EXHIBIT 17

Declaration of Russell James Ramsland, Jr.

1. My name is Russell James Ramsland, Jr., and I am a resident of Dallas County, Texas. I submit this declaration pursuant to 28 USC sec 1746. I am over 18 years of age. I hold an MBA from Harvard University, and a political science degree from Duke University. I have worked with the National Aeronautics and Space Administration (NASA) and the Massachusetts Institute of Technology (MIT), among other organizations, and have run businesses all over the world, many of which are highly technical in nature. I have served on technical government panels.

2. I am part of the management team of Allied Security Operations Group, LLC, (ASOG). ASOG is a group of globally engaged professionals who come from various disciplines to include Department of Defense, Secret Service, Department of Homeland Security, and the Central Intelligence Agency. It provides a range of security services, but has a particular emphasis on cybersecurity, open source investigation and penetration testing of networks. We employ a wide variety of cyber and cyber forensic analysts. We have patents pending in a variety of applications from novel network security applications to SCADA (Supervisory Control and Data Acquisition) protection and safe browsing solutions for the dark and deep web. For this report, I have relied on these experts and resources.

3. In November 2018, ASOG analyzed audit logs for the central tabulation server of the ES&S Election Management System (EMS) for the Dallas, Texas, General Election of 2018. Our team was surprised at the enormous number of error messages that should not have been there. They numbered in the thousands, and the operator ignored and overrode all of them. This led to various legal challenges in that election, and we provided evidence and analysis in some of them.

4. As a result, ASOG initiated an 18-month study into the major EMS providers in the United States, among which are Dominion that provides EMS services in Maricopa County and ES&S that provides EMS services in Pima County and elsewhere in Arizona. We did thorough background research of the literature and there is confirmed evidence from both Democrat and Republican stakeholders in the vulnerability of Dominion and ES&S. The State of Texas rejected Dominion's certification for use there due to vulnerabilities and major vote tampering has been verified in Dallas County in the 2020 General Election where ES&S operates the EMS services. Next, we began doing passive penetration testing into the vulnerabilities described in the literature and confirmed for ourselves that in many cases, past vulnerabilities already identified were still left open to exploit in the November 2020 election. We also noticed a striking similarity between the approach to software and EMS systems of ES&S and Dominion. This was logical since they share a common ancestry in the Diebold voting system.

5. Over the past three decades, almost all of the states have shifted from a relatively low-technology format to a high-technology format that relies heavily on a handful of private services companies. These private companies supply the hardware and

software, often handle voter registrations, hold the voter records, partially manage the elections, program counting the votes and report the outcomes. Arizona is one of those states.

6. These systems contain a large number of known vulnerabilities to hacking and tampering, both when voters express their voting intention by marking an electronic ballot using ballot marking devices (BMDs) , and at the back end where the votes are stored, tabulated, and reported by election officials. These vulnerabilities are well known, and experts in the field have written extensively about them.

7. Dominion ("Dominion") and Election Systems and Software ("ES&S") are privately held companies that provide election technologies and services to government jurisdictions. Numerous counties across the state of Arizona use the ES&S Election Management System and Maricopa County uses the Dominion Election Management System. Both systems have options to be an electronic, paperless voting system with no permanent record of the voter's choices, or a paper ballot based system or hybrid of those two.

8. Both ES&S and Dominion Election Management System's central accumulator fail to include a very badly needed protected real-time audit log that maintains the date and time stamps of all significant election events. Key components of the systems utilize unprotected logs. Essentially this allows the internal operator or an external attacker the opportunity to arbitrarily add, modify, or remove log entries, causing the machine to log erroneous election events. The system makes the creation and maintenance of various logs voluntary, so that the user has a choice to "not retain" or "conceal" their actions. Further, when logs are left unprotected and can be altered, they no longer serve the functional purpose of provided a transparent audit log to the public or election officials.

9. My colleagues and I at ASOG have studied the information that is publicly available concerning the November 3, 2020, election results. Based on the significant anomalies and red flags that we have observed, we believe to a reasonable degree of professional certainty that election results have been manipulated within the ES&S and Dominion systems in Arizona. As one example, Dr. Andrew Appel, Princeton Professor of Computer Science and Election Security Expert has observed, with reference to Dominion Voting machines, "I figured out how to make a slightly different computer program that just before the polls were closed it switches some votes around from one candidate to another. I wrote that computer program into a memory chip and now to hack a voting machine you just need 7 minutes alone with it and a screwdriver." We list below other red flags that our team has uncovered.

10. One red flag where Dominion is used has been seen in Antrim County, Michigan. There we have seen reports of 6,000 votes that were electronically switched from Donald Trump to Joe Biden and were only discoverable through a hand counted manual recount. While the first reports have suggested that it was due to a "glitch"

after an update, it was recanted and later attributed to "clerical error." This change is important because if it were not due to clerical error, but due to a "glitch" emanating from an update, the system would be required to be "re-certified" according to Dominion officials. This was not done. We are skeptical of these assurances as we know firsthand this has many other plausible explanations and a full investigation of this event needs to be conducted as there are a reported 47 other counties using essentially the same system in Michigan. It is our belief (based on the information we have acquired to this point) that the problem most likely did occur due to a glitch where an update file didn't properly synchronize the ballot barcode generation and reading portions of the system. If that is indeed the case, there is no reason to assume this would be an isolated error only in Michigan. This "glitch" would either cause the vote to be misread and directed to another candidate on the ballot or cause the entire ballot upload batch to read as zero in the tabulation processor. This in turn hands over the electronic system to an operator at the voting site with full control to allocate votes between candidates for the entire batch of ballots. We have also observed that provisional ballots were accepted properly but in-person ballots were being rejected (zeroed out and/or changed - flipped). Because of the highly vulnerable nature of these systems to error and exploits, it is my professional opinion based on a reasonable degree of certainty that in Maricopa Co. these systems may have experienced the same problem and switched votes from one Presidential candidate to the other.

