



Open Liberty

Liberty Quarterly Update

19.0.0.10-19.0.0.12

Alasdair Nottingham – Liberty Lead Architect

 @nottycode

Agenda

Open Liberty



Part 1: 10 Minute Liberty overview

Part 2: What is new this quarter

Part 3: Sneak Peek

Part 5: Q&A

10 minute overview

Why Choose Liberty

Open Liberty



- Cloud Ready
 - Container optimized
 - Designed for dev/ops
 - Small disk footprint
 - Efficient memory usage
 - Fast startup
 - High throughput
 - Self-Tuned Thread Pool
- Developer friendly
 - Just enough application server
 - Fast inner loop with dev mode
 - Support for industry standard dev tools
 - Jakarta EE, Java EE, MicroProfile APIs
 - Zero Migration

What people are saying

- "Light operation and efficient operation (restart time can be reduced compared to ND)"
- "Ease of use small footprint ability to be built into a container"
- "It's the best tool for the job."
- "Easy to manage, Cloud Ready a Smart Product with cool feature. Modular flexible and fast."
- "Simple, well supported, cloud and container friendly."
- "Liberty is a fast-to-configure application server with some advantages over other similar products."
- "Simplicity of use."
- "Now that we have experienced Liberty, we are spoiled and want to stick to those easy, non-impacting migrations."

Open Liberty



Alex Lewis
@seekingbinary

Follow

Starting to use this in my own projects. Thoroughly recommended. Keep up the great work @OpenLibertyIO team.

openlibertyio @OpenLibertyIO

Dev mode support and more developer experience enhancements to the Liberty Maven plug-in: openliberty.io/blog/2019/11/2...

11:36 PM - 28 Nov 2019

5 Retweets 13 Likes



Tim Zöller
@javahippie

Follow

The @OpenLibertyIO dev mode is one of the best hot-reload features I have ever worked with, I am seriously impressed!

11:56 PM - 25 Oct 2019

9 Retweets 25 Likes



Philip Riecks
@riECKpil

Follow

This Maven plugin is really a gamechanger for the development experience when it comes to developing @JakartaEE and @MicroProfileIO applications on @OpenLibertyIO. Read my review here: [riECKpil.de/joyful-open-li ...](https://riECKpil.de/joyful-open-li...)

