Binding update (single host mobility)

Problem: Distance between the mobile node and the correspondent node or the home agent contributes to the binding update delay resulting in overall handoff delay and packet loss

My proposals | Key advantages
---|---
Proactive binding update over a secure proactive tunnel (Proactive) | Eliminates post-handoff binding update delay
Hierarchical binding update mechanism using an anchor agent for network layer and application layer mobility protocols (Reactive) | Reduces network global signaling update for intra-domain subnet mobility (e.g., 70% reduction for 10 subnets/domain)
Multi-layer mobility using cross layer feedback (layer 2 and application layer) (Cross Layer) | Adapts binding update (global vs. local) based on mobile's movement and application (50% throughput improvement for high mobility scenario)

Related work: MIP-RR, RFC 4857, HMIPv6 RFC 4140, Politis et al. Lee et al. Zeadally et al.


Media rerouting (unicast traffic)

Problem: In-flight handoff packets are lost during handoff process and need to be redirected to the mobile

My proposals | Key advantages
---|---
Proactive localized multicasting of in-flight data to the neighboring networks (Proactive) | Suitable for intra-domain mobility and does not need any additional network element
Mobile controlled buffering at the edge router of the target network (Proactive) | Ability to control buffering period dynamically based on handoff duration during proactive handoff
Mobility proxy assisted time-bound redirection of in-flight data from previous Network (Reactive) | Reactive forwarding technique to forward in-flight data in case of longer binding update delay

Related work: FMIPv6, Malki et al., Moore et al., Krishnamurty et al.


- Placement of media redirection agent closer to the mobile for reactive forwarding
- Placement of buffering module and amount of buffering need to be controlled for proactive handoff