



Flash Memory Summit

Empowering Real-Time Decision Making for Large-Scale Datasets with SSD-like Economics

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Sr Director – Solutions | Products Pliops

Building Next Gen Real-Time Applications

4,909 digital interactions
per user per day by 2025*

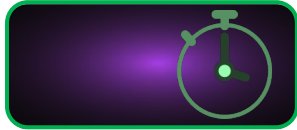


30% of the
world's data will
be real-time
by 2025*

Responding to Real-World Demands

Application Response Times

100m
Sec



1 Sec



10 Sec



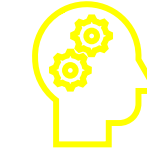
>10 Sec



User Behavior



Happy User



User Flow of
Thought Interrupted



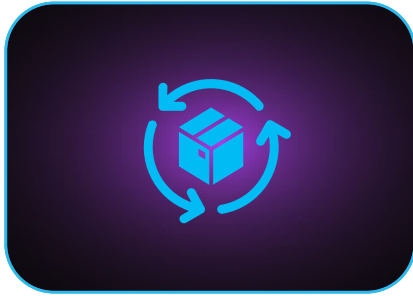
User Multi-tasking



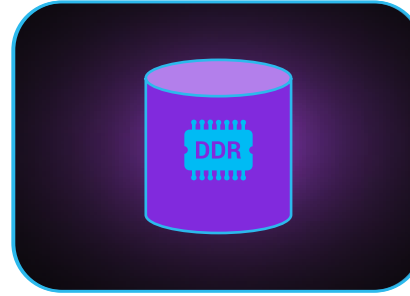
User Goodbye

Caching for Business Intelligence

Business Intelligence
Application



In-Memory
Cache



Backend Database:
RDBMS or NoSQL



1 week of data
for business insights

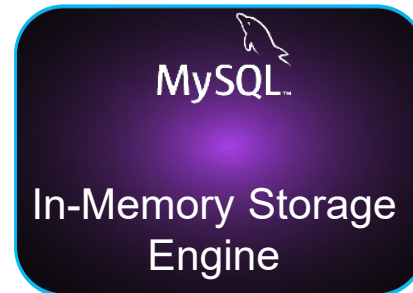


Multi-year business insights



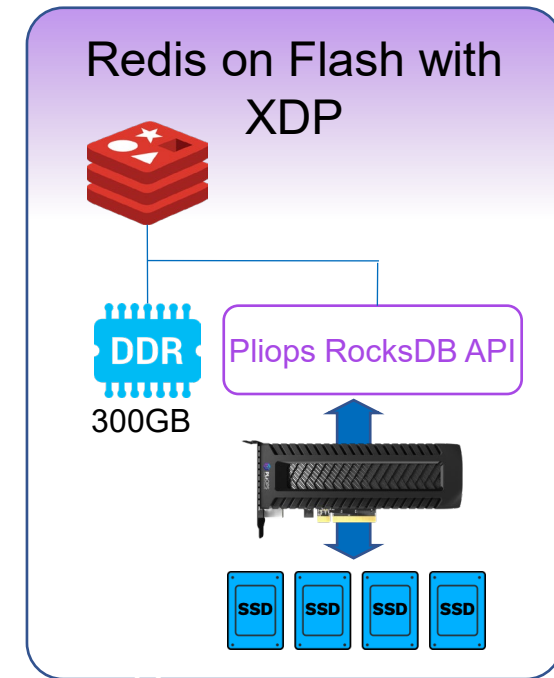
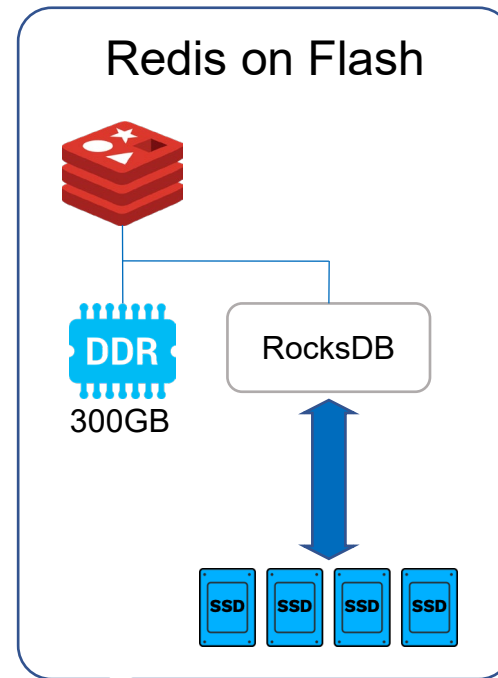
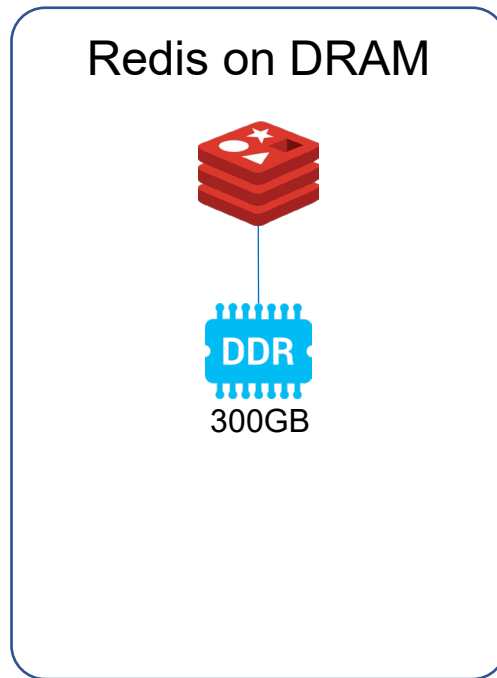
Yearly missed opportunity due to lack of business insights

