Abstract

Packet classification is one of the most important enabling technologies for next generation network services. Four of the main challenges in the packet classification are increase in size of the classifier, link speed, amount of multimedia traffic, and number of media-rich and bandwidth intensive internet applications. Due to this there is a need of memory efficient and high throughput packet classification schemes. In this paper a novel technique for fast parallel packet classification (FPPC) is proposed. A recent paper [14] showed how to construct a hierarchical Tree-Trie (TT) search structure and a clustering algorithm that partitions a given classifier into a fixed number of clusters. This dramatically enhances memory efficiency and throughput. This idea is extended to address the more challenging problem of general packet classification. The hierarchical search results are passed on to the bloom filter for final classification. Also it is observed that in a large classifier many rules have very poor hit rate. If Top-N selection approach is used, without affecting minimum Quality of Service (QoS) requirements it is possible to reduce mean delay and increase the throughput. The simulation results shows that proposed scheme gives 22.5% rise in the throughput and 5.62% decrease in mean delay with slight decrease in memory efficiency as compared to Hierarchical Hybrid Search Structure (HHSS) scheme.
A Novel Technique for Fast Parallel Packet Classification

References

- Network simulator, http://www.isi.edu/nsnam/ns

Index Terms

Computer Science
Networks

Keywords

Bloom filter Classifier Hierarchical structure Packet classification