Deploy a modern data platform with SQL Server 2019 on Red Hat Enterprise Linux 8

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SESSION OBJECTIVES

At the end of this session, you should be better able to...

- Describe the state of SQL Server on Red Hat Enterprise Linux today
- Understand the new features for SQL Server administrators in Red Hat® Enterprise Linux® 8
- Understand the major capabilities new to SQL Server 2019
- Explain the value proposition and basics of data virtualization
- Explain SQL Server 2019 key features for performance, security, and availability

MICROSOFT SQL SERVER ON RED HAT ENTERPRISE LINUX

"Our joint customers have a choice when it comes to selecting an operating system and a database to run their business critical systems and an opportunity to realize great long-term value, in your datacenter or on Microsoft Azure."

PAUL CORMIER, PRESIDENT PRODUCTS AND TECHNOLOGIES, RED HAT

A leading database[1]

MICROSOFT SQL SERVER

A leading Linux OS[2]

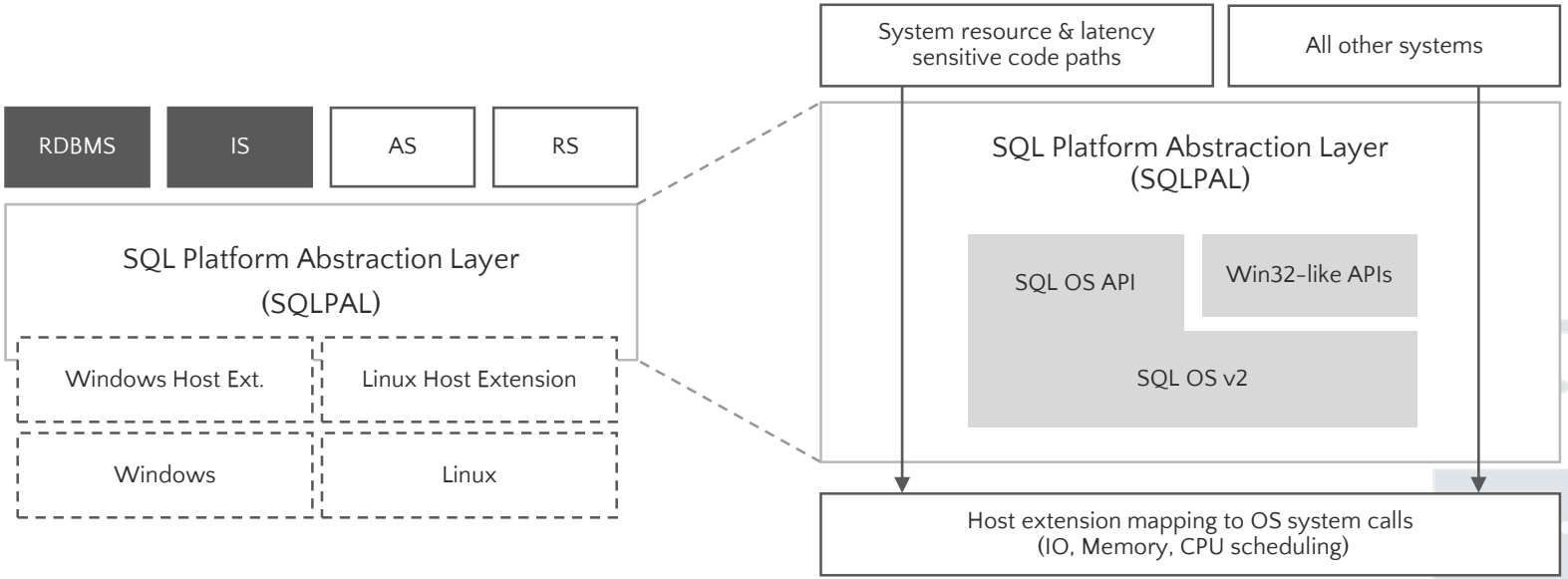
RED HAT ENTERPRISE LINUX

On a leading Cloud Platform[3]

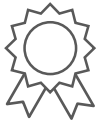
MICROSOFT AZURE

SQL SERVER ON RHEL

Same as SQL Server on Windows Server - Platform Abstraction Layer (PAL)



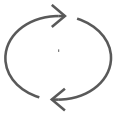
LINUX-NATIVE USER EXPERIENCE



Standard installation process

Package-based installation using YUM for Red Hat Enterprise Linux

Uses the standard package update/upgrade process for SQL Server upgrade



Familiar experience

SQL Server service runs natively using systemd

Linux file paths are supported in T-SQL statements and scripts (defining/changing the path, database backup files)

