

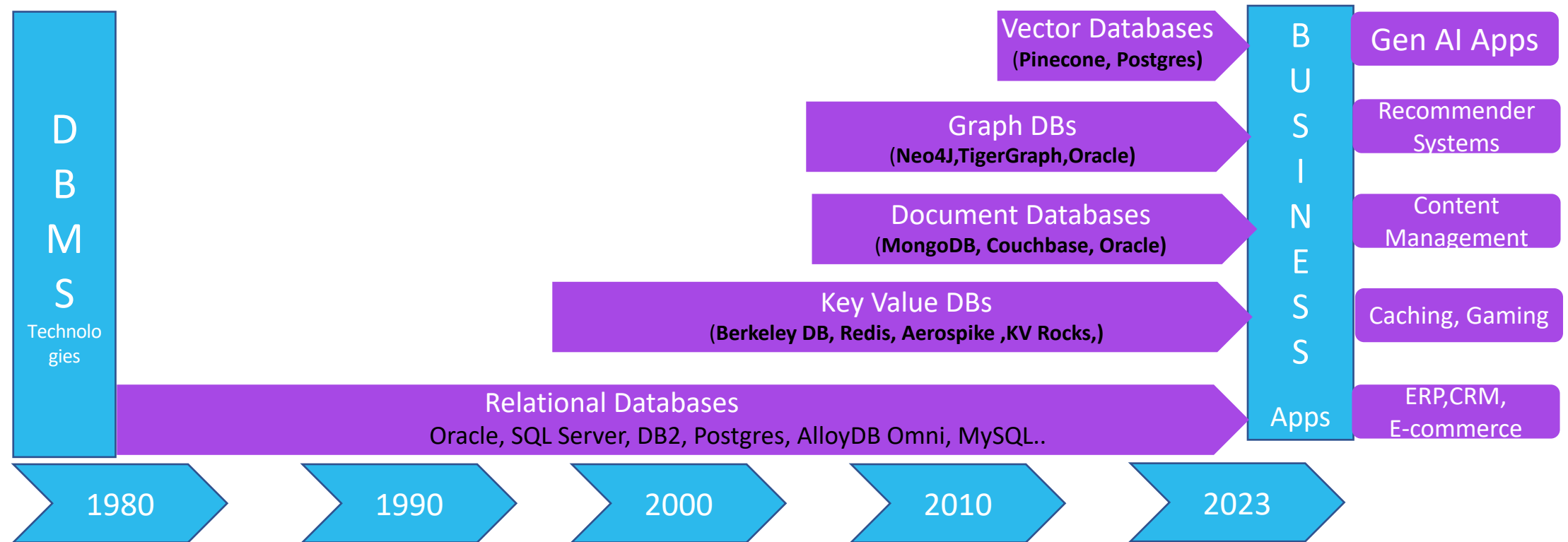
Building High Performant & Scalable Data Infrastructure for Database Deployments

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Sr Director – Product | Solutions Pliops



