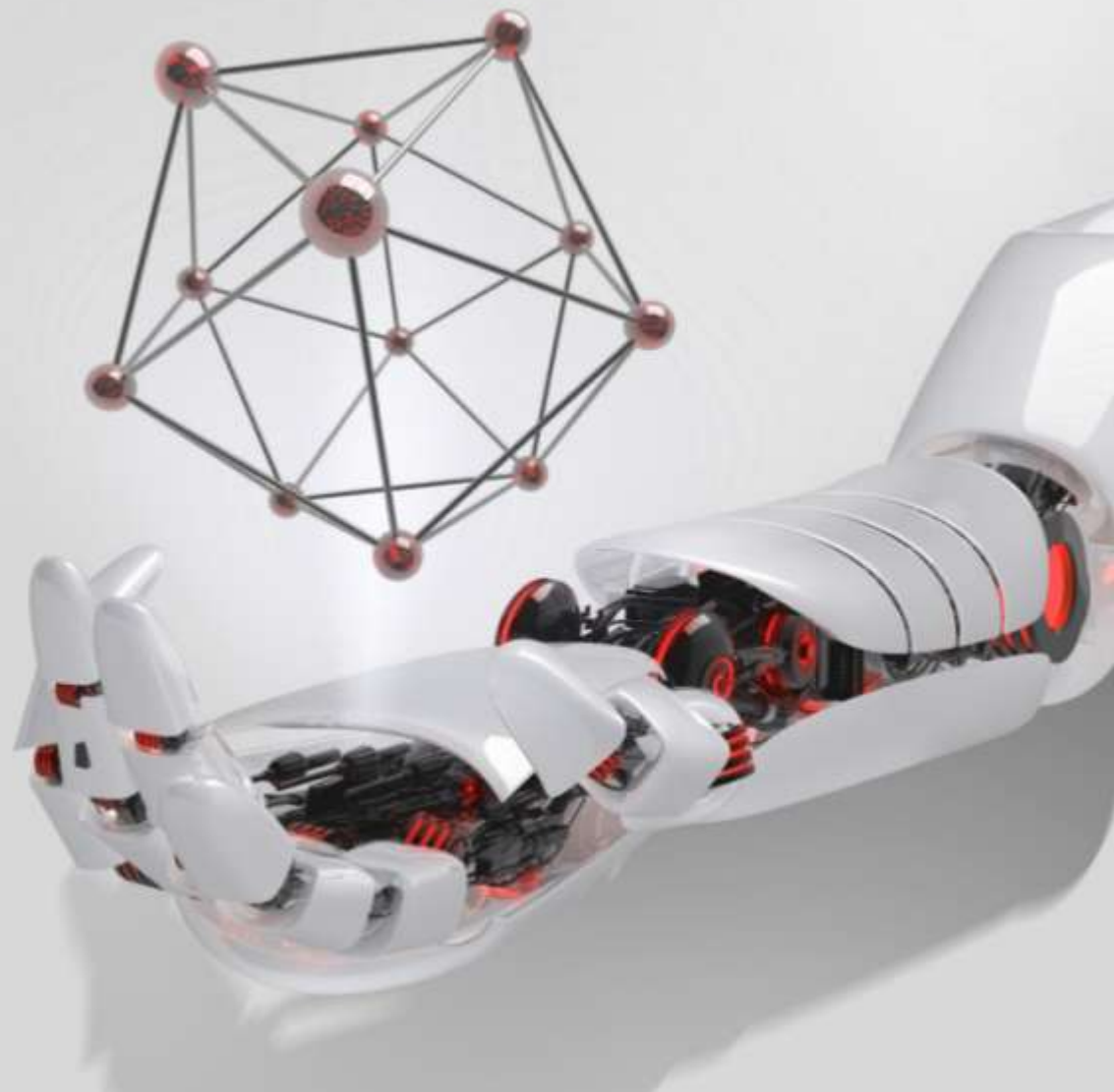


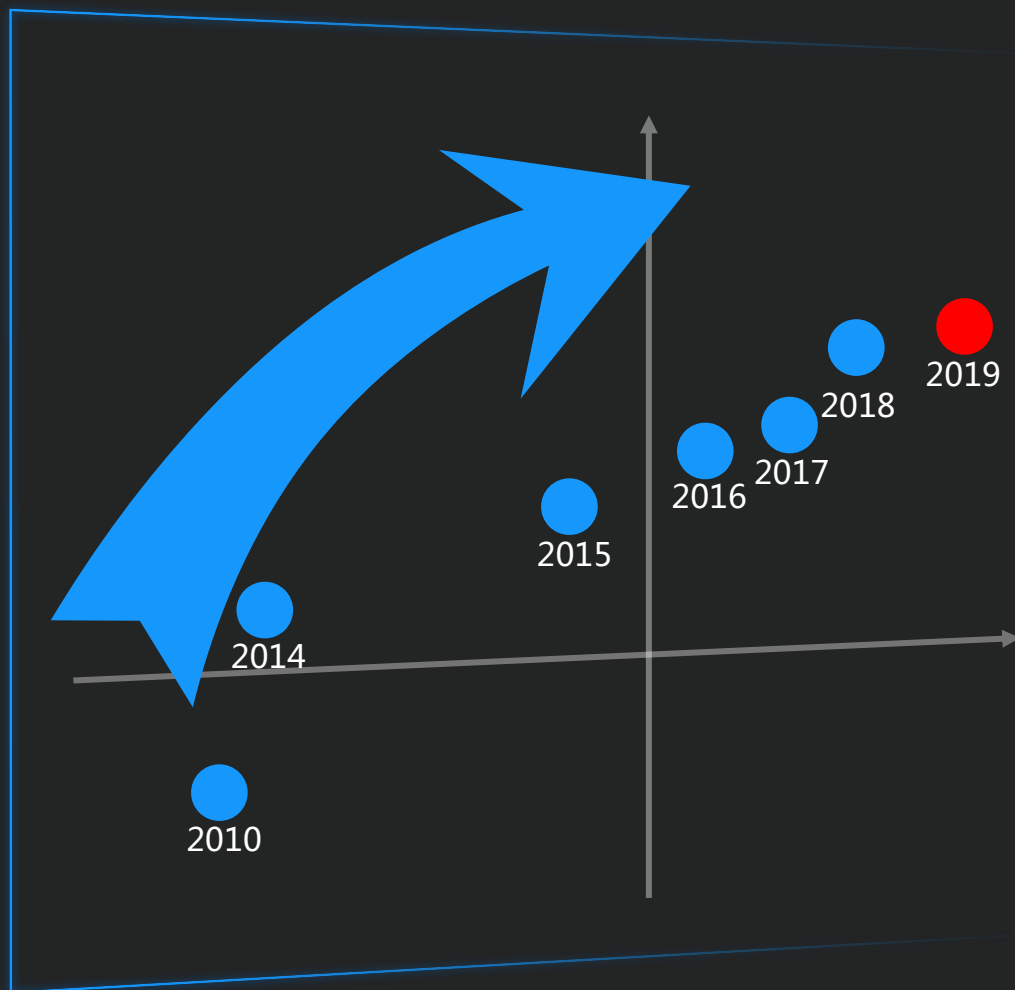
# Обновление продуктовой линеки IT

Алексей Июдин

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# В квадрате лидеров для Primary Storage

