

19 JAN - 8 FEB, 2021 ASIA TELECOM SUMMIT

WELCOME & INTRODUCTION

By Tiago Rodrigues 19th Jan 2021

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ASIA TELECOM SUMMIT

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Asia Telecom Summit

Full Program Agenda

3rd – 4th February – WBA Members Only Working Sessions Start time: 10:00 ET; 07:00 PT; 23::00 Singapore; 15:00 GMT

4th February – WBA Members Only Working Sessions: **Briefing for Asia-based members** Start Time: 08:30 PST – 11:30 EST; 16:30 BST – 17:30 CET

ASIA TELECOM SUMMIT OPEN CONFERENCE: Start time 16:00 Singapore; 08:00 GMT; 03:00 ET; 00:00 PT

Tuesday 19 th January	Wednesday 27 th January	Thursday 28 th January	Tuesday 2 nd February	Monday 8 th February
WBA Executive Plenary	OpenRoaming™: Transforming Public & Guest	Next Generation of Wi-Fi	Wi-Fi & 5G: The Path To Convergence 16:00PM Singapore	Next Gen Wi-Fi & IoT
	Wi-Fi		Wi-Fi & 5G: The Path To Convergence 12:30 AM Singapore	



WBA Executive Plenary



Tiago Rodrigues

CEO Wireless Broadband Alliance



Eric McLaughlin

VP Client Computing Group GM Wireless Solutions Group Intel Corporation



Dr. Derek Peterson

CTO Boingo



Mark Grayson

Distinguished Engineer And WBA OpenRoaming Standards Group Chair Cisco



Nimisha Taylor

Competition and Regulation Specialist



	TODAY'S AGENDA
08:00am	Introduction & Welcome
(GMT)	Tiago Rodrigues, CEO, Wireless Broadband Alliance
08:05am	How will Wi-Fi Connect the World in 2021
(GMT)	Tiago Rodrigues, CEO, Wireless Broadband Alliance
08:25am	Wi-Fi 6E: Accelerating in 2021
(GMT)	Eric McLaughlin, VP Client Computing Group, GM Wireless Solutions Group, Intel Corporation
08:45am	Bridging the Gap in the 5G Era: Wi-Fi and Cellular
(GMT)	Dr. Derek Peterson, CTO, Boingo Wireless
09:05am	OpenRoaming™: Raising the bar for Wi-Fi privacy
(GMT)	Mark Grayson, Distinguished Engineer & WBA OpenRoaming Standards Group Chair, Cisco.
09:25am	Competition and Regulation for Wi-Fi in 2021
(GMT)	Nimisha Taylor, Competition & Regulation Specialist
09:45am	Close
(GMT)	Tiago Rodrigues, CEO, WBA



Introduction & Welcome

TIAGO RODRIGUES

CEO, WIRELESS BROADBAND ALLIANCE



WELCOME TO ALL NEW MEMBERS 2020-2021







- 55% more confident about investing in Wi-Fi.
- 65% already implemented Passpoint-OpenRoaming or planning to do it in 2021.
- 67% said convergence (Wi-Fi & Cellular) is very important for future strategy.
- Most deployed technology will be Wi-Fi 6/6E, with +65% already implemented, or planning to do it in 2021.
- Wi-Fi traffic grew due to the pandemic.



