

Huawei Presentation

Misa Miletic, dipl. el. ing.
Enterprise Solution Manager
misa.miletic@huawei.com



Huawei: Leading provider of ICT infrastructure and smart devices



Vision & mission

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

195,000

employees

170+

countries and regions

No. 44

on Fortune Global 500

No. 2

in R&D investment

54.8%

of employees are in R&D



Huawei Serbia : In Serbia, For Serbia



Vision & mission

Bring digital transformation to every Serbian people and organization for a fully connected and intelligent Serbia

17+

Years in Serbia

200+

employees

80%+

Serbian Stuffs

30M +

Tax Paid locally in past 3 years

100M+

Local procurement in past 3 years



Agenda:

- **Huawei Data Storage Introduction**
- Huawei IdeaHub: Smart Whiteboard Solution

Upgrade for Inclusive All-Flash Storage in Any Scenario

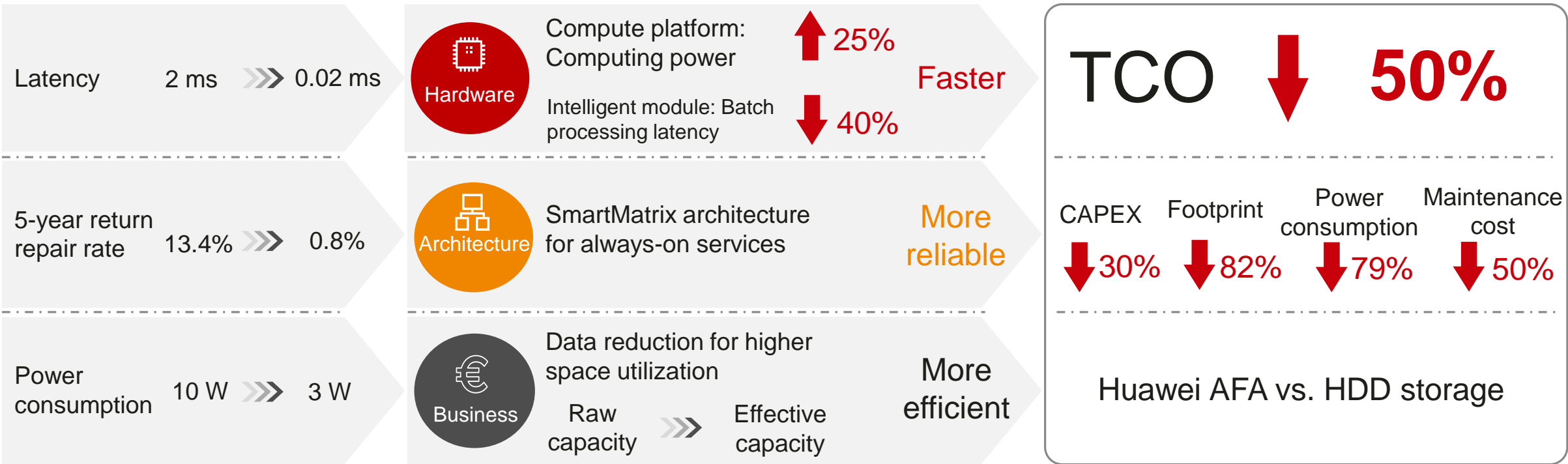


HDD

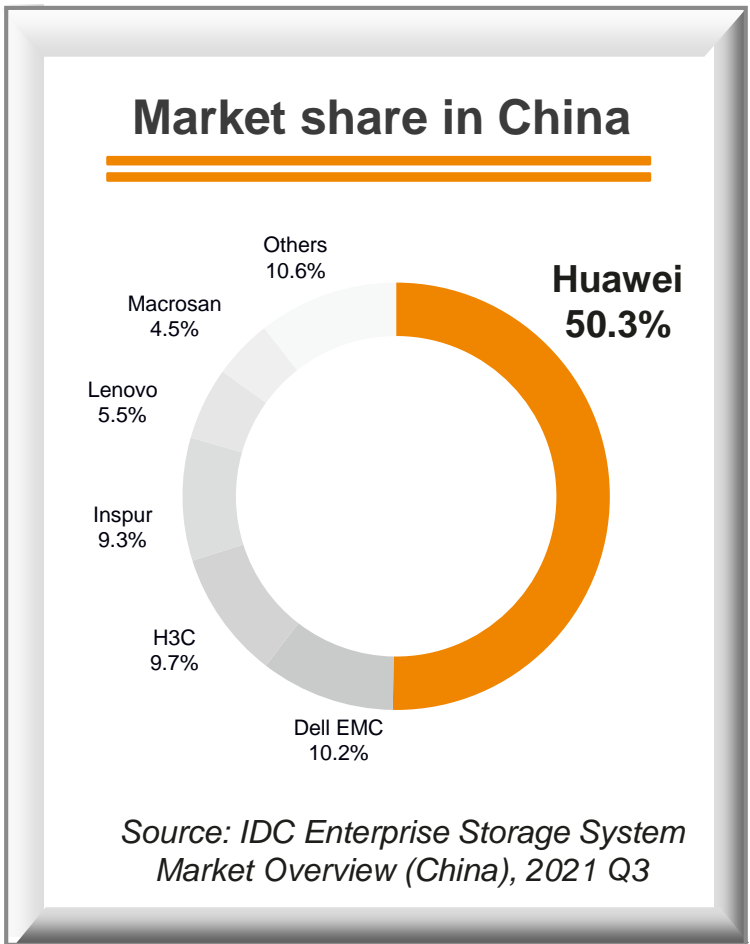


SSD

Huawei innovations for inclusive all-flash storage



Lead the Market with Cutting-Edge Huawei All-Flash Storage



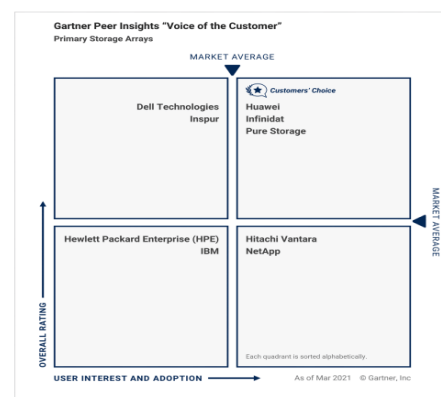
Huawei All-Flash Storage Gains Industry Renown

