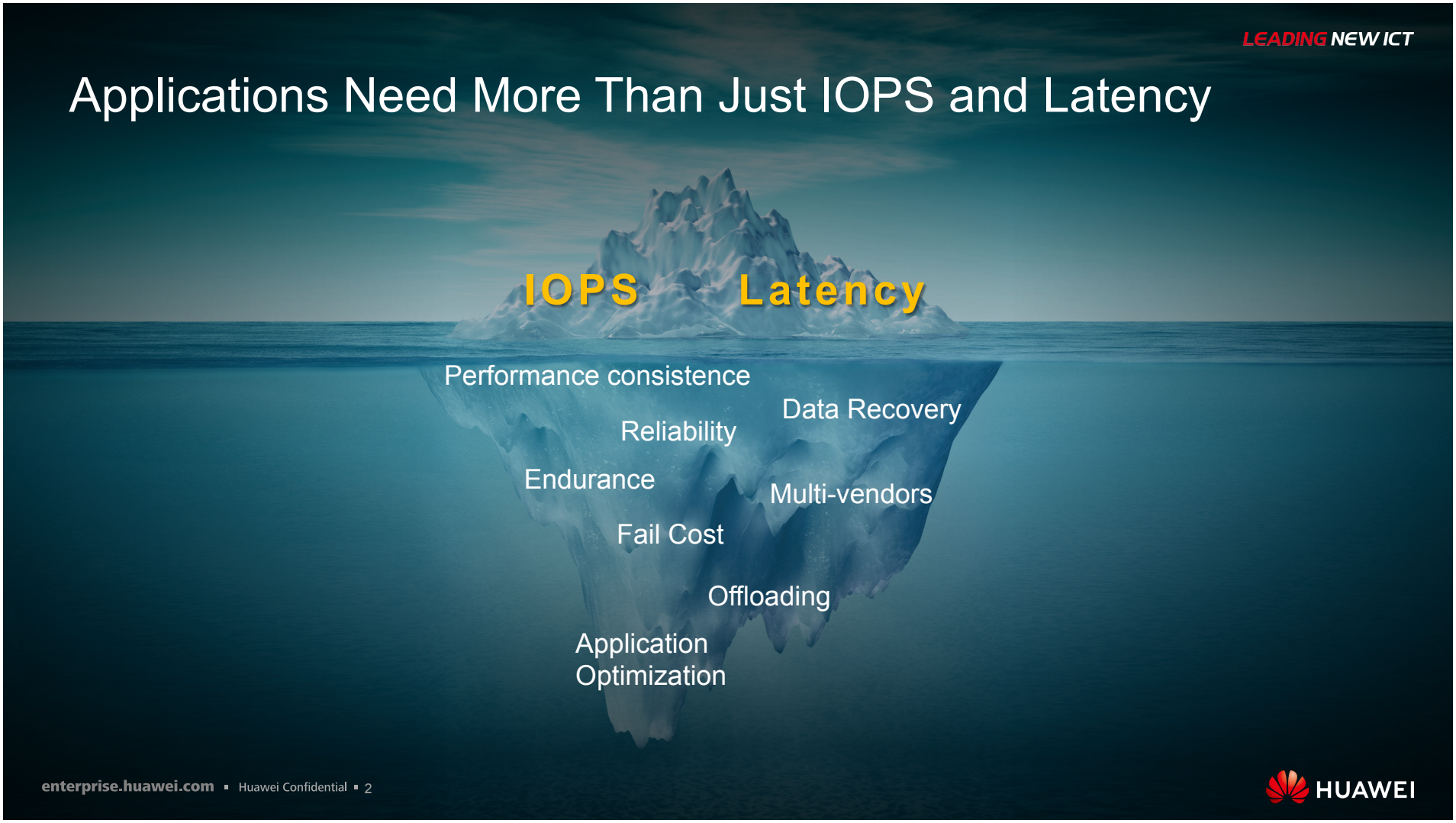
Applications Need More Than IOPS and Latency

