White Paper #1 - Auditable V3

Findings:

The Trump Organization is using a very unusually-configured "secret" email server in Pennsylvania for current and ongoing email communications with Alfa Bank (Moscow), and with Alfa Bank (Moscow) through another unusually-configured server (a "Tor exit node") at Spectrum Health in Michigan.

These servers are configured for direct communications between the Trump organization and Alfa Bank to the exclusion of all other systems.

The only plausible explanation for this server configuration is that it shows the Trump Organization and Alfa Bank to be using multiple sophisticated layers of protection in order to obfuscate their considerable recent email traffic.

Discussion:

1. On approximately July 28, 2016, a lookup in global DNS for all the hostnames with a domain name that has the word "Trump" in it yielded 1,933 domains. [File: PTR-Contains-Trump-1933.txt]

2. Another look-up for all domains registered by the Trump organization yielded 3,352 domains. [Filename: Trump-Domains-Registered-3352.txt]

3. Searching the data set in #1 for hostnames containing "mail," "smtp," "relay," or "mta" yielded 537 unique hostnames (i.e., machine names). (Includes irrelevant results such as "Trumpets for America.") [Filename: Trump-And-Mail-MTA-Relay-Etc-537.txt]

4. Of the 537 unique hostnames in #3, 15 were registered by the Trump Organization. [Filename: Trump-Owned-And-Mail-Systems-15.txt]

5. Manual verification (by manually looking at the hosting location, the name servers and the domain ownership details) confirmed that the 15 hostnames registered by the Trump Organization (in #4) were owned and controlled by the Trump Organization. [Filename: Trump-Owned-And-Mail-System-WHOIS-15.txt]

6. A search of global nonpublic DNS activity revealed from which IP addresses in the world systems looked up these 15 domains, in the 90 day period from May 4 - Sept. 4, 2016. [Sample of output of search - Filename: MX-Lookups-For-15-Trump-Related-Domains.txt]

7. A computerized and manual scan of those results for anomalous data of any kind to identify anomalous data was undertaken.

8. That search yielded 14 domains with no anomalous data (e.g.,trump-mail.com, trumpuniversity.com, and trumpsoho.com) and 1 that *did* contain anomalous data:

    mail1.trump-email.com (IP address 66.216.133.29)

    [Filename: Log-Of-DNS-Lookups-For-mail1.trump-email.com-851.txt]

9. trump-email.com, the "parent" domain for mail1.trump-email.com, is registered to the Trump organization, so mail1.trump-email.com is a Trump-controlled mail server. [*See* following WHOIS lookup and file referenced in #4]

GoDaddy™ All Products Domains Websites Hosting Web Secu

WHOIS search results for:

TRUMP-EMAIL.COM

(Registered)

Domain Name: TRUMP-EMAIL.COM
Registry Domain ID: 1565681481_DOMAIN_COM-VRSN
Registrar WHOIS Server: whois.godaddy.com
Registrar URL: http://www.godaddy.com
Update Date: 2016-06-29T14:27:44Z
Creation Date: 2009-08-14T20:06:37Z
Registrar Registration Expiration Date: 2017-07-01T03:59:59Z
Registrar: GoDaddy.com, LLC
Registrar IANA ID: 146
Registrar Abuse Contact Email: abuse@godaddy.com
Registrar Abuse Contact Phone: +1.4806242505
Domain Status: clientTransferProhibited http://www.icann.org/epp#clientTransferProhibited
Domain Status: clientUpdateProhibited http://www.icann.org/epp#clientUpdateProhibited
Domain Status: clientRenewProhibited http://www.icann.org/epp#clientRenewProhibited
Domain Status: clientDeleteProhibited http://www.icann.org/epp#clientDeleteProhibited
Registry Registrant ID:
Registrant Name: Trump Orgainzation
Registrant Organization: Trump Orgainzation
Registrant Street: 725 Fifth Avenue
Registrant City: New York
Registrant State/Province: New York
Registrant Postal Code: 10022
Registrant Country: US
Registrant Phone: +1.2128322000
Registrant Phone Ext:
Registrant Fax:
Registrant Fax Ext:
Registrant Email: emcmullin@cendyn.com
Registry Admin ID:

10. Over the 90-day period from May 4 - Sept. 4, 2016, there were 19 external IP addresses (in yellow) from which *A record* searches originated for mail1.trump-email.com:

