



The bridge to possible

The Need for 6GHz

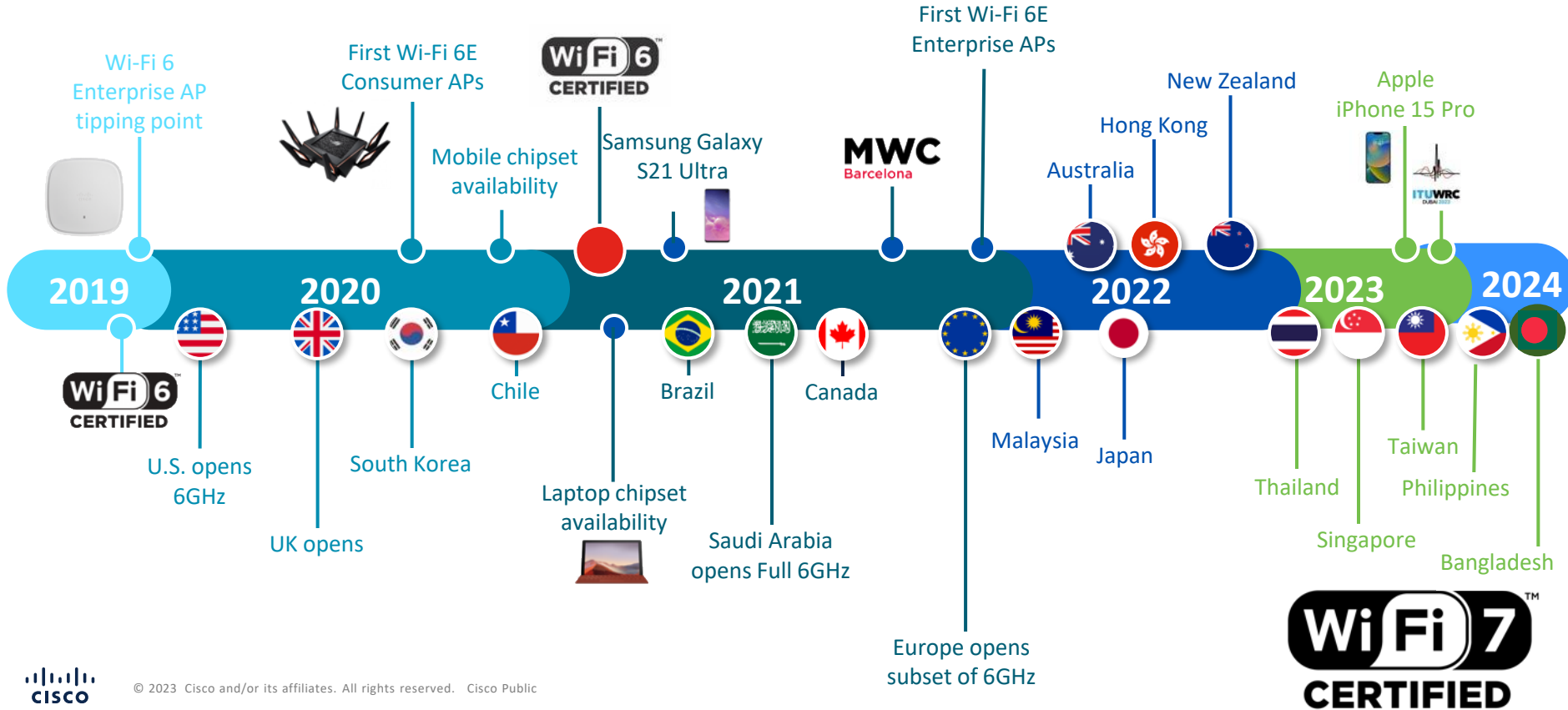
Connecting Our Digital Future

Rishant Dahiya

Technical Solutions Architect- Wireless

Cisco India & SAARC

The Road to 6GHz



Wi-Fi has succeeded **despite** little bandwidth

2.4 GHz Channels

ISM Band

2407 + 5 X Ch. Number

Channel

1611

Center Freq

2.4122.4372.462

80 MHz

Wavelength 12.5cm - 4.9" to 12.0cm - 4.7"

5 GHz Channels

Frequency

5000 + 5 X Ch. Number

500 MHz

Wavelength 5.8cm - 2.3" to 5.1cm - 2.0"

Radio Band

Center Freq

20 MHz

40 MHz

80 MHz

160 MHz

DFS Channels

DFS Channels

DFS Channels

DFS Channels

U-NII-1

U-NII-2a

U-NII-2c (Extended)

