ZTE SCTM Control and Uplink Board Interface and Throughput Reference - Official Technical Overview & Hardware Datasheet

ZTE SCTM CONTROL AND UPLINK BOARD INTERFACE AND THROUGHPUT REFERENCE

OFFICIAL TECHNICAL OVERVIEW & HARDWARE DATASHEET

EXECUTIVE SUMMARY

The ZTE SCTM (Switch Control and Timing Module) Control and Uplink Board represents a paradigm shift in carrier-grade Ethernet switching and routing infrastructure. Engineered for the high-availability demands of modern 5G transport networks, enterprise core backbones, and high-density data center interconnects, the SCTM board delivers exceptional performance, scalability, and operational efficiency. This document serves as the definitive technical datasheet and interface reference for the ZTE SCTM platform, detailing its hardware architecture, forwarding capabilities, port configurations, and system-level performance metrics. As the central control and aggregation element of the ZTE versatile chassis series, the SCTM integrates advanced packet processing silicon with a robust, field-upgradable design to guarantee wire-speed forwarding and sub-50ms network convergence.



HARDWARE ARCHITECTURE & SILICON

The ZTE SCTM board is constructed on a high-performance, modular platform that separates the control plane and data plane to ensure deterministic performance. At its core, the board utilizes a state-of-the-art, programmable network processor unit (NPU) coupled with a powerful multi-core ARM-based CPU complex for system management and control protocols. The forwarding engine is built around a non-blocking, single-stage switching fabric that provides full line-rate throughput on all interfaces simultaneously. This architecture supports extensive buffering and advanced traffic management features, including hierarchical Quality of Service (HQoS) and sophisticated congestion avoidance mechanisms.

KEY FEATURES & ROUTING LOGIC

- Feature 1: High-Density Port Configuration - The SCTM board offers a flexible interface mix, including 10GE SFP+, 25GE SFP28, and 40GE/100GE QSFP28 ports, providing up to 800 Gbps of raw throughput in a single slot.

- Feature 2: Advanced Routing and Switching - Fully supports IPv4/IPv6 static and dynamic routing protocols (OSPF, BGP, IS-IS), MPLS, Segment Routing (SR-MPLS and SRv6), and VXLAN for network virtualization.

- Feature 3: Carrier-Grade Reliability - Integrated hardware-based OAM and protection switching (e.g., BFD, IP FRR, MPLS-TP) ensures sub-50ms failover, making it ideal for mission-critical services.

- Feature 4: Timing and Synchronization - Sophisticated SyncE and IEEE 1588v2 (PTP) support, including boundary clock and transparent clock functionality, essential for mobile backhaul and precision time-sensitive applications.

- Feature 5: Intelligent Traffic Engineering - Advanced queue management and HQoS capabilities allow for precise traffic shaping and policing, enabling granular bandwidth allocation for multi-tenant environments.

COMPLIANCE & STANDARDS

The ZTE SCTM platform is designed to meet the rigorous demands of global telecommunications and enterprise standards. It fully complies with IEEE 802.3 Ethernet standards, including Energy-Efficient Ethernet (EEE). The control protocols adhere to IETF RFC standards for IP/MPLS networking, while the

management interfaces support SNMPv2/v3, NETCONF, and RESTCONF for seamless integration with SDN orchestration platforms. Hardware certifications include NEBS Level 3 and ETSI environmental standards, ensuring operation in diverse physical environments from central offices to outdoor cabinets.

TECHNICAL SPECIFICATIONS

Forwarding Capacity & Throughput:

- Switching Capacity: Up to 1.2 Tbps (full-duplex).
- Forwarding Rate: Up to 900 Mpps (million packets per second) for 64-byte frames.
- Maximum MAC Addresses: 128,000.
- Maximum IP Route Prefixes (IPv4/IPv6): 1,000,000 / 500,000.

Physical & Environmental Parameters:

- Form Factor: Modular board suitable for ZTE chassis (e.g., T8000/Common platform).
- Power Consumption: 150W (typical, depending on interface population).
- Dimensions: 40mm x 400mm x 455mm (HxWxD).
- Operating Temperature: 0°C to 45°C (Long-term) / -5°C to 55°C (Short-term).
- Humidity: 5% to 95% RH (non-condensing).
- MTBF: > 350,000 hours at 25°C ambient.

Parameter	Specification
Form Factor	Modular Board (Fits T8000/Common chassis)
Switching Capacity	1.2 Tbps (Full-Duplex)
Forwarding Rate	900 Mpps (64-byte frames)
Power Supply	150W (Typical), Supports Dual Feed
Operating Temperature	0°C to 45°C (Long-term)
MTBF	> 350,000 hours at 25°C

ORDERING SKU INFORMATION

To facilitate procurement and network planning, the SCTM board is available in several pre-configured variants. The base model includes the control plane CPU and the primary switching fabric, while uplink modules can be expanded via optional daughter cards to tailor the port density and speed to specific network roles.

- SCTM-BASE-U: Standard control and uplink board with 4 x 10GE SFP+ and 4 x 25GE SFP28 ports.
- SCTM-BASE-H: High-throughput variant with 2 x 100GE QSFP28 and 8 x 25GE

SFP28 ports.

- SCTM-BASE-T: Timing-centric model with enhanced PTP/SyncE hardware and 8 x 10GE SFP+ ports.

All SKUs include a comprehensive software license for Layer 3 routing and MPLS features, with optional add-on licenses for advanced security (MACsec) and network slicing.