Interop Grand Prize
The Server & Storage category



2021 Gartner Peer Insights
Customers' Choice for Primary Storage Arrays

Figure 1. Gartner Peer Insights "Voice of the Customer" Primary Storage Arrays



Source: Gartner (May 2021)

Ranked Recommended by DCIG
Listed in Top 5 High-end Storage Array List



TOP 5 High-end Storage Arrays

- Dell EMC PowerMAX Series (8000)
- Hitachi Vantara VSP 5000 Series (5500/5500H)
- Huawei OceanStor Dorado V6 Series (18000 V6)
- IBM FlashSystem 9000 Series (9200)
- NetApp AFF & FAS Series (AFF400/FAS8700)

* Listed in Alphabetical Order

INTEROP

A major event in global business technology that recognizes the most competitive products

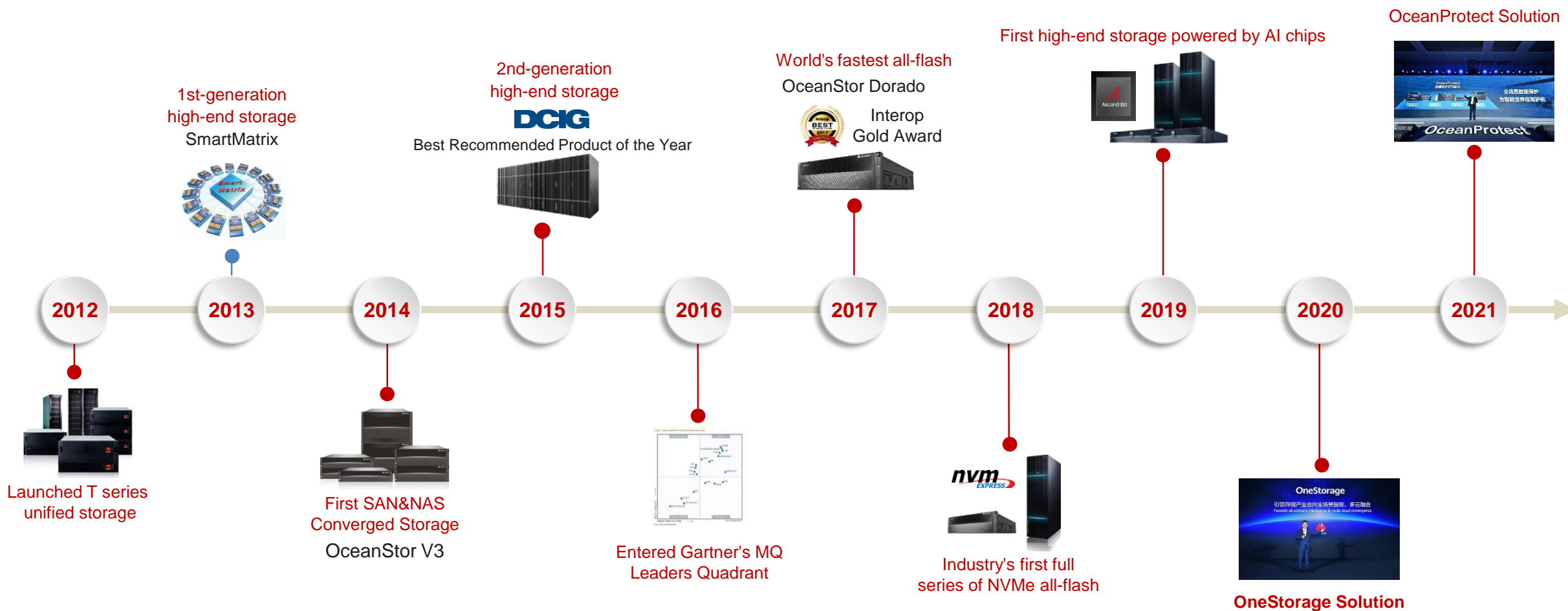
Gartner

A leading technology research and consulting company and provides the world's most trusted source of independent IT research and advice.





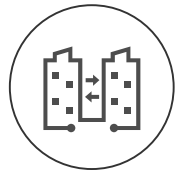









DCIG

A global IT consulting organization known for extensive analysis and objective reviews in enterprise storage and cloud computing

R&D Innovation Make Huawei Storage Lead In the Industry

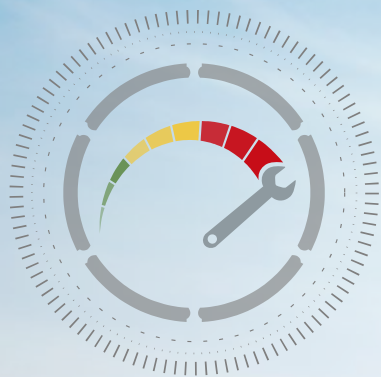


Providing Complete Storage Portfolio

| | |
|------------------|---|
| Solutions | <div>       </div> <div> Intelligent data lake Video cloud HPDA/HPC Enterprise application acceleration Active-Active Backup </div> |
| Data management | <div> Intelligent O&M Intelligent storage management Device management </div> <div>  eService  DME Storage  DeviceManager </div> |
| Storage products | <div> All-flash storage Hybrid flash storage Distributed Storage HCI Backup Storage </div> <div> Dorado  OceanStor  Pacific  FusionCube  OceanProtect  </div> |

OceanStor Dorado All-Flash Storage Highlights

Ever Fast



Industry-leading
performance and
latency

21M IOPS and 0.05 ms latency
30% higher NAS performance than
industry benchmark



Ever Solid

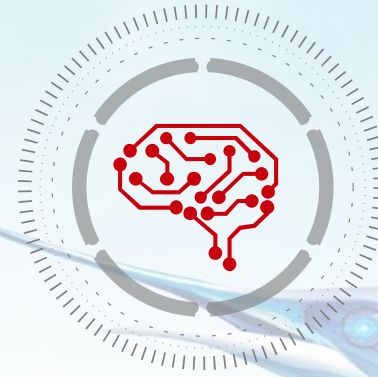


SmartMatrix fully
interconnected architecture
for always-on applications

Tolerates failure of 7 out of 8 controllers
Provides active-active solution for SAN
and NAS



