# Path recovery mechanism in 6LoWPAN routing

ABSTRACT

The feature of 6LoWPAN is the capability of the dynamic assignment of 16-bit short addresses. Hierarchical routing (HiLow) algorithm that uses dynamically assigned 16-bit unique short address as its interface identifier has an advantage of memory saving. The 16-bit unique short address is assigned to a 6LoWPAN device during an association operation with a neighbor node which is also called parent node in HiLow. Besides reducing the overhead of maintaining routing table, HiLow also supports for larger scalability. However, previous research did not deal with the path recovery when sensor nodes in HiLow are failed. The node failure may be due to the battery lifetime of the 6LoWPAN device. This kind of failure will cause the expiration of the association event and make the previously assigned 16-bit short address of the child node from the failure parent node become invalid within PAN. In this paper, a new path recovery mechanism so-called step parent node (SPN) algorithm is proposed to conventional HiLow to reassign the valid 16-bit short addresses for the child nodes of the failure parent node and provide the path robustness. The child nodes of the failure parent node will broadcast a step parent node request message (spn_request) to the neighbor nodes. The neighbor node whose child nodes do not exceed the maximum child value will act as a step parent node of the new child nodes. It enhances the reliability of conventional hierarchical routing mechanism.

**Keyword:** 6LoWPAN; HiLow; 16-bit address; Path recovery; Step parent