

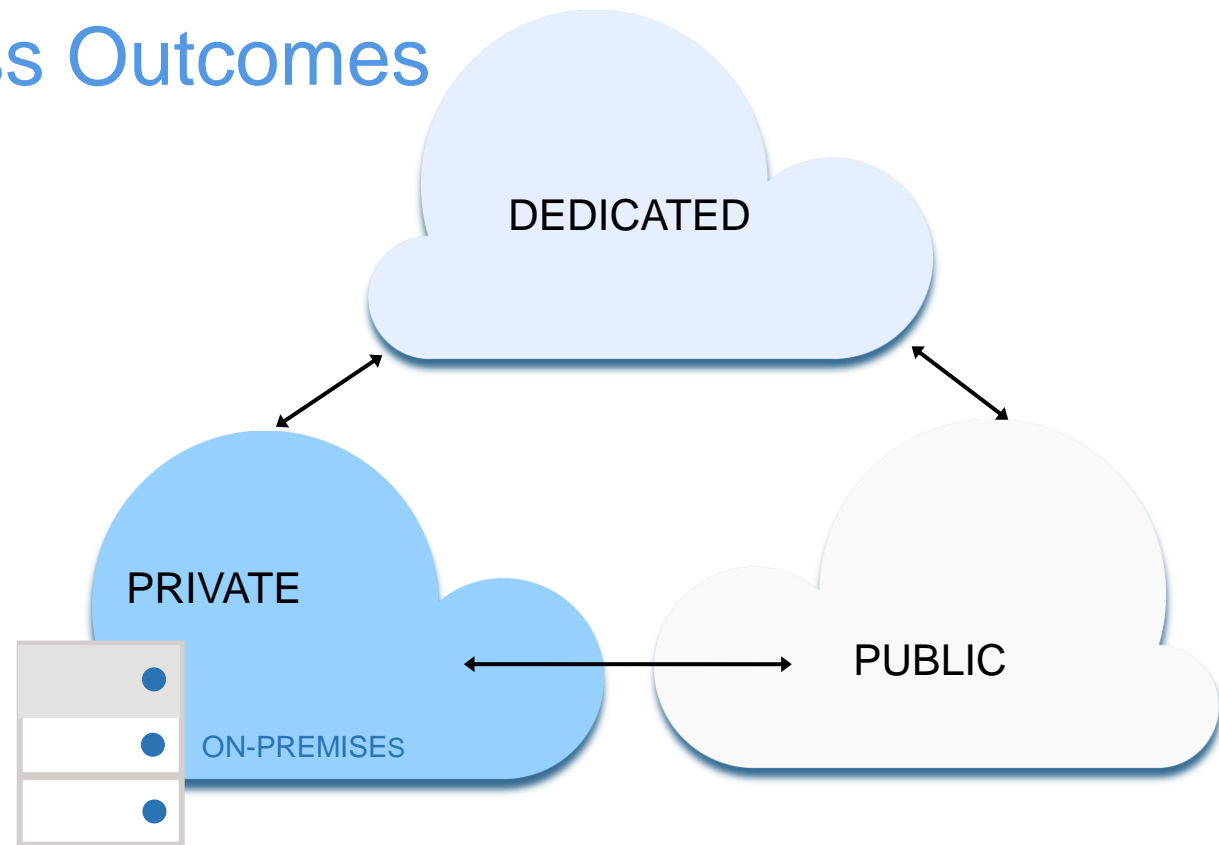
WebSphere Application Server Version 9 Update: On-Premises and in the Cloud

Ian Robinson – WebSphere Chief Architect

WebSphere User Group 2017



Hybrid Cloud is the Path to Business Outcomes



Hybrid cloud is a combination of cloud and traditional IT working in unison to deliver value to customers, suppliers, employees, & partners.

CIOs report that 16% of workloads now run in a public cloud, growing to 41% in 5 years

WebSphere operates across the hybrid cloud landscape

WebSphere traditional Speed of Operation

Manage & maintain stable, mission critical transactional applications
Systems of Record

Plus

WebSphere Liberty Speed of Innovation

Explore, develop and deploy for growth opportunities
Systems of Engagement, DevOps, Continuous Delivery, Microservices, Cloud



Enterprise Apps



Servers



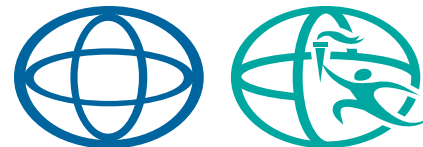
Enterprise Assets

- Longer release cycles
- Cost savings with workload consolidation



Marathoner

- IT-centric user requirements
- Longer life cycles



WebSphere Application Server

- 24 x7 availability
- Rock solid security
- Deployment flexibility

- Composable
- Continuous delivery
- Continuous integration
- Autonomic scaling
- Continuous monitoring

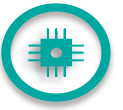


Sprinter

- Contextual contents
- Zero migration
- Cloud and Mobile friendly security



Cloud



IoT

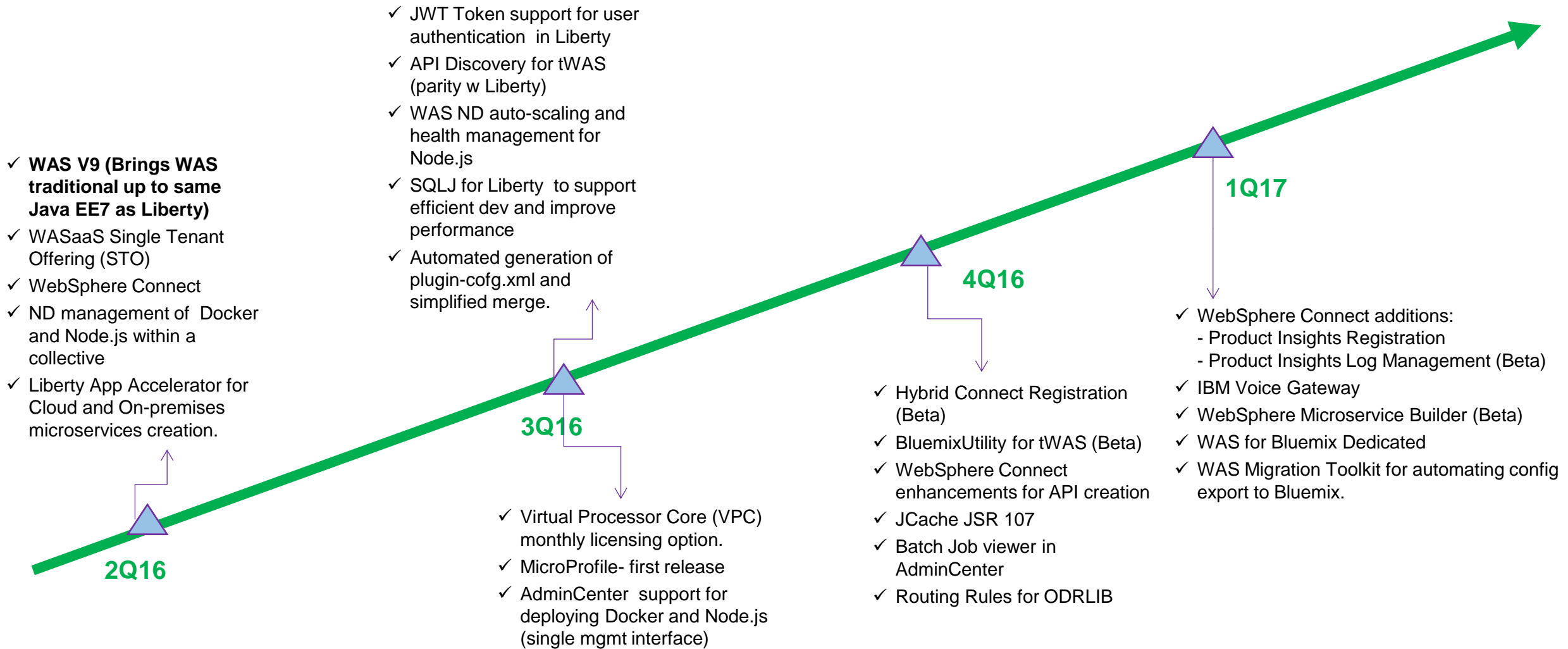


Mobile



Data

Recent WebSphere News (2016-2017)



Our on-ramps to hybrid cloud



Customer-facing architecture: focused on speed and agility

Transactional architecture: focused on availability and stability

WebSphere Application Server

The cornerstone of your cloud strategy

CREATE

Developer focused to speed delivery pipeline

- Lightweight composable runtime for microservices acceleration
- Java EE7 Market Leadership and support for Open Source
- Full integration within any DevOps toolchain for efficient & continuous delivery

CONNECT

Easy cloud connections to new & existing apps

- Create, expose & connect APIs
- Re-use existing apps and connect to “on or off” premises
- Add value to on-prem deployments through offloaded software inventory and log analysis

