IPv6 over 802.11ah
draft-delcarpio-6lo-wlanah-01

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IEEE 802.11ah Short Overview

- It operates at Sub-1Ghz ISM bands. It is designed for low-power consumption and longer range operation (hundreds of meters)
- Link bit-rates are lower compared to 802.11n/ac
- It will enable IoT devices to use 802.11 technology
- Efficient L3 and above protocols are needed to enable the best use of the technology.

Use Cases

Table 1. Use cases applicable for 802.11ah

From [RFC7548]	From IEEE Task Group AH
Environmental & Infrastructure Monitoring	Sensor and Meters
Industrial Applications, Building Automation, Home Automation	Backhaul Sensor and meter data (data aggregation)
Energy Management	Extended Range Wi-Fi
Transport Applications	
Medical Applications	
Community Network Applications and Field Operations.	

IEEE 802.11ah MAC

- There are two protocol versions (PV0 & PV1), and 6LoWPAN is compatible with both
- PV0 is the standard MAC format used by 802.11b/n/ac/ah
- PV1 is only used in 802.11ah. It has less overhead
- Compatibility with PV0 and LLC implies compatibility with whole 802.11 family
- Details of the formats are described in the draft document

Prefered 802.11ah topology

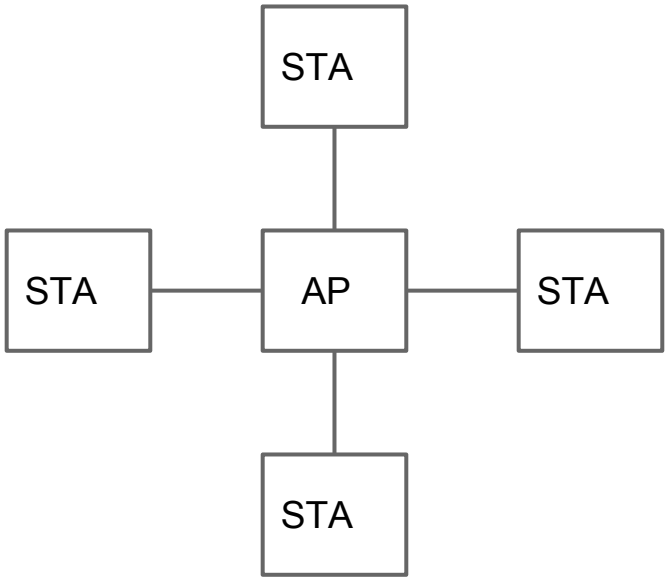


Figure 1. A star topology

- Star topology is defined in 802.11ah
- It allows power-saving mode (devices can sleep) due to existence of Access Point
- Ad-hoc topologies are allow in 802.11

LLC SNAP Compatibility

- New Ethertype can be used to indicate 6LoWPAN compression protocol being fully backwards compatible with LLC as shown in the figure.

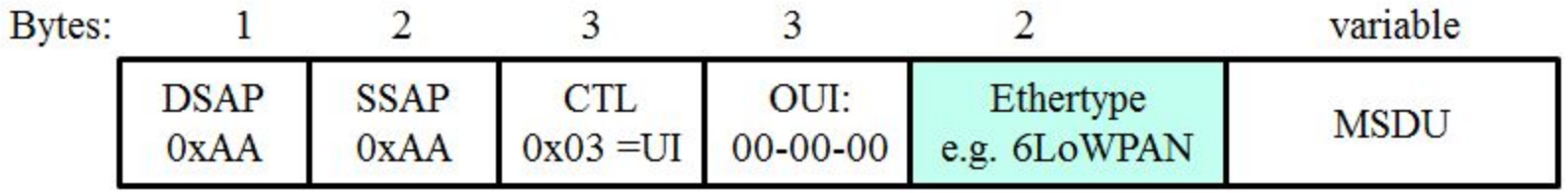


Fig 2. Format of LPD compatible with current 802.11 recommendations

Relation with IEEE

- This topic was presented in at last IEEE meeting as an informative presentation

  https://mentor.ieee.org/802.11/dcn/15/11-15-1085-00-0wng-6lowpan-over-802-11.pptx

