

## Ethernet Passive Optical Networking (EPON) Solutions for MSOs

Subscriber demand for higher-speed access networks is growing and competitive pressures are upping the broadband ante – driving MSOs to develop new solutions that leverage their networks and subscriber base to create profitable and differentiated services. As the leading provider of IEEE 802.3 EPON chips for the deployment of triple-play services in broadband access networks, Teknovus has developed head-end and CPE System on Chip (SoC) products that specifically address MSO Business and Residential requirements.

Any new access platform must be able to support the existing MSO service-delivery architecture, while providing the required combination of cost competitiveness and back-office integration as well as meeting ever-increasing user expectations for throughput, QoS, and advanced video services. IEEE EPON solutions have the following advantages for residential and business/enterprise applications:

- **EPON increases the bandwidth per customer by a factor of 10 or more**, compared with traditional networks
- **EPON is the most cost-effective way** to leverage existing fiber and expand the fiber network to new areas
- **EPON is the world's predominate FTTP technology** deployed by incumbents, CLECs, and MSOs
- **EPON is an open IEEE standard** (802.3ah), and its organization is open for anyone to join
- **EPON service flows map 1:1 with existing DOCSIS solutions, providing complementary services that can be managed through DOCSIS over EPON solutions**

With millions of triple-play residential and commercial subscribers deployed by more than 35 network operators and dozens of system vendors, Teknovus offers best-of-breed EPON SoC solutions for central office and customer premises equipment. Teknovus combines low-cost (CapEx and OpEx) EPON connectivity with unique traffic management capabilities that inexpensively shape and manage services at the edge of the operator's network. Through the use of multiple "logical links" (LLIDs) per end-user device, Teknovus' EPON supports and manages Service Level Agreements (SLAs) on a per-service, per-customer basis, in much the same way DOCSIS systems operate today.



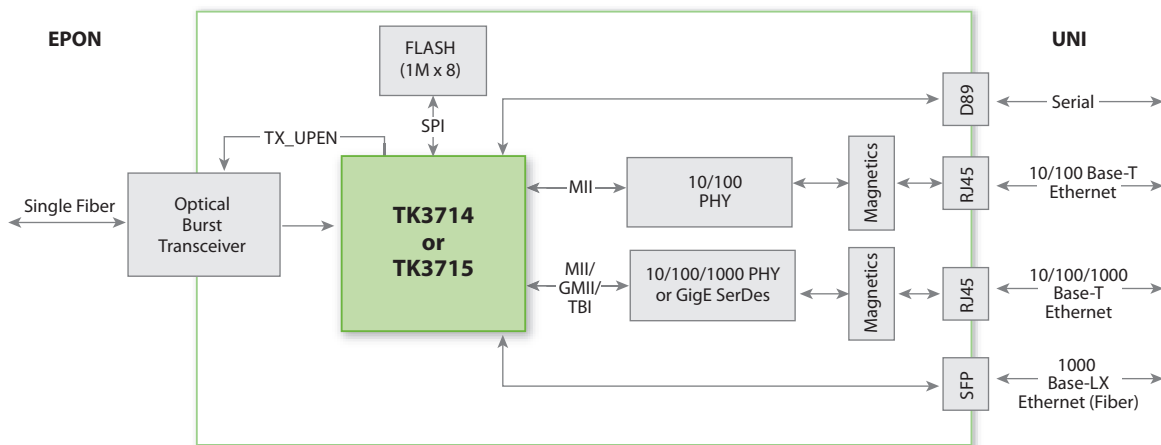
When evaluating and selecting a new technology it is important to ensure that there is a viable ecosystem of infrastructure, customer premises and test equipment, as well as optical components, to support commercial deployments. As the leading provider of EPON SoCs, Teknovus has developed an extensive community of system vendors, OEMs, ODMs, test equipment manufacturers and partners to ensure interoperability, performance, and secure supply of its advanced EPON solutions to network operators.

**Teknovus EPON Product Features:**

- **Auto-Sensing Turbo-EPON™ mode** operates at 1.25Gb/s downstream with legacy systems and 2.5Gb/s downstream with Turbo-EPON ONUs (Optical Network Units) and OLTs (Optical Line Terminals)
- **Ultra-low power** enables total ONU consumption under 2 Watts
- **Complete EPON SoC designs** slash development times and costs, thus accelerating time-to-market
- **Integrated packet buffer and integrated processor memory** – available only in Teknovus EPON ONU chips – provide the smallest solution footprint and lowest cost CPE solutions
- **Standards-based architecture** guarantees low-cost deployment and interoperability with third party systems
- **8 logical links** support guaranteed bi-directional connections for 8 independent services, performing like 8 ONUs in one
- **Feature-rich firmware** including IGMP snooping, powerful VLAN modes, and QoS policy enforcement
- **DOCSIS over EPON middleware solutions that enable EPON solutions to be provisioned and managed with the cable company’s existing back office**

**Systems-on-Chip (SoC) for 1.25G/2.5G Turbo-EPON™ Optical Network Units (ONUs)**

The Teknovus TK3714 and TK3715 are the industry’s first dual-speed, auto-sensing ONU chips. (The TK3715 supports China’s “CTC-Mode” interoperability requirements.) Designed for both business and residential Customer Premises Equipment (CPE) ONUs, the TK3714 and TK3715 provide the built-in functionality and performance required for ONUs delivering triple-play services. These SoCs feature a unique Multiple Logical Link architecture which provides up to 8 dedicated links for bi-directional services such as VoIP and IPTV. Delivering guaranteed performance for both per-subscriber and per-service contracts, the TK3714 and TK3715 offer the power of 8 distinct ONUs in a single device.



