Container Engines by Demo™

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What’s this talk all about

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**Drawings**
To help set up the demos

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**Demos**
To understand how container engines work

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**Trick Questions**
For fun and to apply knowledge
Container Engines do Three Main Things

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**Provide User Interface/API**
This is the CLI provided by things like Podman and Docker, as well as the API provided by CRI-O (CRI)

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**Create Config**
This is an OCI compliant runtime config file which is handed off to an OCI compliant runtime (runc, kata, gvisor, etc)

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**Mount Storage**
Handle expansion of container image to layers on filesystem. Pass bind mounts through to storage namespace.
Demo #1 The Discerning Container Connoisseur (DCC)
Drawing

User

Bash CLI

Container Host

Linux Kernel

Fork/Exec

Process

Bash
Drawing
Demo
Trick Questions

Raise your hand if:
You can discern which processes were started by Podman and which were started by Docker?

Tell me how:
You can tell them apart?
Demo #2 Creating a Container
Drawing

Creating a container
Demo
Demo #3 The Story of Storage
Container Engines by Demo™

Plan with confidence
Remove uncertain from your platforms
Simpler deployment options
Standardized platforms for any environments
Latest stable tools
Combining open source innovation with enterprise reliability

 Drawing

User
Podman CLI

Podman

Container Host
Containers Storage MD
Copy on Write
Persistent Volume

Mounting storage
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Trick Questions

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Raise your hand if:
The container engine has a major effect on storage performance?

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Tell me how:
The container engine affects performance?
Demo #4 The Cagey
Configuration File
Drawing

User → Podman CLI → Podman

Container Host
- Containers
- Storage
- MD + C

Copy on Write
Persistent Volume

Creating config
Drawing
Demo
Trick Questions

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**Raise your hand if:**
You think you can create these configuration files by hand?

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**Tell me how:**
You would go about creating one?
Demo #5
Rambunctious Runc
Container Engines by Demo™

Drawing

Starting a container
Demo
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Drawing

The running container
Trick Questions

Raise your hand if:
You think runc provides a compatibility layer for running containers

Tell me how:
The container runtime can run Windows containers on Linux?
Demo #6 Cleaning up
Drawing

Killing the container
Drawing

Removing the container
Drawing

Removing the image
Demo
Container engines are simpler (and more complex) than we think
Further Reading/ Studying

- GitHub Repository for This Demo
- Podman API Announcement
- So, What Does a Container Engine Really Do Anyay
- Linux Container Internals Lab 2.0