



SQL Server 2019: The Modern Data Platform



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Experience

Microsoft Data Platform MVP

Over 10 years of experience

Multi-platform DBA

Community

Guatemala SQL Server User Group – Primary leader

International speaker, mentor, volunteer

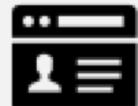
Simple talk, MSSQL Tips and SQL Server Central author

DBA Mastery

SQL Server tips & tricks best practices, scripts and more

MAXDOP calculator

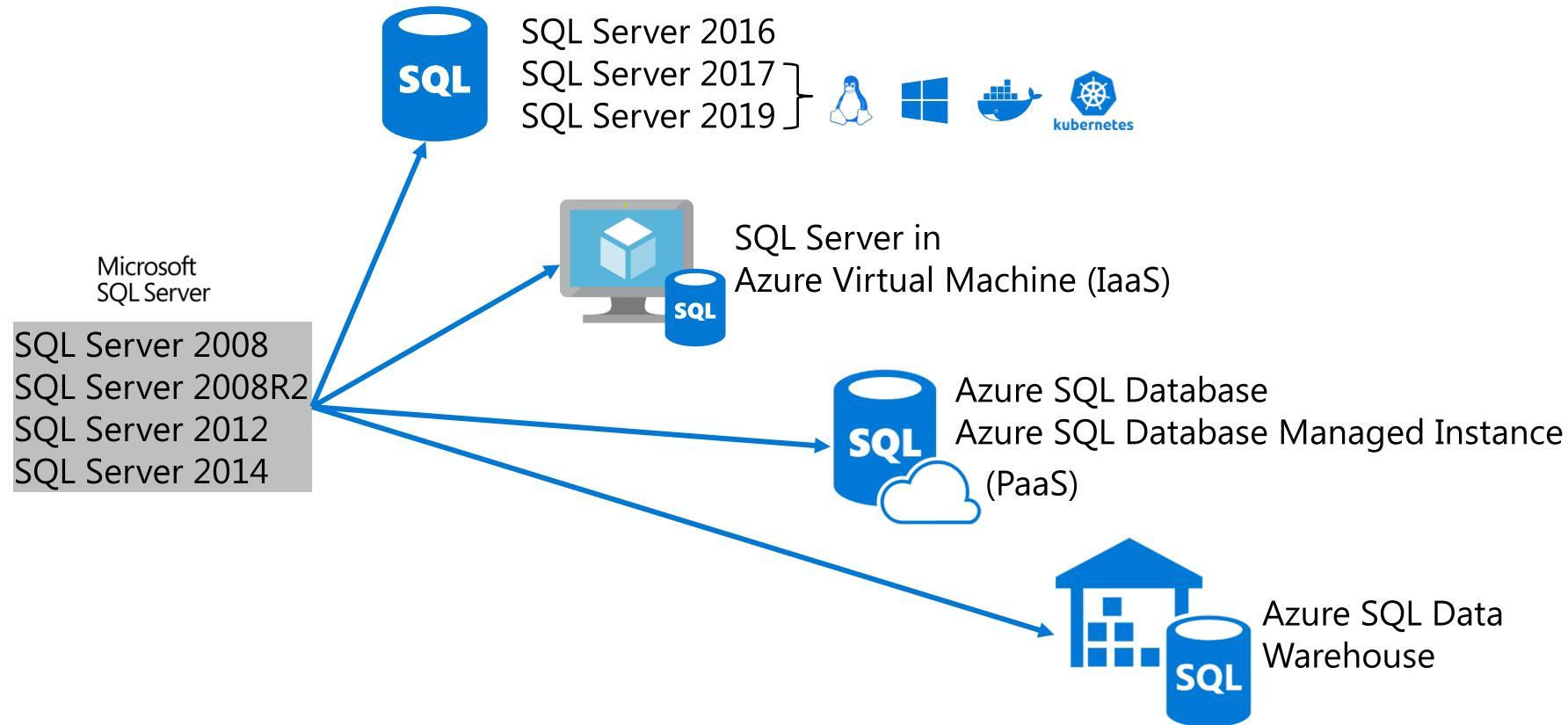
PerfMon for DBA's



Modernizing the WideWorldImporters Company

- Mixture of SQL Server 2008, 2014, and 2016 servers
- Expensive ETL applications for data sources outside of SQL Server
- Should we use “Big Data” technologies?
- Query performance tuning expensive
- Some database applications suffer from I/O performance
- Need data secure end-to-end with classification and auditing
- Applications need better availability and less downtime
- Our company uses a mixture of different operating system platforms
- Popularity of containerized applications growing
- What, when, and how should I migrate to the cloud?
- Desire to build more intelligent applications with AI and Machine Learning

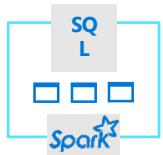
Azure Data Modernization Choices



Modernize with SQL Server 2019

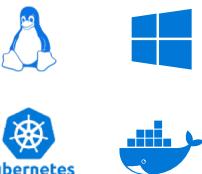
Now with big data clusters

Intelligence over any data



Analytics over structured and unstructured data with the power of SQL and Apache Spark

