Resilient GMP

draft-anggawijaya-pim-resilient-gmp-01

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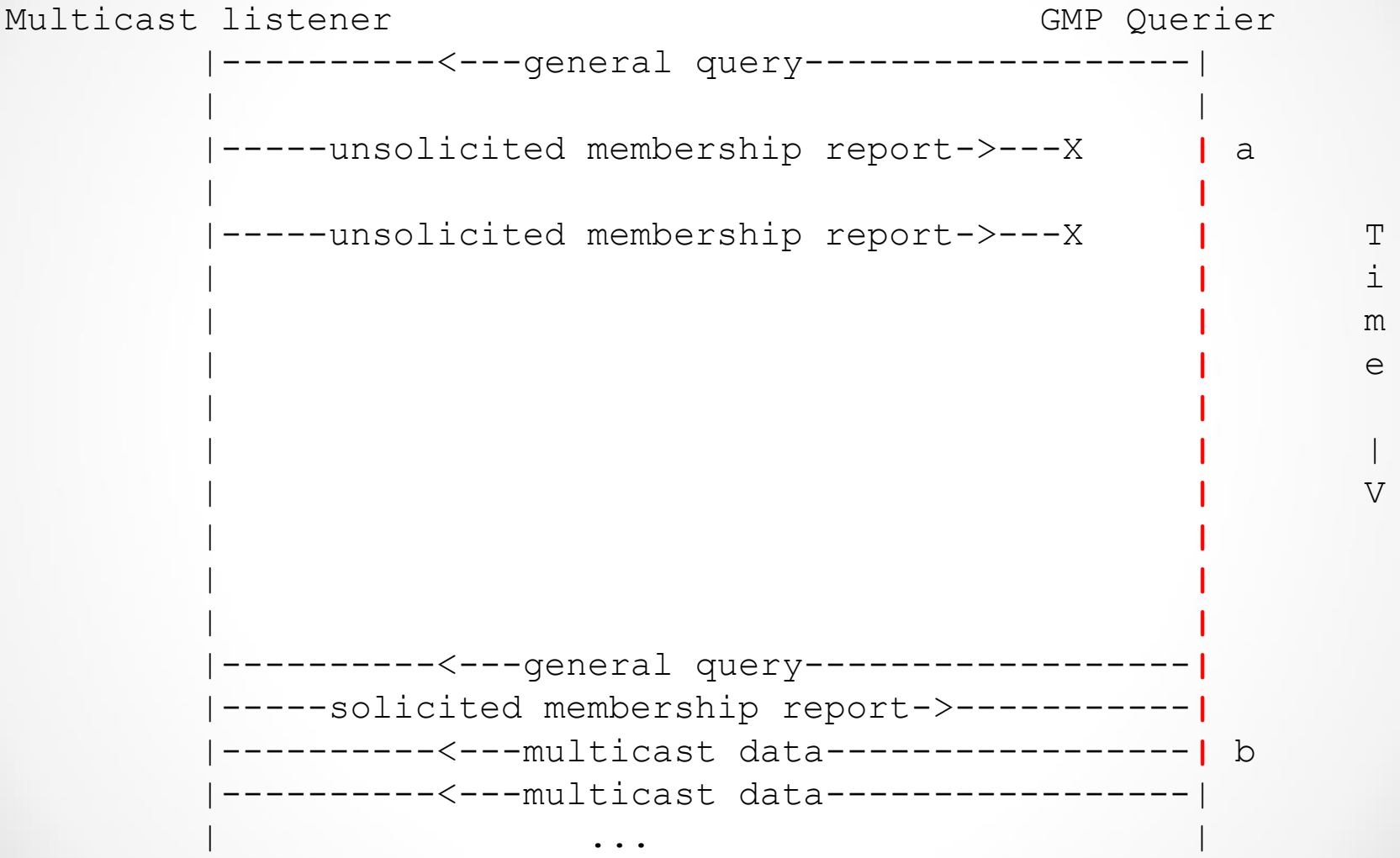
Resilient GMP – Quick Recap

- Motivations:
  - Lossy multicast on less reliable link – WiFi
    - [draft-mcbride-mboned-wifi-mcast-problem-statement]
    - [draft-vyncke-6man-mcast-not-efficient]
    - [draft-perkins-intarea-multicast-ieee802]
  - Use of SNMG addr reported by MLD for mitigating against DDoS attack on ND cache
    - [draft-smith-v6ops-mitigate-rtr-dos-mld-slctd-node]
- Current solution: 'robustness variable' (rv) based retransmission - what if 'rv' number of membership report messages get lost ?

