# Application Modernization Sample
# From Java EE in 2010 to Cloud-Native in 2021

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IBM

# Why ?

1. More Agility
2. Better User Experiences
3. Reduced Costs

# Strategies

# Strategies

1. Retire

# Strategies

1. Retire
2. Don’t touch

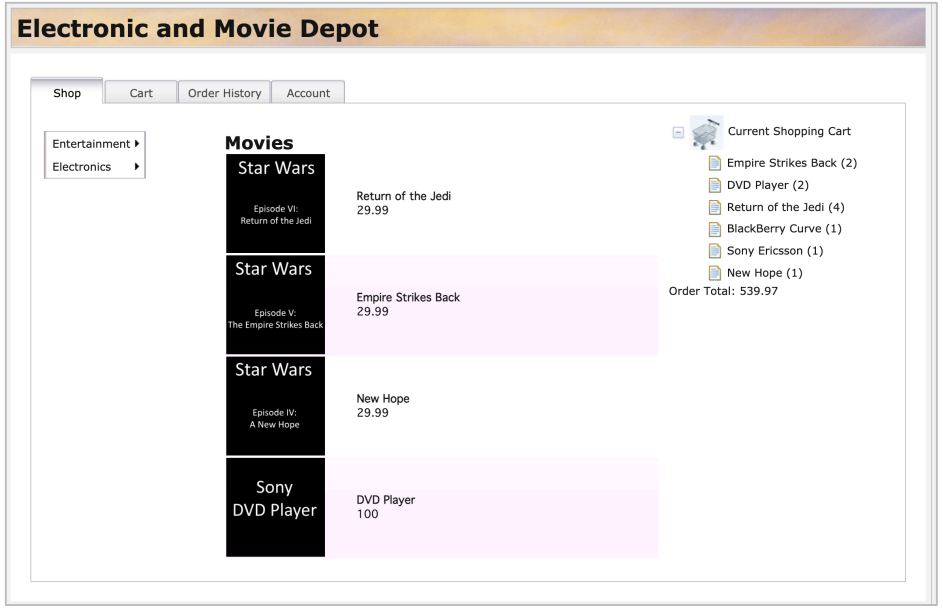
# Strategies

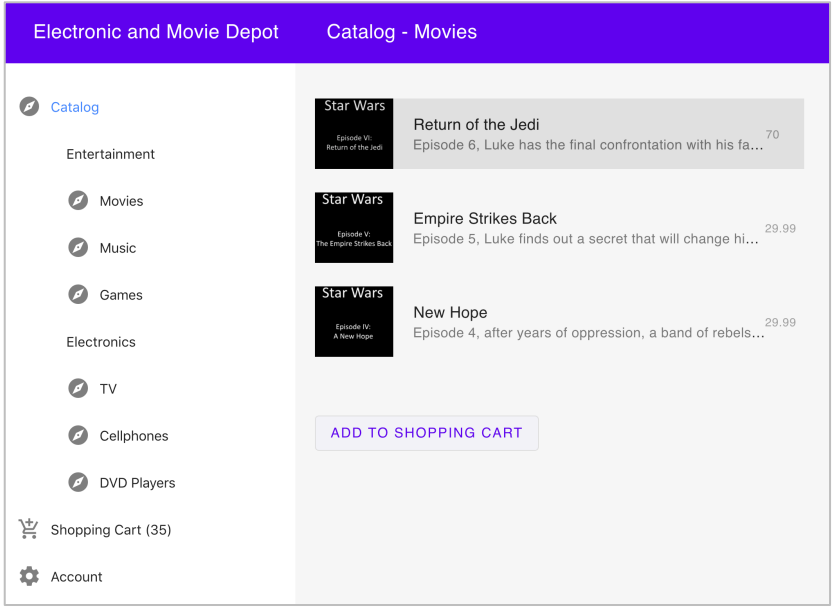
1. Retire
2. Don’t touch
3. Lift and shift

