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Deploying Applications with the PASOE Docker Container

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Agenda

- Docker vs Virtual Machine
- Deployment Architecture
- Docker Container for PASOE
- PASOE Container Image and CI/CD
- Demo
- Q&A

Deploy and upgrade PASOE in business applications with “the push of a button”.

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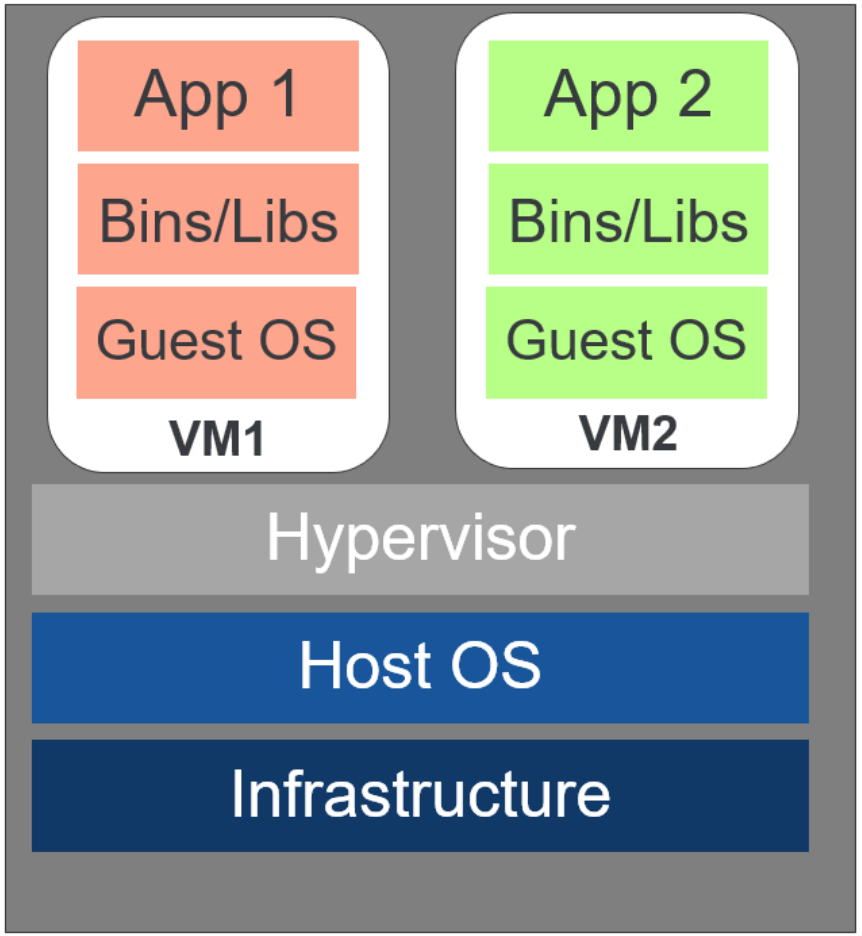
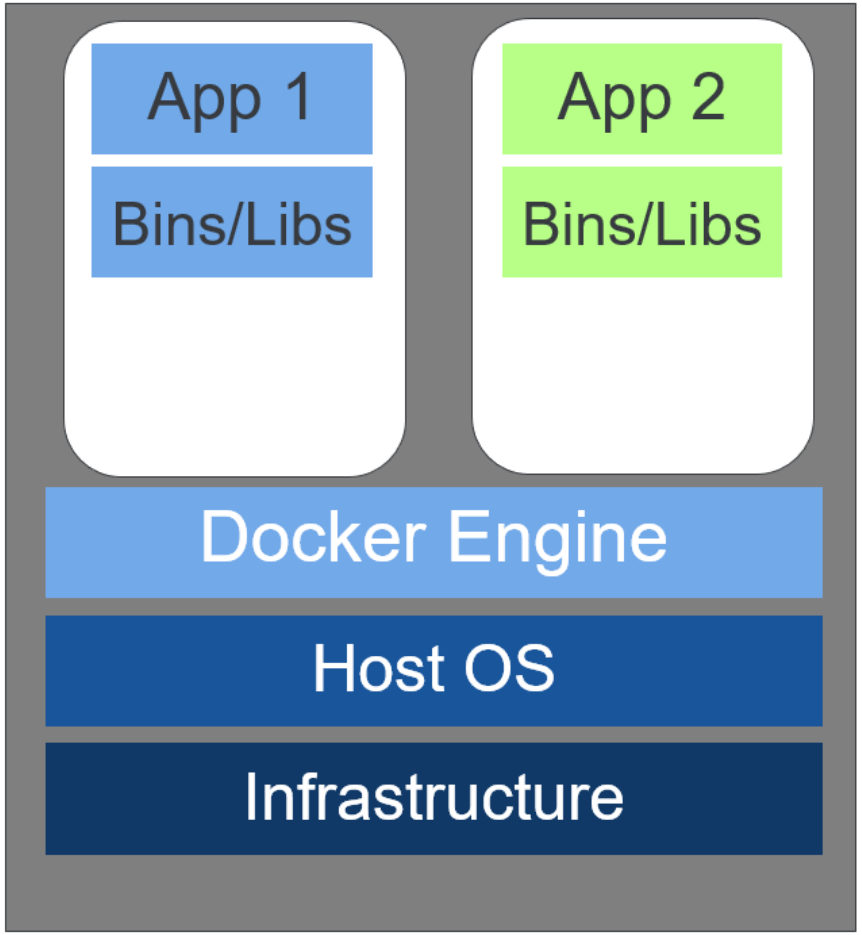
Docker vs Virtual Machine

