

# Accelerate Your Development Team with Docker

Rey Rahadian  
Gitesh Shah

August 26-27 2019

#sugcon



**SUGCON**  
ANZ 2019

- Common problems in the wild
- Docker
- Running Sitecore on Docker
- Container Orchestration
- Key Takeaways



# Common Problems in the Wild



## ■ Long onboarding time

- Depending on the complexity of the projects, it can take days to onboard a new developer

## ■ Software dependencies are hard to manage

- Different projects require specific software version to be installed in the developer machines

## ■ Environment differential issues

- Subtle differences between environments leading to application issues specific to an environment

## ■ Deployments are not reliable and takes long time

- Retrying deployments sink a lot of time

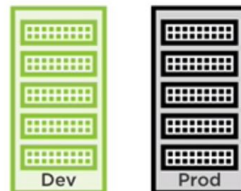
- How Docker can help with these problems



**Accelerate  
Developer  
Onboarding**



**Eliminate App  
Conflicts**



**Environment  
Consistency**



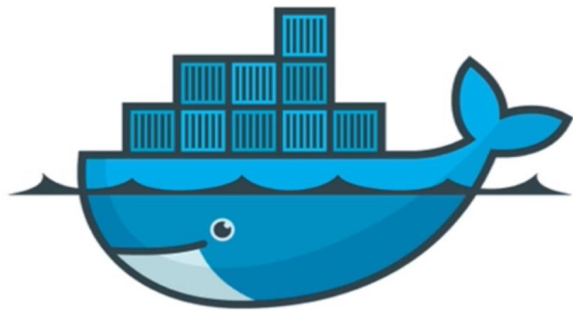
**Ship Software  
Faster**



# Docker



### What Is Docker?



- Lightweight, open, secure platform
- Simplify building, shipping, running apps
- Runs apps within container system
- Runs on Linux, Windows or Mac
- Relies on “images” and “containers”

# The Role of Images and Containers



**Docker Image**

E.g: Windows with asp.net and application code



**Docker Container**

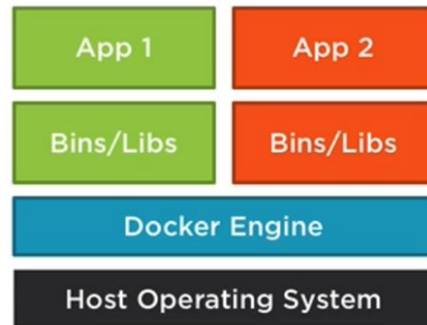
Created using an image and runs the application



