Residence Time Measurement

draft-mirsky-mpls-residence-time-04

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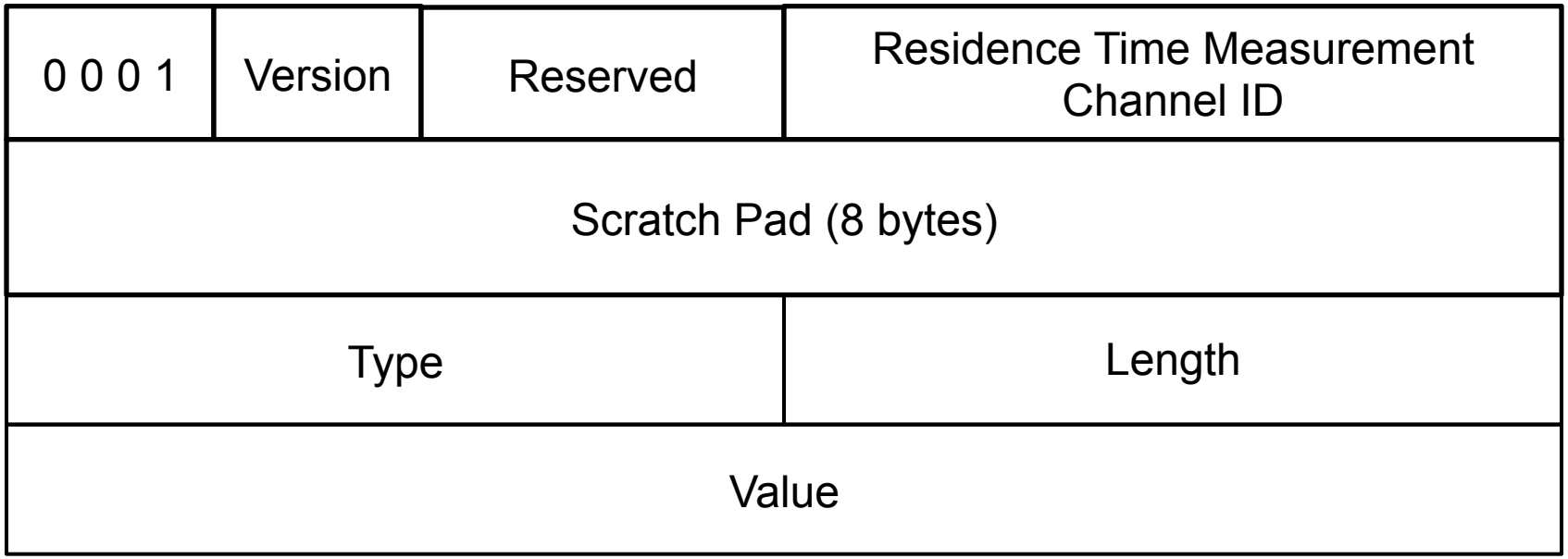
Update since -02

