

WebSphere Application Server Roadmap & Direction



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The app revolution

Fundamentally changing the way we interact with technology.

Apps are everywhere

The quantity and usefulness of web and mobile apps has led to an “**app revolution**” among consumers and businesses alike.

Experience matters

Customers and employees now expect a **delightful** and **seamless** experience across all interactions with a business.

Cloud makes it possible

Apps today can be stitched together quickly with pre-built assets. Cloud makes the **API economy** possible.

App development is about speed and choice



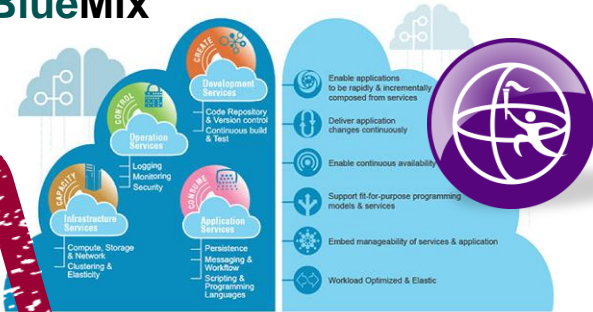
Developers' expectations have evolved.



Cloud Foundry



IBM BlueMix



The Buildpack for IBM WebSphere Liberty is freely available for developers

<https://github.com/cloudfoundry/ibm-web-sphere-liberty-buildpack>

This Time Last Year

- Push deploy applications to PaaS-provided WebSphere Liberty
- Host on-premise
- Currently development-use only. But free!
- Includes IBM Java 7
- Uses Cloud Foundry extensible buildpack architecture
- The WebSphere Liberty buildpack is an open source contribution to the Cloud Foundry community and provisions developer-licensed instances of WAS Liberty Core V8.5.5.0

Contributed to open source Cloud Foundry community

Visit our developer community at <http://wasdev.net>

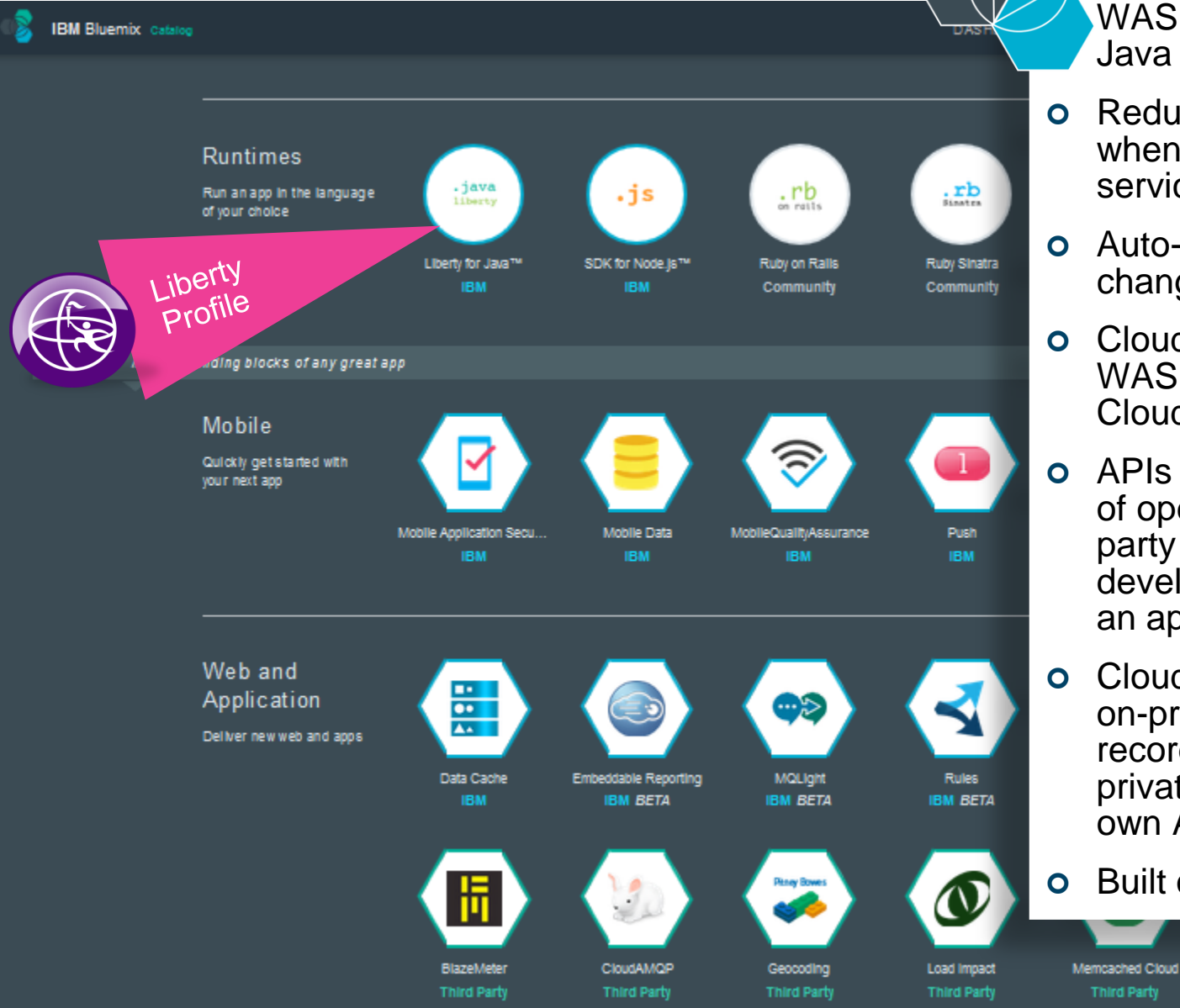
IBM BlueMix: <http://ibm.com/bluemix>









WAS Liberty Profile is the Java runtime for IBM BlueMix

- Reduce development time when integrating cloud services
- Auto-scaling policies react to changing workload
- Cloud tools to extend your WAS Developer Tools for Cloud deployment
- APIs and Services: A catalog of open source, IBM and third party APIs services allow a developer to stitch together an application in minutes.
- Cloud integration: Connect to on-premises systems of record plus other public and private clouds. Expose your own APIs to your developers.
- Built on IBM SoftLayer







IBM Bluemix Catalog










Runtimes
Run an app in the language of your choice

-  Liberty for Java™ IBM
-  SDK for Node.js™ IBM
-  Ruby on Rails Community
-  Ruby Sinatra Community

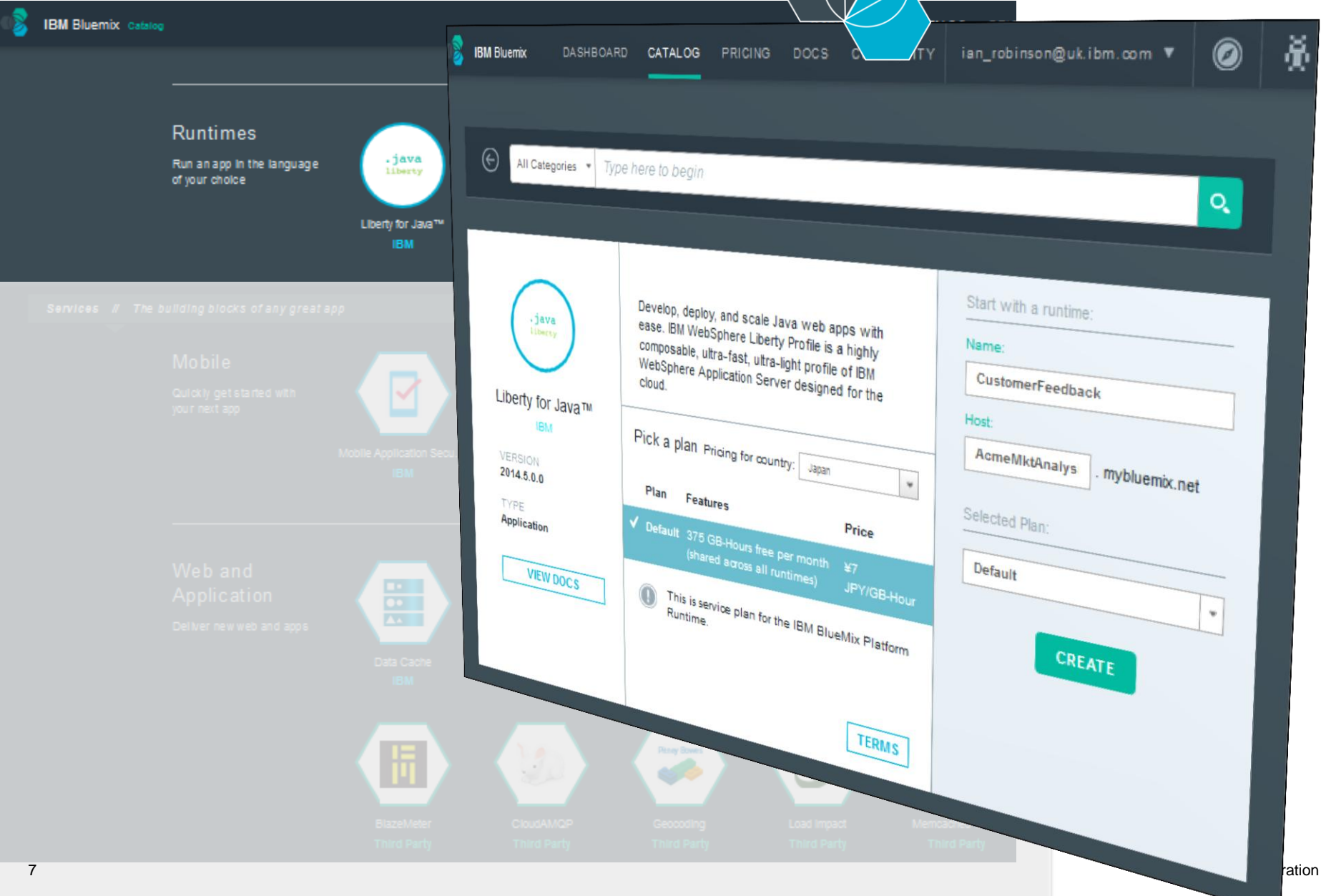
Mobile
Quickly get started with your next app

