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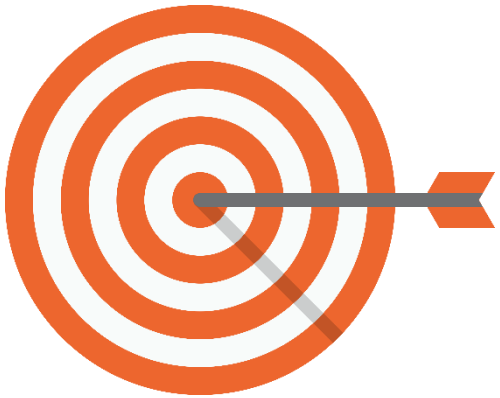
Docker Deep Dive

Introduction to Docker, Visual Studio and the Windows platform

Marcel de Vries

Course Objectives



Provide you with all the **practical** guidance to deliver applications using container technologies on Windows

Show how to do this with Visual Studio and Visual Studio Team Services

Show you how to run containers in production on clusters

What You Will Get from Deep Dive

You will learn how to use Windows containers to deliver your applications

- ✓ No more stress delivering features to production
- ✓ Always have running software
- ✓ Deliver anytime you want

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Course Modules

Docker on windows intro

Docker & Visual Studio

Data & Unit Testing

Continuous Delivery

Running on Azure ACS

Overview

Running Containers & Docker
Windows Server 2016
Windows 10
Production

Development Tools
Docker Tools & Docker for Windows
Selecting the Right .NET Framework
Visual Studio 2017
VSTS

Container Clusters
Azure Container Services
Service Fabric

Running Containers & Docker

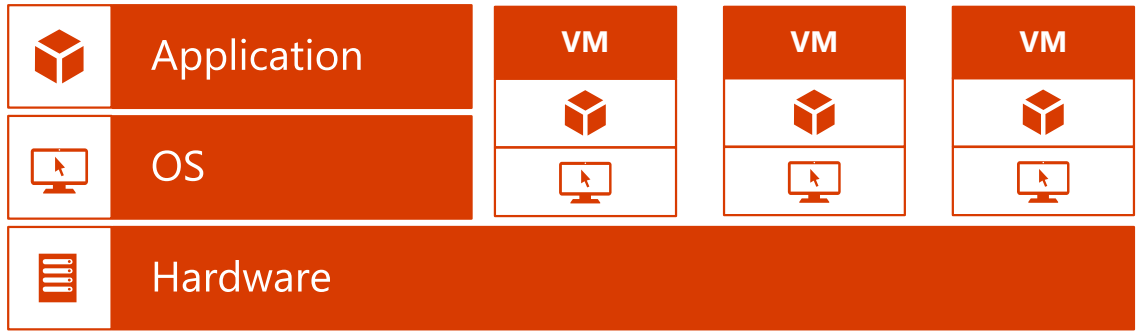
What Is a Container?

A containers is an isolated, resource controlled, and portable operating environment. A container provides a place where an application can run without affecting the rest of the system and without the system affecting the application.

If you were inside a container, it looks very much like you are inside a freshly installed physical computer or a virtual machine.

Containers vs. Virtual Machines

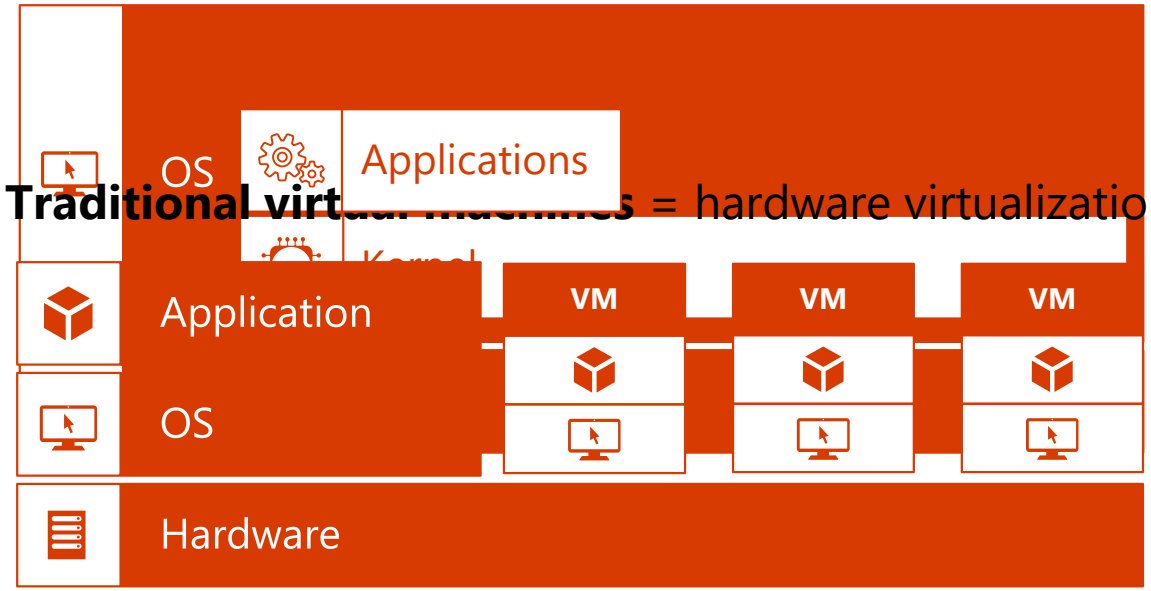
Traditional virtual machines = hardware virtualization



