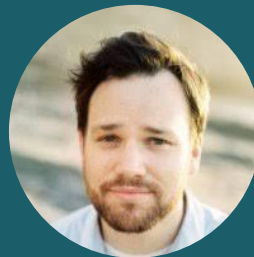




.Net Pipeline on Windows Kubernetes



Jessica Deen, Microsoft Azure & Dan Garfield, Codefresh

Dan Garfield

Chief Evangelist



 **codefresh**

Jessica Deen

Cloud Developer Advocate



Agenda

Containers - What are they?

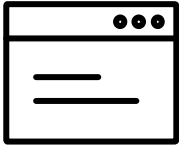
Codefresh - what is it?

Windows Kubernetes with Azure

Demo

Questions?

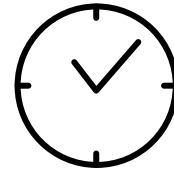
What we hear from developers



I need to create applications at a competitive rate without worrying about IT



New applications run smoothly on my machine but malfunction on traditional IT servers



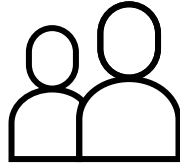
My productivity and application innovation become suspended when I have to wait on IT



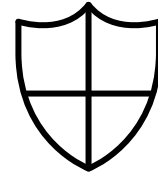
What we hear from IT



I need to manage servers and maintain compliance with little disruption



I'm unsure of how to integrate unfamiliar applications, and I require help from developers



I'm unable to focus on both server protection and application compliance

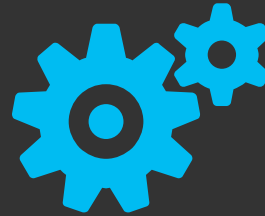


IT stress points

Security
threats



Datacenter
efficiency



Supporting
innovation



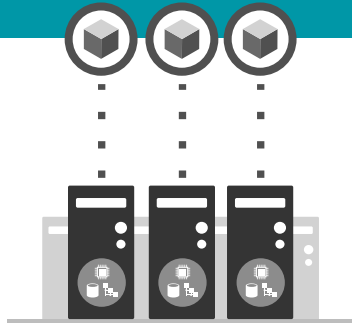
Cloud is a new way to think about a datacenter

Traditional model

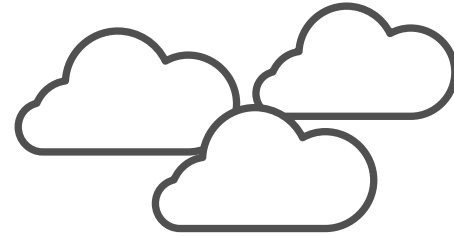
Dedicated infrastructure for each application
Purpose-built hardware
Distinct infrastructure and operations teams
Customized processes and configurations

Cloud model

Loosely coupled apps and micro-services
Industry-standard hardware
Service-focused DevOps teams
Standardized processes and configurations



Servers



Services

Why Containers?



Developer
s

- Enable 'write-once, run-anywhere' apps
- Enables microservice architectures
- Great for dev/test of apps and services
- Production realism
- Growing Developer Community

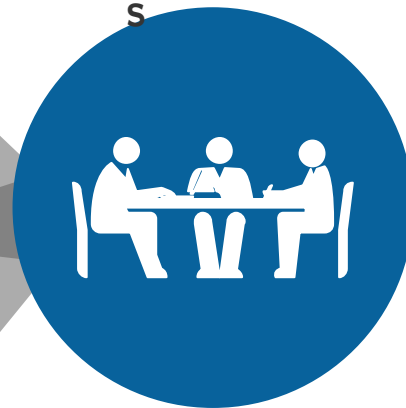


Operation
s

- Portability, Portability, Portability
- Standardized development, QA, and prod environments
- Abstract differences in OS distributions and underlying infrastructure
- Higher compute density
- Easily scale-up and scale-down in response to changing business needs

DevOp

s



What is a Container?

Not a real thing. An application delivery mechanism with **process isolation** based on several **Linux kernel** features.

