Network Ingress Filtering: Defeating Attacks which employ Forged ICMP/ICMPv6 Error Messages

(draft-gont-opsec-icmp-ingress-filtering-02)

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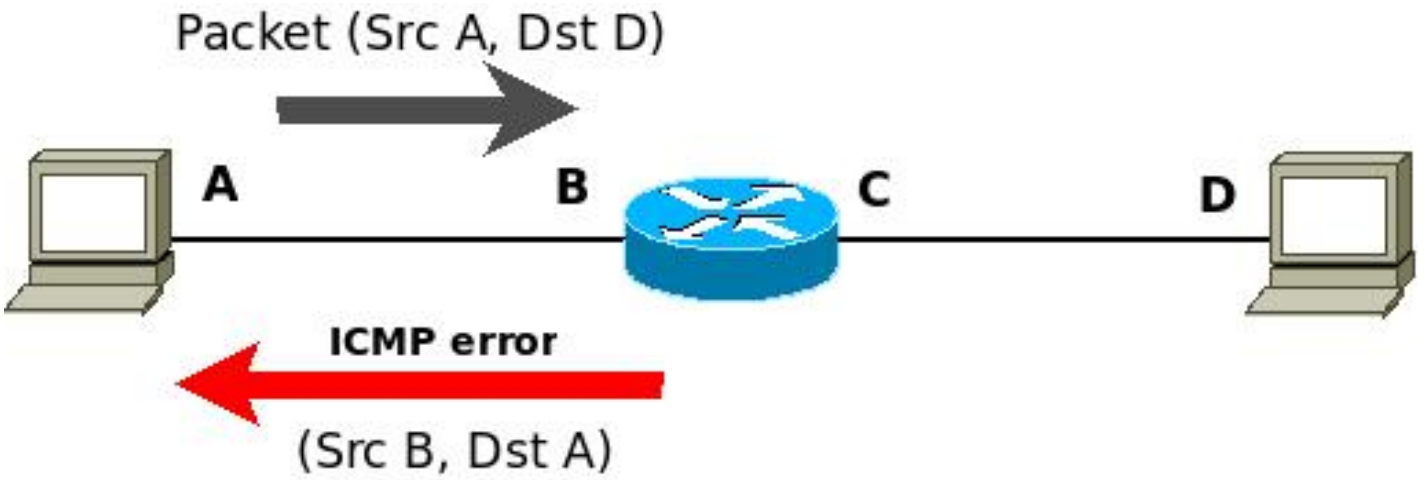
IETF 99
Prague, Czech Republic. July 16-21, 2017

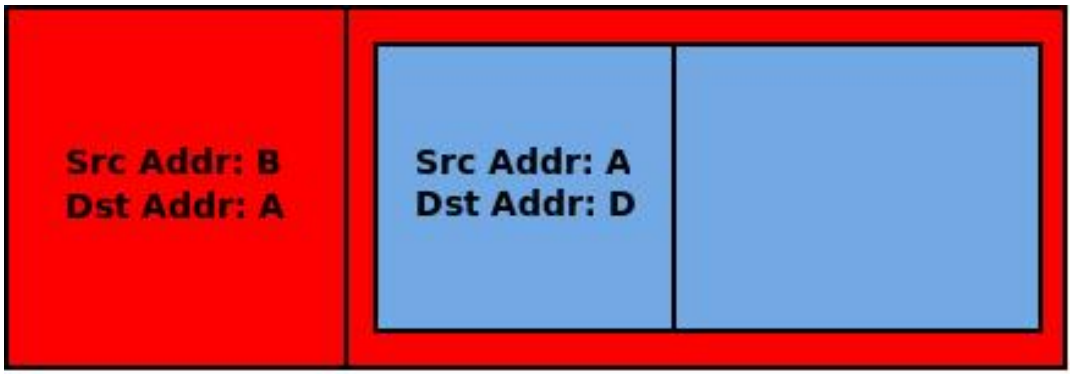
Goal

- Specify filtering policy to mitigate attacks based on spoofed ICMPv6 errors
  - Spoofed ICMPv6 PTB to play with PMTUD or trigger fragmentation
  - Spoofed ICMPv6 errors that might reset connections
  - etc.
- Should be deployed close to users (e.g. CPEs)
- Must never be applied in multihomed scenarios

