

DBA MASTERY



Working with SQL Server
containers to build
database solutions



Thank you to our sponsors!





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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 User Group 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

- Containers
 - What?
 - Why?
 - Demo
- SQL Server as an application component
 - Good old days
 - Contemporary practices
- Enter Docker compose
 - Demo
- SQL Server containers in CI/CD pipelines
 - Enter Jenkins



PREREQUISITES

- Basic experience with Linux
- Basic experience with Docker containers
- Basic familiarity with Cloud computing
- Basic familiarity with Shell scripting
- DBA experience with SQL Server



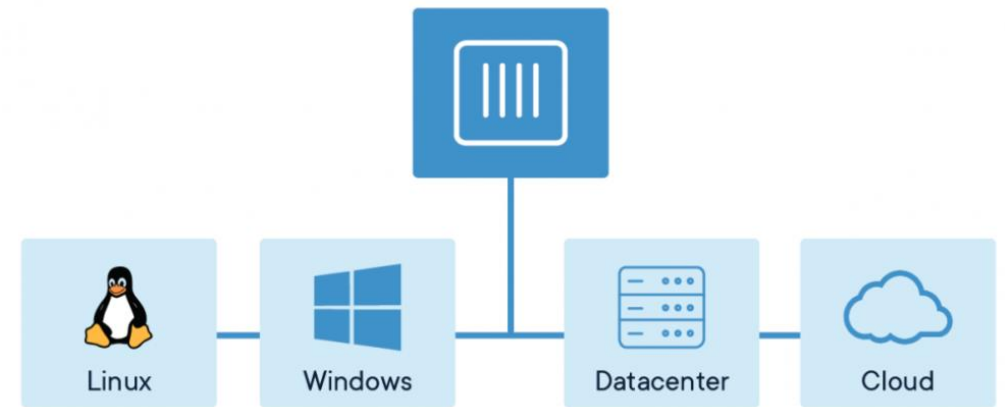
CONTAINERS

WHAT AND WHY?



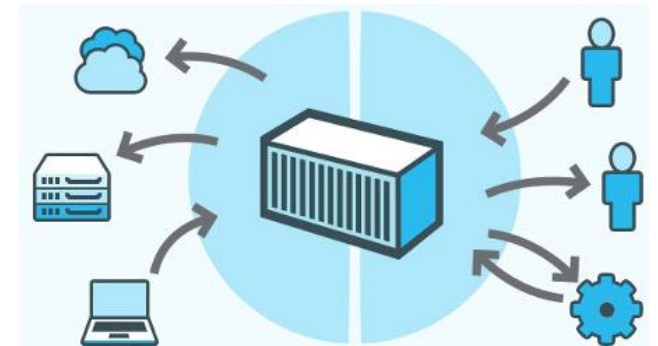
WHAT ARE CONTAINERS?

- Standard unit of software
- Lightweight
- Secure / Isolation
- Portable and cross platform



WHY CONTAINERS?

- Consistent and predictable environments
- Cloud focus
- Fast deployments / Automation
- Enables CI / CD
- Eliminates shared environments / resource contention



