Container Camp AU 2018 - Workshop

Lifting and Shifting legacy Windows workloads into Windows Containers

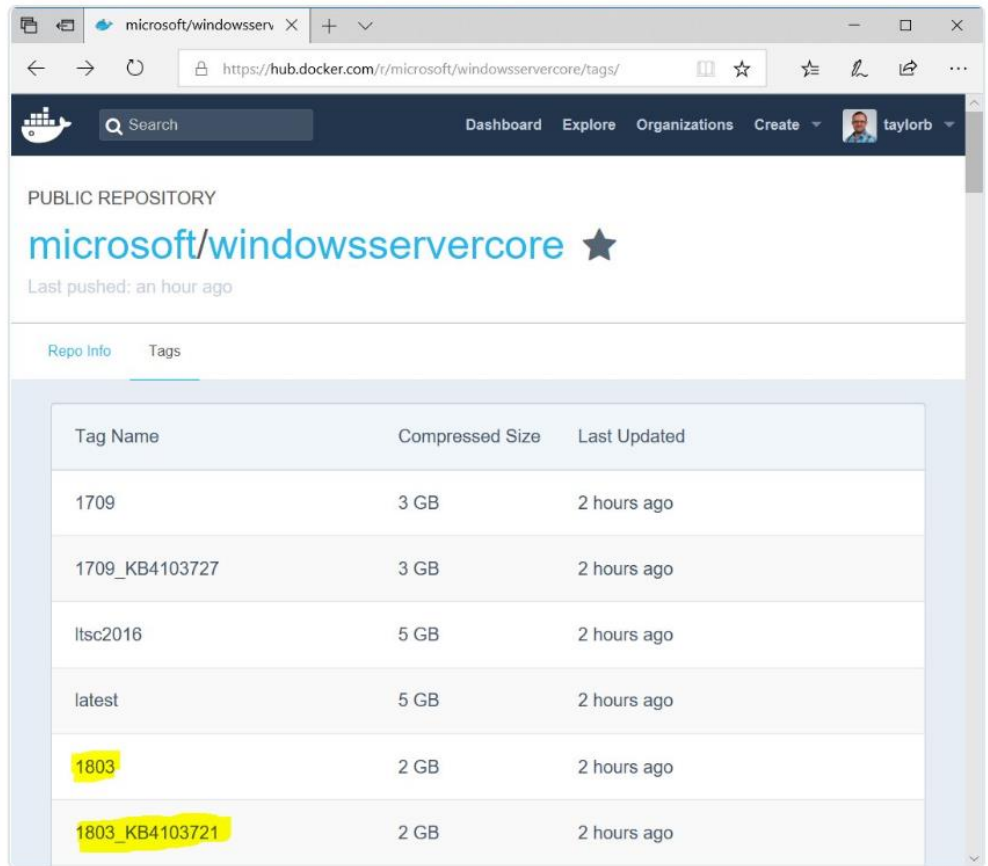
Photo by Ljubica on Unsplash

Paul Bouwer
Software Engineer - Microsoft
@pbouwer

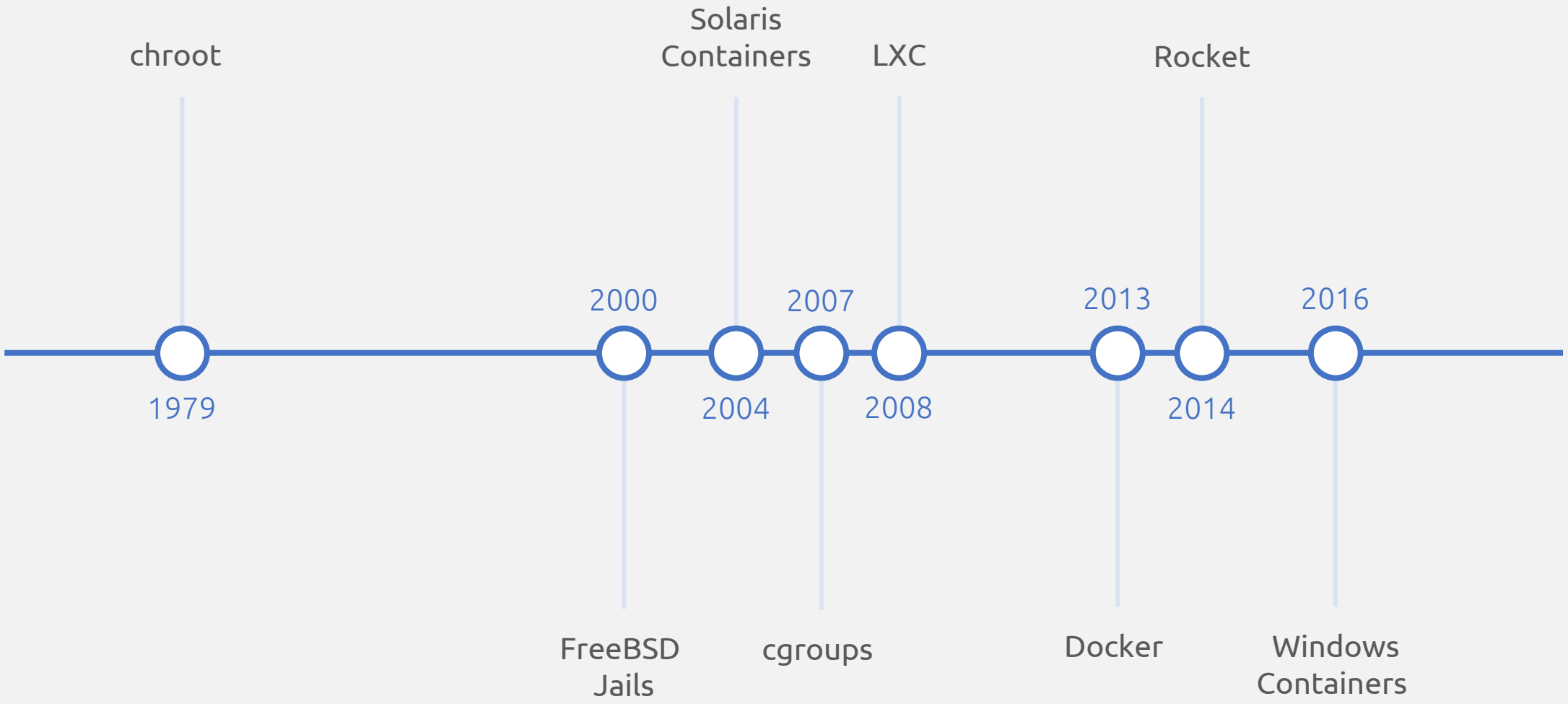
lift and shift your legacy windows workloads like IIS web sites and windows services into windows containers.

