Primary Storage Trends

Boston Storage Solution Group

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Some observations for Primary Storage

- A red ocean market with increasingly competitions from cloud and among existing vendors
- Data and application has far more reaching impacts to customer's business than underlying infrastructure. Application and data platform has controlled data access point resulting in decoupling of infrastructure underlying and applications that use them.
- Building an integrated application platform by leveraging hardware and underlying infrastructure capabilities could be one of the key competences for primary storage products.
- Growing software capabilities and broader ecosystem supports to meet customer requirements with hardware differentiation as core competence can increase customer stickiness and expand business.

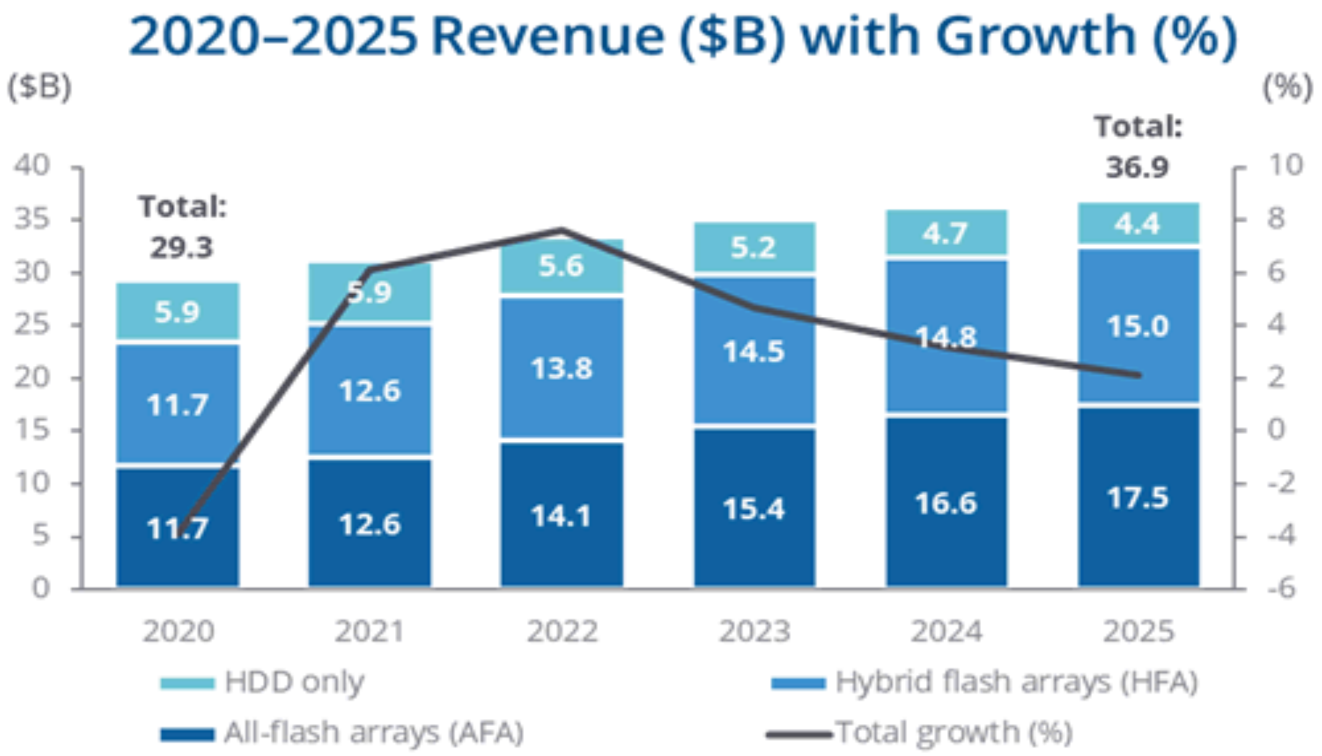
Some observations for Primary Storage

- Carbon emission regulation conforming may become a barrier for enterprises to enter certain IT markets in the future.
- Some primary storage vendors, NetApp as leading example, have started to transition themselves into public cloud storage companies. It is a bold move. To hedge the risk, we are expecting those vendors will continue to invest their bread and butter – on prem primary storage market.