Popular Linux high-availability including Red Hat High Availability and HPE Serviceguard are supported

Cross-platform tools

SQL Server command-line tools (sqlcmd, bcp) available for Linux and MacOS

Existing Windows tools such as SQL Server Management Studio (SSMS), SQL Server Data Tools (SSDT), and PowerShell module (sqlps) to manage SQL Server on Linux from Windows

Cross platform open source tools such Azure Data Studio and mssql-cli

Visual studio code extension for SQL Server on MacOS, Linux, or Windows

NEW WITH SQL SERVER ON RED HAT ENTERPRISE LINUX 8

Increased performance

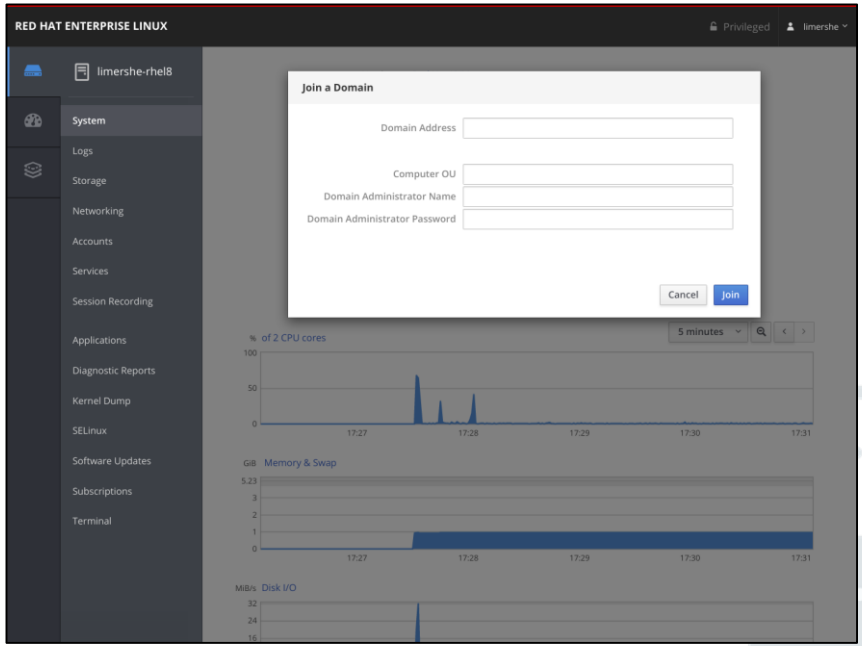
- Updates to the mssql-tuned profile optimized tuning for decision support workloads
- New TCP/IP stack delivers increased performance and BBR congestion control
- Storage block devices now use multi-queue scheduling to make the best use of bandwidth available from modern flash-based storage devices
- File System DAX supported for SQL Server on RHEL 8 allowing for acceleration with persistent memory
- XFS file system FUA enhancements for SQL Server - write request I/O traffic is reduced by ~50% for a SQL Server write-intensive workloads[1]

NEW WITH SQL SERVER ON RED HAT ENTERPRISE LINUX 8

Improved manageability

Feature-rich Red Hat web console (Cockpit)

- More accessible for SQL DBAs
- Join a Microsoft Active Directory domain, view performance statistics, inspect logs, configure networking and storage, start and stop services, manage subscriptions, and more

