Cisco Router Command Line Equivalents for Chinese Manufactured Layer 3 Switches - Official Technical Overview & Hardware Datasheet

PRODUCT IDENTIFICATION

This document serves as the definitive technical reference and hardware datasheet for the integration of Cisco IOS-derived command-line interface (CLI) paradigms with high-performance, Chinese-manufactured Layer 3 switching platforms. This overview details the hardware architecture, forwarding engine logic, and operational command equivalence that enables seamless migration, multi-vendor interoperability, and operational continuity for enterprise and carrier-grade networks. The platform detailed herein represents a strategic synthesis of robust hardware engineering and software familiarity, designed to meet the rigorous demands of modern datacenter, campus backbone, and service provider edge environments.



CORE INTERNAL TOPOLOGY

The internal architecture of this Layer 3 switching family is engineered around a distributed, non-blocking switching fabric. The design centralizes control plane intelligence while separating data plane forwarding to dedicated hardware engines, mirroring the best practices established by leading industry architectures. This bifurcation ensures that routing protocol updates and network control functions do not impede wire-speed packet forwarding.

- **Central Processing Module (CPM):** Hosts the primary control plane, running a fully featured network operating system that provides the Cisco-equivalent command structure. The CPM is responsible for routing protocol peerings (BGP, OSPF, EIGRP-compatible), management plane functions (SNMP, SSH, TELNET), and system health monitoring.

- **Forwarding Engine & ASIC Array:** A set of purpose-built Application-Specific Integrated Circuits (ASICs) and programmable Network Processors (NPs) constitute the data plane. This architecture provides deterministic, low-latency forwarding for IPv4, IPv6, and MPLS frames. The forwarding table (FIB) and adjacency table (Adj) are hardware-resident to ensure line-rate performance. The command-line environment provides direct visibility and configuration control over these internal tables.
- **Switch Fabric Matrix:** A high-bandwidth, non-blocking fabric connects all line card interfaces and the CPM. This architecture ensures that any-to-any communication occurs without oversubscription, a critical requirement for spine-leaf datacenter topologies and high-density aggregation points. The command set includes directives to monitor fabric utilization and diagnose congestion points.

SWITCHING SUBSYSTEM CAPABILITIES

The CLI, which is functionally equivalent to standard Cisco IOS/IOS-XE, provides granular control over the advanced hardware capabilities of the platform. This deep integration allows network administrators to leverage the underlying hardware acceleration for complex services.

- **Layer 2 Functionality:** Supports comprehensive VLAN architectures,

spanning-tree variants (PVST+, Rapid-PVST, MSTP), and link aggregation (LACP). Standard Cisco command equivalents are available for all configuration and monitoring tasks.

- **Layer 3 Routing:** Hardware-accelerated IPv4/IPv6 static routing and dynamic routing protocols (OSPFv2/v3, BGP-4, and IS-IS). The command structure for route maps, prefix lists, and route redistribution is syntactically aligned with Cisco standards, facilitating rapid deployment.

- **Multicast Forwarding:** Supports IGMP snooping, PIM-SM/DM, and MSDP for efficient group communication traffic management. The same familiar `ip pim`, `ip igmp`, and `ip mroute` commands are used to manage these services.

- **MPLS & Segment Routing:** Advanced SKUs provide support for MPLS forwarding, including LDP and RSVP-TE, as well as Segment Routing (SR-MPLS) for modern traffic engineering applications.

OPERATIONAL ADVANTAGES

- **Accelerated Migration:** The command equivalence significantly reduces the learning curve and operational risk associated with deploying new hardware platforms.

- **Staff Retention:** Organizations benefit from the ability to retain and retrain existing Cisco-skilled personnel without an extensive training cycle.

- **Cost Optimization:** The hardware platforms offer a compelling

price/performance ratio compared to legacy alternatives, providing competitive TCO.

SPECIFICATION MATRIX

Parameter	Specification
Form Factor	1RU Standard Rack-Mountable Chassis
Switching Capacity	Up to 2.56 Tbps (Non-Blocking Fabric)
Forwarding Rate	Up to 1900 Mpps (64-Byte Packets)
CPU / Control Plane	Quad-Core x86 Processor, 32GB RAM, 64GB SSD
Power Supply	Dual Hot-Swappable Redundant AC (100-240V) or DC (-48V)
Cooling	Front-to-Back Airflow, N+1 Redundant Fan Modules
Interfaces	48x 10G SFP+ Ports + 8x 40/100G QSFP28 Ports

REGULATORY COMPLIANCE

The hardware platform adheres to a comprehensive suite of international and

industry-specific standards, ensuring its suitability for global deployment in any regulated environment. The CLI includes monitoring commands to report on hardware operational status relative to these compliance parameters.

- **EMC & Safety:** FCC Part 15 (Class A), CE Mark (EN 55032, EN 55024), UL/CSA 60950-1, EN 60825-1 (Laser Safety).
- **Environmental:** RoHS-6/6 compliant, WEEE Directive compliant, and designed for operation under NEBS (Network Equipment Building Systems) Level 3 standards for temperature, humidity, and seismic conditions.
- **Telecom & Networking:** Compliance with IEEE 802.3 (Ethernet), IEEE 802.1Q (VLAN), and MEF 9/14 for Carrier Ethernet services.

