The UDP Tunnel Transport mode
draft-fairhurst-6man-tsvwg-udptt-01 (21-Jun-09)
(Individual Submission)

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Transport Checksum for IPv6

- In IPv4 checksum is not required
  - Endpoint association protected by IP checksum
  - Still is recommended [RFC 5405]

- IPv6 [RFC 2460] mandates transport checksum
  - No IPv6 header checksum
Why do people some want to change?

- **AMT, Automatic IP Multicast Without Explicit Tunnels**
  
draft-ietf-mboned-auto-multicast-09
  AMT outer checksum protects only outer IP & UDP header, type, and Nonce
  Issue is mis-delivery to standard UDP stacks

- **Desirable:**
  No Checksum computation at sender/receiver
  UDP-like traversal of middleboxes (header value 136)
Effect of corruption

- Errors could...
  - Cause packet to go in wrong direction, or to wrong port
    Such packets should be discarded
  - Cause the inner packet to become corrupted
    Such packets should be discarded

Nice to make *wrong* endpoint do the checksum, but avoid processing on *actual* tunnel endpoints...
UDPTT pseudo-header for IPv6:

128b Source Address
128b Destination Address
32b 0x0000000008
24b zero
8b   Next H value
UDPTT Header Format

Figure 1: UDPTT Header Format

UDPTT pseudo-header for IPv6:

128b Source Address
128b Destination Address
32b 0x0000000008
24b zero
8b Next H value
Two length fields: in IP and Transport

- **Three behaviours:**
  - **1** Standard checksum calculation
    - If “UDP” length used, could truncate with no payload
  - **2** Standard checksum calculation
    - If “corrected IP” length used, would be OK
  - **3** Checksum used IP length rather than UDP length
    - Fails, discarded (Non-compliant to RFC 2460)
Updated text:

3.2. Requirements for Tunnelled Protocols
3.3. Backwards compatibility with RFC 2460
3.1 UDPTT Usage Guidelines
6. Security Considerations
Appendix B. Applicability for AMT

Currently known remaining issues:
Middleboxes /SHOULD/MUST/ NOT truncate IPv6 datagrams
Specify simple API (sockopt)
???
???
v4-v6 protocol translation (PT)
What may middleboxes do?

• Most NATs adjust transport checksums and don't (re) compute.
• Some middleboxes automatically drop zero checksums.
• Some middleboxes may correctly forward UDPTT

• But ... there are many variants!
What Next?

- Some minor tweaks...

- The author thinks this is ready for WG consideration:
  
  *Is this a good idea?*
  
  *Does anyone have comments?*
  
  *Is this deployable?*