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# SECURING CONTAINERS WITH OPENSHIFT

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# SECURING CONTAINERS: THE TOP TEN LIST

1. Container Host & Multi-tenancy
2. Public Images
3. Private Registries
4. Building Containers
5. Deploying Containers
6. Container Platform
7. Network Isolation
8. Storage
9. API Management
10. Federated Clusters

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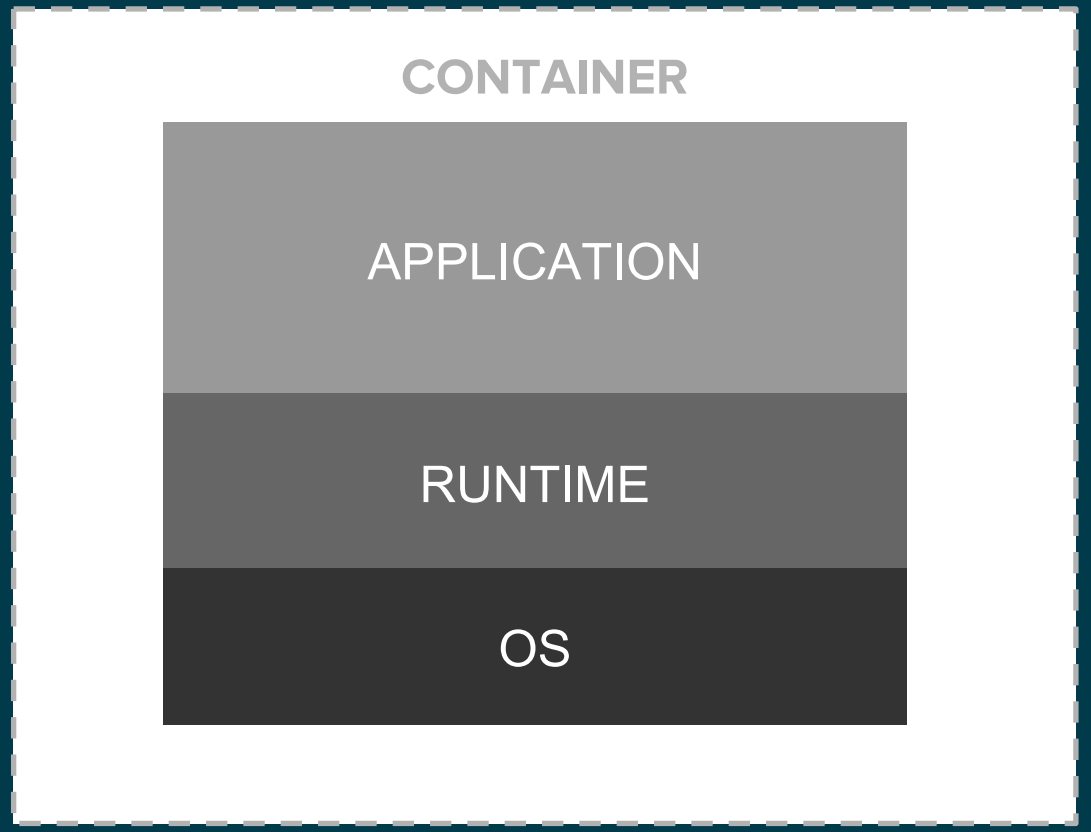
# CONTENT: EACH LAYER MATTERS

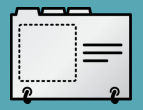
- Are there known vulnerabilities in the application layer?
- Are the runtime and OS layers up to date?
- How frequently will the container be updated and how will I know when it's updated?



