

一种支持快速增量更新的掩码匹配算法

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摘要: 文章提出一种支持快速增量更新的掩码匹配算法 TernarySort. 该算法使用决策树将掩码匹配规则划分为多个分区, 不同叶节点的规则互不重叠, 以保障规则更新性能. 同时通过选取有效比特位, 减小决策树深度, 并允许叶节点中规则重叠, 减少分区数量, 以提高分类性能. 实验结果表明, 与现有的算法相比, TernarySort 可提升 80% 以上的分类性能, 同时保持快速的更新性能. TernarySort 能够满足 SDN 对掩码匹配算法的要求.

关键词: 软件定义网络; 网包分类; 决策树

A Mask Matching Algorithm with Fast Incremental

Update Support

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Abstract: This paper proposes a mask match algorithm, TernarySort, supporting fast incremental update. The algorithm uses decision trees to partition mask matching rules. To guarantee the update performance, it restricts that rules residing in different leaf nodes do not overlap with each other. At the same time, TernarySort selects effective bits to reduce the depth of decision trees. And it allows rules to overlap in one leaf node, to decrease the number of partitions and improve the classification performance. The experimental results show that, compared to currently used algorithms, TernarySort can improve packet classification performance by more than 80% while maintaining fast rule updating performance. TernarySort meets the requirements of SDN for mask matching algorithms.

Key words: SDN; packet classification; decision tree

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