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1 Literature Review

1. **Bit Weaving** (Meiners, Liu & Torng, 2012): if match fields of two entries differ by only one bit and their action fields are same, these two entries can be merged.

2. **Dependent-set caching** (Naga Katta & Walker, 2014) : Each rule is assigned a "cost" corresponding to the number of rules that must be installed together and a "weight" corresponding to the number of packets expected to hit that rule. The current problem of maximizing the total weight can be formulated as a linear integer programming problem, where each rule has a variable indicating whether the rule is installed in the cache.

2 Research Methodology

To verify our results, we will simulate real data center traffic by using ClassBench (Taylor & Turner, 2007). ClassBench will be used to generate synthetic rule policy with a different type of packet classification; this will be implemented using C language.

ClassBench is a good choice for simulating a near real data center environment. It generates synthetic rule policy with the desired rule number and dependency using a database from a real data center. In this simulation, we intend to take the standard policy Access Control List, IP Chain and Firewall from the seed files provided by ClassBench.

References

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Naga Katta, J. R., Omid Alipourfard & Walker, D. (2014). Rule-caching algorithms for software-defined networks. https://www.cs.princeton.edu/~jrex/papers/cacheflow-long14.pdf.

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