IP Fragmentation Considered Fragile

draft-ietf-intarea-frag-fragile-02

Ron Bonica, Fred Baker, Geoff Huston, Bob Hinden, Ole Troan, Fernando Gont

IETF 103
What We Seem To Agree On

• The Problem
  • When a packet is fragmented, the upper-layer header appears only in the first fragments
  • Many stateless middle boxes require access to the upper-layer header
    • By definition, a stateless middle box does not perform virtual reassembly of fragmented packets
  • IP fragmentation causes these stateless middle boxes to behave badly

• The Recommendation
  • Applications SHOULD break their reliance on IP fragmentation
    • Push the problem of fragmentation to upper-layers
  • Middle box developers SHOULD make their devices stateful enough to work well in the presence of IP Fragmentation
Outstanding Issues

• Should IPERF be included in Section 6
  • Applications That Rely on IP Fragmentation
• Others?
Merciless Reality Check

• Will application developers heed the recommendations?
  • Cost of compliance for new applications is relatively low
  • Legacy applications will break their reliance on IP fragmentation when they are economically motivated to do so
    • Maybe DNS will be among the first
• Will middle box developers heed the recommendations?
  • Cost of compliance varies with middle box type
  • Middle box vendors will produce devices that behave well in the presence of IP fragmentation when they are economically motivated to do so
    • Probably requires motivation beyond that which exists today
  • Problem of the installed base
• The market will decide!!
Next Steps

• One final update, reflecting outcome of today’s conversation
• Working Group Last Call