Docker vs Virtual Machine



Host Machine



Docker

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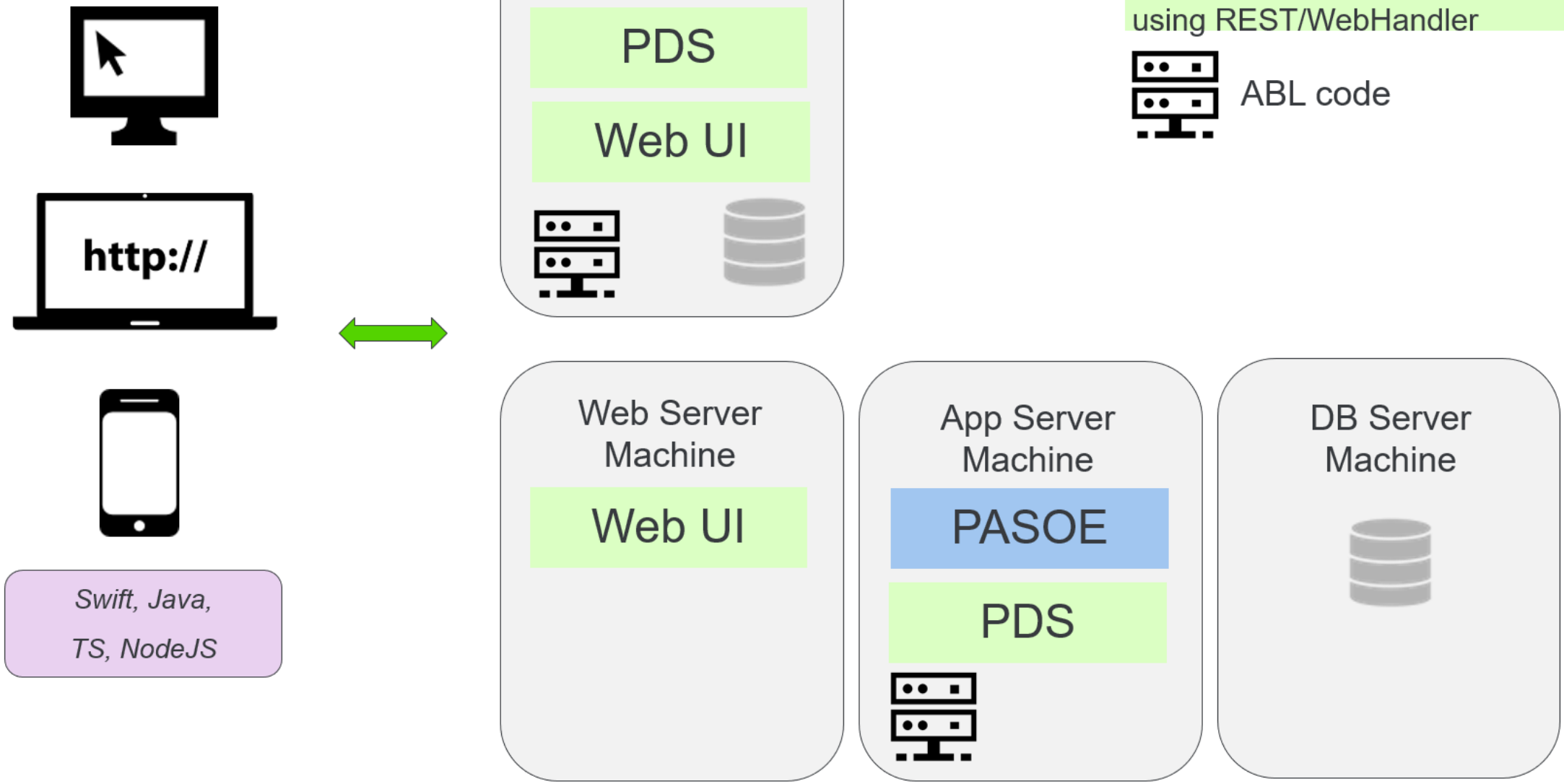
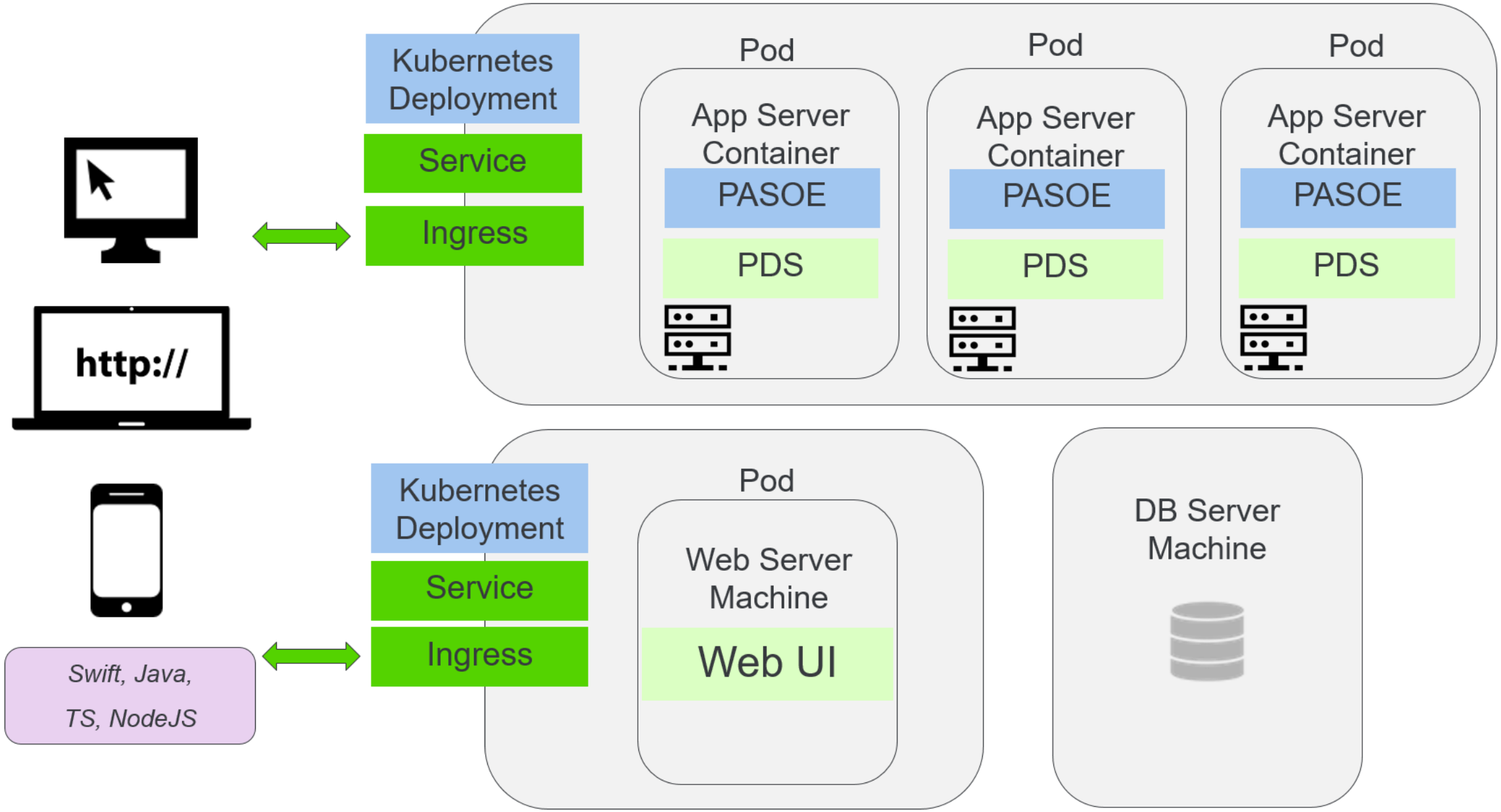
Deployment Architecture





