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Mtrace Version 2: Traceroute Facility for IP Multicast

draft-asaeda-mboned-mtrace-v2-00

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Outline

- Overview
- Mtrace messages
- Open issues (incl. IANA issues)
- Next step

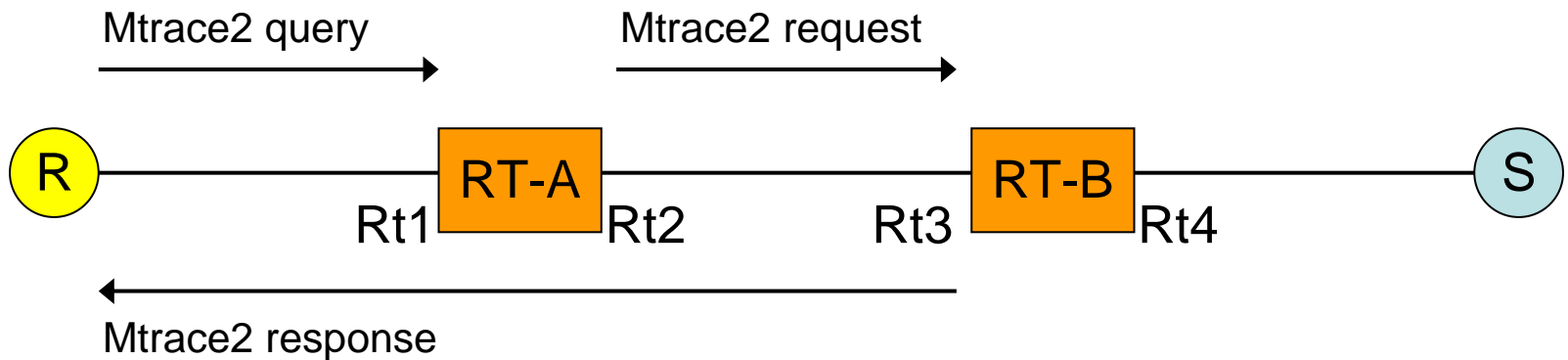
Overview

- Multicast “traceroute” facility
 - Trace an IP multicast routing path
 - Implemented in multicast routers
 - Accessed by diagnostic programs
- Integrate mtrace and mtrace6 drafts
 - Named “mtrace version 2 (mtrace2)”
 - Both IPv4 and IPv6 supported
 - Need to clarify the requirements of new functions, revise old functions ...

Aim of This I-D

- Get the first part of the effort started
- Work on the effort to get the other stuff going
- Provide an RFC on the existing, refined, and new stuff
 - Fix IANA issues (especially for ICMPv6 types)

Query, Request, Response



Mtrace2 Header

IGMP Type	# hops	Checksum
Multicast Address		
Source Address		
Destination Address		
Response Address		
Resp TTL	Query ID	

IPv4

ICMP Type	# hops	Checksum
Reserved		
Multicast Address		
Source Address		
Destination Address		
Response Address		
Resp Hop Limit	Query ID	

IPv6

Mtrace2 Type Field

- Protocol
 - IPv4
 - IGMP Type
 - IPv6
 - ICMPv6 Type
- Type
 - Query and request
 - IPv4: 0x1F
 - IPv6: MTRACE6_QRYREQ (TBD)
 - Response
 - IPv4: 0x1E
 - IPv6: MTRACE6_RESP (TBD)

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 outgoing interface					
Total number of packets for this source-group pair					
Rtg Protocol	Fwd TTL	M	B	S	Src Mask
		Z			Forwarding Code

IPv4

Query Arrival Time				
Incoming Interface ID				
Outgoing Interface ID				
Local Address				
Remote Address				
Input packet count on incoming interface				
Output packet count on outgoing interface				
Total number of packets for this source-group pair				
Rtg Protocol	Fwd Hop Limit	MBZ	S	Src Prefix Len
Forwarding Code	Reserved			

