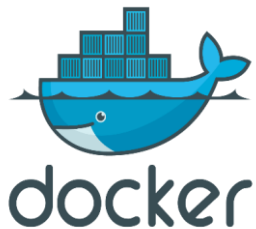


Frank Geisler



SQL Server on Docker

Frank Geisler

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Microsoft P-TSP

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Speaker



Agenda

- The Big Container Theory
- Windows and Containers
- Building a SQL Server Container
- Building a customized Container Image
- Export Images
- Publishing customized Images on Docker Hub
- A really nice GUI for Docker
- Scenarios where you can use Docker
- References





The Big Container Theory

Definition Container

Containers *wrap* a piece of software in a complete *filesystem* that contains *everything needed to run*: code, runtime, system tools, system libraries – anything that can be installed on a server. This *guarantees* that the software *will always run the same*, regardless of its environment.

<https://www.docker.com/what-docker>

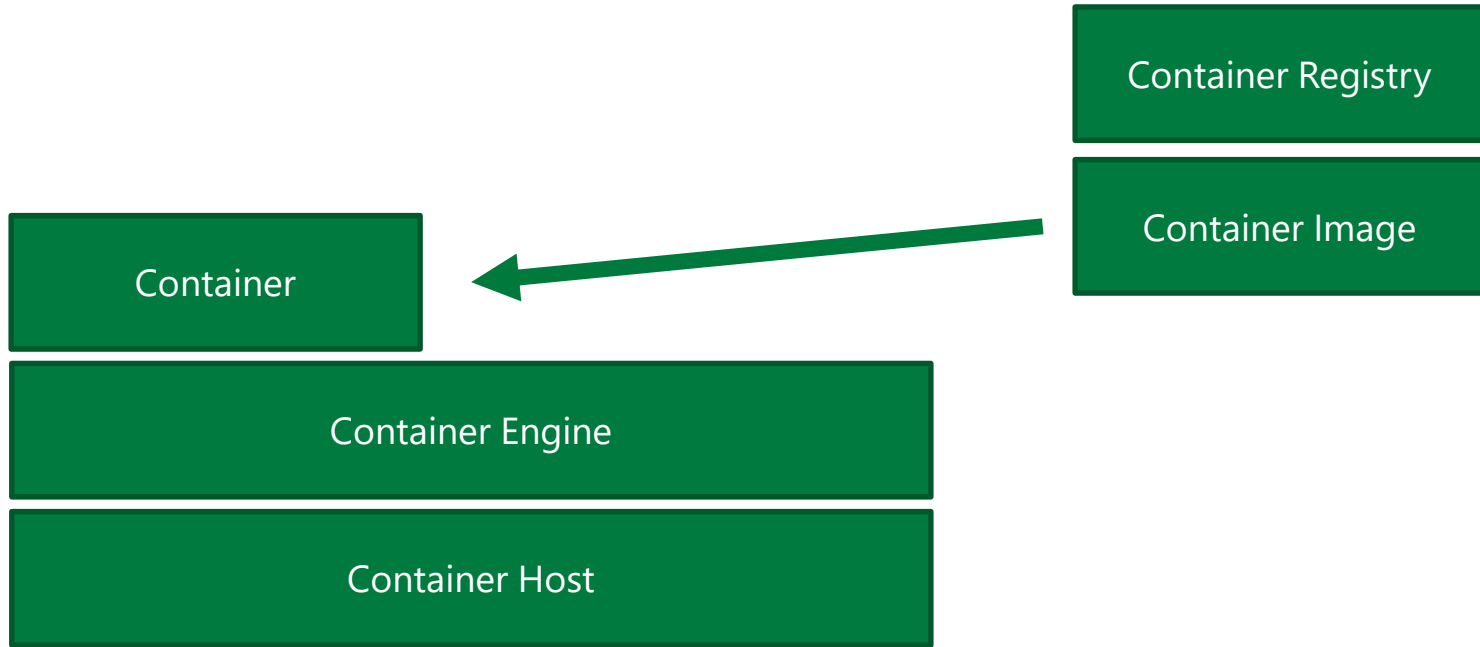


Basic Elements of Docker

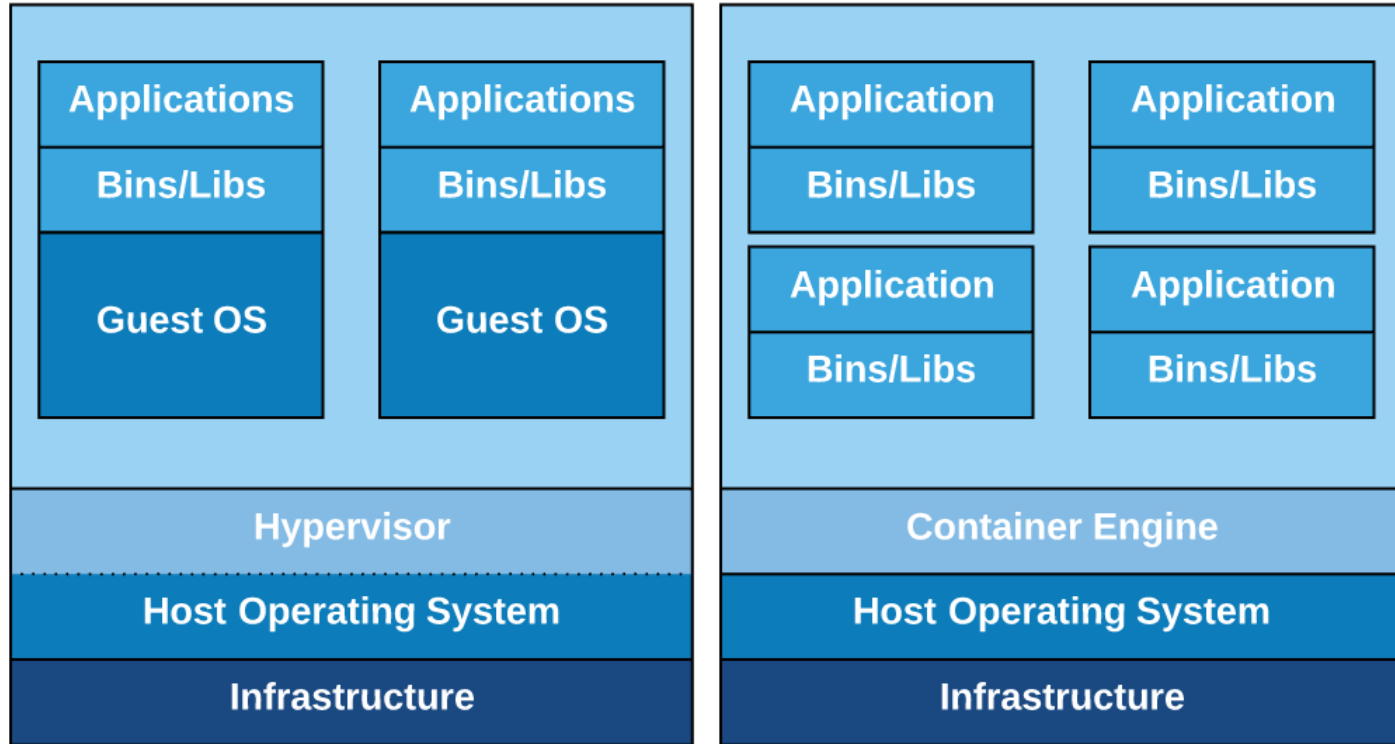
- Container Image
- Container
- Container Host
- Container Engine
- Container Registry



How do the Elements relate?



