



## Mobile & Wireless Roundup #95 (see original on [LinkedIn!](#))

By Zahid Ghadialy

Welcome to the 95th edition of this newsletter. As I have been working in the mobile industry for a very long time, I believed I had a good understanding of bytes, megabytes and gigabytes. However when I was away recently, I bought a 20GB data package that I thought would last me for some 18-19 days. In the end I found out that I didn't even use couple of GB.

I also found out that it was easier and cheaper to get a data only eSIM that may be expensive than the local SIM in the visiting country but far cheaper than the roaming packages offered by operators in UK. Also the fact that these eSIMs were offering roaming in the visiting country means that you are generally not affected by the restrictions they may have. For example, I was still able to use WhatsApp calling in a country that restricts that feature from local ISP/Mobile data. This is because of home routing in case of roaming SIMs.

An interesting discussion that I was [following](#) this week was one on how much data rate is sufficient per person? Does 10 Mbps sound reasonable or does it sound too low? Combine it with the other things (cameras, set top box, etc.) and maybe 100 Mbps is more than sufficient per household?

Even though with 5G we are not just focusing on speeds, from a consumer point of view, speed is what really differentiates 5G from 4G and maybe 6G from 5G in future. We can always argue, like we did in 5G, that 5G/6G is not really consumer of B2C focussed but is instead designed for enterprises and industries (B2B).


While this has an element of truth in it, the reason for 5G NSA was to alleviate the congestion some operators were battling with in busy and dense areas. The industry focussed features are yet to be fully rolled out. Hopefully 6G won't have an interim NSA kind of solution and would be a fully baked technology, with some compelling use cases.

For those of you who don't know me, I am a technologist with over 25 years' experience in mobile wireless technology, currently working as an independent advisor, analyst, consultant and a trainer. This newsletter is a summary of my posts and other news that caught my attention since the last newsletter.



**New White Paper**  
**Private** wireless networks for **Industry, Logistics and Process Automation**; alternative network options for **Enterprises and Criteria for Deployment**

**Download Now** ↓



*This newsletter is kindly sponsored by Firecell - the Private 5G experts*

### 🕒 6G

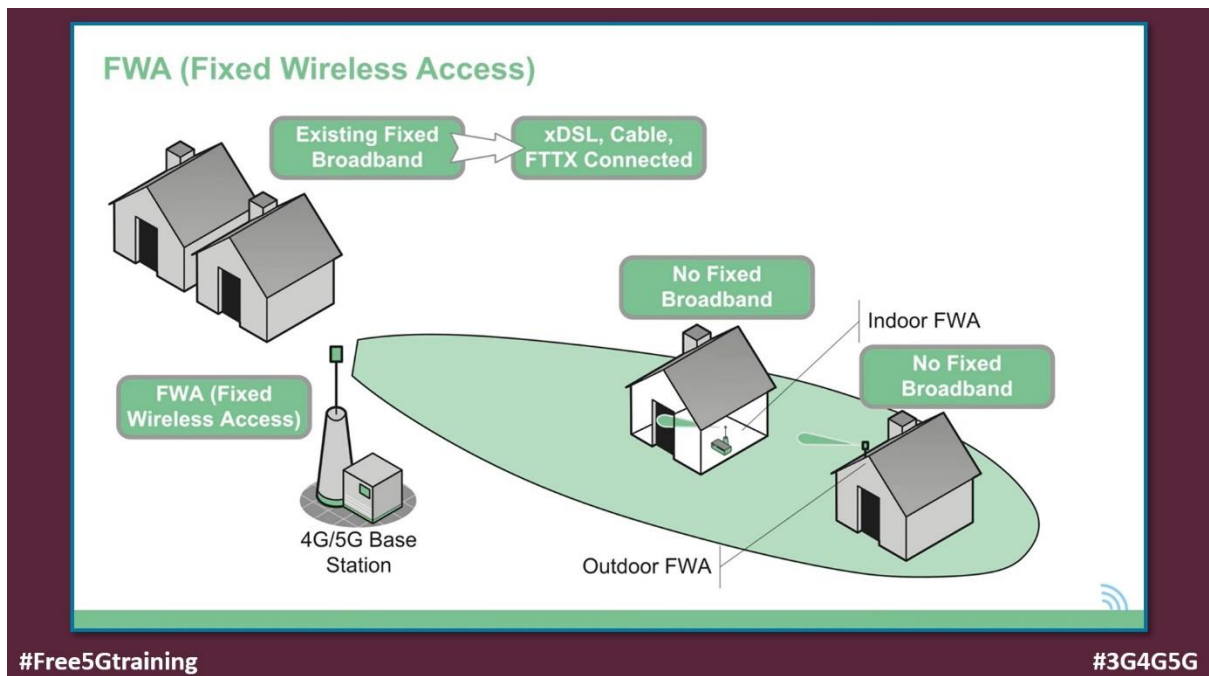
- Free 6G Training: Presentations from EuCNC & 6G Summit 2024 ([link](#))

### 🕒 5G

- IPv6 adoption for 5G/6G ([link](#))
- Wireless Future: Rethinking Wireless Repeaters ([link](#))

### 🕒 4G/LTE

- How is Fixed Wireless Access (FWA) deployed? ([link](#))



### 🕒 Open & Disaggregated Networks (including Open RAN, vRAN, etc.)

- Open RAN MoU Group Rel 4 requirements released and contributed to TIP OpenRAN PG ([link](#))

