Microsoft

#techsummitCH

Power your move to the cloud

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Moving to the cloud can be challenging

Workloads

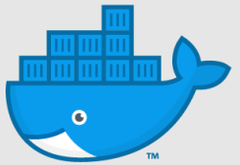
New apps, traditional, ISV/SI, HPC, IOT, serverless

Target platfoms

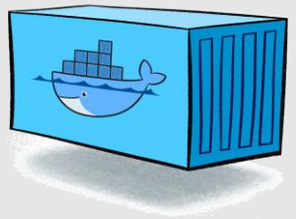
SaaS, PaaS, IaaS, CaaS, FaaS

Clouds

Private, hybrid, public



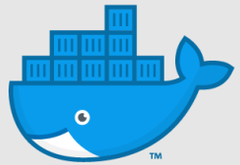
Build, ship and run, any app, anywhere



Containers as a Service

Host	Only operating system, joined as cluster
Engine	Just a Docker service/daemon
App	Packaged in container images

Orchestrator schedules apps on hosts



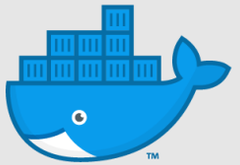
Containers are great

They separate app and infra (Portability)

They automate app deployment (Agility)

They run on a host with only a Docker engine (Security)

They don’t need a dedicated guest os (Density)



Containers are not so great

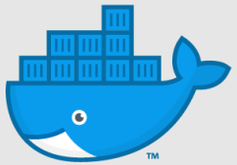
They won't fix your organizational challenges

They won't fix your technical debt

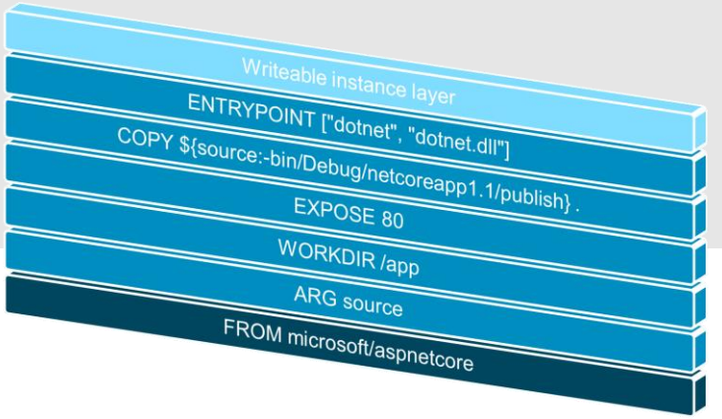
They won't change monoliths into microservices

They don't have a GUI

They don't have state



Dockerfile




```
FROM microsoft/aspnetcore:2.0.5
ARG source
WORKDIR /app
EXPOSE 80
COPY ${source:-bin/Debug/netcoreapp2.0/publish} .
ENTRYPOINT ["dotnet", "myapp.dll"]
```