10 Major points deserving attentions

- Fully embrace application as data and data/application platform integration in primary storage and take full control of data/application entrances.
- Position primary storage product to provide modern data center infrastructure services including compute, storage, and other services.
- Extensive ecosystem support by leveraging application and data platform integration. (Transform storage eco system problems into platform eco system problems)
- Provide more application and data centric semantics to be integrated and managed by data/application platform.
- Highly distributed architecture with modular design and managed with data/application platform and distributed OS.
- Provide extensive support for PayU and STaaS including hardware agile deployment support and software supports
- Extensive data sovereignty and security support to enable customer digital ownership
- More energy efficient with carbon footprint accounting
- Hardware specialization to accommodate dynamic workload and workload consolidation
- Further advance AIOps and intelligent management to help customer reduce TCO

Overview



Selected Segment Growth Rate

- ▲ All-flash arrays CAGR 8.4%
- ▲ Hybrid flash arrays CAGR 5.1%
- ▼ HDD only CAGR -5.8%

Total Market CAGR

4.7%

However, not all sectors or products are expected to grow equally.
Virtual SAN/HCI is expecting to grow a much faster rate 42.8% than others.

There are several main driving forces for revenue growth:

- All flash array with HCI
- Delivery model (consumption-based service model)

In term of storage media type shipped by storage systems, we will see a trend of HDD sales are decelerating to a point that it is not significant market for big storage vendor anymore.

Worldwide external enterprise storage sales are still dominated by 3 big markets: United States, China, and Europe, with Chinese market having much fastest growth rate 12.3. Due to stagnant growth rate projects in US markets, vendors will and already have shift their focus on European markets and other faster growth markets like Latin America and APJ market. We are going to see even fiercer competitions on those market fronts.

Trends

- Fast Growing HCI Market
- Consumption based or PayU service model
- Containerized Mission Critical Application Proliferation
- CloudOps and Hybrid Cloud
- AIOps
- Hardware and Software Acceleration Adoption

Current Primary Storage Survey

- Data Sevices
- Media
- Host Interfaces
- AIOps

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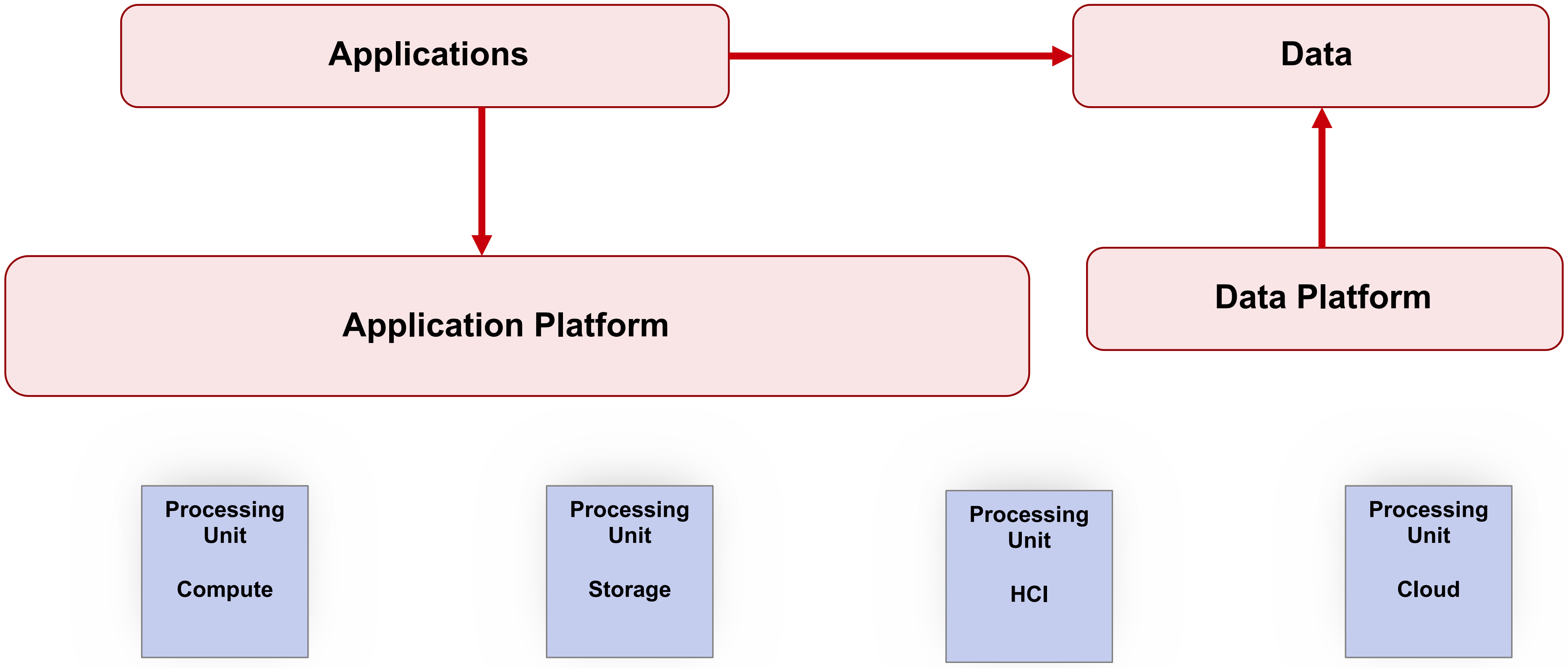
Pain Points