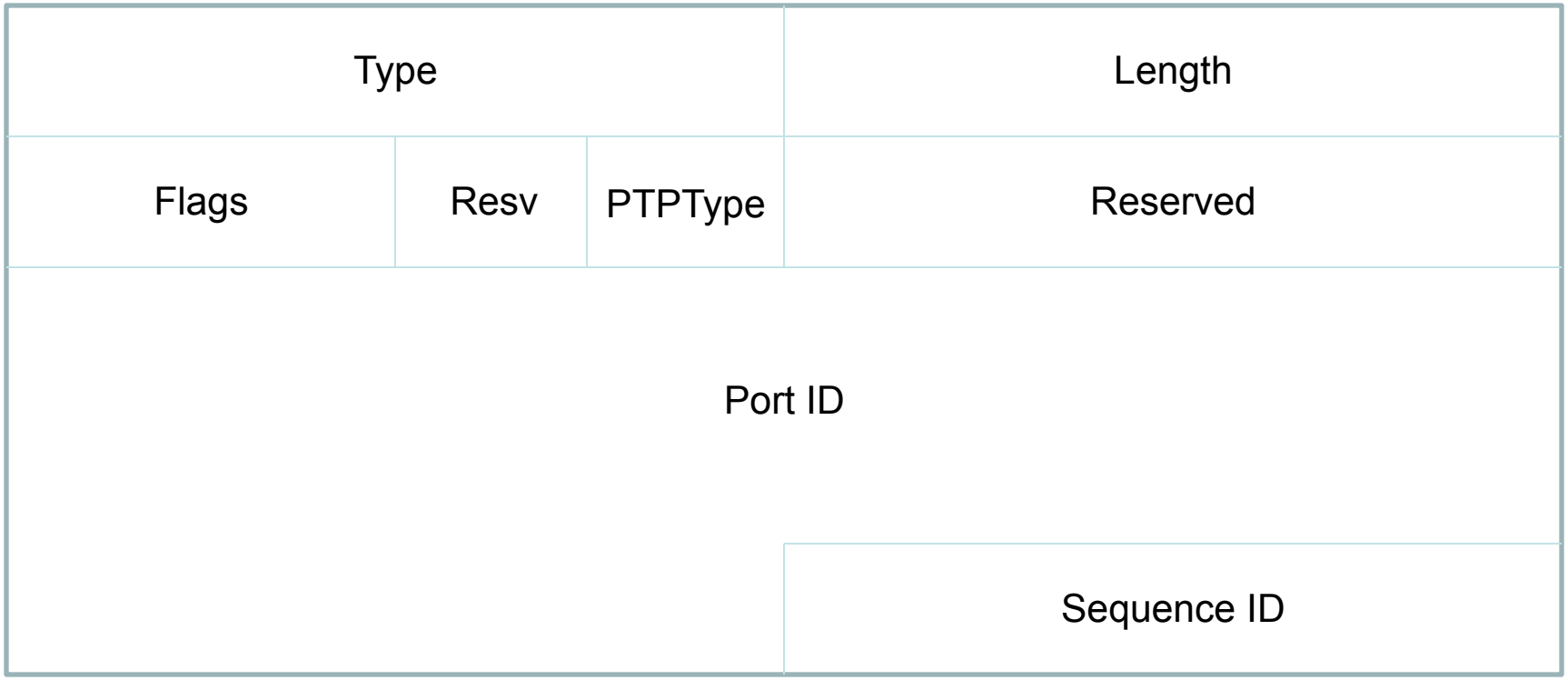
- Welcome Eric Gray
- RTM ACH format updated
- PTP Packet sub-TLV introduced
- RTM Capability sub-TLV in IGP-TE
- RTM Set Object in RSVP-TE
- 2-step RTM mode added

RTM G-ACh



- format agnostic to time format, e.g. PTP or NTP
- supports 1-step and 2-step RTM

PTP Packet Sub-TLV



PTP-Packet Sub-TLV (cont.)

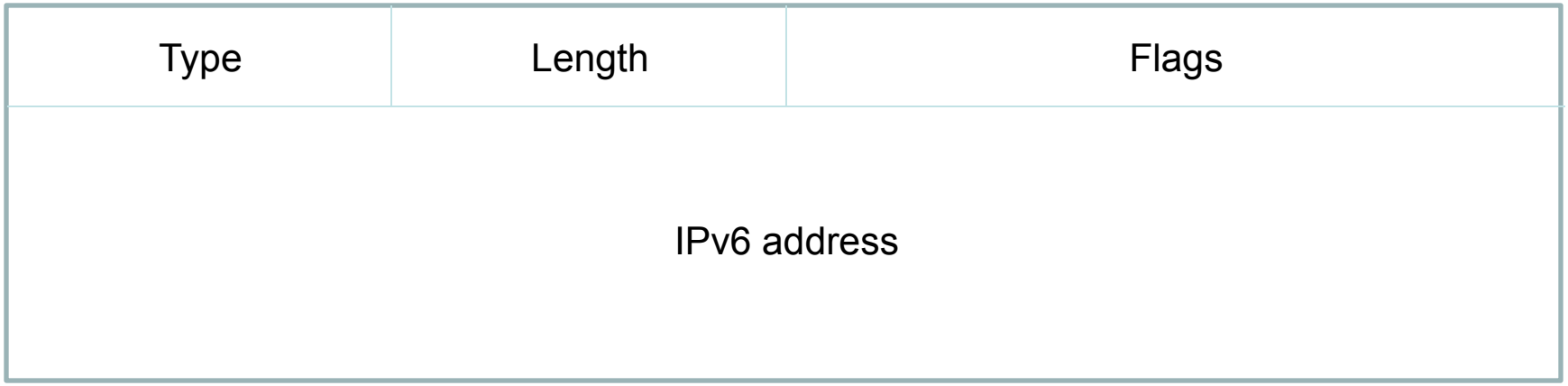
- The Type field identifies PTP sub-TLV;
- The Length field of the PTP sub-TLV contains the number of octets of the Value field and MUST be 20;
- The Flags field currently defines one bit, the S-bit, that defines whether or not the current message has been processed by a 2-step node, where the flag is cleared if the message has been handled exclusively by 1-step nodes and there is no follow-up message, and set if there has been at least one 2-step node and a follow-up message is forthcoming.
- The PTPType indicates the type of PTP packet carried in the TLV. PTPType is the messageType field of the PTPv2 packet whose values are defined in the Table 19 IEEE 1588-2008.
- The 10 octets long Port ID field contains the identity of the source port. The Sequence ID is the sequence ID of the PTP message carried in the Value field of the message.