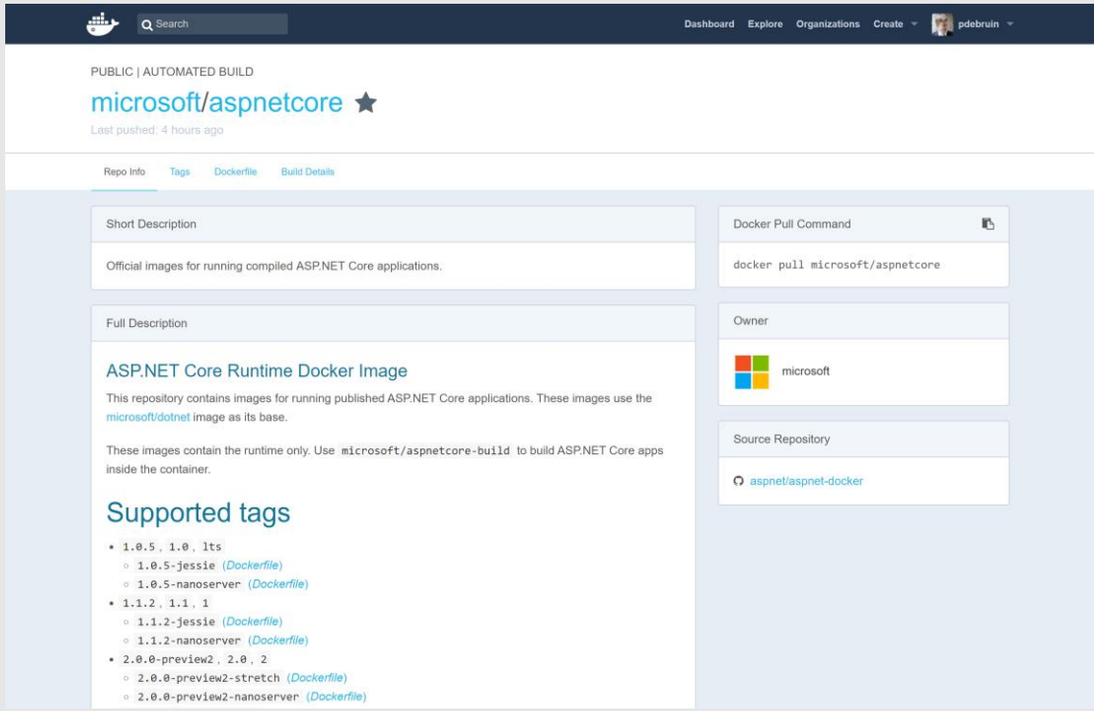
Base images

microsoft/windowsservercore

microsoft/iis

microsoft/dotnet

microsoft/aspnet



microsoft/nanoserver:<version/fx/platform>

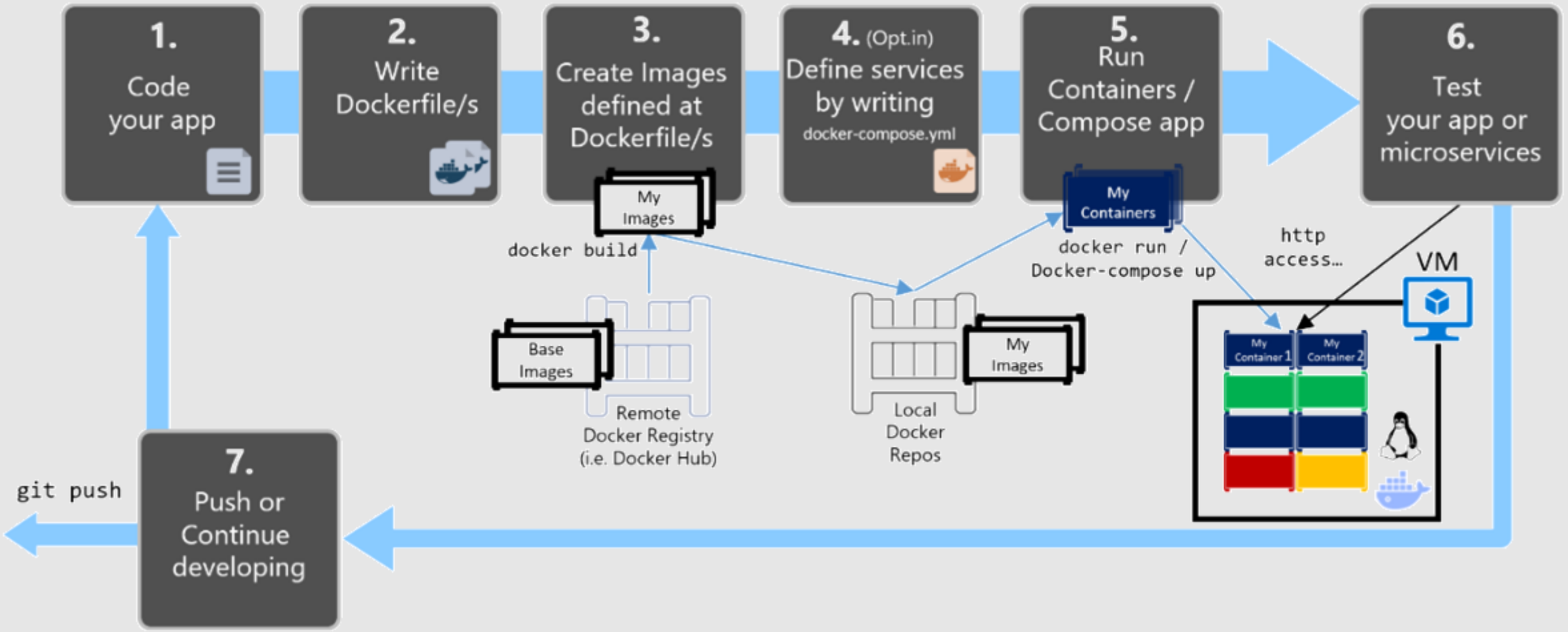
microsoft/dotnet

microsoft/aspnetcore

Docker build & run

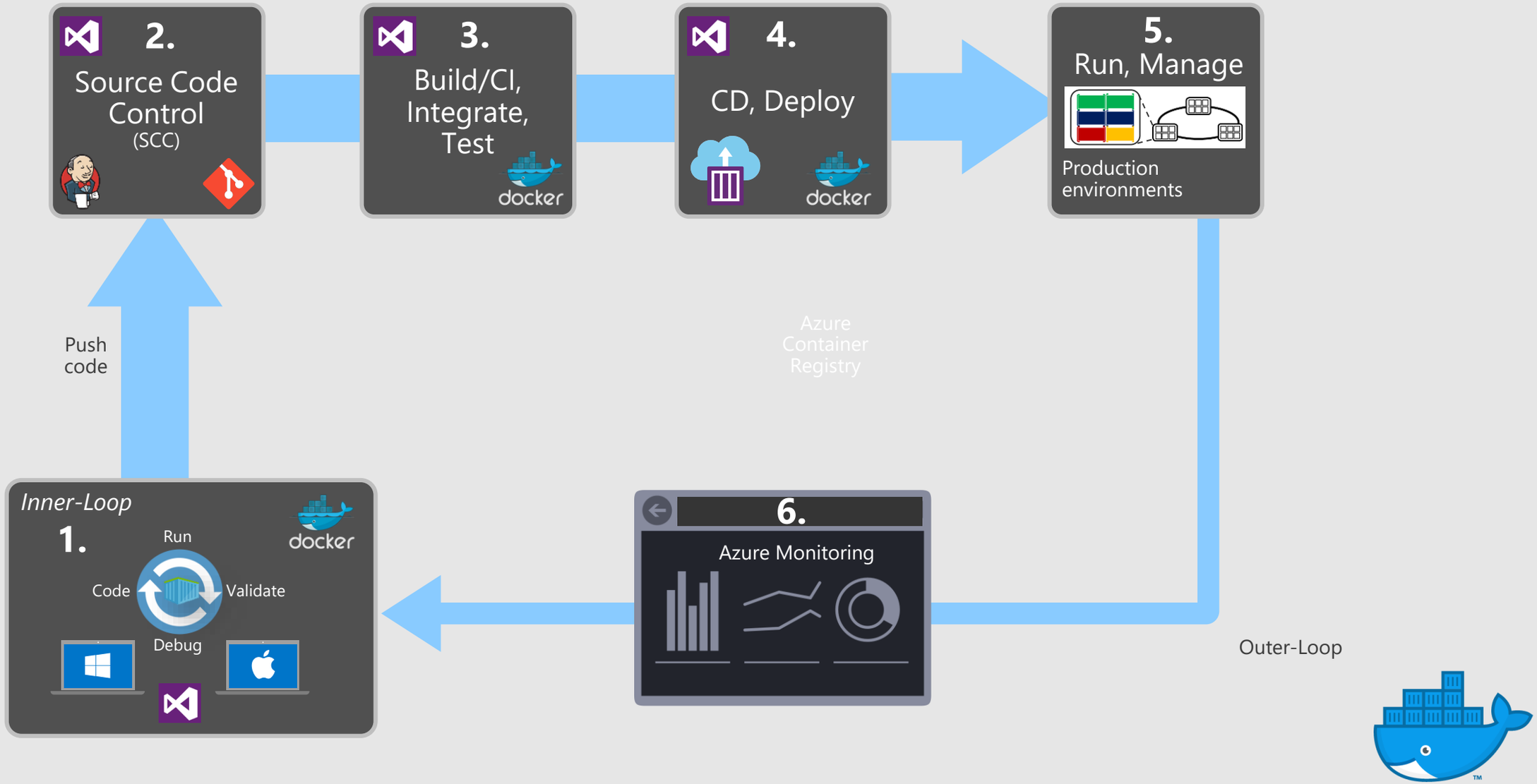
```
docker build . –t <hubid>/<imagename>
    imageid

docker run –d –p 80:80 <hubid>/<imagename>
    containerid

docker inspect <containerid>
    ipaddress
```

