



IBM Software Group

What's New in WebSphere

On-Premises, Cloud and in Open Source

Jagdish Komakula.

Worldwide WebSphere Migrations Specialist



ON DEMAND BUSINESS™

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Digital Transformation is happening....Clients are looking to:

Deliver Better, Faster and Cheaper

Adopt a hybrid
cloud strategy

Integrate seamlessly
across any platform

Optimize the cost
of their existing
infrastructure

Move their IT
infrastructure
to cloud

Dev/Test in the cloud



Enhance applications
with new services

Implement Microservices
Architecture & leverage Docker
Containers for portability

Continuous
Delivery of Apps

Adopt and Expand
API usage

Add cognitive
capabilities



WebSphere Application Server v9

The cornerstone of your cloud strategy

30%+ TCO <small>WAS on Cloud vs On-premises</small>	122% ROI <small>Liberty vs Open Source</small>	\$325K annual infrastructure savings <small>by year 3 vs. Open Source</small>	Industry Leading Security <ul style="list-style-type: none">- Open ID Connect- Secure Engineering Accreditation O-TTPS	30% better performance <small>with Java 8</small>	Intelligent Management <ul style="list-style-type: none">45% less hardware60% admin savings	45% less software 90% fewer outages
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CREATE

CONNECT

OPTIMIZE

Developer focused to speed delivery pipeline

Easy cloud connections for new & existing apps

Smart management of the mission critical

- Lightweight composable runtime - perfect for microservices
- Full integration with any DevOps toolchain for continuous delivery
- Java EE7 market leadership and support for Open Source

- Create, expose and connect APIs
- Re-use existing apps and connect to “on or off” premises
- Deploy anywhere - on premises, in cloud or hybrid

- Leading edge cloud & mobile security
- Enterprise Management of Java & Node.js
- High availability: auto-scaling, dynamic routing, health management, diagnostics



Create
new cloud
apps

WAS V9 delivers robust & modern developer environment for speed & enterprise scalability

- Cloud-First Java app platform - Speed development with composable runtime and microservices architecture;
 - Full **Java EE7** certification for **both WAS Traditional and Liberty Profiles**;
 - Leverage **Spring and Spring Boot** frameworks within applications;
 - Leverage end-to-end **DevOps Toolchain** and **Garage Method** (best practices)
 - Portability of apps with Docker support; Deploy to IBM Container Service, Docker Data Center, and other container services
- Seamlessly manage Java and Node.js apps and APIs through common management interface



Microservices + Java

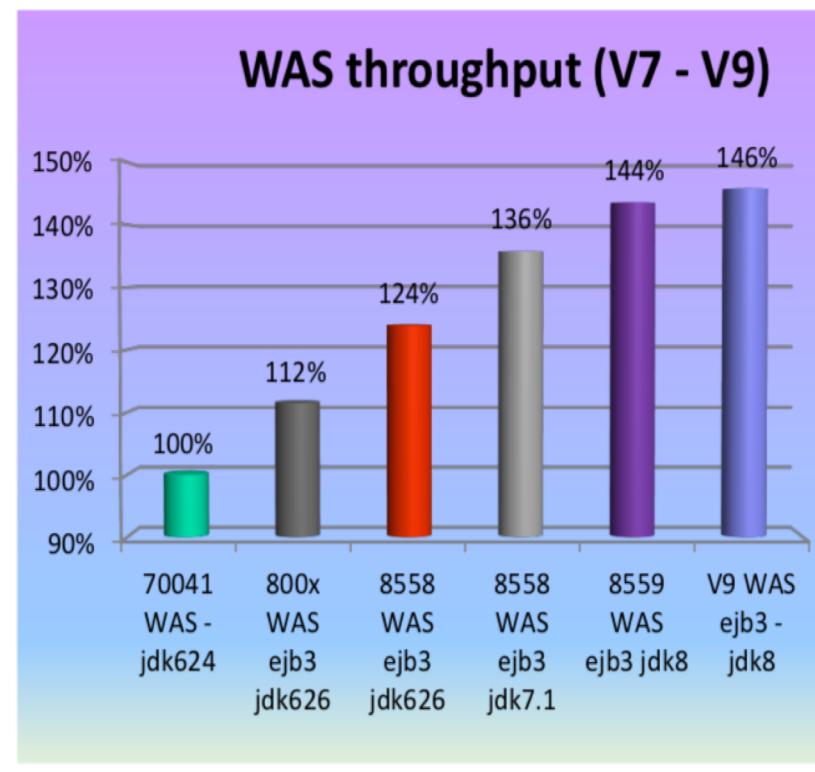
Production ready, EE7 compliant app server for microservices strategy

- Large Developer base using Java Framework (including Spring based on Java EE)
- WAS V9 brings traditional WAS deployments up to the same level of EE7 and Java 8 as WebSphere Liberty - WebSphere's architecture + Java EE7 = proven, enterprise development platform for Microservices
- WebSphere Connect – add new microservices or modernize current apps with microservices - Seamless connectivity to cloud based data and cognitive services
- Allows for easy integration with DevOps workflows and Docker container strategies
- IBM provides best practices and methodologies for creating a brand new microservices application. Game On! is an exemplar application that helps users explore basic and advanced microservices concepts.



WebSphere performance from V8 thru V9 (with Java upgrades)

- This cumulative chart shows the improvement of WAS performance due to both JAVA improvements and WAS product improvements.
- Dynacache and Large server pages were used where applicable in these measurements.
- JDK8 first supported in v8559 as an optional install. JDK8 is the default for V9.
- Daytrader3 used for benchmarking



Product Terminology

What you buy Product/Edition/License	What you install Runtime / features	
WebSphere Application Server Network Deployment (& z/OS)	WAS Liberty Java EE + Advanced Management	and/or WAS traditional Java EE + Advanced Management
WebSphere Application Server (Base)	WAS Liberty Java EE	and/or WAS traditional Java EE
WebSphere Application Server Liberty Core	WAS Liberty Java EE Web profile	



Open Liberty

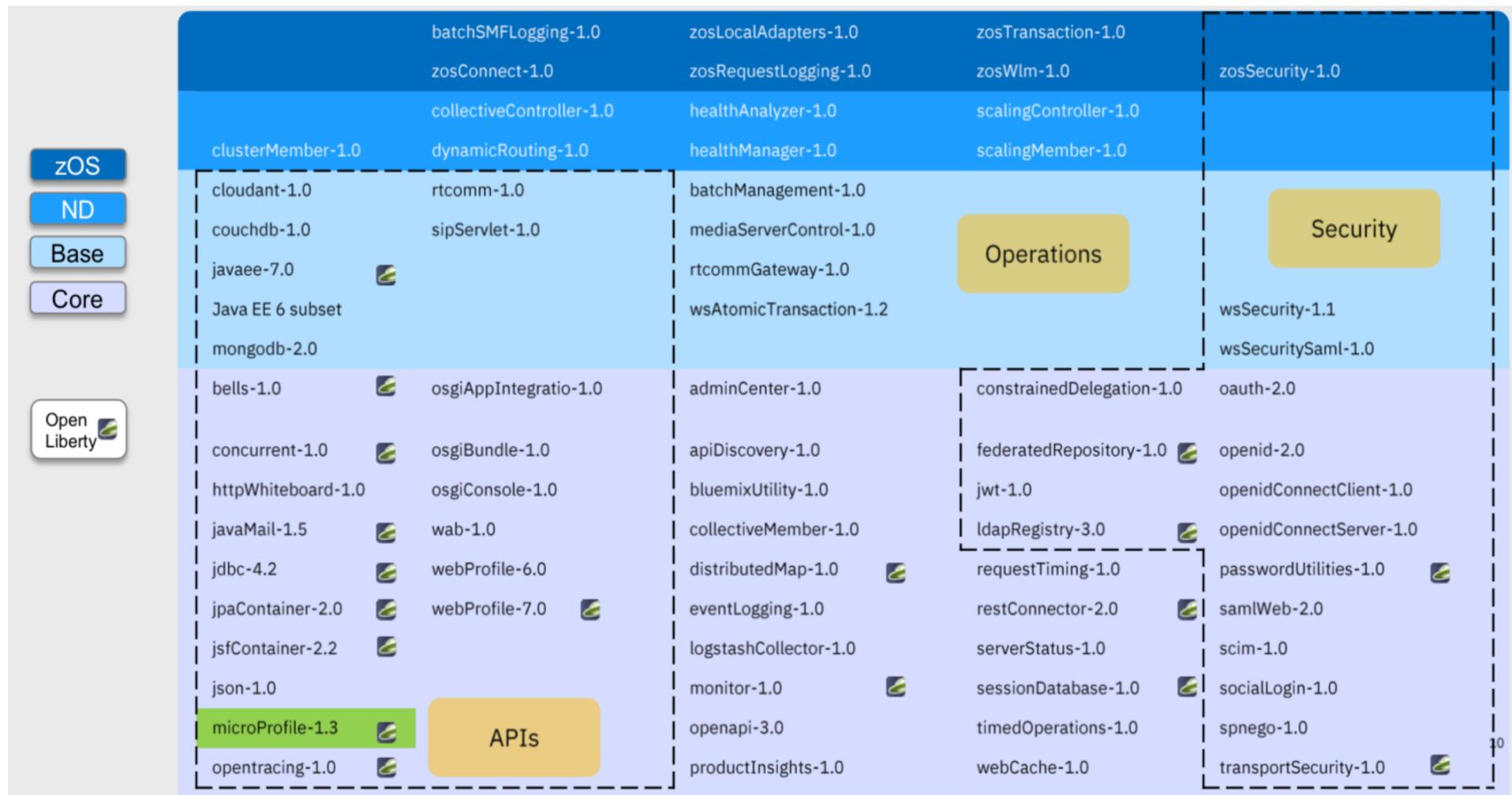
The diagram illustrates the features and ecosystem integration of Open Liberty, centered around a central green dome. At the top of the dome is a blue flying saucer labeled "Engineered for the cloud Increased resilience Independent lifecycle". The dome is divided into three main sections: "OPEN SOURCE" (purple), "MICROSERVICES" (blue), and "CONTAINERS" (orange). Below these sections are several green callout boxes:

- Community innovation**
Low cost of entry
Developer preference
- Java™ EE7**
for seamless integration with existing WAS investment
- Eclipse License**
for community contributions and ecosystem integration
- Docker**
for ease of inclusion in a DevOps build pipeline
- MicroProfile™**
for building microservices and cloud-native apps
- Support Upgrade**
easily upgrade to WebSphere Liberty for fee-based support

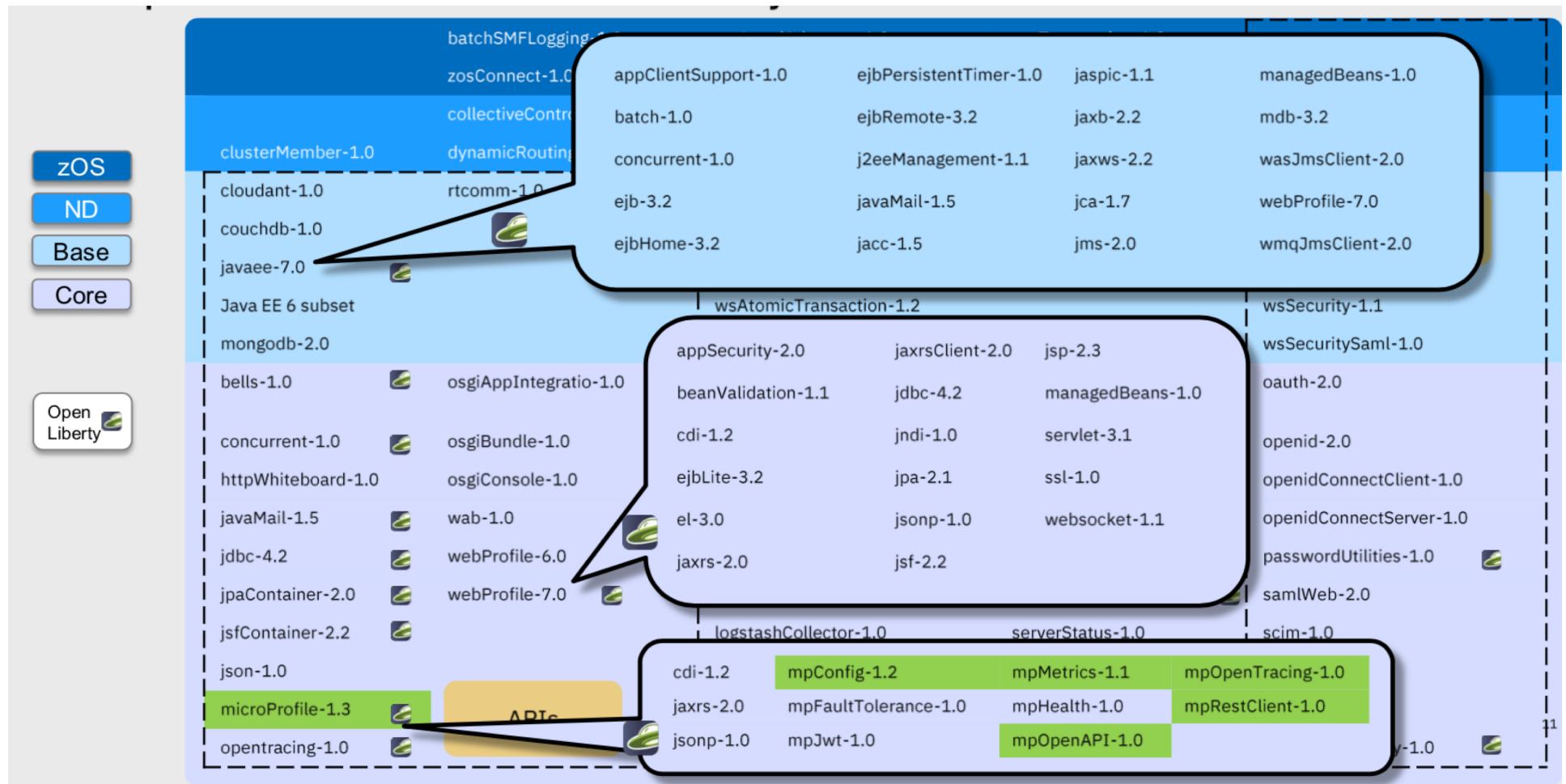
At the bottom of the diagram, there is a decorative footer bar featuring various icons and colors.

<https://openliberty.io/>

Composable Features of Liberty

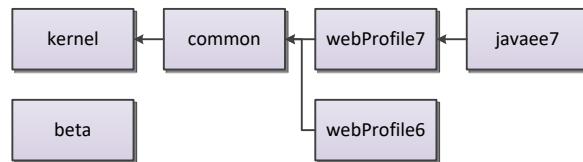


Composable Features of Liberty



Customized Docker containers for Java EE

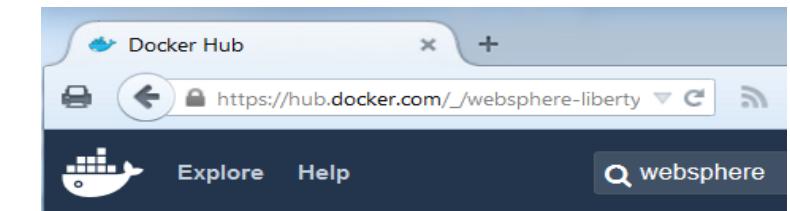
- WAS Liberty images on Docker Hub
 - ▶ WAS Liberty containers (currently V8.5.5.8):
 - Kernel, Java EE 6 Web Profile, Java EE 7 Web and Full Profile and latest Beta images
 - Docker files: <https://github.com/WASdev/ci.docker>



- Dockerfiles in on WASdev GitHub to:
 - ▶ Simple layer to upgrade to commercial license
 - ▶ Build your own customized image

```
FROM websphere-liberty:kernel
COPY server.xml /opt/ibm/wlp/usr/servers/defaultServer/
RUN installUtility install defaultServer
```