Just Enough Application Server

Open Liberty



You control which features are loaded into each server instance

Java EE



```
<feature>jsf-2.3</feature>
```

jsp-2.3

jsf-2.3

servlet-4.0

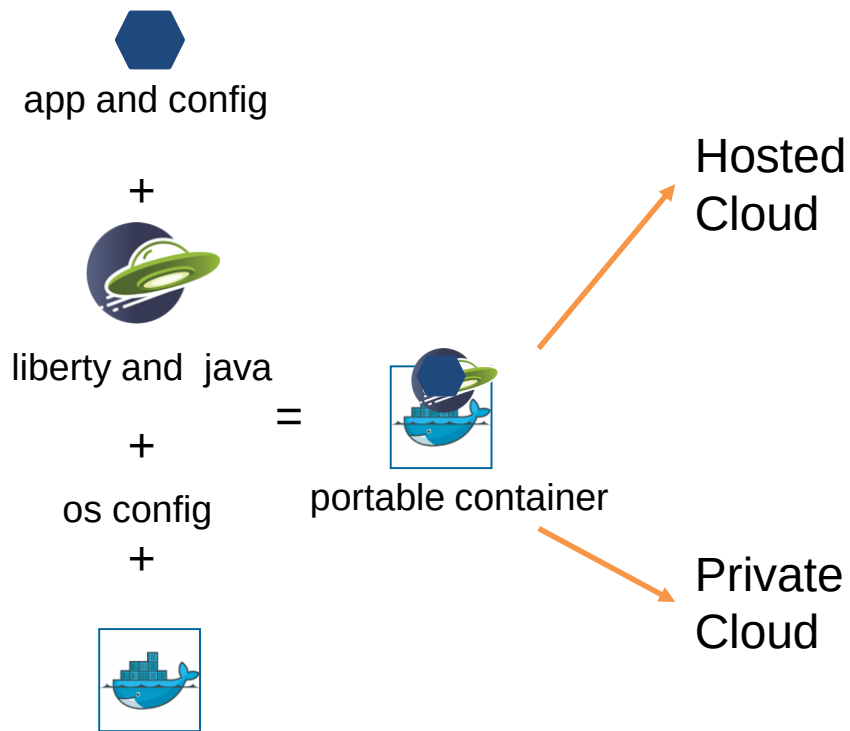
http-2.0

appmgr

Kernel



Liberty in Containers



IBM Cloud Kubernetes Service

Azure Kubernetes Service

Google Kubernetes Engine

Amazon Elastic Kubernetes Service

Jelastic

Red Hat Open Shift Container Platform

Pivotal Kubernetes Service

Pivotal Cloud Foundry

FROM open-liberty
ADD myapp.war /config/dropins/myapp.war

Liberty Zero Migration

Open Liberty

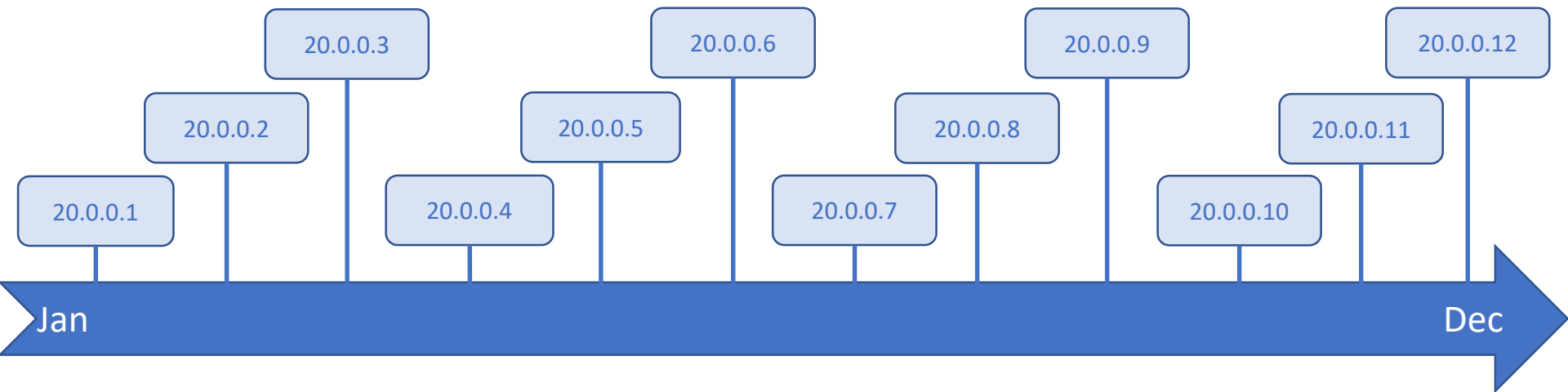


- Zero config migration
 - Write once, run forever
- Zero app migration
 - No behavior changes in existing features
 - New behaviors in new features
- Choose your Java
 - Java 13, 11, 8
 - AdoptOpenJDK
 - IBM
 - OpenJDK
 - Oracle



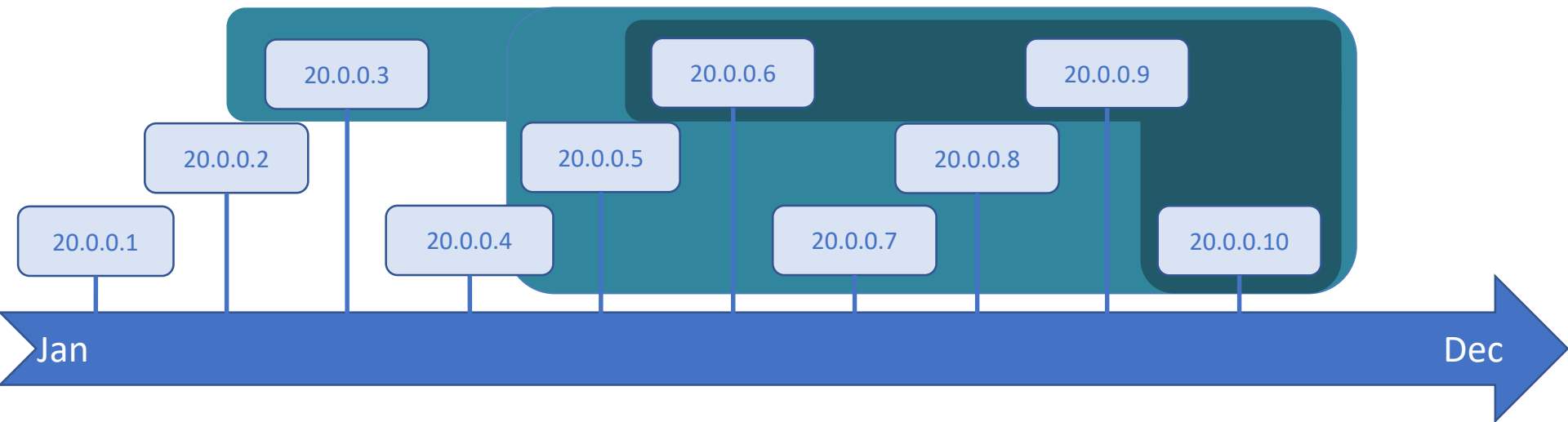
Liberty Release Cadence

Open Liberty



	iFixes	Proactive security iFixes
All releases	For 24 weeks	Most recent
Releases ending in 3/6/9/12	For 2 years	Most recent 2

Liberty Release Cadence Example



	iFixes	Proactive security iFixes
All releases	For 24 weeks	Most recent
Releases ending in 3/6/9/12	For 2 years	Most recent Two

How to get Support

Open Liberty



WebSphere



z/OS
ND
Base
Core



IBM Cloud Pack for Apps

IBM Integrated Application Runtimes

Java:

- WebSphere
- Liberty
- MicroProfile
- Jakarta EE
- OpenJ9
- HotSpot

Node.js:

- Loopback
- Express



Red Hat Runtimes

Integrated DevOps



Red Hat OpenShift

Red Hat Runtimes



Open Liberty

JBoss EAP

OpenJDK

Spring

Thorntail

Node.js

Red Hat AMQ

Red Hat Data Grid

Recent Updates

Focus areas

Open Liberty



Developer Experience

APIs

Foundation

Orchestration

Security

Last 12 month highlights

Open Liberty

a MicroProfile 2.2

a JDBC 4.3

f Server variables

f Java SE 11

o Default variable v

o Enhanced support

variables in confi

o Non-root docker

s PKCS12 for cert

s Password hash c

s TLS 1.3

s SPNEGO with O

s Forwarded & X-F

header support

f 30% startup performance

f 10% memory footprint imp

f Java SE 11 Hotspot

f Java SE 12

f Oracle UCP

f Liberty readiness analysis

o UBI based docker images

o Open Liberty Operator

s TLS Hostname verification

s OIDC support for SPNEG

s z/OS Get SAF groups

s z/OS Keyring monitor

d Liberty dev n

d VS Code ext

a Jakarta EE 8

a MicroProfile 3

a MicroProfile

a MicroProfile

a MicroProfile

f PostgreSQL

f Config valida

s OpenID Con

s OAuth PKCE

s z/OS SAF au

d MicroShed Testing

d MicroProfile Starter for vs code

d MicroProfile Starter for IntelliJ

d Source 2 image builder

a MicroProfile 3.2

a MicroProfile Health 2.1

a MicroProfile Metrics 2.2

f Java SE 13

f Server package expanded app

o Jaeger support for MP Open Tracing

s Reader role

s Trust JVM cacerts OOTB

s Custom login modules for JCA

s API to change SAF password



19.0.0.1-3
1Q19



19.0.0.4-6
2Q19



19.0.0.7-9
3Q19



19.0.0.10-12
4Q19



Periodic Table of Liberty (19.0.0.12)