Inner loop


1.
Code
your app
2.
Write
Dockerfile/s
3.
Create Images
defined at
Dockerfile/s
4. (Opt.in)
Define services
by writing
docker-compose.yml
5.
Run
Containers /
Compose app
6.
Test
your app or
microservices
My
Images
docker build
Base
Images
Remote
Docker Registry
(i.e. Docker Hub)
My
Containers
docker run /
Docker-compose up
My
Images
Local
Docker
Repos
http
access…
VM
My
Container 1
My
Container 2
git push
7.
Push or
Continue
developing

Demo: Inner loop

Outer loop


2.
Source Code Control
(SCC)
3.
Build/CI, Integrate, Test
docker
4.
CD, Deploy
docker
5.
Run, Manage
Production environments
Push code
Azure Container Registry
Inner-Loop
1.
Run
Code
Validate
Debug
docker
6.
Azure Monitoring
Outer-Loop

Demo: Outer loop

Modernize traditional applications

Costly maintenance, unsupported hardware/os

Remember portability, agility, security and density

Package existing apps in containers
Run them on Docker EE with supported OS in Azure

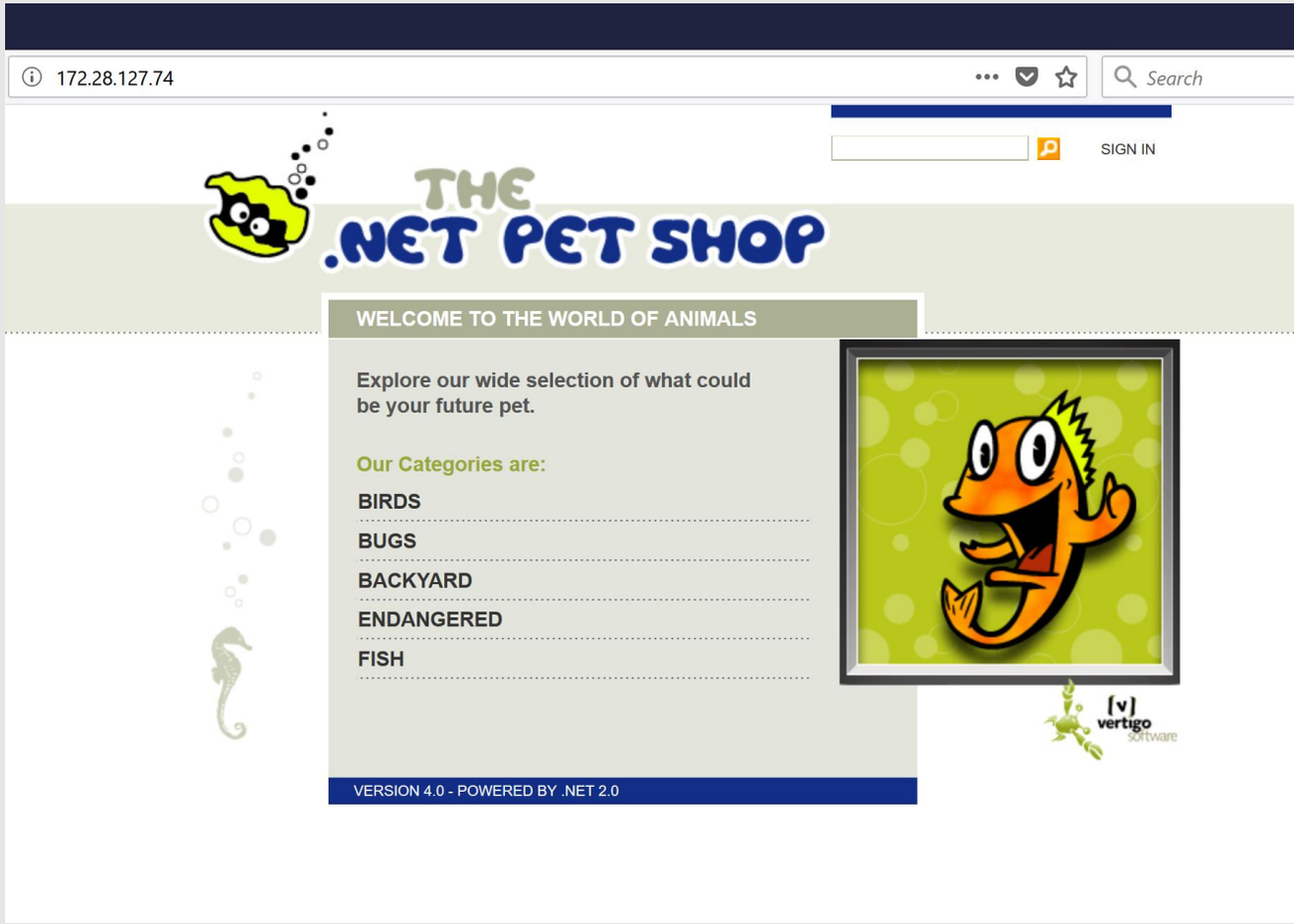
Run more on less, scale up/down, upgrade/rollback, recover

Typical traditional application (2006)

Installation Prerequisites

Microsoft .NET Pet Shop 4 has the following installation prerequisites:

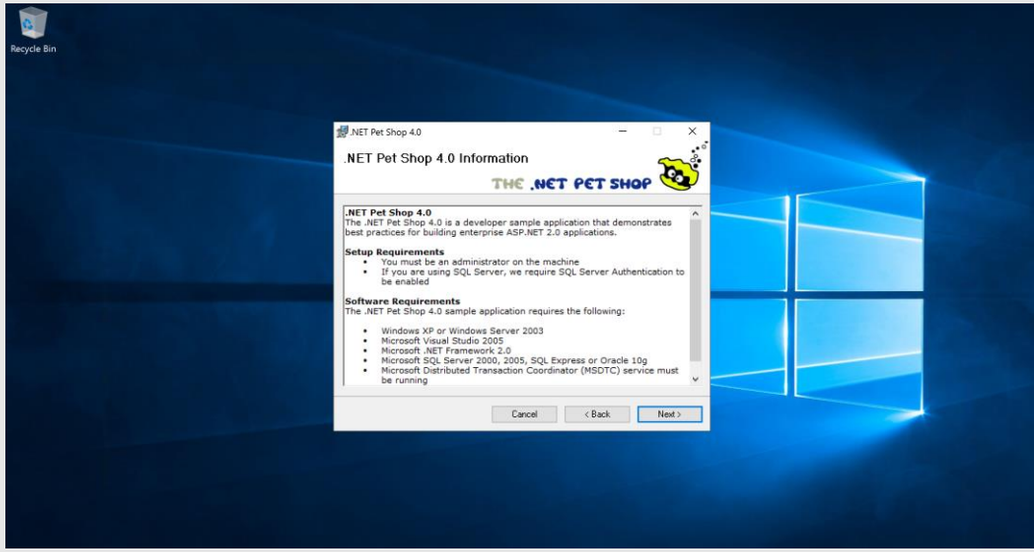
- Operating System: Windows XP SP2 or Windows Server 2003
- Microsoft.NET Framework 2.0
- Microsoft SQL Server 2005, SQL Server Express, or Oracle 10g
- Microsoft Internet Explorer 6 or greater
- Microsoft Visual Studio® .NET 2005



