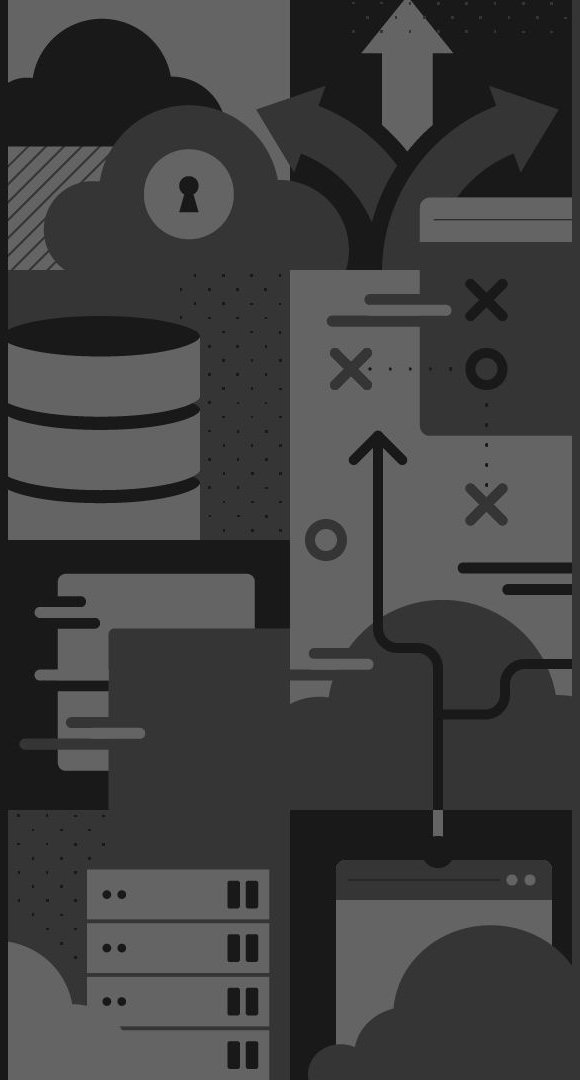


OpenShift where ever you need with ✨ Appliances ✨

Offline and at scale!

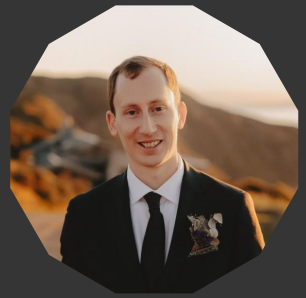
James Blair

Specialist Architect, Red Hat

Caleb Woodbine

Senior Software Engineer, ii.nz

Who are we??



James Blair

- Maintainer & sig co-chair @ etcd-io
- Specialist Architect @ Red Hat
- @ github.com/jmhbnz

