Updated Specification of the IPv4 ID

IETF 80

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Quick review

- ID *already* isn't unique within 2MSL
  - Recognize existing practice
- Limit IPv4 ID use to fragmentation
  - Update 791, 1122, 2003 accordingly
  - Remind users of the impact of using fragmentation

Changes 00 -> 01 (review)

- Lots of rewriting for clarity
- Removed SHOULD send only atomic datagrams
  - Now conditional (and consistent with DNS use):
    - Atomic can reuse IP ID (i.e., *not* rate limited)
    - Non- atomic,MUST rate limit (existing requirement)
- Added SHOULD verify integrity
  - To protect against ID reuse in fragments
- Removed incremental deployment plan
- Removed "reordering interval"

Changes 01 -> 02

- Abstract describes affected RFCs
- Updated refs

- To do to proceed:
  - Replace NAT with "address sharing devices"
  - Waiting for reviews
    - DNSOPS
    - INTAREA AD / IPDIR

BACKUP SLIDES

Current protocol req᾽ts

- Frag only:
  - MUST NOT use ID except for frag/reassy
  - Source MAY set ID to any value if atomic
  - Transit/dest MUST ignore ID if atomic
- Safe use:
  - Non-atomic rexmits MUST NOT reuse ID
  - Overlapping fragments MUST be ignored
  - Non-atomic or protected ATOMIC ID MUST NOT change in transit
  - NATs MUST honor rules as if a source

Current user req'ts

- Non-atomic sources MUST rate limit to honor ID non-reuse (existing req'd)

- Higher-layer protocols SHOULD verify integrity
  - Some transits ignore DF=1, and many reuse IDs too quickly; this is just good practice

- Non-atomic sources with strong integrity checks MAY reuse IDs (and thus exceed rate limit)

Reminder req'ts

- Non-atomic IDs MUST NOT repeat within one MSL within src/dst/proto triple
- DF=1 MUST NOT be fragmented
- Transits MUST NOT modify DF=1 bit

(none of these are new,
but are included in this doc
in 2119 language)