Containerization process

Steps

- Windows Server with GUI manually
- Windows Server with GUI automated
- Windows Server without GUI automated
- WindowsServerCore container automated

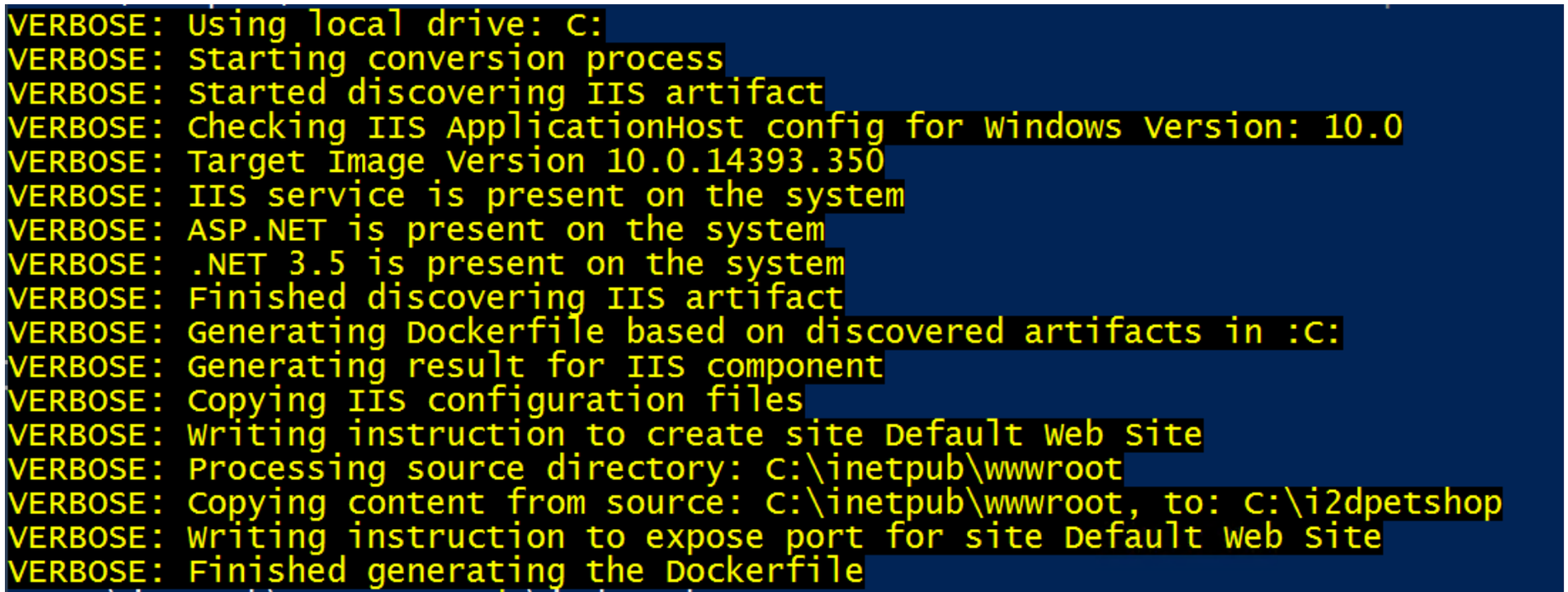


Use tools like Image2Docker

Optimize

Image2Docker

```
Install-Module Image2Docker
Import-Module Image2Docker
ConvertTo-Dockerfile –local –Artifact IIS
    –OutputPath c:\i2dpetshop -Verbose
```



MTA Dockerfile optimized

```
FROM microsoft/aspnet:3.5

COPY . /inetpub/wwwroot

EXPOSE 80

#add-windowsfeature aspnet
#RUN msiexec.exe <your.msi>
#RUN powershell.exe <your.ps1>
```

Docker compose

```yaml
version: '3'
services:
    petshopweb:
        image: pdebruin/petshopweb:4
        build:
            context: ./web/
            dockerfile: dockerfile
        ports:
            - 80:80
        networks:
            - default
        depends_on:
            - petshopdb

    petshopdb:
        image: microsoft/mssql-server-windows-express
        networks:
            - default
        env_file:
            - vars.env
        environment:
            ACCEPT_EULA: "Y"
            attach_dbs: "[
                {'dbName':'MSPetShop','dbFiles':['C:\\\\tempdb\\\\MSPetShop.mdf','C:\\\\tempdb\\\\MSPetShop_log.ldf']},
                {'dbName':'MSPetShop4','dbFiles':['C:\\\\tempdb\\\\MSPetShop4.mdf','C:\\\\tempdb\\\\MSPetShop4_log.ldf']},
                {'dbName':'MSPetShop4Orders','dbFiles':['C:\\\\tempdb\\\\MSPetShop4Orders.mdf','C:\\\\tempdb\\\\MSPetShop4Orders_log.ldf']},
                {'dbName':'MSPetShop4Profile','dbFiles':['C:\\\\tempdb\\\\MSPetShop4Profile.mdf','C:\\\\tempdb\\\\MSPetShop4Profile_log.ldf']},
                {'dbName':'MSPetShop4Services','dbFiles':['C:\\\\tempdb\\\\MSPetShop4Services.mdf','C:\\\\tempdb\\\\MSPetShop4Services_log.ldf']}]"
        ports:
            - "1433:1433"
        volumes:
            - C:/_projects/petshop4/petshop/docker/db:C:/tempdb/

networks:
    default:
        external:
            name: nat
```

