SNMP in 6LoWPAN Networks

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IEEE 802.15.4 Characteristics

- Small frame size (max frame size = 127 bytes)
- Low power devices (mostly battery operated)
- Limited memory and processing power
- Low bandwidth (max data rate = 250 kbps)
- Large scale and dense deployments
- Devices and channels tend to be unreliable
- Devices may have sleep scheduling in order to conserve energy

6LoWPAN

- IPv6 over Low power Wireless Personal Area Networks makes 802.15.4 networks look like an IPv6 link
  - Header compression
  - Fragmentation and reassembly layer
  - Mesh routing support
  - Multicast emulation / avoidance
- Management protocols need to consider the memory, processing, and message size constraints of 6LoWPANs.
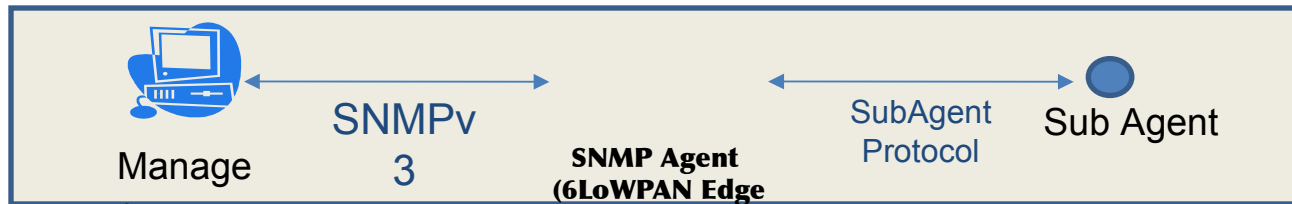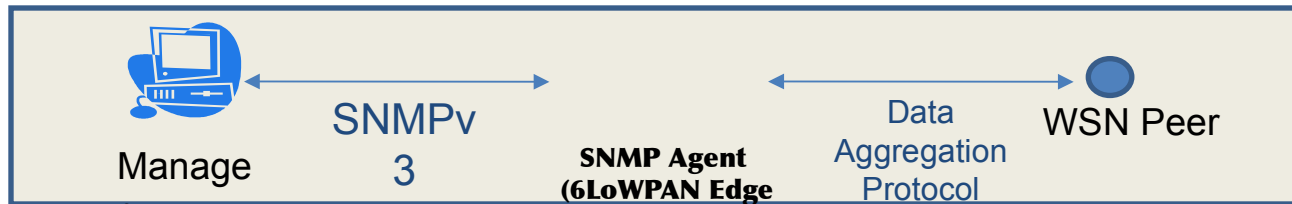
SNMPv3 6LoWPAN Deployment Models
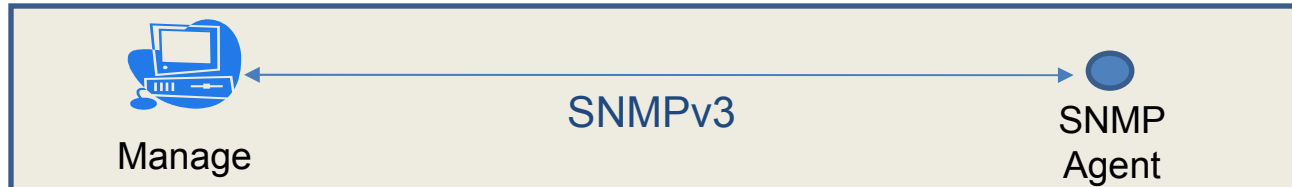
Lightweight End-to-End
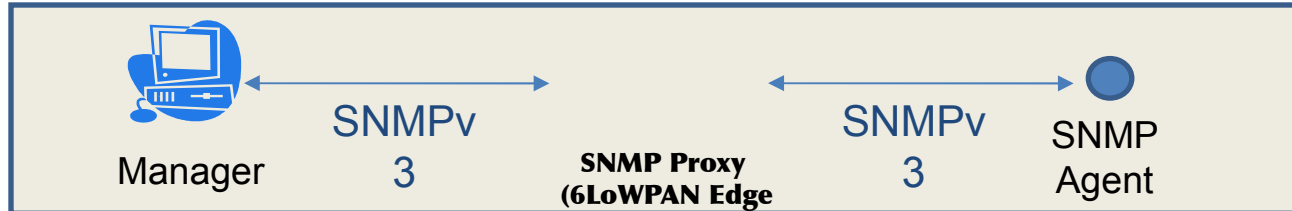
Proxy Model

SNMP with Sub-Agent Protocols

SNMP with Data Fusion Protocols

Recommendations

- Applicability statement for End-to-End SNMPv3
  - Recommendations on how SNMP can be reused "as is" in a constrained 802.1.5.4/6LoWPAN network with a minimal footprint on the devices

- SNMPv3 with proxy at the Edge Router
  - Using proxy to change encoding or to translate between versions?

- Do we need a subagent protocol?
  - AgentX over UDP?

Appendix

- RFC 4944
- RFC 4919
- draft-hamid-6lowpan-snmp-optimizations