Database Technology Evolution & Apps Adoption



Storage Technology Evolution & Performance



Image credit: Intel

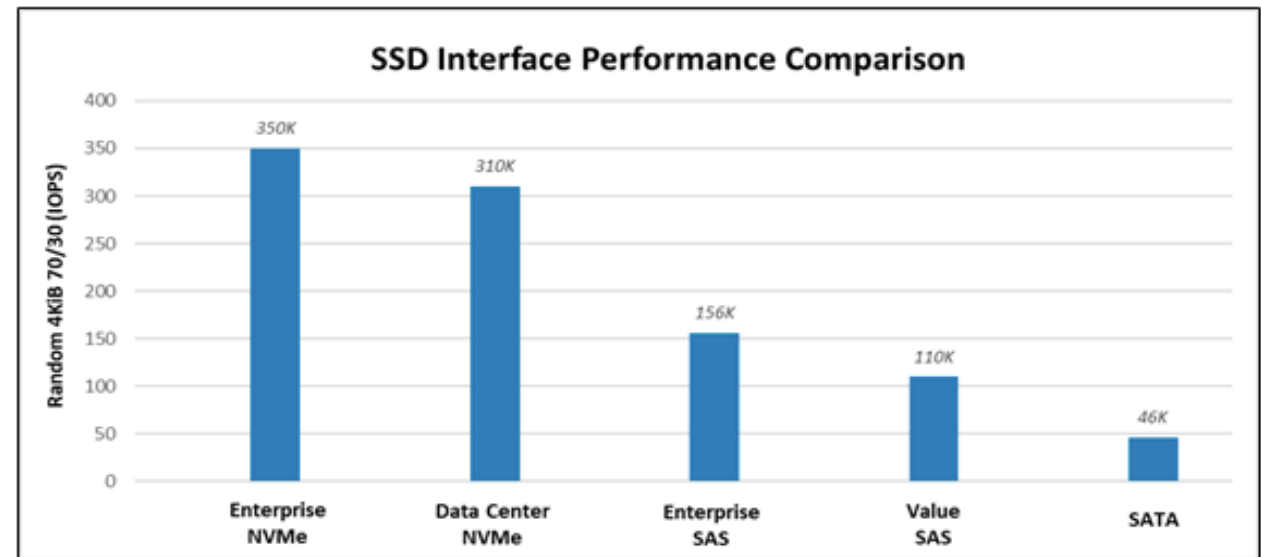
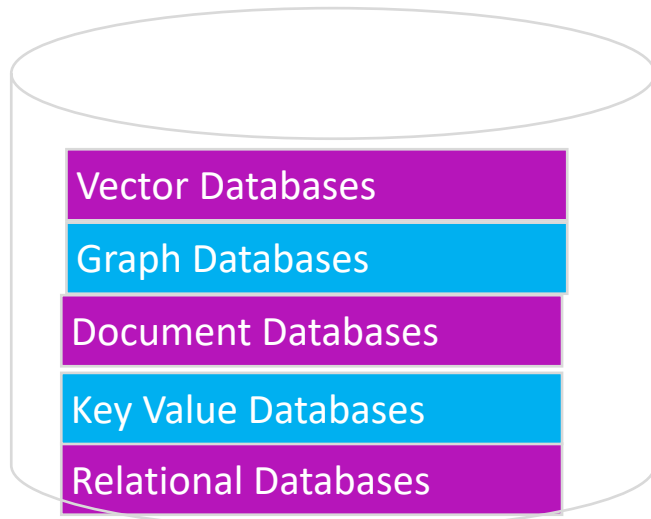


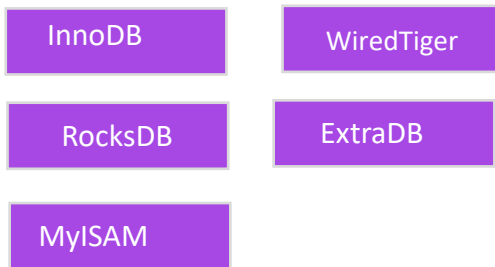
Figure 1. Random 4KiB 70/30 IOPS variances for each storage interface

Databases Technology: Infrastructure Challenges



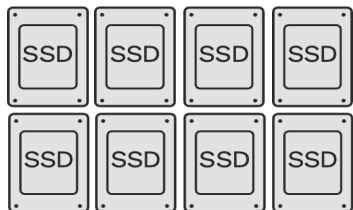
Compression

Storage Engines



- ↑ CPU Consumption
- ↑ IO Amplification
- ↑ Storage Capacity Amplification

Storage Engine Challenges

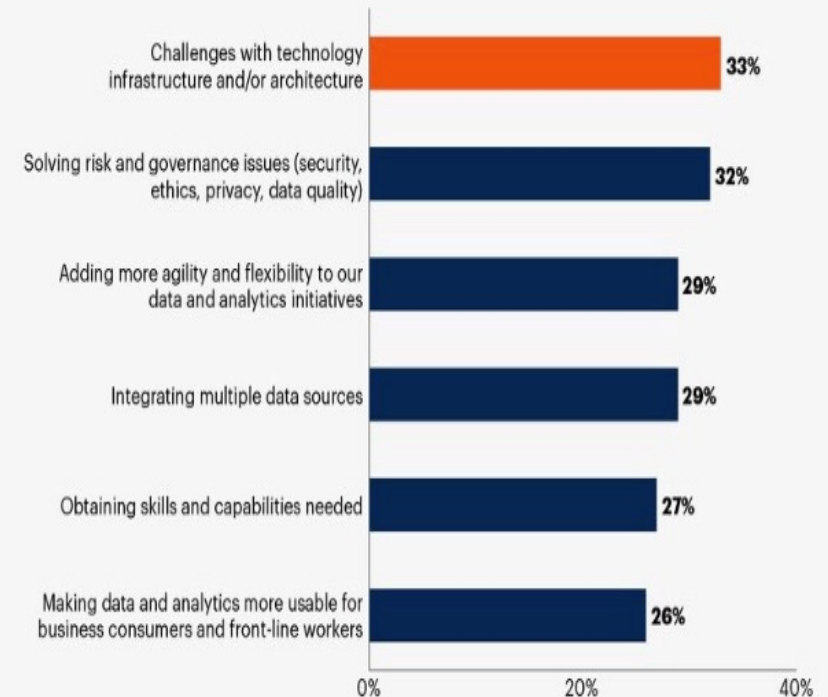


Data Protection
Data Sequentialization

Storage Management Challenges

Top Internal Challenges in Adopting Data and Analytics

Top 3 Rank Sum



n = 270, total respondents, excluding "don't know"

