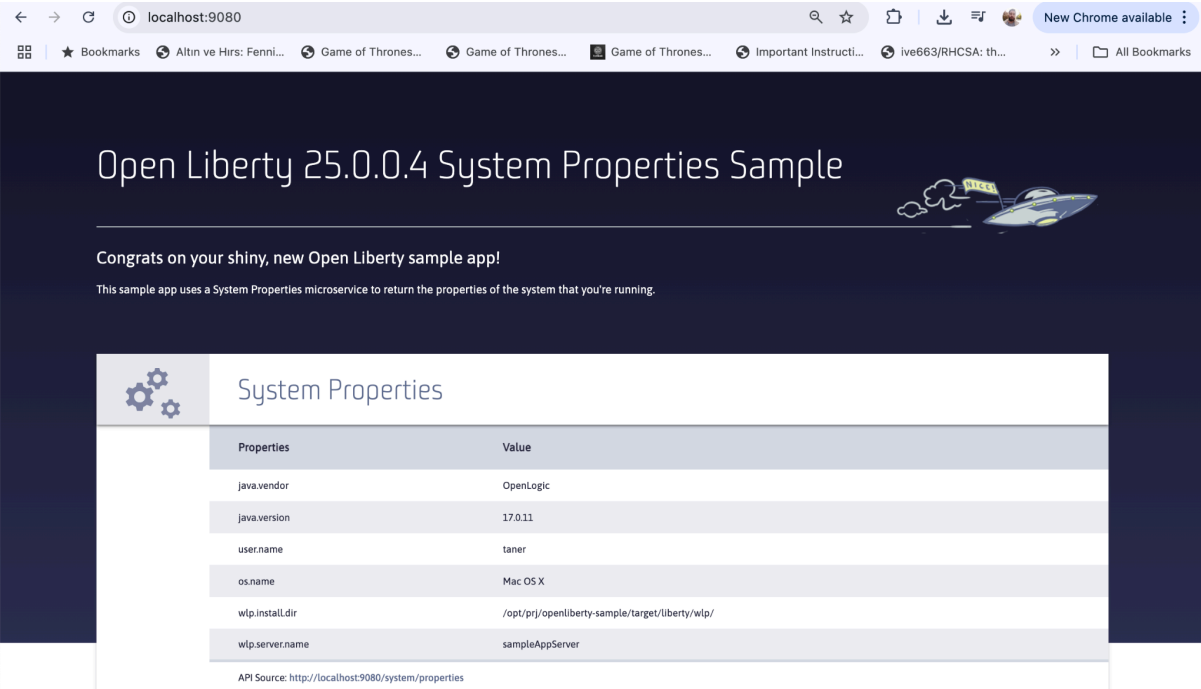Schlank, flexible und effizient.

Open Liberty 25.0.0.4 System Properties Sample

Congrats on your shiny, new Open Liberty sample app!

This sample app uses a System Properties microservice to return the properties of the system that you're running.

System Properties

Properties	Value
java.vendor	OpenLogic
java.version	17.0.11
user.name	taner
os.name	Mac OS X
wlp.install.dir	/opt/prj/openliberty-sample/target/liberty/wlp/
wlp.server.name	sampleAppServer

