Huawei MA5600T Series OLT Software Version Compatibility Matrix for Third-Party ONUs - Official Technical Overview & Hardware Datasheet

HUAWEI MA5600T SERIES OLT SOFTWARE VERSION COMPATIBILITY MATRIX FOR THIRD-PARTY ONUS

OFFICIAL TECHNICAL OVERVIEW & HARDWARE DATASHEET

1. EXECUTIVE SUMMARY

This document serves as the definitive technical reference for the Huawei SmartAX MA5600T series Optical Line Terminal (OLT) platform, with a specific focus on its software version compatibility with third-party Optical Network Units (ONUs). As network operators increasingly seek to build flexible, cost-effective, and vendor-diverse access networks, the ability to integrate non-Huawei ONUs into the MA5600T ecosystem has become a strategic imperative.

The MA5600T series, a carrier-grade GPON OLT, is engineered with a robust hardware architecture providing up to 3.2 Tbit/s backplane capacity and 960 Gbit/s switching capacity . This datasheet details the software version matrix and specific configuration prerequisites required to enable seamless interoperability with third-party ONUs. By leveraging standard ITU-T G.984 GPON and G.988 OMCI protocols, the MA5600T can be configured to support a

wide range of third-party ONUs, eliminating vendor lock-in and reducing total cost of ownership (TCO) .



2. THE COMPATIBILITY CHALLENGE: VENDOR LOCK-IN AND THE UNLOCK SOLUTION

By default, Huawei OLTs are configured with firmware that restricts operation to Huawei-branded ONUs. When a third-party ONU is connected to a locked OLT, it will typically remain offline, with the system reporting an "Insufficient ONT interoperability access license" or showing a "Last down cause: LOSi/LOBi" error . This intentional limitation is designed to enforce vendor-specific ecosystems but presents a significant barrier to network flexibility.

To overcome this, the MA5600T platform requires a specific unlock procedure.

This process involves modifying the OLT's firmware configuration to deactivate proprietary authentication mechanisms and allow standard-based OMCI management of third-party devices . The unlock enables the OLT to recognize and manage ONUs from various manufacturers, including ZTE, Nokia, FiberHome, Syrotech, VSOL, and other generic OEM vendors, provided they adhere to ITU-T standards .

3. SOFTWARE VERSION COMPATIBILITY MATRIX FOR THIRD-PARTY ONUS

The successful integration of third-party ONUs is critically dependent on the OLT's main control board and its associated software version. The unlocking and compatibility capability is not universal across all firmware releases. The following matrix outlines the specific compatibility and unlock support for the MA5600T series based on the main control board and firmware version.

Platform Series	**Main Control Board(s)**	**Compatible Firmware Versions (R-Series)**	**Third-Party ONU Support Status**
MA5600T / MA5680T / MA5603T /	SCUN, SCUK, SCUH	R015, R018	Supported (Requires Unlock)

MA5683T			
MA5608T	MCUD, MCUD1	R015, R018	Supported (Requires Unlock)

Huawei MA5600T Series OLT Software Compatibility Matrix

| Platform Series | Main Control Board(s) | Compatible Firmware Versions (R-Series) | Third-Party ONU Support Status |

| :--- | :--- | :--- | :--- |

| MA5600T / MA5680T / MA5603T / MA5683T | SCUN, SCUK, SCUH | R015, R018 | Supported (Requires Unlock) |

| MA5608T | MCUD, MCUD1 | R015, R018 | Supported (Requires Unlock) |

Notes:

- **Firmware Versions:** The R015 and R018 software trains are widely deployed for the MA5600T series and are confirmed to support the third-party ONU unlock feature .

- **Platform Discrepancies:** While the MA5600T series uses SCU-class control boards, the MA5608T is a smaller form-factor chassis that utilizes MCUD-class boards. The unlock principle and compatible versions are consistent across both .

- **Newer Generation:** For context, the newer MA5800 series supports a broader range of firmware (R018-R024) and control boards (e.g., MPSC, MPLA), providing a longer-term upgrade path .