326 look-ups from 217.12.97.15 [Alfa Bank]
288 look-ups from 217.12.96.15 [Alfa Bank]
230 look-ups from 167.73.110.8 [Spectrum Health]
98 look-ups from 50.207.241.62 [Domo, Inc., Salt Lake City. VPN provider]
4 look-ups from 66.155.252.34 [malware on it]
4 look-ups from 63.118.233.31 [malware on it]
4 look-ups from 192.216.142.4 [malware on it]
3 look-ups from 63.118.233.30 [malware on it]
2 look-ups from 74.217.49.226 [malware on it]
2 look-ups from 69.74.121.66 [malware on it]
2 look-ups from 198.175.230.159 [malware on it]
2 look-ups from 198.175.230.158 [malware on it]
2 look-ups from 109.110.227.141 [malware on it]
2 look-ups from 69.30.221.250 [malware on it]
2 look-ups from 69.30.210.242 [malware on it]
1 look-up from 79.134.218.13 [Obit ISP, St. Petersburg, owned by Alfa Bank]
1 look-up from 69.30.198.202 [malware on it]
1 look-up from 203.12.160.3 [malware on it]
1 look-up from 204.101.0.66 [malware on it]

(These are the outside servers looking to send email to mail1.trump-email.)

11. A number of things about mail1.trump-email.com and the activity surrounding it stood out as being very unusual.

i. This is a *very* small number of source IP addresses: the number of IP addresses looking up the mail1.trump-email.com host name is minuscule—only 19 over ninety days. A normal mail server would have look-ups over a 90-day period coming from thousands to tens-of-thousands of different IP addresses.

ii. This is a *very* unusual distribution of source IP addresses: 4 IP addresses have significantly more lookups (97%) than the other 15 (3%). A normal distribution for mail look-ups would be fairly uniform in range, i.e., from each IP address would come a similar number of look-ups for any given domain name.[1]

iii. The majority of lookups for this *mail server* are for the A (regular) record by Alfa Bank and not the MX (mail record). This is significant because it shows a mail server set up to masquerade as a regular (non-mail) server. (An *A record* search is the appropriate look-up for another form of communication (such as a VPN or secure connection, a text connection, etc).)

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[1] mail1.trump-email.com is hosted by a Pennsylvania-based company, Listrak, which is a reasonably well known CRM (Customer Relationship Management) company that provides large-scale distribution of marketing emails (usually sending email messages to thousands of recipients hundreds of times a day). Most email systems receiving email from a CRM company would do an *A record* look-up of the connecting mail system (in this case, from mail1.trump-email.com) in order to verify its reputation, location, etc. before accepting the inbound connection. Hence the expected nearly equal distribution of IP address counts, and the expectation that there would be tens or hundreds of thousands of lookups.

- The top 2 IP addresses are the 2 main DNS servers belonging to Alfa Bank.
- Of the 975 total look-ups from the 19 IP addresses, 87% are from Alfa Bank or Spectrum Health (an Alfa Bank pass-through, discussed below).
- Add the suspicious look-ups from Domo, and 97% of the look-ups are suspect.

iv. mail1.trump-email.com is configured to only accept email from pre-determined and pre-approved IP addresses. When one tries to connect to mail1.trump-email.com (using telnet to port 25, the mail submission port), you get the response "lvpmta14.lstrk.net does not accept mail from you ([incoming IP address])." ["lvpmta" stands for "listrak virtual private mail transfer agent"]

This shows mail1.trump-email.com to be an active mail server (since there was a response from port 25) but one that highly restricts the sources from which it will accept email.

v. The Spectrum Health IP address is a TOR exit node used exclusively by Alfa Bank, i.e., Alfa Bank communications enter a Tor node somewhere in the world and those communications exit, presumably untraceable, at Spectrum Health. There is absolutely no reason why Spectrum would want a Tor exit node on its system.[2] (Indeed, Spectrum Health would not *want* a TOR node on its system because, by its nature, you never know what will come out of a TOR node, including child pornography and other illegal content.)

vi. The 4th most active IP address (after Alfa Bank and Spectrum Health) belongs to DOMO, a commercial cloud and VPN service provider located in Utah. VPNs to public VPN providers such as DOMO are often used to obfuscate the source of Internet traffic.

vii. The Alfa Bank name servers are not respecting the TTL for the mail1.trump-email.com hostname. The requires either modification of standard configuration (which takes skill and effort) or it indicates a manual loop-up. This is highly unusual because Alfa Bank is a large sophisticated global organization, i.e., this was not done in error. (Fingerprinting of the name severs at Alfa Bank indicate modern resolver code; all of the modern resolvers respect TTL.) [Filename: DNS-Lookups-For-mail1.trump-email.com-Through-9-14.txt]

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[2] We discovered that Spectrum Health is the victim of a network intrusion. Therefore, Spectrum Health may not know what it has a TOR exit node on its network. Alternatively, the De Vos family may have people at Spectrum who know there is a TOR node, i.e., the TOR node could have been placed there with inside help.