https://hub.docker.com/_/websphere-liberty



OFFICIAL REPOSITORY
websphere-liberty ☆
Last pushed: 11 hours ago

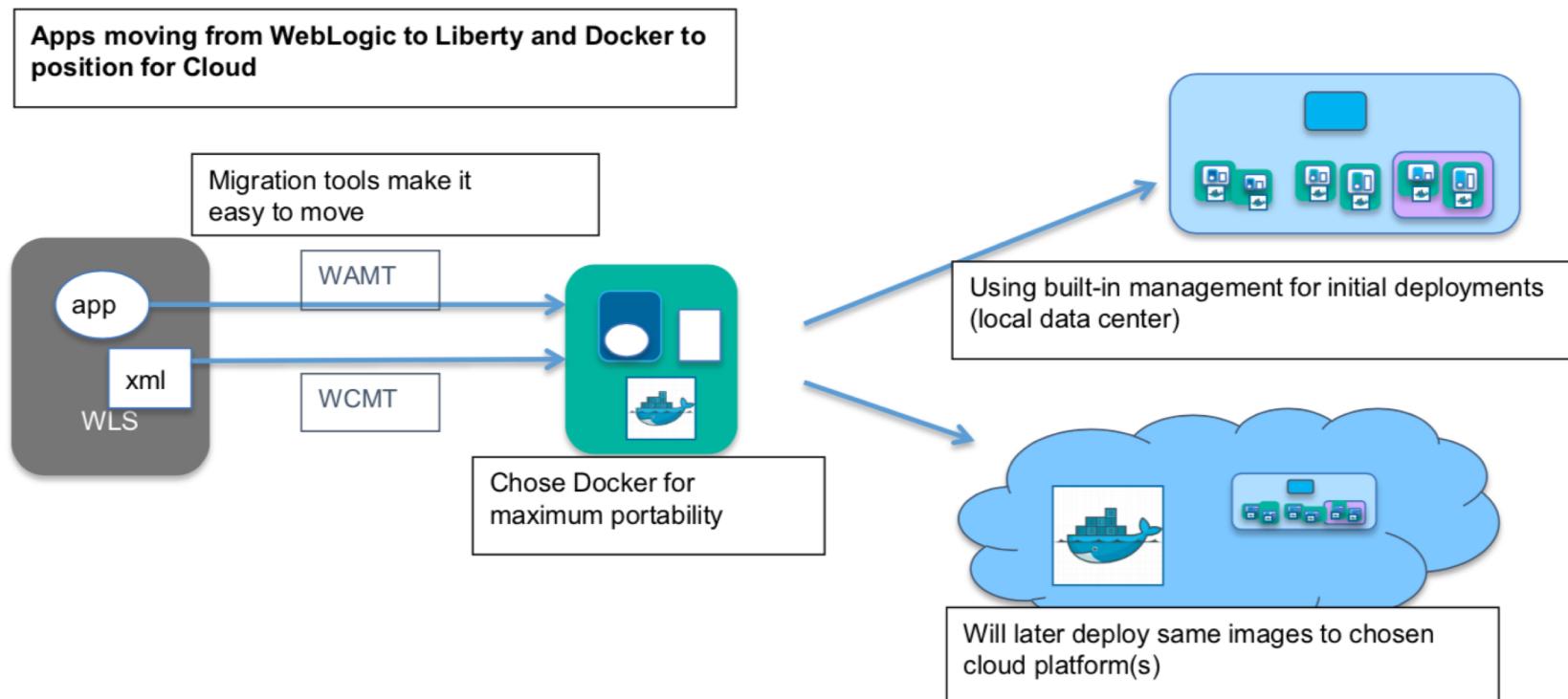


11

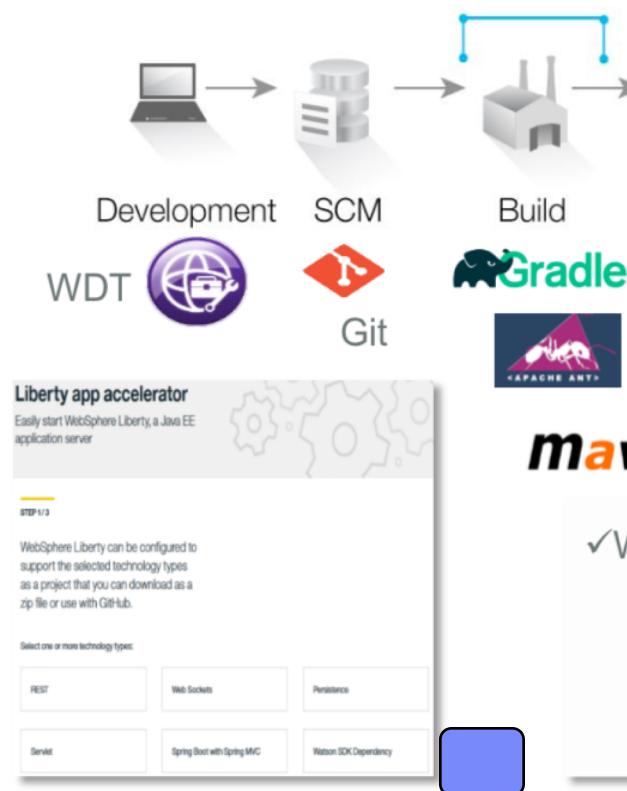


11

Liberty & Docker as flexible route to Cloud

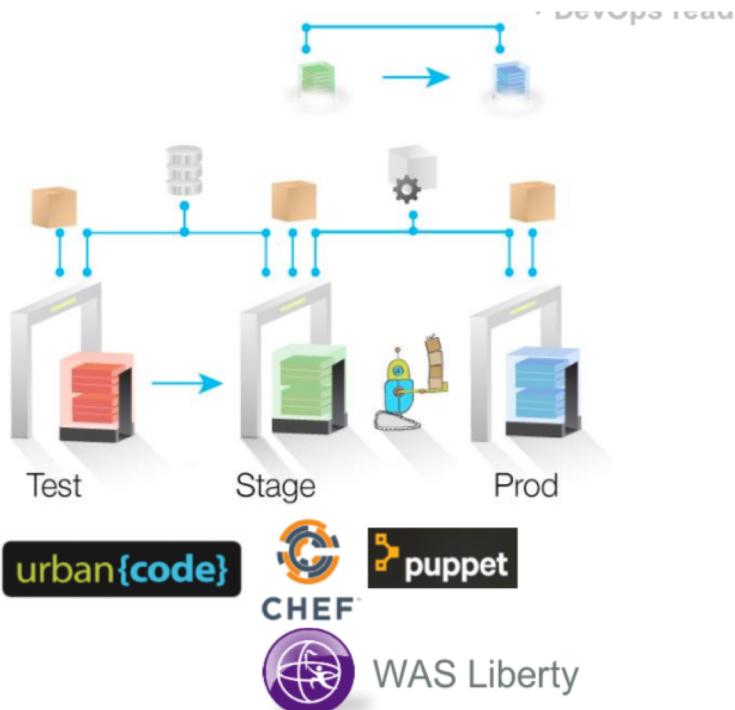


DevOps Tool Chain support

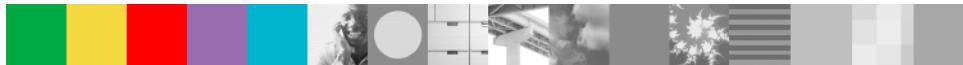


Configure:

- Applications
- Middleware
- Databases



- ✓ WebSphere Application server works with your DevOps pipeline
- ✓ Build automation tools with Maven, Ant, Gradle
- ✓ Continuous Integration with Jenkins
- ✓ Continuous Testing with Rational Test Virtualization server
- ✓ Continuous Delivery Urban Code, Chef, Puppet



Connect existing apps & data

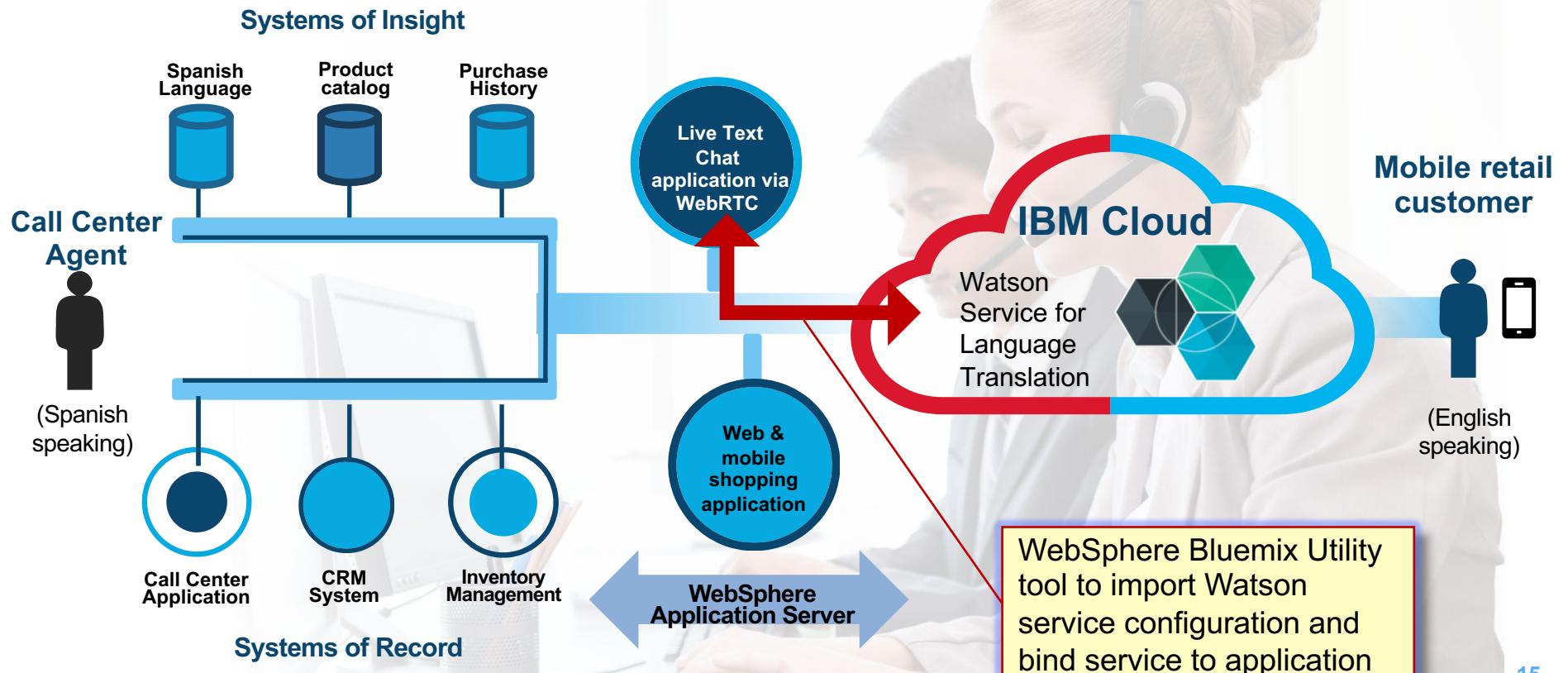
Connect to cloud services to integrate new capabilities, improve time to mkt & lower costs

- Seamlessly connect on-premises apps to cloud services like Watson, Cloudant, dashDB, API Connect, Log Analytics - take advantage of latest technologies and extend the value of existing Java apps
- Optimize use of APIs for exposing and better monetizing traditional apps
- Leverage PayGo models and eliminate risk and complexity of managing these new services
- Leverage “API Connect Essentials” now included in WAS editions



Enhance Applications with IBM Cloud Services

Retail example: WAS integration with IBM Watson Services for Cognitive Apps



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Optimize costs for app infra

Move apps anywhere, in any way, to increase speed and optimize costs

- Create a borderless environment with easy app portability regardless of architectural environment (Cloud container services, Docker, VMWare)
 - Exploit WAS ND intelligent management for workload optimization and placement
 - Move apps to the IBM public cloud with choice of pre-configured environ, flexible PayGo pricing models
 - WAS Liberty app deployment to OpenShift and Pivotal Cloud Foundry running in Amazon AWS, Microsoft Azure, and IBM Cloud
 - WAS on Cloud - Single Tenant
 - Ease of use enhancements for caching to optimize user experience



