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SAMENA ELITE

TECHNOLOGIES THAT ACCELERATE DIGITAL ECONOMY

Jan-Mar, Volume 1, 2024



Huawei

Addressing Critical
FWA Challenges and
Accelerating 5G...



Omantel

Omantel's 5G Home
Wireless Broadband
Triumph...



GSA 4G-5G FWA Forum

Re-defining 5G Deploy-
ment Success: GSA's
Perspectives on FWA...

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This Quarter

The Case for Fixed Wireless Access

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Jan-Mar, Volume 01, 2024

TABLE OF CONTENTS

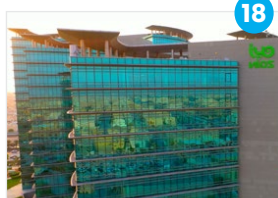
ARTICLES



15

Aladdin Baitfadhil
Chief Commercial Officer
Omantel

Omantel's 5G Home
Wireless Broadband
Triumph: Unleashing 5G
Connectivity's...



18

Operator Perspectives
Zain KSA

Fixed Wireless Access
(FWA): Re-defining 5G
Deployment Success



20

Julien Grivolos
Chairperson
GSA 4G-5G FWA Forum

Re-defining 5G Deploy-
ment Success: GSA's
Perspectives on FWA...

04

EDITORIAL

12

OBSERVATIONS BY SAMENA COUNCIL

Making FWA-Broadband Possible in a
Fiber-Broadband Dominated Market

25

INDUSTRY UPDATES

- SAMENA Council to Provide Industry Support to Member-led Fixed Wireless Access (FWA) Industry Club
- Telefónica Goes Live with First 5G FWA Offering in Brazil
- NEXCOM Expands Use of FWA over 5G to Power Smart Cities and Factories
- Jio to Reach Pan-India Coverage with its 5G FWA Service in H1 2024
- Airtel Plans Fixed Wireless on SA for Factories
- AT&T Expands its FWA Service
- Huawei's Innovative FWA² Solution Powers Smart Home Living
- Orange Becomes First in Slovakia to Offer Cyber-Secure 5G FWA for Businesses
- New Opportunities of 5G FWA in Africa, Addressing the Gap in Last-mile Fixed Broadband Connectivity

INTERVIEW

09



Allen Tang
President, Middle East and
Central Asia Marketing &
Solution Sales
Huawei

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stc Kuwait

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Bocar A. BA
Chief Executive Officer
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Fixed Wireless Access (FWA) Potential for Broadband Progress

Operators in the SA-ME-NA region and, to some extent, in the neighboring regions, including Central Asia, have invested heavily in 5G networks. However, satisfactorily monetizing these investments remains a critical challenge. More importantly, the critical need for developing human digital capacity, ensuring digital participation, and societal development, at large, is of the essence.

Due to a myriad of variables, encompassing regional and cultural constraints, geographical and demographical challenges, policy maturity levels, educational levels, occupations, age, gender, and economic indicators, inhabitants of the SA-ME-NA and neighboring regions continue to have access to vastly different amounts of information transmission resources. This critically impacts common development and progress of citizens of these markets.

Fixed Wireless Access (FWA), with its inherent cost and deployment efficiencies as well as use-cases, offers some viable means to monetize 5G investments while also accelerating human participa-

tion, development, and contributions in the digital age. As a versatile technology that can benefit a wide range of industries beyond just providing high-speed broadband internet to homes and businesses, FWA is expected to account for over 25% of the world's 5G connections over the next 4 years.

Compared with fixed-network technologies (which, of course, have their own merits), FWA has the advantage of low-cost deployment and can speedily improve broadband penetration rate. That is to say, FWA can help connect more people more quickly and enables more people to enjoy digital life – a mission SAMENA Council is closely engaged in fulfilling with global entities, and on which we launched a “universal broadband financing framework” in November 2023.

Market analysis shows that FWA will play an increasingly important role in the development of 5G networks around the world, offering highly useful and scalable applications such as High-Speed 5G Home Internet, VoIP, TV/Live Content, Managed Network Services, Gaming, VR & AR Experiences,



IoT Connectivity, Basic Connectivity for Rural Areas, High-Speed Rural Broadband, Enterprise Networking, Mobile Backhaul, etc.

Therefore, there appears to be a direct correlation in making use of 5G investments and empowering other sectors to achieve greater efficiencies through new use cases of wireless technologies.

For example, in Education, FWA can materialize virtual classrooms, distant education, vocational trainings. In Healthcare, we can realize remote health consultations and remote patient monitoring. In Agriculture, environmental knowledge, precision farming, crop yields, real-time crop and livestock monitoring, resource management can be achieved through FWA deployments. In Transportation/Mobility, connected vehicles, traffic management, roadside infrastructure management, dynamic route optimization, improved traffic safety, smart-city service delivery, among other services can be achieved with FWA. And there are other sectors and markets where FWA can play a truly enabling role.

While, these are some strong opportunities offered by FWA, the challenge remains in accelerating FWA deployments. Currently, FWA deployments are estimated with North America at 40%, Europe at 30%, Asia Pacific at 20%, Middle East and Africa with 10% penetration, and Central Asia from 0-1%.

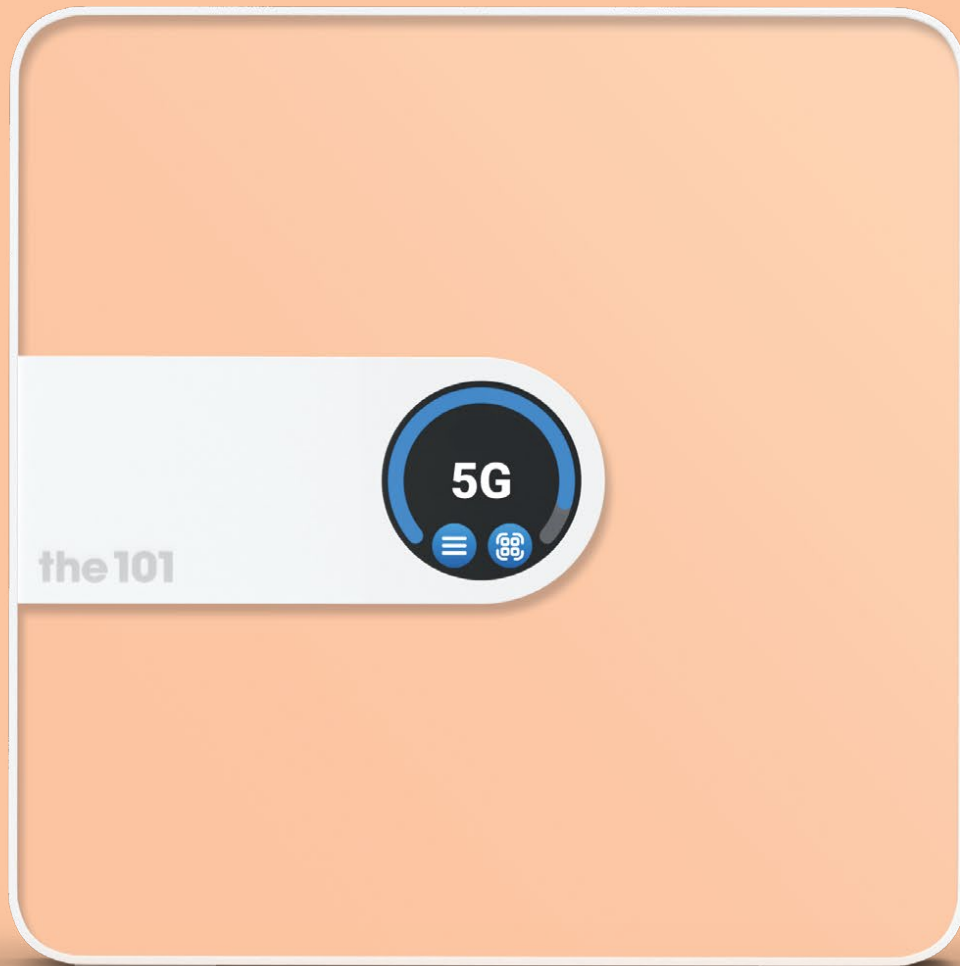
This clearly substantiates that fact that we need to accelerate efforts to deploy FWA, and create new possibilities for industry integration, digital inclusion, sustainable connectivity, and digital economy, at large.

Our SAMENA ELITE newsletter publication focuses on building a knowledge-base on FWA trends, potential, market progress, policy and regulatory needs, as well as in advocating solutions and approaches that foster FWA development while meeting larger goals, such as those stipulated in the ITU's Connect 2030 Agenda for Global Telecommunication/ICT Development or the UN Broadband Commission's advocacy targets.

We hope that this new FWA-centric publication will add value to the Industry's thought-leadership and evolving technology experience. 🌐

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Addressing Critical FWA Challenges and Accelerating 5G and 5.5G Business Growth

The swift advancement of mobile internet, coupled with the increasing adoption of 5G technologies, has propelled Fixed Wireless Access (FWA) to the forefront as a promising solution for delivering high-speed internet connectivity. By harnessing wireless technologies such as 4G, 5G, and the emerging 5.5G, FWA offers an experience comparable to fibre broadband, combining rapid deployment and cost efficiency. Despite its clear benefits, industry leaders, including CEOs and CTOs, must address several challenges to ensure that FWA not only keeps pace with fibre networks but also supports the sustainable evolution of technology.

A discussion with Mr. Allen Tang, President of Huawei's Middle East and Central Asia Market and Solution Sales, reveals valuable insights into the development of Fixed Wireless Access (FWA) within the region. He also elaborates on FWA's future prospects and the advancement of crucial technologies that will support FWA evolution.



Allen Tang
President, Middle East and Central Asia
Marketing & Solution Sales
Huawei

1. Mr. Tang, following the initial commercial deployment of 5G in the region, there has been a swift increase in the adoption of FWA for home broadband services, leveraging 5G technology. Compared to fibre-based home broadband services, what would you say are the primary advantages of FWA?

Indeed, since 5G first launched in 2019, we have seen rapid growth of FWA users. The recent data suggested there are currently over 2.6 million in the region.

Compare with fibre, the primary benefits of FWA lie in its rapid deployment, reduced initial costs, and a shorter period to achieve return on investment (ROI). Its competitive pricing, seamless purchase-to-use journey, and adequate network speeds are key factors that appeal to consumers. Survey reports indicate that 20% of FWA users have transitioned from optical fibre services, underscoring FWA's appeal even in regions with established fibre optic infrastructure.

2. You've highlighted several advantages of FWA-based home broadband. In light of these benefits, do you view FWA as a competitor to fibre-based home broadband? Given the significant investments many countries and operators have made in fibre-to-the-home (FTTH) infrastructure, how do you envision both technologies coexisting and evolving together, if at all possible?

Instead of viewing FWA and fibre as competing technologies, operators can strategically develop FWA in conjunction with fibre-based solutions. This harmonious coexistence leverages the unique advantages of each technology, allowing them to complement each other effectively. By adopting a holistic approach to broadband expansion, both FWA and fibre can cater to diverse market demands and geographical considerations, thereby enriching the connectivity landscape with their combined strengths.

