A quantum leap in service delivery

The Wireless Access Providers Association (WAPA) recently called for South Africa's government to free up vast tracts of radio frequency spectrum in the 6GHz band, claiming that doing so could drive a wave of economic growth. But this isn't a plea for spectrum for cellular. This is about Wi-Fi, as Paul Comer of the WAPA Executive Management Committee, explained.

Photo: The Wireless Access Providers Association (WAPA)

Comer: "WAPA is tirelessly lobbying for more progressive and efficient spectrum management"

Photo: Adobe Stock

Wi-Fi6 and 6E could compete with LTE and 5G.

THE WIRELESS ACCESS Providers Association (WAPA), established in 2006, is a South African non-profit trade association acting as a collective voice for the wireless industry. WAPA's primary objective is to promote the wireless industry's growth by facilitating self-regulation, promoting best practices, and educating members and the market about new wireless technologies and business models. In addition, WAPA offers its members regulatory advice, technical training, a code of conduct, a forum for knowledge sharing and business-enablement opportunities.

Paul Comer of the WAPA executive management committee added: "WAPA currently has around 250 members, of which 200 are ICASA [South African regulator]-licensed ISPs, so this forms the industry side of WAPA's core business. From a consumer prospective we offer a 'Find a provider' service via our website where you can request internet services and the request is distributed to our members who can then assist with their offerings. We also deal with any complaint or dispute from consumers against a WAPA member ISP's service and strive for resolution in this regard."

WAPA is also positioned to be an interface between ICASA, network operators, service providers, and consumers. WAPA regularly makes submissions and presentations to the South African government on wireless industry regulations.

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In particular, said Comer, "WAPA is tirelessly lobbying for more progressive and efficient spectrum management in South Africa and is focusing on the possibilities of spectrum for interference-free access."

A recent focus has been on spectrum for Wi-Fi. So what role does Wi-Fi in particular play in South Africa today?

Comer said, "Wi-Fi has become the dominant last-hop connectivity for access to the internet in South Africa and globally. Although its application varies between industry and consumer it remains dominant in both. The increase in personal devices, industrial, IOT, smart appliances, security and CCTV has pushed the demand and given it a key role in how we connect. Nearly all fixed line broadband connectivity, whether fibre, satellite, fixed wireless, DSL or LTE, will ultimately end up linking via a Wi-Fi link to the target devices.

And it's evolving. In recent years it's gone from the IEEE 802.11b/g/n standards to the new 802.11ac/ax/be, now renamed as Wi-Fi 5, 6 and 7 respectively. "It represents a quantum leap in service delivery driven much by advancement in chipset technology and will continue to do so."

He explained, "Wi-Fi6 is simply just an advancement of Wi-Fi5 with regard to speed and its ability to deal better with multiple users, Wi-Fi6E, however, is an enhancement of Wi-Fi6 in regards to spectrum in the 5.925MHz to 7.125MHz band and has been split into upper and lower bands: 5.925-6.425MHz and 6.425-7.125MHz."

Global adoption of these bands has been mainly in the lower band but the US, Canada, Brazil, Saudi Arabia and South Korea have all adopted the full band. The final global outcome for the 6E upper band will probably be decided at the ITU World Radiocommunication Conference 2023 (WRC-23) in Dubai in December.

Cromer said, "I question the fact that if upper band 6E is declared IMT spectrum at WRC23 that 5G will battle to co-exist with incumbent users already within the band and therefore believe that it should be opened for unlicensed Wi-Fi and not IMT. The advantages are clear of 6/6E over Wi-Fi 5 as it is not just an advancement but a whole new swathe of spectrum too."

This of course leads us to Wi-Fi 7 which is not only a step up from 6E but has the ability to aggregate all Wi-Fi bands – 2.4, 5.8 and 6GHz – together coupled with massive MIMO to deliver phenomenal speeds and 320MHz channels. "10Gbps download speeds have already been achieved and we envisage that peak speeds in the future could be over 30Gbps as the technology advances."

The countries that release the 6E band in standard power for fixed wireless broadband could certainly compete with LTE and 5G but most are still only using it in low power for local Wi-Fi as the technology and regulatory landscape evolves. "It is of course already complementing all other technologies such as fibre and fixed wireless, as all devices that connect to these mediums are using Wi-Fi and requiring greater speeds and more connected devices – to which Wi-Fi 6 and 7 are ideally suited."

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As for how Wi-Fi 6E could benefit South Africa if the regulatory environment supported it, Comer's appearance in a podcast on the subject went into some depth on the topic, but the short version is that for South Africa, the cumulative economic value between 2021 and 2030 associated with enabling license-exempt access to the 1200MHz in the 6GHz band amounts to up to US$34.81bn in GDP contribution, US$13.32bn in producer surplus to South African enterprises, and US$9.63bn in consumer surplus to the South African population. Comer summed up, "The total contribution amounts to up to US$57.76bn to the South African economy over the next ten years."

He also quoted Martha Suarez, president of the Dynamic Spectrum Alliance (DSA) an organisation promoting unlicensed access to the 6 GHz band: "License-exempt use of the entire 6 GHz band for Wi-Fi will be critical to address current pressing bandwidth demands for end users, new applications and industries. It will also play a crucial role in bridging the digital divide in these countries, enabling improved access to remote education, work and commerce. Wi-Fi needs greater spectrum access in the 6 GHz band to effectively support the modern digital ecosystem."

So is he optimistic that ICASA is moving in the right direction?

He said, "With regard to ICASA they have already drafted an amendment to the radio frequency spectrum regulations in regard to opening the lower 6GHz band. WAPA will be responding with a submission to them and will support all work in the future with regard to opening the bands further for the benefit of all."

The podcast WAPA's Paul Colmer on why Icasa should open up 6GHz for Wi-Fi can be found on the techcentral.co.za website. The Draft Amendment Radio Frequency Spectrum Regulations, 2022 can be found on the icasa.org.za website. ✆

For more information on WAPA, go to wapa.org.za