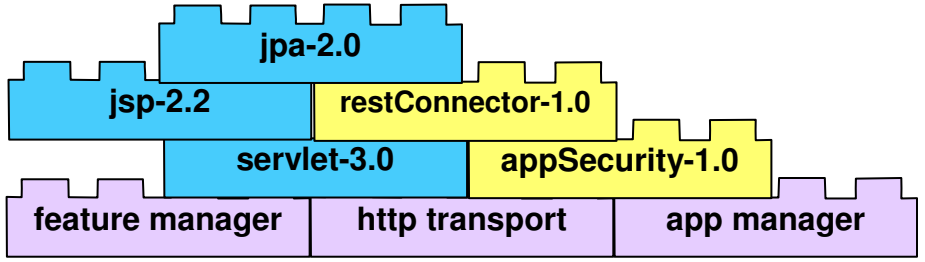
Liberty: Highly composable feature-based runtime

Example:



Full WAS Profile



WAS V8.5
Liberty Profile

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Tools Edition bundles

Updated to support V8.5 and the Liberty profile

Team

Individual

WAS ND – Tools Edition

- Like “WAS – Tools Edition” but for WAS ND production use

WAS – Tools Edition

- Solution: Production WAS + unlimited tools (RAD or WAS Developer Tools)
- Terms (runtime): Production use
- Terms (tools): Unlimited use of tools for developing applications to be deployed on WAS included with this bundle

WAS for Developers – Tools Edition for Eclipse

- Solution: WAS for Developers + WAS Developer Tools
- Terms: Single user. Development use only
- Freely available, supported for a fee
- Easily obtained for rapid development to WAS V7, V8, V8.5 and Liberty

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WebSphere Application Server Family

WAS for Developers

+ Liberty profile

Tools Edition

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

Also available as a no-charge edition for the developer desktop

WAS Hypervisor Edition

+ Liberty profile

Optimized to instantly run in VMware and other server virtualization environments

+ Intelligent mgmt

WAS ND

+ Liberty profile

Tools Edition

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

+ Intelligent mgmt

WAS for z/OS

+ Liberty profile

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

+ Intelligent mgmt

WAS

+ Liberty profile

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

+ Liberty profile

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

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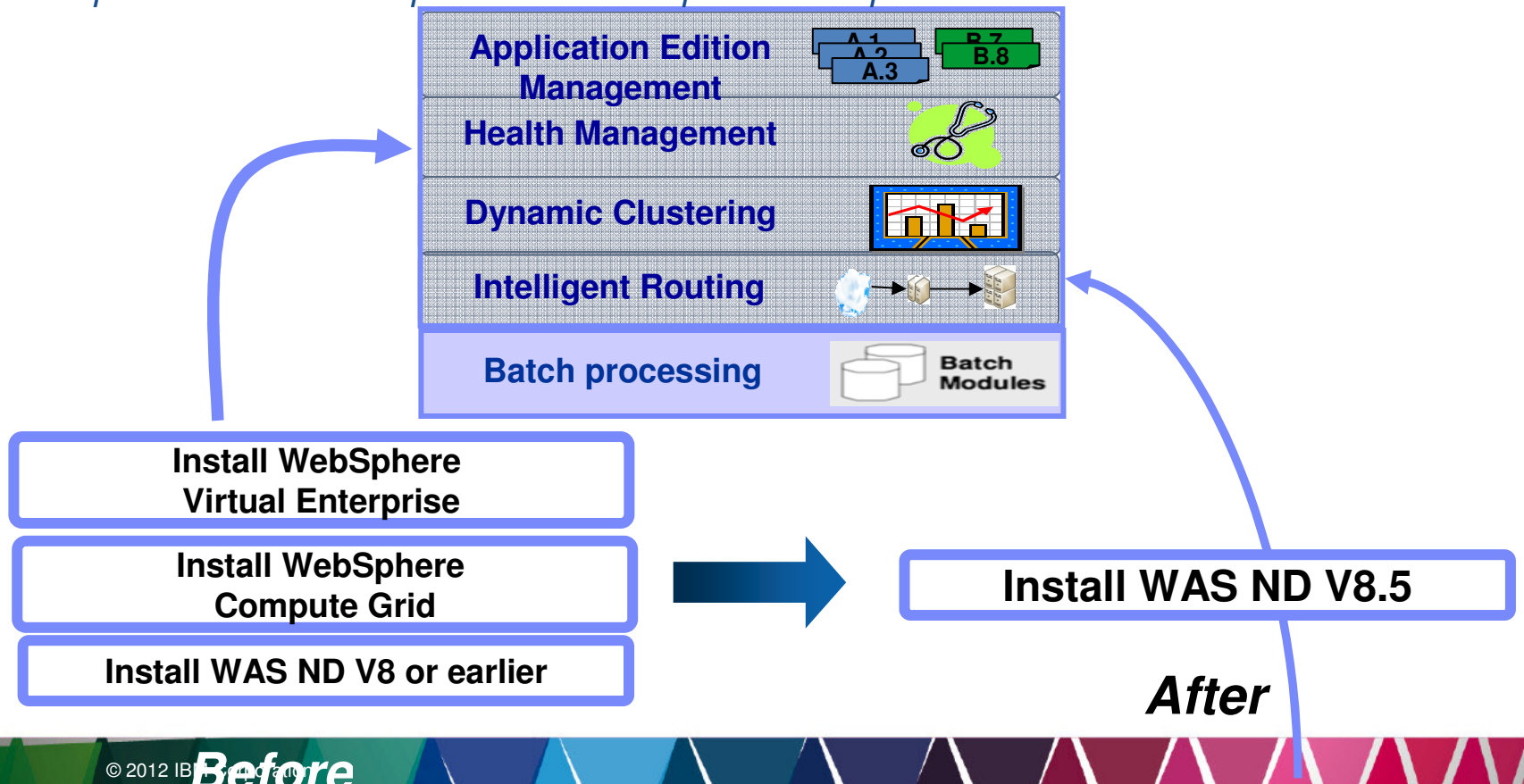
WAS V8.5 – Enhanced ND