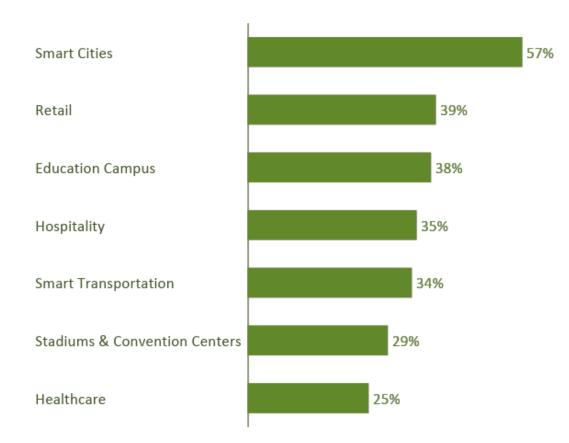


WBA Annual Industry Report 2021

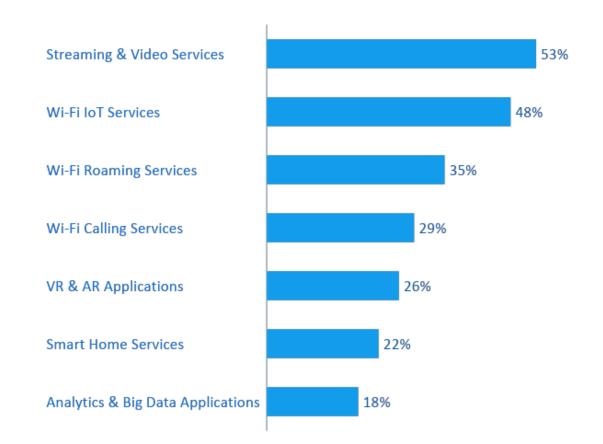
Source: Wireless Broadband Alliance Author(s): Adlane Fellah & Caroline Gabriel Issue date: November 2020 Version: Final



TOP WI-FI DEPLOYMENTS PER VERTICAL



TOP APPLICATIONS DRIVING FUTURE WI-FI TRAFFIC



Source: WBA Annual Industry Report 2021, Nov 2020

2020 KEY OUTCOMES FROM WBA





OpenRoaming on the rise to define the Global Standard for Public Wi-Fi



Enlargement of collaboration with Enterprises, Cities & Regulators



Wi-Fi 6/6E Trials promoting adoption worldwide for carriers & enterprises



17 Work Programs set a new record with large membership engagement



Home Broadband, Wi-Fi Sensing & IoT raising relevancy



Industry engagement, visibility and recognition at a new level



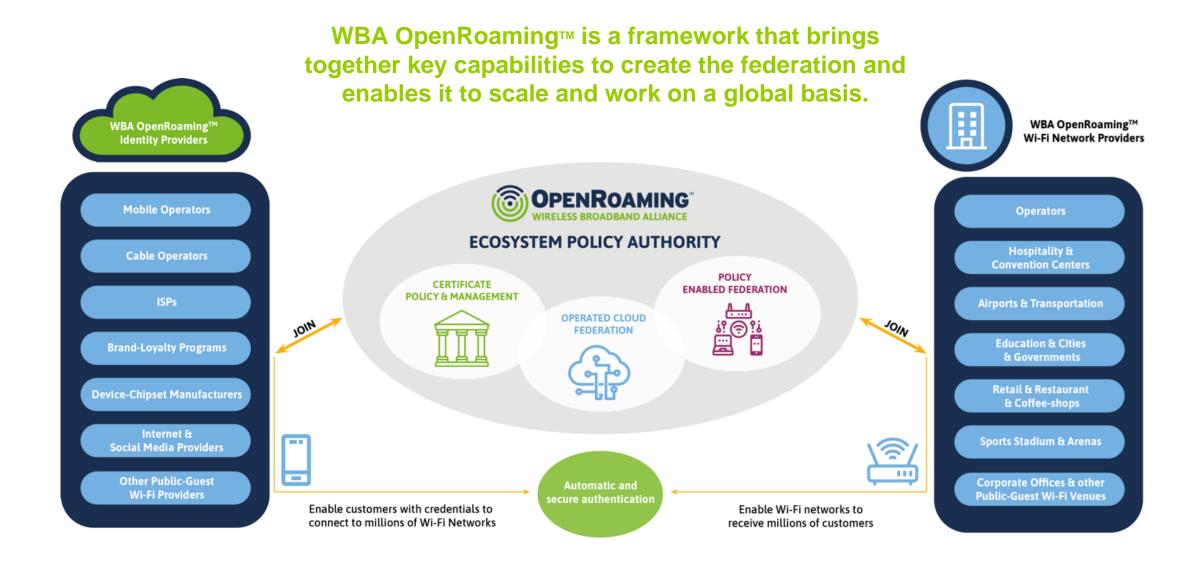
5G	loT	NextGen	Roaming	Testing & Interop
Work Group	Work Group	Work Group	Work Group	Work Group
5G & Wi-Fi Convergence in	Wi-Fi in	Wi-Fi 6 & 6 GHz	In-Flight Connectivity	Wi-Fi IMSI
Private 5G Networks	Industrial IoT	Trials	OpenRoaming	Privacy Protection
	Rural Wi-Fi	In-Home Multi-AP Solutions	OpenRoaming for Private Cellular Networks	Captive Portal Onboarding Evolution
	AR & VR Requirements &	Wi-Fi Sensing	Passpoint Profiles &	Wi-Fi & Devices
	Deployment Guidelines	Deployment Guidelines	RCOIs Prioritization	Identification
		Trackside Connectivity Guidelines	Blockchain Settlements for WRIX	
WBA OpenRoaming	Policy & Regulato		Market	WBA Certification
Task Group	Work Grou		/ork Group	Task Group