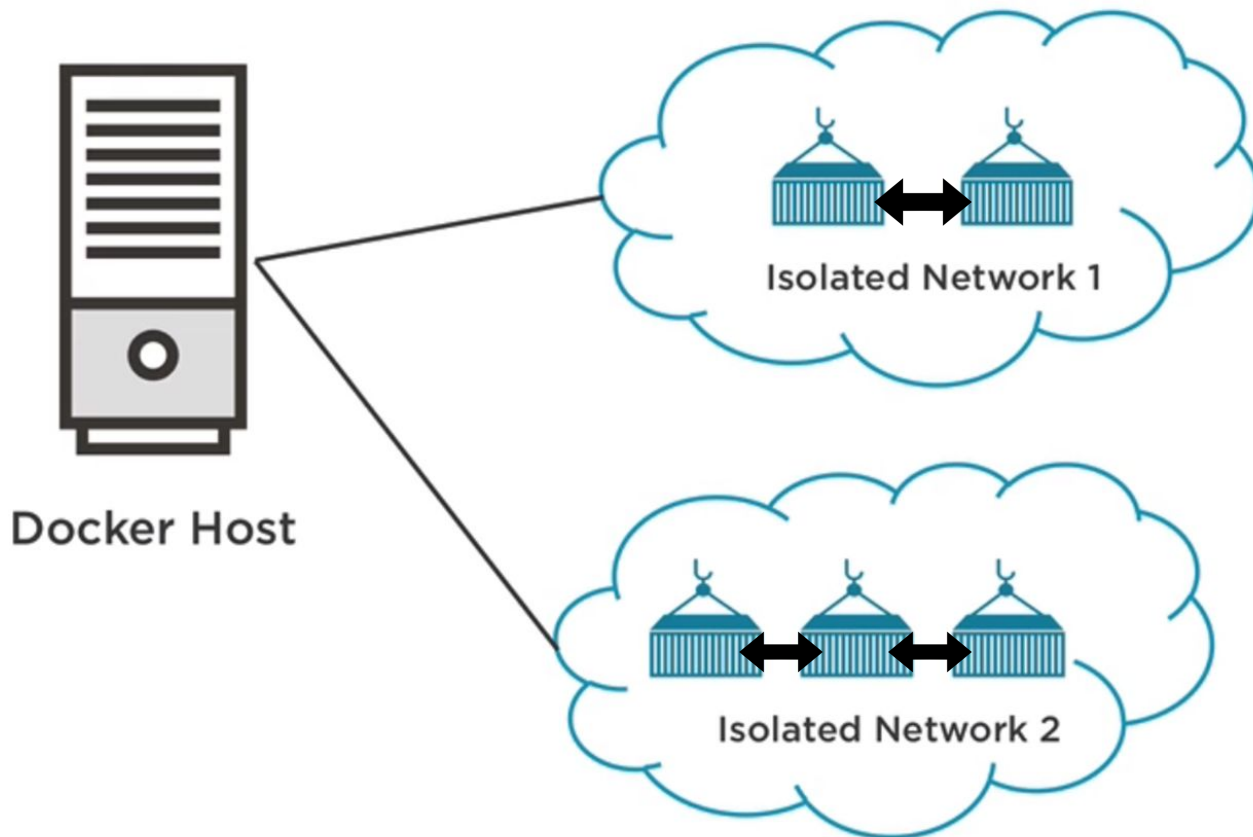
# Docker Containers Versus Virtual Machines



