ZTE OLT GTGO Board Port Security and MAC Address Limit Configuration Sheet - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document serves as the definitive technical reference for the ZTE OLT GTGO Board, specifically focusing on its advanced port security mechanisms and MAC address limit configuration capabilities. As a carrier-grade line card designed for the ZTE C300 and C600 series Optical Line Termination (OLT) platforms, the GTGO board delivers exceptional Gigabit Passive Optical Network (GPON) aggregation with a robust set of Layer 2 security features. This datasheet provides network architects, system integrators, and operations engineers with comprehensive specifications, configuration parameters, and performance metrics essential for deploying secure, high-density fiber access networks in both enterprise and service provider environments. The GTGO board's hardware-based port security and granular MAC address management ensure network integrity, prevent unauthorized access, and enable precise traffic control at the optical edge.



HARDWARE ARCHITECTURE & SILICON

The ZTE OLT GTGO board is engineered around a high-performance, purpose-built network processor and a dedicated switching fabric ASIC, delivering wire-speed forwarding for all GPON traffic. The architecture is designed to support up to 16 GPON ports per board, each capable of serving up to 128 Optical Network Terminals (ONTs), resulting in a total of 2,048 ONTs per line card. The board's silicon integrates a multi-threaded packet processing engine that handles complex operations such as Dynamic Bandwidth Allocation (DBA), traffic shaping, and advanced security functions without impacting performance. The hardware-based MAC address management module enables the system to learn, store, and filter MAC addresses at line rate, with a dedicated ternary content-addressable memory (TCAM) for security ACLs and MAC limiting rules. This architecture ensures that port security and MAC

address limit configurations are enforced in hardware, providing deterministic performance even under full line-rate conditions of up to 2.488 Gbps downstream and 1.244 Gbps upstream per PON port. The board's power-efficient design is complemented by a robust power management subsystem that includes dual power input paths and comprehensive overcurrent protection.

KEY FEATURES & ROUTING LOGIC

- Feature 1: Port Security with MAC Address Limiting: The GTGO board provides hardware-based port security that allows administrators to define a maximum number of MAC addresses that can be learned on a per-PON port or per-ONT basis. This feature prevents MAC flooding attacks, controls network access, and ensures that only authorized devices can connect to the network. The limit can be flexibly configured from 1 to 64 MAC addresses per ONT, with action policies including shutdown, trap, or restrict mode.

- Feature 2: Static MAC Address Binding: Network operators can bind specific MAC addresses to individual ONT interfaces. This feature ensures that devices attempting to connect with an unauthorized MAC address are immediately blocked, enhancing security for fixed-line broadband deployments or enterprise access points. Up to 256 static MAC entries per board are supported.

- Feature 3: Dynamic MAC Address Aging: The system supports configurable MAC address aging timers (ranging from 10 to 1,000 seconds) to automatically flush inactive MAC entries, optimizing the MAC address table and freeing resources for new devices. This is particularly valuable in dynamic environments where subscriber devices frequently change.

- Feature 4: MAC Address Table Overflow Protection: When the number of learned MAC addresses reaches the configured limit, the GTGO board implements a defined policy. The 'Shutdown' action disables the port, 'Restrict' discards frames from new MAC addresses while logging events, and 'Trap' sends an SNMP notification to the network management system without disrupting service for existing devices.

- Feature 5: Integrated Security ACLs: The GTGO board leverages its TCAM for simultaneous enforcement of MAC address limits and Access Control Lists (ACLs), allowing for sophisticated traffic filtering based on source/destination MAC, VLAN, and priority fields. This enables micro-segmentation and secure multi-tenant isolation.

- Feature 6: Advanced DBA and QoS Integration: Security functions are tightly integrated with the board's DBA engine and QoS mechanisms. This ensures that

security policy enforcement does not degrade service quality, with bandwidth guarantees maintained for critical applications even when security restrictions are active.

- Feature 7: Redundant Control and Management: The GTGO board supports active/standby management switching, ensuring that security policies and MAC configurations are synchronized and persistently applied across failover events, providing carrier-grade resilience.

