

Proposed Revision to the Guidelines on the Security Aspects for the Design, Implementation, Management and Operation of Public Wi-Fi Service

Telecommunications Regulatory Affairs Advisory Committee
8 December 2016

Background

- In June 2007, the former Office of the Telecommunications Authority (now Office of the Communications Authority or OFCA) established the Wi-Fi Security Working Group with a view to formulating a set of guidelines for enhancing the security of public Wi-Fi service
- The Working Group comprises representatives from relevant operators, industry associations and Office of the Government Chief Information Officer (OGCIO)



The Guidelines

- In October 2007, having considered the views and inputs of the representatives and in consultation with the industry, OFCA issued the Guidelines on the Security Aspects for the Design, Implementation, Management and Operation of Public Wi-Fi Service (the Guidelines)
- The Guidelines state that the operators should observe the general principles, take necessary security measures and report to OFCA the severe security breaches in accordance with the specified criteria, procedures and timeframes



Enhancements to the Guidelines in 2008

- In July 2008, taking into account practical experiences and feedback from Operators on the implementation of the Guidelines, OFCA revised the Guidelines
- Major revisions include
 - ▣ additional options of strong encryption using Transport Layer Security (TLS)
 - ▣ secure air interface using Wi-Fi Protected Access 2 (WPA2)



Public Wi-Fi Services

Public Wi-Fi Services (as of 31 October 2016)	Quantity
Unified Carrier Licensees authorised to provide public Wi-Fi services	6
Class licensees for the provision of public wireless local area network services (public Wi-Fi services)	55
Number of Wi-Fi hotspots (access points) installed for provision of public Wi-Fi services	43,893
Registered number of Wi-Fi zones (areas) provided with public Wi-Fi services	9,970

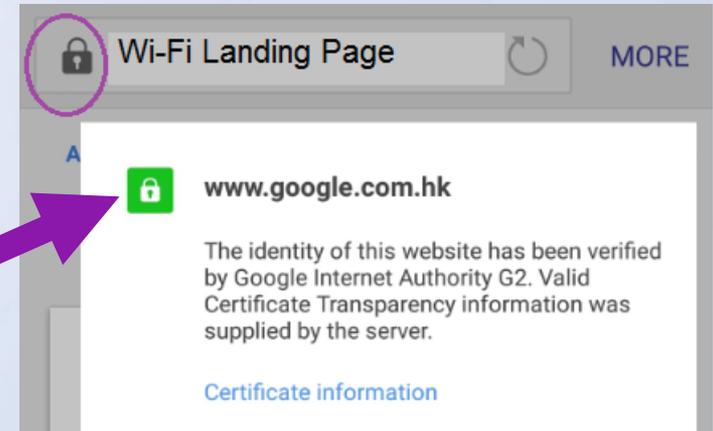
Proposed Revision to the Guidelines

- With a view to further enhancing the security of public W-Fi services, OFCA proposes to adopt the following technical measures -
 - ✓ Implementation of Server Certificate
 - ✓ Enabling Layer 2 Isolation
 - ✓ Tackling the Risk of Exhaustion of Internet Protocol (IP) Addresses

Implementation of Server Certificate

- Used to authenticate the identity of server
- Originally regarded as advanced technical measure