Taylor Brown
@Taylorb_msft

@windowsserver container images for 1803 are now live! look how nice and compact :)



6:34 AM - 9 May 2018


chroot
1979
Solaris Containers
2004
LXC
2008
Rocket
2014
2000
FreeBSD Jails
2007
cgroups
2013
Docker
2016
Windows Containers

windows containers

release channels

Long-Term Servicing Channel (LTSC)
Semi-Annual Channel (SAC)

	Long-Term Servicing Channel	Semi-Annual Channel
New releases	Every 2–3 years	Every 6 months
Support	5 years of mainstream support, plus 5 years of extended support	18 months
Availability	All channels	Software Assurance or Azure (cloud hosted)
Naming convention	Windows Server YYYY	Windows Server, version YYMM

Long-Term Servicing Channel (LTSC)

Do you need stability and predictability?
Do you need to run legacy or traditional Windows workloads?

Semi-Annual Channel (SAC)

Do you need to innovate rapidly?
Do you need early access to the newest Windows Server features?

releases

Windows Server Release	Channel	Version	Build
Windows Server, version 1803	Semi-Annual	1803	10.0.17134
Windows Server, version 1709	Semi-Annual	1709	10.0.16299
Windows Server 2016	Long-Term Servicing	2016	10.0.14393

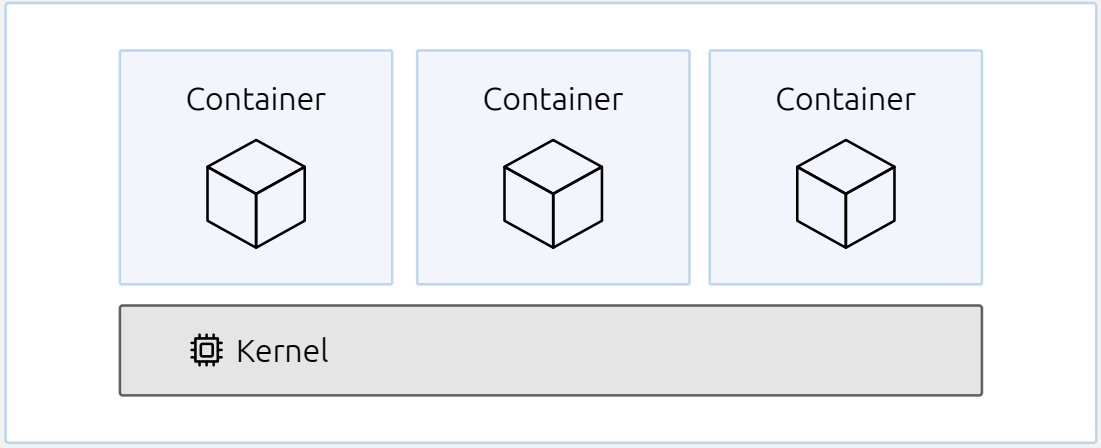
types

Windows Server Containers
Hyper-V Containers

Windows Server Containers

Application isolation via process and namespace isolation
Container host shares a kernel with all containers running on host
Containers and container host require same kernel version

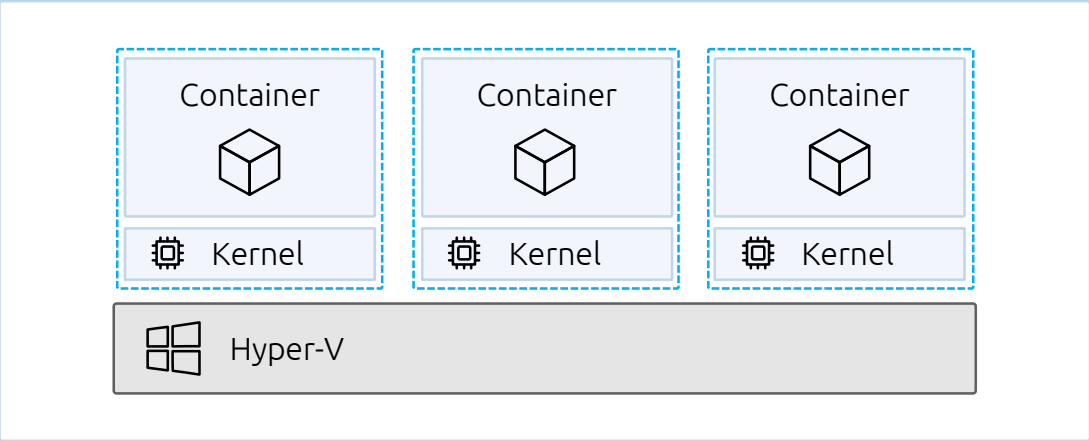
Do not use to isolate untrusted/hostile code



Hyper-V Containers

Application isolation via highly optimised virtual machine
Container host does not share kernel with containers running on host
Containers and container host can run different kernel versions

Use to isolate untrusted/hostile code
Hyper-V isolation is a runtime decision



flavours

Windows Server Core
Nano Server

Windows Server Core

Use for legacy applications (lift and shift)
Includes full .NET framework
Can run IIS and Windows Services
Large container size (GBs)

Nano Server

Use for cloud-first applications
Optimised for .NET Core
PowerShell Core, .NET Core, & WMI are not included
Small container size (MBs)

Starting in Windows Server, version 1709, Nano Server will only be available as a container base OS image

