OMDIA

Pushing fiber closer to the customer to meet the needs of future home broadband applications

The home network has become a key area of service differentiation for broadband service providers—to the extent that much of the broadband marketing focus has now shifted from who provides the highest basic speeds to who can provide the best overall home Wi-Fi experience. This has led to new investments from service providers in advanced Wi-Fi hardware and Smart Wi-Fi software platforms.

Requirements on the broadband network will only continue to increase, with future broadband applications relying on networks capable of delivering ultra-high speeds and ultra-low latency. To provide such services, Huawei has set out its vision for a 5-star broadband service standard that will rely on a combination of Wi-Fi 6 and fiber-to-the-room (FTTR) technology in the home. However, installing fiber cabling in mass-market residential homes will be a new venture for service providers in many countries. How will service providers justify the business case for such a deployment?

COVID-19 led to higher demands on the broadband network

The COVID-19 pandemic brought about fundamental change to people's daily lives, changing the way companies, governments, and social organizations carry out their operations. Even before the pandemic, the world was entering a new era in communications, underpinned by the next generation of fixed and mobile communications networks. The pandemic highlighted the importance of this evolution, accelerating the urgency around the need for greater infrastructure investment.

One key element of this digital evolution is the growing shift to the cloud. The intelligence required to run tomorrow's services and applications will increasingly sit in the cloud, meaning for those services and applications to run perfectly, the network element between device and cloud must have little to

zero impact. For the delivery of future applications that will rely on technology such as extended reality (XR)—for example, the concept of the metaverse that some believe represents the next generation of internet interface—this will mean being able to deliver a consistent broadband connection of at least 1Gbps and end-to-end latency of 8ms or less.

Home Wi-Fi offers value and new opportunities for service providers

To meet the growing demands on the network, operators have been investing in optical fiber in the core, backhaul, and, increasingly, in the access parts of the network. This overall enhanced customer experience has given early fiber-to-the-home (FTTH) providers a competitive advantage over other types of broadband operators in the form of superior net promoter scores (NPS) and reduced customer churn.
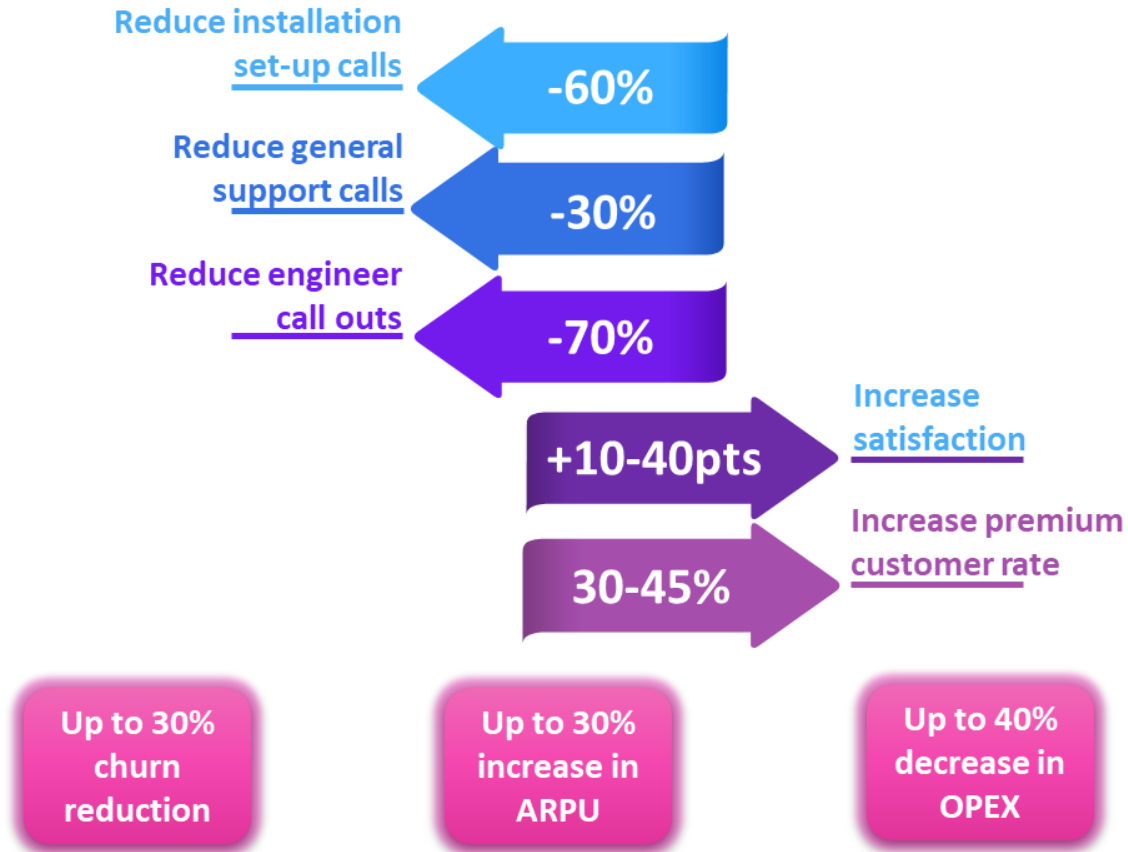
For example, in 2019, the Spanish operator Masmovil topped the network quality rankings with its FTTH network, enabling it to boast an NPS ahead of its competitors at that time. A second example is Bell Canada, which has highlighted that its churn rates are lower when customers are on a full fiber (FTTH) network. On average, the company found that churn rates for fiber access subscribers are 30–35 basis points lower than those on fiber-to-the-node (FTTN) or digital subscriber line (DSL) networks.

