A Load Balancing Algorithm for High Speed Intrusion Detection*

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ABSTRACT

Using the concept of bit entropy and bit flow entropy, a novel load-balancing algorithm named Dimension-based Classification Algorithm (DCA) is introduced in this paper, aiming at implementing NIDS in high-speed network with traffic load up to Gbps. Based on the contents of fields in IP packet header and some simple operations, this algorithm can keep the semantic relativities among packets in a high bandwidth network environment while distributing workload to different processing node. It has a fairly good load-balancing feature in both macroscopical and microscopical senses for high-speed intrusion detection. The selection of operation and operand of DCA is discussed in detailed, and their efficiency is evaluated.

Keywords: Load Balance, Bit Entropy, Packet Classification, Intrusion Detection.

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