In-Memory Database Application Types



MemTier Benchmark Testing with Redis

Extending In-Memory to Large Data Sets on Flash



MemTier
Benchmark

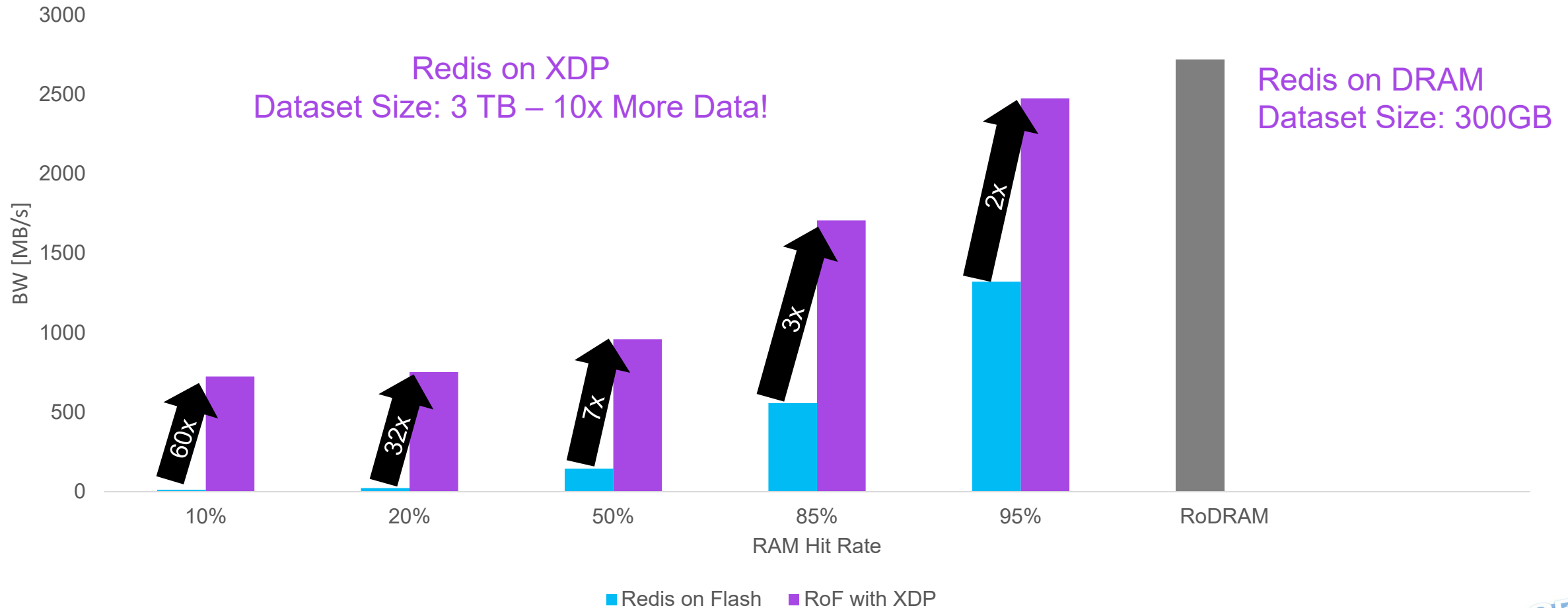