12. An updated search on Sept. 14, 2016 of the prior 90 days (i.e., June 17-Sept 14) shows a total of 3,553 look-ups for mail1.trump-email.com from only 9 IP addresses:

- 2,817 look-ups from the two Alpha Bank IP addresses;
- 729 look-ups from the Spectrum Health Tor node; and
- 7 look-ups from miscellaneous sources (3 internal and 4 from malware).

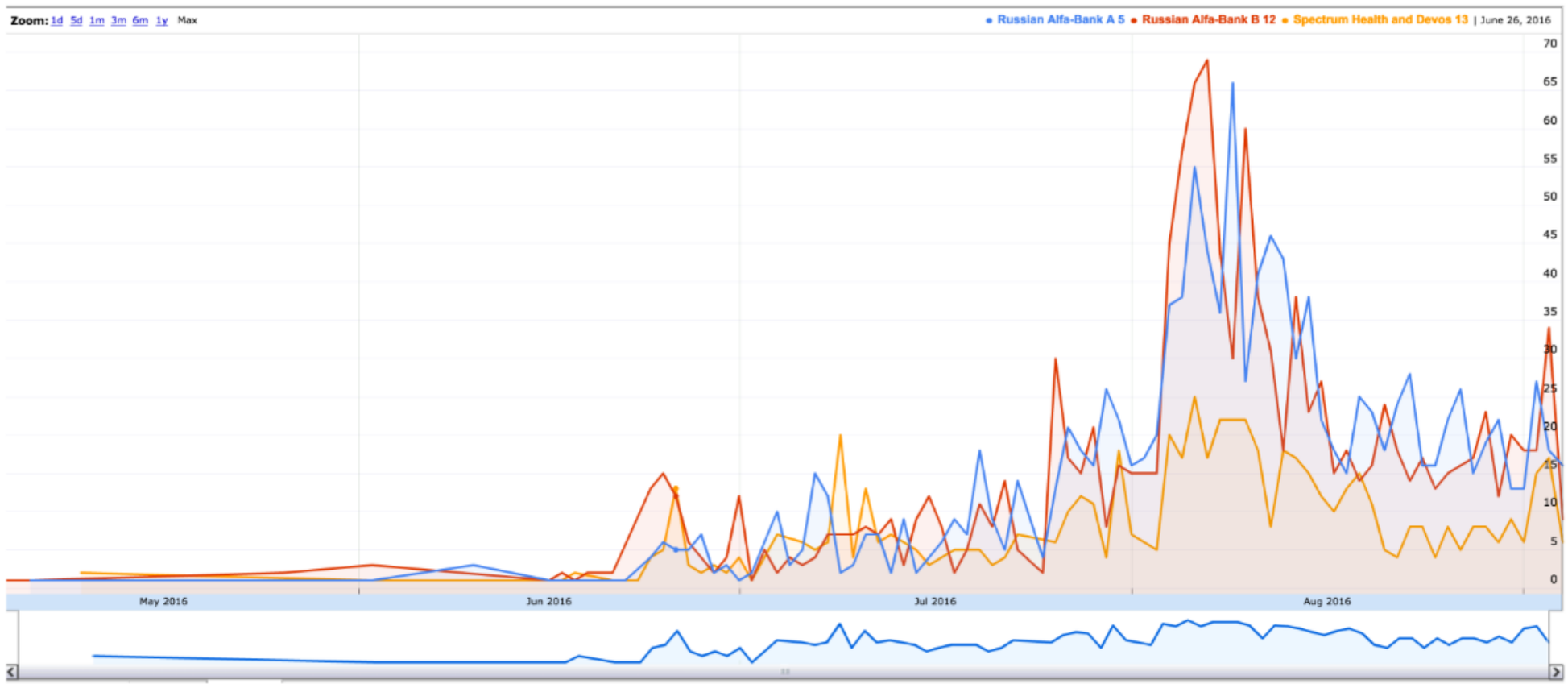
During this period, 99.8% of the look-ups for mail1.trump-email.com came from Alfa Bank or the Spectrum Tor node.

