



HUAWEI

Applications Need More Than IOPS and Latency

Aug. 2018

LEADING NEW ICT

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Applications Need More Than Just IOPS and Latency

IOPS Latency

Performance consistence

Data Recovery

Reliability

Endurance

Multi-vendors

Fail Cost

Offloading

Application
Optimization

Reliability: Power Loss Protection and Data Recovery

Power loss protection challenge



SLC



QLC

Big capacity makes data recovery more difficult



Endurance and Cost

PE Cycle /K

100

10

1

SLC

eMLC

MLC

TLC

QLC

Endurance reach critical point



Fail drive parts cost higher



X 64TB

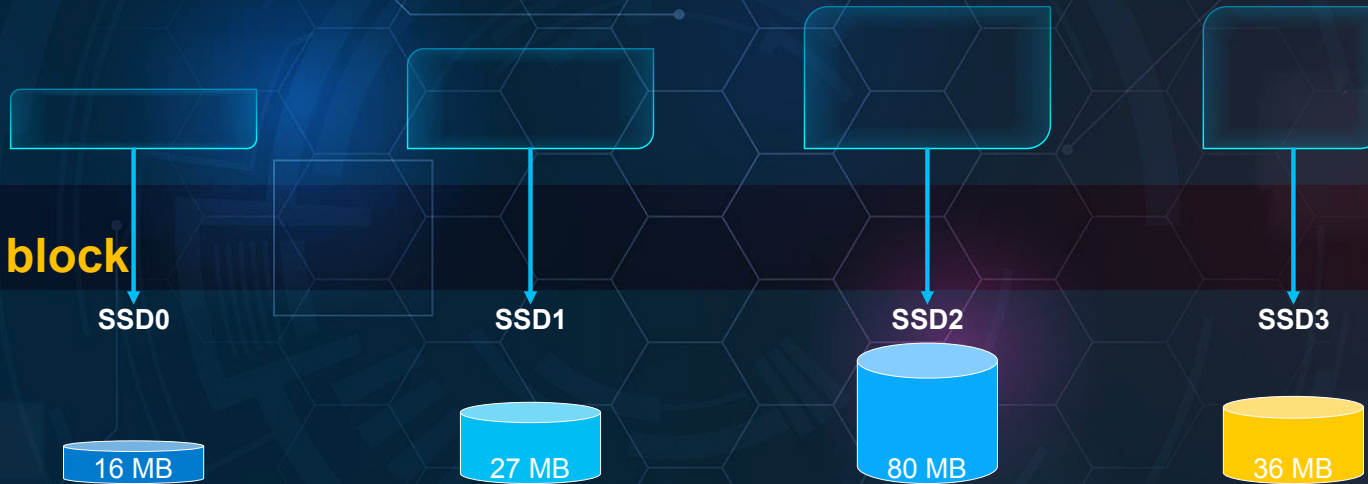


BMW3

Multi Vendors Adoption

How to choose a RAID stripe size?