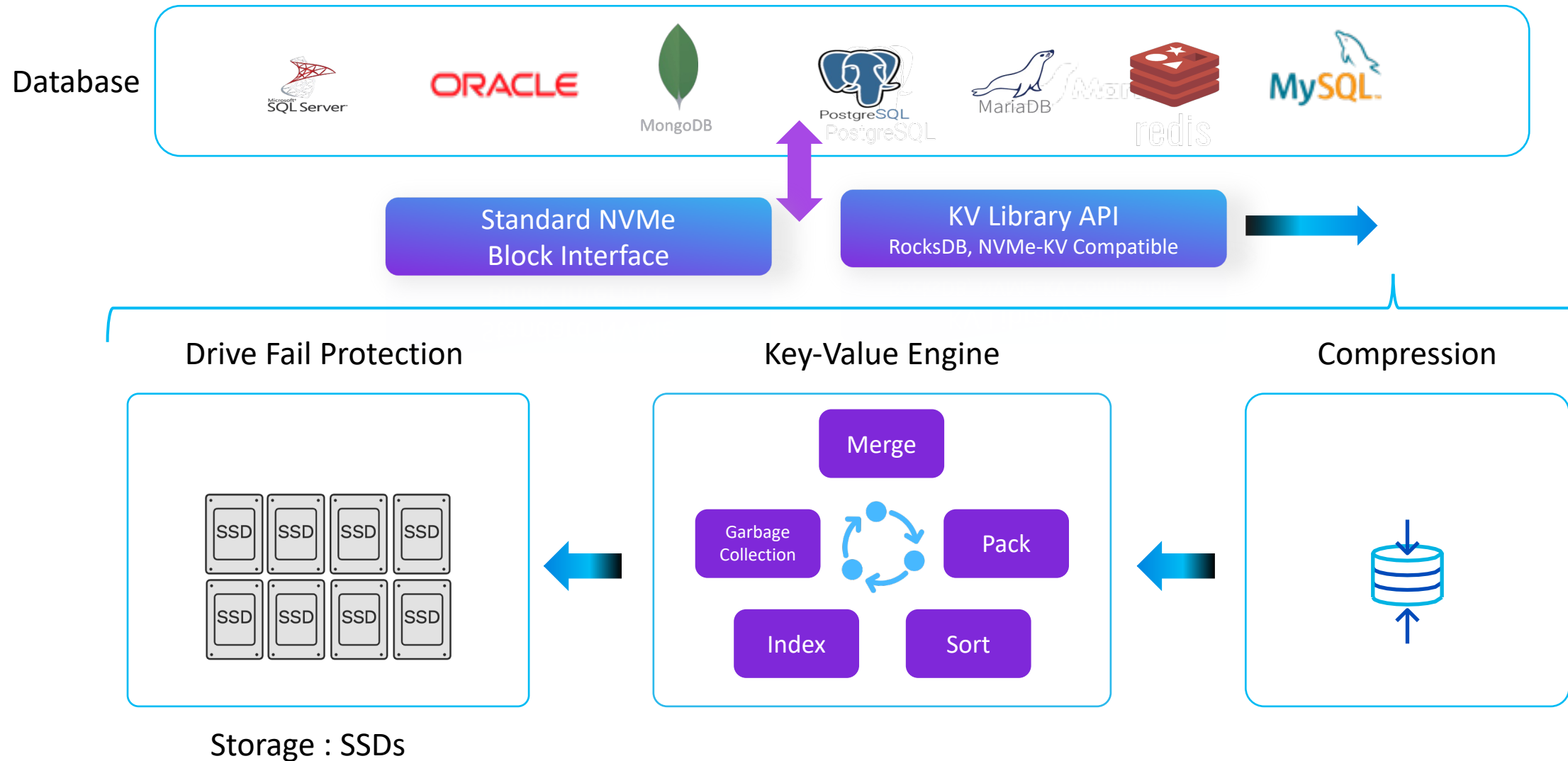
Q02: What are your organization's top three internal hurdles or challenges in adopting data and analytics?

