

Domain Name System

Mr. Pradeep Nayak¹, Nandan M R², Sushma K N³, Srusti K⁴, Diya H B⁵

Assistant Professor, Department of Information Science and Engineering¹

Students, Department of Information Science and Engineering^{2,3,4,5}

Alva's Institute of Engineering and Technology, Mijar, Mangalore, Karnataka, India

Abstract: *The DARPA Internet's name service is provided via the Domain Name System (DNS). One of the biggest name services now in use, it provides a special mix of hierarchies, caching, and datagram access and is composed of a highly diversified community of servers, users, and networks. This article explores the concepts that underlie the initial design of the DNS in 1983, explains how these concepts have evolved into the present implementations and usages, highlights notable surprises, successes, and failings, and makes predictions about how the DNS may develop in the future. Nameserver delegations, the foundation of the Domain Name System (DNS), generate intricate and delicate dependencies between names and nameservers. In this work, we report the findings of a comprehensive DNS survey and demonstrate how these dependencies result in a very vulnerable naming system. It examines the efficiency of name caching and the calculation of retransmission timeouts, demonstrates how algorithms to boost DNS's resilience result in disastrous behavior when servers fail or when specific implementation faults are triggered, explains the paradoxically high proportion of wide-area DNS packets, and assesses the effects of flaws in various DNS implementations. It demonstrates how DNS performance would only be slightly enhanced by negative caching in a network with suitably configured name servers. It ends by urging a fundamental shift in how we design and implement name servers and distributed applications in the future.*

Keywords: DNS

REFERENCES

- [1] R. Arends, R. Austein, M. Larson, D. Massey, and S. Rose. Protocol Modifications for the Domain Name System Security Extensions. Request for Comments 4035, Mar. 2005.
- [2] C. Huitema and S. Weerahandi. Internet Measurements: The Rising Tide and the DNS Snag. In Proc. of ITC Specialist Seminar on Internet Traffic Measurement and Modeling, Monterey, CA, 2000.
- [3] Internet Systems Consortium. BIND Vulnerabilities. <http://www.isc.org/sw/bind/bind-security.php>, Feb. 2004.
- [4] J. Jung, A. Berger, and H. Balakrishnan. Modeling TTL-based Internet Caches. In Proc. of IEEE International Conference on Computer Communications, San Francisco, CA, Mar. 2003.
- [5] J. Jung, E. Sit, H. Balakrishnan, and R. Morris. DNS Performance and Effectiveness of Caching. In Proc. of SIGCOMM Internet Measurement Workshop, San Francisco, CA, Nov. 2001.
- [6] P. Mockapetris. Domain Names: Concepts and Facilities. Request for Comments 1034, Nov. 1987.
- [7] P. Mockapetris. Domain Names: Implementation and Specification. Request for Comments 1035, Nov. 1987.
- [8] P. Mockapetris and K. Dunlop. Development of the Domain Name System. In Proc. of ACM SIGCOMM, Stanford, CA, 1988.
- [9] V. Pappas, Z. Xu, S. Lu, D. Massey, A. Terzis, and L. Zhang. Impact of Configuration Errors on DNS Robustness. In Proc. of ACM SIGCOMM, Portland, OR, Aug. 2004.
- [10] K. Park, V. Pai, and L. Peterson. CoDNS: Improving DNS Performance and Reliability via Cooperative Lookups. In Proc. of Symposium on Operating Systems Design and Implementation, 2004.
- [11] V. Ramasubramanian and E. G. Sirer. The Design and Implementation of a Next Generation Name Service for the Internet. In Proc. of ACM SIGCOMM, Portland, OR, Aug. 2004.
- [12] A. Shaikh, R. Tewari, and M. Agarwal. On the Effectiveness of DNS-based Server Selection. In Proc. of IEEE International Conference on Computer Communications, Anchorage, AK, Apr. 2001.
- [13] K. Thompson. Reflections on Trusting Trust. Comm. of the ACM, 27(8), Aug. 1984.



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[14] C. E. Wills and H. Shang. The Contribution of DNS Lookup Costs to Web Object Retrieval. Technical Report TR-00-12, Worcester Polytechnic Institute, July 2000