Microsoft

Getting started with containers and Kubernetes

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Agenda

Why containers?

Getting started with Docker containers

Using Docker for local development

Deploying containers

Container orchestrators (Kubernetes)

Q & A

About me

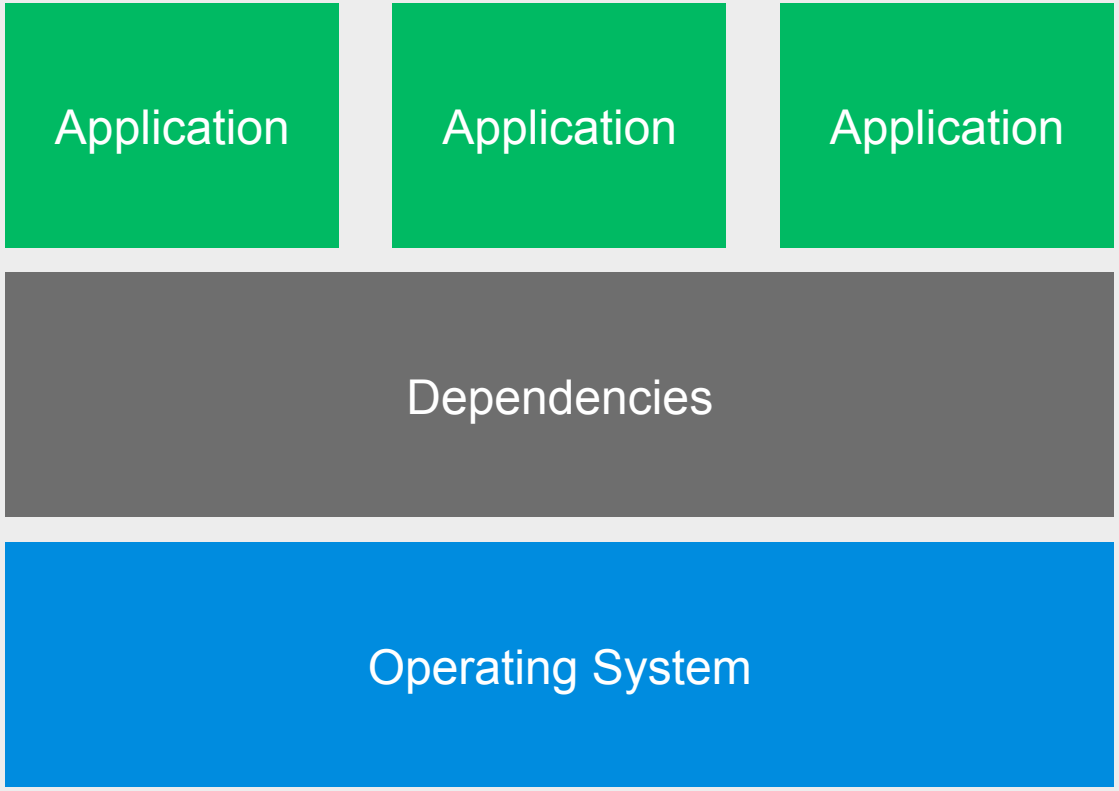
UBC Computer Science grad 2000

Worked in Vancouver in various software development roles

Cloud Developer Advocate at Microsoft

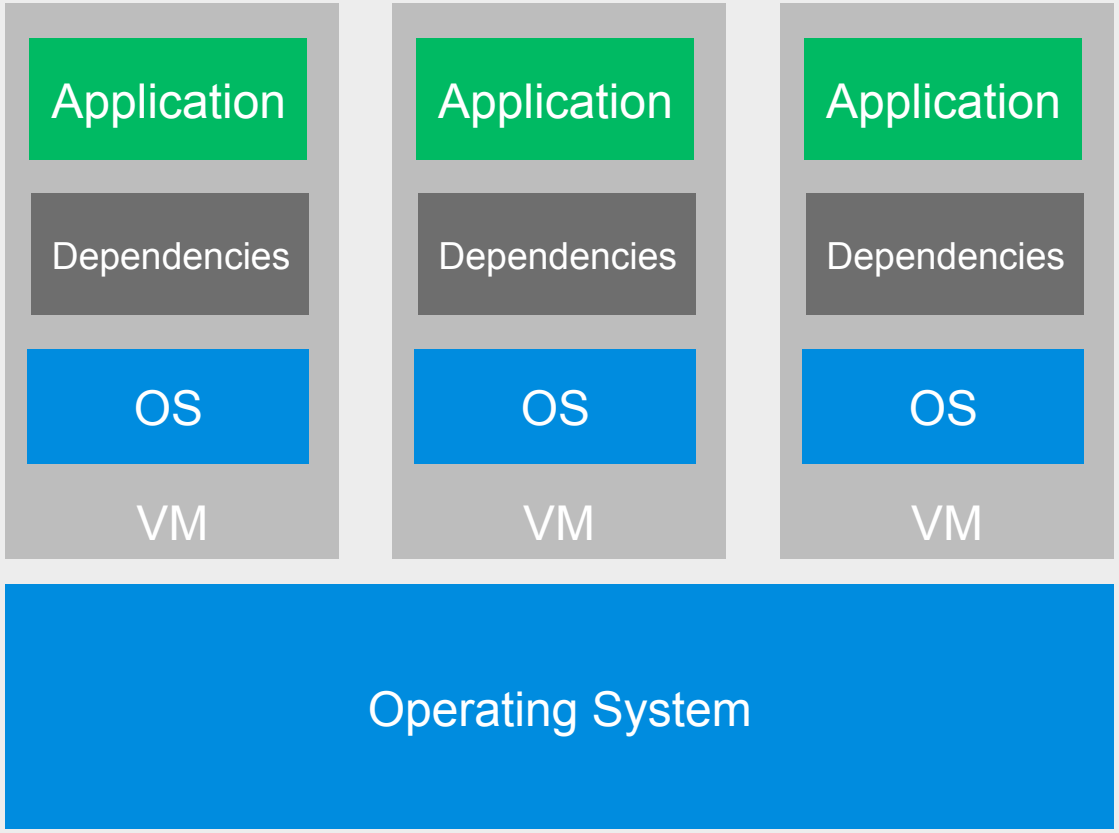
Containers

Processes



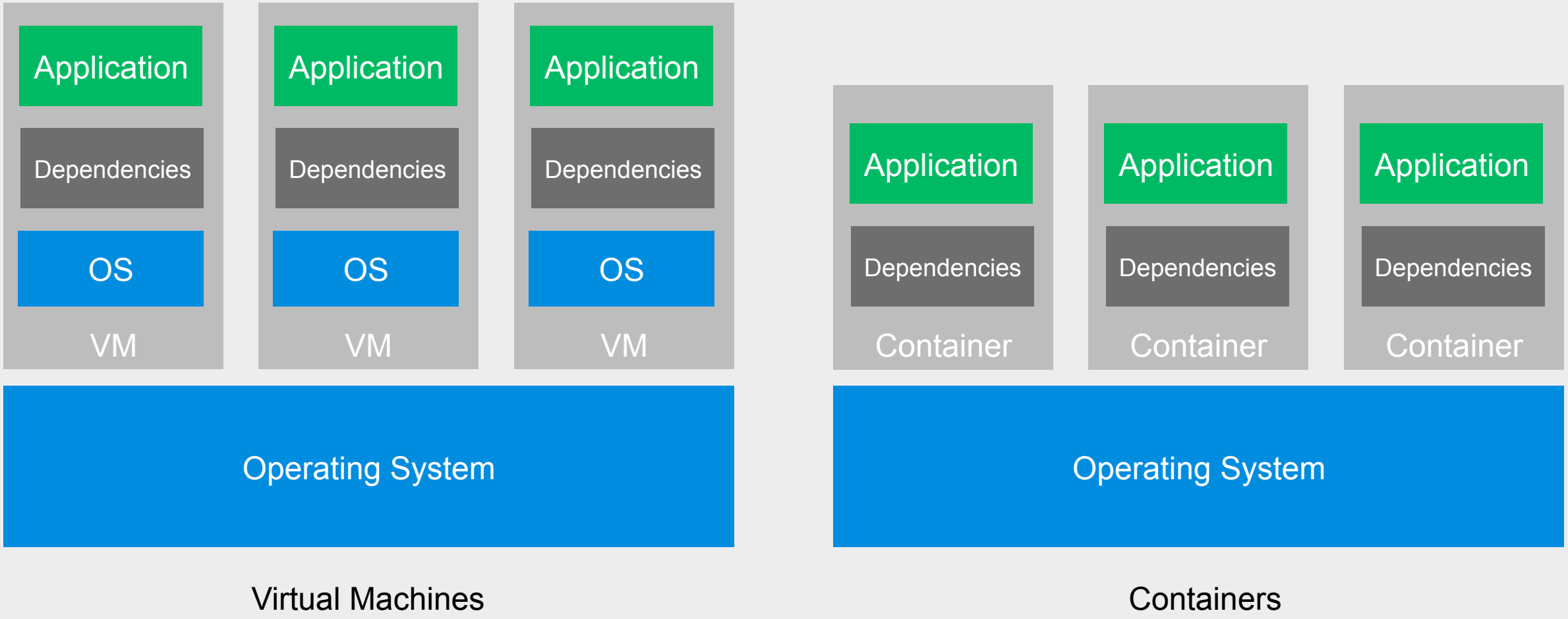
- **Efficient**
- **No Isolation**

Virtual Machines



- **High isolation**
- **Not efficient**
- **Slow to start**

Virtual Machines vs Containers



Containers

Process isolation with host-level performance

Package applications with all dependencies

Deployed the same way no matter what's inside

Co-exist with other containers on the same host

Developers responsible for building app *and* environment

Docker has become the de facto container format

Getting started with Docker

Getting started with Docker

Docker Hub

Images vs containers

Running a container

Building your own Docker images

Create a Dockerfile

```
FROM node:8
RUN mkdir -p /usr/src/app
WORKDIR /usr/src/app
COPY . .
RUN npm install
CMD ["npm", "start"]
```

Building a custom image

Building a custom image

Build a Docker image on your machine

Tags

Using environment variables

Docker compose

Sharing container images

Public registries

Private registries

Container registries

Deploying containers

Infrastructure as a service

Containers as a service

Platform as a service

Container orchestrators

Ways to deploy containers to Azure

Azure Container Instances

Azure App Service

Azure Kubernetes Service (AKS)

Azure Service Fabric Mesh

…

Deploy a container to the cloud

Good practices for containers

One process per container

Deploy the same image to all environments

Externalize all configuration

Use cloud services for data persistence

Container orchestrators

Run containers on a cluster of servers

Auto-scaling, auto-healing

Service discovery

Ingress

Kubernetes

Quickly becoming the most popular container orchestrator

Resource model

- Pod
- Deployment
- Service
- Ingress

kubectl command line tool

Getting started with Kubernetes

Helm and Draft

Continuous Integration / Delivery

Future of containers

Common way to deploy applications

More cloud services that run containers

Better developer tools

Tools to check out

VS Code extensions: Docker, Kubernetes

Helm and Draft

Virtual Kubelet / AKS Virtual Node

Azure Dev Spaces

Azure DevOps

AKS Virtual Nodes

Questions?

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