The connected home had to play catch up

The success metrics mentioned above are not possible without investing in the home network, as well as in the core and access. As service providers invested in the access, what was commonly known as the access bandwidth bottleneck was further pushed into the home—an area to which service providers had traditionally paid less attention. This led to the home network becoming a growing source of customer dissatisfaction with, in some cases, up to 60% of broadband customer service calls being related to the Wi-Fi network, resulting in increasing operational costs as well as customer churn.

Service providers have therefore been investing in more advanced Wi-Fi hardware, along with Smart Wi-Fi software platforms. This investment enables an improved customer home broadband experience and provides more advanced remote diagnostics and troubleshooting tools. Combined, the success metrics have been impressive, including a reduction in customer service calls and rising customer NPS (see **Figure 1**). Operational costs were reduced by up to 40% and customer churn by up to 30%. Some operators have also managed to increase their broadband ARPU by up to 30% when they positioned advanced home networking technology as a premium component in broadband pricing tiers.

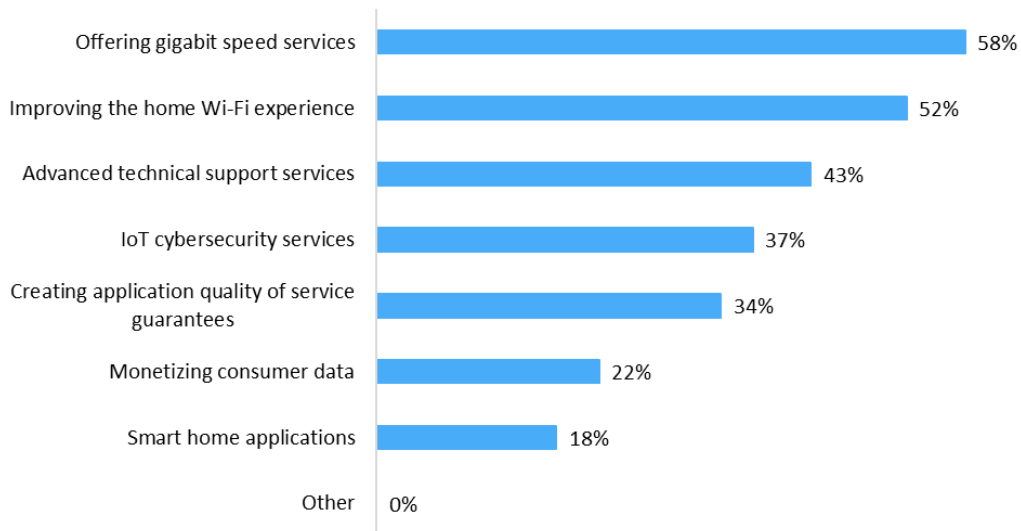**Figure 1: Optimizing the home Wi-Fi experience has seen huge operational benefits**