‘Dead Period’ in GMP



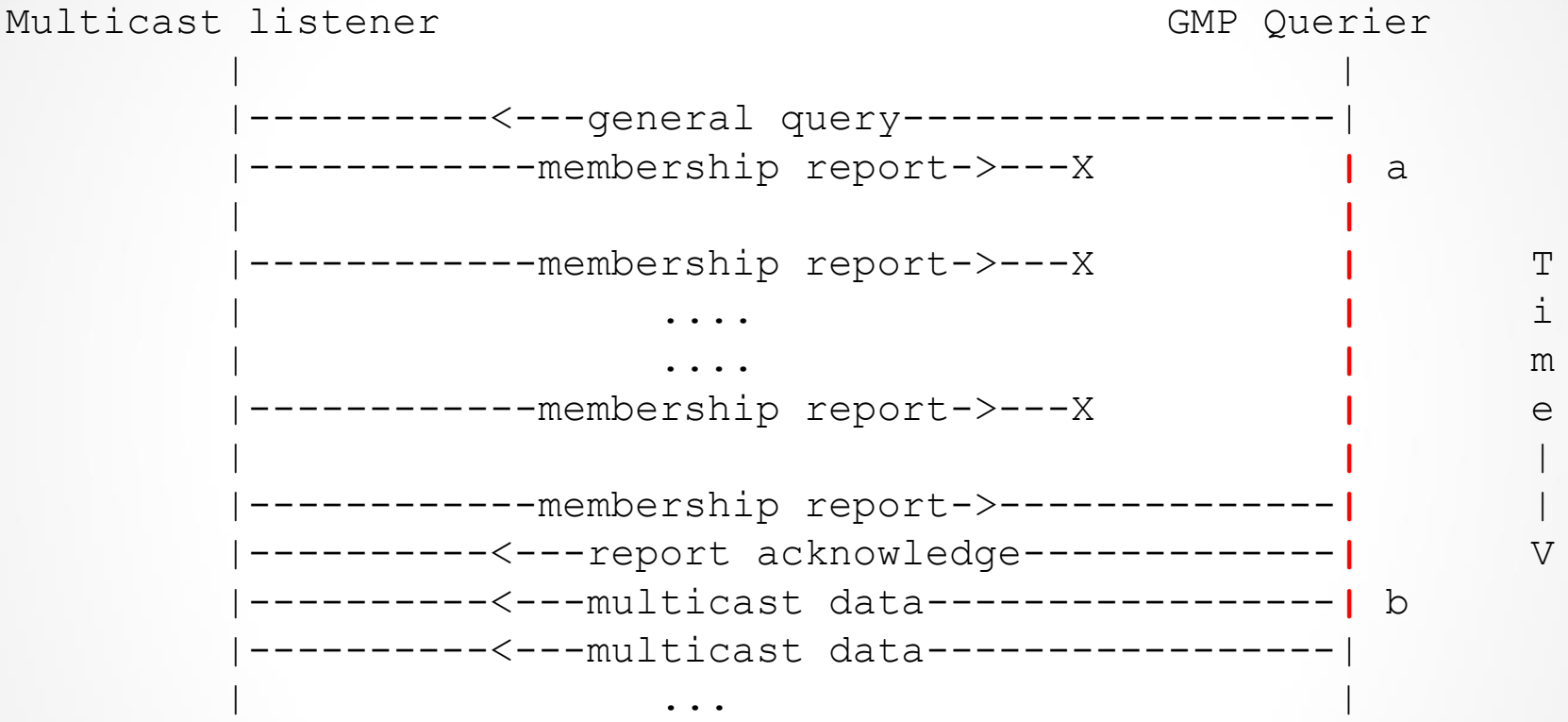
Mitigation Strategies

- Leave the responsibility to app layer to reset the socket, but better to do it in network layer
- Increase the robustness variable – increases chattiness for all listeners
- Decrease the query interval – also increases chattiness for all listeners

Proposed Solution

- Listeners retransmit membership reports beyond the robustness variable
- Only stops when router acknowledge the reports or when no router is detected (2.5 x Query Interval)
- Acknowledgement is sent unicast to listener - reflected membership report message
- Router announce capability to acknowledge reports in query packets

Proposed Solution – cont.



-01 Update

- New IGMP message
  - IGMP Type = 0x23 - Report acknowledgement
- New MLD message
  - ICMPv6 Type = 160 - Report acknowledgement

Snooping Devices

- RFC-4541, Sec. 2.1.1
  - “3) The switch that supports IGMP snooping must flood all unrecognized IGMP messages to all other ports and must not attempt to make use of any information beyond the end of the network layer header.”
- Unicast IGMP report acknowledgements are flooded by existing implementations
- Should this proposal update RFC-4541 ?
  - ‘Flood unknown multicast IGMP messages; forward report acknowledgement and other unknown unicast IGMP messages’

Experimental Implementations

- *IGMP host – linux-stable patch*
- IGMP querier/host – AlliedWare Plus
- *Wireshark 2.0.2 patch*
- *Tcpdump 4.7.4 patch*
- Will publish the *open-source impl.* above soon

Next Steps

- Resilient MLD implementations – host & querier, pkt decoder
- More open source stack implementations ?
  - freeBSD, mrd6 etc…
- update -02, looking forward for your comments

- Questions
- Suggestions and Comments

Thank You

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