High-Density Fiber Infrastructure Application Note: OEM 16-Port Pizza-Box GPON OLT Complete Chassis Power and Cooling Specs

PRODUCT IDENTIFICATION

The OEM 16-Port Pizza-Box GPON OLT is a compact, high-density passive optical network aggregation platform designed for space-constrained central office and data center deployments. This complete chassis solution integrates a full GPON Optical Line Terminal (OLT) functionality within a compact, low-profile 1RU form factor, offering a cost-effective means to deliver scalable fiber-to-the-home (FTTH), fiber-to-the-building (FTTB), and fiber-to-the-curb (FTTC) services. The complete chassis includes a robust backplane, dual hot-swappable power supply units, and an advanced cooling subsystem engineered to maintain optimal operating temperatures within diverse environmental conditions.



CORE INTERNAL TOPOLOGY

The platform's internal architecture is built around a non-blocking, high-throughput switching fabric that integrates the GPON Media Access Control (MAC) layer directly with the packet processing engine. The 16 GPON ports are independently managed, each supporting a downstream line rate of 2.488 Gbps and an upstream line rate of 1.244 Gbps, adhering to the ITU-T G.984 series standard. The chassis backplane provides dedicated high-speed lanes to each PON port, facilitating a total system switching capacity of up to 40 Gbps. The architecture is engineered to minimize latency through cut-through switching when forwarding packets between the GPON interfaces and the upstream network uplinks.

SWITCHING SUBSYSTEM CAPABILITIES

At the heart of the OLT lies a sophisticated switching and routing subsystem that supports Layer 2 and advanced Layer 3 features. This subsystem offers the intelligence necessary for managing dynamic bandwidth allocation (DBA), multicast group management (IGMP snooping), and VLAN stacking (Q-in-Q) for service segmentation. The forwarding engine executes line-rate forwarding decisions, enabling the simultaneous support of up to 512 logical ONU connections per PON port, or a total of over 8,000 ONUs per chassis. This capability is crucial for dense subscriber environments, ensuring a rich Quality of Experience (QoE) for all served users.

OPERATIONAL ADVANTAGES

The primary operational advantage of this OEM solution is its unparalleled port density per rack unit. The pizza-box design maximizes scarce rack space, allowing network operators to deploy dense GPON aggregation points. Additionally, the integrated, intelligent cooling solution and high-efficiency power supplies contribute to a low total cost of ownership (TCO) by reducing power consumption and cooling requirements, leading to a superior power efficiency ratio (measured in Watts per subscriber).

SPECIFICATION MATRIX

Parameter	Specification
Form Factor	1RU Rackmountable Pizza-Box Chassis
GPON Ports	16 x SFP (ITU-T G.984.2 Compliant)
Upstream Ports	2 x 10GE SFP+ (Dual-Mode Optical/Copper), 1 x Console (RJ-45)
S	w
4	0
Forwarding Rate	~60 Mpps (Million Packets per Second)
P	o
D	u
Power Consumption	Max: 150W, Typical: 110W
C	o
4	
Operating Temperature	0°C to 50°C (NEBS Compliant)

REGULATORY COMPLIANCE



This product is designed and manufactured in compliance with a comprehensive set of global industry and safety standards to ensure seamless integration into carrier-grade networks. This includes, but is not limited to, compliance with the CE marking directive, FCC Part 15, and RoHS standards. Furthermore, it meets key telecom standards for electromagnetic compatibility (EMC), safety (IEC/EN 60950), and network equipment building systems (NEBS) level 3 standards, ensuring operational reliability in all deployment scenarios. The OLT also adheres to the SFF-8472 digital diagnostic monitoring interface for optical transceivers and supports industry-standard management protocols such as SNMP and TL1.