① Object Size: 4KB

② Latency Requirement:
1m Sec (+/-5%)

③ Data Set Size:
300 GB to 3TB

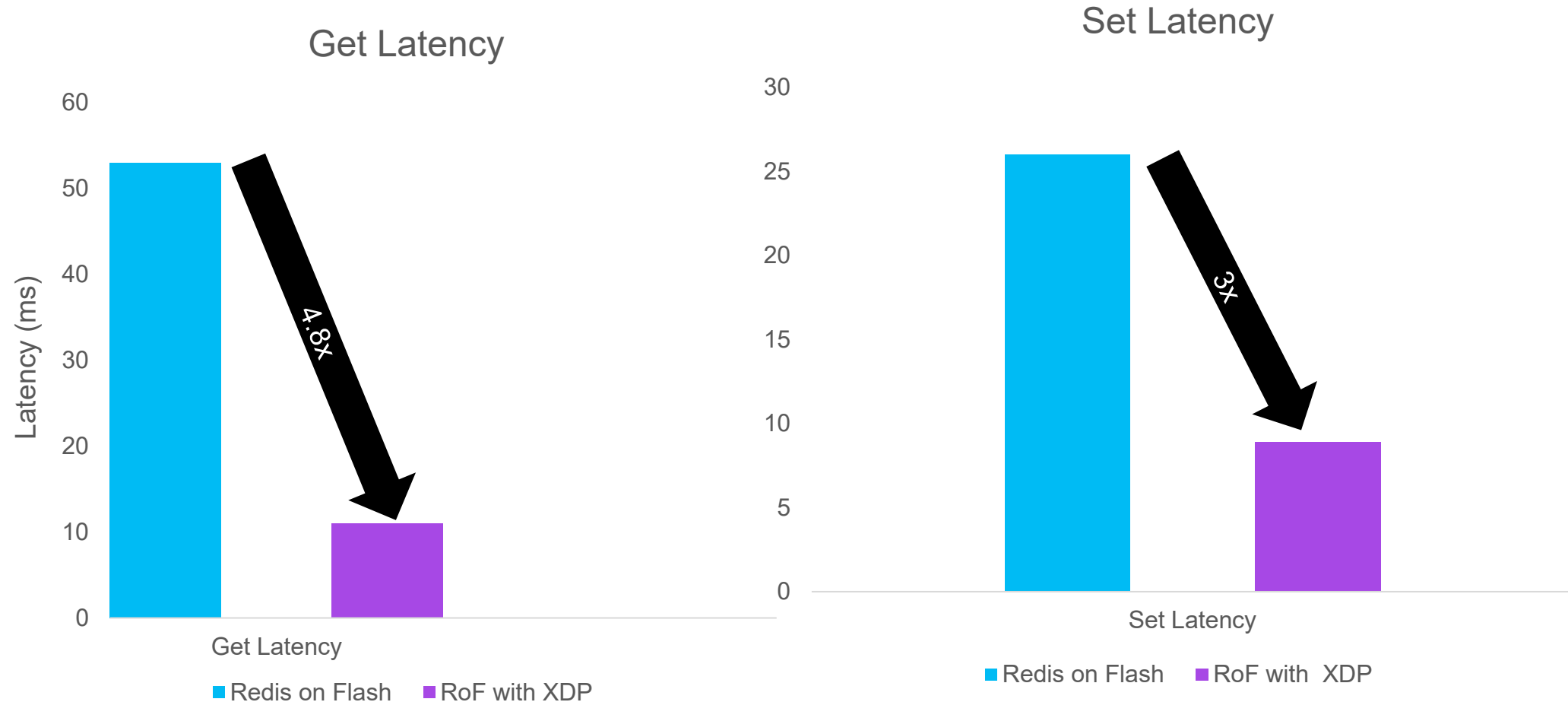
Redis on Flash: With and Without Pliops XDP