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Docker Container for PASOE

Docker Container for PASOE

- Available for OpenEdge 11.7.5, 12.0, and 12.1
- Baseline container image of PASOE (store/progresssoftware/pasoe)
- Available via Docker Hub and ESD
- PASOE is pre-installed
- Create custom images with ABL code and data services
- Sidecar Container Pattern
- CI/CD - Testing, Staging and Deployment

Docker Container for PASOE

- Zero byte progress.cfg
- Lightweight image
- File Permission set for user pscadmin in container
- HTTPS only by default
- /psc/dlc/image-version
- EFK support (Elasticsearch, Fluent Bit, Kibana)

Docker Container for PASOE

- Container Image works with:
  - Docker on Linux
    - Red Hat Enterprise Linux (RHEL)
    - Docker Enterprise Edition (Docker-EE)
  - Kubernetes

Resources

- The store/progresssoftware/pasoe image is available via Docker Hub and ESD
- Documentation available in the Progress Information Hub:
  - https://docs.progress.com/bundle/pas-for-openedge-intro/page/Use-PAS-for-OpenEdge-with-Docker-containers.html
  - https://docs.progress.com/bundle/pas-for-openedge-docker/page/How-to-Deploy-Applications.html
  - https://docs.progress.com/bundle/pas-for-openedge-docker/page/Deploy-using-the-standalone-Docker-image.html

Sample App available via Progress Community

- Docker Container for PASOE – FAQ
  - https://community.progress.com/community_groups/openedge_deployment/w/openedgedeployment/3280.docker-container-for-pasoe-faq
- Using the Container Image for PAS for OpenEdge 11.7 with a Sample Application
  - https://community.progress.com/community_groups/openedge_general/m/documents/3610
- Using the Container Image for PASOE for OpenEdge 11.7 with EFK Stack Logging (Sample App)
  - https://community.progress.com/community_groups/openedge_general/m/documents/3650
- Using the Container Image for PAS for OpenEdge 12.1.0 with a Sample Application
  - https://community.progress.com/community_groups/openedge_general/m/documents/3759

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PASOE Container Image and CI/CD

PASOE image available on Docker Hub

- https://hub.docker.com/_/pasoe

Progress Application Server (PAS) for OpenEdge

By Progress Software Corporation

Progress Application Server (PAS) for OpenEdge is a platform that provides Web server support for OpenEdge applications.

Container | Docker Certified | Linux | x86-64 | Application Infrastructure | Base Images

docker CERTIFIED

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This container image requires a valid license code before it can be used. If you don't already have your own license code reach out to your nearest Progress sales representative or a local re-seller. Visit www.progress.com/openedge to learn more.