Virtual Machines vs. Containers

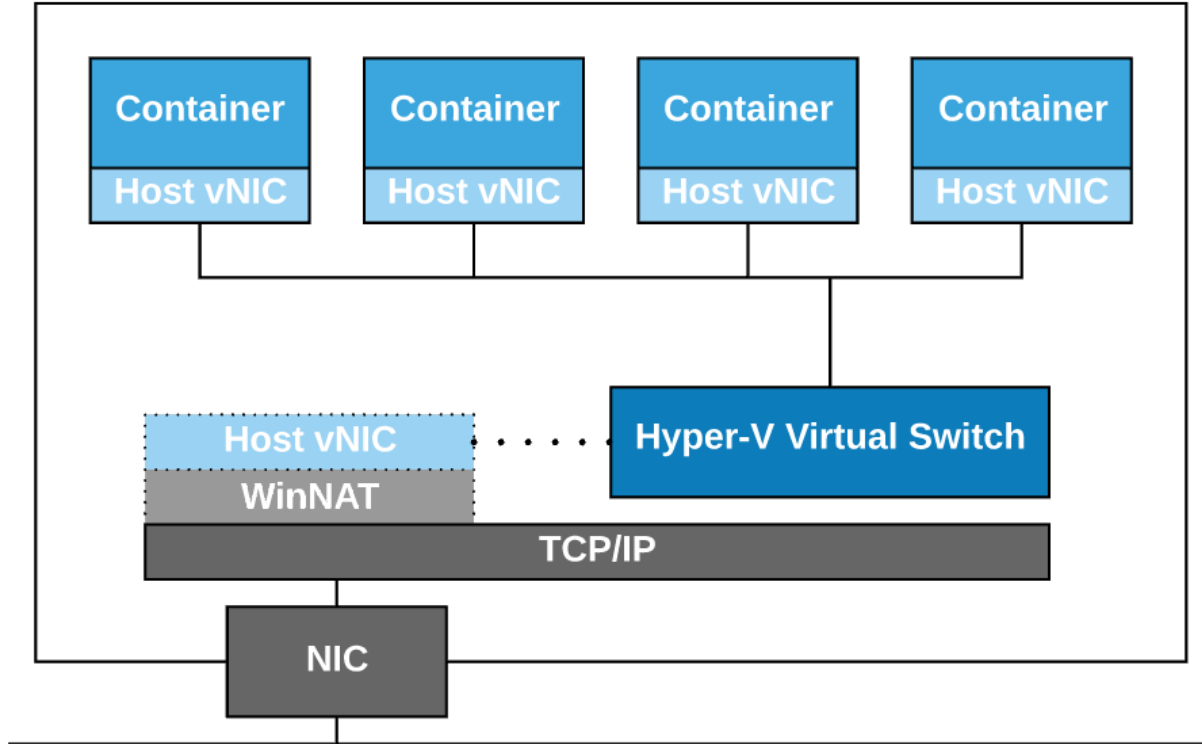


Containers are no VMs !

- They are just processes
- They are restricted which Ressources they can use
- They are stopped when the process is quit



Container Network

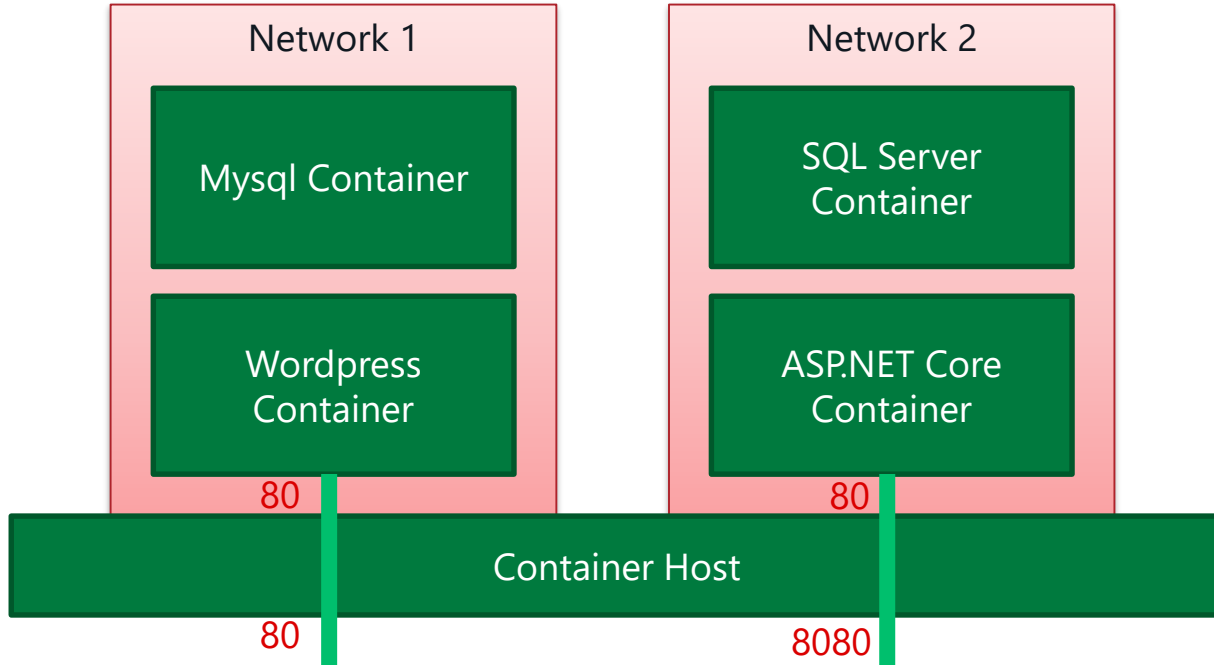


Container Network

- Each Container is connected to a virtual private default network that is called „bridge“
- Each virtual Network is bound through a NAT Firewall to the host IP.
- Container in the same virtual network are allowed to communicate (without -p)
- Best practice: Create an own network for each Application



Best practices



What is in an image

- App Binaries and Dependencies
- Metadata on how the Image File and the Image have to be executed
- Official Definition: „An image is an ordered collection of root filesystem changes and the corresponding execution parameters for use within a container runtime.“
- No complete OS, no kernel, no kernel modules (like drivers)
- Can be very small or very big



A large, stylized teal graphic on the left side of the slide, resembling a thick, curved arrow or a stylized letter 'C' that points towards the right.

