

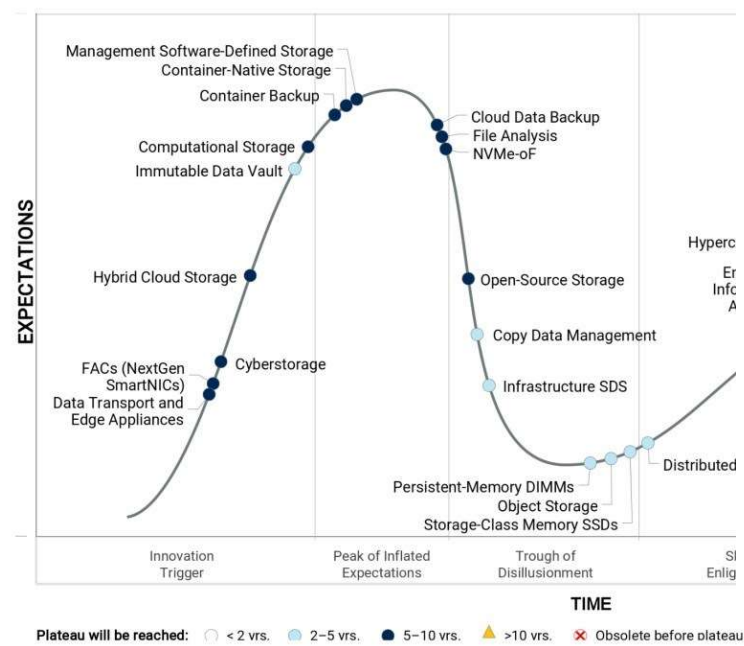
# *2023 Storage Trends & Technologies*

Futurewei Boston Storage Lab  
2/7/2023



# Hype cycle for storage and data protection – From 2021 to 2022

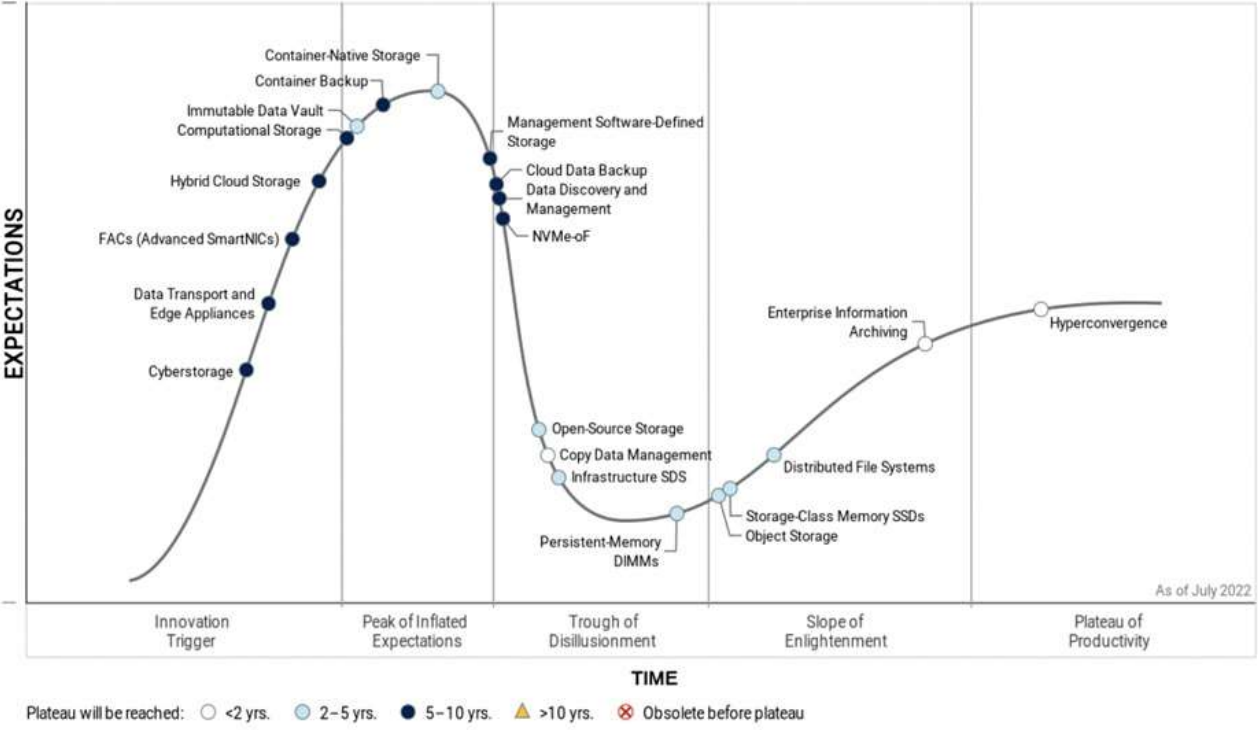
Hype Cycle for Storage and Data Protection Techno



