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J. Levine
Taughannock Networks
P. Hoffman
Cybersecurity Association
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Top-Level Domains That Are Already Dotless

Abstract

Recent statements from the Internet Architecture Board (IAB) and the Internet Corporation of Assigned Names and Numbers (ICANN) Security and Stability Advisory Committee have focused on the problems that the DNS is likely to experience with top-level domains (TLDs) that contain address records (so-called "dotless domains"). In order to help researchers determine the extent of the issues with dotless domains, this document lists the current dotless TLDs and gives a script for finding them. This document lists data about dotless TLDs but does not address the policy and technology issues other than to point to the statements of others.

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1. Introduction

In the past few years, well-respected groups have issued documents about top-level domains in the DNS that contain address records (so-called "dotless domains"). The Security and Stability Advisory Committee (SSAC) of the Internet Corporation for Assigned Names and Numbers (ICANN) issued a report called "Report on Dotless Domains" [SAC053] in February 2012. The Internet Architecture Board (IAB) issued a statement called "Dotless Domains Considered Harmful" [IAB-DOTLESS] in July 2013. The New gTLD Program Committee of the ICANN Board of Directors (NGPC) approved a resolution on dotless domains [NGPC-DOTLESS] in August 2013. (The authors of this document note that they are not on the SSAC, the IAB, or the ICANN Board.)

All of these documents consider the effects of dotless domains without describing the extent of their current deployment. In order to help researchers determine the extent of the problems with dotless domains, this document lists the known dotless domains at the time of publication and shows how researchers can find them in the future. In this document, we consider any TLD with an A, AAAA, and/or MX record at the apex to be dotless. This document is meant to provide current data to the Internet community but does not give advice.

Many people have expressed a belief that ICANN prohibits all TLDs from being dotless. That belief is not true; ICANN's policies apply only to their contracted TLDs. This document shows the extent to which dotless domains exist today.

2. Current Dotless Domains

This section shows the dotless domains we found on September 3, 2013, using the script in Appendix A. The data was nearly constant for many months, with very few additions or deletions of records.

We checked every TLD in the root zone to see which ones had A, AAAA, or MX records. We found that about 5% of the TLDs did, and all of the TLDs that do are two-letter TLDs or country code TLDs (which are also known as ccTLDs).

2.1. TLDs with A Records

At the time this document is published, the following TLDs have A records.

AC has address 193.223.78.210
AI has address 209.59.119.34
CM has address 195.24.205.60
DK has address 193.163.102.24
GG has address 87.117.196.80
IO has address 193.223.78.212
je has address 87.117.196.80
KH has address 203.223.32.21
PN has address 80.68.93.100
SH has address 193.223.78.211
TK has address 217.119.57.22
TM has address 193.223.78.213
TO has address 216.74.32.107
UZ has address 91.212.89.8
VI has address 193.0.0.198
WS has address 64.70.19.33

2.2. TLDs with AAAA Records

At the time this document is published, the following TLD has an AAAA record.

DK has IPv6 address 2a01:630:0:40:bla:bla:2011:1

2.3. TLDs with MX Records

At the time this document is published, the following TLDs have MX records. The SSAC report implies, but does not explicitly say, that MX records would cause a TLD to be considered dotless; the IAB report does not mention MX records at all.