Fibre optic networks, renowned for their reliability and high-speed internet access, have set the benchmark for fixed broadband services, thanks to their stability and superior bandwidth capabilities. However, the logistical and financial challenges associated with deploying fibre in remote or economically disadvantaged areas render FWA (Fixed Wireless Access) a compelling alternative. Telecom operators can foster synergistic growth by employing a hybrid approach—offering fibre services in accessible regions and FWA in less reachable areas. This strategy enables FWA to complement fibre optic networks, broadening coverage significantly.

Moreover, even in regions with high fibre optic penetration, such as the United Arab Emirates, where fibre home pass rates are exceptionally high, FWA subscription continues to surge, contributing to a more than 15% increase in overall home broadband penetration. Factors driving user preference for FWA include a balance between speed and cost, a swift and straightforward purchasing process, and shorter contractual commitments.



For operators concurrently expanding 5G and fibre optic infrastructures, FWA presents an opportunity to quickly capture market share during the protracted fibre rollout phases.

For operators concurrently expanding 5G and fibre optic infrastructures, FWA presents an opportunity to quickly capture market share during the protracted fibre rollout phases. While fibre remains the superior long-term solution for those demanding the highest quality of internet access, FWA is an effective interim measure. This dual-focus strategy has been successfully adopted by tier-1 operators in Saudi Arabia and Oman, leading to significant business achievements.

3. Given that FWA home broadband and mobile phone users share the same network resources, what effects does this have on the network performance for regular mobile phone users? How can these impacts be minimized for mobile users while simultaneously ensuring a high-quality FWA user experience with guaranteed speeds?

FWA home broadband and mobile phone users sharing network resources can lead to reduced speeds for mobile users during peak times. To address this while ensuring a high-quality FWA experience, operators should focus on network optimization and capacity planning to manage increased demand without sacrificing service quality.

Operators can maintain a satisfactory network experience for both FWA and mobile users by keeping the Physical Resource Block (PRB) ratio below 50%. For higher PRB ratios, solutions include Quality of Service (QoS) adjustments to prioritize services dynamically and dynamic spectrum sharing to balance the needs of FWA and mobile users, along with adding more spectrum for capacity.

Guaranteed speed experiences, defined as target speeds being available 80% of the time, require end-to-end managed services. Operators must enforce strict QoS and traffic management policies, prioritize traffic types, and use intelligent scheduling during congestion. Additionally, high-speed Customer Premises Equipment (CPE) and a speed monitoring platform are vital for maintaining service quality.

4. FWA-based home broadband enriches experience for users. Given that many are still using the older 4G-based FWA service, what strategies could accelerate the migration of FWA subscribers from 4G to 5G?

To encourage the transition from 4G to 5G FWA, operators must prioritize widespread 5G network coverage and ensure device compatibility. Marketing initiatives and incentive programs can play a crucial role in persuading users to switch to 5G services. Highlighting the superior speed, reduced latency, and enhanced connection stability of 5G FWA can further motivate users to migrate.

Additionally, as the Customer Premises Equipment (CPE) ecosystem matures, the declining prices of CPE devices contribute significantly to the migration effort. The emergence of affordable 5G CPEs, priced between \$60 and \$70, serves as a key driver in the shift from 4G WTTx to 5G FWA.

5. Operators often provide substantial or unlimited data packages with their FWA home broadband offerings. However, there's a risk that a minority of users might excessively consume network resources over extended periods, affecting service quality for others. How can operators effectively manage FWA users who excessively use data?

A simple solution that can mitigate traffic abuse is for operators to enforce fair usage policies or levy additional charges for consumption beyond typical usage levels. Concurrently, real-time monitoring of network traffic allows for the identification of abnormal usage patterns, enabling operators to take corrective actions, such as bandwidth throttling for those users.

Conclusion:

Fixed Wireless Access (FWA) has emerged as a predominant broadband access solution, offering telecom operators a swift avenue to deploy high-speed Internet services across various scenarios. Yet, for FWA's long-term viability and growth, it is imperative that operators tackle technical hurdles, enhance user experience, and forge sound business strategies that align with the expanding range of application scenarios. The onset of the 5.5G era, paired with ongoing technological advancements, positions FWA to assume an increasingly significant role in the future telecommunications landscape. 🌐

6. FWA is predominantly utilized for home broadband services. Can operators extend FWA-based solutions to enterprise clients? What high-value enterprise scenarios could potentially enhance FWA revenue streams?

Operators can definitely extend FWA based service to enterprise users indeed. FWA offers a rapid and cost-effective internet access solution for enterprise customers, regardless of their location in urban or remote areas. Key scenarios where FWA can add significant value include industrial parks, warehouses, remote offices, and temporary work sites. Operators can boost their average revenue per user (ARPU) by tailoring FWA service packages to meet the specific needs of these enterprises, thereby enhancing the monetization of their 5G networks.



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7. Could you provide some insights into the future evolution of FWA? How will FWA evolve in terms of technology and standards, particularly with the advancements in 5G and the transition to the 5.5G era, to support higher data rates and new application requirements?

The future evolution of FWA hinges on continuous technological advancements and standardization efforts. As 5G and 5G-Advanced technologies mature, FWA is poised to accommodate higher data rates and meet the demands of new applications. Currently, with a 100 MHz spectrum allocation in 5G, FWA can deliver service speeds ranging from 100 to 300 Mbps. As we transition into the 5.5G era, enhanced spectrum availability, coupled with technologies like ELAA (Extremely Large Aperture Array) Massive MIMO and multi-carrier aggregation, will enable FWA to support service provisioning speeds of up to 1 Gbps, with peak data rates potentially reaching 10 Gbps.

OBSERVATIONS BY SAMENA COUNCIL

Making FWA-Broadband Possible in a Fiber-Broadband Dominated Market

Transformation of home wireless connectivity through fixed wireless offerings is on the rise in the UAE; a market that ranks at number one for the highest Fiber to the Home (FTTH) penetration at more than 98%, which exceeds penetration levels in highly fiberized markets of Asia Pacific.

Etisalat UAE, the telecoms pillar of the e& Group and a globally-recognized enabler of digital transformation in the region, has consistently been a leading force in FTTH penetration in the country, setting a benchmark in the global telecom industry.

Given that the UAE is known for its advanced telecommunications and fiber infrastructure, for other players, especially du, this has, however, posed a unique challenge in innovation and differentiated offerings.

Industry observations indicate that overcoming the preference for fiber-optic connections in a market like the UAE has required du to strategically position the advantages and innovations of its wireless solution, ensuring it addressed the needs and expectations of customers accustomed to reliable fiber broadband. This is for an operator, which has already launched a 5G Stand-alone (SA) network, brought to life the world's first 5G-Advanced demonstration Villa in collaboration with

Huawei, and has achieved 98.5% 5G population coverage across the UAE.

du's introduction of the Fixed Wireless Access (FWA) service has marked a pivotal moment in the UAE's home internet market. In a landscape dominated by triple play packages, the absence of options catering to individuals seeking, for example, standalone home internet for OTT content consumption was glaring. Recognizing this untapped market, du strategically positioned itself by crafting a unique value-proposition tailored to meet the specific needs of this underserved segment.

By providing a dedicated home internet solution at an affordable cost, du not only addressed a critical gap in the market but also demonstrated a keen understanding of evolving consumer preferences. The success of this value-proposition was not merely in creating a new service but in fundamentally changing the dynamics of the home internet industry.

du's ability to identify and fulfill the unmet needs of a niche audience not only garnered a loyal customer base but also set a precedent for adapting to shifting market demands. In February 2022, du made a strategic move to upgrade their Home Wireless product to 5G technology. This transition marked

a significant turning point in their journey as the product differentiation was moved from "Technology position" base to "Value-proposition base". With 5G, du enhanced data speeds and reduced latency, ensuring an even more remarkable user experience. This move laid the groundwork for targeting a premium market segment that values a comprehensive and high-speed internet experience.

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The revamped value-proposition offered by du was anchored in the superior capabilities of 5G technology, providing subscribers with unparalleled speed and reliability. Recognizing the evolving landscape of consumer preferences, du bundled its 5G service with a curated selection of popular OTT

By deploying advanced multi-carrier aggregation technology in its commercial wireless network, the Operator has brought about noticeable shift in network speeds and user experience for its Home wireless services (FWA) portfolio, marking a new milestone for other operators in the SA-ME-NA region as well neighboring regions, such as Central Asia.

platforms such as OSN, Disney+, and Amazon Prime. This comprehensive package not only addressed the need for fast internet but also tapped into the increasing demand for diverse and premium content. Moreover, du added further value by including a specialized internet calling pack, catering to the growing importance of seamless communication. This strategic integration of advanced technology, premium content, and enhanced communication services formed a compelling value proposition, justifying a premium price point. In targeting a market segment willing to pay for this enhanced and bundled experience, du not only solidified its position as a technological leader but also demonstrated a nuanced understanding of consumer needs and preferences. This forward-thinking approach not only retained existing subscribers but also attracted a new audience seeking a comprehensive, high-quality internet and entertainment solution.

Customers are increasingly choosing du's Home Wireless for its speed, convenience, and competitive pricing, reflecting the product's tremendous success. This reflects a notable achievement in the telecom industry for du.

Home Wireless product has proven that wireless connectivity can be a viable and attractive alternative. By deploying advanced multi-carrier aggregation technology in its commercial wireless network, the Operator has brought about noticeable shift in network speeds and user experience for its Home wireless services (FWA) portfolio, marking a new milestone for other operators in the SA-ME-NA region as well neighboring regions, such as Central Asia.

du launched its FWA services in the UAE in 2021, which quickly became popular among users. du's contributions were also recognized by SAMENA LEAD award for Fastest 5G FWA Experience. On the other hand, e& was recognized in the last SAMENA LEAD awards for its leadership as Outstanding Digital Transformation Enabler. Both Operators are integral to sustainably building the UAE's digital future. 🌐

Role of 5G FWA in Fulfilling National Broadband Visions

- One of the critical policy challenges, is to harness market forces to promote convergence or equalization in living standards between villages, cities, and towns. This is particularly true of larger markets of the SA-ME-NA region.
- Policymakers and regulators may accelerate fulfillment of their broadband development plans by implementing strategies for broader economic areas that integrate cities with their surrounding rural areas.
- Predictable, stable and efficient policies and regulations are critical for ensuring that Telecom Operators have enabling environments and incentives to extend broadband coverage to underserved areas.
- There is an industry consensus that digital inclusion (which fundamentally refers to reasonable broadband penetration rate and data service access), must be increased around the world, dramatically. While various approaches can tackle the challenges of connecting the unconnected, FWA may be the optimal and most cost-effective way forward to fulfill this vision of digital inclusion.
- To ensure market access for 5G FWA (or even 4G FWA) Operators, it is important to establish a legal and regulatory framework that is fully transformed to cater to new broadband development and digital-inclusion requirements, and not hindered by legacy rules. For example, there should be no limits on the number of independent service providers permitted to provide 4G/5G FWA services to consumers.
- Governments should include 4G/5G FWA into their national broadband plans, and it is essential to introduce a strategy or specific goal on FWA solutions for hard-to-reach areas. National broadband-development plans should recognize FWA as an essential element for providing broadband access to rural, remote or geographically-challenged areas.
- Governments of the SA-ME-NA region should leverage FWA in those areas where Fiber-to-the-Home technologies are not feasible. Moreover, they should enable and encourage FWA deployment with innovative offerings in areas where there is extensive fiber presence as well – as observed in the case of the UAE.



