



PASS VIRTUAL
SUMMIT 2020

PREMIER SPONSOR



Microsoft Azure

Modernizing SQL Server Operations with Kubernetes

Bryan Gartner

Sr. Technology Strategist

SUSE



Explore

Everything PASS
Has To Offer

Free Resources
Online PASS.org



Unlock exclusive
training &
networking



PASS
LOCAL
GROUPS

Local user
groups around
the world



PASS
SQLSATURDAY

Free 1-day
local training
events



PASS
MARATHON

Back-to-back live
webinar events



PASS
VIRTUAL
GROUPS

Online special
interest user
groups



PASS
VOLUNTEERS

Get involved

Bryan Gartner

Sr. Technology Strategist
SUSE

 /bryangartner



Career Journey : EE
-> IT -> Software
Engineer ->
Solution Architect

Linux Tenure : 20+
years of FOSS
contribution and
advocacy

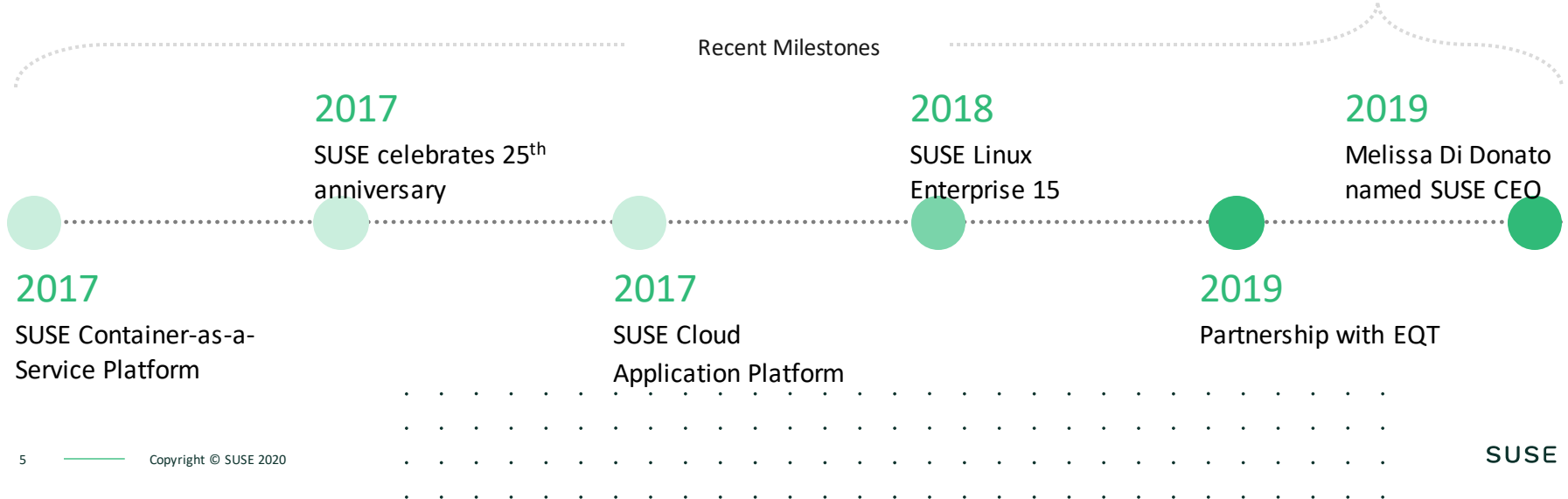
Agenda



- SUSE Intro
 - Modernizing SQL Server
 - OS Migration
 - Unit Transformation
 - Workload Orchestration
- 

28 Years of Leadership in True Open Source

1992 to 2000	2001 to 2010	2011 to Present	2017 to Present
The Pioneering Years	Becoming strategic partner of SAP and building a strong ecosystem	Enabling an Always Open Data Center	From Linux Pioneer to Software-Defined Infrastructure and Edge



28 Years of Successful & Satisfied Customers



80%

Linux in Large Enterprise
Over 80% of the Fortune Global 50 are active SUSE Customers



80%

Linux for SAP
80% of all SAP applications running on Linux run on SUSE



50%

Linux in HPC
Half of the world's 20 largest supercomputers run on SUSE



12/15

Linux in Automotive
12 of the 15 largest tier one automotive vendors run SUSE



7/10

Linux in Manufacturing
7 out of 10 world's largest manufacturers use SUSE Linux Embedded and Enterprise



9/10

Linux in Aerospace
9 out of 10 of the largest aerospace companies rely on SUSE



Top 10

Linux in Telecom
10 of the largest telecommunications carriers rely on SUSE



7/10

Linux in Pharma
7 out of 10 of the largest pharmaceutical companies use SUSE Linux Enterprise



7/10

Linux in Retail
7 out of 10 of the largest retailers in the U.S. are active SUSE customers



4/5

Linux in Finance
4 out of 5 of the world's largest banks use SUSE Linux Enterprise



15+

Mainframe Linux
Over 15 years of mainframe Linux market share leadership



#1

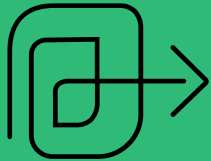
Embedded Linux
Digitizing products with high security and safety requirements

Strong Momentum.

Growing Momentum.



SUSE Vision



Simplify

Run the Business

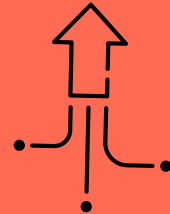
Simplify and
optimize existing
IT environments



Modernize

Transform the Business

Bring applications and
data into modern
computing



Accelerate

Scale the Business

Accelerate business innovation
through true Open Source
Software





A Deep Alliance Partnership Dedicated to your Success

- SUSE is Globally Managed Strategic ISV at Microsoft
- 12 years – SUSE has been partnering with Microsoft for over a decade to support our joint customers
- + 20 years – SUSE and Microsoft have been working with SAP for 20 years driving enterprise customer success
- SUSE and Microsoft are closely collaborating to enable your SAP environments on Azure with high-availability, optimized tuning and performance, and reliability you can depend on



Integrated Support

- Seamless collaborative process between Microsoft and SUSE to jointly troubleshoot the issue and drive to resolution
- Onsite SUSE engineer co-located with Microsoft support teams
- Strong governance model and shared goals