Aug.2018

LEADING NEW ICT

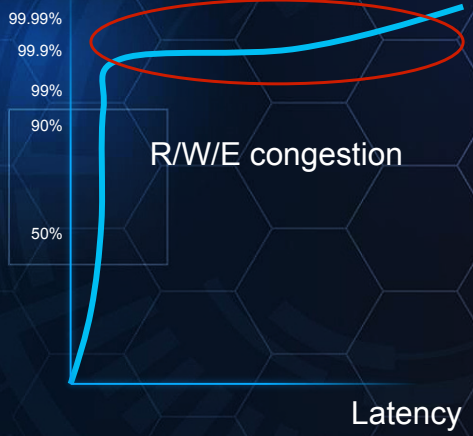
Applications Need More Than Just IOPS and Latency



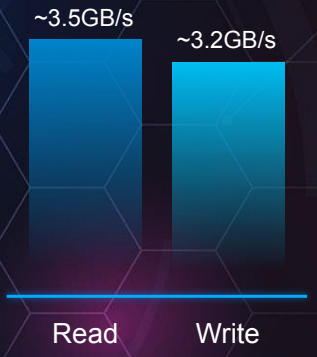
Performance Consistency

Write IOPS

Consistency



Interface Limit



~3.6GB/s

nvm EXPRESS®

PCIe 3.0 X 4

1T -> 16T Bandwidth no upgrade

IOPS / GB ↓20X

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Reliability: Power Loss Protection and Data Recovery

Power loss protection challenge

SLC

QLC

Big capacity makes data recovery more difficult

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Endurance and Cost

Endurance reach critical point

Fail drive parts cost higher

X 64TB

≈

BMW3

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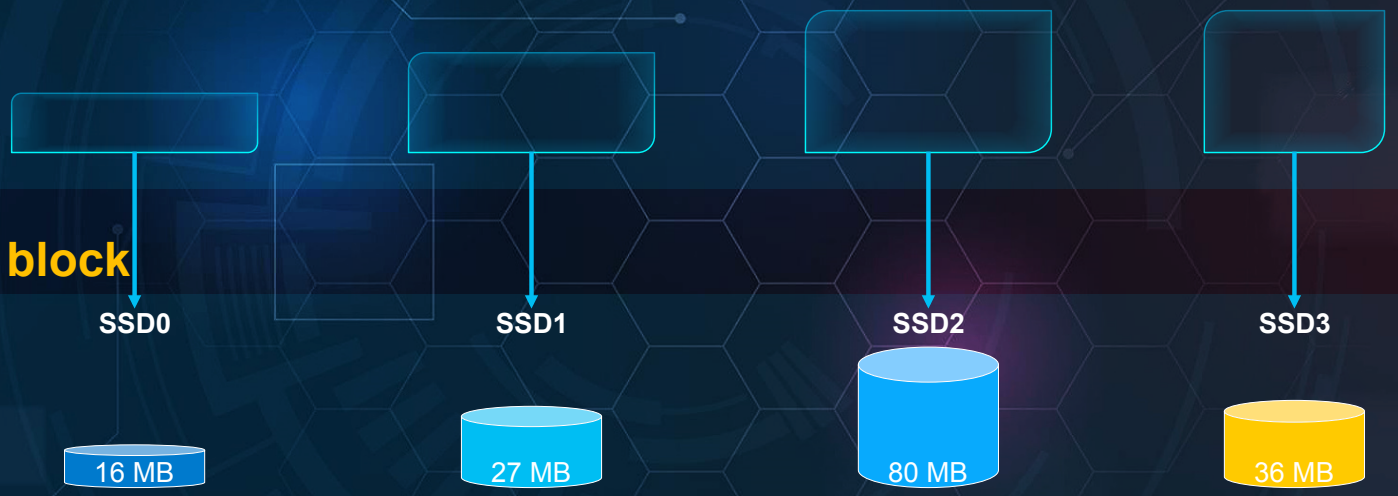
Multi Vendors Adoption

How to choose a RAID stripe size?



Differences in Erase Block Size between different manufacturers/generational Flash

Offload or Just Pull Up to The Host

The Dialog GAP Between Applications and SSD Drives

Database

SDS

Cloud

Transaction

throughput

Transaction time

…

GAP !