Windows and Containers

Docker and Microsoft

Announced cooperation in 2014

Windows Server 2016 and Windows 10
Anniversary Edition support Containers

Docker and Microsoft partner to bring
container applications across platforms

October 15, 2014 | Microsoft News Center



Editor's note – Oct. 16, 2014 –The press release below was updated to clarify that the orchestration of containers on Azure is planned to be integrated in a future Docker release.

SAN FRANCISCO and REDMOND, Wash. — Oct. 15, 2014 — Microsoft Corp. and [Docker Inc.](#), the company behind the fast-growing Docker open platform for distributed applications, on Wednesday announced a strategic partnership to provide Docker with support for new container technologies that will be delivered in a future release of Windows Server. Developers and organizations that want to create container applications using Docker will be able to use either Windows Server or Linux with the same growing Docker ecosystem of users, applications and tools.

Today's business climate requires higher levels of innovation than before, and distributed applications that support open portability are at the forefront of this demand. Docker is

<http://news.microsoft.com/2014/10/15/DockerPR/>



Types of Containers

Windows Server Containers

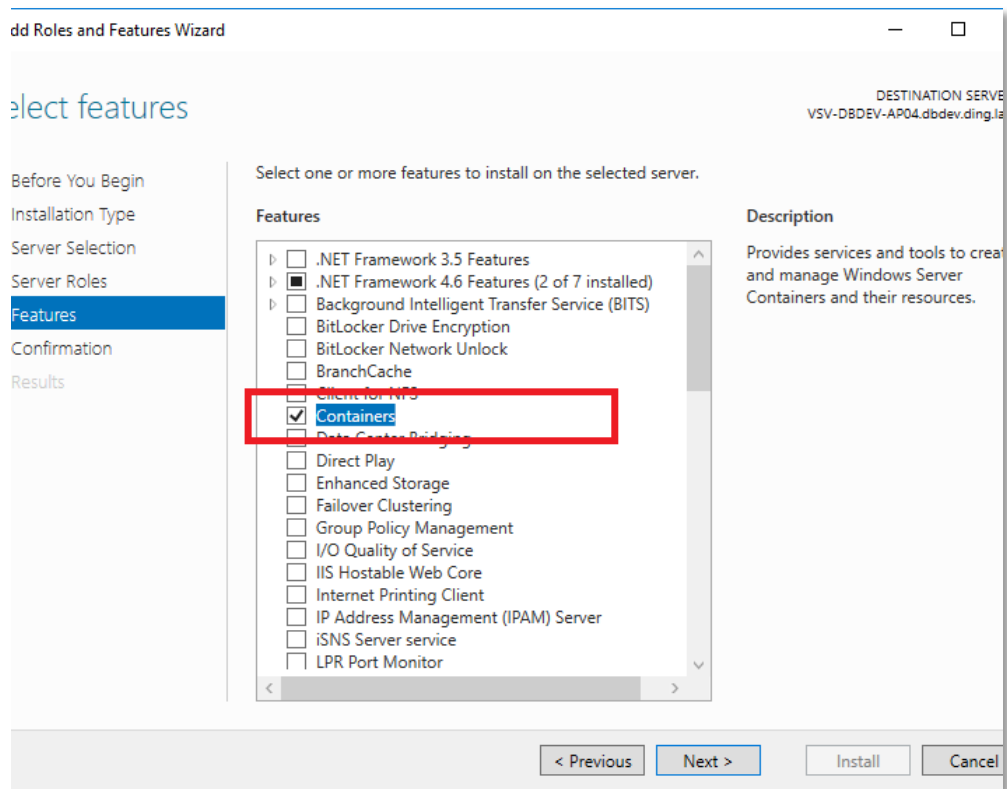
- Isolation on Namespace, Ressources and Prozess Isolierung
- Share the host kernel with host and other containers

Hyper-V Containers

- Extend Isolation compared to Windows Server Containers
- Are executed within a special virtual machine
- Don't share the Kerne with the host
- Are determined on runtime with **--isolation=hyperv**
- You can also execute a linux host (linux vm)



Activate Container Feature



Install Docker Engine with PowerShell

```
Install-PackageProvider -Name NuGet -MinimumVersion  
2.8.5.201 -Force
```

```
Install-Module -Name DockerMsftProvider -Force
```

```
Install-Package -Name docker -ProviderName  
DockerMsftProvider -Force
```

```
Restart-Computer -Force
```



Windows 10 - Docker Store

Download .msi

<https://store.docker.com/>

Get Docker CE for Windows

Stable channel

This installer is fully baked and tested. This is the best channel to use if you want a reliable platform to work with.

These releases follow the Docker Engine stable releases.

[Get Docker CE for Windows \(stable\)](#)

Edge channel

This installer provides the latest Edge release of Docker for Windows and Engine, and typically offers new features in development.

Use this channel if you want to get experimental features faster, and can weather some instability and bugs. We collect all usage data on Edge releases across the board.

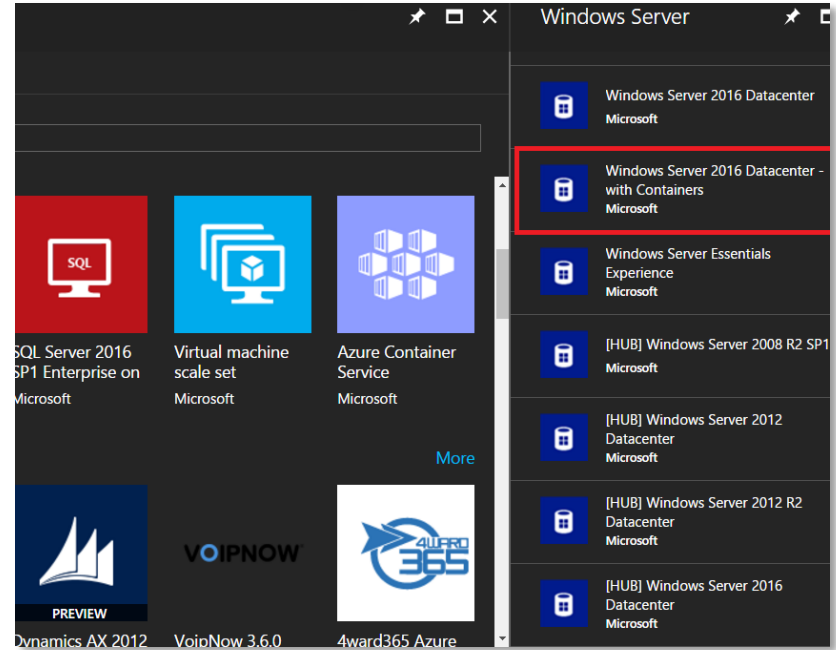
Edge builds are released once per month.