COMPLIANCE & STANDARDS

The ZTE OLT GTGO Board adheres to and exceeds a comprehensive set of industry standards and regulatory requirements, confirming its suitability for global telecommunications and enterprise environments. It is fully compliant with ITU-T G.984.x and G.988 series standards for GPON, ensuring interoperability with a wide range of ONT/ONU equipment. The board meets IEEE 802.1D (MAC Bridging), 802.1Q (VLAN), and 802.1ad (QinQ) standards for Layer 2 switching and VLAN encapsulation. Security compliance is demonstrated through alignment with IEEE 802.1X (Port-based Network Access Control), with support for RADIUS authentication integration. The hardware design and component sourcing follow the Restriction of Hazardous Substances (RoHS) and Waste Electrical and Electronic Equipment (WEEE)

directives. Additionally, the board meets Electrostatic Discharge (ESD) immunity requirements per IEC 61000-4-2 and has undergone rigorous environmental testing to ensure operation within temperature and humidity ranges as specified by Telcordia GR-63-CORE and GR-1089-CORE. The GTGO board also supports management and monitoring protocols such as SNMPv2/v3, and CLI, ensuring seamless integration into existing network management frameworks.

TECHNICAL SPECIFICATIONS

- Physical & Dimensions: Standard OLT line card form factor; Dimensions: 395 mm (depth) x 220 mm (height) x 30 mm (width); Weight: 2.4 kg.
- GPON Ports: 16 GPON ports (SC/APC connectors) per board. Compliant with Class B+ optics standard; Transmitter: 1490 nm (downstream) / 1310 nm (upstream); Fiber reach: up to 20 km with 1:64 split ratio.
- Switching Capacity: 40 Gbps non-blocking, full-duplex switching capacity.
- MAC Address Table: 16K MAC address entries (shared across all ports). Supports both dynamic learning and static configuration.
- MAC Address Limit Capabilities: Per-ONT and per-PON port MAC limit configurable from 1 to 64 addresses; Action policies: Shutdown, Restrict, Trap; Static MAC entries: up to 256 per board.
- Packet Buffer: 4 MB packet buffer, shared and configurable via QoS policies.
- Security Features: Hardware-based MAC limiting, 802.1X authentication

support, ACLs (up to 512 entries), Storm control for broadcast/multicast/unknown unicast.

- Management Ports: 1 x 10/100/1000BASE-T out-of-band management port; 1 x Console port (RJ-45).

- Power Consumption: Maximum 80 W; Dual power input paths (redundant) with support for -48V DC power supply.

- Environmental Specifications: Operating Temperature: -5°C to 55°C; Storage Temperature: -40°C to 70°C; Humidity: 10% to 90% (non-condensing).

- MTBF: 150,000 hours at 25°C ambient.

Parameter	**Specification**
Form Factor	Standard OLT line card (for ZTE C300/C600 chassis)
Switching Capacity	40 Gbps (non-blocking, full-duplex)
Power Supply	Dual Hot-Swappable Redundant -48V DC (80W max)

ORDERING SKU INFORMATION

To facilitate the procurement and integration process for various deployment scenarios, the ZTE OLT GTGO Board is offered under specific orderable Stock

Keeping Units (SKUs). The base board is designated for GPON aggregation applications, with options for different transceiver interfaces and accessory kits. The product lifecycle is supported by ZTE's global supply chain, ensuring availability for new deployments and spare parts inventory management. For fiber distribution and cabling, complementary accessory bundles are available, including fiber optic patch cords, and SFP modules for uplink connectivity. Comprehensive service and support packages, including extended warranty, advanced replacement, and 24/7 technical assistance, can be acquired alongside the hardware to ensure operational continuity. The following table outlines the primary orderable configuration for the GTGO board.

- SKU: ZTE-GTGO-16-BASE: Standard GTGO board, includes 16 SC/APC GPON ports, management port, and console port. It does not include uplink SFP modules (ordered separately).
- SKU: ZTE-GTGO-16-PLUS: Extended configuration, includes 16 GPON ports plus a pre-installed 10G SFP+ uplink module for higher backhaul capacity. It is bundled with a starter accessory kit.
- SKU: ZTE-GTGO-ACCESS-KIT: Accessory kit containing a full set of LC/SC adapters, fiber cleaning tools, and mounting screws.
- SKU: ZTE-SFP-10G-SR: 10 Gigabit SFP+ transceiver for short-reach uplink (up to 300m over multimode fiber).
- SKU: ZTE-SFP-10G-LR: 10 Gigabit SFP+ transceiver for long-reach uplink (up

to 10km over single-mode fiber).