11. In Dallas County where ES&S is used, the voter records during early voting were captured each day for those voters who cast ballots either in person or by mail-in and catalogued using the hash totals to provide an absolute unique identifier. As required by state law, the Dallas County Elections Department published the Daily Vote Roster for all voters who cast ballots during Absentee and In-Person Early Voting. The Roster contained the VoterID, name, address, type of vote, and various dates associated with every Early-Voting vote cast. Dallas County claims its source of roster data was the In-Person Electronic Poll Books, and the Absentee Ballot scanners. Dallas County has claimed that entry into the Vote Roster can only be done by a registered Dallas County voter who either appeared In-Person or by Absentee Ballot. The computer that generated the roster was apparently hacked between October 7 and October 30. During that period tens of thousands of vote records were purged, added, or edited from the ES&S generated Vote Roster.

Specifically, over this period, 53,485 voter records had their hash identifier changed, meaning the vote was tampered with. In most cases, this tampering took the form of purging the vote, and then re-constituting it in some form or fashion, but with a change in the hash total meaning the vote was somehow changed. This translates into approximately 107,000 hacked votes in Dallas County alone for ES&S. Ten blocks of voters on Westminster Street in Highland Park had their votes purged and then some of them were selectively re-instated at a later date with changes from the vote intended by the voter as originally recorded. People who double voted were catalogued as well as dead people who voted, people with no VUID voted (800 of them), unregistered university students voted, and people living abroad who claim a

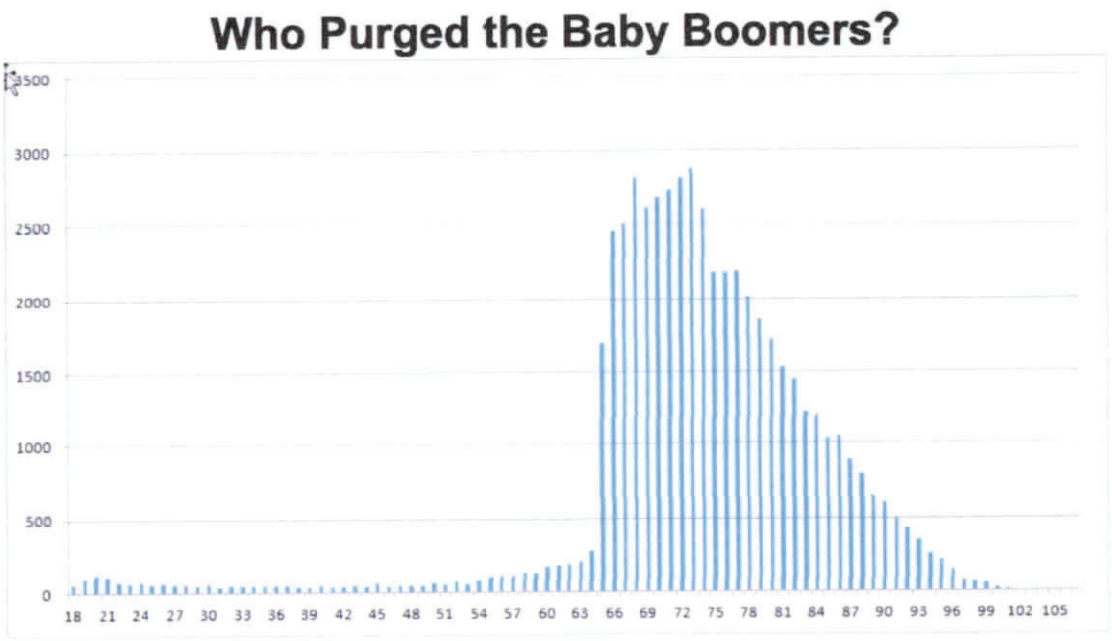
Dallas Residence for voting purposes, but who in a spot check are unknown to the residences they list in the ES&S system. A short list of them includes:

Country	Voters Who Voted
Mexico	118
Guatemala	9
Nicaragua	4
Kenya	18
Canada	154
Ireland	34
China	62
Australia	105
	504

In plain English, at the instant before a voter casts a ballot there is a one-to-one relationship between the voter and their ballot as well as a one-to-one association between the voter and their votes.

At the instant that ballot is cast, the one-to-one relationship between the voter and ballot still exist, but the relationship between the voter and their votes is gone. No one can know how they voted. The key security check on voting integrity is the absolute match between the number of voters in the Vote Roster and the number of ballots counted. If these numbers do not match, either physical ballots were added or removed from the Ballot Counter or "voters" were added or removed from the Vote Roster. In either case, the election has been compromised and the election is nothing more than a lottery. Tens of thousands of Vote Roster entries were undeniably purged and other tens of thousand of entries apparently created out of thin air, using the ES&S EMS system.

12. Equally troubling in Dallas County and the ES&S System is the apparent ease of targeting within the system of certain groups for purging. Over 92% of PURGED In-Person and Absentee voters were over 65. This makes clear the system is easily manipulated by inside or outside actors and this is the system used in much of Arizona, especially in Pima Co.



Purged Voters by Age *Source: Dallas County Election Department Vote Rosters Oct 7-Oct 30*

13. Where ES&S is concerned, a statistical red flag can be observed in Pima County where public data reveals 66 percent of precincts (164 of 248) contain voter turn-out above 80%, according to county records. Further if these public data votes were normalized to 80% turnout (still 2%+/- above any previous turnout), the excess votes are at least 32,374 over the maximum that could be expected. A sample of this is shown in the table below.