OPTIMIZE

Smart management of the mission critical

- High availability: auto-scaling, dynamic routing, Health management, Diagnostics
- Deploy Anywhere on-premises, in cloud or hybrid
- Take advantage of cloud native clustering and management





Why Java EE7 on WebSphere for microservices

Production ready, EE7 compliant app server for microservices strategy

- Large Developer base using Java Framework (including Spring based on Java EE)
- WebSphere designed with lightweight, composable runtime architecture
- WebSphere's architecture + Java EE7 = proven, enterprise development platform for Microservices
- Be at the leading edge of <http://MicroProfile.io> adoption: evolving Java for microservices
- WAS V9 brings traditional WAS deployments up to the same level of EE7 and Java 8 as WebSphere Liberty

Lightweight &
composable



Ideal for
microservices



MicroProfile.io

Optimizing Enterprise Java for a microservices architecture

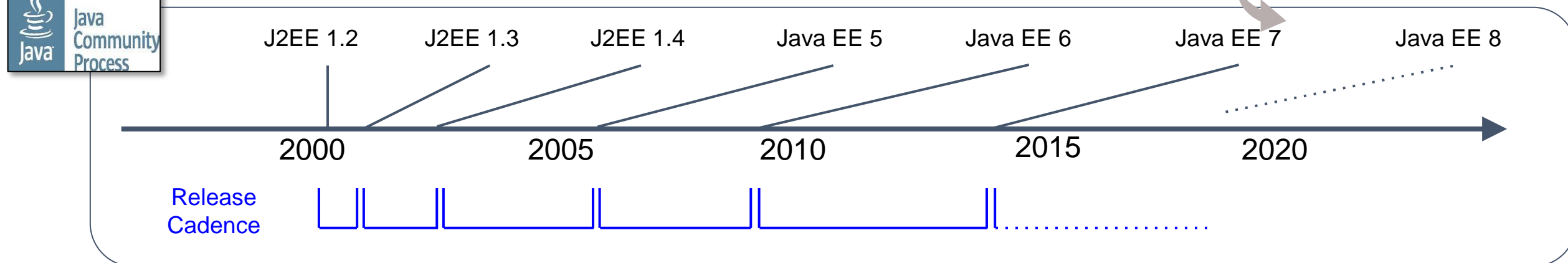
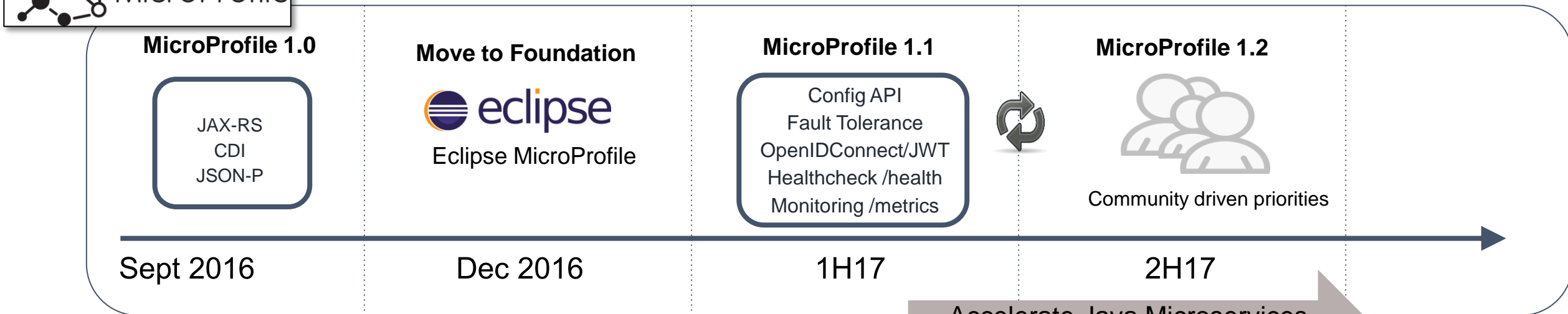




