STORAGE BRIDGE BAY
WORKING GROUP, INC

An Introduction to the Storage Bridge Bay

2007 Spring Storage Networking World

What is SBB?

- Specifications created by a non-profit working group that define mechanical/electrical interfaces between a passive backplane drive array and the electronics packages that give the array its “personality”

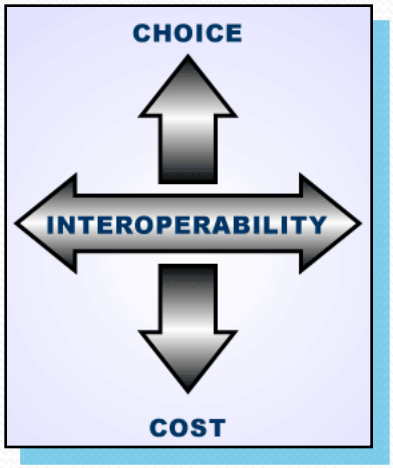
SBB Members

NEC Corporation

Quanta Computer Inc.

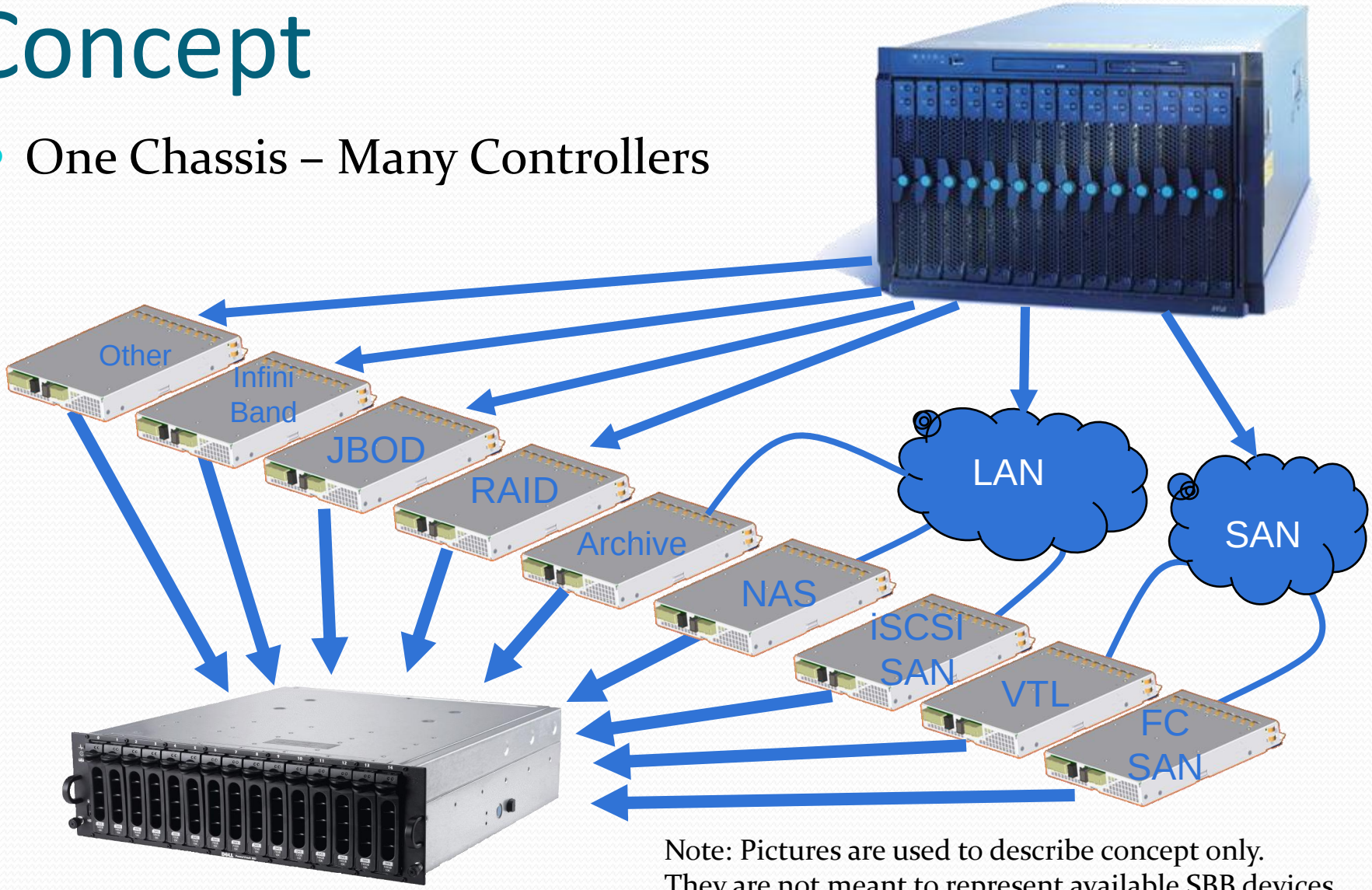
SNIA and SBB

