

# Statement of Interest for Name Collision Analysis Project

**APRIL 26, 2019**

## General Questions

1. Name: **Matthew Thomas**
2. Stakeholder Group: **None**
3. Constituency: **None**
4. ICANN Affiliation  
(if not covered by item 2 or 3 above) **None**
5. Current employer(s): **VeriSign, Inc.**
6. Current position(s): **Principal Engineer**
7. Type(s) of work performed: **My work focuses on numerous aspects of Internet security, stability and resiliency including but not limited to: DDoS attacks, domain name abuse, miscreant behavior within the DNS, and large-scale measurements and evolving trends in Internet architectures**
8. Declared country of primary residence (e.g., country to which you pay taxes): **United States**
9. Please list any financial relationship beyond de minimis stock ownership you may have with any company that to your knowledge has a financial relationship or contract with ICANN: **Verisign, my sole employer and I am a shareholder.**

## NCAP Specific Questions

Points to keep in mind when answering the questions below:

- These are all “good faith” declarations. No one is expecting the person filling this out to undertake any type of significant work to complete this section, rather this is to the best of your knowledge or recollection.
  - After the initial declaration ICANN may judge that it is necessary to discuss some aspects of this in greater detail.
  - It is important to note that the SOI is a continuous obligation on the person making the declaration and if that person’s situation changes which affects the SOI or if they become aware of new facts or remember something that should have been included in the SOI then that person has the obligation to update the SOI accordingly and promptly.
- 10 . Please identify any patents or intellectual property ownership you or your company has related to the domain name system that may intersect with the study of name collision strings.

<u>Publication No.</u>	<u>Title</u>
US2010/0257266	EXISTENT DOMAIN NAME DNS TRAFFIC CAPTURE AND ANALYSIS
US2015/0058139	EXISTENT DOMAIN NAME DNS TRAFFIC CAPTURE AND ANALYSIS
US2015/0365305	DOMAIN NAME SYSTEM TRAFFIC ANALYSIS
EP2988455	DOMAIN NAME SYSTEM TRAFFIC ANALYSIS
US2015/0256424	NAME COLLISION RISK MANAGER
EP2916525	NAME COLLISION RISK MANAGER
US2017/0279846	DETECTING AND REMEDIATING HIGHLY VULNERABLE DOMAIN NAMES USING PASSIVE DNS MEASUREMENTS
EP3223499	DETECTING AND REMEDIATING HIGHLY VULNERABLE DOMAIN NAMES USING PASSIVE DNS MEASUREMENTS
US2013/0085914	AUTHENTICATED NAME RESOLUTION
US2013/0198065	ADAPTIVE NAME RESOLUTION
EP2579539	AUTHENTICATED NAME RESOLUTION
US2013/0173825	PROVIDING PRIVACY ENHANCED RESOLUTION SYSTEM IN THE DOMAIN NAME SYSTEM
US2015/0058999	PROVIDING PRIVACY ENHANCED RESOLUTION SYSTEM IN THE DOMAIN NAME SYSTEM
EP2611116	PROVIDING PRIVACY ENHANCED RESOLUTION SYSTEM IN THE DOMAIN NAME SYSTEM
US2014/0122476	PRIVACY PRESERVING DATA QUERYING
US2016/0085987	PRIVACY PRESERVING DATA QUERYING
US2014/0123301	PRIVACY PRESERVING REGISTRY BROWSING
US2016/0285836	PRIVACY PRESERVING REGISTRY BROWSING
US2017/0262651	PRIVACY-PRESERVING DATA QUERYING WITH AUTHENTICATED DENIAL OF EXISTENCE
EP2725515	PRIVACY PRESERVING DATA QUERYING
EP2725516	PRIVACY PRESERVING REGISTRY BROWSING

11. Have you in the past undertaken paid or unpaid work (e.g., travel and accommodation expenses, membership of speakers panels/bureaus or advisory boards, fellowships, equipment, writing or administrative support) related to the study of name collision strings? **YES, through my work at Verisign.**

Please provide supporting details. **Please see references provided below.**

Please note that:

- If the person filling this out is a member of the SSAC they do not have to declare anything they have done in the context of their SSAC work.
- This declaration is not made to include general statements made in a context that is not directly associated with name collision.