U-NII-3

5.1805.2005.2205.240

5.2605.2805.3005.320

5.5005.5205.5405.5605.5805.6005.6205.6405.6605.6805.7005.720

5.7455.7655.7855.8055.825

36404448

52566064

100104108112116120124128132136140144

149153157161165

3846

5462

102110118126134142

151159

42

58

106122138

155

50

114

165 was IEEE, now U-NII-3

“6 GHz... necessary to ensure that sufficient spectrum resources are made available... to support a long-term future for new generations of... RLAN technologies” — European Radio Spectrum Committee

6GHz will provide Wi-Fi room to grow

“...the 6 GHz band [is] an opportunity to begin considering... spectrum sharing techniques in order to provide access for new services in the band while maintaining access and protection for existing services.” — ISED

2.4 GHz Channels				80 MHz
ISM Band				2407 + 5 X Ch. Number
Channel				Wavelength 12.5cm - 4.9" to 12.0cm - 4.7"
Center Freq				2.412 2.437 2.462

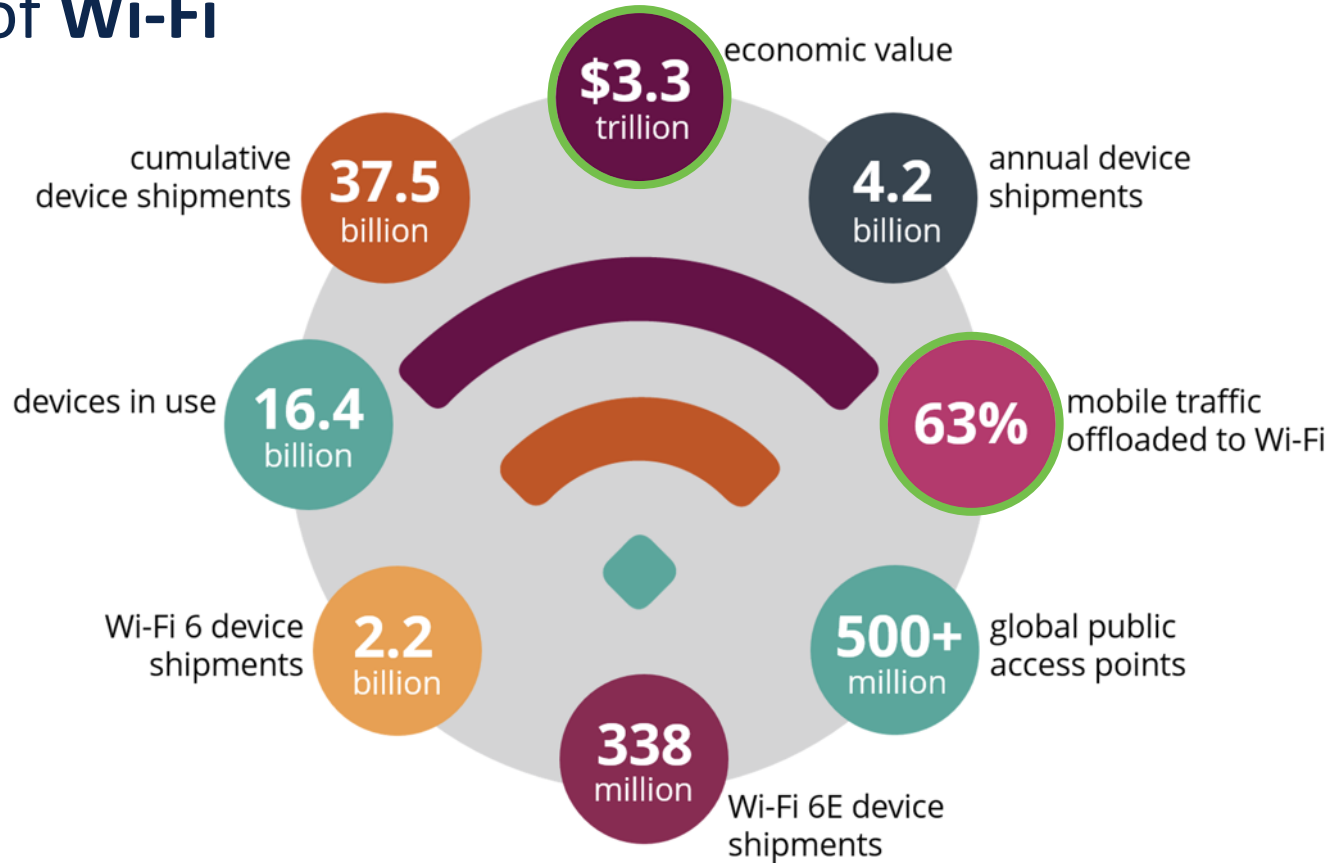
5 GHz Channels				500 MHz
Frequency				5000 + 5 X Ch. Number
Wavelength				5.8cm - 2.3" to 5.1cm - 2.0"

