Operational Issues Associated With Long IPv6 Header Chains
draft-wkumari-long-headers-02
ASIC-based IPv6 Forwarding

• Typical behavior
  – Copy N bytes from beginning of packet to on-chip memory

• Service Types
  – Basic: requires information from IPv6 header, hop-by-hop and routing extension header
    • Example: Plain old IPv6 forwarding
  – Enhanced: requires information from deeper inside the header chain (e.g. TCP header)
    • Examples: Load-balancing, firewall filtering

• Long header chains may adversely impact forwarder’s ability to deliver enhanced services
Requirements for IPv6 forwarders

• MUST provide basic services regardless of header chain length
  – Don’t drop the packet
  – Process the entire hop-by-hop extension header
  – Process the entire routing extension header

• MUST provide enhanced services at a minimum level
  – Document limitations due to header chain length
  – Policy language must include a mechanism to identify packets that cannot be matched upon due to header chain length
Advice to Protocol Developers

• Many IPv6 implementations cannot offer enhanced services for packets with header chains in the range of 128-364 bytes
• Many network operators filter packets for which they cannot offer enhanced services
• Protocols that rely on long header chains should be used only in environments that are known to permit packets with long header chains