NBI's XGS-PON rollout reflects its aim to be the world's best open access FTTP operator

Authors:
Stephen Wilson, Senior Principal Analyst, Broadband Access Intelligence Service
Julie Kunstler, Chief Analyst, Broadband Access Intelligence Service

Introduction

National Broadband Ireland (NBI) is the company set up to carry out the objectives of the Irish government's National Broadband Plan. The vision of the plan, which ties into EU targets for universal gigabit access coverage by 2030, is to ensure the availability of world-class broadband across the whole of the Republic of Ireland and to deploy in areas that were not considered economically viable for private sector operators. To this end, NBI's fiber-to-the-premises (FTTP) rollout is a public-private partnership with funding from the Irish government that has been approved by the European Commission and from the winning bidder for the National Broadband Plan tender, the international telecoms investor Granahan McCourt Capital, and its investment partners. NBI is a wholesale-only FTTP operator that offers open access to all retail service providers.

The NBI network will cover more than 569,000 premises as well as new premises built in the rollout area (known as the "Intervention Area") over the next 25 years and will cover 23% of the population or 1.1 million people. NBI's FTTP network will also cover 56,000 farms and 44,000 businesses. This represents a sizable rollout and the largest public-private partnership in European telecoms history. The project is the largest investment in rural Ireland since electrification.

As part of its FTTP rollout, NBI moved to deploy XGS-PON from day one without any legacy Gigabit Passive Optical Network (GPON) rollout. This case study considers the rationale for NBI's XGS-PON deployment and the results that it has achieved. It examines the way the technology avoids the risk of an in-country digital divide, the competitive advantages that the XGS-PON rollout provides, the way in

which it can satisfy end users and generate revenue, and the benefits it provides in terms of network efficiency.

NBI's XGS-PON rollout can eliminate the risk of an in-country digital divide

NBI's rollout footprint covers all areas where private operators do not consider it commercially viable to deploy high-speed broadband (defined by the EU as 30Mbps). This was established during consultation between the government and the private sector, which resulted in the creation of the Intervention Area, a map of some 569,000 premises, mostly rural, spanning every county in Ireland. While the rollout helps ensure that all Irish citizens and businesses can gain access to FTTP, there was still a risk that speeds available in rural areas might be lower than those in urban areas. This has been avoided by benchmarking the minimum speeds offered in NBI's wholesale plans to those available in areas where operators have commercially deployed FTTP. NBI initially offered entry-level speeds of 150Mbps, which have subsequently increased to 500Mbps. The deployment of XGS-PON means these speeds can comfortably be accommodated today and there is room to increase them further in the future.

NBI's XGS-PON rollout reflects its aim to be a technology leader

Stemming from its investor, Granahan McCourt Capital, NBI in Ireland has an overall mission to be the best wholesale open access FTTP operator in the world. As part of this strategy, the company strives to adopt the latest technology, and the company's XGS-PON rollout fits well within this context. The vision of NBI is to combine world-class fiber infrastructure with world-class cloud infrastructure, evidenced by its IT solutions, which are built on Amazon Web Services. This includes the ability to provision subscribers as well as to bill them, and the ability to monitor the network from a performance and fault management point of view. The move to utilize the latest technologies such as XGS-PON reflects the advantage that NBI enjoys in that its fiber rollout is a greenfield deployment, which means the operator is not burdened by legacy technologies and systems. These technology choices have been made to make the experience of its customers, the internet service providers (ISPs), easy and frictionless, which helps maximize utilization of the network.

XGS-PON helps NBI emphasize broadband quality to its retail service provider customers
Deploying XGS-PON is also important for NBI, because it demonstrates that the company is committed to providing a quality product offering. This can help NBI attract retail ISPs onto its network, and the company has already had success in this area, signing agreements with 62 ISPs. So far, 51 of these ISPs have been onboarded and are selling services on the network within a couple of years of the network going live.

### XGS-PON provides differentiation from alternative broadband technologies
The emphasis on broadband quality that the deployment of XGS-PON highlights is also important in encouraging retail service providers not to use other technologies in the NBI fiber footprint. The higher speeds and quality that XGS-PON provides are important in encouraging mobile network operators (MNOs) to use the NBI FTTP network rather than launch fixed wireless access (FWA) services. Non-MNO FWA services are available in rural areas in Ireland but only offer download speeds of up to 150Mbps, far below what NBI's XGS-PON network is capable of providing.