# Strategies

1. Retire
2. Don’t touch
3. Lift and shift
4. Containerize
5. Refactor

# Sample Application



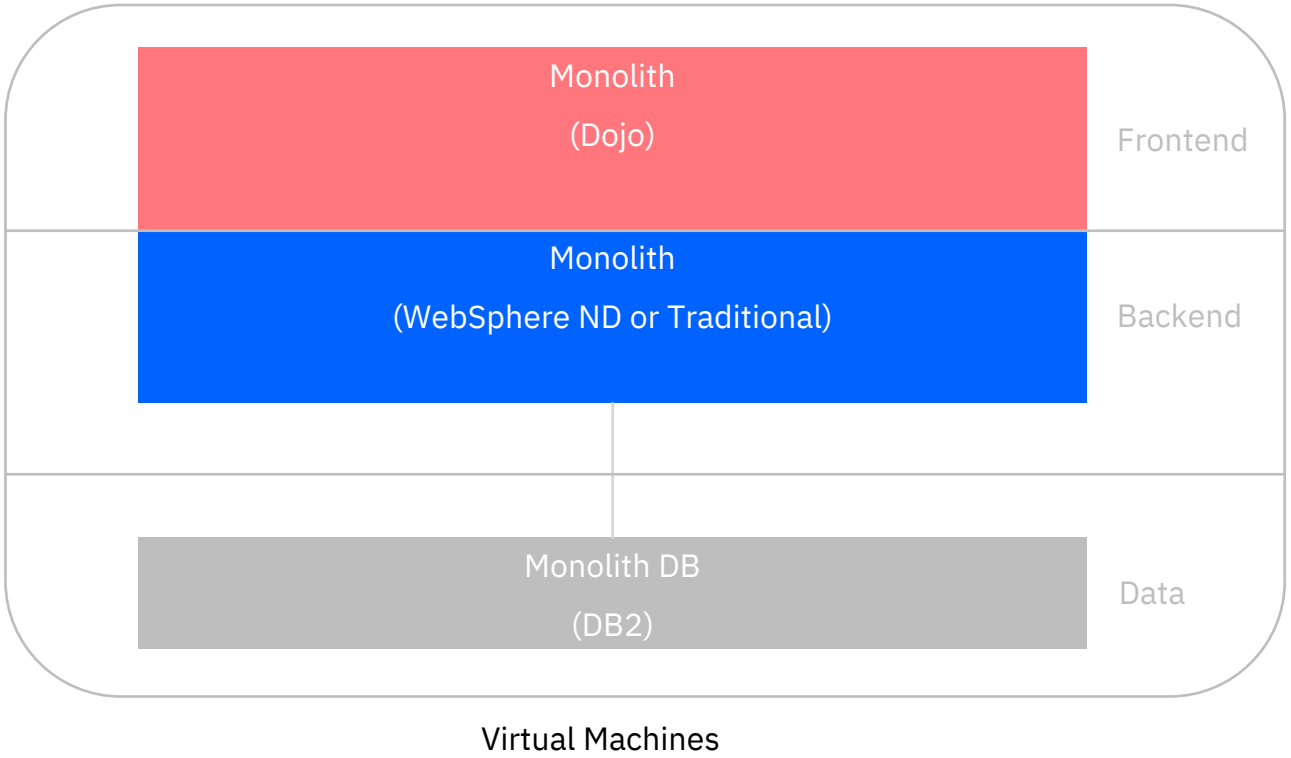
# Application Modernization is a Journey.

# Take Baby Steps!

# Steps

1. WebSphere Traditional 8.5.5 in VM
2. WebSphere Traditional 9 in container
3. WebSphere Liberty monolith
4. Separated frontend
5. Open Liberty monolith
6. Strangled Service and Open Liberty monolith
7. Strangled Service and Quarkus monolith
8. Micro Frontends

# Starting Point: Monolith running in VMs



# IBM Cloud Transformation Advisor

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IBM Garage Methodology

Log in

## IBM Cloud Transformation Advisor

You can use IBM Cloud Transformation Advisor to analyze your on-premises workloads for modernization. Determine the complexity of your applications, estimate the development cost to move to the cloud, and get recommendations for the best target environment. Run Transformation Advisor Local on your desktop until you have a Red Hat OpenShift cluster deployed.