Intelligent



Intelligent full-lifecycle
management

Intelligent O&M
Edge-cloud collaboration

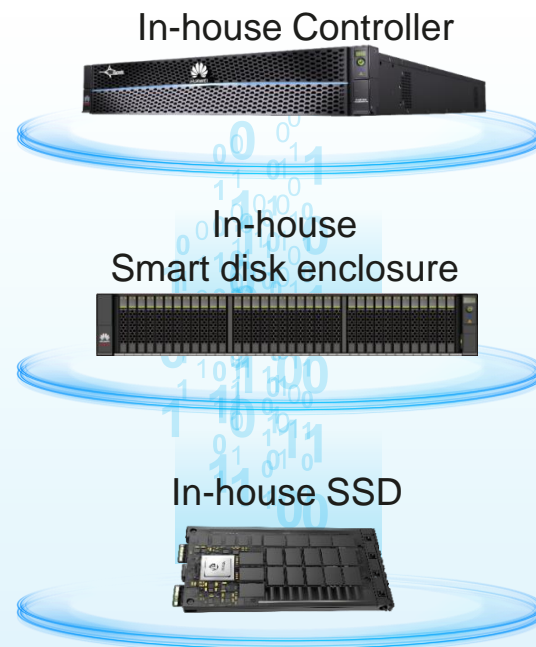


OceanStor Dorado All-Flash Storage

Ever Fast, Ever Solid

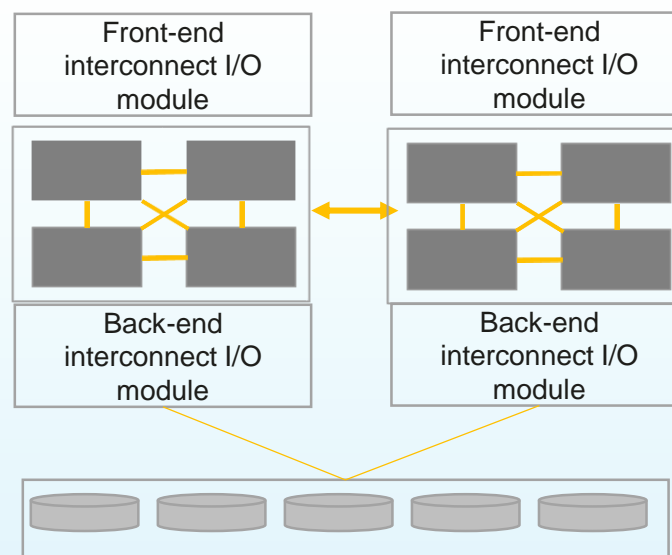
**FlashLink, In-depth Collaboration,
Uncompromising Performance**

21Mn IOPS, 0.05ms latency



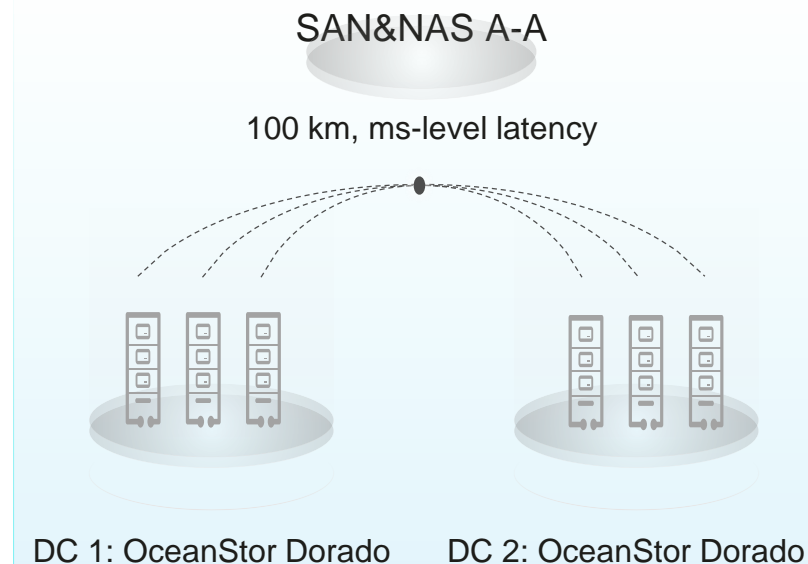
In-depth collaboration among controllers, disk enclosures, and SSDs with FlashLink for stable and high performance.

**SmartMatrix Architecture,
99.99999% (7 9's) Reliability**



Front-end sharing, back-end disk enclosures shared by 8 controllers, industry's unique tolerates 7/8 controller failures

**SAN&NAS Active-Active,
Never Lost a File**



Industry-Only Active-Active (A-A) Solution

OceanStor Dorado Product Overview

Entry-level

Mid-range

High-end



| | Entry-level | Mid-range | | High-end | |
|-----------------------------|---|---|--------------------------|---|---------------------------|
| Model | OceanStor Dorado 3000 V6 | OceanStor Dorado 5000 V6 | OceanStor Dorado 6000 V6 | OceanStor Dorado 8000 V6 | OceanStor Dorado 18000 V6 |
| Controller enclosure height | 2U | 2U | 2U | 4U | 4U |
| Controller expansion | 2-16 | 2-16 | 2-16 | 2-16 | 2-32 |
| Maximum disks | 1200 | 1600 | 2400 | 3200 | 6400 |
| Cache/Dual-controller | 128 GB, 192 GB | 256 GB, 512 GB | 1024 GB | 512 GB, 1024 GB, 2048 GB | 512 GB, 1024 GB, 2048 GB |
| Front-end ports | 8/16/32G FC/FC-NVMe, 10/25/40/100G Ethernet, 25 Gb NVMe over RoCE | 8/16/32G FC/FC-NVMe, 10/25/40/100G Ethernet, 25/100 Gb NVMe over RoCE | | 8/16/32G FC/FC-NVMe, 10/25/40/100G Ethernet, 25 Gb NVMe over RoCE | |
| Back-end ports | SAS 3.0/100G RDMA | | | | |

OceanProtect Backup Storage: High Efficiency and Zero Loss

Customer C: 46% shorter backup time

OceanProtect: Fast backup and recovery

- Long backup periods impact core applications.