Flavour	Channel	Version/Label	Size
Windows Server Core	Long-Term Servicing	ltsc2016	5GB
	Semi-Annual	1709	3GB
	Semi-Annual	1803	2GB
Nano Server	Semi-Annual	sac2016	418MB
	Semi-Annual	1709	132 MB
	Semi-Annual	1803	115 MB

host requirements

Container Host
Virtualised Container Hosts

Container Host

Windows Container feature enabled/installed
Host must be running Windows Server 2016, 1709, 1803 or Windows 10 Pro/Ent
Hyper-V role installed to run Hyper-V containers
Windows must be installed to C:\, unless only Hyper-V containers are deployed

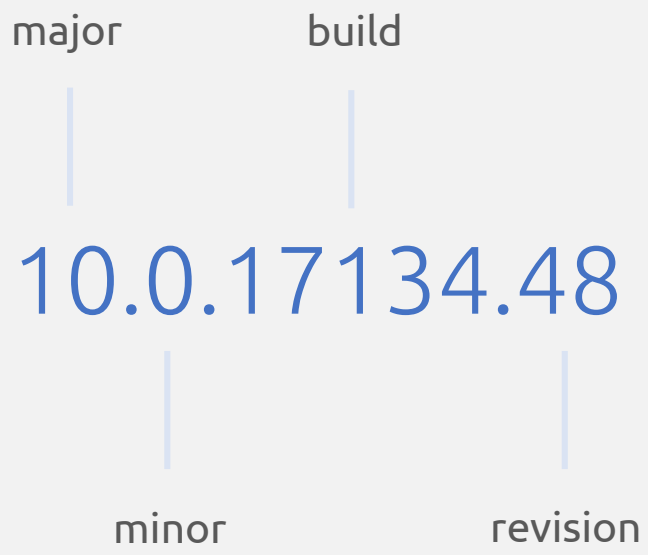
Virtualised Container Hosts

Nested virtualisation must be enabled
Virtualised Hyper-V host must have the following:
- Minimum 4GB RAM
- Windows Server 2016, 1709, 1803 or Windows 10 Pro/Ent on Host
- Windows Server Full/Core in the Container Host Virtual Machine
- CPU with Intel VT-x support
- Container Host Virtual Machine with minimum 2 virtual processors

version compatibility

Container OS	Host OS					
	Windows Server 2016 Builds: 14393	**Windows 10 1609, 1703** Builds: 14393., 15063.	**Windows Server version 1709** Builds 16299.	**Windows 10 Fall Creators Update** Builds 16299.	**Windows Server version 1803** Builds 17134.	**Windows 10 April 2018 Update** Builds 17134.
Windows Server 2016 Builds: 14393.	process or hyper-v isolation	hyper-v isolation	hyper-v isolation	hyper-v isolation	hyper-v isolation	hyper-v isolation
Windows Server version 1709 Builds 16299.*	not supported	not supported	process or hyper-v isolation	hyper-v isolation	hyper-v isolation	hyper-v isolation
Windows Server Version 1803 Builds 17134.*	not supported	not supported	not supported	not supported	process or hyper-v isolation	hyper-v isolation

Windows Containers



Example 1:

Container host is running Windows Server 2016 with KB4041691 applied.

Any Windows Server container deployed to this host must be based on the 10.0.14393.1770 container base images. If KB4053579 is applied to the host the container images must be updated at the same time to remain supported.

Example 2:

Container host is running Windows Server version 1709 with KB4043961 applied.

Any Windows Server container deployed to this host must be based on a Windows Server version 1709 (10.0.16299) container base image but need not match the host KB. If KB4054517 is applied to the host the container images do not need to be updated, though should be in order to fully address any security issues.

using base images

Windows Server 2016 (LTSC)

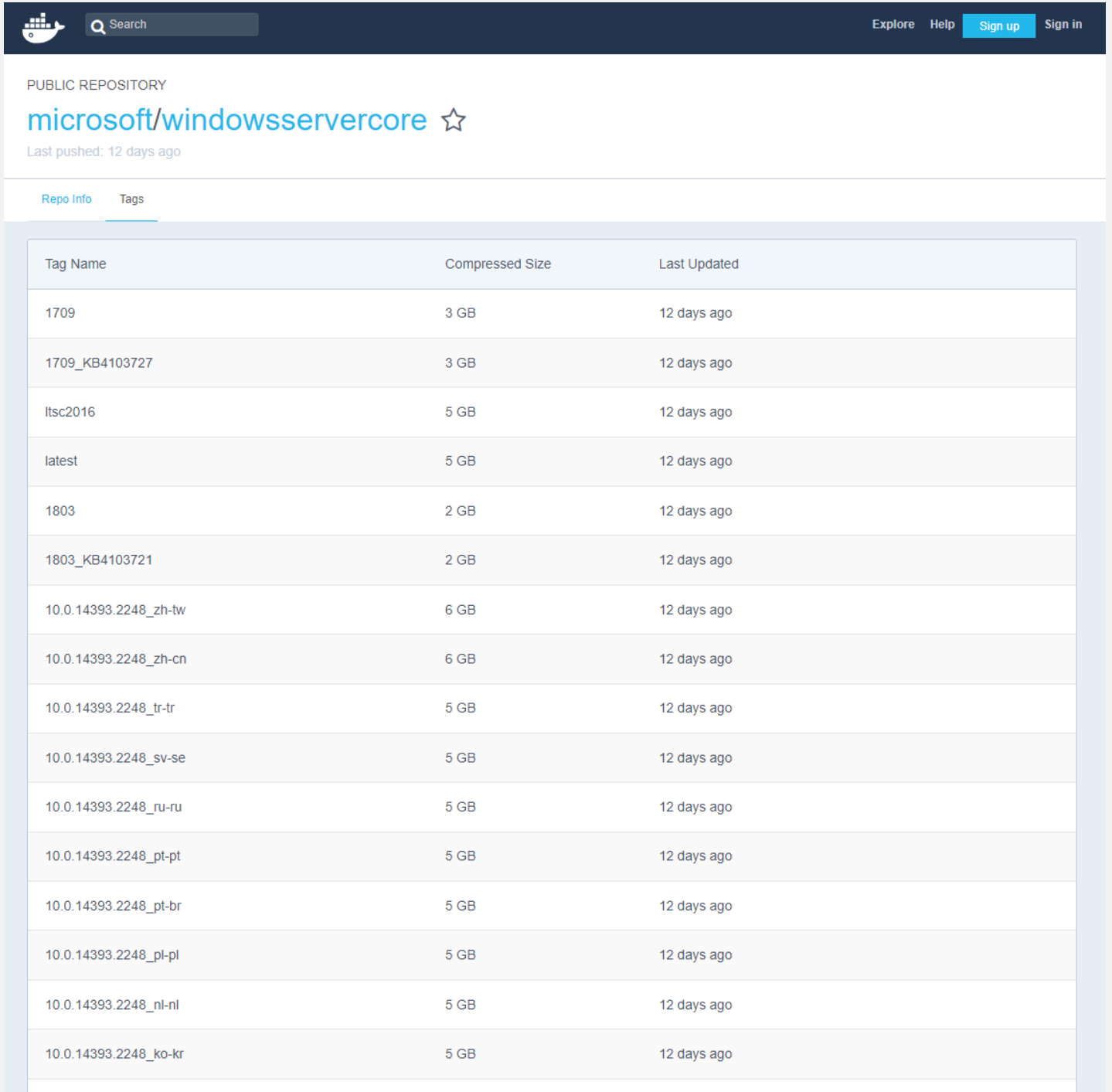
ltsc2016, latest
10.0.14393.<Revision Number>
10.0.14393.<Revision Number>_<Language Code>