In progress

More Information regarding WBA projects (<u>https://wballiance.com/what-we-do</u>)

OPENROAMING: OPPORTUNITIES FOR NEW BUSINESS MODELS





Time to turn the page and make Public-Guest Wi-Fi simple and secure to all



OPENROAMING: LATEST NEWS



OpenRoaming deployed in Municipalities from WIFI4EU

ACHIEVEMENTS

End game: Seamless and secure roaming across different municipalities, with fast and reliable authentication



Project milestones:

 Enabling 4 different municipalities in Belgium with different mix of vendor OEM, IT integrators, brokers involved in each scenario

WIRELESS BROADBAND ALLIANCE

- ✓ User onboarding simple and straightforward:
 - off the shelf profile available from device and operating system vendors, e.g. Samsung, Google)
 - Onboarding portal possibility for local credentials
- System stability and interoperability with any Wi-Fi networks



OpenRoaming deployed in several Cities in Spain by WIONGO Networks



Tourist Hotspots in Spain to Provide Secure, Auto-Connected Wi-Fi With First Spanish Deployment of WBA OpenRoaming[™] by WIONGO

- Spain becomes the latest country to join push for global Wi-Fi roaming, delivering a seamless and secure roaming internet experience with WBA OpenRoaming[™]
- Users in Port of Barcelona, Port Vell, Barceloneta Beach and Palma de Mallorca City among the first to benefit, with 18 more cities to follow
- Cisco aid in deployment with local "smart destination" specialists WIONGO to operate

London, 21st Oct 2020 – The Wireless Broadband Alliance (WBA) today announced that major destinations in Spain will be the latest to join a globally available Wi-Fi community that offers secure, automatic and friction-free internet access for billions of devices.





Wi-Fi 6 & 6E TRIALS: LATEST REPORT





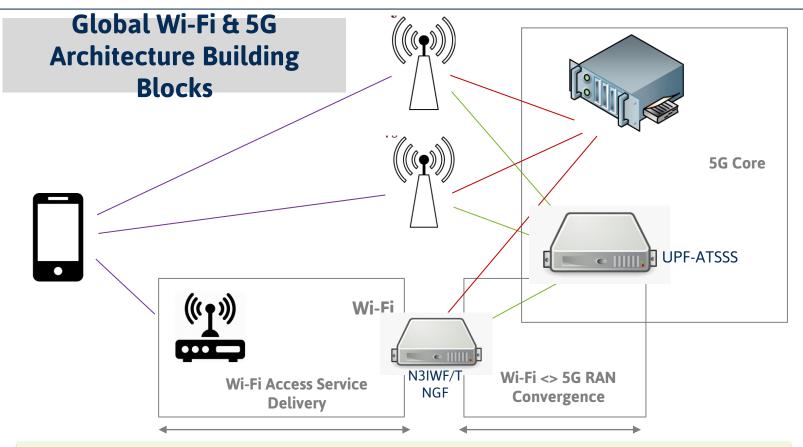




Download latest Report on WBA Wi-Fi 6 and Wi-Fi 6E Trials at www.wballiance.com

Wi-Fi 6 & 5G CONVERGENCE





WBA Role:

- Use of an access-neutral mechanism
- End-to-end service delivery over Wi-Fi
- Verticals test plans and trials
- Network Manageability and Policy Control
- Enablement of Wi-Fi Only Devices

WBA Role:

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- Traffic Routing across Multiple Accesses
- EAP authentication framework
- WLAN Gateway Function (N3IWF/TNGF)
- ATSSS for traffic routing
- End-to-end QoS across 5G and Wi-Fi



Aligning the Industry on Opportunities and Challenges



Driving requirements and early trials including coexistence





IF YOU ARE INTERESTED IN ANY OF THE WORK PROGRAMS PRESENTED

Join WBA and helps us to make Wi-Fi better for all

More information at <u>www.wballiance.com/membership</u>

THANK YOU

Tiago Rodrigues, WBA CEO, tiago@wballiance.com

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Wi-Fi 6E: Accelerating in 2021

ERIC MCLAUGHLIN

VP CLIENT COMPUTING GROUP, GM WIRELESS SOLUTIONS GROUP, INTEL CORPORATION



Wireless Broadband Alliance: Asia Telecom Summit, 2021

Wi-Fi 6E: Accelerating in 2021

Eric McLaughlin VP Client Computing Group, GM Wireless Solutions Group Intel Corporation



6 GHz Wi-Fi 6E Certification Program in Place

Wi-Fi Alliance[®] delivers Wi-Fi 6E certification program

Wi-Fi® interoperability in 6 GHz promotes worldwide innovation and diverse ecosystem



"Wi-Fi 6E will see rapid adoption in 2021 with more than 338 million devices entering the market..."

