

# DBA MASTERY



Working with SQL Server  
containers on Docker





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## Experience

Microsoft Data Platform MVP  
Over 10 years of experience  
Multi platform DBA

## Community

International speaker, author, blogger, mentor  
Guatemala SQL Server community leader  
Simple Talk, SQL Server Central and MSSQL Tips  
author

## DBA Mastery

SQL Server tips, scripts, best practices and more



MAXDOP Calculator

Azure Data Studio wait stats widget

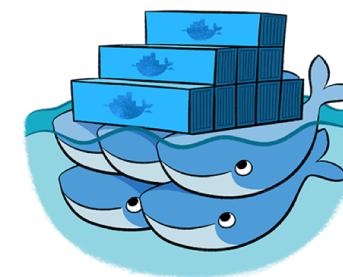
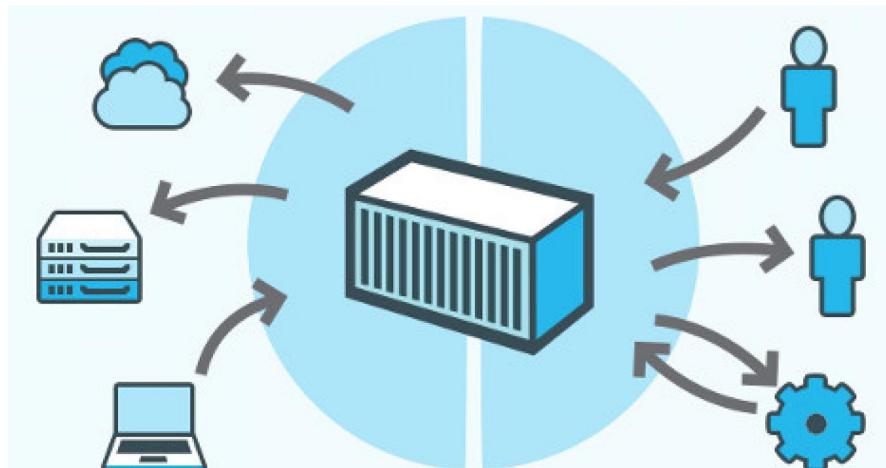
PerfMon for DBA's

MSDB tuning

# AGENDA

- Introduction to Docker
  - Definition and components
  - Architecture
  - VMs vs Containers
- The SQL Server docker image
- The SQL Server Dockerfile
- Running a SQL Server container
  - Managing containers
  - Demo





Build, ship and deploy



# DOCKER



- From Docker docs:

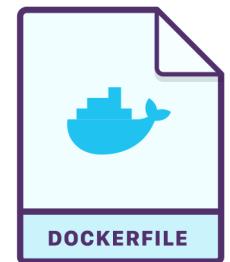
*Docker is an open platform for developing, shipping, and running applications. Docker enables you to separate your applications from your infrastructure so you can deliver software quickly.*

*With Docker, you can manage your infrastructure in the same ways you manage your applications.*



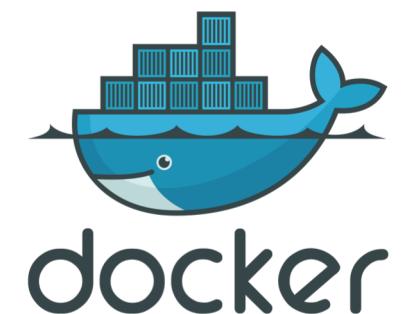
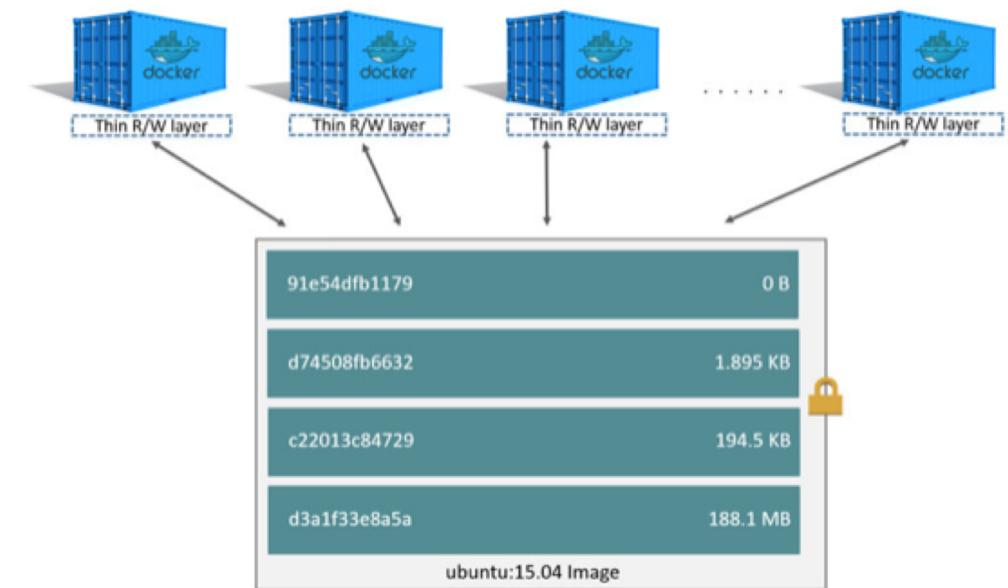
# IMAGES