Usage Model	Level 1 & 2 Support	Level 3 Support Directly from SUSE
BYOS		
PAYG		

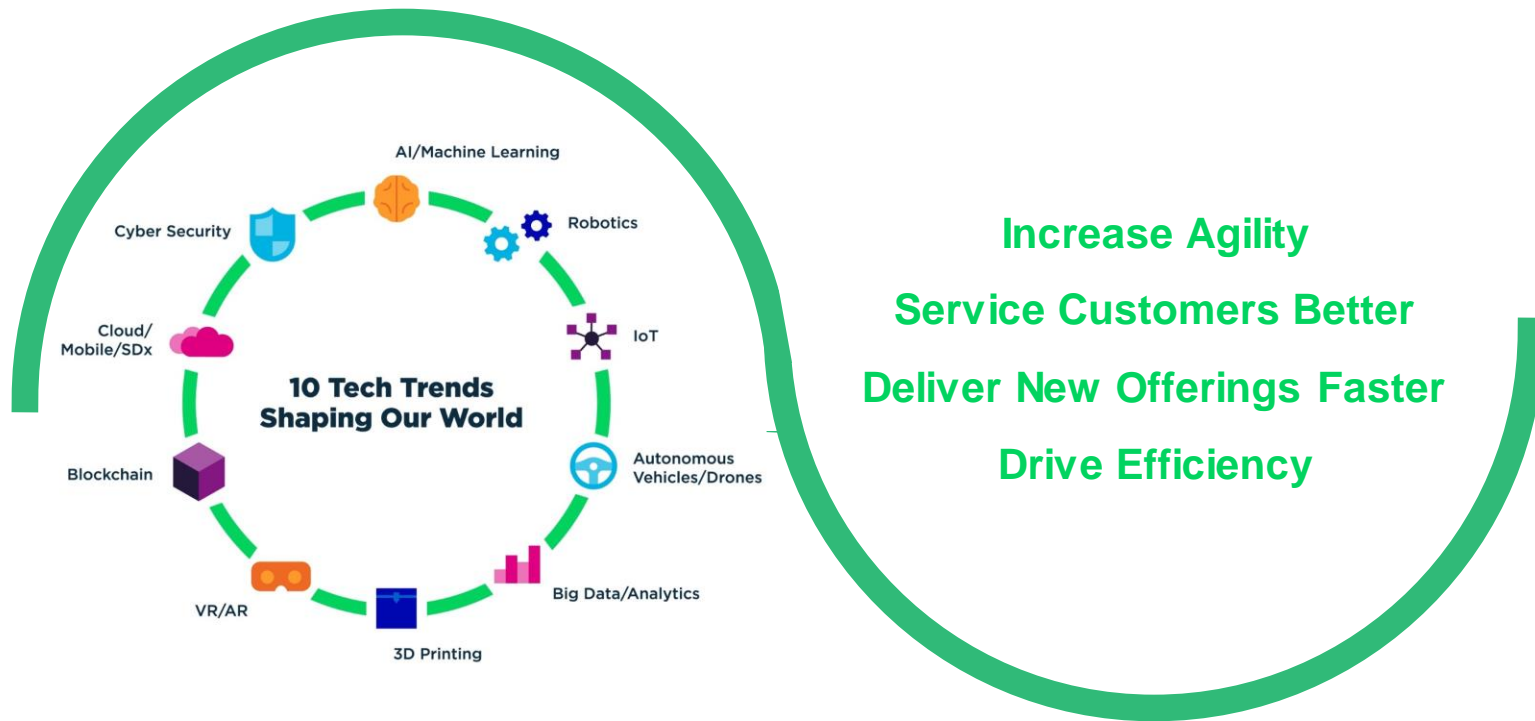


**Open Source
is like a bridge**

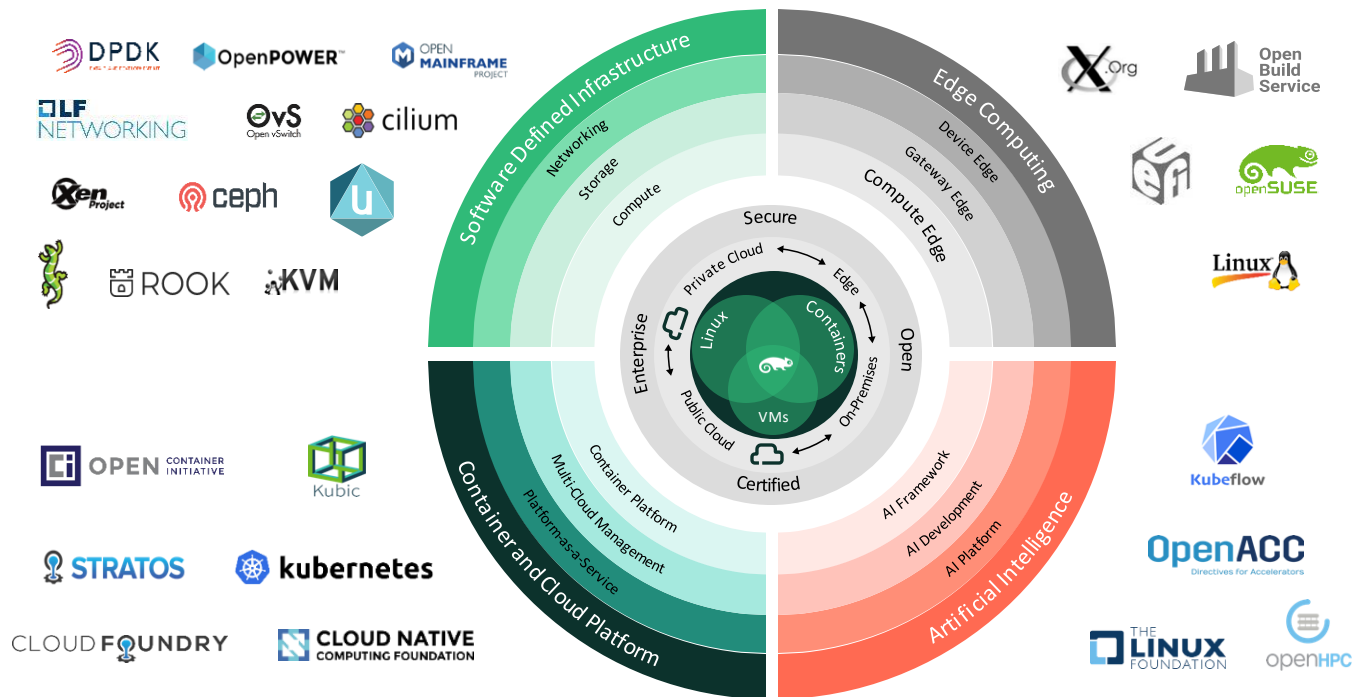


Technology Trends Shaping the World

Open Source Is A Key Enabler



SUSE & Supported Open Source Projects



Microsoft & Open Source

TypeScript

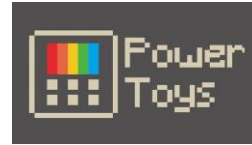


.NET



Azure
SDK

VS Code



Xamarin

What Does This Mean for You?