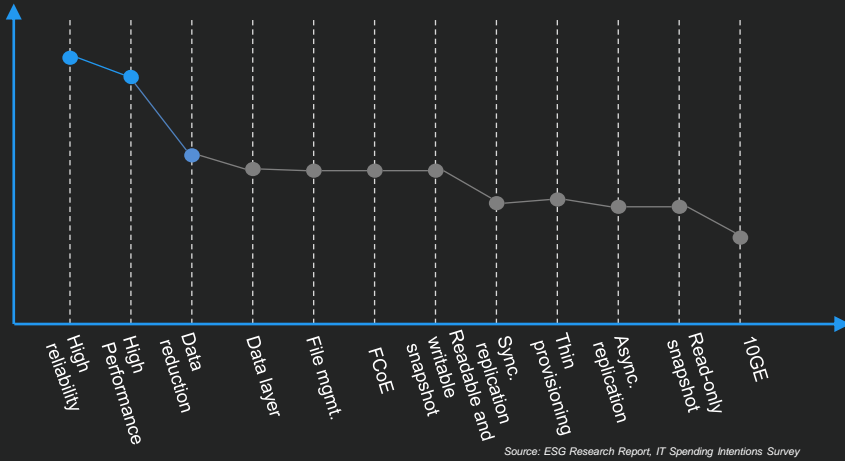


Primary Storage = General Purpose Storage + Solid State Array



# Основные требования Заказчиков к массивам AFA

- Тренды индустрии: повышение надежности, повышение производительности, компрессия\дедуп.