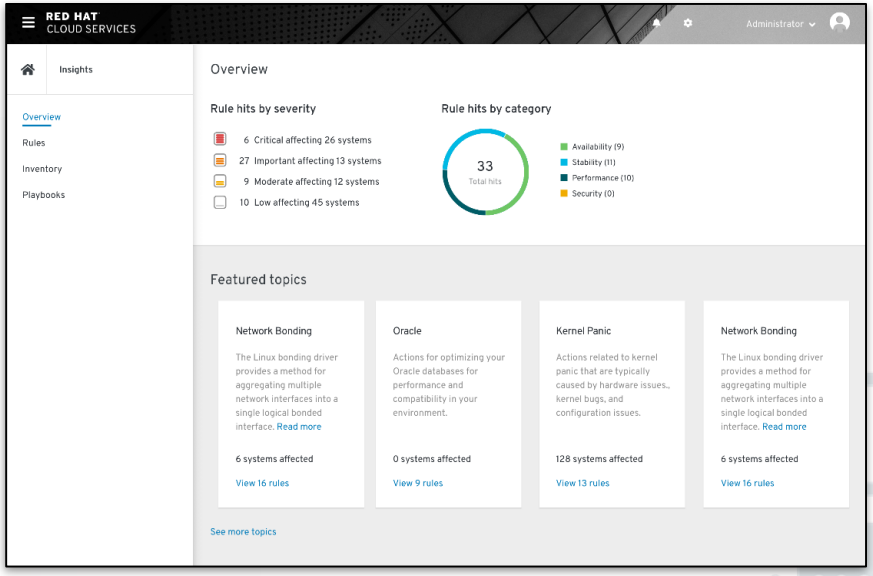


NEW WITH SQL SERVER ON RED HAT ENTERPRISE LINUX 8

Improved manageability

Predictive OS analytics with Red Hat insights

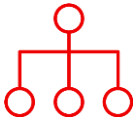
- Proactively identify and remediate threats to security
- Identify performance, availability, and stability issues
- Avoid problems and unplanned downtime



NEW WITH SQL SERVER ON RED HAT ENTERPRISE LINUX 8

Improved security

System-wide crypto policies reduce attack vectors and keep systems in compliance



New industry standard algorithms and protocols: openssl 1.1.1; TLS 1.3

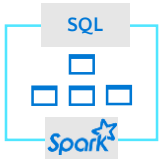
Session recording to support compliance and audit. Based on tlog terminal I/O logger

Demo: SQL Server Performance on Red Hat Enterprise Linux 8

Modernize on premises with SQL Server 2019

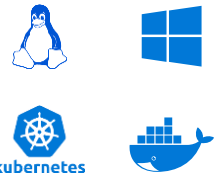
Now with big data clusters

Intelligence over any data



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

Choice of platform and language



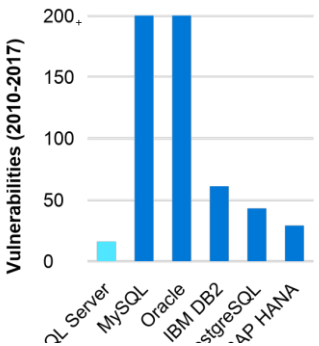
T-SQL	SCALA	Python
Java	Node.js	Ruby
C/C++	C#/VB.NET	.NET core

Industry-leading performance

#1 OLTP performance[1]

#1 DW performance on 1TB[2], 10TB[3], and 30TB[4]

Most secure over the last 8 years[5]



Insights in minutes and rich reports

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

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Private cloud

In-memory across all workloads

Most consistent data platform

1/10th the cost of Oracle

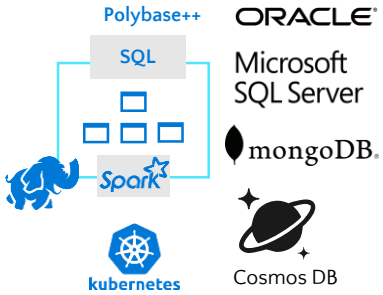
Public cloud

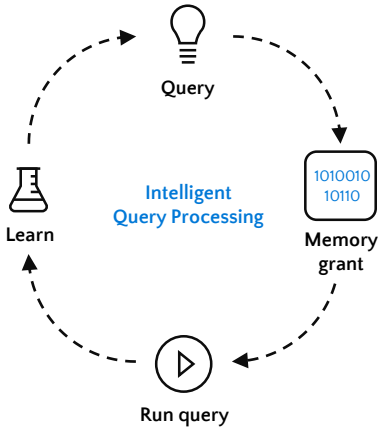
All TPC Claims as of 1/19/2018.