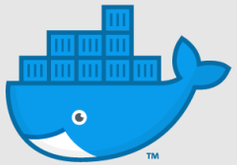
Demo: MTA & compose

.NET Portability Analyzer

CLI / VS EXT

	A	B	C	D	E	F
1	Submission Id	b582affb-cc5b-465f-95f8-2d925886cc92				
2	Description					
3	Targets	.NET Core,.NET Framework,.NET Standard				
4						
5	Header for assembly name entries	Target Framework	.NET Core	.NET Framewor	.NET Standard	
6	PetShop.BLL		100	100	98,28	
7	PetShop.CacheDependencyFactory		97,67	100	93,02	
8	PetShop.DAL		100	100	95,56	
9	PetShop.DBUtility		85,42	100	64,58	
10	PetShop.IBLLStrategy		100	100	100	
11	PetShop.ICacheDependency		96,67	100	96,67	
12	PetShop.IDAL		100	100	100	
13	PetShop.IMessaging		100	100	100	
14	PetShop.IProfileDAL		100	100	100	
15	PetShop.Membership		86,09	100	82,12	
16	PetShop.MessagingFactory		100	100	95,12	
17	PetShop.Model		100	100	100	
18	PetShop.MsmqMessaging		68,12	100	65,22	
19	PetShop.OracleDAL		94,26	100	94,26	
20	PetShop.OracleProfileDAL		92,56	100	92,56	
21	PetShop.OrderProcessor		100	100	97,59	
22	PetShop.Profile		90,09	100	73,87	
23	PetShop.ProfileDALFactory		100	100	95,12	
24	PetShop.SQLProfileDAL		100	100	93,28	
25	PetShop.SQLServerDAL		100	100	89,78	
26	PetShop.TableCacheDependency		86,67	100	82,22	
27						
28	API Catalog last updated on	Monday, January 29, 2018				
29	See 'http://go.microsoft.com/fwlink/?LinkId=397652' to learn how to read this table					
30						