Virtual Machines



Docker Containers



## Docker Compose Features



### Manages the whole application lifecycle:

Start, stop and rebuild services

View the status of running services

Stream the log output of running services

Run a one-off command on a service



# Running Sitecore on Docker



# Sitecore in a Container





# Sitecore Docker File

Dockerfile ✕

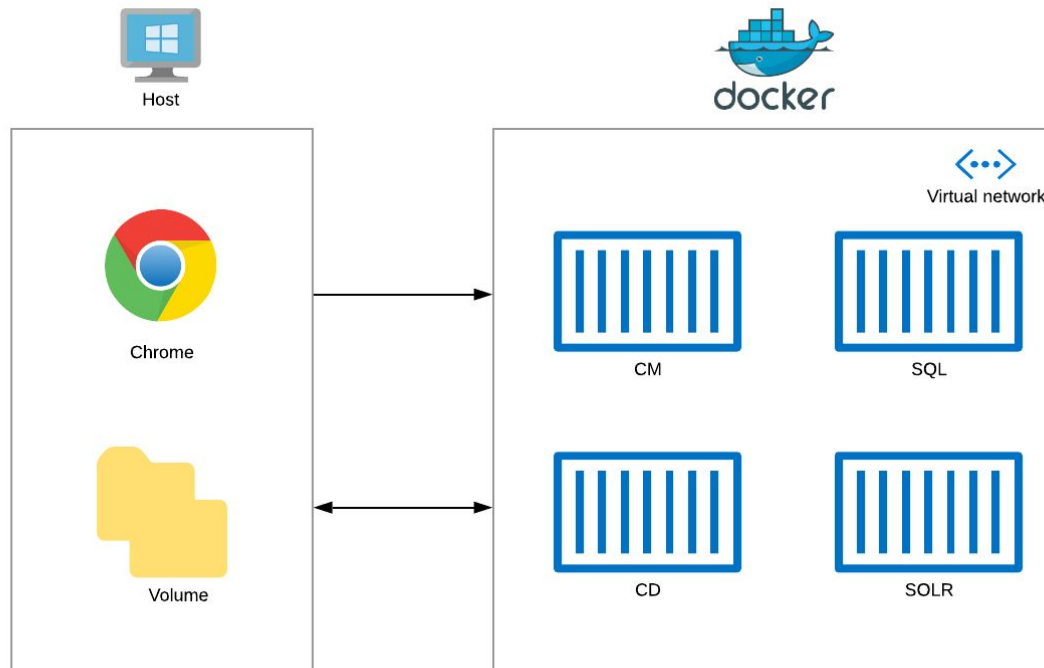
Dockerfile ▸ ...

```
1 # escape="
2 FROM mcr.microsoft.com/dotnet/framework/aspnet:4.8-windowsservercore-1903 as download
3
4 SHELL ["powershell", "-Command", "$ErrorActionPreference = 'Stop'; $ProgressPreference = 'SilentlyContinue';"]
5
6 ADD https://download.microsoft.com/download/0/1/D/01DC28EA-638C-4A22-A57B-4CEF97755C6C/WebDeploy_amd64_en-US.msi C:\\install\\webdeploy.msi
7 ADD https://download.microsoft.com/download/1/2/8/128E2E22-C1B9-44A4-BE2A-5859ED104592/rewrite_amd64_en-US.msi C:\\install\\urlrewrite.msi
8 ADD https://aka.ms/vs/15/release/VC_redist.x64.exe C:\\install\\VC_redist.x64.exe
9
10 FROM mcr.microsoft.com/dotnet/framework/aspnet:4.8-windowsservercore-1903 as builder
11
12 COPY --from=download /install /install
13
14 # Install Sitecore dependencies, SIF, apply tweaks and remove default website
15 RUN $env:INSTALL_TEMP = 'C:\\install'; |
16     Start-Process msixec.exe -ArgumentList '/i', (Join-Path $env:INSTALL_TEMP '\\webdeploy.msi'), '/quiet', '/norestart' -NoNewWindow -Wait; `
17     Start-Process msixec.exe -ArgumentList '/i', (Join-Path $env:INSTALL_TEMP '\\urlrewrite.msi'), '/quiet', '/norestart' -NoNewWindow -Wait; `
18     Start-Process (Join-Path $env:INSTALL_TEMP '\\VC_redist.x64.exe') -ArgumentList '/install', '/passive', '/norestart' -NoNewWindow -Wait; `
19     Install-PackageProvider -Name NuGet -Force | Out-Null; `
20     Register-PSRepository -Name SitecoreGallery -SourceLocation https://sitecore.myget.org/F/sc-powershell/api/v2; `
21     Install-Module SitecoreInstallFramework -RequiredVersion 2.1.0 -Force; `
22     Set-ItemProperty -Path 'HKLM:\\SYSTEM\\CurrentControlSet\\Services\\Dnscache\\Parameters' -Name ServerPriorityTimeLimit -Value 0 -Type Dword; `
23     setx /M PATH $($env:PATH + ';C:\\Sitecore\\Scripts'); `
24     Remove-Website -Name 'Default Web Site'; `
25     Remove-Item -Path $env:INSTALL_TEMP -Force -Recurse;
26
27 COPY . /install/
28
29 # Expand zips, prepare SIF config and WDP package
30 RUN $env:SIF_CONFIG = 'sitecore-xmi-cm.json'; `
31     $env:SIF_PACKAGE = 'sitecore*_cm.scwdp.zip'; `
32     $env:SITENAME = 'sc'; `
33     $env:INSTALL_TEMP = 'C:\\install'; `
34     Expand-Archive -Path (Join-Path $env:INSTALL_TEMP '*.zip') -DestinationPath $env:INSTALL_TEMP; `
35     Expand-Archive -Path (Join-Path $env:INSTALL_TEMP '*Configuration files*.zip') -DestinationPath $env:INSTALL_TEMP; `
36     $config = Get-Content (Join-Path $env:INSTALL_TEMP $env:SIF_CONFIG) | ConvertFrom-Json; `
37     $config.Tasks.InstallWDP.Params.Arguments | Add-Member -Name 'Skip' -Value @(@{'ObjectName' = 'dbDacFx'}, @{'ObjectName' = 'dbFullSql'}) -MemberType NoteProperty; `
38     $config.Variables.'Site.PhysicalPath' = 'C:\\inetpub\\{0}' -f $env:SITENAME; `
39     ConvertTo-Json $config -Depth 50 | Set-Content -Path (Join-Path $env:INSTALL_TEMP $env:SIF_CONFIG); `
40     Rename-Item -Path (Resolve-Path (Join-Path $env:INSTALL_TEMP $env:SIF_CONFIG)).Path -NewName 'config.json'; `
41     Rename-Item -Path (Resolve-Path (Join-Path $env:INSTALL_TEMP $env:SIF_PACKAGE)).Path -NewName 'package.zip';
42
```

