Abstract

Wireless sensor networks face a number of challenges; a wireless sensor network which includes a number of sensor nodes must provide reliability and fault tolerance against a number...
of odds such as scalability, hardware, environmental conditions, power and energy factors. In this paper, we address these two issues of Reliability and Fault Tolerance using mirror nodes. We demonstrate that increased reliability can be achieved by using mirror nodes and the costs could be maintained by implementing the Direct Processor Access (DPA). Experimental results on the benchmarks data set show that our proposed system based on Direct Processor Access outperforms the other well-known methods such as the Distributed Deviation Detection, Distributed anomaly detection, Intrusion detection for routing attacks, Statistical en route filtering and Abnormal Relationship Tests (ART). The improvement in performance using DPA is very high, particularly, for the graphical and network processes (6.8 percent improvement). Statistical Tests also demonstrate higher fault tolerance and improvement in performance for our method. Finally, we show that our system is robust and is able to handle faulty sensor nodes without compromising performance.

Reference


DPA to Rectify Transient Faulty Nodes in Effective Manner

Symp. on Circuits and Systems, vol. 4, pp. 751-754.

Index Terms

Computer Science
Wireless Networks

Key words

Wireless Sensor Networks
Faulty Sensor Nodes
Fault Tolerance
Direct Processor Access
Mirror Nodes