Bibliography

[1] A. Aho and M. Corasick, "Efficient string matching: An aid to bibliographic search," *Communications of the ACM*, vol. 18, no. 6, June 1975, pp. 333-343.

[2] Altera Inc, "Implementing High-Speed Search Applications with Altera CAM", Altera Application note 119, July 2001.

[3] K. G. Anagnostakis, E. P. Markatos, S. Antonatos, and M. Polychronakis. "E2xB: A domainspecific string matching algorithm for intrusion detection," *Proceedings of the 18th IFIP International Information Security Conference (SEC2003)*, Athens, Greece, May 2003, pp. 217-228.

[4] D. J. Bernstein. SYN cookies. http://cr.yp.to/syncookies.html.

[5] R. S. Boyer and J. S. Moore, "A fast string searching algorithm," *Communications of the ACM*, vol. 20, no. 10, Oct. 1977, pp. 762-772.

[6] Young H. Cho, S.N., Mangione-Smith, W., "Specialized hardware for deep network packet filtering," *Proceedings of 12th International Conference on Field Programmable Logic and Applications (FPL2002)*, Montpellier, France, Sep. 2002, pp. 452-461.

[7] C. Jason Coit, Stuart Staniford, and Joseph McAlerney, "Towards faster pattern matching for intrusion detection or exceeding the speed of snort," in *Proceedings of the 2nd DARPA Information Survivability Conference and Exposition (DISCEX II)*, Washington, DC, June 2001.

[8] D. E. Comer. Internetworking with TCP/IP. Prentice–Hall, Englewood Cliffs, New Jersey, third edition, 1995.

[9] Beate Commentz-Walter, "A string matching algorithm fast on the average," in *Proceedings 6th International Colloquium on Automata, Languages and Programming*," H.A. Maurer, Ed. July 1979, vol. 71 of Lecture Notes in Computer Science, Springer, pp. 118-132.

[10] DEFCON. http://www.shmoo.com/cctf/

[11] Neil Desai: "Increasing Performance in High Speed NIDS". Available from http://www.linuxsecurity.com/articles/intrusion_detection_article-4617.html

[12] P. Ferguson and D. Senie, "Network Ingress Filtering: Defeating Denial of Service Attacks Which Employ IP Source Address Spoofing," RFC 2267, January 1998.

[13] M. Fisk and G. Varghese. "An analysis of fast string matching applied to content-based forwarding and intrusion detection," Technical Report CS2001-0670 (updated version), University of California - San Diego, 2002.

[14] R. Franklin, D. Carver, B. Hutchings, "Assisting network intrusion detection with reconfigurable hardware," *IEEE Symposium on Field-Programmable Custom Computing Machines (FCCM'02)*, Napa, California, Sep. 2002, pp. 121-130.

[15] Gokhale, M., Dubois, D., Dubois, A., Boorman, M., Poole, S., Hogsett, V.: Granidt: Towards gigabit rate network intrusion detection technology. In: *Proceedings of 12th International Conference on Field Programmable Logic and*

Applications (FPL2002), Montpellier, France, Sep. 2002, pp. 401-413.

[16] M. Handley, C. Kreibich, and V. Paxson, "Network intrusion detection: evasion, traffic normalization, and end-to-end protocol semantics," in Proc. *10th USENIX Security Symposium*, Washington, DC, Aug. 2001, pp. 115-131.

[17] R. Nigel Horspool, "Practical fast searching in strings," *Software Practice and and Experience*, vol. 10, no. 6, 1980, pp. 501-506.

[18] N.F. Huang, R.T. Liu, Y.T. Chen, "A Two-Stage Multiple-Pattern Matching Architecture for Network Security System," Submitted to IEEE International Conference on Communications (ICC2005), Seoul, Korea, May 2005.

[19] David Husak, "Network Processors: A Definition and Comparison," Available from *http://e-www.motorola.com/collateral/M957198397651.pdf*

[20] IBM: "The Network Processor Enabling Technology for High-Performance Networking," Available from *http://www.npforum.org/pressroom/whitepapers. shtml*

[21] IDT Inc, "Classification and Content Inspection Co-Processor" 2003.

[22] "Intel(R) Network Processor," http://www.intel.com/design/network/products /npfamily/

[23] Bo Jiang, Bin Liu, "High-Speed Discrete Content Sensitive Pattern Match Algorithm for Deep Packet Filtering," *2003 International Conference on Computer Networks and Mobile Computing (ICCNMC'03)*, Shanghai, China, Oct

2003, pp. 149-157.

[24] Sun Kim and Yanggon Kim, "A fast multiple string-pattern matching algorithm," *Proceedings of the 17th AoM/IAoM Inernational Conference on Computer Science*, San Diego, California, May 1999, pp. 44-49.

[25] Frank Kargl, Joern Maier, Michael Weber, "Protecting web servers from distributed denial of service attacks," *Proceedings of the tenth international conference on World Wide Web*, Hong Kong, April 2001, pp. 514-524.

[26] Panos C. Lekkas, "Network Processors: Architectures, Protocols and Platforms", McGraw-Hill Professional 2003.

[27] J. Lemon, "Resisting SYN Flooding DoS Attacks with a SYN Cache," *Proceedings of USENIX BSDCon'2002*, San Francisco, California, Feb. 2002, pp. 89-98.

[28] R.T. Liu, N.F. Huang, C.H. Chen, C.N. Kao, "A Fast String Matching Algorithm for Network Processor-Based Intrusion Detection System", ACM Transactions on Embedded Computing Systems, Vol. 3, No. 3, Aug. 2004, pp. 614-633.

[29] R.T. Liu and N.F. Huang, C.N. Kao, and C.H. Chen, "A Fast Pattern Matching Algorithm for Network Processor-Based Intrusion Detection System," *IEEE International Performance Computing and Communications Conference (IEEE IPCCC2004)*, Phoenix, Arizona, Apr. 2004, pp. 271-275.

