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RESEARCH-ARTICLE

Mobile Matrix: A Multihop Address Allocation and Any-to-Any Routing in Mobile 6LoWPAN

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Mobile Matrix: A Multihop Address Allocation and Any...

Pages 65-72

← →

ABSTRACT

References

Index Terms

Comments

ABSTRACT

In this work, we present Mobile Matrix, a routing protocol for 6LoWPAN that uses hierarchical IPv6 address allocation to perform any-to-any routing and mobility management without changing a node's IPv6 address. In this way, device mobility is transparent to the application level. The protocol has low memory footprint, adjustable control message overhead and achieves optimal routing path distortion. Moreover, it does not rely on any particular hardware for mobility detection, such as an accelerometer. Instead, it provides a passive mechanism to detect that a device has moved. We present analytic proofs for the computational complexity and efficiency of Mobile Matrix, as well as an evaluation of the protocol through simulations. Finally, we propose a new mobility model, to which we refer as cyclical random waypoint mobility model, that we use to simulate mobility scenarios, where communication is carried out in environments with limited mobility, such as 6LoWPANs deployed in office buildings, university campuses, concert halls or sports stadiums. Results show that μ Matrix deliveries



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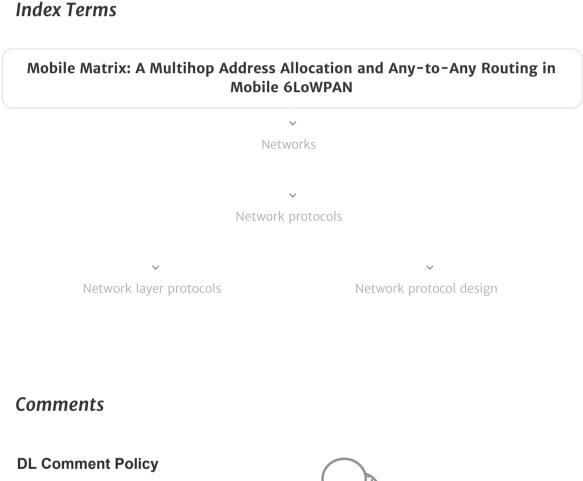
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