Source: Gartner (July 2021)

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Hype Cycle for Storage and Data Protection Technologies, 2022



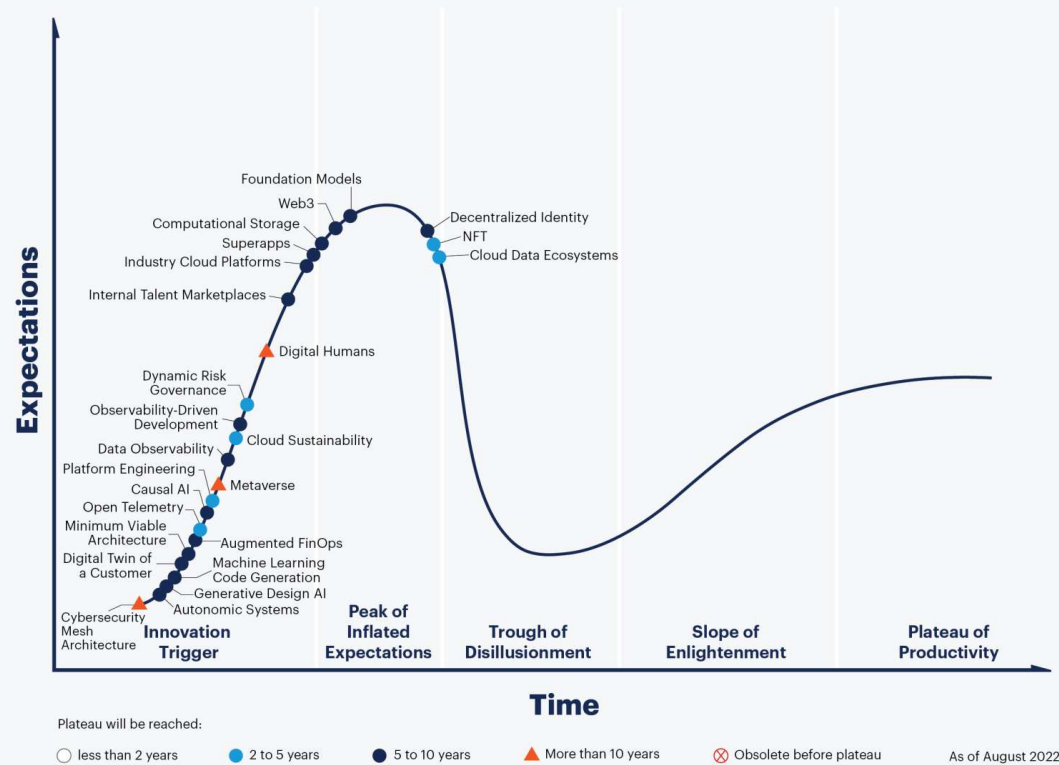
Source: Gartner (July 2022)