Containers vs. Virtual Machines

Containers = Operating system virtualization

Traditional virtual machines = hardware virtualization



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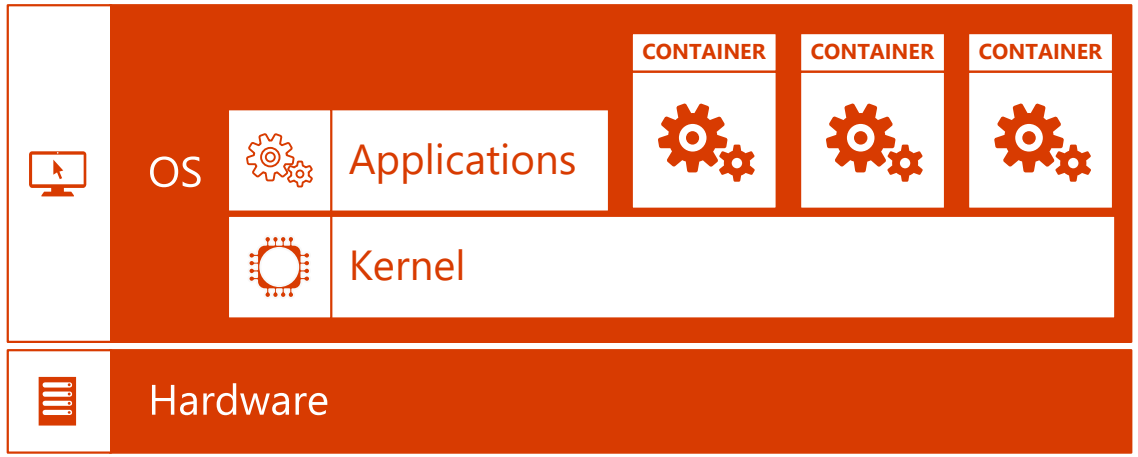

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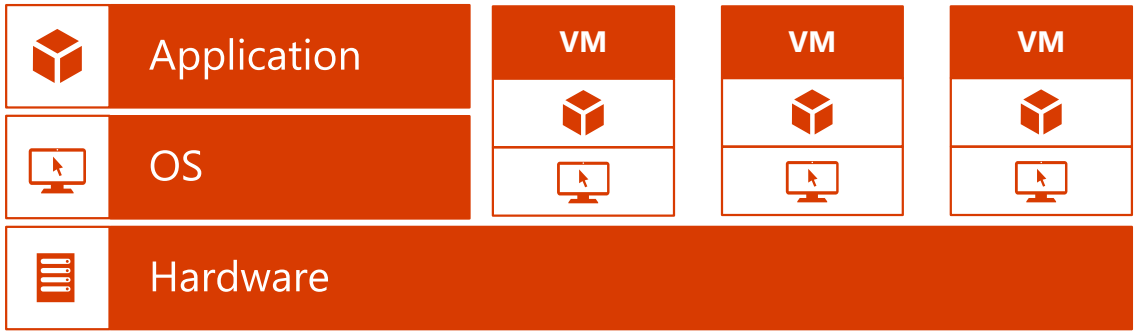