Windows Server, version 1709 (SAC)

1709
1709_KB<Knowledge Base ID>

Windows Server, version 1803 (SAC)

1803
1803_KB<Knowledge Base ID>



Tag Name	Compressed Size	Last Updated
1709	3 GB	12 days ago
1709_KB4103727	3 GB	12 days ago
ltsc2016	5 GB	12 days ago
latest	5 GB	12 days ago
1803	2 GB	12 days ago
1803_KB4103721	2 GB	12 days ago
10.0.14393.2248_zh-tw	6 GB	12 days ago
10.0.14393.2248_zh-cn	6 GB	12 days ago
10.0.14393.2248_tr-tr	5 GB	12 days ago
10.0.14393.2248_sv-se	5 GB	12 days ago
10.0.14393.2248_ru-ru	5 GB	12 days ago
10.0.14393.2248_pt-pt	5 GB	12 days ago
10.0.14393.2248_pt-br	5 GB	12 days ago
10.0.14393.2248_pl-pl	5 GB	12 days ago
10.0.14393.2248_nl-nl	5 GB	12 days ago
10.0.14393.2248_ko-kr	5 GB	12 days ago

Windows Server 2016 (SAC)

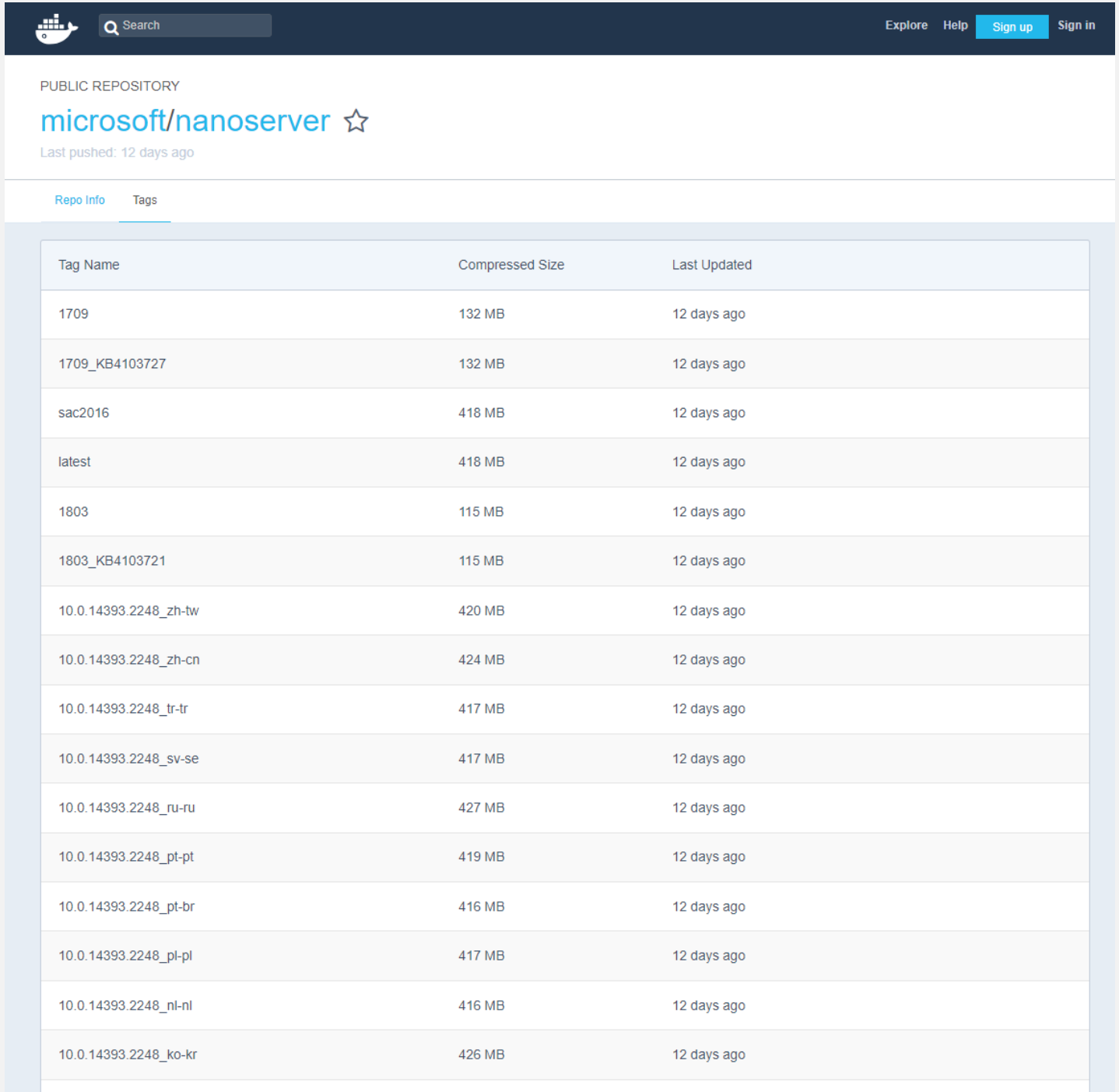
sac2016, latest
10.0.14393.<Revision Number>
10.0.14393.<Revision Number>_<Language Code>

