OCP SUMMIT

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Quanta QCT Project Olympus

DX-88 Hard Disk Storage Expansion

Alvin Ni/ Associate Vice President of Research and Development /Quanta Cloud Technology

Speaker Bio

Alvin has over 25 years of experience as an engineer, with deep knowledge of the design and architecture of enterprise products and platforms. Along with the technical skill sets related to multiple OEM/ODM server designs and its subsystems, Alvin has experience in leading engineering teams and overseeing the execution of multiple parallel R&D projects at Quanta.

He joined Quanta in 2015 and was fully in charge of the Quanta Cloud Technology product designs and deliverables. He has leveraged his profound knowledge and prodigious experience in optimizing QCT Server/Storage designs and quality. Prior to working for Quanta, Alvin worked for Dell as their Platform senior director for module portfolio platform delivery. His footprint also covers HTC, Mentor Graphic, and Digital Equipment Corp.

Alvin received his bachelor and master's degrees in electrical engineering from Taiwan's National Tsing Hua University, the top university in the technology field in Taiwan.

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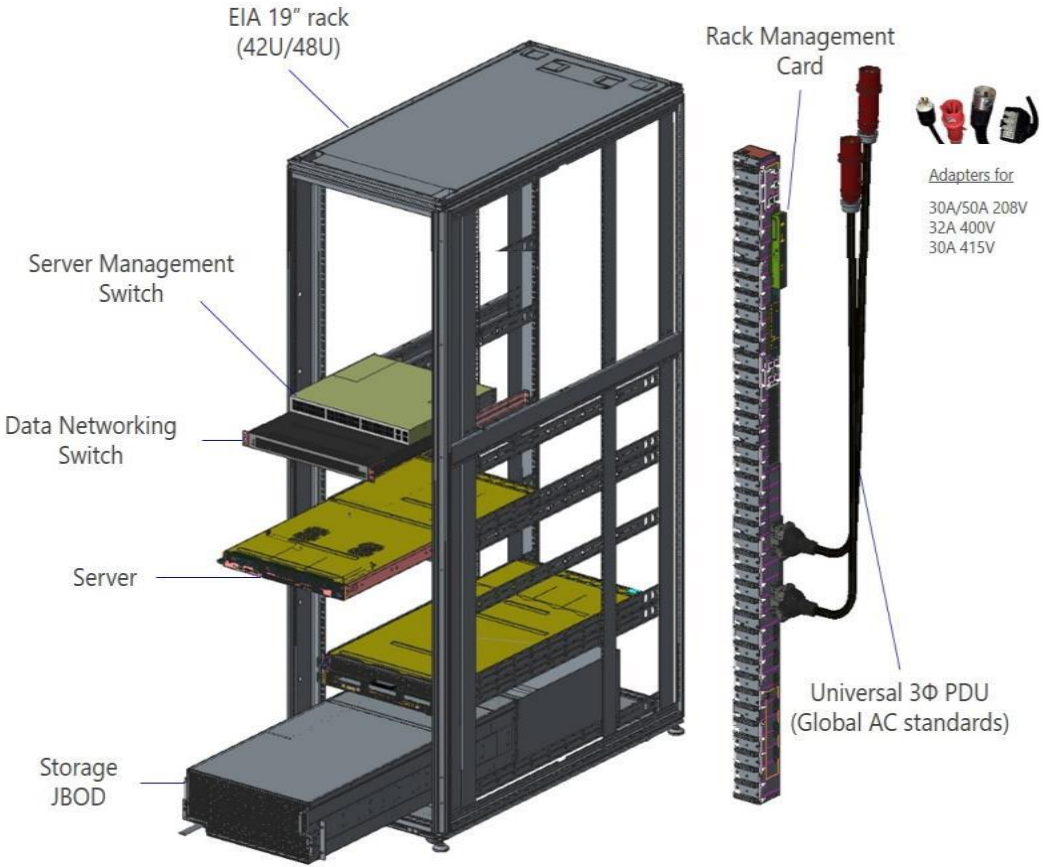
Associate Vice President of Research and Development, Quanta Cloud Technology.