Choice of platform and language



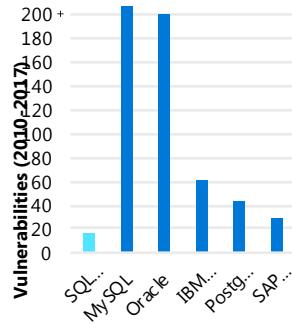
T-SQL
Java
C/C++
SCALA
Node.js
C#/VB.NET
Python
Ruby
.NET core

Industry-leading performance



#1 OLTP performance¹
#1 DW performance on 1TB², 10TB³, and 30TB⁴

Most secure over the last 8 years⁵



Insights in minutes and rich reports



The best of Power BI and SQL Server Reporting Services in Power BI Report Server



Private cloud

In-memory across all workloads

Most consistent data platform



Public cloud

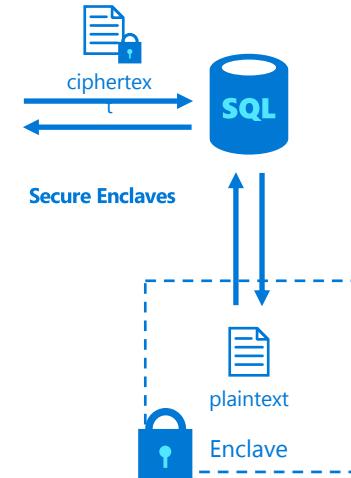
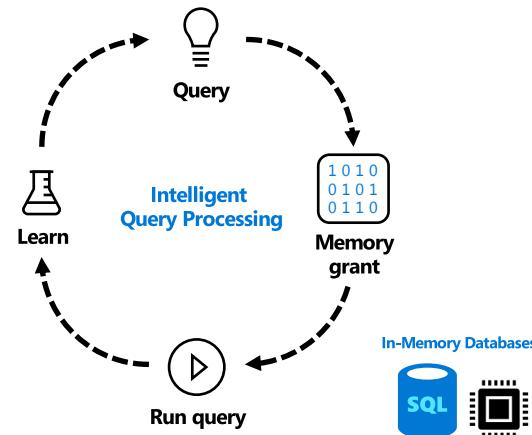
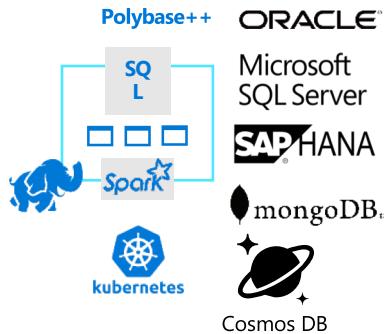
1/10th the cost of Oracle

All TPC Claims as of 1/19/2018.

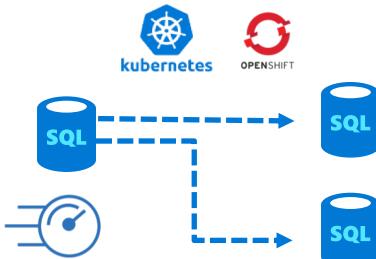
¹ <http://www.tpc.org/4081>; ² <http://www.tpc.org/3331>; ³ <http://www.tpc.org/3326>; ⁴ <http://www.tpc.org/3321>; ⁵ National Institute of Standards and Technology Comprehensive Vulnerability Database