Gartner

**FUTUREWEI**  
Technologies

# Hype cycle for Emerging Technologies - 2022

## Hype Cycle for Emerging Tech, 2022



### 3 key themes on 2022 chart:

1. Expand immersive experiences
2. Accelerate artificial intelligence (AI) automation
3. Optimize technologist delivery

gartner.com

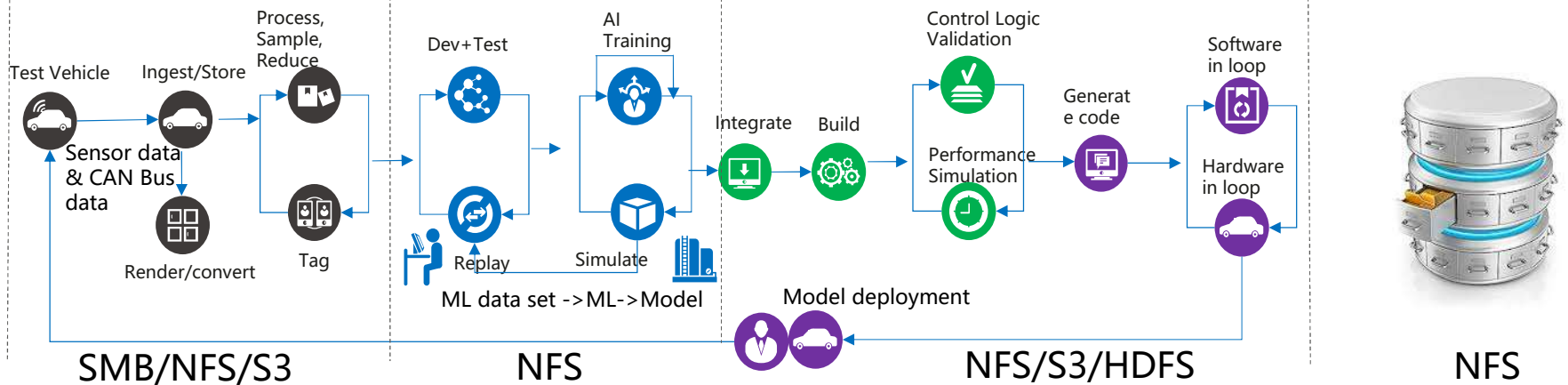
Source: Gartner  
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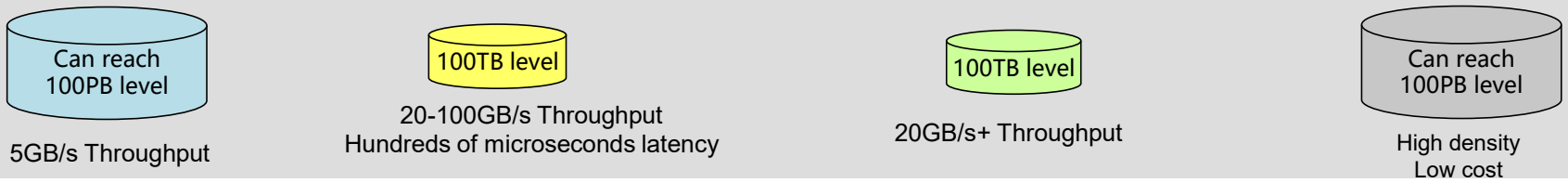
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# Storage for AI - example: ADAS

Phase	Data collection and pre-processing	AI Training	Validation, simulation, SIL, HIL	Backup and archiving
Core requirements	Support expansion to hundreds of PBs	Support large number of small files, high throughput, and ultra-low latency	Support high throughput	High capacity, low cost, long term



