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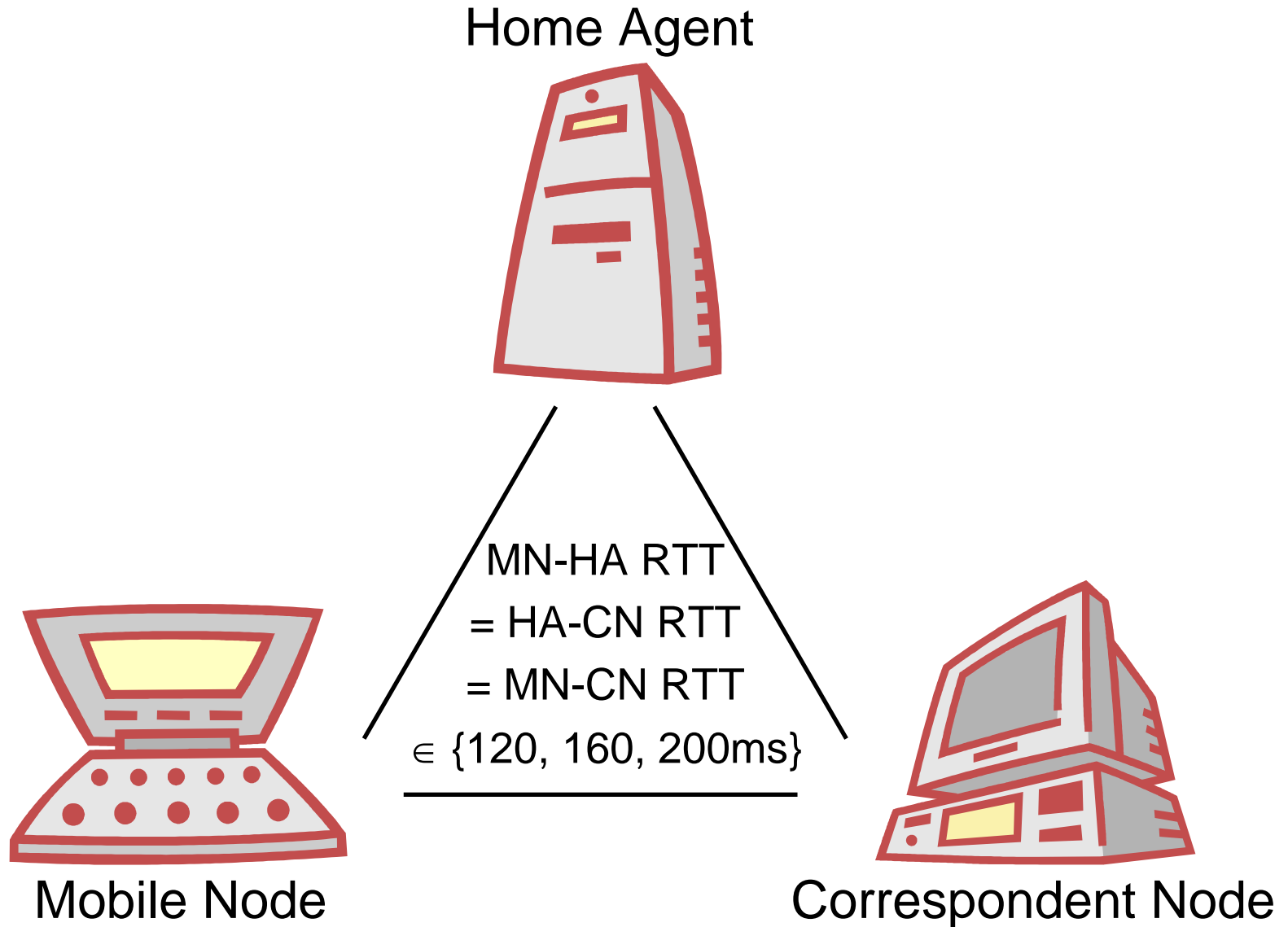
# Experimentation Results for Early Binding Updates and Credit-Based Authorization

