GPON OLT Command Line Interface (CLI) Reference - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document serves as the definitive technical reference for the Command Line Interface (CLI) utilized across the next-generation GPON Optical Line Terminal (OLT) platform. Designed for carrier-grade access networks, this CLI provides granular, hierarchical control over all system functions, from physical port configuration to complex service-level traffic engineering. It embodies a robust, secure, and highly scriptable management framework, enabling network operators to achieve unprecedented operational efficiency and service agility. The CLI syntax is structured to be intuitive for seasoned engineers while offering the depth required for fine-tuning advanced OLT features, including Dynamic Bandwidth Allocation (DBA), forward error correction (FEC), and comprehensive quality of service (QoS) policies.

ARCHITECTURE & CHASSIS DESIGN

The CLI architecture is logically partitioned into a hierarchical tree of command modes, mirroring the modular hardware design of the OLT chassis. This structure provides a clear and secure pathway for configuration, monitoring, and diagnostics. The system operates across distinct privilege levels, ensuring that routine monitoring can be delegated without compromising system integrity. Key architectural elements visible through the CLI include:

- **User and Privileged Executive Modes:** The foundational access levels, providing a secure boundary between viewing operational status and executing potentially impactful system changes.
- **Global Configuration Mode:** The root of all configuration changes, where system-wide parameters such as hostname, authentication servers

(RADIUS/TACACS+), and SNMP community strings are defined.

- **Interface Configuration Modes:** Dedicated sub-modes for configuring specific physical and logical interfaces. This includes GPON, Ethernet uplink, and management interfaces, allowing for precise control over parameters like IP addressing, MTU, and administrative state.

- **Service and Protocol Sub-Modes:** Nested configuration contexts for features such as DHCP relay, IGMP snooping, DBA profiles, and bridge-domain configurations, enabling deep customization of service delivery.

This hierarchical design ensures a logical and secure operational workflow, reducing the potential for misconfiguration and enhancing overall network stability.

HARDWARE FEATURES

The CLI exposes and controls a rich set of hardware features engineered for high-performance and resilient access networks. The command set is designed to fully leverage the underlying hardware capabilities, providing administrators with comprehensive control over the OLT's functionality.

- **GPON Interface Control:** Comprehensive commands for managing GPON ports, including enabling/disabling, setting optical parameters (laser on/off,

transmit power levels), and monitoring real-time optical signal statistics (Rx/Tx power, temperature, bias current).

- **Dynamic Bandwidth Allocation (DBA):** Advanced CLI options for configuring DBA profiles that dictate upstream bandwidth allocation algorithms, ensuring fair and efficient utilization of the GPON medium. Parameters include fixed, assured, and best-effort bandwidth assignments per Optical Network Unit (ONU).

- **ONU Management:** A full suite of commands for discovering, authorizing, and managing ONUs. This includes provisioning ONU profiles, managing encryption keys, and performing remote ONU reboots and firmware upgrades.

- **Quality of Service (QoS):** Granular control over traffic classification, marking, and queue scheduling. The CLI allows for the definition of complex traffic classes and the application of strict priority, Weighted Fair Queuing (WFQ), or a combination thereof, ensuring SLA conformance.

- **Resilience & High Availability:** Commands to manage and monitor redundant power supplies, fan trays, and control/switch fabric modules. Link Aggregation Group (LAG) configurations for uplink interfaces are also fully supported to provide network-level redundancy.

COMPLIANCE & STANDARDS

The CLI and the underlying OLT platform are engineered to comply with a

comprehensive suite of international standards, ensuring seamless interoperability and regulatory acceptance across global telecommunications networks.

- **GPON Standards:** Full adherence to ITU-T G.984.x series recommendations, including G.984.1 (General characteristics), G.984.2 (Physical Media Dependent sublayer), G.984.3 (Transmission Convergence layer), and G.984.4 (ONU management and control interface).
- **Data Networking:** Full compliance with IEEE 802.3 for Ethernet interfaces, IEEE 802.1Q for VLAN tagging, and IEEE 802.1p for CoS prioritization. IP networking protocols adhere to relevant IETF RFCs (e.g., RFC 791, RFC 2131).
- **Management:** Support for SNMP v1/v2c/v3, enabling integration into standard network management systems (NMS). The CLI itself is accessible via SSHv2 and Telnet, with strict adherence to security best practices.
- **Environmental & Safety:** Compliance with global safety standards (e.g., UL, IEC) and environmental regulations (e.g., RoHS, WEEE). The hardware is designed for operation in a wide range of temperature and humidity conditions, suitable for central office and outdoor cabinet deployments.

TECHNICAL SPECIFICATIONS

The following table provides a detailed summary of the key hardware and

performance specifications for the GPON OLT platform. This data represents typical performance under standard operating conditions.

Parameter	Specification
Form Factor	1RU / 2RU / 4RU Rackmount Chassis
GPON Port Density	Up to 16 ports per 1RU system / 64 ports per 4RU system
System Switching Capacity	Up to 640 Gbps
Typical Power Consumption	150W - 450W (depending on configuration)
Power Supply	1+1 Redundant AC (100-240V, 50-60Hz) / DC (-48V)

ORDERING OPTIONS

The GPON OLT platform is available in a variety of configurations to meet diverse deployment needs, ranging from compact edge deployments to high-density central office installations. The flexible ordering structure is as follows:

- **Chassis Platforms:** Available in various form factors including 1RU, 2RU,

and larger modular chassis, each supporting a specific number of GPON ports and uplink capacity. The CLI remains consistent across the entire product family.

- **Interface Modules:** For modular chassis systems, a range of line cards are available, offering different port densities (e.g., 8, 16 ports per card) and uplink interface types (e.g., 10GE, 25GE).

- **Power Supplies:** Standard and redundant power supply units (PSUs) are offered in both AC and DC variants, providing flexibility for different power infrastructure environments.

- **Software Licenses:** Feature-based licensing options are available to enable advanced capabilities such as enhanced security, high-density ONU support, or advanced routing protocols. These licenses are easily managed via the CLI.

- **Transceivers:** A comprehensive range of qualified Small Form-factor Pluggable (SFP/SFP+) transceivers for GPON and Ethernet uplink ports, validated for performance and interoperability on the platform.

For detailed ordering information, including specific part numbers, please refer to the separate product order guide or contact your regional sales representative.


Power
Alarm
Link
Activity