

Transmission of IPv6 Packets over PLC Networks

draft-hou-6lo-plc-04

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Status

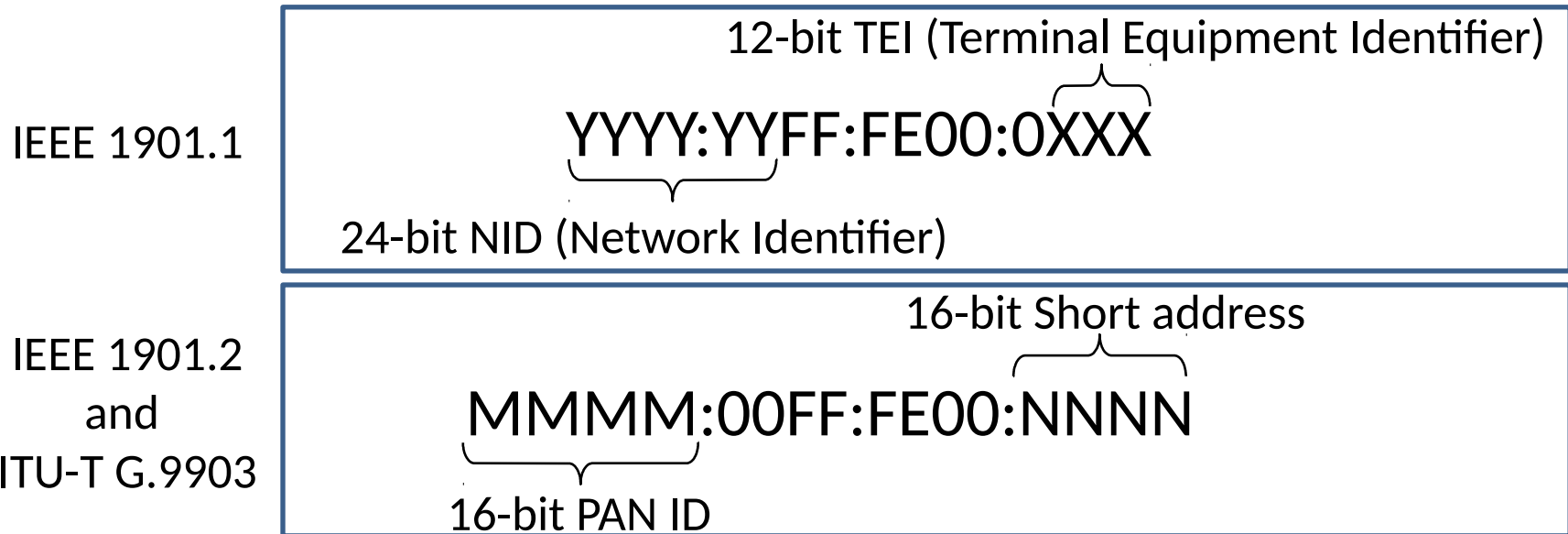
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 - Updated Parts
 - Formally include IEEE 1901.1 into the scope
 - Address autoconfiguration and mapping designed for IEEE 1901.1
 - Add RFC 6775-update features to Neighbor Discovery
- Charlie Perkins and Bing Liu become co-authors

Recently published IEEE 1901.1 Standard

- IEEE 1901.1: IEEE Standard for Medium Frequency (less than 12 MHz) Power Line Communications for Smart Grid Application
 - Published in May 2018
 - <https://standards.ieee.org/findstds/standard/1901.1-2018.html>
- Technical Characteristics
 - TDMA and CSMA/CA support
 - OFDM
 - Fragmentation and reassembly, improving the transmission efficiency
 - Data retransmission
 - AES/3DES/DES data encryption
 - Incident processing with four levels of priorities for differentiated QoS
 - Data rate up to 2Mbps

Stateless Address Autoconfiguration

- **64-bit IID derived from long address**
 - Based on the EUI-64 ID or EUI 48 MAC (extended to 64-bit by inserting 0xFFFE)
 - Set the U/L (7th bit of the first byte) to 1 and G/I (8th bit of the first byte) to 0
- **64-bit IID derived from short address:**

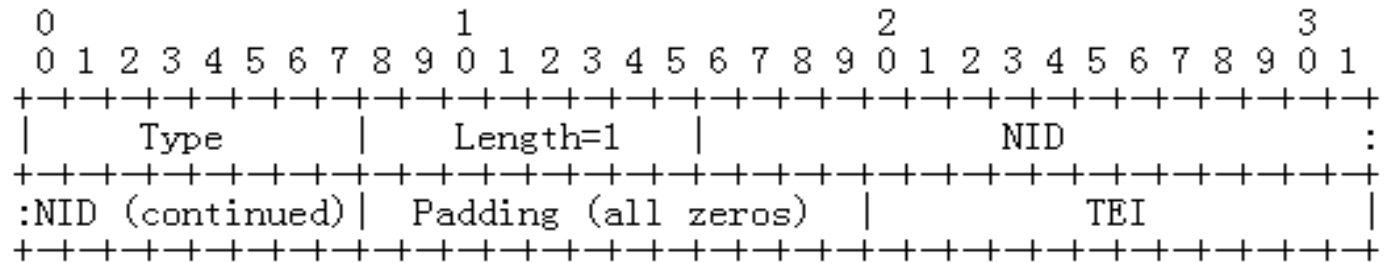


- U/L bit and G/I bit set to 0.
- To avoid any ambiguity in the derived Interface ID, these two bits MUST NOT be used to generate the NID (for IEEE 1901.1) or PAN ID (IEEE 1901.2, ITU-T G.9903).

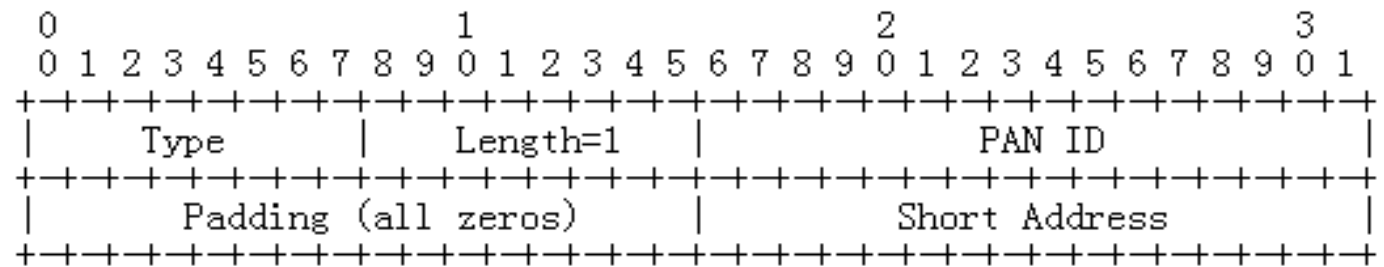
Unicast Address Mapping

Link layer address option can be used in Neighbor Discovery to resolve Link layer address and to suppress the broadcast in RA/RS and NA/NS.

IEEE 1901.1



IEEE 1901.2
and
ITU-T G.9903



Using RFC 6775-update for Neighbor discovery

- RFC6775-update PLC devices include the EARO with the 'R' flag set when sending Router Solicitations, and process Router Advertisements that include EARO to extract status information.
- Duplicate Address Detection is in this case proxied by a routing registrar, which MAY operate according to Optimistic DAD (ODAD) [RFC4429].
- For networks with mixed RFC6775-only and RFC6775-update devices, the RFC6775-update PLC devices MUST use a 64-bit ROVR for backward compatibility.

Future Work

- Next Steps
 - WG Adoption?
- Welcome feedback!