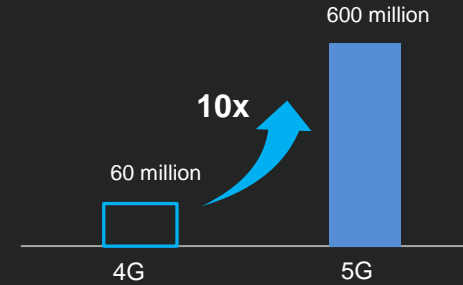


- Требования Заказчиков: надежность, снижение TCO, производительность

Architecture reliability	Architecture reliability	OPEX	TCO	TCO
High performance	High performance	High performance	High performance	High performance
TCO	TCO	Tenancy	Architecture reliability	Data migration

## Improved performance

Daily CDRs/million users



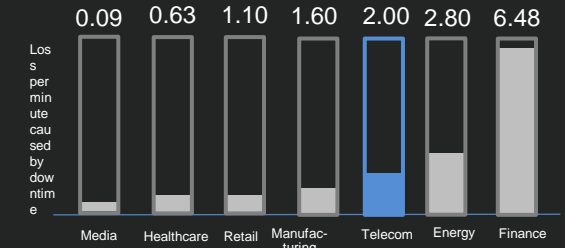
1 Million Users	3G (WCDMA)	4G (FDD-LTE)	5G
Download speed per user	14.4 Mbps	150 Mbps	10+ Gbps
Number of CDRs per user per second	586	938	5,860
Data increase per day	73 GB	117 GB	730 GB
Storage IOPS	4,200	6,720	42,000

## 24/7 always-on services

31s → 0s

99.9999% reliability

Service Interruption Costs in Various Industries (M USD/10 Million Users)



## Reduced costs

China Mobile



25%↓

reduced by 20 billion RMB within 3 years

DT



50%↓

reduction in OPEX over 3 years

KPN



25%↓

reduction in TCO over 3 years

# Dorado V6



OceanStor Dorado V6

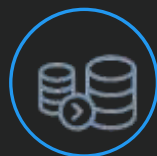


**Повышение производительности: 20 million IOPS**

- FlashLink



**Повышение надежности: Выдерживает отказ 7 контроллеров из 8 без влияния на сервисы**



**Снижение TCO: 30%+ lower OPEX than competitors**

# Как мы это делаем?



## FlashLink

100% повышение производительности

30+% снижение задержки

10 million IOPS Industry average → 20 million IOPS Huawei

0.3 ms latency Industry average → 0.1ms latency Huawei

### Контроллеры + дисковые полки + диски



# Kunpeng 920



## Kunpeng 920

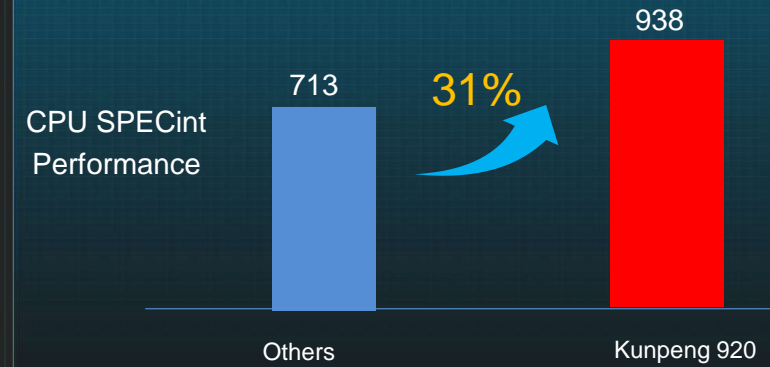
- 7 nm chip
- Single CPU with 64 cores

VS.