-  Mobile Application Security IBM
-  Mobile Data IBM
-  Mobile Quality Assurance IBM
-  Push IBM

Web and Application
Deliver new web and apps

-  Data Cache IBM
-  Embeddable Reporting IBM BETA
-  MQLight IBM BETA
-  Rules IBM BETA
-  BlazeMeter Third Party
-  CloudAMQP Third Party
-  Geocoding Third Party
-  Load Impact Third Party
-  Memcached Cloud Third Party

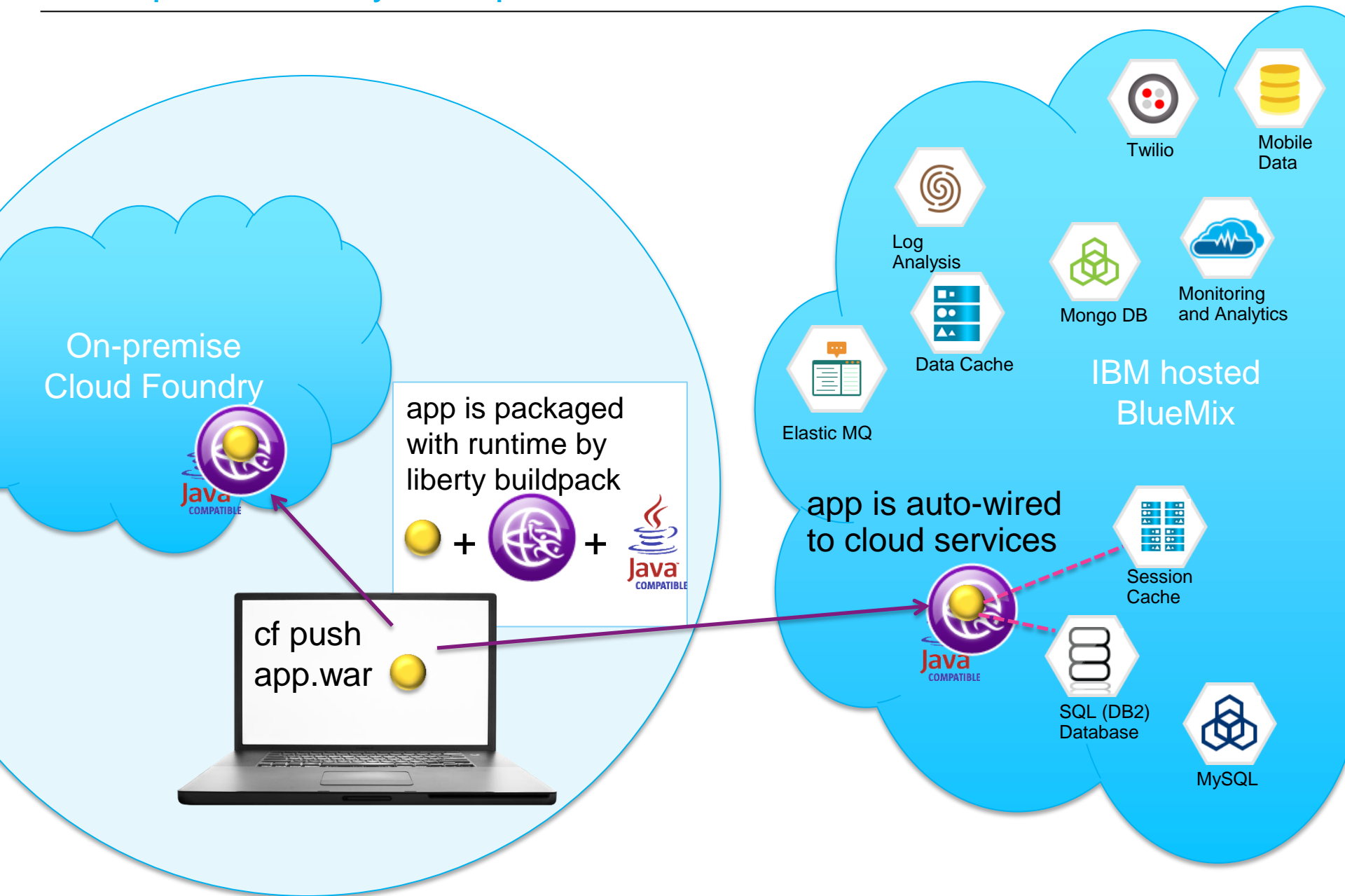




The screenshot displays the IBM Bluemix Catalog interface. The top navigation bar includes 'IBM Bluemix', 'DASHBOARD', 'CATALOG', 'PRICING', 'DOCS', 'COMMUNITY', and a user profile 'ian_robinson@uk.ibm.com'. The main content area is titled 'Runtimes' and features a search bar with 'All Categories' and a search icon. The 'Liberty for Java™' runtime is highlighted, showing its version (2014.5.0.0) and type (Application). A 'Pick a plan' section allows users to select a plan for Japan, with a table of options:

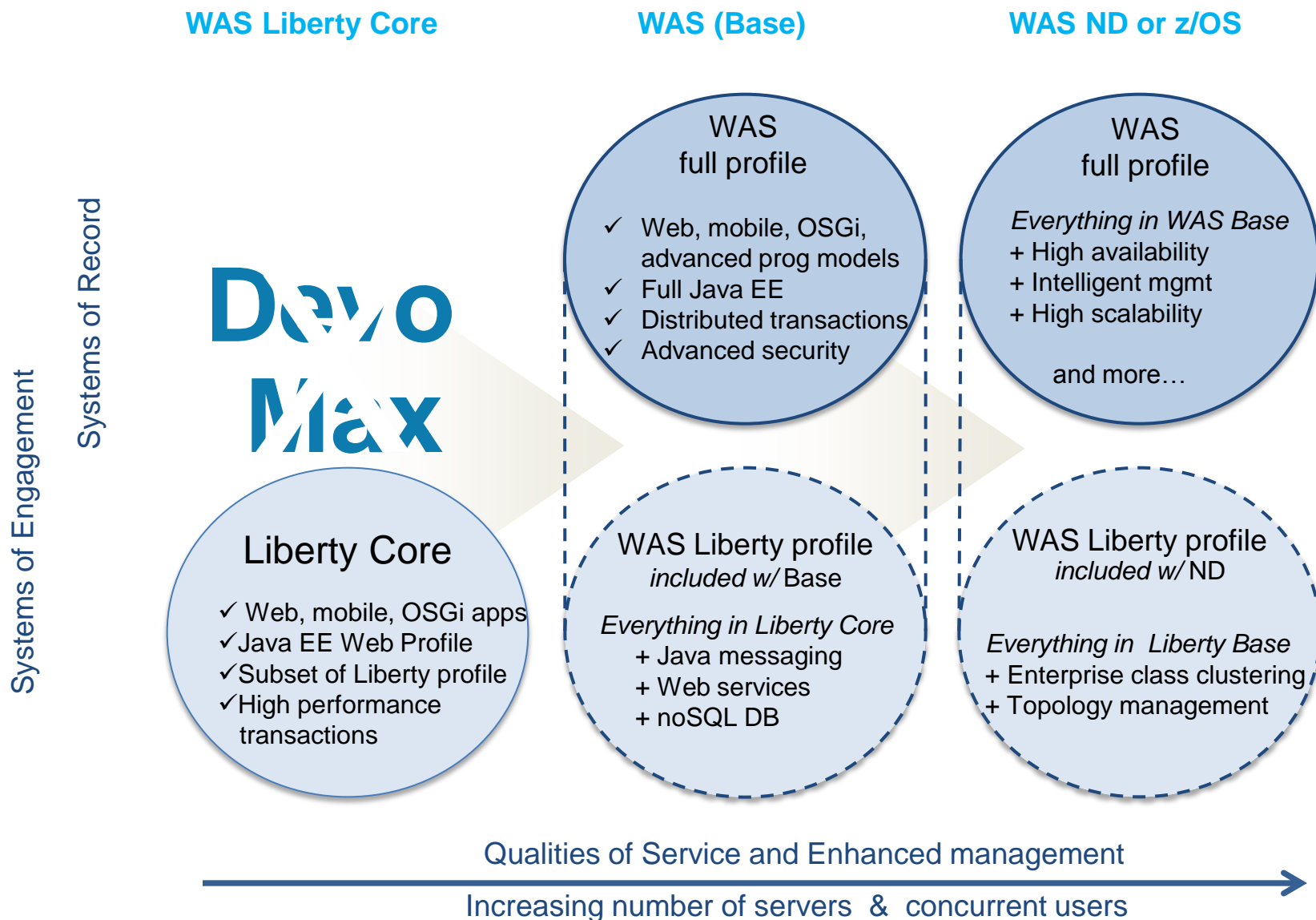
Plan	Features	Price
Default	375 GB-Hours free per month (shared across all runtimes)	¥7 JPY/GB-Hour

