AWS re:Invent

CON210-S

How to run like a startup with enterprise Kubernetes on AWS

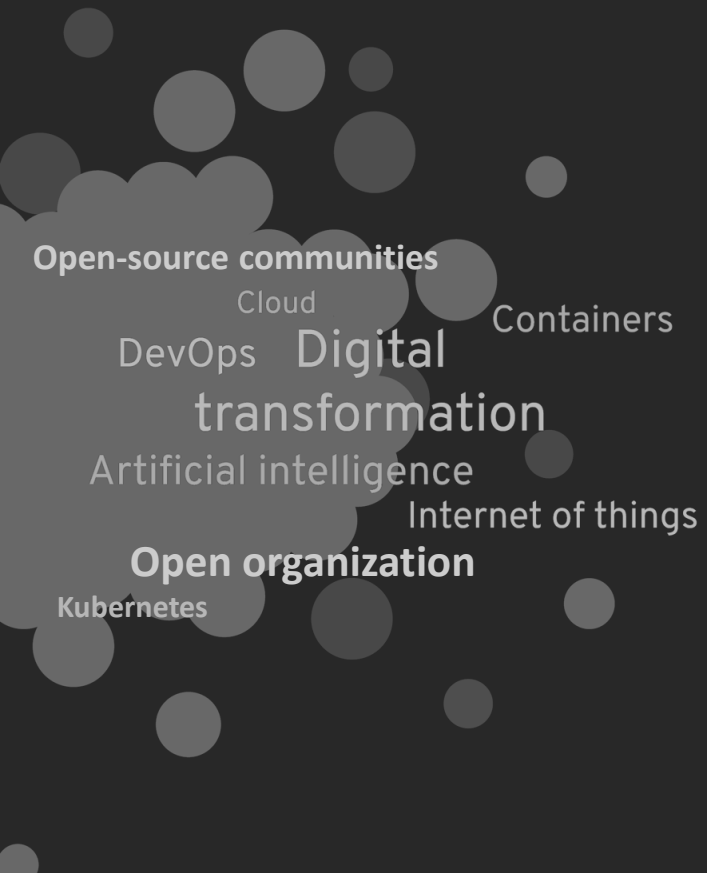
Yuriy Denysov
DevOps Engineer
Scholastic Corporation

Dan Juengst
Technology Evangelist
Red Hat

AWS re:Invent

aws

Big ideas drive business innovation



Business innovation is all around us.

Every organization in every geography and in every industry can innovate and create more customer value and differentiation with open-source technologies and an open culture

Creating value depends on your ability to deliver applications faster

Cloud-native applications

Artificial intelligence (AI) and machine learning (ML)