[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

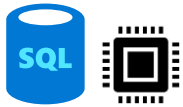
SQL SERVER 2019

Key New Functionality

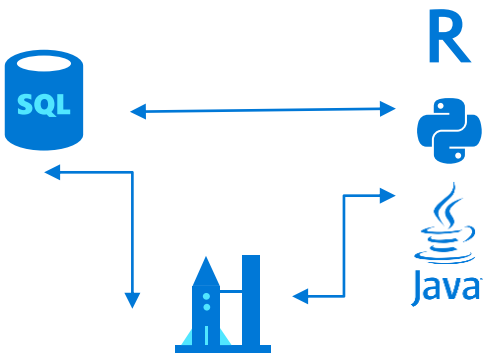




In-Memory Databases

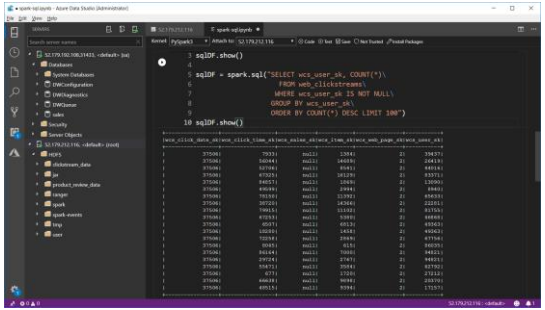


Built-in Machine Learning and Extensibility



Modern Platforms with Compatibility

Azure Data Studio



SQL Server on Linux – What have we learned?

11M+ Docker Pulls

Thousands of instances and CPUs using SQL Server on Linux

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Customers are….

- Standardizing on an Operating System (Mixed OS and Hybrid Cloud short-term)
- Re-evaluating the preferred database for new applications
- Migrating from SQL Server (Older Versions), ORACLE, MySQL, or PostgreSQL

BINARY CONFIDENCE

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Is it the same as Windows?

Is the performance the same as on Windows?

Is the licensing the same as on Windows?

Do I need to know Linux?

Is SQL Server different in a container?

Need multi-instance? Use containers

Linux kernel FUA and XFS contributions

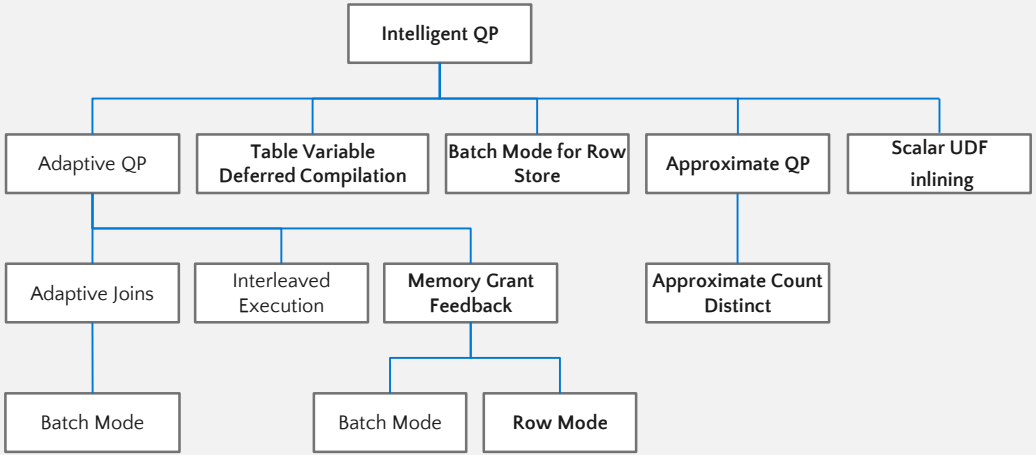
Read more on the bobsql blog

Intelligent Performance with SQL Server

The intelligent database

- Intelligent Query Processing
- Gain performance insights anytime and anywhere with Lightweight Query Profiling
- Accelerating I/O performance with Persistent Memory
- Hybrid Buffer Pool
- Tempdb: It Just Runs Faster (Planned)