EIA 19" rack
(42U/48U)
Rack Management
Card
Adapters for
30A/50A 208V
32A 400V
30A 415V
Server Management
Switch
Data Networking
Switch
Server
Storage
JBOD
Universal 3Φ PDU
(Global AC standards)

DX-88

- The Most Advanced JBOD in the world
  - Supports 88 near-line LFF SATA drives
  - N+1 Dual Rotor Fans
  - N+N Redundant, 1650W 3-Phase, Hot-Swap PSUs
  - Individual HDD on/off to minimize NTF

OVERVIEW

- 4U JBOD
  - 88 Hot-plug HDDs
  - N+1 Dual Rotor Fans
  - N+N Redundant, 1650W 3-Phase, Hot-Swap PSUs
  - Drawer design – slide out for service
- Robust Feature Set
  - Integrates into Project Olympus Infrastructure through Universal PDU
  - Runs on OpenBMC
    - Gathers HDD temps and component status info
  - Individual HDD on/off to minimize NTF

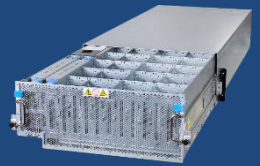
Microsoft

OPEN Compute Project

Your Colocation Partners only
have EIA-310 Support

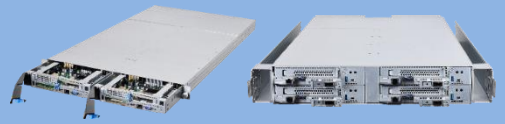
Offering EIA Support to all these Building Blocks
Allows integration into all colocations !!