Try Transformation Advisor Local

# IBM WebSphere Application Migration Toolkit



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## IBM WebSphere Application Server Migration Toolkit

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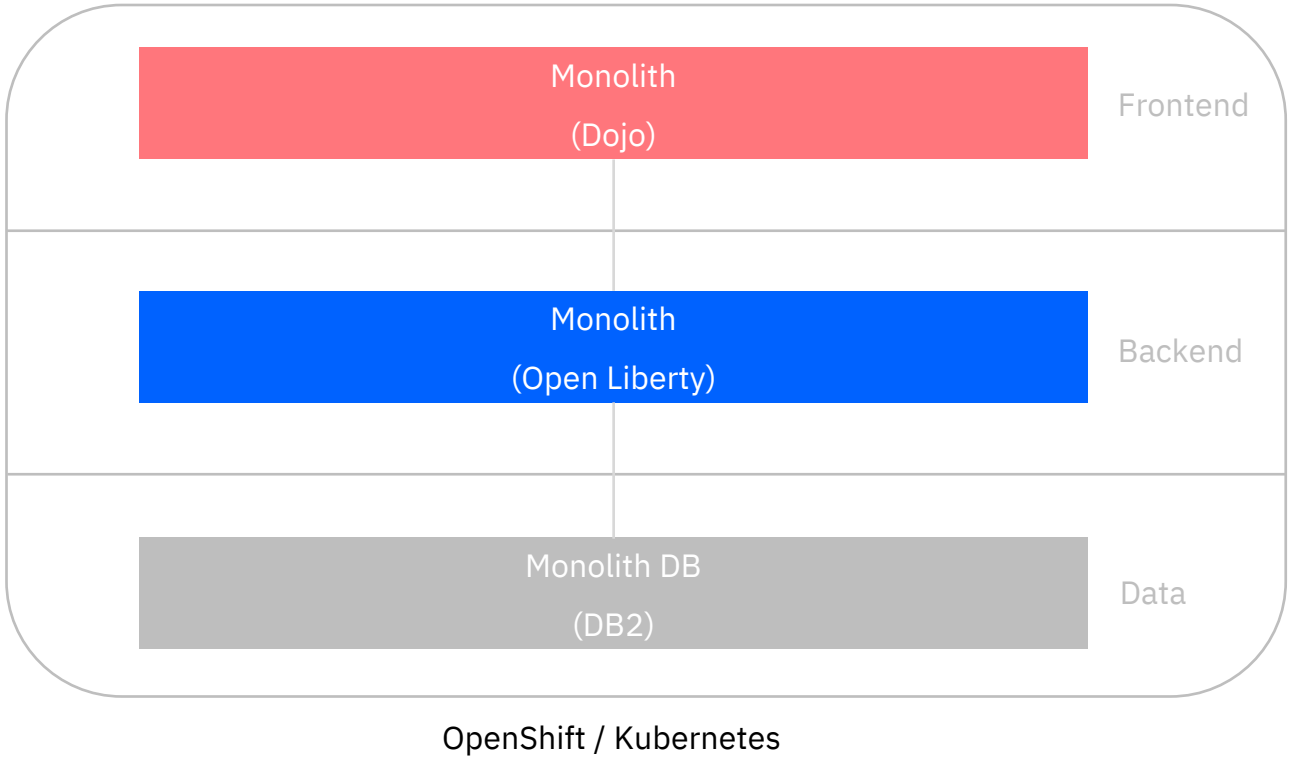
The IBM® WebSphere® Application Server Migration Toolkit is a suite of tools and knowledge collections that enables your organization to quickly and cost-effectively migrate to WAS Liberty and WebSphere Application Server V8, V8.5.5 or V9, whether from a previous version of WebSphere Application Server or competitive application servers including Apache Tomcat Server, JBoss Application Server, Oracle Application Server, and Oracle® WebLogic Server. It features cloud migration rules for running your application on Liberty for Java on IBM Bluemix and other third-party PaaS environments such as Cloud Foundry. This Eclipse Marketplace solution combines all our Eclipse-based migration tools in one easy installation. The WebSphere Version to Version Application Migration Tool enables organizations deploying to Liberty or traditional WebSphere Application Server to more easily migrate applications from WebSphere Application Server V5.1 and later. Upgrading to a more recent version of WebSphere Application Server is of course less time-consuming than migrating from another application server, given that IBM has made significant investments in upward compatibility, configuration, and management process upgrades, as well as API preservation and consistency between versions. However, in some cases, applications must be changed in order to support or exploit new levels of industry standard specifications delivered with new versions of WebSphere Application Server. Go to the WebSphere migration tools download page to download this tool and the command line binary scanner.