[Get Docker CE for Windows \(Edge\)](#)



Azure

- There are plenty possibilities...
- E.g.: There is an image where container role is already activated and the docker engine is installed



Check if Docker is running

Get-Service docker

```
Administrator: Windows PowerShell
PS C:\windows\system32> get-service docker

Status  Name      DisplayName
-----  -
Running Docker    docker

PS C:\windows\system32>
```

docker version

```
Administrator: Windows PowerShell
PS C:\Windows\system32> docker version

Client:
 Version:      17.03.2-ee-5
 API version:  1.27
 Go version:   go1.7.5
 Git commit:   fa09039
 Built:        Wed Jul 19 23:56:45 2017
 OS/Arch:      windows/amd64

Server:
 Version:      17.03.2-ee-5
 API version:  1.27 (minimum version 1.24)
 Go version:   go1.7.5
 Git commit:   fa09039
 Built:        Wed Jul 19 23:56:45 2017
 OS/Arch:      windows/amd64
 Experimental: false
PS C:\Windows\system32>
```



Docker with older Versions of Windows / SQL Server

- www.windocks.com
- A port of the open source project of Docker Inc.
- Software supports the creation of Containers with older Versions of SQL Server (2008+) and older Versions of Windows Server (2012+)
- Free Community Edition available
www.windocks.com/leads/add?src=downloadcommunity



A large, stylized teal graphic on the left side of the slide, consisting of several overlapping curved lines that form a shape reminiscent of a stylized 'S' or a series of connected loops.

Building a SQL Server Container

Browser the docker repository

docker search microsoft/mssql

```
Administrator: Windows PowerShell
PS C:\Windows\system32> docker search microsoft/mssql
```

NAME	DESCRIPTION	STARS	OFFICIAL	AUTOMATED
microsoft/aspnet	ASP.NET is an open source server-side Web ...	636		[OK]
microsoft/dotnet	Official images for .NET Core for Linux an...	608		[OK]
microsoft/mssql-server-linux	Official images for Microsoft SQL Server o...	358		
mono	Mono is an open source implementation of M...	235	[OK]	
microsoft/windowsservercore	Windows Server 2016 Server Core base OS im...	205		
microsoft/aspnetcore	Official images for running compiled ASP.N...	202		[OK]
microsoft/nanoserver	Windows Server 2016 Nano Server base OS im...	199		
microsoft/iis	Internet Information Services (IIS) instal...	150		
microsoft/mssql-server-windows-express	Official Microsoft SQL Server Express Edit...	101		
microsoft/azure-cli	Docker image for Microsoft Azure Command L...	92		[OK]
microsoft/mssql-server-windows	Official images for Microsoft SQL Server f...	80		
microsoft/aspnetcore-build	Official images for building ASP.NET Core ...	70		[OK]
microsoft/mssql-server-windows-developer	Official Microsoft SQL Server Developer Ed...	44		
microsoft/vsts-agent	Official images for the Visual Studio Team...	31		
microsoft/oms	Monitor your containers using the Operatio...	28		[OK]
microsoft/dotnet-samples	.NET Core Docker Samples	23		[OK]
microsoft/cntk	CNTK images from github.com/Microsoft/CNTK...	16		[OK]
microsoft/applicationinsights	Application Insights for Docker helps you ...	8		[OK]
rsmoorthy/mssql	MSSQL Database (version SQL2000)	7		[OK]
microsoft/dotnet-nightly	Preview bits of the .NET Core CLI	5		[OK]
microsoft/dotnet-buildtools-prereqs	Images for building the various components...	5		
swapnillinux/mssql	Microsoft SQL Server (mssql) vNext CTP 1.1...	2		[OK]
microsoft/draft	A tool for developers to create cloud-nati...	2		
softwareplant/mssql	SQL Server test database	0		[OK]
astronomerio/mssql-source	MSSQL source.	0		[OK]

```
PS C:\Windows\system32>
```



Download an image

docker pull microsoft/mssql-server-linux

```
Administrator: Windows PowerShell
PS C:\Windows\system32> docker pull microsoft/mssql-server-windows
Using default tag: latest
latest: Pulling from microsoft/mssql-server-windows
3889bb8d808b: Downloading [>] 16.78 MB/4.07 GB
e29afd68a947: Downloading [>] 17.32 MB/1.225 GB
bd43224dc30b: Download complete
8b0535843b49: Download complete
4374dfc05b90: Download complete
0d8d285a896c: Download complete
180220843db4: Download complete
4ce1c9b6cde5: Download complete
63478436438d: Download complete
7dd8189c4efc: Download complete
cd74dcd6dc6c: Downloading [>] 8.081 MB/1.62 GB
7367ef909a12: Waiting
cfc787c1a9c4: Waiting
1bea40cabe16: Waiting
```



Check the image

docker images

Administrator: Windows PowerShell

```
PS C:\docker> docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
microsoft/mssql-server-windows	latest	671720e6a1ea	2 weeks ago	13 GB

```
PS C:\docker>
```



Create a Container from the Image

```
docker container run -d -p 1433:1433 --env ACCEPT_EULA=Y --env  
SA_PASSWORD=!test123 --name sqlcontainer microsoft/mssql-server-  
linux
```



```
Administrator: Windows PowerShell  
PS C:\Windows\system32> docker run -d -p 15789:1433 --env ACCEPT_EULA=Y --env sa_password=Testing11@@ --name MyFirstCont  
ainer microsoft/mssql-server-windows  
3dc5591d6561ff4d32823fd7223f3f5a7a5d6fcf51e51b311982076cc8746233  
PS C:\Windows\system32> █
```



What happens on docker run in the background?

1. Docker determines if the image is locally in the cache (in given Version)
2. Could the image not be found it will be searched in the image repository (Standard: Docker Hub)
3. Downloads the newest version (in our demo case because no Version is specified)
4. Creates a new container based on the image and prepares it for start.
5. Assigns a virtual IP-Address to the container in the private Docker Network.
6. Binds Port 1433 internally on Port 1433 externally
7. Starts the container and executes the CMD Commands in Docker File



Check if container is running

docker ps [-a]

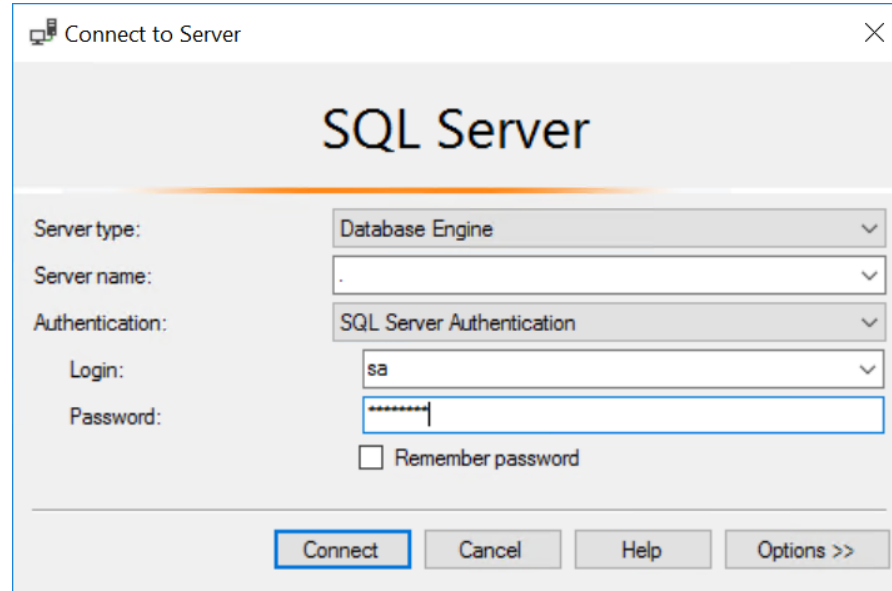
```
Administrator: Windows PowerShell
PS C:\Windows\system32> docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS
3dc5591d6561	microsoft/mssql-server-windows	"cmd /S /C 'powers..."	29 seconds ago	Up 21 seconds
0.0.0:15789->1433/tcp	MyFirstContainer			

```
PS C:\Windows\system32>
```