SQL Server 2019

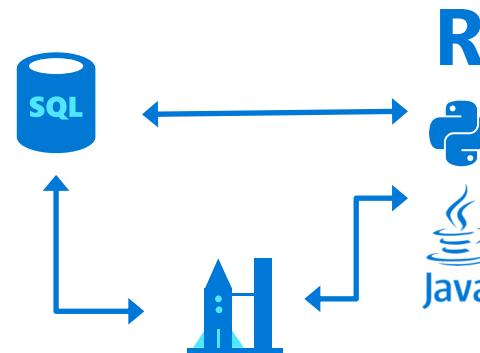
Key New Functionality



High Availability



Built-in Machine Learning and Extensibility



Modern Platforms with Compatibility

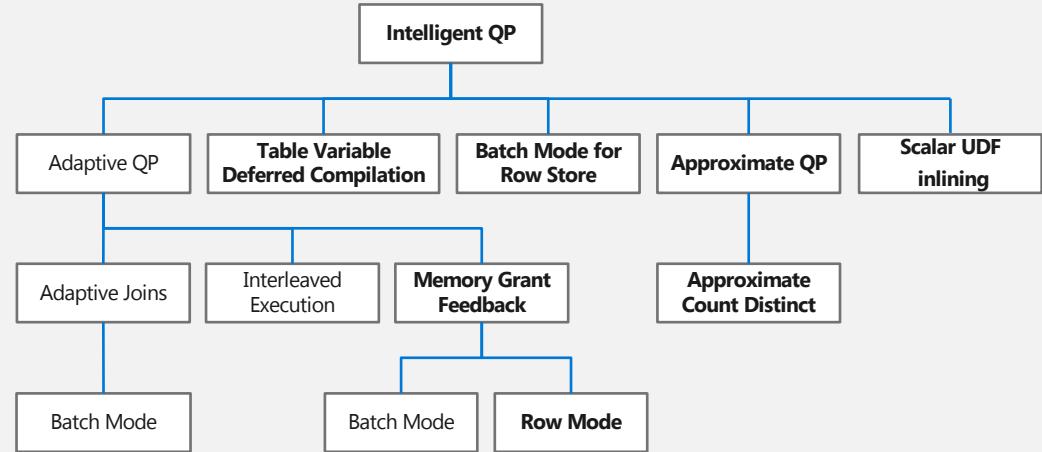


Intelligent Performance with SQL Server

The intelligent database

- Intelligent Query Processing
- Performance insights anytime and anywhere with **Lightweight Query Profiling**
- Accelerating I/O performance with **Persistent Memory**
- TempDB: It Just Runs Faster
Memory-optimized TempDB Metadata