12. Do you or someone you have a business or personal relationship with intend to bid to work on any portions of the NCAP project. **Not to my knowledge.** If yes please provide a short summary of this.

13. Do you or someone you have a business or personal relationship with intend to apply for the .HOME, .CORP or .MAIL TLDs in the new gTLD process (or have done so in the past). **Not to my knowledge.** If yes please provide a short summary of this (Please note that a list of applicants for the .HOME, .CORP or .MAIL TLDs in the past round of new gTLDs will be included as an annex to this SOI form for convenience).

14. Have you or your company published any reports or made any public recommendations on name collisions (This should be about formal recommendations that have been made publicly. This should not be about opinions or discussions on panels or any other such type of forum)? **Yes.** Please provide supporting details if affirmative. **I and/or my employer have reviewed or otherwise been directly involved in all of the following:**

## Peer-Reviewed Research Papers

1. **Casey Deccio.** [\*What's in a Name \(Collision\)? Modeling and Quantifying Collision Potential.\*](#) Presented at Workshop and Prize on Root Causes and Mitigation of Name Collisions (WPNC), London, UK, March 8-10, 2014. (Slides: [11].)
2. **Andrew Simpson.** [\*Detecting Search Lists in Authoritative DNS.\*](#) Presented at Workshop and Prize on Root Causes and Mitigation of Name Collisions (WPNC), London, UK, March 8-10, 2014. (Slides: [12].)
3. **Andrew Simpson and Matthew Thomas.** [\*Analysis Techniques for Determining Cause and Ownership of DNS Queries.\*](#) Presented at Workshop and Prize on Root Causes and Mitigation of Name Collisions (WPNC), London, UK, March 8-10, 2014. (Slides: [13].)
4. **Matthew Thomas, Yannis Labrou and Andrew Simpson.** [\*The Effectiveness of Block Lists to Prevent Collisions.\*](#) Presented at Workshop and Prize on Root Causes and Mitigation of Name Collisions (WPNC), London, UK, March 8-10, 2014. (Slides: [14].)
5. Qi Alfred Chen, **Eric Osterweil, Matthew Thomas,** and Z. Morley Mao. [\*MitM Attack by Name Collision: Cause Analysis and Vulnerability Assessment in the New gTLD Era.\*](#) In 37th IEEE Symposium on Security and Privacy (S&P '16), pp. 675-690. IEEE, May 2016. (Slides: [17].)
6. Qi Alfred Chen, **Matthew Thomas, Eric Osterweil,** Yulong Cao, Jie You, and Z. Morley Mao. [\*Client-side Name Collision Vulnerability in the New gTLD Era: A Systematic Study.\*](#) In ACM

Conference on Computer and Communications Security (CCS '17), pp. 941-956. ACM, November 2017. (Slides: [18].)