Erase block



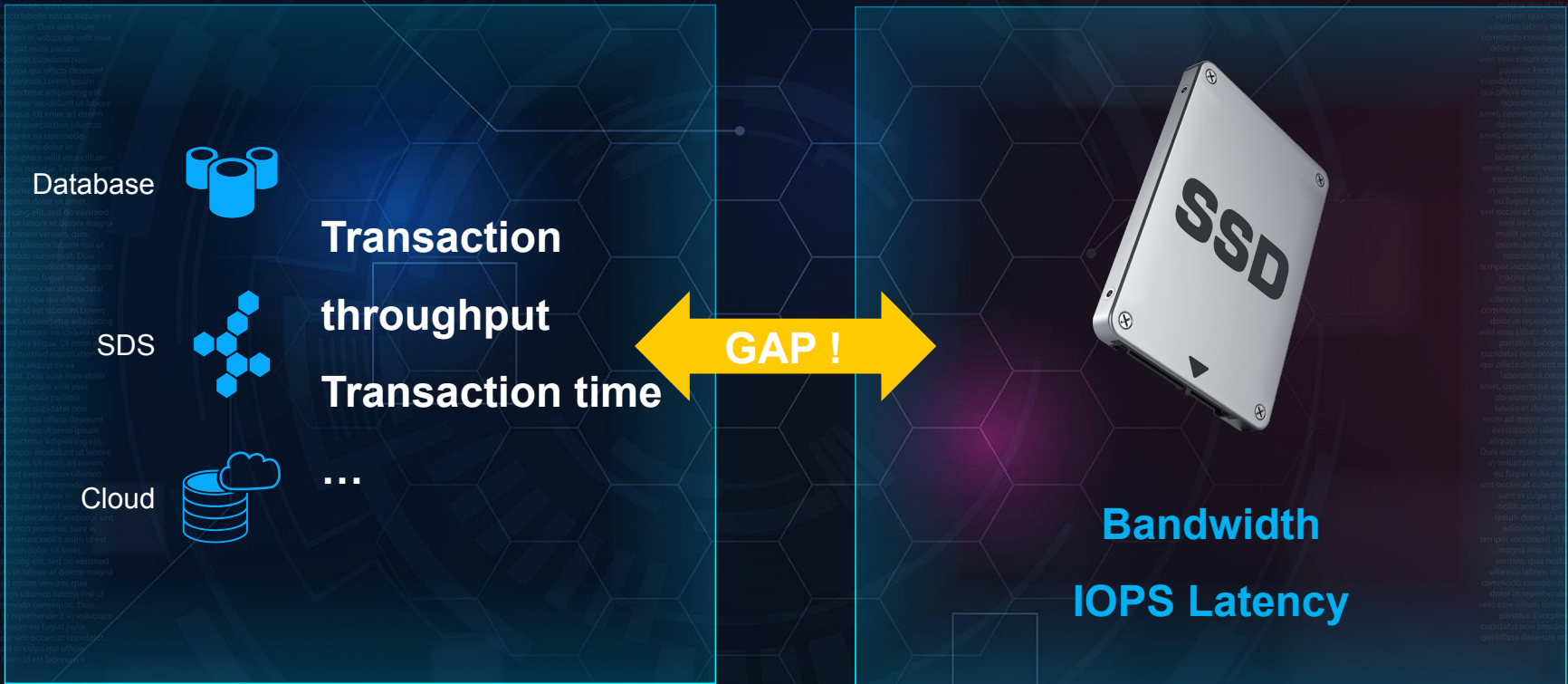
Differences in Erase Block Size between different manufacturers/generational Flash