Analytics

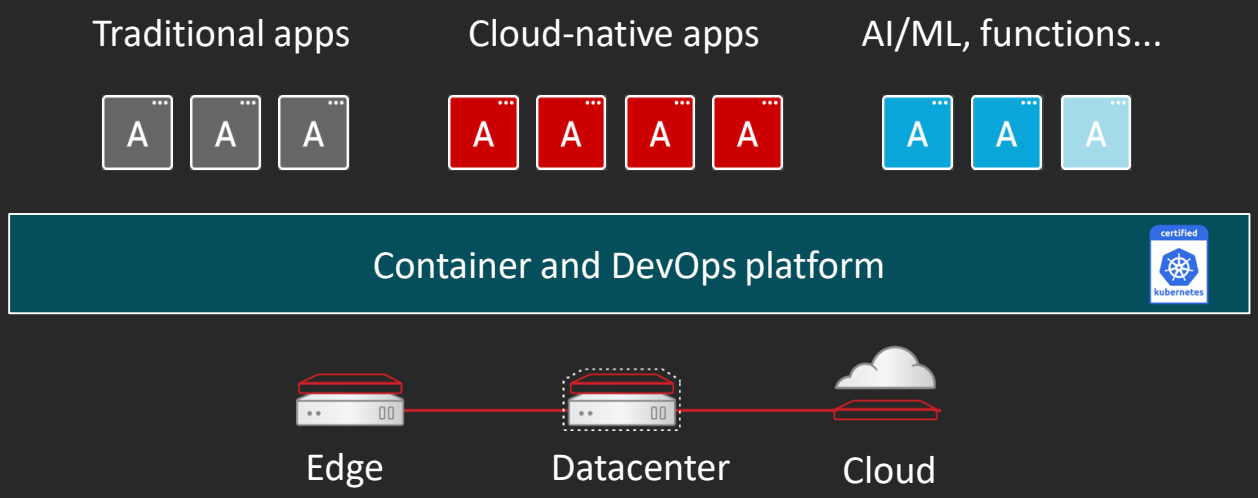
Internet of Things

Innovation culture

Containers, Kubernetes, and hybrid cloud are key ingredients

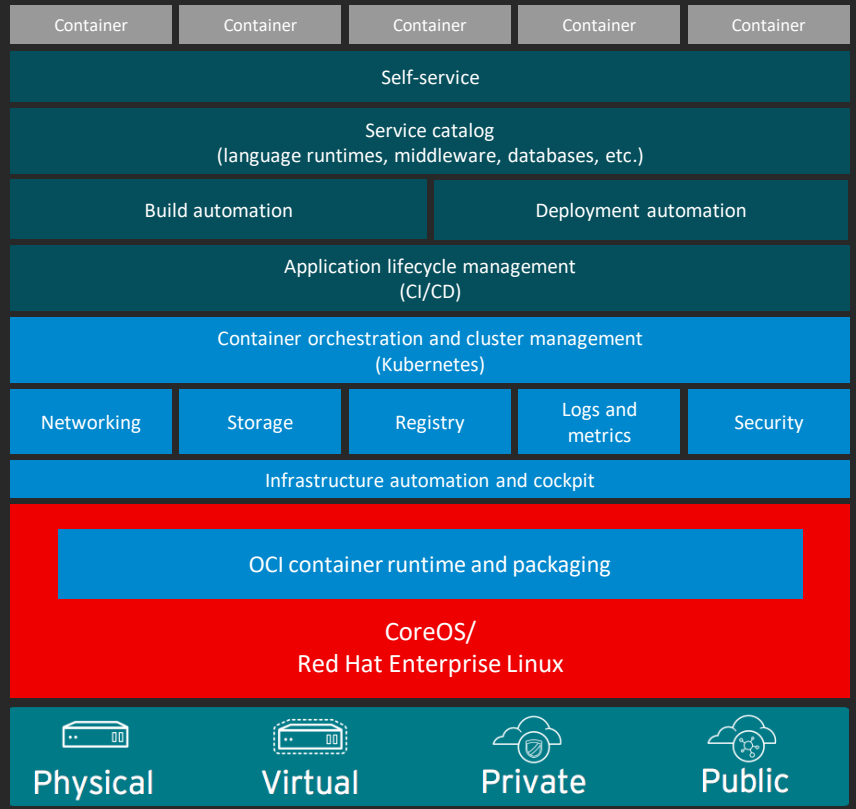
OpenShift is a great platform to deliver container-based applications