Bandwidth

IOPS Latency

There Is No Perfect Solution To Solve Everything

HOST Manage SSD

- Multi-Vendor Adoption
- Offloading

Standard SSD

- Performance Consistency
- Reliability
- Endurance
- Cost

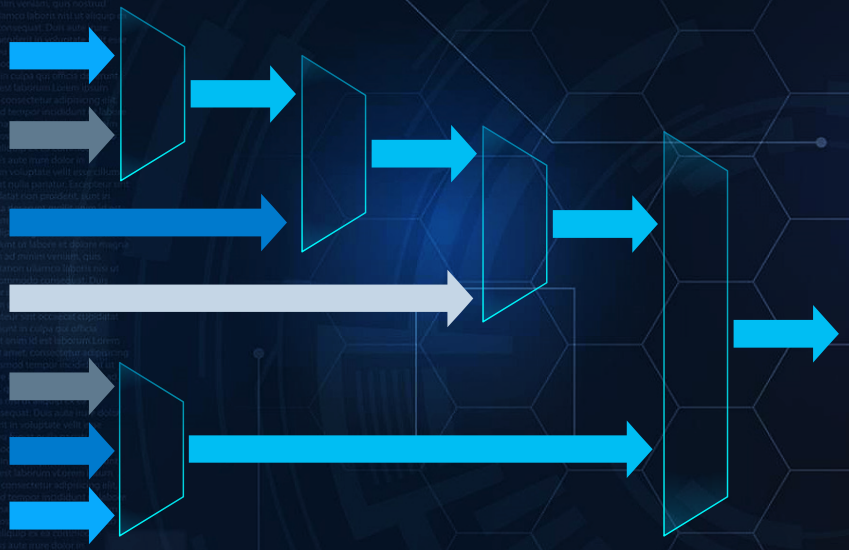
What We are Doing to Make SSD Even Better?

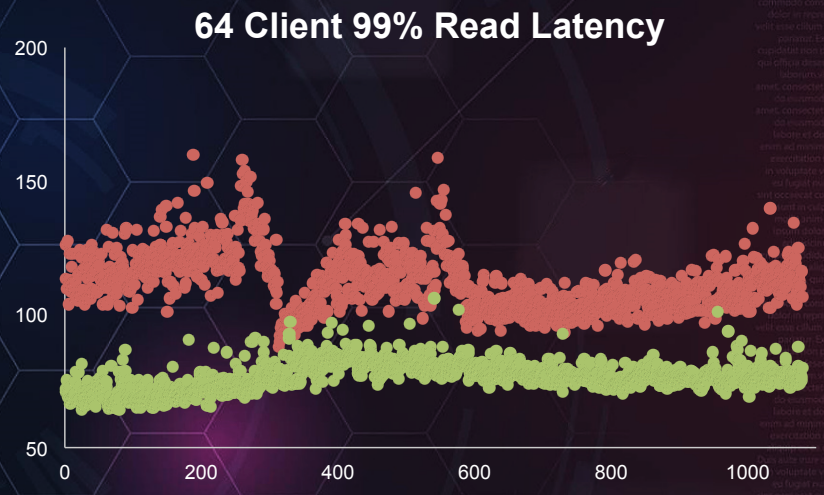
PLOG SSD

Large Scale Design

Standard SSD Optimization

Smart Multilevel Scheduler: Provides Great Latency



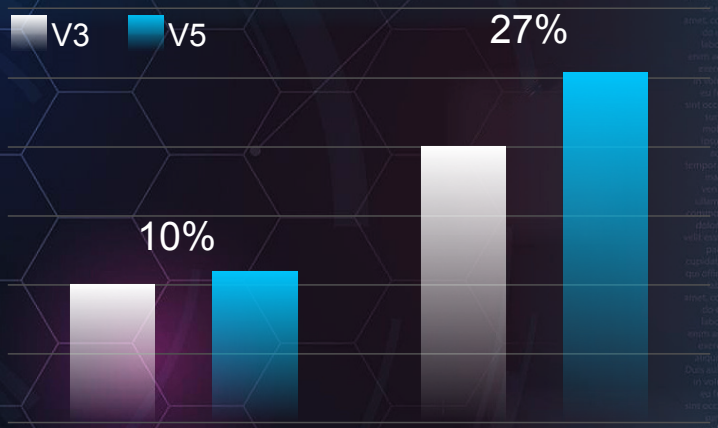


Smart multilevel scheduler
e.g. Priority： user read > system read > user write > system write

