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Mtrace Version 2: Traceroute Facility for IP Multicast

draft-ietf-mboned-mtrace-v2-01

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Changes

- Mtrace ver.2 (mtrace2) works on UDP
 - Checksum field was deleted
 - UDP checksum only
 - TLV format
 - Mtrace2 Query: 1, Mtrace2 Response: 2
- Both IPv4 and IPv6 have been supported
- Every packet count field has 64 bits length now
- Supported protocols
 - IGMP/MLD proxy and AMT gateway/relay were added

Mtrace2 Response Data

Query Arrival Time						
Incoming Interface Address						
Outgoing Interface Address						
Previous-Hop Router Address						
Input packet count on incoming interface						
Output packet count on incoming interface						
Total number of packets for this source-group pair						
Rtg Protocol	Fwd TTL	M	B	S	Src Mask	Forwarding Code

IPv4

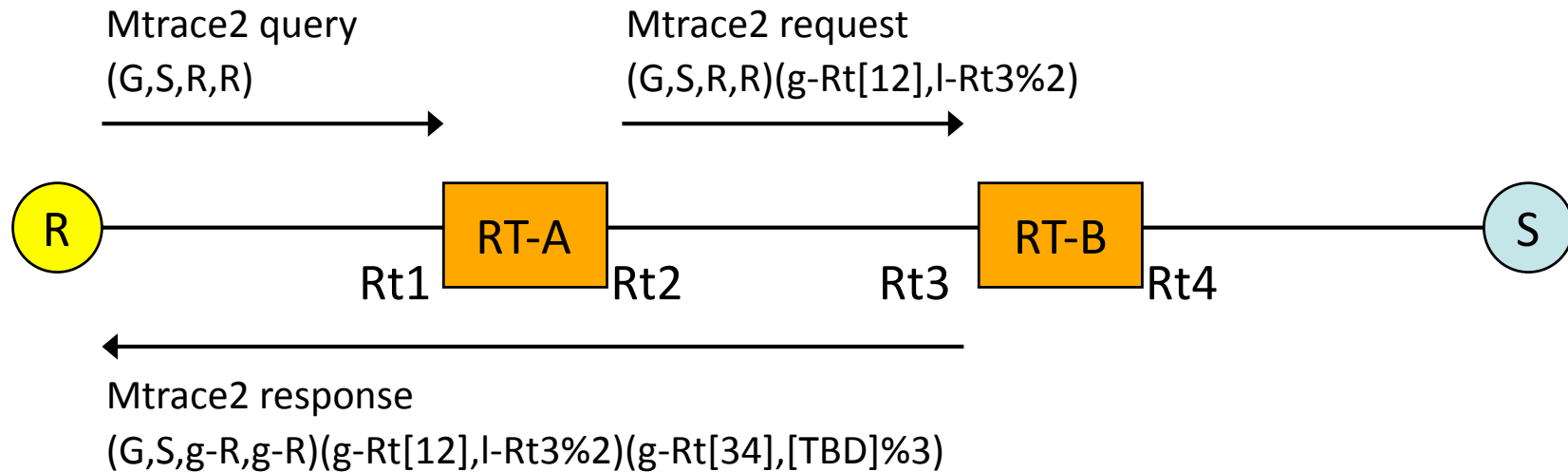
Query Arrival Time				
Incoming Interface ID				
Outgoing Interface ID				
Local Address (128 bits)				
Remote Address				
Input packet count on incoming interface (64 bits)				
Output packet count on incoming interface				
Total number of packets for this source-group pair				
Rtg Protocol	MBZ	S	Src Prefix Len	Forwarding Code

IPv6

Supported Protocols

- Current proposed protocols
 - 0 Unknown
 - 1 PIM
 - 2 PIM using special routing table
 - 3 PIM using a static route
 - 4 PIM using MBGP route
 - 5 PIM using state created by Assert processing
 - 6 Bi-directional PIM
 - 7 IGMP/MLD proxy
 - 8 AMT Relay
 - 9 AMT Gateway
- Need to request to add new entries for IpMRouteProtocol [IPMROUTE-MIB]
- Obtaining these values
 - Use multiple entries (by combination) of MIB
 - IpRouteProtocol, IpMcastRouteRtType, and IpMRouteProtocol, IpMcastRouteEntry, etc.
 - Are there any object to report these values?

Link-Local Address



- IPv6
 - TODO: If no global address, link-local address can be filled in? Or global address is MUST?
 - “If more than one global address is assigned to the router, it should specify the global address in a response block. If no global address is assigned, it specifies a link-local address with the InterfaceIndex of [IF-MIB]”

IANA Issues

- Request to reserve mtrace2 UDP port number
- Request to use Router Alert Option
- TLV
- IANA has assigned 224.0.1.32, mtrace.mcast.net, as the default multicast address for IPv4 mtrace responses
 - Mtrace2 uses the same IPv4 address as the default multicast group for IPv4 mtrace responses
 - Request to assign MTRACE2_IPV6RESPADDR for IPv6 mtrace2 responses, if multicast responses are still needed
 - Eliminate this operation ? Or default unicast ?

Open Issues in Mtrace2 Header (1)

- 4.1 Mtrace2 TLV format
 - No limit on length but encourage to limit whole packet to MTU

Open Issues in Mtrace2 Header (2)

- 5.2 Multicast Address
 - This field specifies the 32 bits length IPv4 or 128 bits length IPv6 multicast address to be traced, or is filled with "all 1" in case of IPv4 or with the unspecified address (::) in case of IPv6 if no group-specific information is desired. **Note that non-group-specific traceroutes may not be possible with certain multicast routing protocols.**

will be changed to;

- Note that non-group-specific mtrace2 MUST specify source address.

Next Step

- Revise the draft
 - Fix TODOs, open issues, and several bugs, and present the new draft at the next IETF
- Support multiple TLV response data for flexibility
 - See next slide
- Implementation
 - We've just started mtrace2 command and router-side implementations

Multiple TLV Responses