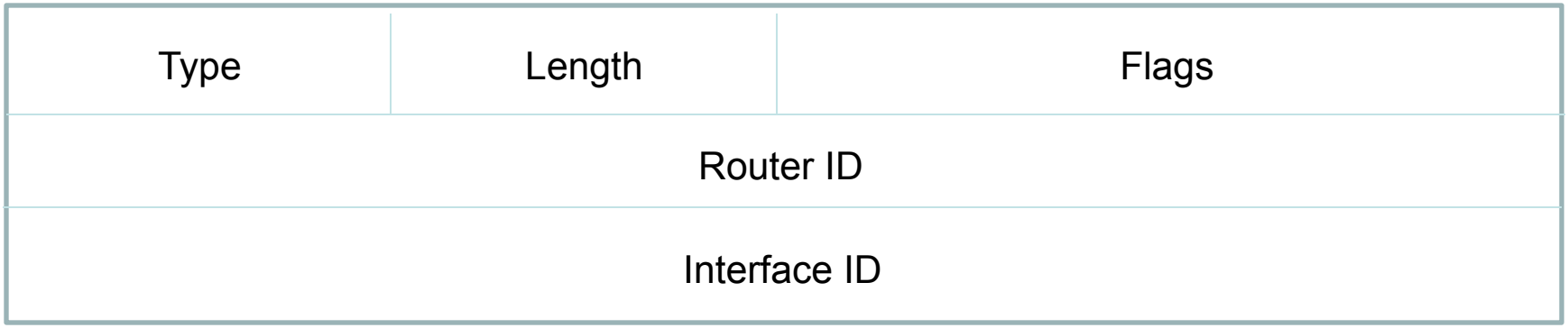
RTM Capability sub-TLV

Type		Length
RTM		

- Type value will be assigned by IANA from appropriate registries
- Length MUST be set to 4
- RTM is a three-bit long bit-map field that advertises ingress and egress RTM capability to support 1-step and/or 2-step mode
- RFC4202 explains that “the Interface Switching Capability Descriptor describes switching capability of an interface. For bi-directional links, the switching capabilities of an interface are defined to be the same in either direction. I.e., for data entering the node through that interface and for data leaving the node through that interface". That principle SHOULD be applied when a node advertises RTM Capability.

