

My comment on NTIA docket number 0810021307–81308–01 (Enhancing the Security and Stability of the Internet’s Domain Name and Addressing System) follows. I would appreciate an acknowledgment of receipt.

1. During my time as Senior Advisor for Internet Technology at the US FCC, I studied the challenges of getting certain kinds of Internet capabilities deployed. The results are published in the following paper:

J. Scott MARCUS, “Evolving Core Capabilities of the Internet”, *Journal on Telecommunications and High Technology Law*, 2004, available at: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=921903](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=921903).

2. The paper includes a lengthy discussion of the *economic* challenges of deploying DNSSEC.

3. The key argument is that there is a class of capabilities where deployment has been glacial, even if the technology seemed to be reasonably well accepted, mature, and apparently desirable. These problem capabilities usually exhibit some combination of:

- strong network externalities;
- relatively high transaction costs to implement (often because of long, complex value chains);
- limited direct benefit to the parties that would have to invest in deploying them; and
- largely as a result, many of the economic characteristics of *public goods*.

4. DNSSEC seems to be a good example of such a capability. Similar concerns hold for (1) IP version 6 (IPv6), and (2) differentiated QoS between ISPs.

5. For these capabilities, market forces alone are unlikely to achieve timely deployment. As is often the case with public goods, public policy intervention is likely to be necessary if the capability is to deploy at all.

6. The point is that DNSSEC deployment should not be viewed solely as a technical problem. Active policy interventions are likely to be necessary in order to get past the initial bottlenecks.

7. These findings are generally consistent with the NTIA's findings in your study of IPv6 a few years ago. See also the discussion of the initial adoption hump in the presence of network externalities in Rohlfs's book on *Bandwagon Effects*.

8. Since 2005, I have worked as a senior consultant and more recently as a department manager for WIK-Consult GmbH, the consulting arm of the Wissenschaftliches Institut fuer Infrastruktur und Kommunikationsdienste (WIK), a research institute in the economics and regulation of network industries located in Bad Honnef, Germany. From 2001 to 2005, I was Senior Advisor for Internet Technology (a position comparable in stature to the Chief Economist or Chief Technologist) to the FCC. I was a member of the

FCC's Homeland Security Policy Council, and had duties that included cybersecurity. Prior to joining the FCC, I was Chief Technology Officer (CTO) for GTE Internetworking, one of the largest Internet backbone ISPs in the world at the time, and held a variety of positions in its predecessor and successor companies from 1990 to 2001. I served on the Board of the American Registry of Internet Numbers (ARIN) from 2000-2002.

9. For a list of my more significant publications, see <http://www.mynetcologne.de/%7Enc-marcusjs/publications.html>

10. I am making these comments for the public good. No client has asked me to comment on the matter. To the best of my knowledge, I have no financial interest whatsoever in the resolution of this public consultation.

Sincerely,  
J. Scott MARCUS

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Department Manager



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