RADIUS & Diameter MIP4 Application Impacts on MIPv4 Session Setup

draft-muhanna-diameter-mip4-performance-00.txt

DIME4 WG, IETF 69

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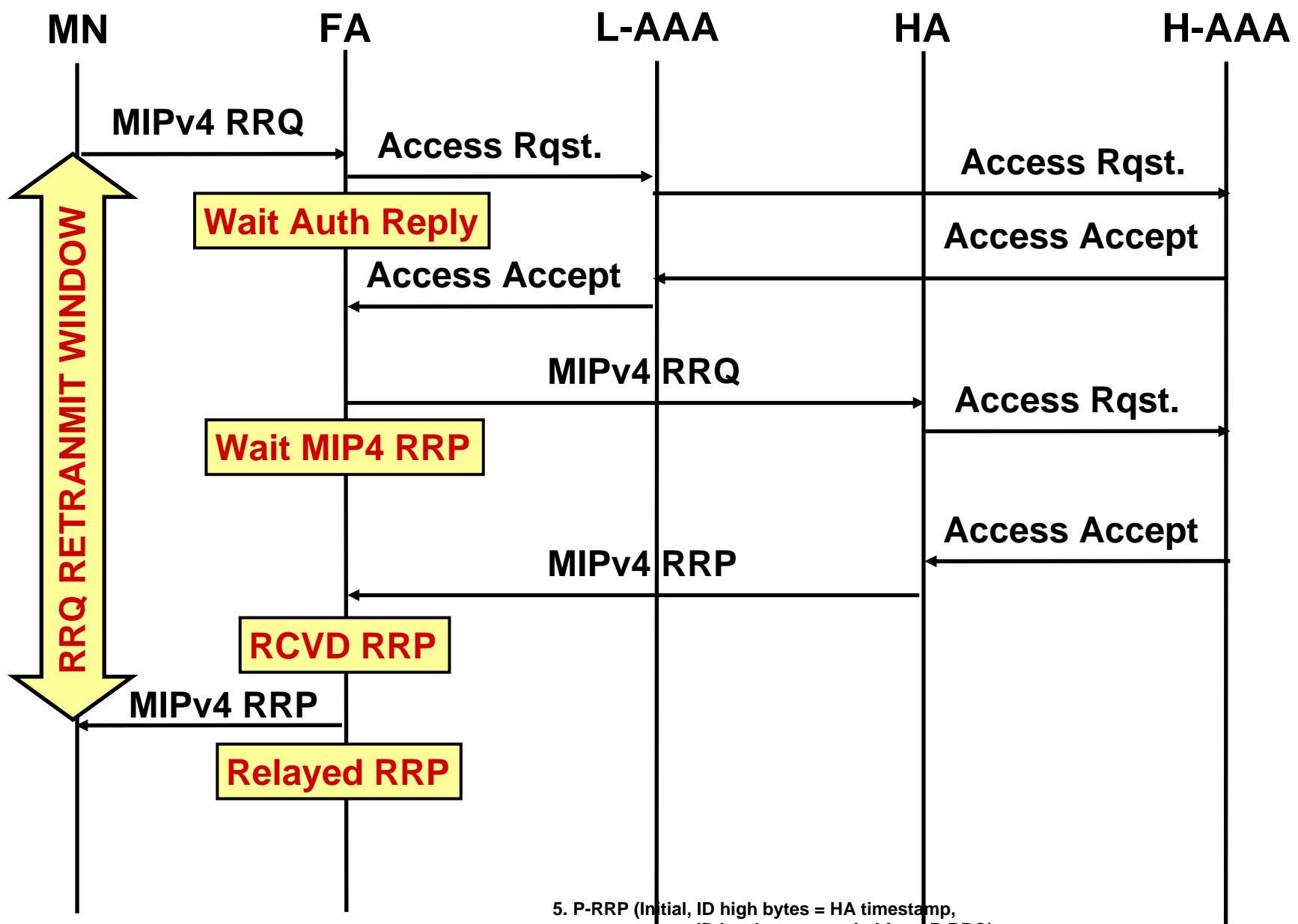Mohamed Khalil (mkhalil@nortel.com)

Overview

- Background
- RADIUS Impact on MIPv4 Session Setup
- Diameter MIPv4 Application Impact on MIPv4 Session Setup
- Conclusion
- Next Steps and Recommendations

Background

- RFC3344 mandates MN to NOT retransmit initial MIPv4 RRQ before 1 sec.

- In wireless access, Many MIPv4 Clients sets the 1st RRQ retransmit timer to 1 sec.

- Diameter MIP4 Appl uses AAA to Authorize & Authenticate MIPv4 users; Also exchange MIPv4 RRQ/RRP between FA & HA.

- RADIUS-like Model Uses AAA to Authorize, Auth. MIPv4 users. Initial MIPv4 RRQ/RRP are exchanged directly between FA and HA

Initial MIPv4 Registration- RADIUS

MN　　　**FA**　　　**L-AAA**　　　**HA**　　　**H-AAA**

RRQ RETRANMIT WINDOW

MIPv4 RRQ

Access Rqst.

Access Rqst.

Wait Auth Reply

Access Accept

Access Accept

MIPv4 RRQ

Access Rqst.