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DESCRIPTION | REVIEWS | RESOURCES

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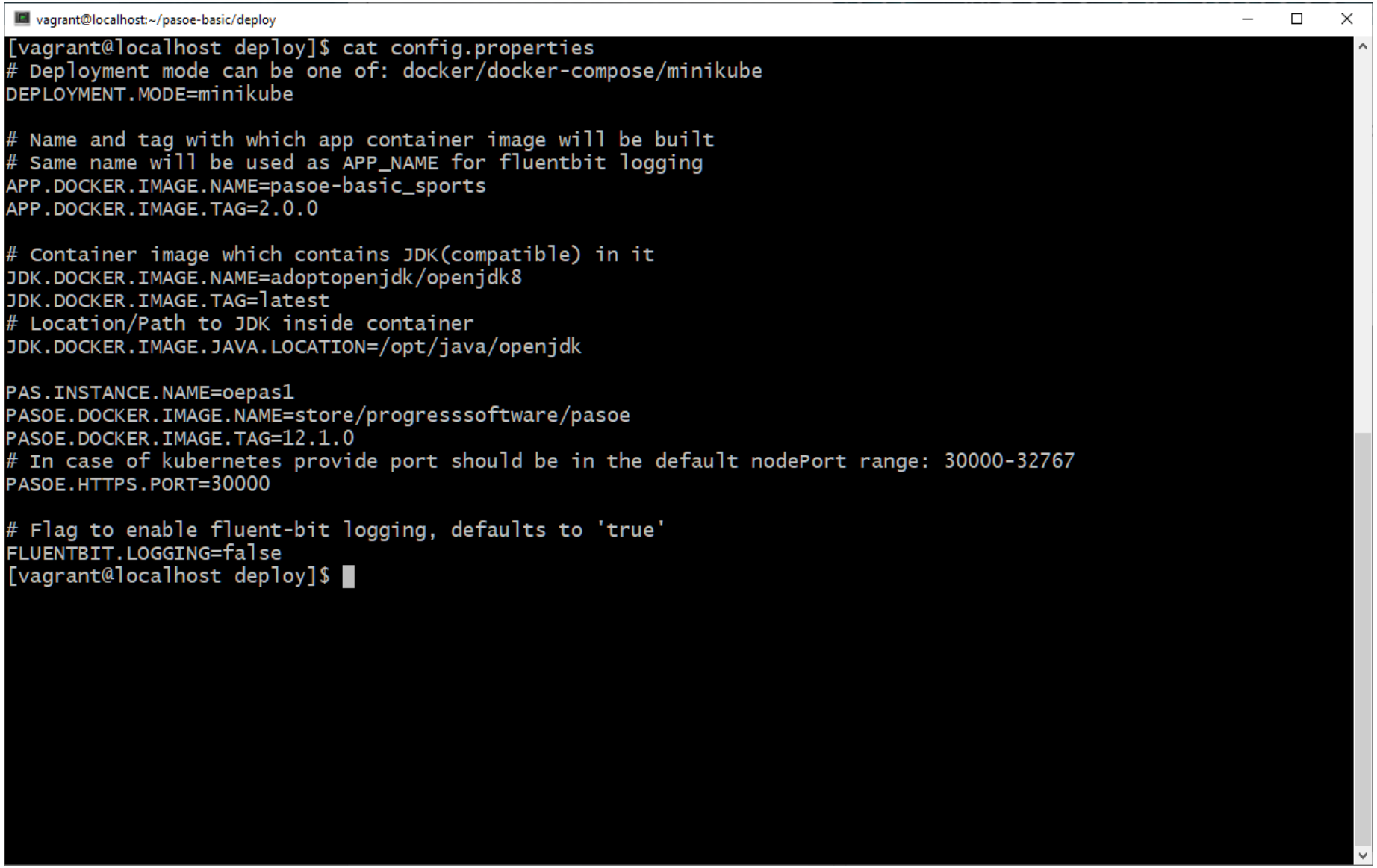
Progress Application Server (PAS) for OpenEdge is tailored specifically to support OpenEdge applications, including WebSpeed applications.

