From: O'Callaghan, Edward C. (ODAG)
Sent: Tuesday, January 15, 2019 9:26 AM
To: Rosenstein, Rod (ODAG)
Subject: FW: US v. Manafort
Attachments: Attachment A - SEALED Declaration.pdf; Attachment B - REDACTED Public Declaration.pdf

SCO filed the attached last night setting forth their arguments why Manafort is in breach of the cooperation agreement. This responds to defense counsel's filing from last week.

Edward C. O'Callaghan
(b) (6)

From: (b) (6) . (ODAG)
Sent: Friday, January 18, 2019 5:14 PM
To: Rosenstein, Rod (ODAG)
Subject: TOC Meeting Materials
Attachments: TOC Task Force Reports--January 14 2019.pdf

Sir,

The read-ahead for Wednesday's task force meeting is attached.

(b) (6)
Special Assistant
Office of the Deputy Attorney General
Phone (b) (6)

EXHIBIT 2

U.S. Department of Justice

REPORT OF THE ATTORNEY GENERAL'S CYBER DIGITAL TASK FORCE

U. S. Department of Justice

Office of the Deputy Attorney General

The Deputy Attorney General

Washington, D.C. 20530

July 2, 2018

Dear Mr. Attorney General:

You have emphasized that "upholding the Constitution and protecting the rule of law is the foundation of everything we do" at the Department of Justice. Our important duties include keeping America safe by fighting crime and preserving the Nation's security.

As President Trump has observed, "The United States faces an extraordinarily dangerous world, filled with a wide range of threats that have intensified in recent years." Director of National Intelligence Dan Coats explained earlier this year that the cyber threat "is one of [our] greatest concerns and top priorities." The Department of Justice shares that assessment.

Every day, malicious cyber actors target our citizens, our businesses, our military, and all levels of our government. They cause billions of dollars in losses and attempt to undermine our democratic values. Combating cybercrime and cyber-enabled threats to our Nation's security must remain among the Department's highest priorities.

In February 2018, you directed the formation of a Cyber-Digital Task Force to undertake a comprehensive assessment of the Department's work in the cyber area, and to identify how federal law enforcement can even more effectively accomplish its mission in this vital and evolving area.

The initial assessment is complete. It is my privilege to present this report of the Attorney General's Cyber-Digital Task Force.

I hope this report will assist as all Americans keep moving forward to protect our people, promote our economy, and preserve our values.

Sincerely,

Rod J. Rosenstein
Deputy Attorney General

REPORT OF THE ATTORNEY GENERAL'S CYBER DIGITAL TASK FORCE

United States Department of Justice
Office of the Deputy Attorney General
Cyber-Digital Task Force
950 Pennsylvania Avenue, N.W.
Washington, D.C. 20530
https://www.justice.gov/cyberreport

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ATTORNEY GENERAL'S CYBER-DIGITAL TASK FORCE

Task Force Members

Sujit Raman, Chair
Associate Deputy Attorney General
Office of the Deputy Attorney General

John P. Cronan
Assistant Attorney General (Acting)
Criminal Division

John C. Demers
Assistant Attorney General
National Security Division

Carl Ghattas
Executive Assistant Director
Federal Bureau of Investigation

John M. Gore
Assistant Attorney General (Acting)
Civil Rights Division

Andrew E. Lelling
United States Attorney
District of Massachusetts

David T. Resch
Executive Assistant Director
Federal Bureau of Investigation

Beth A. Williams
Assistant Attorney General
Office of Legal Policy

Peter A. Winn
Chief Privacy & Civil Liberties Officer (Acting)
Director, Office of Privacy & Civil Liberties

Task Force Contributors

Matthew J. Sheehan
Counsel to the Deputy Attorney General
Staff Director

Elizabeth Aloi	Brendan Groves	Erica O'Neil
Leonard Bailey	Aarash Haghighat	Richard Pilger
Michael F. Buchwald	William Hall	Jason Poole
Mark Champoux	Christopher Hardee	Andrew Proia
Thomas Dettore	Adam Hickey	Kimberley Raleigh
Richard Downing	Ray Hulser	Peter Roman
Benjamin Fitzpatrick	Anitha Ibrahim	Opher Shweiki
Lindsey Freeman	Matthew Kluge	Michael Stawasz
Tashina Gauhar	John T. Lynch, Jr.	Andrew Warden
Josh Goldfoot	Katrina Mulligan	J. Brad Wiegmann
Bonnie Greenberg	Sean Newell	Cory Wilson

