Azure Container Instances: Getting Started

INTRODUCING AZURE CONTAINER INSTANCES

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The fastest and easiest way to get containers running in Azure

Course Overview

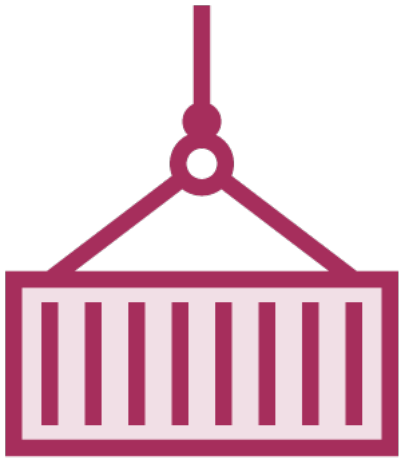
In this module

- What are Azure Container Instances?
- Azure container hosting options
- What can you use ACI for?

Later in this course

- Running containerized tasks
- Configure and monitoring containers
- Attaching volumes
- Understanding “container groups”
- ACI and orchestrators

The Docker Revolution



Package your application into a “Docker image”

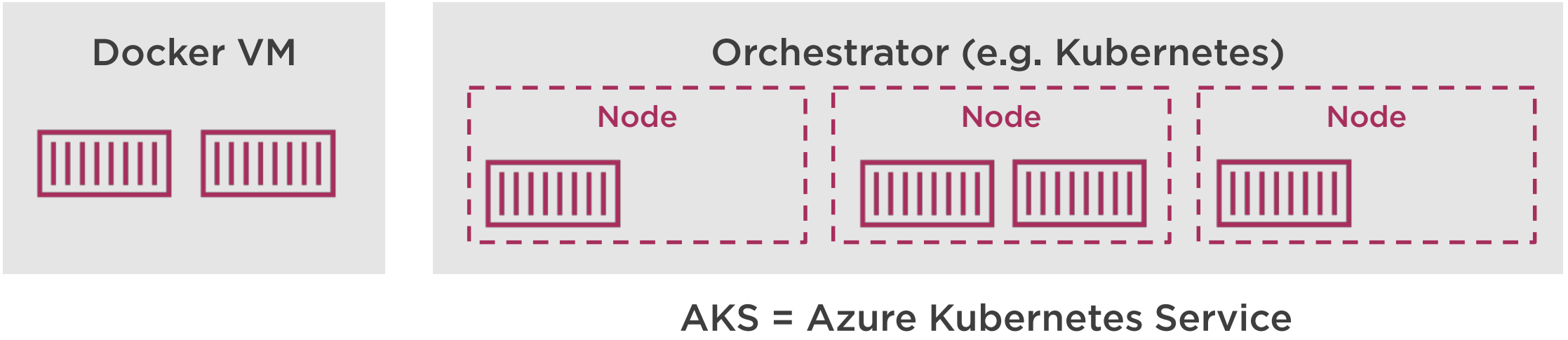
Run it on a Docker host as a “container”

Works the same wherever it is deployed

Easily run third party containers from a registry

Build distributed applications with multiple containers

Hosting Containers in Azure



Why Azure Container Instances?

Quick experiments

- Why wait for a VM to start?
- Might not want to re-use existing Docker VM

“Serverless” containers

- Azure manages the host VMs
- Just specify the container
- Per-second billing model

Region: East US

Currency: US Dollar ($)

Pricing Details

Azure Container Instances bill at the "container group" level which are assignments of vCPU/Memory resources that can be used by a single container or split by multiple containers. Container groups are co-scheduled containers that share the same network and node lifecycle. Read more about container groups here.

METER	PRICE *
Container group duration	Memory: $0.000004 per GB-s vCPU: $0.000012 per vCPU-s
Windows software duration **	$0.000012 per vCPU-s

*The pricing above reflects the rates for general availability and goes into effect on July 1, 2018. Usage prior to July 1, 2018, will be billed at the preview rates.