Accelerating Java Microservices



MicroProfile



Composable Java EE Features For Liberty



WebSphere
z/OS

WebSphere
ND

WebSphere
Base

WebSphere
Liberty
Core

zosConnect-1.2

zosLocalAdapters-1.0

batchSMFLogging-1.0

zosTransaction-1.0

zosWlm-1.0

zosRequestLogging-1.0

zosSecurity-1.0

collectiveController-1.0

clusterMember-1.0

scalingController-1.0

healthAnalyzer-1.0

healthManager-1.0

scalingMember-1.0

dynamicRouting-1.0

Java EE 6
subset

sipServlet-1.0

rtcomm-1.0

mediaServerControl-1.0

couchdb-1.0

rtcommGateway-1.0

javaee-7.0

cloudant-1.0

batchManagement-1.0

mongodb-2.0

wsAtomicTransaction-1.2

wsSecurity-1.1

wsSecuritySaml-1.1

osgiBundle-1.0

osgiAppIntegration-1.0

restConnector-2.0

eventLogging-1.0

oauth-2.0

microProfile-1.0

bells-1.0

sessionDatabase-1.0

requestTiming-1.0

scim-1.0

json-1.0

httpWhiteboard-1.0

collectiveMember-1.0

adminCenter-1.0

ldapRegistry-3.0

javaMail-1.5

concurrent-1.0

timedOperations-1.0

apiDiscovery-1.0

openid-2.0

wab-1.0

osgiConsole-1.0

webCache-1.0

bluemixUtility-1.0

openidConnectClient-1.0

blueprint-1.0

distributedMap-1.0

serverStatus-1.0

openidConnectServer-1.0

webProfile-6.0

logstashCollector-1.0

monitor-1.0

spnego-1.0

webProfile-7.0

productInsights-1.0

federatedRegistry-1.0

constrainedDelegation-1.0

passwordUtilities-1.0

transportSecurity-1.0

jwt-1.0

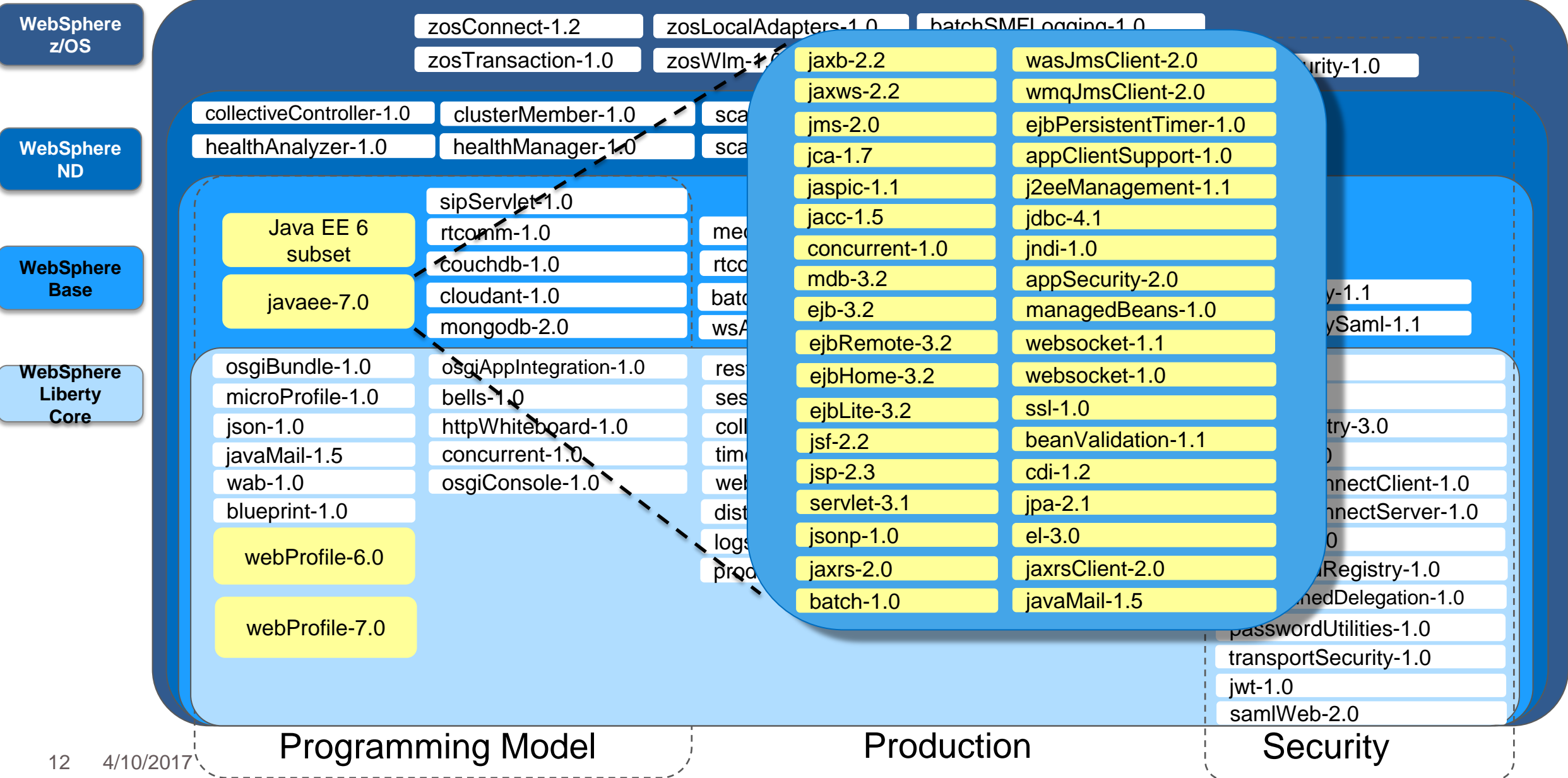
samlWeb-2.0

Programming Model

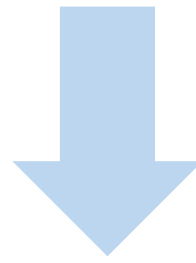
Production

Security

Composable Java EE Features For Liberty

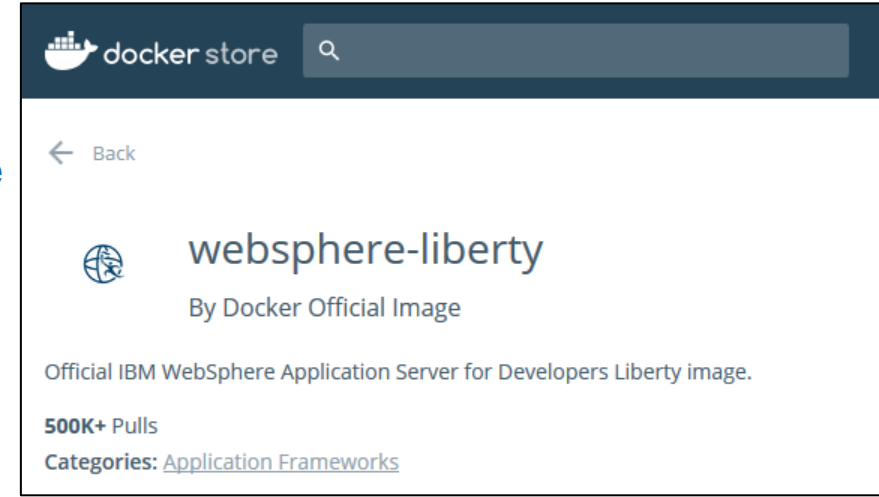
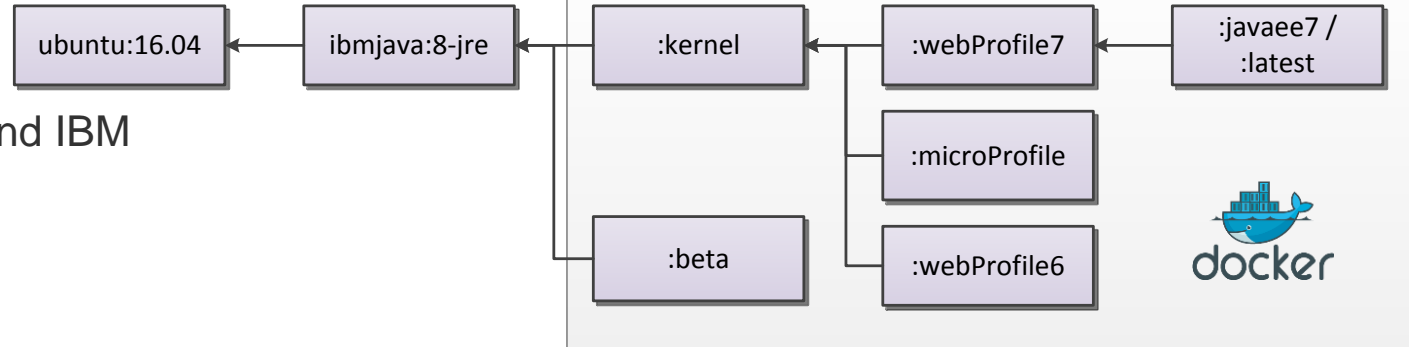


WebSphere and Docker Containers



900,000
Liberty Docker image
downloads

- All WAS versions 8.5.5 onwards supported
- Official WAS images for x86, zSeries, and Power systems
- Official IBM HTTP Server Docker image
- Official WebSphere eXtreme Scale Docker image
- Download official WAS images from Docker Hub and IBM Containers on Bluemix

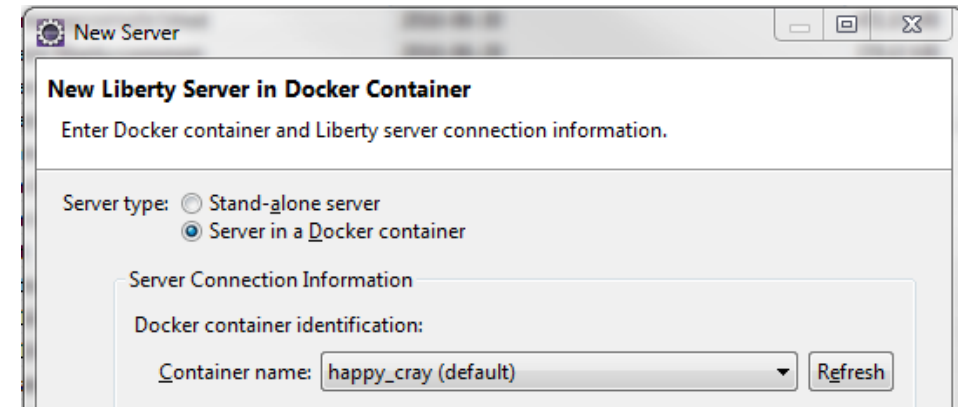


Docker pricing options

- ✓ VPC license
- ✓ PVU license
- ✓ Sub-capacity supported



WDT & Admin Center
Docker Support



Easily create 'right-size' Docker images with Liberty...

```
FROM websphere-liberty:kernel
COPY server.xml /config
RUN installUtility install defaultServer
```

dockerfile

1. Want image for this

3. Add only the required features

2. Identify required features



- Java EE7 Web profile and Full platform: Additional components:
- ✓ Individual features
 - ✓ Convenience features for EE6 EE7 web and full platform
 - ✓ Zip archive product images
 - ✓ Add-ons to bring an existing install up to Java EE7 web or full platform
 - ✓ Beta drivers
 - ✓ Deployable Samples with source in Github repo
 - ✓ Config snippets

```
<server description="BlogServer">

  <!-- Enable features -->
  <featureManager>
    <feature>servlet-3.1</feature>
    <feature>jdbc-4.1</feature>
  </featureManager>

  ...
</server>
```


/config/server.xml




...and run in the Cloud.

Developers get to **choose** the level of **infrastructure abstraction** and **fine-tuned control** that suits their apps and services.

Instant Runtimes



The highest level of infrastructure abstraction. Focus on the app.




Bluemix Cloud Foundry app runtimes

Deploy and scale apps without manually configuring and managing servers


Get started free | Deploy a container

- ✓ Based on Bluemix Cloud Foundry
- ✓ Focus on apps, not servers
- ✓ Get to market fast

Containers



Powerful, but less resource intensive than VMs. Key to supporting hybrid portability.




IBM Containers on Bluemix

Create and deploy Docker applications that will run anywhere

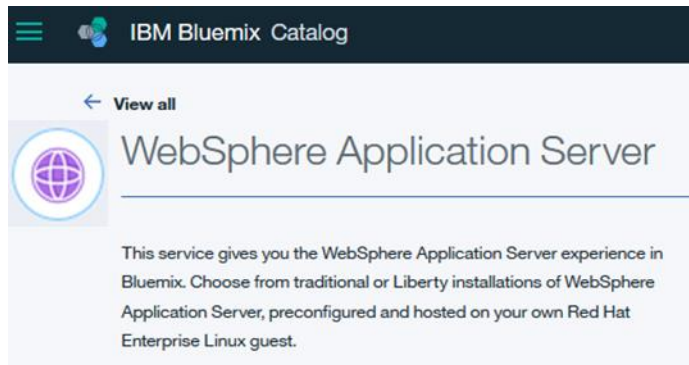

Get started free

- ✓ Fully managed, scalable hosted container service
- ✓ Built on open source Docker technology
- ✓ Security compliance insight, logging, and monitoring
- ✓ Container groups with fully qualified domain names, load balancer, auto-recovery, and auto-scaling

Virtual servers



Control all the way down to the operating system. Can be ideal for lift and shift of legacy apps.



Bring your Traditional WAS & Liberty applications to pre-optimized off-premises managed cloud environment without change

Leverage Pay-as-You-GO or Subscription to WAS workloads in repeatable and reliable deployments in the Cloud.

Develop and deploy applications with identical interfaces & experience for Developers and Operations in the cloud and on-premises

Accelerate Microservice Creation...