# THE VALUE OF TRUSTED CONTENT

**Red Hat Registry Stats**

- 227 repositories
- 2,169 images
- 1+ TB storage



**Red Hat Security Statistics 2016**

- 97 critical RHSA
- 286 important RHSA
- 100% fixed in <1d

**Red Hat Customer Portal Stats 2016**

- 13,100,000 visitors
- 2,400,000 searches
- 108,300,000 views

- Image Documentation
- Image Advisories

RED HAT® CONTAINER CATALOG

- Container Health Index
- Extensive Image Metadata

Red Hat rebuilds container images when security fixes are released

# Java Applications

by Red Hat, Inc. | in Product Red Hat OpenShift Container Platform

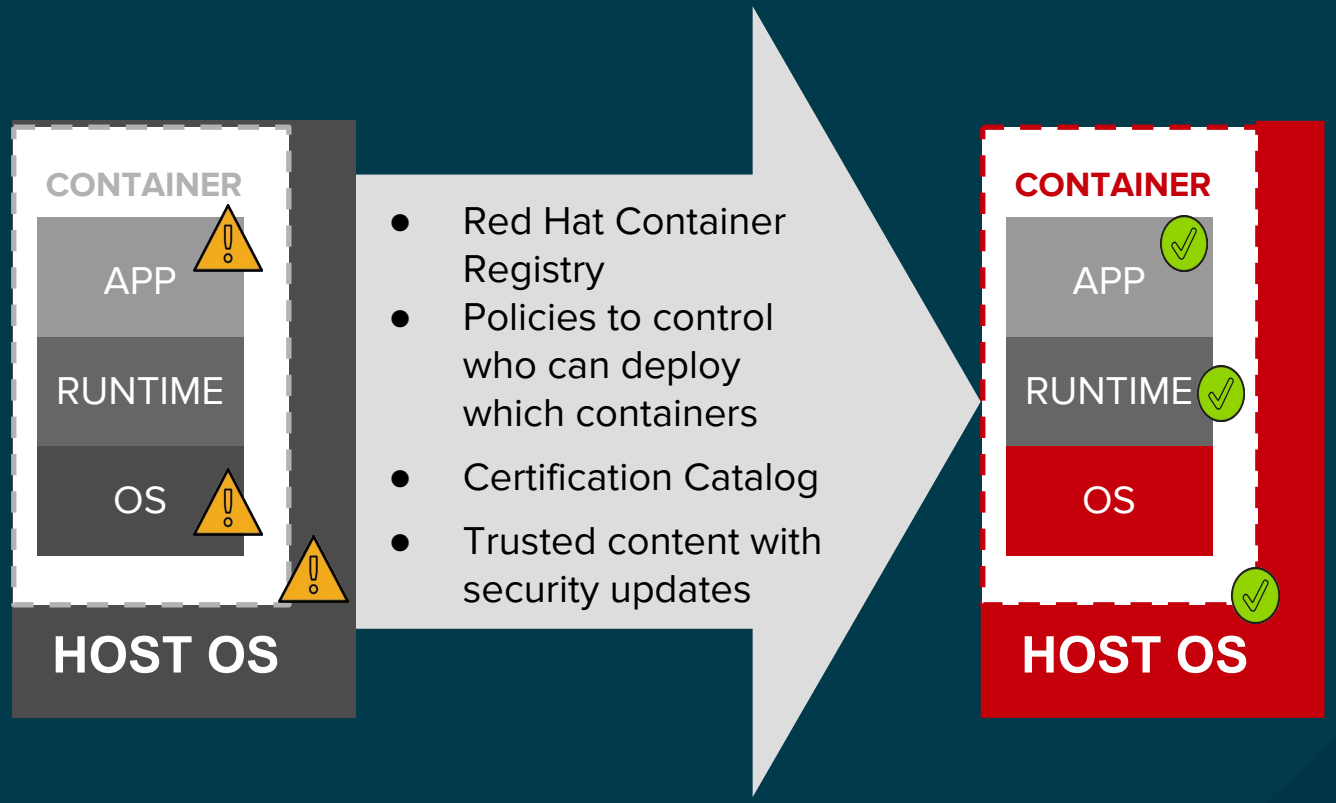
registry.access.redhat.com/redhat-openjdk-18/openjdk18-openshift Updated 7 days ago 1.0-3 : Health Index A


| Tag Name | Date Pushed | Image Advisory | Health Index | Docker Image ID |
|---|---|---|---|---|
| 1.0-3 1.0 latest | 7 days ago | RHBA-2017:1168 | A | af2b44054a5d |
| 1.0-2 | 2 months ago | RHEA-2017:0291 | C | 0e4bec3a7491 |