**Only applies to vCPU of Windows container groups

https://azure.microsoft.com/en-us/pricing/details/container-instances/

Container Instances

REGION: East US

OPERATING SYSTEM: Linux

Container groups	Duration
1	86400 Seconds

Memory

1 GB	×	1 Container groups	×	86,400 Seconds	×	$0.0000040 Per GB-s	=	$0.35

vCPU

1	×	1 Container groups	×	86,400 Seconds	×	$0.0000120 Per vCPU-s	=	$1.04

Sub-total $1.38

Container Instances

REGION: East US

OPERATING SYSTEM: Linux

Container groups	Duration
1	2592000 Seconds

Memory

1 GB	×	1 Container groups	×	2,592,000 Seconds	×	$0.0000040 Per GB-s	=	$10.37

vCPU

1	×	1 Container groups	×	2,592,000 Seconds	×	$0.0000120 Per vCPU-s	=	$31.10

Sub-total $41.47

Av2 Standard

Av2 Standard is the latest generation of A-series virtual machines with similar CPU performance and faster disk. These virtual machines are suitable for development workloads, build servers, code repositories, low-traffic websites and web applications, micro services, early product experiments, and small databases. Like the prior A Standard generation, Av2 virtual machines will include load balancing and auto-scaling at no additional charge.

ADD TO ESTIMATE	INSTANCE	CORE	RAM	TEMPORARY STORAGE	PAY AS YOU GO	1 YEAR RESERVED (% SAVINGS)	3 YEAR RESERVED (% SAVINGS)
⊕	A1 v2	1	2.00 GiB	10 GiB	~$26.28/month	- -	- -
⊕	A2 v2	2	4.00 GiB	20 GiB	~$55.48/month	- -	- -
⊕	A4 v2	4	8.00 GiB	40 GiB	~$116.07/month	- -	- -
⊕	A8 v2	8	16.00 GiB	80 GiB	~$243.09/month	- -	- -
⊕	A2m v2	2	16.00 GiB	20 GiB	~$72.27/month	- -	- -
⊕	A4m v2	4	32.00 GiB	40 GiB	~$151.84/month	- -	- -
⊕	A8m v2	8	64.00 GiB	80 GiB	~$319.01/month	- -	- -

Container Instances

REGION: East US

OPERATING SYSTEM: Linux

Container groups	Duration
1	2592000 Seconds

Memory

4 GB	×	1 Container groups	×	2,592,000 Seconds	×	$0.0000040 Per GB-s	=	$41.47

vCPU

2	×	1 Container groups	×	2,592,000 Seconds	×	$0.0000120 Per vCPU-s	=	$62.21

Sub-total $103.68

Azure Container Instances will save money for occasional workloads ...

... but cost more for continuously running workloads.

When to Use Azure Container Instances?

Continuously Running

Websites

Databases

Not cost effective compared to VMs

Occasionally Running

Continuous integration

Quick experiments

Delete after a few hours

Load testing

Batch jobs

Media processing

Handle spikes in load

Add extra capacity to Kubernetes

15 minutes per build
× 40 builds per month
= 600 minutes a month

ACI with 2 Cores & 4GB RAM
for 600 minutes
= $1.50 (approx.)

VM with 2 Cores & 4GB RAM
For 1 month
= $55.00 (approx.)

ACI Features

Easy to create

- Azure CLI
- PowerShell
- C# fluent SDK
- ARM templates

Networking

- Public IP address
- Domain name prefix
  - aci-demo.eastus.azurecontainer.io
- Expose ports

