Chinese Manufactured Line Cards in Legacy Cisco Chassis: Electrical Interfacing Protocol - Official Technical Overview & Hardware Datasheet

PRODUCT IDENTIFICATION

This document serves as the definitive technical reference for the integration and operation of high-performance, Chinese-manufactured line cards designed for deployment within legacy Cisco Catalyst 6500/7600 series and analogous modular chassis platforms. The core innovation detailed herein is the proprietary Electrical Interfacing Protocol (EIP), a hardware-level signal conditioning and negotiation algorithm that ensures seamless physical and electrical compatibility between new-generation silicon and legacy backplane architectures. This datasheet provides network architects, procurement specialists, and field engineers with the critical parameters required for successful deployment, capacity planning, and lifecycle management.



CORE INTERNAL TOPOLOGY

The architectural foundation of these line cards is built upon a multi-layered approach to backplane communication. Legacy Cisco chassis utilize a 32-bit or 64-bit parallel bus architecture (e.g., CBA / EoR) with specific voltage thresholds and clocking schemes. The Chinese-manufactured line cards incorporate a sophisticated Field-Programmable Gate Array (FPGA)-based front-end processor that actively manages the Electrical Interfacing Protocol. This EIP engine performs three critical functions: Voltage Level Translation (adjusting I/O thresholds from 1.2V to legacy 2.5V or 3.3V tolerances), Bus Re-timing to compensate for signal degradation over long backplane traces, and Adaptive Clocking to synchronize with the chassis master clock source. The internal packet forwarding pipeline consists of a high-capacity TCAM for ACL and QoS lookups, coupled with a distributed shared memory buffer architecture that

minimizes head-of-line blocking.

SWITCHING SUBSYSTEM CAPABILITIES

The switching subsystem leverages a centralized fabric interface that maps to the chassis fabric channel. The line card acts as a slave to the supervisor engine, receiving forwarding decisions via the Inter-Process Communication (IPC) bus. However, the EIP enables local switching intelligence for certain traffic classes, reducing supervisor CPU load. This hybrid forwarding model supports both Distributed Forwarding (DFC) mode and classic Centralized Forwarding modes. Key capabilities include Layer 2 bridging at wire-speed, Layer 3 IPv4/IPv6 routing with hardware acceleration, and sophisticated Quality of Service (QoS) marking and queuing. The protocol ensures that error-correction mechanisms, such as Forward Error Correction (FEC) and Cyclic Redundancy Check (CRC) offload, are handled at the ingress/egress stages, guaranteeing data integrity across the legacy interconnect.

OPERATIONAL ADVANTAGES

Deploying these line cards offers significant operational advantages, primarily extending the service life of existing chassis investments. Key advantages include: Cost Reduction compared to new switch acquisition, Energy Efficiency

through advanced silicon fabrication (7nm/12nm), Increased Port Densities (e.g., 48 x 1G/10G RJ45/SFP+), Simplified Management via standard SNMP and CLI, and Rapid Spare Parts Availability. The EIP technology ensures 'plug-and-play' interoperability, negating the need for complex software upgrades on legacy supervisors, although certain enhanced features may require minimum IOS versions. This presents a strategic pathway for phased network migration to higher-speed aggregation while maintaining a stable core.

SPECIFICATION MATRIX

Parameter	**Specification**
Form Factor	Modular Line Card for Cisco Catalyst 6500/7600 Series
Interfacing Protocol	Proprietary EIP (Electrical Interfacing Protocol) with Adaptive Voltage/Clocking
Switching Capacity	Up to 160 Gbps / 320 Gbps Full-Duplex (Variant Dependent)
Forwarding Rate	Up to 250 Mpps (Million Packets per Second)
Port Configuration	48 x 10/100/1000BASE-T RJ45 or 48 x 1G SFP or 8 x 10G SFP+

Power Supply	Hot-Swappable, Redundant (via Chassis Power Supplies)
Operational Temperature	0°C to 40°C (32°F to 104°F)
Mean Time Between Failures (MTBF)	> 200,000 Hours (Bellcore Method)

REGULATORY COMPLIANCE

The line cards are manufactured in compliance with global telecommunications and safety standards. Electromagnetic compatibility is certified to FCC Part 15 (Class A), CE Mark (EN 55022, EN 55024), and CISPR 22. Safety certifications include UL 60950-1, CSA C22.2 No. 60950-1, and IEC 60950-1, ensuring safe operation in datacenter and enterprise environments. Environmental compliance extends to RoHS (Restriction of Hazardous Substances) and REACH directives. The EIP hardware has been rigorously tested in accordance with Telcordia GR-1089-CORE for electromagnetic compatibility and electrical safety, ensuring it meets the stringent requirements of carrier-grade central office equipment.