Source: Gartner (December 2019); data from Gartner's data and analytics adoption survey

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Gartner

Unified Approach to Database Infrastructure



MySQL Performance Acceleration

2.9X Performance Scaling with Pliops XDP

2.9X Aggregate Higher
TPM

44% per Instance

■ TPS ■ ■ ■

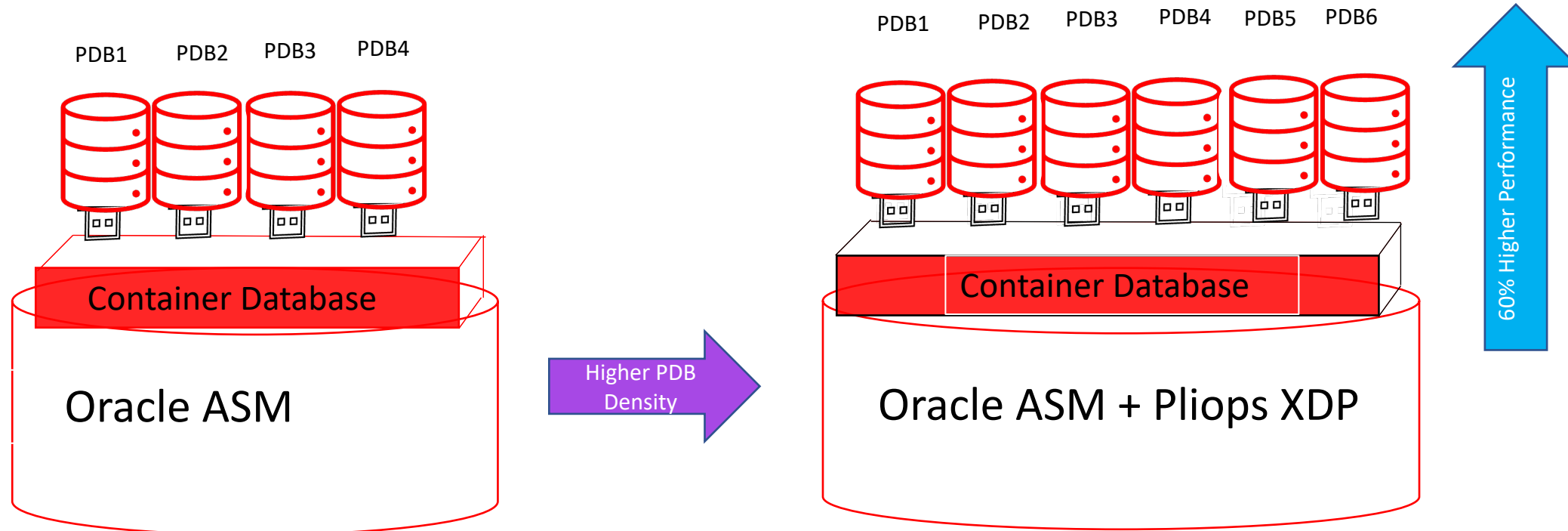
2X User Scaling & Latency Reduction

256 Users

512 Users

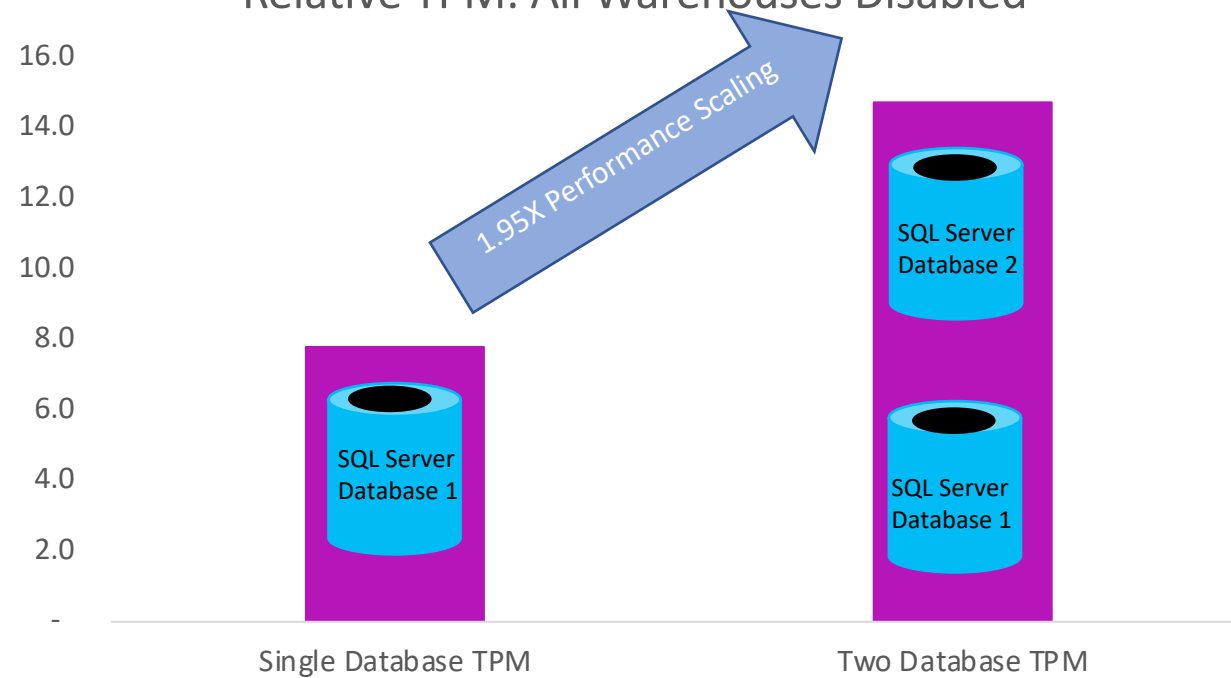
43% Latency Reduction

Oracle Pluggable Database Consolidation

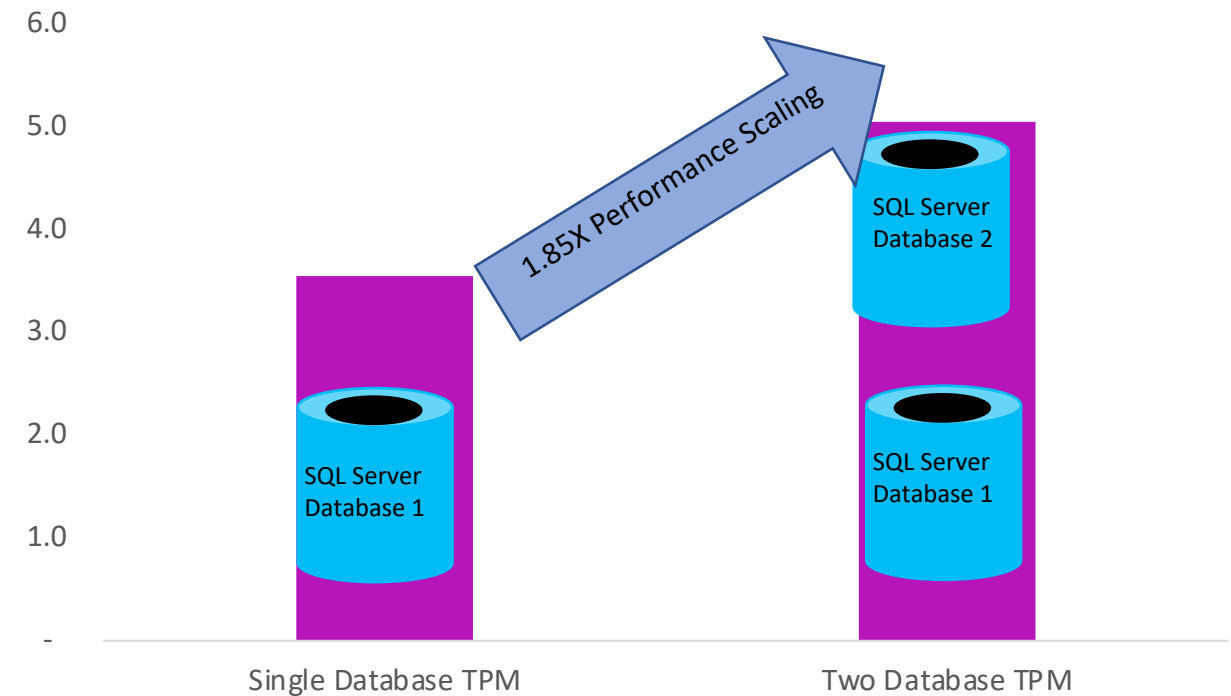


SQL Server 2022 Performance Scaling

Relative TPM: All Warehouses Disabled



Relative TPM: All Warehouses Enabled