# Step 5: Open Liberty Monolith



# Huge Advantage of Jakarta Enterprise Edition:

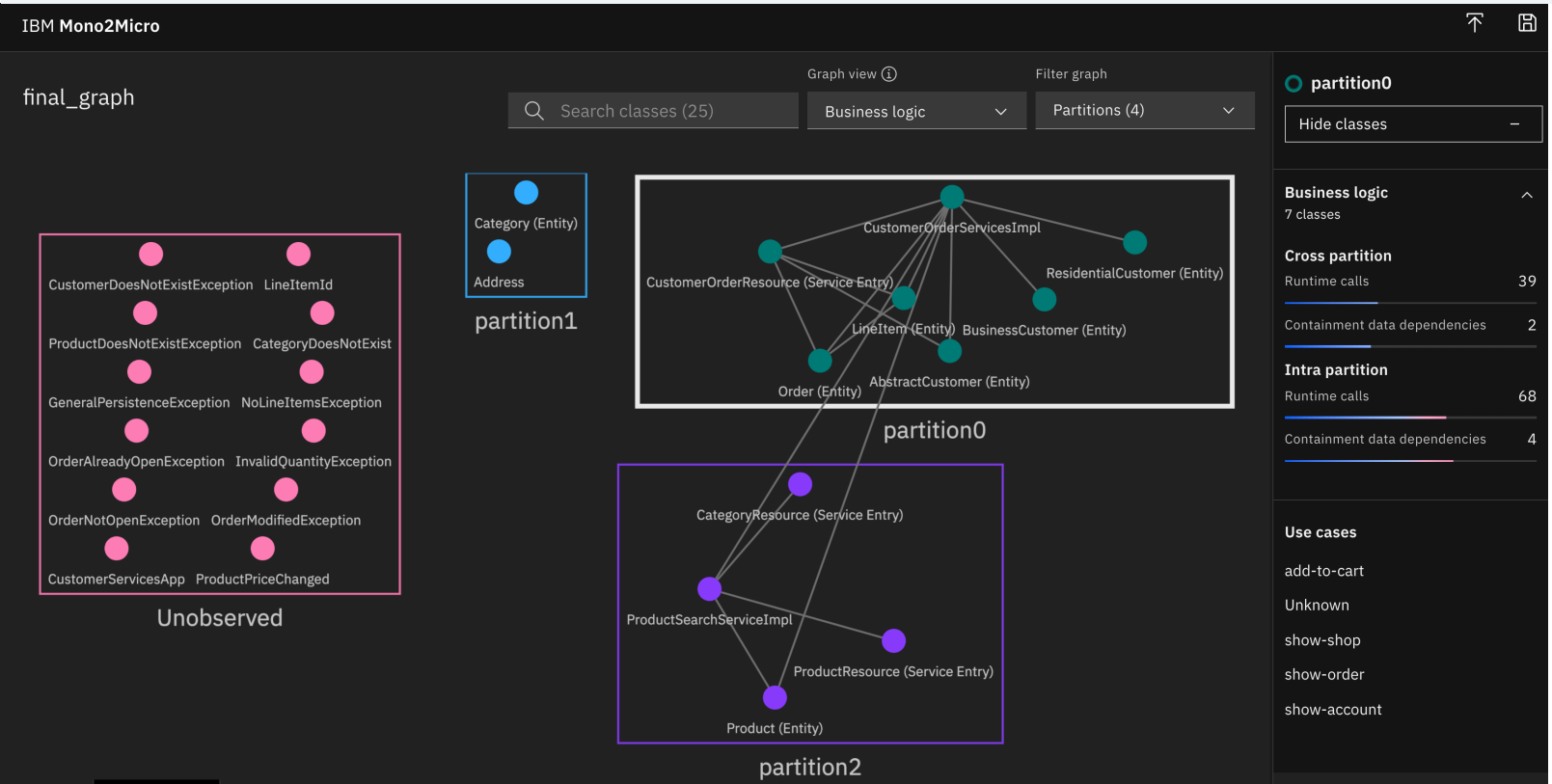
# Upwards Compatibility!