**Figure 1**  
Block diagram of TK3714/TK3715-based ONU

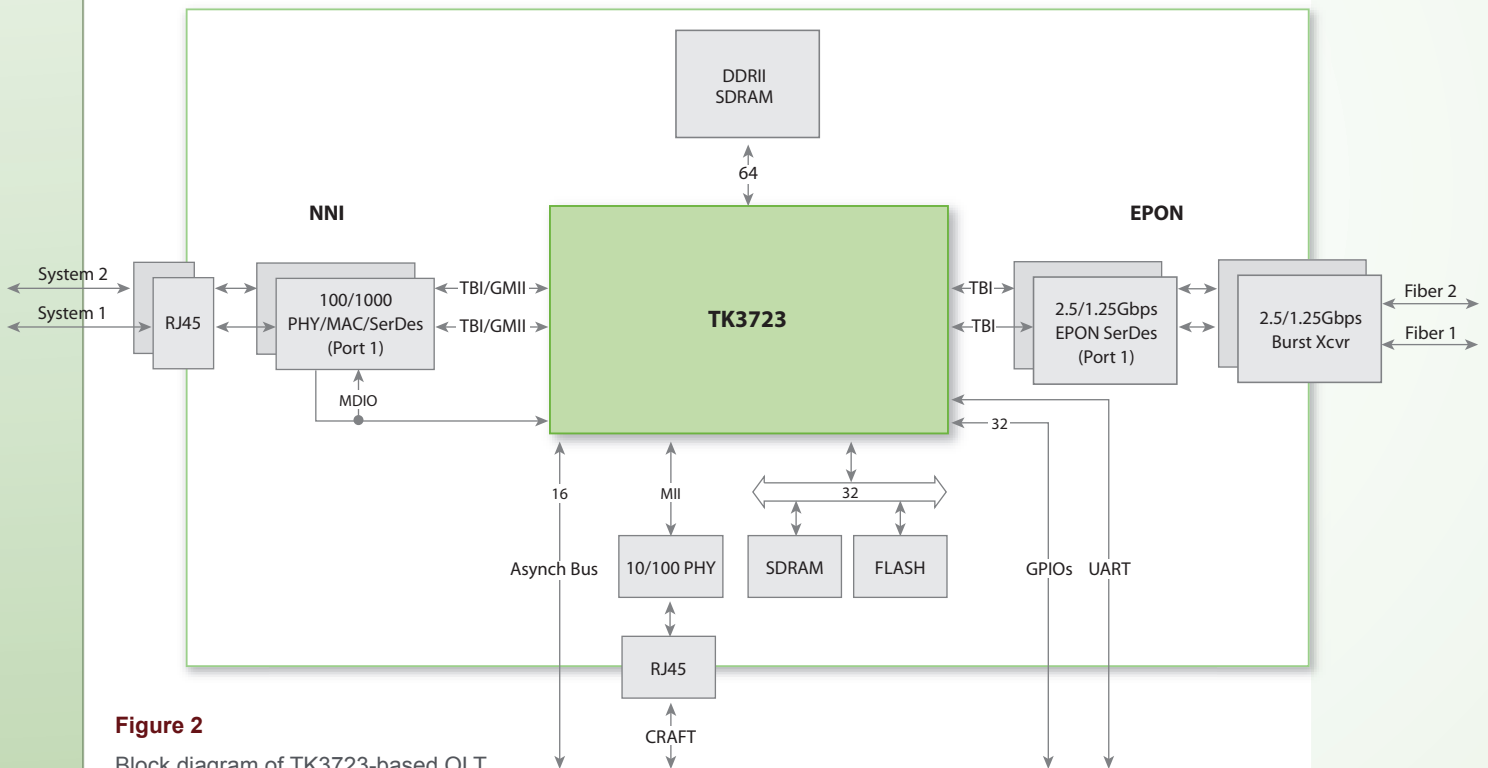




### Dual Turbo-EPON™ MAC Traffic Manager for Optical Line Terminals (OLTs)

The TK3723 SoC is a complete traffic manager and dual-port EPON MAC for Optical Line Terminals (OLTs), enabling service providers to deploy triple-play services over future-proof fiber optic networks. Teknovus' TK3723 is the industry's first dual speed EPON OLT and is IEEE standards-compliant.

Designed for access networks serving both business and residential subscribers, the TK3723 provides all the built-in functionality and performance required for OLTs delivering multiple services over a unified network. The dual EPON MACs are combined with a configurable VLAN switch, bi-directional traffic shaping, and scheduling support. The TK3723's configurable DBA adapts to multiple service provider requirements without sacrificing performance, and its fully configurable L2/L3/L4 line-rate packet processing allows for advanced classification, filtering, and application monitoring. The unique 512 logical links architecture supports up to 512 dedicated links for bi-directional services, such as VoIP and IPTV. The TK3723 supports guaranteed performance for both per-subscriber and per-service contracts.



**Figure 2**  
Block diagram of TK3723-based OLT