- Is a read-only template with instructions for creating a Docker container
- Images are created using a Dockerfile
- A snapshot of a set of files required to run an application (portable)
- A new image can be created from an existing image (make your own)
  - SQL Server for example, based on Ubuntu or RedHat

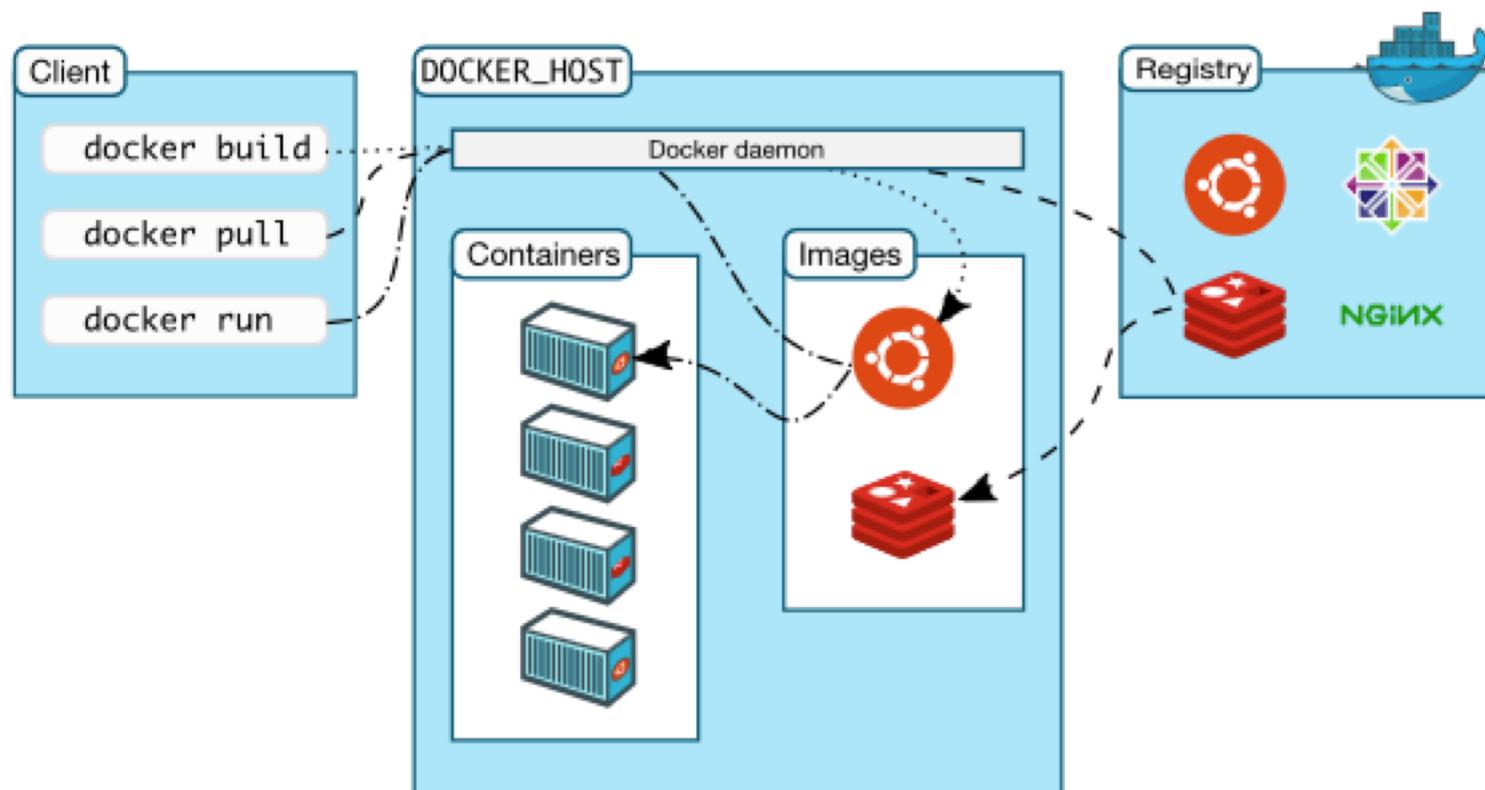


# CONTAINERS

- The runnable instance of a Docker image
- Container is nothing more than a program
- Containers has full access to all resources
- Writable layer and shared read-only layer
  - Small storage footprint
  - Volumes = Persistent storage