Christian Vogt, [chvogt@tm.uka.de](mailto:chvogt@tm.uka.de)

Implementation, TCP and VoIP-like UDP Measurements, Brief Analysis

63th Meeting of the Internet Engineering Task Force  
Mobopts Research Group Session, August 2, 2005

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## MIPv6 as implemented in Kame-Shisa patch

- Home registration first
  - Then RR
  - Then correspondent registration
- } **4 RTT**

## MIPv6 plus optimistic Return Routability

- Home registration and RR in parallel
  - Then correspondent registration
- } **3 RTT**

## MIPv6 plus Early Binding Updates and CBA

- RR proactive and concurrent
  - Home and correspondent registration in parallel
- } **1 RTT**

## Network and access

- 128 KB/s bandwidth; no loss (except during handovers)
- Handovers through firewall; no real L2-handover delay

## IPv6 auto-configuration

- Router Advertisements every 30ms to 70 ms (RFC 3775)
- Assuming optimistic DAD (but not implemented)

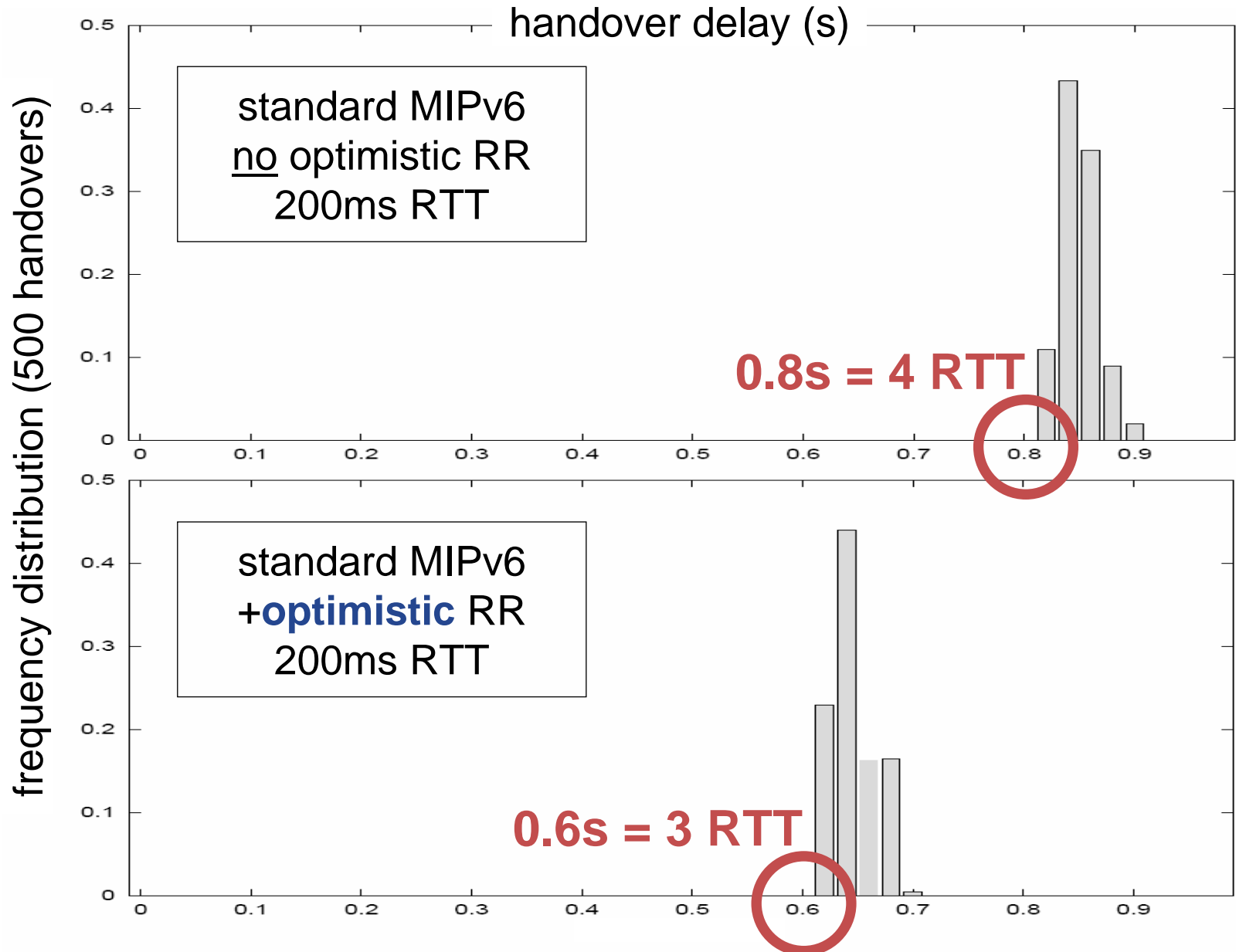
## Mobility

- Handovers separated by 10s; 1st home-to-visited, then visited-to-visited

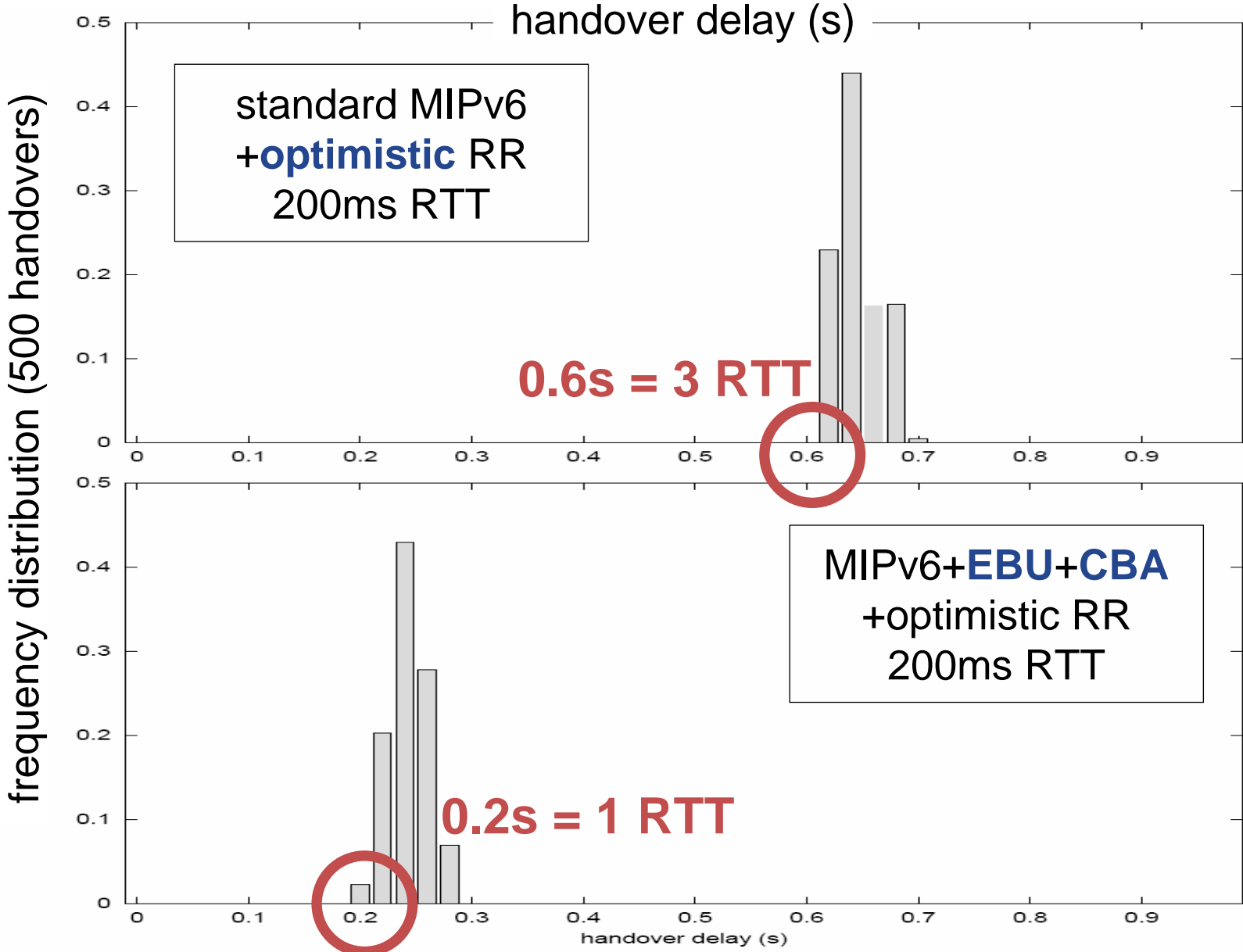
## Application

- VoIP-like UDP traffic; 100 pps; 64kbps VoIP stream; bidirectional; 140 Bytes per packet + IPv6 Routing, Destination Options ext. header
- TCP download from sender-CN to receiver-MN

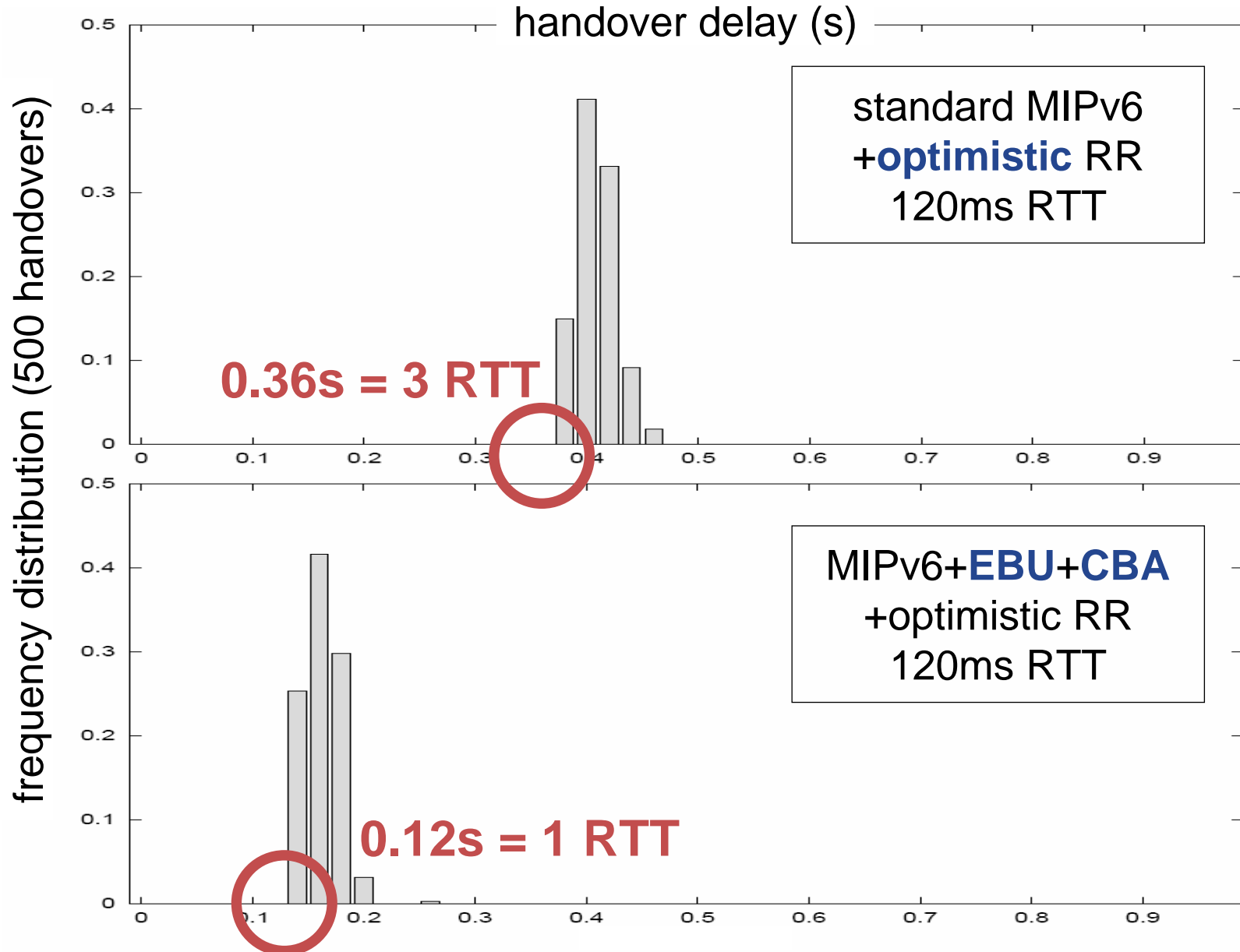
# Conservative vs. optimistic RR for VoIP-like UDP