2020 Precinct	2020 Voter Turnout
Pima - Precinct 145	95%
Pima - Precinct 205	94%
Pima - Precinct 216	93%
Pima - Precinct 186	93%
Pima - Precinct 200	93%
Pima - Precinct 195	93%
Pima - Precinct 74	93%
Pima - Precinct 127	93%
Pima - Precinct 172	93%
Pima - Precinct 77	92%
Pima - Precinct 169	92%
Pima - Precinct 207	92%
Pima - Precinct 228	92%
Pima - Precinct 187	92%
Pima - Precinct 213	92%
Pima - Precinct 84	92%
Pima - Precinct 194	92%
Pima - Precinct 193	92%
Pima - Precinct 125	92%

Pima - Precinct 220	92%
Pima - Precinct 173	92%
Pima - Precinct 210	92%
Pima - Precinct 141	91%
Pima - Precinct 212	91%
Pima - Precinct 12	91%
Pima - Precinct 131	91%
Pima - Precinct 106	91%
Pima - Precinct 240	91%
Pima - Precinct 61	91%
Pima - Precinct 199	91%
Pima - Precinct 171	91%
Pima - Precinct 56	91%
Pima - Precinct 46	91%
Pima - Precinct 184	91%
Pima - Precinct 241	91%

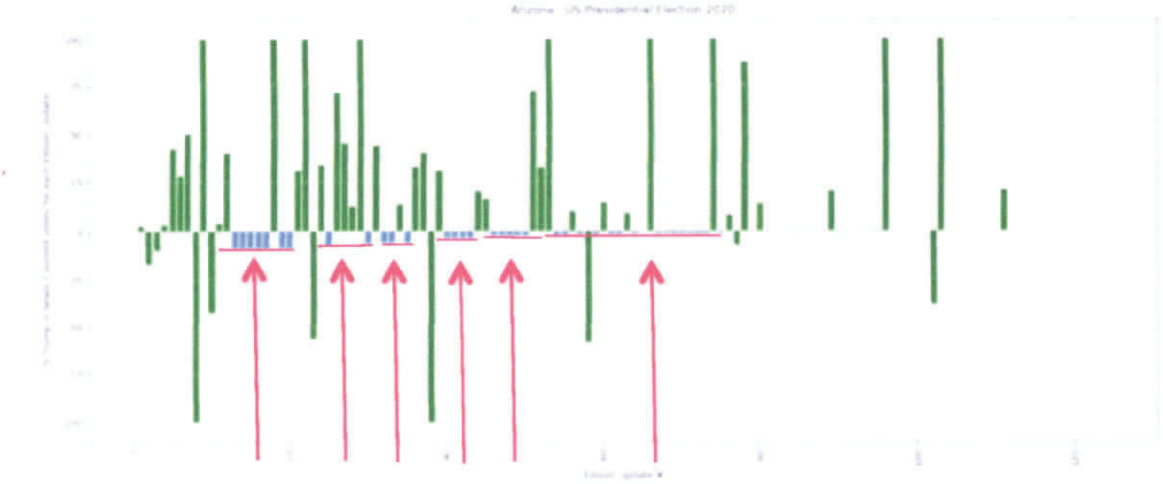
14. A similar outcome can be seen in many precincts in Maricopa County where Dominion is the EMS service provider. Here, public data reveals 54 percent of precincts (300 of 558) contain voter turn-out above 80%, according to county records. Further if these public data votes were normalized to 80% turnout (still 2%+/- above any previous turnout), the excess votes are at least 68,350 over the maximum that could be expected. A sample of this is shown in the table below.

2020 Precinct	2020 Voter Turnout
Maricopa - OVAL	94%
Maricopa - GRAND	94%
Maricopa - RIMROCK	93%
Maricopa - BLACK GOLD	93%
Maricopa - LA SOLANA	93%
Maricopa - PALISADES	93%
Maricopa - SOLCITO	92%
Maricopa - BILTMORE	92%
Maricopa - GRAYHAWK	92%
Maricopa - TERRAVITA	92%
Maricopa - WILDER	92%
Maricopa - SAGUARO	92%
Maricopa - VISTANCIA	92%
Maricopa - AVIANO	92%
Maricopa - FESTIVAL	91%
Maricopa - DEL JOYA	91%
Maricopa - PEAK VIEW	91%
Maricopa - CAREFREE	91%
Maricopa - ALEXANDER	91%
Maricopa - CLIFFVIEW	91%
Maricopa - NORTON	91%
Maricopa - CALAVEROS	91%

Maricopa - CANYON	91%
Maricopa - SKY HAWK	91%
Maricopa - WESTBROOK	91%
Maricopa - EASTMARK	91%
Maricopa - BLUE SKY	91%
Maricopa - RIO VERDE	91%
Maricopa - WOLF RUN	91%
Maricopa - ALPACA	91%

Together, these 2 red flag anomalies account for 100,724 votes that must be regarded with deep suspicion, especially in light of the known and published, demonstrable vulnerabilities of both election systems as shown in other areas.