## SMB/NFS/S3/HDFS multi-protocol interoperability



## Storage as a service

Tiering

Global Access

Multi-Tenancy

Life-cycle based data management and data flow

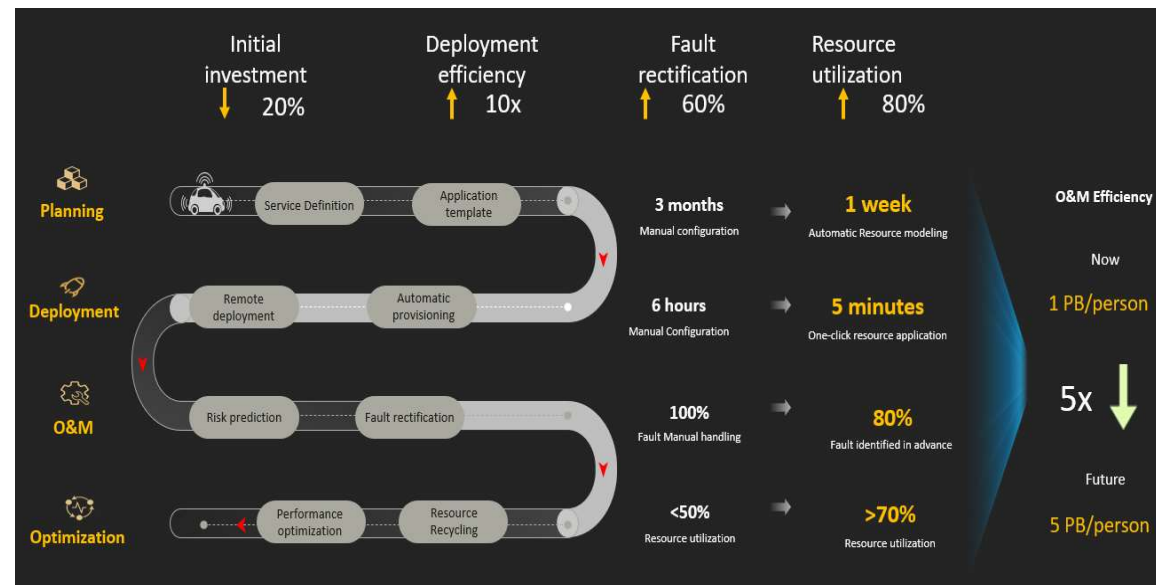
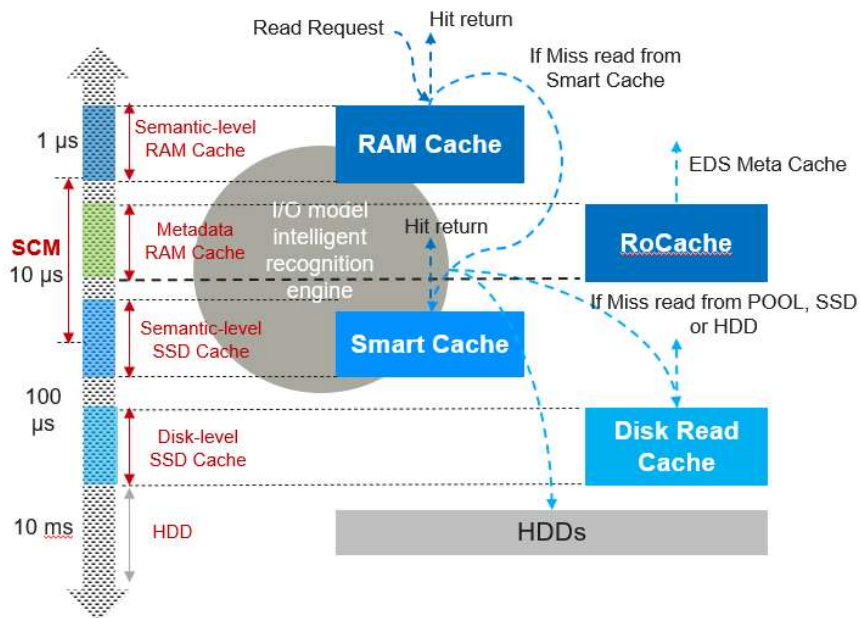
WORM