# DOCKER ARCHITECTURE



# VM'S VS CONTAINERS

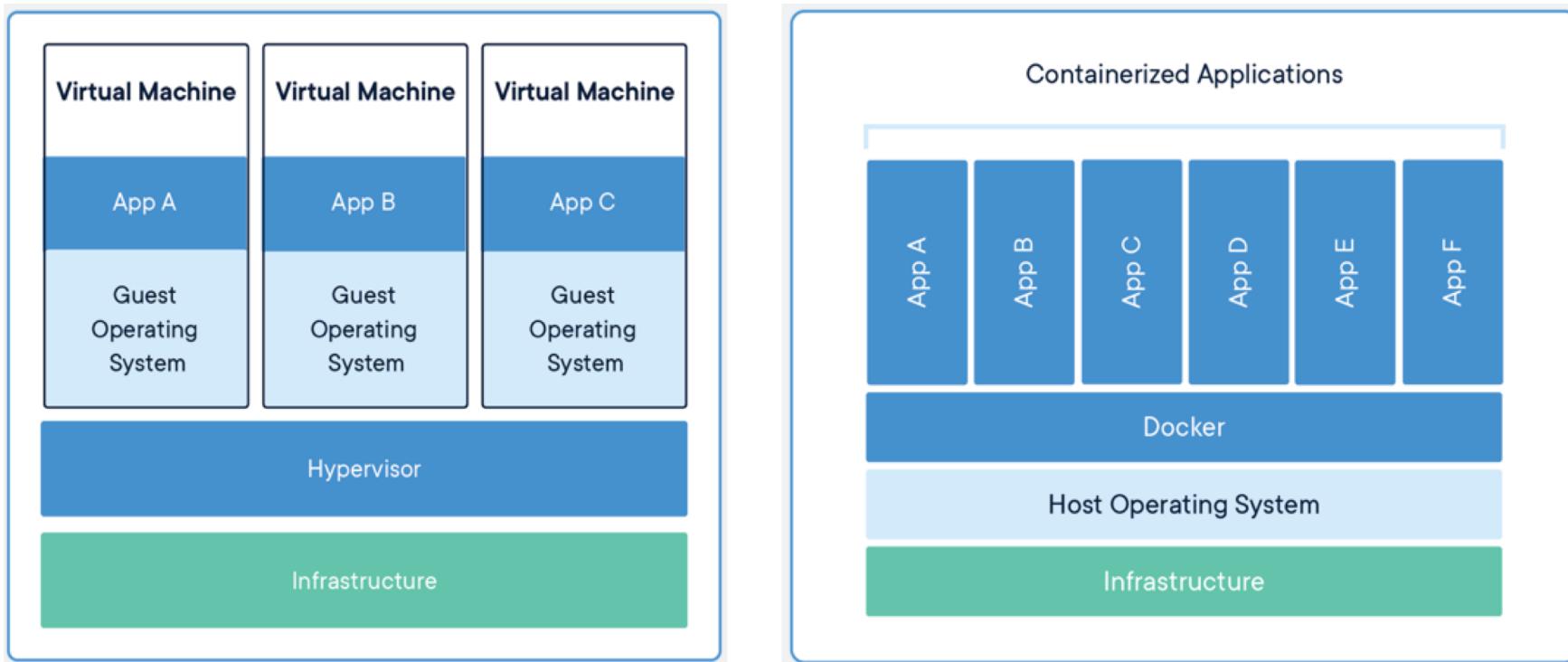


- 
- Virtualization +15 years
  - Sometimes heavyweight
  - Hardware virtualization
  - Each VM has an entire OS