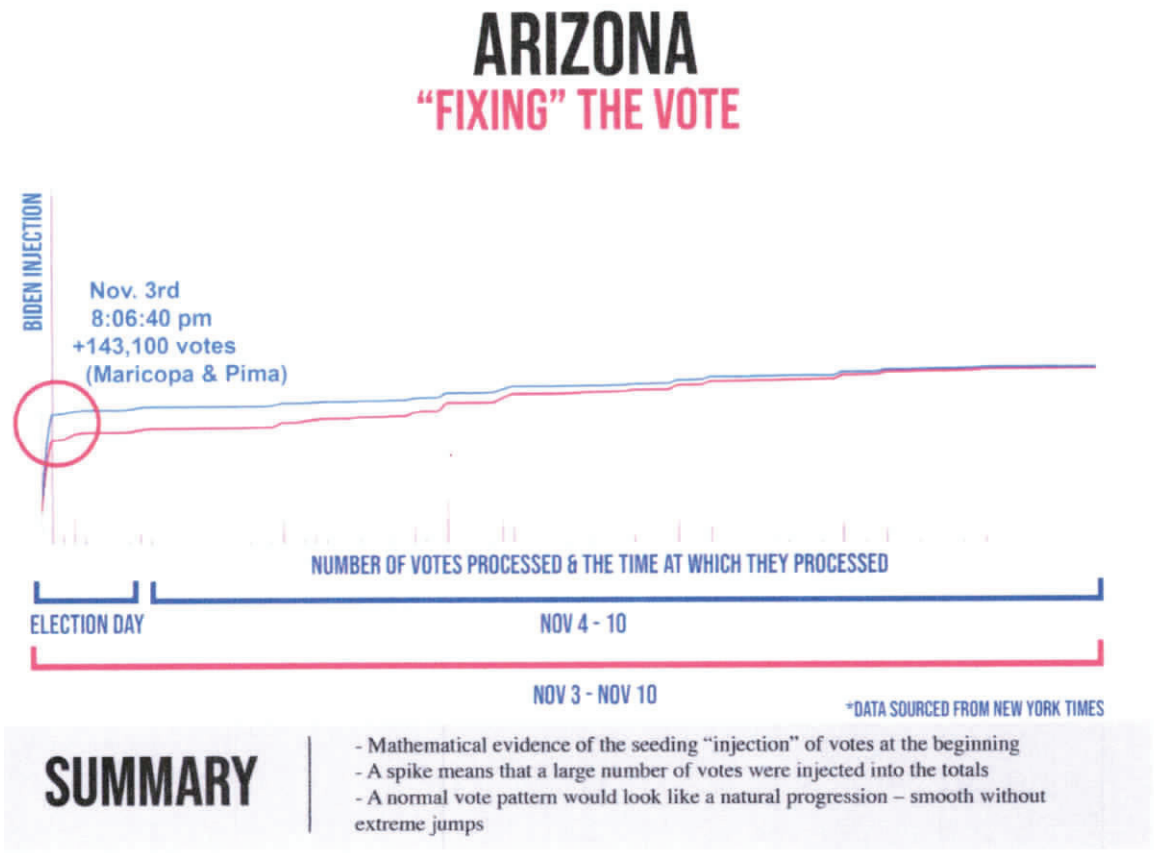
15. The following data strongly suggests that the additive algorithm (a feature enhancement referred to as "ranked choice voting algorithm" or "RCV") was activated in the code as shown in the Democracy Suite EMS Results Tally and Reporting User Guide, Chapter 11, Settings 11.2.2. It reads in part, "**RCV METHOD: This will select the specific method of tabulating RCV votes to elect a winner.**" For instance, blank ballots can be entered into the system and treated as "write-ins." Then the operator can enter an allocation of the write-ins among candidates as he or she wishes. The result then awards the winner based on "points" that the algorithm computes, not actual voter votes. The fact that we observed the percentage of the votes submitted in each batch that went towards a candidate remain unchanged for a series of time and for a number of *consecutive* batches is extremely concerning. In the following graph, the Blue votes indicate the percentage of the batch that went for Biden in Arizona according to the Edison data reported to the NYT. The red lines and arrows indicate the impossible consistencies. The statistical impossibility of the consistent percentage reported to Biden approaches zero. This makes clear an algorithm in the election system is allocating votes based on a percentage.



Impossible consistency in percentage of votes counted

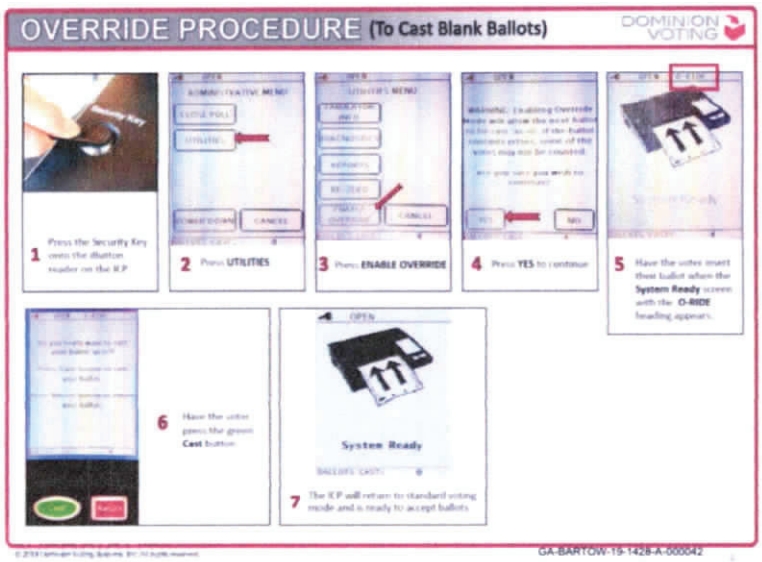
16. Yet another statistical red flag in Arizona starts with an improbable, and possibly impossible spike in processed votes. A time series and location specific

analysis would determine whether the equipment on hand at any location would have even been capable of processing this many ballots in the time represented. In Michigan, we have already observed this phenomenon, even though it was physically impossible.



This spike, cast almost exclusively for Biden, could easily be explained by the Dominion EMS control system by pre-loading batches of blank ballots in files such as Write-Ins or other adjudication-type files then casting them almost all for Biden using the Override Procedure (to cast Write-In, Blank, or Error ballots) that is available to the operator of the system. A few batches of blank ballots electronically pre-loaded into the adjudication files could easily produce a processed ballot stream this extreme so that actual paper ballots would not be needed until later to create "corroboration" for the electronic count. In this case, the first step would be to forensically test samples of paper ballots to determine if the ballots were real or fraudulently manufactured.