NEW DEMANDS



NEW OPPORTUNITIES



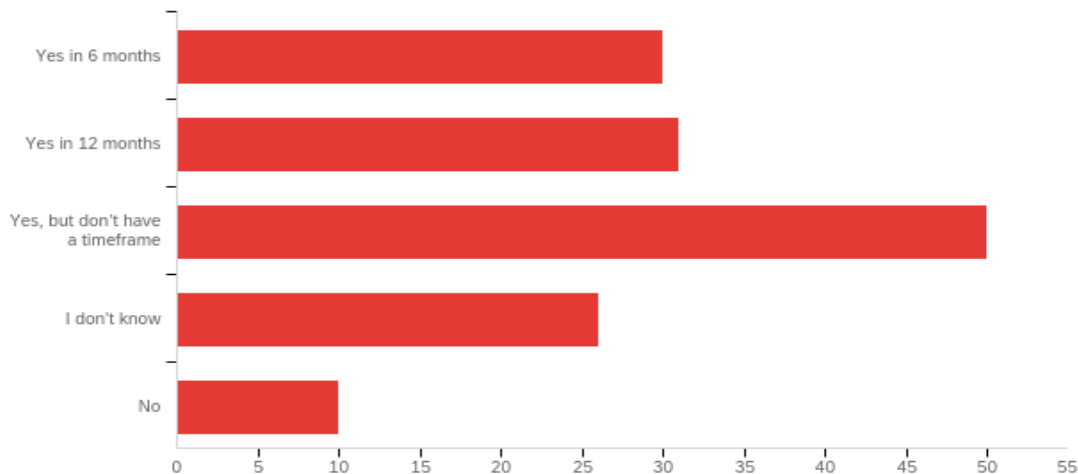
**New Ways
to Leverage
Open Source**



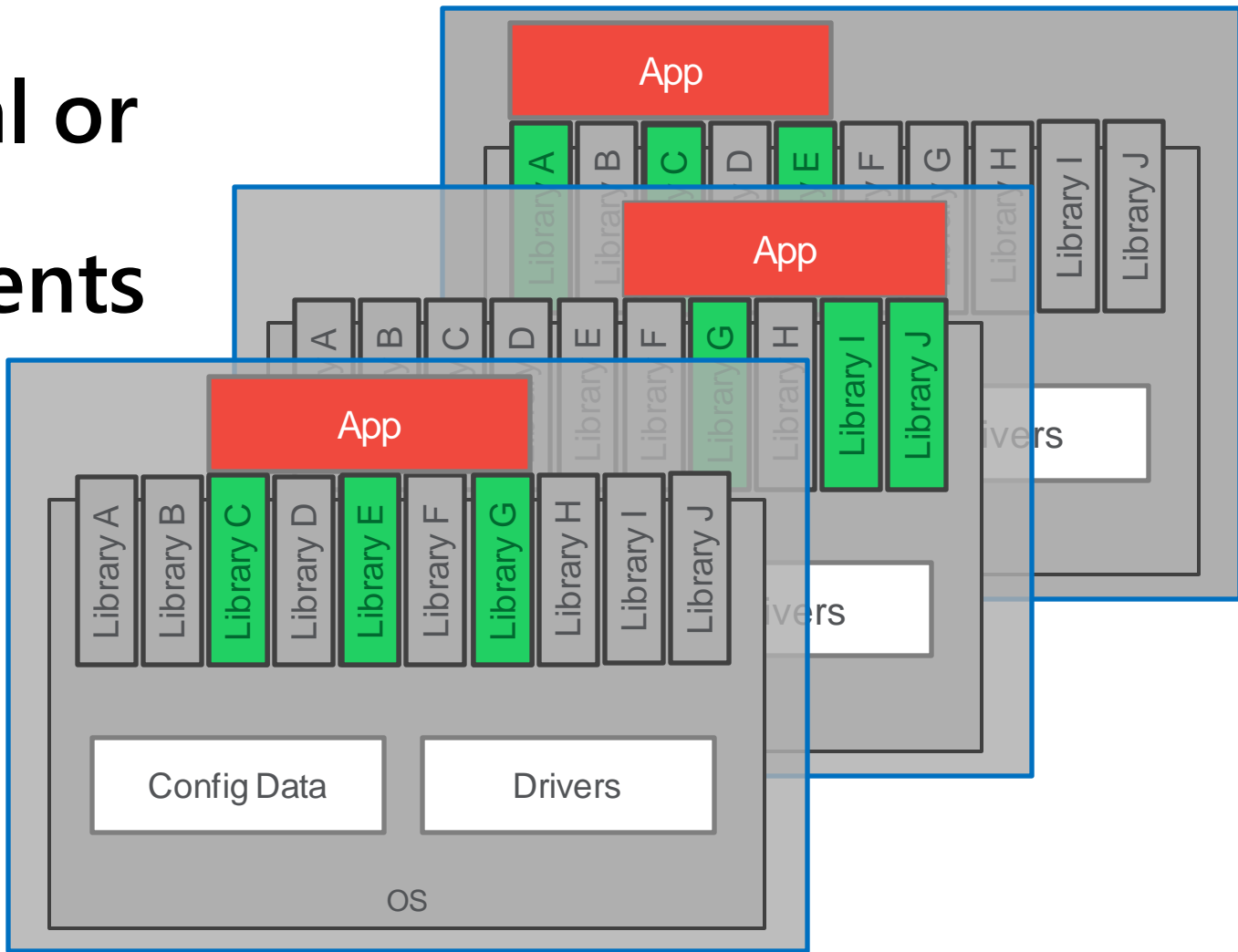
Modernizing SQL Server



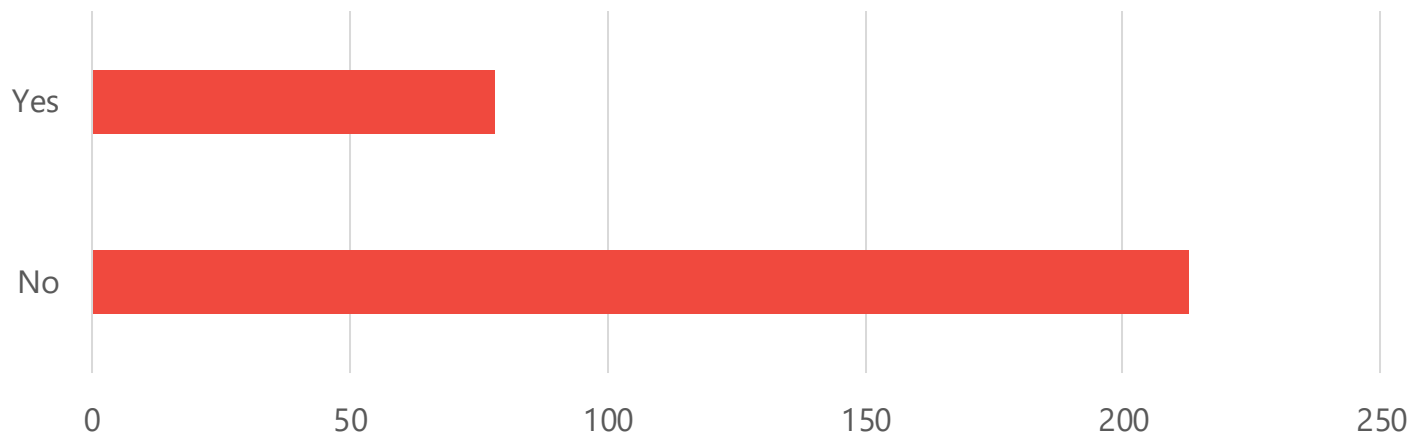
Q: Are you currently planning to