- Both organizations are in full support of each other!
- The SNIA and the SBB Working Group see their efforts as complementary and non-overlapping
- Overall goal is to provide standards that help drive customer choice, reduce cost and improve interoperability



Concept

- One Chassis – Many Controllers



Note: Pictures are used to describe concept only.
They are not meant to represent available SBB devices.

Concept

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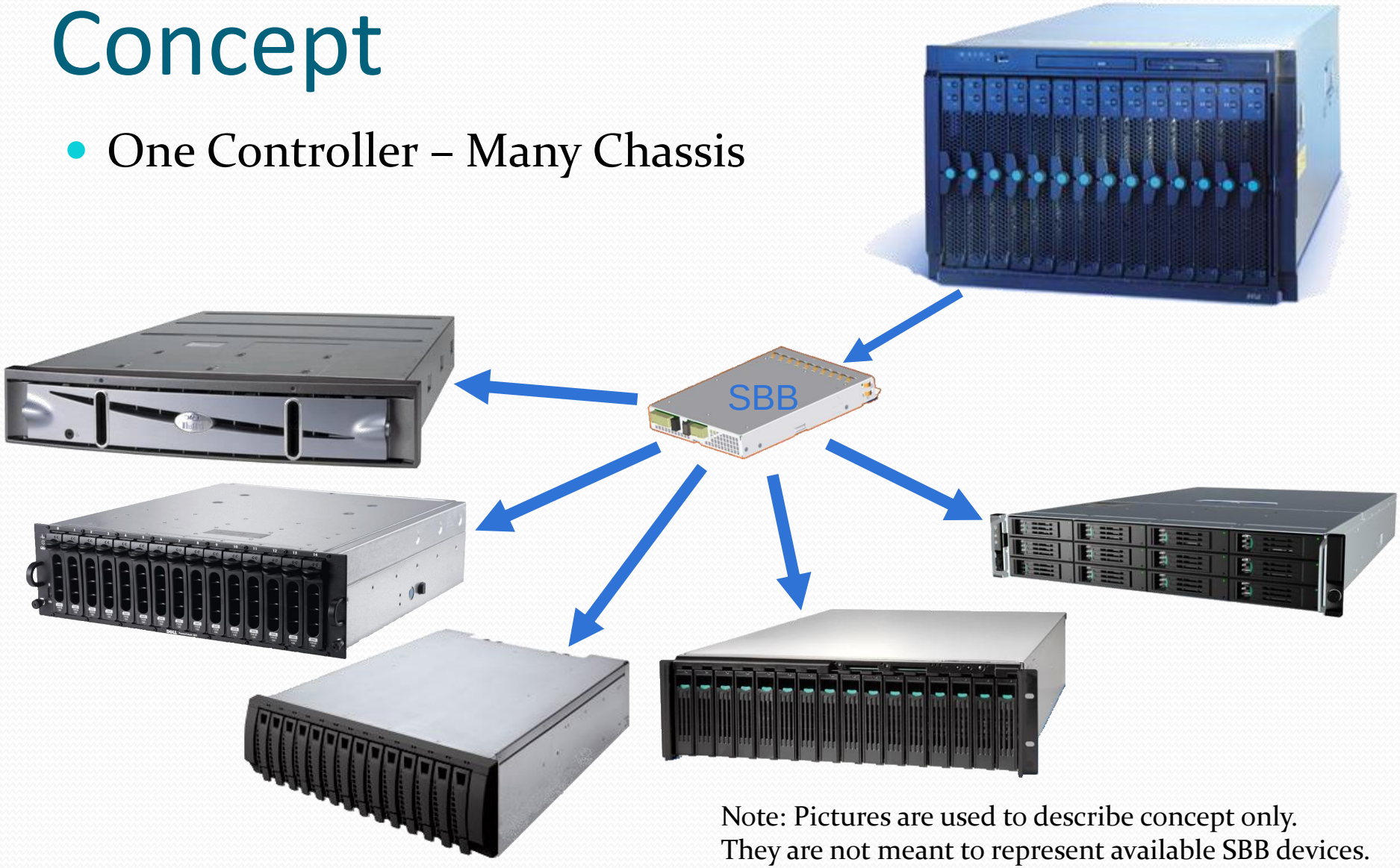