Google AlloyDB Omni Solution

Use Cases & Customer Benefits

Postgres Compatible Database

2X Performance Gains

Increase User Scalability – Support Peak demands

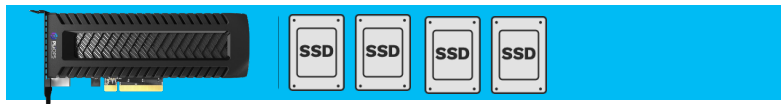
Enterprise Support & services



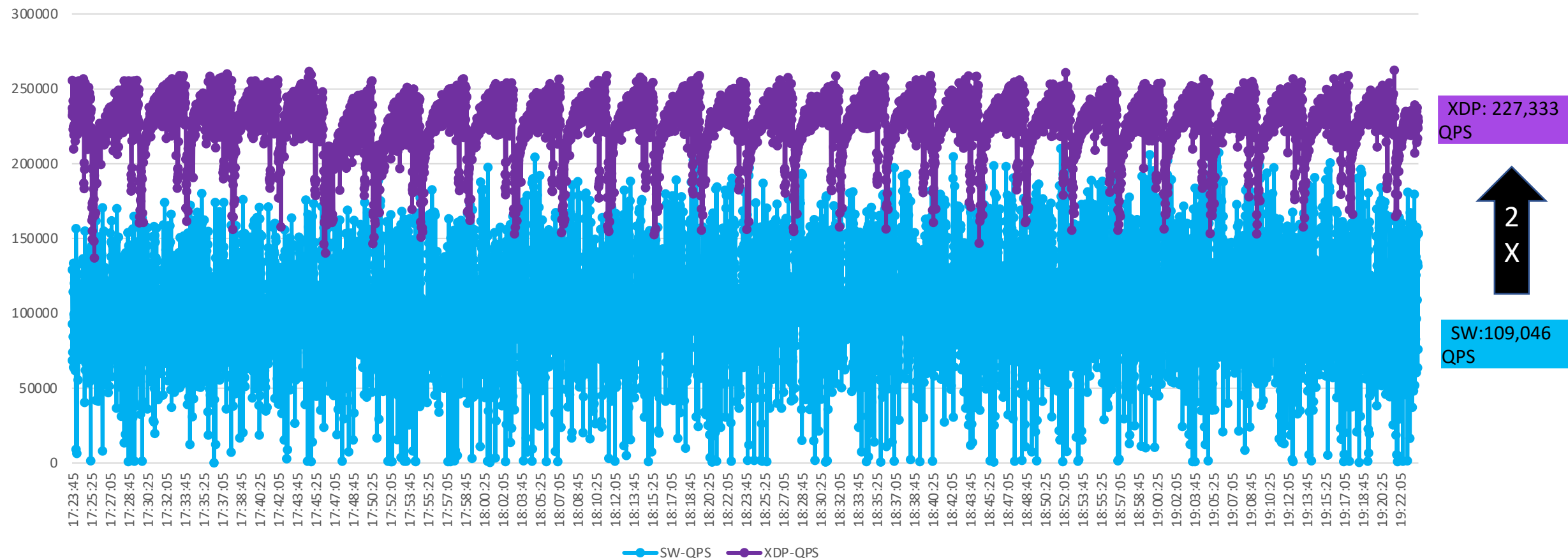
AlloyDB Omni Services –
Migration & Deployment