A warning icon indicates: 'This is service plan for the IBM BlueMix Platform Runtime.' The right sidebar contains a 'Start with a runtime:' form with fields for 'Name' (CustomerFeedback), 'Host' (AcmeMktAnalysis.mybluemix.net), and 'Selected Plan' (Default), followed by a 'CREATE' button. The bottom of the page shows a grid of other services like Mobile Application Security, Data Cache, BlazeMeter, CloudAMQP, Geocoding, Load Impact, and Memcached.



4 years ago WAS faced **The Innovator's Dilemma**.
How do we continue to support thousands of existing deployments
and provide the next generation platform at the same time?
Independent technology bases?
Or...





WebSphere Application Server



A proven platform for Web, Mobile and Cloud applications

Cloud



Mobile



Right fit
application server

For rapid development and light-weight production deployment with high scalability



- Web Profile certified (Liberty Core Edition)
- Small footprint (< **54MB**), quick startup (< **3 sec**)
- Developer-first design of simple, shareable XML configuration
- Dynamic runtime and configuration
- Unzip install and deploy
- Fidelity to WebSphere Application Server Full Profile
- Add custom features and integrate 3rd party components via Liberty extensions interface
- Install new features from repository with no server restart
- Lightweight collective management scales to 10,000 servers

Simplified Server Configuration

```
<server>
  <featureManager>
    <feature>jsp-2.2</feature>
    <feature>jdbc-4.0</feature>
  </featureManager>
```

Features control which capabilities (bundles) are installed in the server

'singleton' configurations specify properties for a runtime service like logging

```
<logging traceSpecification="webcontainer=all=enabled:*=info=enabled"/>
```

'instance' configurations specify multiple resources like applications and datasource definitions

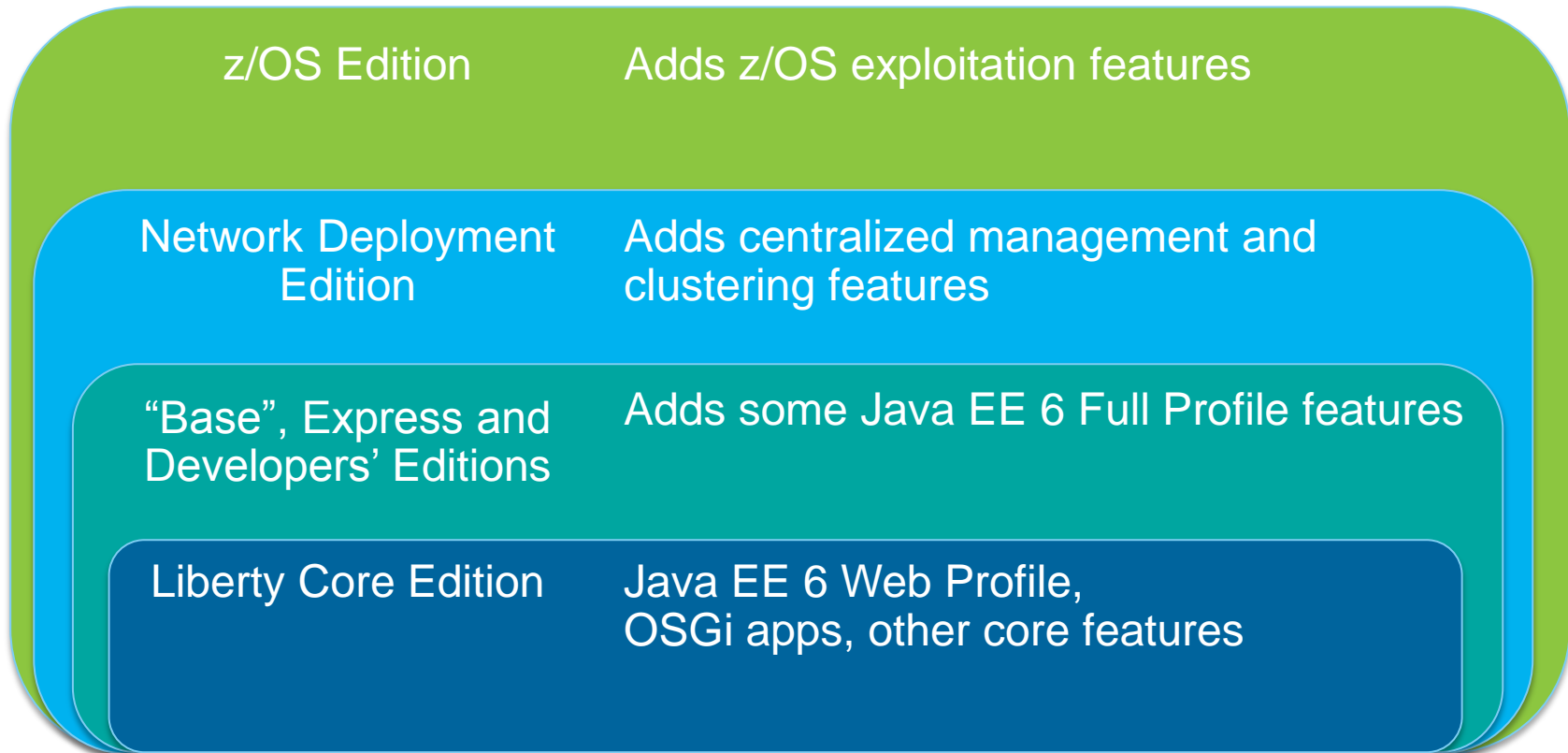
```
<application name="tradelite" location="tradelite.war"/>
```

```
<dataSource jndiName="jdbc/TradeDataSource">
  <properties.derby.embedded databaseName="${server.config.dir}/tradedb"/>
</dataSource>
```