With OpenShift, you can deliver all your applications in a whole new way



OpenShift = Enterprise Kubernetes+

Red Hat OpenShift



OpenShift is consistency for operations

From your datacenter to the cloud

Automated operations

Multi-tenant

Secure by default

Network traffic control

Over-the-air updates

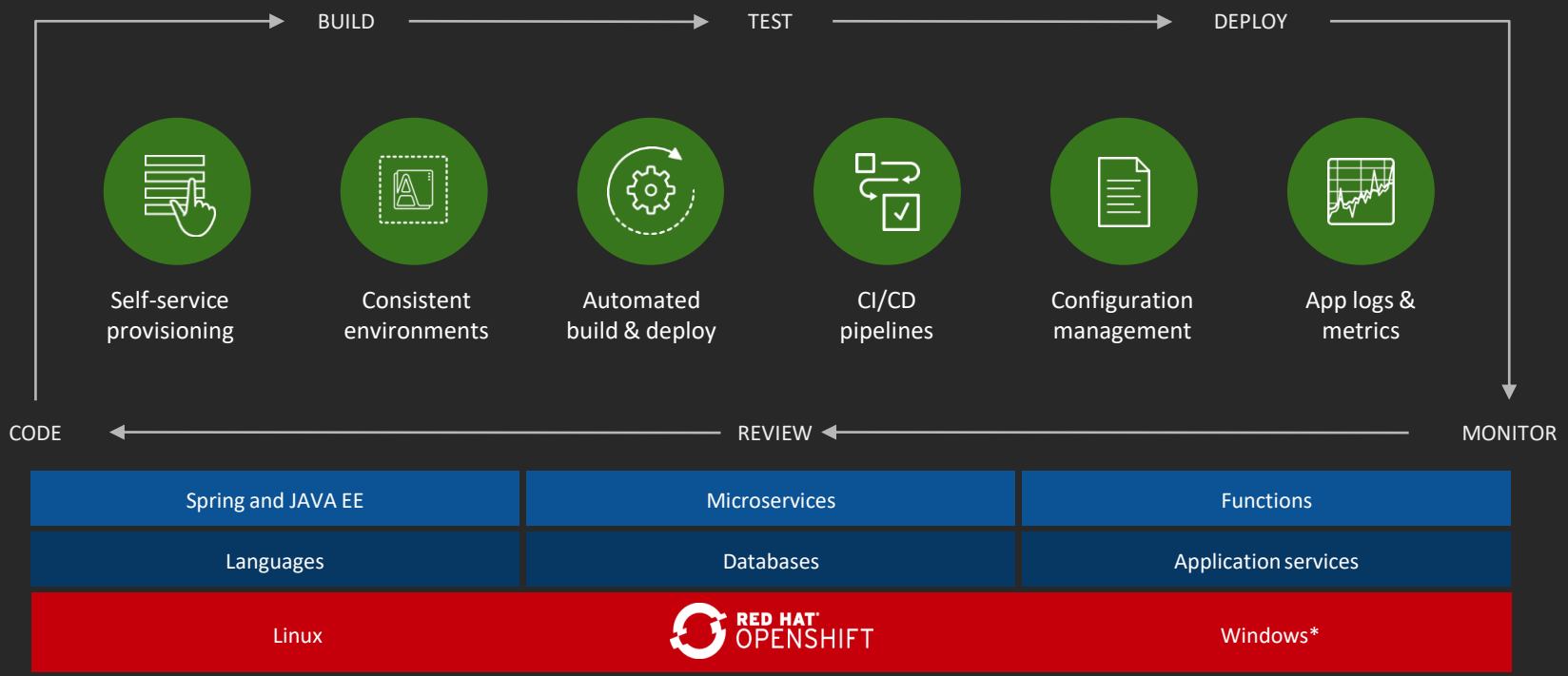
Monitoring & chargeback

Pluggable architecture

RED HAT® OPENSHIFT

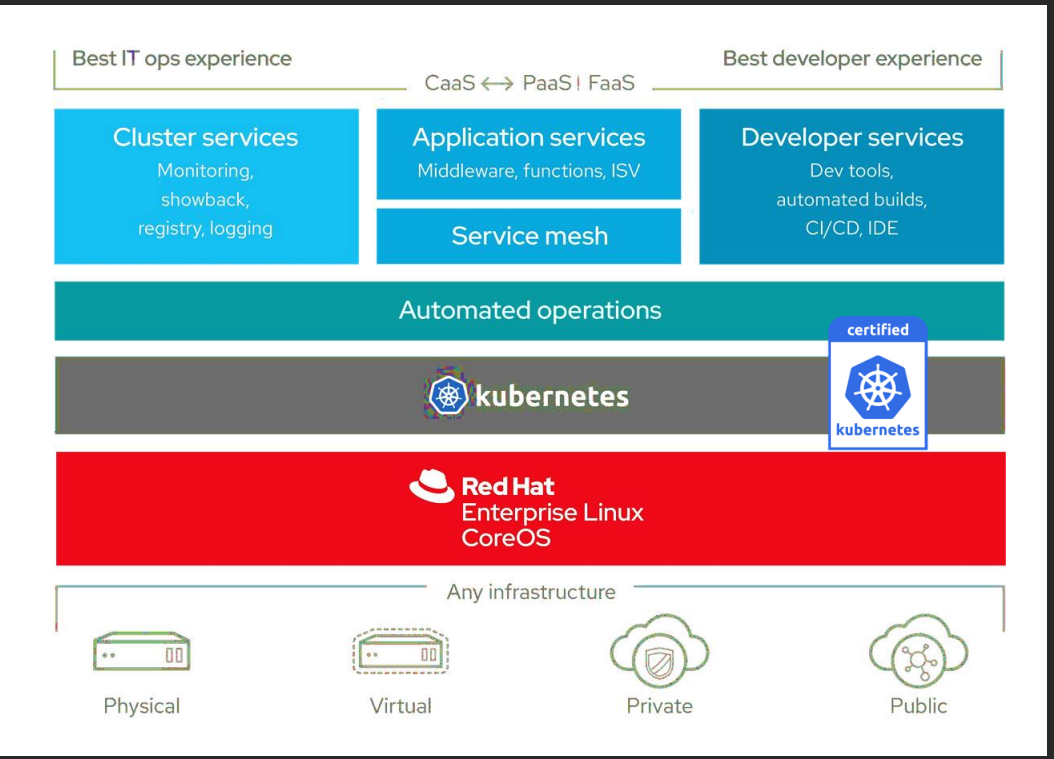
Bare metal, VMware vSphere, Red Hat Virtualization,
Red Hat OpenStack Platform, Amazon Web Services

OpenShift enables developer productivity



*coming soon

OpenShift 4: A smarter Kubernetes platform



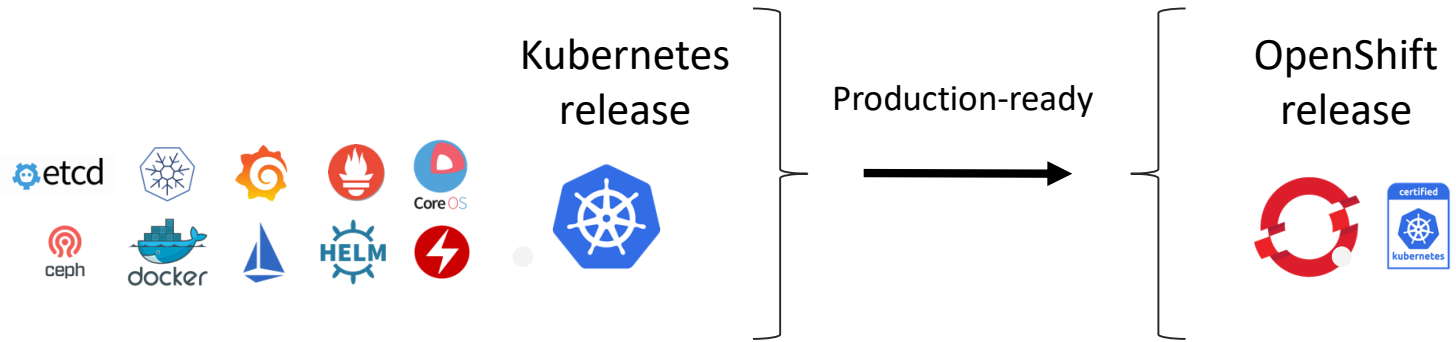
Automated, full-stack installation from the container host to application services

Seamless Kubernetes deployment to cloud and on-premises environments

Automatic scaling of cloud resources

One-click updates for platform, services, and applications

OpenShift is trusted enterprise Kubernetes



- Hundreds of defect and performance fixes
- 200+ validated integrations
- Certified container ecosystem
- 9-year enterprise lifecycle management
- Red Hat is a leading Kubernetes contributor since day one

Why OpenShift on AWS?

IDC research: The business value of OpenShift on AWS

> **Our developers** say that OpenShift on AWS is very easy to use, and they are definitely more productive as a result ... seeing **60–70 percent increases in productivity levels**.

Financial Services

> OpenShift on AWS has really helped us improve our reservation system and contributed to up to **15 percent more revenue**, **worth tens of millions of dollars** per year.

