

Design and Implementation of Lightweight 6LoWPAN Gateway Based on Contiki - IEEE Conference Publication

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Abstract

6LoWPAN technology realizes the IPv6 packet transmission in the IEEE 802.15.4 based WSN. And 6LoWPAN is regarded as one of the ideal technologies to realize the interconnection between WSN and Internet, which is the key to build the IoT. Contiki is an open source and highly portable multitasking operating system, in which the 6LoWPAN has been implemented. In contiki, only several K Bytes of code and a few hundred bytes of memory are required to provide a multitasking environment and built-in TCP/IP support. This makes it especially suitable for memory constrained embedded platforms. In this paper, a lightweight 6LoWPAN gateway based on Contiki is designed and its designs of hardware and software are described. A complex experiment environment is presented, in which the gateway's capability of accessing the Internet is verified, and its performance about the average network delay and jitter are analyzed. The experimental results show that the gateway designed in this paper can not only realize the interconnection between 6LoWPAN networks and Internet, but also have good network adaptability and stability.

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