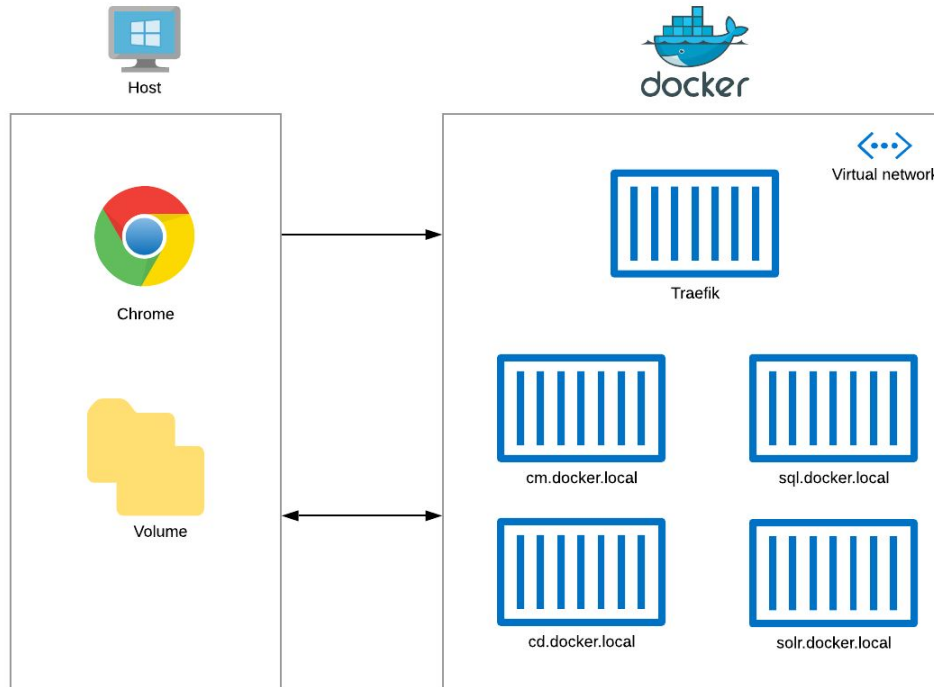


- Sitecore Docker Community Repository
  - <https://github.com/sitecore/docker-images>
  - Maintained by Sitecore community
  - Docker images since Sitecore 8.2 until 9.2
  - Includes XM, XP and JSS, SXA variant docker images
- Sitecore Community Slack Channel
  - #docker