# PRIVATE REGISTRIES:
## SECURE ACCESS TO IMAGES

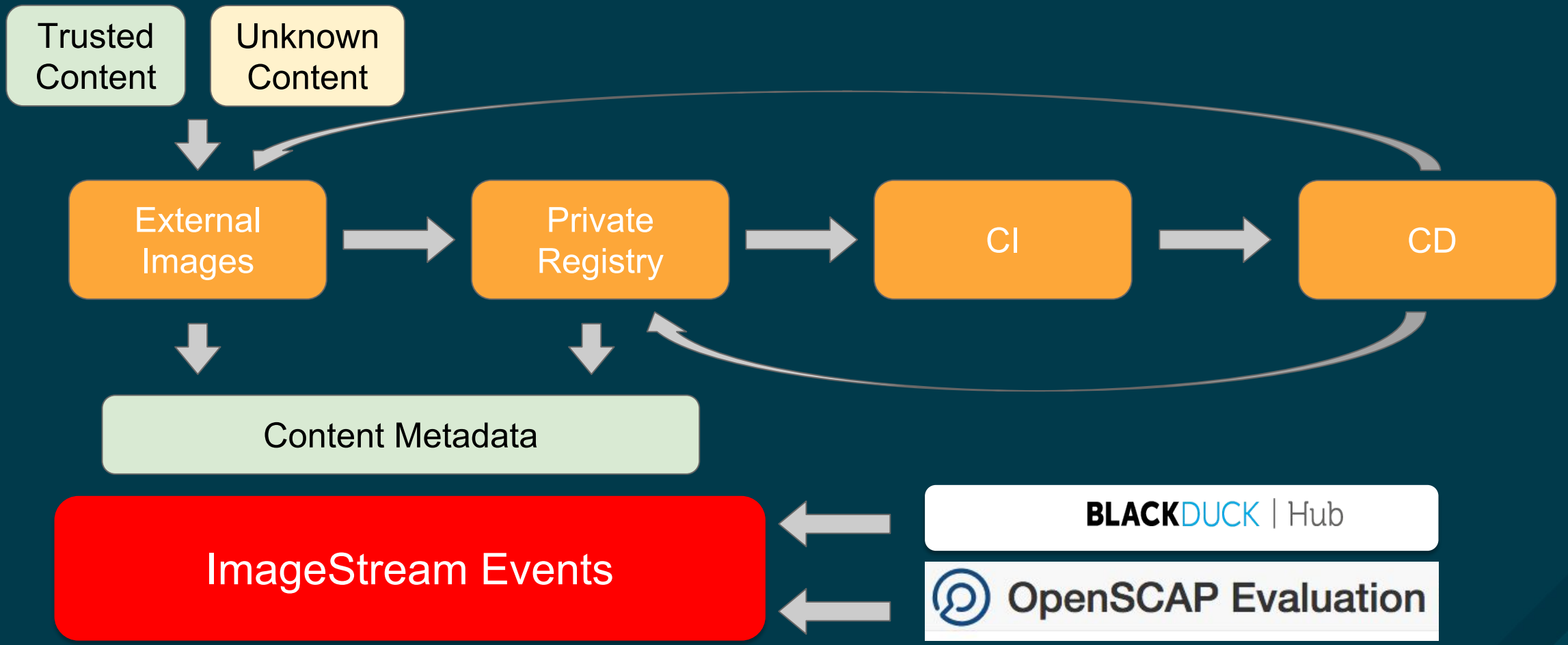
Image governance & private registries

- Are there access controls on the registry? How strong are they?
- What security meta-data is available for your images?
- How is the data kept up-to-date?