Traditionally Progress applications are packaged as Web application archives (WAR files) and are deployed on the Java servlet container of a running PAS for OpenEdge instance. Apache Tomcat is used as the Web server that includes the Java servlet container for hosting Web applications. Client access to PAS for OpenEdge is through HTTP/HTTPS

Loading Docker image for PASOE

- Docker pull from Docker Hub:
  - docker login
  - docker pull store/progresssoftware/pasoe:12.1.0
- Load image into Docker environment (ESD download):
  - docker load –i PROGRESS_PASOE_DOCKER_IMAGE_11.2.1_LNX_64.tar.gz

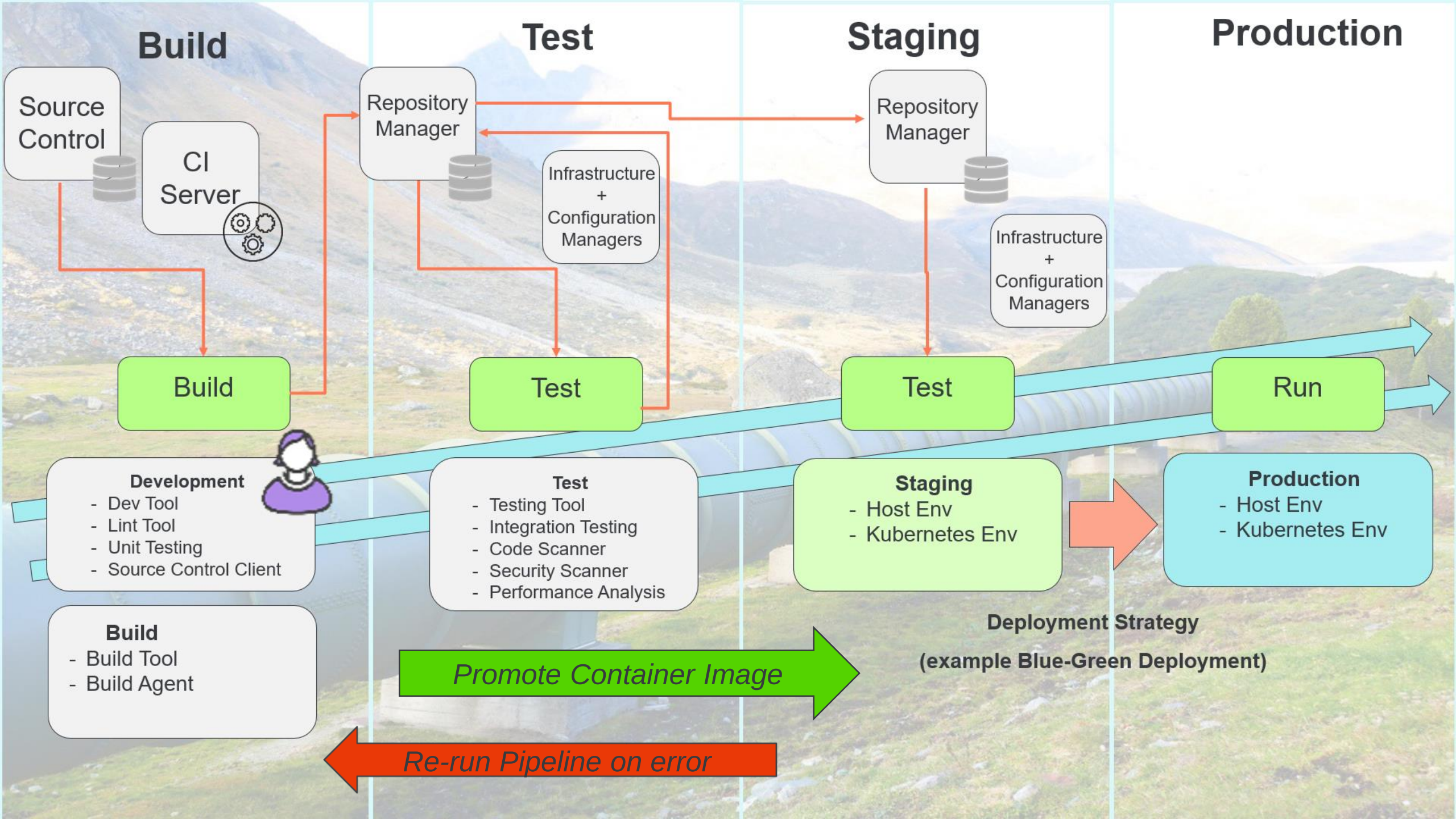
Deployment Scripts



Kubernetes Deployment

vagrant@localhost:~/pasoe-basic/deploy/scripts/minikube

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: oepas1
  labels:
    app: oepas1
    version: v1
spec:
  replicas: 2
  strategy:
    rollingUpdate:
      maxSurge: 1
      maxUnavailable: 1
    type: RollingUpdate
  selector:
    matchLabels:
      app: oepas1
      version: v1
  template:
    metadata:
      labels:
        app: oepas1
        version: v1
    spec:
      volumes:
        - name: deploy-artifacts-dir
          emptyDir: {}
        - name: java-dir
          emptyDir: {}
        - name: license-dir
          secret:
            secretName: progress-121-license
        - name: runtime-config-oepas1
          configMap:
            name: runtime-config-oepas1
"deployment.yml" 95L, 2878C
```


Build
Test
Staging
Production
Source Control
CI Server
Repository Manager
Infrastructure + Configuration Managers
Repository Manager
Infrastructure + Configuration Managers
Build
Test
Test
Run
Development
- Dev Tool
- Lint Tool
- Unit Testing
- Source Control Client
Test
- Testing Tool
- Integration Testing
- Code Scanner
- Security Scanner
- Performance Analysis
Staging
- Host Env
- Kubernetes Env
Production
- Host Env
- Kubernetes Env
Build
- Build Tool
- Build Agent
Promote Container Image
Deployment Strategy
(example Blue-Green Deployment)
Re-run Pipeline on error

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Kubernetes

Deploy Application Image using Kubernetes (v1)

- Build:
  - `ant package`
- Deploy
  - `ant deploy`

vagrant@localhost:~/pasoe_k8s_scripts

```
deploy:

BUILD SUCCESSFUL
Total time: 7 seconds
++ kubectl get deploy
NAME                            READY   UP-TO-DATE   AVAILABLE   AGE
nginx-ingress-controller        1/1     1            1           56m
nginx-ingress-default-backend   1/1     1            1           56m
oepas1                          0/2     2            0           0s
web-deployment                  1/1     1            1           55m