[Filename: DNS-Lookups-For-mail1.trump-email.com-Through-9-14.txt]

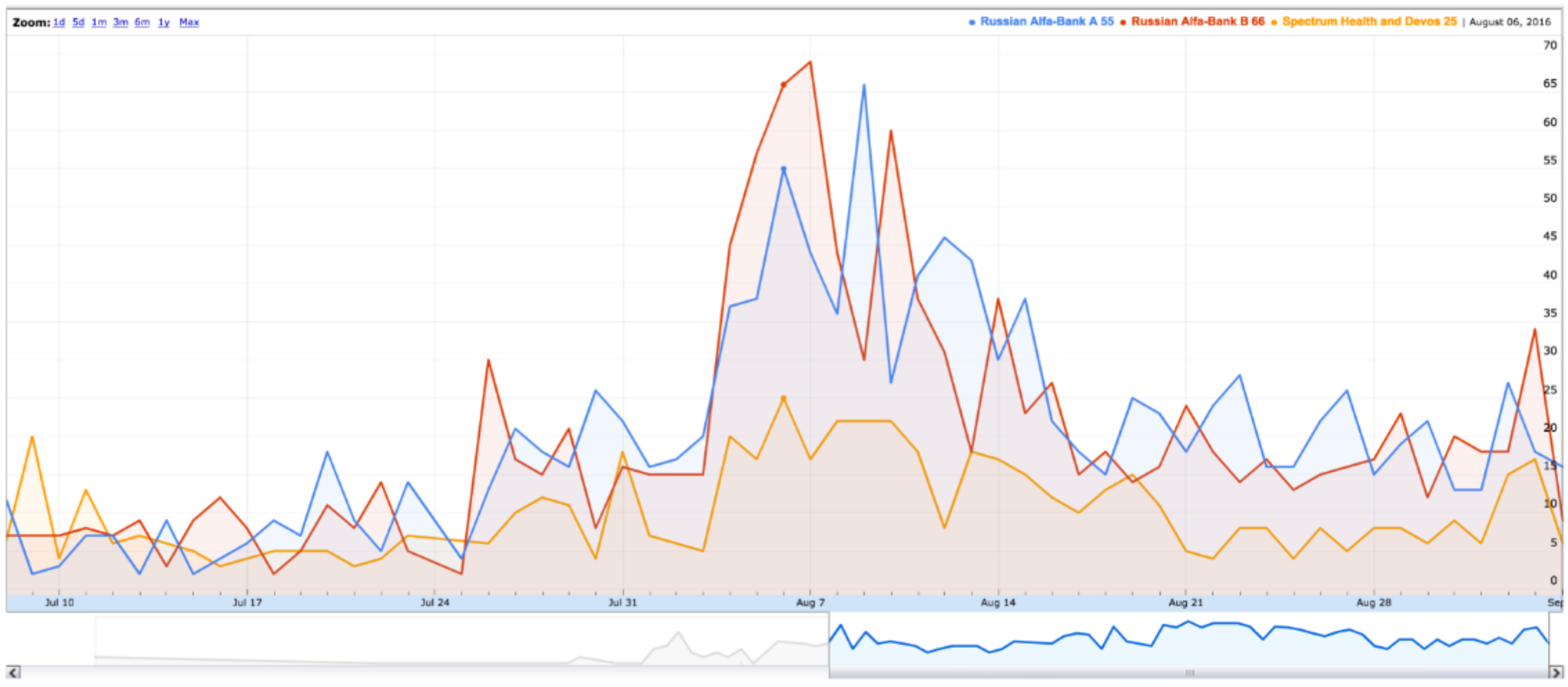
Conclusion:

While there may be *possible* explanations for the configurations of mail1.trump-email.com and the Spectrum Health TOR node, there is no *plausible* explanation other than that Alfa Bank and the Trump Organization are using multiple sophisticated layers of protection to obfuscate their communications.

This histograph shows the connections to mail1.trump-email from the two Alfa Bank IP addresses (326 and 288 connections) and the Spectrum Health IP address (230 connec-



tions) over time, and shows that the connections overlap over the same days.



This histograph shows the same information over an excerpted period of time.