Windows Server, version 1709 (SAC)

1709
1709_KB<Knowledge Base ID>

Windows Server, version 1803 (SAC)

1803
1803_KB<Knowledge Base ID>



Tag Name	Compressed Size	Last Updated
1709	132 MB	12 days ago
1709_KB4103727	132 MB	12 days ago
sac2016	418 MB	12 days ago
latest	418 MB	12 days ago
1803	115 MB	12 days ago
1803_KB4103721	115 MB	12 days ago
10.0.14393.2248_zh-tw	420 MB	12 days ago
10.0.14393.2248_zh-cn	424 MB	12 days ago
10.0.14393.2248_tr-tr	417 MB	12 days ago
10.0.14393.2248_sv-se	417 MB	12 days ago
10.0.14393.2248_ru-ru	427 MB	12 days ago
10.0.14393.2248_pt-pt	419 MB	12 days ago
10.0.14393.2248_pt-br	416 MB	12 days ago
10.0.14393.2248_pl-pl	417 MB	12 days ago
10.0.14393.2248_nl-nl	416 MB	12 days ago
10.0.14393.2248_ko-kr	426 MB	12 days ago

```
FROM microsoft/windowsservercore:1709
...

FROM microsoft/nanoserver:1709_KB4043961
...

FROM microsoft/windowsservercore:1803_KB4103721
...
```

Demo

Windows Container Basics

Photo by Alex Munsell on Unsplash

Lab 1

Exploring Windows Containers

Photo by Todd Quackenbush on Unsplash

build images

dockerfile instructions

FROM

```
FROM microsoft/windowsservercore:1709
...

FROM microsoft/nanoserver:1709_KB4043961
...

FROM microsoft/windowsservercore:1803_KB4103721
...
```

ESCAPE

```
# escape=`

FROM microsoft/windowsservercore:1803
RUN powershell.exe -Command `
    $ErrorActionPreference = 'Stop'; `
    wget https://www.python.org/ftp/python/3.5.1/python-3.5.1.exe
-OutFile c:\python-3.5.1.exe; `
    Start-Process c:\python-3.5.1.exe -ArgumentList '/quiet
InstallAllUsers=1 PrependPath=1' -Wait; `
    Remove-Item c:\python-3.5.1.exe -Force
```

SHELL

```
SHELL ["powershell", "-Command", "$ErrorActionPreference = 'Stop';
$ProgressPreference = 'SilentlyContinue'"]
```

file/directory references

Backslashes and forward slashes

```
# back slashes
WORKDIR C:\\inetpub\\wwwroot

# forward slashes
WORKDIR /inetpub/wwwroot
```

powershell

Grouped commands with line continuation

```
# Install Python
RUN Invoke-WebRequest https://www.python.org/ftp/python/3.5.1/python-
3.5.1.exe -OutFile c:\python-3.5.1.exe ; `
    Start-Process c:\python-3.5.1.exe -ArgumentList '/quiet
InstallAllUsers=1 PrependPath=1' -Wait ; `
    Remove-Item c:\python-3.5.1.exe -Force
```

Build and runtime scripts

```
# Powershell scripts located in scripts folder on build machine.
# init.ps1 script is executed via RUN instruction.
# run.ps1 is executed when image is run as a container.
COPY scripts .
RUN ./init.ps1

ENTRYPOINT ["powershell", "-File", ".\\run.ps1"]
```

useful tips

Download and extract files

```
# Download file
RUN Invoke-WebRequest -Uri $url -OutFile file.zip

# Much faster way to download file
RUN Start-BitsTransfer -Source $url -Destination file.zip

# Running into TLS 1.2 issues
RUN [Net.ServicePointManager]::SecurityProtocol =
[Net.SecurityProtocolType]::Tls12

# Extract downloaded zip files
RUN Expand-Archive file.zip -DestinationPath C:\temp\
```

Run processes or installers

```
# Run executable / installer
RUN Start-Process your-executable.exe -ArgumentList '--parameter',
'value' -NoNewWindow -Wait;

# Install Chocolatey and a Chocolatey package
RUN Install-PackageProvider -Name chocolatey -RequiredVersion
2.8.5.130 -Force; `
    Install-Package -Name webdeploy -RequiredVersion 3.6.0 -Force;

# Install MSI sliently
RUN Start-Process msiexec.exe -ArgumentList '-i', 'installer.msi',
'/quiet', '/passive' -NoNewWindow -Wait;
```

Leverage multi-stage builds

```
FROM microsoft/windowsservercore:1803 as builder

RUN Write-Host 'Use Powershell to download and install';

# ship a smaller container
FROM microsoft/nanoserver:1803

COPY --from=builder /app /app

CMD ["yourapp.exe"]
```

here be dragons!