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Aladdin Baitfadhil
Chief Commercial Officer
Omantel

Omantel's 5G Home Wireless Broadband Triumph: Unleashing 5G Connectivity's Full Potential

Oman Telecommunications Company (Omantel) is the leading telecommunications provider in sultanate of Oman. It made waves in 2019 with the commercial launch of its 5G services. Among the standout achievements was the introduction of Home Internet through Fixed Wireless Access (FWA), positioning Omantel as a pioneer in bringing 5G connectivity to households. In this article, we look at Omantel's journey of using 5G to empower its customers and reap financial rewards from 5G at the same time as it bridged the gap between demand for high speed broadband from new areas and challenges of traditional fixed technologies.

1. Early Success and User Adoption

The launch of home broadband fixed wireless access (FWA) using 5G provided a new way to access high speed broadband for homes which were earlier connected by old technologies serving very low speeds or not connected at all. The new alternative provided by 5G thus instantly became a technology of choice for public. By the end of 2022, Omantel had amassed an impressive user

base of over 100,000 FWA subscribers & covered 90% of households in Oman with 5G, underscoring the rapid adoption of their 5G services. This early success not only demonstrated the market's hunger for high-speed and reliable home internet but also showcased Omantel's ability to meet these demands.

2. 5G Dominance in Wireless Traffic

The impact of 5G on Omantel's wireless landscape was nothing short of transformative. In its endeavor to lead the wireless connectivity space, Omantel's 5G FWA services not only ensured widespread coverage but also delivered comparable bandwidth to traditional fiber, offering speeds of up to 1Gbps. The parity in bandwidth with fiber technology made Omantel's 5G FWA services a compelling choice, as it provided comparable high-speed connections without the need for labor-intensive fiber deployment, especially in regions where fiber installation was technically challenging or financially impractical. This strategic decision allowed Omantel to swiftly bridge connectivity gaps and cater to areas that might have otherwise remained

underserved due to infrastructure limitations. By the close of 2022, 5G had swiftly emerged as the dominant force in wireless traffic, handling a remarkable 60% of the total wireless traffic, surpassing all other existing wireless networks in the region. The remarkable achievement of 5G handling 60% of wireless traffic speaks volumes about its efficiency,

Omantel's success with 5G FWA stands as a compelling case study in the transformative power of next-generation connectivity.

reliability, and the widespread adoption of Omantel's 5G FWA services. By providing comparable speeds and efficiently handling the majority of wireless traffic, Omantel's 5G FWA services set a new benchmark in the region's telecommunications landscape. This achievement solidified their position as a trailblazer in delivering next-generation, high-speed, and reliable internet connections via 5G FWA.

3. Strategic Partnerships for Enhanced Services

In their pursuit of enhancing 5G FWA services, Omantel strategically forged partnerships with influential industry players such as Zain KSA and Nvidia. This collaboration marked a significant leap forward, paving the way for the introduction of GeForce Now for home broadband customers, significantly elevating the value proposition of their 5G FWA offerings.

The introduction of GeForce Now—a leading global cloud gaming platform opened doors to a whole new realm of entertainment for their home broadband customers. This strategic collaboration showcased Omantel's agility and adaptability in recognizing and fulfilling the evolving needs of their consumer base.

By integrating GeForce Now into their offerings, Omantel showcased a foresighted approach to meet the increasing demand for cloud-based gaming experiences. This move not only bolstered their service portfolio but also positioned them as a front-runner in providing comprehensive, innovative, and immersive digital experiences beyond conventional connectivity.

The strategic partnerships with Zain KSA and Nvidia reinforced Omantel's commitment to offering diversified and value-added services. The collaborative efforts underlined the company's adaptability and responsiveness to the ever-evolving digital needs of their consumers, enabling them to stand out as a provider that extends beyond traditional telecommunications services, embracing entertainment, gaming, and advanced digital experiences.

4. Overcoming Infrastructure Challenges

In regions where deploying fiber was technically challenging and financially unviable, Omantel's strategic decision to embrace 5G as the technology of choice proved prescient. This approach allowed the operator to extend its services to areas where

traditional infrastructure deployment was impractical, addressing connectivity gaps and enhancing accessibility for a broader demography.

This strategic decision to rely on 5G technology not only showcased Omantel's adaptability but also demonstrated 5G technology's capability to provide robust connectivity solutions in diverse geographical landscapes. In areas where the deployment of fiber posed significant hurdles, 5G emerged as the preferred technology, offering reliable, high-speed internet access and effectively addressing the connectivity gaps, thereby meeting the demands of consumers in regions where traditional infrastructure installation was a challenge.

5. Global Collaborations for Service Innovation

Omantel's forward-looking approach to 5G is further emphasized by an Memorandum of Understanding (MoU) with LG U+, a pioneering Korean operator renowned for its cutting-edge services in the realm of 5G, particularly in Augmented Reality (AR) and Virtual Reality (VR) services.

This collaboration between Omantel and LG U+ aimed to explore and introduce new experiences over 5G, focusing on advanced services such as AR and VR. LG U+'s standing as an industry frontrunner in developing innovative 5G services positioned them as an ideal partner for Omantel to further enrich the customer experience in Oman.

By aligning with LG U+, a leader known as a global innovator in 5G services, Omantel showcased its commitment to staying at the forefront of technological advancements and enriching the customer experience in Oman.

6. Financial Growth through 5G Investment

The investment in 5G infrastructure proved to be a catalyst for financial success. Omantel's investment in 5G technology didn't just transform

connectivity; it significantly impacted their financial performance, highlighting the substantial growth derived from their foray into 5G services.

During the first half of 2020, following the launch of their 5G FWA service, Omantel witnessed a remarkable 8.1% growth in home broadband revenue when compared to the same period in 2019, when the 5G FWA service had not yet been introduced. This surge in revenue served as tangible evidence that the integration of 5G technology had a direct and substantial positive impact on the company's financial performance.

The continued success and tangible benefits of their 5G investment were further underscored in 2022, as Omantel's FWA segment revenue saw a staggering year-on-year jump of 143%. This exponential growth within the FWA segment served as a testament to the substantial financial impact of their 5G offerings. The substantial financial growth derived from their 5G investment further solidifies the success and positive impact of Omantel's strategic move to venture into 5G technology, showcasing not only its transformative effect on connectivity but also its direct and substantial contribution to the company's financial prosperity.

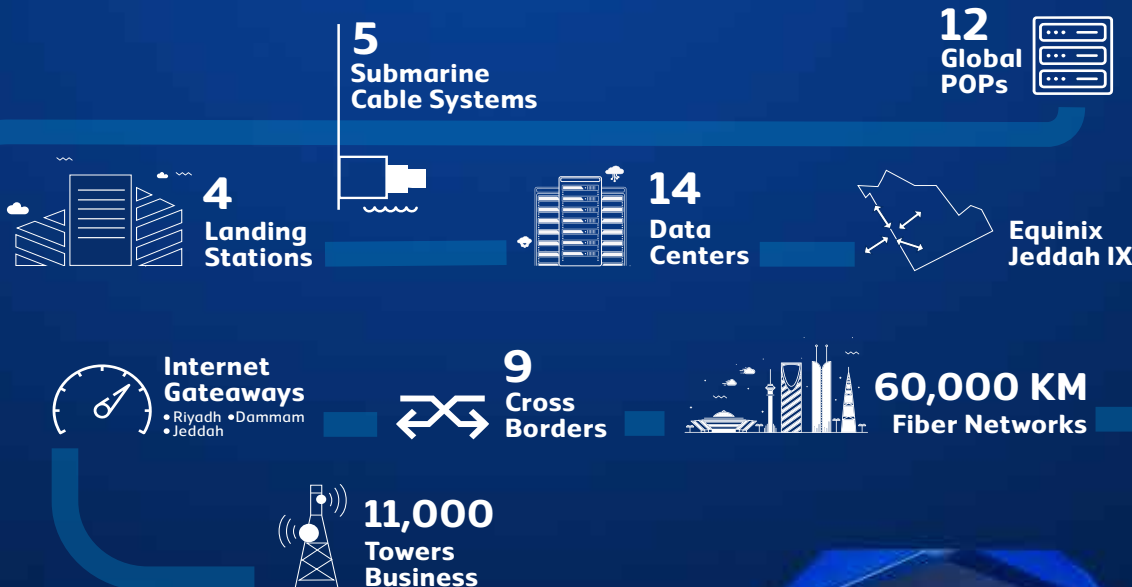
Omantel's success with 5G FWA stands as a compelling case study in the transformative power of next-generation connectivity. From early adoption and strategic partnerships to financial growth and global collaborations, Omantel's journey highlights how 5G can be a game-changer for telecommunications operators. It not only provides reliable connectivity but also opens avenues for innovation and growth, proving especially valuable in addressing challenges posed by diverse geographic and demographic landscapes. As Omantel continues to lead the way, its experience serves as an inspiring model for operators worldwide navigating the ever-evolving landscape of telecommunications. 🌐

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OPERATOR PERSPECTIVES

Zain KSA's 5G FWA Achievement: A Journey of Innovation and Success

Zain KSA has left an indelible mark on the history of telecommunications through its pioneering 5G Fixed Wireless Access (FWA) services. The company took a bold step into this transformative journey, setting a milestone by introducing commercial 5G services in October 2019. By becoming the first entity in Saudi Arabia to wholeheartedly embrace this cutting-edge technology, Zain KSA secured its position at the forefront of innovation and catalyzed a paradigm shift in the nation's telecom landscape. This article delves into the successful account of Zain KSA's 5G FWA success, meticulously dissecting the key factors that have contributed to and played a pivotal role in propelling its remarkable ascent within the dynamic telecommunications industry.

Expansive Coverage: A Pillar of Success

Zain KSA's remarkable success in 5G FWA is the outcome of its bold vision to prepare Saudi Arabia's digital infrastructure to power a digital economy and society. In a well-planned strategic maneuver, the company embarked on its journey in 2019, launching commercial 5G services with a sweeping network covering 27 cities and featuring 2,600 towers. This laid the groundwork for a vertical expansion of their

5G services, establishing a robust and comprehensive foundation for a wide range of offerings to individuals and enterprises.

Toward the end of 2020, Zain KSA's commitment to expansion manifested in a significant growth of its network footprint. The coverage sprawled across 41 cities, now fortified by a staggering 4,000 towers. This expansive reach ensured that a substantial portion of the Saudi population could seamlessly access their high-speed services.

The far-reaching coverage and network efficiency have been a cornerstone in the company's success story, attracting a diverse customer base from both urban metropolises and remote rural areas.

In 2023, the company continued to grow its network, extending its coverage to 64 cities. These achievements positioned Zain KSA as a global leader in 5G deployment, securing the 4th spot amongst the largest 5G deployments worldwide.

