## AT A GLANCE

### PIVOTAL CF
- Garden and Diego
- .NET and Spring
- Only Cloud-native apps
- Container security on Ubuntu
- Deployment automation
- Open Core
- Pivotal Labs consulting method

### OPENSHIFT
- Docker and Kubernetes
- .NET, Spring and JBoss Middleware (including full Java EE)
- Cloud-native and stateful apps
- Enterprise-grade security on Red Hat Enterprise Linux
- Complete Ops Management
- 100% Open Source
- Red Hat Innovation Labs consulting method

### 5X PRICE

## BRIEF COMPARISON

### PIVOTAL CF
- **GARDEN & DIEGO**
  - Garden uses OCI runC backend
  - Not portable across Cloud Foundry distros
  - Containers share host IP
  - No image registry
  - Private registries are not supported
  - No image build
  - Adoption only in Cloud Foundry

### OPENSHIFT
- **DOCKER & KUBERNETES**
  - Portable across all docker platforms
  - IP per container
  - Integrated image registry
  - Image build from source and binary
  - Adoption in many solutions
Converters Are Terrible
Cloud Foundry is based on the Garden container runtime, not Docker, and then has RunC and Windows backends. RunC is not Docker, just the lowest runtime layer.

Docker Developer Experience Does Not Exist in PCF
PCF “cf push” Dev Experience does not exist for Docker. In Openshift v3 we built S2I to provide that same experience on top of native Docker images/containers.

Diego Is Not Kubernetes
Kubernetes has become the defacto standard for orchestrating docker containers. Diego orchestrates Garden containers and is used only by Cloud Foundry users.

KUBERNETES PLATFORMS

<table>
<thead>
<tr>
<th>PIVOTAL CF</th>
<th>OPENSShift</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>.NET AND SPRING</strong></td>
<td><strong>.NET AND JBOSS MIDDLEWARE</strong></td>
</tr>
<tr>
<td>• Small buildpack service community</td>
<td>• Large docker service community</td>
</tr>
<tr>
<td>• Java, .NET Framework</td>
<td>• Full Java EE, .NET Core</td>
</tr>
<tr>
<td>• Spring Boot and Spring Cloud</td>
<td>• Spring and JBoss middleware portfolio</td>
</tr>
<tr>
<td>• Community CI/CD</td>
<td>• Certified Jenkins and Deployment Pipelines</td>
</tr>
<tr>
<td><strong>ONLY CLOUD-NATIVE APPS</strong></td>
<td><strong>CLOUD-NATIVE AND STATEFUL APPS</strong></td>
</tr>
<tr>
<td>• No persistent storage</td>
<td>• Persistent storage support</td>
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<tr>
<td>SECURITY AND OPERATIONS</td>
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<tr>
<td><strong>PIVOTAL CF</strong></td>
<td><strong>OPENSШIFT</strong></td>
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<tr>
<td><strong>BASIC SECURITY ON UBUNTU</strong></td>
<td><strong>ENTERPRISE-GRADE SECURITY ON RED HAT ENTERPRISE LINUX</strong></td>
</tr>
<tr>
<td>· Container traffic rules</td>
<td>· SELinux and OpenScap</td>
</tr>
<tr>
<td>· AppArmor integration</td>
<td>· Unprivileged containers (no root)</td>
</tr>
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</tr>
<tr>
<td><strong>DEPLOYMENT AUTOMATION</strong></td>
<td><strong>COMPLETE OPS MANAGEMENT</strong></td>
</tr>
<tr>
<td>· Deployment via BOSH and Ops Manager</td>
<td>· Deployment via Ansible</td>
</tr>
<tr>
<td>· No ops management</td>
<td>· Ops management with Red Hat CloudForms</td>
</tr>
<tr>
<td>· No bare-metal</td>
<td>· Built-in log management (Elasticsearch/Kibana)</td>
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<thead>
<tr>
<th>ECO SYSTEM</th>
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<tbody>
<tr>
<td><strong>PIVOTAL CF</strong></td>
</tr>
<tr>
<td><strong>OPEN CORE</strong></td>
</tr>
<tr>
<td>· Proprietary (based on open source)</td>
</tr>
<tr>
<td>· CF Foundation with 65+ members</td>
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<tr>
<td><strong>PIVOTAL LABS CONSULTING METHOD</strong></td>
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## CONTAINER

### PIVOTAL CF
- **Garden** linux container and **buildpacks** based on OCI runC backend
- Adopted only in Cloud Foundry
- Runs Docker by converting to Garden
- Not portable across platforms (e.g. Bluemix)
- **No** image registry
- Private registries not supported
- Containers share host IP
- All communication through load-balancer

### OPENSİFT
- Native **Docker** linux container
- Widespread commercial adoption
- Portable across platforms
- Integrated image registry
- Built-in SDN
- IP per container
- Inter-container communication