The Intelligent Query Processing feature family



Bold indicates new and improved features in SQL Server 2019

Mission critical security

Confidential computing

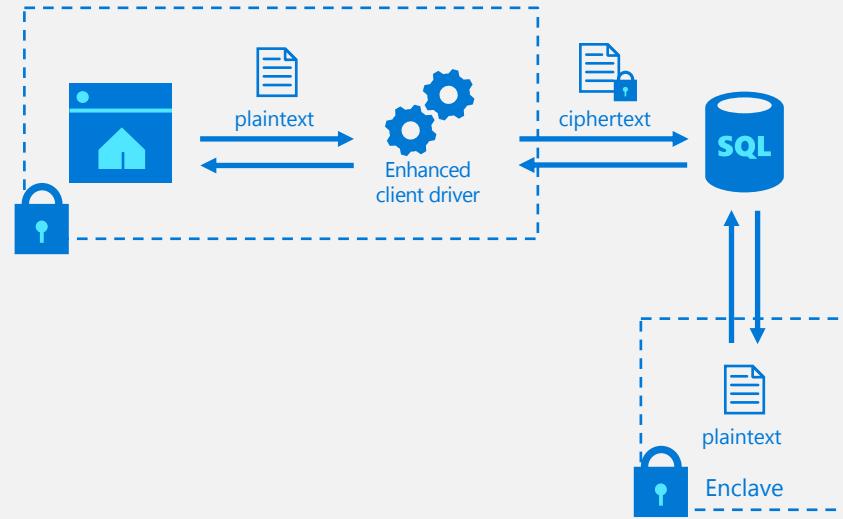
Always Encrypted with secure enclaves

Data Classification and auditing built-in

TDE scan suspend and resume

Simplified certificate management

Always Encrypted with secure enclaves



High Availability

Keep SQL Server running

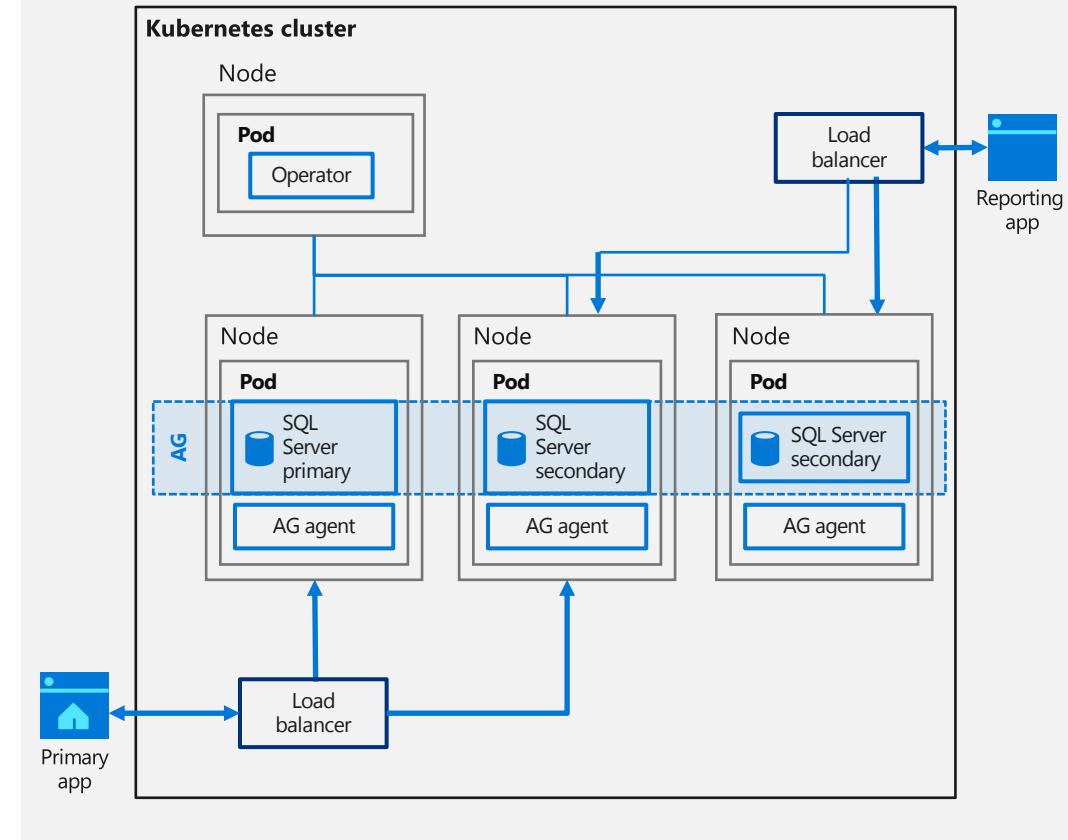
Online Index Enhancements

Availability Groups Enhancements
System Databases (Planned)

Availability groups on **Kubernetes**

Accelerated Database Recovery

Availability groups on Kubernetes



SQL Server 2019 and Linux and Containers

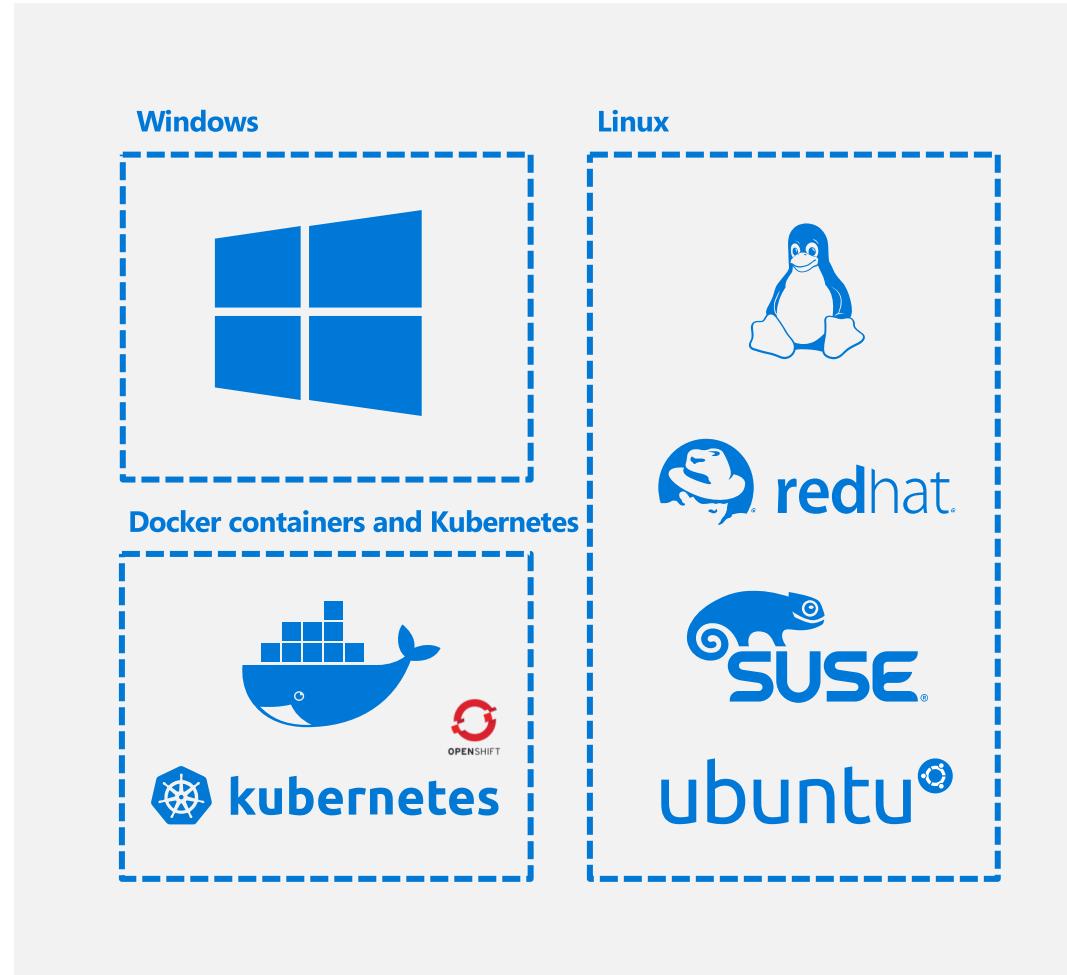
New Features

- Replication
- Distributed transactions
- Machine Learning
- Polybase

The Microsoft Container Registry

Red Hat Images

Availability Groups on **Kubernetes**



Why SQL Server and Containers?

