Market Update: Service Providers Leveraging Gfast to Complement Fiber Optic Infrastructure (MU-449)

Copper-based Gfast technology allows service providers to extend their ultra-fast broadband service offerings to areas where economic fiber delivery is unfeasible

Market Review

Consumer Demands Are Driving Fiber Deployment

Exponentially growing demand for ultra-fast broadband speeds among consumers, driven by video streaming services as well as an increasing number of IoT devices that need access to the cloud, is driving the wider deployment of fiber by service providers as the go-to medium for fixed broadband access. This consumer demand, combined with the reality that fiber can be delivered over greater distance than copper cable solutions, has resulted in fiber being deployed in nearly all greenfield opportunities any service provider network.

New Copper Technologies Emerging as Ideal Complements to Fiber

However, for brownfield locations, universal fiber deployment can be both problematic and costly. In these locations, particularly in the last few hundred meters leading up to and within the customer premises, running fiber cable can be heavily regulated, and in some cases impossible. In addition, the installation can be complicated and time consuming, which significantly drives up the costs. For many service providers, Gfast technology has emerged as a powerful and compelling alternative to fiber, delivering fiber-like speeds over existing copper infrastructure. For example, AT&T delivers advanced broadband services to millions of homes and businesses in the U.S. market using FTTH. However, AT&T is also using Gfast technology to deliver up to 700 Mbps today, and possibly higher bit-rates in the future, to provide ultra-fast internet service to its customers in the United States where FTTH is not feasible, such

as apartment and condominium buildings. As shown in other real-life cases below, service providers are finding great success in using Gfast technology as an extension of their fiber access strategies, using it as their best option when faced with the impracticality of fiber deployment in many scenarios.
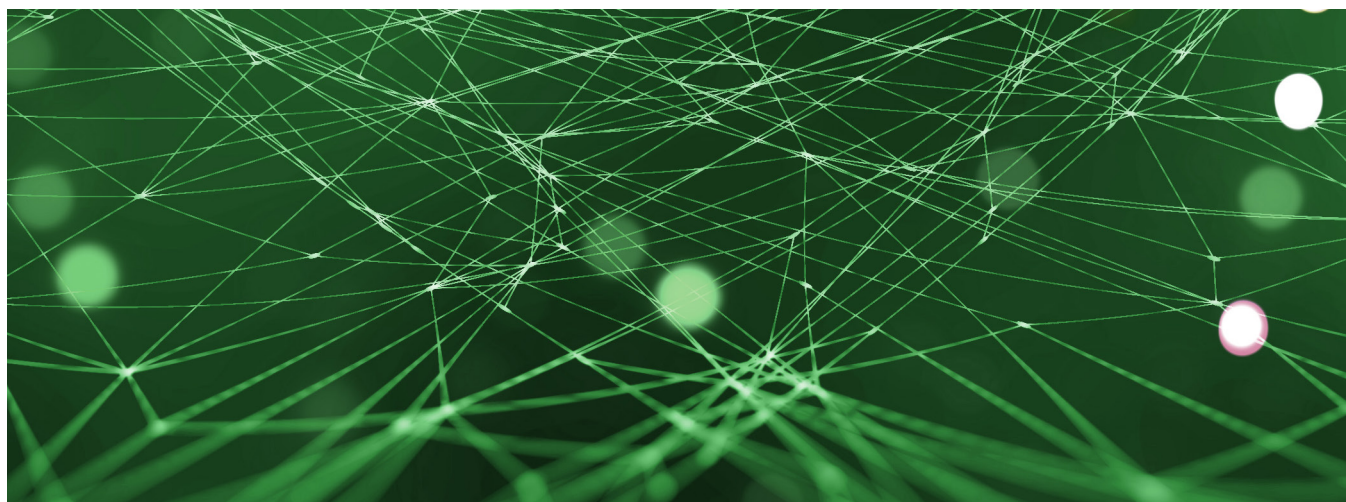
Gfast Technology – Breathing New Life into Copper Infrastructure

Gfast products capable of delivering broadband speeds of up to 2Gbps are shipping today, with future enhancements currently undergoing standardization that will extend this up to 10Gbps. Although it is true that these extremely high data rates are only possible with extensive loop shortening, the economic feasibility is still extremely attractive as the last few hundred meters before fiber reaches the premises can often be the most costly. Thus, many service providers are using Gfast as a complement to their fiber buildouts, adopting a number of topologies including Fiber-to-the-Curb (FTTC) or Fiber-to-the-Basement or Building (FTTB).

Deployment Updates

NBN Co Adopts Hybrid Copper/Fiber Strategy to Deliver Up to 400Mbps Broadband

The National Broadband Network Co. (NBN Co) is an Australian national wholesale open-access data network provider. NBN Co was established in 2009 to execute on the government's proposal to provide optical fiber broadband access to 93% of the Australian population at a projected cost of A$43 billion. The

initial rollout fell behind schedule and after a change of government the plan was modified in 2013 to develop a mixed copper/fiber deployment making use of the existing copper wiring, but at a much shorter distance. In single family home areas, this consists of FTTN and FTTC (fiber-to-the-curb, also known as fiber-to-the-distribution point or FTTdp), while FTTB is in use for MDUs. As initially deployed, NBN Co used an older copper technology (VDSL2) to deliver at least 25Mbps services – although 90% of premises can get at least 50Mbps, but has announced that it will use Gfast technology for 100Mbps + services that will be deployed starting in Q4 2018. **"The telecommunications pit and pipe infrastructure in Australia means we can fit a small DPU around 150 meters from most premises. The makes Gfast 212 an ideal technology for NBN Co's FTTC network to deliver up to 1Gbps over existing copper",** said Daniel Willis, General Manager FTTx Technologies, Chief Technology Office, NBN.