Performance at Different Hit Ratios



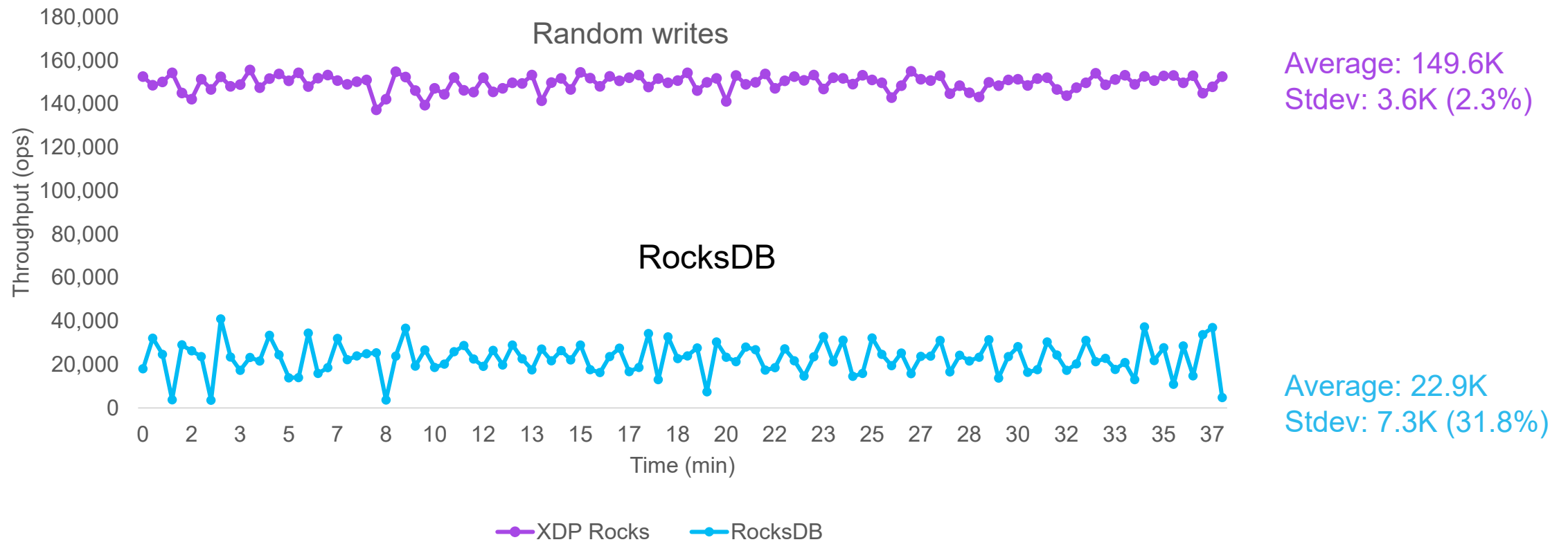
4 9's Latency : XDP Benefits over RocksDB

