FWA spells opportunity

Fixed wireless access and its place in your broadband future

Use case

Introduction

Fixed wireless access (FWA) has come to the forefront in recent years as 5G arrived and a global pandemic made the world realize that the digital divide needs to be closed once and for all. In reality, FWA has been around for quite some time, but these recent events have made it both more viable to operators and more vital to humankind.

What it means for you

FWA spells opportunity for operators, but what that means for you is a matter of perspective. To illustrate, let's take a look at two prevalent operator types: fixed broadband providers, and mobile network operators.

Fixed

Many incumbents offer fixed broadband services over traditional fiber, copper, or hybrid fiber-coaxial networks. The unlimited bandwidth potential of fiber-to-the-home provides a long-term competitive edge and peace of mind in knowing that wireless technology will not overtake fiber in speed, reliability, or operational efficiency. But the challenge for fixed operators is in connecting everyone quickly and at the right cost.

That's where FWA comes in. It can be used to complement fiber in several ways:

- Provide instant coverage to consumers at the tail end of a fiber rollout.
- Provide coverage where fiber won't go, because cost or time to market is prohibitive.
- Quickly build footprint and grab market share outside of your usual territory.
- Offer broadband in rural areas where the economics are difficult.

Mobile

Mobile challengers with networks built for mobile services don't have traditional fixed territories. But they do have an opportunity to use their radio investment to generate new revenues with fixed services to:

- Grab broadband market share with a network that already exists.
- Compete directly with fiber-grade services, generally with 5G mmWave.
- Seek out targets of opportunity within their footprint without worrying about full coverage.

FWA's unique advantages

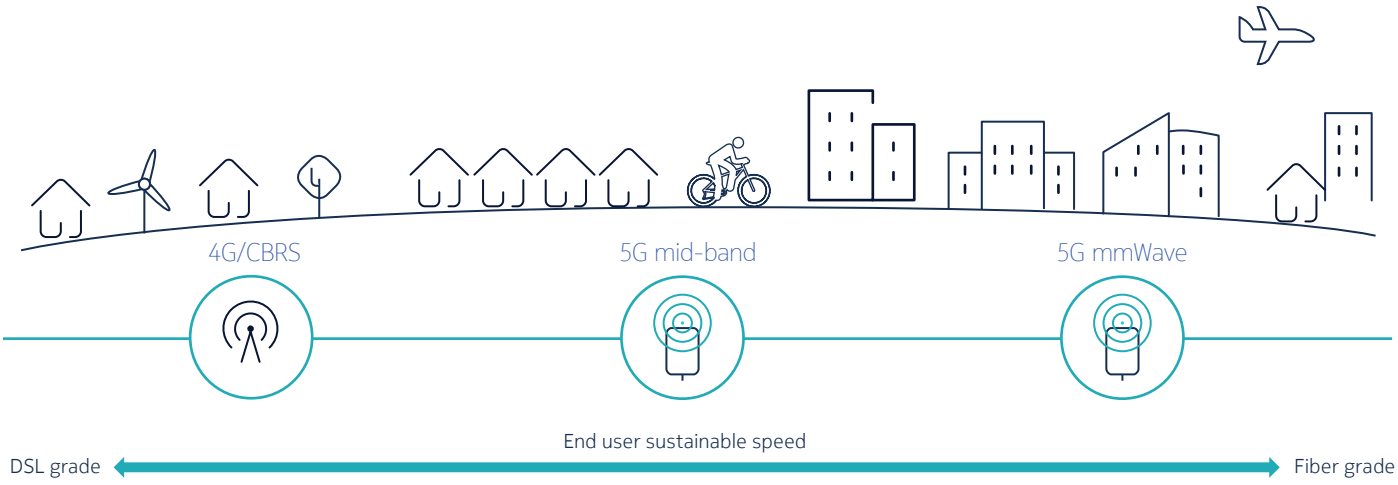
Any operator with a radio network enjoys some big competitive advantages.

The first is agility. If you have a radio network in place, it's very simple to add fixed broadband subscribers. With no wires to connect the home, FWA CPE are easy to install. They can be placed in

box stores or shipped from online orders right to the customer's home. Once there, it's a simple process for subscribers to install it themselves at their leisure. No truck rolls, no install technicians, and no waiting around at home between the hours of 8:00 am and 5:00 pm.

Second, you don't have to offer services everywhere. Fixed broadband operators design their networks for specific areas with specific numbers of subscribers to pass and connect. FWA does not have to be that way. In many cases, the radio investment was made for mobility making it possible to offer services as part of a bundle without concern about covering specific areas. Still, if desired, FWA has the flexibility to be planned and deployed with serving areas in mind.

Standards-based 3GPP technology choices



4G mobile networks commonly use macrocells serving many users, typically going to a maximum distance of 500 meters in dense urban environments but all the way up to 10-15 km in rural areas. Maximum distance can be achieved with low bands, but the compromise is lower speeds. 4G LTE in the mid bands (up to 2.6 GHz) can deliver peak speeds in the hundreds of Mbps but these speeds will degrade with distance. In addition, radio resources are shared, so actual sustained speeds would be far lower on a popular service, which is why 4G FWA can only really be compared to ADSL fixed broadband services (but with better peak rate). Nevertheless, 4G FWA is a good tool for increasing ARPU through bundled services and for providing broadband coverage in hard-to-reach areas, particularly rural.

Citizens Broadband Radio Service (CBRS) takes mid-band spectrum in the US and makes it available for any operator to use without a license. It operates in the 3.5 GHz band and can provide fast, affordable, high-speed internet access with achievable speeds of 100 Mb/s in download and up to 20 Mb/s in upload. Since the spectrum is unlicensed, everyone from network operators to school districts to small and medium businesses have unprecedented access to at least 80 megahertz of mid-band spectrum to connect the unconnected.

5G brings much more capacity to FWA with more spectrum, up to 100 MHz of channel bandwidth, and better spectral efficiency. Spectrum in the mid-band 2-6 GHz range delivers 10-15 times more capacity than 4G LTE. With this capacity, operators can offer services in the 100s of Mbps, depending on concurrent usage and distance from the base station. This places 5G FWA in the mid-grade range when compared to traditional fixed networks.

Millimeter wave spectrum can support speeds of 1 Gb/s or more. Most attention on mmWave is currently on the 24-28 GHz bands, though we will see future use of the 37-40 GHz bands. These high frequencies are what make its capacity so high, but it's also a limiting factor. These signals can't travel very far, and they are also susceptible to interference from things like trees and buildings and even glass. These challenges are not insurmountable, however, and the maturing 5G ecosystem has helped to overcome them while improving its economics with new deployment models that leverage the attributes of all 5G spectrum for speed, capacity, and coverage.

Conclusion

There have never been so many options for fast, reliable and standards-based wireless access solutions. FWA can play a role in connecting the unconnected and in giving consumers a competitive choice in areas that are already well-served. As such it can complement your broadband rollouts to ensure that you can achieve 100% coverage of your service area or it can carry the weight of a full broadband rollout if you have no existing fixed assets.

For more information about Nokia's FastMile FWA solution, click here.

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