HOST

Offload or Just Pull Up to The Host



The Dialog GAP Between Applications and SSD Drives



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

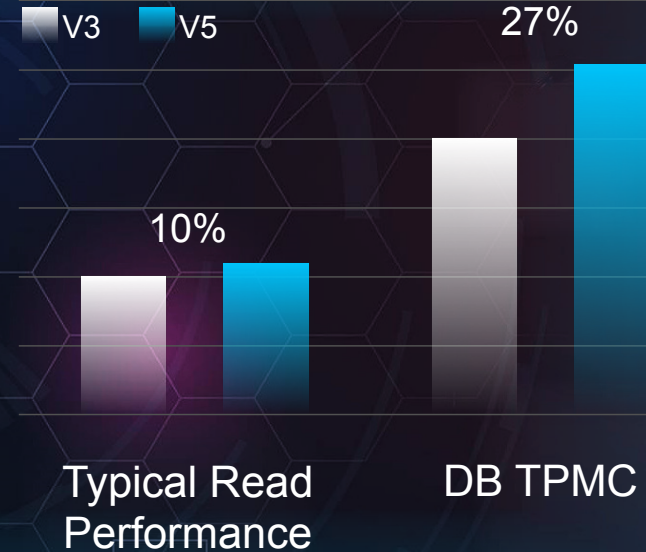
Large Scale Design

Standard SSD Optimization

Smart Workload Processing: Enables Applications Experience Better



Aware typical workload, make better schedule management



Smart streams: Makes More Difference

Standard

With Smart-Streams



22.8%

20.9%



Endurance

Performance

Standard

With Smart-Streams

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



PLOG SSD: Bring Lots of Fun

PLOG SSD

Large Scale Design

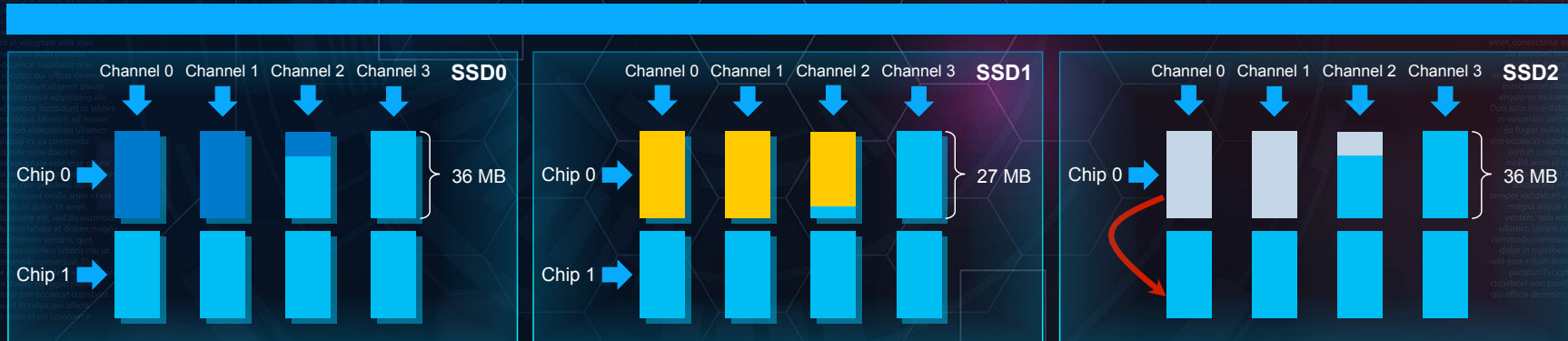
Standard SSD Optimization

HOST

PLOG SSD

Advantage:

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



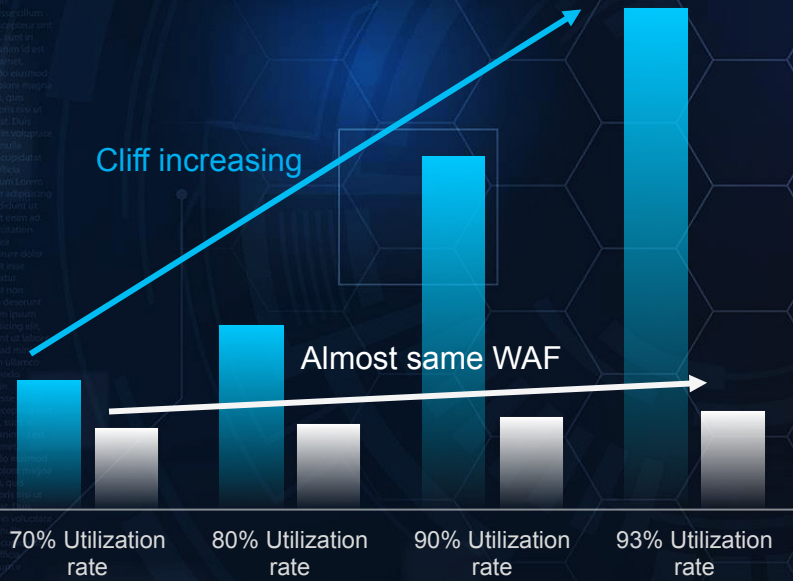
Storage Performance And WAF Benefits Evaluation