FUTUREWEI Technologies

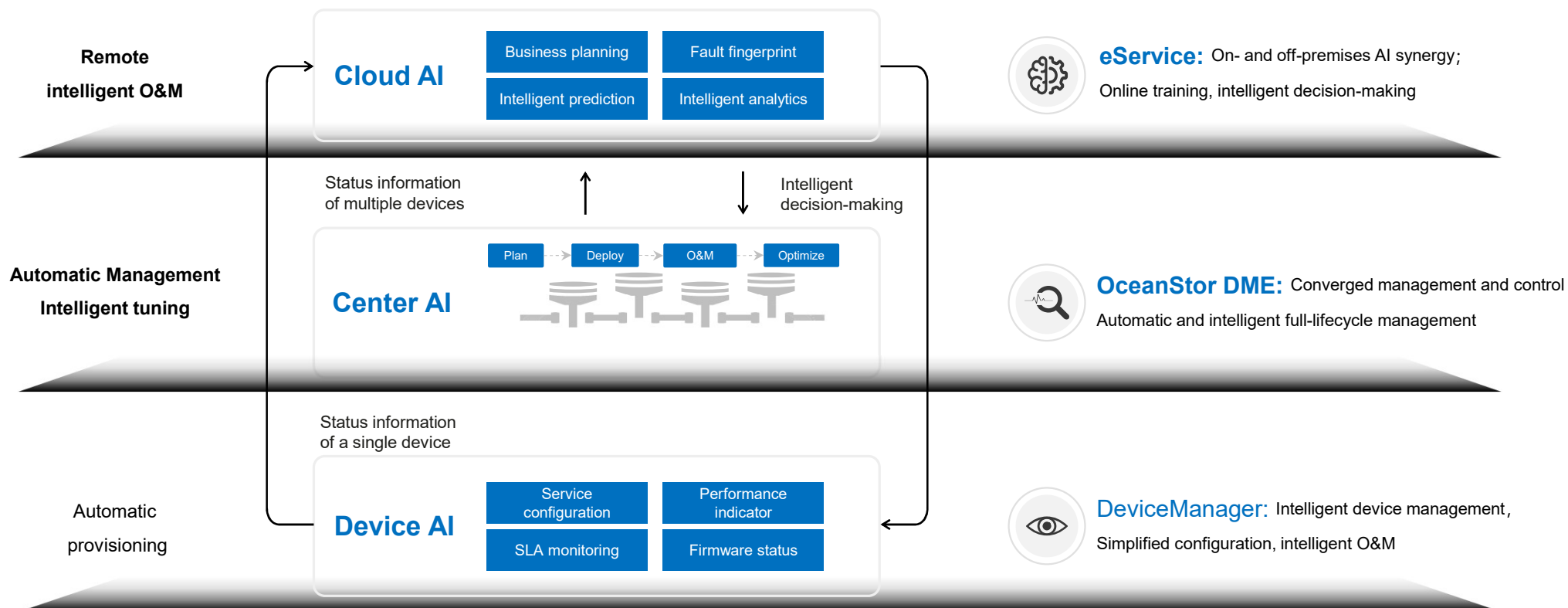
# AI for Storage

- Fully automated and predicative O&M
- Improved algorithm with dedicated AI hardware offloading

Multi-level distributed read cache



# Automation: Three-Layer Collaboration for Efficient O&M



# Cloud vs On-Premise

- The pandemic brought massive new business to cloud.
- Meanwhile some companies are moving off the public cloud.
- Enterprise storage cloud-integration capability is becoming more and more valuable.

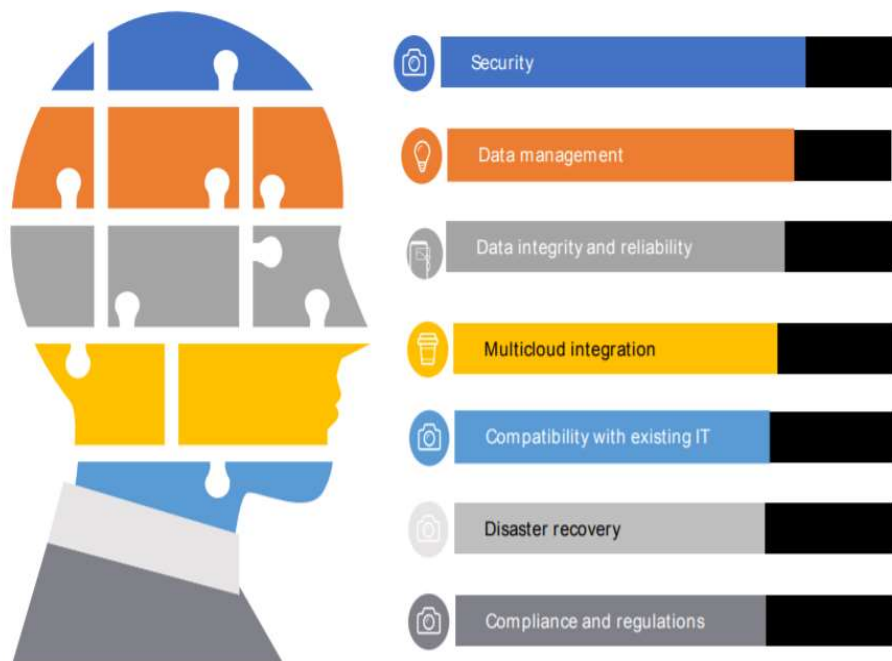
	Cloud	On-Premise
Cost model	OPEX	CAPEX
Control	Less control	Full control
Security	Limited control and authority for data security	Complete control over data and applications
Compliance	More friendly to compliance regulations	Depends on region and availability
Flexibility	Superior flexibility	More suitable for predictable workload