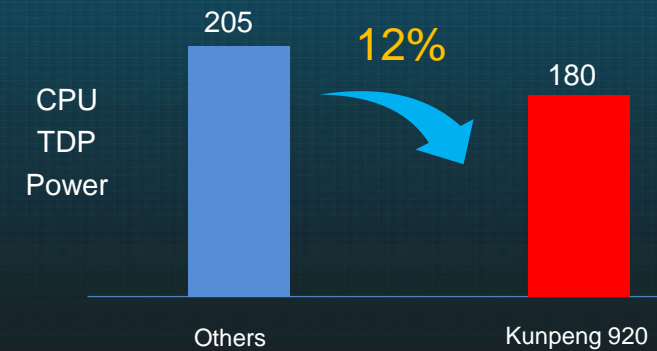
## Intel CPU

- 14 nm chip
- Single CPU with 18 cores

## Производительность



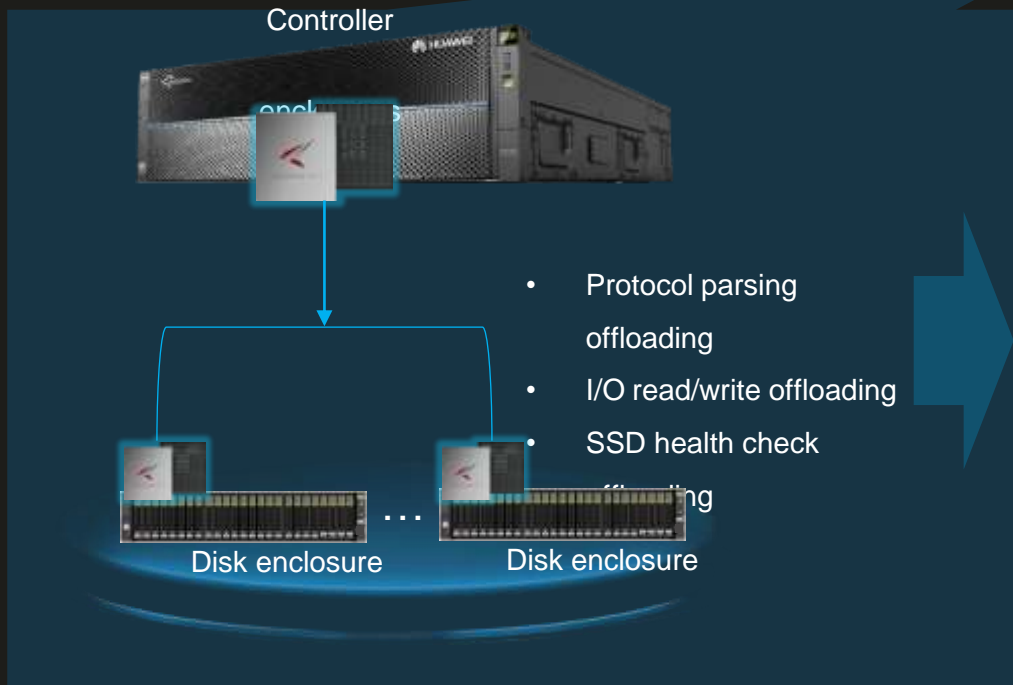
## Энергопотребление



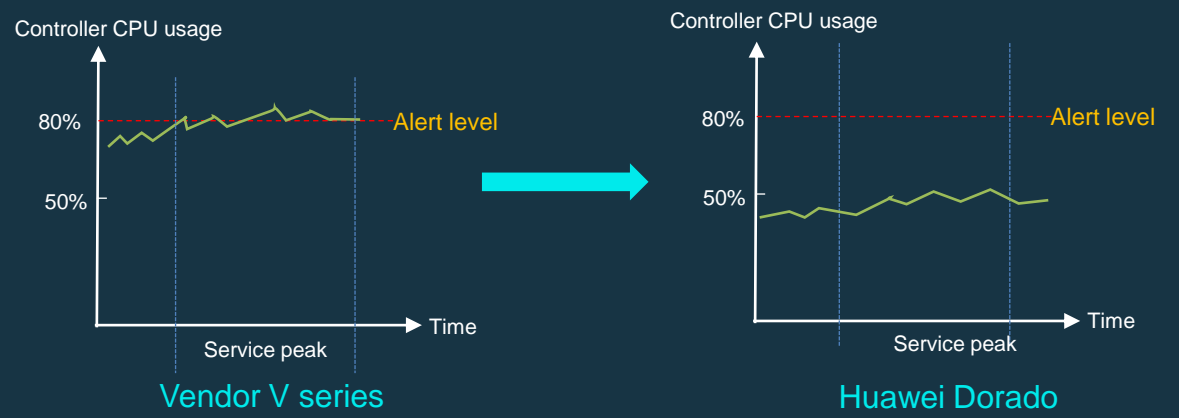
Data source: Huawei lab benchmark tests

# Дисковые полки

## FlashLink



Снижение нагрузки на процессоры контроллеров.