# THE CONTAINER CONTENT LIFECYCLE

Trust is temporal; re**build** and re**deploy** as needed



# CD: MANAGING CONTAINER DEPLOYMENT

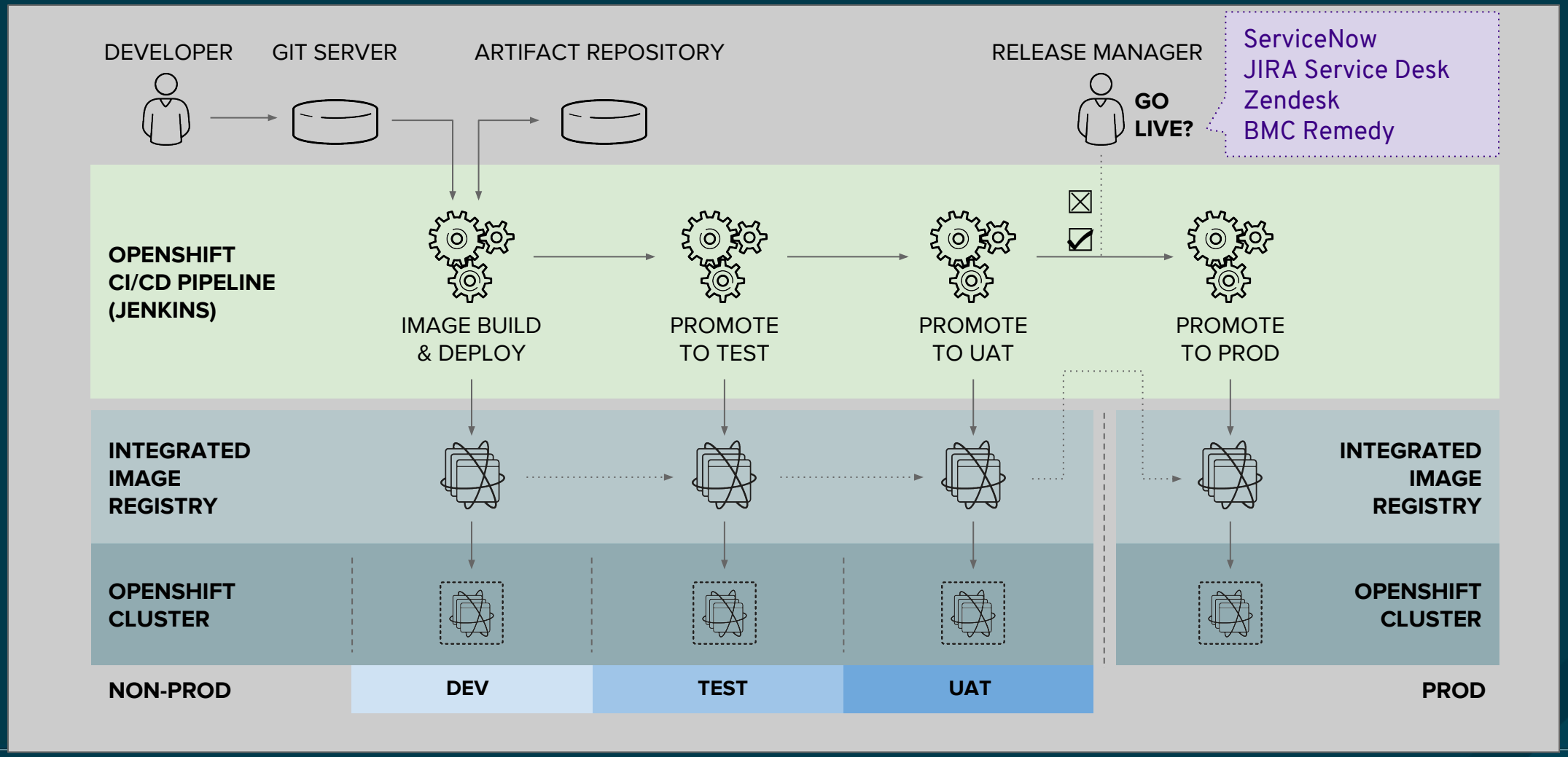
Security & continuous deployment

- Monitor image registry to automatically replace out-of-date images
- Use policies to gate what can be deployed: e.g. if a container requires root access, prevent deployment
- Monitor images for vulnerabilities

```
$ oc describe scc restricted
Name:                restricted
Priority:               <none>
Access:
  Users:             <none>
  Groups:               system:authenticated
Settings:
  Allow Privileged:         false
  Default Add Capabilities:      <none>
  Required Drop Capabilities:    KILL,MKNOD,SYS_CHROOT,SETUID,SETGID
  Allowed Capabilities:       <none>
  Allowed Volume Types:       configMap,downwardAPI,emptyDir,persistentVolumeClaim,secret
  Allow Host Network:         false
  Allow Host Ports:         false
  Allow Host PID:           false
  Allow Host IPC:           false
  Read Only Root Filesystem:     false
  Run As User Strategy:             MustRunAsRange
    UID:             <none>
    UID Range Min:            <none>
    UID Range Max:            <none>
  SELinux Context Strategy:         MustRunAs
    User:               <none>
    Role:               <none>
    Type:               <none>
    Level:              <none>
