On Optimal Firewall Rule Ordering
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Summary

In today's online connected world, almost all corporate networks use some form of 
perimeter firewalls to manage Internet connections and enforce a security policy at the 
corporate gateway. Although it can considerably enhance network security and 
protect business-critical information, a firewall with thousands of rules can become a 
bottleneck for network performance. The primary goal of this paper is to present a 
new rule order optimizer based on simulated annealing to find optimal configurations 
that minimize the average number of rule comparisons while preserving precedence 
relationships among disjoint rules. The proposed approach is evaluated and its 
effectiveness is compared with another approximate solution under several firewall 
configurations and policy profiles.

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