Brought to you by Informa Tech

New OLT platforms must adapt to the changing broadband landscape and meet end users' evolving needs

Publication date:
February 2024
Author:
Stephen Wilson, Senior Principal Analyst, Broadband Access Intelligence Service

---

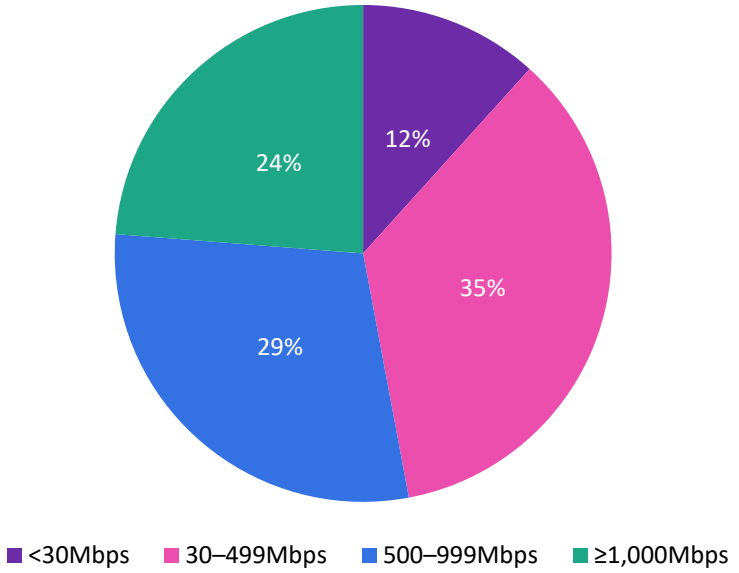
Introduction

The broadband access market continues to evolve, and operator requirements in terms of broadband speeds, overall experience, and kinds of customers are changing. This blog examines the kind of features that new optical line terminal (OLT) platforms should support in order to meet operators' shifting requirements both today and in the future.

The ability to offer symmetrical bandwidths of at least 10Gbps is a must for operators

Multigigabit access is already becoming increasingly prevalent globally: for example, Omdia forecasts that at the end of 2024, 24% of global fixed broadband subscriptions will have speeds of 1Gbps or above (see **Figure 1**).