DEMO

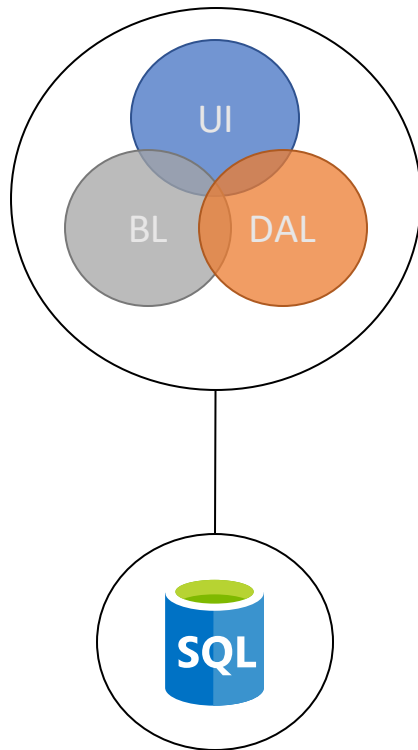
Custom container



SQL SERVER AS APPLICATION COMPONENT



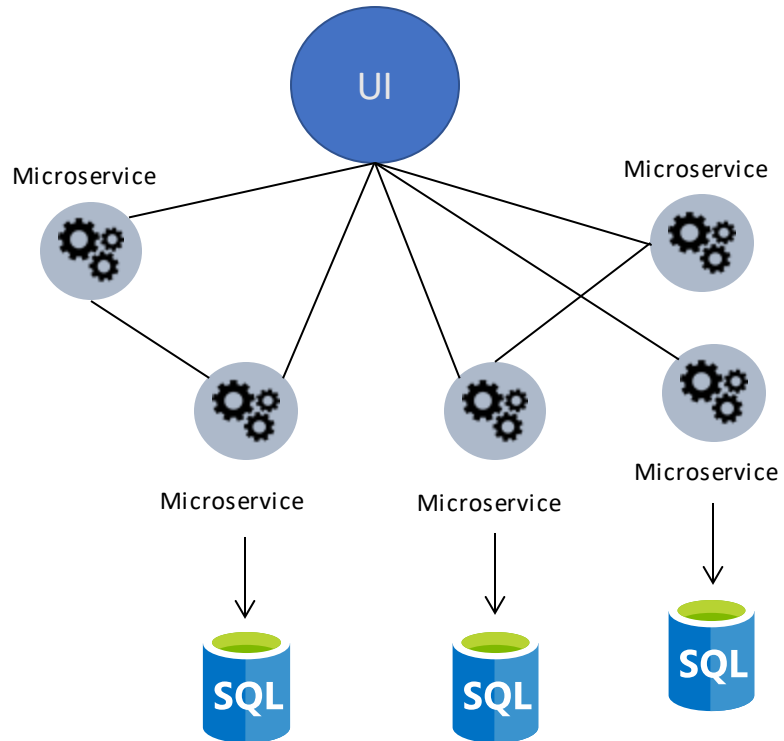
GOOD OLD DAYS



- **Pros**
 - Simple development
 - Simple deployment
 - Simple testing
 - Simple sharing
- **Cons**
 - Difficult to understand & change
 - Limited agility
 - Slowness
 - Poor reliability