Moreover, the fixed wireless plans that are available come with data caps, and this is not the case for NBI's FTTP plans, which can use the 10Gbps capacity that XGS-PON can provide. Average traffic per FTTP subscriber line is well above that of DSL and FWA connections. For example, in 1Q23 the figure for FTTP stood at 442GB per month compared with only 88GB for DSL and 297GB for FWA, according to data from Irish regulator Comreg. This reflects the attraction of fiber to retail ISPs since it does not place technological constraints on subscriber usage levels.

XGS-PON allows NBI to meet the demands of Irish FTTP customers

Offering gigabit and multigigabit speeds via its XGS-PON deployment is also important for NBI to satisfy its retail service provider customers, because there is real demand for such speeds in the Irish market. For example, as of 1Q23, 9% of total Irish fixed broadband subscriptions had a sold download speed of 1Gbps or higher.

Figure 1: Ireland retail fixed broadband subscriber lines by sold download speed, 1Q23
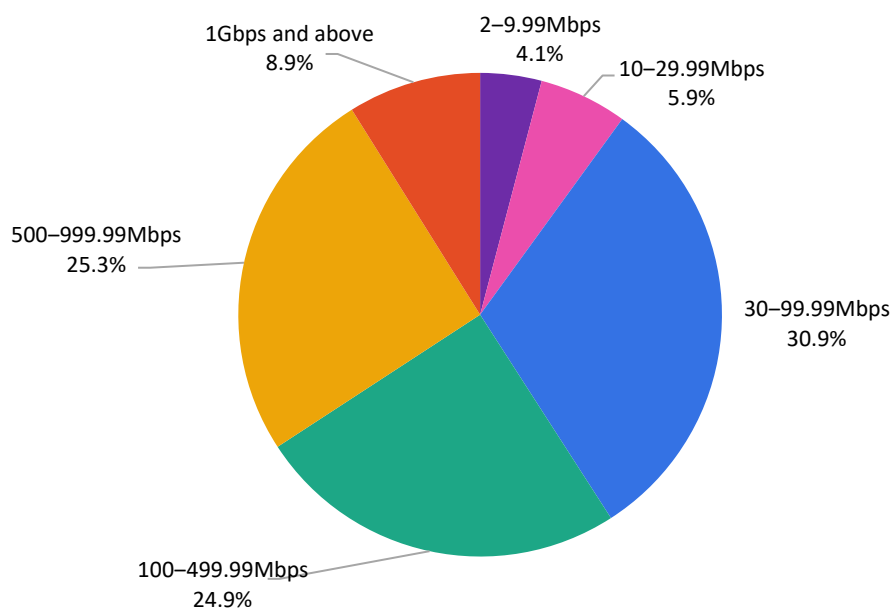
© 2023 Omdia

Source: Comreg

The figures are even higher when only FTTP is considered, and as of 1Q23, 20% of FTTP subscriptions had a sold download speed of 1Gbps or higher.

Figure 2: Ireland retail FTTP subscriber lines by sold download speed, 1Q23

Pie chart showing:
- 30–99.99Mbps: 0.1%
- 100–499.99Mbps: 24.8%
- 500–999.99Mbps: 55.0%
- 1 Gbps and above: 20.0%
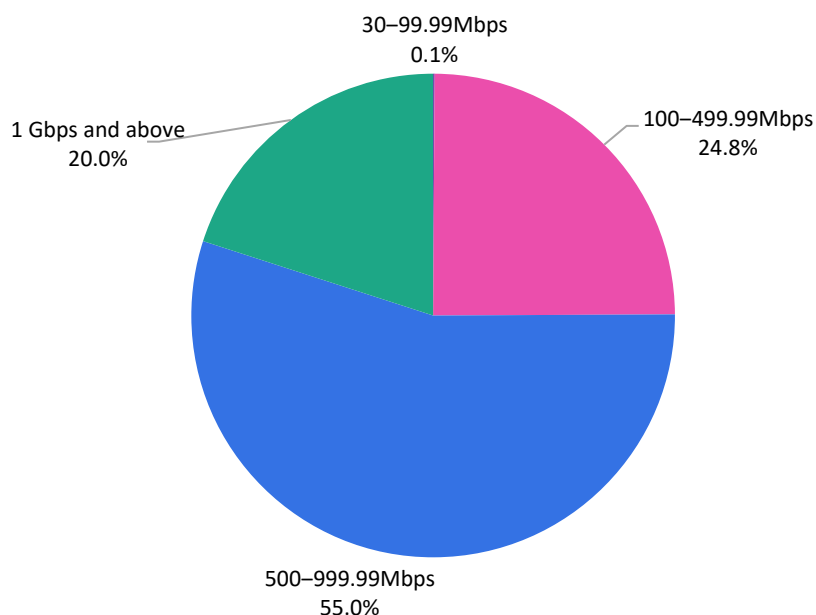
© 2023 Omdia

Source: Comreg

These figures also mean that there are opportunities for NBI to earn additional revenue from higher-ARPU gigabit and multigigabit subscribers. NBI's XGS-PON network also supports gigabit and multigigabit offers targeted specifically at enterprises that have higher ARPUs.

