

IEEE 802 EC
Privacy Recommendation Study Group

Update to IESG/IAB/IEEE802-EC
@ Jan 2015 Exec teleconference

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ToC

- IEEE 802 Privacy EC SG Status
- IETF91 Wi-Fi Privacy Experiment
- Proposed PAR to IEEE 802
- Plans and upcoming meetings
 - IEEE 802 Plenary network trial
 - IETF92 network trial
- Q&A

IEEE 802 EC Privacy SG

- Scope

The IEEE 802 Executive Committee (EC) Privacy Recommendation SG will study privacy issues related to IEEE 802 technologies and consider the need for a recommended practice applicable to IEEE 802 protocols. If such a need is identified, the SG will determine whether the IEEE 802 criteria for standards development (CSD) support the initiation of a project and, if so, it will prepare a PAR for consideration by the IEEE 802 Executive Committee.

- Lifetime

Study Group (SG) Created at July 2014 IEEE 802 plenary.

Currently chartered to run until IEEE 802 Plenary meeting in March 2015 (Berlin, Germany), with an expectation of renewal through July 2015.

IETF91 Wi-Fi Privacy Experiment

Wi-Fi Privacy Trial at IETF and IEEE Meetings

- Opt-in trial at IETF and IEEE meetings networks to assess performance and implications of user's MAC address randomization
- First experiment at IETF91, coordinated between Privacy EC SG participants and IETF NOC team
- Looked at potential issues related to:
 - DHCP pools
 - States in network switches
 - MAC address collisions
 - ARP/ND
 - IPv6 addressing
 - Security infrastructure

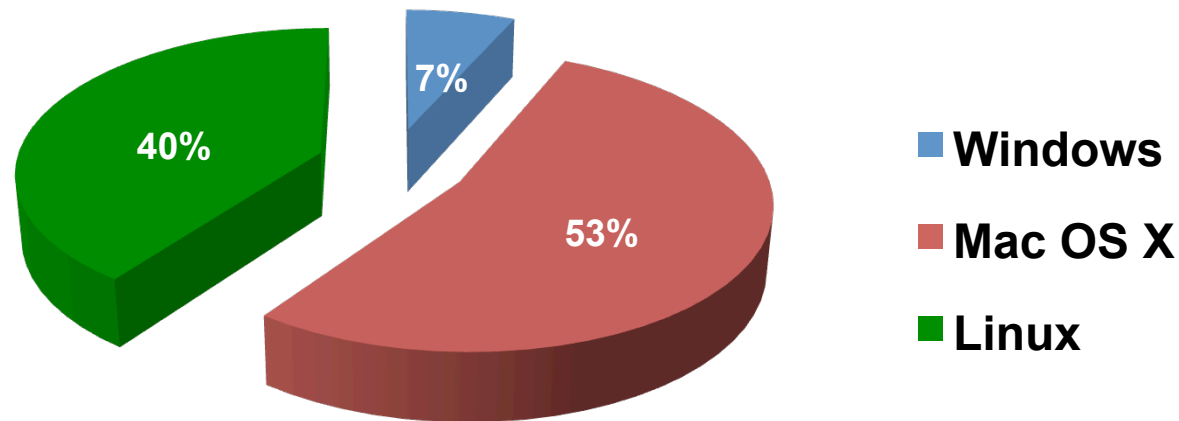
Trial setup

- WLAN address randomization scripts developed and provided for 3 different OSes:
 - Microsoft Windows (tested on Windows 7)
 - Apple Mac OS X (tested on Version 10.10, alias Yosemite)
 - GNU Linux (tested on Debian testing/unstable, Ubuntu 13.10, and Fedora 20)
- Probes on DHCP and wireless network infrastructure

<https://www.ietf.org/registration/MeetingWiki/wiki/91privacy>

Participants' statistics

- Participation increased significantly throughout the week
 - Around 3x at the end of the week (Mon-Thu)
- OS distribution:



DHCP logs

- 685 Local MACs seen during the week
 - 631 Local MACs were seen on the trial's WLAN network
 - 125 Local MACs were also seen on regular IETF WLAN networks
- Estimating between 50 and 100 people participated in the trial
 - Results based on the number of non-Local MAC seen on the trial's WLAN and other metrics (e.g., # different IP addresses allocated and DHCP hostnames provided)
 - Method for better keeping track the number of participants should be provided in the future (e.g., use of IEEE 802.1X access setup)

Experiment's next steps

- Preparing a “wish list” with IETF NOC and SG members
 - Logged information: we are working on potential additional logs that would help us getting more precise information
 - Access setup: use IEEE 802.1X to easily track participation
 - Increased frequency poll of logs at the routers (netdisco)
 - Decrease DHCP lease time for Local MACs
 - Make a more detailed study of collision effects under different scenarios
- Need to increase participation
 - Prepare address randomization tools for more platforms/OSes, including mobile ones (e.g. Android)

Privacy Recommendation PAR/CSD Proposal

<https://mentor.ieee.org/privecsg/dcn/15/privecsg-15-0004-01-0000-privacy-recommendation-par-csd-proposal.pptx>

Title

- IEEE Recommended Practice for Information technology-- Telecommunications and information exchange between systems-- Local and metropolitan area networks:
- **Privacy considerations for IEEE 802 Protocols.**

Scope of the Project

- This document specifies a privacy threat model for IEEE 802 protocols and provides general recommendations for protocol developers and implementers on how to protect against privacy threats.