zOS

ND

Base

Core

Open
Liberty

New in
4Q19

New in
3Q19

New in
2Q19

New in
1Q19

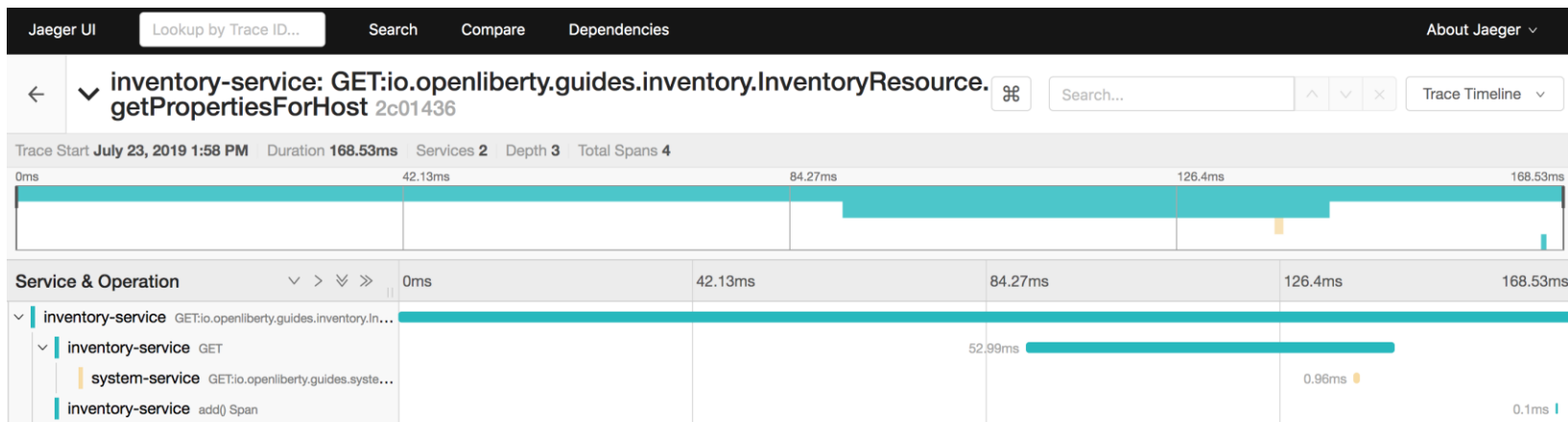
batchSMFLogging-1.0		zosLocalAdapters-1.0		zosTransaction-1.0		zosSecurity-1.0	
collectiveController-1.0		healthAnalyzer-1.0		scalingController-1.0			
clusterMember-1.0	dynamicRouting-1.0	healthManager-1.0		scalingMember-1.0		Security	
cloudant-1.0	sipServlet-1.0	batchManagement-1.0	Operations				
javaee-7.0		wsAtomicTransaction-1.2			passwordUtilities-1.0		
javaee-8.0					wsSecurity-1.1		
jakartaee-8.0					wsSecuritySaml-1.0		
bells-1.0	mpContextPropagation-1.0	adminCenter-1.0	constrainedDelegation-1.0		audit-1.0		
concurrent-1.0	mpReactiveMessaging-1.0	collectiveMember-1.0	federatedRepository-1.0		ldapRegistry-3.0		
javaMail-1.6	mpReactiveStreams-1.0	distributedMap-1.0	jwt-1.0		oauth-2.0		
jaxb-2.2	opentracing-1.3	eventLogging-1.0	jwtSso-1.0		openid-2.0		
jdbc-4.3	osgiConsole-1.0	logstashCollector-1.0	sessionDatabase-1.0		openidConnectClient-1.0		
jpaContainer-2.2	springBoot-2.0	monitor-1.0	webCache-1.0		openidConnectServer-1.0		
jsfContainer-2.3	webProfile-7.0	openapi-3.1			samlWeb-2.0		
json-1.0	webProfile-8.0	requestTiming-1.0			scim-1.0		
jsonbContainer-1.0		usageMetering-1.0			socialLogin-1.0		
jsonpContainer-1.1		restConnector-2.0			spnego-1.0		
microProfile-3.2	APIs		sessionCache-1.0		transportSecurity-1.0		

Jaeger Open Tracing

Open Liberty



- Jaeger is the Open Tracing server from CNCF used by Istio
- Package Jaeger client in application, or a library
- Just need `mpOpenTracing-1.3`