upgrade/migrate/add SQL Server 2019 to your environment ?



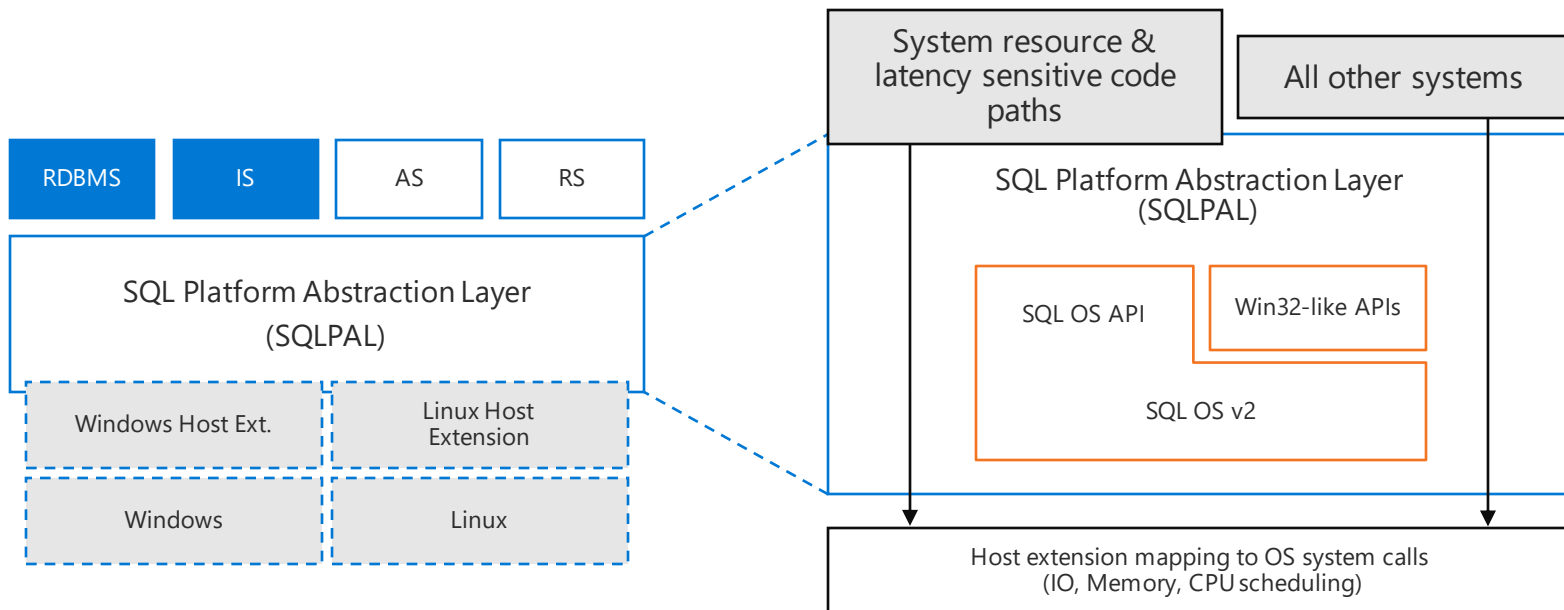
Baremetal or VM deployments



Q: Do you currently run SQL Server on Linux ?



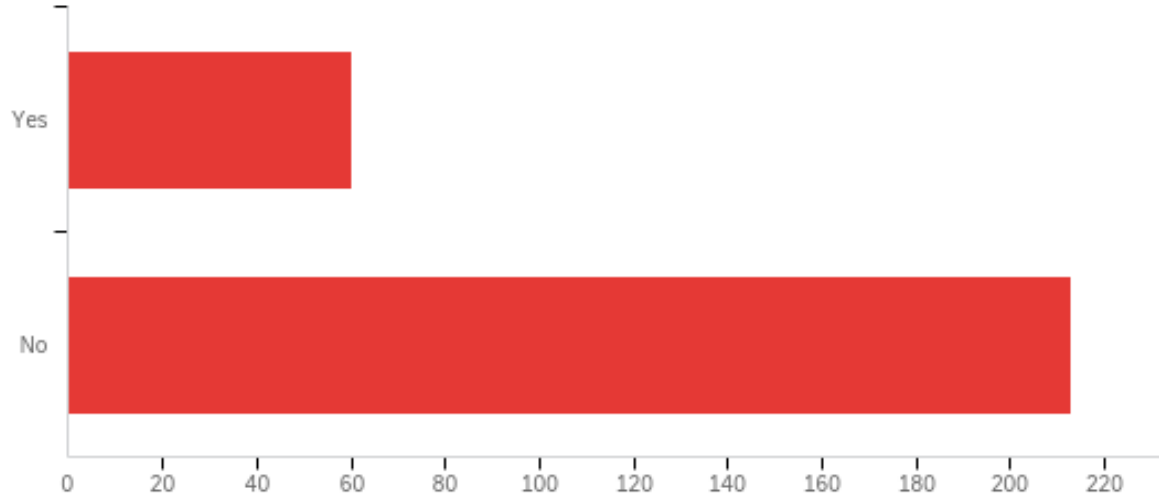
The same abstraction layer with SQL Server on Linux