Get a Java-based microservice that uses Liberty built and deployed in

<10 minutes

<http://wasdev.net/accelerate>

Liberty app accelerator

Easily start building apps for WebSphere Liberty, a Java EE application server



Configure WebSphere Liberty with a set of selected technologies. Then download the project as a zip file.

STEP 1 / 2

Select one or more technology types:

<input type="checkbox"/> REST	<input type="checkbox"/> Web Sockets	<input type="checkbox"/> Persistence
<input type="checkbox"/> Servlet	<input type="checkbox"/> Spring Boot	<input type="checkbox"/> Watson SDK
<input checked="" type="checkbox"/> MicroProfile	<input checked="" type="checkbox"/> Microservice Builder (Beta)	<input type="checkbox"/> Swagger

STEP 2 / 2

Configure your project and either create in GitHub or download as a ZIP file.

Name the project:

Optional configuration

Please note: The Maven projects created by the Liberty app accelerator have dependencies on projects with the following licenses: AL 2.0 and ILAN

Create On GitHub

or

Download

Once the download is complete, locate your project and unzip it.

Run your application with:

```
mvn install liberty:run-server
```

Access your application at:

```
http://localhost:9080/myLibertyApp/
```

Your application code can be found in:

```
src/main/java
```

Your Liberty server can be found in:

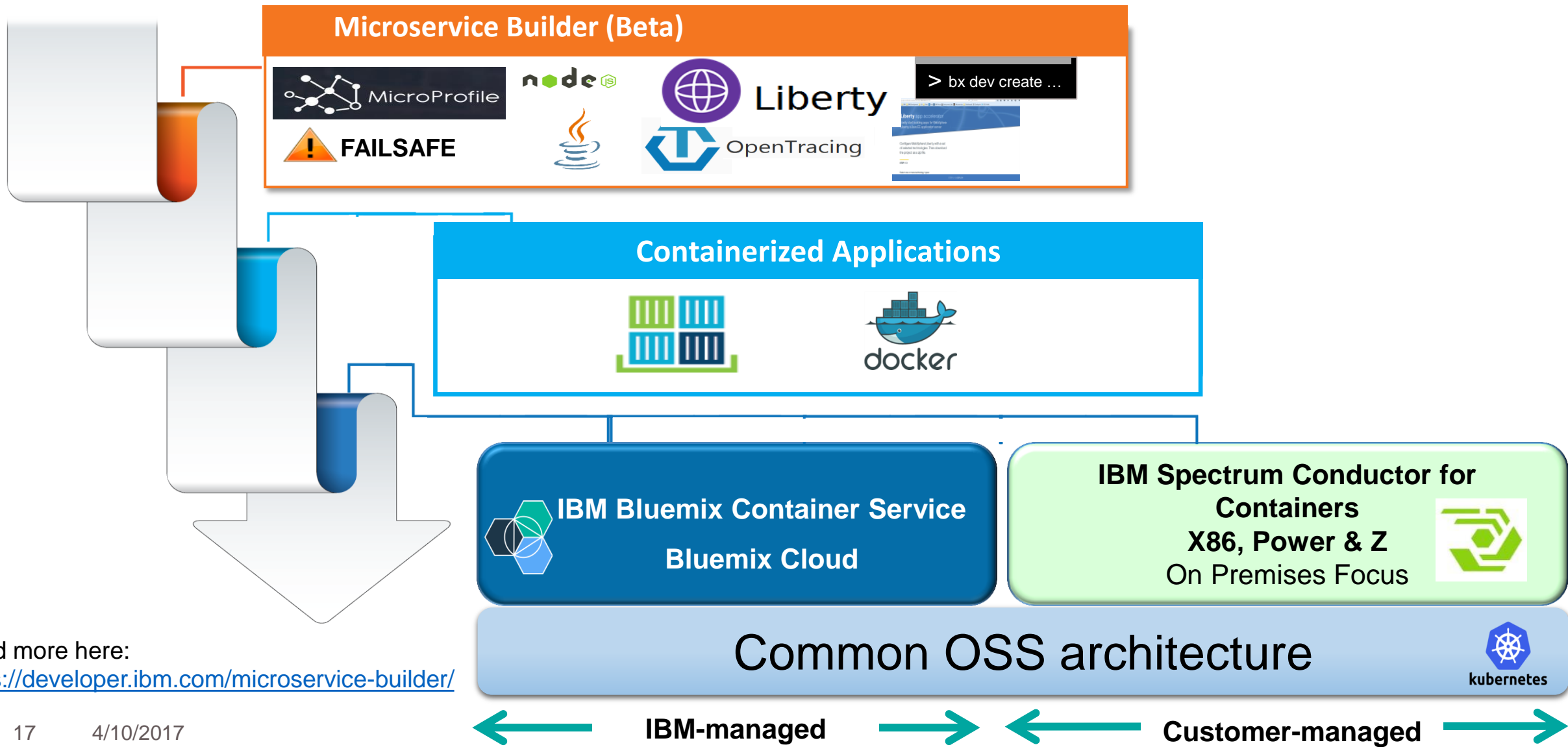
```
target/wlp/usr/servers/LibertyProjectServer
```

Optionally, import your project into WebSphere Developer Tool



...and deploy end-to-end using Microservice Builder (Beta)...

Microservice Builder (Beta) : Leverage Standardized programming models and tools, Deploy to Kubernetes-based Docker cloud on-premises or in Bluemix






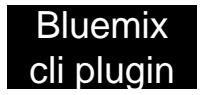
Read more here:


<https://developer.ibm.com/microservice-builder/>








...exploiting native Kubernetes Docker management and scaling...

Prog. models + Tools + Runtimes

Monitoring services for real-time visibility + 

Container Orchestration and Insight

Microservice Builder (Beta) along with Kubernetes Container Management

For on-premises deployment, IBM Spectrum Conductor for Containers provides a simple Kubernetes and Docker experience with WebSphere

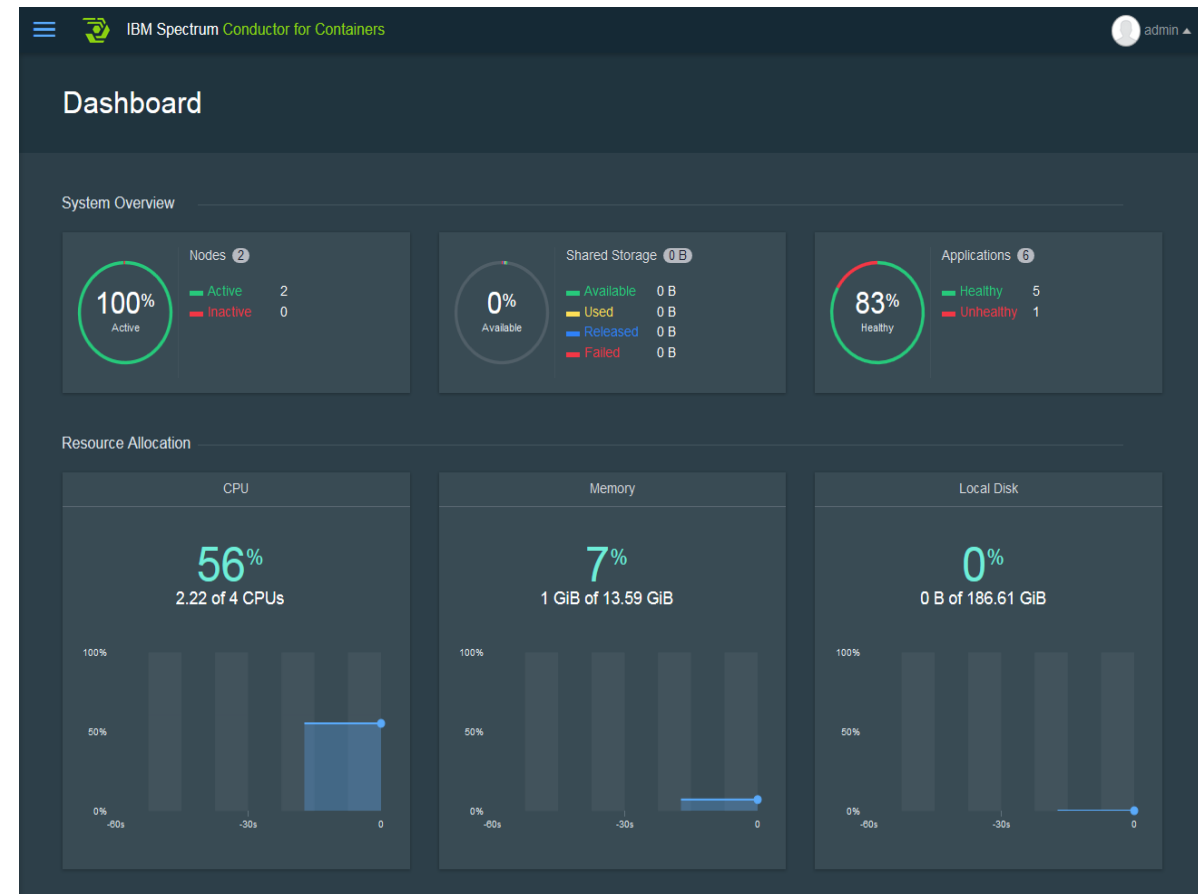
- Containers are the infrastructure for new workloads. Spectrum CFC and Bluemix Containers offer:**
- Container orchestration**
- Resource management
 - Application life-cycle management/schedule/deployment
 - Scaling, rolling upgrade
 - Service registry/discovery
- Container infrastructure**
- Load balance
 - Multi-host networking
 - Distributed storage management
 - Image/software repository management
 - Configuration management
 - User/Account management (Multiple tenancy and Role-Based Access Control)
- Ops management**
- Log consolidation and analysis
 - Monitoring
 - Health check and monitoring

...using IBM Spectrum Conductor for Containers on Prem..

