ZTE C320 OLT Firmware Upgrade and Flash Partition Recovery Blueprint - Official Technical Overview & Hardware Datasheet

PRODUCT IDENTIFICATION

The ZTE C320 Optical Line Terminal (OLT) is a carrier-grade, high-density GPON/XG-PON aggregation platform designed for next-generation fiber-to-the-home (FTTH) and enterprise access networks. This document serves as the definitive technical reference for the firmware upgrade methodology and flash partition recovery procedures integral to maintaining system integrity, service continuity, and operational resilience. The C320 platform combines robust hardware architecture with a sophisticated software-defined operating environment, ensuring seamless upgrades and rapid disaster recovery in mission-critical telecommunications infrastructures.



CORE INTERNAL TOPOLOGY

The ZTE C320 is architected around a distributed switching fabric that interconnects all line cards, uplink modules, and the active/standby main control boards. The internal topology comprises a high-speed backplane operating at 640 Gbps full-duplex switching capacity, facilitating non-blocking communication between the PON interfaces and the upstream network ports. Central to the system integrity is the dual-partition flash memory scheme. Each main control board (MCB) features two independent flash banks (Boot Bank 0 and Boot Bank 1), along with a reserved recovery area. This design ensures that a failed firmware upgrade on the active partition can be instantly rolled back to the last known working image via the bootloader or watchdog timer. The system also employs a proprietary ZTE software integrity check (SIC) mechanism that validates the cryptographic hash of the firmware image upon boot, ensuring protection against file corruption or unauthorized modifications.

SWITCHING SUBSYSTEM CAPABILITIES

- Switching Fabric: 640 Gbps non-blocking, distributed shared memory architecture.
- Forwarding Rate: Up to 480 Mpps (million packets per second) for 64-byte frames.

- Redundancy: 1+1 main control board (MCB) redundancy with automatic switchover, and 1+1 power supply modules (AC/DC) with load sharing.

- Flash Memory: Dual 1 GB NAND flash memory banks per MCB, with a dedicated 256 MB SPI flash for bootloader and recovery code.

- Upgrade Modes: Support for Zero Downtime Upgrade (ZDU), allowing uninterrupted forwarding of data traffic while the control plane and system software are updated sequentially.

OPERATIONAL ADVANTAGES

- Seamless Firmware Upgrades: The C320’ s flash partition logic enables a ‘hitless’ software upgrade, where the inactive bank receives the new firmware while the system continues operating on the active bank. Upon completion of the integrity verification, a controlled switchover is executed.

- Automated Recovery: In the event of a boot failure due to a corrupt image or power interruption during an upgrade, the system automatically reverts to the backup partition. The bootloader includes an enhanced recovery timer that triggers partition rollback after three consecutive boot failures.

- Service Assurance: The upgrade and recovery blueprints ensure that service-level agreements (SLAs) are maintained, minimizing downtime to sub-second levels during main control board switchovers.

SPECIFICATION MATRIX

- System Capacity: Supports up to 128 GPON ports or 64 XG-PON ports per chassis (depending on line card configuration).

- Uplink Interfaces: 8 x 10GE SFP+ or 2 x 100GE QSFP28 for high-capacity upstream aggregation.

- Management Ports: 1 x 10/100/1000BASE-T out-of-band management (MGMT), 1 x RJ45 console, and 1 x USB 2.0 for local firmware recovery.

- Environmental: Operating temperature range: -5°C to +55°C; Humidity: 5% to 95% (non-condensing).

- Power Consumption: Typical: 800W; Maximum: 1200W (fully loaded).

Parameter	**Specification**
Form Factor	6-RU Standard Modular Chassis (19-inch rack-mountable)
Switching Capacity	640 Gbps full-duplex, non-blocking
Power Supply	Dual Hot-Swappable Redundant AC: 100-240V, 50/60Hz; DC: -48V
Flash Memory Configuration	Dual 1 GB NAND + 256 MB SPI Flash per MCB
MTBF	> 250,000 hours
Maximum Power Consumption	1200W (fully configured)

REGULATORY COMPLIANCE

The ZTE C320 OLT complies with the following international safety and electromagnetic compatibility (EMC) standards:

- Safety: IEC 60950-1, EN 60950-1, UL 60950-1, and GB 4943.1.
- EMC: EN 300 386, FCC Part 15 Class A, and VCCI Class A.
- Environmental: RoHS Directive (2011/65/EU) and WEEE Directive (2012/19/EU).
- Telecom Standards: ITU-T G.984 (GPON), G.987 (XG-PON), and MEF CE 2.0 specifications.

The platform also meets the stringent NEBS (Network Equipment Building Standards) Level 3 requirements for temperature, humidity, and seismic performance, making it suitable for both central office and remote outdoor cabinet installations.