Portable

Run anywhere Docker is supported

Lightweight

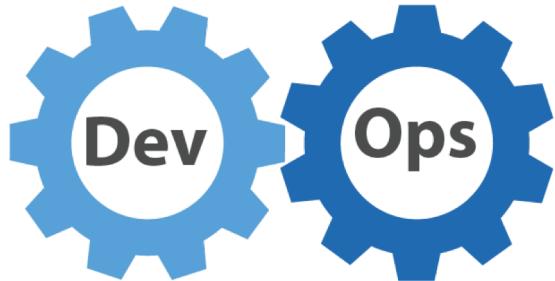
Reduced disk, CPU, and memory footprint

Consistent

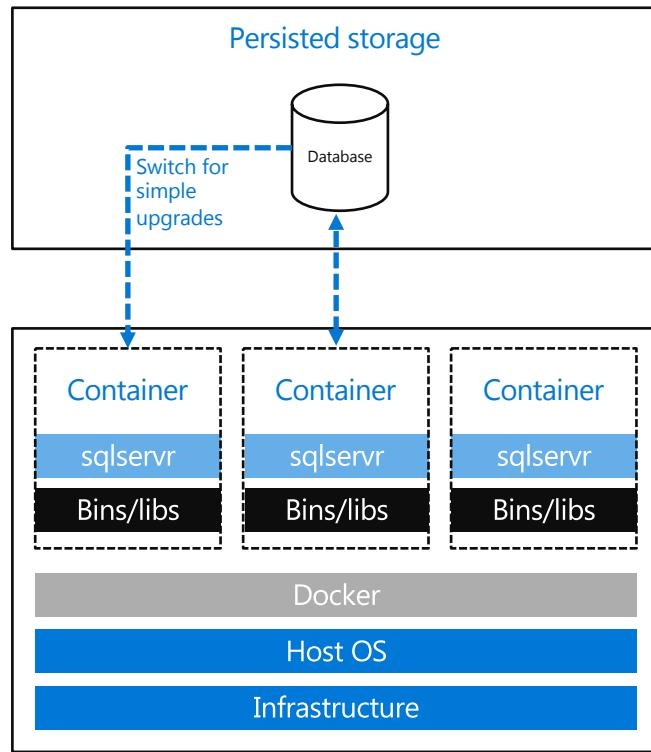
Consistent image of SQL Server, scripts, and tools