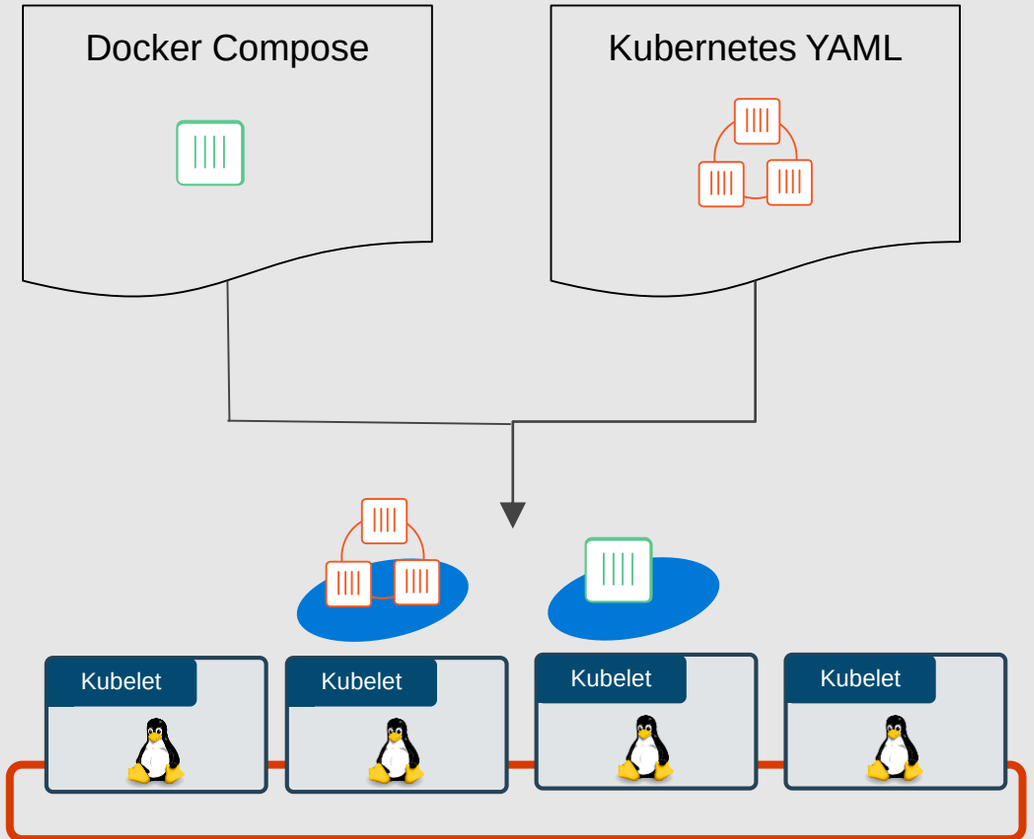
	A	B	C	D	E	F
1	Target type	Target member	Header for assembly name entrie	.NET Core	.NET Framewor	.NET Standard
2	T:System.Messaging.DefaultPropertiesToSend	T:System.Messaging.DefaultPropertiesToSend	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
3	T:System.Messaging.DefaultPropertiesToSend	M:System.Messaging.DefaultPropertiesToSend.set	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
4	T:System.Messaging.DefaultPropertiesToSend	M:System.Messaging.DefaultPropertiesToSend.set	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
5	T:System.Messaging.DefaultPropertiesToSend	M:System.Messaging.DefaultPropertiesToSend.set	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
6	T:System.Messaging.DefaultPropertiesToSend	M:System.Messaging.DefaultPropertiesToSend.set	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
7	T:System.Messaging.DefaultPropertiesToSend	M:System.Messaging.DefaultPropertiesToSend.set	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
19	T:System.Messaging.AcknowledgeTypes	T:System.Messaging.AcknowledgeTypes	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
30	T:System.Web.Profile.ProfileProvider	T:System.Web.Profile.ProfileProvider	PetShop.Profile	Not supported	Supported: 2.0+	Not supported
31	T:System.Web.Profile.ProfileProvider	M:System.Web.Profile.ProfileProvider.#ctor	PetShop.Profile	Not supported	Supported: 2.0+	Not supported
32	T:System.Web.Profile.ProfileProvider	M:System.Web.Profile.ProfileProvider.DeleteProfil	PetShop.Profile	Not supported	Supported: 2.0+	Not supported
33	T:System.Messaging.MessageQueueException	T:System.Messaging.MessageQueueException	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
34	T:System.Messaging.MessageQueueException	M:System.Messaging.MessageQueueException.get	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
70	T:System.Messaging.MessageQueue	T:System.Messaging.MessageQueue	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
71	T:System.Messaging.MessageQueue	M:System.Messaging.MessageQueue.#ctor(System	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
72	T:System.Messaging.MessageQueue	M:System.Messaging.MessageQueue.get_DefaultP	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
73	T:System.Messaging.MessageQueue	M:System.Messaging.MessageQueue.Receive(Syst	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
74	T:System.Messaging.MessageQueue	M:System.Messaging.MessageQueue.Send(System	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
75	T:System.Messaging.MessageQueue	M:System.Messaging.MessageQueue.set_Formatte	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
76	T:System.Web.Security.MembershipProvider	T:System.Web.Security.MembershipProvider	PetShop.Membership	Not supported	Supported: 2.0+	Not supported
77	T:System.Web.Security.MembershipProvider	M:System.Web.Security.MembershipProvider.#cto	PetShop.Membership	Not supported	Supported: 2.0+	Not supported
78	T:System.Web.Security.MembershipProvider	M:System.Web.Security.MembershipProvider.Encr	PetShop.Membership	Not supported	Supported: 2.0+	Not supported
79	T:System.Web.Security.MembershipProvider	M:System.Web.Security.MembershipProvider.get_	PetShop.Membership	Not supported	Supported: 2.0+	Not supported
80	T:System.Web.Security.MembershipProvider	M:System.Web.Security.MembershipProvider.get_	PetShop.Membership	Not supported	Supported: 2.0+	Not supported
8	T:System.Messaging.MessageQueueTransactionTy	T:System.Messaging.MessageQueueTransactionTy	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
9	T:System.Web.Caching.SqlCacheDependency	T:System.Web.Caching.SqlCacheDependency	PetShop.TableCacheDependency	Not supported	Supported: 2.0+	Not supported
10	T:System.Web.Caching.SqlCacheDependency	M:System.Web.Caching.SqlCacheDependency.#cto	PetShop.TableCacheDependency	Not supported	Supported: 2.0+	Not supported
11	T:System.Web.Caching.AggregateCacheDependenc	T:System.Web.Caching.AggregateCacheDependenc	PetShop.CacheDependencyFactory	Not supported	Supported: 2.0+	Not supported
12	T:System.Web.Caching.AggregateCacheDependenc	T:System.Web.Caching.AggregateCacheDependenc	PetShop.TableCacheDependency	Not supported	Supported: 2.0+	Not supported
13	T:System.Web.Caching.AggregateCacheDependenc	T:System.Web.Caching.AggregateCacheDependenc	PetShop.ICacheDependency	Not supported	Supported: 2.0+	Not supported
14	T:System.Web.Caching.AggregateCacheDependenc	M:System.Web.Caching.AggregateCacheDependen	PetShop.TableCacheDependency	Not supported	Supported: 2.0+	Not supported
15	T:System.Web.Caching.AggregateCacheDependenc	M:System.Web.Caching.AggregateCacheDependen	PetShop.TableCacheDependency	Not supported	Supported: 2.0+	Not supported
16	T:System.Web.Profile.ProfileInfo	T:System.Web.Profile.ProfileInfo	PetShop.Profile	Not supported	Supported: 2.0+	Not supported
17	T:System.Web.Profile.ProfileInfo	M:System.Web.Profile.ProfileInfo.#ctor(System.Str	PetShop.Profile	Not supported	Supported: 2.0+	Not supported
18	T:System.Web.Profile.ProfileInfo	M:System.Web.Profile.ProfileInfo.get_UserName	PetShop.Profile	Not supported	Supported: 2.0+	Not supported
1	T:System.Data.OracleClient.OracleConnection	T:System.Data.OracleClient.OracleConnection	PetShop.OracleProfileDAL	Not supported	Supported: 1.1+	Not supported
2	T:System.Data.OracleClient.OracleConnection	T:System.Data.OracleClient.OracleConnection	PetShop.Membership	Not supported	Supported: 1.1+	Not supported
3	T:System.Data.OracleClient.OracleConnection	T:System.Data.OracleClient.OracleConnection	PetShop.OracleDAL	Not supported	Supported: 1.1+	Not supported
4	T:System.Data.OracleClient.OracleConnection	T:System.Data.OracleClient.OracleConnection	PetShop.DBUtility	Not supported	Supported: 1.1+	Not supported
5	T:System.Data.OracleClient.OracleConnection	M:System.Data.OracleClient.OracleConnection.#ct	PetShop.DBUtility	Not supported	Supported: 1.1+	Not supported
6	T:System.Data.OracleClient.OracleConnection	M:System.Data.OracleClient.OracleConnection.#ct	PetShop.Membership	Not supported	Supported: 1.1+	Not supported
7	T:System.Data.OracleClient.OracleConnection	M:System.Data.OracleClient.OracleConnection.#ct	PetShop.OracleDAL	Not supported	Supported: 1.1+	Not supported
8	T:System.Data.OracleClient.OracleConnection	M:System.Data.OracleClient.OracleConnection.#ct	PetShop.OracleProfileDAL	Not supported	Supported: 1.1+	Not supported
9	T:System.Data.OracleClient.OracleConnection	M:System.Data.OracleClient.OracleConnection.Beg	PetShop.Membership	Not supported	Supported: 1.1+	Not supported
10	T:System.Data.OracleClient.OracleConnection	M:System.Data.OracleClient.OracleConnection.Beg	PetShop.OracleProfileDAL	Not supported	Supported: 1.1+	Not supported
11	T:System.Web.Profile.ProfileAuthenticationOption	T:System.Web.Profile.ProfileAuthenticationOption	PetShop.Profile	Not supported	Supported: 2.0+	Not supported
15	T:System.Data.OracleClient.OracleCommand	T:System.Data.OracleClient.OracleCommand	PetShop.DBUtility	Not supported	Supported: 1.1+	Not supported
16	T:System.Data.OracleClient.OracleCommand	M:System.Data.OracleClient.OracleCommand.#cto	PetShop.DBUtility	Not supported	Supported: 1.1+	Not supported
17	T:System.Data.OracleClient.OracleCommand	M:System.Data.OracleClient.OracleCommand.Exec	PetShop.DBUtility	Not supported	Supported: 1.1+	Not supported
18	T:System.Data.OracleClient.OracleCommand	M:System.Data.OracleClient.OracleCommand.get_	PetShop.DBUtility	Not supported	Supported: 1.1+	Not supported
19	T:System.Data.OracleClient.OracleCommand	M:System.Data.OracleClient.OracleCommand.set_(	PetShop.DBUtility	Not supported	Supported: 1.1+	Not supported
20	T:System.Data.OracleClient.OracleCommand	M:System.Data.OracleClient.OracleCommand.set_'	PetShop.DBUtility	Not supported	Supported: 1.1+	Not supported
21	T:System.Web.Profile.ProfileInfoCollection	T:System.Web.Profile.ProfileInfoCollection	PetShop.Profile	Not supported	Supported: 2.0+	Not supported
22	T:System.Web.Profile.ProfileInfoCollection	M:System.Web.Profile.ProfileInfoCollection.#ctor	PetShop.Profile	Not supported	Supported: 2.0+	Not supported
23	T:System.Web.Profile.ProfileInfoCollection	M:System.Web.Profile.ProfileInfoCollection.Add(Sy	PetShop.Profile	Not supported	Supported: 2.0+	Not supported
24	T:System.Web.Profile.ProfileInfoCollection	M:System.Web.Profile.ProfileInfoCollection.GetEn	PetShop.Profile	Not supported	Supported: 2.0+	Not supported
25	T:System.Messaging.MessageQueueErrorCode	T:System.Messaging.MessageQueueErrorCode	PetShop.MsmqMessaging	Not supported	Supported: 1.1+	Not supported
26	T:System.Web.Caching.CacheDependency	T:System.Web.Caching.CacheDependency	PetShop.TableCacheDependency	Not supported	Supported: 1.1+	Not supported