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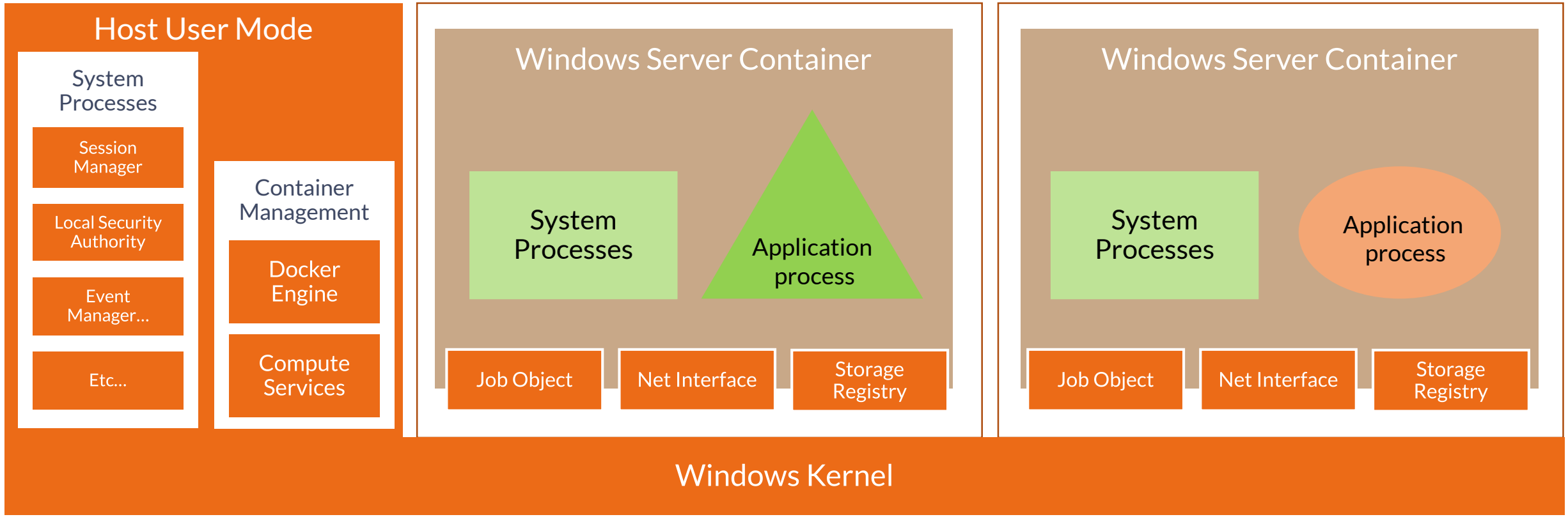
How Containers Work on Windows



Demo

Inspecting Running Containers on Windows

Containers vs. Docker

Docker

Unification of container technology

A set of command-line tools to work with containers

A unified way to build Container images

A unified way of maintaining images in a registry

A daemon process that manages the images & networking on a host machine

Alternatives

Rocket

Provides more secure execution capabilities with various isolation levels

```
docker run –it microsoft/windowsservercore cmd.exe
docker exec <container name> ipconfig
docker ps -a
docker images
docker network
```

Docker Command-Line Interface

These Docker commands start a container, create a new folder on the file system, exits the container, thus topping it and then committing the resulting state as a new image to be used and started later