Reduce installation set-up calls **-60%**

Reduce general support calls **-30%**

Reduce engineer call outs **-70%**

+10-40pts Increase satisfaction

30-45% Increase premium customer rate

Up to 30% churn reduction

Up to 30% increase in ARPU

Up to 40% decrease in OPEX

© 2022 Omdia

Source: Omdia

The home network must continue to evolve to meet future expectations

The need to deliver greater broadband network capabilities will be continuous. Service providers recognize that constant improvements to the home Wi-Fi experience as well as broadband services to the home are key elements in the quest to increase broadband revenues (see **Figure 2**).

Figure 2: Improving the home Wi-Fi experience is key to future revenue growth

**Which do you see as the largest opportunities for growing broadband ARPU?**

Category	Percentage
Offering gigabit speed services	58%
Improving the home Wi-Fi experience	52%
Advanced technical support services	43%
IoT cybersecurity services	37%
Creating application quality of service guarantees	34%
Monetizing consumer data	22%
Smart home applications	18%
Other	0%

© 2022 Omdia

Notes: n=192

Source: Omdia's Digital Consumer Service Provider Insights

While investments in new Smart Wi-Fi platforms have been a success, Wi-Fi as a technology remains subject to environmental interference. Although the interference is potentially reduced through techniques such as dynamic band and channel steering, it cannot always be fully eliminated. This will become increasingly important as future Wi-Fi standards that utilize higher frequency bands, which naturally have a higher attenuation, are launched.

FTTR can play a role in the future evolution of the home network

One of the simplest and most effective ways of mitigating environmental interference and overall signal attenuation on a radio signal is to shorten the distance between the transceiver and receiver. In the home, this can be achieved using a wired backbone around the house, which then connects individual Wi-Fi access points in each room. The optimum cabling technology for this internal backbone is optical fiber, as it is the most future-proof, cost-efficient, sustainable, and consistent of all cabling options (see **Figure 3**).

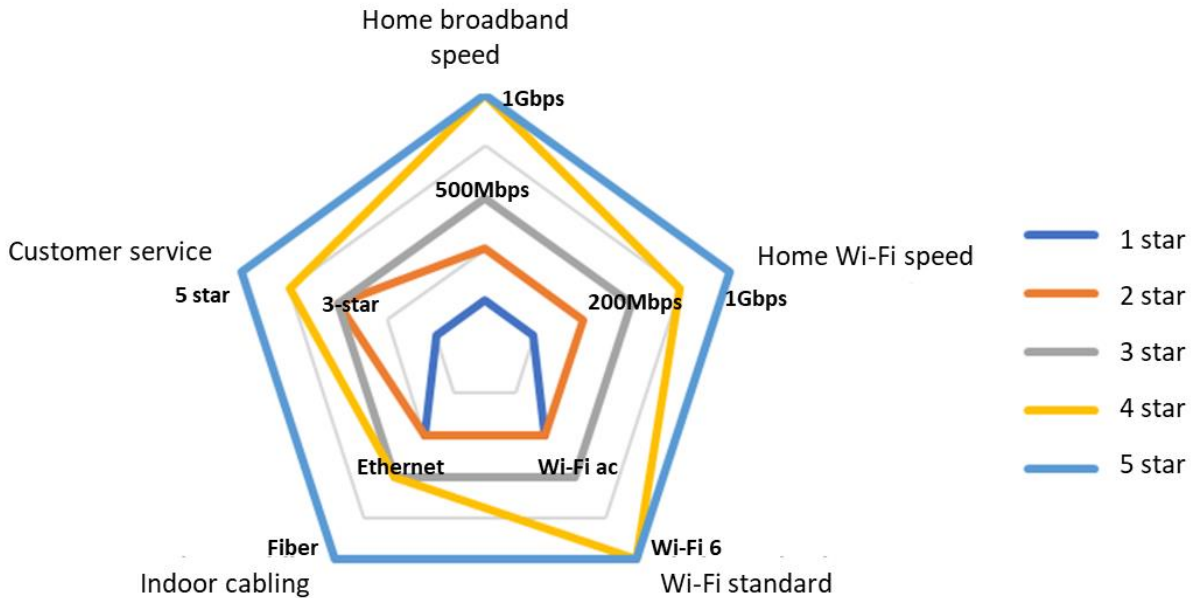![OMDIA]