AlloyDB Omni



Postgres: Sustained Performance



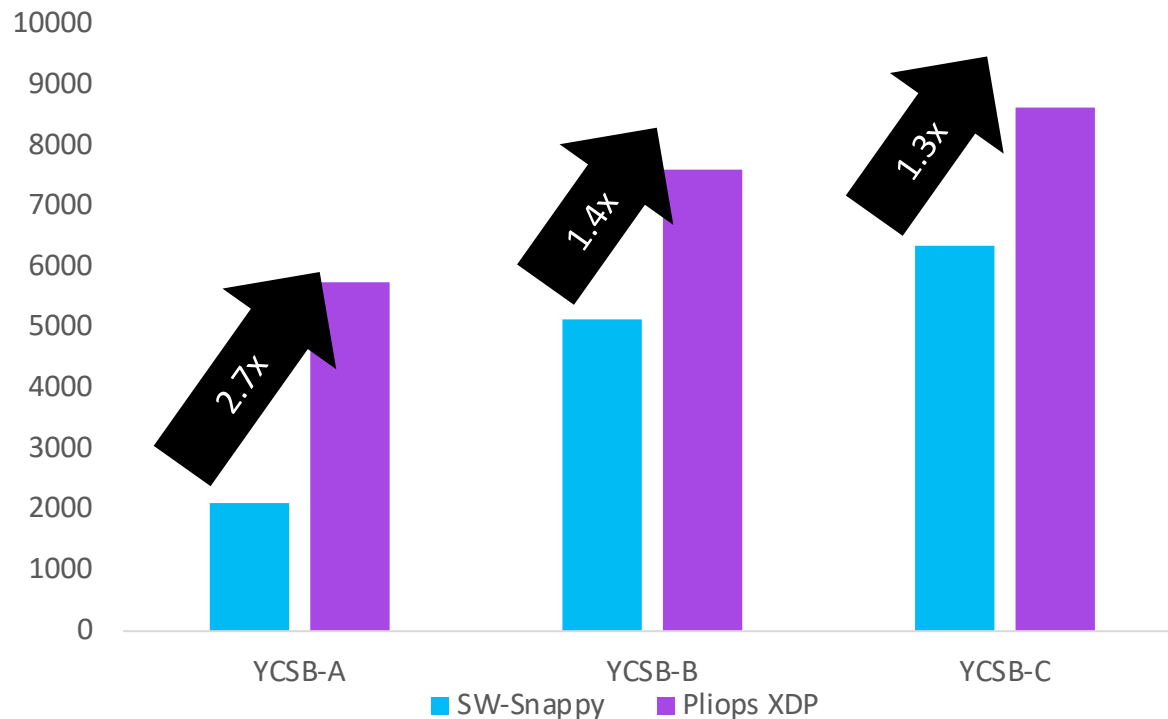
MongoDB: Performance Benefits



Flash Memory Summit



Performance per Core

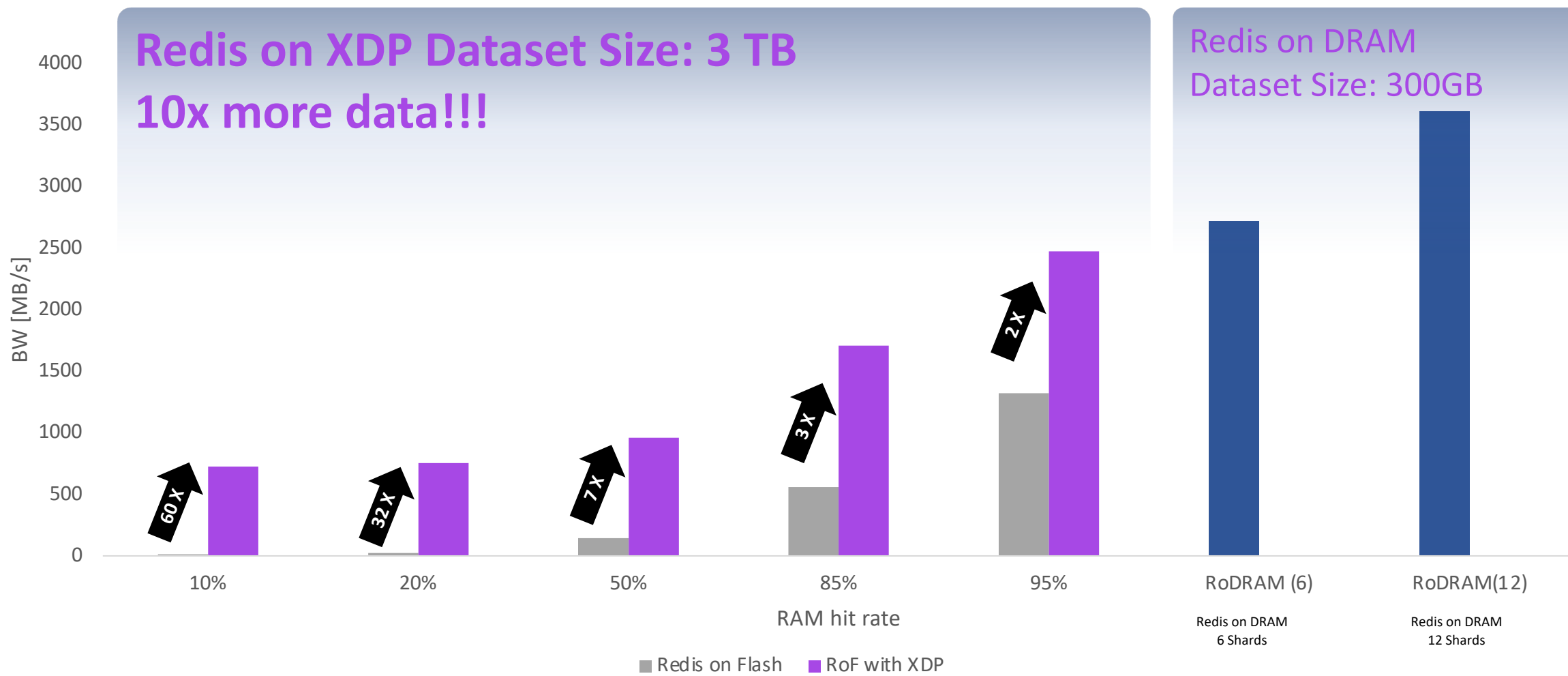


Performance & CPU Utilization

Tests	Snappy Ops/Sec	USR_CPU%	SYS_CPU%	MongoDB IOWAIT_CPU
YCSB-A	31,734	13.15	3.03	21.92
YCSB-B	66,875	13.69	4.04	14.8
YCSB-C	82,584	14.84	4.76	13.79