- Phil Solis, research director at IDC

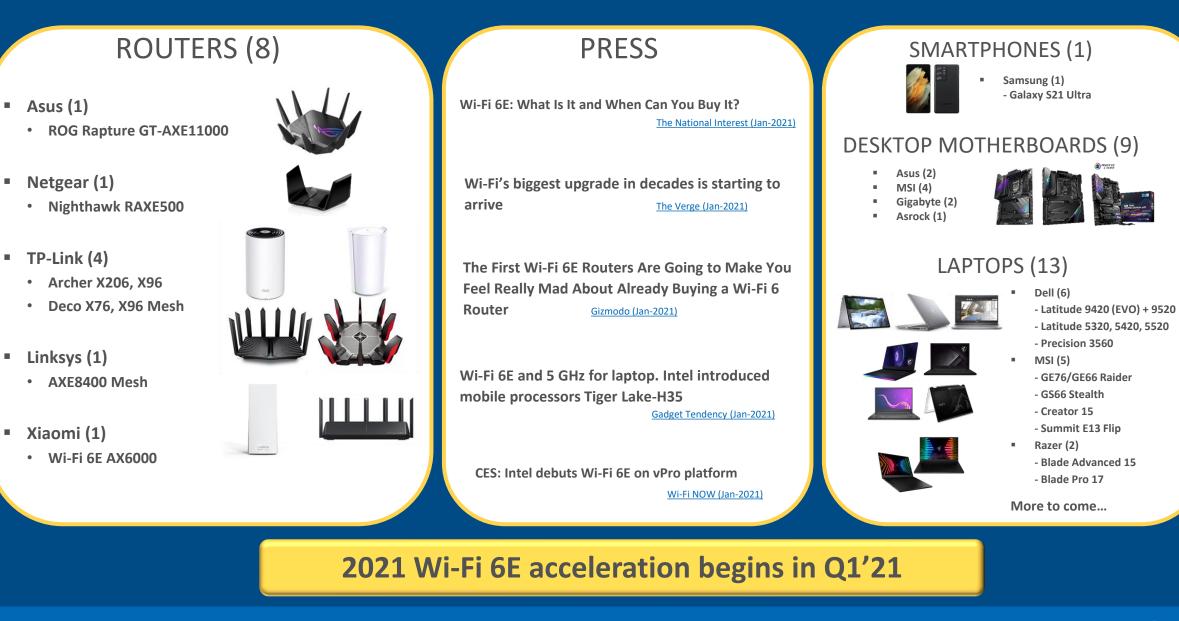
"We are delighted Intel[®] Wi-Fi 6E AX210 will be the first PC client solution to receive Wi-Fi 6E certification..."

Eric McLaughlin VP, Client Computing Group;
 GM, Wireless Solutions Group, Intel Corporation

Wi-Fi Alliance[®] (Jan-2021)

Certification is essential to ensure Wi-Fi interoperability

Jan'21: Wi-Fi 6E is Finally Here!



6 GHz Wi-Fi 6E Worldwide Regulatory Momentum



6 GHz Wi-Fi 6E spectrum footprint growth expected 2021-22

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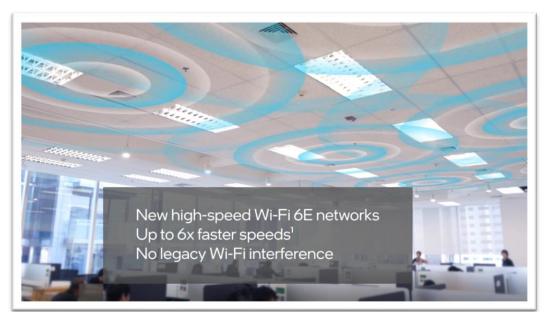
Intel Wi-Fi 6E Videos & Infographics

Gaming Video



(click image for video)

Corporate Video



(click image for video)

Wi-Fi 6E Gaming, Corporate, & Consumer assets planned for intel.com



^{6 GHz} Wi-Fi 6E

1 2 0 Tana

PC gaming's biggest Wi-Fi advancement in 20 Years

Intel[®] Killer[™] Wi-Fi 6/6E (Gig+)

