



UDP Options

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Recent changes

- Option changes
 - Echo options
 - 9, 10
 - OCS integrates CCO
 - 16-bit negative of option area Internet cksum + length delta
 - Byte-swapped if not sum field isn't word-aligned
- Text extended
 - Rules for extending options
 - See next slide...
 - Inclusion and processing rules
 - ALWAYS: Drop options if OCS fails, but still deliver the body
 - RECEIVER DECIDES: Whether to require ANY option

Design principles

(per inclusion/processing rules)

- Who decides what?
 - Senders decide what to add
 - Receivers decide what to require
 - Soft-state helps coordinate safe use of content-modifying options, e.g., AE
 - Ensures default is consistent with legacy

Design principles

(per inclusion/processing rules)

- These are options, not encapsulations
 - Add to body, but not modify or depend on it
 - Exceptions include only LITE, AE, ACS
 - Do not depend on each other
 - Exceptions include only OCS, AE
 - Cannot declare the order of options
 - Process in the order that they occur
 - EXCEPT:
 - LITE always first if present
 - Then OCS (if present)

Other issues raised (1)

- FRAG+LITE
 - Use UDP CS=0 to traverse misbehaving middleboxes
 - Copy UDP CS “style” in reassembly CS ‘style’ (honoring user configuration)
 - Reassembled payload has its own checksum (which can also be zero if desired)
 - This should affect UDP statistics as expected (act like one UDP packet in/out)
 - These are admittedly known to potentially affect legacy receivers packet counts badly
 - Reassembled packet already has the potential for UDP options after reassembly
 - LITE as specified avoids the need for scatter-gather within UDP payloads during reassembly
- LITE (without FRAG)
 - May not traverse misbehaving middleboxes unless UDP CS=0 (but then the whole payload is LITE anyway)
 - OCS of the LITE area undermines “light” properties of the LITE area as separate
 - LITE as specified avoids need for scatter-gather within the payload for zero-copy

Other issues raised (2)

- Require/ignore flag
 - Legacy receivers already ignore all anyway, so 'require' is meaningless without soft-state
 - Given soft-state, no flags are needed
- Other uses of the surplus area
 - Currently allow this to be used if not defined as an option
 - But then ALL BETS ARE OFF (we don't ensure middlebox traversal, protect, etc.) – nor should we (they're not ours)
- Other proposals have been considered before
 - Fixed header (all options are optional)
 - Lack of a required OCS (UDP CS=0 is valid, so should OCS=0, but without wasting space)
 - Surplus area indicators are redundant with EOL
 - Attempts to provide a UDP header checksum (NAT would undermine)

Pending changes

- Typos:
 - TLV description
 - OCS, NOP, EOL have implicit, predefined L
 - Option section numbering
 - 6 should be 5.11
 - 6.1 should be 5.12
 - OCS detail
 - Length now is 3 bytes; 1 byte T, 2 byte V
- Middlebox traversal in Sec 12
 - Update to explain that new OCS works only when the remaining surplus is zero length (but this is user choice)
- Update LITE+FRAG discussion
 - Force CS=0 even if user doesn't ask
 - User choice of CS=0/not should follow in use of reassembly CS

For the future

- Cookie option
 - A separate draft, if desired