identity

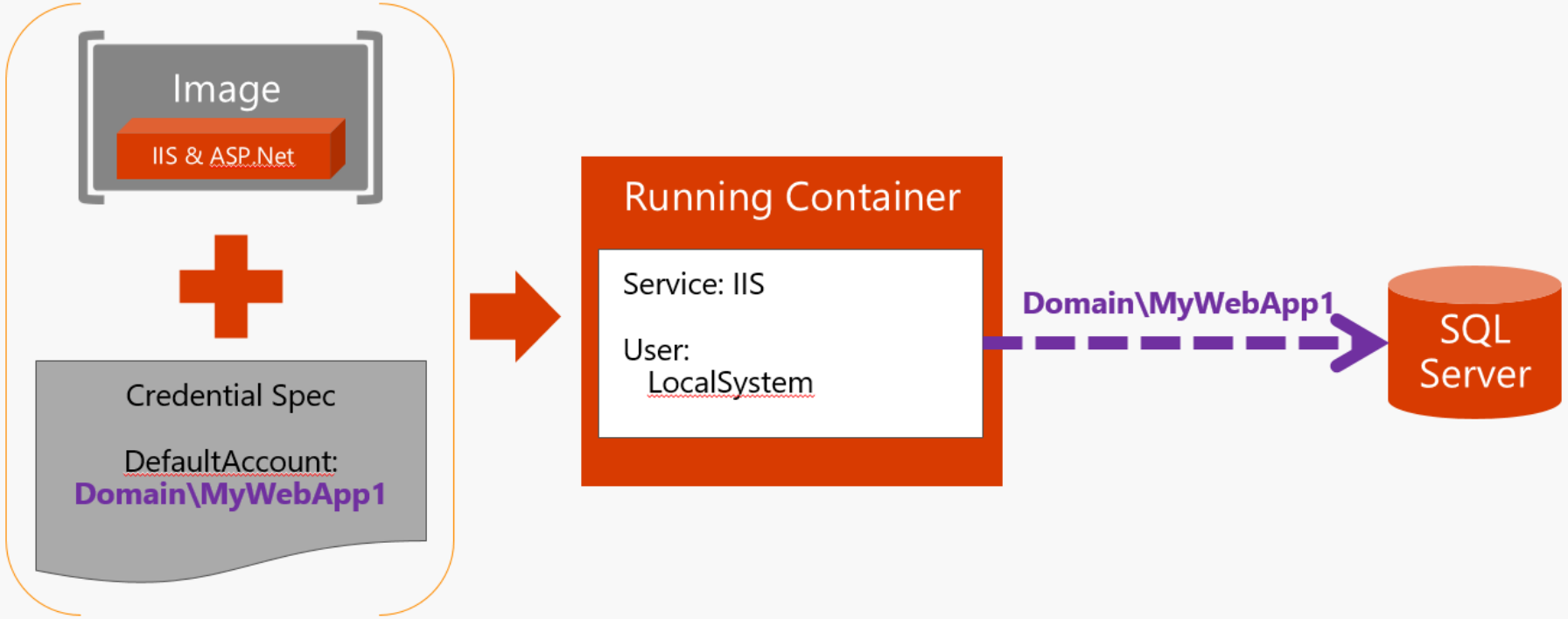
Process User

Process runs as ContainerAdministrator user

Active Directory Service Accounts

Windows Containers cannot be domain joined
Leverage a type of domain account called a group Managed Service Account (gMSA)
Services running as Local System or Network Service will use the Windows Container's identity

```
docker run --security-opt "credentialspec=file://myapp.json"
-d -p 80:80 -h myapp.mydomain.local <imagename>
```



https://docs.microsoft.com/en-us/virtualization/windowscontainers/manage-containers/manage-serviceaccounts

background processes

Windows Processes

IIS and Windows Service run in the background
Containers expect process in the foreground
When service stops or process dies, container runtime doesn’t know about it

How do we solve this?

Microsoft/~~IIS.~~ServiceMonitor

This repository Search Pull requests Issues Marketplace Explore

Microsoft / IIS.ServiceMonitor

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Code Issues 4 Pull requests 2 Projects 0 Wiki Insights

An entrypoint process for running IIS in Windows containers

40 commits 16 branches 3 releases 11 contributors MIT

Branch: master New pull request Create new file Upload files Find file Clone or download

mcy94w filter out PATH for any value, filter out DRIVERDATA for any value (#36) Latest commit ab42ec6 11 days ago

.github	Create CODEOWNERS	2 months ago
src/ServiceMonitor	filter out PATH for any value, filter out DRIVERDATA for any value (#36)	11 days ago
.gitignore	Initial commit	10 months ago
LICENSE	Initial commit	10 months ago
README.md	filter out PATH for any value, filter out DRIVERDATA for any value (#36)	11 days ago
ServiceMonitor.sln	Add solution file	10 months ago
build.cmd	Add solution file	10 months ago
sign.props	Add microbuild	9 months ago

README.md

Microsoft IIS Service Monitor

ServiceMonitor is a Windows executable designed to be used as the entrypoint process when running IIS inside a Windows Server container.

ServiceMonitor monitors the status of the `w3svc` service and will exit when the service state changes from `SERVICE_RUNNING` to either one of `SERVICE_STOPPED`, `SERVICE_STOP_PENDING`, `SERVICE_PAUSED` or `SERVICE_PAUSE_PENDING`.

Additionally, ServiceMonitor will promote environment variables from process environment it's own process environment block to the DefaultAppPool. We achieve this by naively copying all variables in our process environment block except for those Environment variable / value pairs present in this list below.

Environment variable exclusion list

Environment Variable	Value
TMP	"C:\Users\ContainerAdministrator\AppData\Local\Temp"

iis-docker/windowsservercore-1803/Dockerfile

```
# escape=`

FROM microsoft/windowsservercore:1803

RUN powershell -Command `
    Add-WindowsFeature Web-Server; `
    Invoke-WebRequest -UseBasicParsing -Uri
"https://dotnetbinaries.blob.core.windows.net/servicemonitor/2.0.1.3
/ServiceMonitor.exe" -OutFile "C:\ServiceMonitor.exe"

EXPOSE 80

ENTRYPOINT ["C:\\ServiceMonitor.exe", "w3svc"]
```

aspnet-docker/4.7.2-windowsservercore-1803/runtime/Dockerfile

```
# escape=`

FROM microsoft/dotnet-framework:4.7.2-runtime-windowsservercore-1803

SHELL ["powershell", "-Command", "$ErrorActionPreference = 'Stop';
$ProgressPreference = 'SilentlyContinue';"]

…

EXPOSE 80

ENTRYPOINT ["C:\\ServiceMonitor.exe", "w3svc"]
```

Demo

Windows Containers - Here be dragons!

Photo by Alex Munsell on Unsplash

configuration

Strategies

Bundle config inside container – typical of initial lift and shift
Inject secrets and configuration – more container native

anthonychu/aspnet-env-docker

This repository Search Pull requests Issues Marketplace Explore

anthonychu / aspnet-env-docker

Watch 1 Star 6 Fork 0

Code Issues 0 Pull requests 0 Projects 0 Wiki Insights

No description, website, or topics provided.