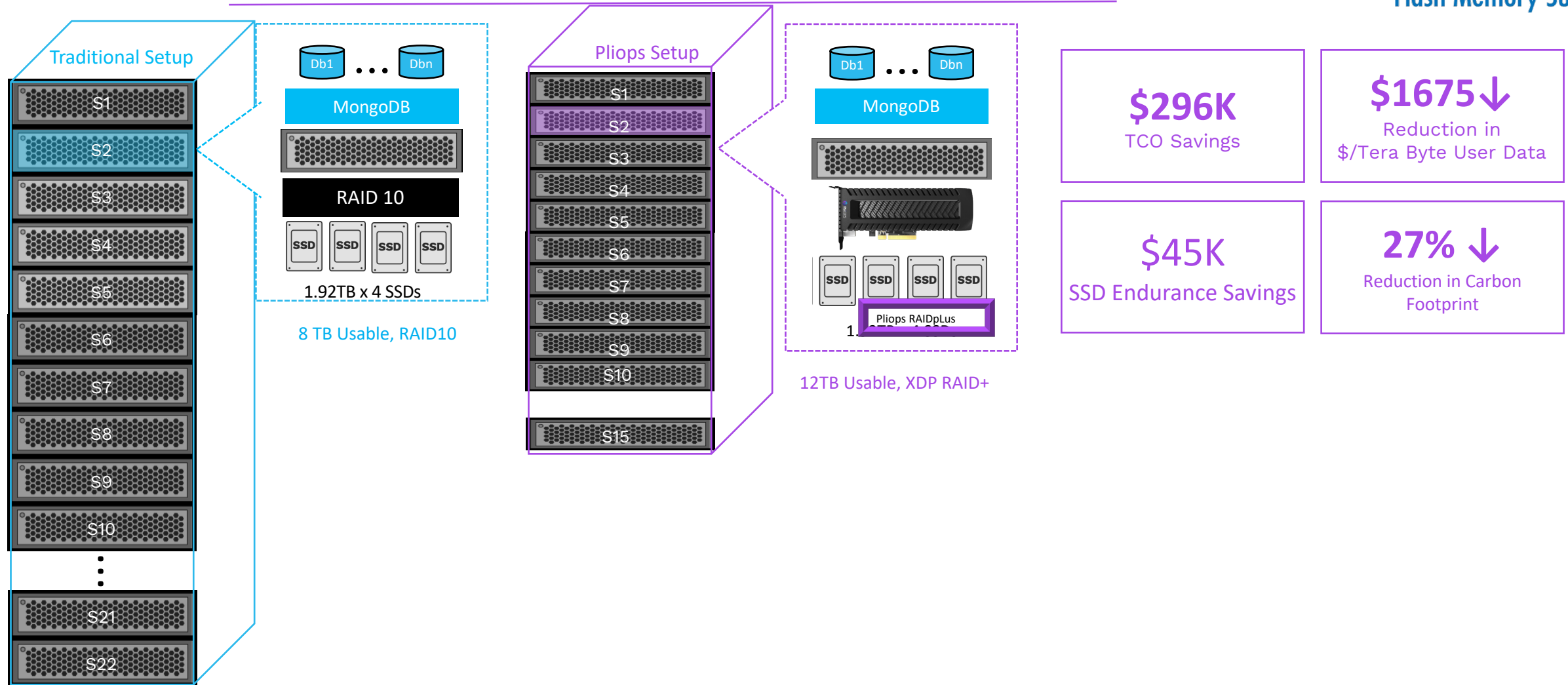
Tests	Performance	USR_CPU	SYS_CPU	IOWAIT_CPU
YCSB-A	74,845	19.13	9.47	4.18
YCSB-B	83,720	13.8	9.64	3.30
YCSB-C	86,313	12.32	9.73	3.07

Redis on XDP Performance





TCO & Sustainability Benefits with Pliops Deployment





Pliops Database Solution Portfolio Benefits

Application

Proprietary Redis-compatible persistent KV storage service.
RocksDB storage engine

ORACLE

redis

mongoDB

MySQL

PostgreSQL

MariaDB

Transformation through XDP

SQL Server
Replace RocksDB with XDP-Rocks
Performance Scaling & Backup offload
Advanced API - checkpoint, compaction filter, ...

Oracle PDB
Consolidation

Near DRAM like
Performance

Economically Scale
Datasets to Petabyte
Deployment

Db Instances & user
Scaling

Customer TCO Objective

3x server base consolidation

Standard NVMe
Host Interface

KV Library API
RocksDB, NVMe-KV Compatible

- Database Acceleration
- Latency Reduction
- User Scaling
- Capacity Expansion

Outcome

Pliops Data Acceleration & Protection

Begin with 100's of servers of Deployment



- Minimize System Resources
- Brings IO Amplification to theoretical minimums - < 1x to 2X
- Data Sequentializations
- Enhanced SSD Endurance

Thank You