WebSphere Virtual Enterprise and WebSphere Compute Grid



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Intelligent Management

Extending QoS through autonomic computing

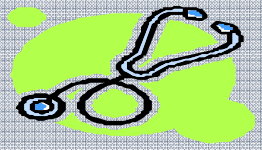
Application Edition Management

Self-Managing

StockTrading 1.0
StockTrading 2.0
StockTrading 3.0
Finance 3.0
Finance 4.0

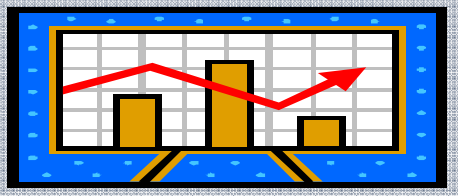
Health Management

Self-Protecting
Self-Healing



Dynamic Clustering

Self-Optimizing



Intelligent Routing

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WAS V8.5 introduces Intelligent Management

Application Edition Mgmt

- Applications can be upgraded without incurring outages
- Concurrently run multiple editions of the same application
- Roll out policies to switch from one edition to another without outages
- Manage editions from the WAS admin console, using the edition control center

Health Mgmt.

- Automatically detect and handle application health problems
- Intelligently handle health issues while preserving continuous availability
- Includes health policies for common application problems
- Customizable health conditions and health

Examples:

- Excessive request timeouts
- Excessive response time
- Workload
- Excessive memory utilization

Dynamic Clustering and Intelligent Routing

Dynamic Clustering

- Proactively provision and start / stop servers based on workload demands
- Automatically adjust to meet response time goals (service level agreements)

Intelligent Routing

- Requests are prioritized based on administrator defined rules
- On Demand Route (ODR) is the focal point for intelligent routing
- Provide preference for higher priority requests
- Integrates with health mgmt and dynamic clustering

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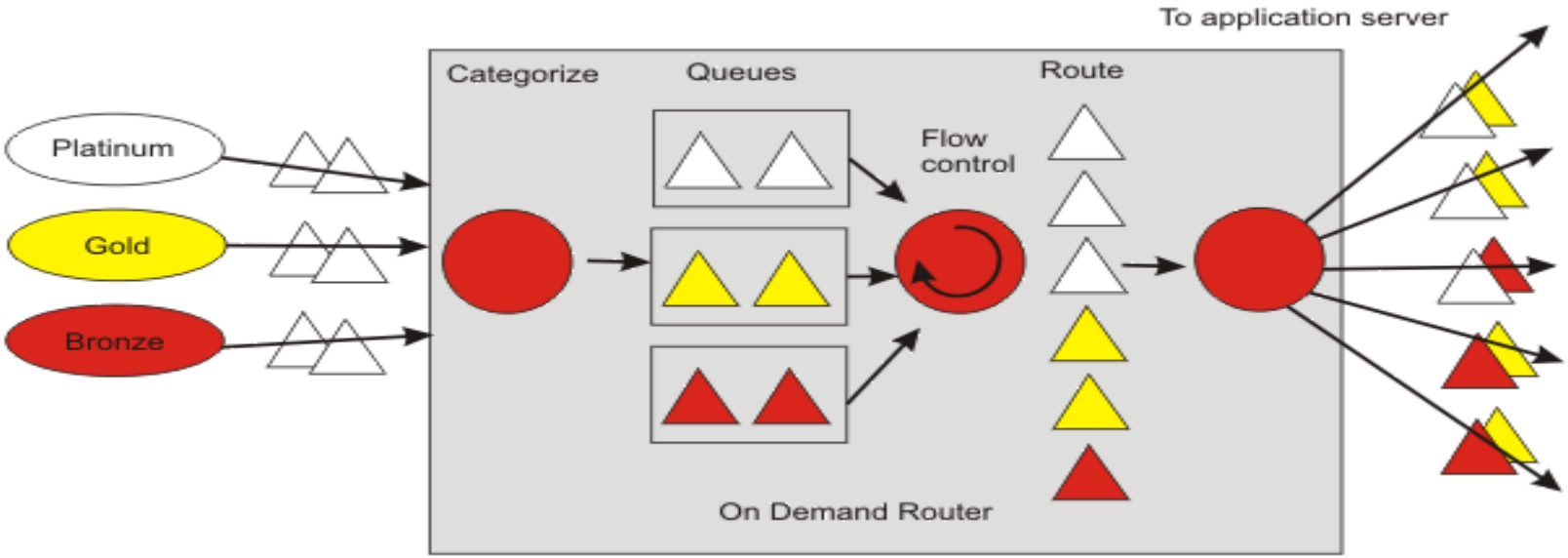
Prioritize, load balance, auto-learn application state and dynamically scale resources to protect business critical applications