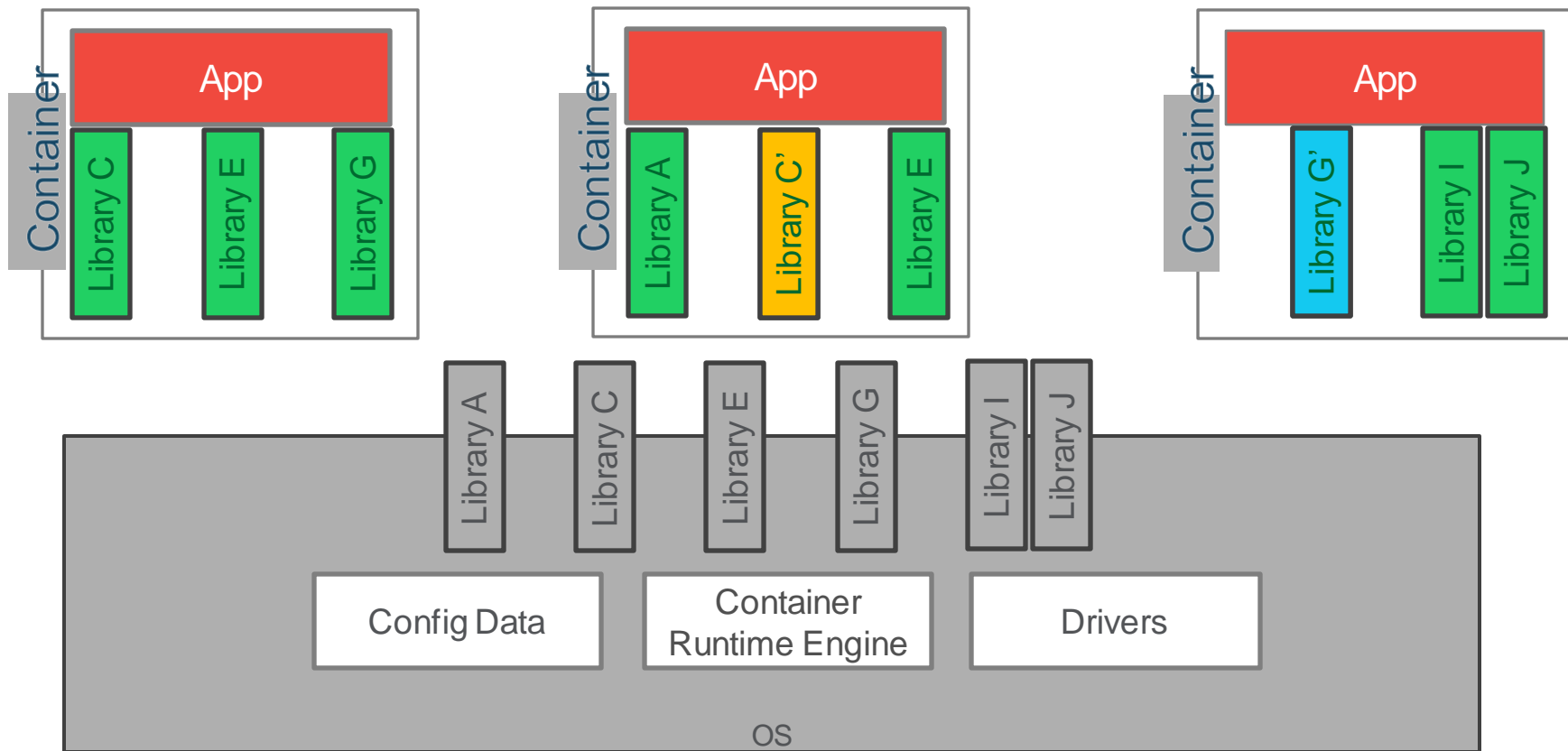
SQL Server on Linux: Easy

- Download the Microsoft SQL Server SLES repository configuration file:
 - `sudo zypper addrepo _fc http://packages.microsoft.com/config/sles/12/mssql-server-2019.repo`
- Add Microsoft's signing key:
 - `sudo rpm --import https://packages.microsoft.com/keys/microsoft.asc`
- Refresh your repositories:
 - `sudo zypper --gpg-auto-import-keys refresh`
- Run the following commands to install SQL Server:
 - `sudo zypper install -y mssql-server`
- After the package installation finishes, run `mssql-conf setup` and follow the prompts to set the SA password and choose your edition:
 - `sudo /opt/mssql/bin/mssql-conf setup`
- Bonus points
 - Similar process to install [mssql-tools](#) on Linux
 - Accessed by SQL Server Management Studio

Q: Do you currently leverage containers for SQL Server deployments ?



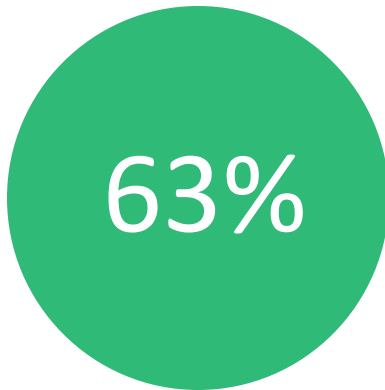
Containers



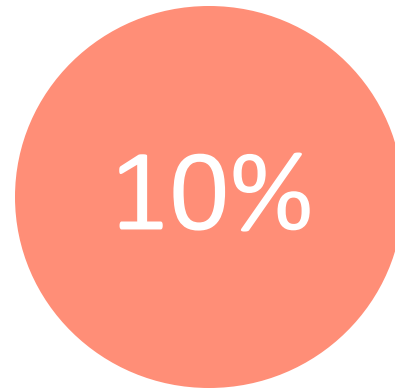
Container Adoption is Becoming Mainstream