Efficient

Faster deployment, reduced patching, and less downtime

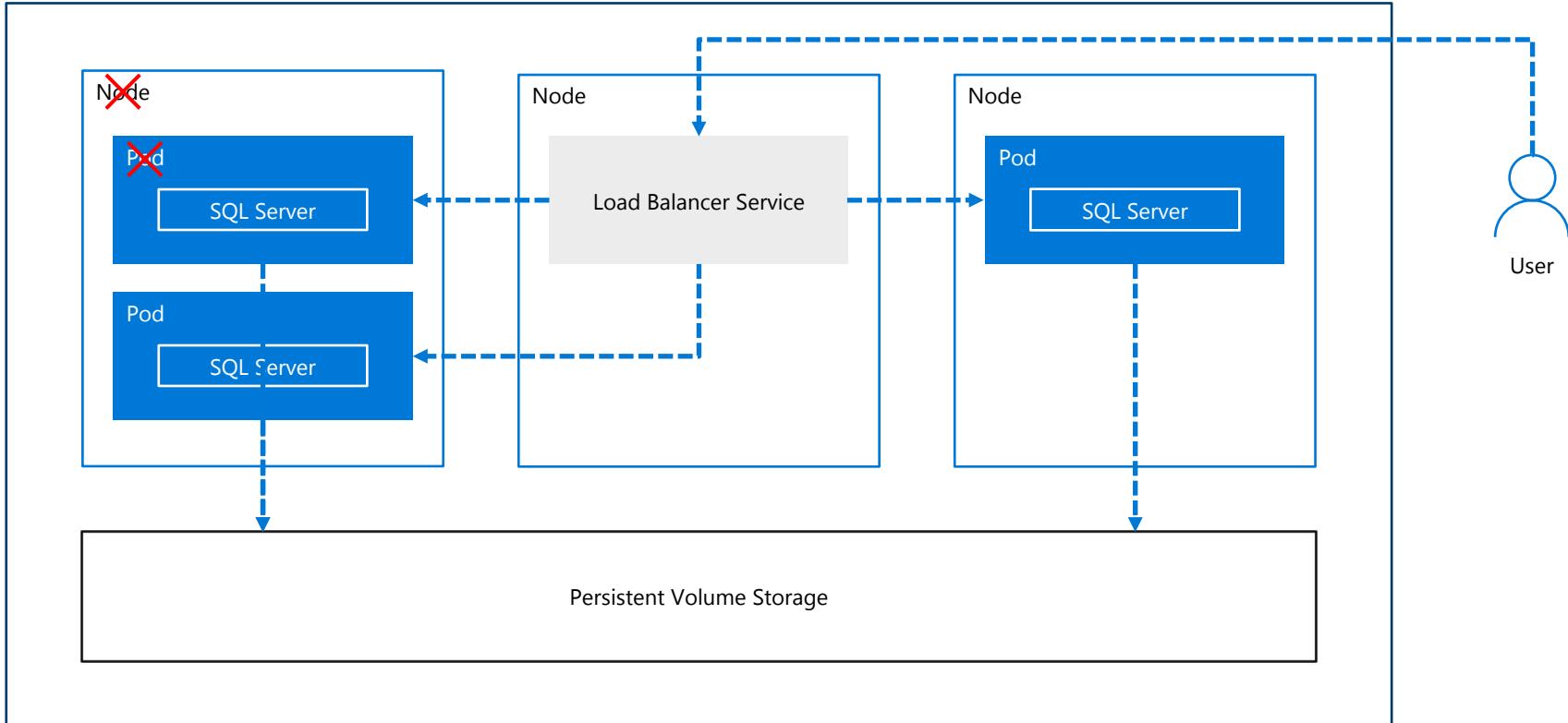


Container configuration



SQL Server - Shared storage HA in Kubernetes

Built-in HADR orchestration with no clustering required

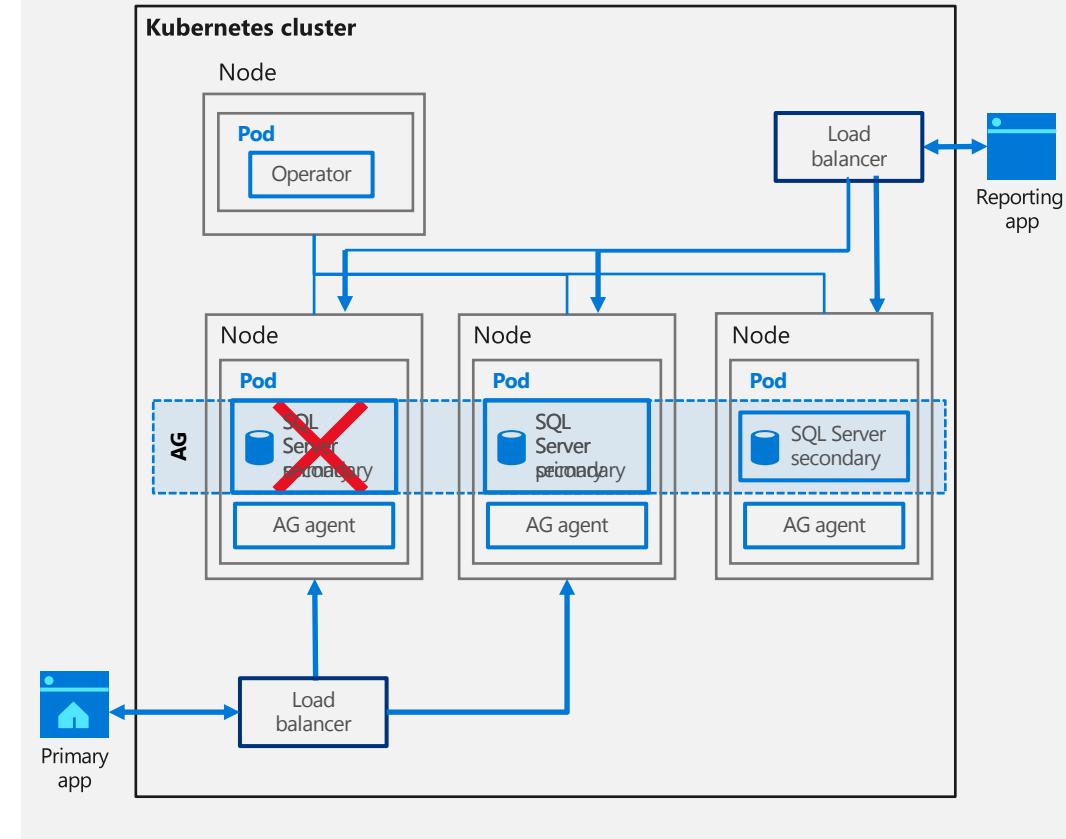


SQL Server 2019

Always On Availability Groups on Kubernetes

- SQL Server/k8s failover integration
- Operator deployment
- AG concepts all apply
- Load Balancer for Primary App
- Load Balancer for Secondary Replica Readers