Strategic multi-dimensional growth

In addition to the low-latency 5G connectivity, Zain KSA was the first telecom operator globally to provide 5G carrier aggregation and later launched 5G Stand-Alone technology

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to scale its enterprise offerings and support Saudi Vision 2030's digitalization journey and the transition to a digital economy.

Meanwhile, in line with its strategy to leverage technology for sustainability, Zain KSA is championing green technology innovation and has announced several related initiatives. In collaboration with Red Sea Global, Zain KSA is working on the world's first zero-emission 5G network in the Red Sea and has already installed innovative sustainable towers at Ummahat Island. The company plans to spearhead green ICT infrastructure development with energy-efficient hardware and software solutions alongside its partner, Huawei.

While placing 5G at the heart of its business services ecosystem and

supporting enterprises to harness automation efficiencies, Zain KSA is equally dedicated to enabling individual customers to realize the lifestyle-enhancing benefits of high-speed internet, all within an eco-conscious framework.

Adding Value Through Bundled Services

Zain KSA elevated innovation by significantly enhancing its home wireless broadband offerings, marking a paradigm shift in the industry. Expanding into adjacent markets, the company ingeniously introduced a diverse array of bundled services to its subscribers, strategically incorporating popular streaming platforms such as OSN and Shahid into their packages. This forward-thinking move addressed the burgeoning demand for entertainment, making Zain KSA's 5G FWA packages irresistibly appealing to a broad spectrum of consumers.

Beyond these strides, Zain KSA achieved the milestone of being the first in the region to align with the GeForce NOW (GFN) Alliance forged by Nvidia. In 2022, the company launched PLAYHERA MENA eSports to cater to the region's growing market of gaming enthusiasts. These groundbreaking ventures positioned Zain KSA as a trailblazer, offering its customers a diverse portfolio of high-quality games.

These transformative innovations are a testament to Zain KSA's commitment to differentiating itself from the competition. By incorporating cutting-edge services and pioneering partnerships, the company not only met but exceeded consumer expectations, establishing its 5G FWA services as a comprehensive and desirable choice for a discerning and diverse consumer base.

Family Offer

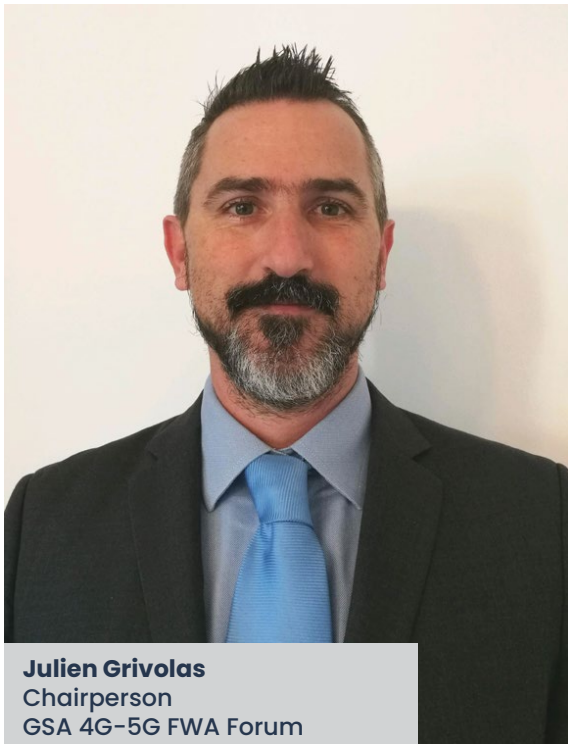
Zain KSA displayed its commitment to innovation by introducing family bundles featuring family offers. This visionary approach went beyond conventional offerings, providing families with comprehensive and cost-effective packages that seamlessly integrate both home broadband and mobile services. This innovative convergence simplified the user experience and enhanced cost savings, creating a compelling value proposition for consumers. The strategic implementation of family bundles marked a significant leap for Zain KSA, transcending the boundaries of traditional service provision through a consolidated and interconnected service model. The inherent convenience and financial advantages embedded in these bundles became a key driver of Zain KSA's increasing appeal, cementing its position as a customer-centric telecommunications provider.

Zain KSA's transformative journey into the dynamic realm of 5G FWA stands as a testament to the profound impact of two key pillars: expansive network coverage and a steadfast commitment to continuous innovation. In this pioneering venture, Zain KSA has not merely offered high-speed internet but has successfully generated value through the strategic bundling of services such as streaming, cloud gaming, and family convergence packages. This multi-faceted approach has set an influential precedent, setting a new standard for comprehensive telecommunications offerings and empowering the community to lead a digitally enhanced lifestyle.

Zain KSA's transformative journey into the dynamic realm of 5G FWA stands as a testament to the profound impact of two key pillars: expansive network coverage and a steadfast commitment to continuous innovation. In this pioneering venture, Zain KSA has not merely offered high-speed internet but has successfully generated value through the strategic bundling of services such as streaming, cloud gaming, and family convergence packages.

Zain KSA's successful rollout of accessible high-speed connectivity and applications to direct consumers ties into the company's overarching goal of providing a complex ICT ecosystem for individuals and enterprises in the Kingdom to empower a knowledge-driven society and a digital economy. The versatility and seamless delivery of these offerings demonstrate the transformative power of pairing strategy and innovation with an unwavering commitment to enhance lives and foster growth for all. 🌐





Julien Grivolos
Chairperson
GSA 4G-5G FWA Forum

Re-defining 5G Deployment Success: GSA's Perspectives on FWA Growth Trends

Fixed Wireless Access (FWA) is proving to be a life changer by ensuring the availability of strong and reliable wireless broadband connectivity to people wherever they are, whatever they do. 5G FWA is currently one of the hottest topics in the industry, and is seeing a strong market traction all around the world, especially from policy, regulatory, and business perspectives. This is true for developing as well as for developed economies. Notably, FWA has emerged as a prime monetization use-case for 5G deployments all over the globe, and particularly in the markets of North America, Europe, Asia, Central Asia, and the Middle East.

In the US, industry analysts estimated that FWA captured more than 90% of new US broadband customers in 2022 (<https://www.telecoms.com/wireless-networking/fixed-wireless-access-is-booming-in-the-us>) and that the FWA momentum continues to increase. For example, T-Mobile US keeps reporting record net adds

in this segment closing 2023 with 4.8 million FWA subscribers, well on its way to reach its target of 7-8 million subs by end 2025. In Europe, new 5G FWA networks are also rapidly being launched and there were already 66 commercial 5G FWA networks in EC-27 countries in November 2023 (<https://gsacom.com/paper/fwa-market-november-2023/>).

However, there is still a lot to be done. Let's not forget that, according to the State of Broadband report 2023 (<https://www.broadbandcommission.org/download/7121>), there are still 2.6 billion people who remain unconnected. Covid-19 further demonstrated the critical need for broadband access for all. In developing economies, we also see good progress and we can mention initiatives such as those of Airtel and Jio in India who both recently launched 5G FWA services. In the case of Jio, since September 2023, JioAirFiber brings high-speed connectivity (up to 1Gbps) together with a range of TV and streaming

services depending on the package similar to what it offers using fiber (<https://rilstaticasset.akamaized.net/sites/default/files/2023-09/19092023-MR-JIO-ANNOUNCES-LAUNCH-OF-JIO-AIRFIBER.pdf>).

In addition, many countries or regions position broadband connectivity as a new vital commodity and some have put Digital as a key pillar of their Economy Recovery plans. Without a doubt, FWA should play a critical role in these strategic plans and help bringing broadband connectivity with all its related socio-economic benefits to all quickly, and not having to wait 5 or 10 years. Thanks to its quick Time to Market, low TCO, high capabilities and smooth evolution path, 3GPP FWA is the answer. In particular, 5G combined with FWA has already further unlocked new business opportunities for operators and enlarged the world of possibilities for end-users. This is just the beginning.

More than 150 operators already offer 5G FWA services

In GSA's FWA Market reports, the GSA Research team is collecting data about services delivered using indoor and outdoor CPE and focuses on FWA services delivered using 4G LTE and 5G technologies. In our latest edition of November 2023, 477 operators were identified as providing a total of 587 LTE and 5G FWA services in 175 countries (up 11% YoY). This is expected to keep growing as 678 LTE or 5G FWA services are being invested in by 554 operators worldwide across

all and how advanced that network is from a technology perspective; and whether its rivals have introduced a FWA service. Where one operator introduces a FWA home broadband service, its rivals often quickly follow.

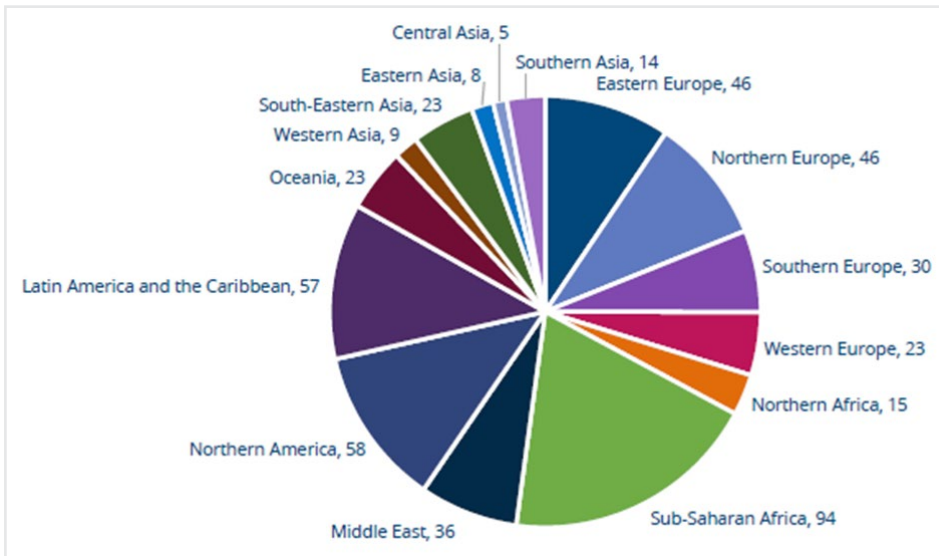
Looking at 5G FWA specifically, with more than 50% of 5G commercial operators also offering FWA services, FWA is the undisputed N°1 use case for 5G after mobile broadband. In fact, 192 operators were investing in 5G FWA with 152 operators having already launched 5G FWA services,

up 270% from 41 in Nov 2021. 5G FWA accounts for 40% of launched 5G services, up significantly from 19% in Oct 2022.

When it comes to tariff structures, more than 52% of LTE FWA services are volume-based tariffs, in comparison with just over 19% of LTE service providers offering speed-based tariff structures and just 13.5% offering both. The difference is less marked with 5G tariff structures where 20% of service providers promote structures based only on speed and 25% based only on volume. Although many operators promote "unlimited" usage, in fact, the great majority is restricted: by limiting speed after a certain threshold, by fair use policies, or by limiting "unlimited" offers to a maximum, albeit large, level of data usage. GSA identified 45 operators with 5G packages being promoted with tariff package options that appear truly unlimited.