Commissioned Research

Figure 3: FTTR network schematic
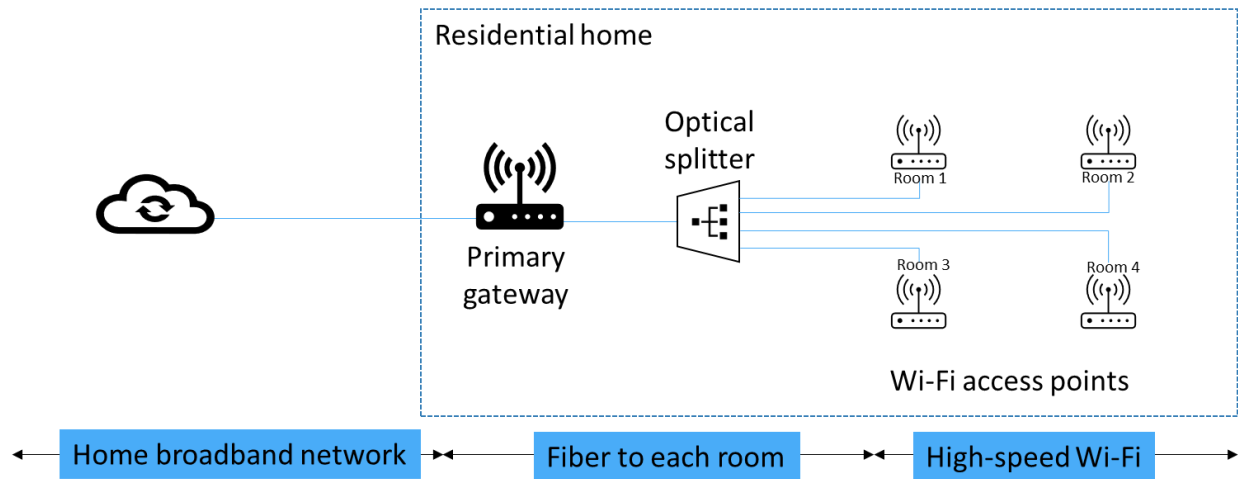
Source: Omdia

Utilizing a mix of FTTR plus Wi-Fi 6 is a key element of what equipment vendor Huawei has defined as a 5-star broadband service standard (see **Figure 4**), which provides speeds of 1Gbit and ultra-low latency to every room of the house. Based on results from a pilot with STC in the Middle East, Huawei has shown that FTTR cabling provides gigabit-plus speeds in every room, with average ping times of less than 10ms.

OMDIA

Figure 4: Huawei's 5-star broadband service standard

© 2022 Omdia

Source: ETSI F5G Industry Specification Group

Figure 5 illustrates that, based on responses to the World Broadband Association Service Provider
Thought Leadership Survey, in-building fiber cabling is now seen by service providers as one of the most
important elements for delivering future applications, only marginally behind the FTTH/B connection
itself. This will especially be the case in multi-dwelling units (MDUs) and other larger households that are
already typically utilizing in-door cabling for broadband connectivity. In the longer term, a greater
number of households that traditionally have not utilized indoor cabling for broadband connectivity are
expected to have it retrofitted.