# AI Chip управления кэшированием

## FlashLink



Использование кэш на 40+% эффективнее

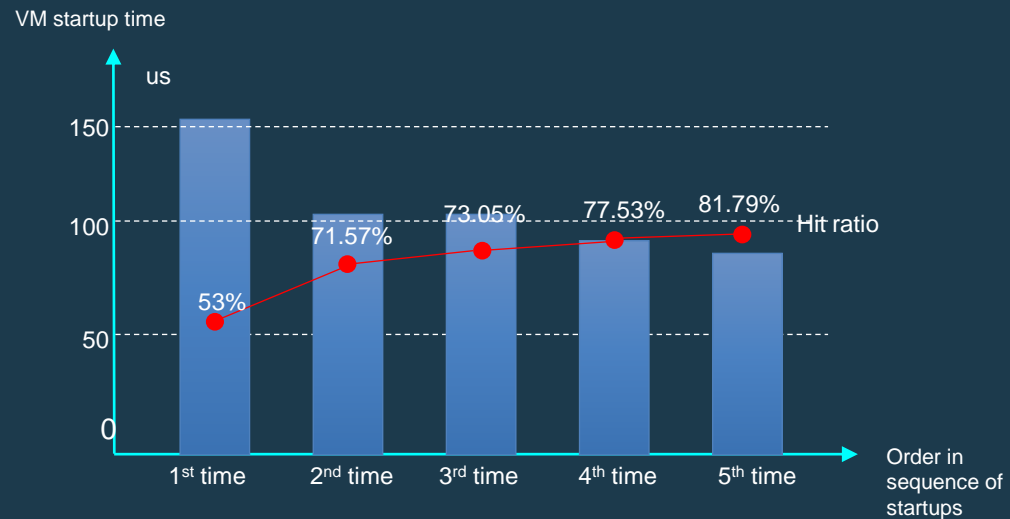


AI chip algorithm model training



Ascend 310:  
FLOPS: 8 teraFLOPS

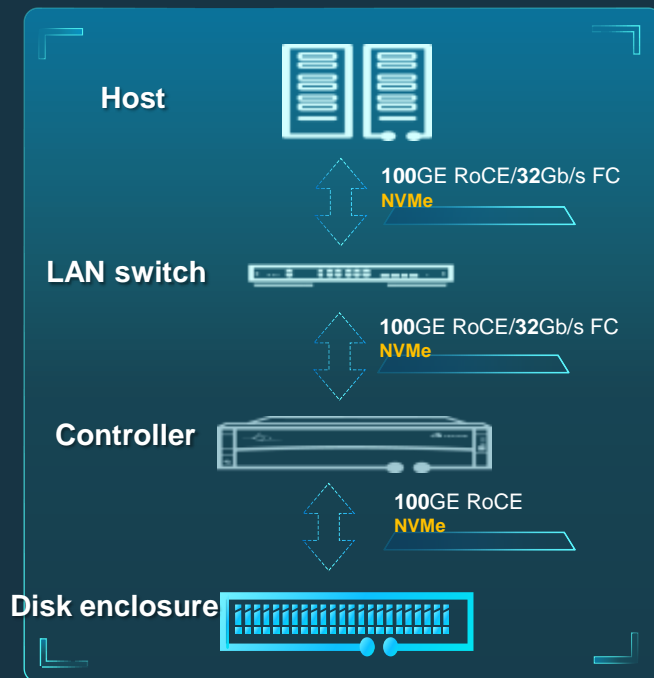
Старт VM быстрее на 40%





# Архитектура End-to-End NVMe

## FlashLink



0.1 ms

E2E NVMe

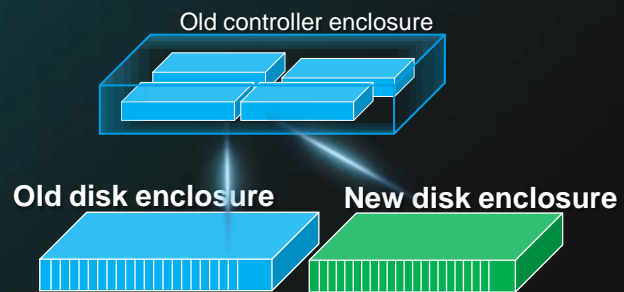
Снижение задержки на 30+%

0.3 ms  
Industry average

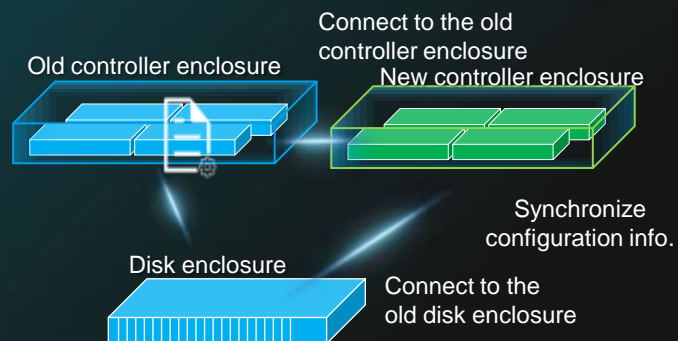
0.1 ms  
Huawei

# Продление жизненного цикла массива - FlashEver

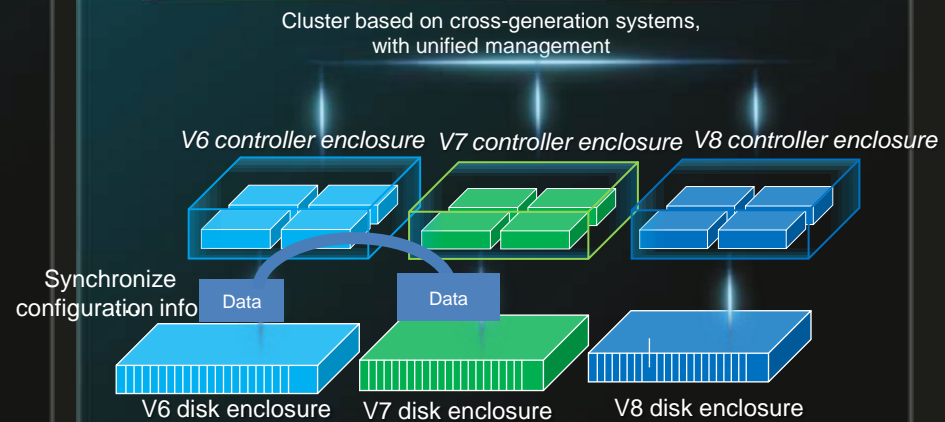