Kubernetes on Prem on x and p

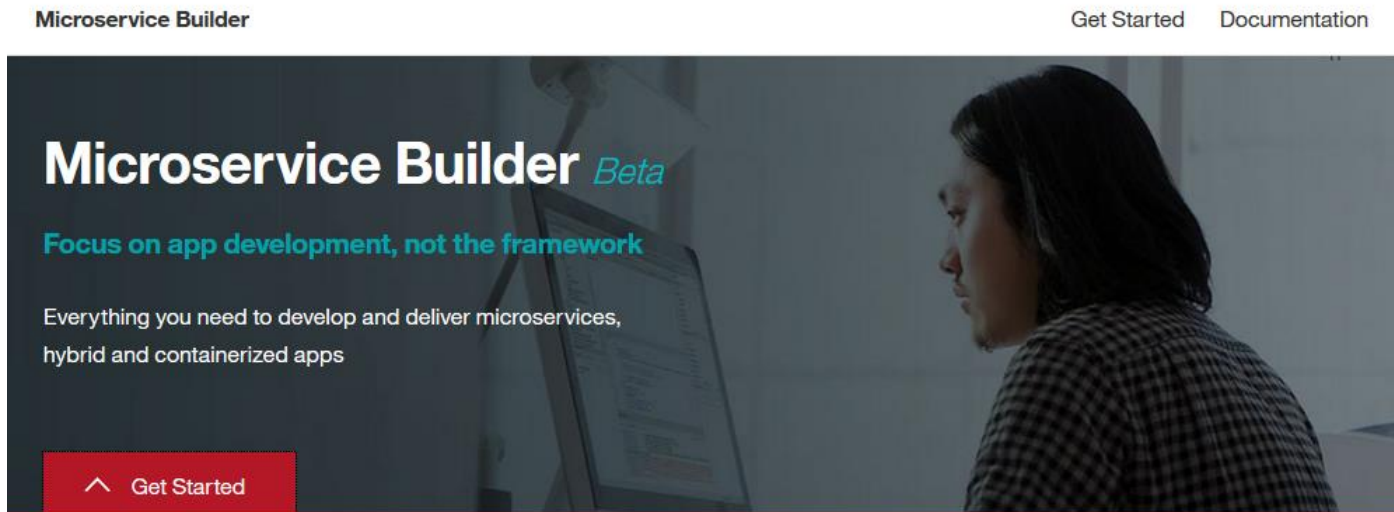


- **Community Edition available now! Free to download and use as you wish**
 - Customer-managed, on-premises Kubernetes offering from IBM on x86 or Power
 - Simple container based installation with integrated orchestration & resource management
 - Authorization and access control (built-in user registry or LDAP)
 - Private Docker registry
 - Dashboard UI
 - Metrics and log aggregation
 - Calico networking
 - Pre-populated app catalog
- **Learn more and register on our community page: <http://ibm.biz/ConductorForContainers>**



Microservice Builder (Beta)

End-to-End user experience to develop and deliver microservices, hybrid and containerized apps



In 3 steps

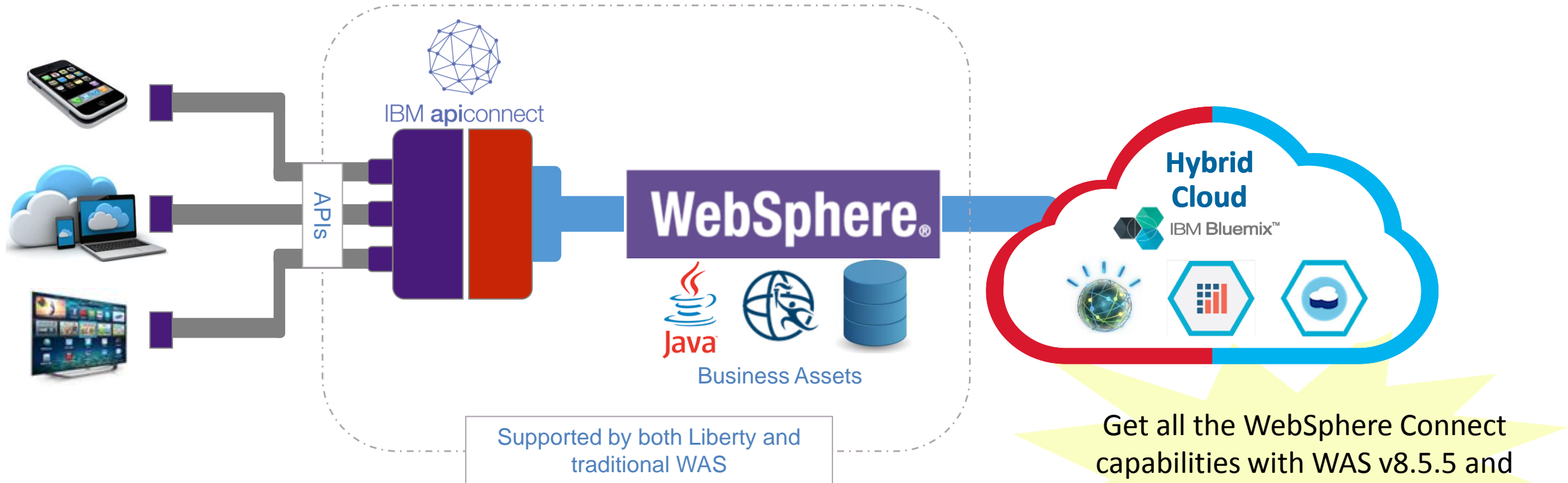
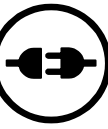
Create and Run your microservices, hybrid and containerized apps



<https://developer.ibm.com/microservice-builder>

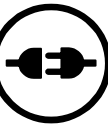
WebSphere Connect - Integrate Enterprise Services through APIs

On-ramp to API Economy and Hybrid Cloud



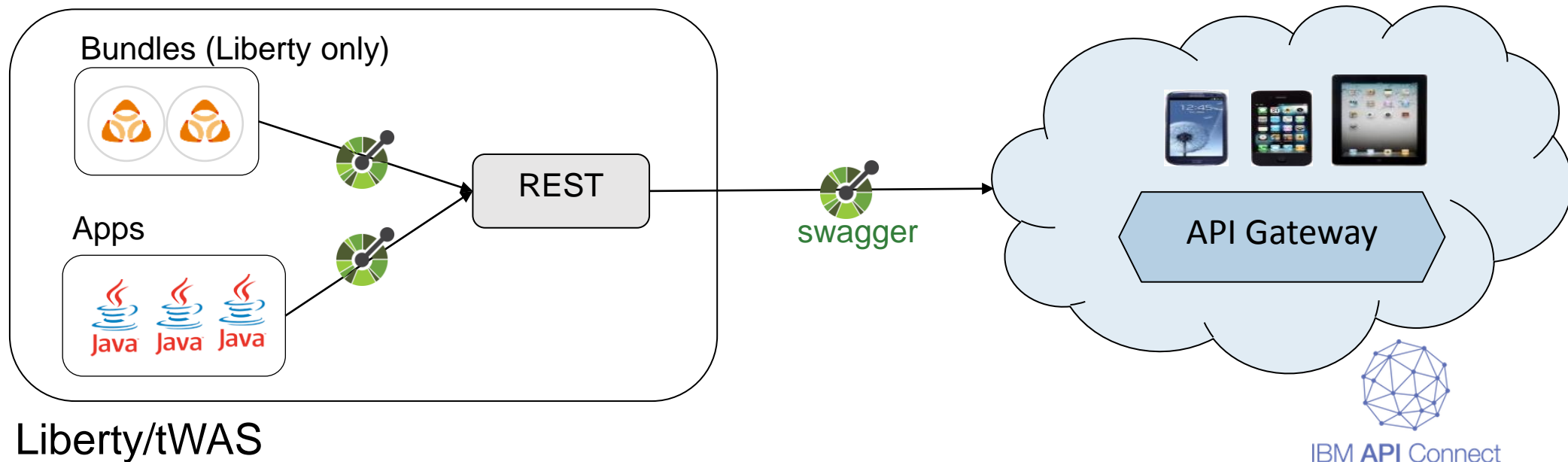
WebSphere Connect is...