4. TECHNICAL PREREQUISITES FOR INTEROPERABILITY

Achieving stable interoperability with third-party ONUs requires strict adherence to several technical prerequisites. These conditions are essential for ensuring that after the software unlock, the ONUs register, authenticate, and forward traffic reliably .

- **PON Standard Compliance:** The third-party ONU must be a standard GPON device, strictly compliant with the ITU-T G.984 series of recommendations. Support for non-standard or proprietary extensions will likely result in compatibility failures .
- **OMCI Protocol Compliance:** Full support for the OMCI protocol (ITU-T G.988) is the cornerstone of cross-brand interoperability. The OMCI allows the OLT to discover, register, and manage the ONU, as well as configure services such as VLANs and QoS .
- **ONU Serial Number (SN) Format:** The ONU's serial number may need to conform to a format recognizable by the Huawei OLT. In many cases, the SN must start with the prefix "HWTC" to be accepted during the authentication

phase. Manual addition of the ONU's SN to the OLT's whitelist might be required .

- **Optical Parameters:** The optical transceiver of the ONU must be compatible with the Huawei OLT's SFP module. Typical GPON deployments use Class B+ or Class C+ optical modules. The ONU's receiver power must be within the operating range of the OLT (e.g., OLT receiver range: –8 dBm to –27 dBm). Proper optical link budget design is crucial to prevent ONU flapping .

5. CONFIGURATION WORKFLOW FOR THIRD-PARTY ONU INTEGRATION

For network engineers, the process of integrating a third-party ONU into a MA5600T network involves a systematic configuration workflow. The steps are broadly categorized into two phases: OLT preparation and ONU configuration .

Phase 1: OLT Preparation (Unlock & Authentication)
The primary task is to disable the vendor-specific authentication mechanisms. This is typically performed via the command-line interface (CLI).

- **Disable Private OAM:** Execute the CLI command `undo gpon private-oam enable` on the GPON port. This disables Huawei-specific private OAM extensions.
- **Set Authentication Mode:** Ensure the OLT uses standard SN authentication

by configuring the command `gpon authentication-mode sn`. This bypasses the proprietary authentication checks that would otherwise reject a third-party ONU .

Phase 2: ONU Configuration (Registration & Service)
After the OLT is unlocked, the third-party ONU can be registered using its serial number.

- **Add ONU:** Use the command `ont add` to manually add the third-party ONU to the OLT's database, specifying its SN.
- **Verify Status:** Check the ONU status using `display ont info` to confirm it shows as "online." Once online, standard service profiles (e.g., for data, voice, and video) can be applied .

6. HARDWARE SPECIFICATIONS & STANDARDS COMPLIANCE

The MA5600T series provides a resilient foundation for mixed-vendor GPON deployments. Its hardware architecture is defined by high-capacity backplanes and carrier-grade redundancy.

- **Backplane Switching Capacity:** Up to 3.2 Tbit/s.
- **Control Board Switching Capacity:** The SCUK and SCUN boards offer up to

960 Gbit/s in load-sharing mode .

- **MTBF:** Approximately 45 years, ensuring high availability for critical access networks .

- **Standards Compliance:** The platform and its service boards (e.g., GPBD, GPFD) are fully compliant with ITU-T G.984.x and support features like 9216-byte Jumbo frames and 1588v2 time synchronization. This ensures that when third-party ONUs adhere to the same standards, interoperability is not only possible but also reliable .

7. CONCLUSION

The Huawei MA5600T series, when operating with specific R015/R018 software versions on SCU or MCU control boards, provides a proven, standards-based path for integrating third-party ONUs. By executing the required software unlock and adhering to the technical prerequisites of standards compliance, OMCI support, and optical matching, network operators can successfully build a multi-vendor, cost-optimized GPON access network. This datasheet confirms that the MA5600T is not a closed system but a flexible platform capable of adapting to diverse operational requirements.