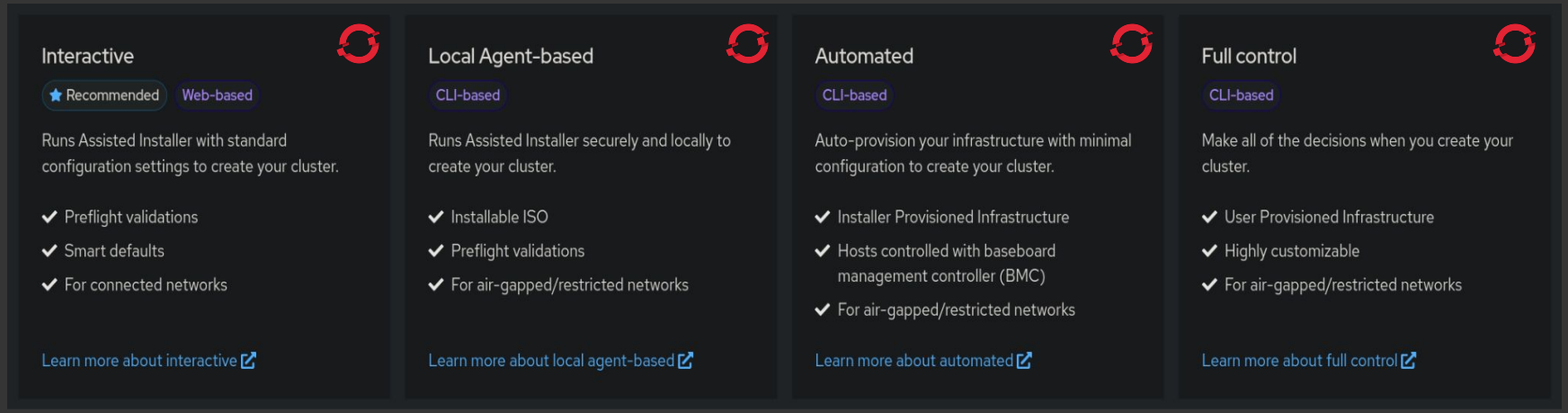
Caleb Woodbine

- Maintainer @ k8s conformance & sig k8s infra team
- Senior Software Engineer @ ii.nz
- @ github.com/bobymcbobs

What we'll explore today

- Refresh on OpenShift installation methods
- Introducing the OpenShift appliance builder
- Appliance creation walkthrough
- Appliance boot demo

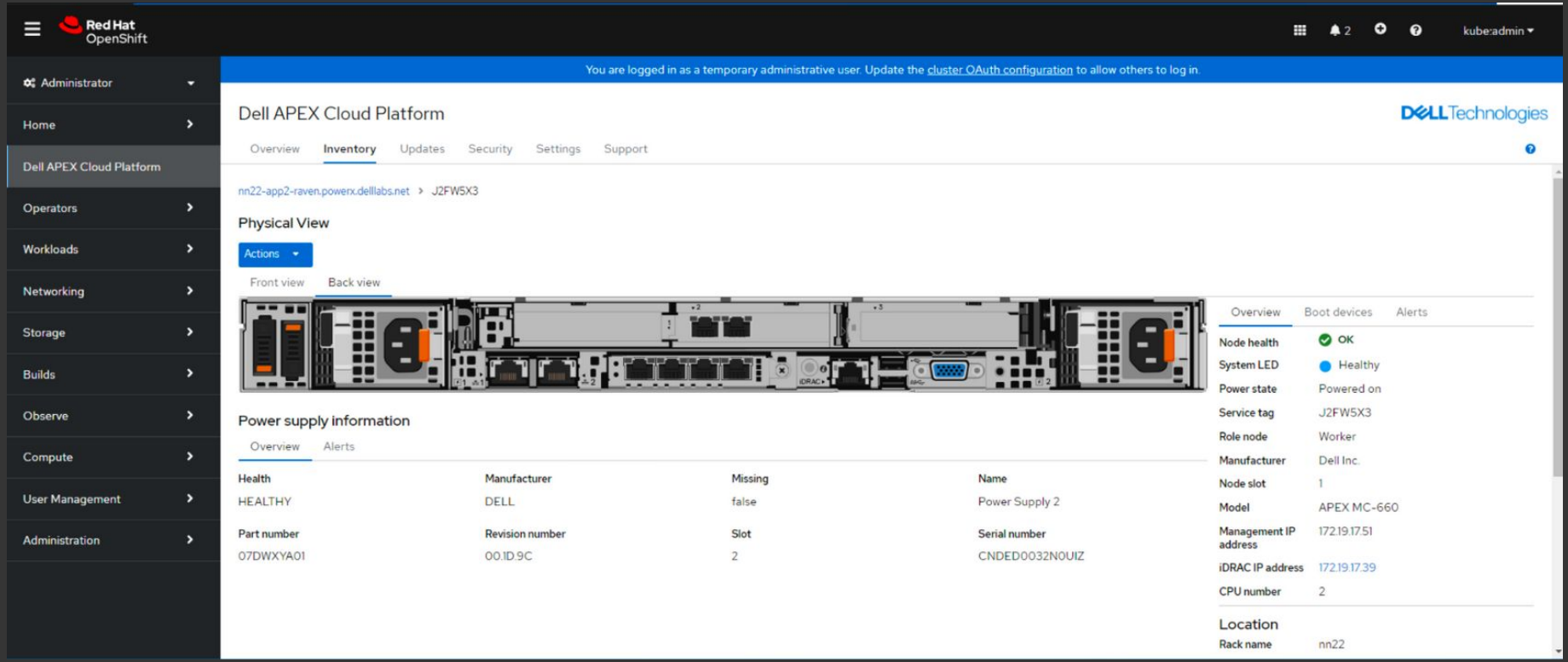
OpenShift installation methods



What is Appliance builder?