  FSGroup Strategy:                 MustRunAs
    Ranges:             <none>
  Supplemental Groups Strategy:     RunAsAny
    Ranges:             <none>
```

Policies control the actions that a pod can perform and what it has the ability to access

# THE OPENSHIFT CI/CD PIPELINE



RED HAT® OPENSHIFT Container Platform

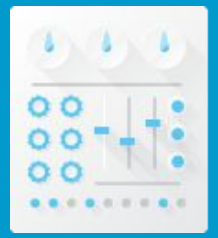
# SECURITY THROUGHOUT THE STACK AND THE LIFECYCLE

Self-Service

Service Catalog
(Language Runtimes, Middleware, Databases)

Build Automation | Deployment Automation

OpenShift Application Lifecycle Management
(CI/CD)



Container Orchestration & Cluster Management
(Kubernetes)

Networking | Storage | Registry | Logs & Metrics | Security

Infrastructure Automation & Cockpit

**Enterprise Container Host**

Container Runtime & Packaging
(docker)

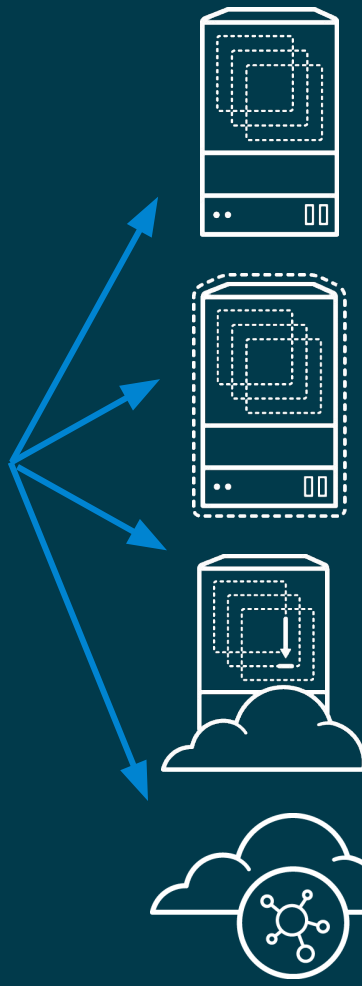
Atomic Host | Red Hat Enterprise Linux

Web & Mobile
Contaner

Data & Storage
Container

Integration
Container

Business Automation
Container



Physical

Virtual

Private cloud

Public cloud



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Learn more about OpenShift Online and sign up for free

Read the Ten Layers of Container Security whitepaper

Read the 2016 Red Hat Product Security Risk Report

Deeper Technical Details - OpenShift Container Security

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# THANK YOU