Best of both worlds (Legacy + New)

More large high-speed channels





No product or component can be absolutely secure. Your costs and results may vary. Intel technologies may require enabled hardware, software or service activation

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^{6 GHz} Wi-Fi 6E

intel

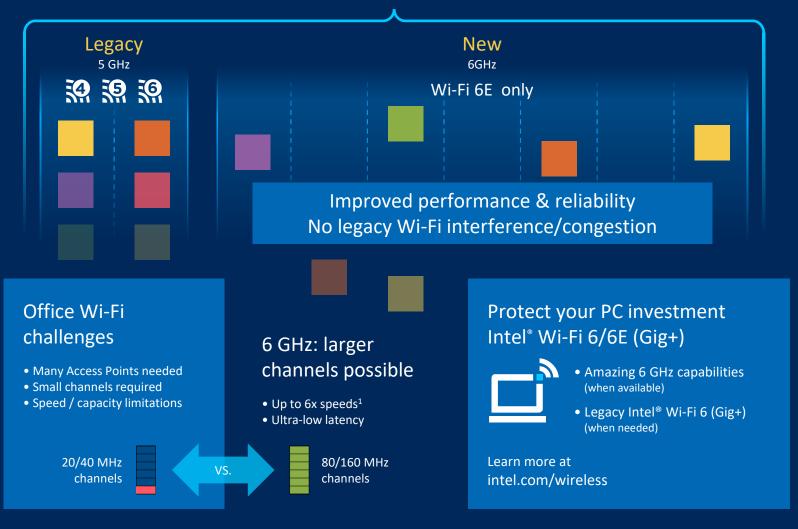
Business Wi-Fi's biggest advancement in 20 years



Intel[®] Wi-Fi 6/6E (Gig+)

Best of both worlds (Legacy + New)

Many large high-speed channels



1) Performance varies by use, configuration and other factors. For details on performance claims, learn more at www.Intel.com/PerformanceIndex (connectivity). No product or component can be absolutely secure. Your costs and results may vary. Intel technologies may require enabled hardware, software or service activation. © Intel Corporation. Intel, the Intel logo, and other Intel marks are trademarks of Intel Corporation or its subsidiaries. Other names and brands may be claimed as the property of others

Call to Action



Legal Disclaimers

Wireless spectrum channel / road analogy depictions are for illustrative purposes only and may vary.

6 GHz PC Wi-Fi 6E operation requires use of Intel® Wi-Fi 6E (Gig+) products in conjunction with operating systems and routers/APs/Gateways that support Wi-Fi 6E, together with regional spectrum allocation & required regulatory certifications.

Gaming Infographic

1) "Nearly 3X faster speeds" is based on the IEEE 802.11ax specification. 160 MHz channels and Wi-Fi 6/6E technology advantages enable significantly higher maximum theoretical PC client speeds vs. standard Wi-Fi 5 (802.111ac) products.

2) "Up to 75% lower latency" is based on the IEEE 802.11ax specification & Intel engineering simulation. 160 MHz channels and Wi-Fi 6/6E technology advantages related to network managed traffic enable lower latencies, more efficient operation, and higher reliability vs. random contention-based traffic of standard Wi-Fi 5 (802.11ac) networks.

Corporate Infographic

1) "Up to 6X faster speeds" is based on the IEEE 802.11ax specification & legacy 5 GHz vs. new 6GHz Wi-Fi spectrum. With more large channels in 6 GHz, technology advantages of Wi-Fi 6E networks enable higher maximum theoretical PC client speeds vs. standard 5 GHz Wi-Fi 5 (802.11ac).

Performance varies by use, configuration and other factors. Learn more at www.Intel.com/PerformanceIndex (connectivity).

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates.

No product or component can be absolutely secure. Your costs and results may vary.