- Defining application service levels during deployment using configurable service policies



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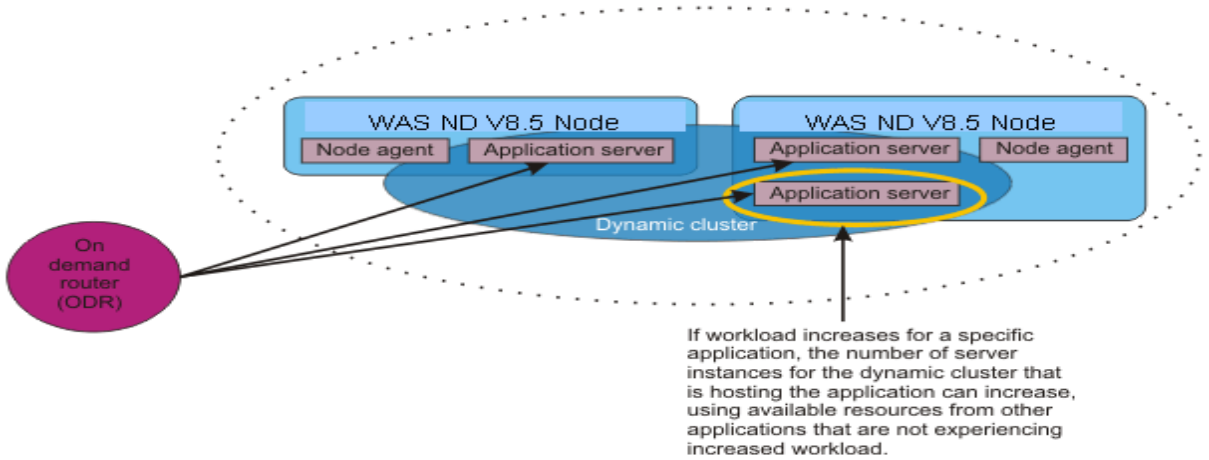
Prioritize, load balance, auto-learn application state and dynamically scale resources to protect business critical applications

- Use dynamic clustering to pool hardware resources
  - Application instances start / stop in response to demand
  - Improve hardware utilization



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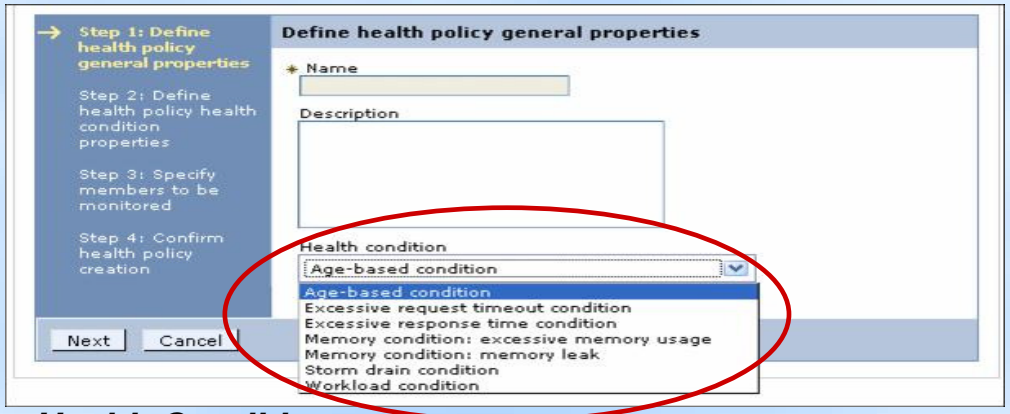
Sense and respond to common problems before end user outages

- Health policies can be defined for common server health conditions
- When a health policy's condition is true, corrective action execute automatically or require approval
  - Notify administrator (send email or SNMP trap)
  - Capture diagnostics (generate heap dump, java core)
  - Restart server
- Excessive response time means you are monitoring what matters most: your customer's experience!
- Application server restarts are done in a way that prevent outages and service policy violations
- Each health policy can be in supervised or automatic mode



Health Conditions

- **Excessive request timeouts:** *% of timed out requests*
- **Excessive response time:** *average response time*
- **Excessive garbage collection:** *% of time spent in GCs*
- **Excessive memory:** *% of maximum JVM heap size*
- **Age-based:** *amount of time server has been running*
- **Memory leak:** *JVM heap size after garbage collection*
- **Storm drain:** *significant drop in response time*
- **Workload:** *total number of requests*

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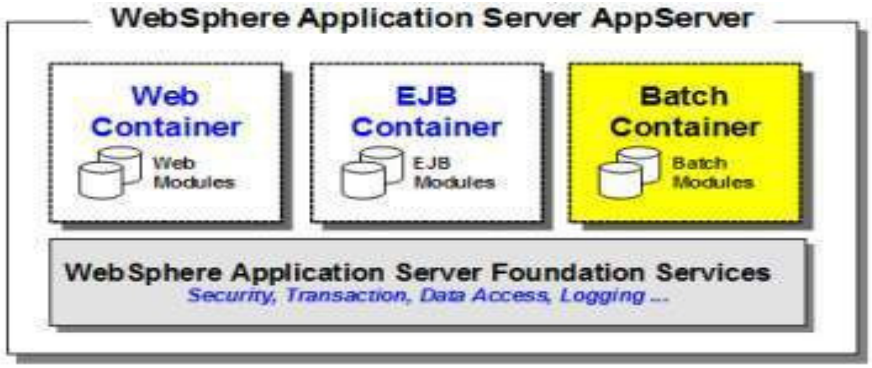
WebSphere Batch

