L2TPv3

- control connection
  - inband "tunnel"
    - PW="session"
  - Modes
    - manual
      - no Control Channel
      - (pwc) protocol none
      - (xcon) l2tp id #local #remote
      - (xcon) l2tp cookie (local|remote) #s #h #l
    - manual w. keepalive
      - dead-peer detection
      - (xcon) l2tp hello [l2-class]
    - dynamic
      - (pwc) protocol l2tpv3 [#l2-class]
  - format
    - uses Attribute-Value Pairs
    - connection-oriented
      - uses seq + windows
    - Authentication
      - CHAP-like
        - old
      - Message Digest
        - password optional
- PMTUD
  - path MTU discovery
  - Fragment on PE
    - move load out uf the core
  - assemble on CE
    - move load from PE
  - function
    - copy DF-Bit
      - if set
    - listen for ICMP UNreachable
    - Fragment accordingly
  - (pwc) up pmtu
  - verify
    - sh ip traffic
    - sh int stats
    - sh int switching
- pw-class
  - common configuration
  - (conf) pseudowire-class #name
  - (pwc) encapsulation l2tpv3
  - (pwc) ip local interface #int
  - (pwc) ip dfbit set
  - (pwc) ip pmtu
    - enable path mtu discovery
  - (pwc) ip tos (value #v | reflect)
  - (pwc) ip ttl #v
  - (pwc) sequencing transmit
    - needs Control Word
  - (int) xconnect #tun-end #VC-id pw-class #name
- config
  - l2tp specific config
  - (conf) l2tp-class #name
  - default 0
- protocols
  - Frame Relay
    - type 1
    - (conf) connect #name #int #dlci l2transport
    - no L2SS
      - Q.922 transported asis
  - PPP
    - type 7
    - FCS alternatives + ACFC not supported
  - HDLC
    - type 6
    - transports protocols with simmiliar framing
  - Ethernet
  - ATM
    - AAL5 SDU mode
      - type 2
      - packet reassemnled
      - ATM header dropped
      - (int) encapsulation aal5
    - Port Mode
      - type 3
      - (int) encapsulation all0
    - VCC mode
      - type 9
      - (int) pvc l2transport
      - (pvc) xconnect...
    - VPC mode
      - type A
      - (int) atm pvp l2transport
      - (pvp) xconnect...
    - pack multible cells into one packet
      - cell p
      - MCPT
      - (int) a
      - (int) c
      - #nr]]
- encapsulation
  - into IP or UDP
    - IP protocl id 115
    - udp port 1701
  - inbound signaling
    - session ID=0
  - one session per PW
  - Header Fields
    - session id (4B)
      - 0= control
      - 2 session i
    - cookie (0,4,8B)
      - prevents i
    - L2-specific sublayer(4B)
      - u
- QoS
  - (pwc) ip tos (value # | reflect)
  - (pmap) set ip prec tunnel #
  - (pmap) set ip dscp tunnel #