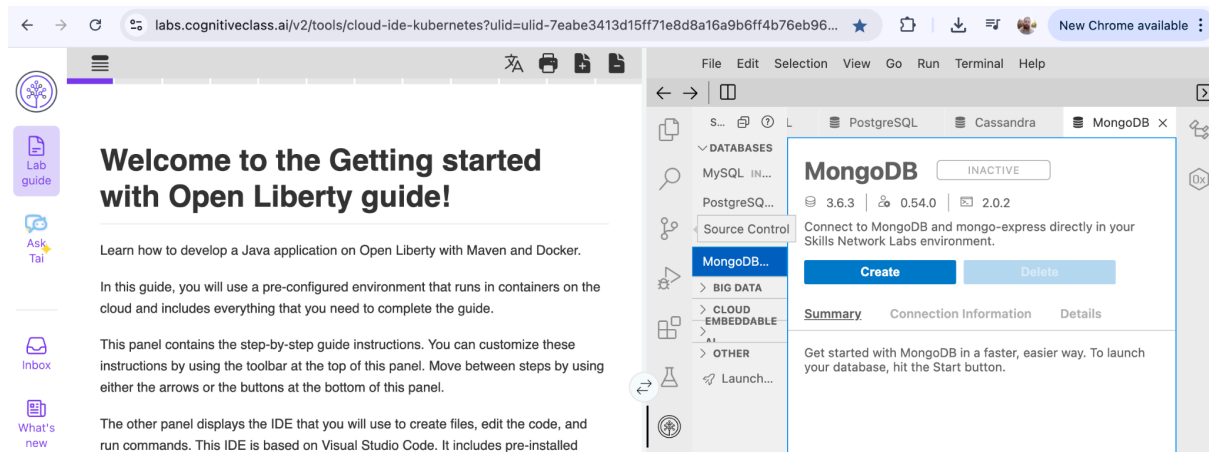API Source: http://localhost:9080/system/properties


```
[INFO] [AUDIT   ] CWWKF0012I: The server installed the following features: [cdi-4.0, distributedMap-1.0, jndi-1.0, json-1.0, jsonb-3.0, jsonp-2.1, monitor-1.0, mpConfig-3.1, mpHealt
h-4.0, mpMetrics-5.1, restfulWS-3.1, restfulWSClient-3.1, ssl-1.0, transportSecurity-1.0].
[INFO] [AUDIT   ] CWWKF0011I: The sampleAppServer server is ready to run a smarter planet. The sampleAppServer server started in 8.768 seconds.
[INFO] CWWKM2015I: Match number: 1 is [27/04/2025, 13:12:46:764 CEST] 00000027 com.ibm.ws.kernel.feature.internal.FeatureManager         A CWWKF0011I: The sampleAppServer server
is ready to run a smarter planet. The sampleAppServer server started in 8.768 seconds..
[INFO]
[INFO] ****************************************************
[INFO] *    Liberty is running in dev mode.
[INFO] *        Automatic generation of features: [ Off ]
[INFO] *        h - see the help menu for available actions, type 'h' and press Enter.
[INFO] *        q - stop the server and quit dev mode, press Ctrl-C or type 'q' and press Enter.
[INFO] *
[INFO] *    Liberty server port information:
[INFO] *        Liberty server HTTP port: [ 9080 ]
[INFO] *        Liberty server HTTPS port: [ 9443 ]
[INFO] *        Liberty debug port: [ 7777 ]
[INFO] ****************************************************
[INFO] Source compilation was successful.
[INFO] Tests compilation was successful.
[INFO] [AUDIT   ] CWWKT0017I: Web application removed (default_host): http://192.168.178.20:9080/
[INFO] [AUDIT   ] CWWKZ0009I: The application io.openliberty.sample.getting.started has stopped successfully.
[INFO] [AUDIT   ] CWWKT0016I: Web application available (default_host): http://192.168.178.20:9080/
[INFO] [AUDIT   ] CWWKZ0003I: The application io.openliberty.sample.getting.started updated in 0.383 seconds.
[INFO] [ERROR   ] CWWKO0801E: The SSL connection cannot be initialized from the 0:0:0:0:0:0:0:1 host and 9.443 port on the remote client to the 0:0:0:0:0:0:0:1 host and 50.599 port
on the local server. Exception: javax.net.ssl.SSLException: The WebSphere server received an unencrypted inbound communication on a secure connection.  This does not indicate a prob
lem with the WebSphere server. To resolve the issue, configure the client to use SSL or to connect to a port on the WebSphere server that does not require SSL.
[INFO]   at com.ibm.ws.channel.ssl.internal.SSLHandshakeErrorTracker.noteHandshakeError(SSLHandshakeErrorTracker.java:88)
[INFO]   at [internal classes]
[INFO]
```

Tutorials:

https://openliberty.skillsnetwork.site/courses

https://labs.cognitiveclass.ai/v2/tools/cloud-ide-kubernetes?ulid=ulid-7eabe3413d15ff71e8d8a16a9b6ff4b76eb9635a

https://youtu.be/B11e0NSENAA

IBM MQ: docker pull ibmcom/mq
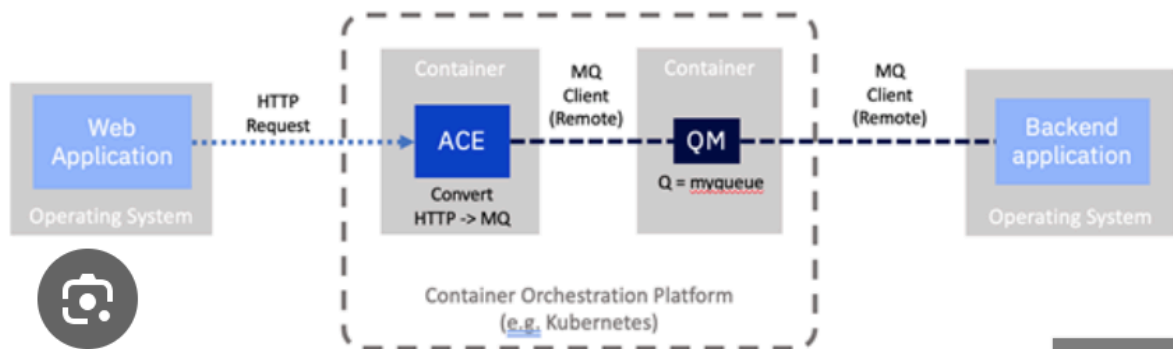Producer.java, Consumer.java -> src/main/java/io/openliberty/sample/messaging/