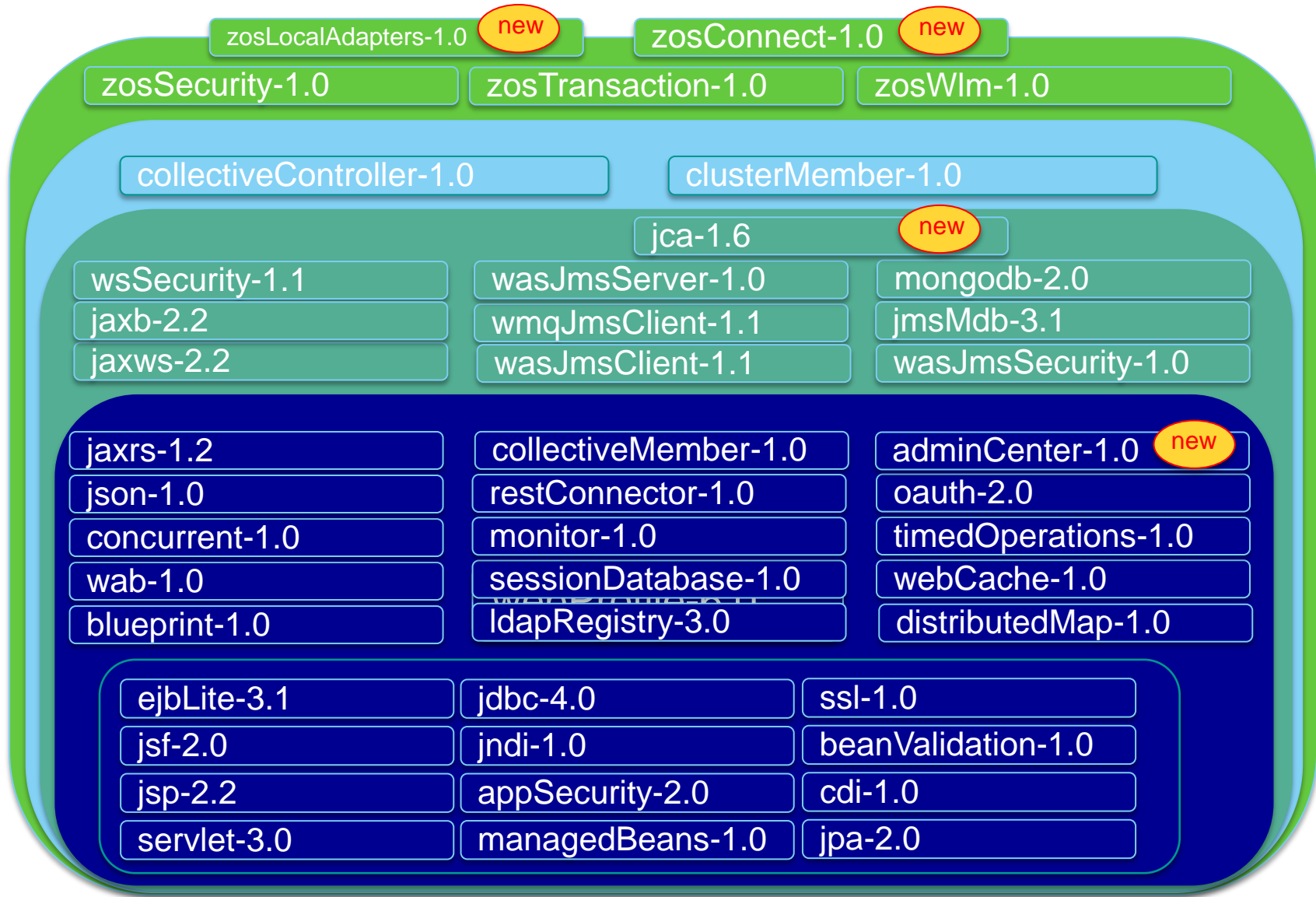
```
</server>
```

Any of this configuration could be put into a separate xml file and 'included' in this 'master' configuration file

Lightweight and Dynamic Runtime...



- zos
- nd
- base
- core



WAS ND - Intelligent Management Capabilities



Part of WAS ND V8.5.0+ and WAS for z
Builds on traditional ND cell-based operational management
Added Liberty Profile (assisted lifecycle subset) in V8.5.5.1

Application
Edition
Management



Server Health
Management



SLA based
Dynamic
Clustering



Intelligent
Routing and SLA
Enforcement



Better TCO through management efficiency and performance, Intelligent Management delivers the ability to sense and respond quickly to changes



Up to
45%
less hardware

Up to
60%
less administration

Up to
45%
less software

Up to
90%
fewer outages

Source: Based on 60+ Operations Optimization Value Assessments done to date by IBM for real customers
Cost reductions are compared to traditional WAS ND deployment

Operational Flexibility

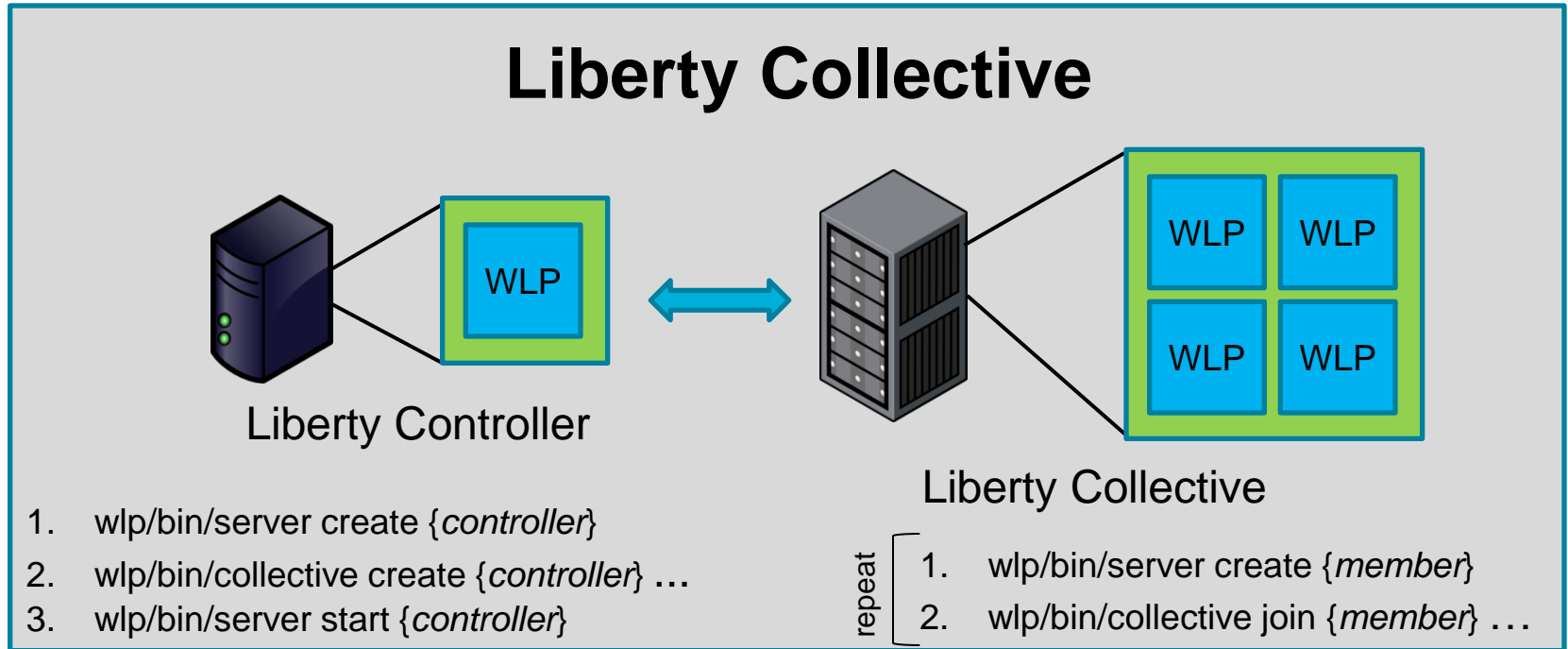
- WAS ND Cell-based management and routing
- Loosely-coupled server Collectives (new in ND V8.5.5)
- Standalone server farms (WAS plugin licensing relaxed)

In each case, app server tier behind an HTTP reverse-proxy tier.

Load-balancing in all cases.

WAS-provided, integrated central point of management for first 2 only

WAS ND: Scalable Collectives – Looser Coupling Than Cells



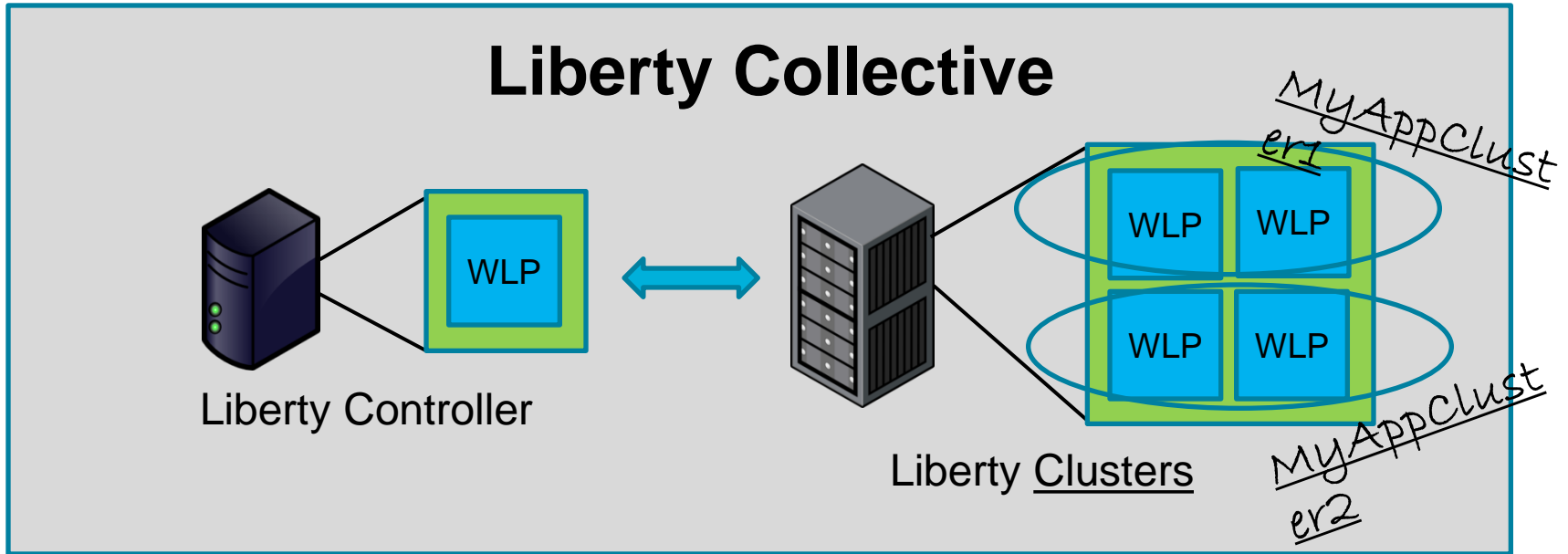
server.xml

```
<featureManager>
  <feature>collectiveController-
1.0</feature>
</featureManager>
```

server.xml

```
<featureManager>
  <feature>collectiveMember-1.0</feature>
  [ <feature>clusterMember-1.0</feature> ]
</featureManager>
```