Namespaces (what a process can see)

- ❖ **PID**
- ❖ **Mount**
- ❖ **Network**
- ❖ **UTS**
- ❖ **IPC**
- ❖ **User**
- ❖ **Cgroup**

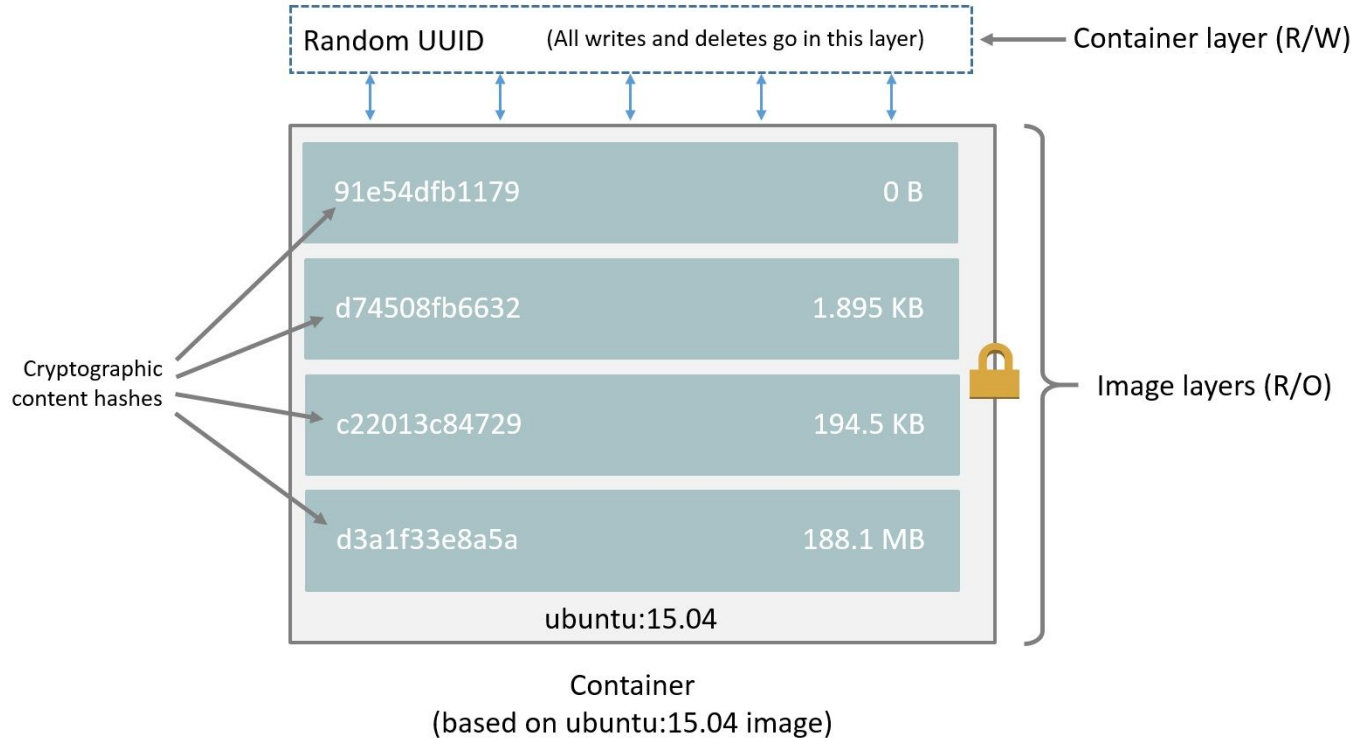
Cgroups (what a process can use)

- ❖ **Memory**
- ❖ **CPU**
- ❖ **Blkio**
- ❖ **Cpuacct**
- ❖ **Cpuset**
- ❖ **Devices**
- ❖ **Net_prio**

What is docker

- ❖ **Open Source Container Runtime**
- ❖ **Mac, Linux, Windows Support**
- ❖ **Command Line Tool**
- ❖ **“Dockerfile” format**
- ❖ **The Docker image format with layered filesystem**