++ kubectl get pod --watch
NAME                                            READY   STATUS        RESTARTS   AGE
nginx-ingress-controller-68f69c65b8-kktc6       1/1     Running       0          56m
nginx-ingress-default-backend-576b86996d-2b8sz  1/1     Running       0          56m
oepas1-78dcb8b88b-6nffp                         0/1     Init:0/2      0          1s
oepas1-78dcb8b88b-j6fn4                         0/1     Init:0/2      0          1s
oepas1-7b8fbbd79c-ctvrh                         1/1     Terminating   0          34m
oepas1-7b8fbbd79c-d58k8                         1/1     Terminating   0          34m
web-deployment-8759db759-lh654                  1/1     Running       0          55m
oepas1-78dcb8b88b-j6fn4                         0/1     Init:1/2      0          2s
oepas1-78dcb8b88b-6nffp                         0/1     Init:1/2      0          2s
oepas1-78dcb8b88b-j6fn4                         0/1     Init:1/2      0          3s
oepas1-78dcb8b88b-6nffp                         0/1     Init:1/2      0          3s
oepas1-78dcb8b88b-6nffp                         0/1     PodInitializing   0          4s
oepas1-78dcb8b88b-j6fn4                         0/1     PodInitializing   0          4s
oepas1-78dcb8b88b-j6fn4                         0/1     Running           0          5s
oepas1-78dcb8b88b-6nffp                         0/1     Running           0          6s
^C++ kubectl get svc,ingress
NAME                                TYPE           CLUSTER-IP       EXTERNAL-IP      PORT(S)
      AGE
service/kubernetes                  ClusterIP      10.96.0.1        <none>           443/TCP
      58m
service/nginx-ingress-controller    LoadBalancer   10.101.235.223   192.168.56.222   80:31671/TCP,443:30012/
TCP   57m
service/nginx-ingress-default-backend   ClusterIP      10.102.27.211    <none>           80/TCP
      57m
```

https://3.80.235.130/ui

Not secure | 3.80.235.130/ui

+ Add new record

Drag a column header and drop it here to group by that column

Cust Num	Name	State	Country	
1	LIFT TOURS	MA	USA	Edit Delete
2	URPON FRISBEE	Uusima	Finland	Edit Delete
3	HOOPS	GA	USA	Edit Delete
4	GO FISHING LTD	Middlesex	United Kingdom	Edit Delete
5	MATCH POINT TENNIS	MA	USA	Edit Delete
6	FANATICAL ATHLETES	AL	United Kingdom	Edit Delete
7	AEROBICS VALINE KY	Uusimaa	Finland	Edit Delete
8	GAME SET MATCH	AL	USA	Edit Delete

1 2 3 4 5 ... 10 items per page

1 - 10 of 83 items

Deploy Application Image using Rolling Updates (v2)

- Build:
  - `ant package`
- Deploy
  - `kubectl replace -f ~/pasoe-basic/v2/deployment.yml`
  - `kubectl rollout status -w deployment.v1.apps/oepas1`