- A collection of capabilities **built into WAS** that help you **turn backend WAS assets into APIs** and **connect to and from the hybrid cloud** to rapidly extend the value of their application investments
- WebSphere Application Server v8.5.5 and v9 includes API Connect Essentials as a Supporting Program, adding IBM Support and extra API calls per month

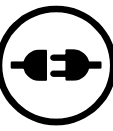


WebSphere API Discovery

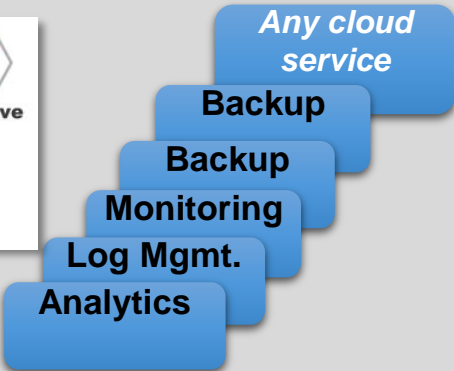
- Auto-generates and aggregates Swagger documents
- Merged Swagger document available at /api/docs
 - Query parameter allows filtering based on context root.
 - Support both JSON and YAML.
- Available for traditional WebSphere and Liberty (through **apiDiscovery-1.0** feature).



Easily Connect to IBM Cloud - Extending On-Prem Value...



WebSphere
Connect
capabilities



1 Expose with API based platform

- Expose apps & data as APIs
- Manage full API lifecycle
- Enable plug and play services

3 Extend with Bluemix Services

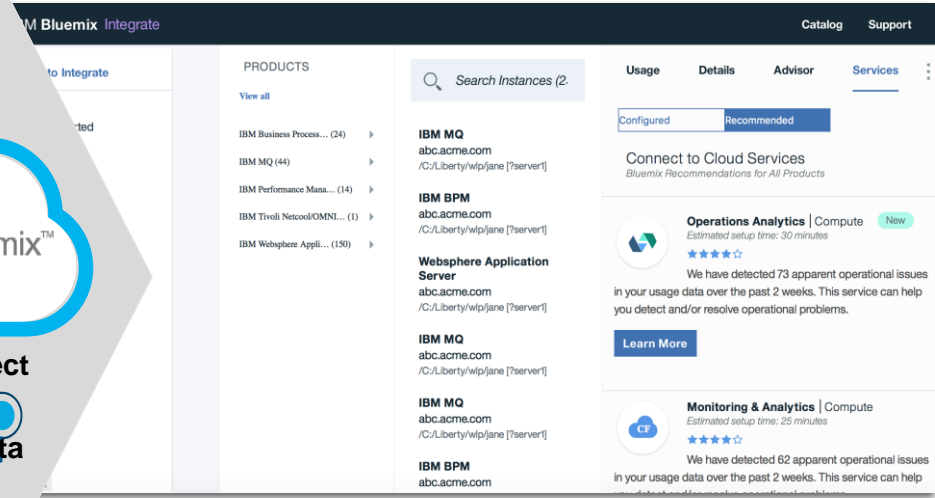
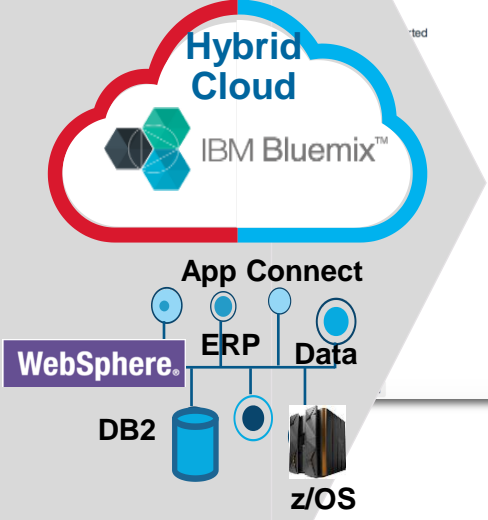
- Enhance on prem apps & data
- From Bluemix or any cloud
- Tiered pricing 'free to paid'

Cognitive
Advisement

Registration &
Usage

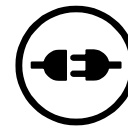
2 Enhance with C2C Services

- Central and secure connection to IBM Cloud
- View registered licenses and usage analytics
- Advise on value added services, architectures, tools



4 Manage from Product Insights Service

- Common User Experience
- Launchpad to IBM Cloud
- View entitlements & usage
- App Store experience
- Links to support, community
- Advise & Cognitive Interaction



...and take advantage of IBM Cloud Product Insights...

Challenge: Understanding which products and versions are deployed, how they are being utilized, and if usage matches investment is challenging. Clients need insights into their deployments, guidance on how to optimize utilization and costs, and recommendations quickly

Registration and Usage

Easy registration of IBM on-premises applications; single dashboard for cross-product tracking and insight into software usage

Recommendations for Optimization

Recommendations on the most relevant Bluemix services that will provide immediate value to current deployments

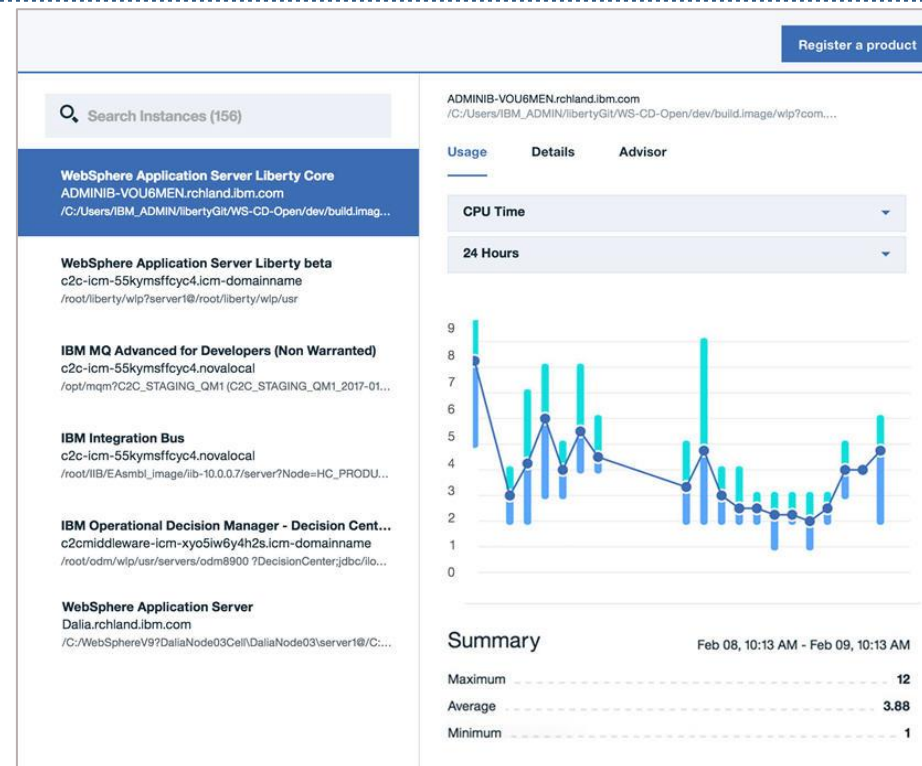
Log Management

Manage your on-premises and Cloud logs that accelerate root cause analysis through SME dashboards and rapid search

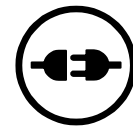
Cognitive Advice

Watson-based cognitive advisement for managing your hybrid environment; Chatbot assistant and conversational experience

IBM Product Insights



IBM Cloud service for offloading software inventory and log analytics to reduce on-prem operational costs.

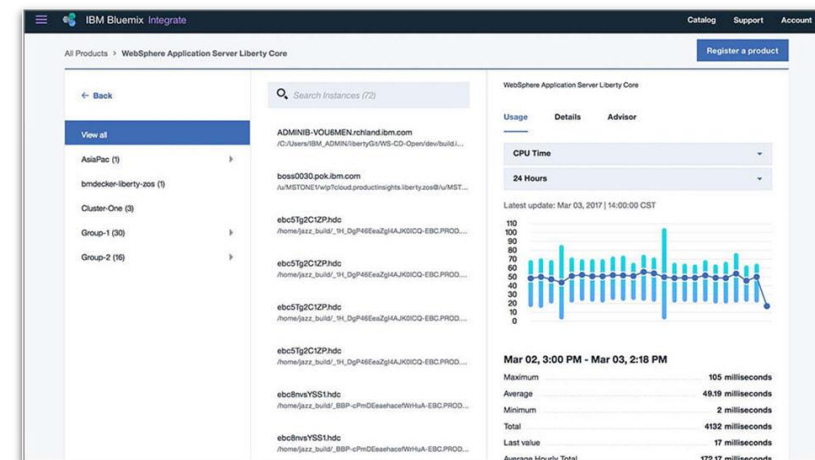


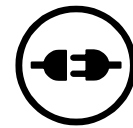
...including Product Insights: Registration and Usage...