Deployed into
production

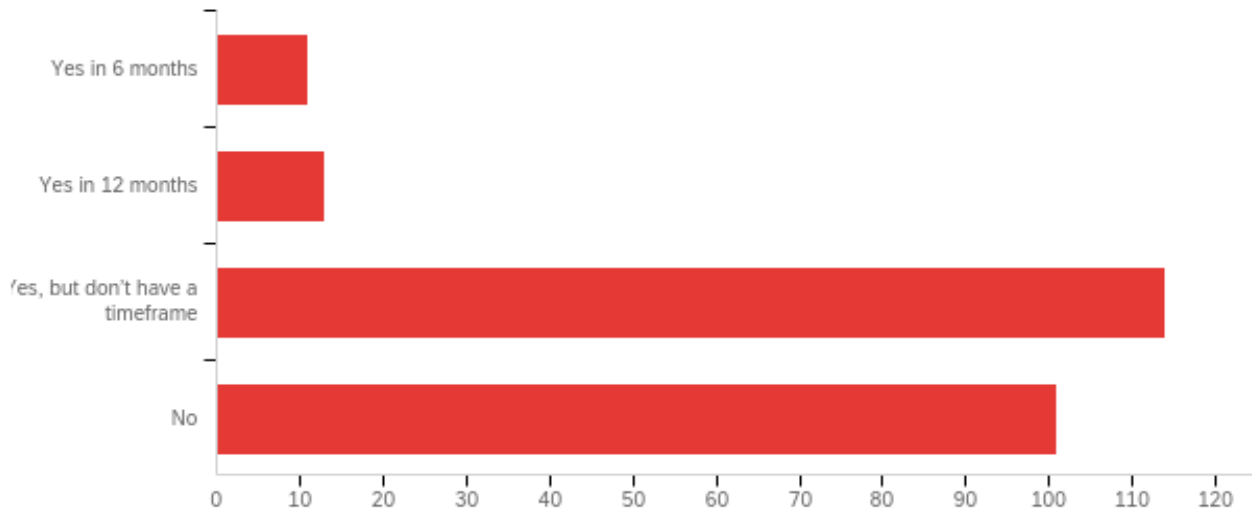


Testing and
evaluating



No plans

Q: Are you planning to leverage containers for SQL Server deployments ?



Why SQL Server Containers



Portable

Run anywhere with a container runtime



Lightweight

Reduced disk, CPU, and memory footprint



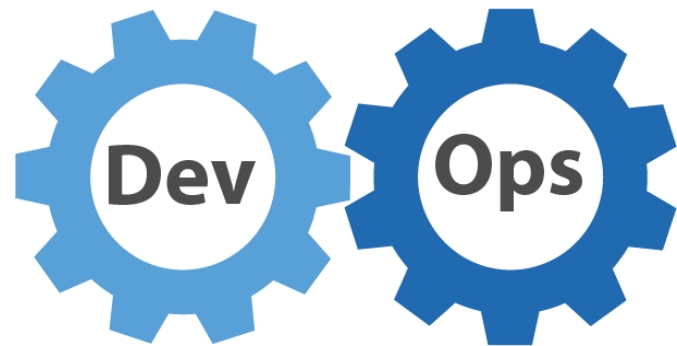
Consistent

Consistent image of SQL Server, scripts, and tools



Efficient

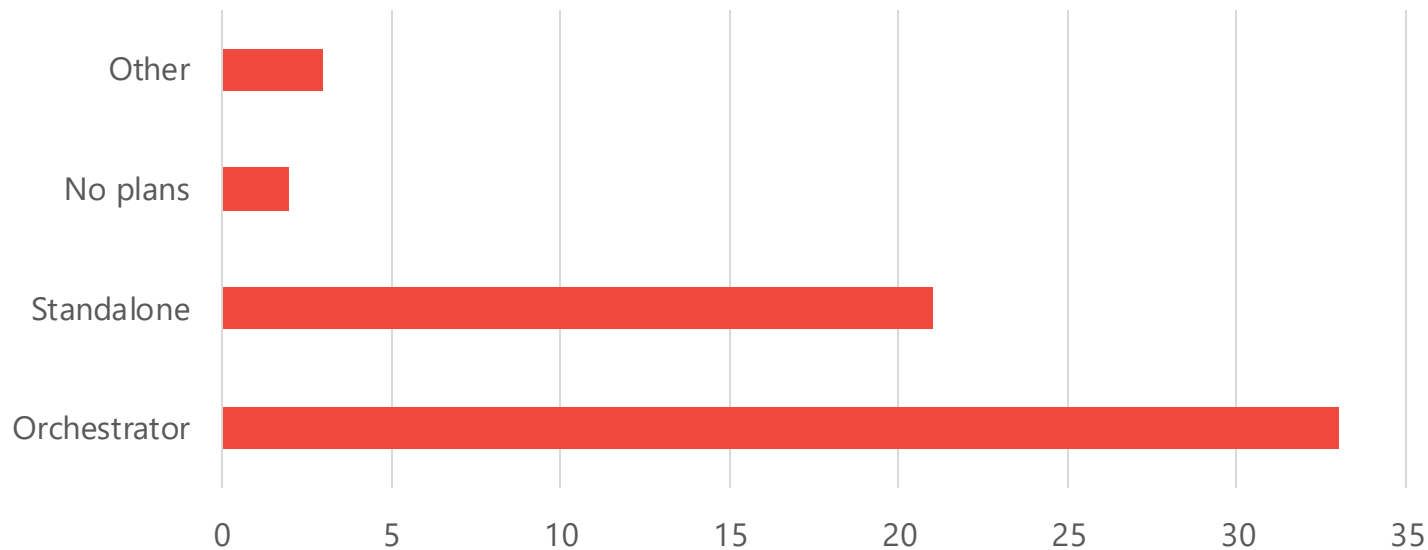
Faster deployment, simplified patching, and less downtime



SQL Server on Containers: Easier

- [Deploy](#) On Container Host
- Download the Microsoft SQL Server container image:
 - `docker pull mcr.microsoft.com/mssql/server:2019-latest`
 - `podman pull mcr.microsoft.com/mssql/server:2019-latest`
- Run the container:
 - `docker run -e "ACCEPT_EULA=Y" -e "SA_PASSWORD=<YourStrong@Passw0rd>" \`
 `-p 1433:1433 --name sql1 -h sql1 \`
 `-d mcr.microsoft.com/mssql/server:2019-latest`
 - `podman run -e "ACCEPT_EULA=Y" -e "SA_PASSWORD=<YourStrong@Passw0rd>" \`
 `-p 1433:1433 --name sql1 -h sql1 \`
 `-d mcr.microsoft.com/mssql/server:2019-latest`
- FYI, you can also [build](#) your own container image, based upon SUSE Linux Enterprise Server and store in your own container registry

Q: How do you deploy SQL Server Containers ?



Deploying at Scale Requires Automation

Orchestration

- Scheduling
 - Service discovery
 - Resource Allocation
-

Performance and availability

- Scaling
 - Load balancing
 - Self-healing
 - Monitoring
-

Maintenance

- Rollout
- Rollback



SUSE CaaS Platform

Enable IT and DevOps professionals to more easily deploy, manage and scale container-based applications and services.



