

Hybrid Cloud Storage Integration Blueprint - Official Technical Overview &

Hardware Datasheet

EXECUTIVE SUMMARY

The Hybrid Cloud Storage Integration Blueprint represents a paradigm shift in enterprise data management, delivering a unified, carrier-grade hardware platform engineered to seamlessly bridge on-premises storage area networks with public cloud infrastructure. This blueprint defines the architectural framework, hardware specifications, and deployment topology required to achieve transparent, high-throughput, and secure data mobility across heterogeneous storage environments. Designed for mission-critical telecom and enterprise workloads, the platform ensures data integrity, ultra-low latency access, and policy-driven tiering across local NVMe arrays and remote object stores.



ARCHITECTURE & CHASSIS DESIGN

The Hybrid Cloud Storage Integration Blueprint is anchored by a modular, high-availability chassis available in 2RU and 4RU configurations. The architecture employs a dual-star backplane with redundant switch fabrics, enabling non-blocking interconnect between storage controller modules, network interface cards, and cache acceleration engines. Each controller node integrates a multi-core x86 processing complex, dedicated hardware offload engines for erasure coding and encryption, and hot-swappable NVMe drive bays. The chassis supports front-to-back airflow with redundant fan trays and 1+1 DC power feeds, ensuring continuous operation in ambient temperatures up to 55 ° C. The design philosophy prioritizes component redundancy, field-replaceable unit accessibility, and seamless scalability from 24 to 96 drive slots per rack unit.

HARDWARE FEATURES

The platform incorporates a suite of hardware-accelerated features tailored for hybrid cloud integration. Key capabilities include:

- Unified Storage Fabric: Simultaneous support for NVMe over Fabrics (NVMe-oF), iSCSI, NFS, SMB, and S3-compatible object protocols.
- Cloud Gateway Offload: Dedicated ASIC for TLS/IPsec encryption, compression, and deduplication, enabling line-rate data transfer to public cloud endpoints.
- Cache Coherency Engine: Hardware-based cache mirroring across controller nodes with sub-microsecond synchronization.
- Policy-Based Tiering: Automated data movement between local flash tiers and remote cloud buckets based on user-defined latency, cost, or compliance policies.
- Telemetry & Analytics: Onboard BMC with RESTful API, SNMPv3, and streaming telemetry for real-time monitoring of storage QoS and cloud link health.

COMPLIANCE & STANDARDS

The Hybrid Cloud Storage Integration Blueprint complies with the following industry standards and regulatory frameworks:

- Safety: IEC 60950-1, IEC 62368-1, UL 60950-1, CSA C22.2 No. 60950-1
- EMC: FCC Part 15 Subpart B Class A, EN 55032 Class A, EN 55024, VCCI Class A
- Telecom: NEBS Level 3 (GR-63-CORE, GR-1089-CORE), ETSI EN 300 019
- Environmental: RoHS 2 (2011/65/EU), WEEE, REACH
- Security: FIPS 140-2 Level 1, Common Criteria EAL2+, TPM 2.0

TECHNICAL SPECIFICATIONS

The following table summarizes the core technical parameters of the Hybrid Cloud Storage Integration Blueprint.

Parameter	Specification
Form Factor	2RU / 4RU modular chassis
Controller Nodes	Dual redundant active-active
Processor	Multi-core x86 server-class CPU per controller
Cache Memory	Up to 512GB DDR4 per controller
Storage Media	NVMe SSD (hot-swappable)
Max Drive Bays	96 per 4RU chassis

Raw Capacity	Up to 737TB per 4RU chassis (7.68TB drives)
Network Interfaces	100GbE QSFP28, 25GbE SFP28, 10GbE SFP+ (optional)
Storage Protocols	NVMe-oF, iSCSI, NFS v3/v4, SMB 3.1.1, S3
Cloud Integration	AWS S3, Azure Blob, Google Cloud Storage, S3-compatible
Encryption	AES-256, TLS 1.3, IPsec, FIPS 140-2 Level 1
Data Reduction	Inline deduplication, compression, erasure coding
Redundancy	1+1 power, N+1 fans, dual-star backplane
Power Supply	1600W AC or DC, 1+1 redundant
Operating Temperature	5°C to 55°C (41°F to 131°F)
Dimensions (4RU)	177.8mm H x 482.6mm W x 812.8mm D
Weight (4RU fully populated)	Approx. 68 kg (150 lbs)
Management	BMC, RESTful API, SNMPv3, Redfish, CLI
Compliance	NEBS Level 3, FCC Class A, CE, RoHS 2,

	WEEE
MTBF	> 250,000 hours

ORDERING OPTIONS

Base System Configurations:

- HCS-IB-2RU-24: 2RU chassis, dual controllers, 24 NVMe bays, 2x 100GbE QSFP28 uplinks, redundant AC PSUs.
- HCS-IB-4RU-48: 4RU chassis, dual controllers, 48 NVMe bays, 4x 100GbE QSFP28 uplinks, redundant DC PSUs.
- HCS-IB-4RU-96: 4RU chassis, dual controllers, 96 NVMe bays, 8x 100GbE QSFP28 uplinks, redundant DC PSUs.

Expansion & Option Modules:

- HCS-CLD-GW: Cloud gateway offload module with dual 25GbE SFP28 ports.
- HCS-ENC-ASIC: Hardware encryption/compression offload card.
- HCS-FAN-TRAY: Spare fan tray with dual-rotor fans.
- HCS-PSU-AC: 1600W AC power supply unit.
- HCS-PSU-DC: 1600W DC power supply unit.

- HCS-NVMe-3.84T: 3.84TB enterprise NVMe drive.
- HCS-NVMe-7.68T: 7.68TB enterprise NVMe drive.