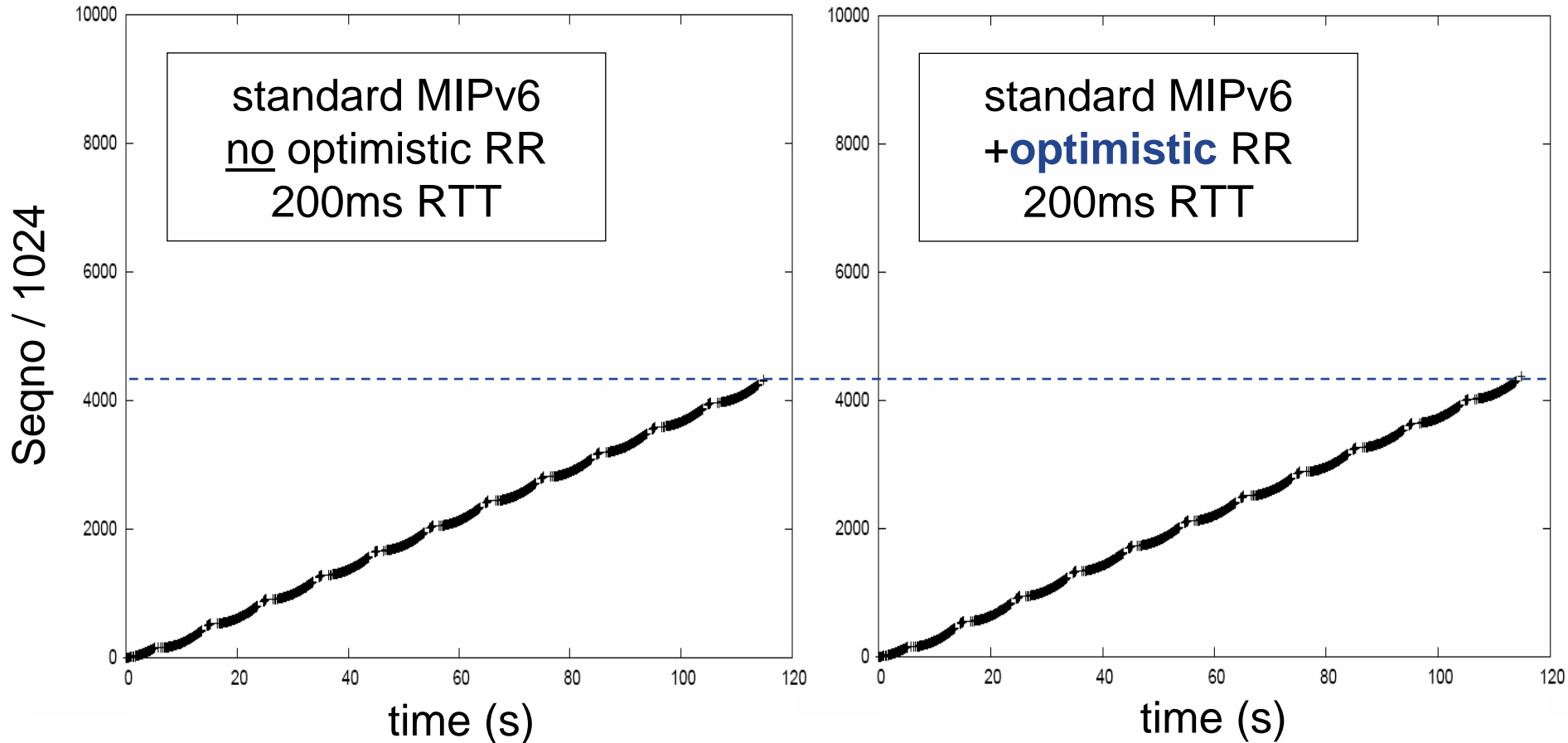
# Pure optimism vs. EBU+CBA for VoIP-like UDP