WAS ND: Lightweight Management Clusters



Add cluster feature:

server.xml

```
<featureManager>
  <feature>collectiveMember-1.0</feature>
  <feature>clusterMember-1.0</feature>
</featureManager>
<clusterMember name="MyAppCluster1"/>
```

Name the cluster:

WebSphere Liberty Repository to pick up new Liberty product features, samples, and tutorials:

- Easily extend your development and production environments with new features

Administer production apps with the **WebSphere Liberty Administrative Center**

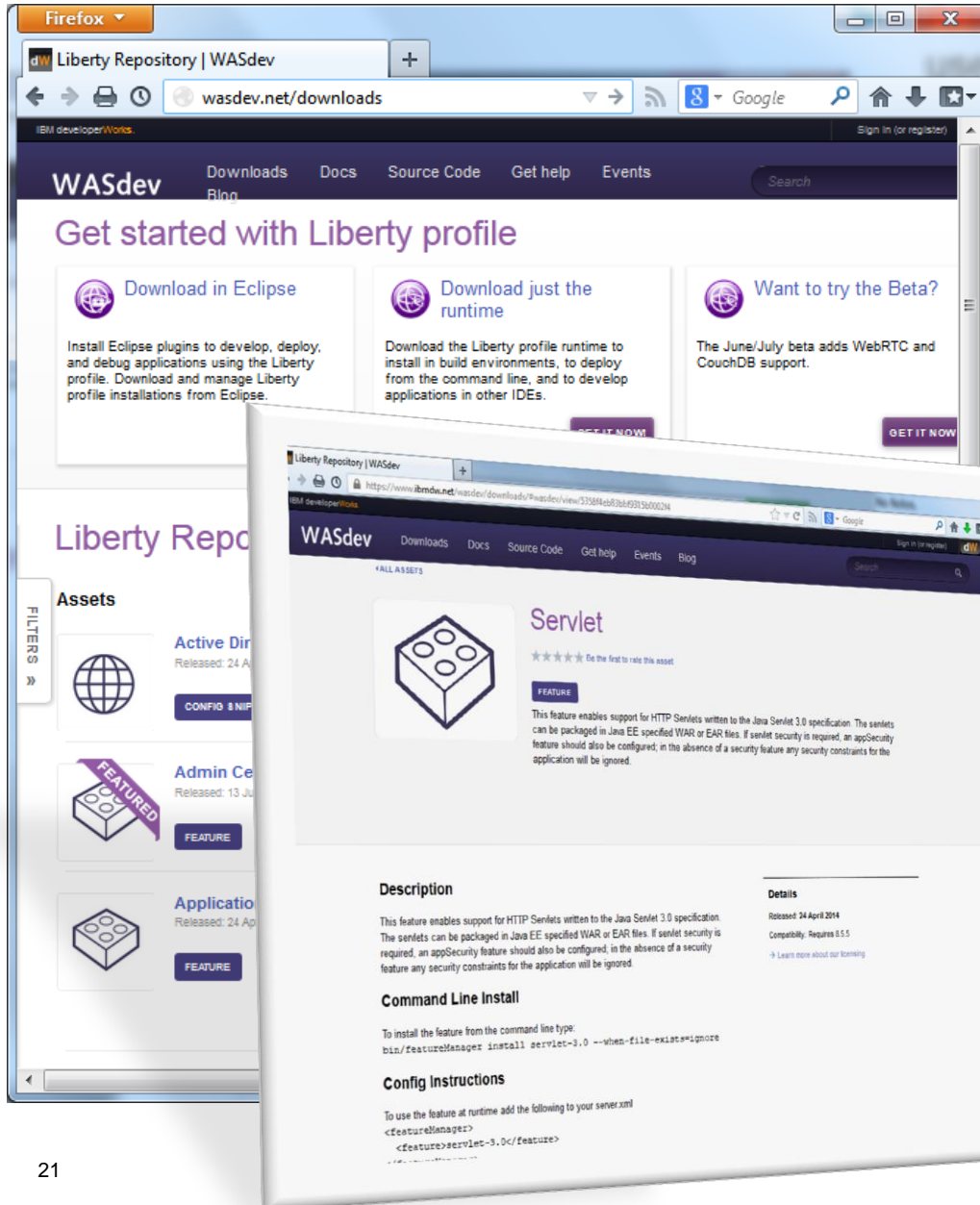
- Flexible, extensible, mobile ready, next generation admin UI to manage Liberty Servers

Extend existing enterprise data and business logic to **Web, Mobile or Cloud** apps

- Leverage **WebSphere Liberty Java Connector Architecture (JCA)** feature to connect in to and extend existing enterprise backend systems
- Use **WebSphere Liberty z/OS Connect** for secure enterprise connectivity to easily extend existing assets to Mobile & Cloud applications using RESTful services and JSON.
- **IBM WebSphere Liberty Optimized Adapters for z/OS (WOLA)**: a function of WAS Liberty for z/OS that allows very fast, efficient, and low-latency memory to memory exchanges between WAS z/OS and CICS, IMS & Batch.

Different options for using **WebSphere Liberty in the Cloud**

- Build applications using the Liberty Buildpack and Caching services on IBM BlueMix
- Deploy WAS Liberty patterns using Pure Application Pattern service on SoftLayer
- Bring your own existing entitlement of WAS to SoftLayer or Amazon cloud environments



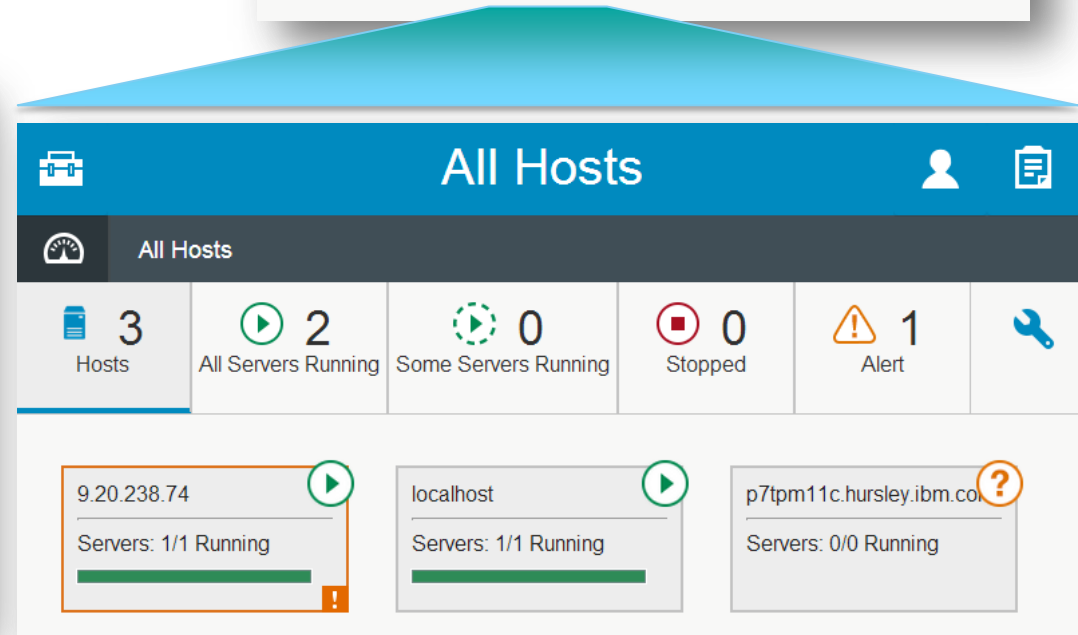
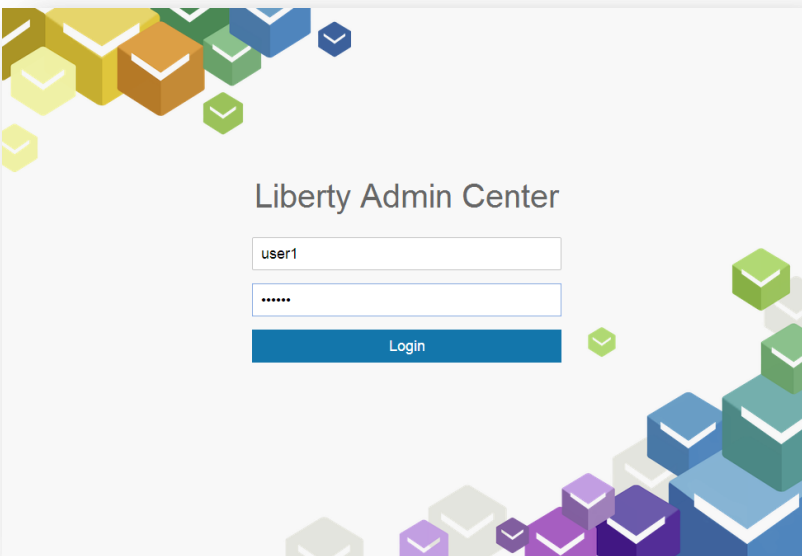
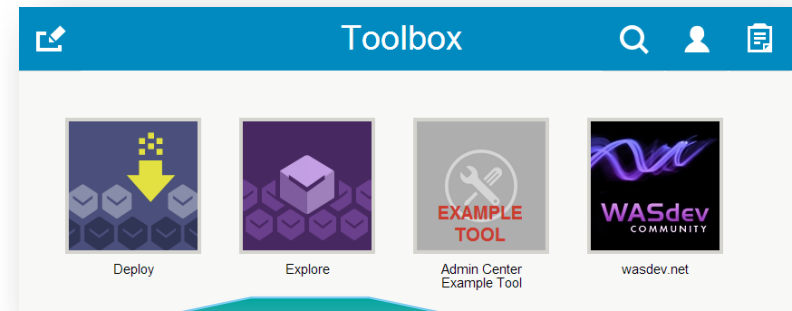
▶ An **online repository** to deliver new Liberty function to users. Starting with the current release, new Liberty features will be delivered via the Liberty repository for use in production.