NBI is achieving very strong subscription take-up, which reflects its network quality and technology choices

The fact that XGS-PON deployment has played a role in attracting multiple retail service providers to the NBI network should lead to higher overall subscription take-up thanks to competition between these different ISPs. The results of NBI's rollout have so far been extremely positive, and in some areas subscription take-up rates have reached 30% within six months of deployment and 40% just one year after deployment. NBI hopes to increase this figure to more than 80% over time, which demonstrates the importance of standing out from any potential competing infrastructure.

A further important point to note is that NBI's emphasis on delivering quality broadband with its XGS-PON deployment and wider technology choices is delighting its retail ISP customers and translating into highly satisfied broadband end customers. One way of measuring customer satisfaction is by using Net Promotor Scores. Such scores, which can range from -100 to +100, are based on how likely respondents say they would be to recommend a company or product. NBI has consistently achieved extremely high Net Promotor Scores since its launch (+52 in 2023), with results that are almost unheard of in telco. This is also supported by NBI's "Continuous Improvement" program and "Close The Loop" initiatives, designed to address pain points.

**Figure 3: NBI, Net Promotor Score, 2021–23**

© 2023 Omdia
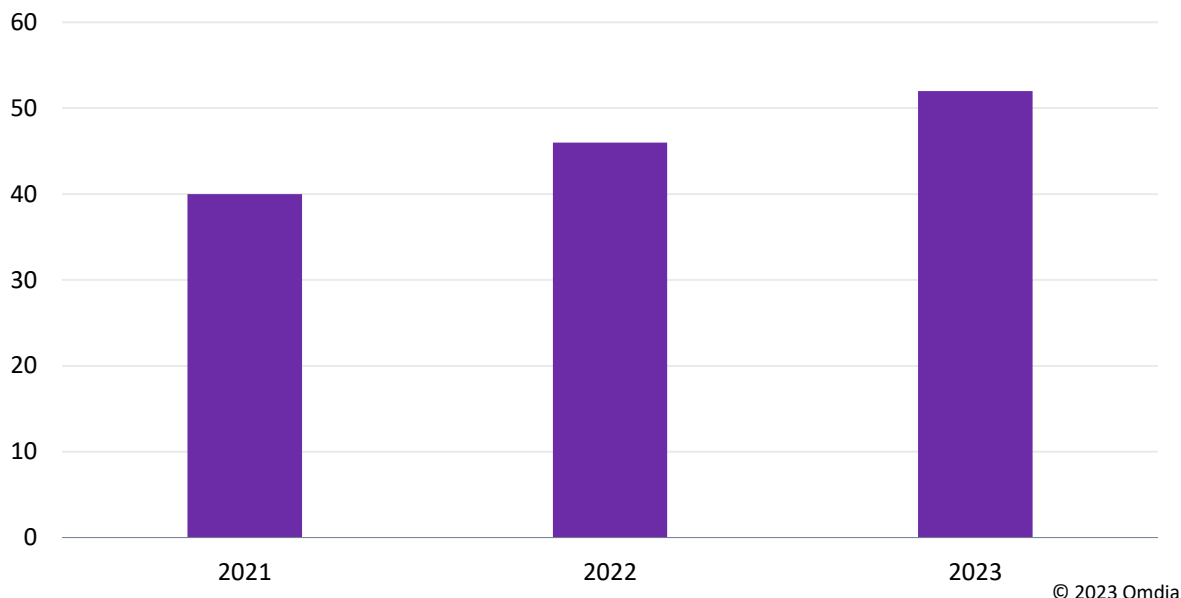
Source: NBI

XGS-PON helps future-proof the NBI FTTP network and can deliver cost efficiencies

A further point to consider is that NBI's XGS-PON rollout helps it to future-proof its network. The operator is deploying XGS-PON optical network terminals (ONTs) today, and these can remain in place for a long time as retail service providers continue to increase the speeds they offer to end subscribers. As noted, NBI has already increased its entry-level speeds from 150Mbps to 500Mbps. The company currently has a wholesale tier with downstream speeds of 2Gbps, and the XGS-PON rollout provides the flexibility to increase this over time.