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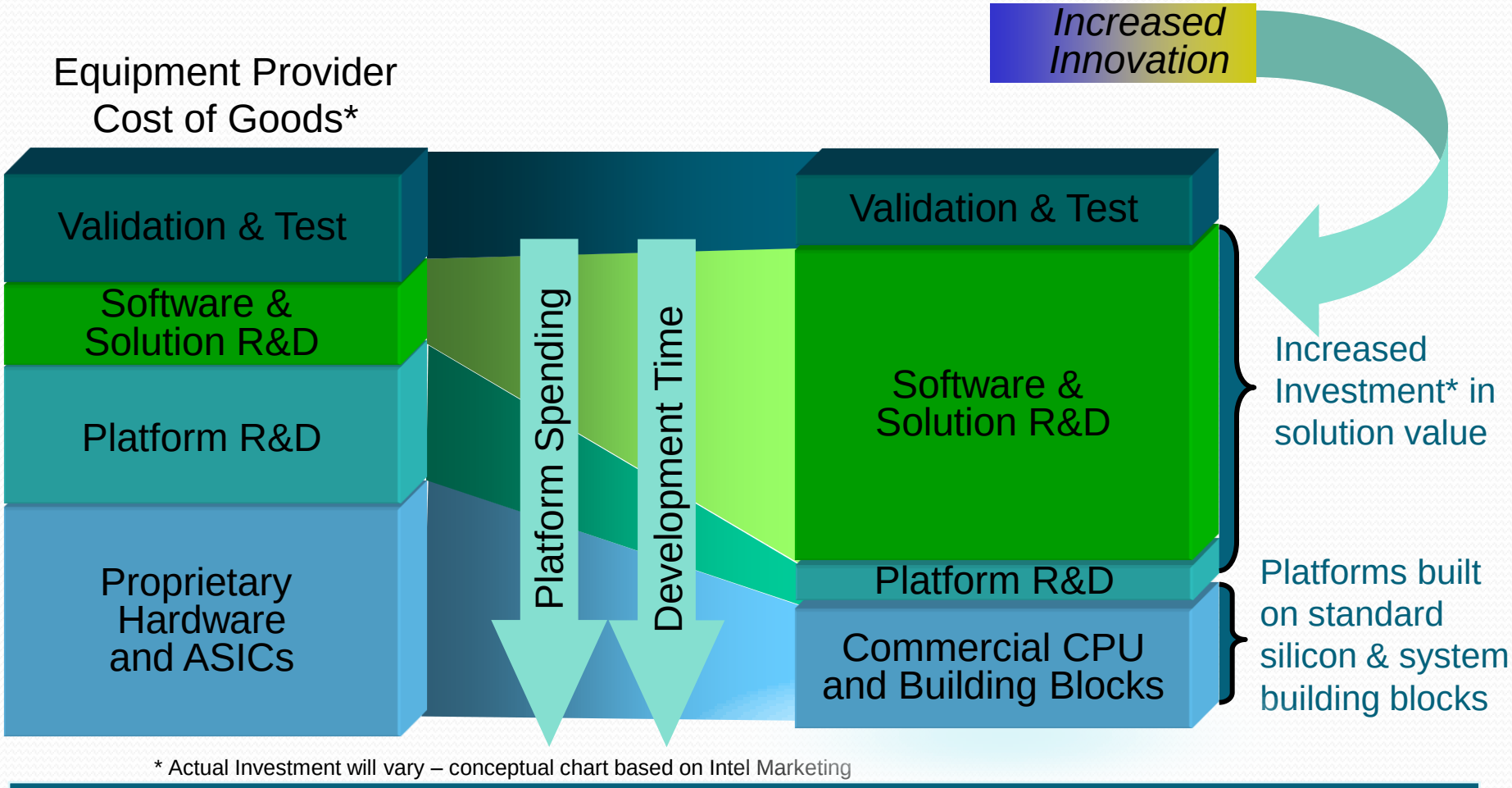