More ACI Features

Container types

- Windows
- Linux

Restart policy

Mount volumes

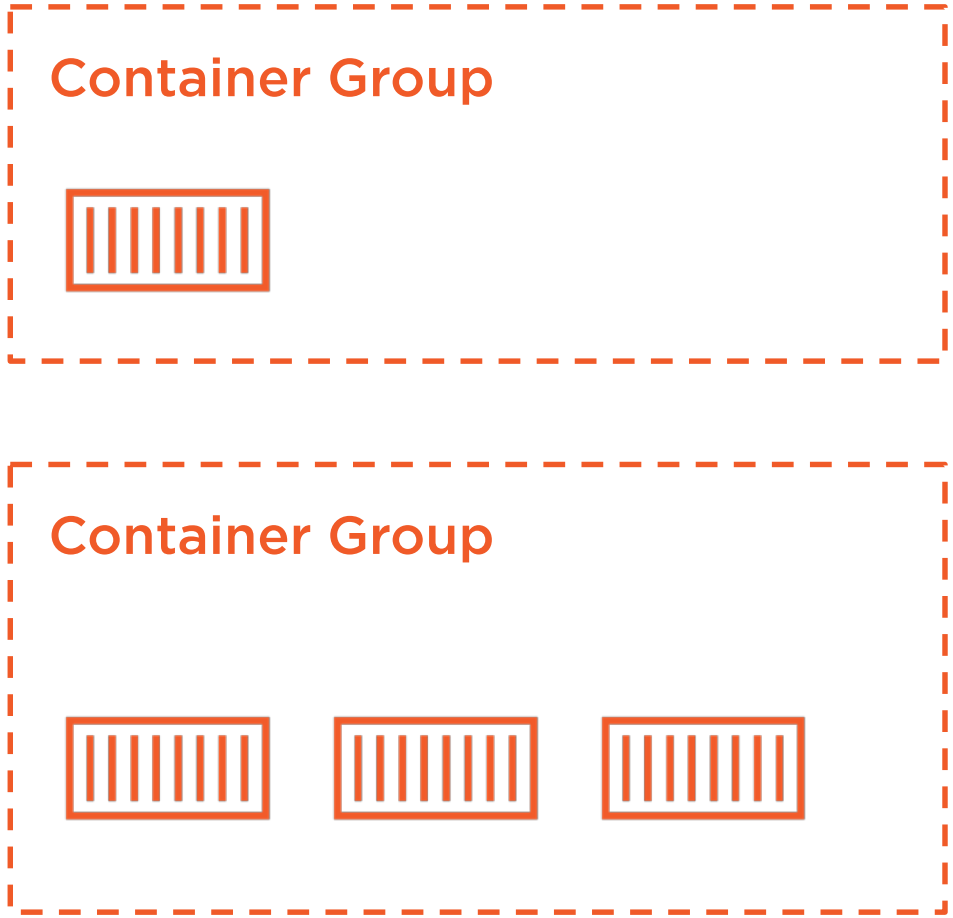
- Azure File Shares
- Secrets
- Git repositories

Custom command line

Set environment variables

View logs

Container Groups

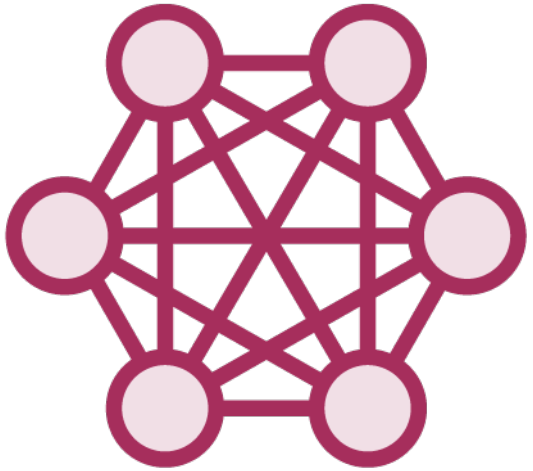


A “container group” often hosts a single container

They can also host multiple containers similar to a Kubernetes “pod”