Smart Workload Processing: Enables Applications Experience Better

MySQL®

Aware typical workload, make better schedule management



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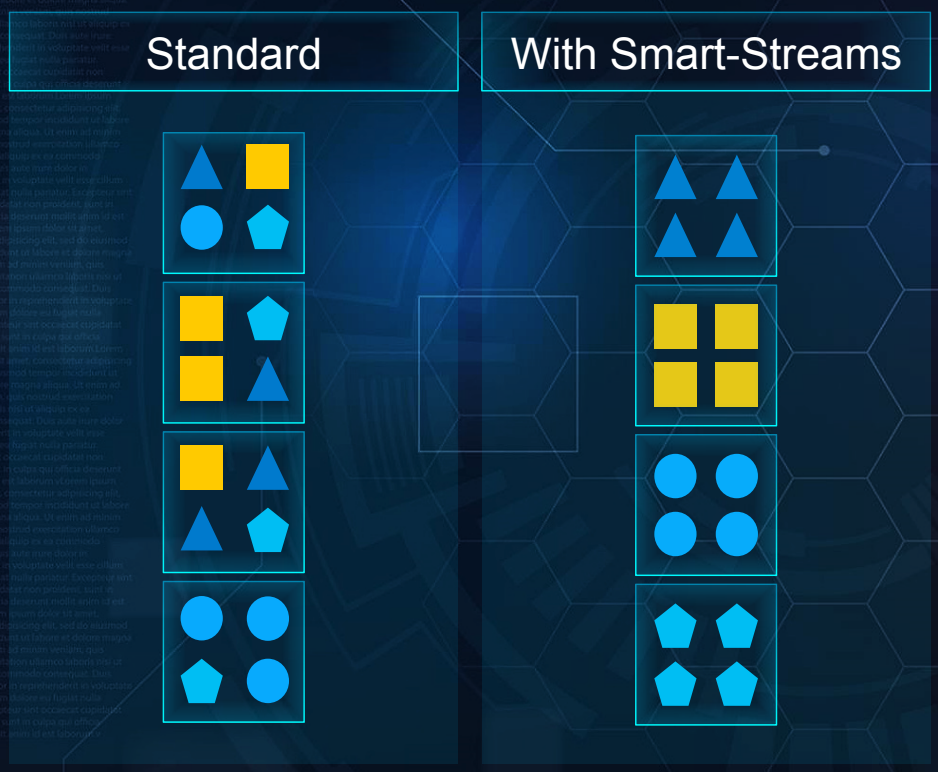
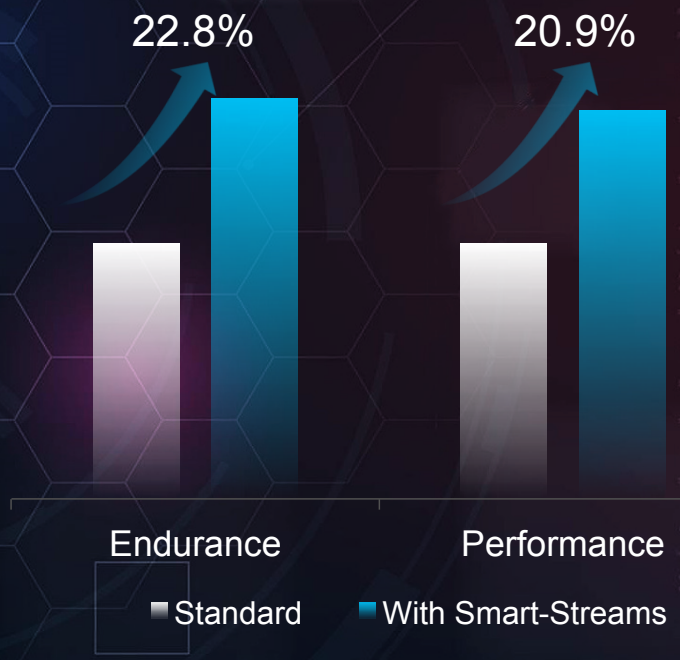
Smart streams: Makes More Difference





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Dorado Achieves No.1 Performance By Smart-streams