Quickly develop and deploy batch applications and dramatically reduce infrastructure and operational costs

- **Manage end-to-end batch jobs** running across disparate execution environments such as WAS & CICS
- **Process business transactions cost effectively** by sharing resources and development skills between batch and on-line transactions (OLTP)
- **Achieve operational efficiency** by breaking massive batch jobs into manageable parallel tasks in a controlled fashion that helps you maintain service level agreements



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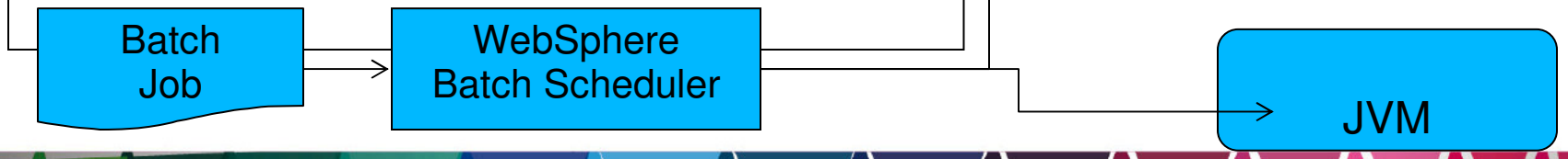
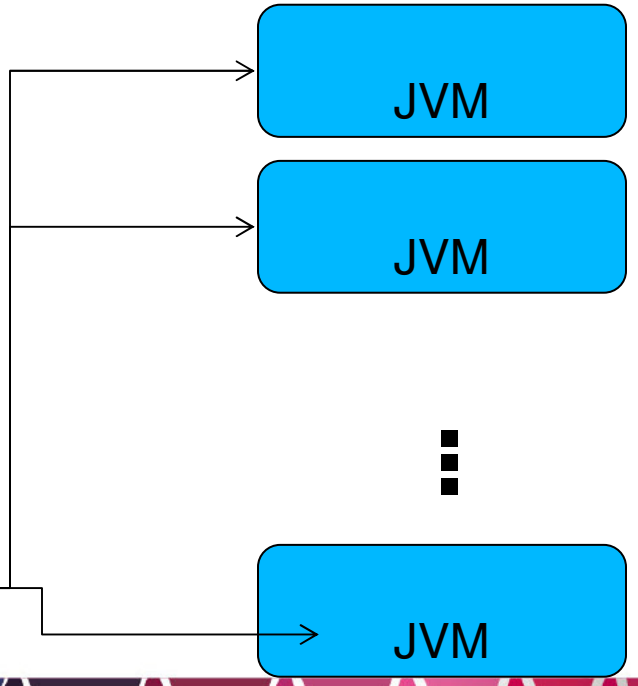
Leverage OLTP infrastructure for new batch workloads

- Batch workloads delivery high efficiency for bulk processing tasks
  - Enable IT efficiency by exploiting under-utilized capacity
  - Efficiently re-use business services through co-location
  - Resiliency for long-running batches with container-based checkpoint / restart
  - Exploit system-managed batch parallelization
  - Include batch jobs in enterprise workload scheduler plans with Enterprise Workload Connector (aka WSGRID), with optional, optimized native connector for z/OS



Example: Container-managed parallel batch



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WebSphere Application Server V8.5
Liberty Profile

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Introducing the Liberty profile

- A new profile of WebSphere Application Server that is focused FIRST on the developer experience
- Provides fidelity with the full-profile application server editions
  - Same containers, QoS as full-profile WAS; radically refactored
  - Extremely dynamic - start what the app requires and no more
- Small, lightweight, fast!
  - **Download size: < 50 MB**
  - **Memory footprint (web feature): < 60 MB**
  - **Incredibly fast (re)start times: < 5 seconds**
- Simplified configuration for quick time to productivity
  - One single config file (server.xml) or modular config (as desired)
- WebSphere Developer Tools (WDT) available for the Liberty profile
  - Through Eclipse Marketplace (no charge) and Rational development tools
- Find everything you need on the **WASdev** community (http://wasdev.net)

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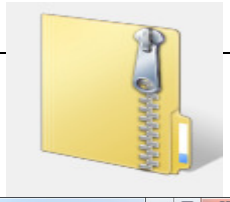
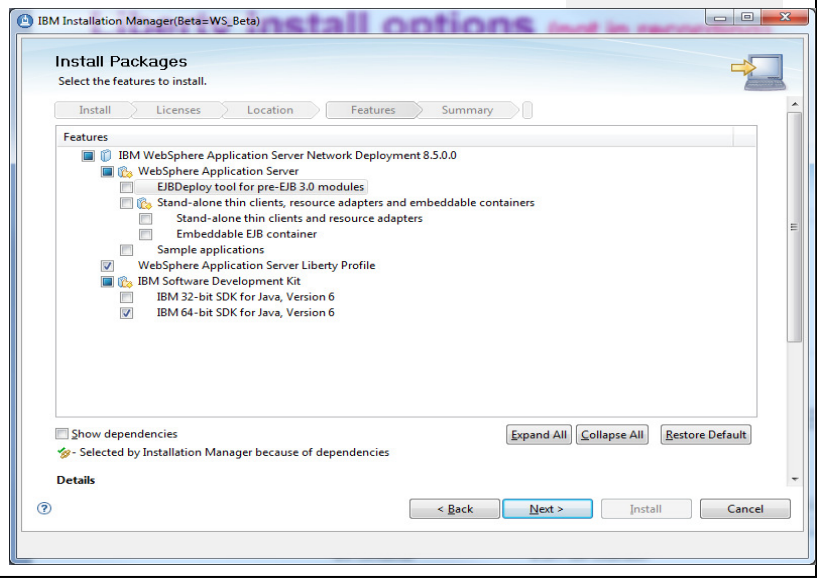
Installing the Liberty profile