Reader Role

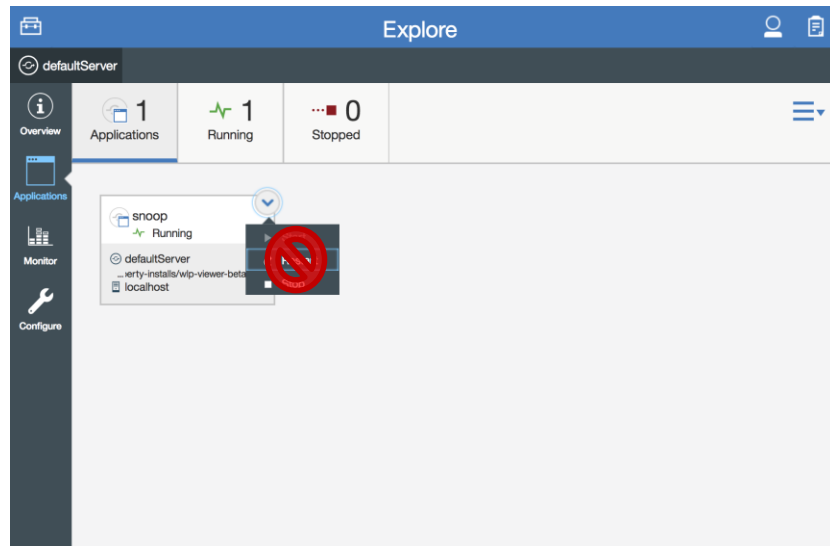


Give someone read-only access to admin center and MBeans

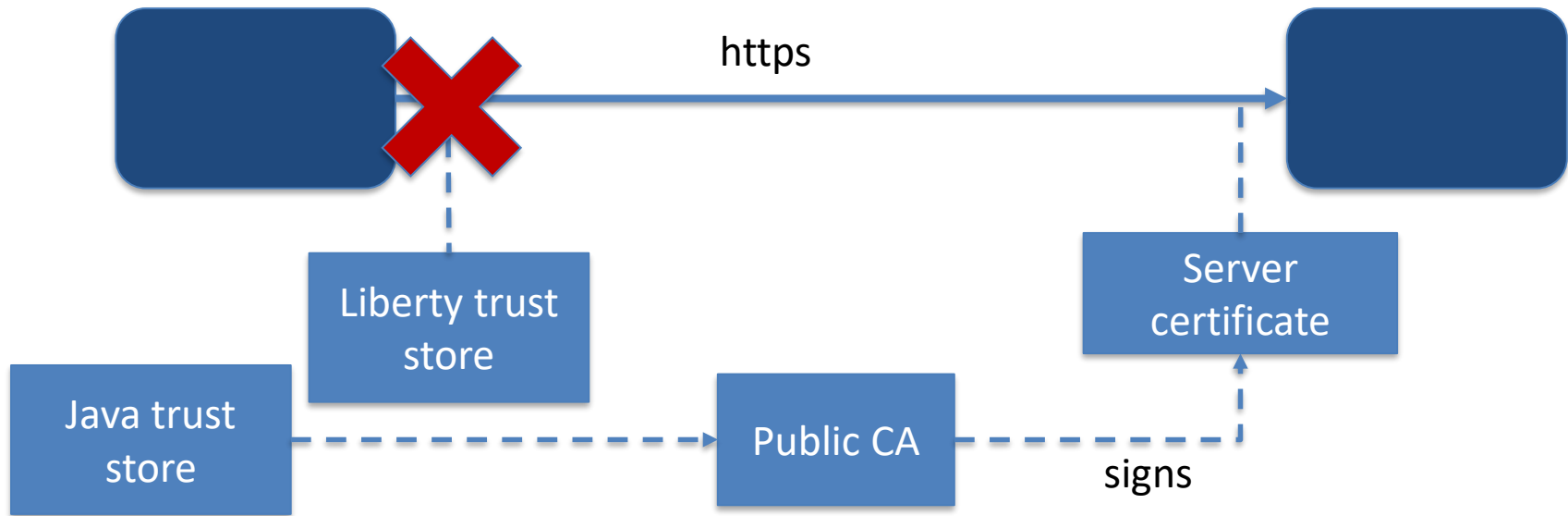
```
<server>
  <basicRegistry id="basic">
    <user name="admin" password="password" />
    <user name="reader" password="password" />
  </basicRegistry>

  <administrator-role>
    <user>admin</user>
  </administrator-role>

  <reader-role>
    <user>reader</user>
  </reader-role>
</server>
```



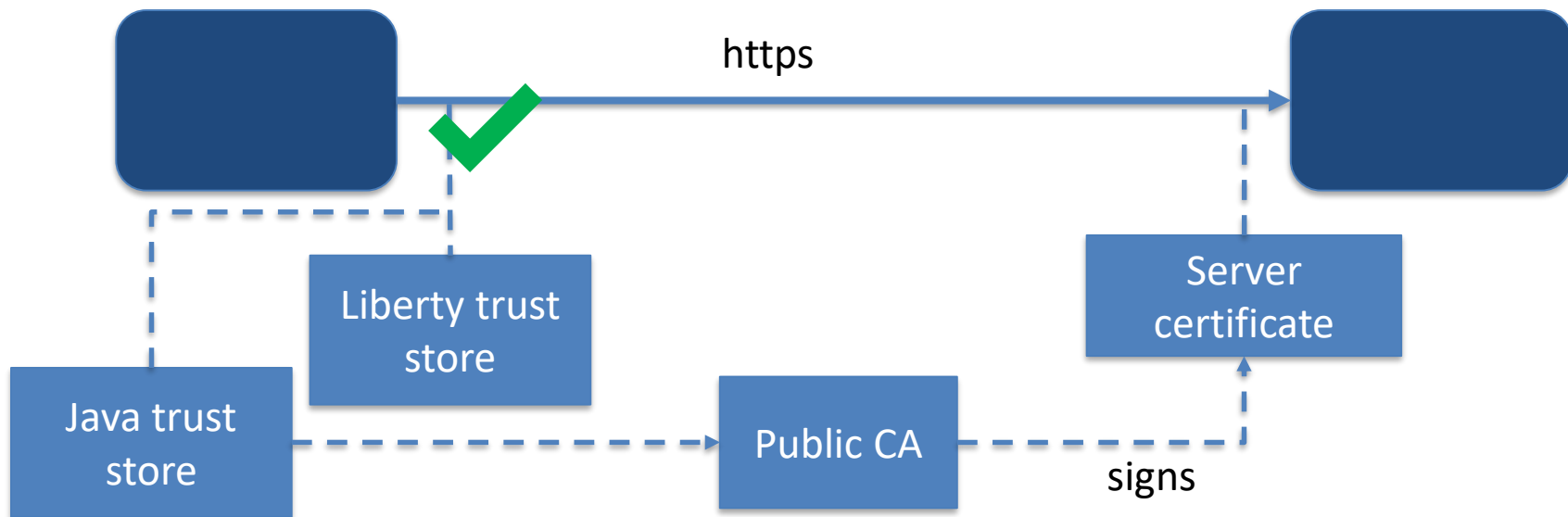
TLS Trust configuration background



TLS Trust configuration new



```
<server>  
  <ssl id="defaultSSLConfig" trustDefaultCerts="true" />  
</server>
```



Trusted certs in env vars



- Read a signing cert from env var

```
<server>
  <keyStore id="myKeyStore" location="myKey.p12"
           type="PKCS12" password="<your password>" />
</server>
```

server.xml

```
cert_myKeyStore="-----BEGIN
CERTIFICATE-----
. . . .
-----END CERTIFICATE-----"
```

environment

Trusted certs in env vars



- Read a signing cert from env var

```
<server>
  <keyStore id="myKeyStore" location="myKey.p12"
    type="PKCS12" password="<your password>"
    readOnly="true" />
</server>
```

server.xml

```
cert_myKeyStore-----BEGIN
CERTIFICATE-----
. . . .
-----END CERTIFICATE-----"
```

environment

Configurable JSON log fields



- Different runtimes may produce different json formats
- Liberty allows you to change the json keys for data