IBM DataPower: docker pull ibmcom/datapower
docker run -d -p 5550:5550 -p 443:443 --name datapower ibmcom/datapower

AppConnect Enterprise: HTTP/REST API -> ConfigResource.java , SystemResource.java.
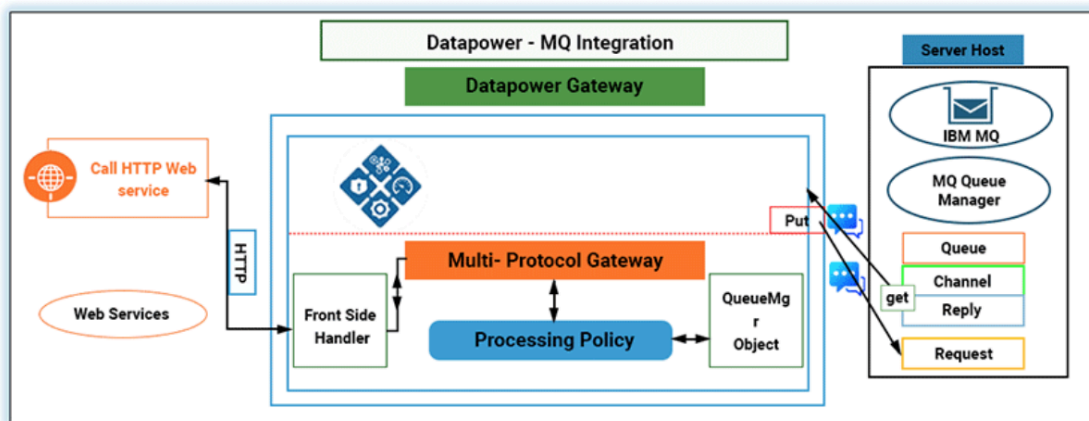Create flow using toolkit

https://community.ibm.com/community/user/wasdevops/blogs/kok-sing-khong/2022/10/31/configure-websphere-liberty-application-to-put-a-m

Datapower integration with MQ

(Client Browser / Postman)
    |
[DataPower]
    |
[App Connect Enterprise]
    |
[IBM MQ]
    |
[Open Liberty App]

🔥 Quick Roadmap (Order)

Step	Technology	Goal
1	IBM MQ	Send/Receive messages
2	App Connect	Simple Flow HTTP ↔ MQ
3	DataPower	API Gateway for your app

Use: podman for a more lightweight system. -not available on younger MacOs versions–..

ic login –sso

No resource group targeted, use 'ibmcloud target -g RESOURCE_GROUP'

```
taner@mbp openliberty-sample % ic login --sso
API endpoint: https://cloud.ibm.com
Region: eu-de

Get a one-time code from https://identity-3.us-south.iam.cloud.ibm.com/identity/passcode to proceed.
Open the URL in the default browser? [Y/n] > Y
One-time code >
Authenticating...
OK

Targeted account FixHub (df24a7ff1a68462b9c9f48124c5396f5) <-> 3027271


API endpoint:      https://cloud.ibm.com
Region:            eu-de
User:              stanermetin@gmail.com
Account:           FixHub (df24a7ff1a68462b9c9f48124c5396f5) <-> 3027271
Resource group:    No resource group targeted, use 'ibmcloud target -g RESOURCE_GROUP'
taner@mbp openliberty-sample %
```

ic target -g a8a9bc4e1a82415abf1689f0*******
ic iam oauth-tokens (update auth tokes)
ibmcloud plugin install container-registry

ibmcloud cr region-set eu-de
ic cr login

9443 Control Tower

MQ:

docker pull icr.io/ibm-messaging/mq:latest

docker run --env LICENSE=accept --env MQ_QMGR_NAME=QM1 --volume qm1data:/mnt/mqm
--publish 1414:1414 --publish 9444:9444 --detach --env MQ_APP_USER=app --env
MQ_APP_PASSWORD=passw0rd --env MQ_ADMIN_USER=admin --env MQ_ADMIN_PASSWORD=passw0rd
--name QM1 icr.io/ibm-messaging/mq:latest