Connect to SQL Server



The screenshot shows the 'Connect to Server' dialog box. The title bar reads 'Connect to Server' with a close button. The main heading is 'SQL Server'. Below this, there are several fields: 'Server type:' set to 'Database Engine', 'Server name:' set to '.', 'Authentication:' set to 'SQL Server Authentication', 'Login:' set to 'sa', and 'Password:' with a masked password '*****'. There is an unchecked checkbox for 'Remember password'. At the bottom, there are four buttons: 'Connect' (highlighted with a blue border), 'Cancel', 'Help', and 'Options >>'.

Connect to Server

SQL Server

Server type: Database Engine

Server name: .

Authentication: SQL Server Authentication

Login: sa

Password: *****

☐ Remember password

Connect Cancel Help Options >>



Check Container

docker inspect sqlcontainer

```
Administrator: Windows PowerShell
"SecondaryIPAddresses": null,
"SecondaryIPv6Addresses": null,
"EndpointID": "",
"Gateway": "",
"GlobalIPv6Address": "",
"GlobalIPv6PrefixLen": 0,
"IPAddress": "",
"IPPrefixLen": 0,
"IPv6Gateway": "",
"MacAddress": "",
"Networks": {
  "nat": {
    "IPAMConfig": null,
    "Links": null,
    "Aliases": null,
    "NetworkID": "9a8ee6b4f05a18a14f4feb52b1d43ef0cb45b509a467f99bb79e616189eadc7e",
    "EndpointID": "5e016622a227a6412ebd40559ac47dbc72e5c85efb3d657d1ce77623803125b7",
    "IPAddress": "172.27.167.239",
    "IPv6Gateway": "",
    "GlobalIPv6Address": "",
    "GlobalIPv6PrefixLen": 0,
    "MacAddress": "00:15:5d:cb:16:4a"
  }
}
```

PS C:\windows\system32>



Connect to the container

`docker exec -it sqlcontainer bash`

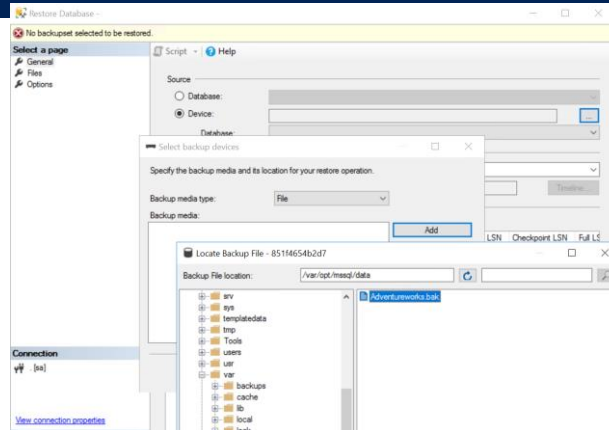
```
PS C:\Users\testadmin> docker exec -it sqlcontainer bash
root@851f4654b2d7:/# ls
bin    core  etc    install.sh  lib64  mnt    proc  run    srv    tmp    var
boot  dev   home   lib         media  opt    root  sbin   sys    usr
root@851f4654b2d7:/# cd /var/opt/mssql/data
root@851f4654b2d7:/var/opt/mssql/data# ls
master.mdf  mastlog.ldf  model.mdf  modellog.ldf  msdbdata.mdf  msdblog.ldf  tempdb.mdf  templog.ldf
root@851f4654b2d7:/var/opt/mssql/data#
```

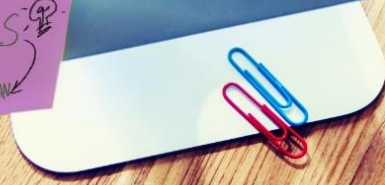


Copy files into the container

```
docker cp c:\temp\Adventureworks.bak  
sqlcontainer:/var/opt/mssql/data/Adventureworks.bak
```

```
PS C:\Users\testadmin> docker cp c:\temp\Adventureworks.bak sqlcontainer:/var/opt/mssql/data/Adventureworks.bak  
PS C:\Users\testadmin> █
```





Advantages

- Easy and quick installation
- New Containers can be deployed in seconds
- Small footprint compared to Virtual Machines
- Customize Images
- Access to Docker Repository (hundreds of images are available)
- Portable – Images can be stored on Docker Hub
- Independent from the cloud vendor



Disadvantages for SQL Server

- At the moment only the relational engine is supported
- Only official support on Windows Server 2016 / Windows 10 Anniversary Edition.
- There are only official SQL Server Images for 2016 and 2017
- SQL Images can be really big (~13GB)
- No Overcommitting of ressources



A large, stylized teal graphic element on the left side of the slide. It consists of several overlapping, curved, ribbon-like shapes that form a complex, abstract shape, possibly resembling a stylized letter 'C' or a decorative flourish. The color is a vibrant teal or light green.

Buliding a customized Image

Dockerfile

A file on the docker host that contains all commands that create a customized Image.