Demo

Docker Command-Line

Difference Between an Image and a Container

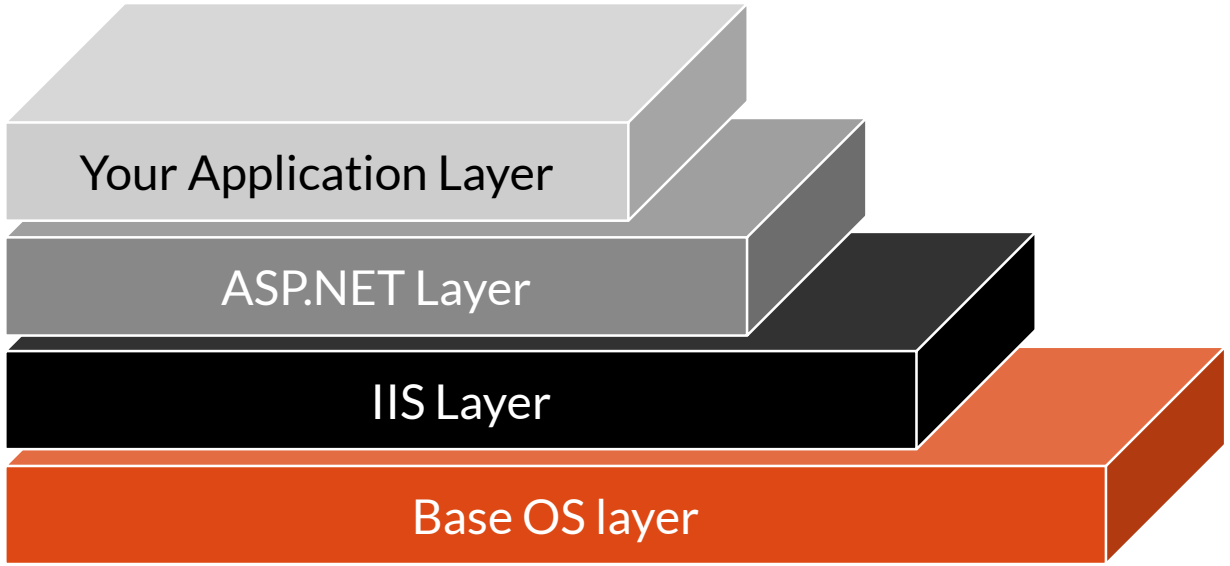
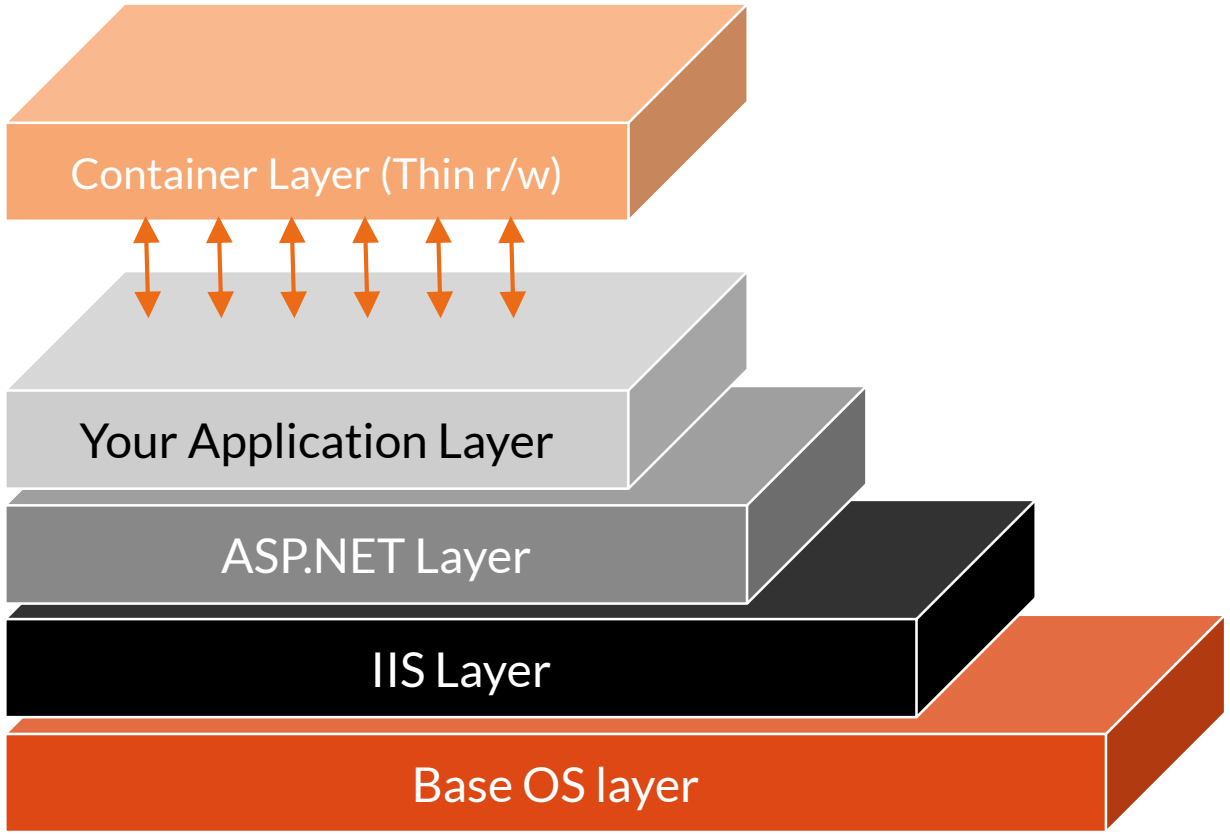


