

IPv6 over Constrained Node Networks(6lo) Applicability & Use cases

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History and status

- 1st WGLC : draft-ietf-6lo-use-cases-05 (Non. 2018)
- 2nd WGLC : draft-ietf-6lo-use-cases-09 (Oct. 2020)
- Submitted to IESG : draft-ietf-6lo-use-cases-12 (Feb. 2022)
- **14th revision : draft-ietf-6lo-use-cases-14 (Oct.24.2022)**

Updates after Last meeting

–Handling Appendix A

- Comment from Robert Sparks
- “Appendix A is neither introduced nor referenced from the body of the document. Why is it here?”

–Update Security Consideration section

- Comment from Robert Sparks
- “I don't think the addition is sufficient. As written it's almost cryptic. This section should say why L2 security is required, and what the threats are if it is not provided.”

Handling Appendix A

–Appendix A. Design Space Dimensions for 6lo Deployment

- In old versions of this draft, the content in Appendix A is located in the main body. During progressing this draft and resolving the comments, it was moved to Appendix A.
- There were comments to keep the Appendix A because it provides useful information for 6lo deployment.
- Add a related sentence in the Introduction.

The 6LoWPAN working group produced the document entitled "Design and Application Spaces for 6LoWPANs" [RFC6568], which describes potential application scenarios and use cases for low-power wireless personal area networks. The present document aims to provide guidance to an audience who are new to the IPv6 over constrained node networks (6lo) concept and want to assess its application to the constrained node network of their interest. This 6lo applicability document describes a few sets of practical 6lo deployment scenarios and use cases examples. In addition, it considers various network design space dimensions such as deployment, network size, power source, connectivity, multi-hop communication, traffic pattern, security level, mobility, and QoS requirements (see Appendix A).

Update Security Consideration section

– Before : Security considerations are not directly applicable to this document. For the use cases, the security requirements described in the protocol specifications apply.

The 6lo stack uses the IPv6 addressing model and it is required to consider the implication for privacy with L2-address-driven IPv6 addresses. In a typical 6lo use case with a variety of secured data (e.g., personal healthcare data), it is also required to provide secure data transmissions. Even though the 6lo stack do not address security at the network layer, it is required to provide L2-level security and application-level security is highly desirable.

– After : This document does not create security concerns in addition to those described in the Security Considerations sections of the 6lo adaptation layers considered in this document [[RFC7428](#)], [[RFC7668](#)], [[RFC8105](#)], [[RFC8163](#)], [[RFC9159](#)], [[I-D.ietf-6lo-nfc](#)], and [[I-D.ietf-6lo-plc](#)].

Neighbor Discovery in 6lo links may be susceptible to threats as detailed in [[RFC3756](#)]. Mesh routing is expected to be common in some 6lo networks, such as ITU-T G.9959 networks, BLE mesh networks and PLC networks. This implies additional threats due to ad hoc routing as per [[KW03](#)]. Most of the L2 technologies considered in this document (i.e., ITU-T G.9959, BLE, DECT-ULE, and PLC) support link-layer security. Making use of such provisions will alleviate the threats mentioned above. Note that NFC is often considered to offer intrinsic security properties due to its short link range. MS/TP does not support link-layer security, since in its original BACnet protocol stack, security is provided at the network layer; thus, alternative security functionality needs to be used for a 6lo-based protocol stack over MS/TP.

End-to-end communication is expected to be secured by means of common mechanisms, such as IPsec, TLS/DTLS or object security [[RFC8613](#)].

The 6lo stack uses the IPv6 addressing model. The implications for privacy and network performance of using L2-address-derived IPv6 addresses need to be considered [[RFC8065](#)].

Thanks!!

Questions & Comments