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Bridging the Gap in the 5G Era Wi-Fi and Cellular

DR. DEREK PETERSON

CTO, BOINGO WIRELESS





Bridging the Gap in the 5G Era Wi-Fi and Cellular

DR. DEREK PETERSON

CTO, BOINGO WIRELESS





OpenRoaming[™]: Raising the bar for Wi-Fi privacy

MARK GRAYSON

DISTINGUISHED ENGINEER & WBA OPENROAMING STANDARDS GROUP CHAIR, CISCO

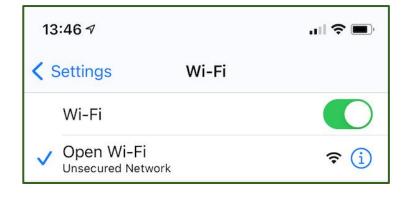




OpenRoaming Raising the bar for Wi-Fi privacy

Mark Grayson Distinguished Engineer and WBA OpenRoaming Standards Group Chair 19 January 2021

Addressing this issue



13:51 🔊		II 🍣 🔲
Settings	Wi-Fi	
Wi-Fi		
✓ WPA1 Wi-Fi Weak Security		₽ ? (i)

Settings	Wi-Fi	
Jettings	VVI-I I	
Wi-Fi		
VPA2 Wi-Fi		🔒 ᅙ 🚺
Privacy Warning		- • 🕑

WPA2 Wi-Fi

Privacy Warning

< Wi-Fi

Private Wi-Fi address is turned off for this network.

Using a private address helps reduce tracking of your iPhone across different Wi-Fi networks.

No Service 🗢	16:38	1 🕈 97% 🔳
< Wi-Fi	VodafoneWiFi	
Privacy Wa	rning	
your mobile	connect to a carrie subscriber identit some cases.	
Disable auto-join to stop automatically using this network.		

Cellular Roaming: Exposing your ID

Home Network



Roaming agreement prohibits sending of "roaming customer targeted communications" unless authorized by home network

Restrictions on use of Personal Identifiable Information for any other purposes is not standardized

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Update Location IMSI/TMSI Insert Subscriber Data



IMSI, MSISDN, Forwarding Numbers, Call Barring Information, APN Information, ..

No Service **२** 16:38 √ ∦ 97% ■

〈Wi-Fi VodafoneWiFi

Privacy Warning

When you connect to a carrier hotspot, your mobile subscriber identity will be exposed in some cases.

Disable auto-join to stop automatically using this network.

When you connect to **any** cellular network, your mobile subscriber identity **& telephone number will always** be exposed to the visited network!

OpenRoaming: Keeping you anonymous

Home Network



OpenRoaming baseline privacy policy restricts the use of all subscriber Personal Identifiable Information for provision of the service, troubleshooting and compliance with the law.

Visited network is prohibited from selling, renting, releasing, disclosing, any PII.

EAP-Response/Identity anonymous@home-network

EAP-Method

EAP-Success

Chargeable-User-Identity: an opaque string/identifier

When you connect to **any** OpenRoaming network, the use of your PII is **always** protected

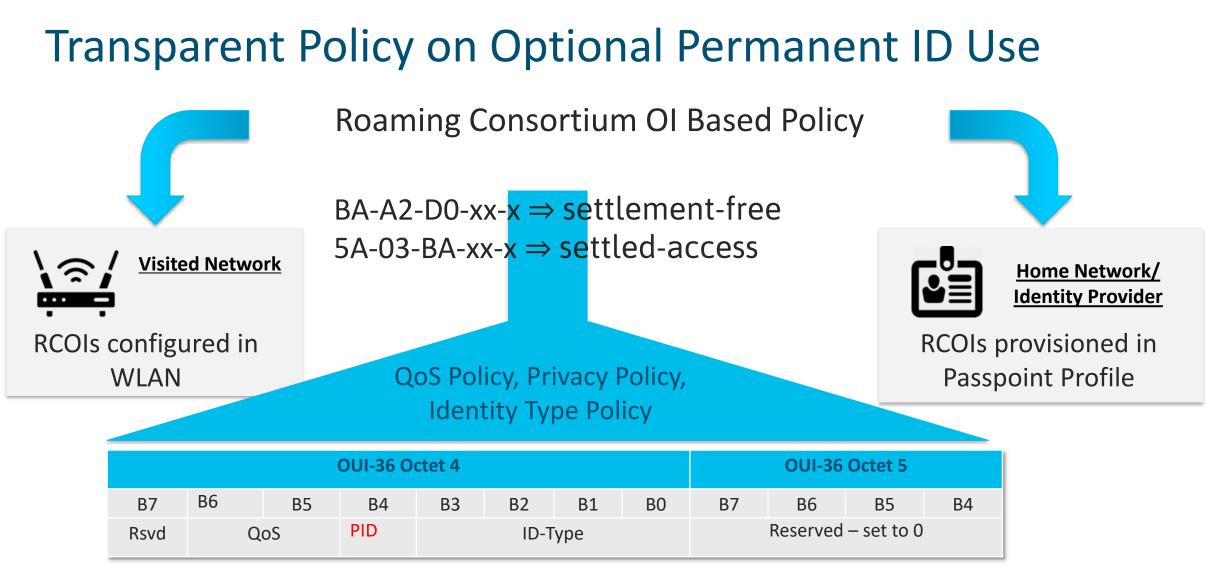
OpenRoaming No issue with MAC Randomization