Bus Bar



Blind Mate

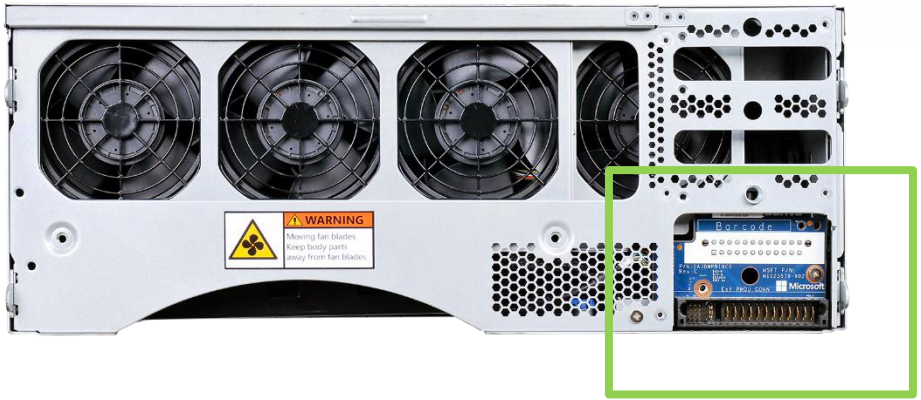
High Density 1U2N
High Density 2U4N

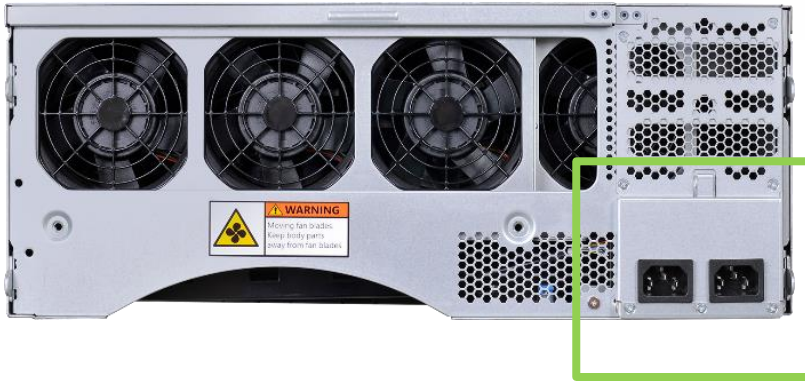


JBOD – DX88

JBOG – JG3

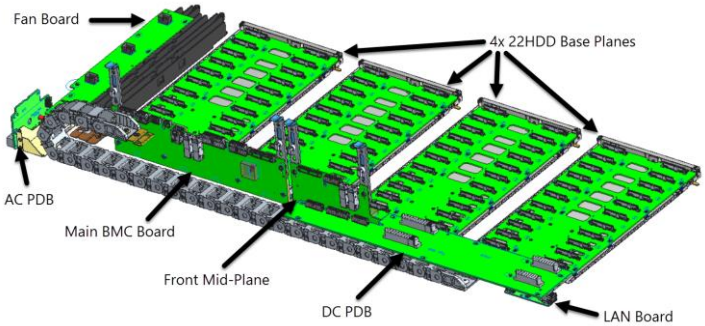
Offering both Olympus PMDU blind mate & EIA C14 Socket





OVERVIEW

- Controlled by Project Olympus Server
  - Configurable with 1, 2 or 4 head nodes
  - HDD Bay segregated into 4x 22HDD Zones
- Supports SMR, HAMR, & 12Gb/s single port SAS near-line HDDs
  - 1.2PB/Chassis (14TB/HDD)
  - 9.6PB/Rack in Cold Storage Configuration (8x JBOD/Rack)
- Designed to optimize performance and reliability
  - Minimized Rotational Vibration and Acoustic Noise
    - <5% HDD Performance Degradation
  - Maximum HDD Case Temperature ≤ 51°C



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SERVICEABILITY

- Tool-less Accessible, Hot-swappable Components
  - Cam Action Tool-Less Installed HDD Carrier
  - Top Loaded Cam Action PSUs
  - Pinch and Pull Tool-Less Fan Module
- LEDs for quick failed component identification
- Cold-Aisle, In-Rack Active PCA Serviceability
  - All active boards are accessible for service with unit in rack
  - Serviceable BMC
  - 4x Independently serviceable expanders

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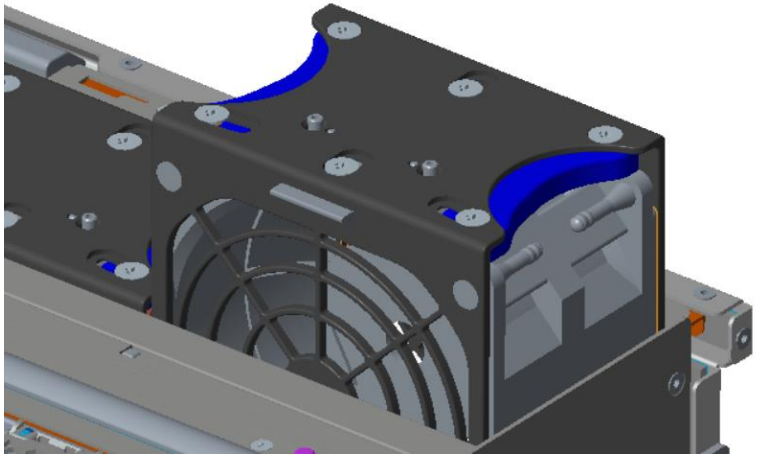

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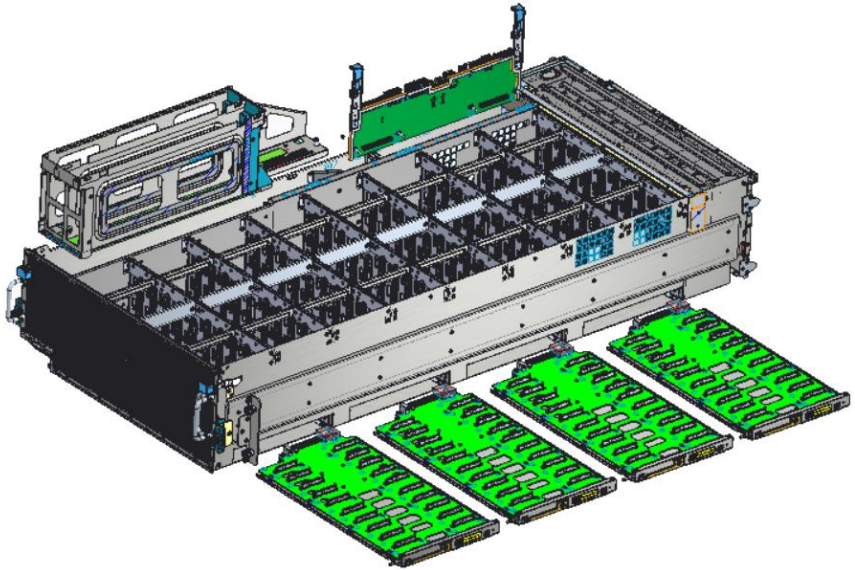

