Disaster Recovery Data Center Replication Network Link - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document serves as the definitive technical reference for the Next-Generation Disaster Recovery Data Center Replication Network Link (DR-RNL) platform. Purpose-built to address the stringent requirements of business continuity and mission-critical data mirroring, this hardware solution redefines the performance, resilience, and operational simplicity of inter-data center connectivity. The DR-RNL is engineered to provide a carrier-grade, high-bandwidth, and ultra-low-latency physical and logical link that guarantees near-zero Recovery Point Objectives (RPO) and Recovery Time Objectives (RTO).

ARCHITECTURE & CHASSIS DESIGN

The DR-RNL is a modular, high-density platform designed for seamless integration into existing transport and IP networks. Its core architecture is built upon a fully redundant, hot-swappable chassis system capable of housing multiple interface modules and controller cards. The system employs a sophisticated, non-blocking switching fabric that ensures deterministic performance under full load, a critical requirement for the synchronous and asynchronous replication protocols commonly used in disaster recovery (DR) scenarios.

The chassis is engineered with a focus on high availability, featuring 1+1 or N+1 redundancy for all critical components, including power supplies, cooling fans, and management modules. The front-accessible design facilitates rapid field replacement, reducing maintenance windows and contributing to the platform's exceptional uptime. Backplane connectivity utilizes high-speed serial interfaces that enable a switching capacity capable of scaling to meet the demands of future 400G and 800G Ethernet deployments.

HARDWARE FEATURES

- ADVANCED REPLICATION OFFLOAD ENGINE: The platform incorporates a dedicated, hardware-based engine for offloading replication protocol

processing (e.g., FCIP, iSCSI, SR-DF, MetroCluster). This feature dramatically reduces CPU load on the control plane, ensuring that management and signaling protocols remain responsive even under peak throughput.

- OPTIMIZED TRANSPORT PROTOCOLS: Support for advanced transport technologies, including MPLS, Segment Routing, and VXLAN, allows for the creation of robust overlay networks that can dynamically route around network failures or congestion.

- INTELLIGENT TRAFFIC MANAGEMENT: Sophisticated QoS (Quality of Service) capabilities, including Priority Flow Control (PFC) and Explicit Congestion Notification (ECN), ensure that critical replication traffic is prioritized over other less time-sensitive data flows. This is vital for maintaining data consistency across geographically dispersed sites.

- DEDICATED OUT-OF-BAND MANAGEMENT: A separate, secure management network port provides access to a comprehensive management and monitoring suite, allowing for proactive fault detection and performance tuning.

COMPLIANCE & STANDARDS

The DR-RNL is designed and certified to meet the most rigorous international standards. This ensures interoperability and compliance for deployment in any global data center environment.

- NETWORK INTEROPERABILITY: Full compliance with IEEE 802.1, 802.3, MEF, and ITU-T G-series standards. Interoperable with leading switch, router, and storage vendor equipment.

- ENVIRONMENTAL STANDARDS: Designed to meet NEBS Level 3 (Network Equipment Building Systems) specifications for temperature, humidity, and seismic resistance, guaranteeing reliable operation in demanding central office environments.

- SAFETY & REGULATORY: Certified to UL, CSA, CE, and FCC safety and emissions standards.

TECHNICAL SPECIFICATIONS

The DR-RNL has been meticulously specified to deliver industry-leading performance for disaster recovery replication links.

- CHASSIS FORM FACTOR: 2RU Rack-Mountable (standard 19-inch EIA rack).

- SWITCHING CAPACITY: 3.2 Tbps non-blocking, fully scalable with additional line cards.

- INTERFACE OPTIONS: 24 x 100G/40G QSFP28 ports; 48 x 25G/10G SFP28 ports; 8 x 400G QSFP-DD ports (for future expansion).

- MAXIMUM THROUGHPUT: Up to 1.6 Tbps full-duplex.

- LATENCY: < 1 microsecond (store-and-forward, 64-byte packets).

- POWER SUPPLY: 1+1 Redundant, Hot-Swappable (AC/DC options available).

- COOLING: Front-to-Back or Back-to-Front airflow configurations (depending on model).

Parameter	**Specification**
Form Factor	2RU Rack-Mountable Chassis
Switching Capacity	3.2 Tbps (Non-Blocking)
Power Supply	1+1 Redundant, Hot-Swappable (AC/DC)
Interfaces	24 x 100G/40G QSFP28, 48 x 10/25G SFP28
Throughput (Max)	1.6 Tbps (Full-Duplex)
Typical Latency	< 1 microsecond
Management	Dedicated Out-of-Band (1G/10G RJ-45/SFP)
Operating Temperature	0°C to 50°C (Short-term: -5°C to 55°C)
MTBF	> 250,000 Hours
Replication Protocols	FCIP, iSCSI, SR-DF, MetroCluster (Offload Engine)

ORDERING OPTIONS

To facilitate precise procurement, the DR-RNL is offered in a variety of base configurations and expansion modules. The following table provides a guide to the primary Orderable Stock Keeping Units (SKUs).

- BASE CHASSIS (PN: DR-RNL-CH-02): Empty 2RU chassis with backplane, redundant power slots, and fan assemblies.

- CONTROLLER/SUPERVISOR MODULE (PN: DR-RNL-SUP-10): Dual-core, route/switch processor module with 32GB DRAM and 8GB Flash.

- LINE CARD - 100G (PN: DR-RNL-LC-100-24): 24-port 100GE/40GE line card (requires QSFP28 optics).

- LINE CARD - 10/25G (PN: DR-RNL-LC-25-48): 48-port 25GE/10GE line card (requires SFP28 optics).

- POWER SUPPLY, AC (PN: DR-RNL-PWR-AC-08): 800W AC Power Supply Module.

- POWER SUPPLY, DC (PN: DR-RNL-PWR-DC-08): 800W DC Power Supply Module.

- REPLICATION OFFLOAD LICENSE (PN: DR-RNL-LIC-ROE): Software license enabling advanced hardware offload functions.