Orange Deploys Gfast as a Complement to Its Fiber Strategy

Orange operates significant fiber optic networks in France, Poland, and Spain. FTTH is their main focus for fixed broadband access, but Orange does run into sites where fiber is not possible or practical. The option in these cases is to run Gfast over copper cables, including both twisted pair and coaxial cable. Orange envisions two scenarios where Gfast complements a fiber strategy: 1) fiber-to-the-drop point and 2) fiber-to-the-door. FTTdp would be used where vectoring is allowed by regulatory bodies, and FTTdoor would be used where vectoring could not be used. The FTTdoor requires a single port solution that can be reverse powered while running fiber to the "door" of each unit in an MDU.

SandyNet Leverages Gfast to Offer Ubiquitous Coverage

SandyNet, the city of Sandy, Oregon's municipal broadband utility, is deploying Gfast and GPON solutions throughout the city. Having originally built a fiber network that reached more homes and businesses in the city, Sandy has found Gfast to offer both a faster time-to-market as well as a more cost effective solution in delivering advanced services to multi-dwelling units (MDUs) in the community. Via this combination of technologies, SandyNet now covers all premises in town with a superior gigabit experience.

Frontier Brings Advanced Services to MDUs with Gfast

Frontier has been extending fiber to single family homes, primarily through its FIOS offering, in order to offer 300 - 500Mbps service. However, MDUs that may sit right next door could be stuck with a VDSL2 based service of 40 – 50Mbps unless fiber was routed to each of the apartments in the MDU. In trying to offer the same service to all customers, Frontier had to face the fact that stringing fiber through older buildings may be impossible because of blocked ducts or other infrastructure issues. Gfast proved to be the answer to this problem, using the relatively short copper or coax cable lengths (100 meters) to offer fiber-like broadband speeds. Starting deployment of Gfast solutions early in 2018 allowed Frontier to begin rolling out the same 300 – 500Mbps services to MDU customers that they had been offering to their FIOS and other fiber customers.

BT Openreach Getting to Market Faster with Gfast

BT via its Openreach subsidiary is also simultaneously deploying fiber solutions and Gfast solutions. Open reach is planning to deploy FTTP to 2M premises and to pass 10M homes with Gfast by 2020. The emphasis on Gfast enables Openreach to offer 330Mbps service over their existing FTTcabinet network with an upgrade to the equipment in the cabinet. While fully committed to FTTH, the lower target number is due to the need to build out the infrastructure. Openreach sees Gfast's ability to get quickly to market over the existing copper as complementary to their long-term fiber plan.

Swisscom Leverages Gfast to Support 90% Ultra-Fast Broadband Coverage Goal Across Switzerland

Swisscom is driving towards ultra-fast broadband deployment to all of Switzerland's 2,222 communities by the end of 2021. The ultimate goal is to enable 90% of all homes and businesses in Switzerland to enjoy high speed Internet, and there are multiple paths to deliver this high speed internet. FTTH service is being offered at 1Gbps, but Gfast over copper is being used where there are no plans for a continuous fiber-optic connection. FTTB and FTTS (Fiber-to-the-Street) are enabling a 500Mbps (max. in best case scenario) service offering. Swisscom is committed to expanding the Gfast footprint as an extension of their FTTH roll out.

"G.fast is an essential pillar in our ultra-broadband rollout which by a mix of fiber based technologies aims to provide ultra-broadband coverage all over Switzerland by end of 2021," said Oliver Lamparter, Product Manager Wireline Access Technologies, Swisscom.

Skywire Brings Symmetrical Gigabit Services to MDUs in the Big Apple

Skywire Networks, a division of Xchange Telecom serving the areas of New York City and New Jersey, has a business model that focuses on bringing advanced broadband services MDUs. However, in it markets, it often was challenged to provide services to residents and businesses in older MDU buildings where the in-building network infrastructure was extremely out of date. A combination of fixed millimeter wave radios to reach each MDU, combined with Gfast to serve each unit was found to be an ideal solution. The company now offers symmetrical gigabit services over copper and coaxial cable to all of its customers, without the costs of rewiring the buildings.

Post Luxembourg Uses Gfast to Serve Hard-to-Reach Customers

Post Luxembourg provides approximately 60% of homes with gigabit fiber-optic network access. However, this same gigabit fiber access is not accessible to MDU residents. Many of the buildings served are too old to easily allow a complete rewiring to bring fiber to each apartment. In order to work around the need to rewire older buildings, Post Luxembourg began deploying Gfast technology in early 2018 to apartment buildings as part of its continual fiber roll-out across the country. As a result, as soon as an MDU is connected via FTTB, apartment customers can benefit from the faster speeds that Gfast provides over the existing MDU copper cabling. Once again, Gfast is being used as an extension of the fiber network.

Summary

Gfast – A Successful Present and a Promising Future

The significant bandwidth and reach advantages of fiber will continue to make it the access technology of choice where it can be installed cost effectively. However, Gfast has a key role to play, and many service providers are leveraging it as a complement to their fiber infrastructure as it allows them to offer the same service levels. Today's Gfast offerings and the ongoing standardization work are ensuring that operators have a viable solution to the portions of their network where it is impractical to install all fiber.

The Broadband Forum has been active in both facilitating Gfast standards and architecture/ deployment models, as well as driving Gfast interoperability and certification. Today, over 40 products are certified as interoperable, providing a wide array of options for service provider deployment.

For more information on Gfast, visit www.broadband-forum.org/projects/major-projects/gfast.

If you are interested in joining the Broadband Forum and shaping the future of broadband through this initiative and a wide variety of other activities, contact our Membership Development Manager at info@broadband-forum.org or visit us at our membership page.