

# Comparison of Stand-Alone Containerized App vs Clustered Containerized App with OpenShift

## Stand Alone Containerized MariaDB

### 1. Create OS Path for Persistent Volume

```
# mkdir /root/var/lib/mysql
# mount /dev/sdd /root/var/lib/mysql
```

or

### 1. Create Docker Persistent Volume Resource

```
$ docker volume create mariadb-vol
```

### 2. Use Virtual Network (Software Defined Network)

```
docker network create --attachable mariadb-privnet
```

### 3. Run MariaDB Container

```
$ docker container run -d --name wordpressdb \
-e MYSQL_ROOT_PASSWORD='redhat' \
-e MYSQL_DATABASE='wordpress' \
-e MYSQL_USER='wordpress' \
-e MYSQL_PASSWORD='redhat' \

-v /root/var/lib/mysql:/var/lib/mysql \
-v mariadb-vol:/var/lib/mysql \

--network mariadb-privnet \

-p 3306:3306

docker.io/mariadb:latest
```

## Clustered Containerized MariaDB with OpenShift

### 1. Create PersistentVolume

```
$ vi pv-mariadb.yaml
apiVersion: v1
kind: PersistentVolume
metadata:
  name: mariadb-wp-volume
spec:
  accessModes:
    - ReadWriteMany
  capacity:
    storage: 3Gi
  persistentVolumeReclaimPolicy: Recycle
  nfs:
    path: /exports/mariadb-wp
    server: services.lab.example.com
```

```
$ oc create -f pv-mariadb.yaml
```

### 2. Create PersistentVolumeClaim

```
$ vi pvc-mariadb.yaml api
version: v1
kind: PersistentVolumeClaim
metadata:
  name: mariadb-wp-claim
  labels:
    name: wordpress
spec:
  accessModes:
    - ReadWriteMany
  resources:
    requests:
      storage: 3Gi
```

```
$ oc create -f pvc-mariadb.yaml
```

### 3. Run oc new-app

```
$ oc new-app --name wordpressdb \
-e MYSQL_ROOT_PASSWORD='redhat' \
-e MYSQL_DATABASE='wordpress' \
-e MYSQL_USER='wordpress' \
-e MYSQL_PASSWORD='redhat' \

docker.io/mariadb:latest
```