Dominion also has a "Blank Ballot Override" function. Essentially a save for later bucket that can be manually populated later.



14. Based on the foregoing, it is my opinion these statistical anomalies and impossibilities compels the conclusion to a reasonable degree of professional certainty that the vote count in Arizona, in particular Maricopa and Pima counties for candidates for President contain at least 100,724 illegal votes that must be disregarded.

I declare, under the penalty of perjury, that the foregoing is correct.

Russell James Ramsland, Jr.

12/1/2020
Date

EXHIBIT 18

JOINT CYBERSECURITY ADVISORY

TLP:WHITE

Product ID: AA20-304A

October 30, 2020

Iranian Advanced Persistent Threat Actor Identified Obtaining Voter Registration Data

SUMMARY

This advisory uses the MITRE Adversarial Tactics, Techniques, and Common Knowledge (ATT&CK®) framework. See the ATT&CK for Enterprise framework for all referenced threat actor techniques.

This joint cybersecurity advisory was coauthored by the Cybersecurity and Infrastructure Security Agency (CISA) and the Federal Bureau of Investigation (FBI). CISA and the FBI are aware of an Iranian advanced persistent threat (APT) actor targeting U.S. state websites—to include election websites. CISA and the FBI assess this actor is responsible for the mass dissemination of voter intimidation emails to U.S. citizens and the dissemination of U.S. election-related disinformation in mid-October 2020.[1] (Reference FBI FLASH message ME-000138-TT, disseminated October 29, 2020). Further evaluation by CISA and the FBI has identified the targeting of U.S. state election websites was an intentional effort to influence and interfere with the 2020 U.S. presidential election.

TECHNICAL DETAILS

Analysis by CISA and the FBI indicates this actor scanned state websites, to include state election websites, between September 20 and September 28, 2020, with the Acunetix vulnerability scanner (*Active Scanning: Vulnerability Scanning* [T1595.002]). Acunetix is a widely used and legitimate web scanner, which has been used by threat actors for nefarious purposes. Organizations that do not regularly use Acunetix should monitor their logs for any activity from the program that originates from IP addresses provided in this advisory and consider it malicious reconnaissance behavior.

Additionally, CISA and the FBI observed this actor attempting to exploit websites to obtain copies of voter registration data between September 29 and October 17, 2020 (*Exploit Public-Facing*

[1] See FBI FLASH, ME-000138-TT, disseminated 10/29/20, https://www.ic3.gov/Media/News/2020/201030.pdf. This disinformation (hereinafter, "the propaganda video") was in the form of a video purporting to misattribute the activity to a U.S. domestic actor and implies that individuals could cast fraudulent ballots, even from overseas. https://www.odni.gov/index.php/newsroom/press-releases/item/2162-dni-john-ratcliffe-s-remarks-at-press-conference-on-election-security.

To report suspicious or criminal activity related to information found in this Joint Cybersecurity Advisory, contact your local FBI field office at www.fbi.gov/contact-us/field, or the FBI's 24/7 Cyber Watch (CyWatch) at (855) 292-3937 or by e-mail at CyWatch@fbi.gov. When available, please include the following information regarding the incident: date, time, and location of the incident; type of activity; number of people affected; type of equipment used for the activity; the name of the submitting company or organization; and a designated point of contact. To request incident response resources or technical assistance related to these threats, contact CISA at Central@cisa.dhs.gov.

Application [T1190]). This includes attempted exploitation of known vulnerabilities, directory traversal, Structured Query Language (SQL) injection, web shell uploads, and leveraging unique flaws in websites.

CISA and the FBI can confirm that the actor successfully obtained voter registration data in at least one state. The access of voter registration data appeared to involve the abuse of website misconfigurations and a scripted process using the cURL tool to iterate through voter records. A review of the records that were copied and obtained reveals the information was used in the propaganda video.

CISA and FBI analysis of identified activity against state websites, including state election websites, referenced in this product cannot all be fully attributed to this Iranian APT actor. FBI analysis of the Iranian APT actor's activity has identified targeting of U.S. elections' infrastructure (*Compromise Infrastructure* [T1584]) within a similar timeframe, use of IP addresses and IP ranges – including numerous virtual private network (VPN) service exit nodes – which correlate to this Iran APT actor (*Gather Victim Host Information* [T1592)]), and other investigative information.

Reconnaissance

The FBI has information indicating this Iran-based actor attempted to access PDF documents from state voter sites using advanced open-source queries (*Search Open Websites and Domains* [T1539]). The actor demonstrated interest in PDFs hosted on URLs with the words "vote" or "voter" and "registration." The FBI identified queries of URLs for election-related sites.

The FBI also has information indicating the actor researched the following information in a suspected attempt to further their efforts to survey and exploit state election websites.

- YOURLS exploit
- Bypassing ModSecurity Web Application Firewall
- Detecting Web Application Firewalls
- SQLmap tool

Acunetix Scanning

CISA's analysis identified the scanning of multiple entities by the Acunetix Web Vulnerability scanning platform between September 20 and September 28, 2020 (*Active Scanning: Vulnerability Scanning* [T1595.002]).