## Technical Presentations

7. **Andy Simpson, Matthew Thomas, Eric Osterweil, and Danny McPherson.** [Regional Affinity for Applied for gTLD Strings](#). Presented at DNS-OARC Fall Workshop, Phoenix, AZ, USA, October 5, 2013.
8. **Burt Kaliski.** [Why SLD Blocking Misses the Point](#). Presented at Online Trust Alliance gTLD Collisions - Risk Assessment and Mitigation Workshop, Herndon, VA, USA, October 29, 2013.
9. **Andrew Simpson.** *Quantitative analysis, composite risks & case study of .CBA*. Presented at Online Trust Alliance's gTLD Collisions - Risk Assessment & Mitigation Workshop, Herndon, VA, USA, October 29, 2013.
10. **Burt Kaliski.** [Managing the Impact of gTLD Name Collisions](#). Presented at The Impact of gTLDs on the Internet, Internet Society Washington DC Chapter, Washington, DC, USA, December 16, 2013.
11. **Casey Deccio.** [What's in a Name \(Collision\)? Modeling and Quantifying Collision Potential](#). Presented at Workshop and Prize on Root Causes and Mitigation of Name Collisions (WPNC), London, UK, March 8-10, 2014. (Paper: [1].)
12. **Andrew Simpson.** [Detecting Search Lists in Authoritative DNS](#). Presented at Workshop and Prize on Root Causes and Mitigation of Name Collisions (WPNC), London, UK, March 8-10, 2014. (Paper: [2].)
13. **Andrew Simpson and Matthew Thomas.** [Analysis Techniques for Determining Cause and Ownership of DNS Queries](#). Presented at Workshop and Prize on Root Causes and Mitigation of Name Collisions (WPNC), London, UK, March 8-10, 2014. (Paper: [3].)
14. **Matthew Thomas, Yannis Labrou and Andrew Simpson.** [The Effectiveness of Block Lists to Prevent Collisions](#). Presented at Workshop and Prize on Root Causes and Mitigation of Name Collisions (WPNC), London, UK, March 8-10, 2014. (Paper: [4].)
15. **Burt Kaliski.** [Name Collisions in the Domain Name System](#). Presented at USTelecom webinar, April 17, 2014.
16. **Burt Kaliski.** [Name Collisions in the Domain Name System](#). Presented at ETH, Zurich, Switzerland, June 27, 2014.
17. Qi Alfred Chen, **Eric Osterweil, Matthew Thomas**, and Z. Morley Mao. [MitM Attack by Name Collision: Cause Analysis and Vulnerability Assessment in the New gTLD Era](#). Presented at 37th IEEE Symposium on Security and Privacy (S&P '16), San Jose, CA, USA, May 23-25, 2016. (Paper: [5].)
18. Qi Alfred Chen, **Matthew Thomas, Eric Osterweil**, Yulong Cao, Jie You, and Z. Morley Mao. [Client-side Name Collision Vulnerability in the New gTLD Era: A Systematic Study](#). In ACM Conference on Computer and Communications Security (CCS '17), Dallas, TX, USA, October 30 – November 3, 2017. (Paper: [6].)

## Technical Reports and Notes

19. **Verisign Labs.** [New gTLD Security and Stability Considerations](#). Verisign Labs Technical Report #1130007. Version 2.2, undated. Included in **D. James Bidzos'** letter, March 28, 2013 [29]. [Version 2.1](#) included as attachment to **Danny McPherson's** email comments [30].

20. **Verisign Labs.** [New gTLD Security, Stability, Resiliency Update: Exploratory Consumer Impact Analysis](#). Verisign Labs Technical Report #1130008. Version 1.1, August 22, 2013. Included as attachment to **Danny McPherson's** email comments [30].
21. **Eric Osterweil.** [On the differences between apples and oranges](#). Undated. Included as attachment to email comments, September 11, 2013 [31].
22. Warren Kumari and **Danny McPherson.** [On DNS Search List Processing: Perhaps the Most Misunderstood Staple of DNS Resolution](#). Undated. Included as attachment to email comments, September 17, 2013 [34].
23. **Eric Osterweil.** [Illustrating the Need to Undertake Qualitative Impact Assessments for Applied-For Strings: .WEBSITE, .COFFEE, and .CLUB](#). Undated. Included as attachment to email comments, September 17, 2013 [35].
24. **Verisign Labs.** [Preliminary Analysis of SLD Blocking Effectiveness](#). November 5, 2013. Included in **Burt Kaliski's** letter [36].
25. **Verisign Labs.** [Continued Analysis of SLD Blocking Effectiveness](#). November 15, 2013. Included in **Burt Kaliski's** letter [37].
26. **Verisign.** [Preliminary Comments on "Mitigating the Risk of DNS Namespace Collisions" Phase One Report](#). March 31, 2014. Included as attachment to **Burt Kaliski's** email comments [38].
27. **Verisign.** [Additional Comments on "Mitigating the Risk of DNS Namespace Collisions" Phase One Report](#). April 21, 2014. Included as attachment to **Burt Kaliski's** email comments [39].
28. **Verisign.** [White Paper: Enterprise Remediation for WPAD Name Collision Vulnerability](#). Verisign, May 23, 2016.