Serving 99.99% User Requests



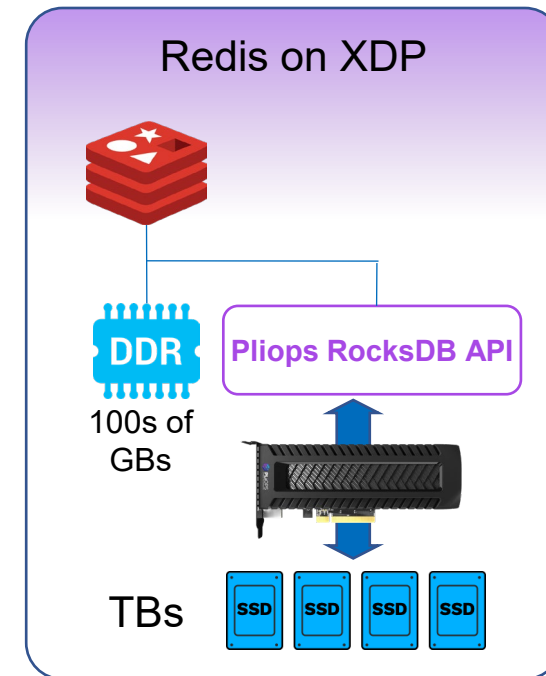
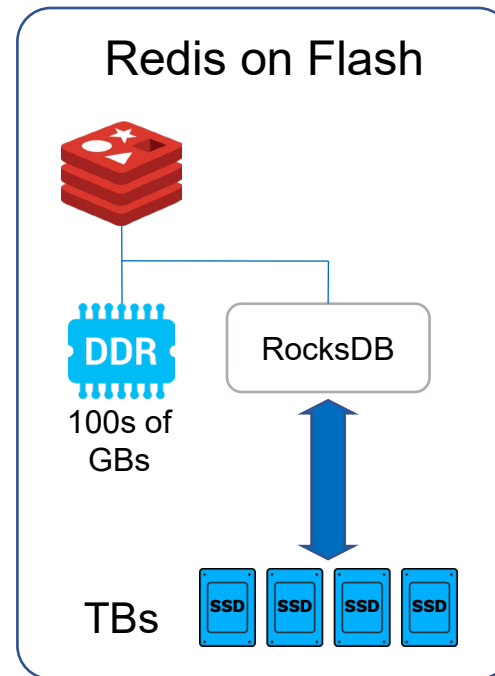
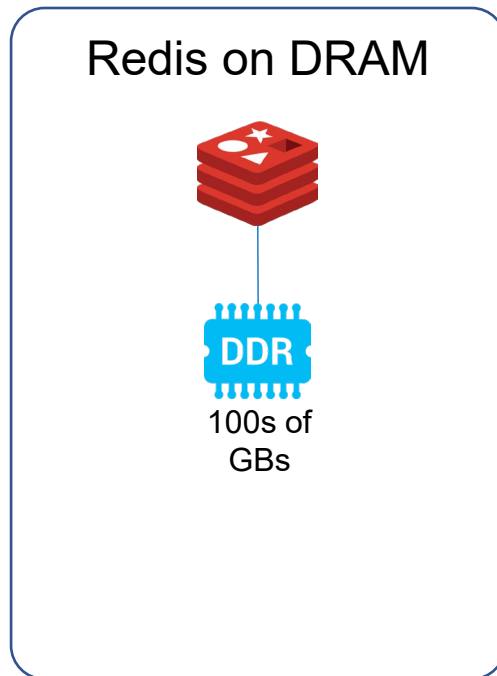
The Rationale for XDP Performance Boost