A utility to produce node disk images for offline and customised OpenShift clusters

What is it really? – Check this out

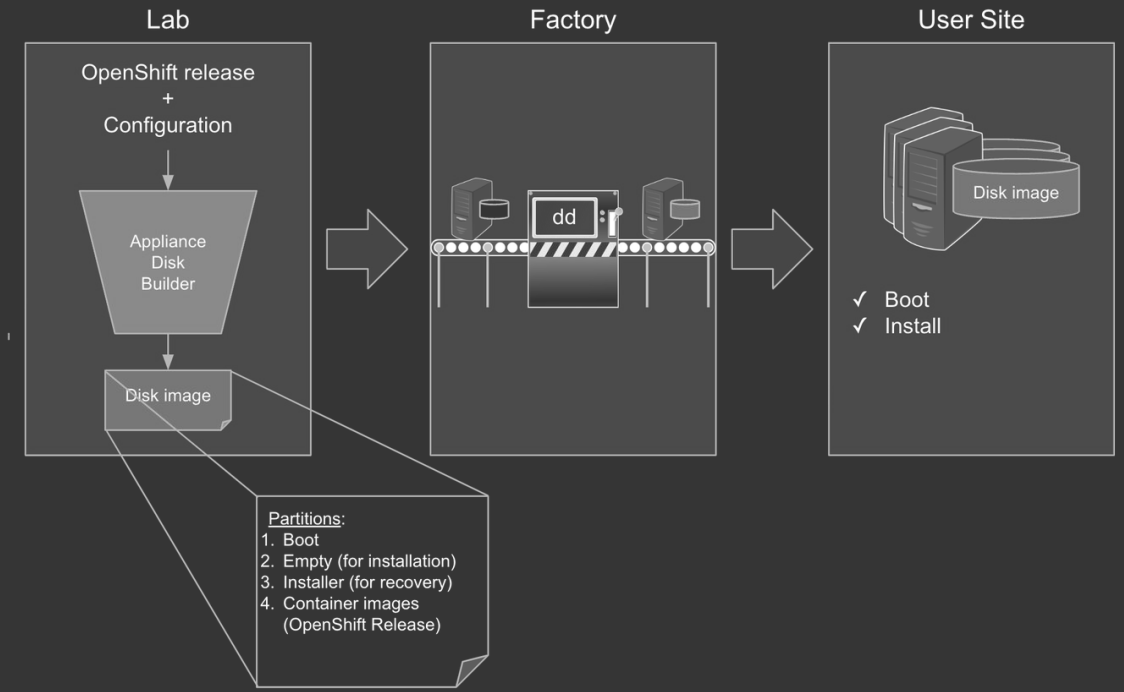


Why is it needed?

- Simplify disconnected installations
- Ship hardware with OpenShift already installed
- Deploy to many edge devices

Of course!

Can I build my own?



Taking a look...

Step 1 - Lab - Declare an appliance-config.yaml

```
 ~ ❯ cat appliance-config.yaml
apiVersion: v1beta1
kind: ApplianceConfig
ocpRelease:
  version: 4.14
  channel: candidate
  cpuArchitecture: x86_64
diskSizeGB: 200
pullSecret: '{"auths":{"...
sshKey: 'ssh-rsa ...
userCorePass: openshift
```