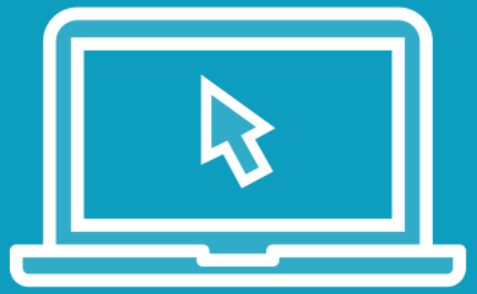
Image layers

Difference Between an Image and a Container



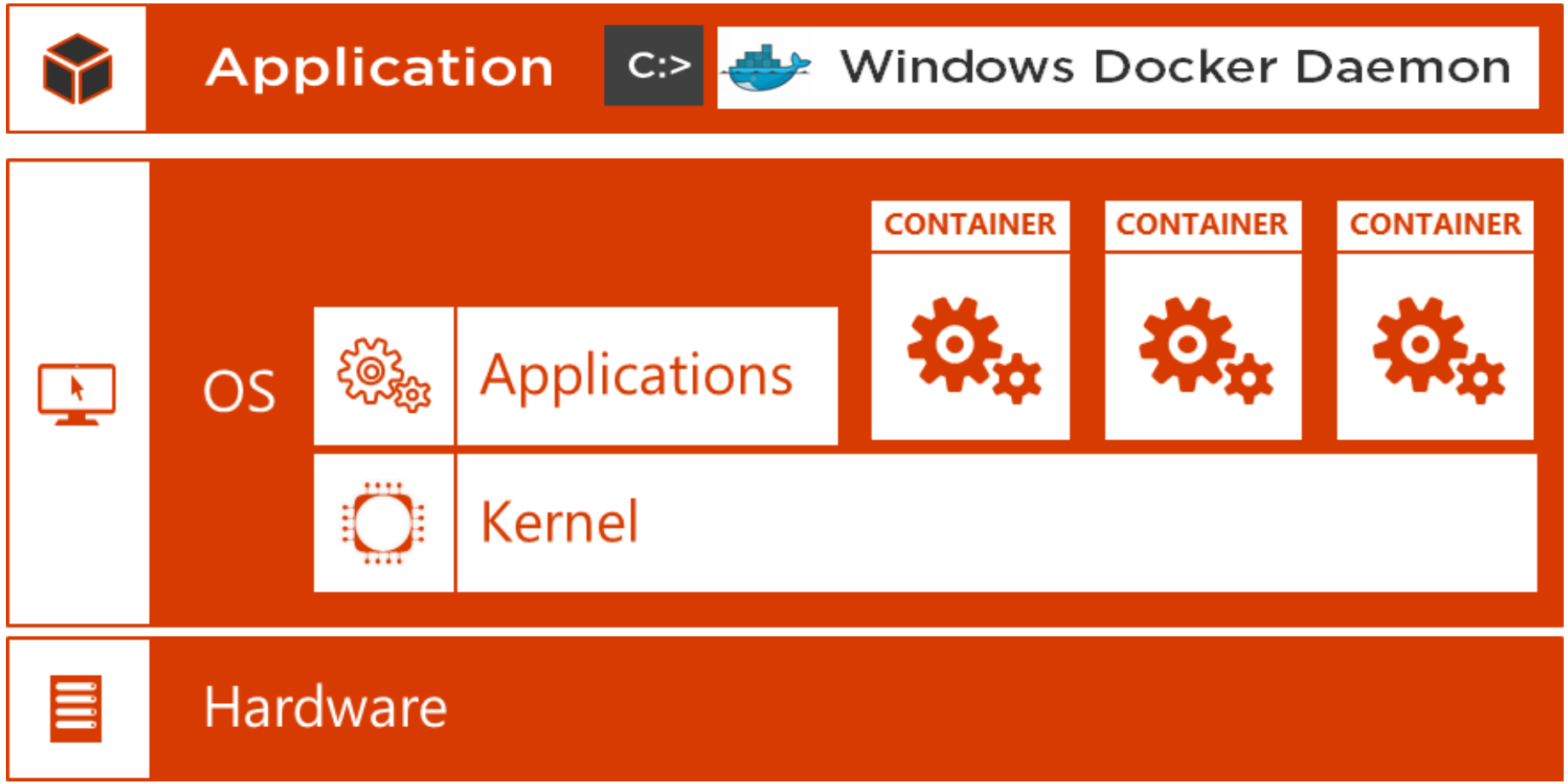
Container

Demo



Inspecting Images & Layers

Putting It All Together

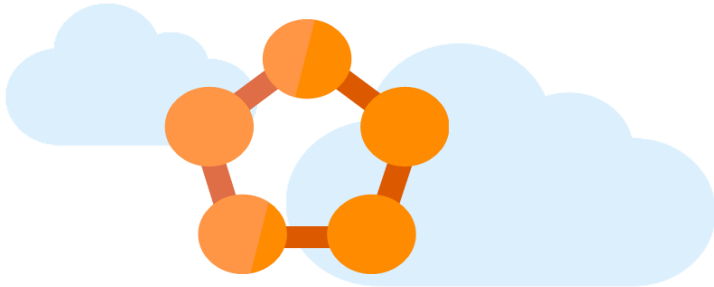


Running on Windows

Windows 10

Windows Server

Running on Azure ACS



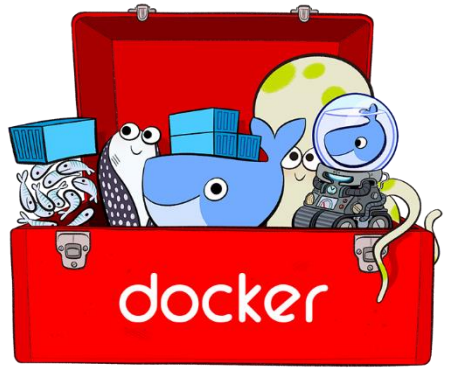