Operators are often vague when they talk about the FWA speeds their customers should expect, sometimes providing theoretical maximum speeds. Nonetheless, GSA collected information about the fastest download speeds quoted by operators for their FWA services

Figure 1 - Number of operators investing in LTE FWA by sub-region

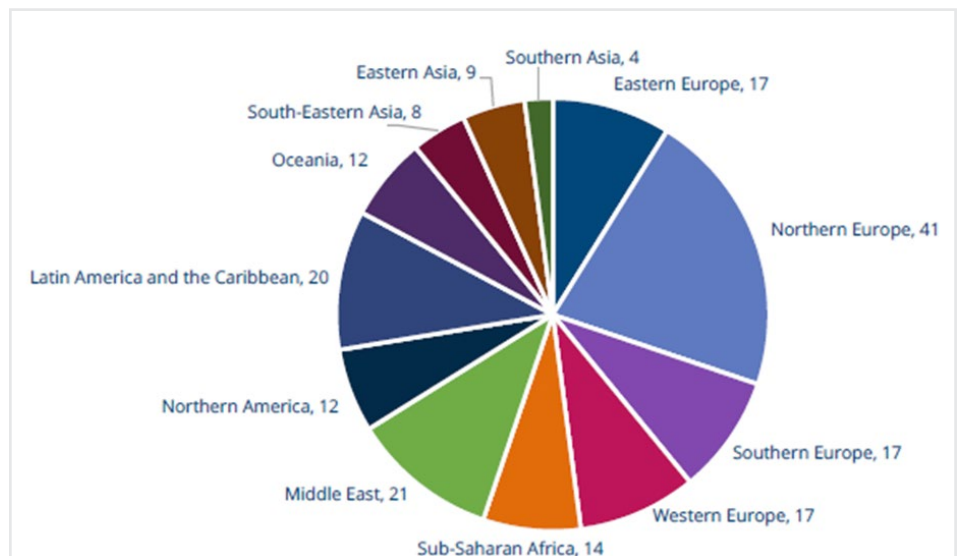


Source – GSA FWA Market report, November 2023

187 countries, an increase of 38 from the last update. The number of operators delivering FWA services using LTE or 5G varies widely by region, as Figure 1 and Figure 2 show. There are more operators marketing FWA services in Europe than any other region, closely followed by the Middle East and Africa.

An operator's decision to offer FWA services will depend on various factors: how well covered with fixed-line broadband services the country or territory is; whether there are many remote regions with little to no broadband availability; whether that operator provides a fixed network at

Figure 2 - Number of operators investing in 5G FWA by sub-region



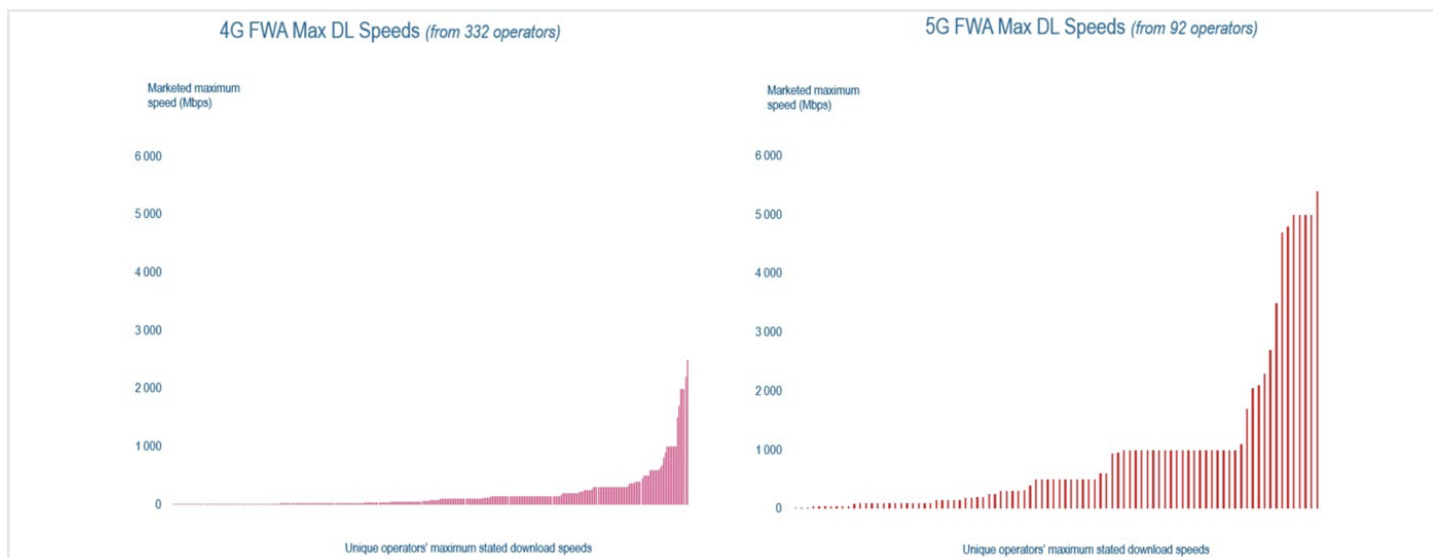
Source – GSA FWA Market report, November 2023

where data was available. The maximum speeds promoted for LTE FWA services range from 1 Mbps to 2.5 Gbps. For 5G FWA, speed data has become more readily available showing its importance as a strategic differentiator. Quoted 5G FWA peak download speeds ranged from 10 Mbps to 5,400 Mbps, with more than half of them sitting in the 250 Mbps to 2,700 Mbps range. The average 5G FWA maximum download speed identified by GSA was 1,059 Mbps, up significantly from 875 Mbps in November 2022.

The major highlight from the 2023 edition was that 5G FWA CPE shipments more than doubled to 7.4 million (+111% YoY) in 2022 and were forecasted to increase again to 13.8 million (+86%) in 2023, representing 43% of 2023 device shipments (vs 29% in 2022). Although a smaller proportion of 5G shipments, millimeter-wave-capable device shipments more than doubled in 2022 to 0.45 million and are expected to grow more than 70% in 2023 to 0.77 million units. In fact, of the 27 vendors surveyed, 30% already

had millimeter-wave-capable products in their portfolio (higher than the 15% a year ago) while 26% of the companies were planning to introduce millimeter-wave-ready products. Respondents were also asked about when they expect the prices of 5G CPE to reach those of 4G currently. Consistent with the previous years, the majority of respondents see this happening by 2025. In terms of form factor, total shipments of 4G-5G FWA indoor and outdoor CPEs were expected to climb 31% in 2023 to almost 25 million units,

Figure 3 - Marketed maximum download speeds – 4G FWA vs 5G FWA



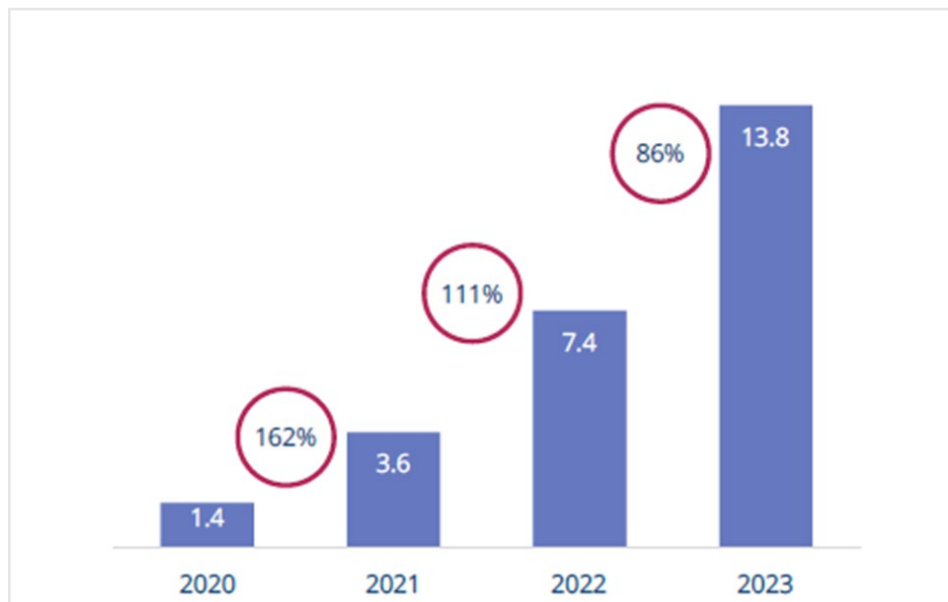
Source – GSA FWA Market report, November 2023

The report also covers research on other areas including service portability and types of FWA device used (indoor CPE vs outdoor CPE).

5G FWA CPE shipments are on the rise

Looking specifically at the FWA device ecosystem side of things, the GSA 4G-5G FWA Forum has conducting its annual FWA CPE market survey since 2021. Our 3rd edition (<https://gsacom.com/paper/fixed-wireless-access-survey-2023/>) was released in September 2023 and presented the aggregate answers of 27 CPE vendors among our members that together form a significant representation of the 3GPP-based 4G/5G FWA device market.

Figure 4 - Shipments of 5G-enabled devices, millions of units, and year-on-year growth



Source – GSA 4G-5G FWA Forum's "FWA CPE market survey 2023", Sample: 25 respondents in 2021, 26 in 2022 and 27 in 2023

thanks to strong growth of indoor devices, which were forecasted to reach 21.6 million units, translating to growth of 34% annually. When adding battery-operated routers to the mix, overall FWA shipments are expected to rise 26% in 2023 to 32 million units as illustrated in Figure 4 below.

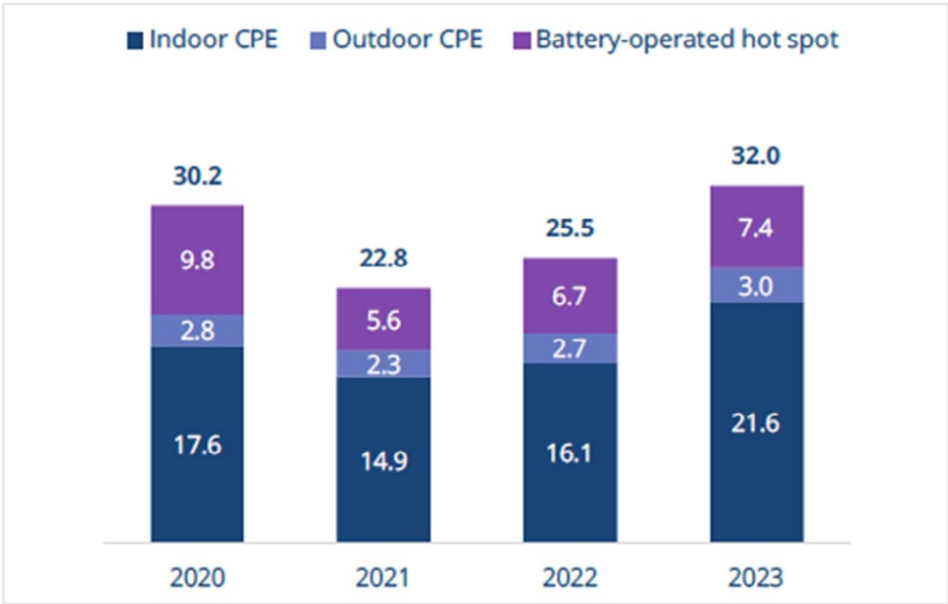
Much more information can be found in the report as companies were surveyed on a range of topics including shipments, market trends, form factors and device features,

current and future. The full survey report is available to download from the GSA 4G/5G FWA Forum website here: <https://gsacom.com/paper/fixed-wireless-access-survey-2023/>. It is worth noting that the GSA 4G/5G FWA Forum team also discussed the key findings of the survey in more detail during a webinar held in September 2023. You can access the recording here: <https://gsacom.com/webinar/fwa-forum-cpe-vendor-survey-findings/>.