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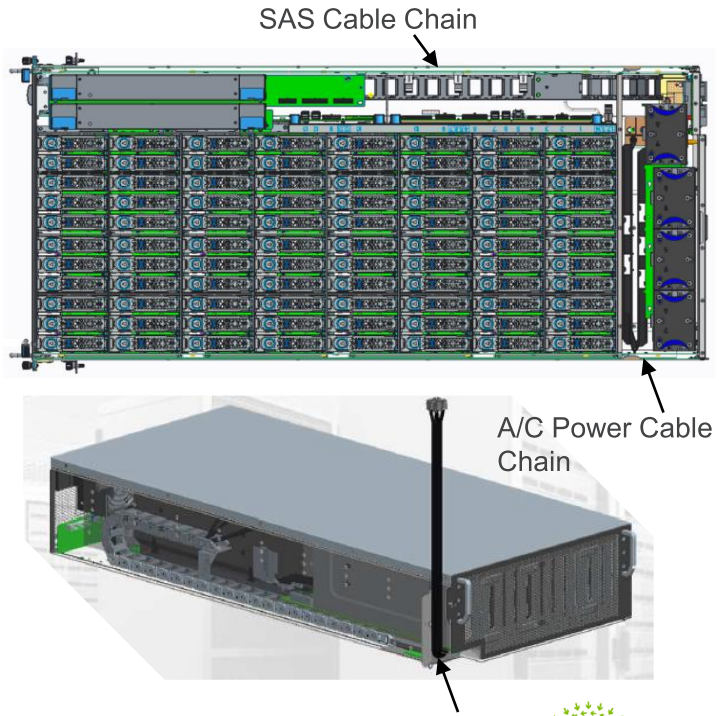
HARDWARE ARCHITECTURE

- External mini-SAS HD cables route directly into enclosure
  - Reduces number of interconnects, improving SI
  - Eliminates need for repeater and ultra low-loss PCB materials
- Side Loaded independent HDD/Expander boards
  - Expander integrated onto HDD board
  - Improves cooling efficiency
  - Reduces number of interconnects for improved SI



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- Static lid and outer chassis shell
  - Reduces services steps and cost
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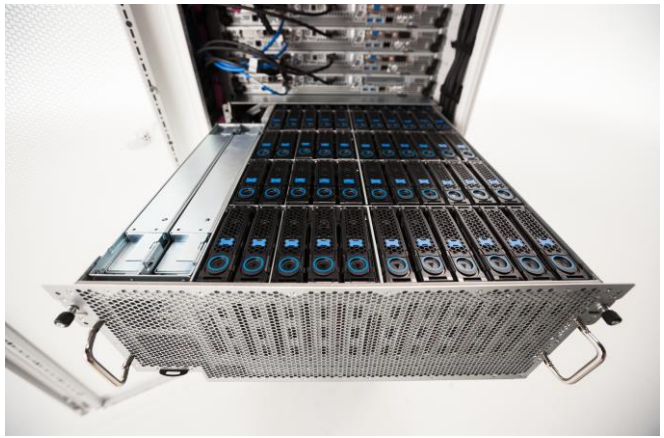