# Monoliths are not evil !

# Use the Strangler Pattern to modernize Applications in Stages !

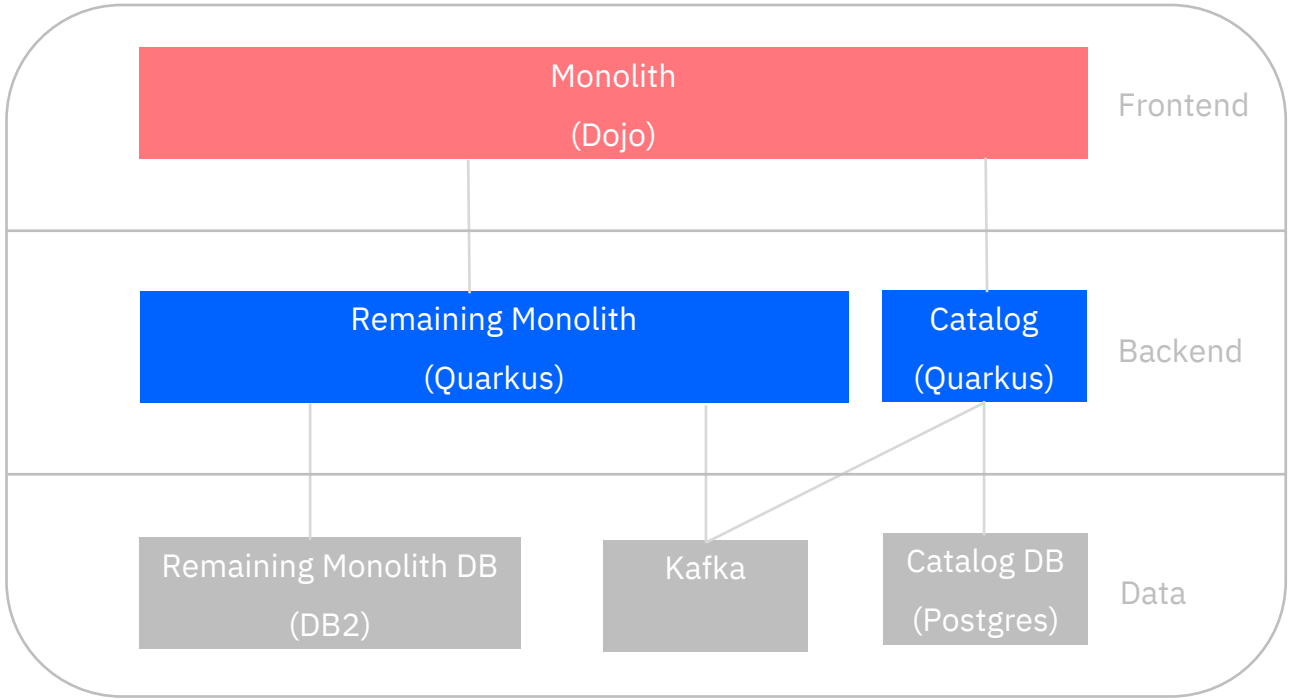
# Don’t build distributed Monoliths !