Running on Service Fabric

Development Tools

Docker for Windows

Docker Command-Line

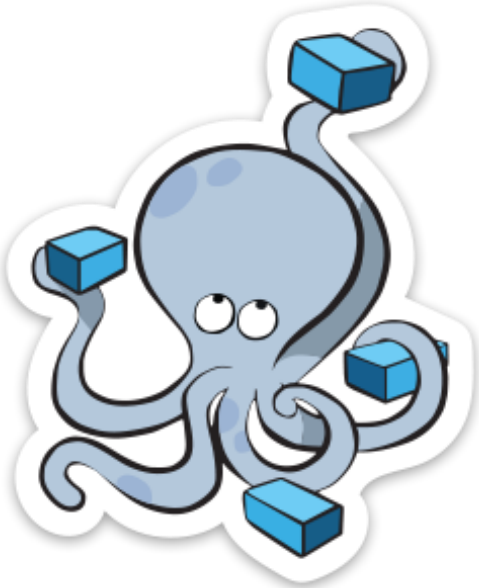
Visual Studio 2017



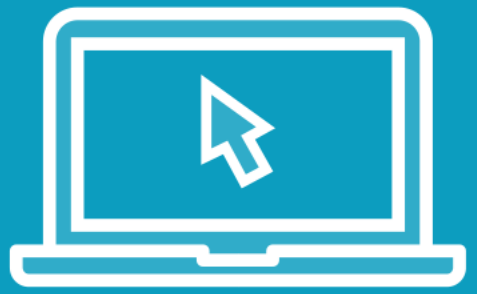
Docker Build

Docker Compose

Support in the Release Pipeline



Demo



Docker Commands Needed to Understand Visual Studio

Which .Net Framework to Choose?