Docker Layered Filesystem



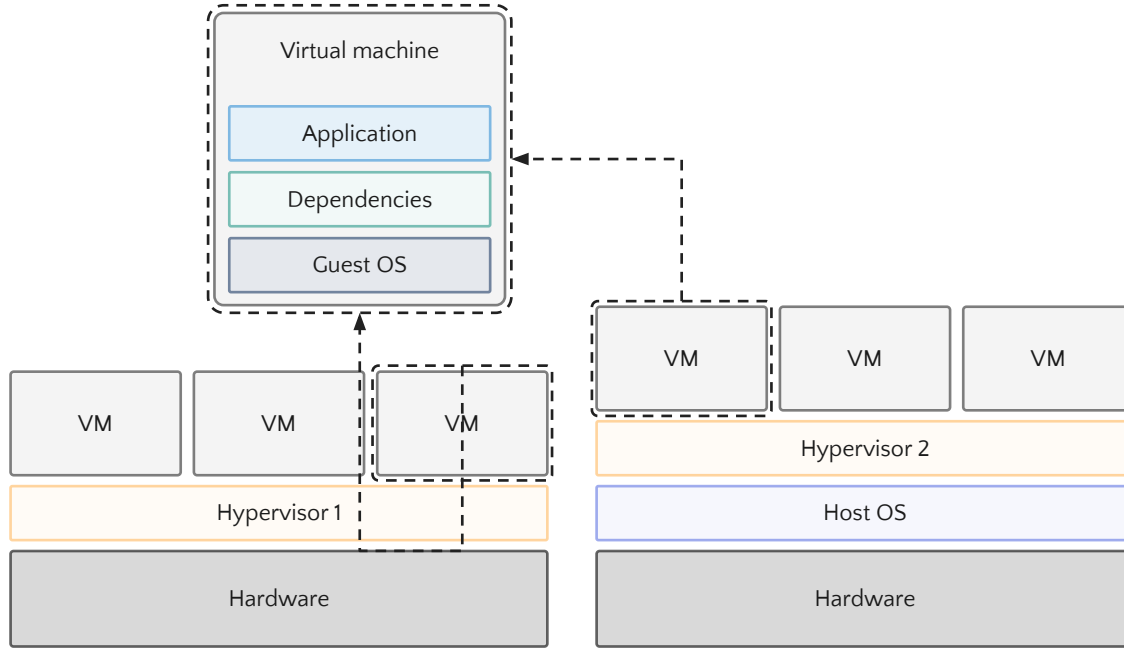
Docker Layered File System - Windows



40.00 KB	LABEL	<code>io.codefresh.repo.branch=master io.codefresh.repo.hash=4a5ed0211a2f27dad121fe7639b2c65fcc7e8970 io.codef ..</code> SHOW MORE
27.30 MB	COPY	<code>dir:357a0581ff98e1a7269d09913350593877c4d9cb3617f23bd134459615811489 in .\</code>
40.00 KB	WORKDIR	<code>C:\inetpub\wwwroot</code>
40.00 KB	ENTRYPOINT	<code>["C:\\ServiceMonitor.exe" "w3svc"]</code>
40.00 KB	EXPOSE	<code>80/tcp</code>
40.00 KB	ENV	<code>ROSLYN_COMPILER_LOCATION=c:\\RoslynCompilers\\tools</code>
226.85 MB	RUN	<code>powershell -Command \$ErrorActionPreference = 'Stop'; \$ProgressPreference = 'SilentlyContinue'; Invoke-We ..</code> SHOW MORE
233.26 MB	RUN	<code>powershell -Command \$ErrorActionPreference = 'Stop'; \$ProgressPreference = 'SilentlyContinue'; Add-Windo ..</code> SHOW MORE
40.00 KB	SHELL	<code>[powershell -Command \$ErrorActionPreference = 'Stop'; \$ProgressPreference = 'SilentlyContinue'];]</code>
40.00 KB	ENV	<code>COMPLUS_NGenProtectedProcess_FeatureEnabled=0</code>
1.08 GB	RUN	<code>Install update 10.0.17134.228</code>
3.43 GB	RUN	<code>Apply image 10.0.17134.1</code>