- Option (1), Using zip installation
  - Download the small (< 50 MB) ZIP archive, decompress it
  - No additional installation / configuration action needed
  - Download, install, get your server running in under three minutes!
- Option (2), Using the IDE
  - Install WebSphere Development Tools for Eclipse
  - Follow links for quick ZIP install
- Option (3), Using Installation Manager
  - The Liberty profile is an optionally installable package in the Application server product repository
- Option (4), Using Job Manager
  - Run a remote, agentless installation of a Liberty profile embedded server
  - Requires ND license for the job manager



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What does this mean 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 WebSphere Application Server 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
    - WAS for Developers – Tools Edition for Eclipse
- Support for Liberty profile on OS X – use your Mac to develop WebSphere apps!
- 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

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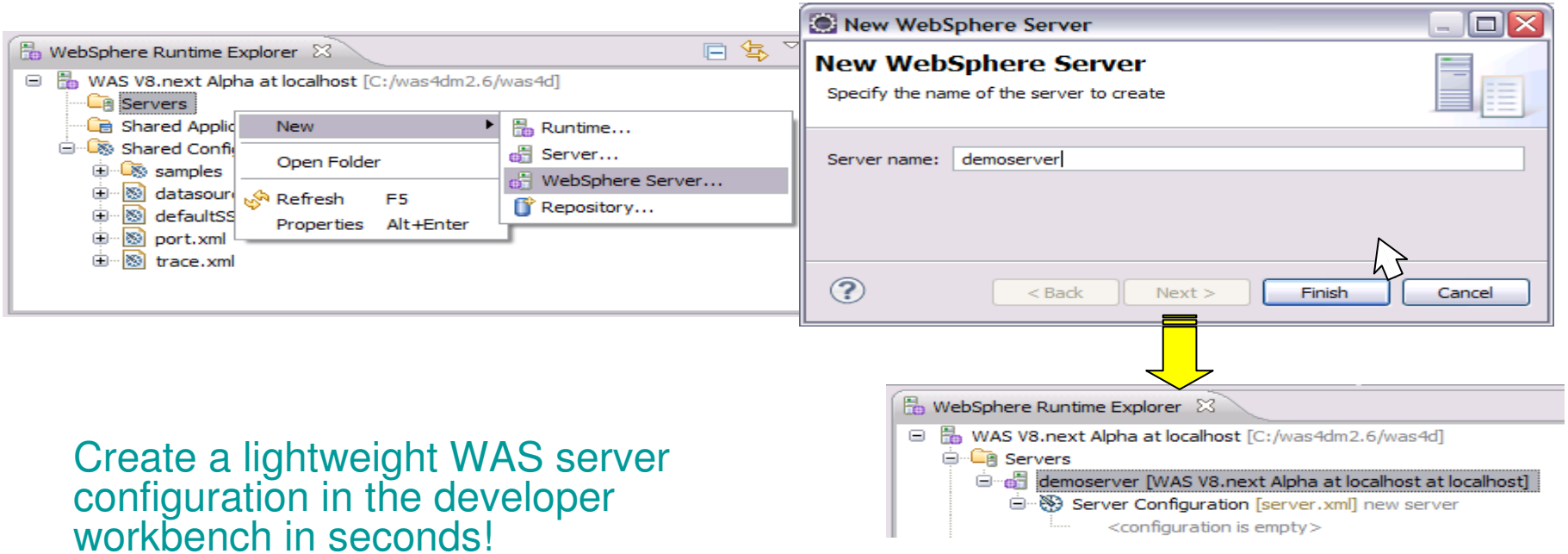
Create a lightweight WAS server in WDT

New!



Create a lightweight WAS server configuration in the developer workbench in seconds!

