Fixed Wireless Access

Fixed broadband solutions to help power utilities connect more customers and make more money
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Fiber + fixed wireless access to effectively close the digital divide

Utilities deliver the continuous, high-quality power society depends upon to function every day. They are also in a unique position to provide the underlying infrastructure for broadband services that will help communities and businesses prosper in the digital age.

Today, utilities in rural areas and smaller cities that are underserved by commercial broadband carriers are deploying fiber to the home. Fiber and gigabit passive optical networking (GPON) provide an effective solution to deliver a quad-play service to customers (internet, video, voice and electricity) with choices in business models and partnering options that address regulatory and investment requirements. They deliver gigabit broadband services today and enable a smooth evolution to 10-Gigabit speeds as customer needs evolve.

But the timelines and costs of building out fiber to widely dispersed homes in rural areas may not always meet utilities’ scheduling and investment needs. That’s why many are turning to fixed wireless access (FWA) solutions to complement their fiber infrastructure and realize their aggressive rural broadband rollout goals in a more cost-effective way.

FWA can deliver fixed-grade broadband speeds of hundreds of Mb/s and can be deployed quickly and easily. And because the technology is tried and trusted, with Nokia solutions readily available, utilities could soon be generating new or improved broadband revenues.
FWA brings better broadband and better business opportunities

4G/5G spectrum is costly, so you want to be sure you’re using it to its full potential. Adding FWA to homes and businesses while also using it to support your grid operations creates immediate opportunities to better serve your customers with high-speed broadband services and higher-quality power. You can also use FWA to introduce new services such as electric vehicle charging and smart city applications. FWA can be used to introduce new services such as EV charging and smart city services.

- 4G/5G FWA can deliver ultra-broadband where your other technologies may not.
- Use it for rural locations where the economics don’t favor fiber.
- Complete a FTTH rollout to plug any coverage gaps so no home is left without ultra-broadband.
- Deploy FWA ahead of a future fiber rollout to keep customers loyal. Switch them to fiber when ready to free up 4G/5G spectrum.
The key to successful FWA

Try and stream a movie while on the move and you know the challenge involved in guaranteeing consistent service to a mobile device. The key to delivering brilliant broadband with FWA is thinking of it as a fixed service, not a mobile one. That means careful business planning, technical planning and marketing. As you’ll see in this eBook, Nokia makes it easy to overcome the challenges and ensure your customers get fast, reliable broadband using FWA.

Network intelligence knows cell capacity and radio efficiency, distance of the home from the radio cell, and any line-of-sight constraints, to determine the precise service level available and get radio planning right.

A range of different end-user devices for different deployments, all easy to install and provision, to give the best customer experience in no time.
Business planning

4G/5G FWA enables a complete user experience in the home by delivering fiber-like fixed broadband services.

It’s true that customers can already use 4G/5G for broadband at home. Smart phone tethering and data dongles (MiFi) work, but they are really designed for mobile convenience, not home broadband. They waste radio resources while providing limited ARPU opportunities. FWA, on the other hand, is designed to serve stationary subscribers with stationary CPE. Higher category devices, with higher gain antennas, drive higher speeds while using radio resources more efficiently. It’s this efficiency which boosts the business case for FWA along with the new revenue opportunities shown above. A new FWA customer can also be connected and activated quickly and easily, with an extremely fast time-to-revenue.
Positioning FWA

Three key aspects for rolling out FWA:

- **Multi-play offerings**: Some operators differentiate on speed. Others offer packages with voice, video and data bundled in one package. With FWA, you can do both. Multi-play offerings reduce churn and increase ARPU with one provider, one bill and even one volume discount depending on the tier of the package.

- **Peak bandwidth**: Today “human impatience” is a killer application: customers expect an instant response when surfing, streaming or downloading. In a very tough market, FWA enables you to set your service apart by satisfying this impatience with excellent peak speeds.

- **Home network**: You don’t want the brilliant broadband you deliver to the home to be undone by poor Wi-Fi inside the home. The home network is increasingly important and, with Nokia WiFi included, you can also deliver perfect in-home Wi-Fi and have the insights and tools needed to manage both the Wi-Fi network in the home and the FWA service.
## Ensuring uptake and loyalty

Take advantage of the unique features of FWA to target the right customers with services they’ll love.

### Target the right customers

| Benefits | • New customers  
|          | • Guaranteed services  
|          | • Fast time-to-market |

- **Target the right customers**
  - Radio planning and 3D modeling tools pinpoint the addresses where you can offer great quality 4G/5G FWA
  - Customer surveys help identify consumer preferences, signs of dissatisfaction and propensity to churn

### Offer a great customer experience

| Benefits | • Increased satisfaction and loyalty  
|          | • Fewer truck rolls |

- **Offer a great customer experience**
  - 4G/5G FWA allows you to differentiate with:
    - No data caps or throttled speeds
    - Free or discounted trial periods to experience the 5G FWA feeling
    - Zero-touch installation and activation - customers love a DIY approach

### Customer care

| Benefits | • Customer satisfaction  
|          | • Fewer returns  
|          | • Upsell opportunities |

- **Customer care**
  - End-to-end service management across the FWA and in-home Wi-Fi networks give you the tools to monitor, manage and maintain an exceptional service. You then have upsell opportunities such as:
  - Higher-value 4G/5G services
  - Partnerships with content providers, video streaming platforms and (cloud) gaming providers
Something for everyone

Your customers will love our FWA devices: great looks, great features, and great performance. And with a variety of options, there’s one to suit every deployment, ensuring you can deliver brilliant FWA broadband every time.

4G gateways
Leverage your 4G assets to connect fixed subscribers with this all-in-one 4G modem with integrated router and Wi-Fi for a powerful and easy-to-install broadband solution.

