# On Optimal Firewall Rule Ordering

**El-Alfy, ESM; Selim, SZ**

## 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.

## References:
1. ACHARYA S, 2006, IEEE INT C COMM ICC
2. ADAMIC L, 2002, GLOTTOMETRICS, P143
3. ALSHAER E, 2003, IFIP IEEE 8 INT S IN
4. ALSHAER E, 2005, IEEE J SEL AREA COMM, V23, P2069
5. ELALFY E, 2007, INT C ADV COMM TECHN
6. FULP E, 2005, 9 IFIP IEEE INT S IN
7. FULP EW, 2005, 10 IEEE INT S COMP C
8. GOUDA M, 2004, P 24 IEEE INT C DIST
9. HAMED H, 2006, ACM S INF COMP COMM, P332
10. KIRKPATRICK S, 1983, SCIENCE, V220, P671
11. QIU L, 2001, 9 INT C NETW PROT, P241
12. RANGANATH VP, 2003, IASTED INT C PAR DIS, P889
13. SUMAN B, 2006, J OPER RES SOC, V57, P1143
14. TARSA SJ, 2006, INT S COMP COMM ISCC, P755

15. YU F, 2004, EFFICIENT MULTI MATC
16. YUAN L, 2006, IEEE S SEC PRIV
17. ZALENSKI R, 2002, IEEE POTENTIALS, V21, P24

For pre-prints please write to: abstracts@kfupm.edu.sa