Dockerfile Code

```
FROM microsoft/mssql-server-linux:latest
LABEL maintainer Frank Geisler <frank_geisler@geislars.net>

# Create a directory where we can copy the Database files.
RUN mkdir /var/opt/sqldatabase

COPY AdventureWorks2017.mdf /var/opt/sqldatabase
COPY AdventureWorks2017_log.ldf /var/opt/sqldatabase

ENV MSSQL_PID=Developer
ENV SA_PASSWORD=!demo54321
ENV ACCEPT_EULA=Y

HEALTHCHECK --interval=10s \
  CMD /opt/mssql-tools/bin/sqlcmd -S . -U sa -P !demo54321 \
    -Q "CREATE DATABASE [AdventureWorks2017] ON (FILENAME =
'/var/opt/sqldatabase/AdventureWorks2017.mdf'), (FILENAME =
'/var/opt/sqldatabase/AdventureWorks2017_log.ldf') FOR ATTACH"
```



Build an Image

docker build -t newsqserverimage .

```
Deleted: sha256:ba90a57977efdde9bd944ef359221c4d2cec2586a97ad7228b788c53e4510c85
Deleted: sha256:f4ffc7f8cd83054c5c4eb031388ecef246d1c9a3431ab7e416c5750463d0345d
Deleted: sha256:5d6da1cc6cf2a690ceaa3c5b5ed8a81ac47168b081ce673406774e94139525
Deleted: sha256:db8256d99d8a475e45a245507b6d1759587e967e66481bde17f5053ebff3924d
Deleted: sha256:239408281c79aa8f923aac8ad7204064db3c777d3d00093a52fb2ce3893c7a17
PS C:\Users\testadmin\Documents\SQL-Server-Sample-Docker-Container\mssql-server-linux-adventureworks2017> do
-t newsqserverimage
Sending build context to Docker daemon 435.4MB
Step 1/9 : FROM microsoft/mssql-server-linux:latest
--> ab22b8353bbd
Step 2/9 : LABEL maintainer Frank Geisler <frank_geisler@geislerts.net>
--> Running in 1a01d0e45faf
Removing intermediate container 1a01d0e45faf
--> 05d46752c2d6
Step 3/9 : RUN mkdir /var/opt/sql/database
--> Running in 5de26c06ab35
Removing intermediate container 5de26c06ab35
--> b53cffi1a3acb
Step 4/9 : COPY Adventureworks2017.mdf /var/opt/sql/database
--> 5ce0338662a2
Step 5/9 : COPY Adventureworks2017_log.ldf /var/opt/sql/database
--> a51ef5c6d760
Step 6/9 : ENV MSSQL_PID=Developer
--> Running in 3857ba589ab4
Removing intermediate container 3857ba589ab4
--> ec4aa8443c4
Step 7/9 : ENV SA_PASSWORD=ldemo54321
--> Running in 6005764fdf82
Removing intermediate container 6005764fdf82
--> fa74a9ffbf73
Step 8/9 : ENV ACCEPT_EULA=Y
--> Running in 93d5f4ed6c60
Removing intermediate container 93d5f4ed6c60
--> a6342955060f
Step 9/9 : HEALTHCHECK --interval=10s CMD /opt/mssql-tools/bin/sqlcmd -S . -U sa -P ldemo54321
TE DATABASE [Adventureworks2017] ON (FILENAME = '/var/opt/sql/database/Adventureworks2017.mdf'),(FILENAME = '
database/Adventureworks2017_log.ldf') FOR ATTACH"
--> Running in 160f675a62a6
Removing intermediate container 160f675a62a6
--> b6870db0de96
Successfully built b6870db0de96
Successfully tagged newsqserverimage:latest
SECURITY WARNING: You are building a Docker image from Windows against a non-Windows Docker host. All files
```



Check the new image

docker images

```
PS C:\Users\testadmin\Documents\SQL-Server-Sample-Docker-Container\mssql-server-linux-adventureworks2017> docker images
REPOSITORY              TAG                IMAGE ID           CREATED            SIZE
mssqlserverimage        latest            b6870db0de96      11 seconds ago    1.77GB
microsoft/mssql-server-linux latest            ab22b8353bbd      10 days ago       1.42GB
PS C:\Users\testadmin\Documents\SQL-Server-Sample-Docker-Container\mssql-server-linux-adventureworks2017>
```



Create a new container from the image

```
docker run -d -p 1433:1433 --name  
newsqservercontainer newsqserverimage
```

```
PS C:\Users\testadmin\Documents\SQL-Server-Sample-Docker-Container\mssql-server-linux-adventureworks2017> docker conta  
er run -d -p 1433:1433 --name neuersqlcontainer newsqserverimage  
89b7b3d96ce33f107f2689ab977d9f46e94dbbba0ee74f72bd4d769f95abfcfa
```



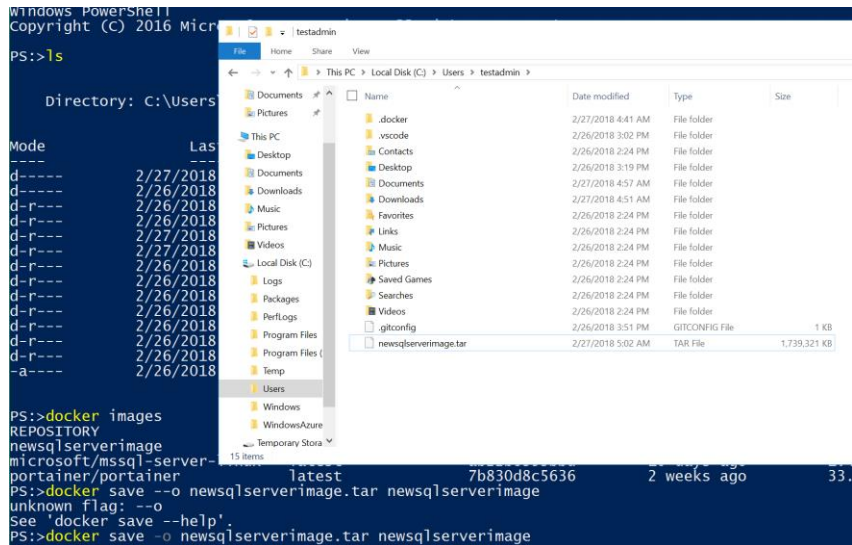




Export Images

Share locally

`docker save -o newsqserverimage.tar newsqserverimage`



The screenshot shows a Windows PowerShell terminal window on the left and a File Explorer window on the right. The PowerShell window displays the command `docker save -o newsqserverimage.tar newsqserverimage` and its output, which includes the image name, repository, and a digest. The File Explorer window shows the contents of the `C:\Users\testadmin` directory, with a table listing files and folders. The `newsqserverimage.tar` file is highlighted in the list.

```
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.

PS> ls

Directory: C:\Users\testadmin

Mode                LastWriteTime         Length Name
----                -
d-----          2/27/2018 4:41 AM             .docker
d-----          2/26/2018 3:02 PM             .vscode
d-----          2/26/2018 2:24 PM             Desktop
d-----          2/26/2018 3:19 PM             Documents
d-----          2/27/2018 4:57 AM             Downloads
d-----          2/27/2018 4:51 AM             Music
d-----          2/26/2018 2:24 PM             Favorites
d-----          2/26/2018 2:24 PM             Links
d-----          2/26/2018 2:24 PM             Music
d-----          2/26/2018 2:24 PM             Pictures
d-----          2/26/2018 2:24 PM             Saved Games
d-----          2/26/2018 2:24 PM             Searches
d-----          2/26/2018 2:24 PM             Videos
d-----          2/26/2018 3:51 PM             gliconfig
d-----          2/27/2018 5:02 AM             newsqserverimage.tar

PS> docker images
REPOSITORY              TAG              IMAGE ID          CREATED          SIZE
microsoft/mssql-server-latest    7b830d8c5636    2 weeks ago      33.1 MB
portainer/portainer      latest          7b830d8c5636    2 weeks ago      33.1 MB
PS> docker save --o newsqserverimage.tar newsqserverimage
unknown flag: --o
See 'docker save --help'.
PS> docker save -o newsqserverimage.tar newsqserverimage
```