docker exec -ti QM1 bash
docker logs QM1
cat /var/mqm/qmgrs/QM1/errors/AMQERR01.LOG

```
2025-04-27T18:09:44.156Z CWWKS9122I: For URL /* in application com.ibm.mq.console, the following HTTP methods are uncovered, and accessible: POST PUT DELETE HEAD OPTIONS TRACE
2025-04-27T18:09:44.828Z Started web server
2025-04-27T18:09:44.589Z MQWB0400E: The MFT REST API is not enabled.
2025-04-27T18:09:44.596Z MQWB0023I: MQ REST API level: p942-L250214
2025-04-27T18:09:44.632Z MQWB0318I: The mqweb server is configured for 'LOCAL' queue manager REST messaging.
2025-04-27T18:09:44.635Z CWPKI0803A: SSL certificate created in 8.509 seconds. SSL key file: /mnt/mqm/data/web/installations/Installation1/servers/mqweb/resources/security/key.jks
2025-04-27T18:09:44.635Z CWWKZ0001I: Application com.ibm.mq.rest started in 8.563 seconds.
2025-04-27T18:09:44.636Z Successfully loaded default keystore: /mnt/mqm/data/web/installations/Installation1/servers/mqweb/resources/security/key.jks of type: JKS
2025-04-27T18:09:44.717Z CWWKZ0001I: Application com.ibm.mq.console started in 8.645 seconds.
2025-04-27T18:09:44.790Z CWWKF0012I: The server installed the following features: [appSecurity-2.0, applicationMonitorMQ-1.0, basicAuthenticationMQ-1.0, concurrent-1.0, distributedM
ap-1.0, jaxrs-2.1, jaxrsClient-2.1, jndi-1.0, jsonp-1.1, servlet-4.0, ssl-1.0, websocket-1.0].
2025-04-27T18:09:44.791Z CWWKF0008I: Feature update completed in 17.577 seconds.
2025-04-27T18:09:44.792Z CWWKF0011I: The mqweb server is ready to run a smarter planet. The mqweb server started in 24.158 seconds.
2025-04-27T18:09:44.866Z CWWKO0219I: TCP Channel defaultHttpEndpoint-ssl has been started and is now listening for requests on host * (IPv6) port 9443.
2025-04-27T18:09:44.874Z CWWKT0016I: Web application available (default_host): https://5d2f0dac6169:9443/ibmmq/console/
2025-04-27T18:09:44.882Z CWWKT0016I: Web application available (default_host): https://5d2f0dac6169:9443/ibmmq/rest/
2025-04-27T18:09:44.890Z CWWKT0016I: Web application available (default_host): https://5d2f0dac6169:9443/ibmmq/console/internal/
taner@mbp openliberty-sample %
```

Queue manager QM1
  ● Queue DEV.QUEUE.1
  ● Channel: DEV.APP.SVRCONN

- Listener: SYSTEM.LISTENER.TCP.1 on port 1414


```
taner@mbp openliberty-sample % docker exec -ti QM1 bash
bash-5.1$ dspmqver
Name:          IBM MQ
Version:       9.4.2.0
Level:         p942-L250214
BuildType:     IKAP - (Production)
Platform:      IBM MQ for Linux (x86-64 platform)
Mode:          64-bit
O/S:           Linux 6.6.31-linuxkit
O/S Details:   Red Hat Enterprise Linux 9.5 (Plow)
InstName:      Installation1
InstDesc:      IBM MQ V9.4.2.0 (Unzipped)
Primary:       N/A
InstPath:      /opt/mqm
DataPath:      /mnt/mqm/data
MaxCmdLevel:   942
LicenseType:   Developer
ReleaseType:   Continuous Delivery (CD)
```

MQ will queue messages ✉

ACE can **pick messages from MQ, transform them, call APIs,** and **push results somewhere.**