# IBM Mono2Micro



# Use event driven architectures to de-couple microservices !

# Step 7: Strangled Catalog Service and Quarkus Monolith

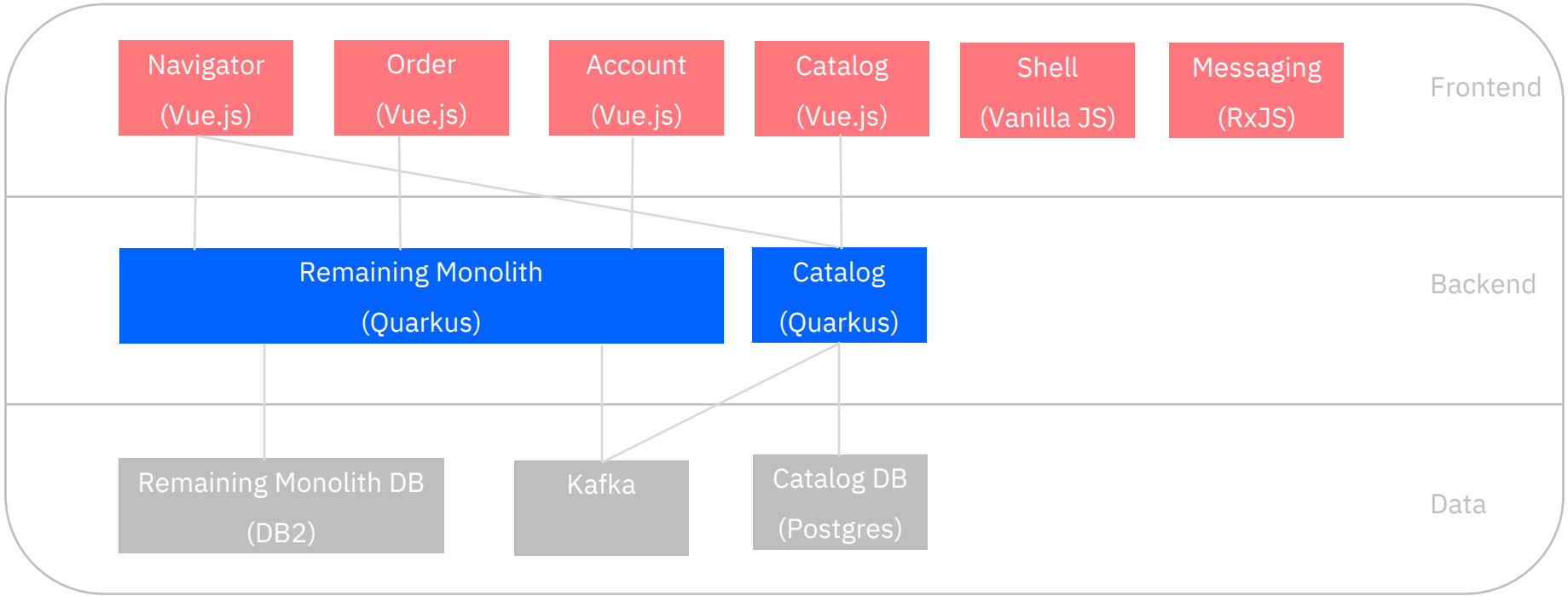


OpenJ9 uses less memory.