5 DCs
800 TB

Backup time: 46% ↓

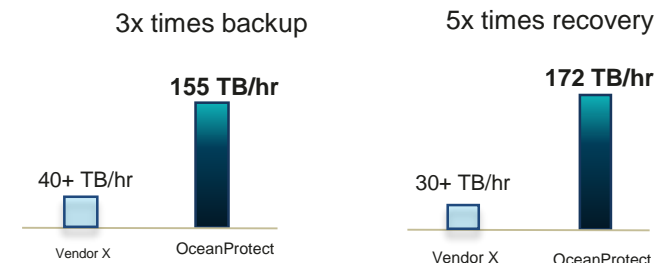
26 hours → 14 hours

TCO: 20% ↓

Based on a 20% higher data reduction ratio than peer vendors

High performance

Backup speed: 3x ↑



Low TCO

Data reduction ratio:
20% ↑

60:1

Vendor X

VS

72:1

HZBC dedup&comp algorithm
(Huawei patent)

High reliability

Zero data loss

Active-Passive architecture



Industry: Task interruption and resuming during service switchover

Active-Active architecture



Huawei: Service switchover within seconds without interruption

Huawei OceanProtect Portfolio:



| | Entry/Mid-Range | Mid/High-End | High-End Flagship |
|--------------------------------|-----------------------------------|--------------------|--------------------|
| Product model | OceanProtect X6000 | OceanProtect X8000 | OceanProtect X9000 |
| Height per node | 2 U | 2 U | 4 U |
| Number of controllers per node | 2 | 2 | 4 |
| Max. number of nodes | 1 | 2 | 2 |
| System usable capacity | 16 TB to 300 TB | 150 TB to 2.0 PB | 480 TB to 3.6 PB |
| System logical capacity | Up to 21.6 PB | Up to 144 PB | Up to 259.2 PB |
| System backup bandwidth | Up to 19 TB/hour | Up to 55 TB/hour | Up to 155 TB/hour |
| System restore bandwidth | Up to 22 TB/hour | Up to 57 TB/hour | Up to 172 TB/hour |
| Data disk type* | 3.84 TB/7.68 TB SAS SSD | 7.68 TB SAS SSD | 7.68 TB SAS SSD |
| Front-end port type | 10/25/40/100GE, 8/16/32 Gbit/s FC | | |

Data disk type* - SSD or SDD/HDD type

Ransomware: a major cyber threat to the global power industry



System breakdown

In early November 2021, XX Electric Power Company in the US suffered a malicious cyber attack that **shut down 90% of the company's internal system functions and wiped 25 years of historical data.**

On May 12, 2017, WannaCry, exploiting the MS17-010 vulnerability, **infected 300,000 users in 150 countries, causing a loss of US\$8 billion.**



Economic loss

In June 2020, Brazil's XX Electric Power Company was extorted by hackers for **US\$14 million** in ransom.

In April 2020, Ranger Locker attacked EDP, a Portuguese multinational energy company, asking for a ransom of up to **US\$10.9 million.**



Power outage

In December 2015, a cyber attack hit a Ukraine power distribution center, **resulting in a 6-hour power outage and affecting 225,000 users.**

In May 2020, Venezuela's national power grid was attacked, **causing power outages in 11 states across the country.**



Data leakage

In June 2018, hackers stole over 65 GB files from Ingerop, which included information of the French company's **nuclear plant program and the personnel information of over a thousand employees.**

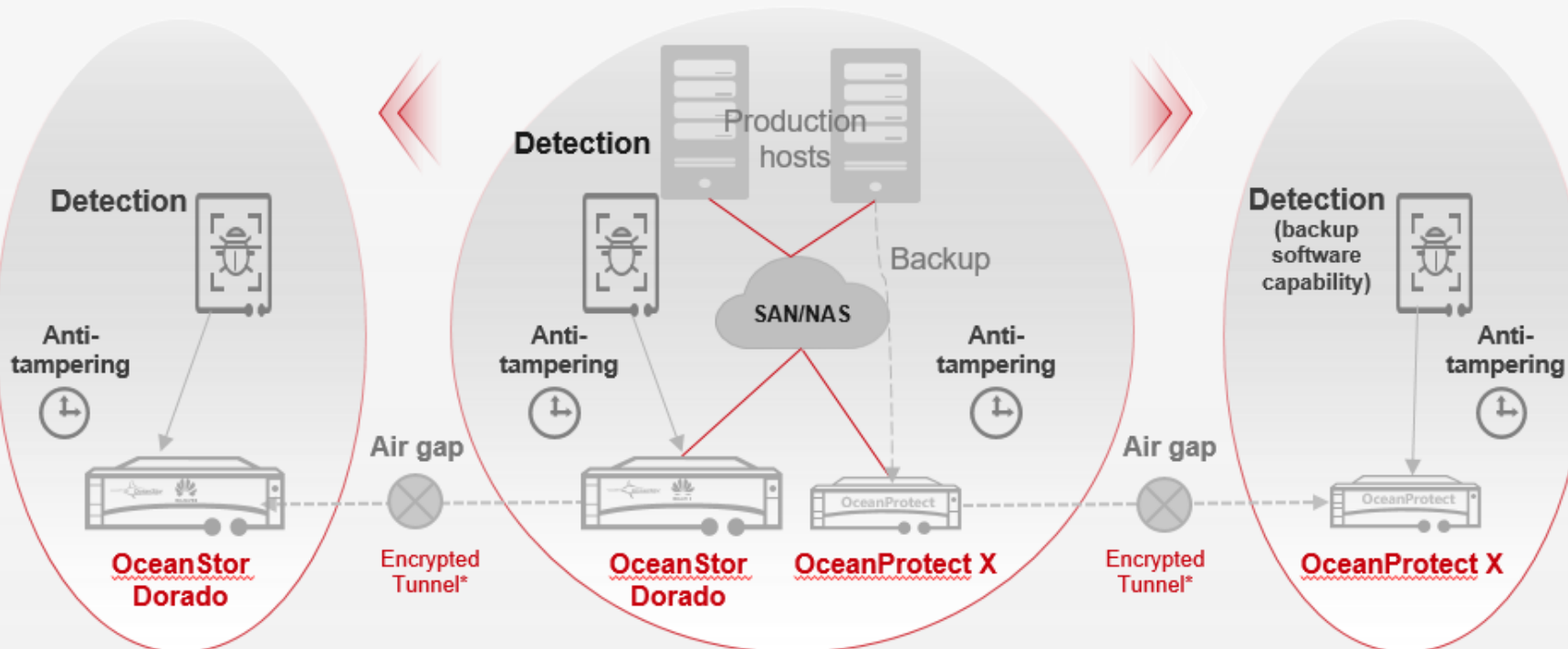
Infrastructure areas, such as energy, electric power, and water resources, are top target of hacker organizations every year. **Closely connected with the production and life of modern society, the electric power sector, in particular, once attacked, may cause severe damage to social production and transportation, leading to personal injury or loss of life, equipment damage, etc.**