- **Accelerate** modern application delivery with Kubernetes, today's leading container management platform.
- **Simplify** Kubernetes administration, with an exceptional operator experience.
- **Maximize** return on your investment with a flexible, no lock-in solution.

1

Complete package for
faster time-to-value

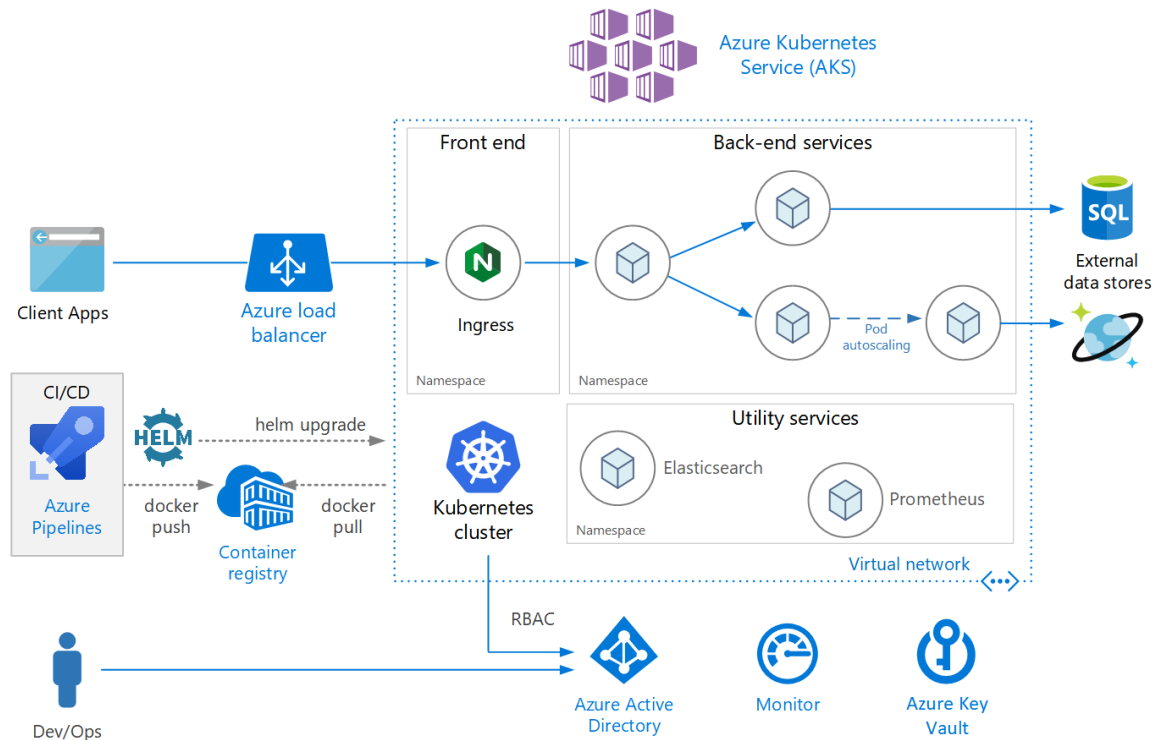
3

Public clouds offer pre-
defined deployment
configurations

75%

Enterprises will be running
containerized workloads in
production by 2022

Azure Kubernetes Service (AKS)



SQL Server 2019 and Linux and Containers

New Features for Linux

- Replication
- Change Data Capture
- Distributed transactions
- Machine Learning
- Polybase
- Tempdb files auto-config

Containers

- Microsoft Container Registry
- Images (Ready built or Build Your Own)
- Non-root Containers
- SQL Server on Windows Containers (Private Preview)