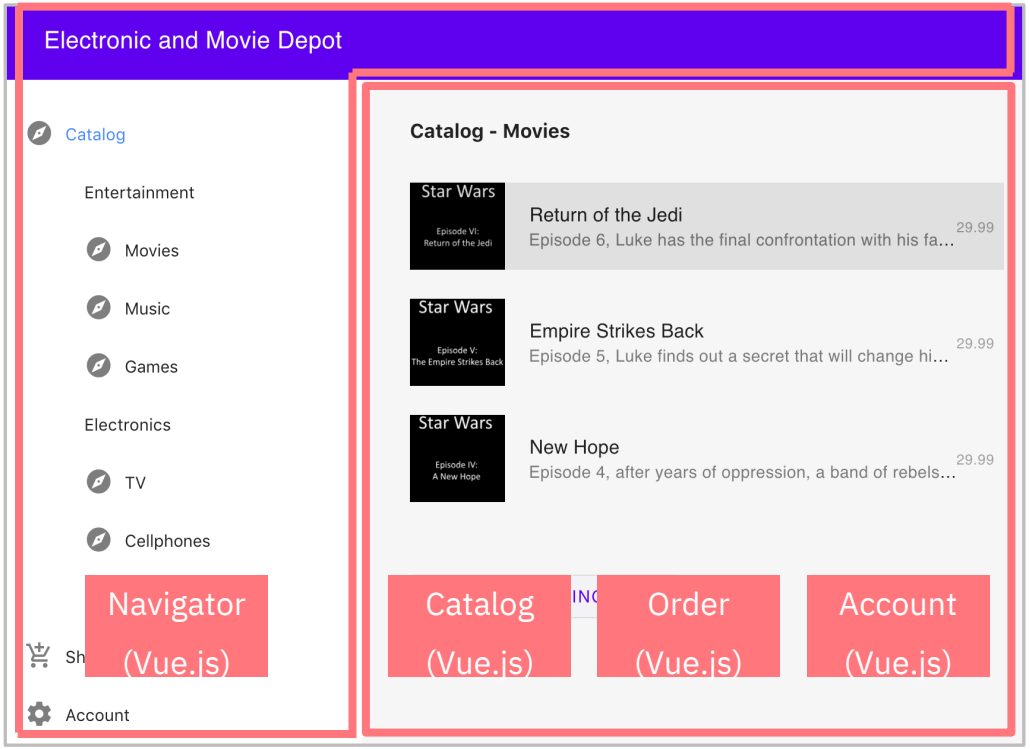
Reactive technologies require less resources.