CONTEMPORARY PRACTICES

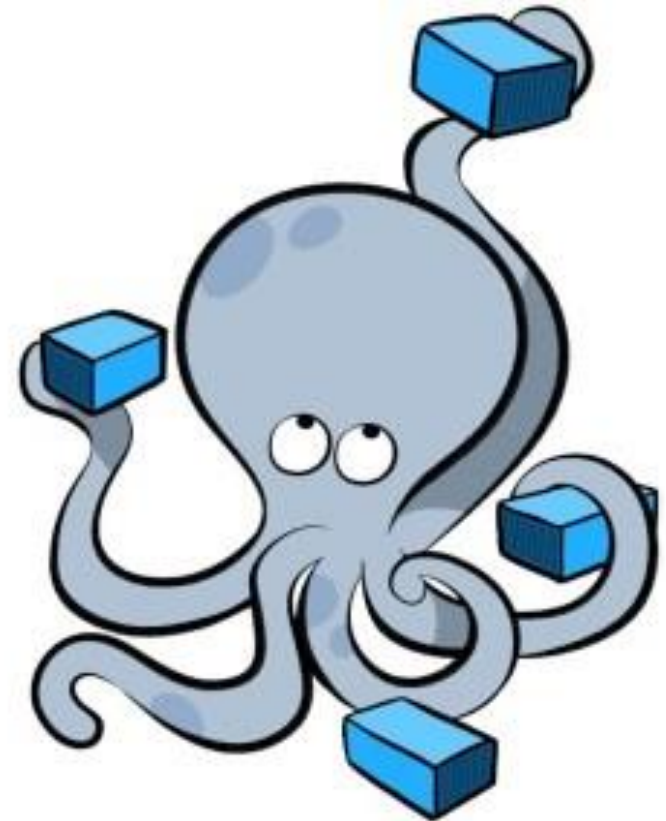


- **Pros**
 - Scalability
 - Reliability
 - Flexible
 - Easy adoption of new technologies
- **Cons**
 - Difficult integration testing
 - Operational complexity
 - Skill demanding



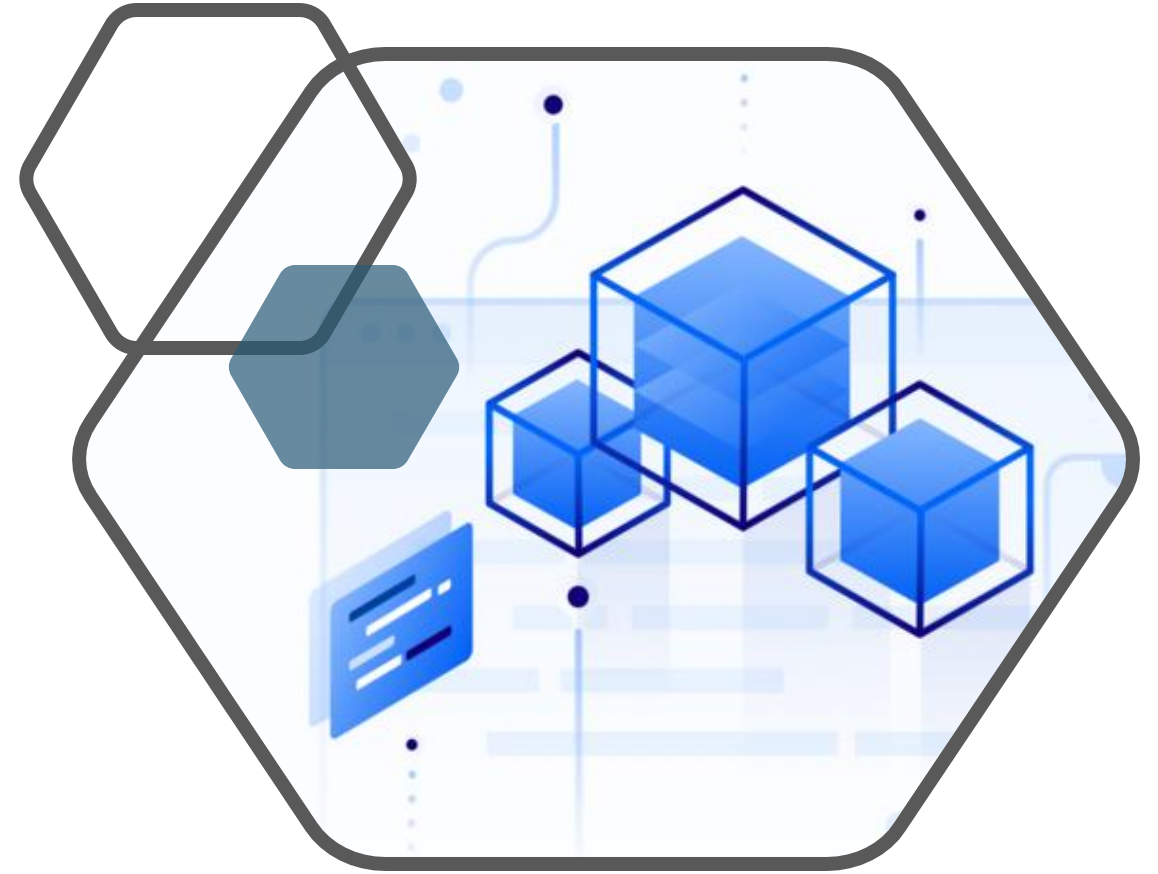
ENTER DOCKER COMPOSE

- Define services
- Run multiple containers
- YAML file
- Dockerfile (optional)
- Version 3.0