ACE:

echo
"eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJJQk0gTWFya2V0cGxhY2UiLCJpYXQiOjE3N
DU3ODAyNjcsImp0aSI6IjA1YWMzYjhjMTQ2YzQxM2Q4ODhkNzA0ZWNjYzh1ZTQzIn0.Hn0jp6MsYUjF75o7
dq3U_cvTu-md88BHibw-2frl-" | docker login cp.icr.io -u cp --password-stdin

```
docker network create ace-mq-netwrork
docker network connect ace-mq-network ibm-mq
docker pull cp.icr.io/appc/ace-server-prod:latest
docker scout quickview cp.icr.io/appc/ace-server-prod:latest
```



```
taner@mbp openliberty-sample % ic cr login
Logging 'docker' in to 'de.icr.io'...
Logged in to 'de.icr.io'.

OK
```



```
taner@mbp openliberty-sample % docker scout quickview cp.icr.io/appc/ace-server-prod:latest
  i New version 1.17.1 available (installed version is 1.9.3) at https://github.com/docker/scout-cli
  ✗ Pull failed
ERROR  Status: failed to get image cp.icr.io/appc/ace-server-prod:latest: failed to pull image cp.icr.io/appc/ace-server-prod:latest: GET https://cp.icr.io/v2/appc/ace-server-prod/
manifests/latest: DENIED: You are not authorized to access this resource. See https://www.ibm.com/docs/en/cloud-paks/1.0?topic=clusters-managing-entitlements#FAQ; [map[Action:pull
lass: Name:appc/ace-server-prod_Type:repository]], Code: 1
```

DataPower:
ic cr namespaces
Both ACE and DataPower come with paid subscriptions.

Alternatives: **Apache Camel** (open-source integration framework)

MuleSoft (another enterprise integration platform)

Red Hat Fuse (another container-based integration solution)

jms-guide:
git clone https://github.com/openliberty/guide-jms-intro.git
mvn -pl models clean install
mvn -pl inventory liberty:run

mvn -pl system liberty:run

sudo lsof -iTCP -sTCP:LISTEN -P -n | grep 7277
curl http://localhost:9081/inventory/systems

mvn -pl inventory liberty:run
mvn -pl system liberty:dev

| InventoryQueueListener.java | inventory/server.xml | SystemService.java | system/server.xml |

system/src/main/liberty/config/server.xml

[System App] ---(sends JMS Message)---> [Inventory App]

Received:

[INFO] [INFO   ] {"hostname":"mbp","recentLoad":0.25132275132275134}
[INFO] [INFO   ] {"hostname":"mbp","recentLoad":0.1977077363896848}
[INFO] [INFO   ] {"hostname":"mbp","recentLoad":0.25748502994011974}
[INFO] [INFO   ] {"hostname":"mbp","recentLoad":0.09004739336492891}
[INFO] [INFO   ] {"hostname":"mbp","recentLoad":0.10702341137123746}
[INFO] [INFO   ] {"hostname":"mbp","recentLoad":0.31640625}
[INFO] [INFO   ] {"hostname":"mbp","recentLoad":0.300411522633744}
[INFO] [INFO   ] {"hostname":"mbp","recentLoad":0.1965065502183406}
[INFO] [INFO   ] {"hostname":"mbp","recentLoad":0.08071748878923767}

[INFO] [INFO   ] Host mbp was updated: 0.074
[INFO] [INFO   ] Host mbp was updated: 0.2289156626506024
[INFO] [INFO   ] Host mbp was updated: 0.06201550387596899
[INFO] [INFO   ] Host mbp was updated: 0.10978043912175649
[INFO] [INFO   ] Host mbp was updated: 0.05788423153692615
[INFO] [INFO   ] Host mbp was updated: 0.6503378378378378
[INFO] [INFO   ] Host mbp was updated: 0.8581436077057794
[INFO] [INFO   ] Host mbp was updated: 0.9597457627118644
[INFO] [INFO   ] Host mbp was updated: 0.30217391304347824
[INFO] [INFO   ] Host mbp was updated: 0.4126637554585153
[INFO] [INFO   ] Host mbp was updated: 0.5325842696629214
[INFO] [INFO   ] Host mbp was updated: 0.08904109589041095
[INFO] [INFO   ] Host mbp was updated: 0.3695150115473441
[INFO] [INFO   ] Host mbp was updated: 0.3240556660039761
[INFO] [INFO   ] Host mbp was updated: 0.3136792452830189
[INFO] [INFO   ] Host mbp was updated: 0.11835748792270531
[INFO] [INFO   ] Host mbp was updated: 0.06361323155216285
[INFO] [INFO   ] Host mbp was updated: 0.112565445026178
[INFO] [INFO   ] Host mbp was updated: 0.25132275132275134
[INFO] [INFO   ] Host mbp was updated: 0.1977077363896848
[INFO] [INFO   ] Host mbp was updated: 0.25748502994011974
[INFO] [INFO   ] Host mbp was updated: 0.09004739336492891
[INFO] [INFO   ] Host mbp was updated: 0.10702341137123746

Pretty-print ☐

[{"hostname":"mbp","systemLoad":0.2359081419624217}]