- Jinsung (Alex) Choi on LinkedIn - Generative AI in Open RAN: Pioneering Intelligent Networks ([link](#))
- William Webb on LinkedIn: Where next for O-RAN ([link](#)) – good discussion.
- Jinsung (Alex) Choi on LinkedIn - Battle of the Titans: AI Chips Transforming Open vRAN ([link](#))

### 🕒 Spectrum

- Rudolf van der Berg on LinkedIn: “The Dutch auction of the 3.5GHz spectrum was concluded within a week. All 3 operators got 100MHz for a total of €174.4M or roughly €58M each...” ([link](#))
- David Wheatley on X: Vodafone and O2 launch 900 MHz spectrum swap ([link](#))

### 🕒 Private Networks

- Private Networks Technology Blog: Lessons Learned from Private 5G Network Deployment in Paris Airport ([link](#))
- Sebastian Barros on LinkedIn: Deutsche Telekom gets 5G mmWave in Private networks 🚀 ([link](#))

### 🕒 Telecoms Infrastructure, Small Cells, Antennas & others

- Paul Rhodes on LinkedIn - Monday Musings: Take a Step Back to see the Growth! ([link](#))
- Telecoms Infrastructure Blog: Mobile Infrastructure from Hajj 2024 (1445 H) ([link](#))



- Paul Rhodes on LinkedIn - Thursday School: Planning for Growth! ([link](#))
- TMN: Freshwave says four way operator sharing on same indoor small cells a world first ([link](#))

### 🕒 Virtualization, Cloud & Edge

- Paul Rhodes on LinkedIn - Saturday School: Open and Virtualised is not Single-Vendor! ([link](#))

## 🕒 Security & Privacy

- ETSI White Paper No. 62: A Vision for Communications Security ([link](#))
- Scott Poretzky on LinkedIn: "O-RAN ALLIANCE Work Group 11 (WG11) for Security considers a #zerotrustarchitecture across all of its work so that #oran network functions, architectural elements, interfaces, and data are protected from external and internal threats..." ([link](#))
- Josué Martins on LinkedIn: How Mobile Operators Lost Thousands Of Dollars Because Of An SMS Malware ([link](#))
- The 3G4G Blog: Attack Surfaces for Different Generations of Mobile Technologies ([link](#))

**3G - UMTS - Attack Vectors**

- Rogue NodeB (BTS) can still happen
- Downgrade Attacks
- Remote IMSI Attack
  - Integrity keys between UE and RNC are generated in the Core Network and tx unencrypted to RNC, and sometimes between RNCs
- HLR overloading using SON
  - rrcConnectionRequest messages
- Cisco ASR 5000 Series GGSN
  - Not properly handling TCP packets

**LTE - Attack Vectors**

- LTEinspector
  - Authentication Relay Attacks
  - Paging Channel Hijacking Attack
  - Panic Attack
- Actual Implementation Errors for Identifiers allowing location tracking
  - Temporary Identifier not being temporary
- Cisco PGW 2200 Remote DOS

**5G Attack Vectors**

- RA and CN don't require authentication.
- Location sniffing attack
  - Place sniffing tool near target UE
    - Monitor for plaintext AuthReq msg
    - The message contains RAND and AUTN
  - Build an AuthReq message using that RAND and AUTN.
  - Broadcast fake message.
    - MAC check fails if not target UE
    - Victim UE passes MAC, fails SED
    - If all messages fail MAC verification, the UE is not nearby. If one SED failure, it is nearby.

**5G Attack Vectors**

- Attach Req Injection
- Battery Draining
  - NB-IOT and LTE-M devices in particular can be drained like 5x faster than expected
- Sending malformed packets can trigger crashes in 5g cores. Yes, still.
- HTTP/2 Attacks
  - Stream Reuse
  - Closed Stream
- End-to-end China Unicom

## 🕒 AI, ML & Automation

- AI and Everything Else - Benedict Evans - SuperAI 2024 ([video](#))
- TMN: Vodafone to boost TOBi with Gen AI ([link](#))

## 🕒 Satellites, HAPS, Drones, UAVs & Space

- AST SpaceMobile CEO Publishes Letter to Partners, Shareholders, and Future Space-Based Cellular Broadband Network Users ([link](#))
- Via Satellite: SpaceX Now Has More Than 100 Direct-to-Cell Satellites in Orbit ([link](#))

## 🕒 Sustainability

- Far EasTone advances Net Zero goals in partnership with Ericsson ([link](#)) – "...the collaboration has recycled over 500 metric tons of electronics to date from legacy radios."

## 🕒 Other News and Technology Stuff

- Howard Watson on LinkedIn: "So do we think William is right. He argues that we in Telecoms don't need any further capacity developments. He believes 10Mbit/s is sufficient for any human. I have spent 40 years chasing exponential demand. Is this really ending? ..." ([link](#))
- VMO2 - Leaving the vanity metrics behind and focusing on what matters: customer experience ([link](#)) – William Webb's take on this on LinkedIn and the discussion [here](#).

- 110 new languages are coming to Google Translate ([link](#))
- Marc Andreessen on Building Netscape & the Birth of the Browser ([video](#))

🕒 **Picture of the week:** [Ecotelligent](#) produces wooden mobile masts. Their [Ecopol](#) towers have been deployed in many different places, for the last 12 years.



You can read more about them on the Telecoms Infrastructure blog [here](#). There are some nice pictures [here](#) and [here](#).

Happy to hear your thoughts. Feel free let me know what worked, what didn't, how I can make this better, etc. Get in touch over LinkedIn!

PDF version of this and previous newsletters are available [here](#).