IPv6

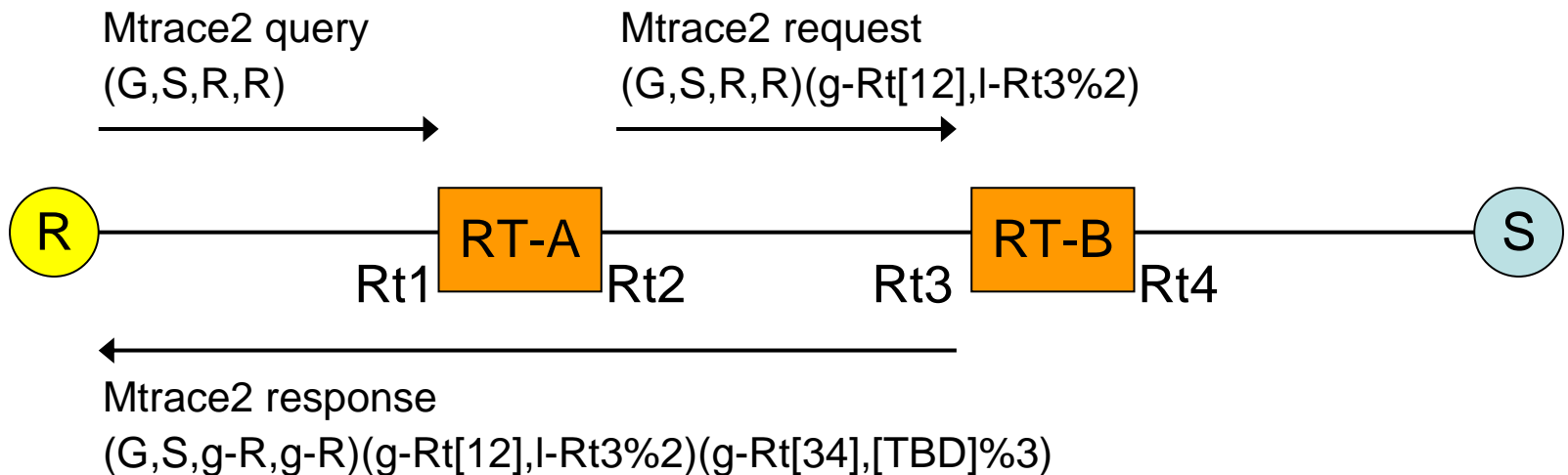
Mtrace2 Response: IIF/OIF

- Local Address
 - IPv4
 - Incoming/Outgoing Interface addresses
 - IPv6
 - Local address
 - Local address: Global IPv6 address
 - » Uniquely identifies the router
 - TODO: If no global IPv6 address, link-local address can be filled in?

Mtrace2 Response: Remote Addr.

- Previous-Hop Router / Remote Address
 - IPv4
 - Address of Previous-Hop Router
 - IPv6
 - Address of Previous-Hop Router
 - Interface IDs + Remote address
 - Interface ID: InterfaceIndex of IF-MIB
 - Link-local unicast address if PIM is used
 - TODO: Global address can be known even with PIM?

Inserted Addresses



Open Issues

- Supported routing protocols?
 - Historical routing protocols (e.g. DVMRP, CBT) should be kept?
 - Bidir PIM support
 - What kind of information needed?
- Packet format change?
 - Variable length packet format to extend the function?
- ...

IANA Issues

- Mtrace2 query and request
 - ICMPv6: MTRACE6_QRYREQ
- Mtrace2 response data
 - ICMPv6: MTRACE6_RESP

Next Step

- Current condition
 - Motivation is clear
 - Protocol requirement exists
 - Protocol definition (incl. IANA definition) is needed
- Next step
 - Clarify the requirements
 - Revise the draft (fix TODO, fix several bugs and present the new draft at the next IETF)
 - Move forward as a WG draft?