DFS Channels												DFS Channels											
U-NII-1						U-NII-2a						TDDWR U-NII-2c (Extended)						U-NII-3					
5.180 5.200 5.220 5.240						5.260 5.280 5.300 5.320						5.500 5.520 5.540 5.560 5.580 5.600 5.620 5.640						5.740 5.760 5.780 5.800 5.820					
36 40 44 48						52 56 60 64						100 104 108 112 116 120 124 128						149 153 157 161 165					
38 42 46						54 58 62						102 106 110 114 118 122						151 155					
42						58						106						155					
50						114						122						155					

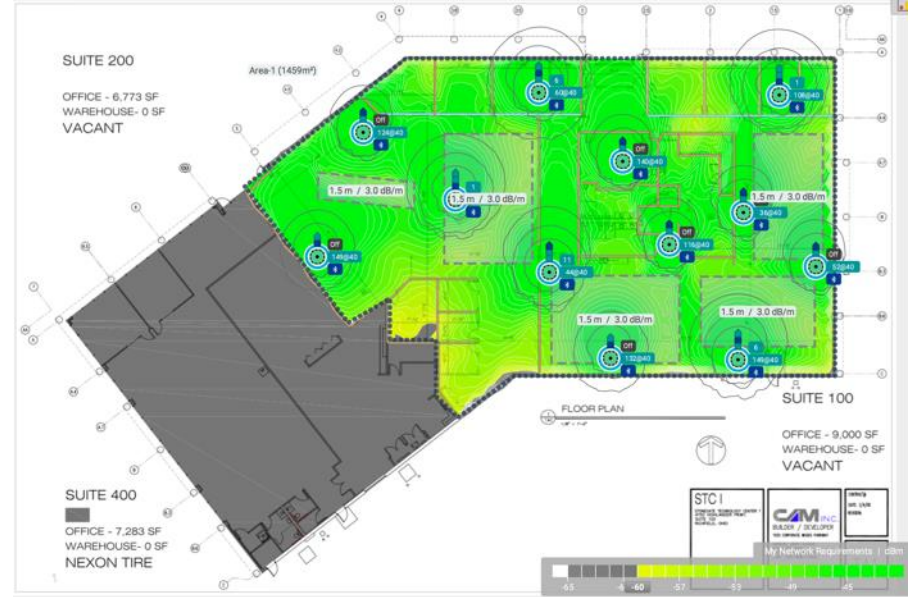
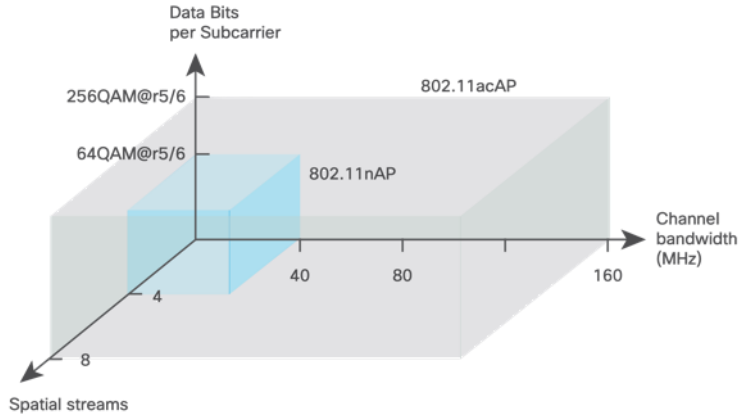
6 GHz Channels				1,200 MHz
FCC - USA				5950 + 5 X Ch. Number
Wavelength				5.1cm - 2.0" to 4.2cm - 1.6"

Low Power Indoor												Standard Power AP											
5dBm/MHz - Net EIRP 18dBm												36dBm with Automated Frequency Coordination (AFC)											
U-NII-5												U-NII-5											
5.955 5.975 5.995 6.015 6.035 6.055 6.075 6.095 6.115 6.135 6.155 6.175												5.955 5.975 5.995 6.015 6.035 6.055 6.075 6.095 6.115 6.135 6.155 6.175											
1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 85 89 93												1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 85 89 93											
3 7 11 15 19 23 27 31 35 39 43 47 51 55 59 63 67 71 75 79 83 87 91												3 7 11 15 19 23 27 31 35 39 43 47 51 55 59 63 67 71 75 79 83 87 91											
7 15 23 31 39 47 55 63 71 79												7 15 23 31 39 47 55 63 71 79											