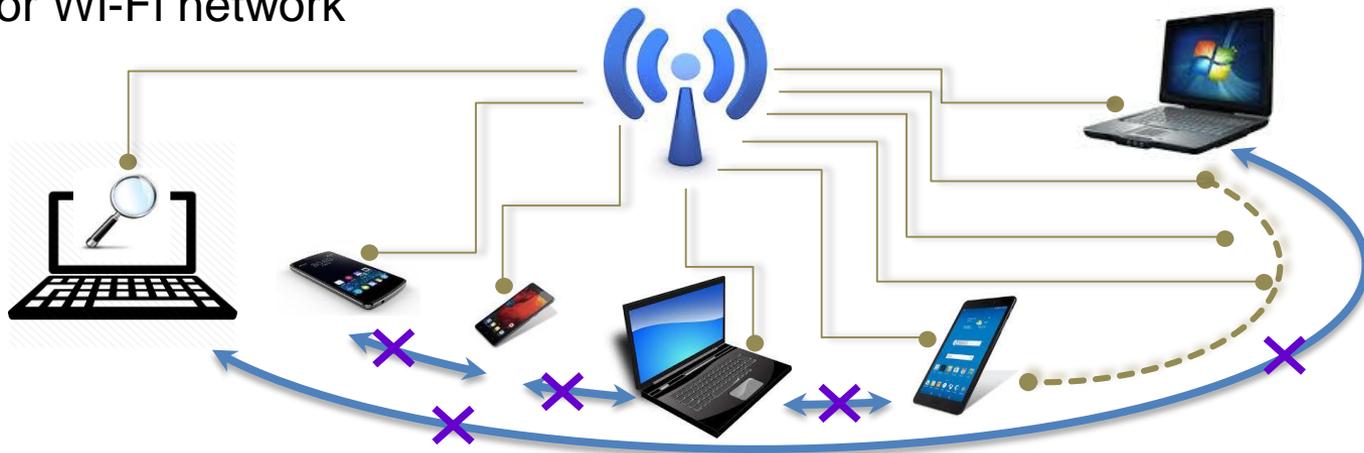
Taking Google's server certificate display as an example



- Propose to adopt it as **basic technical measure**
- Operators are required to install the server certificate signed by a trusted Certification Authority to confirm the authenticity of the access points (APs) concerned, and display it to the end users if possible