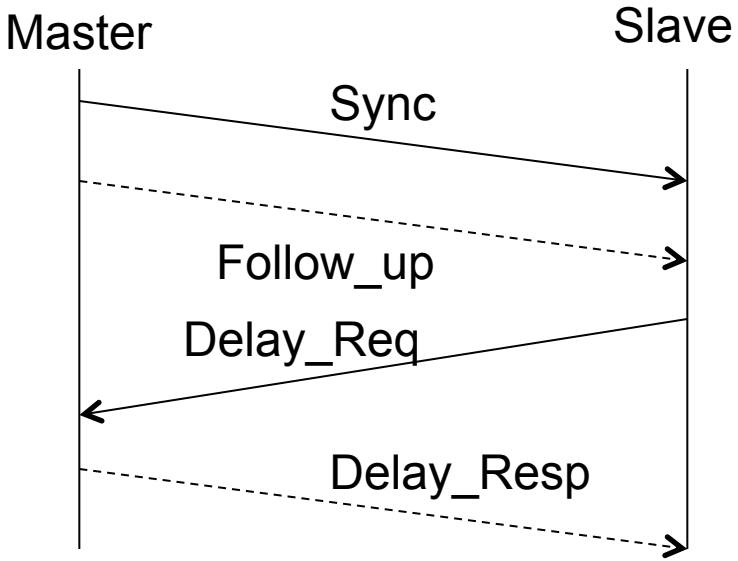
RTM Set sub-Objects





1-step and 2-step RTM modes

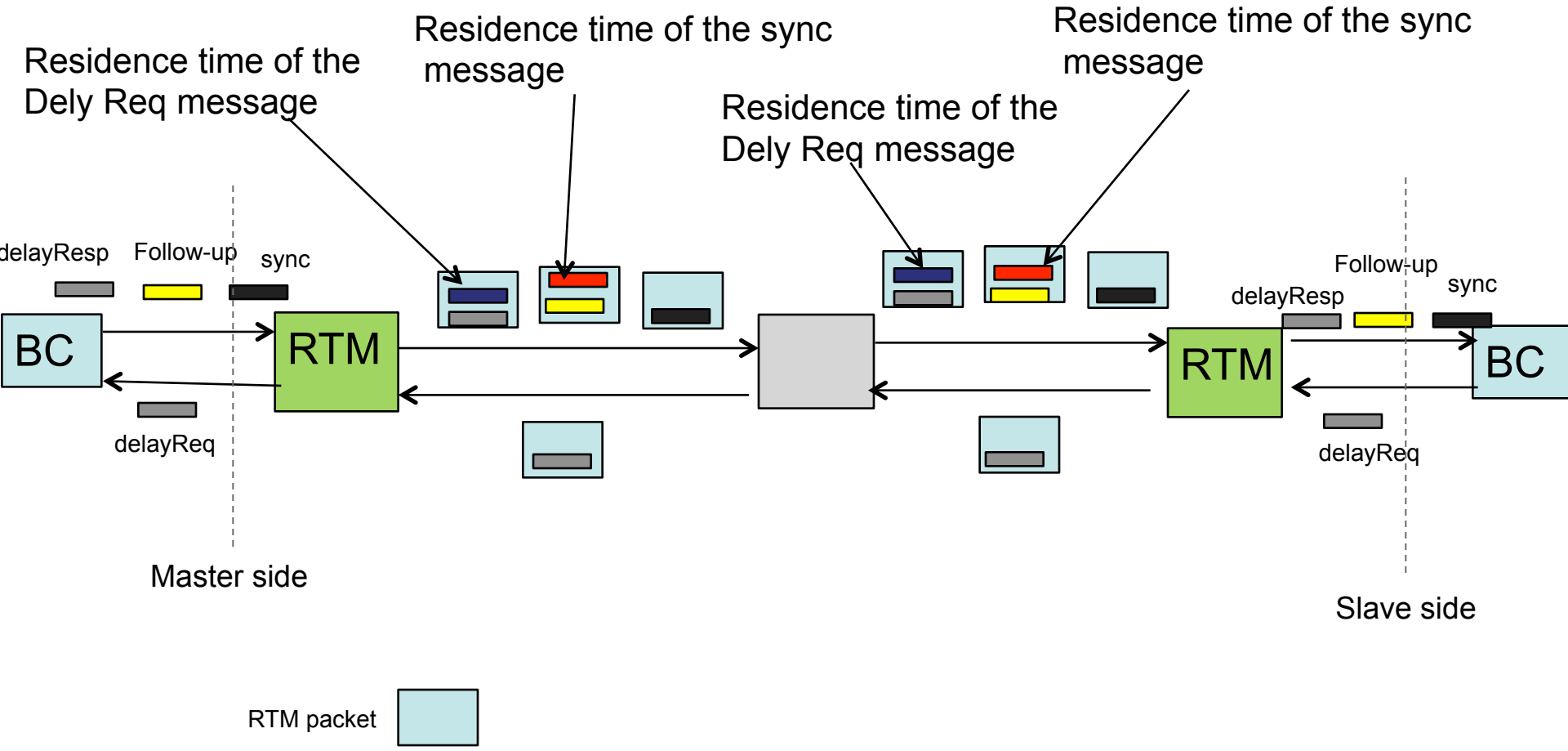
- Inspired to the IEEE 1588 modes of operations:
  - “one-step clock”: A clock that provides time information using a single event message.
  - “two-step clock”: A clock that provides time information using the combination of an event message and a subsequent general message
- two-step clock useful for simplified *transmission* operations (with no loss of accuracy):
  - No need for updating the timestamps *on the fly*



Residence times are accumulated in the associated follow-up messages (or Delay_Resp message associated with the Delay_Req message)

2-step RTM mode: example

- an RTM operating according to two-step clock behaves like a two-step transparent clock.



Next steps

- Solicit comments & feedback from the WG
- Ask WG for adoption of the work