Use Case: IT Administrator needs visibility into the products and versions that are deployed across the organization's environment, and how those investments are being leveraged.

Capabilities

- Quick, easy registration of supported products into the IBM Cloud
- Insight into which products and versions are deployed – management from a single console
- Visibility into product usage to aid with capacity planning



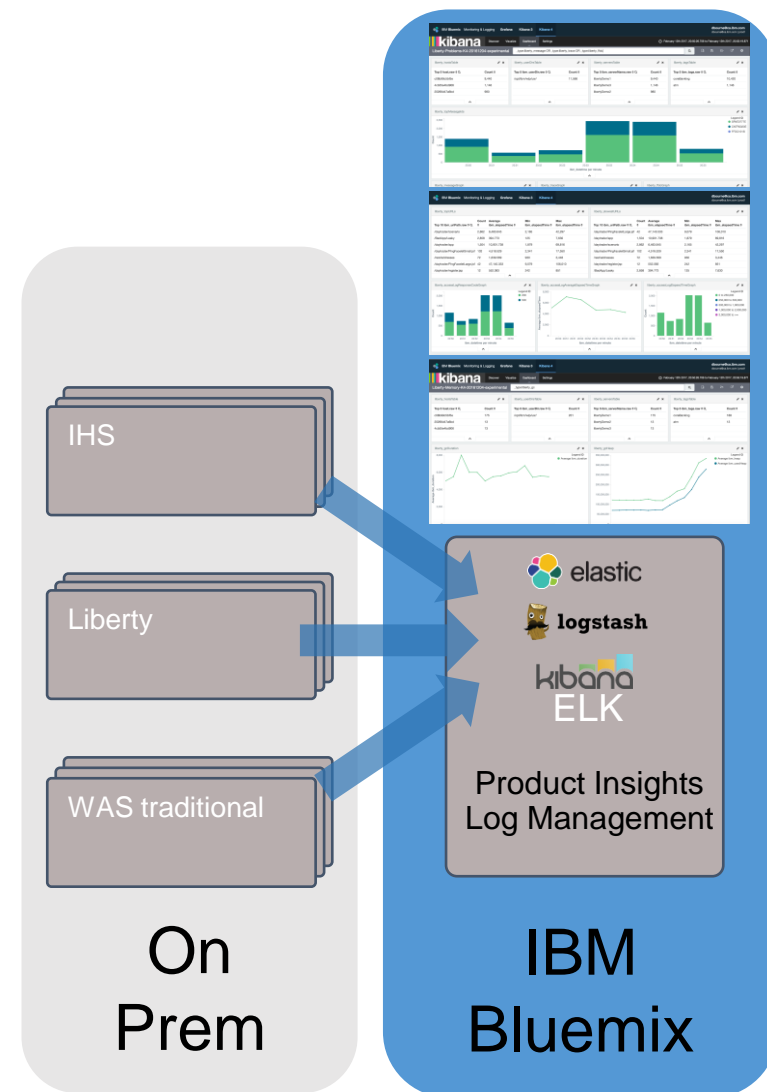


...and Product Insights: Log Management (Beta)...

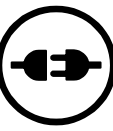
Use Case: IT Subject Matter Experts must quickly diagnose problems within IBM applications, and the infrastructure supporting them. This requires quickly analyzing incredible amounts of both structured and unstructured data.

Capabilities

- Optimized for ingestion of supported backend unstructured log data
- SME dashboards that accelerate root cause analysis of backend issues
- Rapid search across terabytes of log file data



Experimental Bluemix service



...and integrate your Call Center with IBM Voice Gateway..

Connect to Cloud

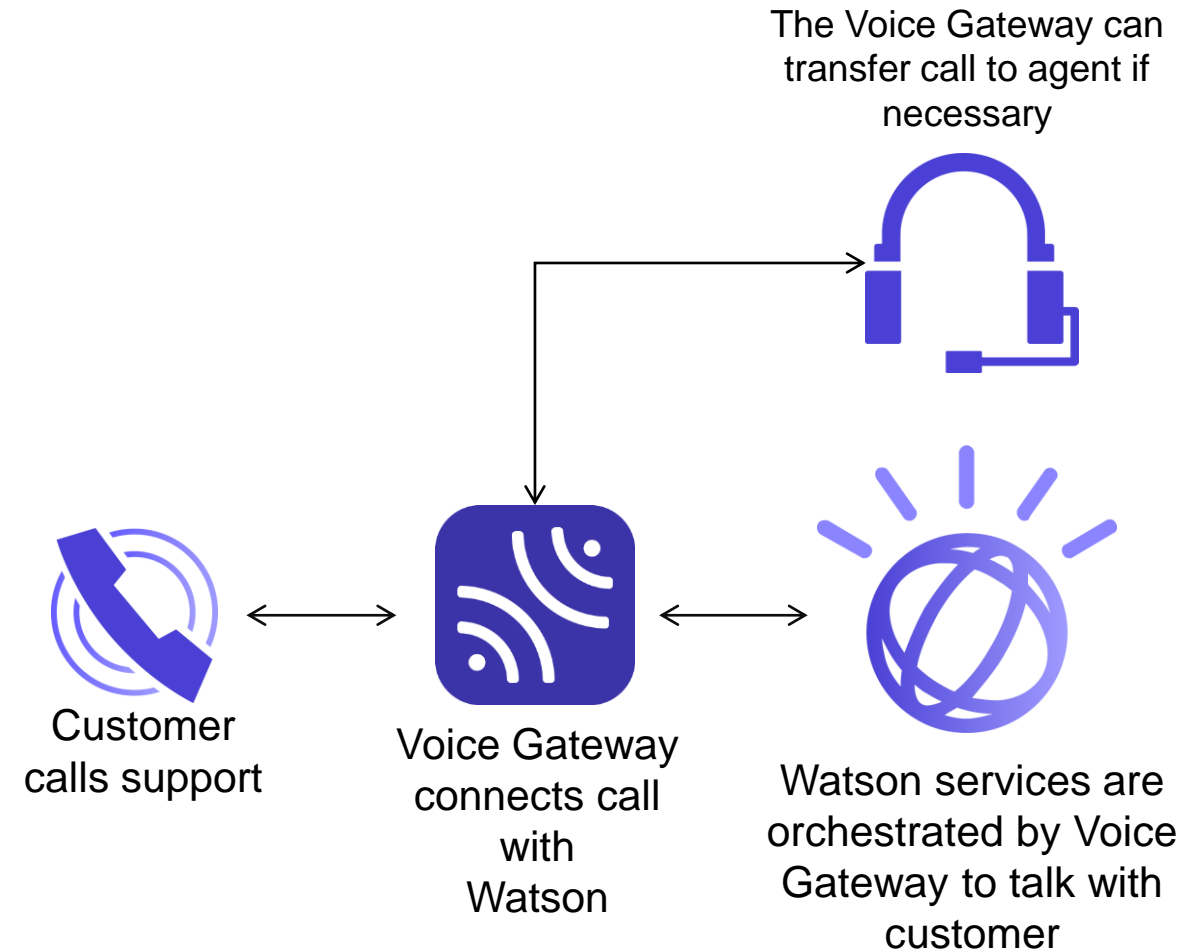
IBM Voice Gateway is a brand new connect to cloud offering that uses WebSphere Liberty to connect the telephone network to Watson's services in Bluemix

Bring Watson to your call center

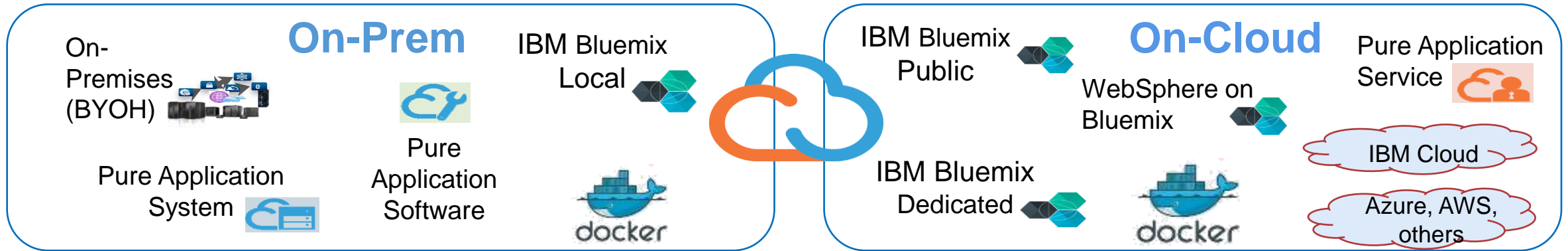
Through connecting Watson Speech To Text, Conversation, and Text To Speech, to the phone network you can use Watson as a self-service customer service agent

Cloud native

The IBM Voice Gateway is a cloud native solution, comprising of two microservices delivered as Docker Images - this gives maximum flexibility in a cloud native world



...and add unified acquisition/billing (soon!)