Virtualization versus containerization

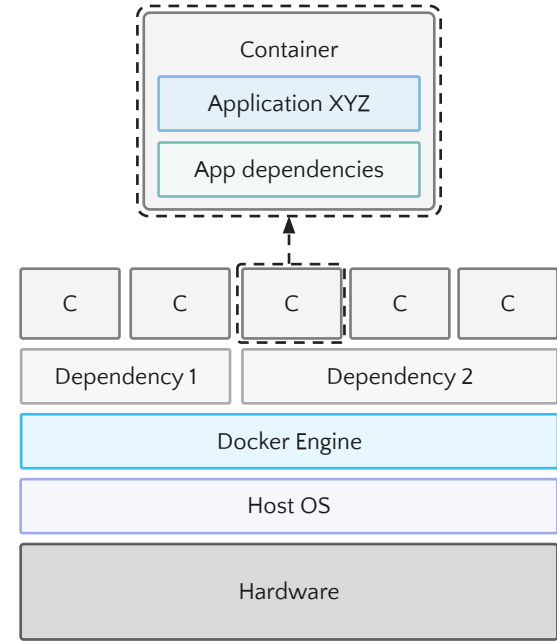
Virtualization



Type 1

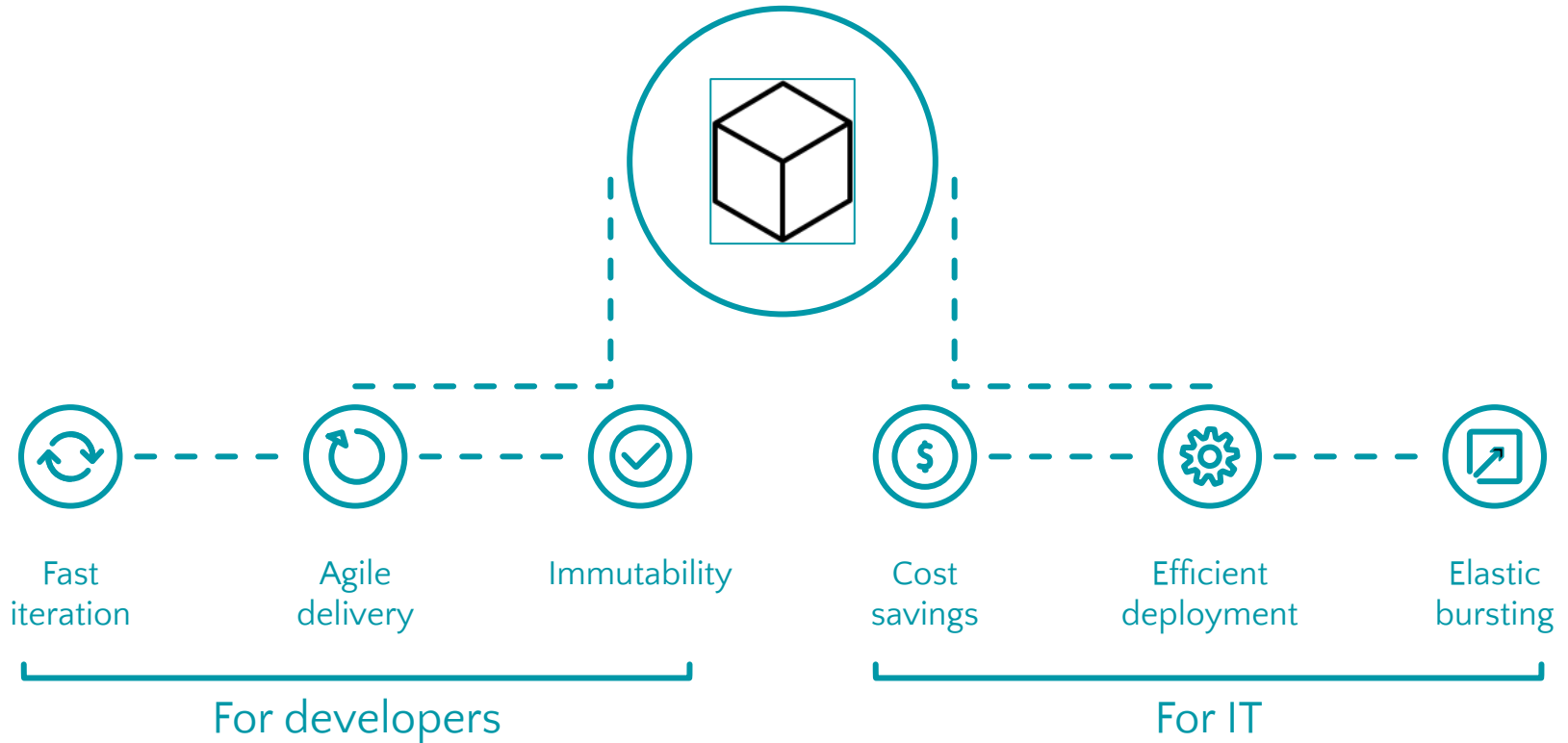
Type 2

Containerization



Hardware

The container advantage



ACS Engine - Manual Windows Cluster Deployment

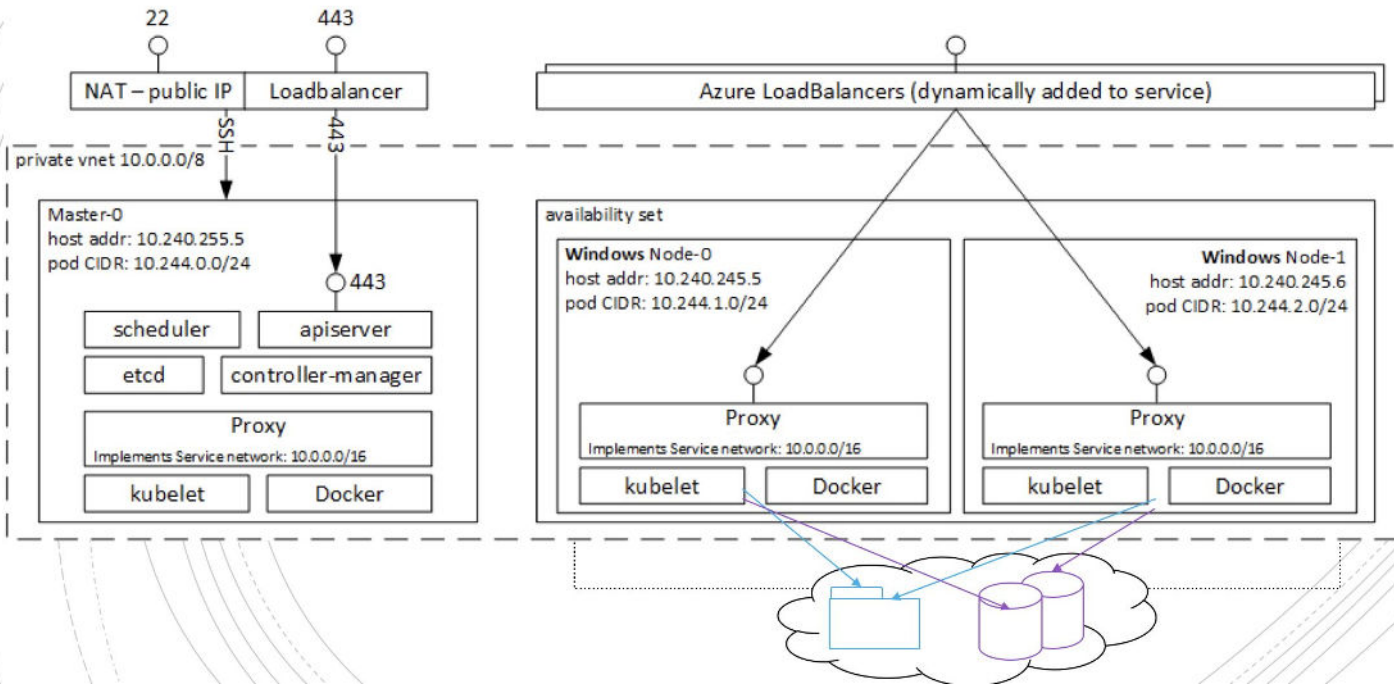
Generates ARM (Azure Resource Manager) templates for Docker enabled clusters on Microsoft Azure

- The input to the tool is a cluster definition.
- The cluster definition (or apimodel) is very similar to (in many cases the same as) the ARM template syntax used to deploy a Microsoft Azure Container Service cluster

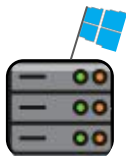
The cluster definition file enables you to customize your Docker enabled cluster in many ways including:

- choice of orchestrators
- multiple agent pools where each agent pool can specify:
 - VM Sizes, including GPU optimized VM sizes
 - Virtual Machine ScaleSets or Availability Sets
 - Storage Account Disks or Managed Disks
 - OS and distro
- Custom VNET
- Extensions

Windows Kubernetes on Azure

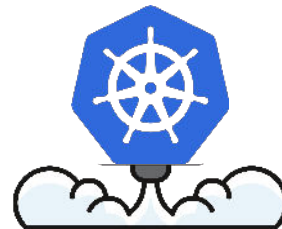


Building Windows w/Codefresh



Windows Node

Bring your own node, full caching and native support.



Agent + Windows Cluster

Behind the firewall access, code stays on node,
*caching not yet available

Demo

Questions?

Thank
you!

Resources!

<https://github.com/jldeen/wink8sdemo>

<http://azure.microsoft.com/account/free>

- 12 Months of FREE services
- \$200 credit

Thank you



Get 120 FREE builds/month
[Codefresh.io](https://codefresh.io)



Learn More
azure.microsoft.com