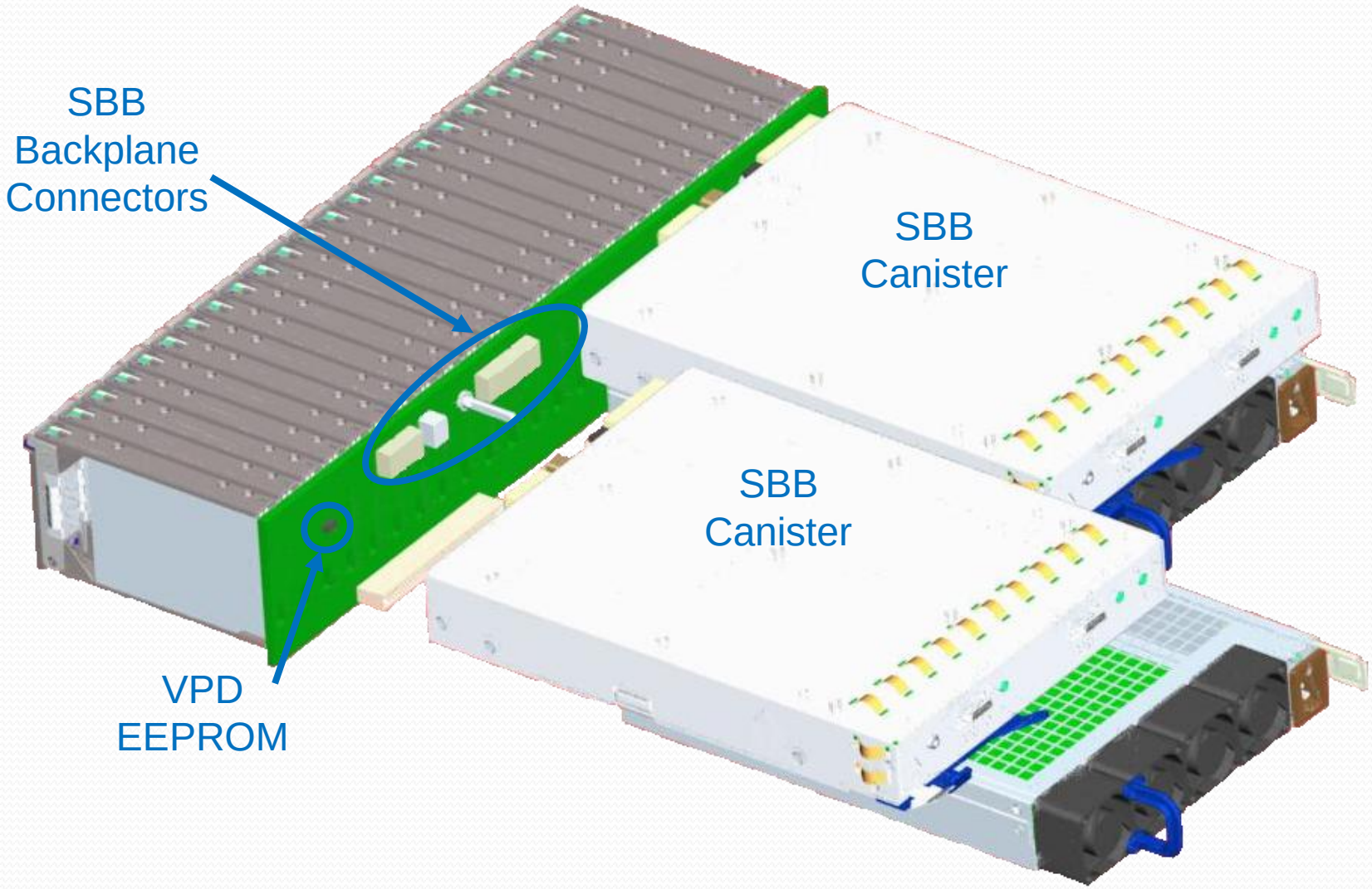
Storage Bridge Bay Benefits