- Server virtulization
- AI/ML
- Security/Ransomware/Data Governanace
- PayU
- Green Initiative and Carbon footprint
- Edge
- ECO System support
- Storage Cloudification

Current Vendor Survey

- Vmware
- NetApp
- Pure Storage
- Dell EMC

Existing Application Full Stack Architecture



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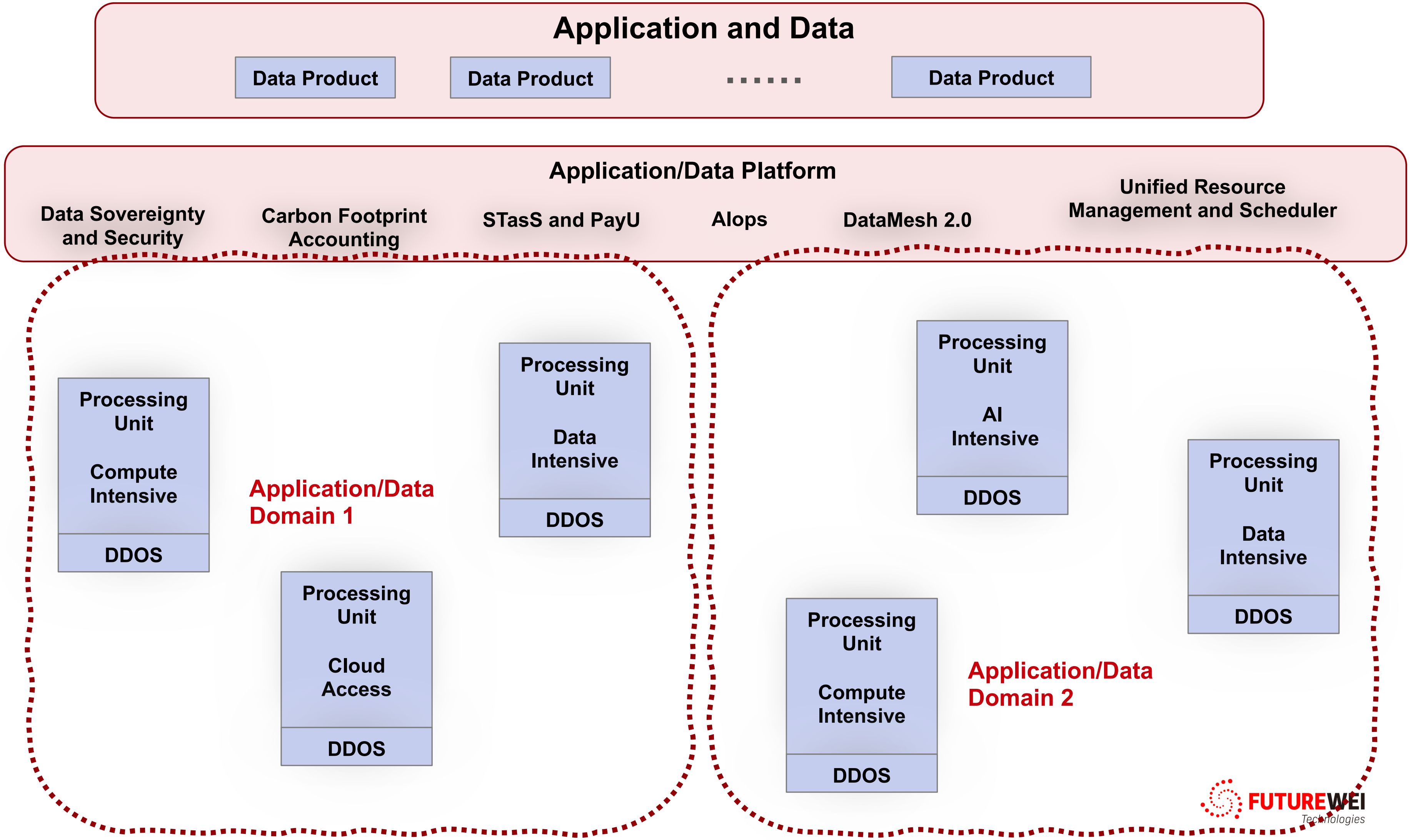
Primary Storage Reference Architecture



Thank You.

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