The actor used the scanner to attempt SQL injection into various fields in `/registration/registration/details` with status codes 404 or 500:

```
/registration/registration/details?addresscity=-1 or 3*2<(0+5+513-513) --
&addressstreet1=xxxxx&btnbeginregistration=begin voter
registration&btnnextelectionworkerinfo=next&btnnextpersonalinfo=next&btnnextresde
tails=next&btnnextvoterinformation=next&btnsubmit=submit&chkageverno=on&chkagever
yes=on&chkcitizenno=on&chkcitizenyes=on&chkdisabledvoter=on&chkelectionworker=on&
chkresprivate=1&chkstatecancel=on&dlnumber=1&dob=xxxx/x/x&email=sample@email.tst&
```

```
firstname=xxxxx&gender=radio&hdnaddresscity=&hdngender=&last4ssn=xxxxx&lastname=x
xxxxinjjeuee&mailaddresscountry=sample@xxx.xxx&mailaddressline1=sample@email.tst&
mailaddressline2=sample@xxx.xxx&mailaddressline3=sample@xxx.xxx&mailaddressstate=
aa&mailaddresszip=sample@xxxx.xxx&mailaddresszipex=sample@xxx.xxx&middlename=xxxx
x&overseas=1&partycode=a&phoneno1=xxx-xxx-xxxx&phoneno2=xxx-xxx-
xxxx&radio=consent&statecancelcity=xxxxxxx&statecancelcountry=usa&statecancelstat
e=XXaa&statecancelzip=xxxxx&statecancelzipext=xxxxx&suffixname=esq&txtmailaddress
city=sample@xxx.xxx
```

Requests

The actor used the following requests associated with this scanning activity.

```
2020-09-26 13:12:56 x.x.x.x GET /x/x v[$acunetix]=1 443 - x.x.x.x
Mozilla/5.0+(Windows+NT+6.1;+WOW64)+AppleWebKit/537.21+(KHTML,+like+Gecko)+Chrome/41.
0.2228.0+Safari/537.21 - 200 0 0 0
```

```
2020-09-26 13:13:19 X.X.x.x GET /x/x voterid[$acunetix]=1 443 - x.x.x.x
Mozilla/5.0+(Windows+NT+6.1;+WOW64)+AppleWebKit/537.21+(KHTML,+like+Gecko)+Chrome/41.
0.2228.0+Safari/537.21 - 200 0 0 1375
```

```
2020-09-26 13:13:18 .X.x.x GET /x/x voterid=;print(md5(acunetix_wvs_security_test));
443 - X.X.x.x
```

User Agents Observed

CISA and FBI have observed the following user agents associated with this scanning activity.

```
Mozilla/5.0+(Windows+NT+6.1;+WOW64)+AppleWebKit/537.21+(KHTML,+like+Gecko)+Chrome
/41.0.2228.0+Safari/537.21 - 500 0 0 0
```

```
Mozilla/5.0+(X11;+U;+Linux+x86_64;+en-
US;+rv:1.9b4)+Gecko/2008031318+Firefox/3.0b4
```

```
Mozilla/5.0+(X11;+U;+Linux+i686;+en-
US;+rv:1.8.1.17)+Gecko/20080922+Ubuntu/7.10+(gutsy)+Firefox/2.0.0.17
```

Exfiltration

Obtaining Voter Registration Data

Following the review of web server access logs, CISA analysts, in coordination with the FBI, found instances of the cURL and FDM User Agents sending GET requests to a web resource associated with voter registration data. The activity occurred between September 29 and October 17, 2020. Suspected scripted activity submitted several hundred thousand queries iterating through voter

identification values, and retrieving results with varying levels of success [*Gather Victim Identity Information* (T1589)]. A sample of the records identified by the FBI reveals they match information in the aforementioned propaganda video.

Requests

The actor used the following requests.

```
2020-10-17 13:07:51 x.x.x.x GET /x/x voterid=XXXX1 443 - x.x.x.x curl/7.55.1 -
200 0 0 1406
```

```
2020-10-17 13:07:55 x.x.x.x GET /x/x voterid=XXXX2 443 - x.x.x.x curl/7.55.1 - 200 0
0 1390
```

```
2020-10-17 13:07:58 x.x.x.x GET /x/x voterid=XXXX3 443 - x.x.x.x curl/7.55.1 - 200 0
0 1625
```

```
2020-10-17 13:08:00 x.x.x.x GET /x/x voterid=XXXX4 443 - x.x.x.x curl/7.55.1 - 200 0
0 1390
```

Note: incrementing `voterid` values in `cs_uri_query field`

User Agents

CISA and FBI have observed the following user agents.

```
FDM+3.x
```

```
curl/7.55.1
```

```
Mozilla/5.0+(Windows+NT+6.1;+WOW64)+AppleWebKit/537.21+(KHTML,+like+Gecko)+Chrome
/41.0.2228.0+Safari/537.21 - 500 0 0 0
Mozilla/5.0+(X11;+U;+Linux+x86_64;+en-US;+rv:1.9b4)+Gecko/2008031318+Firefox/3.0b4
```

See figure 1 below for a timeline of the actor's malicious activity.

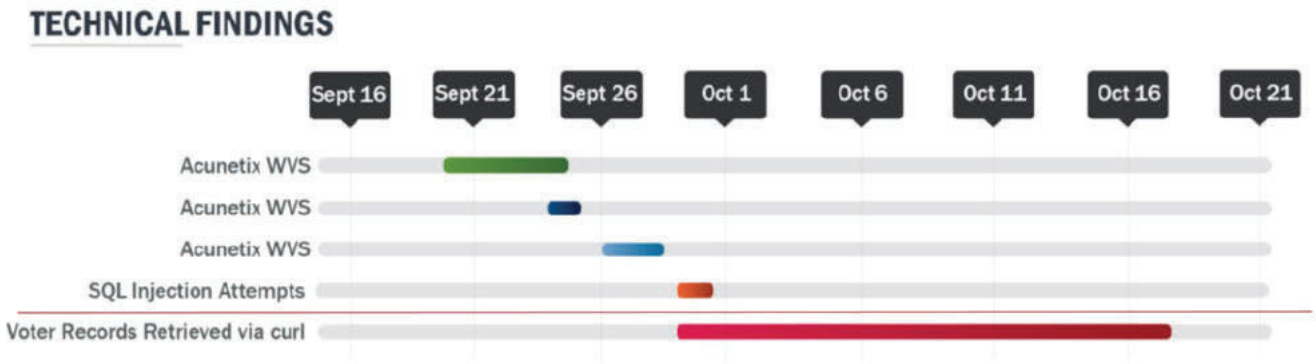


Figure 1: Overview of malicious activity

MITIGATIONS

Detection

Acunetix Scanning

Organizations can identify Acunetix scanning activity by using the following keywords while performing log analysis.

