IPv6 UDP Checksum Considerations

draft-ietf-6man-udpzero-02

Magnus Westerlund

Gorry Fairhurst

OUTLINE

- Introduction
- Updates to the draft
- Summary of analysis
- Constraints

Z[\]
¦§¨©ª«¬®¯°

‹ØÙÚÛÜÝÞ
āĂăąĆćĊċČ
ŅņŇňŌŐőŒ
ŹźŻżŽžƒȘșˆˇ
fifl

ĠġĢģĪīĮįİĶķ
ŢţŤťŪūŮůŰ

ΦΧΨΪΫΆΈΉΊ

НОПРСТУФ
ОПРСТУФХ
ѢѲѳѴѵҐґә

Introduction

- The basis of the issue is the removal of the IP header checksum in IPv6
- Thus UDP checksum was mandated for UDP in IPv6
- This creates issues for a number of tunnel ingresses
- As the discussion has gone on more potential users have been identified: AMT, LISP, Softwires, etc.
- This document is an analysis of issues and comparisons of the properties of potential solutions
- Intended for you to help decide if we should update RFC 2460 in some way

Updates

› The document has been massively changed

  – Restructured

  – Improved introductions and conclusions

› Changed the considerations

  – Removed 2 considerations

  - Rewrote some considerations

- Clearer analysis of the benefits and downsides of the different proposals

- One new proposal analyzed:

  - Set Random and Ignore the UDP checksum on reception

Document Conclusions

- There is no perfect solution only different sets of compromises
- Zero-Checksum properties are:
  - Low complexity encapsulation
  - Good multiplexing support
  - Limited middlebox traversal that could improve over time
  - Good load balancing support
  - In most cases requiring application-level negotiation and validation
- If low complexity is a requirement among the choices, zero checksum appears so far the best choice

Z[\]
¦§¨©ª«¬®¯°

‹ØÙÚÛÜÝÞ
āĂăąĆćĊċČ
ŅņŇňŌŐőŒ
ŹźŻżŽžƒŞşˆˇ
ﬁﬂ

ĠġĢģĪīĮįİĶķ
ŢţŤťŪūŮůŰ

ΦΧΨΪΫΆΈΉΊ

НОПРСТУФ
ОПРСТУФХ
ЂѲѳѴѵҐґә

Document Conclusions

- › Zero-Checksum is recommended to be allowed under constraints
- › The quicker one agrees to change, the fewer IPv6 middleboxes that will not support new behavior will exist
  - – Hopefully the middlebox issue will not be a major one
  - – Actual data / facts for IPv6 middlebox behavior needed
- › Applications using Zero-checksum will need to be careful
  - – Potential for higher rate of corrupted packets than in IPv4
- › Recursive Tunneling with fragmentation is worrying
  - – Don’t ignore this issue or it will bite down the road

Going Forward

- We think we are mostly done with the material in this document:
  - Comments are appreciated
- Aim at WG last call after next version
- Actual change of RFC 2460 is handed over to the next speaker

Z[\]
¦§¨©ª«¬®¯°

‹ØÙÚÛÜÝÞ
āĂăąĆćĊċČ
ŅņŇňŌŐőŒ
ŹźŻżŽžƒȘșˆˇ
fifl

ĠġĢģĪĮįİĶķ
ŢŤťŪūŮůŰ

ΦΧΨΪΫΆΈΉΊ

НОПРСТУФ
ОПРСТУФХ
ѢѲѳѴѵҐґә