



MicroVMs

Lean Mean Virtual Machines



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What's a MicroVM

- It's a VM, but small
- Very limited emulated hardware
- Include only what you need to run your software
- Startup time within a second

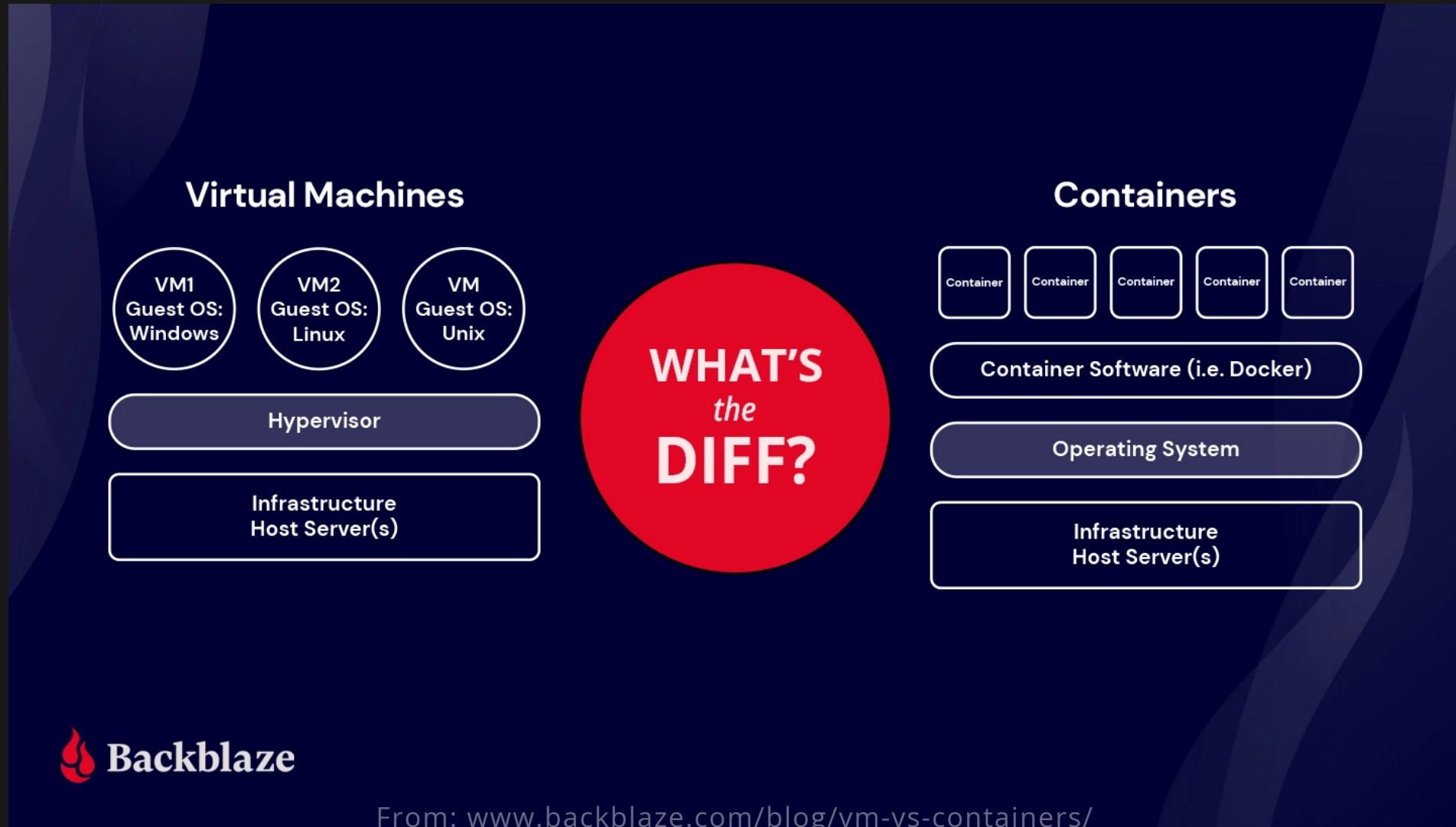


But, VMs are legacy

- Pets are legacy, "The docker way" isn't tied to docker
- **12 Factor** can be applied to more than just containers
- *Something* has to run K8s/Nomad/Docker engine



VMs vs Docker





Use cases

- Anything that runs user code (AWS Lambda, Screeps)
- Building images
 - No more passing through `docker.sock`
- Local cluster emulation
 - Especially useful for things that need custom networking
- Init systems like Systemd/OpenRC can be used



Downsides

- Building VMs is a bit cumbersome
- No "established" orchestration tools like K8s for Docker images
- More overhead than a docker image
- Networking requires more work



Getting started: Firecracker

Firecracker is built by AWS

- 125ms launch time @ 5Mb memory overhead
- Supports overprovisioning
- Metadata service support
- API driven



Building a MicroVM

- Firecracker **QuickStart**
- You need a kernel image, and a root file system
- You *could* compile the linux kernel
 - Or you could get the one from the quickstart
- Get a RootFS
 - Can be created by copying a Docker file system
- You can replace `/sbin/init` by your app to bypass the full system boot



DEMO



Questions?