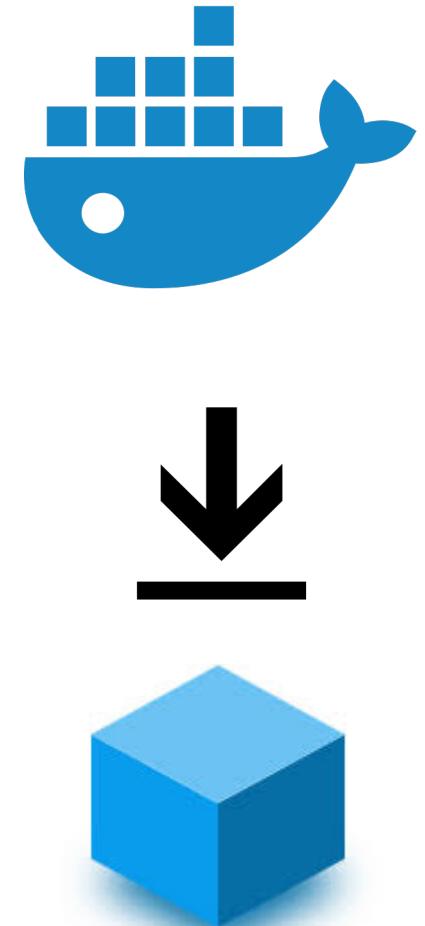
- 
- No installation
  - Lightweight
  - OS virtualization
  - All containers run in the same host OS





# SQL SERVER IMAGE

- [Docker Hub – Microsoft container registry](#)
- SQL Server 2017
  - Just Ubuntu from RTM to latest CU
- SQL Server 2019 (RC)
  - Ubuntu and RedHat
  - From CTP to latest RC



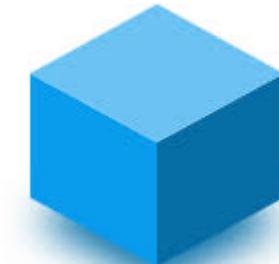
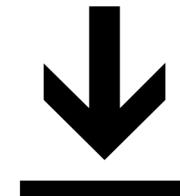
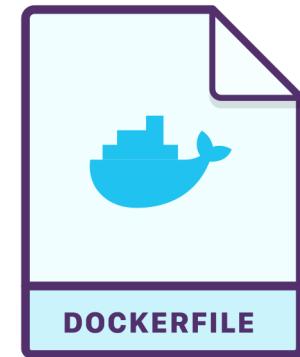
# SQL SERVER DOCKERFILE

```
FROM ubuntu:16.04
```

```
EXPOSE 1433
```

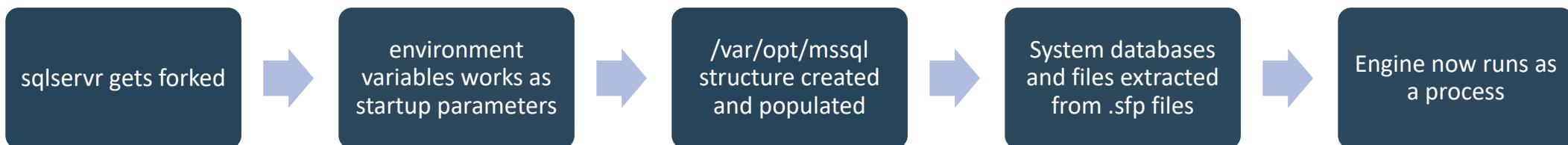
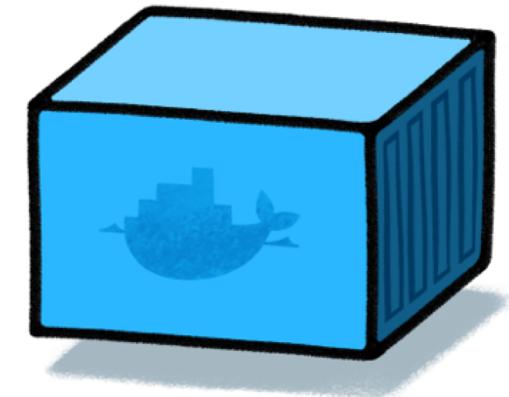
```
COPY ./install /
```

```
CMD ["/opt/mssql/bin/sqlservr"]
```



