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# Mtrace Version 2: Traceroute Facility for IP Multicast

draft-ietf-mboned-mtrace-v2-17

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# Changes (from 15 to 16)

- Revised the introduction to clarify the criteria for directing the mtrace v2 query to either a last hop router or a rendezvous point
- Scanned for and corrected deviations from conventions (e.g. capitalization of “MUST” and “SHOULD” keywords), description of field ranges, etc.)
- Broadened the description of circumstances in which a reply may be sent before the mtrace reaches the FHR
  - Clarified the considerable errors
- Expanded on the criteria described in section 3 (Packet Formats) for validating TLVs within the message and for handling invalid TLVs.

# Changes (from 15 to 16) – cont'd

- Corrected the minimum length requirement in section 3.
- In the “forwarding code” item in section 3, added an explicit definition of the reserved error code range.
- Section 4.2: Defined the term “outgoing interface” before using it in the subsequent paragraphs.
- Corrected/clarified the steps specified for section 4.2.2 “Request Normal Processing”; These changes included clarification of the handling for the “ADMIN\_PROHIB” forwarding code.

# Changes (from 15 to 16) – cont'd

- Section 4.5: Corrected the description for the “number of hops” field adjustment made when proxying an mtrace v2 query
  - “decreases # Hops by ((number of the Standard Response Blocks that were just returned in a Reply) - 1). The "-1" in this expression accounts for the additional Standard Response Block appended by the gateway router.”
- Added more specific details and wording corrections to the descriptions of the mtrace2 forwarding codes registry and TLV types registry in section 8.1 and 8.2.

# Change (from 16 to 17)

- Formula converting from a UNIX timeval to a 32-bit NTP timestamp for Query arrival time (because POSIX.1-2008 recommends `clock_gettime()`)

```
query_arrival_time  
= ((tv.tv_sec + 32384) << 16)  
+ ((tv.tv_nsec << 7) / 1953125)
```

```
struct timespec {  
    time_t tv_sec;    /* seconds */  
    long   tv_nsec;  /* nano seconds */  
};
```

# Next Step

- 2nd WGLC