Dual Ransomware Protection with Primary and Backup Storage

Storage Air-Gap Zone

Production zone

Backup Air-Gap Zone



Layer 1

The production storage detects and intercepts ransomware in a timely manner to assist prompt handling.

Layer 2

Secure snapshots on production storage are used to recover services in seconds.

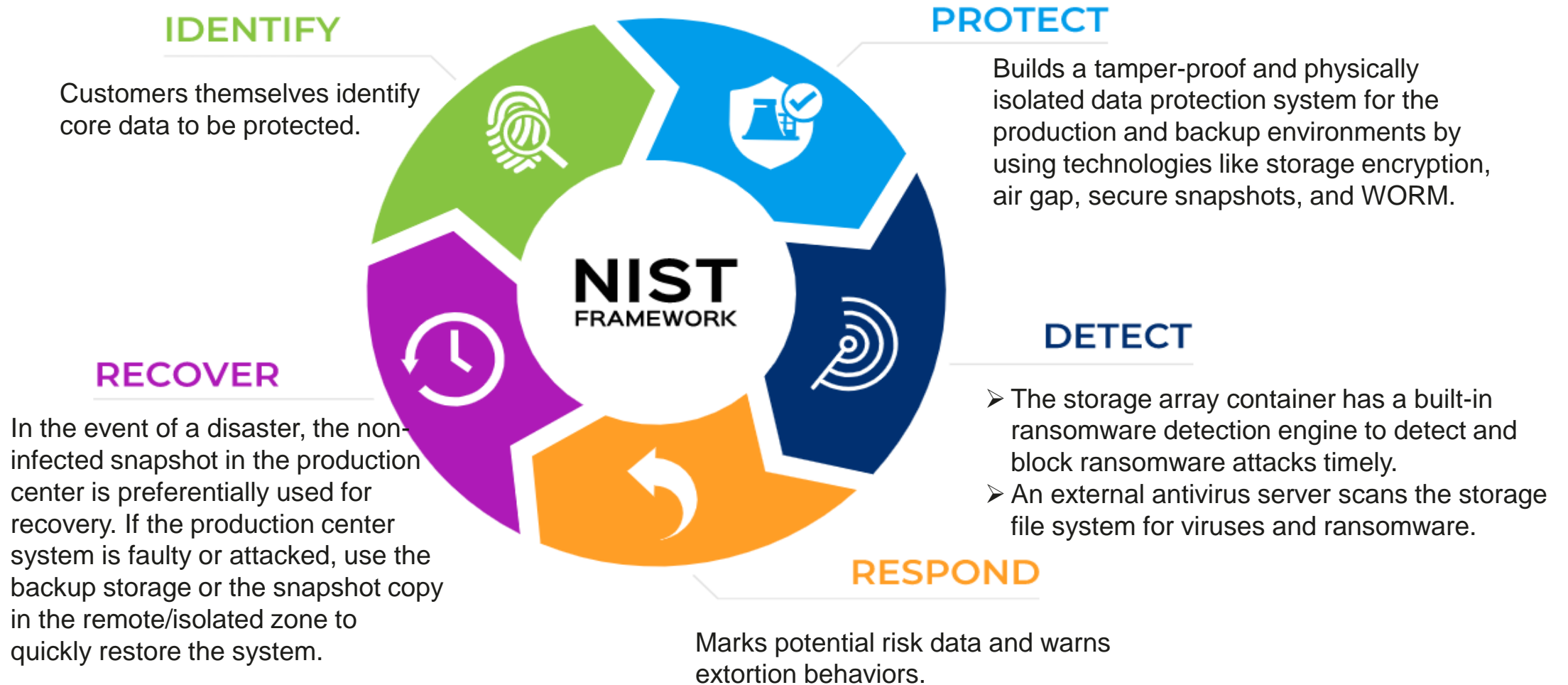
Layer 3

Local backup is used to recover services in hours.

Layer 4

Secure data in the Air-Gap zone is used for fast service recovery.