Figure 1: Global fixed broadband subscriptions by speed, end-2024



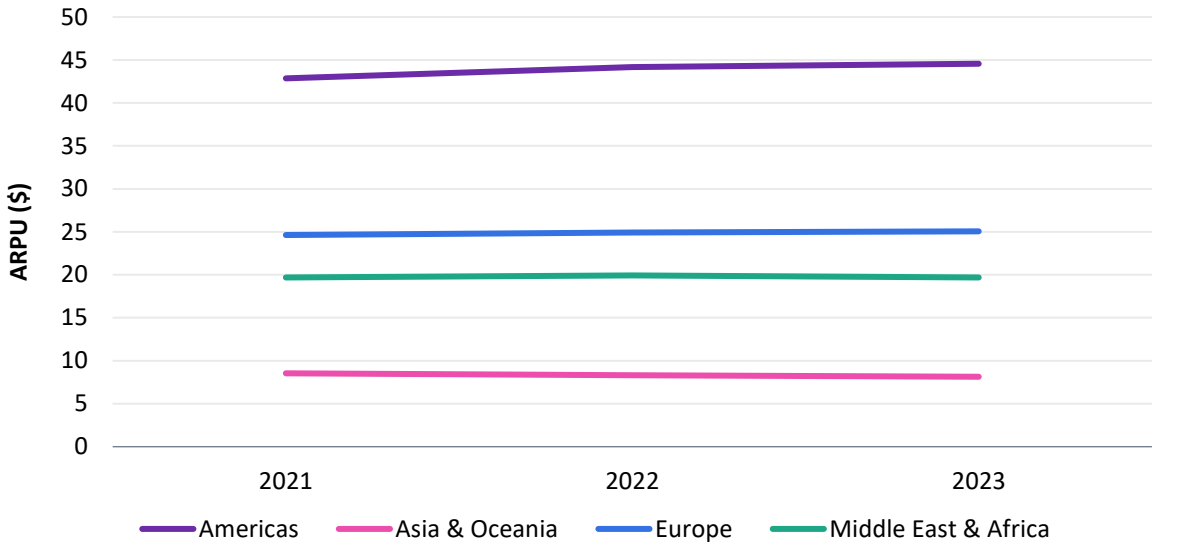
Source: Omdia

However, the challenge is that because of, for instance, the shared nature of PON fiber-to-the-premises (FTTP) infrastructure, XGS-PON (10Gbps Symmetrical Passive Optical Network) cannot provide the real-world 10Gbps speeds that will increasingly be demanded. In addition, in many markets regulators are becoming more stringent in terms of requiring operators to deliver real-world speeds that match their marketed speeds. To this end, operators looking to tap into the demand for 10Gbps speeds can benefit from deployments of 50G PON, which offers a substantial fivefold increase in capacity over XGS-PON and will allow operators to comfortably accommodate demand for 10Gbps speeds and above. As a result, new OLT platforms that incorporate support for 50G PON can be attractive for operators. One necessary condition for new OLT platforms that support 50G PON is that they can accomodate the increased access network capacity with greater backplane capacity. As the number of 50G PON subscriptions increases over time and with the potential for further PON technology evolution to 200G PON, the OLT platforms of today will need to support backplane capacity of at least 1Tbps.

New OLT platforms must be able to ensure a high-quality and reliable overall broadband experience

At the same time, it is clear that operators are broadening their focus from headline speeds to also concentrating on providing an optimal customer experience. One example of this is the growing number of deployments of fiber to the room (FTTR), where fiber is deployed direct to rooms within a subscriber's premises in order to deliver an improved user experience. Broader customer experience improvements are important for operators because they offer the promise of increased ARPU, and growing ARPU has been challenging for operators across the world in recent years (see **Figure 2**). In addition, as FTTP becomes more prevalent and fiber overbuild increases, there will be a corresponding need to go beyond high-speed fiber access alone as a way of delivering the best experience to customers. This entails placing more emphasis on the performance of in-home Wi-Fi networks.

Figure 2: Broadband ARPU by region, 2021–23



Note: USD exchange rate fixed at 4Q23 rate

Source: Omdia

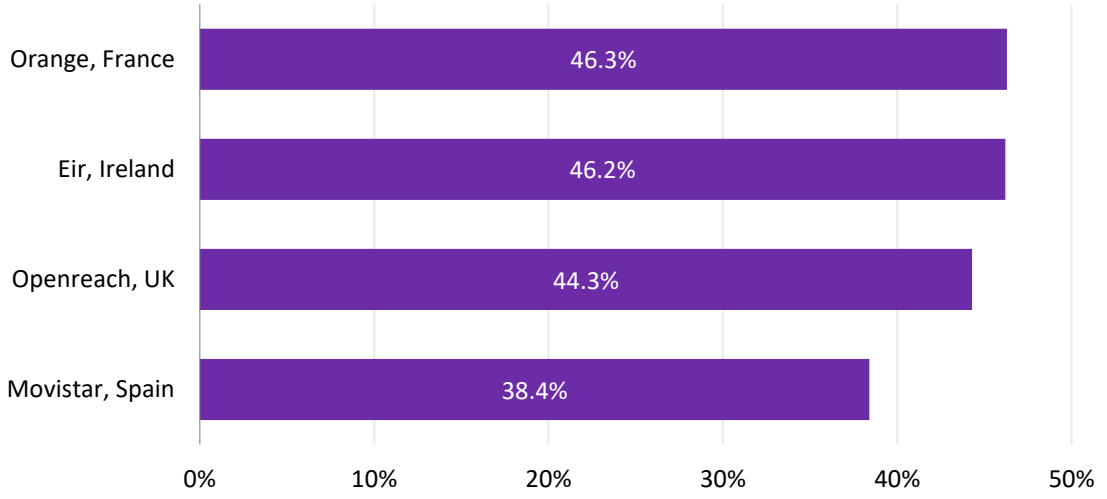
Delivering high-quality in-home Wi-Fi means overcoming challenges related to interference from neighboring access points as well as taking into account the specific requirements of the different applications that are being used. Intelligent OLT platforms can play a role in addressing these challenges. Information on Wi-Fi usage and performance can be collected to form a Wi-Fi experience map; the OLT can then perform simulations on how to optimize performance. As a result of this process, the configuration of the end-user optical network terminal (ONT) can be adapted so, for example, the Wi-Fi channels that are being used can be changed, the channel width can be amended, and the Wi-Fi transmit power can be modified. Wi-Fi optimization can be performed on an intelligent OLT platform that has its own computing power to enable rapid network optimization.

