5G in a Wi-Fi World

Chuck Lukaszewski
Vice President, Hewlett-Packard Enterprise
It’s a Wi-Fi World: 4B devices/year by 2021

Wi-Fi Chipset Shipments
ABI Research, January 2017

3 billion shipments per year
8 billion devices in use
5G Success Depends on Wi-Fi & WiGig

- Wi-Fi carries most public & private Internet traffic worldwide
  - Between 50-80% depending on country.

- Many IEEE technologies are core elements of 5G
  - IEEE and 3GPP are working together on 5G, coordinating at the highest level

- 5G radio aggregation technologies will natively incorporate Wi-Fi
  - 802.11 is a peer member of the 5G “RAT Family” or 5RGF

- 5G radio edge requires indoor small cells that will be Wi-Fi based
  - Like “Gigabite LTE,” 5G achieves high data rates from unlicensed bonding
  - Indoor small cells are mandatory to achieve this vision

- We need significantly more unlicensed spectrum to serve expected demand from both IMT and non-IMT
  - Dynamic Spectrum Access technologies will be critical
Africa is Leading the World in Data Traffic Growth

- In 2016, global mobile data traffic grew an estimated 63% Y/Y
- In 2016, Africa and the Middle East grew over 96% Y/Y
- Africa and Middle East will increase 12X by 2021
- Between 50-70% will be carried on Wi-Fi (depending on country)

South Africa

• Wi-Fi IP traffic grew 36% in 2015.
• **Wi-Fi IP traffic will grow 3X** from 2015 to 2020 (22% CAGR)
• Wi-Fi was **62.7% of total Internet traffic** in 2015 ➞ 61.5% in 2020.
• Wi-Fi Internet traffic will be **3.4X more than Wired** in 2020.

Rest of Africa & Middle East (excluding KSA)

• Wi-Fi IP traffic grew 41% in 2015.
• **Wi-Fi IP traffic will grow 6X** from 2015 to 2020 (43% CAGR)
• Wi-Fi was **56.9% of total Internet traffic** in 2015 ➞ 49.1% in 2020.
• Wi-Fi Internet traffic will be **9.0X more than Wired** in 2020.

Wi-Fi is a Peer Radio Access Technology (RAT) in 5G

Source: IEEE Communications Society Magazine, November 2016
Wi-Fi Will Be Dominant Indoor Aggregation Technology

- Enterprise small cells still selling just 500K units/year
- As of March 2016, only 900K total deployed worldwide
- Small Cell Forum forecasts show Wi-Fi lead growing from 14M in 2016 to 20M in 2020.
Significant C-Band Spectrum Needed to Meet Demand

**Mid-Band Spectrum Shortfall**

- **Wi-Fi** faces a shortfall of **600 MHz – 1.7 GHz** of mid-band spectrum to meet consensus demand forecasts (depending on actual growth rates, usage scenario, country, DFS adoption and other factors).

*Source: Quotient Associates Spectrum Needs Study, February, 2017*
Thank you!