# Using Dynamic Slots Collision Tracking Tree Technique Towards An Efficient Tag Anti-Collision Algorithm in RFID Systems

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## Abstract

One of the research areas in RFID systems is a tag anti-collision protocol; how to reduce identification time with a given number of tags in the field of an RFID reader. There are two types of tag anti-collision protocols for RFID systems: tree based algorithms and slotted aloha based algorithms. Many anti-collision algorithms have been proposed in recent years, especially in tree based protocols. However, there still have challenges on enhancing the system throughput and stability due to the underlying technologies had faced different limitation in system performance when network density is high. Recently, a Bi-slotted Collision Tracking Tree Algorithm (BSCTTA), which is a tree based approach, was proposed and aiming to speedup tag identification in large scale RFID systems. The main idea of BSCTTA is to track a collision bit in order to reduce the prefix overhead and iteration overhead by using time-divided response depending on whether the collided bit is '0' or '1'. In this paper, we proposed a dynamic slots collision tracking tree algorithm, called the DSCTTA scheme, to improve the performance of BSCTTA. Our proposed DSCTTA method can reduce iteration overhead efficiently by time-divided response depending on tracking consecutive collision bits, and therefore can reduce prefix overhead further. The simulation results show that our proposed technique provides better performance than BSCTTA. It is shown that the DSCTTA is effective in terms of increasing system throughput and minimizing identification delay.

Keyword：Tag anti-collision, query tree, dynamic slots collision tracking