Deployment flexibility on additional cloud environments



Elaine
Systems
Administrator

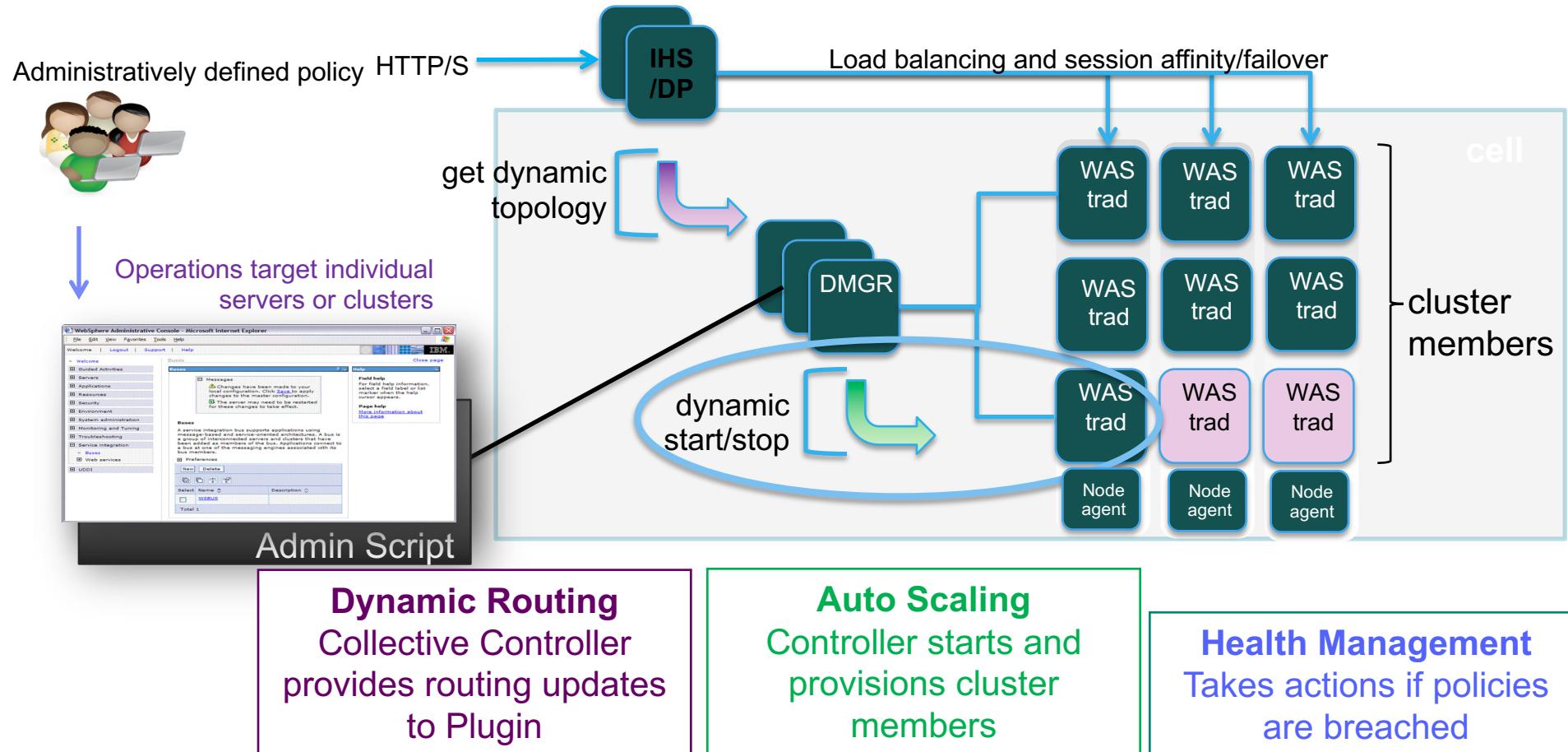
"I want to run Liberty in a non-IBM PaaS on-premise, in Amazon and Azure. I want all the components from IBM to be fully supported and I want to use subcapacity pricing."

Solution Highlights:

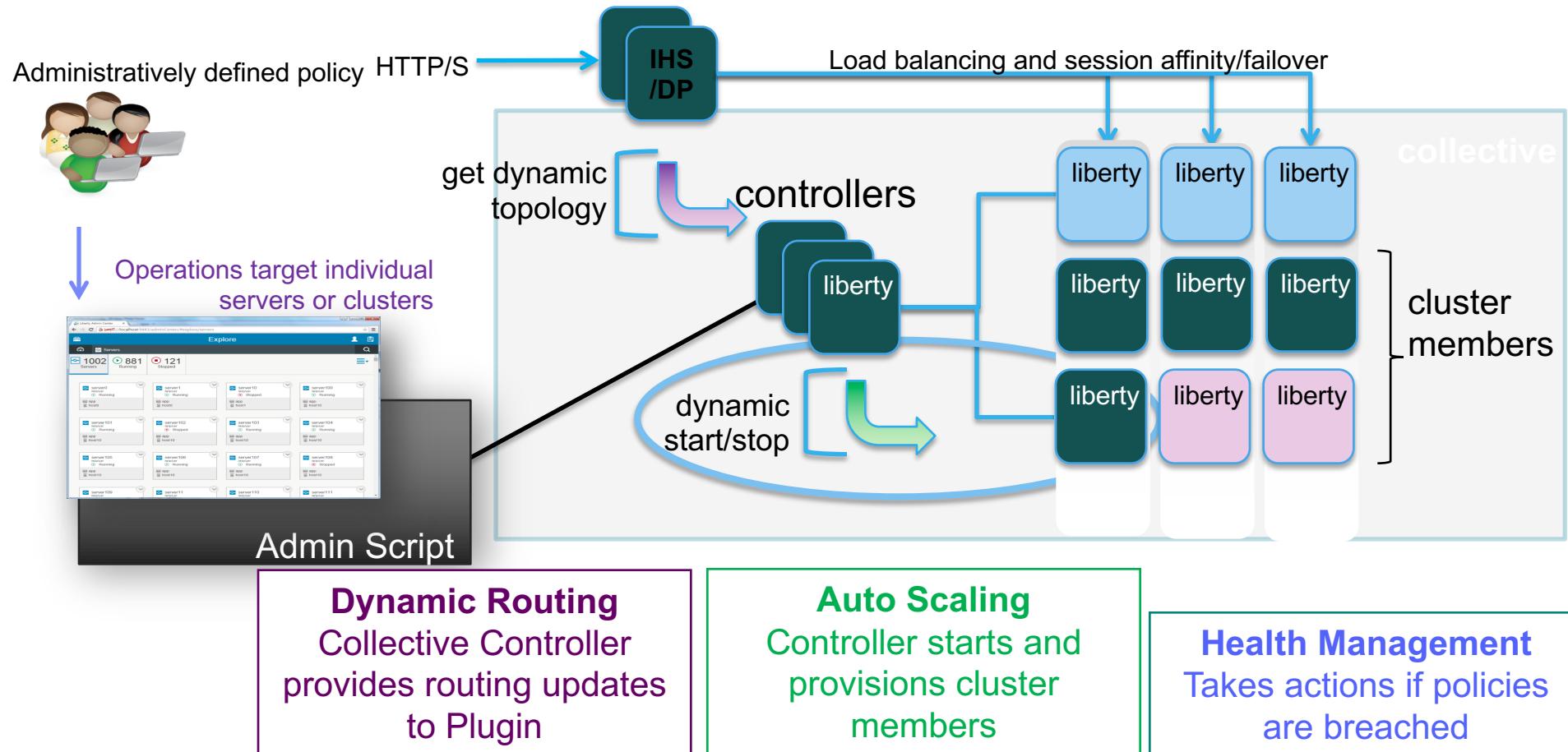
1. A user can deploy Liberty apps in a Docker container to AWS or Azure.
2. A user can deploy Liberty apps to OpenShift and Pivotal Cloud Foundry running locally and can apply sub-capacity charging through suitable configuration.
3. A user can deploy Liberty apps to OpenShift and Pivotal Cloud Foundry running in Softlayer, AWS or Azure, and can apply sub-capacity charging through suitable configuration.



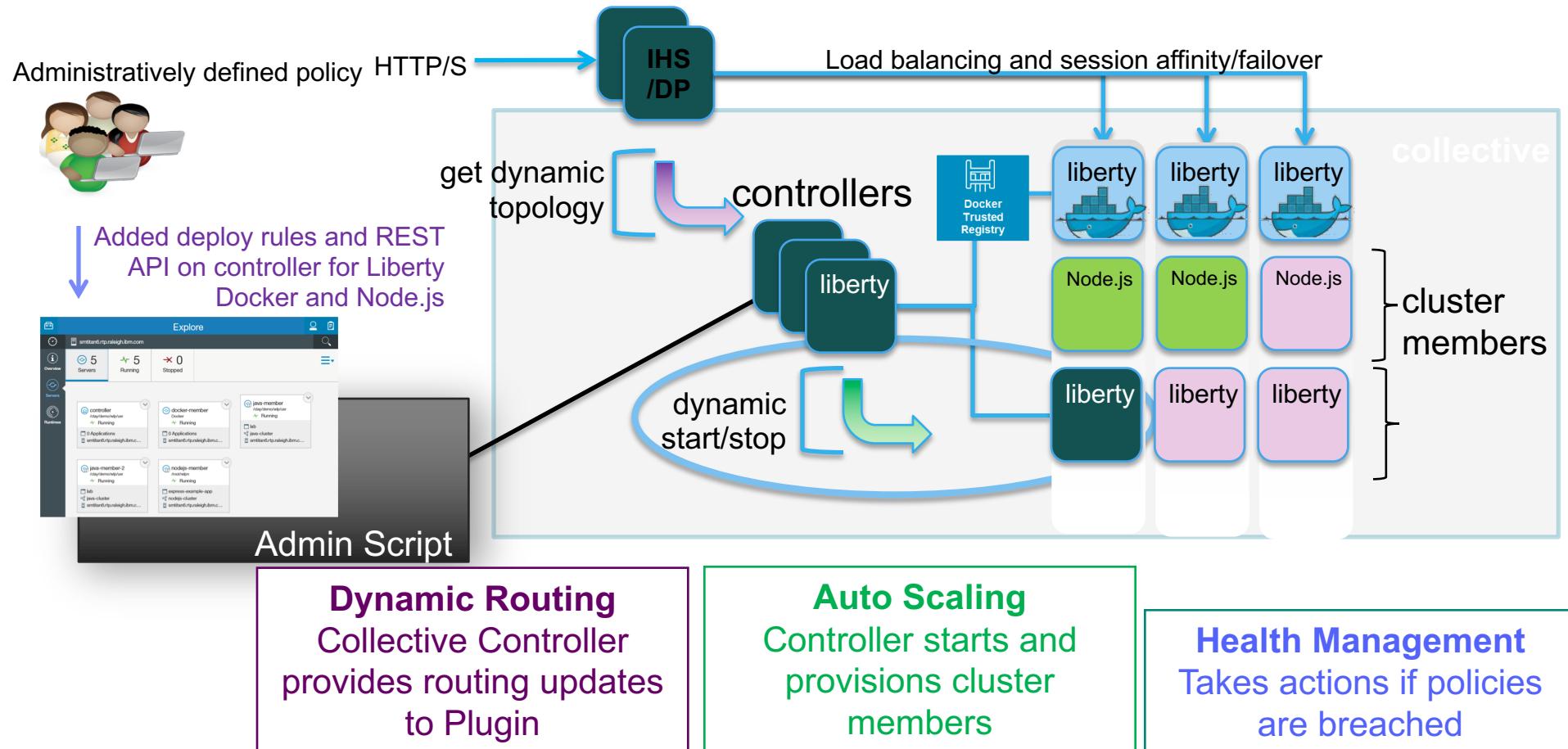
Intelligent Management with WAS ND Cells