NBI's XGS-PON network has sufficient capacity to deal with increasing fixed broadband traffic levels
One further area in which XGS-PON can deliver cost efficiency is that it avoids the need for network upgrades as fixed broadband traffic levels continue to grow in Ireland. Average traffic per FTTP subscriber line was 306% higher in 1Q23 than in 1Q17, for instance. Average traffic in recent quarters has also been above the levels seen during the pandemic, which reflects the continued prospects for increases. Traffic has not returned to prepandemic levels even though many workers and students are back in the office and university respectively.

Figure 4: Ireland, average traffic per FTTP subscriber line, 1Q17–1Q23

© 2023 Omdia
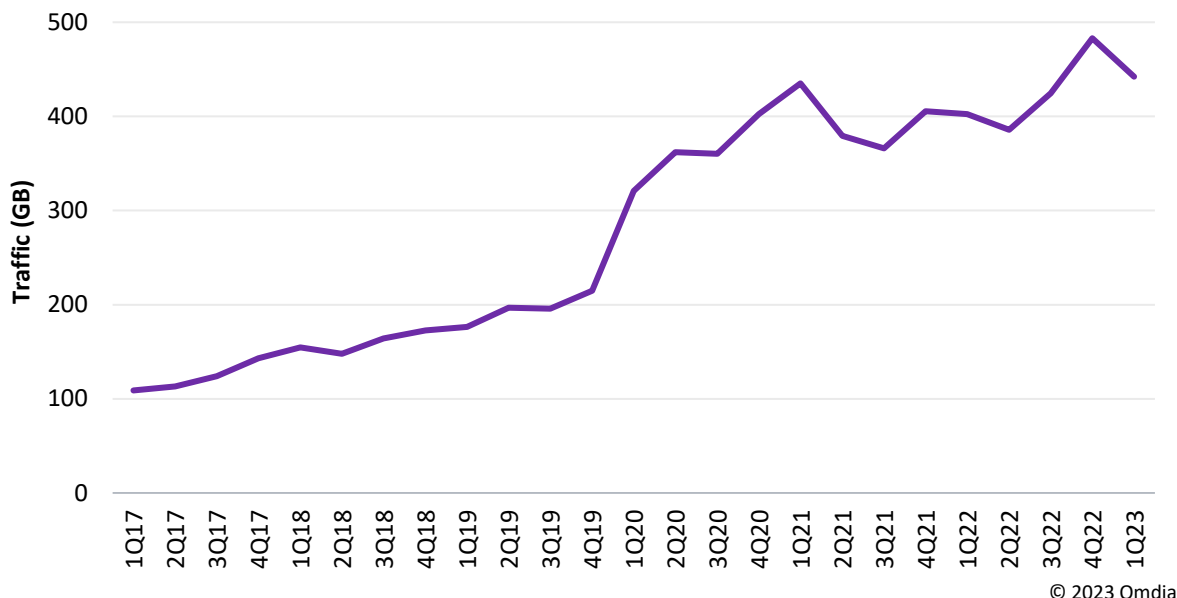
Source: Comreg

The growth in traffic, combined with the fact that NBI's entry-level plan has speeds of 500Mbps and it also offers gigabit and multigigabit access plans, means that without XGS-PON the operator would risk not being able to provide its advertised speeds. XGS-PON, however, provides 10Gbps symmetrical capacity, which can avoid the need for further upgrades for many years.

This efficiency would not have been achieved if the operator had deployed a GPON network, because over time, and as speed demands and traffic increased, it would have been necessary to swap out the GPON ONTs for XGS-PON ONTs. Such a swap-out introduces additional costs (e.g., in terms of the manpower required) and would introduce some inconvenience for subscribers.

The XGS-PON rollout is also important from an efficiency point of view, because it offers sufficient capacity to be able to provide attractive services to enterprises over the PON network. The fact that NBI can serve both residential and enterprise customers over the same XGS-PON network means there are potential savings in network management over running separate PON and point-to-point networks.

Appendix

Authors

Stephen Wilson, Senior Principal Analyst, Broadband Access Intelligence Service

Julie Kunstler, Chief Analyst, Broadband Access Intelligence Service

askananalyst@omdia.com

OMDIA