

Heartbeat Mechanism for Proxy Mobile IPv6

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Heartbeat Mechanism

- The MAG and the LMA manage routes for a mobile node in a PMIPv6 domain
- If MAG or the LMA become unavailable, or if there is a path failure, it takes quite some time for this to be discovered
 - MAG realizes that the LMA is not available only when it sends the next Proxy BU and gets no response
 - LMA realizes that the MAG is not reachable only when it receives ICMP Destination Unreachable messages in response to tunneled MN traffic
- Some of the interfaces where PMIPv6 is being planned for use in SDOs require path failure detection quickly
 - Reaction could include finding alternate nodes or releasing resources

Heartbeat Mechanism

- ❑ Described in draft-devarapalli-netlmm-pmipv6-heartbeat
- ❑ Failure Detection
 - Heartbeat messages exchanged periodically if there is an active binding cache entry at the LMA for a MN attached to the MAG
 - Failure/unreachability detection is based on the exchange of heartbeat messages
- ❑ Re-start Detection
 - Each node maintains a re-start counter in non-volatile memory
 - Every time the node re-starts and loses state, the re-start counter is incremented
 - Every PMIPv6 node stores the last known re-start counter value for each peer PMIPv6 node
 - The value in the re-start counter received in the Heartbeat messages is compared with the stored value – if there is a difference, it is assumed that the peer node had re-started
- ❑ Similar to the GTP path management mechanism developed by 3GPP

New Messages

- ❑ One new Mobility Header message for the Heartbeat request/reply
- ❑ One new mobility option for carrying the Restart Counter value

Extensions

- There is a new draft that proposes extensions
 - draft-koodli-netlmm-path-and-session-management-00
 - Ability to send unsolicited Heartbeat Response Message
 - Per-mobile node indications
 - Session Management to address partial failures