Wait MIP4 RRP

Access Accept
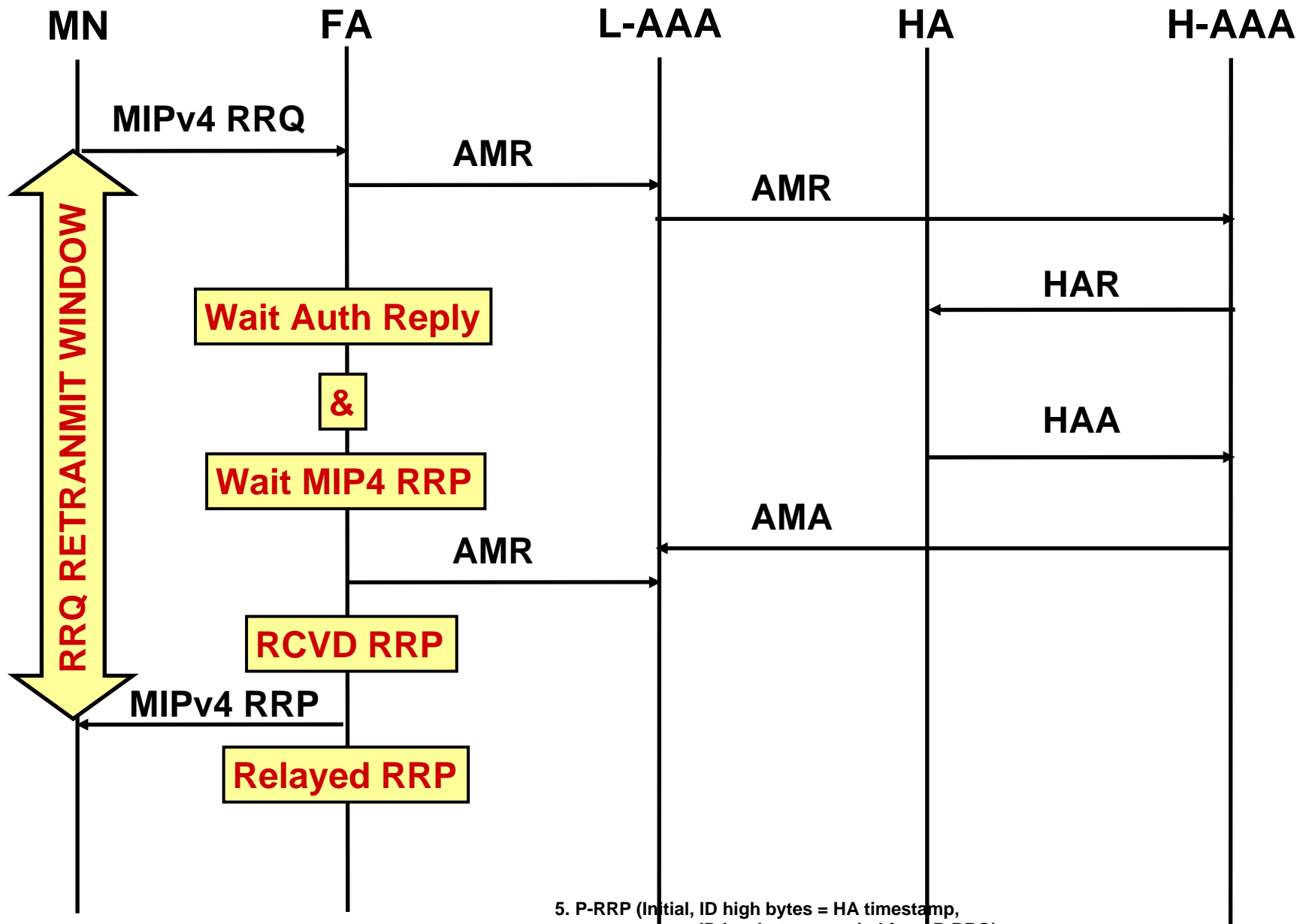
MIPv4 RRP

RCVD RRP

MIPv4 RRP

Relayed RRP

5. P-RRP (Initial, ID high bytes = HA timestamp,
ID low bytes = copied from P-RRQ)

RADIUS Impact on MIPv4 Session Setup

- In RADIUS-model, AAA infrastructure is limited to Authenticating and Authorization of MIPv4 user.

- AAA infrastructure is never used to deliver or exchange MIPv4 RRQ/RRP between FA and HA.

- If the MN retransmits the initial MIPv4 RRQ at any time other than when the FA-waiting-for-AAA response, there is NO need for the FA to communicate with AAA infrastructure.

Initial MIPv4 Registration- Diameter Appl.

MN **FA** **L-AAA** **HA** **H-AAA**

MIPv4 RRQ

AMR

AMR

AMR

RRQ RETRANMIT WINDOW

HAR

Wait Auth Reply

&

HAA

Wait MIP4 RRP

AMA

AMR

RCVD RRP

MIPv4 RRP

Relayed RRP

5. P-RRP (Initial, ID high bytes = HA timestamp,
ID low bytes = copied from P-RRQ)

Diameter MIPv4 Application Impact on MIPv4 Session Setup

- In Diameter MIP4 Application model, AAA infrastructure is used to Auth. and Authorization of MIPv4 user and the delivery /exchange of MIPv4 RRQ/RRP between FA and HA.

- At any time, MN retransmits MIPv4 initial RRQ, FA MUST repeat the same initial Authorization & Auth. process through the AAA infrastructure.

- If network condition, especially AAA infrastructure load, causes delay to the delivery of the initial MIPv4 RRP to FA, Diameter MIP4 Appl. model will worsen the network condition NOT helping it.

Conclusion

- In 4G architecture, Diameter protocol is needed for enabling MIPv4 Authentication, Authorization, and dynamic allocation and delivery MSA.

- Diameter MIPv4 Application has the potential to cause network performance issues in comparison to the current RADIUS model.

- A RADIUS-like mode of Diameter MIPv4 Application which could be specific for wireless network is needed to avoid potential performance issues.

Next Steps & Recommendation

- Do we agree that this is an issue worth further investigation?

- IF YES, can this draft be used as a base for a problem statement document?