# Containerizing Key Business Workloads

## Container Deployment Challenges

### Top challenges when deploying containers



Source: IDC, 2021

### Key engineering tasks moving forward:

- Increase integration of container orchestration platform
- Continue enriching container ecosystem
- Continue expanding data services for edge container use cases.
- Expand data services messaging to benefits around automated container strategy, cloud optimization, autoscaling, and cloud migration.

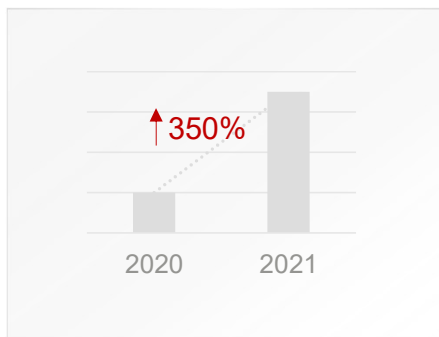
From an engineering perspective, strengthen governance-related features around compliance, regulatory obligations, granular searches, rolling backups, and role-based access controls and security.



# Ransomware Has Become a Major Global Cyber Threat

**Ransomware is a type of malware** that encrypts or steals victim's data and makes computers or specific files unusable or unreadable, and then demands a ransom to recover the computer or decrypt the encrypted file. Ransomware is constantly evolving, and often evades common antivirus software.

## »» Sharp increase in attacks ««



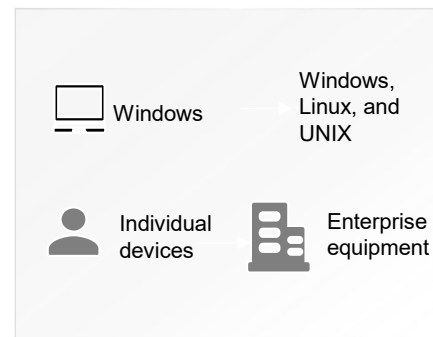
- > 350% attack CAGR.
- The number of new ransomware variants has increased by 46%.

## »» Mainstream network threats ««



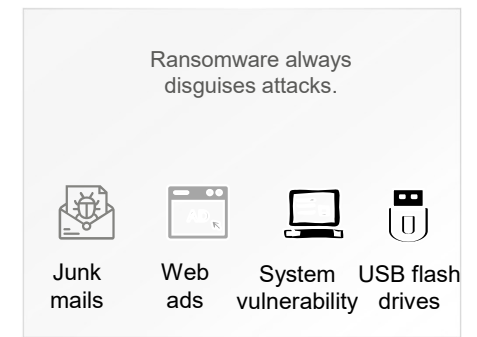
- Global Cybersecurity Outlook 2022 reported that **ransomware attacks are the highest business** concern for cyber leaders.