# Same with 120-ms RTT



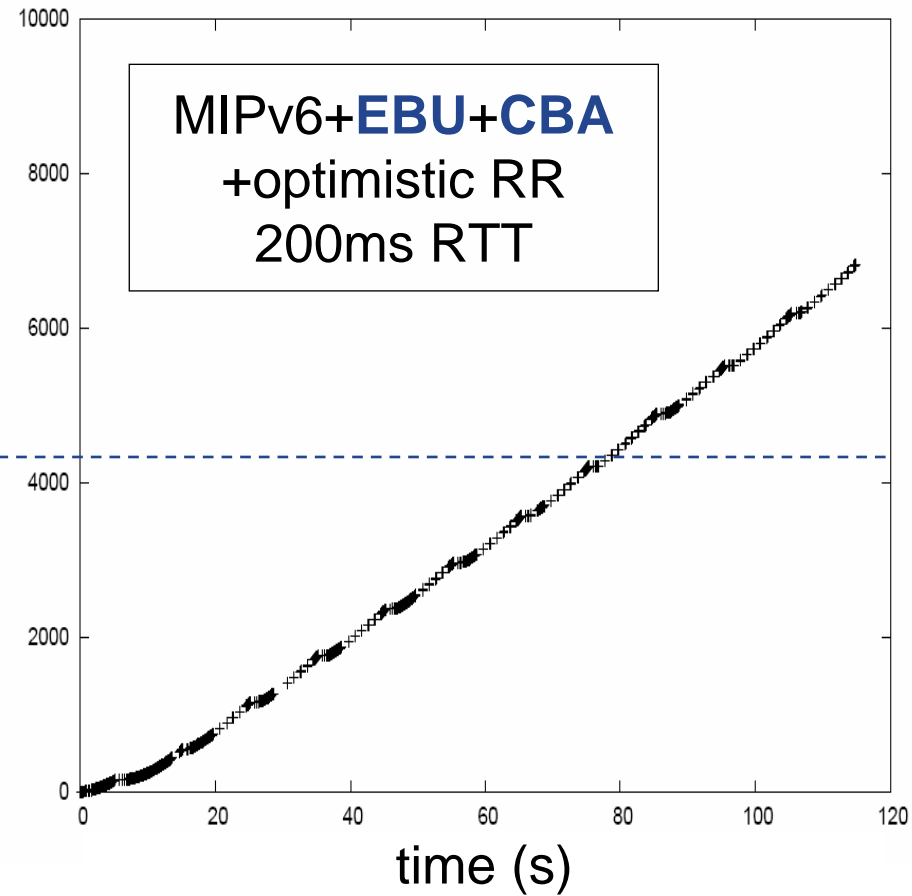
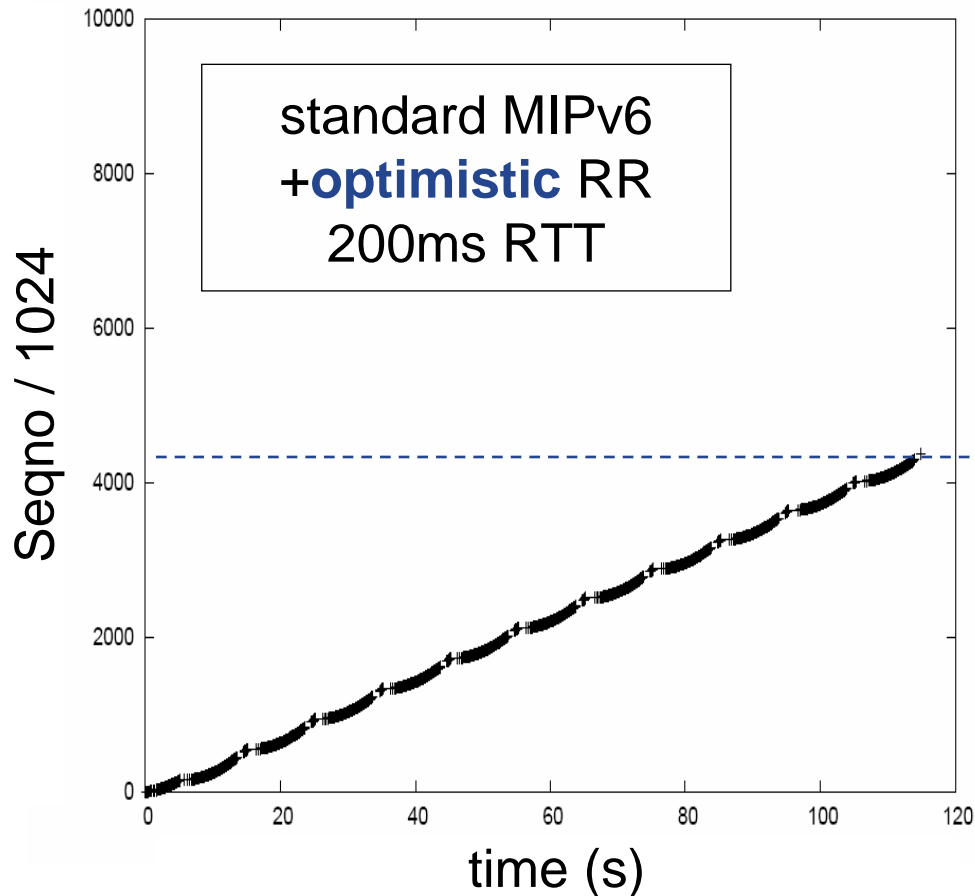
# Conservative vs. optimistic RR for TCP



One RTO is inevitable, since one Cwnd sent to old CoA.  
Signaling can't be done during first RTO in either case.  
We always run into 2nd RTO, which is backed off.



# Pure optimism vs. EBU+CBA for TCP



Only one RTO when signaling is only 1 RTT.

But L2-HO and IPv6 auto-conf. delays may still be too high.

(Waiting for DNA and faster interfaces?)

- UDP traffic benefits from any optimization
- Benefit for TCP traffic depends on whether RTO thresholds are passed
- 1 RTO for TCP is inevitable
- Thanks also to Ralf Beck, Daniel Jungbluth, Constantin Schimmel!