Purpose

- The recommended practice document will provide recommendations to address privacy threats applicable to link layer technologies, including threats such as Surveillance, Monitoring, Stored Data Compromise, Intrusion, Misattribution, Correlation, Identification, Secondary Use, Disclosure and Exclusion.

Need

- In order to address recent concerns about Internet privacy, SDOs such as IETF, W3C and IEEE 802 need to take action.
- Some of the technologies developed in IEEE 802 play a major role in Internet connectivity, and certain threats are applicable specifically to link layer technologies.
- IEEE 802 has been collaborating with IETF in many fronts and the need to develop privacy guidelines in IEEE 802 has been identified as one new area for collaboration between the two organizations.
- This document will provide recommendations on how to consider privacy as part of protocol design and implementation.

Stakeholders

- Developers, providers, and users of services, content and equipment for wired and wireless network connectivity using IEEE 802 protocols. This includes software developers, networking IC developers, bridge and NIC vendors, service providers and users.

Broad Market Potential

- Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:
 - a) Broad sets of applicability.
 - b) Multiple vendors and numerous users.
- **New social networks and applications are being used across multiple networks and devices. These developments bring enormous economic and social value to individuals and to society as a whole. However, such value may not be fully achieved without successfully addressing the growing privacy threat.**
- **Users are increasingly aware of privacy issues. According to GSMA (Mobile Privacy Principles), “A critical factor for the sustainable development of this eco-system is a robust and effective framework for the protection of privacy, where users can continue to have confidence and trust in Internet technologies, applications and services.” Privacy has also been identified as a key feature for Internet service providers, network providers and device manufacturers, as recent industry announcements show.**
- **Most Internet connections make use of a technology developed in IEEE 802 (e.g. IEEE 802.3, 802.1 and 802.11), and some companies have already started implementing privacy features on top of IEEE 802 protocols. Providing privacy features is already seen as a business advantage. This recommendation will mitigate the risk of privacy threats on IEEE 802 technologies and will foster continued growth of deployment of IEEE 802 technologies for communication devices.**

Technical Feasibility

- Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the time frame of the project. At a minimum, address the following items to demonstrate technical feasibility:
 - a) Demonstrated system feasibility.
 - b) Proven similar technology via testing, modeling, simulation, etc.
- **The recommended practice will define recommendations that can be followed by protocol designers and implementers to improve privacy. Hence, no specific technical changes will be specified.**
- *[Editor's note: Some experiments have been carried out and technical reports of these experiments can be published, for instance as Informational RFCs.]*

Group's plans and upcoming meetings

PAR Plans

- Considering submitting the PAR/CSD for pre-circulation in order to get comments from all 802 WGs at the March meeting.
- New PAR to be hosted by an existing WG/TG or a new WG/TG
 - Currently considering 802.1

Privacy EC SG Plans

- Considering doing the MAC trial experiment at both IEEE 802 and IETF meetings
 - IEEE 802 Plenary meeting in Berlin, Germany
 - 8-13 March 2015
 - IETF 92 meeting in Dallas, TX, USA
 - 23-27 March 2015
- Verilan will be providing networking facilities for both sites

Upcoming EC SG meetings

- 4 February 2015, (10:00 AM ET), Teleconference
 - Potential PAR/CSD submission
- 25 February 2015, (10:00 AM ET), Teleconference
- 8-13 March 2015, IEEE 802 Plenary meeting in Berlin, Germany
- (Other meetings and teleconferences TBD, if SG is renewed)

Resources

- EC SG Web Page
 - <http://www.ieee802.org/PrivRecsg/>
- Mailing list (reflector)
 - *stds-802-privacy@listserv.ieee.org*
- Mentor (document repository)
 - <https://mentor.ieee.org/privecsg/documents>
- RFC 6973 - Privacy Considerations for Internet Protocols
 - <http://tools.ietf.org/html/rfc6973>

Further thoughts on Recommended Practices documents

- How to enforce privacy recommendations on future protocol standards in practice?
 - Security section?
 - Privacy-specific section?
 - Expert review?
 - Other?