5G gateways
With 5G in the mid-bands, these all-in-one gateways combine 4G/5G WAN with integrated router and Wi-Fi for a powerful and easy-to-install broadband solution for home and businesses.
Something for everyone

**5G receivers**
High gain antennas (8dBi) and 4G/5G modem combined in one easy-to-install device with 180° field of view. Consumers can install themselves on windows (indoor or outdoor) or on a tabletop.

**4G receivers**
Avoid first wall attenuation and connect more customers at faster speeds with highly efficient outdoor FWA receivers combining a 4G modem with high gain antennas for rural and suburban locations.

**CBRS receivers**
Citizens Broadband Radio Service is a critical tool for rural broadband in the United States. Our Part 96 compliant CBRS outdoor receiver with 19 dBi gain has the power to connect remote areas.
Performance

Nokia solutions provide the highest FWA performance possible, so your customers will be delighted with their service, and so will you.

**Cloud controller provides end-to-end service performance management.**
- Ensure line-of-sight
- Maximize radio efficiency
- Troubleshoot and self-optimize

**Unique Nokia 4G/5G end-to-end network slicing guarantees QoS:**
- Prioritize applications e.g. video, gaming
- Prioritize traffic e.g. fixed over mobile, business over residential

Outdoor receivers avoid signal loss through walls.
Advanced antenna designs and high-gain devices with beamforming for maximum signal strength and radio efficiency.
Multiple APN/NSSAI support for use in slicing to guarantee service levels.
Gateways with integrated Nokia WiFi with self-optimizing mesh technology and Wi-Fi 6 for 1 Gb/s throughout the whole home.

For more information on 4G/5G end-to-end network slicing, [click here](#)
Management

Nokia gives you the tools to ensure an exceptional customer experience from start to finish.

1. Customers subscribe from a web point of sales portal
2. You validate service eligibility with radio planner software, knowing the guaranteed service level, type of device needed (indoor/outdoor), the optimal installation location, the preferred cells list and service APNs
3. FastMile controls the installation of the device and checks if it’s in the right location
4. Home installation is guided by mobile apps
5. FastMile enables you to monitor service health, cell and CPE alarms, status and statistics, and verify if the actual service level matches expectations

Altiplano FastMile Controller

The FastMile Controller provides end-to-end FWA service lifecycle management.
Management

Nokia WiFi App

The Nokia WiFi app guides customers through installation and setup of their 4G/5G FWA gateway and Wi-Fi network, and then manage or extend in-home coverage with additional Nokia WiFi Beacons.

Nokia Wireless App

The Nokia Wireless app guides you or your customer to install outdoor receivers in exactly the right place.
Swisscom

Always aiming for technology leadership, Swisscom wanted to leverage their 5G network to bring better broadband to residential and business customers in remote and rural locations, but without impacting mobile customers.

Considerations

• Must underline Swisscom’s technology leadership
• Must not compromise mobile 5G services
• Must meet minimum service obligations even in the most remote regions: 10 Mb/s download, 1 Mb/s upload
• Must enable B2B business cases with high bandwidth services (up to 1 Gb/s)

Solutions

B2C
• Hybrid deployment using FWA to boost throughput for DSL customers
• Easy self-install 5G receiver
• Mobile app to guide end-user

B2B
• FWA for temporary construction sites, payment terminals, hotels in the mountains, etc.
• Cost-efficient mobile fail-over for SME
• Easy self-install 5G receiver
• Mobile app to guide end-user

Why Nokia?

• Love the design
• A complete user experience with easy self-install
• Trust the Nokia brand inside the home

“We have chosen Nokia as our 5G fixed wireless access device partner. This solution will help us to bring ultra-fast internet speeds to our residential and business customers in rural areas.”

Marcel Burgherr, Head of Gateways, Phones & other Devices, Swisscom
Mobily

Mobily chose to pilot FWA slicing as a way of guaranteeing high quality broadband services to priority customers. It worked.

Considerations
- Be able to rapidly provide, manage and assure FWA service tiers and premium services to residential and business customers
- Slice the network by traffic type (mobile, FWA), service (residential, business), or application (data, IPTV, online gaming)
- Set priority parameters to offer guaranteed performance for each slice independently

Solutions
- Nokia 4G/5G end-to-end network slicing solution including 4G/5G RAN, FastMile 4G/5G FWA gateways and cloud applications
- 4G/5G network slicing across a multi-vendor environment

Why Nokia?
- Slicing solution is unique in the market
- Can partner for all 4G/5G needs
- 3rd party/multi-vendor interoperability

“Mobily and Nokia are proud to be the first in the world to pilot 4G and 5G FWA slicing. This technology will enable us to rapidly provide new services and high-quality customer experience to consumers and enterprises.”

Alaa Malki, CTO, Mobily
World leader in broadband, 5G and FWA

FWA brings together the best of fixed and mobile technologies. So who better to partner with you than the leader in both?

**Market leader**
- Early lead in 5G FWA with key wins
- Trusted partner to 250+ operators
- 15+ years’ experience with carrier-grade fixed networks CPE
- Expertise across, 4G, 5G, FTTH, FTTX and FWA

**Innovator**
- Advanced antenna designs for better coverage, performance and RAN use
- Proven performance against competing solutions
- Nokia managed mesh Wi-Fi 6

**Crowd pleaser**
- Ease of installation
- Smart phone apps and Wi-Fi console
- Visually appealing in the home
- End-user brand perception
- Reduced OPEX and increased customer satisfaction

For more information on Nokia FastMile FWA solution, click here
At Nokia, we create technology that helps the world act together.
As a B2B technology innovation leader, we are pioneering the future where networks meet cloud to realize the full potential of digital in every industry.
Through networks that sense, think and act, we work with our customers and partners to create the digital services and applications of the future.

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