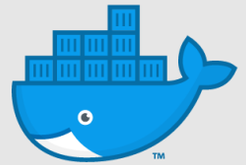


Deploy to Kubernetes

docker stack deploy words -c docker-compose.yml

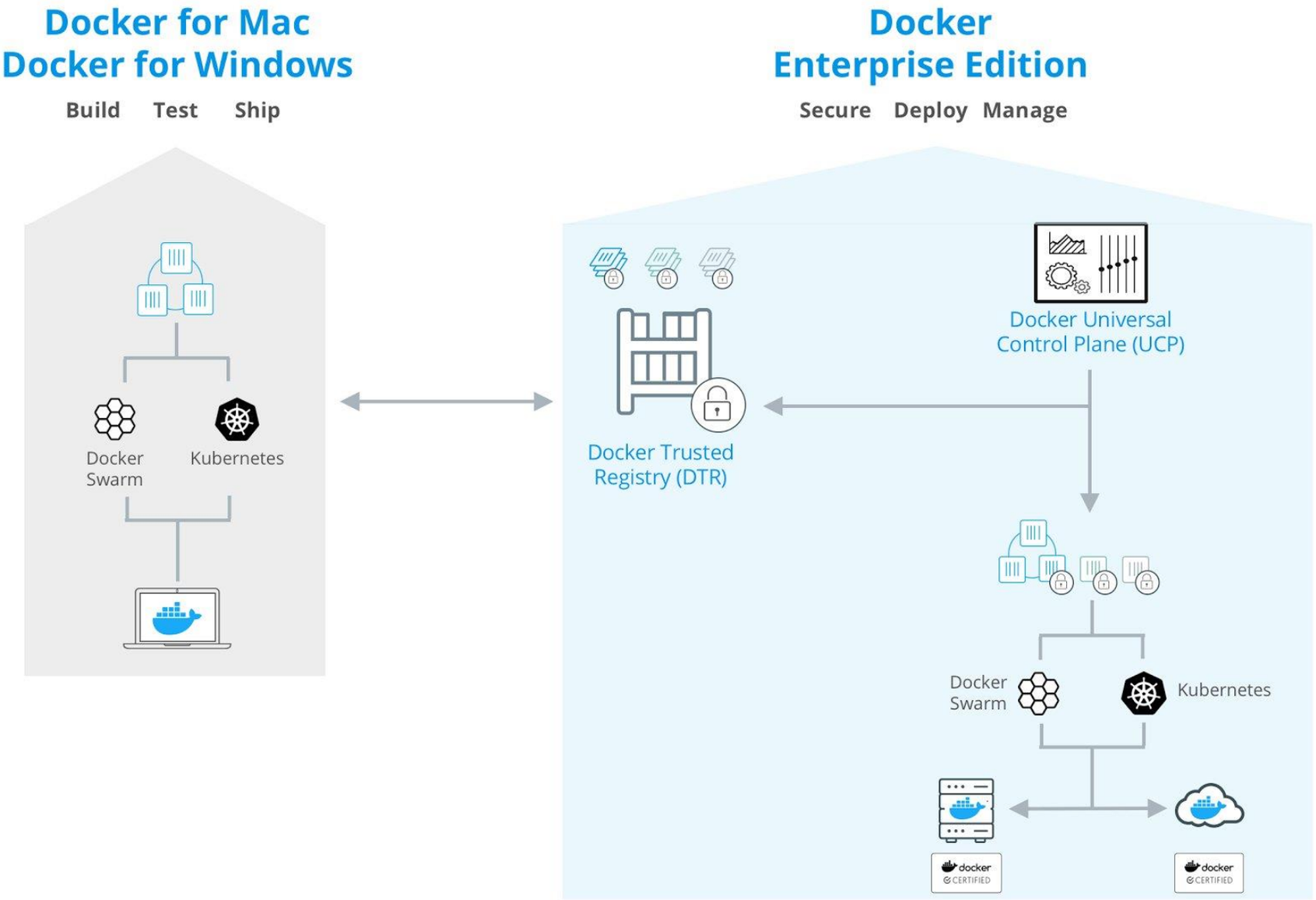
kubectl apply -f kube-deployment.yml



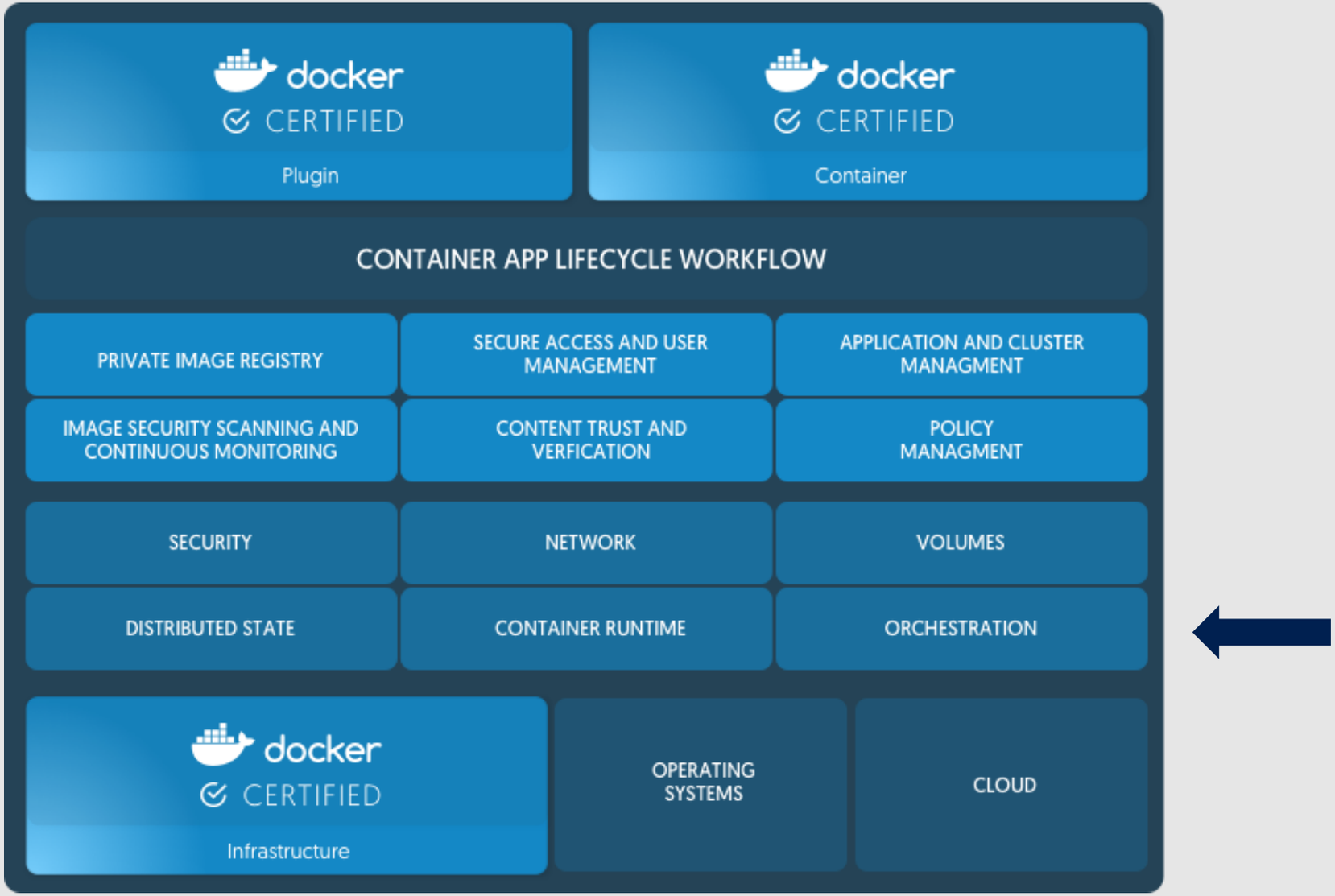


Demo: Deploy to K8s

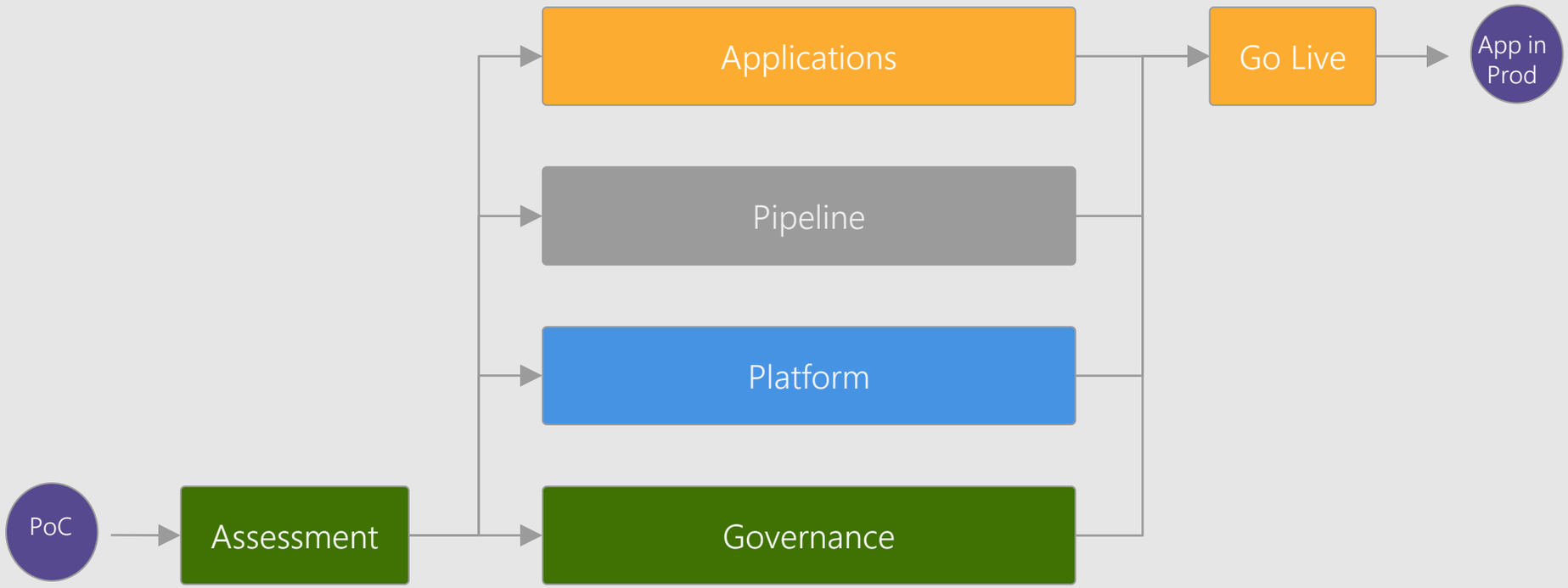
Developer creativity and operational excellence



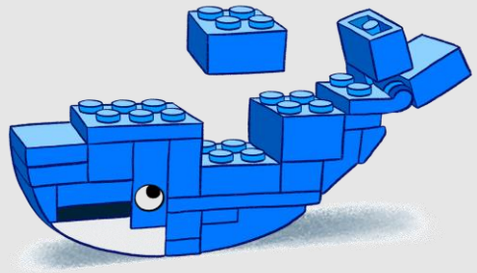
Docker Enterprise Edition platform



From poc to prod



Next steps



Experience Docker4Windows/Mac locally

For production focus on support, security, manageability

Azure (ARM, VSTS, OMS, VMSS) is great for CaaS

Microsoft

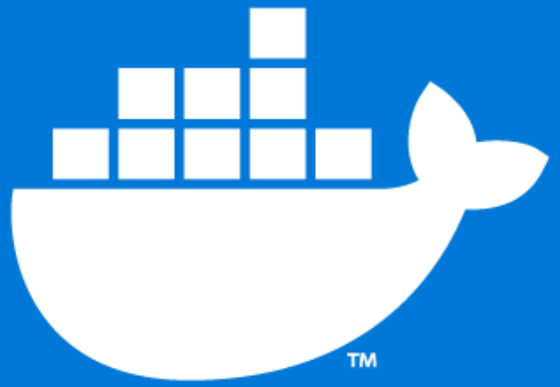
#techsummitCH

Please Complete your Session Evaluations

Get your cool IoT Dev Kit!

Fill out your feedback form and turn it in before you leave.

Microsoft



THANK YOU :)

@pieter_de_bruin