## Замена полки



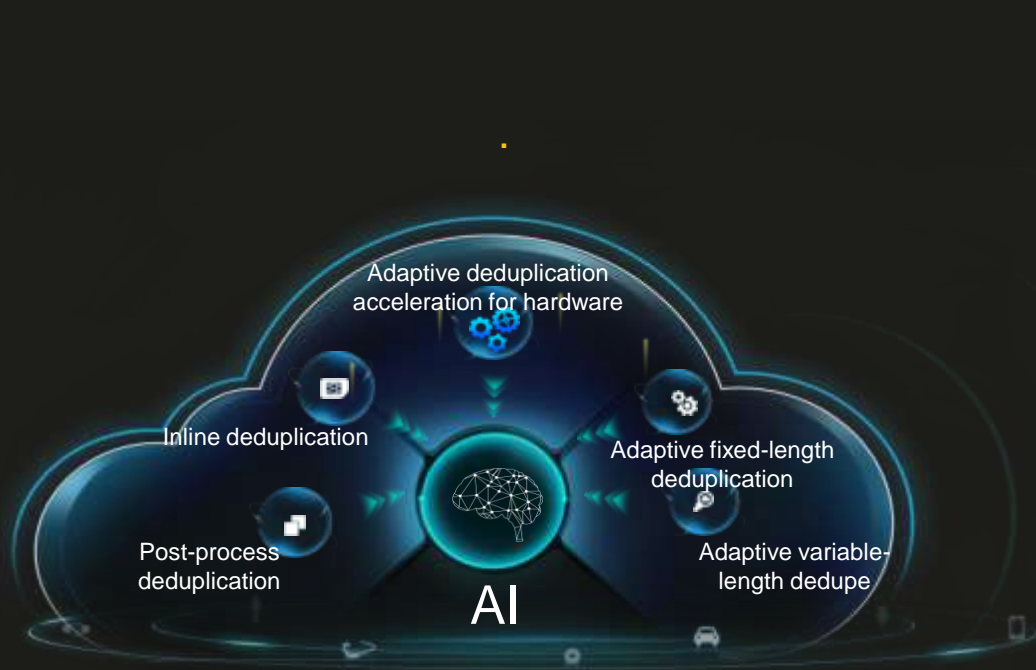
## Замена контроллеров



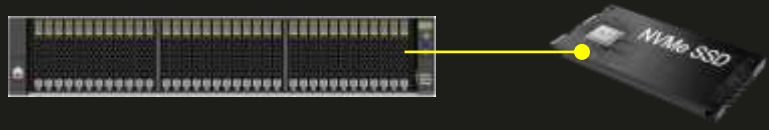
## Федерация



# Дедупликация и компрессия



**Palm SSDs собственной разработки**



**4:1**  
Competitor

**vs.**

**5:1**  
Huawei

**Palm SSDs: на 33% меньше места**



Ordinary SSD

Industry: 24 SSDs/2U



**33%**  
reduced thickness

**33%**  
less space occupied



Palm SSD

Huawei: 36 SSDs/2U



Current max. capacity: 61.44 TB

# Dorado V6

The Best Intelligent All-Flash Storage for the 5G Era