Smart-streams

Smart-workload processing

Smart-scheduler

Dorado

Mission-Critical All-Flash Storage

Lightning Fast

7 Million IOPS

Unique FLASHLINK™ Tech

Flash-oriented design, 0.5 ms consistent latency

OceanStor

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PLOG SSD: Bring Lots of Fun

HOST

Advantage:

- Medialess
- Flex PLOG Size
- Byte Addressable
- Bandwidth Self-define

PLOG SSD

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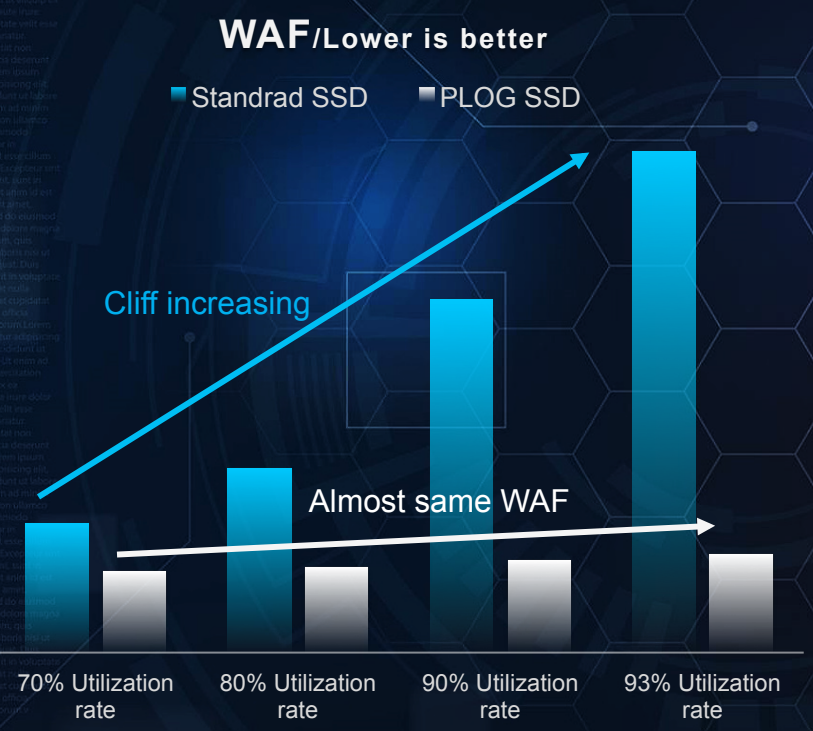
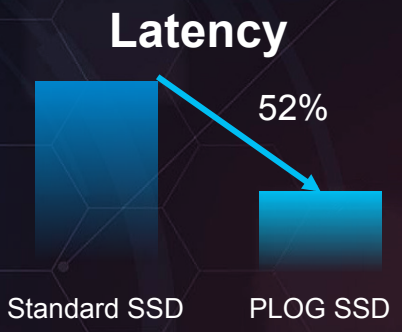
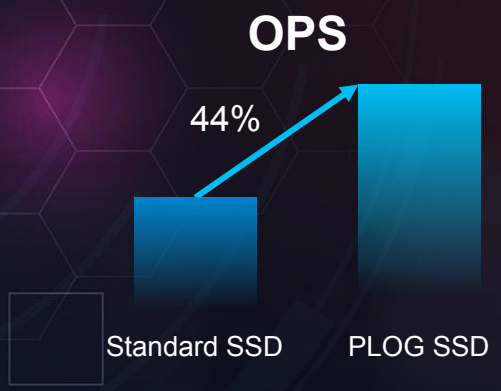
Storage Performance And WAF Benefits Evaluation