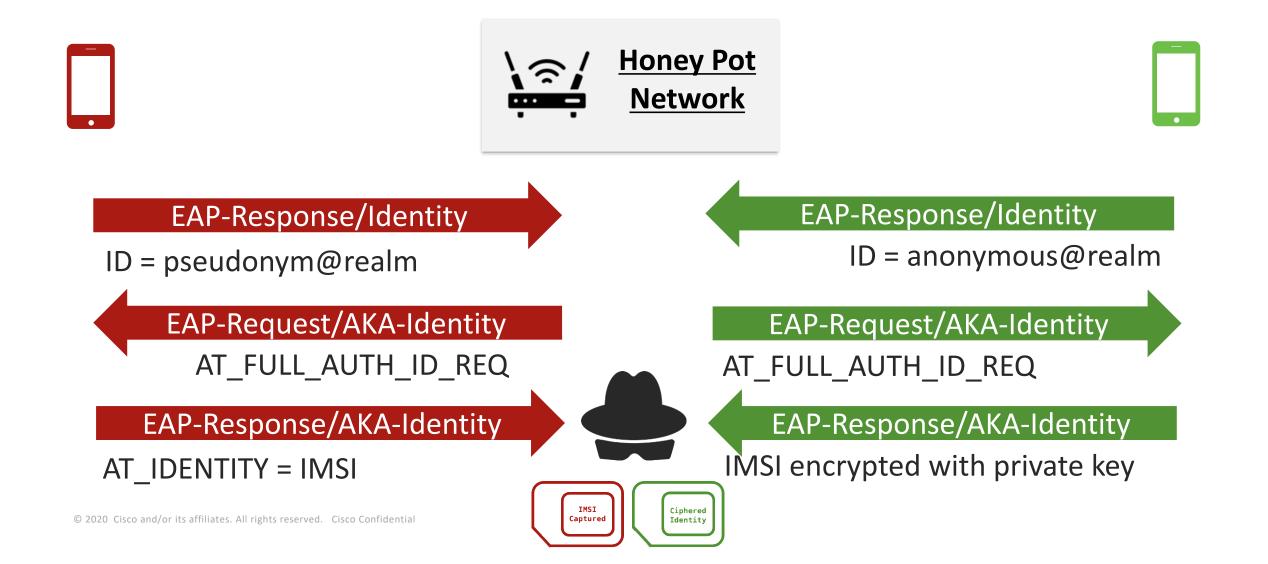
The OpenRoaming Legal Framework

https://openroaming.org	
	Home Groups - WBA Members Meetings - InfoCentre
WBA OpenRoaming Baseline Agreements	OpenRoaming Agreement Templates
Privacy End-User Policy Ts and Cs	WBA-Broker Broker-IDP Broker-ANP Agreement Agreement Agreement



My Wi-Fi deployment requires and/or its affiliates All rights reserved. ID^{o Confidential} My users have consented to exchange of their permanent ID

WBA IMSI Privacy – Blocking Honey Pot Threats



Key Takeaways

- OpenRoaming delivers simple, secure, seamless and scalable Wi-Fi onboarding where users are anonymous by default
- Unlike cellular roaming, all access and identity providers have to sign up to the WBA Baseline Privacy Policy – constrains the use of PII for for provision of the service, troubleshooting and compliance with the law
- 2. Futureproof capability avoids impact of MAC address randomization on legacy systems
- 3. Transparent policies do enable deployment scenarios where permanent identities are exchanged
- Privacy gaps in EAP-SIM/AKA are being addressed by WBA and the industry OpenRoaming, plus MAC randomization, plus IMSI privacy – setting the new benchmark for wireless privacy