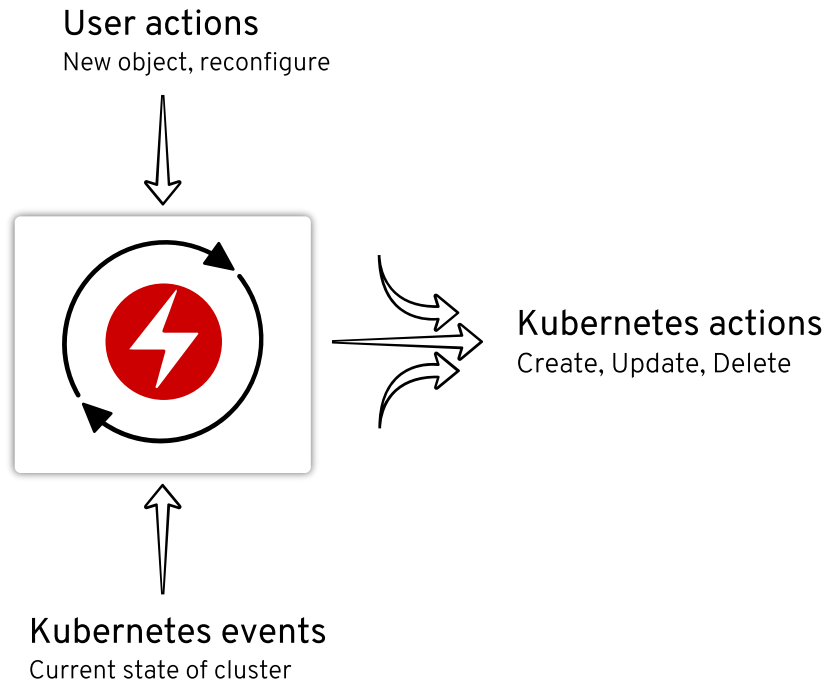
```
com.ibm.ws.logging.json.field.mappings=message:log
```

```
{
  "type": "liberty_message",
  "host": "10.0.0.232",
  "ibm_userDir": "\liberty\usr\\"",
  "ibm_serverName": "defaultServer",
  "message": "CWWKF0011I: The defaultServ
  \"ibm_threadId\": \"00000038\",
  \"ibm_datetime\": \"2020-01-14T20:26:42.44\",
  \"ibm_messageId\": \"CWWKF0011I\",
  \"module\": \"com.ibm.ws.kernel.feature.in\",
  \"loglevel\": \"AUDIT\",
  \"ibm_sequence\": \"1579051602449_00000000\"
}
```

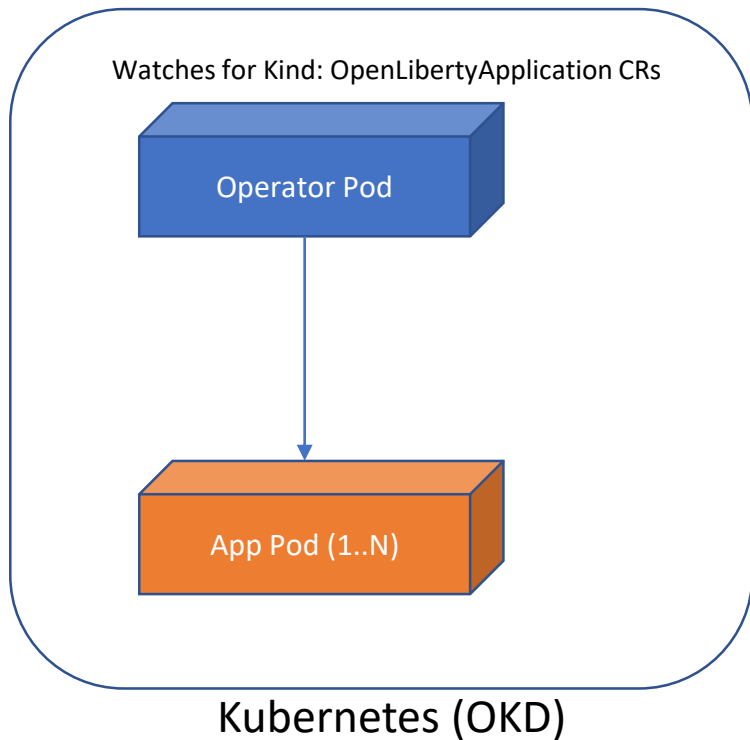


```
{
  "type": "liberty_message",
  "host": "10.0.0.232",
  "ibm_userDir": "\liberty\usr\\"",
  "ibm_serverName": "defaultServer",
  "log": "CWWKF0011I: The defaultServer s
  \"ibm_threadId\": \"00000038\",
  \"ibm_datetime\": \"2020-01-14T20:26:42.44\",
  \"ibm_messageId\": \"CWWKF0011I\",
  \"module\": \"com.ibm.ws.kernel.feature.in\",
  \"loglevel\": \"AUDIT\",
  \"ibm_sequence\": \"1579051602449_00000000\"
}
```

Embracing Operators



Open Liberty Operator



- Creation / deployment of k8s or Knative resources
- Horizontal auto-scaling
- Resource constraints
- Built-in logging and monitoring (Prometheus) integration
- Auto-creation of Routes
- Readiness / liveness probes
- Environment variables setup
- Easy volume persistence setup
- Integration with kAppNav
- App-app service binding
- Day 2 operations