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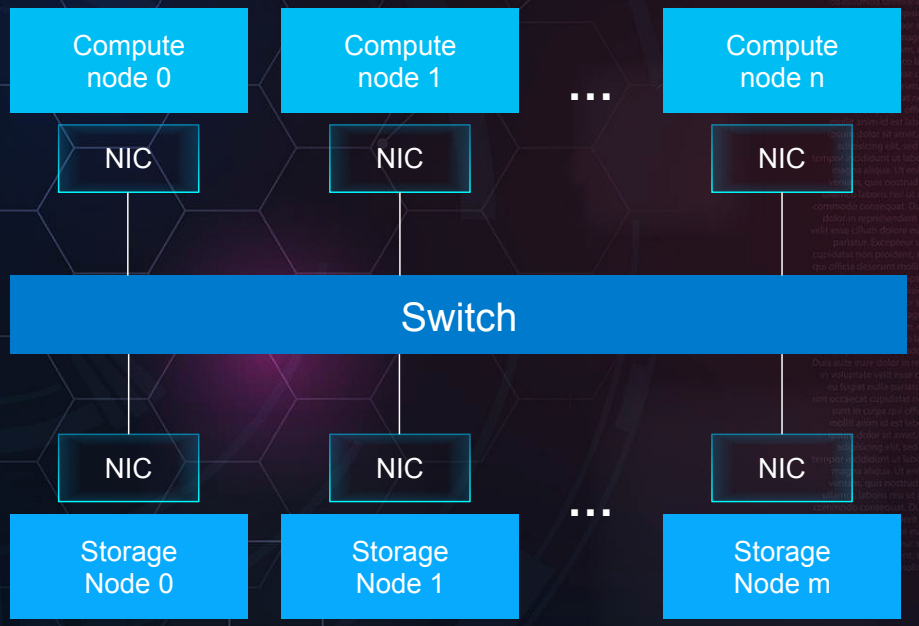
Large Scale Design For Cloud Storage Scenario Brings More Interesting Things

Cloud Storage Architecture



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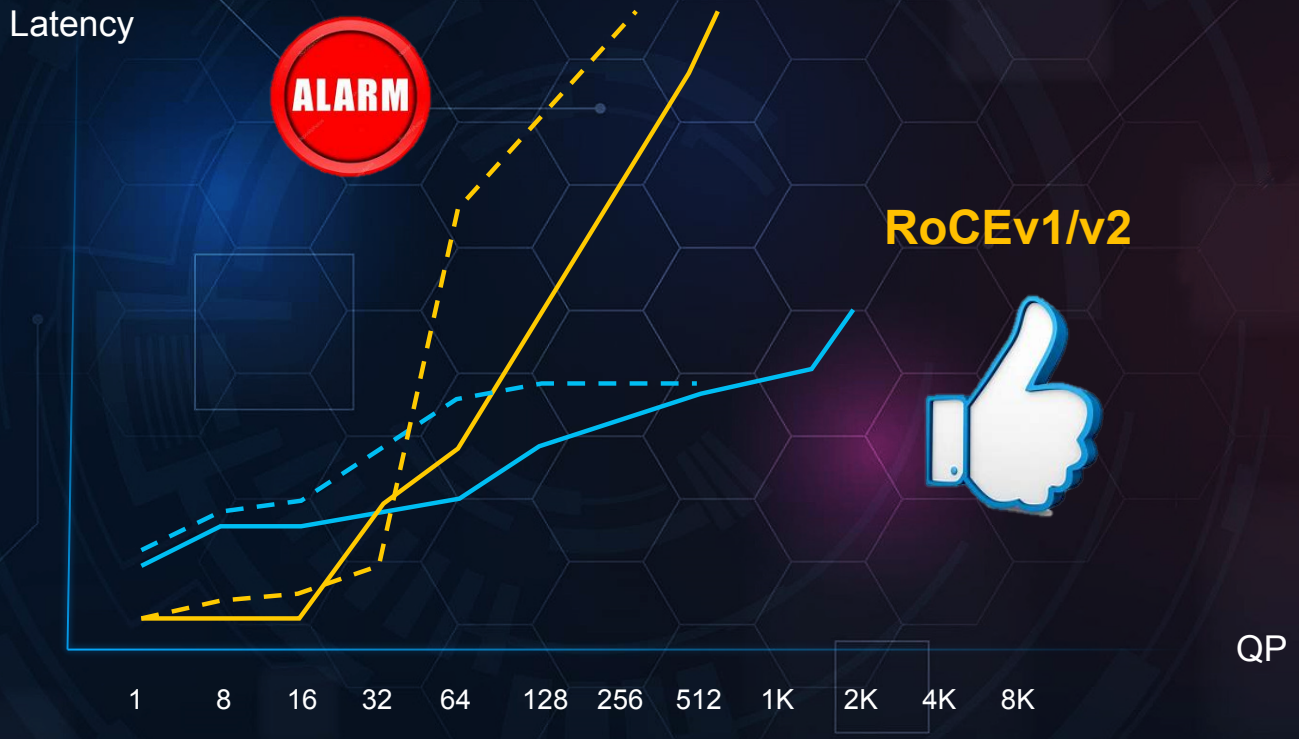
Solving the Network Latency To Make Application E2E System Better