AI mail is handled by 10 mail.offshore.AI.
AX mail is handled by 5 mail.aland.net.
CF mail is handled by 0 mail.intnet.CF.
DM mail is handled by 10 mail.nic.DM.
GP mail is handled by 10 ns1.worldsatelliteservices.com.
GP mail is handled by 5 ns1.nic.GP.
GT mail is handled by 10 ASPMX.L.GOOGLE.COM.
GT mail is handled by 20 ALT1.ASPMX.L.GOOGLE.COM.
GT mail is handled by 20 ALT2.ASPMX.L.GOOGLE.COM.
GT mail is handled by 30 ASPMX2.GOOGLEMAIL.COM.
GT mail is handled by 30 ASPMX3.GOOGLEMAIL.COM.
GT mail is handled by 30 ASPMX4.GOOGLEMAIL.COM.
GT mail is handled by 30 ASPMX5.GOOGLEMAIL.COM.
HR mail is handled by 5 alpha.carnet.HR.
IO mail is handled by 10 mailer2.IO.
KH mail is handled by 10 ns1.dns.net.KH.
KM mail is handled by 100 mail1.comorestelecom.KM.
LK mail is handled by 10 malithi-slt.nic.LK.
LK mail is handled by 20 malithi-lc.nic.LK.
MQ mail is handled by 10 mx1-mq.mediaserv.net.
PA mail is handled by 5 ns.PA.
TT mail is handled by 10 ALT1.ASPMX.L.GOOGLE.COM.
TT mail is handled by 1 ASPMX.L.GOOGLE.COM.
UA mail is handled by 10 mr.kolo.net.
VA mail is handled by 10 raphaelmx3.posta.VA.
VA mail is handled by 10 raphaelmx1.posta.VA.
VA mail is handled by 10 raphaelmx2.posta.VA.
WS mail is handled by 10 mail.worldsite.WS.
YE mail is handled by 10 mail.yemen.net.YE.

3. IANA Considerations

The script in Appendix A relies on IANA continuing to publish a copy of the TLDs in the root zone at
<<http://data.iana.org/TLD/tlds-alpha-by-domain.txt>>.

4. Security Considerations

This document lists the known dotless domains; it does not express an opinion whether or not there are security considerations with the existence of dotless domains. The referenced IAB and SSAC reports discuss the opinions of the respective bodies on the security and stability considerations of dotless domains.

5. Acknowledgements

Andrew Sullivan and Marc Blanchet gave helpful comments on this document.

6. Informative References

[IAB-DOTLESS]

Internet Architecture Board, "Dotless Domains Considered Harmful", July 2013, <<https://www.iab.org/2013/07/10/iab-statement-dotless-domains-considered-harmful/>>.

[NGPC-DOTLESS]

New gTLD Program Committee of the ICANN Board, "Approved Resolution on Dotless Domains", September 2013, <<http://www.icann.org/en/groups/board/documents/resolutions-new-gtld-13aug13-en.htm>>.

[SAC053]

ICANN Security and Stability Advisory Committee, "SSAC Report on Dotless Domains", February 2012, <<http://www.icann.org/en/groups/ssac/documents/sac-053-en.pdf>>.

Appendix A. Script for Finding Dotless Domains

The following Bourne shell script was used for finding the data in this document. The authors believe that this script will work correctly on a wide variety of operating systems and will continue to do so in the foreseeable future. As is customary in the current legal environment, the authors make no assurance that the script is correct or that the script will not cause damage on a system where it is run.

The script checks each nameserver for each TLD instead of just doing a simple query because the nameservers for some of the TLDs have inconsistent data in them with respect to the records shown here.

```
#!/bin/sh
# Get the current list of TLDs from IANA
wget -O orig.txt http://data.iana.org/TLD/tlds-alpha-by-domain.txt
# Remove the comment at the top of the file
grep -v '^#' orig.txt > TLDs.txt
# Get all the nameservers
while read tld; do host -t NS $tld; done < TLDs.txt > TLD-servers.txt
# Do queries for each record type, and do them on each nameserver
for rec in A AAAA MX; do
  while read tld ignorea ignoreb ns; do
    host -t $rec $tld. $ns;
  done < TLD-servers.txt;
done > all-out.txt
# Print the results
grep "has address" all-out.txt | sort -uf
grep "has IPv6" all-out.txt | sort -uf
grep "mail is handled" all-out.txt | sort -uf
```

Authors' Addresses

John Levine
Taughannock Networks

EMail: standards@taugh.com

Paul Hoffman
Cybersecurity Association

EMail: paul.hoffman@cybersecurity.org