The Intelligent Query Processing feature family

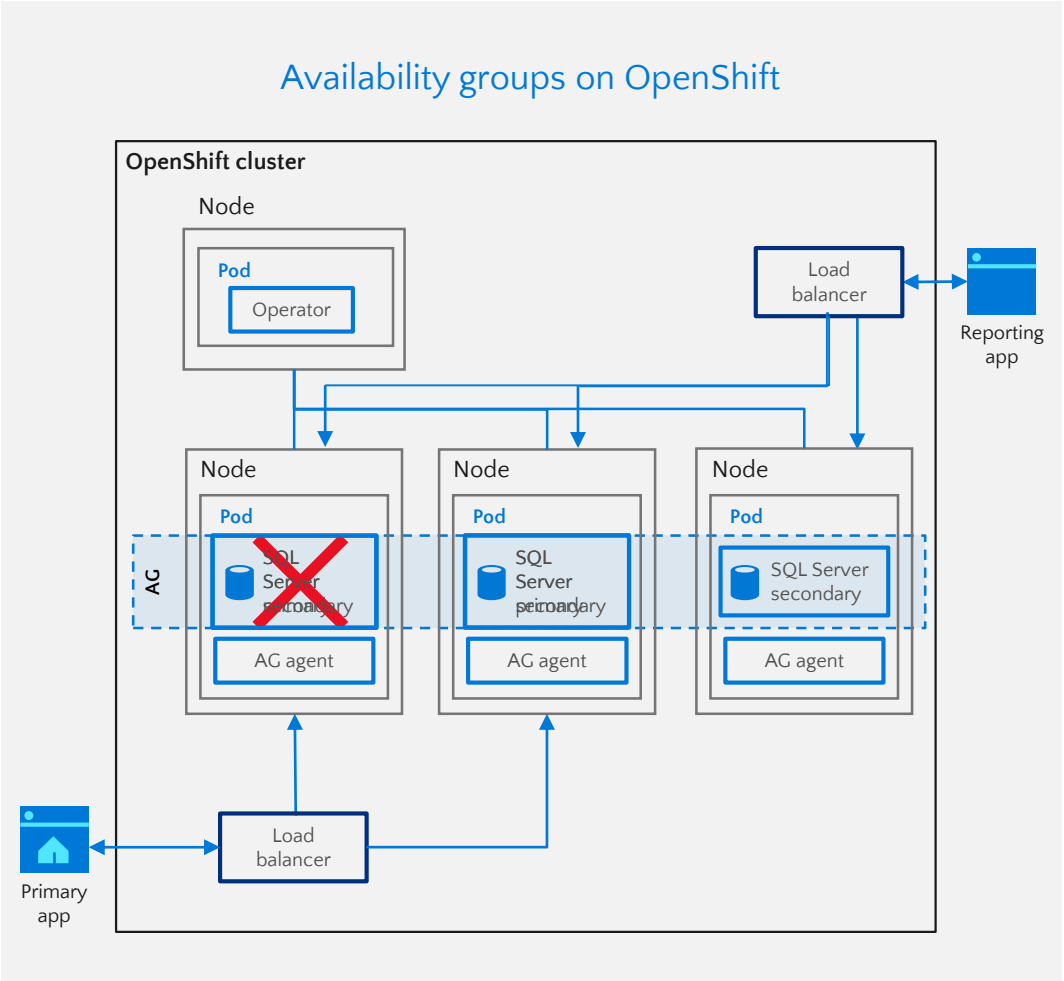


Bold indicates new and improved features in SQL Server 2019

SQL Server 2019

Always On Availability Groups on OpenShift

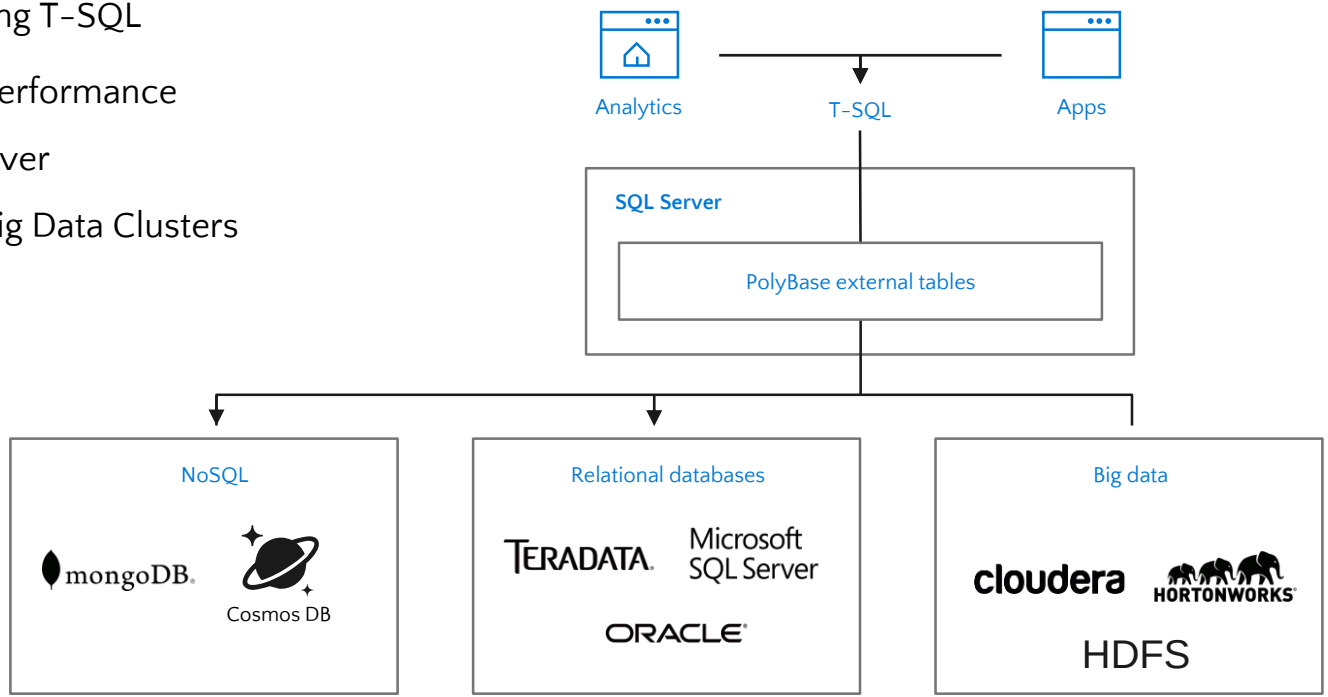
- SQL Server/OpenShift failover integration
- **Operator** deployment and coordination
- AG concepts all apply
- Load Balancer for Primary App
- Load Balancer for Secondary Replica Readers



