WBA WI-FI DEVICES IDENTIFICATION PROJECT

Presented by Tim Twell to IETF MADINAS 2021-11-10

Wi-Fi Device Identities Group - Objectives

- **Find alternatives to the MAC address as a device identifier, and where user identification is required.**

- **Analyse and document currently available solutions and the problems with using them**

- **Liaise with other Standards bodies working on the issue**

- **Explain and Recommend technologies and standards to suit various requirements**

1. **Investigation into the use of MAC addresses as device identifier**

   The project has identified many use-cases where the use of the MAC address as a long term identifier may cause issues with the service.

2. **Identify Wi-Fi Identification Requirements**

   The project has identified the requirements that those use-cases have for identifying devices and/or users, classified according to uniqueness, scope, and duration, and discussed the issues of privacy and of consent for identification.

   Most have a need to identify either a specific device or a user within a network or service, typically for the lifetime of the service.

3. **Examine existing Solutions and Mitigations**

   The project has examined a number of existing technologies that allow identification of the device or user and compared those with the requirements that were identified earlier. Some of these solutions, such as PPSK and Fingerprinting are proprietary, lack standardisation, and may suffer from the same privacy issues as a static MAC.

   The solutions have focused on WPA2/3 Enterprise, Passpoint, OpenRoaming (all with 802.1X authentication), PPSK, Device Fingerprinting, proprietary external identification such as via an App or website, and also doing nothing. Some potential solutions have not been investigated sufficiently well through lack of expertise, such as Wi-Fi EasyConnect and 802.1AR.

   There are some cases where the solutions do not provide the functionality that was available from an unchanging MAC address, and the group is discussing the implications of this functionality becoming unavailable.

5. Recommendations for each Solution Category

The project has almost completed the high-level guidance describing in brief how the solutions work and what one would need to do to deploy them, typically (for now) as a hybrid alongside a legacy MAC-based system.

6. Outstanding Requirements

The project is in the process of identifying those problematic requirements that are not met by the solutions that have been examined. Device typing is one issue, either to gather statistics about network usage or to ensure that the network works well with the majority of devices. Home Wi-Fi network diagnostics would ideally identify trends for specific devices that were failing to connect to a network, but should not be able to identify devices that have no relationship with the network.

Issues also arise where a service may be provided on multiple SSIDs (perhaps because of venue branding requirements; e.g. hotel with conference rooms; or premium service locations), and removal of expired credentials.

Another area of difficulty is identifying and/or blocking devices or users from networks (e.g. for service violations or for lawful intercept/obtaining ICRs). Whilst obviously the use of a MAC is not reliable at present, it is nevertheless used and with RCM it can only become more unreliable, whereas the legal obligations remain.

7. White papers and recommendations

Also in progress is an activity to make recommendations as to which of the available solutions are most suitable to particular network-types or applications. Hospitality venues have different requirements from Enterprise networks, and Home networks are different again.

The final phase of the project will be to publish the whitepaper / papers with recommendation to the WBA membership. These are often accompanied by public summaries and may also be liaised to appropriate collaborating organisations.

Thank you

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