DEMO

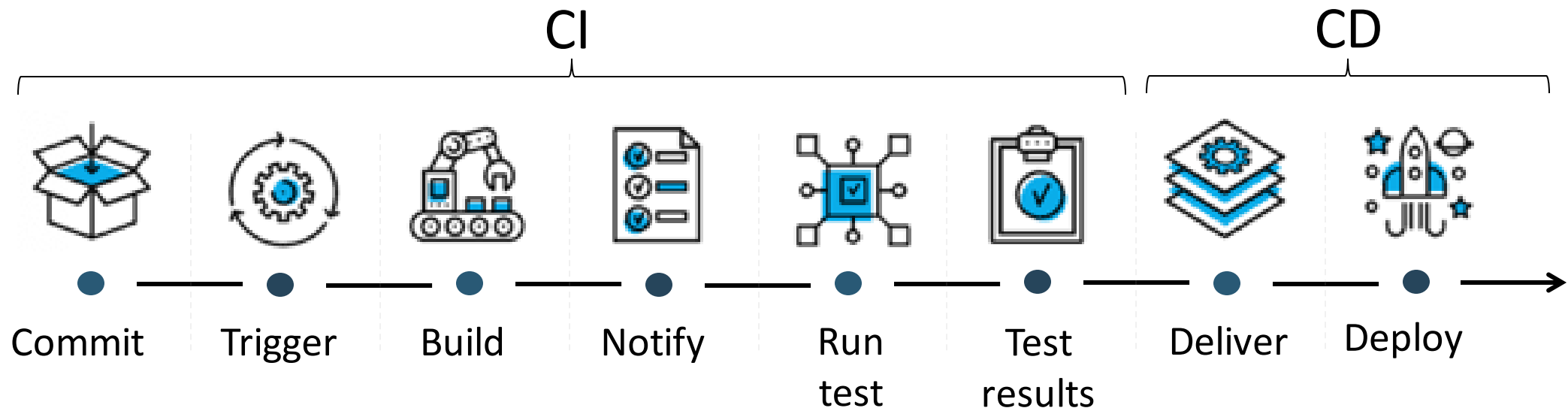
Manual integration



SQL SERVER CONTAINERS IN CI / CD PIPELINES



CI / CD PIPELINES

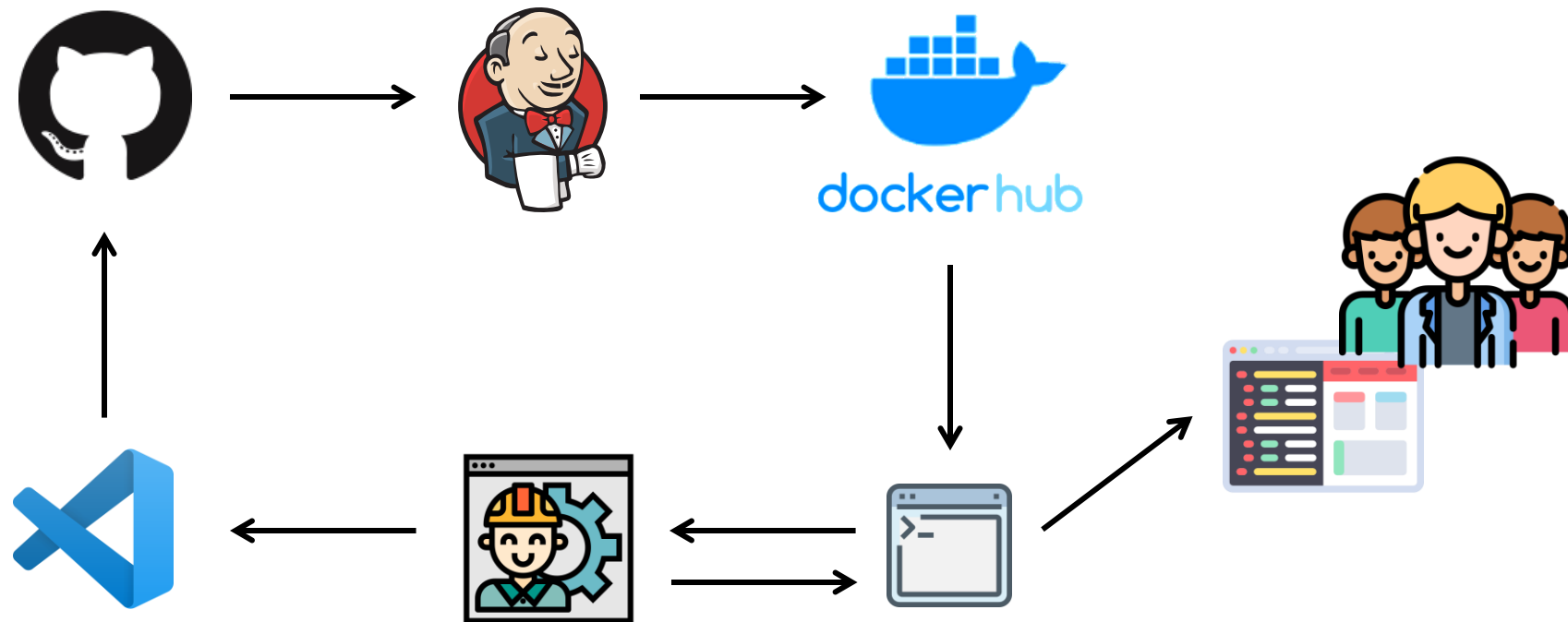


ENTER JENKINS

- Open source
- Automation server
- Jobs / pipelines (Jenkinsfile)
- Extensible (master / agents)
- Plugins



PIPELINE EXAMPLE



WHAT ABOUT WINDOWS CONTAINERS?

Microsoft: SQL 2016 to 2019 Dev editions

- “Not for production use” per Microsoft
- Last SQL 2016, 2017 image update <18 months ago
- No Windows Authentication
- Kubernetes support coming with Windows Server 2019

Windocks: All editions/releases SQL 2008 onward

- Containers = named instances w/Windows Authentication
- Containers are free as named instances under existing SQL licenses
- Supports DB engine, SSRS, & Linked Servers
- DB cloning with “incremental forever” updates with Diff or Transaction Log backups supports SQL Server instances and containers (MS Linux containers too)
- DevOps, CI, and SSRS for AWS RDS or SQL Azure are popular uses
- Kubernetes support available now
- Prices start at \$499/month

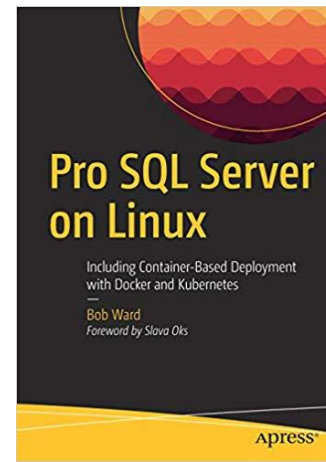


QUESTIONS?



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](#)



ARTICLES AND MORE

- **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](#)
- **MSSQL Tips**
 - [SQL Server 2019 CT2 RHEL Docker containers](#)
 - [Getting started with SQL Server Azure Container Instances](#)



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[Working SQL containers to build database solutions](#)





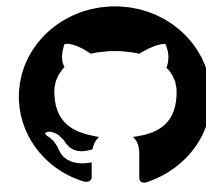
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Thank you!!