* Actual Investment will vary – conceptual chart based on Intel Marketing

End User Benefit: Increased Quality, Faster Access to New Technologies, Greater Range of Product Offerings, Lower Cost

Specification Focus



SBB Features

Feature	SBB 1.0 (Released)	SBB 2.0 (In Development)
Physical Dimensions	Board volume constraints	Common Canister
Power Profiles	60W, 1 00W	60, 100W, 150W, 200W
Drives Supported	24	48
Signal Speeds	3G SAS, 2G FC, 2.5G PCIe	6G SAS*, 4G FC, 5G PCIe
Canister Interconnects	8 full duplex lanes	17 full duplex lanes
Interoperability Model	Vendor specific	Identify and determine compatibility

*Note: 6G SAS SBB requirements may be released as a supplement to SBB Version 2.0 depending on when the 6G SAS specification is completed.

For More Information

- Visit SBBWG.org for:
  - SBB Specification 1.0 (free download)
  - Presentations on SBB
  - Information on joining the SBB Working Group

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SBB 2.0

The Next Generation of SBB Innovation

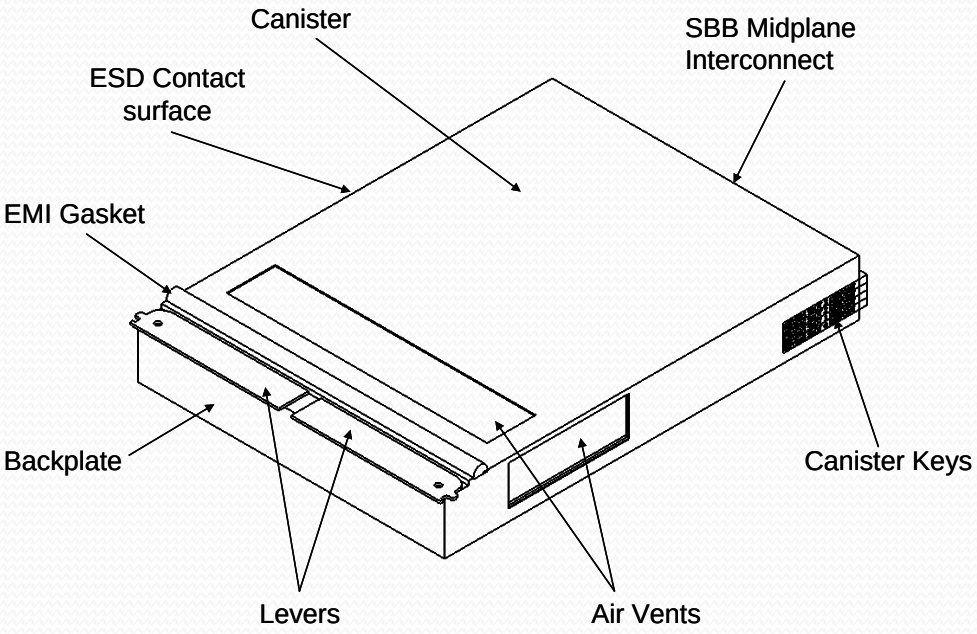
(In Development)

Proposed SBB 2.0 Enhancements

- Common canister
- Support for higher power components
- Additional requirements for greater interoperability
- Incorporation of next generation disk interface technology
- Support for high density disk enclosures

SBB 2.0 Common Canister

- External sheet metal dimensions/details
- Common latching mechanism
- EMI suppression solution
- Faceplate keepout area
- Mechanical keying
  - SAS vs. FC
  - SBB 1.0 canisters in SBB 2.0 enclosures
  - Anti-inversion
- Inlet and exhaust areas

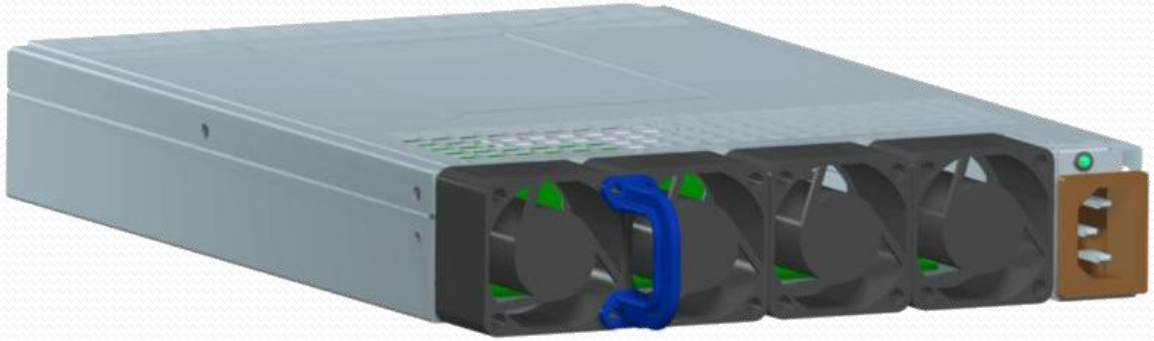


SBB 1.0 = Board Volume Constraints ⟶ SBB 2.0 = Common Canister
Motivation: Reduction in Hardware Integration Cycle

