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BUILDING BOOTABLE CONTAINER IMAGES IN PULP

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Agenda

- Defining the Challenges
- Introducing the Solution
- How Pulp Fits in
- Real-World Use Cases with a Demo
- Q&A and Discussion

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What Problems Are We Trying to Solve?

- Complexity in System Management
- Fragmented Day 1 and Day 2 Workflows
- Upgrade and Package Management Issues
- Bootable Artifact Distribution
- Inconsistent Artifact Types
- Need for Multiple Image Variants

How Can We Solve These Problems?

- By using **standard container practices**
  - Leverage the existing Container Ecosystem
  - Distribute bootable artifacts via Container Registries
  - Apply and manage OS changes within image layers
  - Integrate with Security Scanning
  - Sign and attest the images

What are Bootable Container Images?

- OCI Images designed to be used as a bootable operating system
- Based on the OSTree technology
- Usually created by leveraging the build process with Containerfiles

Containerfile

```
# Base image
FROM quay.io/fedora/fedora-bootc:40

# Install the "hello" package using DNF package manager
RUN dnf install -y hello
```

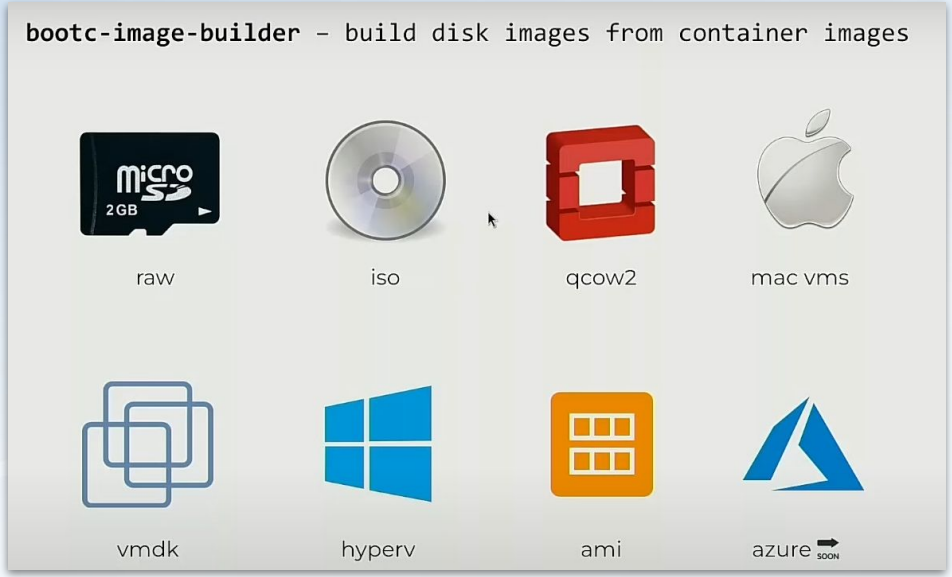
bootc

```
# Step 1: Initialize the system with a Fedora bootable container image
sudo bootc init quay.io/fedora/fedora-bootc:40

# Step 2: Upgrade the system to the latest version of the current image
sudo bootc upgrade

# Step 3: Upgrade to a specific newer version of the Fedora bootable container image
sudo bootc upgrade quay.io/fedora/fedora-bootc:41
```

Running the Image



Here Comes the Pulp

- Pulp has a Container Registry
  - You can upload Containerfiles into Pulp
  - (Bootable) images will be automatically built
  - The images will be automatically distributed

DEMO

- BUILDING THE IMAGE IN PULP
  - create a container repository
  - create a file repository
  - create the Containerfile and push it to Pulp
  - build the image in Pulp
  - create a container distribution

- RUNNING THE CONTAINER IMAGE AS A VM
  - create a config file to add the admin user to the disk image
  - build the disk image using bootc-image-builder
  - run a vm using the qcow2 image

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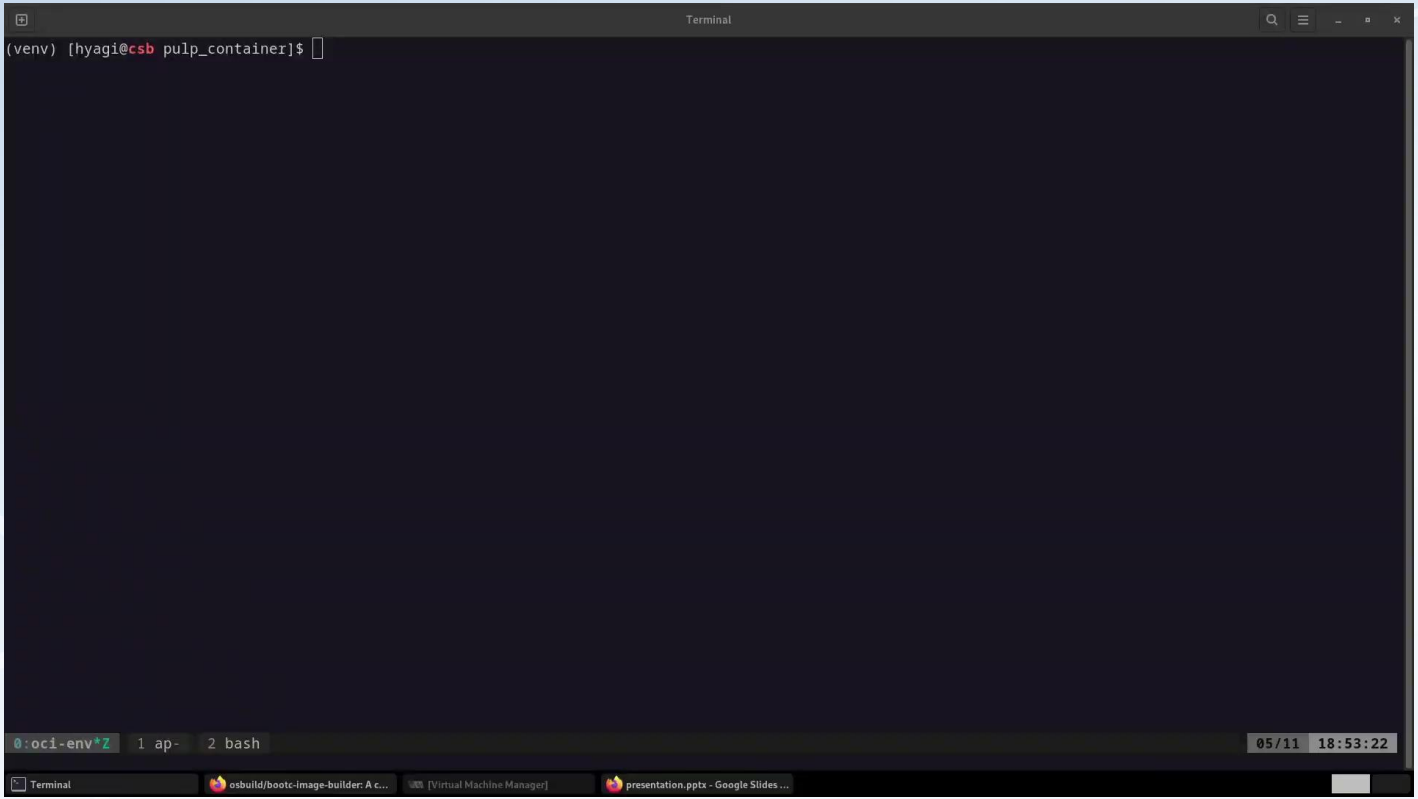

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