Pliops RocksDB - Write Performance



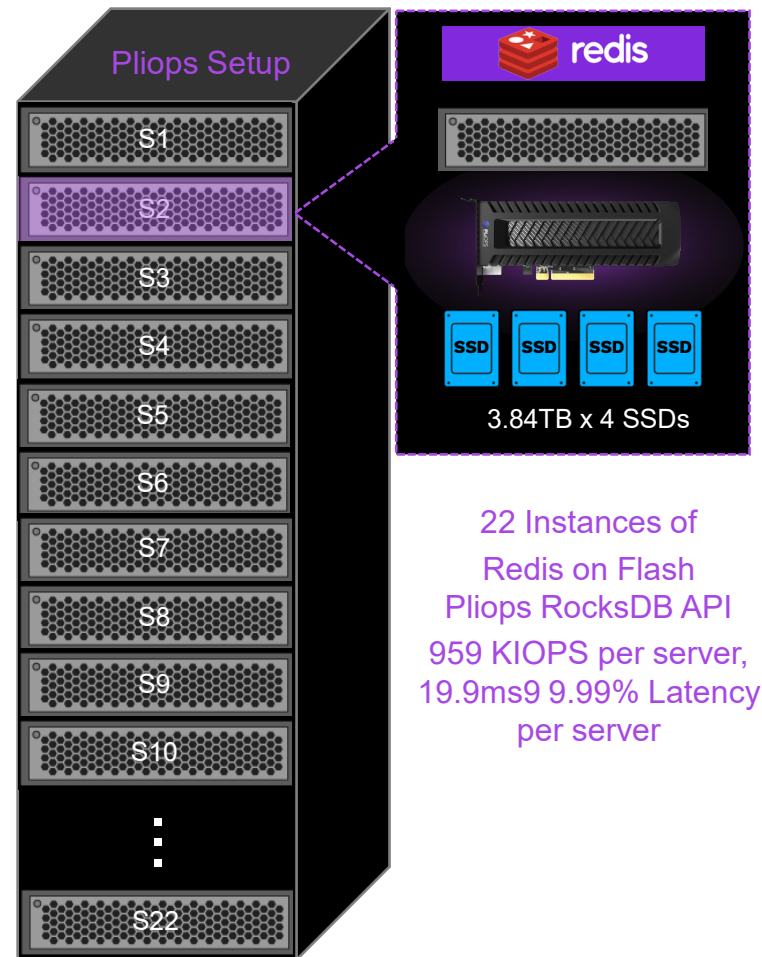
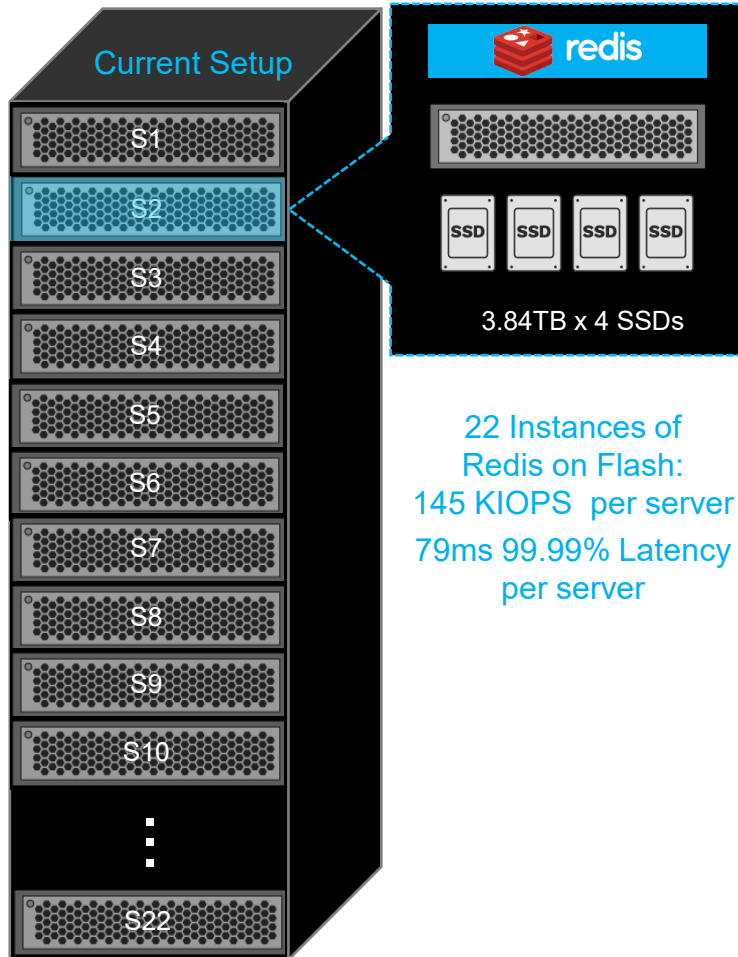