### 4. Run oc expose

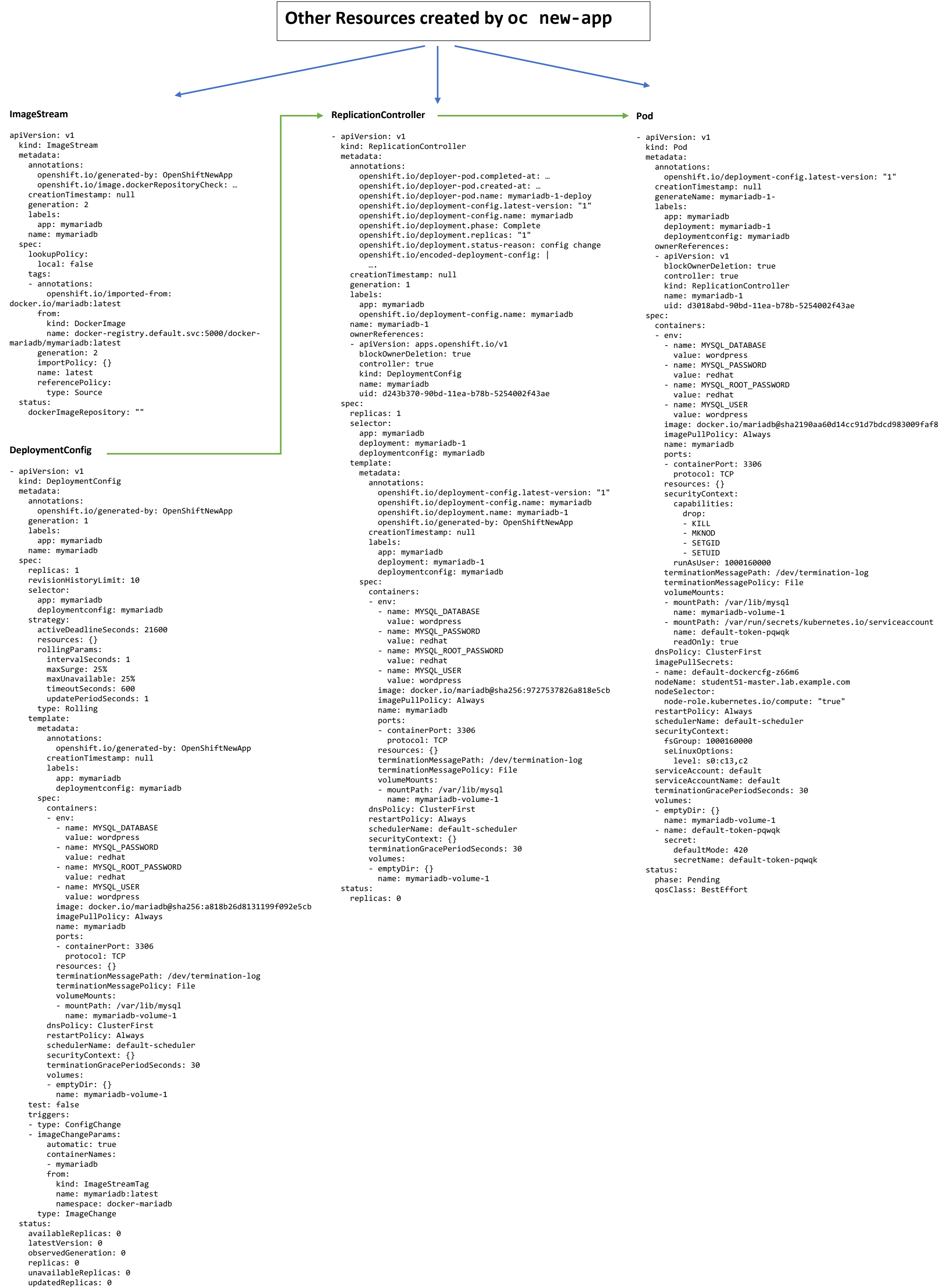
```
$ oc expose svc/mymariadb
```

### Service

```
- apiVersion: v1
kind: Service
metadata:
  annotations:
    openshift.io/generated-by:...
  creationTimestamp: null
  labels:
    app: mymariadb
  name: mymariadb
spec:
  ports:
    - name: 3306-tcp
      port: 3306
      protocol: TCP
      targetPort: 3306
  selector:
    app: mymariadb
  deploymentconfig: mymariadb
  sessionAffinity: None
  type: ClusterIP
status:
  loadBalancer: {}
```

### Route

```
- apiVersion: v1
kind: Route
metadata:
  annotations:
    openshift.io/host.generated: "true"
  creationTimestamp: null
  labels:
    app: mymariadb
  name: mymariadb
spec:
  host: mymariadb-docker-mariadb.router.default.svc.cluster.local
  port:
    targetPort: 3306-tcp
  to:
    kind: Service
    name: mymariadb
    weight: 100
  wildcardPolicy: None
status:
  ingress:
    - conditions:
        - lastTransitionTime: "2020-05-07T23:57:55Z"
          status: "True"
          type: Admitted
      host: mymariadb-docker-mariadb.router.default.svc.cluster.local
      routerName: router
      wildcardPolicy: None
```