## Letters and Public Comments to ICANN

29. **D. James Bidzos.** [Letter to Fadi Chehadé](#), ICANN, March 28, 2013. Includes Version 2.2 of Verisign Labs technical report "New gTLD Security and Stability Considerations" [19].
30. **Danny McPherson.** [Verisign Exploratory Consumer Impact Analysis](#). Submitted to comments-name-collision-05aug13 mailing list, August 27, 2013. Includes Verisign Labs technical reports [19][20].
31. **Eric Osterweil.** [NXDomain responses under existent TLDs are not the same as NXDomain responses under applied-for strings](#). Submitted to name-collision-05aug13 mailing list, September 11, 2013. Includes technical note [21].
32. **Patrick S. Kane, Thomas C. Indelicarto, and Danny McPherson.** [Re: ICANN's Proposal to Mitigate Name Collision Risks – .CBA Case Study](#). Letter to Board of Directors, ICANN, September 15, 2013. Includes Verisign presentation "Focused Analysis on New Applied-For gTLDs (Focus: .cba)."
33. **Patrick S. Kane.** [Focused Analysis on Applied-For gTLDs - .cba](#). Submitted to comments-name-collision-05aug13 mailing list. September 15, 2013. Includes letter [32].
34. Warren Kumari and **Danny McPherson.** [On DNS Search List Processing: Perhaps the Most Misunderstood Staple of DNS Resolution](#). Submitted to comments-name-collision-05aug13 mailing list, September 17, 2013. Includes technical note [22].
35. **Eric Osterweil.** [Illustrating the Need to Undertake Qualitative Impact Assessments for Applied-For Strings: .WEBSITE, .COFFEE, and .CLUB](#). Submitted to comments-name-collision-05aug13 mailing list, September 17, 2013. Includes technical note [23].

36. **Burt Kaliski.** [\*Verisign Labs preliminary analysis of SLD blocking effectiveness.\*](#) Letter to Akram Atallah and John Crain, ICANN, November 5, 2013. Includes Verisign technical note [24].
37. **Burt Kaliski.** [\*Verisign Labs continued analysis of SLD blocking effectiveness.\*](#) Letter to Akram Atallah and John Crain, ICANN, November 15, 2013. Includes Verisign technical note [25].
38. **Burt Kaliski.** [\*Verisign additional comments on "Mitigating the Risk of DNS Namespace Collisions" Phase One Report.\*](#) Submitted to comments-name-collision-26feb14 mailing list, March 31, 2014. Includes Verisign technical note [26].
39. **Burt Kaliski.** [\*Verisign additional comments on "Mitigating the Risk of DNS Namespace Collisions" Phase One Report.\*](#) Submitted to comments-name-collision-26feb14 mailing list, April 21, 2014. Includes Verisign technical note [27].