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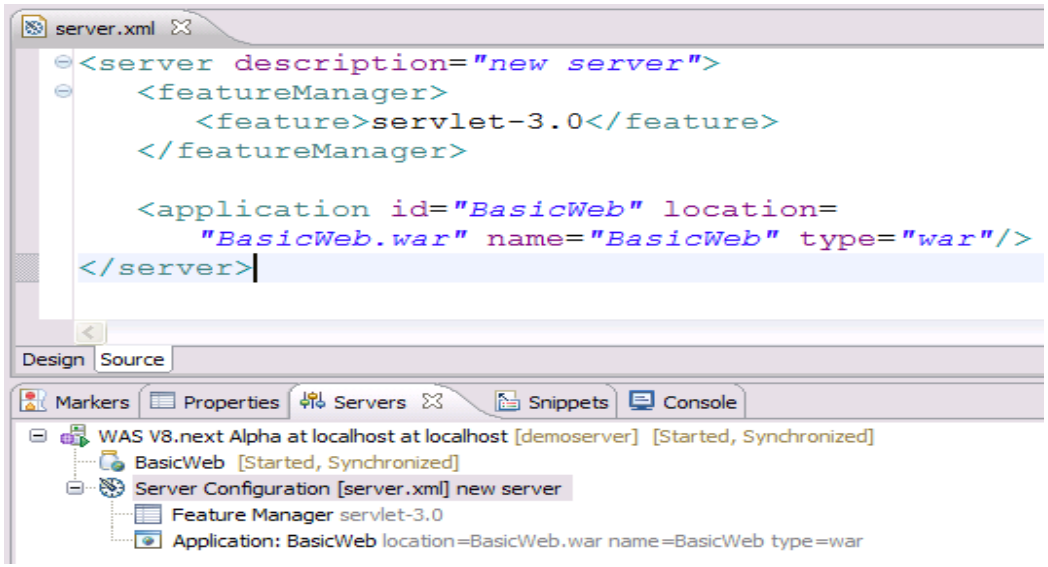
Simplified sever configuration

New!

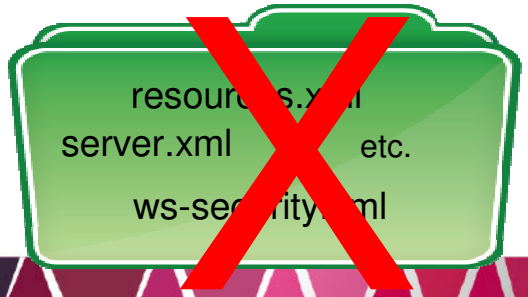
Simplest case: one XML file for all server config (server.xml)

Editable within the workspace

Exportable, shareable, versionable



No need for admin console, wsadmin, or extended EARs



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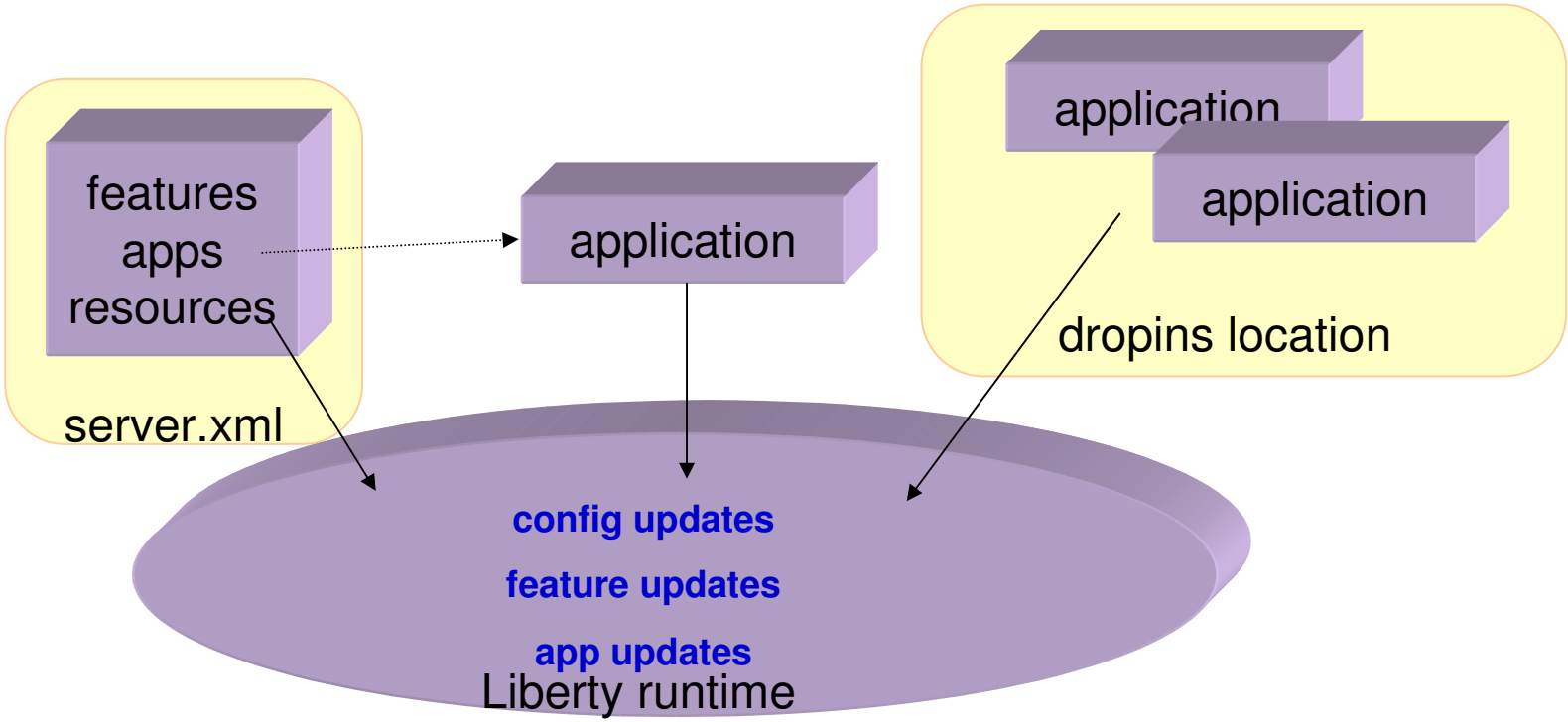
Dynamic runtime