# Don’t build microservices with monolithic frontends

# Step 8: Micro Frontends



# Step 8: Micro Frontends

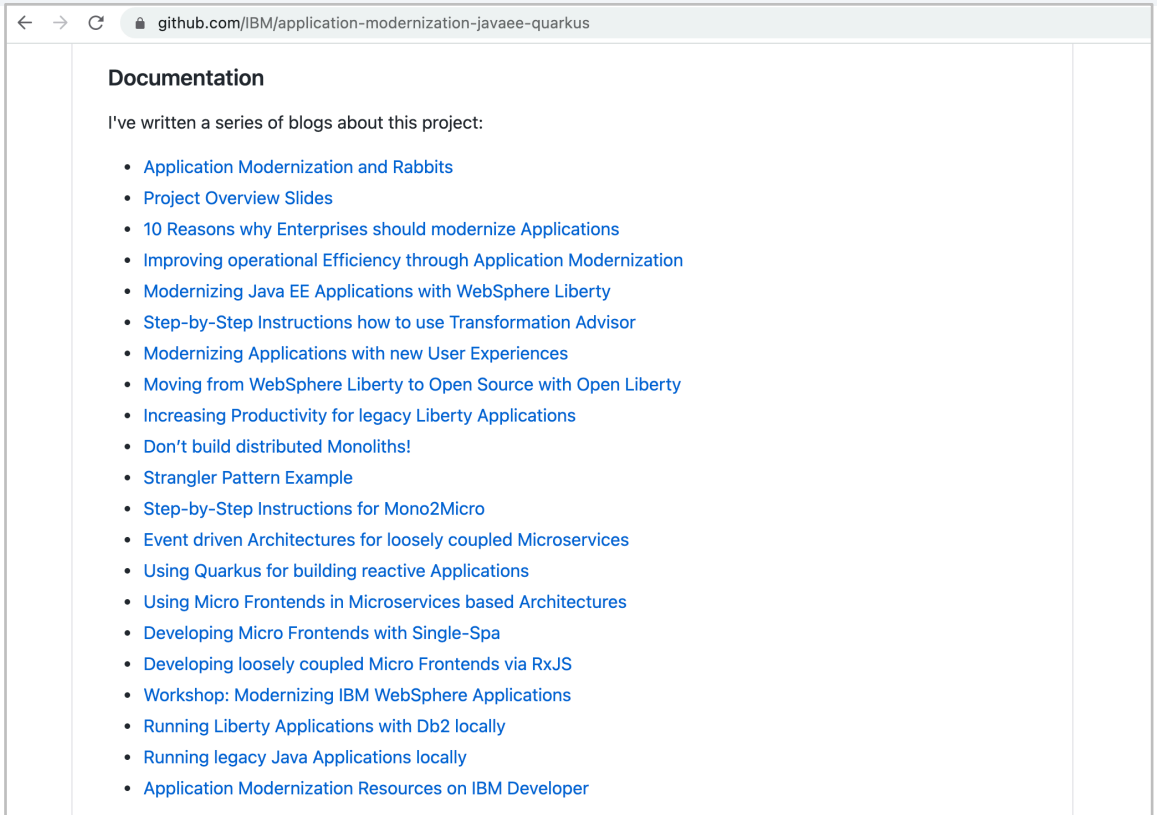



Shell (Vanilla JS)

Messaging (RxJS)

# Try out the example yourself !

# Documentation



# Get Started

github.com/IBM/application-modernization-javaee-quarkus

## TL;DR

If you want to run the modernized application locally, you can invoke the following commands. All you need is a local Docker installation and the git CLI.

Notes:

- Docker requires 12 GB memory and 8 CPUs
- It takes roughly 15 - 20 minutes to start everything

```
$ git clone https://github.com/nheidloff/application-modernization-javaee-quarkus.git && cd applicat
$ ROOT_FOLDER=$(pwd)
$ sh ${ROOT_FOLDER}/scripts-docker/build-and-run.sh
```

The 'build-and-run.sh' script will launch the following containers.

```
Niklass-MBP-2:application-modernization-javaee-quarkus nheidloff$ docker ps -a --format "table {{.ID}}\t{{.Image}}\t{{.Status}}\t{{.Names}}\t{{.Ports}}"
CONTAINER ID   IMAGE                              STATUS              NAMES\PORTS
c3312ecd5dd3   storefront-mf-navigator            Up 2 minutes        storefront-mf-navigator\0.0.0.0:8501->80/tcp
05a346cf8294   storefront-mf-catalog              Up 2 minutes        storefront-mf-catalog\0.0.0.0:8503->80/tcp
9f494dd48699   storefront-mf-account              Up 2 minutes        storefront-mf-account\0.0.0.0:8502->80/tcp
d71a15f941a3   storefront-mf-messaging            Up 2 minutes        storefront-mf-messaging\0.0.0.0:9001->80/tcp
7bae069e9ec0   storefront-mf-order                Up 2 minutes        storefront-mf-order\0.0.0.0:8504->80/tcp
88322643c884   storefront-mf-shell                Up 2 minutes        storefront-mf-shell\0.0.0.0:8080->80/tcp
801998b980d7   storefront-frontend                Up 41 minutes       storefront-frontend\0.0.0.0:9081->9080/tcp, 0.0.0.0:9444->9443/tcp
e8ddb65d11bc   proxy-nginx                        Up 41 minutes       proxy-nginx\0.0.0.0:80->80/tcp, 0.0.0.0:443->443/tcp
9797fe9866e7   storefront-backend-quarkus         Up 41 minutes       storefront-backend-quarkus\0.0.0.0:9082->8080/tcp, 0.0.0.0:9445->9443/tcp
e48926b11e83   storefront-catalog-reactive        Up 41 minutes       storefront-catalog-reactive\8778/tcp, 9779/tcp, 0.0.0.0:9083->8082/tcp
f8693f1b7fb6   storefront-db2                     Up 45 minutes       storefront-db2\0.0.0.0:5000->5000/tcp, 22/tcp, 0.0.0.0:50000->50000/tcp, 55000/tcp, 60006-60007/tcp, 0.0.0.0:60000->60000/tcp
f5b2a88f4a97   strimzi/kafka:0.19.0-kafka-2.5.0   Up About an hour    kafka\0.0.0.0:9092->9092/tcp
37244d91652d   strimzi/kafka:0.19.0-kafka-2.5.0   Up About an hour    zookeeper\0.0.0.0:2181->2181/tcp
616662364 5f1  postgres                           Up About an hour    postgres\0.0.0.0:5432->5432/tcp
```

# More to come !

# @nheidloff