Availability groups on Kubernetes



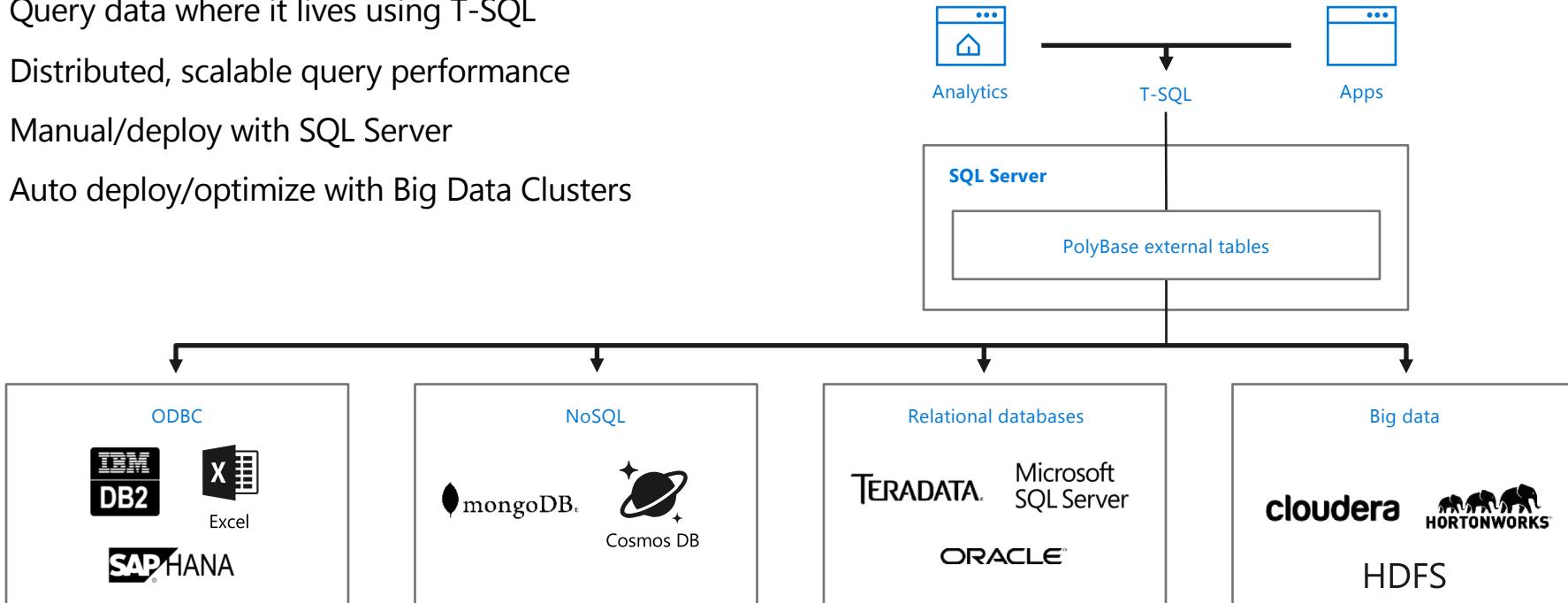
Demo



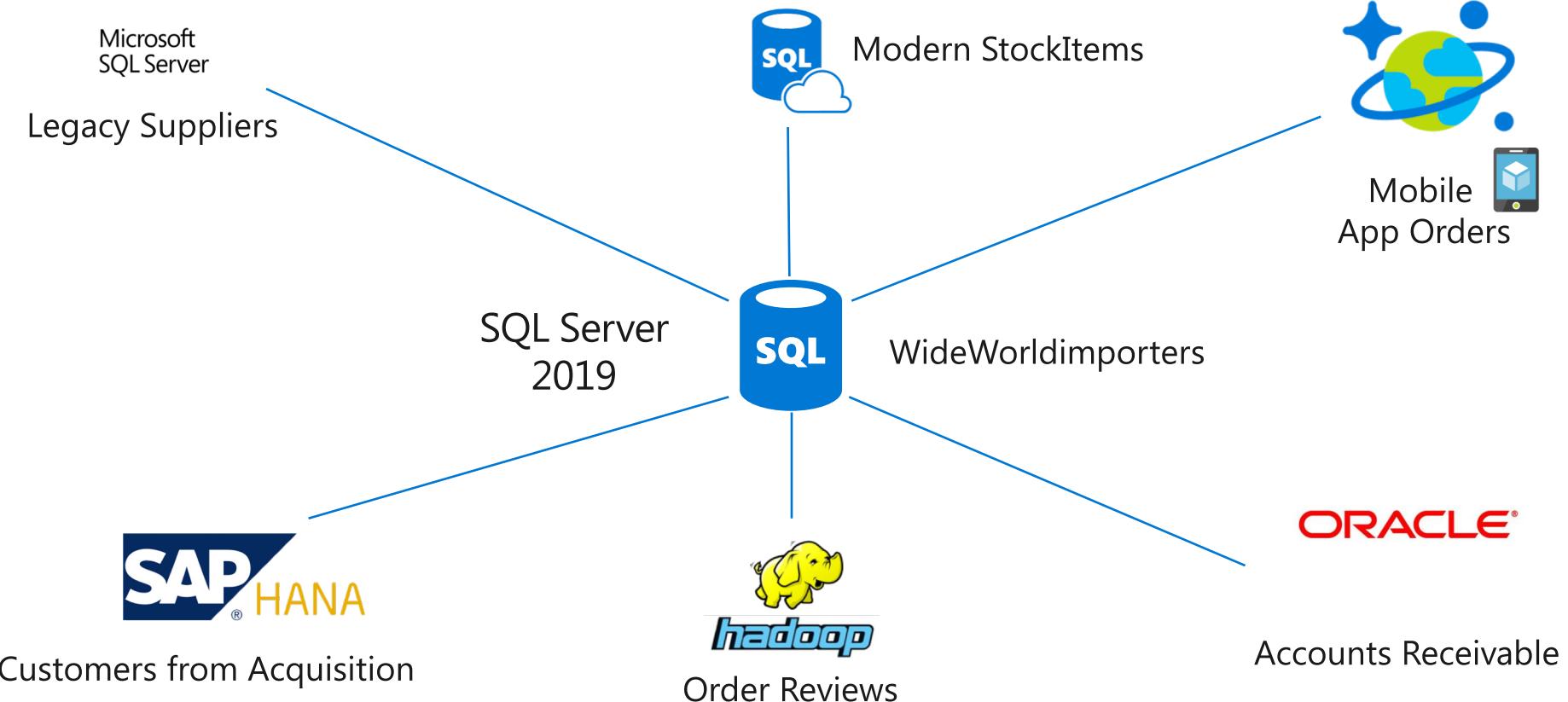
What is SQL Server Polybase?