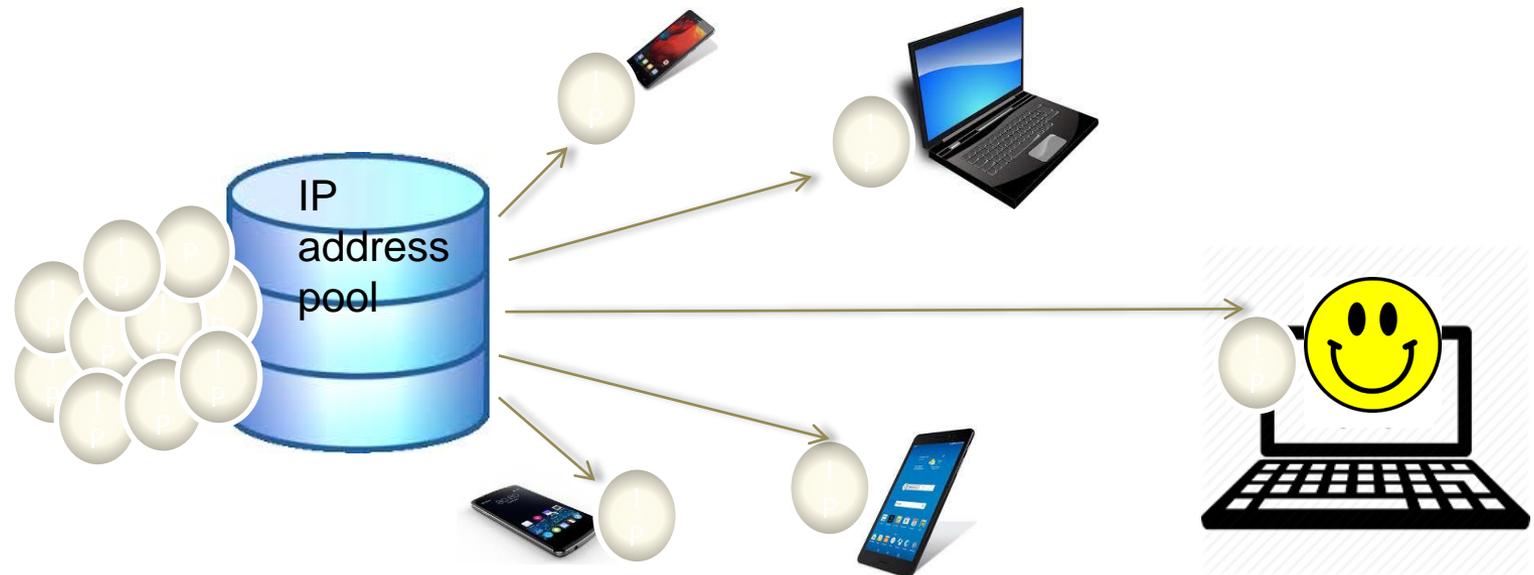
Enabling Layer 2 Isolation

- Layer 2 isolation commonly refers to the arrangement whereby Wi-Fi client devices are logically separated or isolated from one another, even though they are connected to the same AP in a Wi-Fi network
- To promote safe and secure public Wi-Fi access, Operators are encouraged to implement this proposed **advanced technical measure**
- Individual client devices concerned will no longer be able to communicate with each other at the data-link layer, so as to reduce the risk of malicious attacks from unknown devices even though they are accessing the same AP or Wi-Fi network



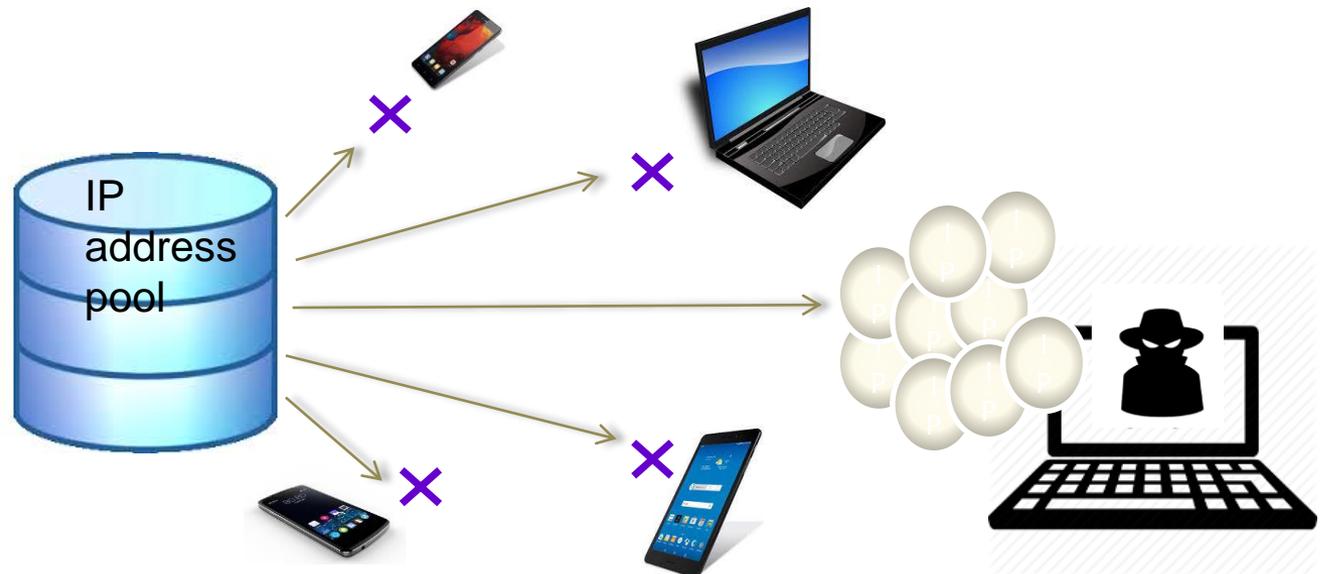
Tackling the Risk of Exhaustion of IP Addresses (1)

- Each telecommunications operator has a limited amount of IP addresses available for provision of public telecommunications services including Wi-Fi service
- Upon registration of the public Wi-Fi service, individual user's client device will be assigned with an IP address from a shared address pool for subsequent access to the Internet



Tackling the Risk of Exhaustion of IP Addresses (2)

- Individual user will not be able to enjoy public Wi-Fi service if his/her device has not obtained an IP address from the Operator
- To minimise the possible risk of denial of service due to exhaustion of all available IP addresses, Operators are encouraged to implement this **advanced technical measure**, e.g. applying a shorter release time, a larger IP address pool, etc



Way Forward

- Proposals are generally supported by OGCIO and major Operators
- OFCA is seeking further comments from the industry including all the relevant licensees
- Will take into consideration all the views and comments received in finalising the revised Guidelines which is expected to be issued around end of December 2016

Thank You