- **Right Fit WAS editions**
 - WAS Family, WAS ND, WAS, WAS Liberty Core
 - **Try**
 - Free WAS tools. Freemium run time. (WASDev.net)
 - Access to 60 day trial downloads at IBM.com
 - Bluemix freemium tier – Bluemix.net
 - **Buy**
 - WAS perpetual (PVUs)
 - **WAS Virtual Processor Cores monthly**
 - Targets new cloud deployments
 - BYOS&L flexibility
- NEW**
- **Buy via Bluemix**
 - WAS instant run time
 - WAS in Bluemix - Multi-tenant
 - **WAS in Bluemix - Single-tenant**
 - WAS on reserved hardware
 - **WAS in Bluemix – Dedicated**
 - WAS as part of Bluemix Dedicated
 - **WAS VPC Monthly (for use on-prem) for unified billing in Bluemix (future)**
 - **Track via Bluemix**
 - **WAS Hourly: Good option for Docker (future)**
- NEW**

IBM WebSphere Application Server in Bluemix

Deliver enterprise applications with Speed and Simplicity of the Cloud!



Develop, Test and Run

IBM WebSphere Application Server in Bluemix



Transactional Integrity



Robust, Proven & Consistent Java Runtime

Develop and deploy Stateful and Transactional applications with identical interfaces & experience for Developers and Operations in the cloud and on-premises

Cloud Enabled



Deploy WAS applications in the Cloud seamlessly

Bring your Traditional WAS & Liberty applications to pre-optimized off-premises managed cloud environment without change.

Do More with Less



Reduce capital expenditures and operational expenses

Leverage Pay-as-You-GO or Subscription to WAS workloads in repeatable and reliable deployments in the Cloud. You can achieve savings by optimizing labor efficiency with hosted hardware consolidation & utilization.

Faster



Accelerate WAS Application Delivery in the Cloud

Compared to "Roll your Own", Deploy apps into test and/or production in minutes, not months. Increase ability to quickly deliver results to capitalize on business opportunities.



What's New 1Q17



WAS in Bluemix

Right-Sizing your WebSphere Application Server Workloads

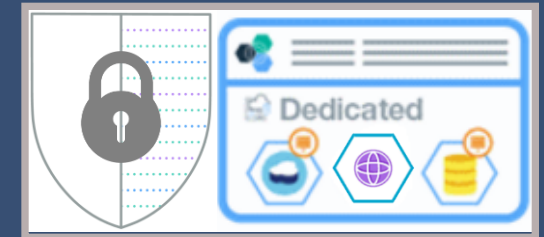
1

Isolate WAS workloads in Bluemix Public Cloud with **WAS Single-Tenant in Bluemix**



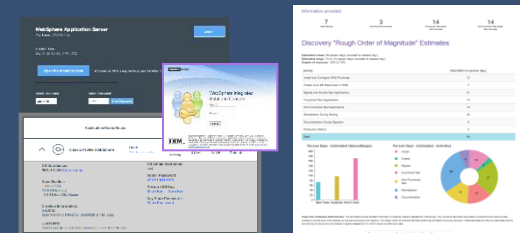
2

Add WAS workloads inside your Bluemix Private Cloud with **WAS in Bluemix Dedicated**



3

Tech Preview: Migrate WAS workloads from On-Prem to **WAS in Bluemix in Under 10 Steps!**



WAS V7 & V8 EOS

WAS Release	WAS EOM	WAS EOS	WAS EOES
7.0 - all editions	Dec 16, 2016 ⁽²⁾	Apr 30, 2018	Apr 30, 2021 ⁽¹⁾
8.0 - all editions	Dec 16, 2016 ⁽²⁾	Apr 30, 2018	Apr 30, 2021 ⁽¹⁾
RFA 71777 on Sept 13, 2016 (Distributed) RFA 71843 on Sept 13, 2016 (z/OS)			

WAS Release	Java 6 EOS in WAS	Java 7 EOS in WAS	Java 8 EOS in WAS
7.0	April 2018	n/a	n/a
8.0	April 2018	n/a	n/a
8.5	April 2018 ⁽¹⁾⁽³⁾	Sept 2019	March 2025

Migration Links

WebSphere Migration Strategy - <https://www-01.ibm.com/support/docview.wss?uid=swg27008724>

Migration Decision Support Tool - <http://whichwas.mybluemix.net>

WebSphere Application Server Migration Discovery Tool - https://www-01.ibm.com/marketing/iwm/dre/signup?source=mrs-form-3089&S_PKG=ov50193

WAS Migration Toolkit overview: <http://www.ibm.com/developerworks/websphere/downloads/migtoolkit/>

WAS 8.5 WebSphere Migration Guide - <http://www.redbooks.ibm.com/redpieces/abstracts/sg248048.html>

(1) After December 2018, Java SDK 6 support is limited to 'usage & known defects'

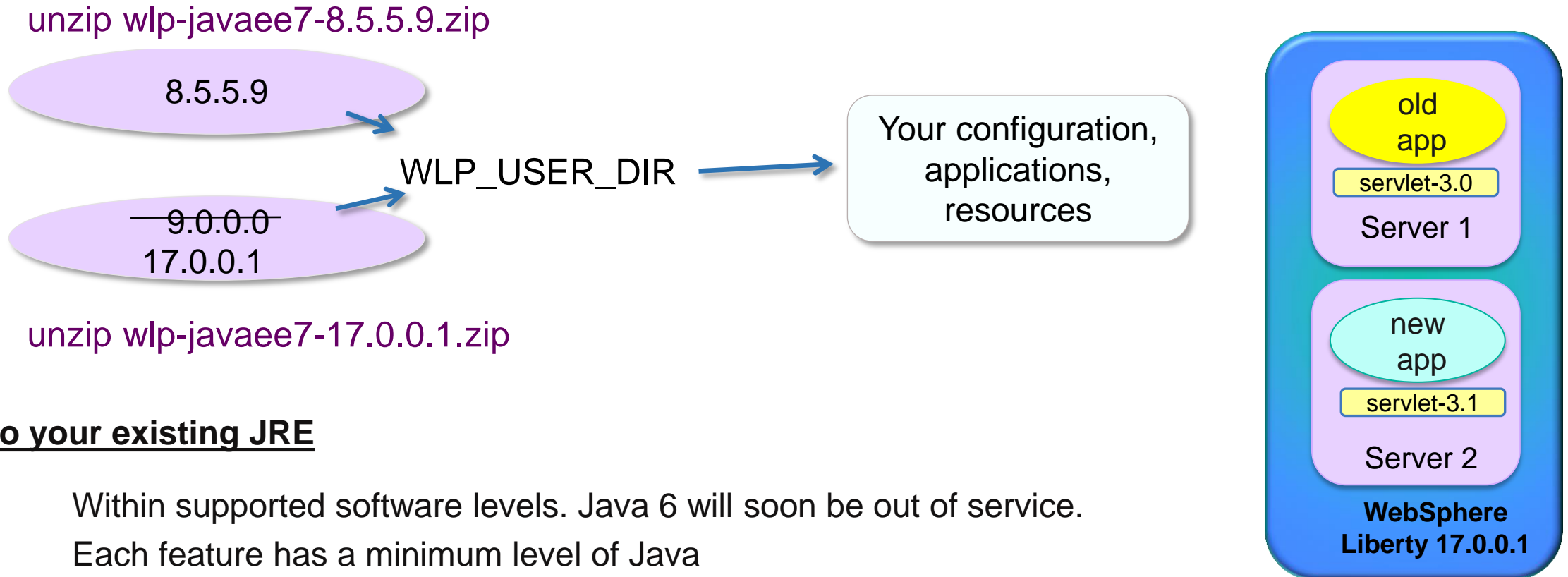
(2) WAS on z/OS EOM will be Feb 2017. Announcement occurred in June 2016.

(3) WebSphere Application Server Liberty has a single support stream for all product versions. Support for Java SE 6 with Liberty will end in September 2017 to allow the Liberty code and included open source packages to move forward.

Eliminate Future Migration Costs

New Liberty features and config: augment rather than replace old ones

Zero migration for unchanged apps on WAS Liberty, regardless of Java EE version



Point to your existing JRE

Within supported software levels. Java 6 will soon be out of service.
Each feature has a minimum level of Java

Join WebSphere Liberty Virtual Proof of Technology (vPOT) Sessions

- **WebSphere Liberty 17.0.0.1 vPOT (Session #1) - April 12th, 2017, 1pm - 3pm ET**
Registration link : <http://ibm.biz/WebcastAprilvPoTInC>
- **WebSphere Liberty 17.0.0.1 vPOT (Session #2) - April 25th, 2017, 8am – 10am ET**
Registration link : <https://www.imwuc.org/p/ca/vi/sid=541>

Agenda:

- Part 1: Executive summary: Liberty value and evolution
- Part 2: Technical deep-dive: what's new in Liberty this quarter
- Part 3: Hands-on labs with live support plus Q&A

(or Google the above event titles)

