Aggregated Option for SYN Option
Space Extension

draft-nishida-tcpm-agg-syn-ext-04

Yoshifumi Nishida
nsd+ietf@gmail.com
Recap: What is “Aggregated Option”?

- Aggregate multiple options into a single option
  - Current TCP option format is not optimized for space
    - It consumes at least 2 bytes or 4 bytes even if it carries just 1 bit info.

- Goal:
  - Provide a solution for limited option space in SYN segments
Aggregated Option Format

- Option length: 3 bytes – 6 bytes
- Can contain 1-4 Aggregated Blocks
- Each block can contain 6 options
- Can accommodate 24 options at total
Updates from -03 version

- Added some texts for User Timeout Options (UTO)
  - The exceptional option that does not use SYN

- Added “Predefined” Aggregated Options
  - Use Group ID 1 to aggregate commonly used options (SACK, MSS, WScale)

- Will add some texts about the scope of the proposal and deployments in the next version
Predefined Aggregated Option Format

- 4 bits are used to store value for WScale option (0-14)
  - If this value is 15, WScale is not included in the option.
- 1 bit is used for SACK PERMIT
  - If this bit is set, SACK PERMIT option is specified. If not, SACK PERMIT is not included in this option.
- 1 bit is used for MSS
  - If this bit is set, MSS=1460 (IPv4), 1440 (IPv6) is specified. If not, MSS is not included in the option.
Another Approach to Aggregate MSS Option

• Can we aggregate more values for MSS?
  • Need to find more commonly used values for MSS
    • Current proposed value (1460, 1440) can cover over 40% MSS options observed in WIDE and CAIDA’s traffic samples

• How do we collect data samples?
Late Negotiation for MSS Option

- Use 3rd Segments and 4th Segments

Client

Aggregated Option (MSS bit is on)

SYN

SYN/ACK

ACK

ACK

Server

Aggregated Option (MSS bit is on)

Send MSS value with MSS option

Send MSS value with MSS option
Drawback for Using Late Negotiation

- Need to use default MSS when client sends data with 3rd ACK
  - We might need an adhoc logic to mitigate this issue

![Diagram of network communication](image)

- Aggregated Option (MSS bit is on)
- Send MSS value with MSS option
- Data packets are sent with default MSS
Questions or Suggestions?

• If you have any better ideas, please share!