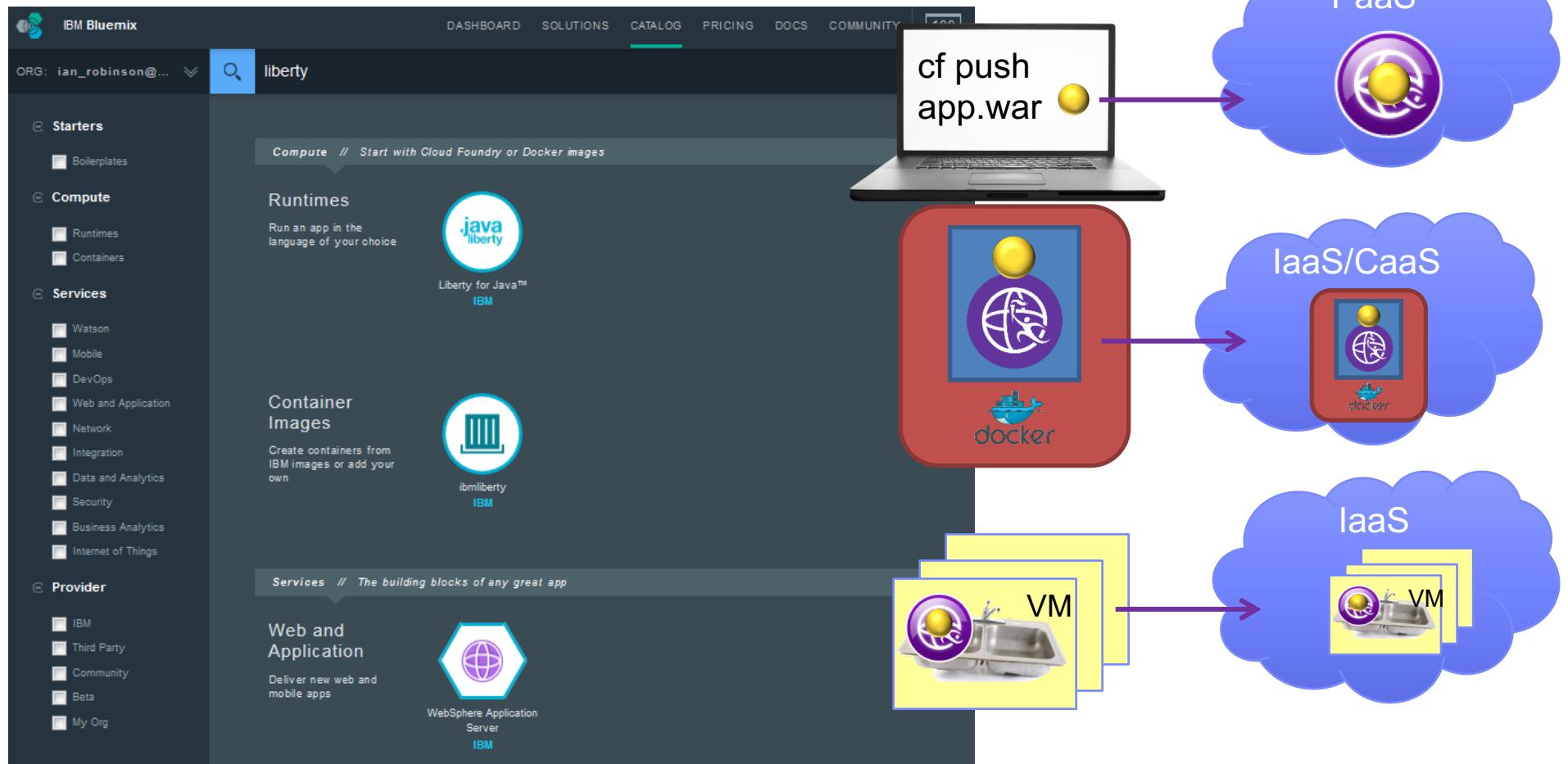
Intelligent Management with WAS ND Collectives



ND Intelligent Management: Also Supports Node.js and Docker Collectives



WebSphere on IBM Cloud



WAS as a Service – Public Cloud



WebSphere
Application Server

IBM

PUBLISH DATE
12/18/2015

TYPE
Service

[VIEW DOCS](#)

Pick a plan Monthly prices shown are for country or region: [United Kingdom](#)

Plan	Features	Price
WAS Liberty Core Plan	WebSphere Application Server Liberty Core. Red Hat Linux Guest.	£0.25 GBP/Hour
WAS Base Plan	WebSphere Application Server Classic Base. Red Hat Linux Guest.	£0.32 GBP/Hour

```

+-----+
| jndiDeploy.sh          | pluginCfgMerge.sh   |
| enableProvisioning.sh | pluginMerge.sh     |
| undeploySheller.sh    | postInstall.sh     |
| printBackup.sh         | preProfileDecoder.sh|
| printCertGen.sh        | queryCertificate.sh|
| printContexts.sh       | registerWtp.sh     |
| printEntitlements.sh  | revokeNode.sh      |
| printFile.sh           | runConfig.sh       |
| printFileEncoder.sh   | requestCertificate.sh|
| printFilePasswordEncoder.sh | ResponseFilePasswordEncoder.sh|
| restoreConfig.sh      | restoreConfig.sh   |
| restoreFile.sh         | restoreFile.sh     |
| retrieveSigners.sh    | revokeCertificates.sh|
| setupConfig.sh         | shutdownConfig.sh  |
| shutdownConfig.sh     | subshConfig.sh    |
| genHistoryReport.sh   | serverStatus.sh   |
| GeoPluginCfgr.sh      | setupCfline.sh    |
| generateReport.sh     | startServer.sh    |
| hadoopResolve.sh      | startUpgrade.sh   |
| hadoopResolve.sh      | sibbUpgrade.sh    |
+-----+
-bash-4.1# psud
/pwd /opt/IBM/WebSphere/Profiles/DefaultAppSrv01/bin
dash-4.1# ./serverStatus.sh *all
RDM00116I: Tool information is being logged in file
/opt/IBM/WebSphere/Profiles/DefaultAppSrv01/logs/serverStatus.log
RDM00120I: Starting tool with profile DefaultAppSrv01 profile
RDM00583I: Retrieving server status for all servers
RDM00586I: Servers found in configuration:
RDM00586I:   Server name: server1
RDM00586I:   The Application Server "server1" is STARTED
bash-4.1#

```

S - 2GB RAM, 1vCP, 12.5 GB disk - WAS ND - \$1.14/hr
M - 4GB RAM, 2vCP, 25 GB disk - WAS ND - \$2.28/hr
L - 8GB RAM, 4vCP, 50 GB disk - WAS ND - \$4.56/hr
XL - 16GB RAM, 8vCP, 100 GB disk - WAS ND - \$9.12/hr
XXL - 32GB RAM, 16vCP, 200 GB disk - WAS ND - \$18.24/hr

Variable VM sizes

WebSphere Application Server

Plan Name : WAS Base Plan

Creation Time: Feb 5, 2016 4:20:05 PM (UTC) Lease Expires: Feb 19, 2016 4:20:05 PM (UTC) Lease Renewal Available: Feb 12, 2016 4:20:05 PM (UTC)

[Download VPN Configuration](#)

Admin Console: <http://159.122.233.228:9060/ibm/console>

Admin Username: wasadmin Admin Password: [Show Password](#)

Application Hosts/Nodes

Classic Profile WebSphere

OS Distribution: RHEL 6.6 X64 [Show Terms](#)

Specification:
1 Virtual CPU
2048 MB Memory
12.5 GB Hard Disk Space

Creation Information:
iFix Info:
8550-WS-WAS-IFPI52103_85500020151112_0822

Guest Info:
IWAS Base (RHEL 6.6, WebSphere 8557 and JDK 7.0) Nov

[SHOW DOCUMENT](#)

Private SSH Key: [Show Key](#) [Save Key](#)

Key Store Password: [Show Password](#)

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WebSphere Integrated Solutions Console

User ID:
Password:
[Log In](#)



Why are customers interested in WAS on Cloud?