WAF/Lower is better

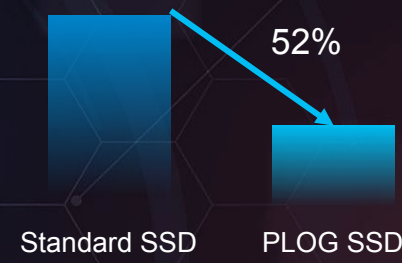
■ Standrad SSD ■ PLOG SSD

Cliff increasing

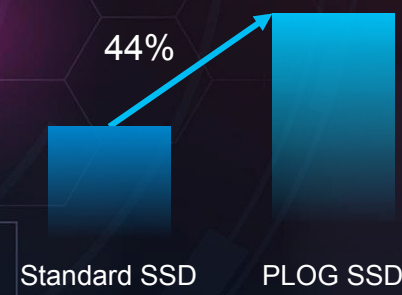
Almost same WAF



Latency



OPS



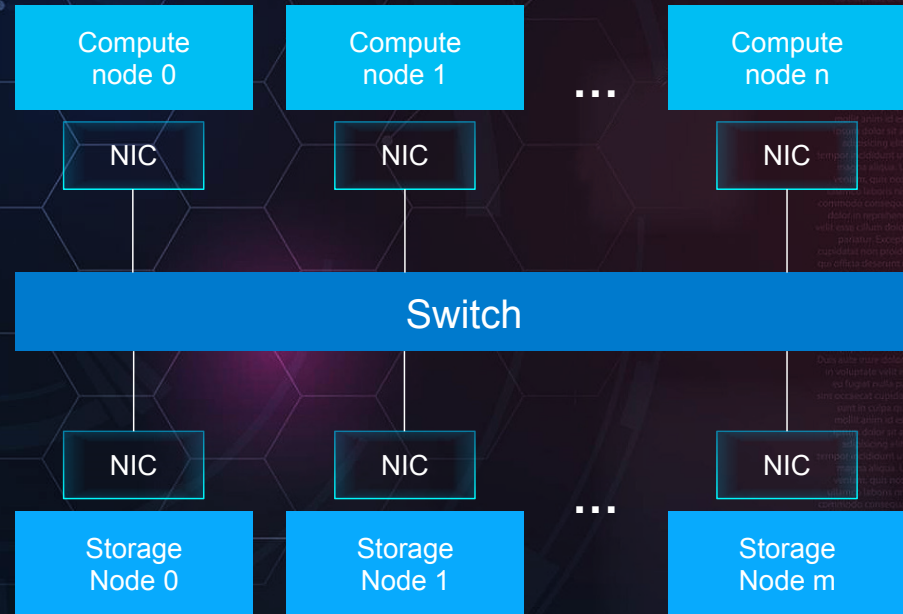
Large Scale Design For Cloud Storage Scenario Brings More Interesting Things