12 commits 2 branches 0 releases 1 contributor MIT

Branch: master New pull request Create new file Upload files Find file Clone or download

anthonychu Merge pull request #1 from anthonychu/add-web-config-transform ... Latest commit 50221a1 on Nov 16, 2017

.dockerignore	Initial commit	6 months ago
Dockerfile	Add web.config transform at startup	6 months ago
LICENSE	Create LICENSE	6 months ago
README.md	Update README.md	6 months ago
Set-WebConfigSettings.ps1	Add web.config transform at startup	6 months ago
Startup.ps1	Initial commit	6 months ago

README.md

Dockerfile - ASP.NET Windows container with support for web.config overrides at startup

This image can be used just like `microsoft/aspnet`. At container startup, it'll perform these additional steps, in order:

1. If `C:\web-config-transform\transform.config` exists, it'll use this file to transform the Web.config
2. Override Web.config with environment variables:
   - Environment variables prefixed with `APPSETTING_` will override the corresponding app setting value (without the prefix)
   - Environment variables prefixed with `CONNSTR_` will override the corresponding connection string (without the prefix)

More information: https://anthonychu.ca/post/overriding-web-config-settings-environment-variables-containerized-aspnet-apps/

Usage

To containerize an existing ASP.NET 4.x application:

Configure IIS via web config

```
# escape=`

FROM microsoft/aspnet:4.7.1-windowsservercore-1709

RUN powershell.exe Add-WindowsFeature Web-Windows-Auth
RUN powershell.exe -NoProfile -Command `
  Set-WebConfigurationProperty -filter
/system.WebServer/security/authentication/AnonymousAuthentication -
name enabled -value false -PSPath IIS:\ ; `
  Set-WebConfigurationProperty -filter
/system.webServer/security/authentication/windowsAuthentication -
name enabled -value true -PSPath IIS:\
```

logging

Strategies

In container logging
Host level logging

Considerations

Per container logging
Aggregated logging

size

Windows Server Core images

These are large (GBs)
Plan your disk space and infrastructure accordingly

iis web sites

build image

Build IIS based image

Leverage microsoft/iis base images
IIS base image available per Windows Server release
Leverage ServiceMonitor to monitor w3svc Windows Service

microsoft/iis:1803

```
# escape=`

FROM microsoft/windowsservercore:1803

RUN powershell -Command `
    Add-WindowsFeature Web-Server; `
    Invoke-WebRequest -UseBasicParsing -Uri
"https://dotnetbinaries.blob.core.windows.net/servicemonitor/2.0.1.3
/ServiceMonitor.exe" -OutFile "C:\ServiceMonitor.exe"

EXPOSE 80

ENTRYPOINT ["C:\\ServiceMonitor.exe", "w3svc"]
```

microsoft/iis-docker
samples/php/Dockerfile

This repository Search Pull requests Issues Marketplace Explore

Microsoft / iis-docker

Watch 26 Star 81 Fork 39

Code Issues 11 Pull requests 0 Projects 0 Wiki Insights

Branch: master ▾ iis-docker / samples / php / Dockerfile Find file Copy path

shirhatti Add PHP sample (#78) c77ec3d on Jan 23

1 contributor

63 lines (53 sloc) 3.03 KB Raw Blame History

```
# escape=`

#
# This Dockerfile is provided for demonstration purposes only and it is not supported by Microsoft
# PHP 7.1 x64 running on IIS
#

FROM microsoft/iis AS php71

SHELL ["powershell", "-Command", "$ErrorActionPreference = 'Stop';"]

RUN `
    try { `
        # Install PHP `
        Invoke-WebRequest 'https://sourceforge.net/projects/phpinstallermsi/files/zip/php-7.1.7-nts-Win32-VC14-x64.zip/download' -UserAgent
        Invoke-WebRequest 'https://download.microsoft.com/download/6/A/A/6AA4EDFF-645B-48C5-81CC-ED5963AEAD48/vc_redist.x64.exe' -UserAgent
        Invoke-WebRequest 'https://sourceforge.net/projects/wincache/files/wincache-2.0.0/wincachewpi-2.0.0.8-7.1-nts-vc14-x64.exe/download
        Expand-Archive -Path c:\php.zip -DestinationPath C:\PHP; `
        `
        # Install PHP Win Cache `
        C:\php_wincache.exe /Q /C "/T:C:\php_wincache_msi"; `
        Start-Process -FilePath msiexec -ArgumentList '/a C:\php_wincache_msi\wincache71x64wpi.msi /qb TARGETDIR=C:\php_wincache_msi\extrac
        Copy-Item C:\php_wincache_msi\extracted\PFiles\php_wincache.dll c:\PHP\ext; `
        `
        # Configure PHP `
        Copy-Item C:\PHP\php.ini-production C:\PHP\php.ini; `
    } `
    catch { `
        $_.Exception; `
        $_; `
        exit 1; `
    }

FROM microsoft/iis

COPY --from=php71 ["/php/", "/php/"]
COPY --from=php71 ["/vc_redist-x64.exe", "/vc_redist-x64.exe"]
```

asp.net

microsoft/aspnet

latest
<.NET Version>-windowsservercore-<OS Version>

Search

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PUBLIC | AUTOMATED BUILD

microsoft/aspnet ☆

Last pushed: 12 days ago

Repo Info | Tags | Dockerfile | Build Details

Tag Name	Compressed Size	Last Updated
latest	6 GB	12 days ago
4.7.2	6 GB	12 days ago
4.7.1	6 GB	12 days ago
3.5	7 GB	12 days ago
4.7.2-windowsservercore-1803	2 GB	12 days ago
3.5-windowsservercore-1803	3 GB	12 days ago
4.7.2-windowsservercore-ltsc2016	6 GB	12 days ago
4.7.2-windowsservercore-1709	4 GB	12 days ago
4.7.1-windowsservercore-1709	4 GB	12 days ago
4.7.1-windowsservercore-ltsc2016	6 GB	12 days ago
3.5-windowsservercore-1709	4 GB	12 days ago
3.5-windowsservercore-ltsc2016	7 GB	12 days ago
4.7	6 GB	12 days ago
4.7-windowsservercore-ltsc2016	6 GB	12 days ago
4.6.2	6 GB	12 days ago
4.6.2-windowsservercore-ltsc2016	6 GB	12 days ago
4.7.1-windowsservercore-1709_KB4048955	3 GB	6 months ago

microsoft/dotnet-framework

latest
<.NET Version>-runtime-windowsservercore-<OS Version>
<.NET Version>-sdk-windowsservercore-<OS Version>