Plan	Features	Price
WAS Liberty Core Plan	WebSphere Application Server Liberty Core. Red Hat Linux Guest.	£0.25 GBP/Hour
<input checked="" type="checkbox"/> WAS Base Plan	WebSphere Application Server Classic Base. Red Hat Linux Guest.	£0.32 GBP/Hour
<small>(i) This plan provisions WebSphere Application Server Classic Base on a hosted Red Hat Linux operating system with 2 GB of RAM, a 12 GB file system, and 1 shared virtual CPU.</small>		
WAS ND Plan	WebSphere Application Server Network Deployment. Cell, Collective, or Stand-alone. Red Hat Linux Guest.	£0.69 GBP/Hour
WAS v9 Classic Beta Plan	WebSphere Application Server v9 Classic Beta. Red Hat Linux Guest. Free Beta.	Free
BYOL Plan	Bring Your Own License. Contact IBM Sales to order this plan.	-

- Available for Liberty Core, WAS Base and WAS ND
- WAS as a service is the ability to provision WAS Base or ND cell/collective topologies on Bluemix infrastructure.
- Fastest way to exploit cloud in existing WAS deployments because the application starting-point is “as-is”



Key Security Feature built into WAS v9

WebSphere Application Server is built using solid secure engineering practices, leveraging security standards, and offers a rich set of security features and capability.

“Secure by Default”
Simplified to ensure properly configure and Secure.
Administration Security is enabled out of the box

Standard Security Tokens
Includes SPNEGO, SAML, OAuth, OpenID, OpenID Connect

Authentication
Basic, Form Based, Certificate, customized Logon

Multiple User Registry Options
File Based, LDAP, z/OS SAF
Operating System, Custom

EE Security Standards
JAAS, JACC, JASPI, and EE
Programmatic API

Session Security
Insure the integrity of a HTTP
Session and all cookies are secure

Application Security
Security for Web Apps, EJB, Web
Services, JMX

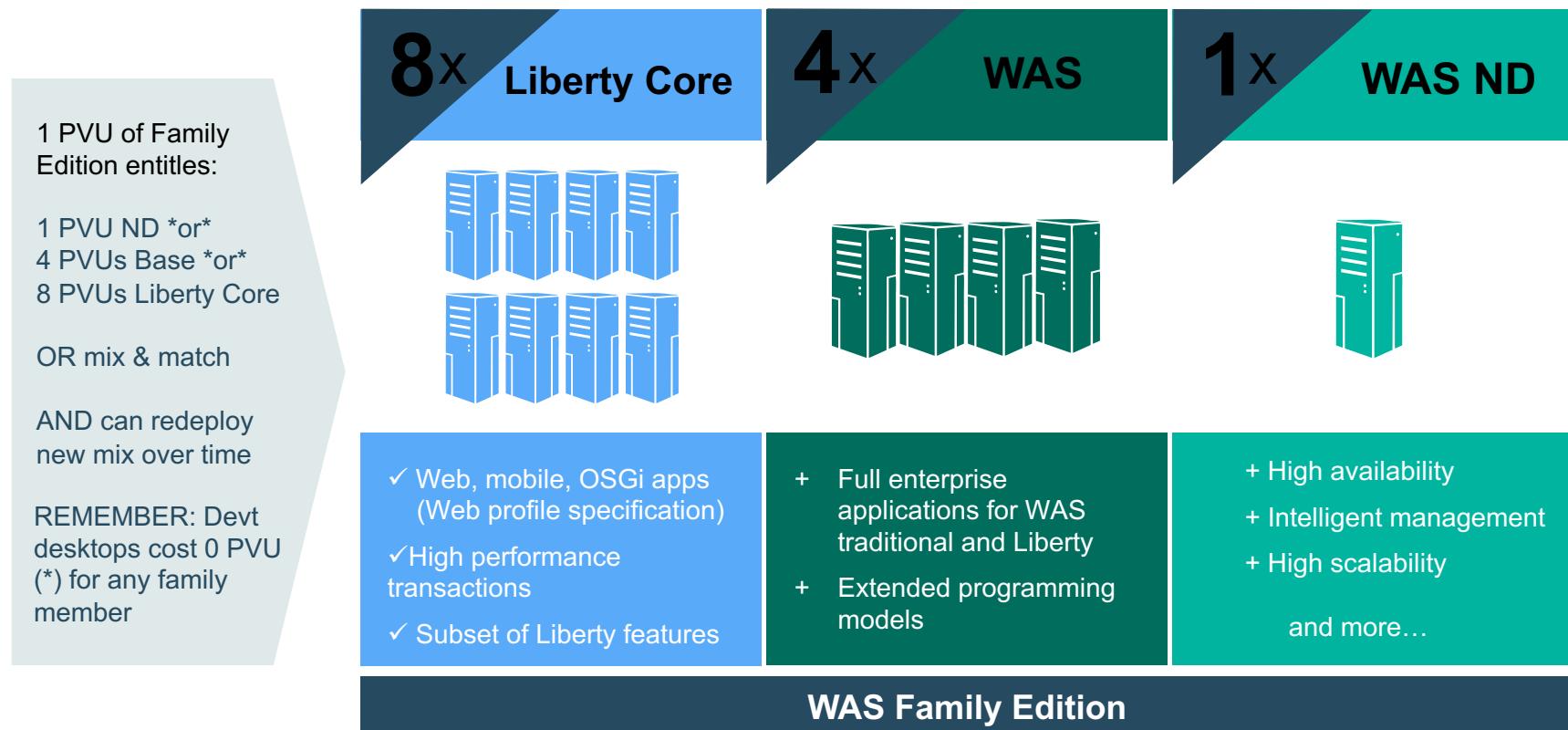
Encryption
TLS 1.2, SHA2, Suit B, Elliptic
Curve, AES256

Federation
Federate multiple User Registries
and API for member Management

Secure Engineering
Leader in Secure Engineering
Practices. OTT-PS Accredited.

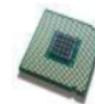
Security Stand. Compliant
FIPS 140-2, 800-131a, 800-161

WebSphere Application Server Editions



Introducing the new Virtual Processor Core – VPC

- Newly introduced simplified license metric
 - The Virtual Processor Core (**VPC**) is sold as a monthly license charge
 - Will replace PVU as the WAS monthly pricing metric
 - PVU remains as WAS perpetual licensing metric. No change.
- Virtual Processor Core
 - Virtual Cores available to the operating system
 - 1 VPC for every VPC available to a virtual Servers Operating System, or 1 VPC for each physical core of a non-partitioned physical server
 - If the number of VPCs is greater than the physical cores, then you only need to license the number of physical cores on the machine
- Benefits to Customers
 - Simplifies Processor and Sub-capacity Licensing
 - Aligns to Cloud Hosted Solution Licensing standards across MSP's
 - Makes it easier for customers On-prem and in Cloud to stay in compliance



In general 1 VPC will be
price equivalent to 70 PVUs



IBM Cloud Private – A 2017 Addition

IBM Middleware, Data, Analytics and Developer Services
Cloud enabled middleware, messaging, databases, analytics, and cognitive services

Core Operational Services
Simplify Operations Management, Security, and Hybrid integration
Provision infrastructure and apps across Multi-Cloud environments

Kubernetes-based Container Platform
Industry leading container orchestration platform

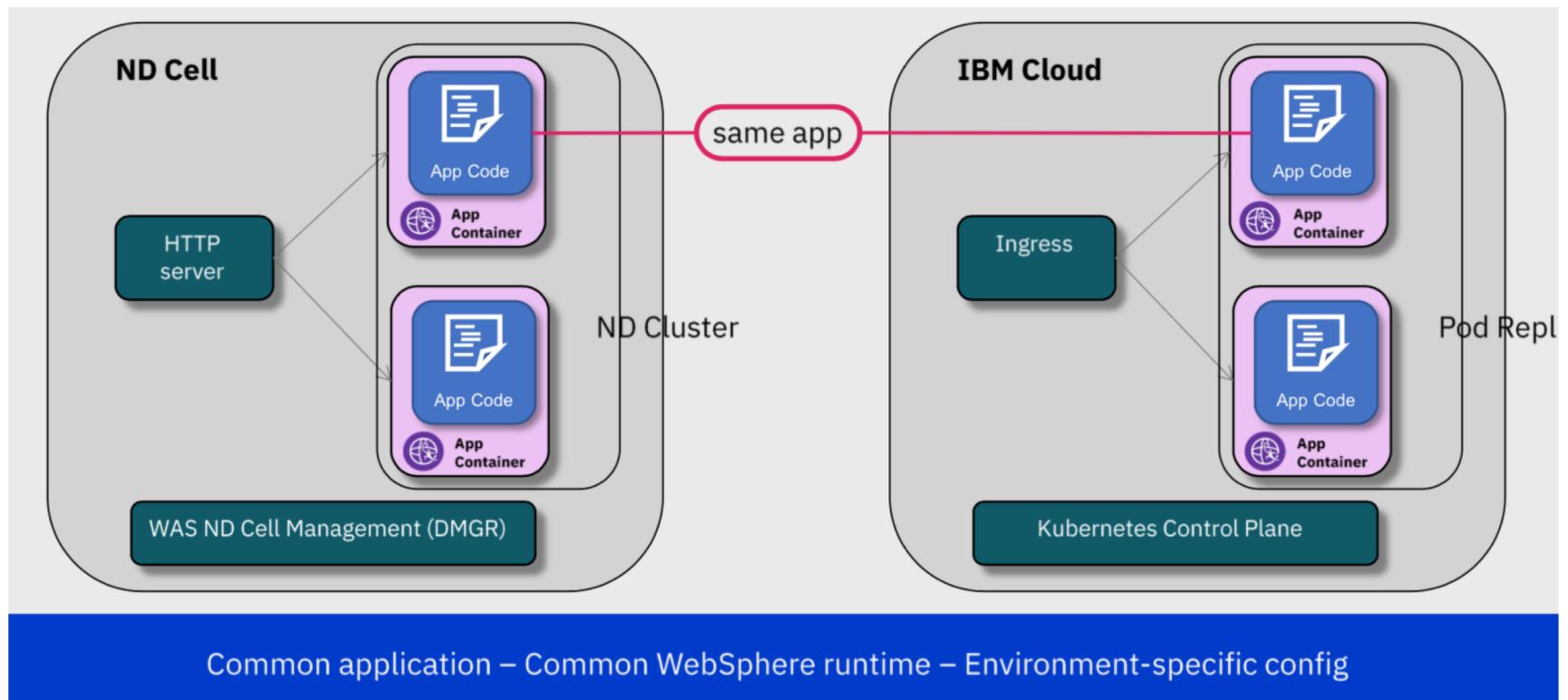
Cloud Foundry
For prescribed app dev & deployment