Name	Date modified	Type	Size
.docker	2/27/2018 4:41 AM	File folder	
.vscode	2/26/2018 3:02 PM	File folder	
Desktop	2/26/2018 2:24 PM	File folder	
Documents	2/27/2018 4:57 AM	File folder	
Downloads	2/27/2018 4:51 AM	File folder	
Music	2/26/2018 2:24 PM	File folder	
Favorites	2/26/2018 2:24 PM	File folder	
Links	2/26/2018 2:24 PM	File folder	
Music	2/26/2018 2:24 PM	File folder	
Pictures	2/26/2018 2:24 PM	File folder	
Saved Games	2/26/2018 2:24 PM	File folder	
Searches	2/26/2018 2:24 PM	File folder	
Videos	2/26/2018 2:24 PM	File folder	
gliconfig	2/26/2018 3:51 PM	GITCONFIG File	1 KB
newsqserverimage.tar	2/27/2018 5:02 AM	TAR File	1,739,321 KB



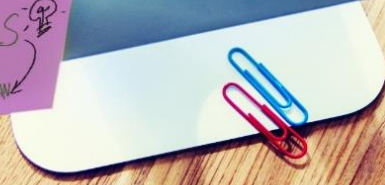
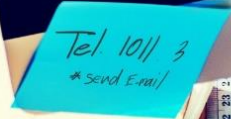
Import Images

`docker load -i newsqserverimage.tar`

Administrator: Windows PowerShell

```
PS C:\docker> docker load -i myfirstimage.tar
f358be10862c: Loading layer [=====>] 7.892 GB/7.892 GB
c28d44287ce5: Loading layer [=====>] 1.933 GB/1.933 GB
ac24122adf9f: Loading layer [=====>] 54.27 kB/54.27 kB
ccf3bc376e1d: Loading layer [=====>] 54.27 kB/54.27 kB
1f9a4e1f3c98: Loading layer [=====>] 54.27 kB/54.27 kB
913439280c63: Loading layer [=====>] 54.27 kB/54.27 kB
03b1efe1f810: Loading layer [=====>] 54.27 kB/54.27 kB
0f488af76f38: Loading layer [=====>] 54.27 kB/54.27 kB
ba96d3a4b724: Loading layer [=====>] 61.44 kB/61.44 kB
59fb9067fb55: Loading layer [=====>] 54.27 kB/54.27 kB
4d4f76869ac7: Loading layer [=====>] 1.867 GB/1.867 GB
7f80e72414d0: Loading layer [=====>] 1.137 GB/1.137 GB
```



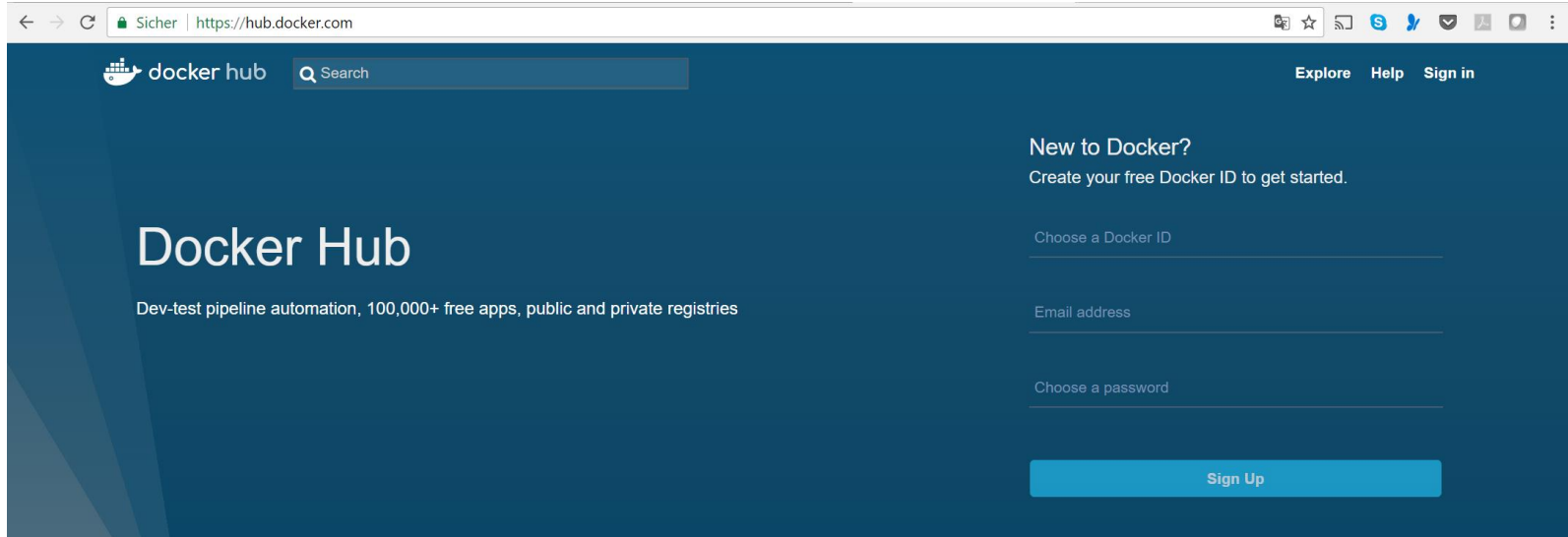


A large, teal-colored abstract graphic on the left side of the slide, consisting of several overlapping, curved, ribbon-like shapes that create a sense of depth and movement.

Publish customized images on
docker
hub

Docker Hub

<https://hub.docker.com>



The screenshot shows the Docker Hub website in a web browser. The browser's address bar displays "https://hub.docker.com". The website has a dark blue header with the Docker Hub logo and a search bar. On the right side of the header are links for "Explore", "Help", and "Sign in". The main content area features the "Docker Hub" logo and the tagline "Dev-test pipeline automation, 100,000+ free apps, public and private registries". To the right, there is a "New to Docker?" section with the text "Create your free Docker ID to get started." Below this are three input fields: "Choose a Docker ID", "Email address", and "Choose a password". A blue "Sign Up" button is positioned at the bottom of these fields.

← → ↻ Sicher | https://hub.docker.com

docker hub Search

Explore Help Sign in

Docker Hub

Dev-test pipeline automation, 100,000+ free apps, public and private registries

New to Docker?
Create your free Docker ID to get started.

