Broadberry™

Affordable Mass Storage Solution

Date:
Q1 2016 - Ongoing

Application:
Cold Storage

Tags:
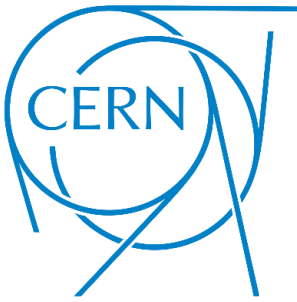CERN, Storage. JBOD

CUSTOMER:

CERN

What is the universe made of? How did it start? Physicists at CERN are seeking answers, using some of the world's most powerful particle accelerators

SOLUTION BRIEF:

CERN needed a way to store massive amounts of data generated from their research into the fundamental structure of our universe.

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Application

- High-Density Archive Storage

Project Background

Approximately 600 million times per second, particles collide within the Large Hadron Collider. Each collision generates particles that often decay in complex ways into even more particles. Electronic circuits record the passage of each particle through a detector as a series of electronic signals, and send the data to the CERN Data Centre (DC) for digital reconstruction. The digitised summary is recorded as a "collision event". Physicists must sift through the 30 petabytes or so of data produced annually to determine if the collisions have thrown up any interesting physics.

As a key supplier, Broadberry have supplied a wide range of server and storage solutions to the CERN project since 2016. This project involved designing and manufacturing an affordable storage solution to expand an existing storage pool.

Key Requirements:

- Cost-Effective
- Compatible with CERN software stack
- Enterprise-Grade, Robust and Ultra-Reliable
- Open-Platform - No Vendor Lock-In or Ongoing costs
- Latest SAS Architecture
- Maximum Storage Density per £
- Must meet CERN's high IO and Bandwidth Requirements

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Broadberry Solution

Broadberry boast a wide range of enterprise-grade JBOD solutions which have won a number of industry awards over the years.

Our CyberStore range of JBOD storage appliances offer enterprise-class storage functionality at a great price point.

For this CERN project we used the CyberStore 460S-JBOD Storage Server with Dual Controller - our high density JBOD with a fantastic record of reliability in hundreds of applications around the world.

As reliability was a critical concern in this project, we specified the industries most reliable hard drives - HGST 12Gb/s SAS Enterprise-Class drives which were configured with low-level firmware enhancements to meet CERN's reliability requirements.

HGST

Key Numbers

4U
Form Factor

144
TB Raw Storage

Solution Specifications

Our accepted solutions was a CyberStore 460S-JBOD Storage Server configured with HGST ultra-reliable 12TB SAS drives.

- 8 x 12Gbps SAS (4 per IOM) Host Connections
- 720TB with 12TB drive modules
- Two 1,650W PSUs, hot swap and redundant
- N+1 redundant fans (fans integrated in PSU)
- 3 year Broadberry Warranty

Features:

- Up to 60 integrated Ultrastar® drive modules
  - Available capacities include 12TB, 10TB, 8TB, and 6TB
- Hybrid capability: can be configured with SSDs to create separate performance tiers within the platform
- Configurable with SAS for HA application or SATA for cost-optimised applications
- Available with 512e or 4Kn sector size
- Supports up to 4 storage enclosures for daisy-chaining
- Fully compliant with 12Gb/s SAS 3 interconnect
- Hot-swappable components: two power supplies with integrated fans, drive modules, and IO Modules
- Microsoft certified for Windows Server 2012, 2012R2

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Broadberry CyberStore 460S-JBOD®

A scalable and cost-effective storage platform for data centers. With up to 60 Ultrastar® drive modules in a single platform, a 12Gb/s SAS interface, and HDD-SSD hybrid capability, this 4U platform is ideal for high-capacity storage needs.

When data centers need storage expansion that delivers low power and high capacity with high-availability, they rely on the Broadberry CyberStore 460S-JBOD Storage Server. This high density, scalable, and cost-effective design includes up to 60 Ultrastar® 3.5-inch drive modules in a 4U enclosure, supports up to 8 hosts with SAS 12Gb/s performance, and delivers enterprise-class serviceability with hot-swappable components.

This integrated platform is qualified, tested and certified to support a broad range of HGST HDDs. It's available with SAS drives for high-availability (HA) applications, with SATA drives for cost-optimised applications, and can be configured with up to twelve (12) 800GB SSDs to create separate performance tiers within the platform.

High Density
Up to 720TB in a 4U enclosure

Scalable
Supports 8 hosts per platform

Enterprise-class Serviceability
Hot-swappable components, cable management arm

Specifications	
Host Connections	8 x 12Gbps SAS (4 per IOM)
Capacity (minimum)	144TB with 6TB drive modules
Capacity (maximum)	720TB with 12TB drive modules
Dimensions (Enclosure)	174.8mm x 424mm x 881mm / 6.88in. x 16.69in. x 34.7in.
Weight	89.81 kg (198 lbs.) – fully configured with 60 helium drive modules
Power Supply	Two 1,650W PSUs, hot swap and redundant
Input Voltage	200-240VAC auto-ranging, 47Hz-63Hz input (high line power only)
Cooling Fans	N+1 redundant fans (fans integrated in PSU)
Temperature Range	5° to 35°C
Humidity	8% to 80% (non-condensing)
Shock	3.5g 6ms Pulse vertical shock
Vibration	Random 0.25 Grms, 5-10Hz, 0.05 g sine wave sweep, 10-300Hz
Acoustics	<7.5dB LwA @ 23°C
Temperature Range	-30° to 60°C
Humidity	8% to 80% (non-condensing)
Shock	8g 6ms Trapezoidal
Vibration	Random 0.6 Grms 10-300Hz

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We have established ourselves as one of the biggest storage providers in the UK, and since 1989 supplied our server and storage solutions to the world's biggest brands. Our customers include:

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