```
     [exec] Successfully built f3f3acdf8ed1
     [exec] Successfully tagged pasoe-basic_sports:2.0.0

BUILD SUCCESSFUL
Total time: 5 seconds
++ docker images pasoe-basic_sports
REPOSITORY           TAG                 IMAGE ID            CREATED                  SIZE
pasoe-basic_sports   2.0.0               f3f3acdf8ed1        Less than a second ago   4.89MB
pasoe-basic_sports   1.0.0               50509f361bf7        58 minutes ago           4.89MB
[vagrant@localhost pasoe_k8s_scripts]$ ./17-deploy-rolling-updates.sh
++ kubectl replace -f /home/vagrant/pasoe-basic/v2/deployment.yml
deployment.apps/oepas1 replaced
++ kubectl get pod
NAME                                        READY   STATUS    RESTARTS   AGE
nginx-ingress-controller-68f69c65b8-kktc6   1/1     Running   0          63m
nginx-ingress-default-backend-576b86996d-2b8sz   1/1     Running   0          63m
oepas1-78dcb8b88b-6nffp                     1/1     Running   0          6m23s
oepas1-78dcb8b88b-j6fn4                     1/1     Running   0          6m23s
web-deployment-8759db759-lh654              1/1     Running   0          61m
++ kubectl rollout status -w deployment.v1.apps/oepas1
deployment "oepas1" successfully rolled out
++ kubectl get pod
NAME                                        READY   STATUS    RESTARTS   AGE
nginx-ingress-controller-68f69c65b8-kktc6   1/1     Running   0          63m
nginx-ingress-default-backend-576b86996d-2b8sz   1/1     Running   0          63m
oepas1-78dcb8b88b-6nffp                     1/1     Running   0          6m24s
oepas1-78dcb8b88b-j6fn4                     1/1     Running   0          6m24s
web-deployment-8759db759-lh654              1/1     Running   0          61m
++ kubectl describe deployment
++ fgrep Image
    Image:        quay.io/kubernetes-ingress-controller/nginx-ingress-controller:0.26.1
    Image:        k8s.gcr.io/defaultbackend-amd64:1.5
    Image:      pasoe-basic_sports:2.0.0
    Image:      adoptopenjdk/openjdk8:latest
    Image:      store/progresssoftware/pasoe:12.1.0
    Image:        nginx
[vagrant@localhost pasoe_k8s_scripts]$
```

https://3.80.235.130/ui

Not secure 3.80.235.130/ui

+ Add new record

Drag a column header and drop it here to group by that column

Cust Num	Name	State	Country	
1	Lift Tours	MA	USA	Edit Delete
2	Urpon Frisbee	Uusima	Finland	Edit Delete
3	Hoops	GA	USA	Edit Delete
4	Go Fishing Ltd	Middlesex	United Kingdom	Edit Delete
5	Match Point Tennis	MA	USA	Edit Delete
6	Fanatical Athletes	AL	United Kingdom	Edit Delete
7	Aerobics valine Ky	Uusimaa	Finland	Edit Delete
8	Game Set Match	AL	USA	Edit Delete

1 2 3 4 5 ... 10 items per page

1 - 10 of 1117 items


DEMO

Summary

- Baseline image of PASOE 12.1 with EFK support
- Create custom images with ABL code and data services
- Use Sidecar Container Pattern
- PASOE 12.1 includes support for deployment scripts
- CI/CD - Testing, Staging and Deployment

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Q&A

Thank You.


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