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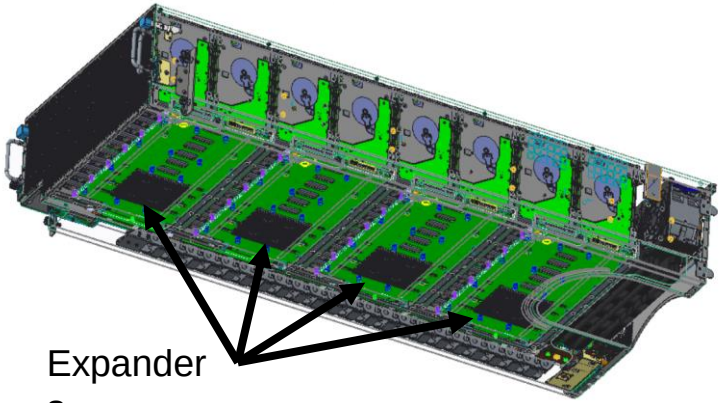

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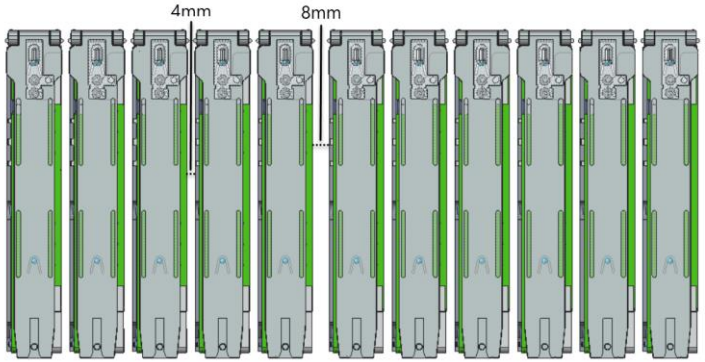
HDD Row Spacing Front View



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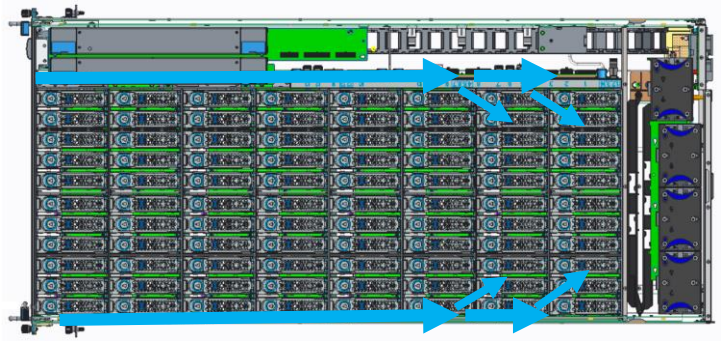
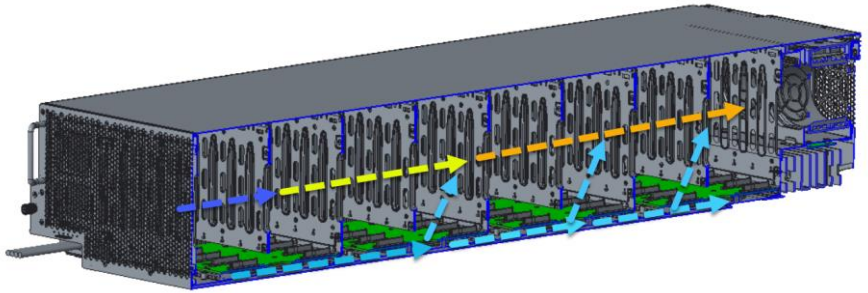
THERMAL ARCHITECTURE

- Supports 88x 14W HDDs & 4x 16W Expanders
- Air-flow management reduces temperatures
  - Multiple by-pass air channels to feed rear rows cold air
  - HDD temperature ≤51C with failed rotor and 35C inlet
  - Minimizes required total chassis airflow
- 4x N+1 dual rotor fan modules
  - Performance targets supported in failed rotor case
  - Supports up to 5-minute hot service
- Isolated PSU cooling – No HDD to PSU pre-heat