Huawei Ransomware Protection Storage Solution Complies: NIST Cybersecurity Framework



NIST - National Institute of Standards and Technology Framework



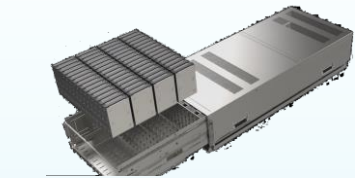
OceanStor Pacific Mass Data Storage

High-density Hardware, High-efficiency Data Analysis

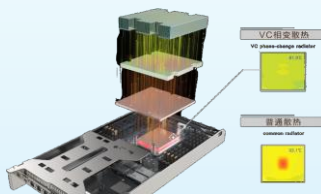
**High-density and large-capacity,
40% Lower Energy Consumption**

**Seamless Multi-protocol Interworking,
High-efficiency Data Analysis**

**High-density hardware:
120 disks/5U vs 36 disks/4U**

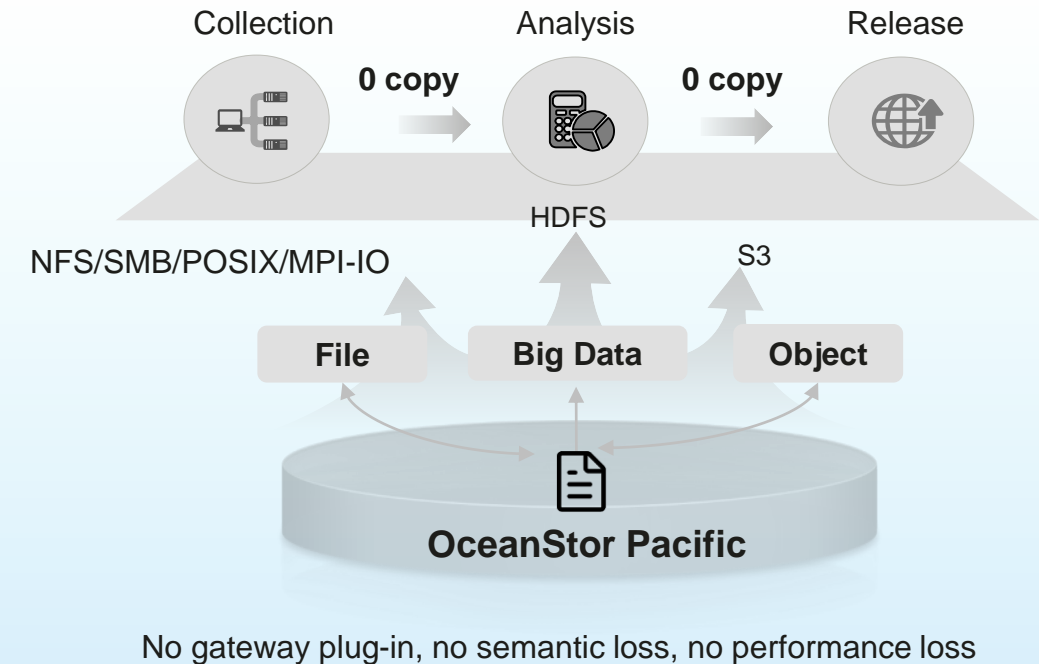
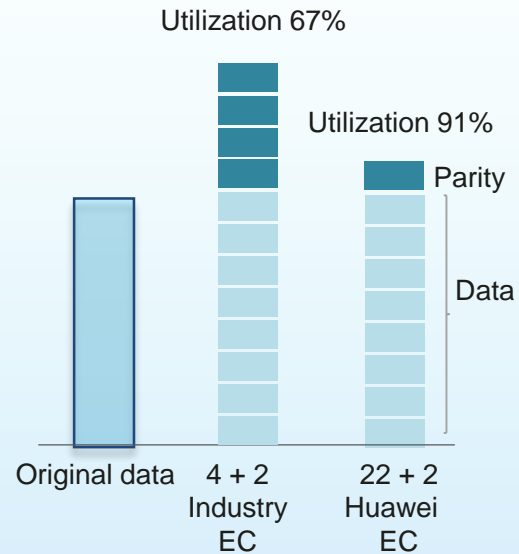


Two-way pull + tank chain



VC phase change heat dissipation

**Elastic EC algorithm,
1.4X disk utilization**



Distributive Storage: OceanStor Pacific Series Solution



✓ Economical Storage for Mass Data

- Object, HDFS, File, Block

Up to
4,096 nodes
for scalability on demand

Up to
91.6%
disk space utilization

Reduced
30%
TCO

✓ Efficient Processing for Diverse Data

Up to
100billion
objects per bucket

As low as
< 1 ms
stable latency

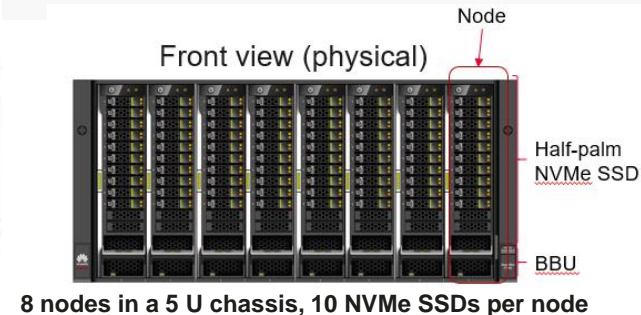
Fault disk prediction
14 days
in advance

✓ Everlasting Operations for Online Services

99.9999%
reliability

24/7
service continuity

Intelligent
health management



High-Density Hardware Architectures for Mass Data

OceanStor Pacific 9950 High-density performance model



5 U, 80 NVMe SSDs, 160 GB/s

OceanStor Pacific 9550 High-density capacity model



5 U, 120 disks, 1.68 PB

Cross-sectional area:

65%↓

Component design

Half-palm NVMe SSDs

Heat dissipation efficiency:

30%↑

Heat dissipation design

Carbon fiber pad + VC heat spreader
Aviation-standard counter-rotating fans
Dual-layer air channel

Disk utilization:

91.6%

Algorithm design

Elastic EC
E2E DIF

Maintenance efficiency:

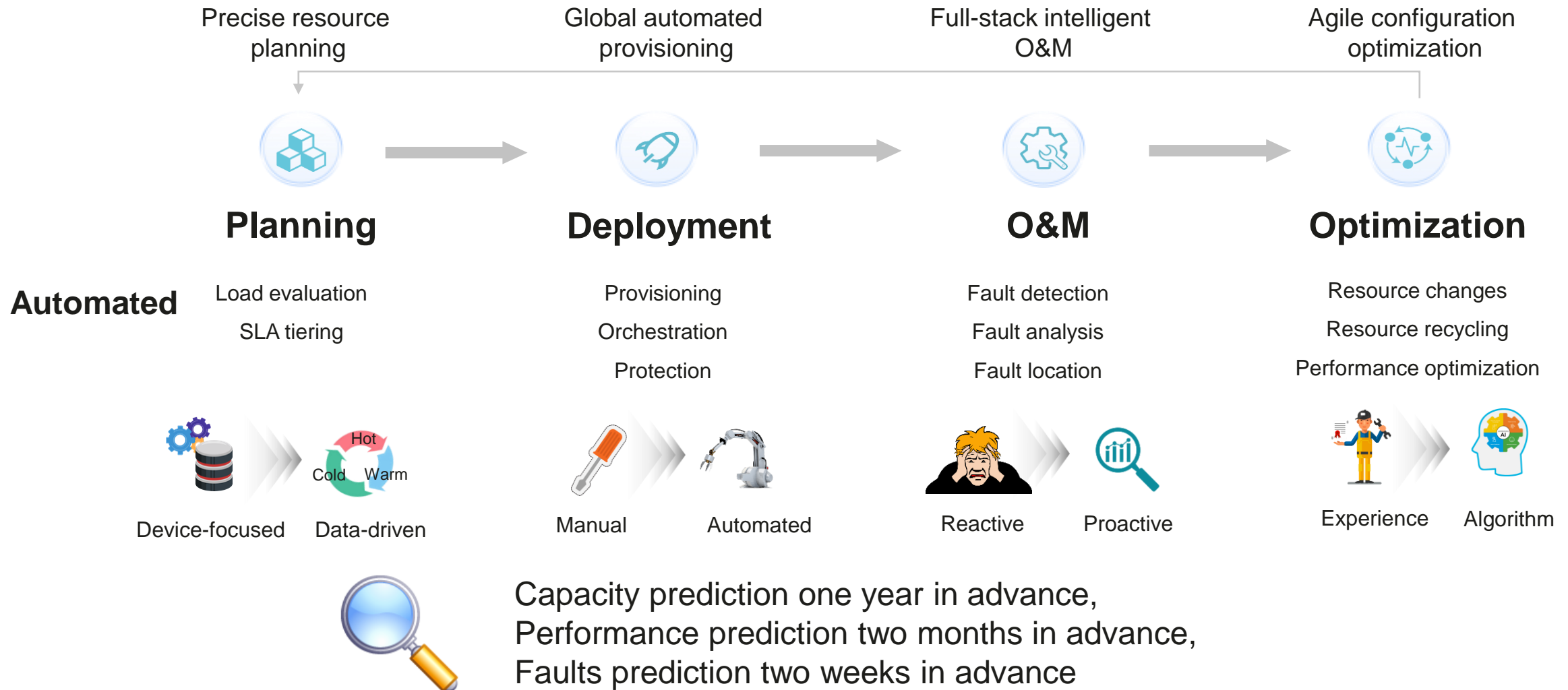
20%↑

System design

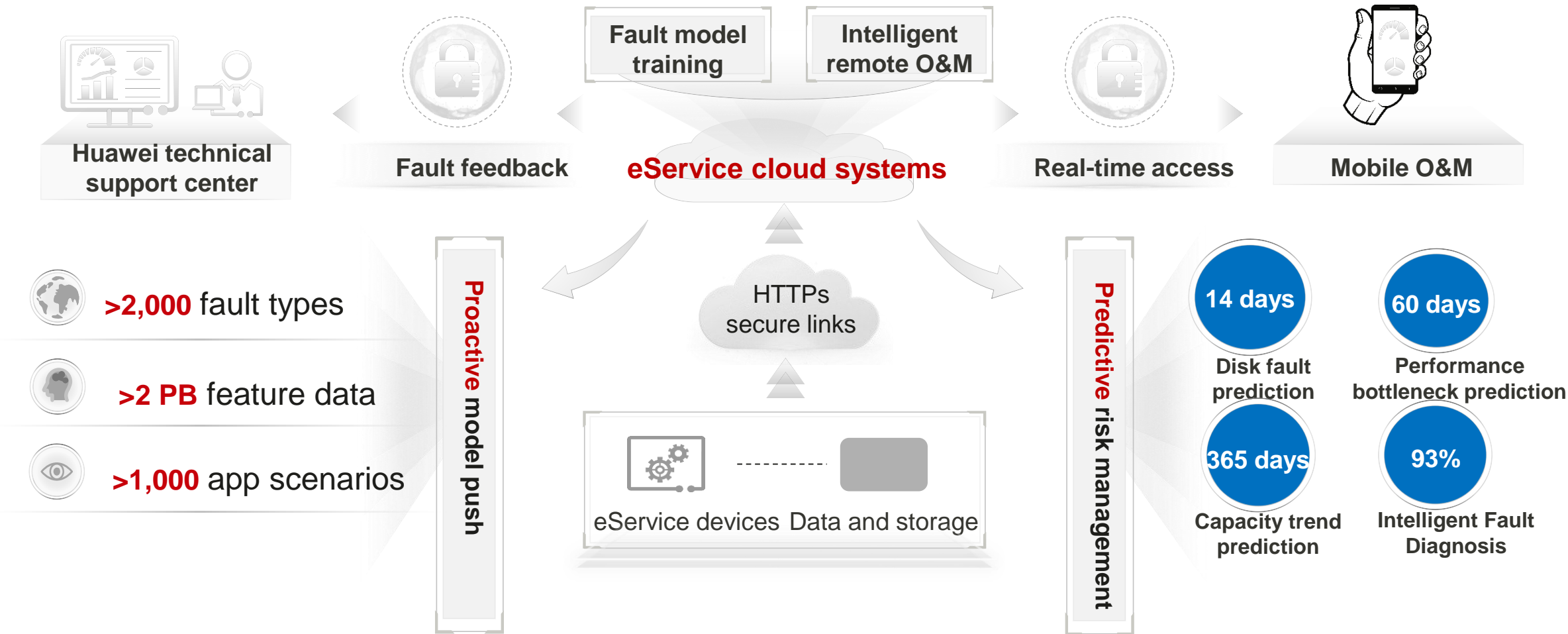
FRU
Bidirectional drawer slide
Tank chain

DME Automates Full-Lifecycle Data Management for Efficient O&M

5x Efficiency Improvement



eService: Cloud Brain for Proactive, Predictive, and Intelligent O&M



Risky disk identification

Identify the faulty disks **14 days** in advance.