- Comments from members of IEEE TASK GROUP AH were updated on the draft

- Work to continue in IETF

what was added in the new version

-Pv0

- ESS
- Extension to 802.11 std
- 6282 features

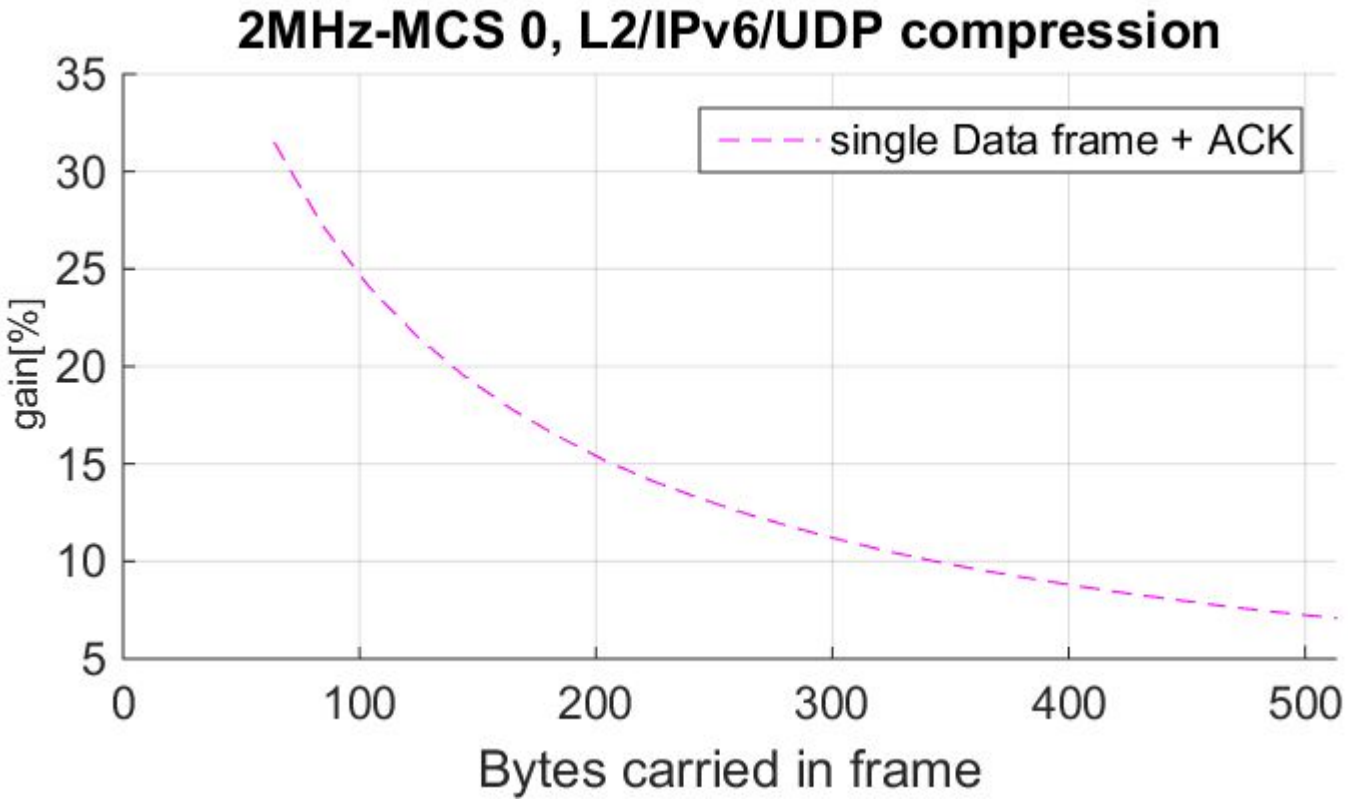
Thanks!

APPENDIX

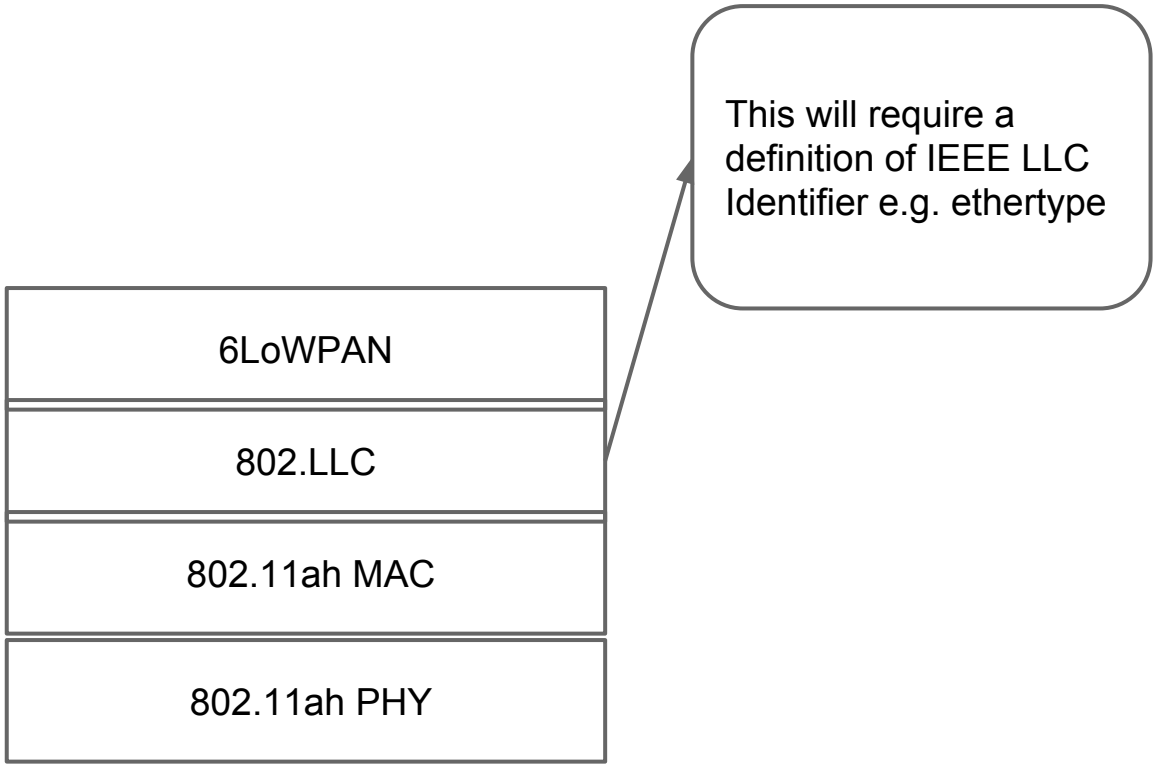
A1. Why 6LoWPAN in 802.11ah?

- IPv6 base header is 40 bytes long, an IPv6/UDP stack has minimum 48 bytes of header
- 6LoWPAN can reduce the overhead of IPv6 headers (also UDP) at networking layer
- IPv6/UDP headers could be reduced from 48 bytes to 3 bytes
- Reduction of header overhead improves overall BSS capacity by reducing air-time of each data frame in the BSS

A2. Example of benefits of compression



A3. Identifier will be required for LLC



A4. Network Topology