"It's all about
Data Virtualization"

- ✓ Distributed compute engine integrated with SQL Server
- ✓ Query data where it lives using T-SQL
- ✓ Distributed, scalable query performance
- ✓ Manual/deploy with SQL Server
- ✓ Auto deploy/optimize with Big Data Clusters



SQL Server 2019: Data Virtualization



The Customer Voice

- Columnstore stats in DBCC CLONEDATABASE
- Estimate compression for Columnstore indexes
- Diagnostics for auto stats blocking
- The #1 voted customer feedback item of all time:
String Truncation (1000+ votes)
- Troubleshoot page resource waits with new built-in T-SQL

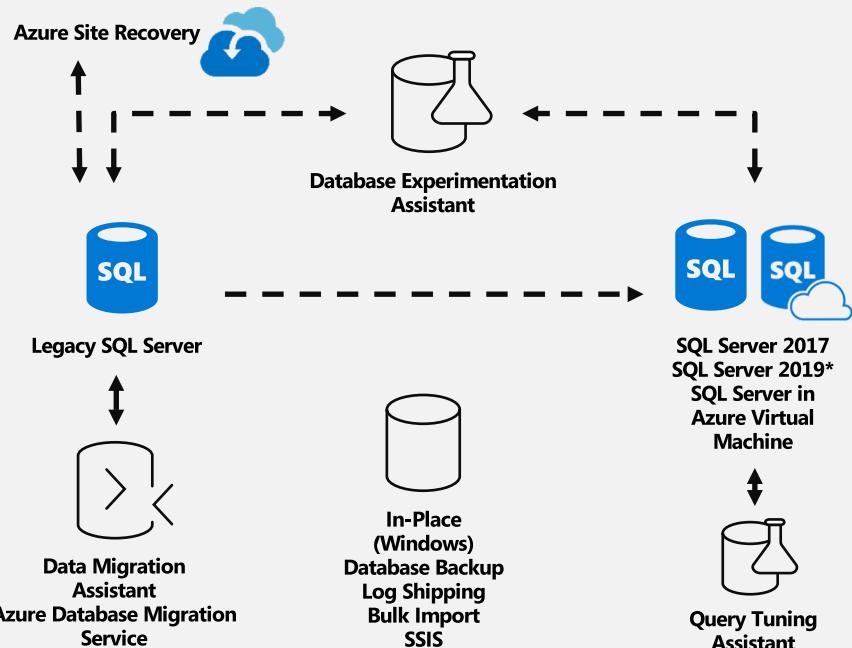
String or binary data would be truncated

String or binary data would be truncated
in table '%.*ls', column '%.*ls'.
Truncated value: '%.*ls'

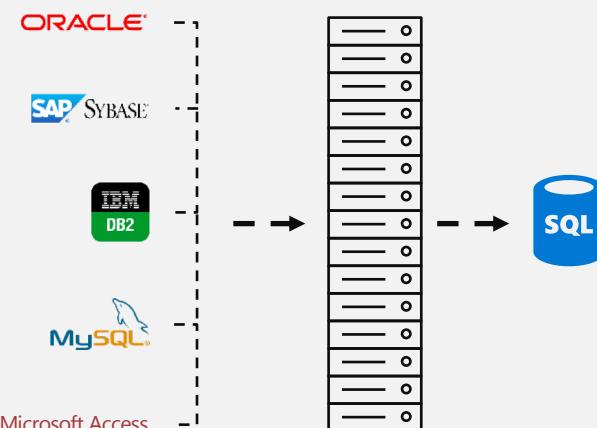
```
SELECT page_info.*  
FROM sys.dm_exec_requests AS d  
    CROSS APPLY  
sys.fn_PageResCracker(d.page_resource) AS r  
    CROSS APPLY sys.dm_db_page_info(r.db_id,  
r.file_id, r.page_id, 'DETAILED')  
        AS page_info;
```

Migrate to the Modern SQL Server

Migration from legacy SQL Server



Migration from external databases



Questions?



Learn more

Use our free training at <https://aka.ms/sqlworkshops>

Learn from videos and demos at <https://aka.ms/sqlchannel>

Download and try it at <http://aka.ms/ss19>

What's new for SQL 2019 [documentation](#)

Sign-up for the EAP program at <https://aka.ms/eapsignup>



Thank You