Hospitality

Source: IDC Report "The Business Value of an Agile and Flexible Platform for Developing and Running Applications with OpenShift on AWS," May 2019

Scholastic story

About Scholastic

The world's **largest publisher** and distributor of **children's books** with **$1.6 billion** in **annual** revenue

A **leader** in **comprehensive** education **solutions**

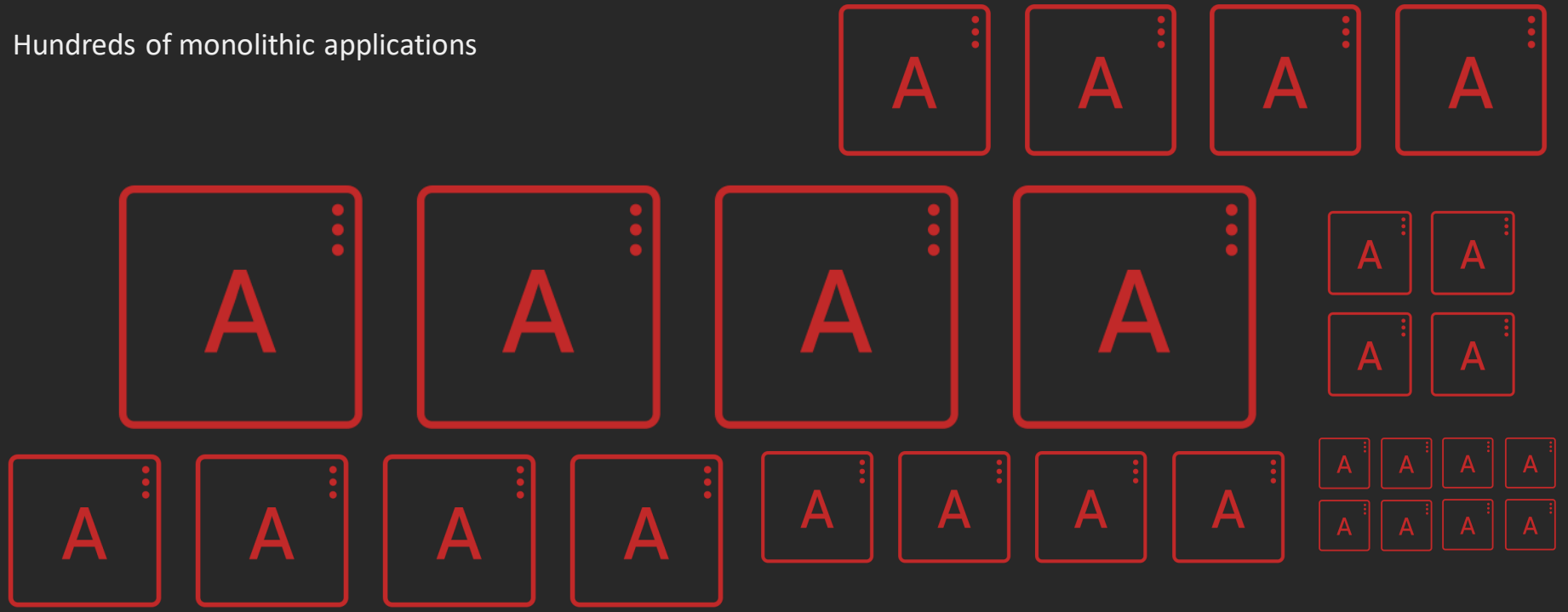
A global reach, **employing** more than **8,400 employees**