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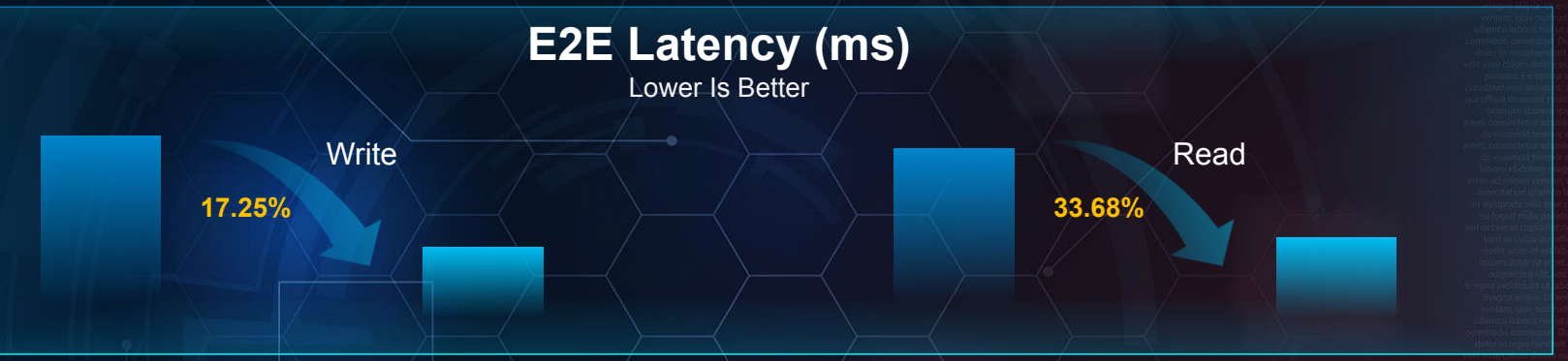
Reference Case Results



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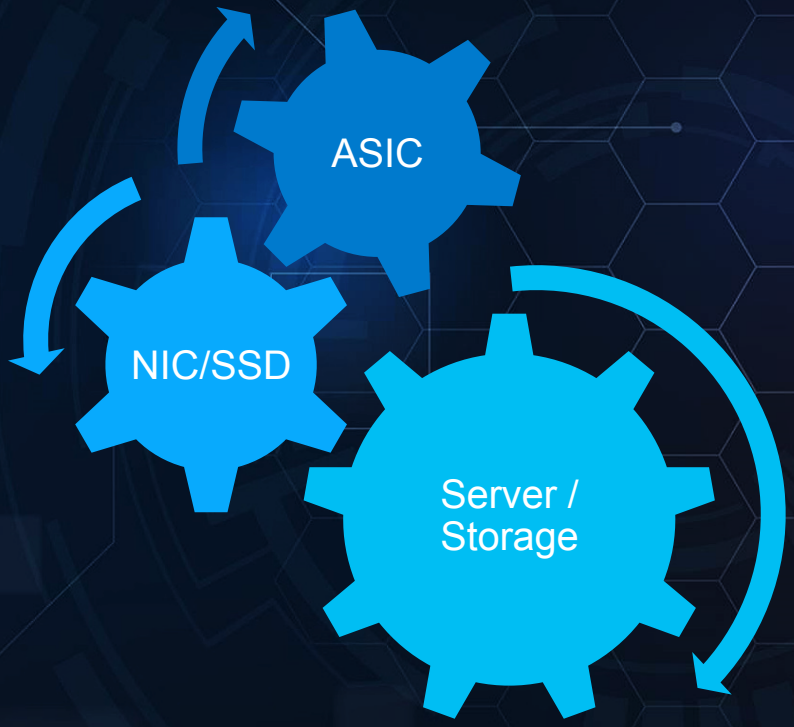
Hardware Innovation Enables Better Application Experience



Innovations

Co-design

Multi-solutions

Huawei IT Products Portfolio

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THANK YOU