Step 2 - Lab - Build the appliance disk image

```
 ~ ❯ sudo podman run --rm -it --pull newer --privileged --net=host -v $APPLIANCE_ASSETS:/assets:Z $APPLIANCE_IMAGE build
[sudo] password for james:
Trying to pull quay.io/edge-infrastructure/openshift-appliance:latest...
Getting image source signatures
Copying blob c7a97c8aa16c done   |
Copying blob eb254c8cc372 done   |
Copying config 127196816b done   |
Writing manifest to image destination
INFO Successfully downloaded appliance base disk image
INFO Successfully extracted appliance base disk image
INFO Successfully pulled container registry image
INFO Successfully pulled OpenShift 4.14.30 release images required for bootstrap
INFO Successfully pulled OpenShift 4.14.30 release images required for installation
INFO Successfully generated data ISO
INFO Successfully fetched openshift-install binary
INFO Successfully downloaded CoreOS ISO
INFO Successfully generated recovery CoreOS ISO
INFO Successfully generated appliance disk image
INFO Time elapsed: 21m53s
INFO
INFO Appliance disk image was successfully created in assets directory: assets/appliance.raw
INFO
INFO Create configuration ISO using: openshift-install agent create config-image
INFO Download openshift-install from: https://mirror.openshift.com/pub/openshift-v4/x86_64/clients/ocp/4.
14.30/openshift-install-linux.tar.gz
```

Step 3 - Factory - Clone appliance disk image to device

```
~ ❯ dd if=appliance.raw of=/dev/sdX bs=1M status=progress
```

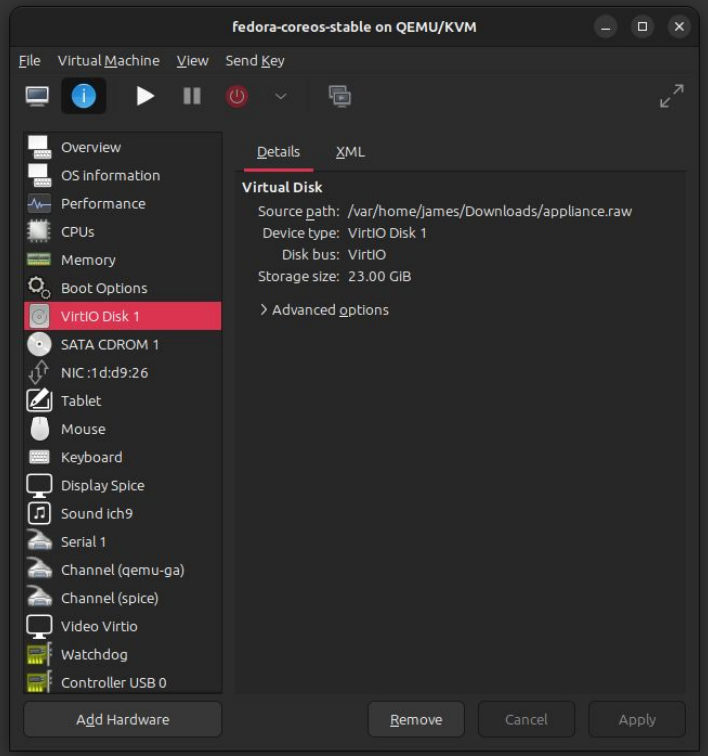
Step 4 - Site - Generate site specific config