# Docker + Sitecore

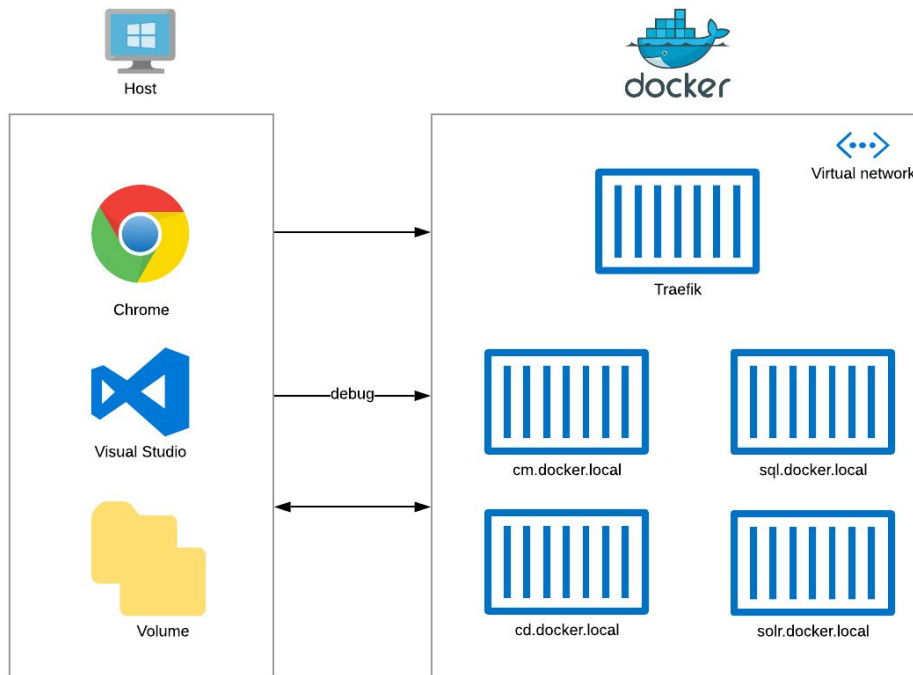


# Docker + Sitecore (Reverse Proxy)

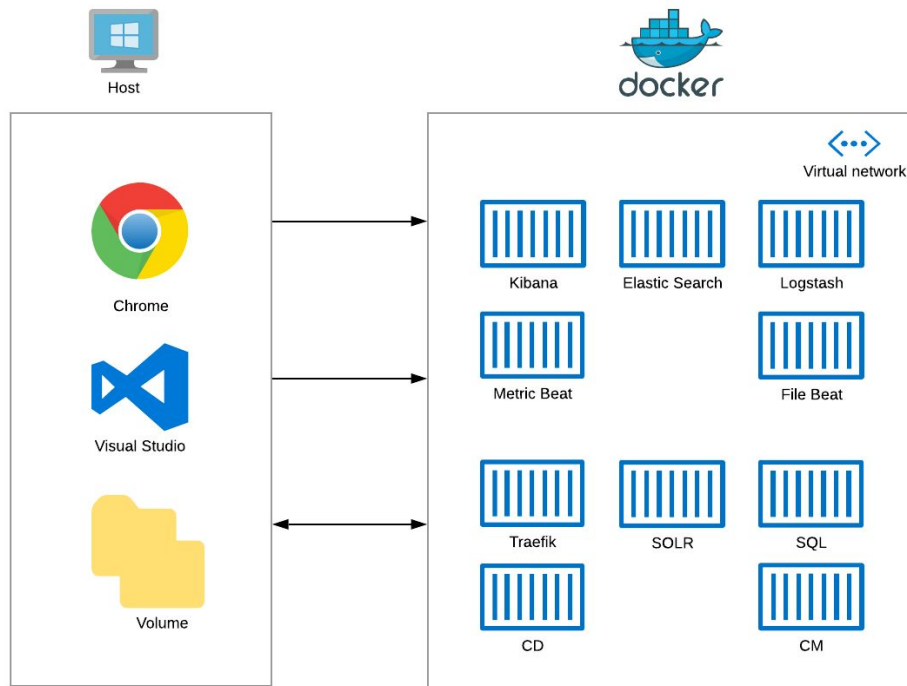




# Docker + Sitecore (Debug)



# Docker + Sitecore (Monitoring)



# Beyond Local Environment





# Container Orchestration







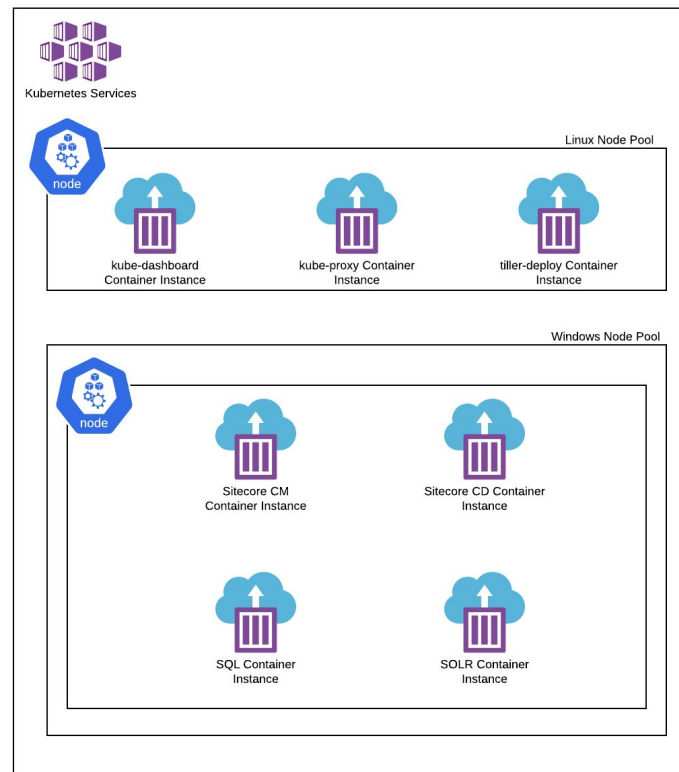
kubernetes



- Service discovery and load balancing
  - Expose containers using their DNS name or IP address
- Storage Orchestration
  - Allows you to mount storage system of your choice such as local storage or cloud providers
- Automated rollouts and rollbacks
  - Deploy new containers without downtime
- Automatic bin packing
  - When containers have specific CPU and memory resource specified, Kubernetes can make better decisions to manage resources for containers
- Self healing
  - Kubernetes restarts containers that fail, replaces unhealthy containers, and don't expose containers to traffic until they're in a ready state.
- Secret and configuration management
  - Stores and manage sensitive information such as passwords, OAuth tokens, and ssh keys.

# Azure Kubernetes Service + Sitecore

- Windows containers support in AKS is currently in preview
- A mix of Windows and Linux node pools
- Windows node pool
  - Sitecore
- Linux node pool
  - Solr
  - SQL
  - Redis
  - MongoDB
  - ELK containers
  - ...
- Scale each node pool easily by defining how many instance of VM you want - supports auto-scaling



- Development Tips
  - Containerize small independent service