Gathers diagnostics

Open Liberty



> oc client

```
┌─┴─┐
│ arthur — bash — 85x6
└─┴─┘
Last login: Thu Dec 12 15:12:22 on tty001
arthur@mbp-2:~$ arthur$ oc apply -f day2operation.yaml
```

kAppNav

Kubernetes Application Navigator

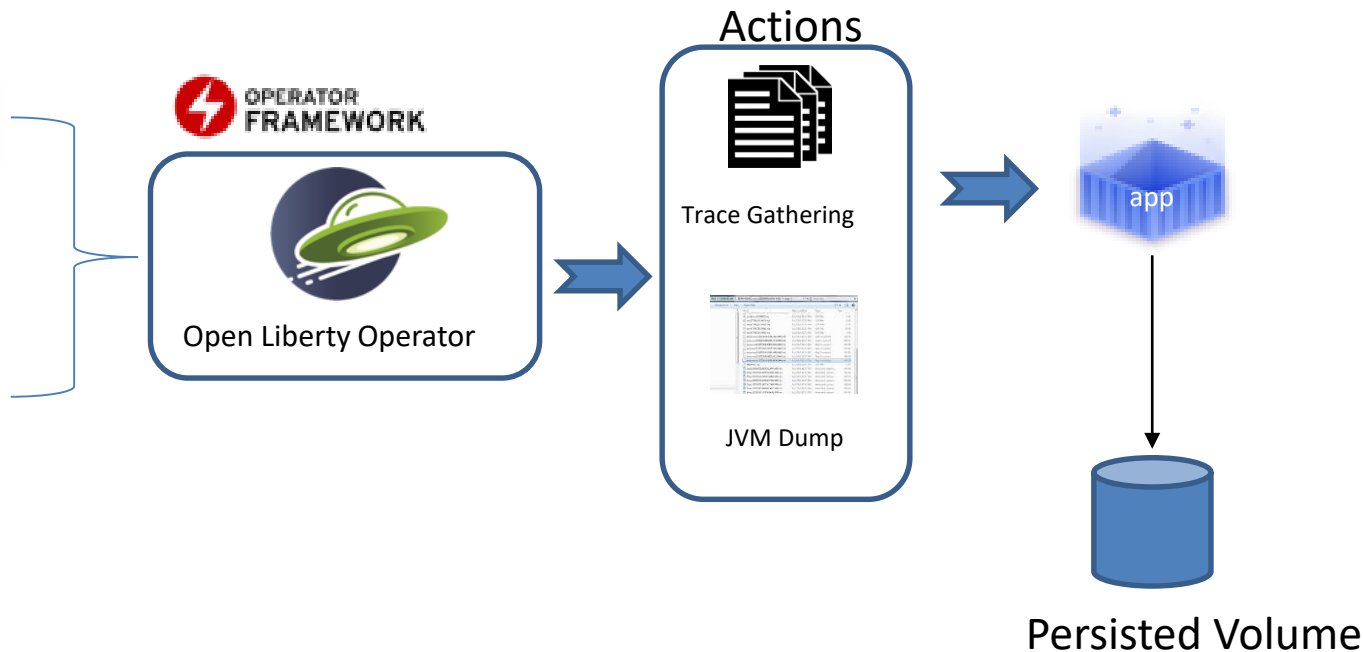
Applications / stock-trader /

stock-trader Normal

Basic Details

Application Specific Details

Status	Name	Kind	Namespace	Platform	Action
Normal	stock-trader	Deployment	kappnav	Kube	
Normal	stock-trader-service	Service	kappnav	Kube	
Normal	stock-trader-service	Service	kappnav	Kube	
Normal	stock-trader-service	Deployment	kappnav	Kube	
Normal	stock-trader	Deployment	kappnav	Kube	

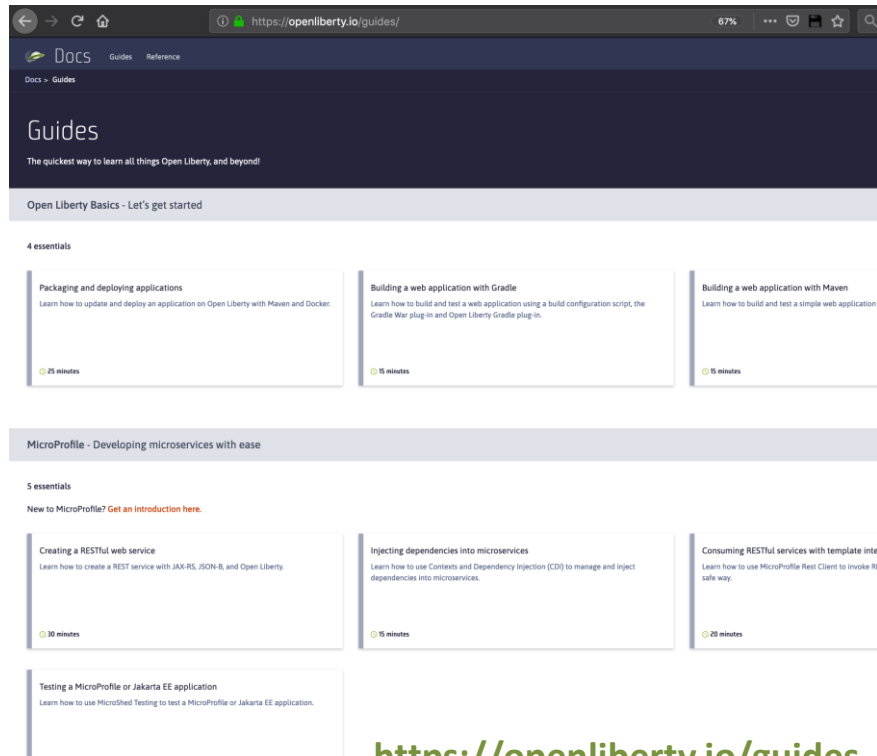


Open Liberty Guides

Open Liberty



- Hands-on learning in ~20 minutes
- 42 guides
 - MicroProfile & Jakarta EE
 - Open Shift, Docker, Kubernetes Istio
- Latest Guides
 - *Testing a MicroProfile or Jakarta EE application*
 - *Containerizing, packaging, and running a Spring Boot application*