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What does the Liberty profile mean 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)
  - Capture the embedded server configuration using development tools
    - Eclipse, WDT, RAD
- Deployment options:
  - Unmanaged unzip install
  - Managed ND deployment of standalone instances
    - “Light-touch” ND management: start and stop server
- Server configuration remains, using the same simplified XML config created in the development environment

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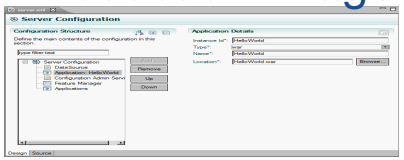
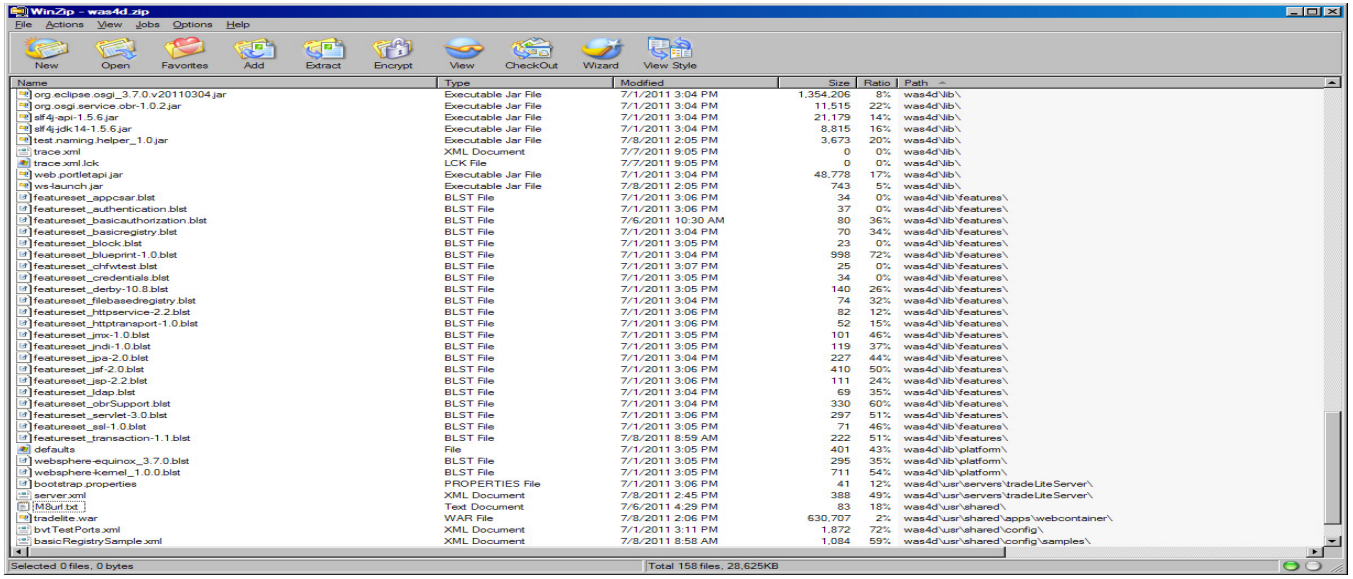
Production image creation



Eclipse plugin, RAD or ADT

Package (zip) runtime, configuration and applications

Package the whole runtime, or choose customized package



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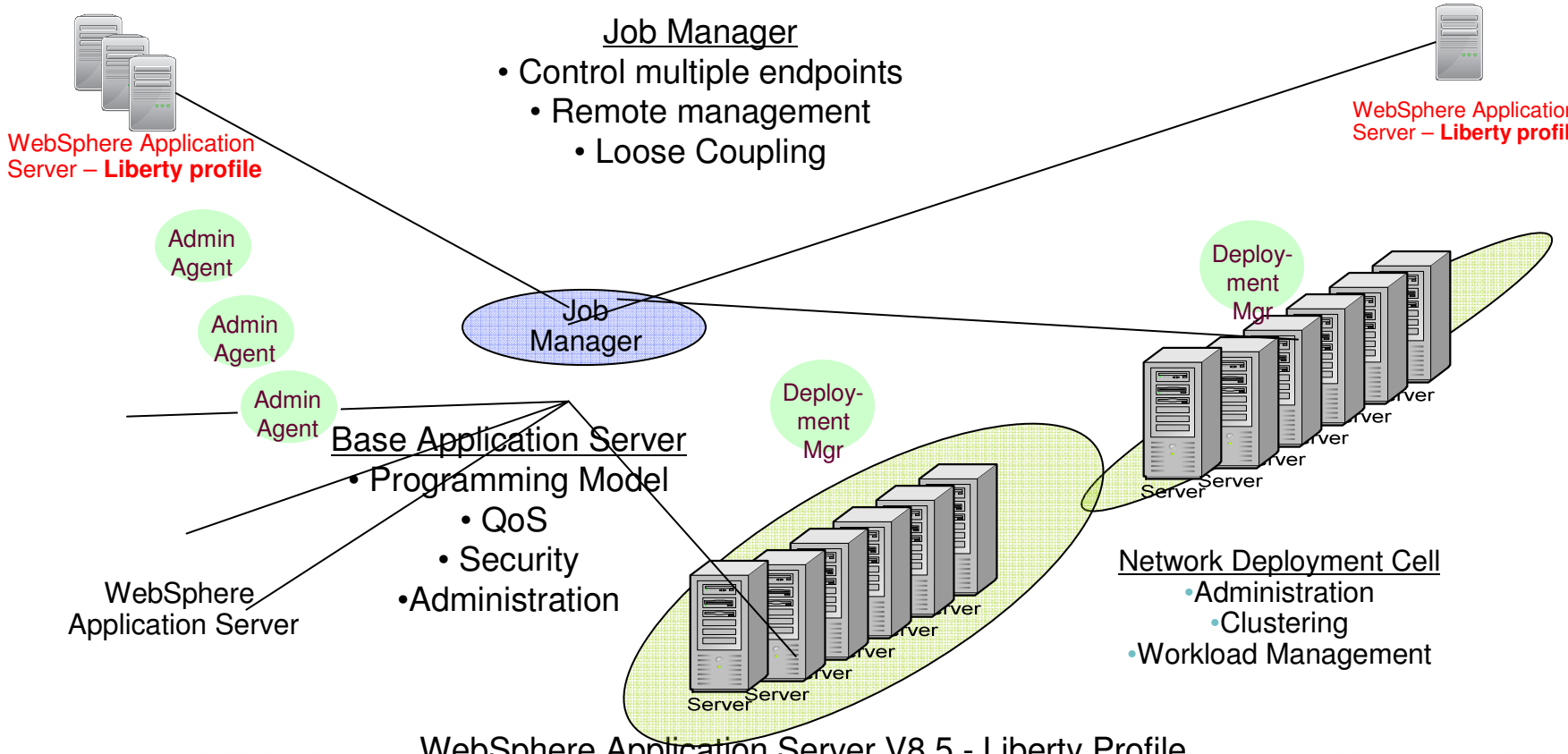
Centralized management through job manager