*Always-On*



**Failure tolerance for 7 out of 8 controllers**

Full-interconnected A-A architecture for 4 times more redundancy

*Blazing-Fast*



**20 million IOPS**

FlashLink®, 100% higher IOPS than industry average

*Compact*

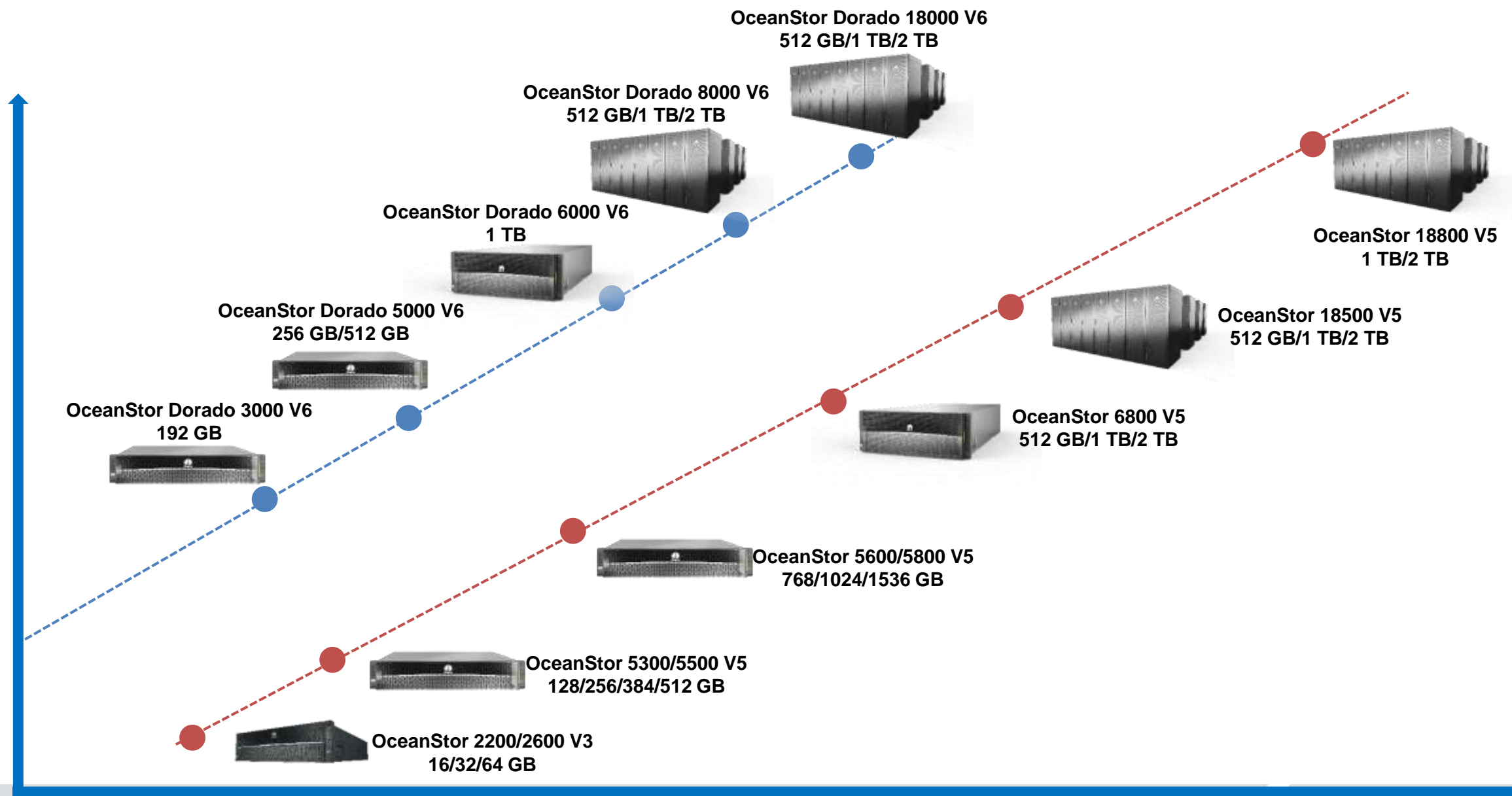


**Highest capacity density**

18 SSDs/U, 33% higher density than industry average



# Обновление линейки Huawei OceanStor V5



# Обновление линейки Huawei OceanStor V5

**5300 V5**



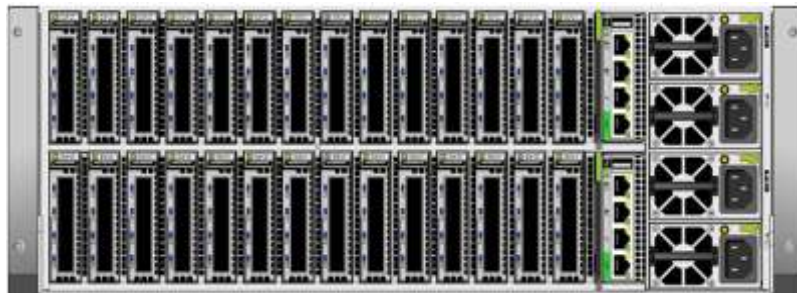
- ✓ Двухюнитовые корпуса, по три модуля расширения на контроллер