In-Memory vs. Large Data Sets on Flash



Performance	<div>✓</div>	<div>✗</div>	<div>✓</div>
Latency	<div>✓</div>	<div>✗</div>	<div>✓</div>
Data Set Size	<div>✗</div>	<div>✓</div>	<div>✓</div>
RA/WA/SA	<div>-</div>	<div>✗</div>	<div>✓</div>

Redis on Flash TCO/Performance



Redis on Flash vs Redis with Pliops XDP Customer Benefits

7x ↑
Higher Performance

4x ↓
Lower 4 9's Latency

86% ↓
TCO / IOPS Reduction

3.6x ↑
Improved Endurance



Improved Customer Experience/
Satisfaction

Real-Time Decision Making for Large Datasets

Business Intelligence
Applications



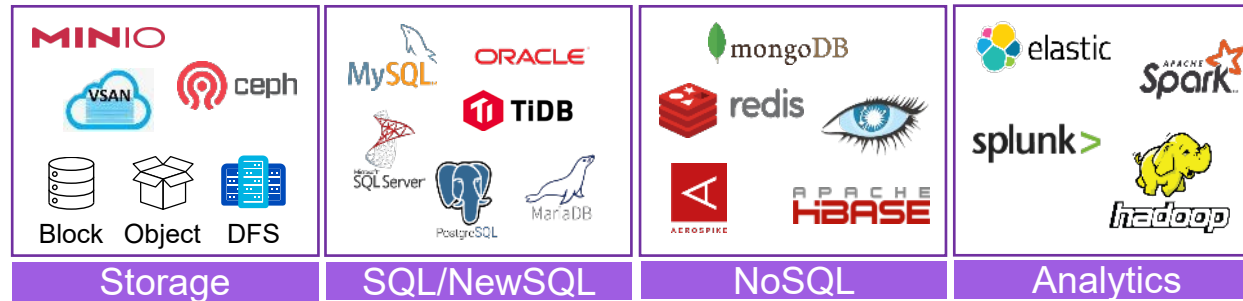
Seamlessly Scaling In-Memory Cache
Unify Cache & Backend Database



