SEAL Problem Statement

• IPv6 minimum MTU is 1280
• Tunnels **MUST fragment** if path MTU too small *(not permitted to report MTU < 1280)*
• If Packet Too Bigs (PTBs) lost, **black hole**
• Classic tunnel fragmentation requires PTBs; need proactive fragmentation → **SEAL**
• Applies to all tunnels (ipip, GRE, IPsec, etc.)
SEAL Strategy

• Admit small and large packets **unfragmented**
• **Proactively fragment mid-sized packets** (non-final fragments **MUST** be at least ~1280)
• At the same time, **send unfragmented probe**
• If probe succeeds, **stop fragmenting**
• Results:
  – First fragment contains **entire IPv6 header chain**
  – **Packets up to 1500 delivered** even if PTBs lost
  – Larger packets delivered if path MTU permits
  – RFC4821 for tunnels
SEAL Requirements

• Uses IPv6 Fragment Header - codes Reserved fields (adds version; control bits)

• Updates RFC2460 (if approved)
  – Implementation: http://linkupnetworks.com/seal/sealv2-0.2.tgz
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