Additional Resources for Building Application with S2I

BuildConfig

```
- apiVersion: v1
kind: BuildConfig
metadata:
  annotations:
    openshift.io/generated-by: OpenShiftNewApp
  creationTimestamp: null
  labels:
    app: php-helloworld
    name: php-helloworld
spec:
  failedBuildsHistoryLimit: 5
  nodeSelector: null
  output:
    to:
      kind: ImageStreamTag
      name: php-helloworld:latest
  postCommit: {}
  resources: {}
  runPolicy: Serial
  source:
    git:
      uri: https://github.com/furqanpr/php-helloworld.git
      type: Git
  strategy:
    sourceStrategy:
      from:
        kind: ImageStreamTag
        name: php:7.1
        namespace: openshift
      type: Source
  successfulBuildsHistoryLimit: 5
  triggers:
  - github:
      secret: f8lsLVnZZnQB8aC9usQE
      type: GitHub
  - generic:
      secret: T593WknjrYk9WCdFFBD1
      type: Generic
  - type: ConfigChange
  - imageChange: {}
      type: ImageChange
status:
  lastVersion: 0
```

Build

```
- apiVersion: v1
kind: Build
metadata:
  annotations:
    openshift.io/build-config.name: php-helloworld
    openshift.io/build.number: "1"
    openshift.io/build.pod-name: php-helloworld-1-build
  creationTimestamp: null
  labels:
    app: php-helloworld
    buildconfig: php-helloworld
    openshift.io/build-config.name: php-helloworld
    openshift.io/build.start-policy: Serial
  name: php-helloworld-1
  ownerReferences:
  - apiVersion: build.openshift.io/v1
    controller: true
    kind: BuildConfig
    name: php-helloworld
    uid: 80c2938b-9061-11ea-b78b-5254002f43ae
spec:
  nodeSelector: null
  output:
    pushSecret:
      name: builder-dockercfg-vdqtq
    to:
      kind: ImageStreamTag
      name: php-helloworld:latest
  postCommit: {}
  resources: {}
  revision:
    git:
      author:
        email: 46949889+furqanpr@users.noreply.github.com
        name: furqanpr
        commit: f13fa001fb83f13df9b4aa4b3a8f9c5ad48b511c
        committer:
          email: noreply@github.com
          name: GitHub
        message: Create index.php
      type: Git
    serviceAccount: builder
  source:
    git:
      uri: https://github.com/furqanpr/php-helloworld.git
      type: Git
    strategy:
      sourceStrategy:
        from:
          kind: DockerImage
          name: registry.access.redhat.com/rhsc1/php-71-rhel7@sha256:289ef5852151a1a3ea4fdf2581a86e6d2b8d
        type: Source
    triggeredBy:
      - imageChangeBuild:
          fromRef:
            kind: ImageStreamTag
            name: php:7.1
            namespace: openshift
            imageID: registry.access.redhat.com/rhsc1/php-71-rhel7@sha256:289ef5852151a1a3ea4fdf2581a86a60ada07
          message: Image change
        status:
          config:
            name: php-helloworld
          output:
            to:
              imageDigest: sha256:63349d9891fbb522d9fe500e2043acc3a31c428c9de44f3acbd7b63ac7ea13e6
          outputDockerImageReference: docker-registry.default.svc:5000/php-hellowor1d/php-helloworld:latest
        phase: New
      stages:
      - durationMilliseconds: 1619
        name: FetchInputs
        startTime: "2020-05-07T12:51:51Z"
        steps:
        - durationMilliseconds: 1619
          name: FetchGitSource
          startTime: "2020-05-07T12:51:51Z"
      - durationMilliseconds: 733
        name: CommitContainer
        startTime: "2020-05-07T12:53:23Z"
        steps:
        - durationMilliseconds: 733
          name: CommitContainer
          startTime: "2020-05-07T12:53:23Z"
      - durationMilliseconds: 6579
        name: Assemble
        startTime: "2020-05-07T12:53:18Z"
        steps:
        - durationMilliseconds: 6579
          name: AssembleBuildScripts
          startTime: "2020-05-07T12:53:18Z"
      - durationMilliseconds: 95462
        name: PushImage
        startTime: "2020-05-07T12:53:24Z"
        steps:
        - durationMilliseconds: 95462
          name: PushImage
          startTime: "2020-05-07T12:53:24Z"
```