and serving **customers** in more than **165 countries** in **45 languages**

Forbes | 2018
AMERICA'S BEST LARGE EMPLOYERS
POWERED BY STATISTA

Scholastic challenges

Hundreds of monolithic applications



Scholastic challenges

Hundreds of monolithic applications

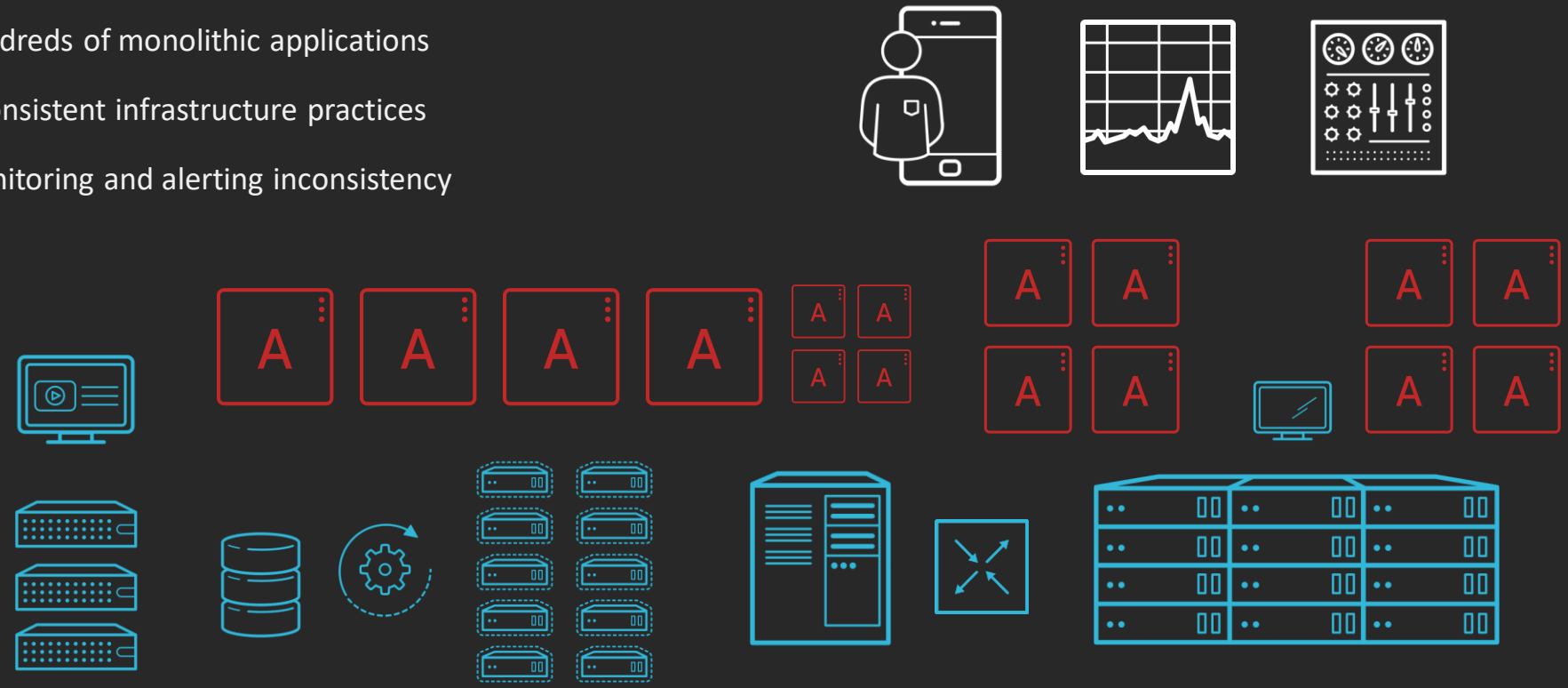
Inconsistent infrastructure practices

Scholastic challenges

Hundreds of monolithic applications

Inconsistent infrastructure practices

Monitoring and alerting inconsistency



Scholastic challenges

Hundreds of monolithic applications

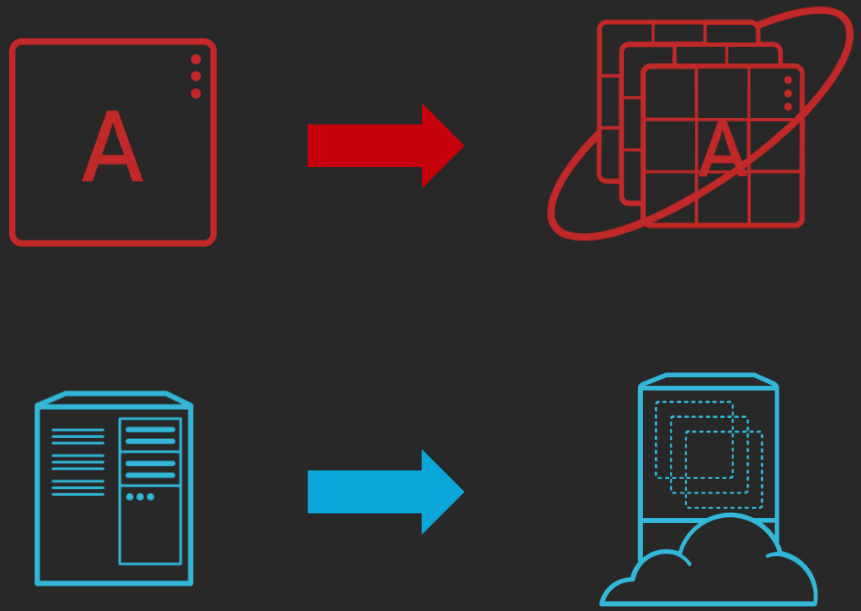
Inconsistent infrastructure practices

Monitoring and alerting inconsistency

Average go-live for application was 2–3 months

Scholastic goals

Move away from monolithic architecture



Scholastic goals

Move away from monolithic architecture

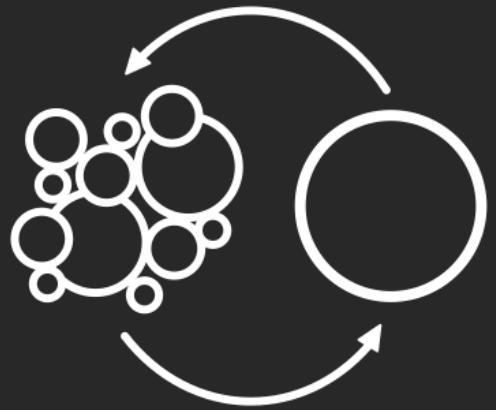
Reduce time to market

Scholastic goals

Move away from monolithic architecture

Reduce time to market

Gain consistency in CI/CD pipelines



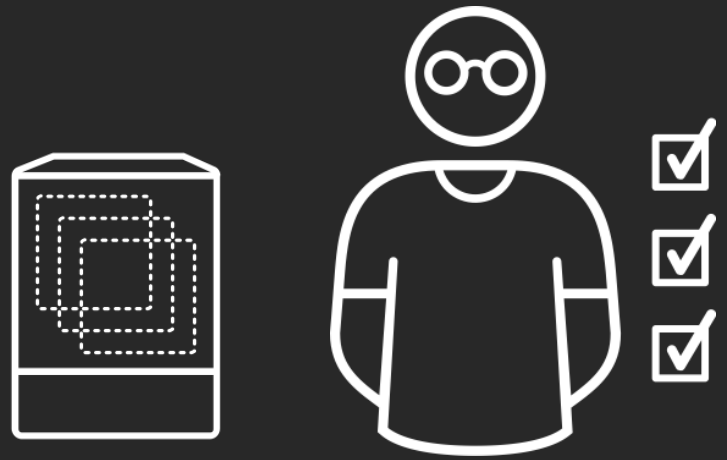
Scholastic goals

Move away from monolithic architecture

Reduce time to market

Gain consistency in CI/CD pipelines

Have a solid container platform (out-of-box solution)



Why Scholastic chose Red Hat (on AWS)

We evaluated Kubernetes, Tectonic, and OpenShift Origin

Finally settled on Red Hat OpenShift Container Platform because:

- Source to Image (S2I)
- Routes
- Templates
- Friendly user interface

Why Scholastic chose Red Hat (on AWS)

We evaluated Kubernetes, Tectonic, and OpenShift Origin

Finally settled on Red Hat OpenShift Container Platform because:

- Orchestration
- Installation
- Support

Solution implementation (infrastructure)

We used the Ansible Contrib playbooks to spin up all infrastructure and install OpenShift

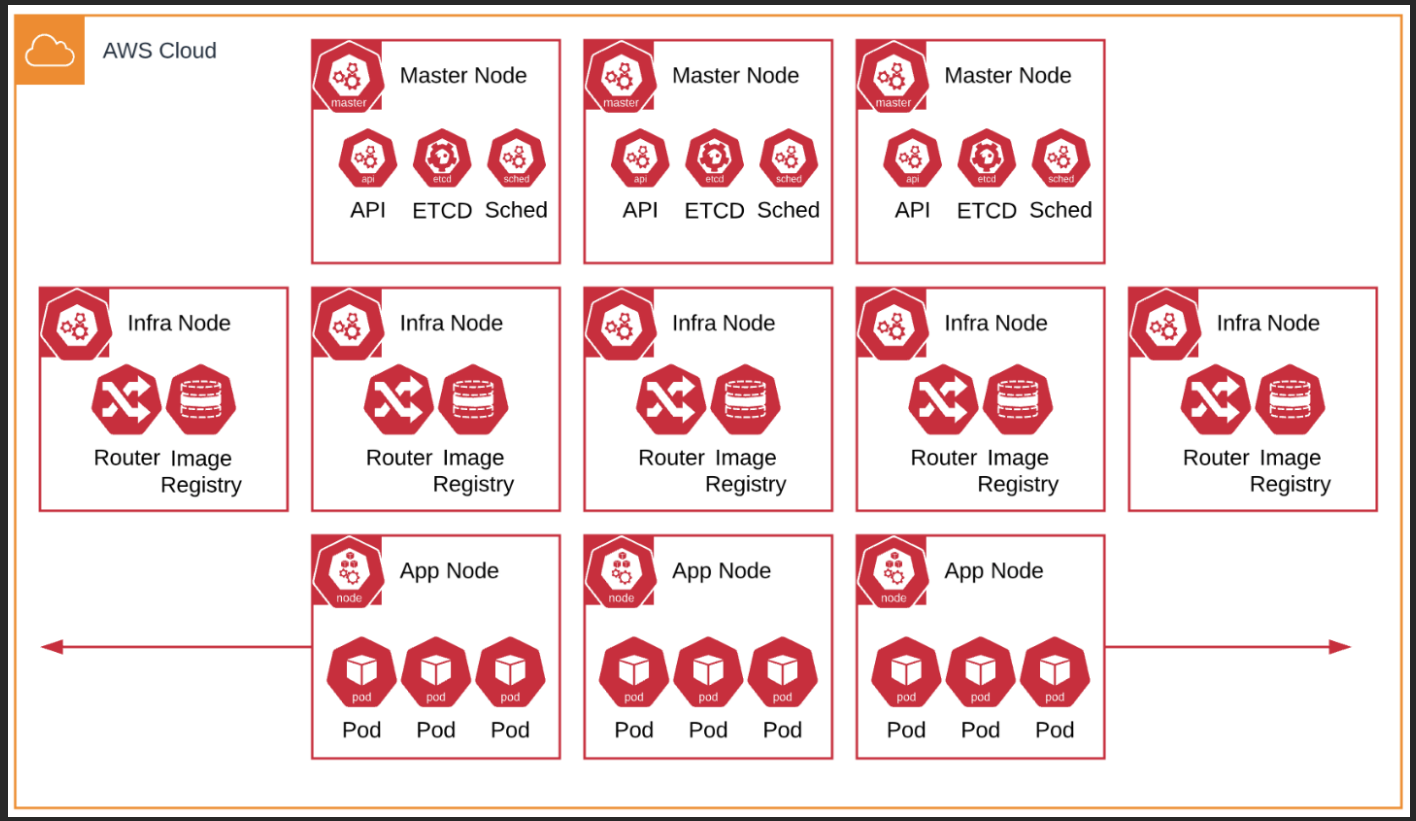
Issues with upgrading and customization

Solution implementation (infrastructure)

Overcame challenges by creating one-time playbooks

```
- include: playbooks/backup.yml
- include: playbooks/update-logrotate.yml
- include: playbooks/update-iptables.yml
- include: playbooks/cht-install.yml
- include: playbooks/sensu/sensu.yml
- include: playbooks/sensu/sensu-openshift.yml
- include: playbooks/prune-cleanup.yml
- include: playbooks/ldap-config.yml
- include: playbooks/sysmon.yml
- include: playbooks/start-prometheus.yml
# - include: cluster-admins.yml
```