The 5G FWA future is bright

As more operator networks are upgraded to LTE-Advanced, more 5G networks are built out and more 5G CPE devices are commercialized, there is no doubt that the number of 5G FWA services will continue to rise with increasing demand from rural and suburban areas to access high-speed, reliable wireless connectivity but also value-added services such as TV packages, streaming platform access, gaming packages and so on. Technical advances such as RedCap could also contribute to accelerate the migration from 4G to 5G FWA in particular in rural areas and developing countries by contributing to reduce the cost of devices. RedCap will be a new topic to be monitored in our next FWA CPE Survey. In addition, if today few operators offer 5G FWA speed guarantees (examples: 3 Austria, DNA in Finland, Optus in Australia), technical evolutions will facilitate such offerings to become more commonly available. Both the FWA CPE Survey and the FWA Market report are expected to be updated in May 2024 while the next GSA 4G-5G FWA Forum online event is planned in mid-June 2024.

Figure 5 - Shipments of FWA devices by type, millions of units



Source – GSA 4G-5G FWA Forum's "FWA CPE market survey 2023", Sample: 25 respondents in 2021, 26 in 2022 and 27 in 2023

The GSA 4G-5G Fixed Wireless Access Forum

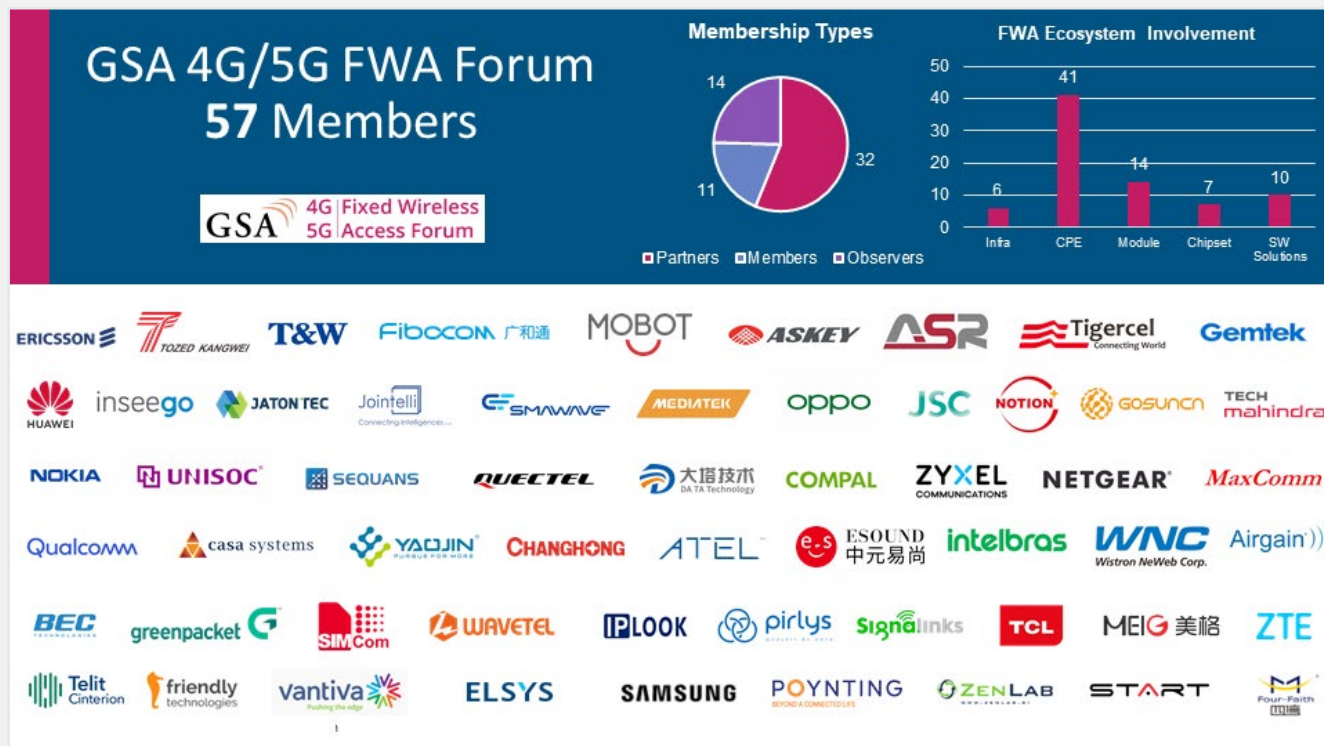
The GSA 4G-5G FWA Forum recognizes the important role 3GPP-based 4G-5G FWA technologies play in offering a fast, economically attractive and future-proof alternative to deploying broadband services, particularly for rural and less densely populated areas. Since its creation in late 2020, the GSA 4G-5G FWA Forum has grown to 57 companies (as of February 2024) that are promoting the benefits of 4G-5G FWA for high-speed wireless broadband as well as their own position in this growing ecosystem. 4G-5G FWA device suppliers currently form the bulk of the membership but there are also network infrastructure, module, chipset and service companies involved in the Forum who support our activities.

Overview of key activities in 2023

One of the main deliverables has been a 4G-5G FWA Ecosystem Catalogue, which is now in its 10th iteration (<https://gsacom.com/paper/fwa-ecosystem-catalogue-issue-10/>) and promotes a wide range of FWA devices, chipsets and modules. The catalogue can be downloaded from the GSA website www.gsacom.com

The Forum also delivers an annual FWA CPE Survey report (<https://gsacom.com/paper/fixed-wireless-access-survey-2023/>) to help the industry better estimate the real market size and identify the major trends of the 4G-5G FWA device market. The 2023 survey report was released in September 2023 and a

Figure 6 - GSA 4G-5G FWA Forum Companies



dedicated webinar available on-demand (<https://gsacom.com/webinar/fwa-forum-cpe-vendor-survey-findings/>) was also held; again, this can be viewed from the GSA website.

In addition, online public events featuring a wealth of speakers from mobile operators, regulatory bodies and the equipment supply industry all discussing and debating a wide range of key FWA industry topics. These events are organized twice a year in order to promote 4G-5G FWA adoption for the benefit of citizens and businesses worldwide. The 5th public event included speakers from Bell Mobility, Telia and the vendor ecosystem. Replay is available on-demand (<https://gsacom.com/webinar/gsa-4g-5g-fwa-forum-plenary-5/>). We also participate in industry events and organize FWA workshops such as during NetworkX 2023 in Paris (<https://gsacom.com/paper/gsa-4g-5g-fwa-forum-workshop/>).

In 2023, the Forum launched its online GSA 4G-5G FWA Device Ecosystem Directory (<https://gsacom.com/fwa-tool/>), a unique on-line tool to access mainstream and emerging FWA vendors and their products. Today it lists ~200 FWA products from more than 25 vendors globally. The intent is to keep the directory updated with new companies or offerings to enable all those involved in the development (or assessment) of the 4G-5G FWA ecosystem or pro-

curement of the resulting devices to identify potential partners.

Finally, thanks to the work of the GSA Research team, we are also publishing, twice a year, the 4G-5G FWA Market reports (<https://gsacom.com/paper/fwa-market-november-2023/>) which provide detailed analysis and statistics about FWA services based on LTE or 5G technologies worldwide.

In 2024, the GSA 4G-5G FWA Forum will continue to update all these deliverables and will look forward to participating to industry events to further promote the development and adoption of 4G-5G FWA services.

Annual benefits 2024

Participation in the GSA 4G-5G FWA Forum is open to all companies involved in the 4G-5G FWA supplier Ecosystem.

All GSA 4G-5G FWA Forum companies who are Partners or Members of the forum can participate in FWA Forum activities and programs.

More details can be found on our website - <https://gsacom.com/fixed-wireless-access-forum/>

Companies interested to join the GSA 4G-5G FWA Forum can contact us at admin@gsacom.com

SAMENA Council to Provide Industry Support to Member-led Fixed Wireless Access (FWA) Industry Club

SAMENA Council has announced that, to help increase FWA penetration in the regions, it will strategically support the creation and thought-leadership activities of the ELITE FWA Club, sponsored by Huawei, a valued member of the Council.

The creation of the FWA-centric club, which will receive thought-leadership contributions from SAMENA Council's FWA focused working group, sets a precedent in developing the wireless-access business and digital-inclusion possibilities for both end-users and enterprises in the region through collaboration among various regional stakeholders.

in the development of 5G networks within and around the Council's regions of focus, offering highly useful and scalable applications.

SAMENA Council views that major industry use-cases of FWA include Education (virtual classrooms, distant education, vocational trainings), Healthcare (remote health consultations, remote patient monitoring, remote health administration), Agriculture (environmental knowledge, precision farming, crop yields, real-time crop and livestock monitoring, resource management), Transportation/Mobility (connected vehicles, traffic management,

natural system, robotics, predictive maintenance, quality control, efficiency and productivity), Retail (inventory management, personalized customer experience delivery, streamlined operations), Environment (intelligent lighting controls, irrigation and water resource management, real-time environmental monitoring), Work/Job-Creation (remote work, seamless collaboration, video conferencing, cloud-based tools and resources), and Emerging Technologies (supporting growth of IoT, AR/VR ecosystems).

Launched in December 2023 in Dubai, the ELITE FWA Club is dedicated to fostering a dynamic, industry-wide dialogue to address technology, business, policy and regulatory as well as user-experience issues. Our mission is to enable Telecom Operators and digital infrastructure investors in collaboratively and sustainably enhancing returns on 5G investments while provisioning quality-of-service and end-user experience on 5G networks. For this reason, the ELITE FWA Club presents an invaluable opportunity for leaders in the ICT sector to delve into unique areas relating to the FWA business, innovation, customer experience management, and ecosystem maturity while advocating for commercial advancements in the FWA sector.

The ELITE FWA Club will hold its second meeting on February 28 during MWC Barcelona 2024. 



Operators in the SA-ME-NA region and, to some extent, in the neighboring regions, including Central Asia, have invested heavily in 5G networks. However, satisfactorily monetizing these investments remains a critical challenge. FWA will play an increasingly important role

roadside infrastructure management, dynamic route optimization, improved traffic safety, smart-city service delivery), Public Safety (emergency response, disaster management, coordination, critical service delivery), Manufacturing (connected AI-based, digital, and

Telefónica Goes Live with First 5G FWA Offering in Brazil

Brazil's Telefónica|Vivo has commercially launched its first 5G fixed-wireless access (FWA) product dubbed Vivo Box 5G.