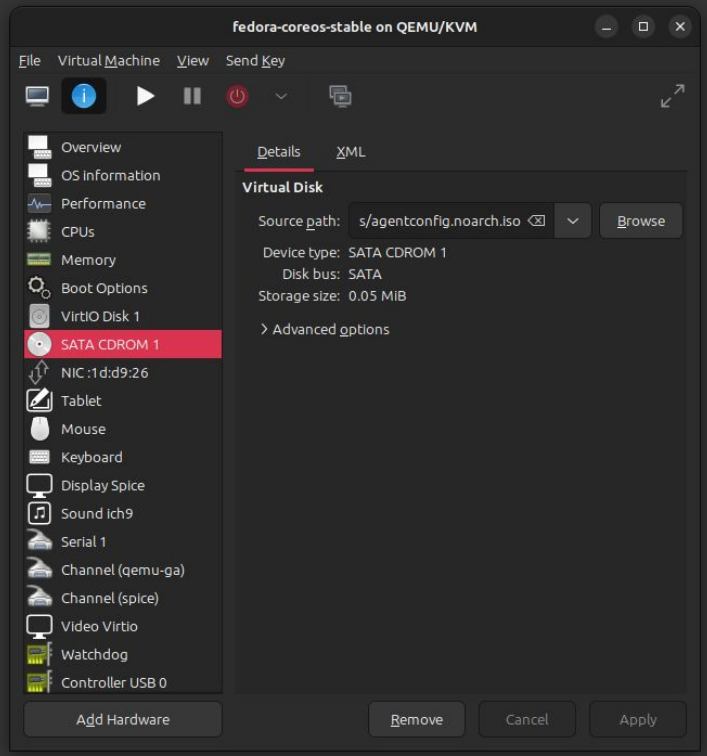
```
 ~ > cat agent-config.yaml
apiVersion: v1alpha1
kind: AgentConfig
rendezvousIP: 192.168.122.100

 ~ >
 ~ >
 ~ > cat install-config.yaml
apiVersion: v1
metadata:
  name: appliance
baseDomain: appliance.com
controlPlane:
  name: master
  replicas: 1
compute:
- name: worker
  replicas: 0
networking:
  networkType: OVNKubernetes
  machineNetwork:
  - cidr: 192.168.122.0/24
platform:
  none: {}
pullSecret: '{"auths":{"":{"auth":"..."
sshKey: 'ssh-rsa ...'

 ~ >
 ~ >
 ~ > ./openshift-install agent create config-image --dir $CLUSTER_CONFIG
```

Step 5 - Site - Mount disks and boot the appliance!





What's more

- Produce an ISO, raw disk image, or sparse raw disk image
- Include pre-installed operators such as from Operator Hub in the artifact
- Include any additional container images or k8s manifests in the artifact
- Run on architectures are x86_64, aarch64 and ppc64le

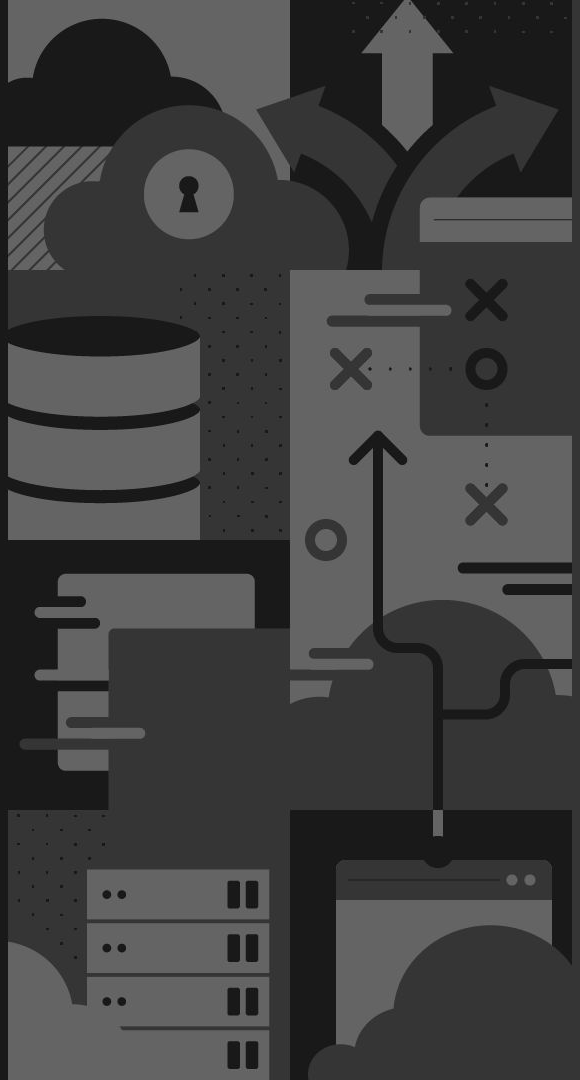
Demo

Open Source

- repo at github.com/openshift/appliance
- KubeVirt (kubevirt.io) / OpenShift Virtualisation
- Podman + Fedora / RHEL

Future

- Now available in **Technology Preview**
- Supported user guide: access.redhat.com/articles/7065136
- Already in use at scale by Dell



Thank you