## »» Diverse attack targets ««



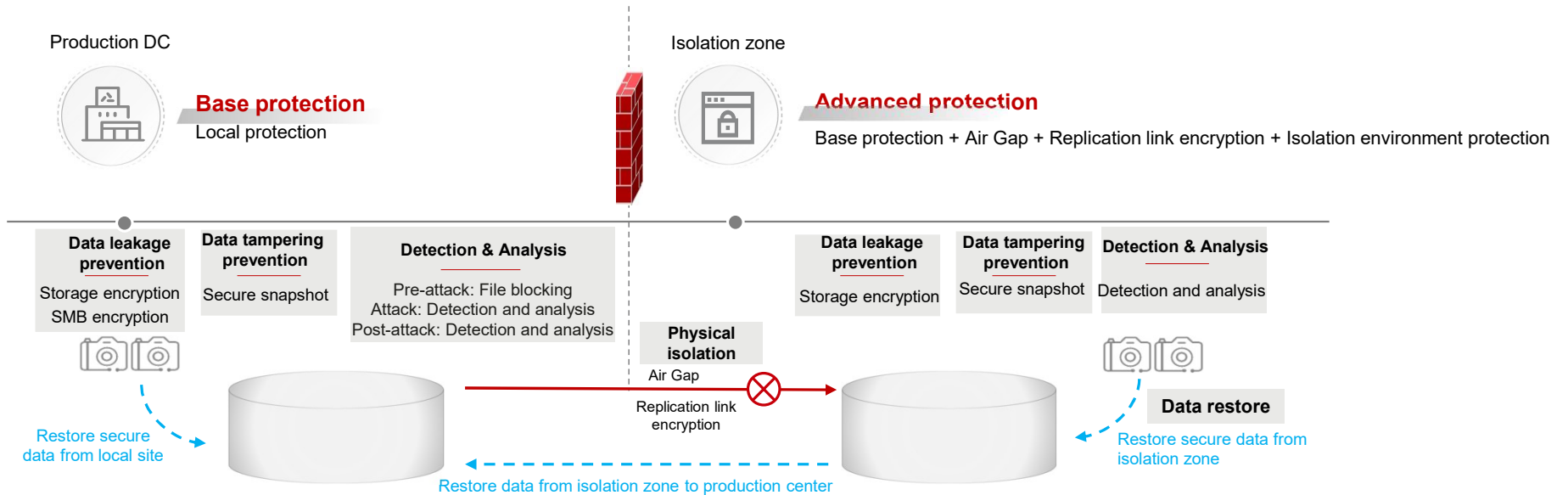
- In 2021, the global industry sectors, such as manufacturing, service, construction, finance, energy, healthcare, industrial control, and government organizations were frequently attacked by ransomware, causing severe losses to global output.

## »» Stealthier ««



- Phishing attacks: Obtain sensitive information through masquerading.
- Brute force attacks: Use trial-and-error to guess login info.
- Zero day attacks: Exploit the software vulnerability before developers can find a fix.

# A Complete Ransomware Protection Solution



## Key Technologies

- 1 Storage encryption**  
Ensures storage data security and prevents sensitive information leakage caused by ransomware attacks.
- 2 Replication link encryption**  
Encrypts data transmitted to prevent sensitive information leakage during replication.
- 3 SMB encryption**  
Transmits SMB packets in ciphertext to prevent data theft.
- 4 Secure snapshot**  
Ensures storage data is read-only and cannot be modified or deleted within a specified time range in the production center and isolation zone.
- 5 Air Gap**  
Automatically disconnects replication links and replicates data to the isolation zone for better protection.
- 6 File blocking**  
Creates a file name extension blacklist to prevent common ransomware.
- 7 Detection & analysis**  
Uses proprietary detection and analysis engine installed in the built-in container of the storage array, and the ML algorithm to analyze user behavior and file damage characteristics, issuing event alarms and providing client information to track the source.

# Higher density components enables better heat dissipation while providing higher density

Low hardware density means high per-GB energy consumption, large footprint, and poor heat dissipation.



High energy consumption per unit capacity



**4U24**



Poor heat dissipation

**High-density components**



HDD

- Typical power consumption: ~7W
- Typical capacity: 600 GB/1.2 TB



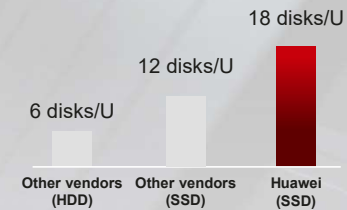
SSD

- Typical power consumption: ~7W
- Typical capacity: 3.84 TB/7.68 TB

**Industry-leading hardware density for 25% higher heat dissipation efficiency**

**High-density systems**

**2U36 NVMe SSD**



# Interpret the Gartner® Magic Quadrant



## Strength: Strong execution

Huawei® has avoided the supply chain and component shortage issues that affected the lead times and price increases of its industry peers, maintaining normal lead times throughout the trailing 12-month period.

## Weakness:

Geopolitical situation continue to weigh.

# Thank You.

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