- `$acunetix`
- `acunetix_wvs_security_test`

Indicators of Compromise

For a downloadable copy of IOCs, see AA20-304A.stix.

Disclaimer: *Many of the IP addresses included below likely correspond to publicly available VPN services, which can be used by individuals all over the world. Although this creates the potential for false positives, any activity listed should warrant further investigation. The actor likely uses various IP addresses and VPN services.*

The following IPs have been associated with this activity.

- 102.129.239[.]185 (Acunetix Scanning)
- 143.244.38[.]60 (Acunetix Scanning and cURL requests)
- 45.139.49[.]228 (Acunetix Scanning)
- 156.146.54[.]90 (Acunetix Scanning)
- 109.202.111[.]236 (cURL requests)
- 185.77.248[.]17 (cURL requests)
- 217.138.211[.]249 (cURL requests)
- 217.146.82[.]207 (cURL requests)
- 37.235.103[.]85 (cURL requests)
- 37.235.98[.]64 (cURL requests)
- 70.32.5[.]96 (cURL requests)

- 70.32.6[.]20 (cURL requests)
- 70.32.6[.]8 (cURL requests)
- 70.32.6[.]97 (cURL requests)
- 70.32.6[.]98 (cURL requests)
- 77.243.191[.]21 (cURL requests and FDM+3.x (Free Download Manager v3) enumeration/iteration)
- 92.223.89[.]73 (cURL requests)

CISA and the FBI are aware the following IOCs have been used by this Iran-based actor. These IP addresses facilitated the mass dissemination of voter intimidation email messages on October 20, 2020.

- 195.181.170[.]244 (Observed September 30 and October 20, 2020)
- 102.129.239[.]185 (Observed September 30, 2020)
- 104.206.13[.]27 (Observed September 30, 2020)
- 154.16.93[.]125 (Observed September 30, 2020)
- 185.191.207[.]169 (Observed September 30, 2020)
- 185.191.207[.]52 (Observed September 30, 2020)
- 194.127.172[.]98 (Observed September 30, 2020)
- 194.35.233[.]83 (Observed September 30, 2020)
- 198.147.23[.]147 (Observed September 30, 2020)
- 198.16.66[.]139(Observed September 30, 2020)
- 212.102.45[.]3 (Observed September 30, 2020)
- 212.102.45[.]58 (Observed September 30, 2020)
- 31.168.98[.]73 (Observed September 30, 2020)
- 37.120.204[.]156 (Observed September 30, 2020)
- 5.160.253[.]50 (Observed September 30, 2020)
- 5.253.204[.]74 (Observed September 30, 2020)
- 64.44.81[.]68 (Observed September 30, 2020)
- 84.17.45[.]218 (Observed September 30, 2020)
- 89.187.182[.]106 (Observed September 30, 2020)
- 89.187.182[.]111 (Observed September 30, 2020)
- 89.34.98[.]114 (Observed September 30, 2020)
- 89.44.201[.]211 (Observed September 30, 2020)

Recommendations

The following list provides recommended self-protection mitigation strategies against cyber techniques used by advanced persistent threat actors:

- Validate input as a method of sanitizing untrusted input submitted by web application users. Validating input can significantly reduce the probability of successful exploitation by providing

protection against security flaws in web applications. The types of attacks possibly prevented include SQL injection, Cross Site Scripting (XSS), and command injection.

- Audit your network for systems using Remote Desktop Protocol (RDP) and other internet-facing services. Disable unnecessary services and install available patches for the services in use. Users may need to work with their technology vendors to confirm that patches will not affect system processes.
- Verify all cloud-based virtual machine instances with a public IP, and avoid using open RDP ports, unless there is a valid need. Place any system with an open RDP port behind a firewall and require users to use a VPN to access it through the firewall.
- Enable strong password requirements and account lockout policies to defend against brute-force attacks.
- Apply multi-factor authentication, when possible.
- Maintain a good information back-up strategy by routinely backing up all critical data and system configuration information on a separate device. Store the backups offline, verify their integrity, and verify the restoration process.
- Enable logging and ensure logging mechanisms capture RDP logins. Keep logs for a minimum of 90 days and review them regularly to detect intrusion attempts.
- When creating cloud-based virtual machines, adhere to the cloud provider's best practices for remote access.
- Ensure third parties that require RDP access follow internal remote access policies.
- Minimize network exposure for all control system devices. Where possible, critical devices should not have RDP enabled.
- Regulate and limit external to internal RDP connections. When external access to internal resources is required, use secure methods, such as a VPNs. However, recognize the security of VPNs matches the security of the connected devices.
- Use security features provided by social media platforms; use strong passwords, change passwords frequently, and use a different password for each social media account.
- See CISA's Tip on Best Practices for Securing Election Systems for more information.