Basic architecture



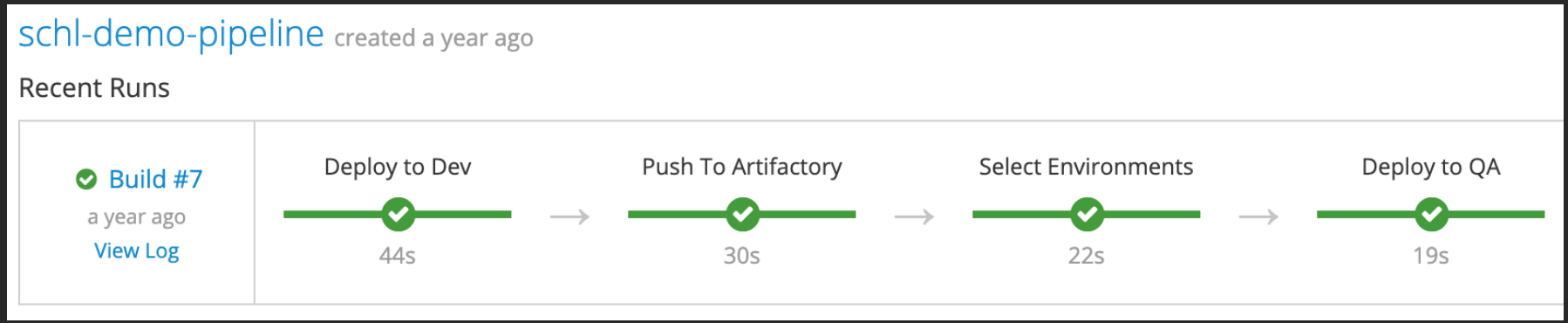
Solution implementation (CI/CD pipelines)

We went through three versions of pipelines

Received feedback from developers for improvements

Started with generic Jenkins job that aliased the oc commands

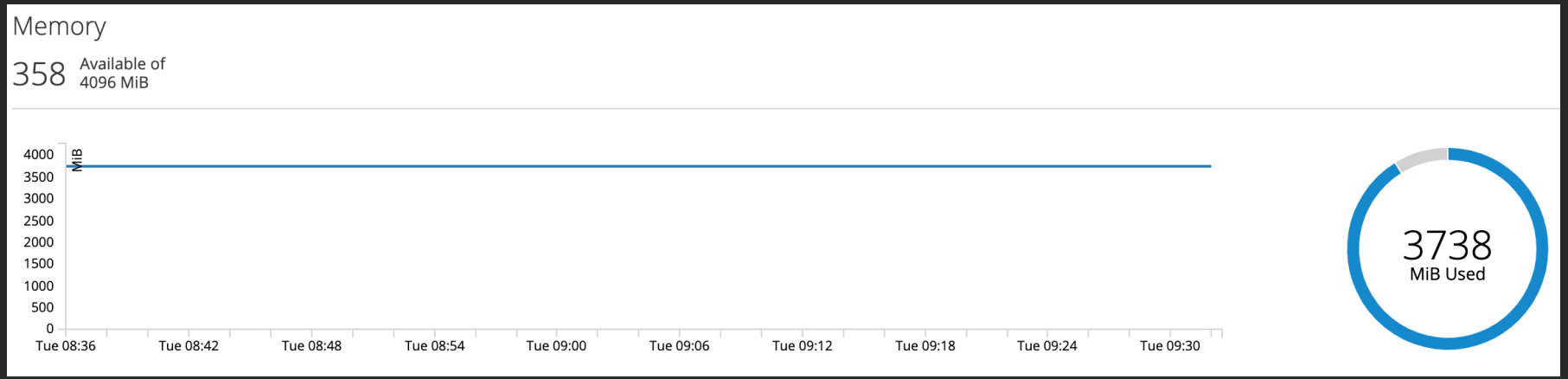
Ended up using OpenShift pipelines GUI with Jenkins as backend



Lessons learned

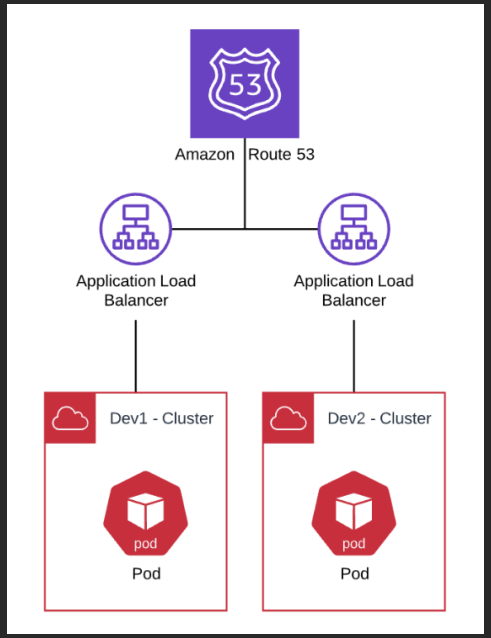
Think about image sizing and optimization; don’t pack too much into images