SBB 2.0 Power Provisions

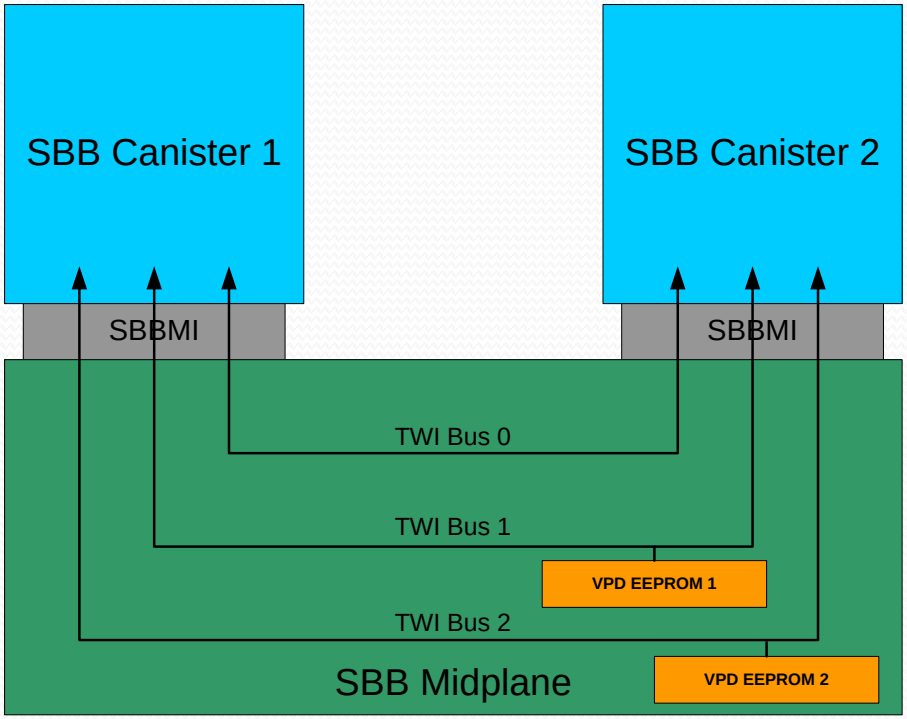
Power Source	Voltage	Average Current	Power
12V	+12V DC	5–16.66A	60 – 200W

Concept power supply



SBB 1.0 <= 100W ⟶ SBB 2.0 <= 200W
Motivation: Support for higher power components