Competition and regulation in Wi-Fi 2021

NIMISHA TAYLOR

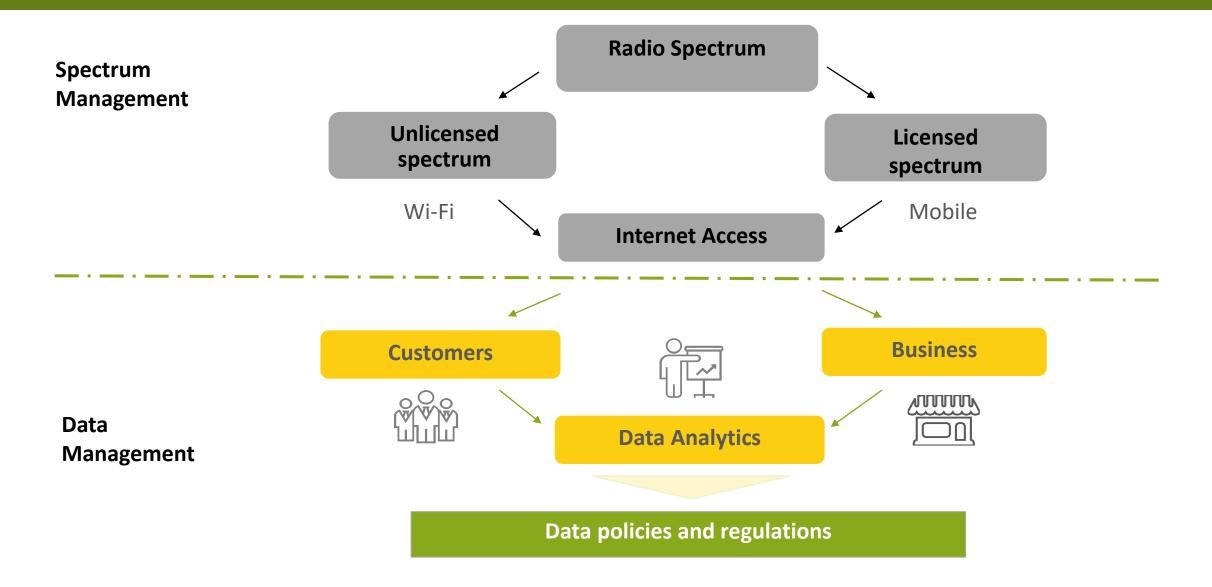
COMPETITION AND REGULATION SPECIALIST



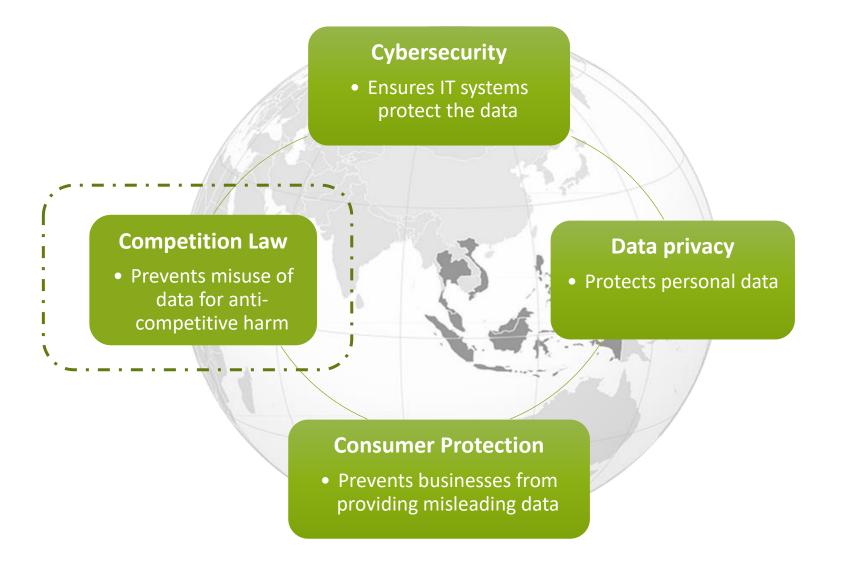
COMPETITION AND REGULATION IN WI-FI 2021 NIMISHA TAILOR

ASIA TELECOM SUMMIT 2021

REGULATORY LANDSCAPE IS CHANGING



DATA POLICIES AND REGULATIONS





Competition and regulation in Wi-Fi 2021

NIMISHA TAYLOR

COMPETITION AND REGULATION SPECIALIST



Closing

TIAGO RODRIGUES

CEO, WIRELESS BROADBAND ALLIANCE





WI-FI CONNECTS THE WORLD

Creating new possibilities in a virtual society

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THANKS FOR ATTENDING

Next event:

January 27th – OpenRoaming : Transforming Public & Guest Wi-Fi

Register: https://wballiance.com/asia-telecom-summit/

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