**5500/5600/5800 V5**



- ✓ Поддержка NVMe и 100G RDMA

**6800 /18500/18800 V5**



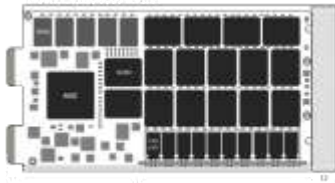
# Поддержка NVMe



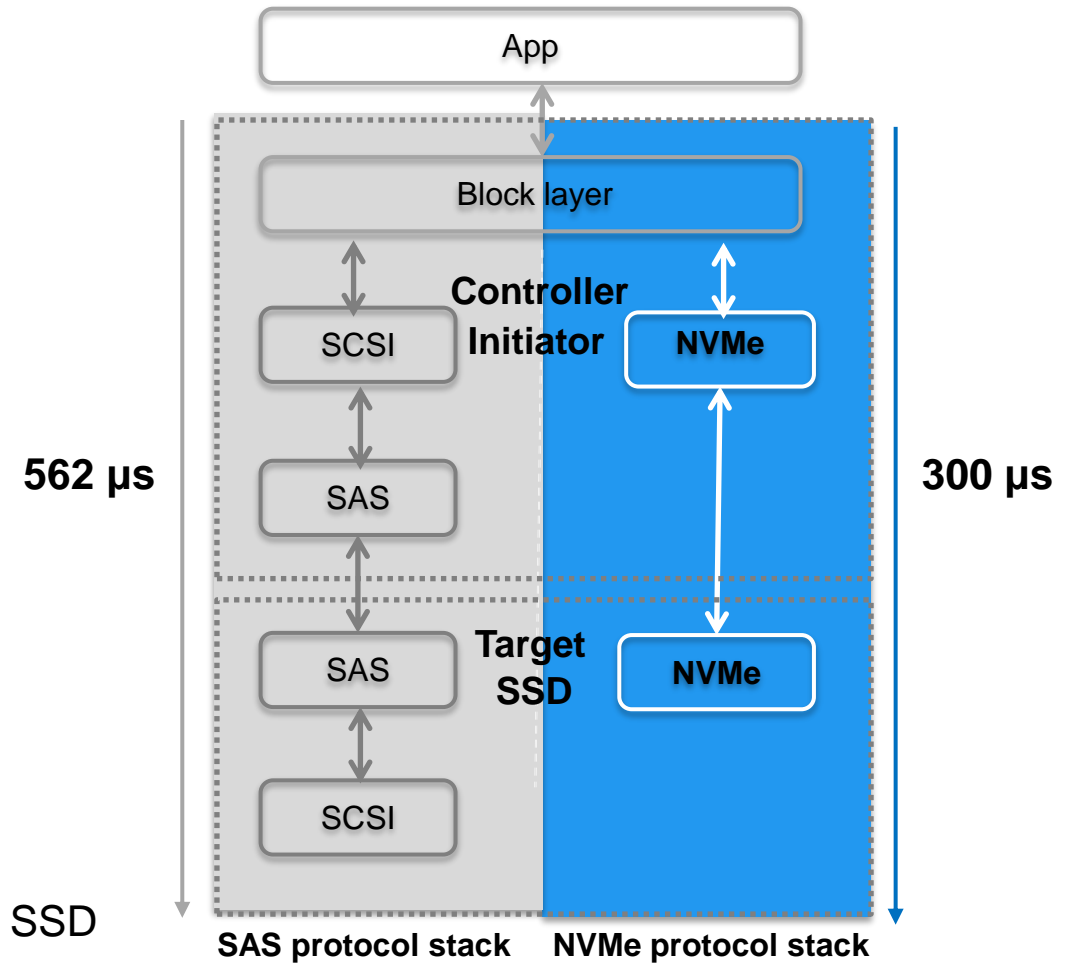
2U controller enclosure with integrated 36 NVMe SSDs  
5500/5600/5800 V5



2U expansion enclosure with 36  
NVMe SSDs



NVMe SSD form factor: Palm-sized SSD  
SNIA SFF-TA-1002  
160 mm x 79.8 mm x 9.5 mm



# Thank you

Bring digital to every person, home and organization for a fully connected, intelligent world.

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