Set limits on applications



Lessons learned

Always think ahead about the upgrade strategy



Red Hat OpenShift 4

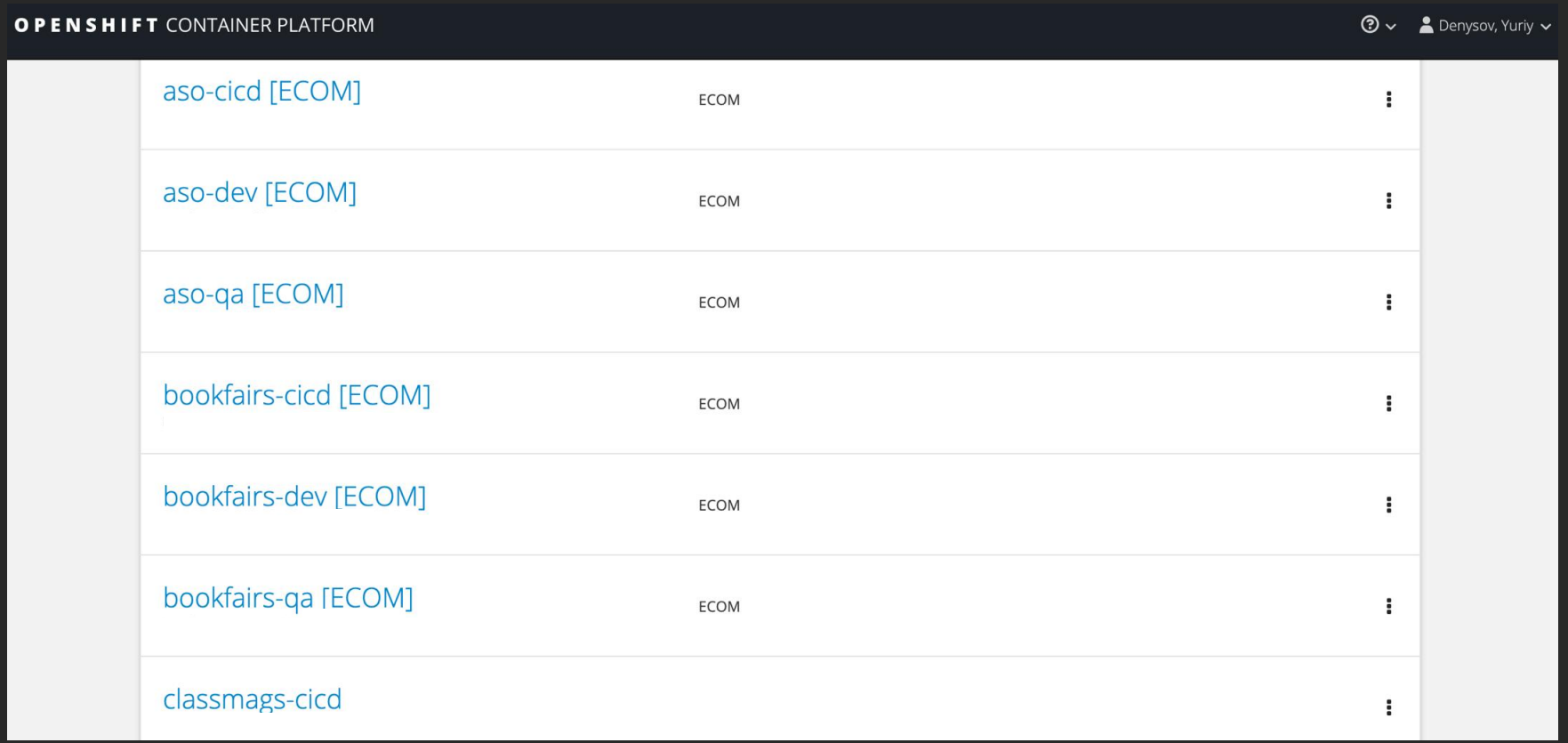
Results

Standardized deployment process for devs

Deployments down to 2–3 minutes

Streamlined operational readiness down to an hour

Results

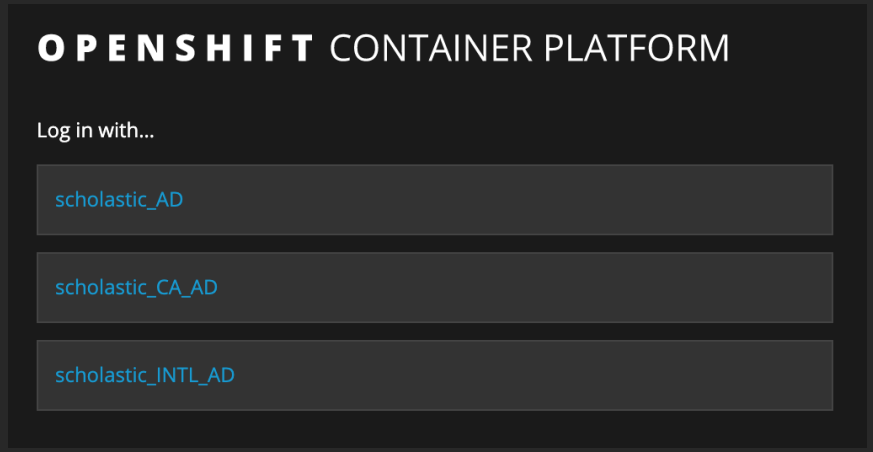

OPENSHIFT CONTAINER PLATFORM
Denysov, Yuriy
aso-cicd [ECOM]
ECOM
aso-dev [ECOM]
ECOM
aso-qa [ECOM]
ECOM
bookfairs-cicd [ECOM]
ECOM
bookfairs-dev [ECOM]
ECOM
bookfairs-qa [ECOM]
ECOM
classmags-cicd

Results

Resiliency

LDAP plugged into OpenShift

Time to market down to 2 weeks



Next steps

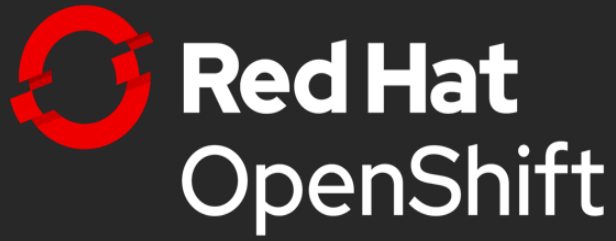
Looking forward to using OpenShift 4

Integrating open-source tools like Istio and Helm

Want to know more?

Try OpenShift via AWS Quick Starts:
https://aws.amazon.com/quickstart/architecture/openshift/

Check out http://learn.openshift.com to see how easy it is to get started and learn about more great innovators like Scholastic that are using OpenShift



Thank you!

Dan Juengst
djuengst@redhat.com
@DanJuengst

Yuriy Denysov
ydenysov@scholastic.com

Please complete the session survey in the mobile app.