Carrier-Grade Routing Solution Brief: Deploying ZTE C620 Compact Pizza-Box OLT System Forwarding and Uplink Redundancy

TARGET NETWORK POSITIONING

The ZTE C620 is a 2U compact pizza-box optical line terminal engineered for space-constrained central offices, remote coverage sites, and low-density access scenarios where full-scale OLT chassis are economically or physically impractical. Unlike conventional large-capacity access platforms that occupy substantial rack real estate, the C620 delivers carrier-class forwarding and uplink redundancy within a 2U, 19-inch chassis measuring 88.1 mm in height . This form factor enables deployment in street cabinets, basement equipment rooms, and third-party IEC-standard racks where depth is limited to 600 mm .

The platform targets three primary deployment contexts: rural and suburban low-density coverage where subscriber take rates do not justify 10U+ chassis investments; mobile transport and fixed-mobile convergence nodes requiring compact aggregation with carrier-grade protection; and enterprise campus or industrial park access points demanding full PON service capabilities with minimal facilities footprint . In each scenario, the C620 preserves the architectural integrity of ZTE’ s TITAN platform while compressing the physical envelope to approximately 16% of a comparable large-capacity OLT volume .



HARDWARE-LEVEL FAILOVER REDUNDANCY

The C620 implements a fully distributed architecture that separates the control plane from the forwarding plane, a design philosophy inherited directly from high-end routing platforms . This separation is not merely logical but physical: the switch and control card (SPUF/SPUFS) houses the management and control functions, while the forwarding plane operates across distributed switching elements. Critically, the control plane supports 1+1 redundancy through dual control boards, and the forwarding plane employs dual switching planes operating in load-sharing mode .

Uplink redundancy operates at multiple layers. Each control board provides four 10GE/GE optical interfaces, and with dual control boards installed, the system presents eight uplink ports across two independently powered

domains . These uplinks support Link Aggregation Control Protocol (LACP) for link-level redundancy, and the platform additionally supports UAPS and STP/MSTP/RSTP for Ethernet uplink protection . At the PON layer, the C620 supports Type B and Type C protection schemes, ensuring that fiber cuts or ONU failures do not cascade into service outages .

Power redundancy follows a similarly rigorous design. The chassis accepts either dual DC power interface cards (-48V/-60V, 15A maximum input current) or a single AC power card (110V/220V) with battery backup interface . The dual DC configuration provides true 1+1 power redundancy with independent feeds, while the AC option includes a temperature-sensor-equipped battery interface for external backup . Fan modules are deployed in pairs with forced air cooling (right-to-left airflow), completing the redundancy chain from power inlet to optical uplink .

PROTOCOL SUPPORT MATRIX

The C620’ s protocol stack reflects its dual identity as both an access platform and an L3-capable aggregation device. At Layer 2, the system supports VLAN-based service demarcation, Ethernet OAM (802.3ah EFM and Y.1731 CFM), and standard spanning tree variants . Layer 3 capabilities include IP routing, VXLAN for overlay networking, and H-QoS for hierarchical traffic

treatment . The NP (Network Processor) programmable architecture enables service-aware forwarding, quality monitoring, and flexible feature deployment without hardware replacement .

For PON access, the platform supports GPON, XG-PON, XGS-PON, Combo PON, Any-PON, and point-to-point GE/10GE architectures through a unified line card portfolio . The 16-port Combo PON card, notable as an industry-first implementation, integrates a WDM1r multiplexer within the optical module itself, enabling GPON-to-XGS-PON migration without ODN modification or additional rack space . Any-PON capability extends this flexibility by allowing a single card to switch between PON technologies via SFP module substitution alone, reducing spare-part inventory and future-proofing against technology transitions .

CORE PARAMETERS

The system’ s backplane delivers 1.8 Tbit/s of switching capacity, with the main control switching fabric contributing 240G and the system-level switching capacity rated at 480G . These figures support non-blocking forwarding across the maximum configuration of 32 PON ports, which can serve up to 2,048 FTTH subscribers in a single 2U chassis . The distributed forwarding architecture ensures that line-rate performance is maintained regardless of packet size or

service mix.

Environmental hardening distinguishes the C620 from typical datacenter equipment. Operating temperature spans -40°C to +65°C with a minimum startup temperature of -25°C, and humidity tolerance extends from 5% to 95% non-condensing . These ratings enable deployment in outdoor cabinets and unconditioned remote sites without supplemental HVAC, a critical enabler for the low-density and remote coverage use cases that define the platform’s market positioning.

Parameter	**Specification**
Form Factor	2U, 19-inch rack-mountable; 88.1 mm (H) × 482.6 mm (W) × 283.5 mm (D)
Service Slots	2 line card slots
Backplane Switching Capacity	1.8 Tbit/s
System Switching Capacity	480G
Main Control Switching Capacity	240G
Maximum PON Ports	32 GPON / XG-PON / XGS-PON / Combo PON / Any-PON
Uplink Interfaces	4× 10GE/GE per control board (8 total with dual control boards)
Control Plane Redundancy	1+1 active/standby; forwarding plane

	load-sharing
Power Configuration	Dual DC: -48V/-60V, 15A max; Single AC: 110V/220V with battery interface
PON Protection	Type B / Type C
Operating Temperature	-40°C to +65°C (min. startup: -25°C)
Operating Humidity	5% to 95%, non-condensing
Weight	Empty chassis: 3.93 kg; Full configuration: <13 kg

LIFECYCLE ASSURANCE (MTBF)

While ZTE does not publish a specific MTBF figure for the C620 in public datasheets, the platform’ s design inherits the reliability engineering of the TITAN series, which targets carrier-grade availability of 99.999% at the system level when configured with full redundancy. The redundancy architecture described above—dual control boards, dual switching planes, dual power feeds, paired fans, and Type B/C PON protection—provides the hardware foundation for this availability target. For operators requiring formal MTBF data for procurement evaluation, ZTE provides reliability predictions through its technical support organization based on Telcordia SR-332 methodology.

Field serviceability is enhanced by the C620’ s universal line card compatibility with the larger C600 and C650 platforms . Spare parts stocked for any TITAN series platform can serve the C620, reducing inventory carrying costs and improving mean time to repair. Hot-swappable line cards, power modules, and fan trays allow component replacement without service interruption in redundant configurations.

TARGET BACKBONE TOPOLOGIES

The C620 occupies a specific topological niche: it is not a core aggregation OLT, but rather an access-edge platform designed to feed into larger C600/C650 nodes or directly into metro Ethernet aggregation. In a typical deployment, the C620’ s uplinks connect via 10GE to a parent OLT or a metro switch, while its PON ports serve ONUs distributed across a campus, industrial park, or low-density service area. The platform supports star, chain, and Ethernet ring topologies, enabling flexible fiber routing that conserves outside plant resources .

For fixed-mobile convergence scenarios, the C620 can aggregate mobile backhaul traffic alongside residential and enterprise PON services, with QoS mechanisms ensuring appropriate treatment of latency-sensitive mobile traffic. The compact form factor permits installation at cell sites or nearby cabinets,

eliminating the need for backhaul to a distant central office and reducing transport latency. In smart industrial park and commercial building deployments, the C620 serves as the building-level access point, terminating PON connections from tenant ONUs and handing off to campus or metro network infrastructure via protected 10GE uplinks.