Cloud Storage Architecture

PLOG SSD

Large Scale Design

Standard SSD Optimization

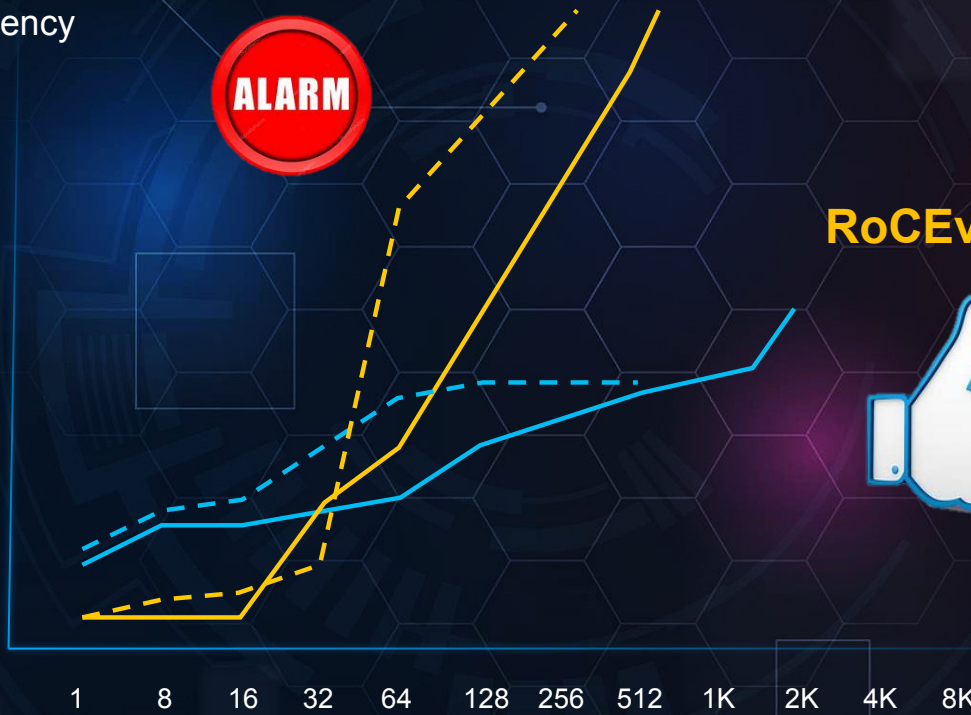


Solving the Network Latency To Make Application E2E System Better

Latency



RoCEv1/v2



QP

Reference Case Results

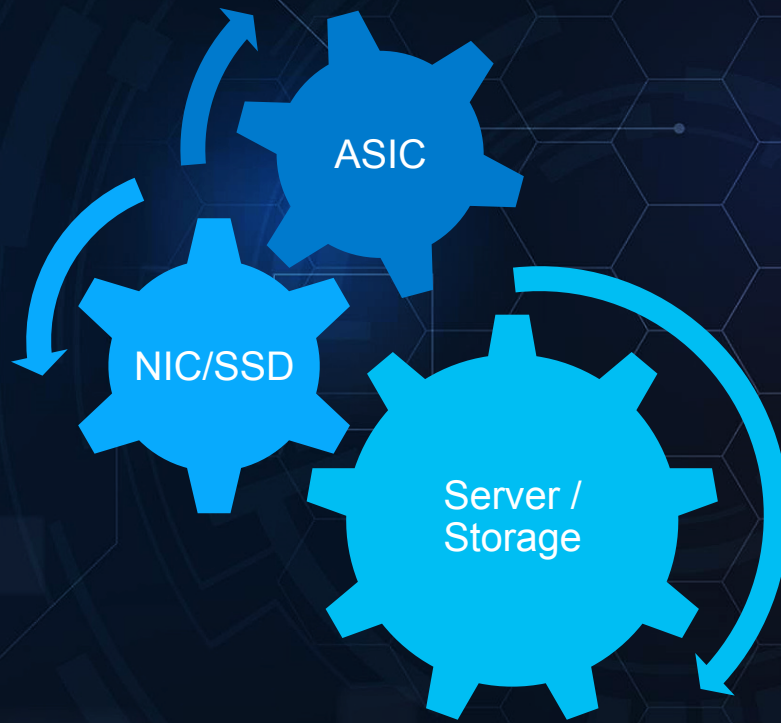
E2E Latency (ms) Lower Is Better



E2E IOPS Higher Is Better



Hardware Innovation Enables Better Application Experience



Innovations
Co-design
Multi-solutions

Huawei IT Products Portfolio

Scenario-Oriented Solutions



FusionCloud



Hardware

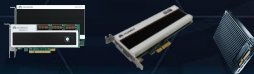


SSD/iNIC/Chips

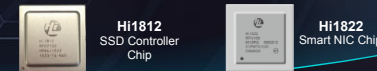
Intelligent NIC



SSD



Chips



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THANK YOU

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