<https://openliberty.io/guides>

Sneak Peak

Focus areas



Developer Experience

APIs

Foundation

Orchestration

Security

Liberty Roadmap

Open Liberty



APIs	Foundation	Orchestration	Dev Exp	Security
MicroProfile 4.x	Java SE Updates	Session failover using Red Hat Data Grid	Dev mode for gradle	LTPA improvements
Jakarta EE 9	App startup performance	Liberty Operator	Improved IDE support	OpenShift oauth support
GraphQL	Install features using maven	Better logging in kubernetes	Appsody	Distributed auth cache
gRPC	EJB Timer failover	Transaction recovery in Clouds	MicroShed Testing 1.0	Lets Encrypt

Labs, Questions

WebSphere Liberty Virtual POT

Open Liberty



Download the operating system specific content zip file from either

<https://ibm.box.com/WASLibertyVPoT> (fast - about 10 minute download)

<https://public.dhe.ibm.com/ibmdl/export/pub/software/websphere/wasdev/pot/> (slower but firewall friendly – about 1 hour download)



Liberty Quarterly Update_19.0.0.10-12.final.pdf



LibertyResourceList.pdf V2



LibertyPoT_19.0.0.12_WIN.zip V3



LibertyPoT_19.0.0.12_LINUX.zip V3



LibertyPoT_19.0.0.12_MAC.zip V3



labs_n_presentations_only.zip V12

charts only

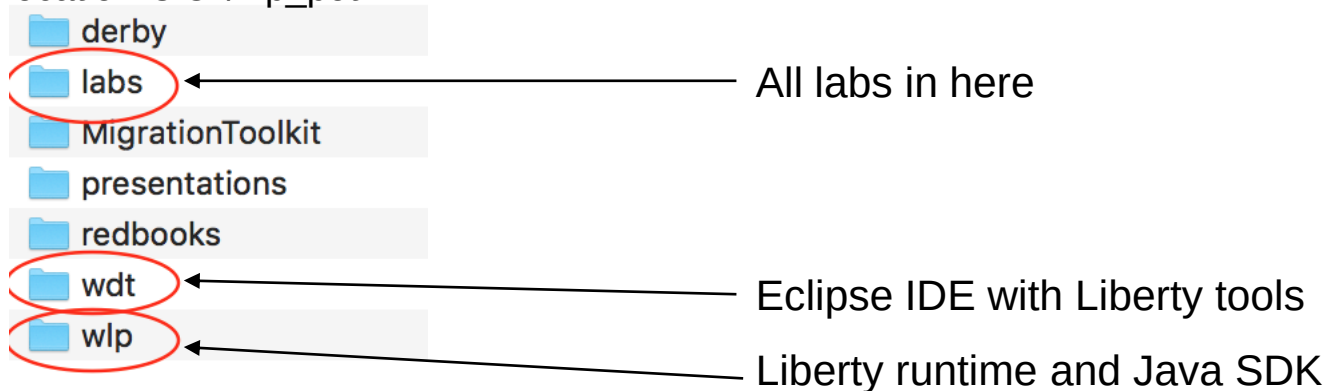
charts & lab instructions
only

WebSphere Liberty Virtual POT



Unzip to C:\wlp_pot

- Note: You can unzip to anywhere you wish but the lab instructions assume the unzip location is C:\wlp_pot



Follow [labs\gettingStarted\0_setup_20180105\setup.pdf](#)

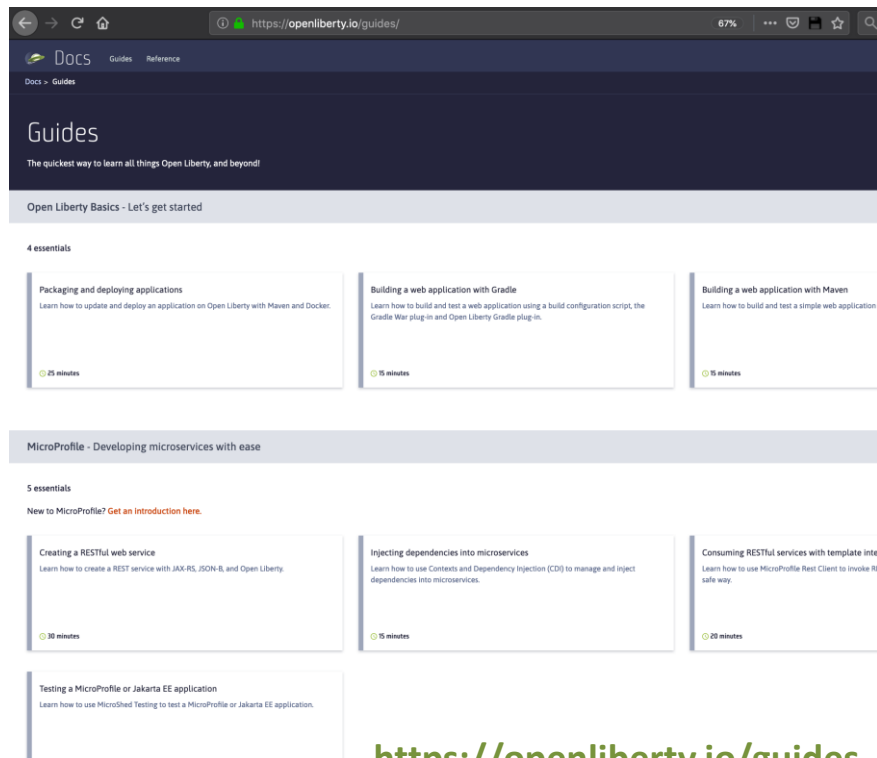
Then choose any labs you want to do

Open Liberty Guides

Open Liberty



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<https://openliberty.io/guides>