[30] R.T. Liu, N.F. Huang, C.N. Kao, C.H. Chen, and Joe Chiou, "A Fast Pattern Match Engine for Network Processor-based IDS", *International Conference on*

Information Technology (ITCC2004), Las Vegas, Nevada, Apr. 2004, pp. 97-101.

[31] G. R. Malan, D. Watson, F. Jahanian, and P. Howell, "Transport and application protocol scrubbing," in *Proceedings IEEE INFOCOM*, Tel Aviv, Israel, Mar. 2000, pp. 1381–1390.

[32] D. Maltz and P. Bhagwat, "TCP splicing for application layer proxy performance," IBM Res. Div., Tech. Rep. RC 21139, Mar. 1998.

[33] E.P Markatos, S. Antonatos, M. Polychronakis and K.G Anagnostakis. "ExB: Exclusion-based signature matching for intrusion detection," *Proceedings of the IASTED International Conference on Communications and Computer Networks (CCN)*, Cambridge, USA, Nov. 2002, pp. 146-152.

[34] D. Moore, G. Voelker and S. Savage, "Inferring Internet Denial of Service Activity," *Proceedings of USENIX Security Symposium'2001*, Washington, DC, Aug. 2001, pp. 9-22.

[35] J. Moscola, J. Lockwood, R.P. Loui, M. Pachos, "Implementation of a content scanning module for an internet firewall," in *Proceedings of IEEE Workshop on FPGAs for Custom Computing Machines*, Napa, California,   Apr. 2003, pp. 31-38.

[36] Network ICE: "Protocol Analysis vs Pattern Matching in Network and Host Intrusion Detection Systems". Available from *http://www.anitian.com/corp/ papers/protocol%20analysis.pdf*

[37] Network ICE : "Protocol Analysis and Command Parsing vs. Pattern Matching in

Intrusion Detection Systems," Available from *http://oldhand.org/document/ids/ Protocol_Analysis_vs_Pattern.pdf*

[38] P. Paulin, F.Karim, P. Bromley, "Network Processors: A perspective on Market Requirements, Processor Architectures and Embedded S/W Tools," In *Proceedings of the DATE 2001 on Design, automation and test in Europe*, Munich, Germany, Mar. 2001, pp 420-429.

[39] Vern Paxson, "Bro: A System for Detecting Network Intruders in Real-Time," *Computer Networks*, 31(23-24), Dec. 1999, pp. 2435–2463.

[40] T. H. Ptacek and T. N. Newsham, "Insertion, evasion, and denial of service: Eluding network intrusion detection," Secure Networks, Inc., Tech. Rep., Jan. 1998.

[41] Martin Roesch, "Snort - lightweight intrusion detection for networks," in *Proceedings of the 13th Systems Administration Conference*, Seattle, Washington, Nov. 1999, pp. 229-238.

[42] G. van Rooij, "Real Stateful TCP Packet Filtering in IP Filter," in *Proceedings of the 2nd International SANE Conference*, Maastricht, Netherlands, March 2000, pp. 161-175.

[43] C. Schuba, I. Krsul, M. Kuhn, G. SpaRord, A. Sundaram, and D. Zamboni, "Analysis of a denial of service attack on TCP", *Proceedings of the 1997 IEEE Symposium on Security and Privacy*, Oakland, California, May 1997, pp. 208-223.

[44] Niraj Shah, William Plishker, Kurt Keutzer. "NP-Click: A Programming Model for the Intel IXP1200" in *2nd Workshop on Network Processors (NP-2) at the 9th International Symposium on High Performance Computer Architecture (HPCA-9)*, Anaheim, CA, Feb. 2003, pp. 100-111.

[45] NSS Group. HTTP://www.nss.co.uk/

[46] OSEC. HTTP:// http://osec.neohapsis.com/

[47] R. Sidhu, V.K. Prasanna, "Fast regular expression matching using FPGAs," *IEEE Symposium on Field-Programmable Custom Computing Machines*, Rohnert Park, CA , Apr. 2001, pp. 223-232.

[48] "Snort.org," http://www.snort.org/

[49] Sourcefire. "*Snort 2.0 - Detection Revisite*d," http://www.snort.org/docs/ Snort_20_v4.pdf, October 2002.

[50] Ioannis Sourdis, Dionisios Pnevmatikatos, "Fast, Large-Scale String Match for a 10Gbps FPGA-based Network Intrusion Detection System," *Proceedings of the 13th International Conference on Field Programmable Logic and Applications (FPL2003)*, Lisbon, Portugal, Sep. 2003, pp. 880-889.

[51] "Spirent Communications," *http://smartbits.spirentcom.com/*

[52] "Vitesse.com," http://www.vitesse.com/

[53] H. Wang, D. Zhang, and K.G. Shin, "Detecting SYN Flooding Attacks," *In Proceedings of IEEE INFOCOM*, New York, US, Jun. 2002, pp. 1530-1539.

[54] B. W. Watson, "The performance of single-keyword and multiple-keyword pattern matching algorithms," Tech. Rep. 94/19, Eindhoven University of Technology, 1994. Available from ftp://ftp.win.tue.nl

[55] David Watson , Matthew Smart , G. Robert Malan , Farnam Jahanian, "Protocol scrubbing: network security through transparent flow modification," *IEEE/ACM Transactions on Networking* (TON), vol.12, no.2, pp.261-273, April 2004.

[56] "Whitehats.com," http://www.whitehats.com/

[57] Sun Wu and Udi Manber, "A fast algorithm for multi-pattern searching," Tech. Rep. TR94-17, Department of Computer Science, University of Arizona, May 1994.