Chinese Manufactured Alternate Layer 3 Backbone Switch Switching Capacity Overview - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

The modern enterprise campus and carrier aggregation network demand a robust, high-performance, and cost-effective core routing platform. The Chinese Manufactured Alternate Layer 3 Backbone Switch represents the pinnacle of silicon innovation, delivering a non-blocking switching fabric engineered to handle the most demanding data center and backbone aggregation environments. This datasheet provides a comprehensive technical overview of the platform, detailing its hardware architecture, forwarding engine capabilities, and operational parameters that enable high-density 10G/40G/100G deployments with carrier-grade reliability. By leveraging an advanced, purpose-built ASIC and a sophisticated memory architecture, this switch delivers line-rate performance, ultra-low latency, and a rich set of Layer 2/Layer 3 protocols essential for modern network infrastructures.



HARDWARE ARCHITECTURE & SILICON

The foundation of the Alternate Layer 3 Backbone Switch is its next-generation, dynamically load-balancing switching fabric. Built around a high-efficiency, low-power network processor, the system is designed to provide a fully non-blocking architecture.

Central to the design is a distributed forwarding engine that enables scalable performance. The hardware employs a sophisticated shared-memory packet buffer architecture that ensures equitable access to resources, preventing head-of-line blocking and guaranteeing deterministic latency for critical traffic flows. The physical chassis design optimizes airflow and component density, ensuring operational stability even under full 100% throughput conditions. Hot-swappable redundant power supplies and fan trays are standard, supporting N+1 redundancy for mission-critical uptime requirements.

KEY FEATURES & ROUTING LOGIC

- Dynamic Routing Protocols: Full support for OSPFv2/v3, BGP-4, IS-IS, and RIPng for robust and scalable network integration. IPv4/IPv6 dual-stack routing is supported in hardware.

- Switching Capacity & Forwarding Rate: Delivers a massive switching capacity of up to 2.56 Tbps, with a forwarding rate of up to 1,920 Mpps, ensuring line-rate performance on all ports.

- High-Density Port Configuration: Supports a versatile interface mix, including 48 x 10G SFP+ ports and 8 x 40G/100G QSFP28 uplink ports for flexible network design.

- Advanced QoS & Traffic Management: Hierarchical QoS (HQoS) with eight priority queues per port, supporting strict priority (SP), weighted round-robin (WRR), and a combination of both for granular traffic control.

- High Availability & Redundancy: Real-time graceful restart, bidirectional forwarding detection (BFD), and virtual router redundancy protocol (VRRP) ensure sub-second failover and network resiliency.

- VXLAN & Network Virtualization: Integrated support for VXLAN bridging and routing, enabling efficient overlay network construction for modern SDN and data center environments.

- Enhanced Security: Hardware-based MACsec (IEEE 802.1AE) encryption, DHCP snooping, and IP source guard provide comprehensive security at the edge and

core.

- Manageability: Industry-standard CLI, SNMPv3, and a web-based GUI provide flexible management options. Support for NETCONF/YANG models ensures seamless integration with automation tools.

COMPLIANCE & STANDARDS

The platform adheres to a rigorous set of international and industry standards, ensuring seamless interoperability and compliance. It carries CE and FCC certifications for electromagnetic compatibility and RoHS for environmental compliance. For networking protocols, it strictly complies with IEEE 802.1D/w/s (STP/RSTP/MSTP), IEEE 802.3ae (10G Ethernet), IEEE 802.3ba (40G/100G Ethernet), and the MEF 9/14 specifications for Carrier Ethernet services, making it suitable for both enterprise and service provider networks.

TECHNICAL SPECIFICATIONS

Parameter	**Specification**
Form Factor	Fixed Configuration 1RU Rack-Mountable
Switching Capacity	2.56 Tbps (Non-Blocking)
Forwarding Rate	Up to 1,920 Mpps

CPU	Dual-Core ARM Cortex-A72 at 1.5GHz
Packet Buffer	24 MB Shared, Dynamic Allocation
MAC Address Table	128,000 entries
Power Supply	Dual, Hot-Swappable Redundant AC/DC (100-240V AC, -48V DC)
Typical Power Consumption	120W (Maximum 250W)
Operating Temperature	0°C to 45°C
MTBF	> 300,000 Hours

