Tunnel Issues ID - Status

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Motivation

- Tunnel use common
  - tunnel+MTU+ICMP in ~100 RFCs
  - IPsec, L2TP/PPTP
  - Mobile IP
  - L[1,2,2.5,3,3.5]VPNs
  - SEAL, LISP
- Potential need for automation
  - 1300-byte MTU vs. can/should we do better
- Potential need to revise/coordinate
  - Fragmentation handling, ICMP handling
- **GOAL: explain in a single document**

Observations

- Tunnels are L2
    - We create them
    - Still subject to link issues,
      e.g., MTU discovery, signalling
- Advantages vs. other L2s
    - Arguably easier to change
    - When L2 protocol matches L3, it MAY be
      easier to align L2 and L3 MTU discovery,
      signalling, etc.
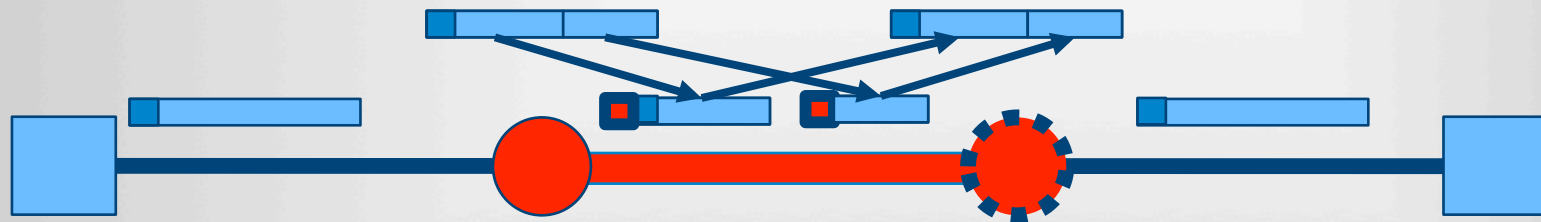
Known Issues

- MTU issues
  - MTU discovery
  - Fragmentation – outer or inner
- Other signalling
  - ICMP
- Performance issues
  - IP-ID exhaustion
  - Fragment size
  - Packing (ala GigE packet bursting)
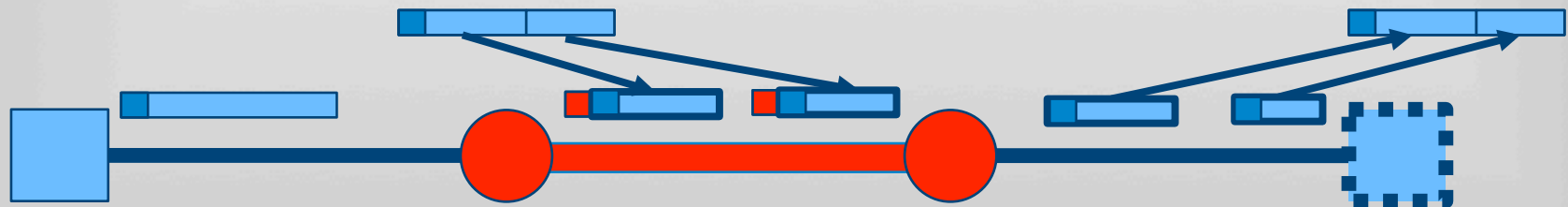
MTU Discovery

- Mechanisms
  - ICMP-based (RFC 1191)
  - Probe-based (RFC 4821, SEAL)
- Impact on E2E MTU discovery
  - Forwarding/recomputing/validating ICMPs
  - Encapsulator sending advisory too-bigs
- Tunnel MTU discovery
  - Is internal mechanism required?
- See RFC 4459…

Fragmentation
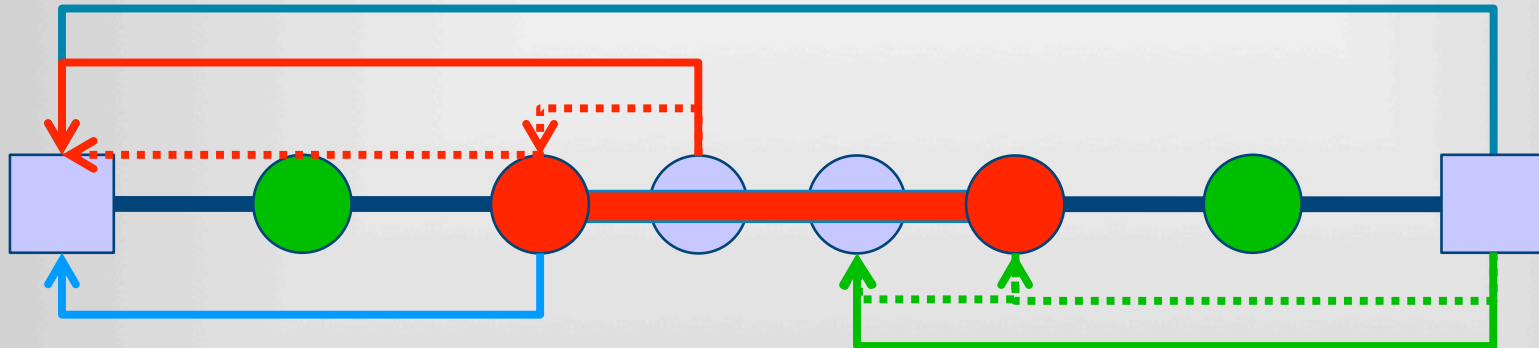
- *Outer* implies reassembly at decapsulator

- *Inner* affects IPv4 DF, reassy at dst

Signaling – ICMP, etc.

- Pop control out of tunnel?
  - E.g., ICMP underliverables, MTU discovery

- Send tunnel status to the original src?
- Push control into tunnel (ever)?
  - (listed for completeness)

Current Status

- Need contributors
  - Expanded list of examples
  - Placeholder for multipoint
  - Entire section of additional issues
- Relationship to security concerns doc
  - Currently proceeding separately (cross-ref)