Allows you to implement the “sidecar” pattern

ACI and Orchestrators

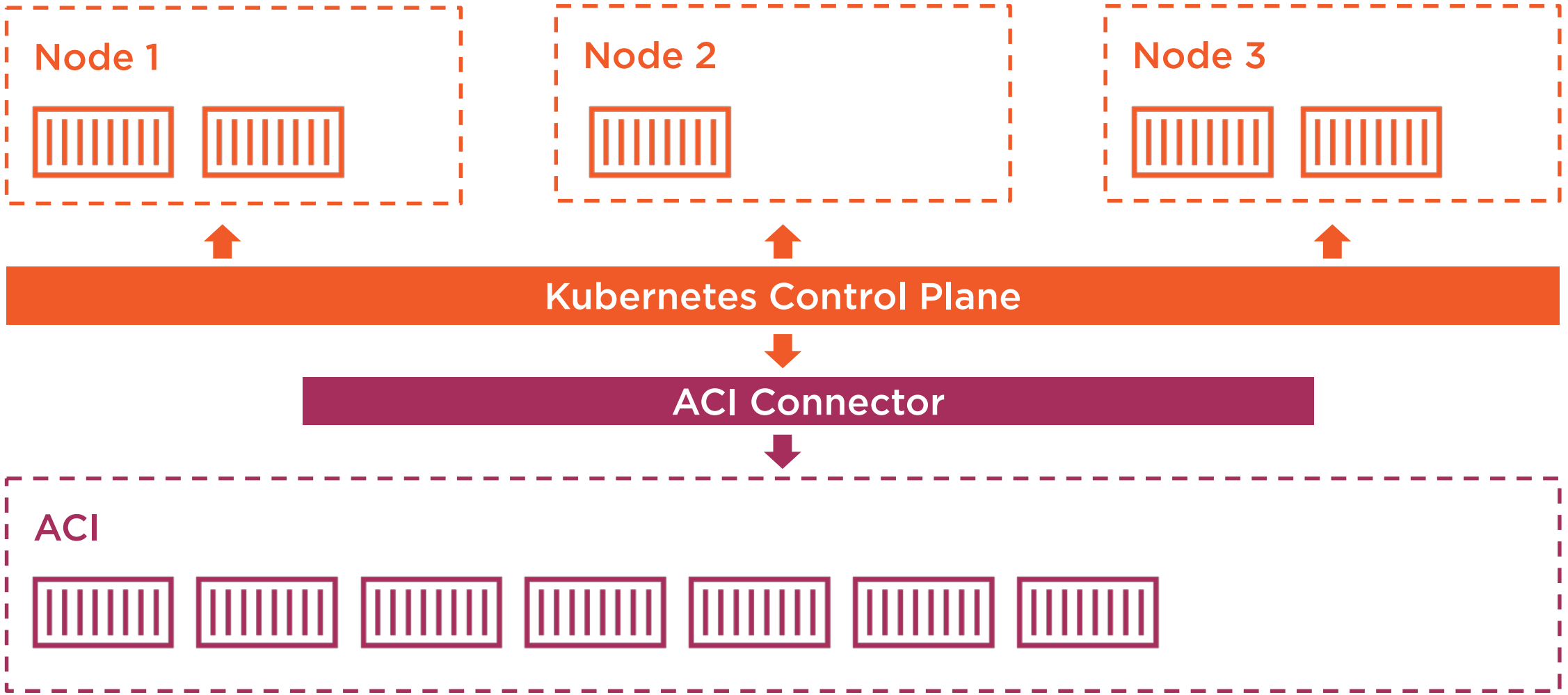


Orchestrator responsibilities

- Scheduling
- Health monitoring
- Failover
- Scaling
- Networking
- Service discovery

ACI is not intended to be an orchestrator

ACI Connector for Kubernetes



virtual-kubelet / virtual-kubelet

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Code | Issues 33 | Pull requests 1 | Projects 0 | Wiki | Insights

Branch: master ▾ virtual-kubelet / providers / azure / | Create new file | Upload files | Find file | History

robbiezhang Add tolerations in the sample pod in README.md ... Latest commit e1b9475 7 days ago

..

client	Adding support for ACI DNS name labels (#97)	a month ago
README.md	Add tolerations in the sample pod in README.md	7 days ago
aci.go	Handling dockerconfigjson format for image pull secrets (#120)	14 days ago
acsCredential.go	[Azure] Optimize VK Setup in ACS/AKS (#85)	2 months ago
acsCredential_test.go	[Azure] Optimize VK Setup in ACS/AKS (#85)	2 months ago
config.go	Initial commit	4 months ago
config_test.go	Initial commit	4 months ago
example.toml	add quotes	3 months ago

README.md

Kubernetes Virtual Kubelet with ACI

Azure Container Instances (ACI) provide a hosted environment for running containers in Azure. When using ACI, there is no need to manage the underlying compute infrastructure, Azure handles this management for you. When running containers in ACI, you are charged by the second for each running container.

The Azure Container Instances provider for the Virtual Kubelet configures an ACI instance as a node in any Kubernetes cluster. When using the Virtual Kubelet ACI provider, pods can be scheduled on an ACI instance as if the ACI instance is a standard Kubernetes node. This configuration allows you to take advantage of both the capabilities of Kubernetes and the management value and cost benefit of ACI.

This document details configuring the Virtual Kubelet ACI provider.

https://github.com/virtual-kubelet/virtual-kubelet/tree/master/providers/azure

Summary

The quickest and easiest way to run containers in Azure

Serverless billing model

Windows & Linux container support

Mount volumes

Specify command line & environment variables

Combine with orchestrators like Kubernetes

- Virtual Kubelet

Up next ...

Running containerized workloads