Resources

Open Liberty



- Open Liberty: <https://www.openliberty.io/>
- Eclipse MicroProfile: <https://microprofile.io/>
- Jakarta EE: <https://jakarta.ee/>
- Liberty advantage: <https://www.ibm.com/downloads/cas/NVY3KY4E>
- Open Liberty Guides: <https://openliberty.io/guides>
- Why Liberty is the best Java runtime for the Cloud <https://developer.ibm.com/wasdev/docs/liberty-profile-best-java-runtime-cloud/>
- WebSphere Application Server V8.5 Administration and Configuration Guide for Liberty Profile (Redbook)
<http://www.redbooks.ibm.com/abstracts/sg248170.html?Open>
- Liberty videos: https://www.ibm.com/support/knowledgecenter/SSAW57_liberty/com.ibm.websphere.wlp.nd.multiplatform.doc/ae/covr_media.html
- Java support dates <http://www.ibm.com/developerworks/java/jdk/lifecycle>
- Single Stream Continuous Delivery <https://www-01.ibm.com/support/docview.wss?uid=ibm10869798>
- WebSphere Migration Knowledge Collection: Planning and Resources <https://www-01.ibm.com/support/docview.wss?uid=swg27008724>
- IBM Transformation Advisor <http://ibm.biz/cloudta>

Next Quarterly Update

Open Liberty



Liberty 19.0.0.10-12 Update

~~Session#1: January 15, 2020 from 1-3pm ET - <http://ibm.biz/Liberty-Jan15>~~

Session#2: January 22, 2020 from 9-11am ET - <http://ibm.biz/Liberty-Jan22>

Liberty 20.0.0.1-3 Update

Session#1: April 8, 2020 from 1-3pm ET - <http://ibm.biz/Liberty-Apr08>

Session#2: April 22, 2020 from 9-11am ET - <http://ibm.biz/Liberty-Apr22>

WebSphere & IBM Cloud Pak for Applications Customer Advisory Board

all customers welcome

<http://ibm.biz/WebSphereAdvisoryBoard>

email: claudiab@us.ibm.com

OPEN invitation

Join 140 other companies

Be part of customer round tables and deep dive meetings

New engagements tracks added.

Reach out to find out more!

Choose your engagement level:

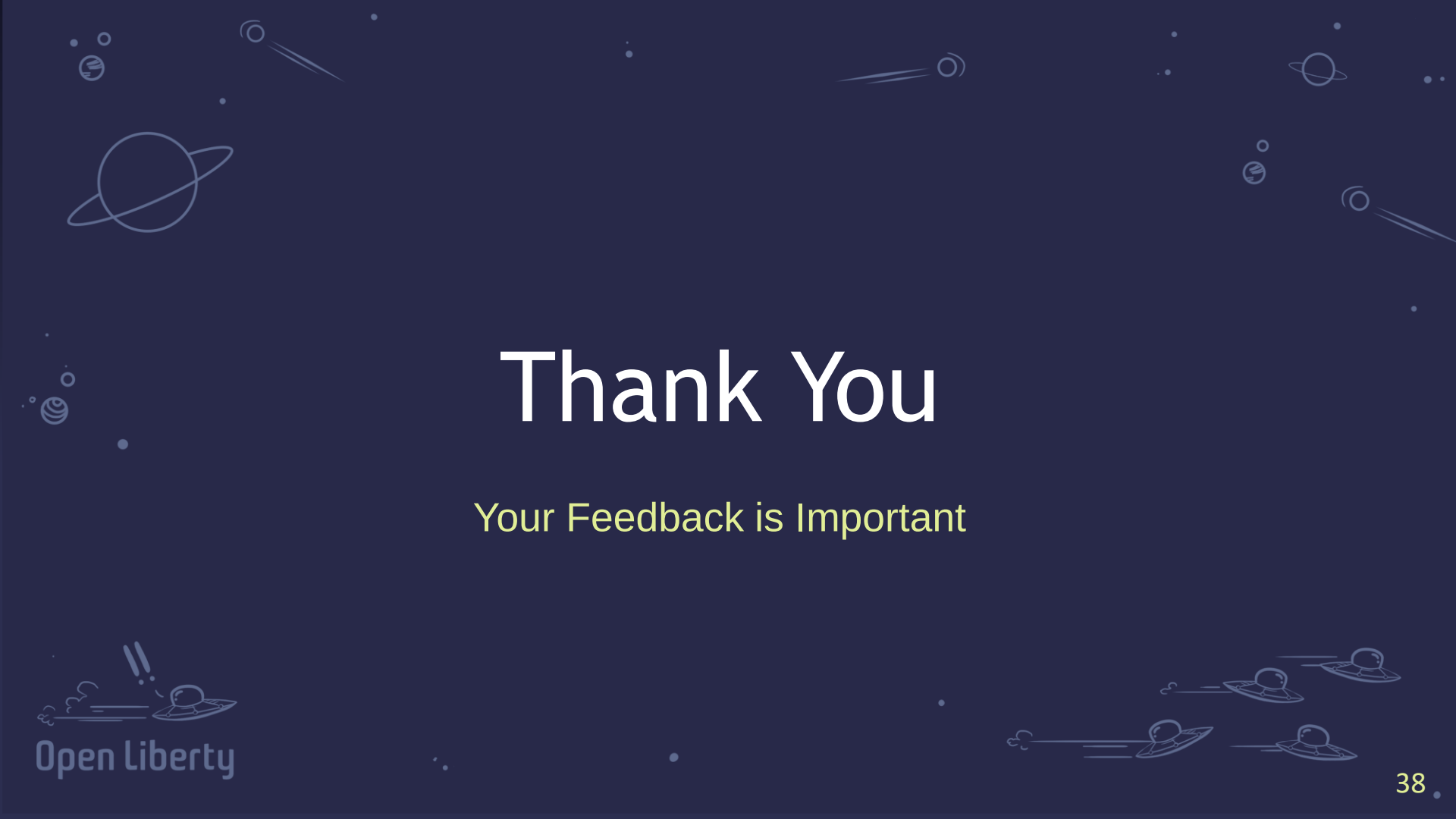
1. **Fly on the wall – NEW****
2. **Stay ahead of the curve:** more time commitment
3. **Close the gap:** quarterly involvement
4. **At your own pace:** impact longer term goals



IBM meets you wherever you are - get involved and be successful.

Questions?

<http://stackoverflow.com/questions/tagged/websphere-liberty>
alasdair@us.ibm.com



Thank You

Your Feedback is Important