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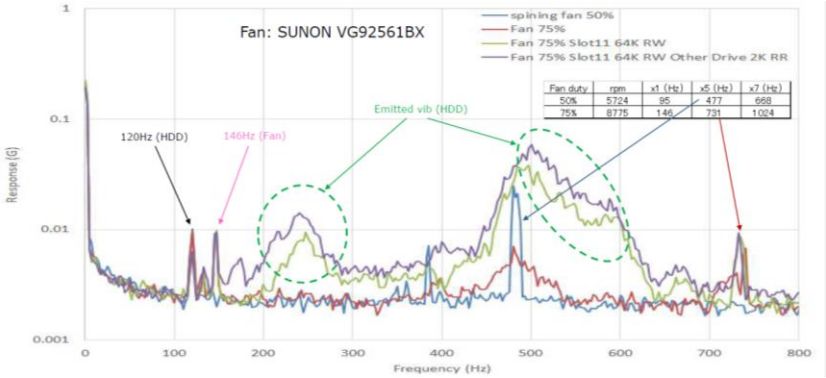
HDD PERFORMANCE

- Maintains ≤5% throughput degradation due to self-excitation and external vibration
- External Vibration Isolation
  - Chassis architecture reduces mechanical and acoustic transmitted vibrations
  - Configurable option to add acoustic damping material to limit transmission of high frequency broadband noise to rear row of HDDs from fans
- Thermal algorithm will minimize fan rpm with consideration to HDD performance



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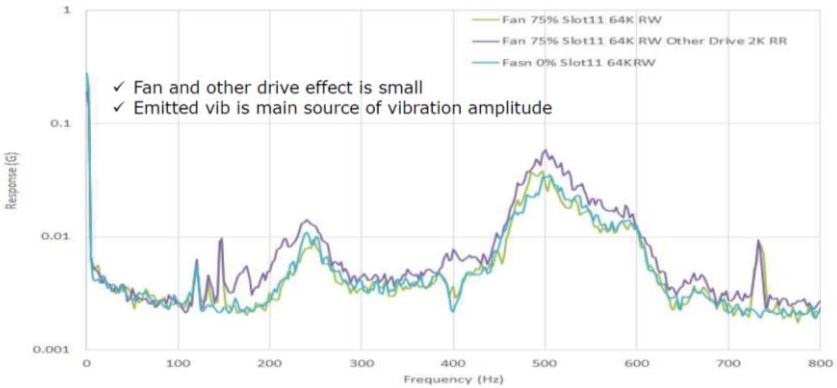

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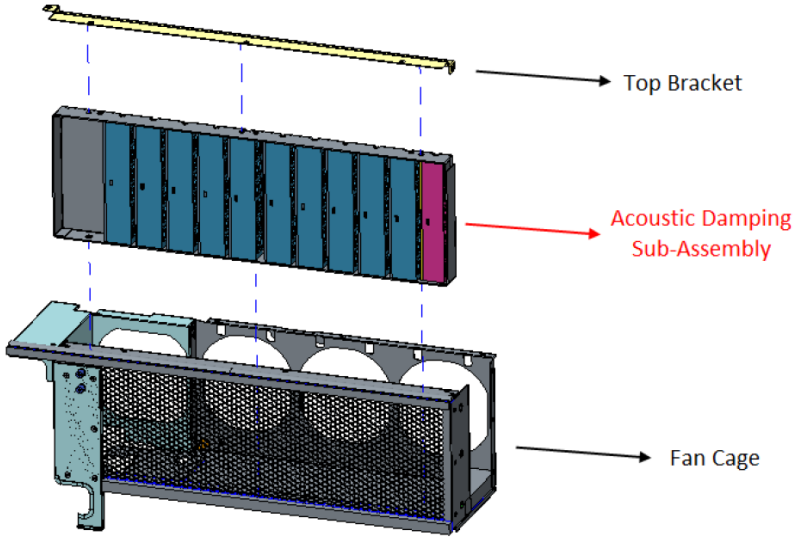

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