A further important requirement for new OLT platforms is the need to support both hard slicing and the dynamic alteration of network parameters to allow operators to provide differentiated and high-quality services. This can be complemented by intelligent network management systems that analyze data to help resolve network faults while taking into account the access technology that is being used.

In this way intelligent OLT platforms can generate new revenue for operators by supporting differentiation in the consumer market. Operators could launch more premium plans that offer greater guarantees over network parameters such as speeds and latencies, which might be attractive for market niches such as gamers.

Hard slicing and the ability to dynamically alter network parameters are tools that could be used by operators offering wholesale access to broadband infrastructure. Operators could launch new wholesale offers that provide greater control for access seekers than traditional bitstream offers and so allow operators to boost wholesale broadband ARPUs. This is a significant opportunity, because in many countries a sizable proportion of subscriptions on incumbent FTTP infrastructure are wholesale subscriptions (see **Figure 3**). Moreover, in many countries a new breed of wholesale-only operator has emerged, and such operators are well placed to launch more sophisticated wholesale offerings.

Figure 3: Selected European incumbents, share of wholesale in total FTTP subscriptions, 3Q23



Note: Openreach numbers refer to non-BT Retail subscription share

Source: Omdia

These innovations also have the potential to allow operators to develop product offerings targeted at the enterprise segment that more closely match those of traditional leased line access. This means that there is scope for operators to charge more to small and medium-sized enterprises that may have previously relied on standard residential PON offerings.

New OLT platforms must deliver the high reliability required by enterprises

Fixed broadband operators have promising opportunities to use PON technologies to serve enterprise customers, so new OLT platforms will need to accommodate the specific requirements of this kind of customer. In the first instance, in many cases industrial applications will require deterministic latency, so the OLT platform will need to support hard slicing in order to provide this. Reliability is also a key concern for industrial enterprises where a six-nines level of availability is typically required. To meet such requirements, new OLT platforms will need reliable heat dissipation, which is important because it ensures that the system does not fail when a single fan fails. Moreover, in order to adequately serve enterprise customers, reliable forwarding is needed such that there is automatic detection of system control board switchover and, as a result, there is zero packet loss and zero damage to services. Finally, in order to meet industrial enterprises' requirements, new OLT platforms will also need to provide a reliable clock to ensure dependable data transmission for different high-value services.

It is important that new OLT platforms capitalize on the energy efficiency benefits of fiber

There is also an increasing focus on sustainability within the telecoms industry. PON fiber rollouts are well placed to meet operators' sustainability objectives thanks to their low energy consumption in comparison with other access technologies such as copper-based DSL. In this way operators must ensure their OLT platforms are maximizing the energy efficiency benefits of fiber deployments. OLTs that can support multiple kinds of PON customers across residential, enterprise, and industrial segments on the same platform stand to deliver particular energy efficiency benefits. In addition, meeting sustainability requirements is another area where intelligent OLT platforms are important. This is because such platforms can help support new services and provide a better quality of experience for customers. This

can then encourage more rapid subscriber migration to fiber, which in turn limits energy consumption from having to run legacy and fiber networks side by side for a prolonged period.

Appendix

Author

Stephen Wilson, Senior Principal Analyst, Broadband Access Intelligence Service

askananalyst@omdia.com

Omdia Commissioned Research

This piece of research was commissioned by Huawei.

Citation policy

Request external citation and usage of Omdia research and data via citations@omdia.com.

Omdia consulting

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Omdia's consulting team may be able to help you. For more information about Omdia's consulting capabilities, please contact us directly at consulting@omdia.com.

Copyright notice and disclaimer

CONTACT US

omdia.com

customersuccess@omdia.com