## ORCHESTRATION

### PIVOTAL CF
- **Diego** orchestrator
- Adoption **only** in Cloud Foundry
- **No** distributed and cron jobs
- Service registry **only** for Spring apps
- Service catalog
- Config Server for Spring apps

### OPENSİFT
- **Kubernetes** orchestrator
- Adoption in many solutions
- Distributed and cron* job support
- Custom scheduling
- Resource limits and quotas with **QoS tiering**
- Multi-cluster orchestration*
- Service discovery for all containers
- Service catalog*
- Loosely-coupled application configuration

* coming soon
APPLICATION SERVICES

PIVOTAL CF
- Few community buildpacks
- Supported runtimes: Java, Ruby, ...
- .NET support

OPENSHIFT
- Many community Docker images
- Supported runtimes: Full Java EE, Java, Ruby, ...
- .NET Core support

- Compelling Big Data services
- Spring Boot and Spring Cloud Services
- Microservices with Spring Boot
- Third-party services

- Stateful and legacy apps not supported
- No persistent storage

APPLICATION LIFECYCLE

PIVOTAL CF
- No container images
- No Docker build
- Containers run from source and binary
  - Spinnaker and Concourse CI
  - CloudBees Jenkins integration

OPENSHIFT
- Image build from source and binary
- Automated redeploy on image update
- Docker build support
  - CI/CD Integration
  - Certified Jenkins
  - Support for Jenkins slaves
  - Built-in CI/CD and Pipeline
  - CloudBees Jenkins integration

- Stateful and legacy apps not supported
- No persistent storage
**SECURITY**

<table>
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<td>• Container traffic rules (in- and outbound)</td>
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<td>• AppArmor integration</td>
<td>• Unprivileged containers (no root)</td>
</tr>
<tr>
<td>• Seccomp integration</td>
<td>• End-to-end cluster security with TLS</td>
</tr>
<tr>
<td>• Unprivileged containers (no root)</td>
<td>• Fine-grained role-based policies</td>
</tr>
<tr>
<td></td>
<td>• Container vulnerability scanning through Red Hat CloudForms and BlackDuck (partner)</td>
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</tbody>
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**OPERATIONS & MANAGEMENT**

<table>
<thead>
<tr>
<th>PIVOTAL CF</th>
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</thead>
<tbody>
<tr>
<td>• Ubuntu (support partnership with Canonical)</td>
<td>• Red Hat Enterprise Linux and Atomic Host</td>
</tr>
<tr>
<td>• Virtual, private and public cloud</td>
<td>• Physical, virtual, private and public cloud</td>
</tr>
<tr>
<td></td>
<td>• Container metrics</td>
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<td>• Container metrics</td>
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<tr>
<td>• Container metrics</td>
<td>• Container log aggregation and management</td>
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<tr>
<td>• Basic log aggregation</td>
<td>• Built-in ElasticSearch and Kibana</td>
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<tr>
<td></td>
<td>• Deployment via Red Hat CloudForms</td>
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<tr>
<td></td>
<td>• Complete operational management</td>
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<td></td>
<td>• (capacity, audit, policy, forensic, etc)</td>
</tr>
<tr>
<td></td>
<td>• Deployment via BOSH and OpsManager</td>
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<td>• No operational management</td>
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**ECOSYSTEM**

<table>
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<tr>
<th>PIVOTAL CF</th>
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<tr>
<td>• Proprietary (open core)</td>
<td>• 100% Open Source</td>
</tr>
<tr>
<td>• Cloud Foundry Foundation with 65+ members</td>
<td>• OpenShift Commons with 200+ members</td>
</tr>
<tr>
<td></td>
<td>• OCI member</td>
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<td></td>
<td>• OCI and Platinum CNCF member</td>
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<tr>
<td>• OCI member</td>
<td>• Kubernetes adopted in CNCF</td>
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<tr>
<td></td>
<td>• Active open-source community</td>
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<tr>
<td>• Vibrant partner community</td>
<td>• Vibrant partner community</td>
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<tr>
<td></td>
<td>• Pivotal Labs consulting method for enabling Agile and DevOps</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>
OpenShift Awards

2 Years Running!

InfoWorld

Review: OpenShift 3 rocks Docker containers

“For both developers and operators, OpenShift fulfills the promise of PaaS.”

http://www.infoworld.com/article/3005681/paas-review-openshift-3-rocks-docker-containers.html

OpenShift Customers

- Amadeus
- FICO
- BBVA
- Cisco
- CA Technologies
- LeShop.ch
- Paychex
- T-Systems
- The University of North Carolina at Chapel Hill
- UTS
- University of Pennsylvania

Read more at openshift.com/customers
An interactive community for all OpenShift PaaS Users, Customers, Contributors, Partners, Service Providers and Developers to share ideas, code, best practices, and experiences.

More at http://commons.openshift.org

Speak to a consultant and learn how we make OpenShift work for you:

770-546-0077
shadow-soft.com or email contact@shadow-soft.com

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