

Datacenter Interconnect (DCI) Solution Blueprint - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document serves as the definitive technical reference and hardware datasheet for the next-generation Datacenter Interconnect (DCI) Solution Blueprint. Engineered to meet the surging bandwidth demands of modern cloud and enterprise data centers, this solution provides a high-capacity, low-latency, and highly reliable optical transport foundation. The DCI Solution Blueprint is architected to simplify the interconnection of geographically distributed data centers, enabling seamless workload mobility, robust disaster recovery, and efficient data synchronization. This document details the system architecture, hardware specifications, operational parameters, and ordering information critical for network architects, engineers, and procurement specialists.



ARCHITECTURE & CHASSIS DESIGN

The DCI Solution Blueprint is built upon a modular, carrier-grade chassis platform that balances high density with operational flexibility. The hardware architecture is divided into logical planes to ensure deterministic performance and resiliency.

- Data Plane: A high-speed, non-blocking switch fabric provides wire-speed forwarding for all traffic. The backplane leverages advanced materials and signal integrity techniques to support high-bandwidth interfaces and ensure error-free transmission over extended distances.
- Control Plane: A fully redundant, modular control plane runs the advanced operating system, handling routing protocols, path computation, and network management. This plane is isolated from data traffic to guarantee control

stability and security.

- Management Plane: Out-of-band management ports provide secure access for system configuration, monitoring, and troubleshooting, independent of the data and control plane traffic.

The chassis is engineered for high availability, with features such as 1+1 or N+1 power supply redundancy, fan tray redundancy, and hot-swappable components to minimize service disruption during maintenance or upgrades.

HARDWARE FEATURES

The DCI Solution Blueprint incorporates a comprehensive set of hardware features designed for demanding operational environments.

- High-Density Interface: The platform supports a wide range of optical interfaces including 10GE, 25GE, 40GE, and 100GE, with forward compatibility for 200G/400G optics. This ensures that the solution can adapt to future capacity upgrades without requiring a chassis replacement.

- Advanced Optics Support: The system is compatible with a variety of transceiver types, such as SFP28, QSFP+, and QSFP28, and supports DWDM/CWDM for efficient wavelength division multiplexing to maximize fiber utilization.

- Forward Error Correction (FEC): Integrated FEC capabilities extend the optical reach and improve signal integrity over challenging fiber links, enabling reliable connectivity over hundreds of kilometers.
- Hardware-Level Encryption: Optional line-rate encryption modules provide secure data-in-transit, ensuring compliance with stringent data privacy regulations without impacting performance.

COMPLIANCE & STANDARDS

The hardware is rigorously certified to meet international safety, EMC, and environmental standards. The solution complies with RoHS, WEEE, and REACH directives. Key safety certifications include UL, CSA, and EN 60950-1 / IEC 62368-1. EMC compliance covers FCC, CE, and VCCI requirements. The platform also adheres to NEBS Level 3 and ETSI environmental standards, making it suitable for deployment in both controlled data centers and some outdoor or edge environments.

TECHNICAL SPECIFICATIONS

Parameter	Specification
Form Factor	2RU Modular Chassis
Switching Capacity	2.4 Tbps / 12.8 Tbps (with fabric

	upgrade)
Power Supply	1+1 Redundant AC (110/240V) or DC (-48V)
Operating Temperature	0°C to 45°C (NEBS Level 3 ready)
Supported Interfaces	10GE SFP+, 25GE SFP28, 40GE QSFP+, 100GE QSFP28
Max Forwarding Rate	Up to 1.2 Bpps
Latency	< 5 microseconds (store-and-forward, any port)
MTBF	> 250,000 hours
Encryption	Optional MACsec/IEEE 802.1AE at line rate

ORDERING OPTIONS

The DCI Solution Blueprint is available in a variety of factory-configured bundles and as modular components for customized deployments.

- Base Chassis Bundles: Includes the chassis, dual control modules, dual fabric modules, and a full set of fan trays.
- Power Supply Units (PSU): Options include AC (110/240V, 50/60Hz) and DC

(-48V) power inputs, with hot-swappable 1+1 redundancy configurations.

- Interface Cards: A range of port density variants, from 48x10GE SFP+ to 12x100GE QSFP28, and a variety of MSA-compliant optics are available.
- Software License Tiers: Different feature packs are available based on the required operational capabilities, enabling a cost-effective deployment.
- Rack Mounting Kits: Standard 19-inch and ETSI rack mounting options are provided to facilitate integration into various data center environments.