Enhanced Enclosure Management

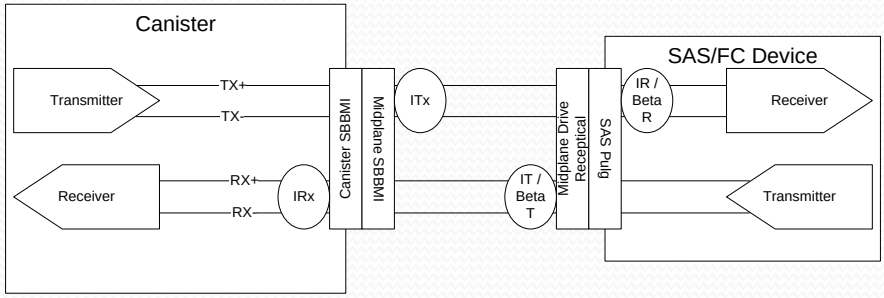


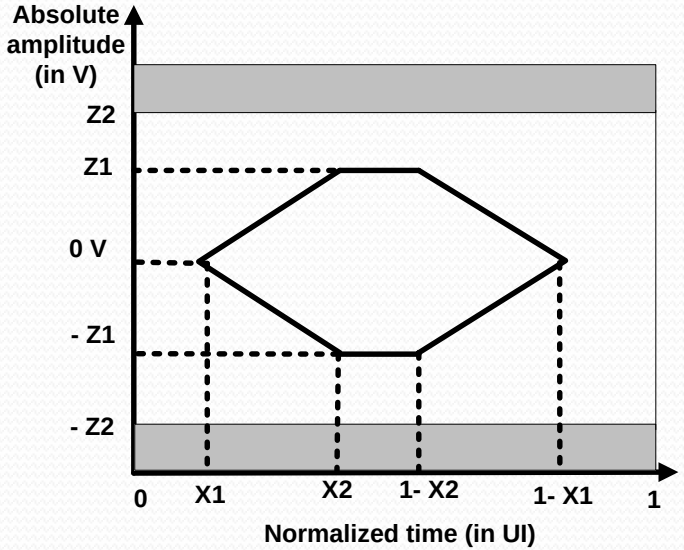
- Hot-plug Management
  - Mutual discovery of partner canister
  - Handshake procedure
  - Shutdown algorithm for incompatible canisters
- Additional VPD Information
  - Power profiles
  - Thermal profiles
  - Vent locations
  - Supported signals
- Enumeration of I2C devices
- Power Management
  - Power-up sequence
  - Staggered drive startup
  - External battery management
- GPIO usage models

SBB 1.0 = Plug and mate ⟶ SBB 2.0 = Smart controllers
Motivation: Reduce integration cycle

Higher Speed Signals

- New drive interfaces
  - 4G Fibre Channel
  - 6G SAS*
  - 6G SATA* - supported only by interposer
- New Canister inter-communication interfaces
  - 6G SAS*
  - PCIe 2.0 (5 G)
  - 4G Fibre Channel
  - GbE (KX)



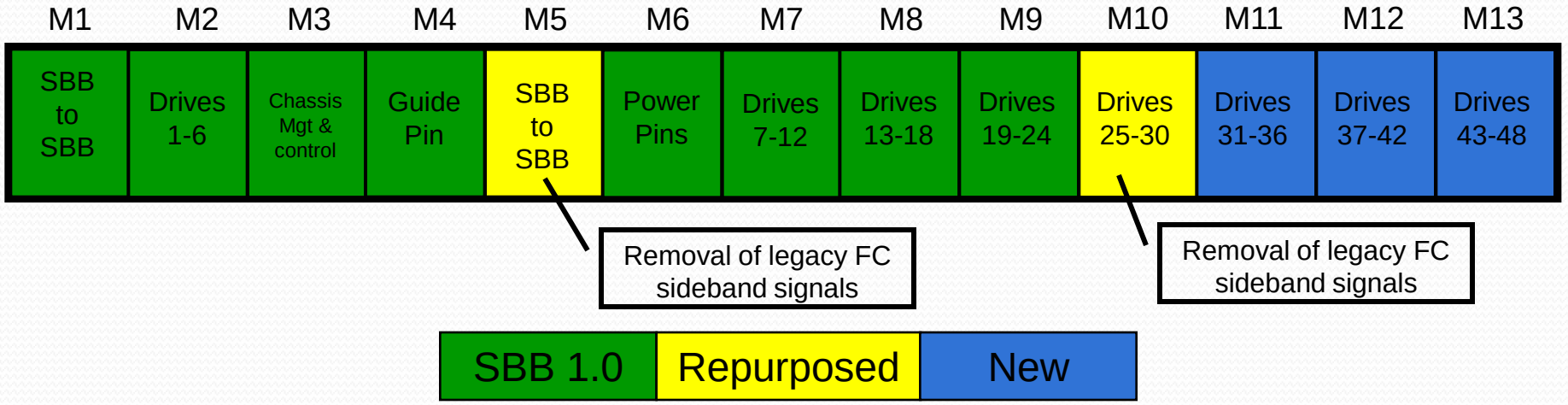


SBB 1.0 = ≤ 3 Gb/s ⟶ SBB 2.0 = ≤ 6 Gb/s
Motivation: Support for evolution of interconnect technology

*Note: 6G SAS SBB requirements may be released as a supplement to SBB Version 2.0 depending on when the 6G SAS specification is completed.

Expanded Modular Connector

- Support for up to 48 drives
- Additional inter-canister communication signals



SBB 1.0 = ≤ 28 drives ⟶ SBB 2.0 = ≤ 48 drives
Motivation: Wider range of enclosure designs

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