- Accessed through Installation Manager, Liberty featureManager command and WDT
- Dependencies calculated and installed
- Service applied the same way regardless of how feature installed.

▶ Other Content available in the repository:

- Code that allows non-Liberty products to easily integrate with Liberty
- Samples using Liberty features and/or 3rd party tool integrations that work as part of Liberty's Ecosystem

- Evolve from one-size-fits-all console
- Lightweight, task-oriented applications / app store approach with customizable toolbox for “right-sized” UI per user / device
- Extensible: New Administrative Capabilities will be delivered continuously through the Liberty Repository
- Initial focus: Discover, control and monitor the life-cycle of applications, servers and clusters in a Collective

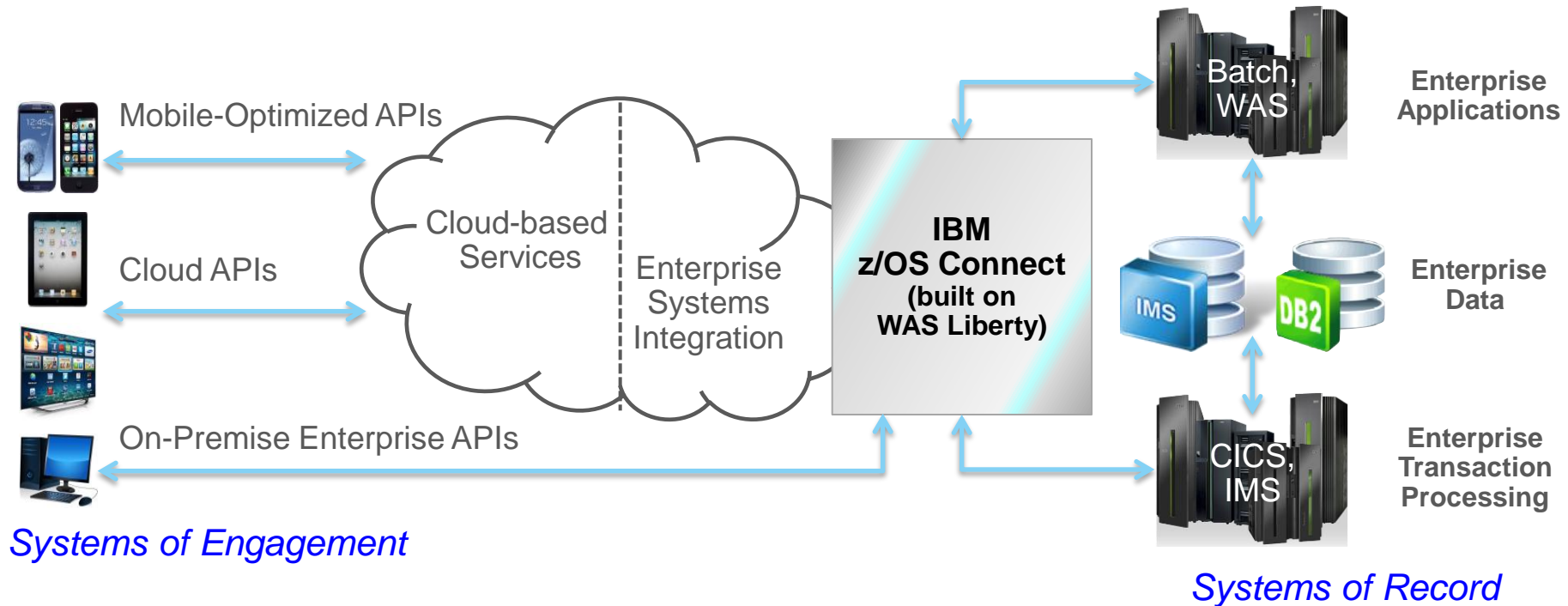


z/OS Connect: Built on WAS Liberty

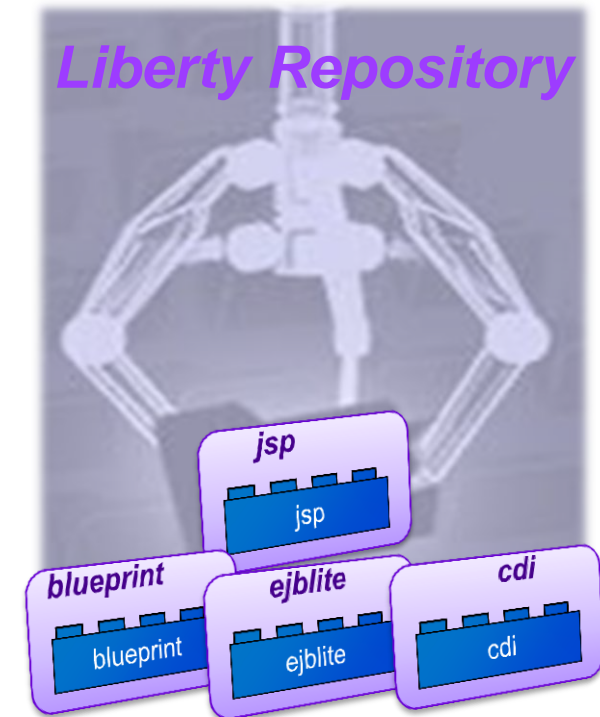


Types of Applications: Developers can access existing z/OS assets in WAS, CICS, IMS and other z/OS environments via z/OS Connect from a mobile, cloud or web client.

z/OS Connect provides REST transformation and standardized security access for calling in to z/OS applications in all major environments - CICS, IMS, batch, Unix System Services, and ISV software. It supports SAF-based security integration allowing for individual z/OS Connect services to have unique sets of authorized users. z/OS Connect is a WAS Liberty server process.



- WAS Next Beta drivers will roll out in a much more continuous fashion to show more accurately what we are working on. Not just during formal programs.
 - Monthly updates
- Productized function will also be delivered more continuously, for the WAS Liberty Profile, through the Liberty Repository.
 - Accessed through Installation Manager, Liberty featureManager command and WDT
 - Dependencies calculated and installed
 - Service applied the same way regardless of how feature installed.
- Intention to provide offline (on premise) management of Liberty Repository instances
 - Like Installation Manager repositories, providing local service for IM, WDT and command-line clients
 - Also inside BlueMix for faster staging of right-size droplets



Previews of technologies that allow you to write engaging and responsive enterprise business applications

Servlet 3.1

Add Asynchronous IO to Servlet which allows to break up the writing of large content into asynchronous writes that do not block

e.g. Streaming video, it is ideal to send the data at just over the rate that it is consumed by a viewer

WebRTC

Write rich, real time multimedia apps (voice and video) on web without requiring plug-ins, downloads or installs.

Strong industry support. Enables contextual communications!