Multi-year business insights



Storage Engines Powering Several Applications



System resource consumption

30-70% CPU Consumption
2,000-10,000% IO Amplification

20%-500%
 Storage Capacity Amplification

10-100%
 CPU Consumption

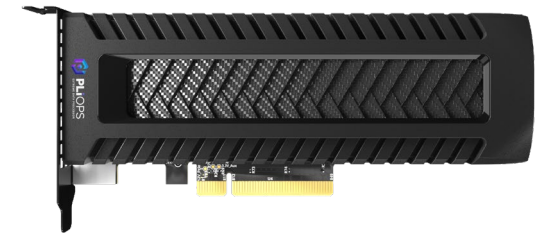
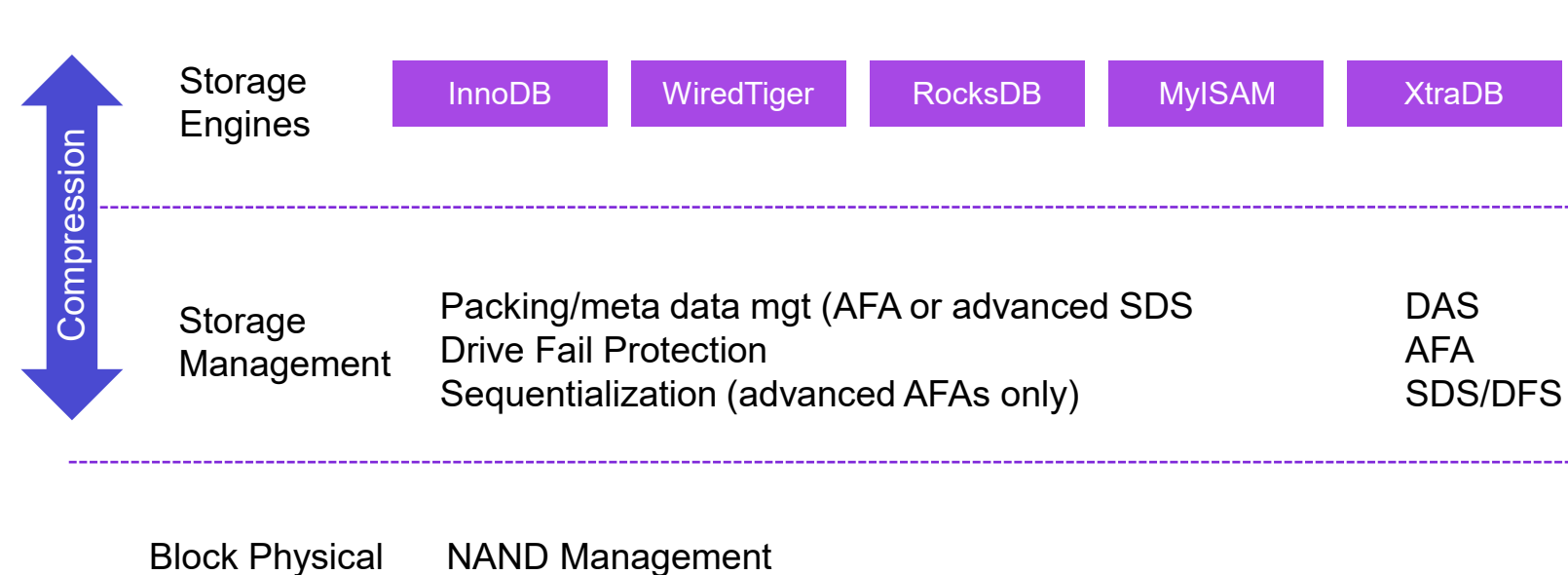
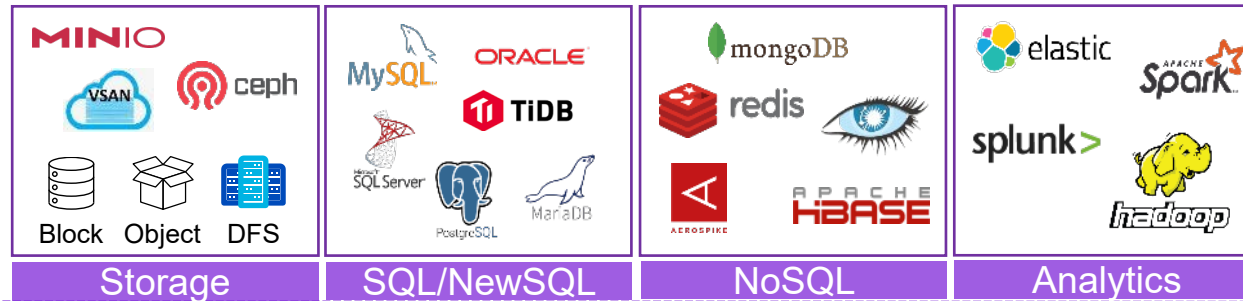
300-600%
 Storage Capacity Amplification

15-50%

Cost of SSD DRAM, Processor,
 NAND overprovisioning

More than half of system resources are devoted to storage engines and services!

Pliops XDP Accelerates Core Storage Functions



- Collapse layers into one optimal device
- Removes 50-500% of system resources
- Brings IO Amplification to theoretical minimums - < 1x to 3x max
- Near universal applicability

Enables extreme scaling for nearly all flash-based workloads



Thank You!