

HARDWARE BASED AUTHENTICATION

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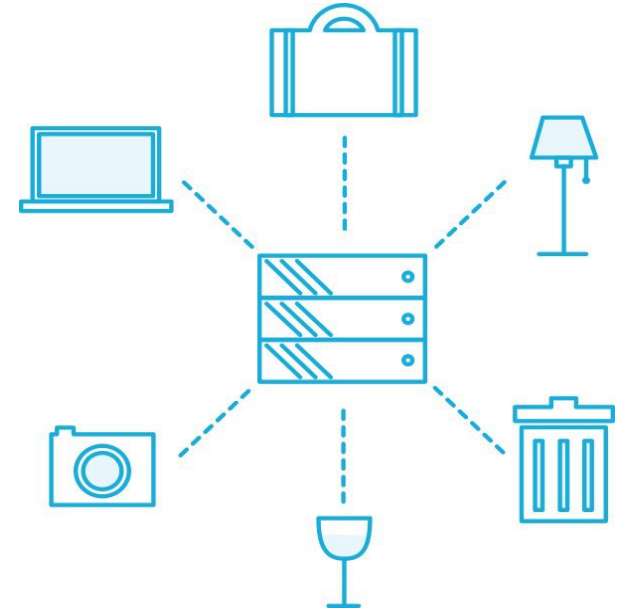
Next Generation Type of Communication

- Characterized by diverse applications connecting in a heterogeneous environment in terms of network technologies and device
- Authentication models based on human intervention (like 802.1X) do not fit well for Internet of Things used in this type of next generation communication era
- What we need is Hardware based authentication via sensing of video/audio or gestures as a device playing a melody or blinking red and blue, or which a person has just touched
- IEEE 802.11bf sensing project provides proper framework for hardware based authentication of Wi-Fi enabled devices
- 3GPP is expected to have a similar project for 5G/6G RAN

Hardware based admission model

E.g., for including new devices into a home/personal network:

- “Should I admit the Smart Teapot blinking red and blue?”
- “Here’s a list of device manifests – add them to the network”
- “Admit the device I just touched”
- “Admit the blinking device I’m pointing the camera at”
- “Admit the device playing a melody”



Source:

<https://www.ietf.org/topics/iot/>

based on IEEE Future Networks Webinar by Prof. Henning Schulzrinne on "Do We Still Need Wi-Fi in the Era of 5G (and 6G)?"

Key Technologies needed

- Sensing
 - Wi-Fi signals for gesture and motion detection
 - 5G/6G signal can also be used as the two are similar technologies
- AI or Neural Network Models
- make sensing resilient to spoofing and adverse channel conditions, i.e., presence of noise and interference from other technologies

Join the Discussion

- New IETF draft “Problem Statement for Internet of Things Sensing” discussing the problem statement and potential IETF work:
 - <https://www.ietf.org/archive/id/draft-hsothers-iotsens-ps-00.txt>
- Read this draft and join the discussions:
 - On mailing list PidLoc
 - Subscribe to <https://www.ietf.org/mailman/listinfo/pidloc>
 - a mailing list to discuss hardware based IoT authentication and its relationship with Wireless Local Area network collaborative and/or multi-band sensing enhanced with artificial intelligence i.e., neural networking capabilities