## Blog Posts

40. **Danny McPherson.** [\*Part 1 of 5; Introduction: New gTLD Security and Stability Considerations.\*](#) Between the Dots, May 9, 2013. Also [published](#) on CircleID, June 24, 2013.
41. **Danny McPherson.** [\*Part 2 of 5; Internet Infrastructure: Stability at the Core, Innovation at the Edge.\*](#) Between the Dots, May 28, 2013. Also [published](#) on CircleID, June 26, 2013.
42. **Danny McPherson.** [\*Part 3 of 5; Name Collisions, Why Every Enterprise Should Care.\*](#) Between the Dots, June 4, 2013. Also [published](#) on CircleID, June 28, 2013.
43. **Danny McPherson.** [\*Part 4 of 5; NXDomains, SSAC's SAC045, and New gTLDs.\*](#) Between the Dots, July 31, 2013. Also [published](#) on CircleID, July 31, 2013.
44. **Danny McPherson.** [\*Part 5 of 5; New gTLD SSR-2: Exploratory Consumer Impact Analysis.\*](#) Between the Dots, August 6, 2013. Also [published](#) on CircleID, August 6, 2013.
45. **Burt Kaliski.** [\*Part 1 of 4 – Introduction: ICANN's Alternative Path to Delegation.\*](#) Between the Dots, November 16, 2013. Also [published](#) on CircleID, November 16, 2013.
46. **Burt Kaliski.** [\*Part 2 of 4 – DITL Data Isn't Statistically Valid for This Purpose.\*](#) Between the Dots, November 8, 2013. Also [published](#) on CircleID, November 8, 2013.
47. **Burt Kaliski.** [\*Part 3 of 4 – Name Collision Mitigation Requires Qualitative Analysis.\*](#) Between the Dots, November 13, 2013. Also [published](#) on CircleID, November 13, 2013.
48. **Burt Kaliski.** [\*Part 4 of 4 – Conclusion: SLD Blocking Is Too Risky without TLD Rollback.\*](#) Between the Dots, November 20, 2013. Also [published](#) on CircleID, November 21, 2013.
49. **Burt Kaliski.** [\*Collisions Ahead: Look Both Ways Before Crossing.\*](#) Between the Dots, January 23, 2014. Also [published](#) on CircleID, January 23, 2014.
50. **Burt Kaliski.** [\*Colloquium on Collisions: Expert Panelists to Select Papers, Award \\$50K First Prize.\*](#) Between the Dots, February 4, 2014. Also [published](#) on CircleID, February 4, 2014.
51. **Burt Kaliski.** [\*Keynote Speaker for Name Collisions Workshop: Bruce Schneier.\*](#) Between the Dots, February 20, 2014. Also [published](#) on CircleID, February 20, 2014.
52. **Burt Kaliski.** [\*Uncontrolled Interruption? Dozens of "Blocked" Domains in New gTLDs Actually Delegated.\*](#) Between the Dots, February 26, 2014. Also [published](#) on CircleID, February 26, 2014.
53. **Burt Kaliski.** [\*Jeff Schmidt to Present Name Collision Management Framework at Research Workshop.\*](#) Between the Dots, March 4, 2014. Also [published](#) on CircleID, March 4, 2014.
54. **Burt Kaliski.** [\*Proceedings of Name Collisions Workshop Available.\*](#) Between the Dots, March 26, 2014. Also [published](#) on CircleID, March 26, 2014.

55. **Burt Kaliski.** [Verisign's Preliminary Comments on ICANN's Name Collisions Phase One Report](#). Between the Dots, April 16, 2014. Also [published](#) on CircleID, April 16, 2014.
56. **Burt Kaliski.** [The Real Uneven Playing Field of Name Collisions](#). Between the Dots, May 16, 2014. Also [published](#) on CircleID, May 8, 2014.

## External Publications with Verisign Contributions

57. SSAC Contributions omitted per guidance above.
58. [US-CERT Alert \(TA16-144A\): WPAD Name Collision Vulnerability](#). US Department of Homeland Security, original release May 23, 2016; revised October 6, 2016. (**Danny McPherson, Eric Osterweil.**)

## Standards Contributions

59. **Matthew Thomas**, Allison Mankin, and Lixia Zhang. [Report from the Workshop and Prize on Root Causes and Mitigation of Name Collisions](#). IETF RFC 8023, November 2016.

15. Please provide any other information you believe may be pertinent to your statement of interest that could involve potential or perceived conflicts of interest.

**None**