Java Batch 1.0

JSR 352 batch container and WDT tools

WebSockets

Enrich applications supporting bi-directional conversation between browser and a server

Exchange live content with browser without being solicited by the client

EJB Lite 3.2

Write portable transactional & secure business logic with small & powerful subset of full EJB API

e.g. Bank account transfer or updating inventories

Additional features available on WASdev.net:

- Developer Productivity:
 - Java EE Concurrency Utilities 1.0, JSON-P 1.0
 - JMS 2.0
 - Administrative Center
 - EJB 3.2, JPA 2.1, Mongo and CouchDB NOSQL
- Enhanced Security:
 - OpenID and OpenID Connect
- WDT Tools and Knowledge Center Connectivity
 - WOLA
 - z/OS Connect
 - JCA 1.6
- And more to come

Visit:

<https://www.ibmdev.net/wasdev/docs/new-in-latest-earlyaccess>



- More annotated POJOs
- Less boilerplate code
- Cohesive integrated platform

- WebSockets
- JSON
- Servlet 3.1 NIO
- REST

- Batch
- Concurrency
- Simplified JMS

Remember This?

z/OS Edition

Adds z/OS exploitation features

Network Deployment
Edition

Adds centralized management and
clustering features

“Base”, Express and
Developers’ Editions

Adds some Java EE 6 Full Profile features

Liberty Core Edition

Java EE 6 Web Profile,
OSGi apps, other core features

Things to look out for in the Beta over coming months

Network Deployment
Edition

Add **Intelligent Management** features
for Liberty Collectives

“Base”, Express and
Developers’ Editions

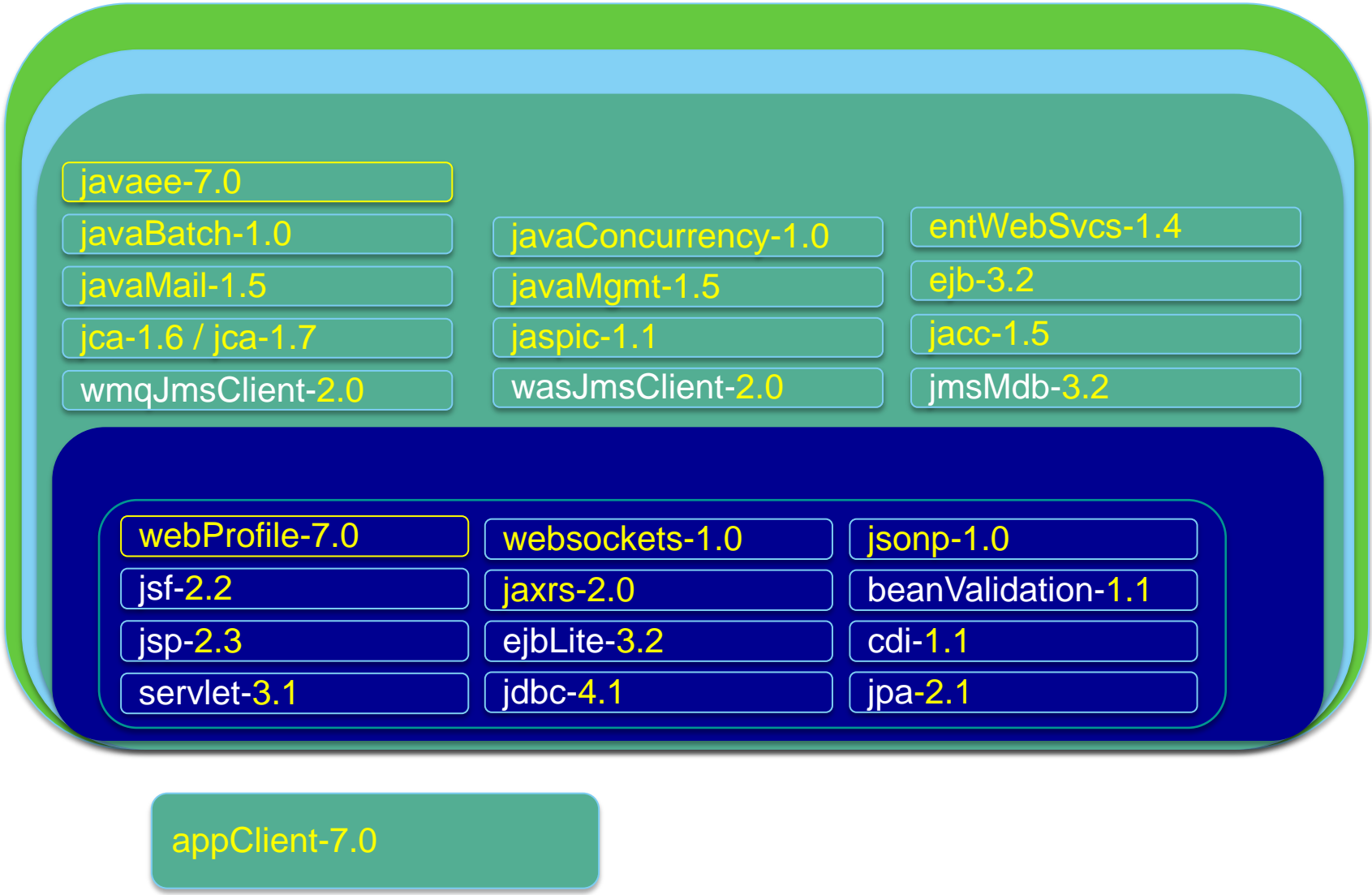
Add some Java EE 6, **all Java EE 7**
Full Profile features

Liberty Core Edition

Java EE 6 **and Java EE 7** Web Profile,
OSGi apps, other core features

How would Java EE features look in Liberty?

base
core



Zero Migration By Design

- There is **no migration needed for Liberty configuration**
 - the same server configurations can be used with different versions and service levels of the runtime
 - set WLP_USER_DIR to shared configuration and apps
- Existing features **will not change behavior**
 - new feature ‘versions’ will be added and will contain all updates and changes
- Supported versions of Java (J2SE) will move forward
 - Several of the Java EE 7 technologies require Java 7
 - Java 6 will go out of support at some point
 - WebSphere Application Migration Tool already has support to identify J2SE 6 -> 7 changes needed by an application

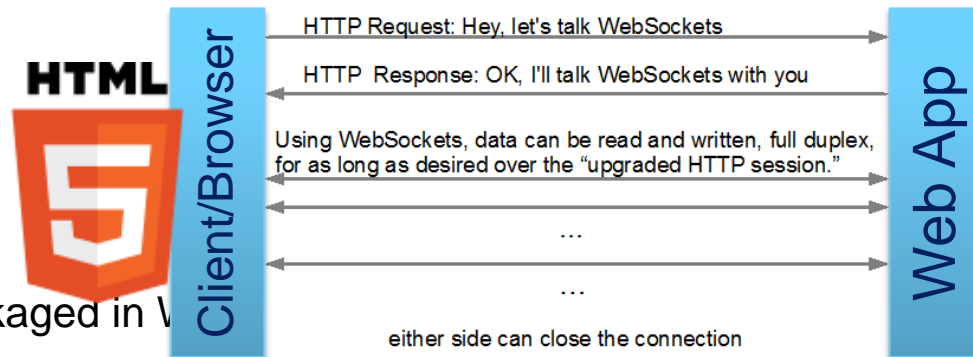
WebSockets

- WebSockets solves difficulties of 2-way HTTP Communications.

– Previous options:

- HTTP Polling
- HTTP Long Polling
- HTTP One Way Streaming
- Combination of the above

- WebSockets:



- @ServerEndpoint annotated POJOs packaged in V programming model.
- HTML5-compliant devices as clients
 - Also Java client API and @ClientEndpoint annotation for POJOs.