Figure 5: Improving in-building cabling is now seen as a key investment area

Meeting the needs of future consumer applications, rank in order of the importance of investment of the following areas:
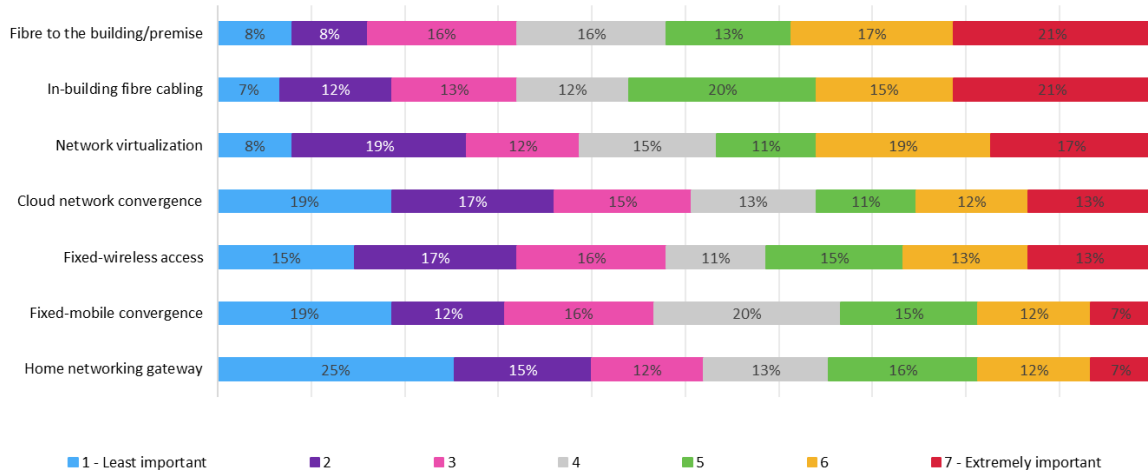
© 2022 Omdia

Notes: n=75

Source: World Broadband Association Thought Leadership Survey, Omdia

Strategies for efficient FTTR deployments

Where a residential building is due to be fitted with indoor cabling, or in cases where existing indoor cabling needs updating, indoor fiber optical cabling is the obvious choice. It is the most sustainable, future-proof, and cost-efficient of all cabling technologies, hence the business case for installing it is straightforward.

However, the business case for retrofitting optical cable into existing households that traditionally lack indoor broadband cabling is more complex. Although Wi-Fi Mesh is not perfect, one major advantage is that it is simple to install and, in most cases, can be done by the customer. Installing optical cable requires engineer installation and is, therefore, a more costly option for service providers to deploy.

Vendors are working hard to minimize these costs. New transparent adhesive fiber and zero splicing connections will reduce installation costs by making the process relatively quick and easy. Although engineer installation will still be required, the adhesive fiber can be installed without the need for trunking, and being transparent and relatively fine, has minimal impact on home decoration. Additionally, without the need for splicing, there is less requirement for the engineer to have specialized training. Based on results from customer trials, installation times can differ based on the style and size of the home, but the average time required to install the FTTR network using this technology was typically 30 minutes per room.

Combining FTTR with engineering visits will further reduce cost

Reducing subscriber acquisition costs, including installation costs, has been a key part of the traditional broadband business model. By minimizing acquisition costs, return on investment can be achieved more quickly, leading to higher per-customer profitability. This has been a major driver behind the development of self-installation techniques and industry standards in the broadband industry. However, it is not always possible, or even desirable, to use customer self-installation. When rolling out new infrastructure, such as FTTH to a property, it may be necessary to send an engineer out to complete the work. Additionally, some service providers, such as Armstrong in the US, have chosen to use engineer installation as the default to provide a high-quality broadband experience. In such cases, FTTR installation can be offered to the customer as an option when the engineer is already visiting the property, thus creating efficiency and reducing cost.

Summary and key takeaways

The demands on the home broadband network will only continue to increase, and service providers must invest in new advanced technologies to keep up with these needs. Huawei believes that future 5-star broadband service experiences will require an FTTR network with Wi-Fi 6 (and beyond) access points in each room. However, making this leap will require careful strategic planning and new investment by service providers. Technologies such as transparent adhesive fiber and zero splicing connection technology can help to reduce the time taken and therefore cost entailed in installing the in-building network.

At a top level, Omdia would recommend:

- In situations where new in-building cabling is required, or existing in-building cabling needs updating, in-building optical fiber should be a service provider's first choice as it is the most future-proof and sustainable option.

- In new-build situations, especially premium housing, in-building FTTR should be considered to differentiate the property further. High-speed broadband is now seen as an essential characteristic by home buyers, and therefore having the latest technology already installed will raise the property's value.

- Where FTTH is being rolled out, FTTR should be offered as an upgrade option as part of the FTTH installation. This will maximize the broadband experience of that FTTH network. Marketing this option when an engineering visit is already planned is highly recommended as it will further reduce the cost of installation.

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