The operator currently provides one subscription-based plan for the service, giving customers access to 150GB of data for BRL 150 (€28.14) per month, plus an additional ten monthly BRL 150 instalments for the necessary Wi-Fi 6 router. The hardware allows up to 128 devices to connect simultaneously.

Vivo talked up the “easy” installation process, saying the router does not need “cables or technical assistance” from engineers to get working.

Users can return the router within seven days if they decide to cancel their service early. Additionally, customers can cancel within 15 days if there is “failure of coverage”, provided that less than 250MB of data has been used.

5G FWA rollout begins

While the offering is Telefónica's first 5G FWA product in Brazil, the launch makes Vivo the second operator to enable the service in the country. Rival Claro Brasil went live with its first

FWA product in August 2023, and with larger monthly data allowances of 200GB and 400GB. The country's third operator TIM Brasil also plans to roll out FWA this year.

Vivo previously flagged the technology as a way to complement its Vivo Fibra fixed offering while expanding its reach in remote areas for consumers, small businesses, and public institutions (TelefónicaWatch, #168).

Vivo has trialed FWA technology over the last three years, prior to Vivo Box 5G's launch. Notably, in October 2021, the operator trialed 26GHz millimetre-wave (mmWave) spectrum to analyse its potential use for ‘next-generation’ services.

The deployment reportedly saw Vivo deploy the technology at two existing facilities in Barra da Tijuca and Recreio, assessing the “performance and maturity of the technology, and also what types of services can be launched”, according to Elmo Matos, Director of Network Planning at the OB.

Focuses of the tests included FWA and “applications aimed at the corporate market”.



Telefónica offers a similar service to Vivo Box 5G in Germany, with Telefónica Deutschland's (O2 Germany) O2 Homespot routers providing internet connectivity over its 4G and 5G networks, and tariffs with unlimited monthly data volumes and transmission speeds of up to 100Mbps.

O2 Germany also experimented with FWA, initiating trials with Samsung in November 2018. The tests used mmWave spectrum, with equipment comprising a virtual core and a 5G radio access unit, as well as 5G outdoor units and indoor routers to customers. In February 2019, the pair concluded that the technology provided an “attractive alternative” to existing DSL broadband without the “time-consuming” fibre deployment normally required. 🌐



NEXCOM Expands Use of FWA over 5G to Power Smart Cities and Factories

NEXCOM, a leading global supplier of network appliances, announced the company's diverse lineup of fixed wireless access (FWA) solutions is helping expand application of 5G FWA to new uses, from bridging the digital divide to enabling real-time data processing to power smart cities and revolutionize the future of telemedicine. NEXCOM provides a 5G FWA uCPE range tailored for various sectors and use cases.

5G FWA uCPE applications are boundless, from delivering reliable connectivity in remote areas to ensuring mission-critical communications in industrial settings and powering smart city technology. 5G FWA uCPE is helping provide reliable, low-latency, and high-bandwidth connections, driving innovation on behalf of diverse industry sectors. 5G FWA has already become a major component in achieving nationwide broadband

ranges, URLLC (Ultra-Reliable Low Latency Communication), and mMTC (massive Machine Type Communication). In addition, advanced features now include 5G network slicing, 5G TSN (Time-Sensitive Networking), 5G security, and NTN (non-terrestrial networks), which enables 5G FWA technology to be used as a 5G private network in various settings, including smart factories, smart manufacturing, smart cities, and intelligent transportation.



▲ FWA over 5G uCPE

Cross-platform Solutions for Powerful Connectivity and Real-time Data Processing

NEXCOM's 5G FWA solutions support powerful connectivity and real-time data processing. The products have been classified and mapped with grades catering to diverse field applications such as Consumer, Enterprise, Industrial, and Telecom. For in-depth explanations download the corresponding White Paper.

connectivity in the U.S.

The most common 5G FWA application is delivering connectivity where wireless transmission is used to reach the last mile. However, the future applications of this innovative technology are growing to include eMBB (Enhanced Mobile Broadband) in both FR1 and FR2 frequency

In response, NEXCOM is delivering a comprehensive 5G FWA uCPE product lineup tailored to different sectors and use cases. Each appliance comes with predefined features and expandable space, allowing users to customize available options to meet specific requirements. NEXCOM 5G FWA uCPE is also integrated with a lightweight network OS for easy set-up and control, designed to simplify network configuration.

"The widespread adoption of 5G FWA underscores the importance of understanding the unique requirements of each application and identifying the most suitable equipment to meet those goals," said Peter Yang, President of NEXCOM.

"We're helping provide clarity in the market by tailoring NEXCOM products to cater to the diverse application grades and settings for 5G FWA applications in both private and public networks. Based on NEXCOM's guidelines and feature matrix, Telco operators who are currently weighing their options on hand can easily find out the best equipment after checking the reliability of the device for managing traffic and meeting critical low-latency demands, the necessity for mobility and outdoor long-range connectivity, and building a comprehensive, future-proof solution that caters to both present and future requirements." 

Jio to Reach Pan-India Coverage with its 5G FWA Service in H1 2024

Jio had announced the launch of its 5G FWA service in eight cities across India in September 2023

Indian operator Reliance Jio Infocomm said that its 5G Fixed Wireless Access (FWA) service, dubbed JioAir-Fiber, will have pan-India coverage within the first half of 2024, according to Indian press reports.

its subscribers have migrated to the 5G network, which has been rolled out across India ahead of schedule.

The operator said that Jio True 5G network currently carries almost one-fourth of Jio's mobility data traffic.

The telco had announced the launch

million premises. However, Jio noted that providing physical last-mile connectivity often ends up taking a lot of time in most parts of the country, leaving millions of potential customers without home broadband, due to the complexities and delays involved in extending fiber to their premises.

Jio is offering FWA plans under two categories – AirFiber, and AirFiber Max, with prices starting from INR 599 (\$7.2) and with speeds of 30 Mbps.

Reliance Jio Infocomm previously said it has created a dedicated 5G network slice for the provision of its 5G fixed wireless access solution. The Indian telco aims to reach 100 million connected premises in India with its FWA offering.

Reliance Jio Infocomm's chairman, Mukesh Ambani, recently said that Jio's 5G network currently reaches all towns and cities across India. He also claimed that the telco achieved the fastest 5G rollout globally.

Reliance Jio Infocomm has been rapidly expanding its 5G network using Standalone (SA) architecture since October 2022.

Reliance Jio secured a mix of wireless spectrum for 5G across the 700 MHz, 3.5 GHz and 26 GHz bands. Jio is the only Indian operator with spectrum in the 700 MHz band. 🌐

The carrier's 5G FWA service is already available in over 4,000 towns and cities across India.

The telco said that early signs of demand and customer engagement with the service have been encouraging.

Jio also noted that about 90 million of

of its 5G FWA service in eight cities across the country in September 2023. The service was initially launched in the cities of Ahmedabad, Bengaluru, Chennai, Delhi, Hyderabad, Kolkata, Mumbai and Pune.

Jio previously said that its optical fiber infrastructure currently spans over 1.5 million kilometers across India, putting the telco in close proximity to over 200



Airtel Plans Fixed Wireless on SA for Factories

Bharti Airtel will launch fixed wireless access services for factories on the 5G stand-alone architecture (SA), which will be different from the non-stand-alone architecture that it currently uses to offer 5G services to consumers.

FWA is a technology that doesn't need fibre or copper to provide high-speed internet within consumer or enterprise premises, and was recently launched by Airtel and Jio.

"The launch of our fixed wireless access network will be on SA. In some factories, in plants, we may actually deploy SA. This is in the short term, but in the more medium term, as more and more traffic shifts from 4G networks to 5G networks, we will take our existing spectrum bands, refarm to move to an all SA network. We're already in the midst of a trial," Bharti Airtel's managing director Gopal Vittal said.

He added that trials for SA were being done in a north Indian city with 30 sites. Currently, Reliance Jio is the only other carrier to offer 5G services on SA architecture using the 700 Mhz band. Experts noted that Airtel would not need to use the sub-Ghz spectrum for SA architecture.

SA refers to stand-alone technology which works independent of any underlying layer such as 4G network, while NSA, or non-stand-alone, works in tandem with the 4G layer. Jio uses 5G SA on top of its indigenous end-to-end 5G stack.

Vittal was speaking to analysts on Tuesday, a day after the Sunil Mittal-promoted telecom services provider posted a 55% year-on-year increase in net profit to ₹2,442 crore in the December quarter, on consolidated revenues of ₹37,900 crore.

The average revenue per user, or Arpu, a key metric of profitability, bettered market expectations at ₹208 per month, up 7.7% y-o-y and higher than ₹203 it posted in the quarter ended September 2023, helped by acquisition of high-value customers and improved realizations.

On commercialization of 5G, Vittal said that 5G should not have a different pricing, but noted that free data being offered by existing 4G and 5G plans were the headwinds to 5G monetization. He added that for monetization, 'tariff repair' needs to take place, referring to the need for mobile tariffs in India to rise to provide adequate return on capital employed. "5G has become really about free data today in India, so there is no real monetization on the consumer side. I do not believe, at the same time, that 5G should have differential pricing... monetization is about overall tariff repair, but free data is obviously a headwind on any sort of 5G monetization," he said.

Vittal noted that Airtel has about 65 million 5G users on its network. The total contribution of 5G users to overall smartphones is expected to rise to 25% by March 2025, from present 15%

to 16%. He also said that of the total smartphone shipments, 60% to 80% were 5G-enabled, depending on the price point.

Airtel's Arpu had increased organically, helped by users migrating from feature phone to smartphone, post-paid data monetization, international roaming, and subscribers shifting to higher-price plans, despite no tariff hikes. He, however, said that Arpus will move up substantially when 'tariff repair' takes place. "The real improvement will come only if there is tariff repair. It's not a question of if but more of when," he said.

In response to analysts seeking comments on Jio asking for closure of 2G networks in India, Vittal said that 2G contribution to Airtel's business was about 17%, and in single digits in markets like Gujarat, Maharashtra, Kerala, Mumbai, and Delhi. "My sense is that in the next few years, you should start seeing substantial, almost disappearing of 2G," he added.

Vittal said that more sites will be added in five circles—Maharashtra, Gujarat, MP Chhattisgarh, Kerala and Bengal—where it lags the market leader. The executive also noted that two platforms developed internally by Airtel—Airtel Work and omnichannel consumer service – will be replicated in a few countries in Africa where Airtel has its own operations. 🌐

AT&T Expands its FWA Service

AT&T has substantially expanded the eligible service areas for its A&T Internet Air Fixed Wireless Access (FWA) service, and now serves parts of 59 markets, up from 35 at the end of the year.