Choose a Docker ID

Email address

Choose a password

Sign Up



Create a repository

Create Repository

1. Choose a namespace (*Required*)
2. Add a repository name (*Required*)
3. Add a short description
4. Add markdown to the full description field
5. Set it to be a private or public repository

frankgeisler ▾

Enter Name

Short Description (100 Characters)

Full Description

Visibility

public ▾

Create



Tag an image

```
docker tag newsqldbserverimage  
frankgeisler/newsqldbserverimage:v1
```

```
PS:>docker tag newsqldbserverimage frankgeisler/newsqldbserverimage:v1  
PS:>_
```



Log into Docker Hub

docker login

```
PS:>docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://
ub.docker.com to create one.
Username: frankgeisler
Password:
Login Succeeded
PS:>
```



Upload Docker image

```
PS:>docker push frankgeisler/newsqserverimage:v1
The push refers to repository [docker.io/frankgeisler/newsqserverimage]
aacc577327d3: Pushed
1b938a328b45: Pushed
541171b43e86: Pushed
2c2b7e5b6217: Mounted from microsoft/mssql-server-linux
01249431b734: Mounted from microsoft/mssql-server-linux
45feb6b3c7be: Mounted from microsoft/mssql-server-linux
912a24c355e6: Mounted from microsoft/mssql-server-linux
bb83128af95f: Mounted from microsoft/mssql-server-linux
49907af65b0a: Mounted from microsoft/mssql-server-linux
4589f96366e6: Mounted from microsoft/mssql-server-linux
b97229212d30: Mounted from microsoft/mssql-server-linux
cd181336f142: Mounted from microsoft/mssql-server-linux
0f5ff0cf6a1c: Mounted from microsoft/mssql-server-linux
v1: digest: sha256:8850682e806e1356637878402eb3012670936a7b7bd262775fad96d987a3ebe7 size: 3041
PS:> _
```



Published Image in Docker Hub

PUBLIC REPOSITORY

frankgeisler/newsqserverimage ☆

Last pushed: 4 minutes ago

Repo Info

Tags

Collaborators

Webhooks

Settings

Short Description



Short description is empty for this repo.

Full Description



Full description is empty for this repo.

Docker Pull Command



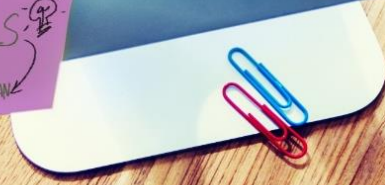
```
docker pull frankgeisler/newsqserverimage
```

Owner



frankgeisler







A nice GUI for Docker

Portainer

- <http://portainer.io>
- Open Source Projekt
- Is executed in Docker itself
- Two commands to start:
 - `docker volume create portainer_data`
 - `docker run -d -p 9000:9000 -v /var/run/docker.sock:/var/run/docker.sock -v portainer_data:/data portainer/portainer`



Portainer

The screenshot displays the Portainer v1.12.1 dashboard. On the left is a dark blue sidebar with the 'portainer.io' logo and a navigation menu. The menu includes 'ACTIVE ENDPOINT' (set to 'local'), 'ENDPOINT ACTIONS', 'Dashboard' (selected), 'App Templates', 'Containers', 'Images', 'Networks', 'Volumes', 'Events', 'Docker', 'PORTAINER SETTINGS', 'Password', 'Users', and 'Endpoints'. The main content area is titled 'Home Dashboard' and shows the user 'admin' with a 'log out' link. A 'Node info' table lists system details: Name (thunderstruck), Docker version (17.03.0-ce), CPU (8), and Memory (8.3 GB). Below this are four summary cards: '10 Containers' (8 running, 2 stopped), '21 Images' (2.6 GB), '21 Volumes' (aufs driver), and '4 Networks'. The footer indicates 'Portainer v1.12.1'.

portainer.io

ACTIVE ENDPOINT
local

ENDPOINT ACTIONS

Dashboard

App Templates

Containers

Images

Networks

Volumes

Events

Docker

PORTAINER SETTINGS

Password

Users

Endpoints

Home
Dashboard

admin
log out

Node info

Name	thunderstruck
Docker version	17.03.0-ce
CPU	8
Memory	8.3 GB

10 Containers
8 running
2 stopped

21 Images
2.6 GB

21 Volumes
aufs driver

4 Networks

Portainer v1.12.1





Research
- Marketing
- Customer

Tel 10/11/3
* send Email

IDEAS
ACTION
PLAN



A large, stylized teal graphic on the left side of the slide, consisting of several overlapping, curved, ribbon-like shapes that form a partial 'D' or a series of nested curves.

Scenarios where you can use Docker

Scenarios where you can use Docker

- Dev / Test
- DevOps
- No knowledge on the server application
- Scaling scenarios



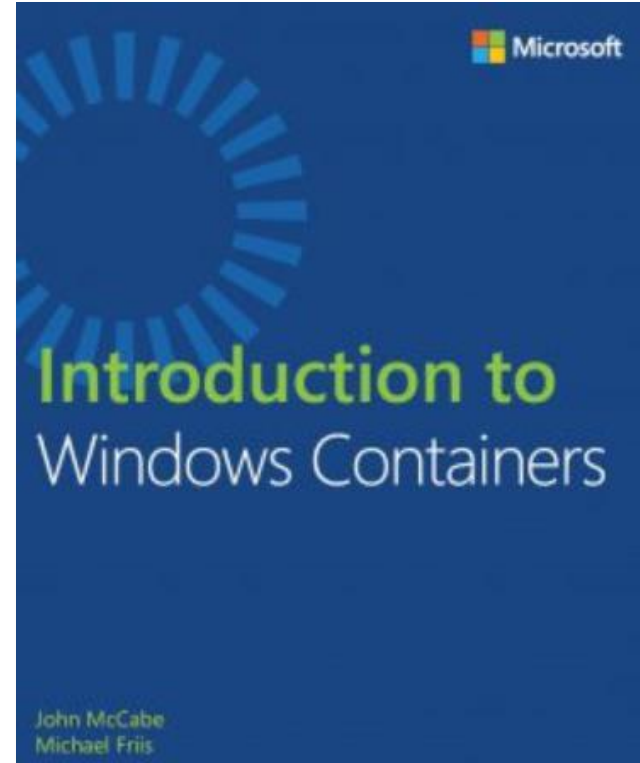
A large, teal-colored abstract graphic on the left side of the slide. It consists of several thick, curved lines that sweep from the top left towards the bottom right, creating a sense of movement and depth. The lines are layered, with some appearing in front of others, and they all curve in a similar direction, suggesting a stylized letter or a dynamic shape.

References

Free E-Book

Free E-Book:

https://blogs.msdn.microsoft.com/microsoft_press/2017/08/30/free-ebook-introduction-to-windows-containers/



Weblinks

- Docker Blog Series on our Website www.gdsbi.de (in german)
- SQL Server Sample Docker Container:
<https://github.com/Frank-Geisler/SQL-Server-Sample-Docker-Container>
- SQL Server Samples auf Docker Hub:
<https://hub.docker.com/u/frankgeisler/>



Thank
YOU