WebSphere Application Server V8.5 - Liberty Profile

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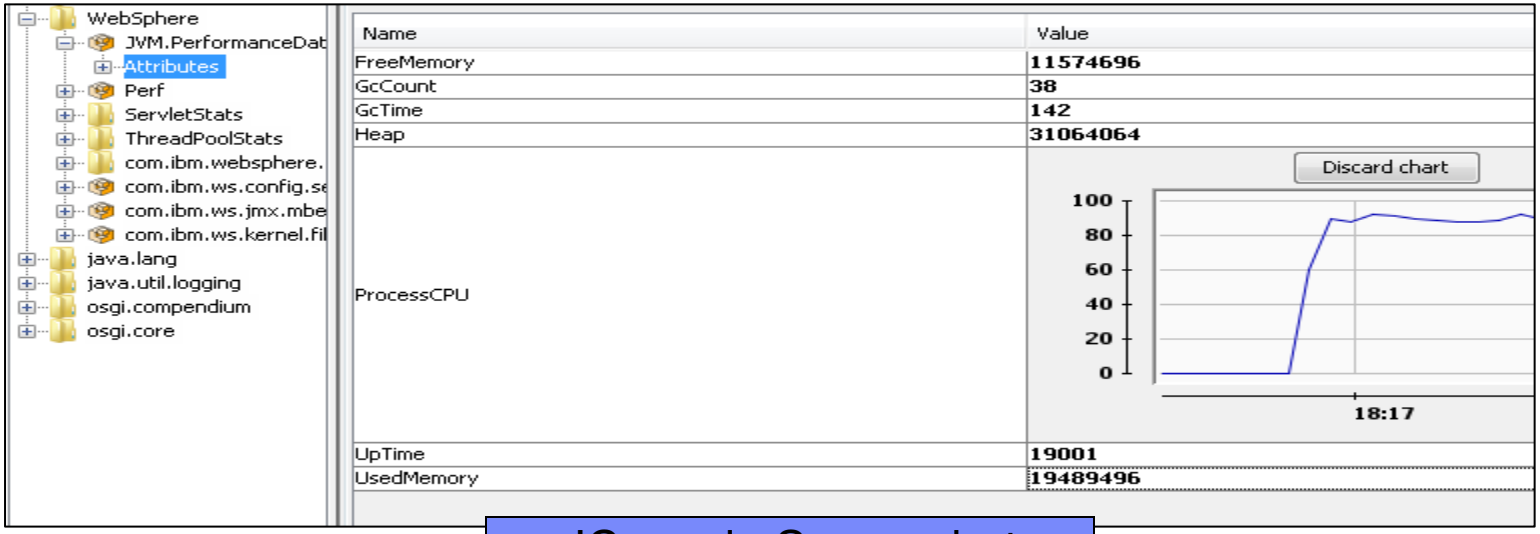
JVM monitoring

- Free Memory
- Used Memory
- Total Heap Size
- Process CPU Utilisation
- JVM Uptime in milliseconds
- GC Count Since JVM Started
- GC Time (Total time spent in GC)



JConsole Screenshot

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Grazie — ITALIAN
धन्यवाद — HINDI
Merci — FRENCH
ありがとうございました — JAPANESE
Obrigado — BRAZILIAN PORTUGUESE
多谢 — SIMPLIFIED CHINESE

Thank You

多謝 — TRADITIONAL CHINESE
Gracias — SPANISH
Спасибо — RUSSIAN
நன்றி — TAMIL
ขอบคุณ — THAI
Danke — GERMAN
شكرا — ARABIC

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