Windows



Linux



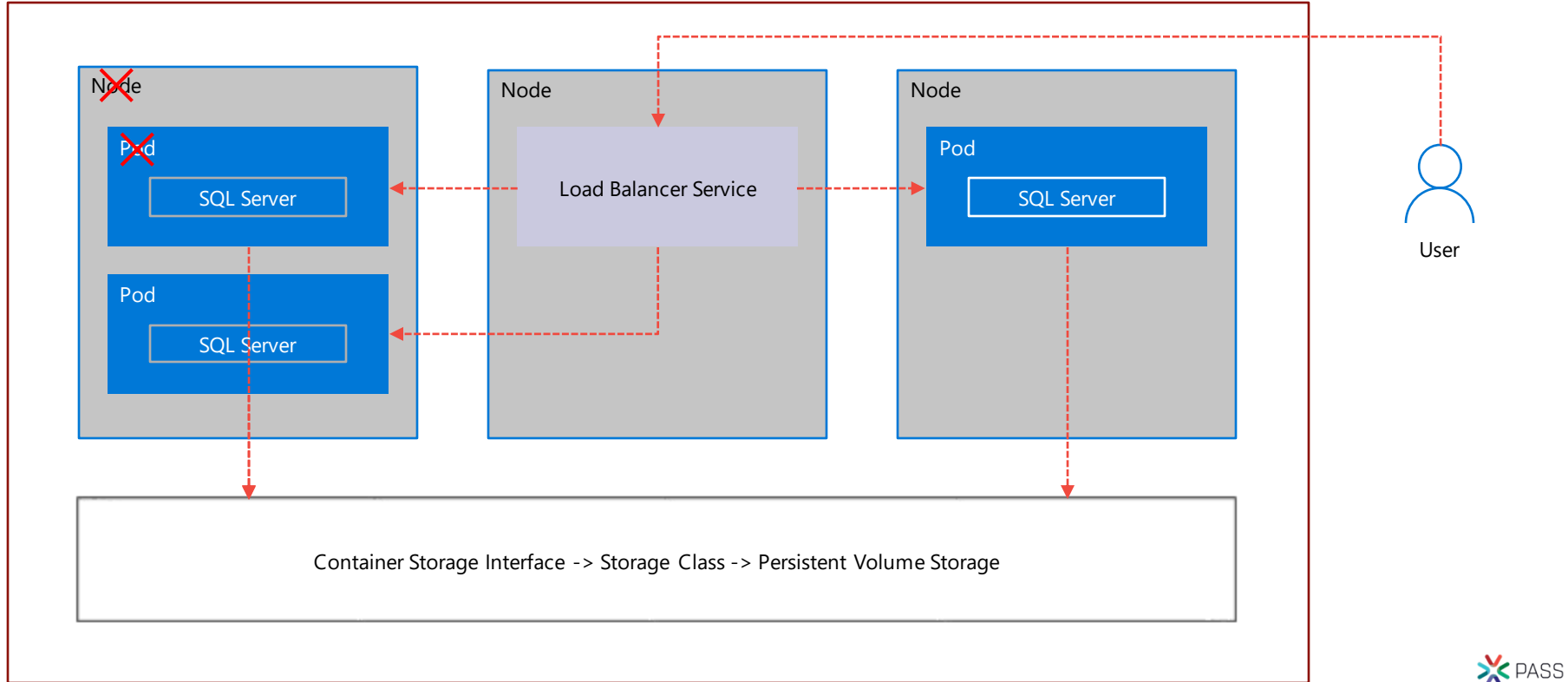
Containers and Kubernetes



SQL Server on Kubernetes: *Easiest*

- [Deploy](#) On Kubernetes (leveraging underlying kubectl configuration file for the target cluster)
- Download, install and run the Microsoft SQL Server:
 - `helm install --name sql-server stable/mssql-linux --set acceptEula.value=Y --set sapassword=Testing1122 --set edition.value=Developer`

SQL Server in Kubernetes



SUSE Enterprise Storage

An intelligent software-defined storage management solution, powered by Ceph technology that enables IT to transform their enterprise storage infrastructure to:



- **Deploy a highly scalable** and resilient environment with no single points of failure.
- **Reduce IT costs** by using commodity off-the-shelf servers and disk drives.
- **Automatically optimize and add storage** when needed without disruption.

Reduce

Capital
Expenditures

Cut

Operational
Expenditures

Adapt

Quickly to Changing
Market Conditions

The core of SUSE Enterprise Storage

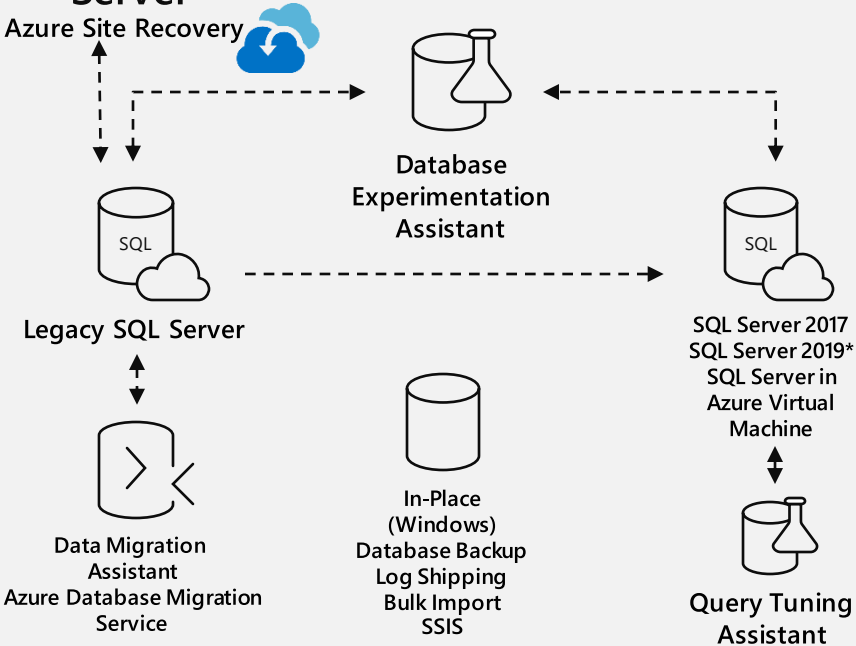
- Users run SUSE Enterprise Storage or another application in the public cloud and seamlessly copy data into that public cloud deployment
- It's a must for any hybrid cloud deployment
- Ceph-to-Ceph mirroring



Migrate to the Modern SQL Server

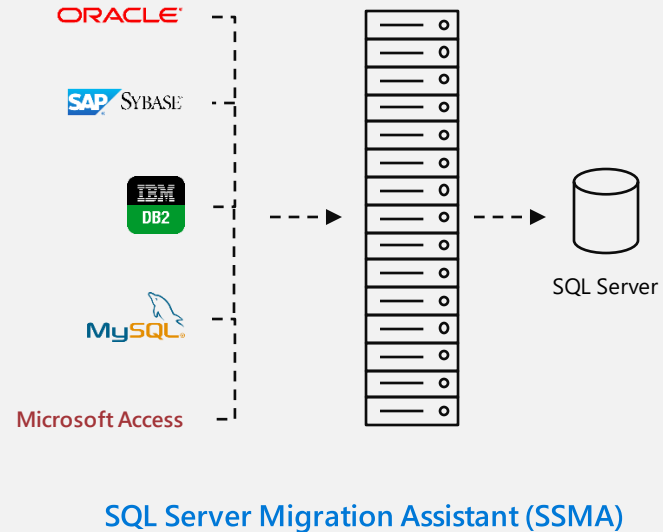
Migration from legacy SQL

Server



* Coming by GA

Migration from external databases



Summary

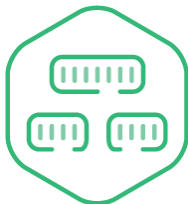
- SQL Server deployments
 - Consider OS migration -> Linux
 - Consider repackaging -> Containers
 - Consider orchestration -> Kubernetes

[x] Simplify

[x] Modernize

[x] Accelerate

Reference Material



CAAS

SUSE CaaS Platform

Product Information:

<https://www.suse.com/products/caas-platform/>

Documentation:

<https://documentation.suse.com/suse-caasp/4.5/>



SES

SUSE Enterprise Storage

Product Information:

<https://www.suse.com/products/suse-enterprise-storage/>

Documentation:

<https://documentation.suse.com/ses/7/>

SQL Server Survey

<https://bit.ly/31UE3Jk>



This survey is intended to assess the state of Microsoft SQL Server deployments leveraging Linux operating systems, public cloud, and containers.

First 10 respondents (who enter contact information) at the end of this survey will receive a SUSE plush chameleon.

- Survey closes on Nov 30th
- SUSE plush chameleons will be shipped as soon as we hit our first 10 respondents
- Only one entry per person allowed.

Thank you for letting us pick your brain!
SUSE Alliance Team for Microsoft

Session Evaluation

Submit before
Friday, Nov. 20
at 5pm EST to
win prizes

Your feedback is important to us!

Please visit the "**Session Evaluation**"
link in the left hand side navigation
bar to rate this session.

Thank you

Bryan Gartner



/bryangartner



bryan.gartner@suse.com