The risky disk identification rate reaches 80%, and the error rate is less than 0.1%.



Capacity prediction

Predict capacity consumption and **identify overloaded resources**.
Predict the capacity trend **in the next 12 months** and determine the capacity requirements.

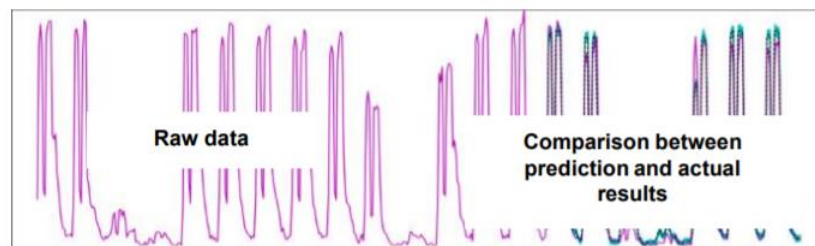


Evaluate the capacity requirements and provide a detailed **capacity expansion solution**. Analyze the idle resources in the system and **improve the resource utilization**.



Performance trend prediction

Predict the performance trend in **the next two months** and evaluate the upper limits of the device performance values to predict performance bottlenecks.



Performance monitoring

Intelligently identify device performance anomalies and provide analysis and suggestions to eliminate performance problems in time and ensure stable service running.



Don't WAIT!

*DELIVER IN **2-5** WEEKS*

Flash Track Promotion

for All Flash Storage + Hybrid Flash Storage



- Enjoy **Rapid Delivery** when you place an order for Huawei flash storage products.
- Easily source products critical to projects that simply have to be implemented **Before the end of 2022**.
- Enjoy **Close Communication and Clear Visibility** regarding product availability.

Agenda:

- Huawei Data Storage Introduction
- **Huawei IdeaHub: Smart Whiteboard Solution**

Huawei IdeaHub Solution: Smart Whiteboard & Video Collaboration Solution



HUAWEI IdeaHub

Intelligence at Your Fingertips



IdeaHub Board
65" | 86"



IdeaHub S
65" | 86"



IdeaHub Pro
65" | 86"

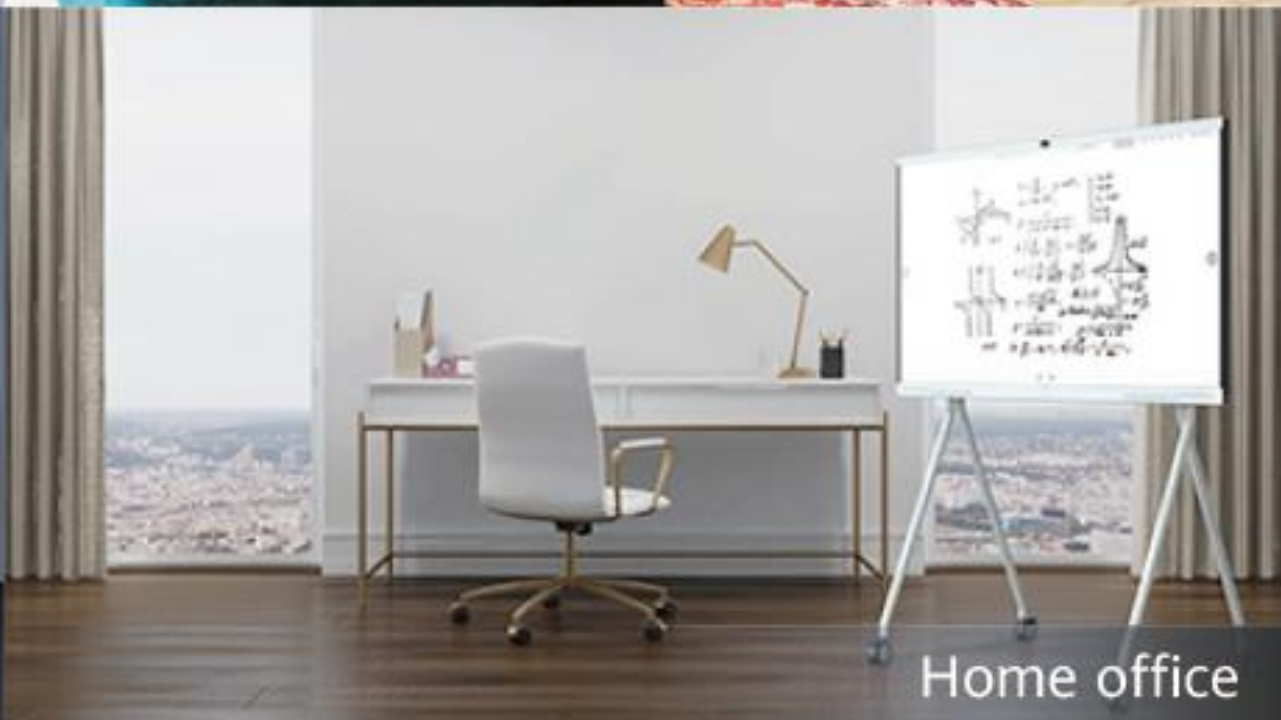
Meeting room



Open office



Executive office



Home office

Thank you.

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

**Copyright©2022 Huawei Technologies Co., Ltd.
All Rights Reserved.**

The information in this document may contain predictive statements including, without limitation, statements regarding the future financial and operating results, future product portfolio, new technology, etc. There are a number of factors that could cause actual results and developments to differ materially from those expressed or implied in the predictive statements. Therefore, such information is provided for reference purpose only and constitutes neither an offer nor an acceptance. Huawei may change the information at any time without notice.