General Mitigations

Keep applications and systems updated and patched

Apply all available software updates and patches and automate this process to the greatest extent possible (e.g., by using an update service provided directly from the vendor). Automating updates and patches is critical because of the speed of threat actors to create new exploits following the release of a patch. These "N-day" exploits can be as damaging as zero-day exploits. Ensure the authenticity and integrity of vendor updates by using signed updates delivered over protected links. Without the rapid and thorough application of patches, threat actors can operate inside a defender's patch cycle.[2]

[2] NSA "NSA'S Top Ten Cybersecurity Mitigation Strategies" https://www.nsa.gov/Portals/70/documents/what-we-do/cybersecurity/professional-resources/csi-nsas-top10-cybersecurity-mitigation-strategies.pdf

Additionally, use tools (e.g., the OWASP Dependency-Check Project tool[3]) to identify the publicly known vulnerabilities in third-party libraries depended upon by the application.

Scan web applications for SQL injection and other common web vulnerabilities

Implement a plan to scan public-facing web servers for common web vulnerabilities (e.g., SQL injection, cross-site scripting) by using a commercial web application vulnerability scanner in combination with a source code scanner.[4] Fixing or patching vulnerabilities after they are identified is especially crucial for networks hosting older web applications. As sites get older, more vulnerabilities are discovered and exposed.

Deploy a web application firewall

Deploy a web application firewall (WAF) to prevent invalid input attacks and other attacks destined for the web application. WAFs are intrusion/detection/prevention devices that inspect each web request made to and from the web application to determine if the request is malicious. Some WAFs install on the host system and others are dedicated devices that sit in front of the web application. WAFs also weaken the effectiveness of automated web vulnerability scanning tools.

Deploy techniques to protect against web shells

Patch web application vulnerabilities or fix configuration weaknesses that allow web shell attacks, and follow guidance on detecting and preventing web shell malware.[5] Malicious cyber actors often deploy web shells—software that can enable remote administration—on a victim's web server. Malicious cyber actors can use web shells to execute arbitrary system commands commonly sent over HTTP or HTTPS. Attackers often create web shells by adding or modifying a file in an existing web application. Web shells provide attackers with persistent access to a compromised network using communications channels disguised to blend in with legitimate traffic. Web shell malware is a long-standing, pervasive threat that continues to evade many security tools.

Use multi-factor authentication for administrator accounts

Prioritize protection for accounts with elevated privileges, remote access, or used on high-value assets.[6] Use physical token-based authentication systems to supplement knowledge-based factors such as passwords and personal identification numbers (PINs).[7] Organizations should migrate away from single-factor authentication, such as password-based systems, which are subject to poor user

[3] https://owasp.org/www-project-dependency-check/
[4] NSA "Defending Against the Exploitation of SQL Vulnerabilities to Compromise a Network" https://apps.nsa.gov/iaarchive/library/ia-guidance/tech-briefs/defending-against-the-exploitation-of-sql-vulnerabilities-to.cfm
[5] NSA & ASD "CyberSecurity Information: Detect and Prevent Web Shell Malware" https://media.defense.gov/2020/Jun/09/2002313081/-1/-1/0/CSI-DETECT-AND-PREVENT-WEB-SHELL-MALWARE-20200422.PDF
[6] https://us-cert.cisa.gov/cdm/event/Identifying-and-Protecting-High-Value-Assets-Closer-Look-Governance-Needs-HVAs
[7] NSA "NSA'S Top Ten Cybersecurity Mitigation Strategies" https://www.nsa.gov/Portals/70/documents/what-we-do/cybersecurity/professional-resources/csi-nsas-top10-cybersecurity-mitigation-strategies.pdf

choices and more susceptible to credential theft, forgery, and password reuse across multiple systems.

Remediate critical web application security risks

First, identify and remediate critical web application security risks. Next, move on to other less critical vulnerabilities. Follow available guidance on securing web applications.[8,9,10]

How do I respond to unauthorized access to election-related systems?

Implement your security incident response and business continuity plan

It may take time for your organization's IT professionals to isolate and remove threats to your systems and restore normal operations. In the meantime, take steps to maintain your organization's essential functions according to your business continuity plan. Organizations should maintain and regularly test backup plans, disaster recovery plans, and business continuity procedures.

Contact CISA or law enforcement immediately

To report an intrusion and to request incident response resources or technical assistance, contact CISA (Central@cisa.gov or 888-282-0870) or the FBI through a local field office or the FBI's Cyber Division (CyWatch@ic.fbi.gov or 855-292-3937).

RESOURCES

- CISA Tip: Best Practices for Securing Election Systems
- CISA Tip: Securing Voter Registration Data
- CISA Tip: Website Security
- CISA Tip: Avoiding Social Engineering and Phishing Attacks
- CISA Tip: Securing Network Infrastructure Devices
- Joint Advisory: Technical Approaches to Uncovering and Remediating Malicious Activity
- CISA Insights: Actions to Counter Email-Based Attacks on Election-related Entities
- FBI and CISA Public Service Announcement (PSA): Spoofed Internet Domains and Email Accounts Pose Cyber and Disinformation Risks to Voters
- FBI and CISA PSA: Foreign Actors Likely to Use Online Journals to Spread Disinformation Regarding 2020 Elections
- FBI and CISA PSA: Distributed Denial of Service Attacks Could Hinder Access to Voting Information, Would Not Prevent Voting
- FBI and CISA PSA: False Claims of Hacked Voter Information Likely Intended to Cast Doubt on Legitimacy of U.S. Elections FBI and CISA PSA: Cyber Threats to Voting Processes Could Slow But Not Prevent Voting

[8] NSA "Building Web Applications – Security for Developers" https://apps.nsa.gov/iaarchive/library/ia-guidance/security-tips/building-web-applications-security-recommendations-for.cfm
[9] https://owasp.org/www-project-top-ten/
[10] https://cwe.mitre.org/top25/archive/2020/2020_cwe_top25.html

- FBI and CISA PSA: Foreign Actors and Cybercriminals Likely to Spread Disinformation Regarding 2020 Election Results