The company announced an additional 26 Internet Air markets this week. Those markets include:

- In California: San Diego and Santa Barbara-Santa Maria-San Luis Obispo.
- In Texas: Austin, San Antonio, Corpus Christi, Laredo, Sherman, Victoria, Beaumont-Port Arthur and Harlingen-Weslaco-Brownsville-McAllen.
- In Florida: Jacksonville, Tallahassee, Panama City and Ft. Myers-Naples and West Palm Beach-Fort Pierce.
- In North Carolina: Charlotte and Raleigh-Durham.
- In Oklahoma: Oklahoma City, Tulsa

and Ada.

- In New York: Buffalo and Syracuse.
- Baltimore, MD
- Indianapolis, IN
- Little Rock-Pine Bluff, AR
- Thomasville, GA

AT&T CEO John Stankey has emphasized that while AT&T intends to use FWA as a tool in specific circumstances, that the carrier's focus remains on 5G and fiber. Speaking about AT&T Internet Air on the company's most recent quarterly call, he said: "I don't expect that we are going to be pushing the product in the same way that some others in the market are pushing it today. We've made a conscious choice as a company that we want to dedicate capital to investing in fiber, which we believe is a more sustainable, long-term means to deal with stationary and fixed broadband needs.

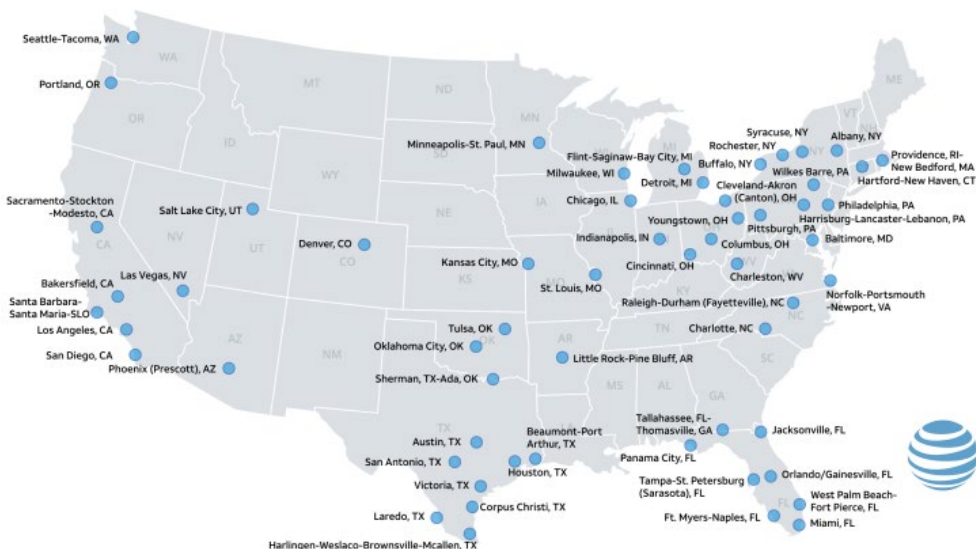
"It doesn't mean that we don't think that fixed wireless serves some segment of the market. It does," he continued. "It serves certain types of circumstances in the consumer base. It serves certain types of circumstances in the business base. And we will take advantage of those certain circumstances."

However, Stankey also said that AT&T would "lean into" serving such small businesses with FWA this year, and also to some extent in the consumer segment, depending on its spectrum profile in a given geographic market. He also pointed out that AT&T is using Internet Air "very, very actively" as it turns down its legacy copper network footprint, to offer an alternative service so that customers remain with the company.

"We've already rolled out AT&T Internet Air to existing copper-based customers with great success," wrote Erin Scarborough, AT&T's president of broadband and connectivity initiatives, in an updated blog post on Internet Air. "As we begin to scale, we are hyper-focused on selecting locations with enough wireless coverage and capacity to deliver not only a great in-home experience, but also maintain a top-notch wireless service for our existing mobile users."

AT&T reported having 93,000 FWA customers as of the end of 2023. 

AT&T internet air



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Huawei's Innovative FWA² Solution Powers Smart Home Living

At the Global Mobile Broadband Forum (MBBF) 2023, Huawei, a global technology company, and du, a part of Emirates Integrated Telecommunications Company (EITC), introduced the world's first 5G Advanced (5G-A) demonstration villa.

This smart home of the future operates on a 10Gbps network, showcasing their joint innovation in 5G technology.

Earlier this year, Huawei and du entered into a Memorandum of Understanding (MOU) focused on 5.5G and 5G-A technological advancements, application exploration, and ecosystem development.

As consumer expectations for superior experiences grow, the demand for network capabilities and content evolution rises, prompting carriers to enhance their home networks to a remarkable 10Gbps.

Fahad Al Hassawi, CEO of du, said, "From the outset of the 5G era, Fixed Wireless Access (FWA) has been a transformative catalyst, enabling us to offer cutting-edge solutions to our valued customers. As pioneers, we at du are honored to lead the way with such innovative solutions.

"Our enduring partnership with Huawei has consistently yielded fruitful results, and with the introduction of FWA², we aim to redefine the bound-

'home of the future'. The showcase offers a firsthand look at the infinite possibilities that 5G-Advanced technology will bring to future homes, along with the superior network experience that 5G-A will offer mobile users. This achievement is only the beginning.

"Moving forward, Huawei will continue to support du in its efforts to build the best 5G networks, explore the commercial use of 5G-Advanced networks, and champion du's leadership in this transformative era."

The 5G-A villa demonstrates the boundless potential that deterministic experience technology holds for future households.



The unveiling of the 5G-A Villa represents an achievement for this collaborative partnership.

5G-A villa

The 5G-A villa shows the seamless integration of cutting-edge technologies, providing a unique smart home experience enriched with features such as naked-eye 3D and extended reality (XR).

aries of user experience by providing our subscribers with unparalleled indoor internet connectivity."

Li Peng, Huawei's Corporate Senior Vice President and President of the company's Carrier BG, echoed this sentiment.

He said, "Today, Huawei is thrilled to unveil the 5G-A powered villa at the

From a commercial perspective, May Li, solution and marketing VP, Carrier Business Group at Huawei Middle East & Central Asia, tells Gulf Business that 5G-A will advance several industry-user cases, from autonomous drive cars to flying taxis among other artificial intelligence-enabled systems.

"On the commercial case, of course, there's a 5G tolling passage spectrum from low, medium to high band. The high band is going to the area of the mixer a millimetre away, so anything under 60 gigahertz. So all these things together will support the demand of the capacity recovery and the latency required for the 5G advanced user cases," says Li.

"The original 5G was behind the mobile phone but 5G-A allow users to connect massive machines and it is enabling the Internet-of-Things," adds Li.

Following the unveiling of the 5G-A, Li said the advanced technology will eventually be deployed commercially across the UAE, "but the biggest thing



is how we are going to design market strategies that will thrive continuously and meet the customers' requirements.

However, Li said it is the responsibility of the service provider, "but our aim is to promote more commercial use

cases to help companies capture the market opportunity."

Utilising Huawei's innovative FWA² solution, it illustrates how Fixed Wireless Access (FWA) has evolved into an operator's powerful tool for rapid user expansion in the 5G era.

As the transition to 5G-A/5.5G takes place, the FWA² solution, comprising FWA Pro, FWA Lite, and FWA Biz, promises unparalleled services for discerning customers. FWA Pro, engineered to support a phenomenal rate of 10Gbps, reimagines smart home living and unlocks vast business opportunities.

The 14th Global Mobile Broadband Forum, themed "Bring 5.5G into Reality," is taking place in Dubai, UAE, from October 10 to 11.

Hosted by Huawei and supported by industry partners GSMA, GTI, and the SAMENA Telecommunications Council, the forum explores the achievements of 5G, the maturity of the ecosystem, the swift commercialization of 5G-A/5.5G, and how mobile broadband technology is shaping the future, transforming people's lives and industries. 

Orange Becomes First in Slovakia to Offer Cyber-Secure 5G FWA for Businesses

Orange Slovakia has become the first operator in the country to provide 5G Internet connectivity for companies. After a successful test run that started on December 14, 2023, the service is now available for business customers.

This service provides businesses with a stable and fast connection even in areas where it is not possible to connect to an optical network. It can be used both as a primary and as a backup connection.

The service can be set up practically anywhere, since Orange uses not only a modern 5G network, but also, for example, an optical connection or a 60 GHz microwave connection.

Orange's Internet for Business via 5G also offers companies an additional

service for protection against DDoS attacks and other cyber threats. Combined with the Online Protection add-on service, the service also provides comprehensive protection against spam, viruses and phishing scams. 



New Opportunities of 5G FWA in Africa, Addressing the Gap in Last-mile Fixed Broadband Connectivity

At the Africacom 5G Summit, GSMA Intelligence cooperate with ICASA, MTN South Africa, and Huawei, released the white paper titled "5G FWA in Africa, Emerging Trends and Opportunities," which comprehensively analyzes the current development trends and future opportunities of 5G FWA services in Africa.

commercial services, among which 14 operators have launched 5G FWA services. Nearly 10 other African countries have announced plans to launch 5G for commercial use. 5G FWA is 10 times faster than 4G FWA. 5G FWA is not only an upgrade of 4G FWA, but also a pragmatic strategy for mobile operators to expand mobile data services and provide enhanced

3.5GHz, 2.3GHz and 2.6GHz spectrums are critical for operators in South Africa to develop 5G FWA. In addition, 2.3GHz and 2.6GHz spectrums have multiple commercial values because these two spectrums can support both 4G and 5G, allowing operators to expand 4G networks while also being used to develop 5G. Multiple benefits from one investment. In terms of CPE prices, GSA data shows that 4G/5G CPE shipments double every year. However, CPE costs in sub-Saharan Africa are far too high, which has become a bottleneck for 5G monetization and FWA market development. The GSMA Intelligence whitepaper recommends that the government reduce taxes on terminal to promote the development of the digital economy. Many operators in Africa have lowered the threshold for market development through CPE trade-in and credit.

In the white paper, GSMA said that connectivity is critical to building Africa's digital economy. 5G FWA is well-placed to play its role in addressing the gap in last-mile fixed broadband connectivity by delivering enhanced connectivity services to households and enterprises. To take advantage of these opportunities, stakeholders like governments and policymakers, operators, service providers, ecosystem partners, need to take steps to facilitate the deployment of 5G FWA networks and stimulate adoption among households and enterprises.

White paper accessible here: <https://data.gsmainelligence.com/research/research/research-2023/5g-fwa-in-africa-emerging-trends-and-opportunities>. 🔗



According to Kenechi Okeleke, Director, GSMA Intelligence, 5G FWA has been widely recognized as an alternative to fixed broadband, with 116 operators worldwide having already launched 5G-based commercial FWA services in 57 markets. The maturity of 5G FWA technologies and commerce is bringing new opportunities for digitalization in Africa and helping Africa address the gap in last-mile fixed broadband connectivity.

At present, 30 operators in 17 markets in Africa have launched 5G

connectivity services for home and enterprise network devices, opening up new incremental space in the home and ToB markets. Leaders in 5G FWA get the opportunity to compete in a market that remains mostly wide open.

According to the white paper, the development of FWA services depends on various factors, including spectrum availability, 4G FWA availability, CPE price, spectrum slicing technology, and 5G network coverage. In terms of spectrum, the



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