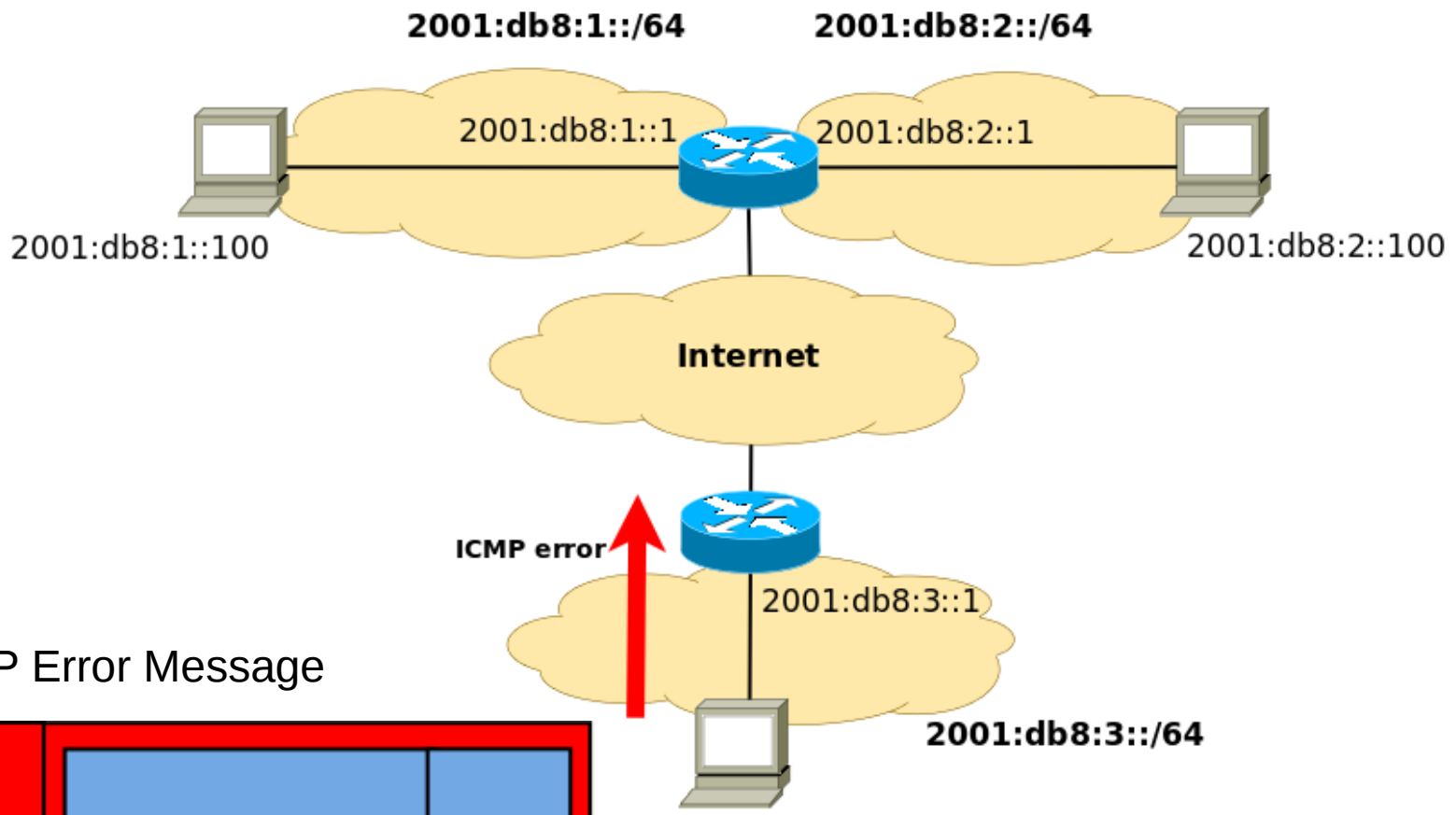
Background on ICMP Error Generation



ICMP error



ICMP-based Attack Scenario



ICMP Error Message

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- IF embedded packet's Destination Address is from within my network

  THEN forward as appropriate

- IF embedded packet's Destination Address is anything else

  THEN deny packet

Changes in version -03

- Change all IPv4 examples to IPv6 examples
- Explain possible limitations in inspecting ICMP payloads
- Include discussion of ICMP extension objects (RFC4884)

Moving forward

- Adopt as opsec wg item?