Value of Wi-Fi

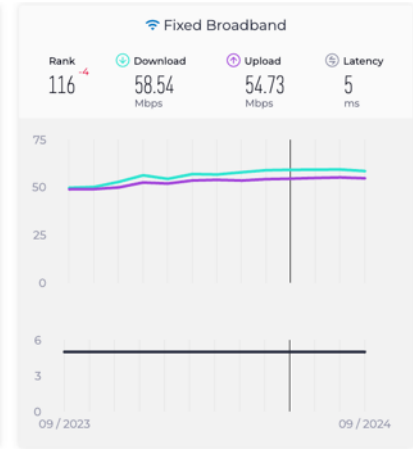
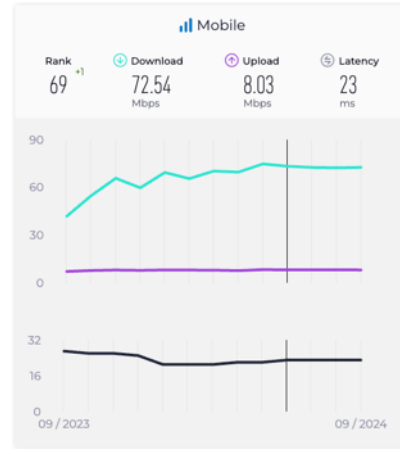
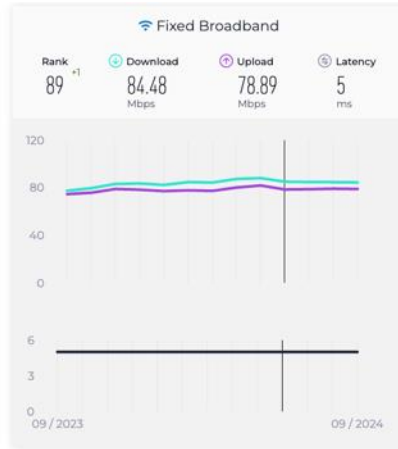
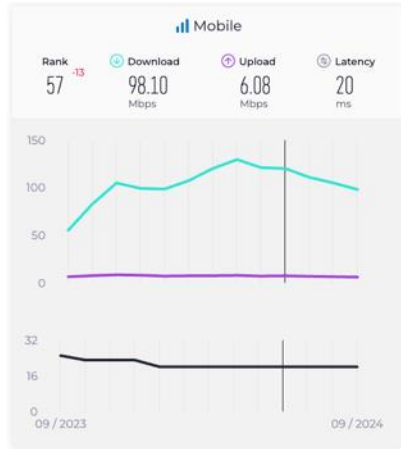


The **Need** for 1200MHz



Area	1K ft ² / 93 m ²		1.2K ft ² / 111 m ²	1.5K ft ² / 130 m ²
BW	80 MHz	40 MHz	40 MHz	40 MHz
Pass/Fail				

A Tale of Two Cities – Delhi & Mumbai



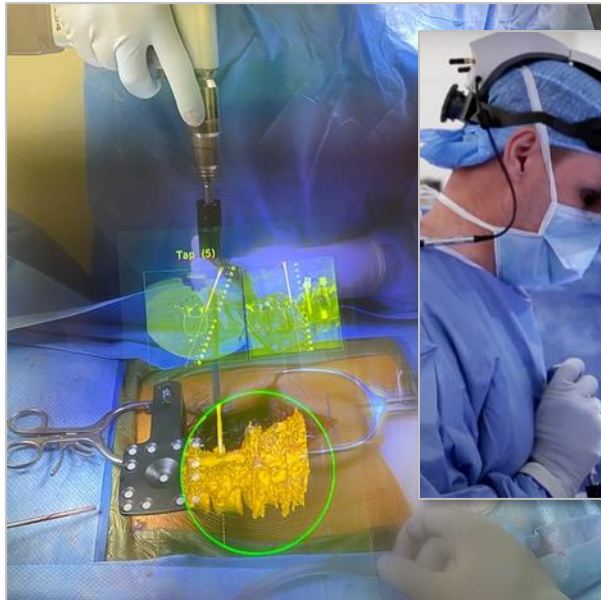
1.8 Gbps



25x







Connecting Our Digital Future



OPENROAMING
WIRELESS BROADBAND ALLIANCE





The bridge to possible