L2TP or not L2TP?

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L2TP Configuration Latency (in authenticated mode)

- L2TP (8), PPP+CHAP (11), DHCPv6 (4) = **23 pkts**
- Idea: collapse all those layers into 1 protocol with minimum packet exchange. E.g.:
  - TSP:
    - 10 packets (digest-md5 auth)
  - TSP-lite:
    - 6 is possible
  - STEP:
    - 4 is possible

L2TP Configuration Latency (in non-authenticated mode)

- L2TP (8), PPP (8), DHCPv6 (2) = **18 pkts**
- Idea: collapse all those layers into 1 protocol with minimum packet exchange. E.g.:
  - TSP:
    - 7 packets (anonymous)
  - TSP-lite:
    - 2 is possible, 3 with return reachability test
  - STEP:
    - 2 is possible

L2TP Encapsulation Overhead

- IPv6 over PPP (4)/L2TP (8)/UDP (8)/IPv4 (20) = **40 bytes**
- Idea: collapse into:
  - IPv6/IPv4 = **20 bytes** or IPv6/UDP/IPv4 = **28 bytes**
- Case sudy: VoIP over radio link
  - VoIP payload = 44 bytes, radio overhead = 12 bytes
  - Total packet size:
    - With L2TP encapsulation:
      44+8+40+40 +12 = 144 bytes
    - With IPv6/IPv4 encapsulation:
      44+8+40+20+12 = 124 bytes **(16% less)**

What else will change by collapsing the layers of L2TP?

- PPP is doing MTU adaptation
- L2TP is doing the management of the tunnel (e.g. keep alive)
- L2TP can make sure packets are ordered

- If we do not use L2TP, the node may have to do all that.