Web Real-Time Communications



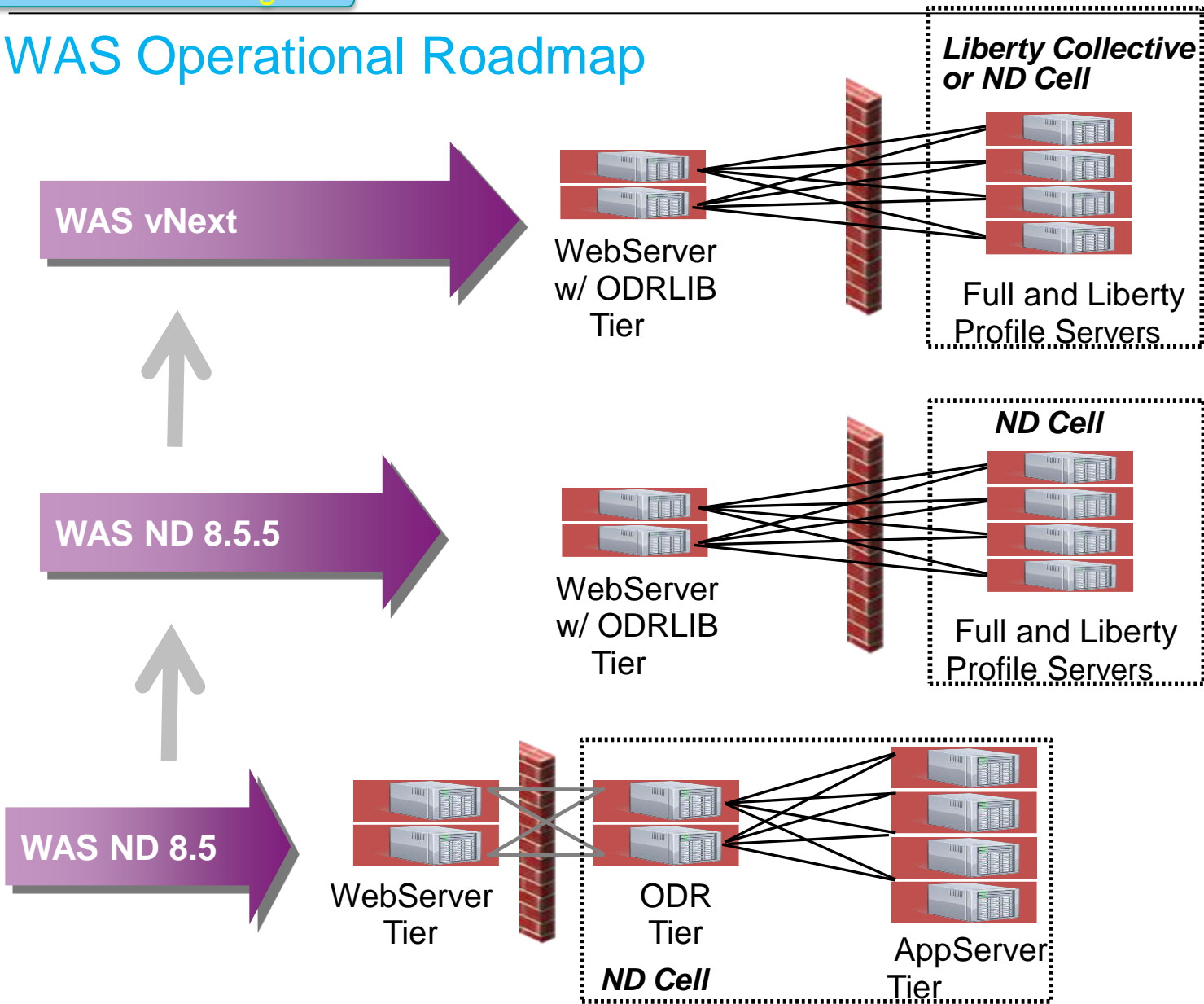
WebRTC offers web application developers the ability to write rich, realtime multimedia applications on the web, without requiring plugins, downloads or installs. (source www.webrtc.org)

Why is WebRTC so disruptive?

- ▶ Eliminates complexity of delivering codecs and streaming protocols.
- ▶ Closely aligned with HTML 5.
- ▶ Enables real-time data communications in addition to voice and video.
- ▶ Strong industry support.
- ▶ **Enables contextual communications!**

WebRTC does not define the signaling plane. It only defines a model for sending and receiving media and a set of protocols for traversing firewalls.

WAS Operational Roadmap



Cloud

Mobile



Right fit
application server

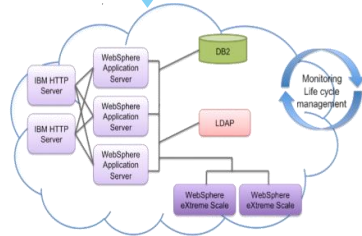


- ▶ Brings the best of “born-on-the-cloud” native development while leveraging existing enterprise data and services
 - BYOSL of WAS/AI to your Cloud environment of choice (SoftLayer, Amazon, etc.)
 - IBM BlueMix changes the game for developers (WAS Liberty, Caching, SQL/NoSQL and more)
 - WAS services reused with Mobile apps (including zOS)
 - WAS services exposed using API Management Services (including zOS)
 - WAS Liberty z/OS Connect – leveraging backend z data and services

- ▶ Ultimate business flexibility with PureApplication Patterns to deploy cloud-enabled workloads
 - Develop once and deploy same pattern to SoftLayer, PureApplication System or on-premise
 - Web Application pattern includes WAS ND with Intelligent Management and elastic caching

Common Pattern Engine

 Dispenses WAS topology

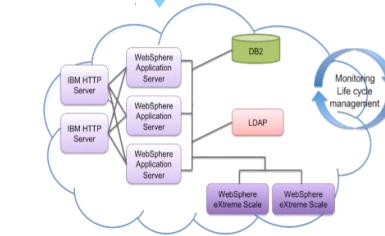


PureApp Service



Off-premises Cloud

 Dispenses WAS topology

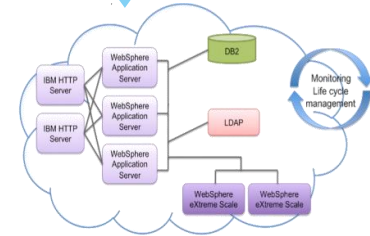


PureApp System



On-premises Cloud

 Dispenses WAS topology



Smart Cloud Orchestrator (SCO)



On-premises BYO h/w (Distributed and z)

Benefits of Cloud technologies consistently available for on-prem and off-premises, enabling self service of middleware technologies

Cloud



Mobile



Right fit
application server

Creating a truly engaging Mobile experience involves far more than building great Mobile apps



Building Mobile apps that support a range of devices, are easy to use and look really cool



Increasing speed to market to deploy capabilities



Rapidly innovating to keep enhancing experience



Protecting Mobile access to enterprise data



Scaling elastically to deliver responsiveness



Integrating Mobile activities with rest of business



Range of Devices

- WDT tools allow you quickly build mobile web apps with mobile widget libraries (DOJO, jQuery,...)
- Integrate WorkLight studio with WDT on the developer desktop to build mobile applications for native, hybrid



Pace of Innovation

- Build new services (APIs) or use existing services (APIs) on WAS or in back end systems



Protect Perimeter

- WebSphere helps secure your application with:
- OAuth
 - SAML/SSO
 - OpenID & OpenID Connect



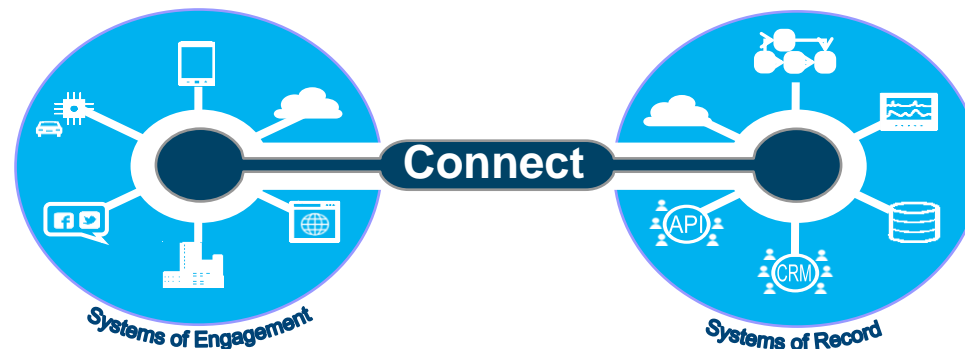
Backend Integration

- Use existing services in/via:
- EIS systems (CICS, IMS, ..)
 - z/OS Connect
 - MongoDB
 - Relational databases



Scale & Latency

- WebSphere Extreme Scale to help scale
- High availability and clustering support for reliability
- Service Level Agreement policies to manage inbound traffic from clients



Download Latest Beta

Download V8.5.5

September beta!

WHAT IS LIBERTY PROFILE?

WHAT'S NEW IN THE BETA?

What's new

SEPTEMBER 24, 2014

JRebel with Liberty in 5 minutes and 10 easy steps

Liberty profile enables you to re-deploy your application without restarting the application server each time. JRebel, from ZeroTurnaround, adds to this by enabling you to instantly reload your code without needing to redeploy or restart the application each time either. It seamlessly integrates with Liberty and the WebSphere Developer Tools.

SEPTEMBER 17, 2014

New in OSGi Applications: Custom Blueprint Namespace Handlers, and bring-your-own ConfigAdmin

Improvements to Liberty profile's OSGi Applications programming model in the September beta.

SEPTEMBER 16, 2014

Announcing: IBM Eclipse Tools for Bluemix September beta

The latest and greatest IBM Eclipse Tools for Bluemix September beta is now available for download! Find out what's new in this release.

SEPTEMBER 12, 2014

Announcing: Liberty profile September beta

The September beta includes Java Batch 1.0 with optional tools support, JPA Entity Listener Injection via CDI, featureManager enhancements, and

Connect & Contribute

WA8DEVNET

Have you tried out Liberty #Maven plug-in? A quick how-to installation guide by @jgawor #WebSphere ow.ly/APhpX

Follow @WA8devnet

SEP 29 **GOTO: Aarhus, Denmark**
Come and see the Liberty Cars, Code Rally and talk about the latest Liberty betas at the GOTO: Aarhus conference in Denmark.

SEP 30 **WebSphere User Group - Edinburgh, UK/Scotland**
Chief Architect Ian Robinson, Product Manager Anita Rass Wan, Architect Jeremy Hughes, Test Architect Kevin Smith, and Liberty Developer Ross Pavitt will all be there.

OCT 15 **Chef Community Summit - London, UK**
Jeremy Hughes, one of our architects, will be there!

OCT 28 **WebSphere Technical University - Düsseldorf, Germany**
*There'll be several people from the WebSphere and Liberty development teams attending. Who exactly? TBC...
For details of the event, see the [conference website](#).*