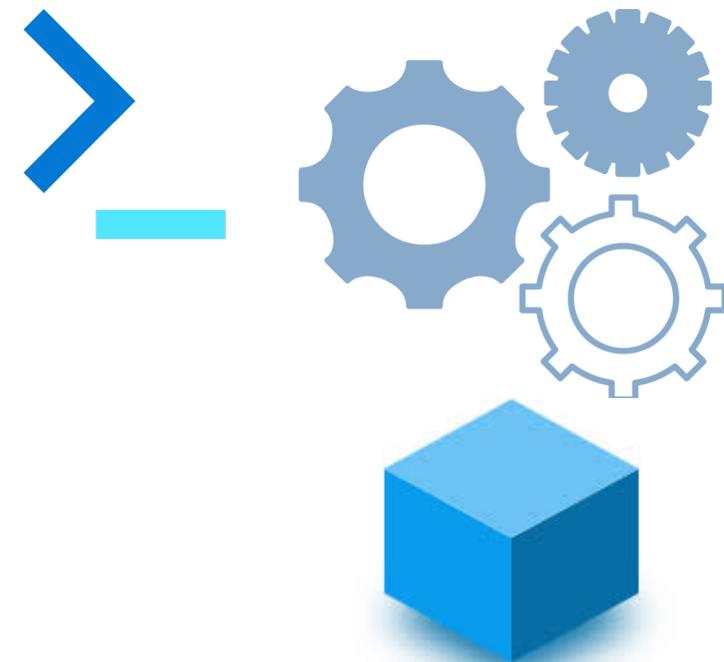
# RUNNING A SQL CONTAINER

```
docker run \
--name MCT2019 \
--env 'ACCEPT_EULA=Y' \
--env 'MSSQL_SA_PASSWORD=N4shv1l13R0cks' \
--publish 1400:1433 \
--detach mcr.microsoft.com/mssql/server:2017-CU16-ubuntu
```



# MANAGING CONTAINERS

- docker pull
- docker run
- docker start | stop
- docker image | container
- docker rm | rmi
- docker exec
- docker build
- docker logs
- docker inspect
- docker volume
- docker save

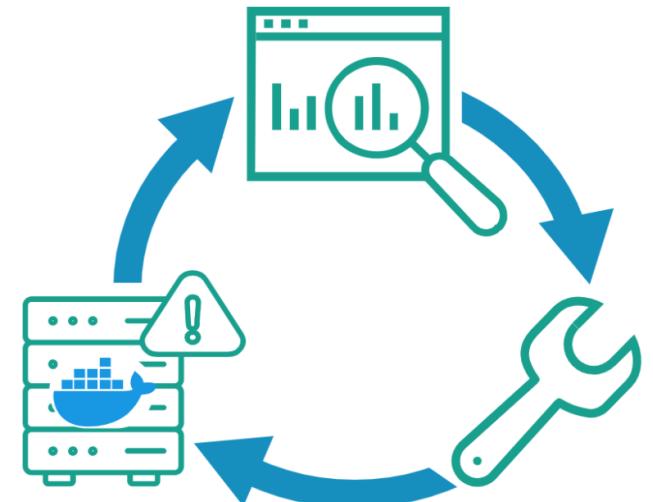


# DEMO



# USE CASES

- Local development
- Troubleshooting
- Demonstrations
- Eliminates shared environments
- Eliminates resource contention
- Temporal environments
  - No installation \ patching

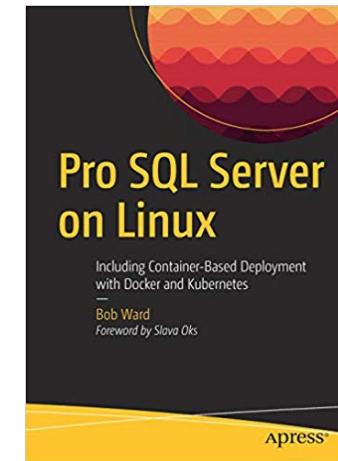


# QUESTIONS ?



# REFERENCES

- **Official documentation**
  - [Docker Docs](#)
  - [Kubernetes Docs](#)
- **SQL Server**
  - [SQL Server workshops](#)
  - [SQL Server samples](#)
- **Books**
  - [Docker Deep dive](#)
  - [The Docker book](#)
  - [Kubernetes: Up and Running](#)
  - [The Kubernetes book](#)
  - [Pro SQL Server On Linux by Bob Ward](#)
- **Pluralsight Courses**
  - [Getting Started with Docker](#)
  - [Docker Deep Dive](#)
  - [Docker and Kubernetes: The big picture](#)
  - [Kubernetes Installation and Configuration fundamentals](#)
- **Microsoft Learning Courses**
  - [Kubernetes Learning Path](#)
  - [SQL Workshops](#)
- **Katacoda**
  - [Docker](#)
  - [Kubernetes](#)



# MORE FROM CARLOS

- **24 Hours of PASS**
  - [YouTube recording](#)
- **Simple Talk**
  - [SQL Server Docker Containers in macOS](#)
- **SQL Server Central**
  - [Creating Aliases for Docker commands](#)
  - [Managing SQL Server containers using Python – Part 1](#)
  - Managing SQL Server containers using Python – Part 2 (**Coming soon**)
- **MSSQL Tips**
  - [SQL Server 2019 CT2 RHEL Docker containers](#)





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Thank you  
Nashville!!