Terraform
For multi-cloud management
(Cloud Automation Manager)

Runs on existing IaaS:



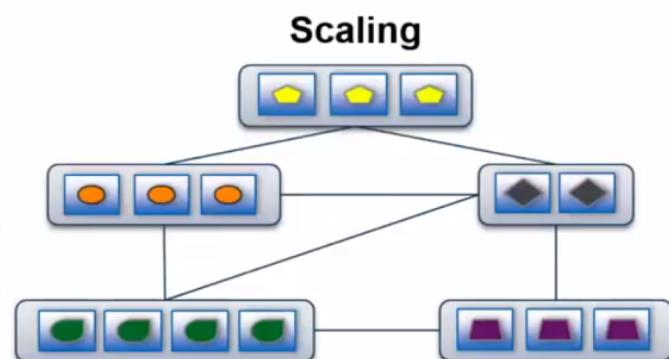
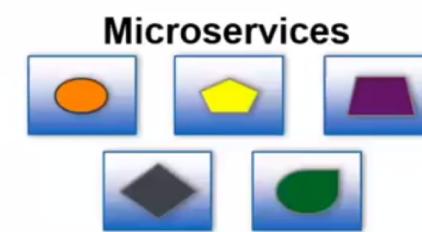
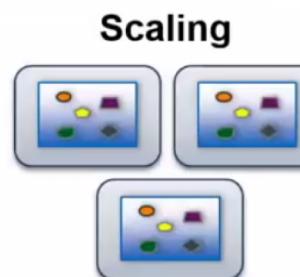
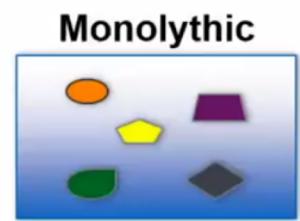
Operational Transformation with App Portability



App Transformation – Microservices & Containers

Developer Benefits

- No need to manage supporting components
- Repeatable
- Consistent
- Pre-integrated services



WebSphere Use Cases driving Private Cloud Adoption

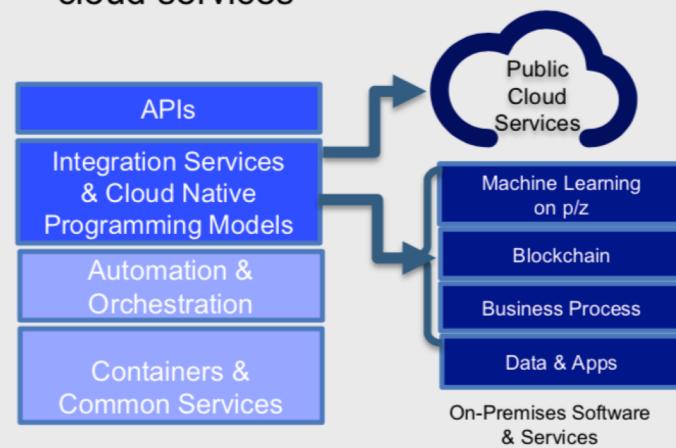
1. Create new cloud native applications



2. Optimize legacy apps with cloud



3. Open your datacenter to work with cloud services



New Applications

Cloud-enabled middleware

Integration & Hybrid Cloud



WASaaS in IBM Cloud Private

1

WebSphere Application Server
Plan Name: WAS ND Plan

Choose Traditional or Liberty:

- Traditional**: Provision a traditional WebSphere Application Server, known for its enterprise qualities of service.
 - [More information >](#)
 - [Single Server](#)
 - [Traditional Cell](#)
- Liberty**: Provision the Liberty profile server, the light weight, full functioned Java application server.
 - [More information >](#)
 - [Single Server](#)
 - [Liberty Collective](#)

2

Deployment Manager

Single Server

✓ Traditional Cell

✓ Liberty Collective

Check to migrate from an existing cell to the cloud [Learn More](#)

WebSphere Cell Deployment Manager Application Nodes Service Profile

The WebSphere Deployment Manager is an instance of the WebSphere Application Server that contains the centralized management function for the WebSphere cell. It is recommended that nothing else run on the VM with the Deployment Manager.

Your block quota for this service is 2 blocks. Including your current configuration, you have 0 blocks remaining. Note: Small = 1 block, Medium = 2, Large = 4, XL = 8, XXL = 16. To increase your memory quota, please open a support ticket with IBM Cloud against WASaaS.

Select the size of the virtual machine for the deployment manager node.

S M L XL XXL

3

Application Nodes

Single Server

✓ Traditional Cell

✓ Liberty Collective

Check to migrate from an existing cell to the cloud [Learn More](#)

WebSphere Cell Deployment Manager Application Nodes Service Profile

Application nodes are the virtual machines upon which the WebSphere Application Server instance runs. In addition, there is a node-agent which connects to the deployment manager for centralized management functions.

Select the number of Application nodes:

1

Your block quota for this service is 2 blocks. Including your current configuration, you have 0 blocks remaining. Note: Small = 1 block, Medium = 2, Large = 4, XL = 8, XXL = 16. To increase your memory quota, please open a support ticket with IBM Cloud against WASaaS.

Select the size of the virtual machine for the Application Server Nodes.

S M L XL XXL

4

Service Profile

Single Server

✓ Traditional Cell

✓ Liberty Collective

Check to migrate from an existing cell to the cloud [Learn More](#)

WebSphere Cell Deployment Manager Application Nodes Service Profile

The level of WebSphere code used to create this instance. The latest level is always the default.

WebSphere Traditional V9.0.0.6

- WebSphere Traditional V9.0.0.6
- WebSphere Traditional V9.0.0.5
- WebSphere Traditional V8.5.5.13
- WebSphere Traditional V8.5.5.12

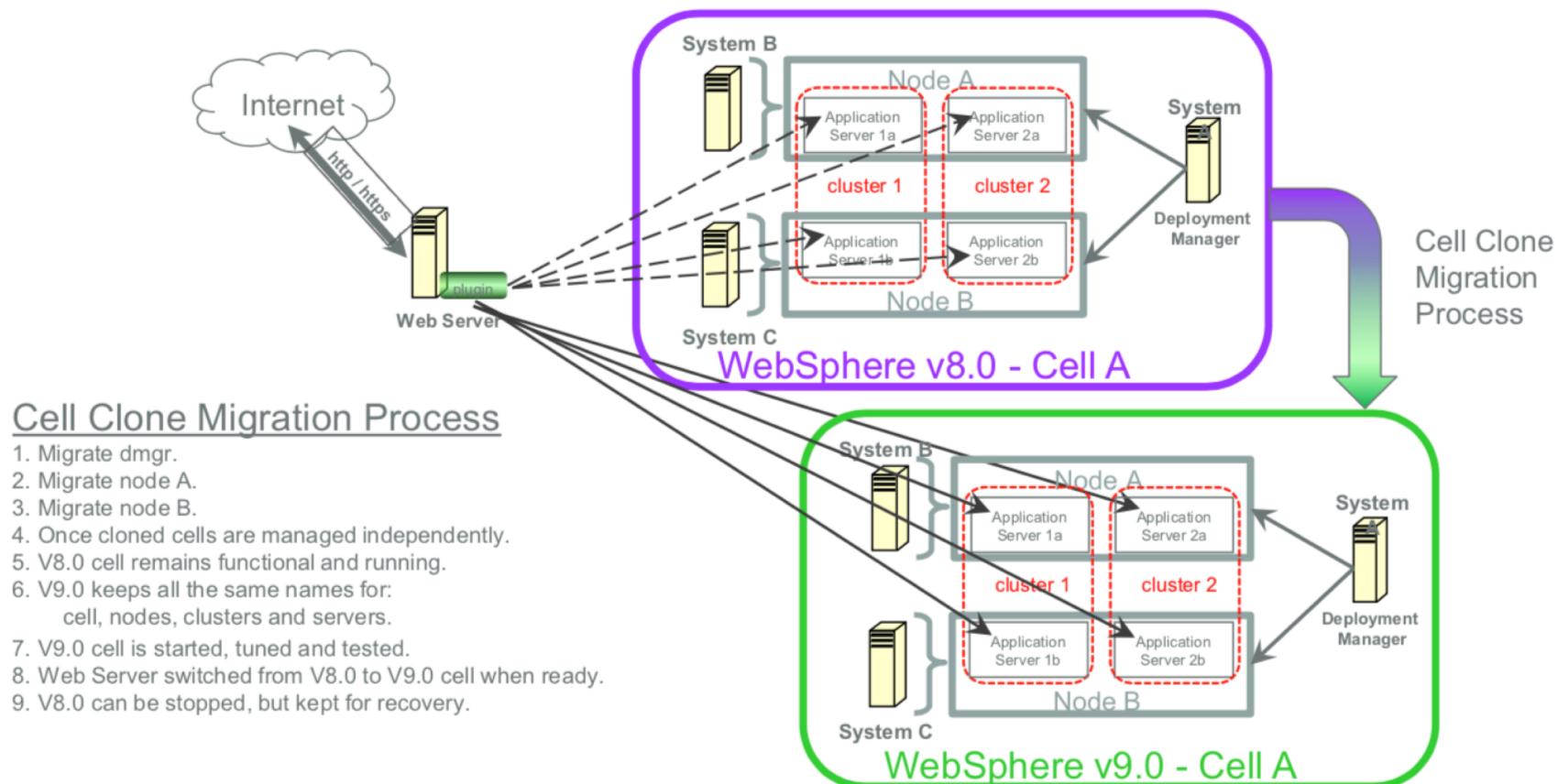
5*

Review:

Service Configuration:
WebSphere ND Cell - WAS Traditional Network Deployment V 9.0.0.6



New Clone Migration Strategy



Clone Migration Demo



e-business



धन्यवाद

Hindi

Спасибо

Russian

شُكْرًا

Arabic

Grazie

Italian

ขอบคุณ

Thai

IBM

பெரிடி

Tamil

多謝

Traditional Chinese

Thank You

English

多謝

Simplified Chinese

ありがとうございました

Japanese

Obrigado

Brazilian Portuguese

Danke

German

Merci

French

감사합니다

Korean

IBM Data Management

12



BACKUP SLIDES



Microclimate

Helping developers build and deploy cloud native applications

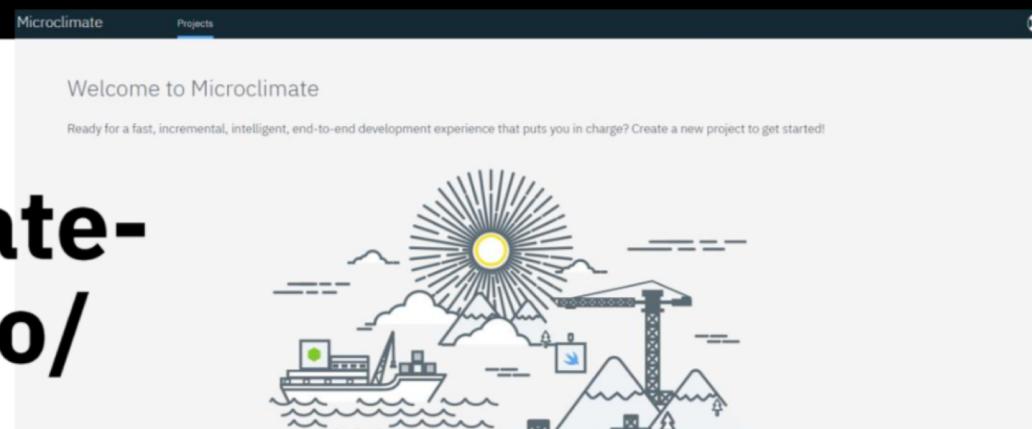
IBM's new, no charge, development platform

Zero install (run on ICP) or download, install and run locally

Generate microservice projects and iterate

Browser based tools for editing and monitoring with real time update and feedback capability to the developer at development time

Commit code to repository: pipeline will automatically build and deploy to IBM Cloud

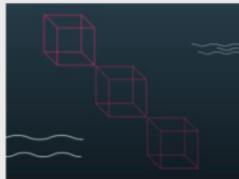


<https://microclimate-dev2ops.github.io/>



Developer Experience

Microclimate is an end to end development environment for the creation of cloud native applications and microservices or enhancing existing services. You can create, edit, build, test and deploy your applications via [Continuous Delivery pipelines](#) then [run and manage them](#) with IBM Cloud Private

1

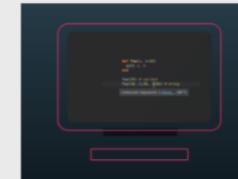
Containerized Development

Start from scratch using lightweight containers that are easily reproducible to match your production environment locally or on IBM Cloud Private

2

Rapid Iteration

Lightning fast round-tripping through edit, build, and run helps find problems sooner to quickly fix and test before deployment

3

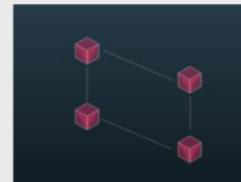
Intelligent Feedback

Best practices and immediate feedback to help improve your application through the integrated IDE or use your editor of choice with Language Server Protocols

4

Diagnostic Services

Add capability at development time to improve problem determination in production through application metrics.

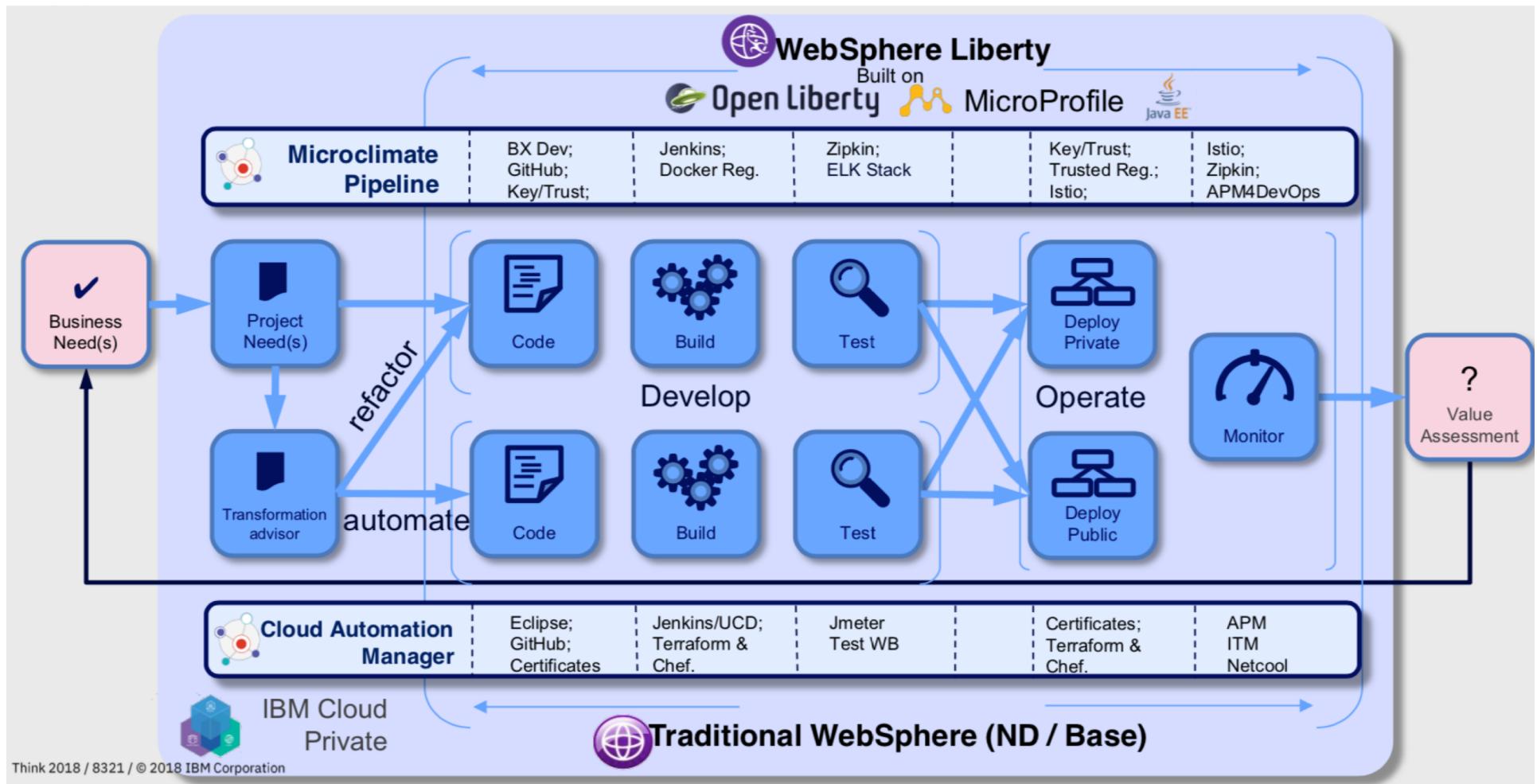
5

Integrated DevOps Pipeline

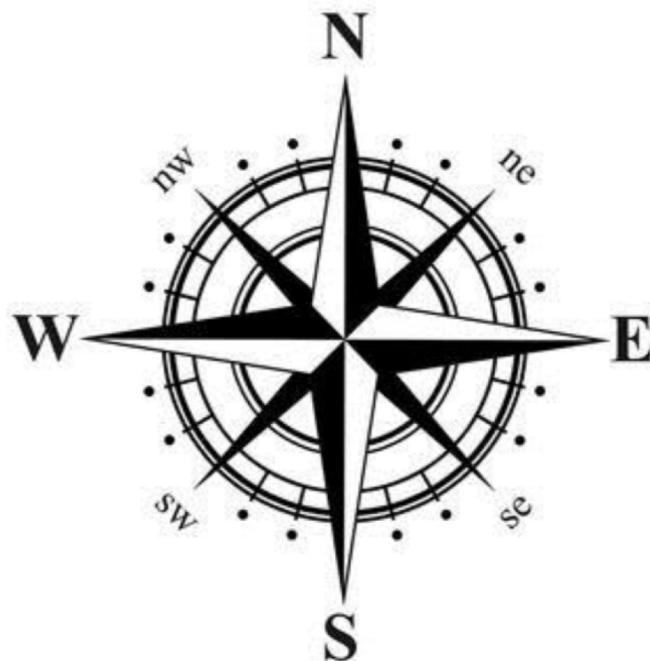
Get into production fast with a preconfigured DevOps pipeline that can be tailored to your needs



Application Modernization



Statements of Direction



Common container management for traditional WebSphere in ICP

Common container management for Reactive Platform in ICP

Simplified migration of existing WAS ND cells to ICP managed VMs

New Hourly licensing option for containerized WebSphere/Liberty deployments

New “Application Platform” Flexpoint offering for ICP and WAS

Freedom to shift WAS entitlements across on-prem and public cloud deployments.