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microsoft/dotnet-framework ☆

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Repo Info Tags

Tag Name	Compressed Size	Last Updated
3.5-sdk	8 GB	13 days ago
3.5	6 GB	13 days ago
3.5-runtime	6 GB	13 days ago
4.6.2	6 GB	13 days ago
4.6.2-runtime	6 GB	13 days ago
4.7	6 GB	13 days ago
4.7-runtime	6 GB	13 days ago
4.7.1-sdk	7 GB	13 days ago
4.7.1	6 GB	13 days ago
4.7.1-runtime	6 GB	13 days ago
sdk	7 GB	13 days ago
4.7.2-sdk	7 GB	13 days ago
latest	6 GB	13 days ago
runtime	6 GB	13 days ago
4.7.2-runtime	6 GB	13 days ago
4.6.2-windowsservercore-ltsc2016	6 GB	13 days ago
4.6.2-runtime-windowsservercore-ltsc2016	6 GB	13 days ago

Build ASP.NET based image

Leverage microsoft/aspnet base images
ASP.NET base image available per .NET version and Windows Server release
Leverages ServiceMonitor to monitor w3svc Windows Service

microsoft/aspnet:4.7.2-windowsservercore-1803

```
FROM microsoft/dotnet-framework:4.7.2-runtime-windowsservercore-1803

SHELL ["powershell", "-Command", "$ErrorActionPreference = 'Stop';
$ProgressPreference = 'SilentlyContinue';"]

RUN Add-WindowsFeature Web-Server; `
    Add-WindowsFeature NET-Framework-45-ASPNET; `
    Add-WindowsFeature Web-Asp-Net45; `
    Remove-Item -Recurse C:\inetpub\wwwroot\*; `
    Invoke-WebRequest -Uri
https://dotnetbinaries.blob.core.windows.net/servicemonitor/2.0.1.3/
ServiceMonitor.exe -OutFile C:\ServiceMonitor.exe

…

ENTRYPOINT ["C:\\ServiceMonitor.exe", "w3svc"]
```

Leverage .NET Framework images

Leverage microsoft/dotnet-frameworks base images
.NET Framework images available as runtime and sdk options
Leverage .NET Framework sdk images for multi-build Dockerfiles

microsoft/dotnet-framework :4.7.2-runtime-windowsservercore-1709

```
# escape=`

FROM microsoft/windowsservercore:1709

# Install .NET 4.7.2
RUN powershell Invoke-WebRequest -Uri
"https://download.microsoft.com/download/5/A/3/5A3607CA-53B1-4717-
8845-4389B11931FA/NDP472-KB4054530-x86-x64-AllOS-ENU.exe" -OutFile
dotnet-framework-installer.exe & `
    .\dotnet-framework-installer.exe /q & `
    del .\dotnet-framework-installer.exe

# ngen .NET Fx
ENV COMPLUS_NGenProtectedProcess_FeatureEnabled 0
RUN \Windows\Microsoft.NET\Framework64\v4.0.30319\ngen update & `
    \Windows\Microsoft.NET\Framework\v4.0.30319\ngen update
```

microsoft/dotnet-framework :4.7.2-runtime-windowsservercore-1803

```
FROM microsoft/windowsservercore:1803

ENV COMPLUS_NGenProtectedProcess_FeatureEnabled 0
```

microsoft/dotnet-framework :4.7.2-sdk-windowsservercore-1709

```
# escape=`

FROM microsoft/dotnet-framework:4.7.2-runtime-windowsservercore-1803

SHELL ["powershell", "-Command", "$ErrorActionPreference = 'Stop';
$ProgressPreference = 'SilentlyContinue';"]

# Install NuGet CLI …
# Install VS Test Agent …
# ngen assemblies queued by VS installers - must be done in cmd shell to
avoid access issues …
# Set PATH in one layer to keep image size down. …
# Install Targeting Packs …
```

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Branch: master dotnet-framework-docker / samples / aspnetapp / Dockerfile Find file Copy path

richlander Add samples to this repo (#126) 6ce0181 20 days ago

1 contributor

19 lines (14 sloc) 447 Bytes Raw Blame History

```
1  FROM microsoft/dotnet-framework:4.7.2-sdk AS build
2  WORKDIR /app
3
4  # copy csproj and restore as distinct layers
5  COPY *.sln .
6  COPY aspnetapp/*.csproj ./aspnetapp/
7  COPY aspnetapp/*.config ./aspnetapp/
8  RUN nuget restore
9
10 # copy everything else and build app
11 COPY aspnetapp/. ./aspnetapp/
12 WORKDIR /app/aspnetapp
13 RUN msbuild /p:Configuration=Release
14
15
16 FROM microsoft/aspnet:4.7.2 AS runtime
17 WORKDIR /inetpub/wwwroot
18 COPY --from=build /app/aspnetapp/. ./
```

entrypoint

Using ServiceMonitor

```
# escape=`

# Leverage ServiceMonitor to monitor the w3svc Windows Service
ENTRYPOINT ["C:\\ServiceMonitor.exe", "w3svc"]

# Run ServiceMonitor in a script with other runtime setup
ENTRYPOINT ["powershell.exe", "c:\\startup\\Startup.ps1"]
```

Lab 2

Exploring IIS and ASP.NET Web Sites

Photo by Todd Quackenbush on Unsplash

windows services

build image

Build Windows Service image

Leverage microsoft/windowsservercore base images
Windows Service Core images come with .NET Framework installed
Leverage InstallUtil.exe to install Windows Service
Leverage ServiceMonitor to monitor Windows Service

entrypoint

Using ServiceMonitor

```
# escape=`

# Leverage same ServiceMonitor technique as with IIS and ASP.NET apps
ENTRYPOINT ["C:\\ServiceMonitor.exe", "WindowsServiceName"]

# Run ServiceMonitor in a script with other runtime setup
ENTRYPOINT ["powershell.exe", "c:\\startup\\Startup.ps1"]
```

Lab 3

Exploring Windows Services

Photo by Todd Quackenbush on Unsplash

orchestrators

Kubernetes
Service Fabric