Full .Net framework

Moving existing workloads to containers

Run on Windows

Feature rich workloads

Windows Server Core base image

.Net Core

Build new workloads

Run on Windows, Mac or Linux

Web workloads

Windows Nano Server base image

Container Clusters

Production Workloads Run on Clusters

Scalability

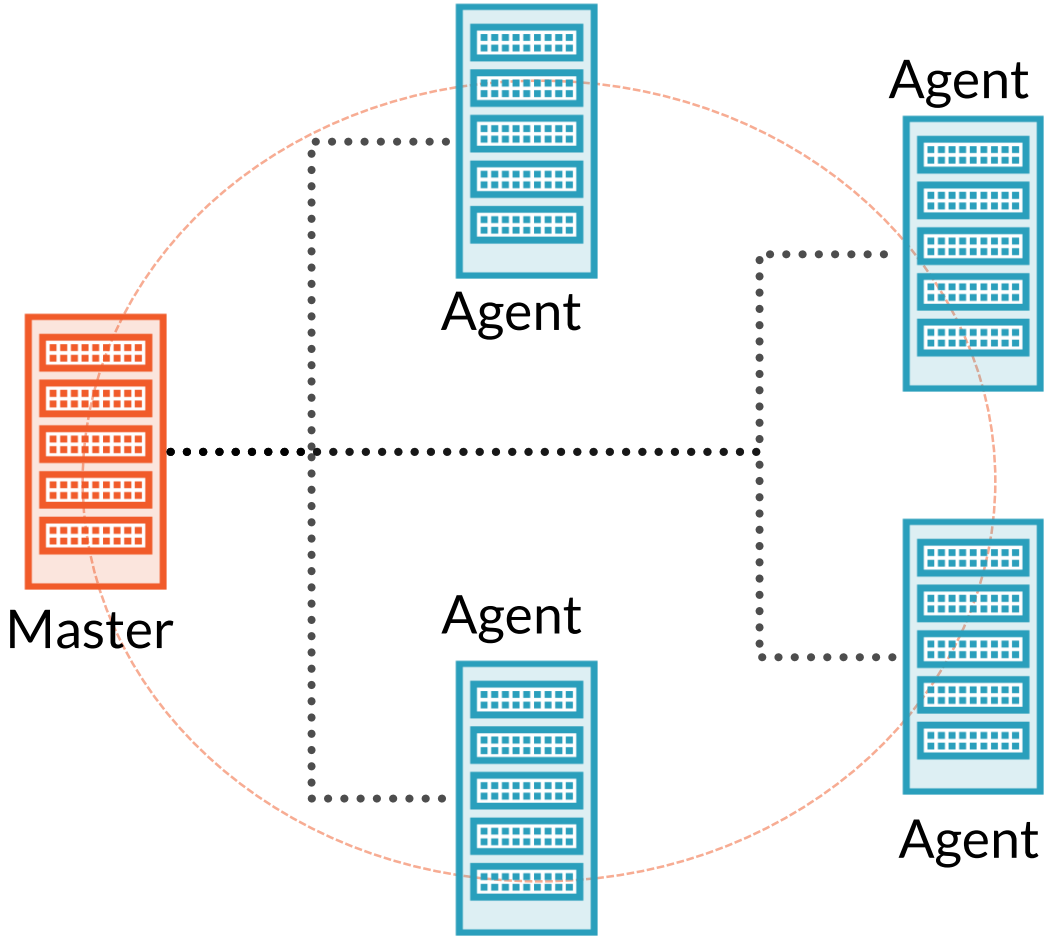
Fault Tolerance

Automatic Recovery

Zero Downtime Deployments

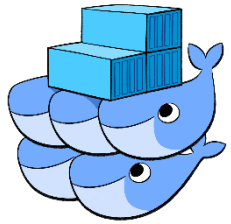
Resource Management Cross Machines

Container Composition

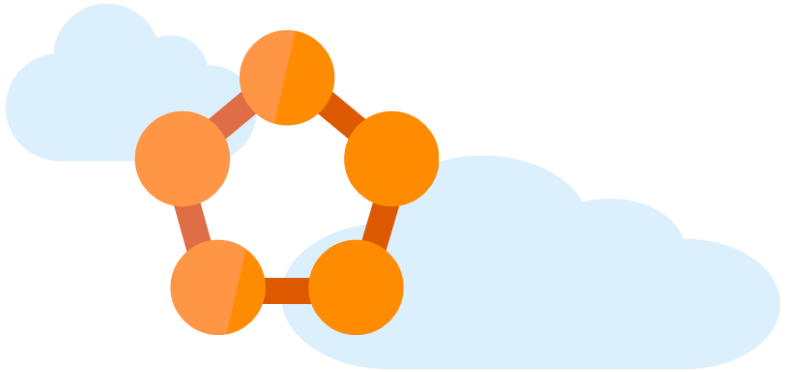


Options For Container Clusters

Azure Container Services (ACS)



DC/OS



Azure Service Fabric

Summary

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