  - Persist data generated by the running containers by mounting your host filesystem using docker volume
  - Isolation process consume less resources compared to Hyper-v isolation mode
  - Docker LCOW allow Windows and Linux containers to run side by side
- Getting your team to adopt Docker
  - Start by containerizing the smallest application, e.g: a docker image which specifically used for building your application
  - Start in local development environment with the aim of expanding the usage to distributed servers, e:g test environment
- Deploying to distributed servers
  - Choose a container orchestrator system
  - Leverage self healing nature of container orchestrator system
  - Deploy ELK or similar to monitor your running containers



I am a proud community member!  
Please contact me on the following handles:



**rey.rahadian**

[sitecorechat.slack.com](https://sitecorechat.slack.com)



**rahadian.rey**

[twitter](https://twitter.com/rahadian.rey)



**reyrahadian**

[linkedin](https://www.linkedin.com/in/reyrhadian)



# Questions?

I am a proud community member!  
Please contact me on the following handles:



[gitesh.shah](#)

[sitecorechat.slack.com](#)



[gjshah7254](#)

[twitter](#)



[giteshportfolio](#)

[linkedin](#)



**Deloitte.**  
Digital

AKQA

 SEARCHSTAX



Codehouse

 **espire**™

JUST AFTER  
**MIDNIGHT**

**Luminary**

**P!NG** WORKS



konabos



WILKERSON  
CONSULTING

**VERSA**

**VA**  
Vos Agency

Insight 



aceik  
SITECORE SPECIALISTS

Thank you!