What is SQL Server Polybase?

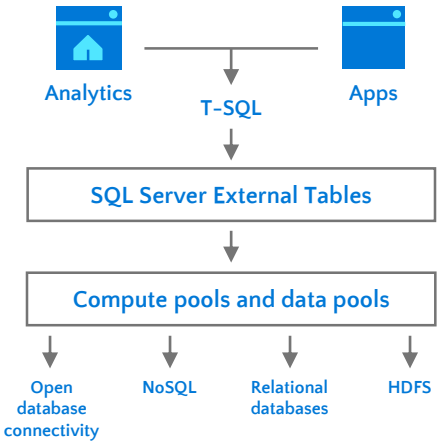
"It's all about Data Virtualization"

- ✔ 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 Big Data Cluster Scenarios

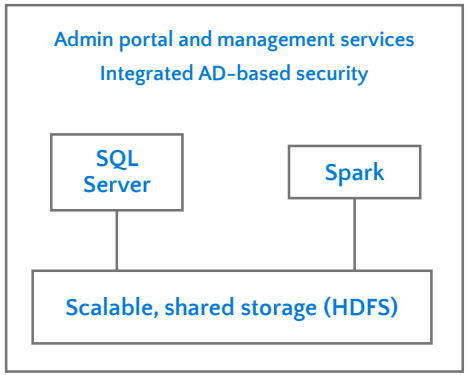
Data virtualization



Combine data from many sources without moving or replicating it

Scale out compute and caching to boost performance

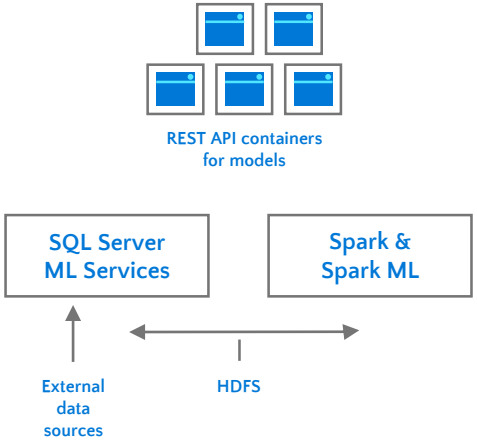
Managed SQL Server, Spark, and data lake



Store high volume data in a data lake and access it easily using either SQL or Spark

Management services, admin portal, and integrated security make it all easy to manage

Complete AI platform

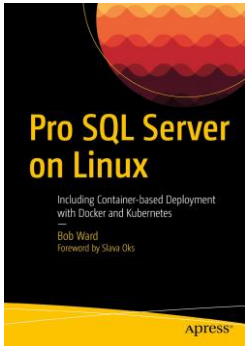


Easily feed integrated data from many sources to your model training

Ingest and prep data and then train, store, and operationalize your models all in one system

Demo: SQL Server Data Virtualization

CALL TO ACTION



Key resources...

Try SQL Server 2019 today on Red Hat Enterprise Linux 8 – https://aka.ms/ss19

Sign up for our Early Adopter Program – https://aka.ms/eapsignup

Go through our free workshops – https://aka.ms/sqlworkshops

Read our blog with details on Linux – https://aka.ms/bobsql

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