And representatives from:

Bureau of Alcohol, Tobacco, Firearms, and Explosives Office of Strategic Intelligence & Information
Drug Enforcement Administration Office of Investigative Technology
Federal Bureau of Investigation Counterintelligence Division
Federal Bureau of Investigation Counterterrorism Division
Federal Bureau of Investigation Criminal Investigative Division
Federal Bureau of Investigation Cyber Division
Federal Bureau of Investigation Digital Transformation Office
Federal Bureau of Investigation Information Technology Branch
Federal Bureau of Investigation Office of Private Sector
Federal Bureau of Investigation Office of the Chief Information Officer
Federal Bureau of Investigation Office of the Director
Federal Bureau of Investigation Office of the General Counsel
Federal Bureau of Investigation Operational Technology Division
INTERPOL Washington, the U.S. National Central Bureau
Justice Management Division Office of the Chief Information Officer/ Cybersecurity Services Staff
United States Marshals Service Investigative Operations Division
United States Marshals Service Judicial Security Division

Introduction

Cyber-enabled attacks are exacting an enormous toll on American businesses, government agencies, and families. Computer intrusions, cybercrime schemes, and the covert misuse of digital infrastructure have bankrupted firms, destroyed billions of dollars in investments, and helped hostile foreign governments launch influence operations designed to undermine fundamental American institutions.

The Department of Justice's primary mission is to keep the American people safe. We play a critical role in the federal government's shared effort to combat malicious, cyber-enabled threats.

In February 2018, the Attorney General established a Cyber-Digital Task Force within the Department and directed the Task Force to answer two basic, foundational questions: How is the Department responding to cyber threats? And how can federal law enforcement more effectively accomplish its mission in this important and rapidly evolving area?

This report addresses the first question. It begins by focusing on one of the most pressing cyber-enabled threats our Nation faces: the threat posed by malign foreign influence operations. Chapter 1 explains what foreign influence operations are, and how hostile foreign actors have used these operations to target our Nation's democratic processes, including our elections. This chapter concludes by describing the Department's protective efforts with respect to the upcoming 2018 midterm elections, and announces a new Department policy—grounded in our longstanding principles of political neutrality, adherence to the rule of law, and safeguarding the public trust—that governs the disclosure of foreign influence operations.

Chapters 2 and 3 discuss other cyber-enabled threats our Nation faces, particularly those connected with cybercrimes. These chapters describe the resources the Department is deploying to confront those threats, and how our efforts further the rule of law in this country and around the world. Chapter 4 focuses on a critical aspect of the Department's mission, in which the Federal Bureau of Investigation plays a lead role: responding to cyber incidents. Chapter 5 then turns the lens inward, focusing on the Department's efforts to recruit and train our own personnel on cyber matters. Finally, the report concludes in Chapter 6 with thoughts and observations about certain priority policy matters, and charts a path

for the Task Force's future work. Over the next few months, the Department will build upon this initial report's findings, and will provide recommendations to the Attorney General for how the Department can even more efficiently manage the growing global cyber challenge.

The Department's Cyber Mission

Computer intrusions and attacks are crimes, and the Department of Justice fights crime. That is true regardless of whether the criminal is a transnational organized crime group, a lone hacker, or an officer of a foreign military or intelligence organization. In addition, the Department has unique and indispensable cybersecurity roles in the realm of foreign intelligence and counterintelligence.

In fighting criminal computer intrusions and attacks, the Department identifies, dismantles, and disrupts cyber threats. In doing so, we provide justice to victims and deter others from committing similar offenses. To fulfill our mission, we deploy criminal justice and intelligence tools to find malicious hackers, arrest them, incarcerate them, and require them to pay restitution to their victims. We shut down the dark markets criminals depend upon to buy and sell stolen information. We deprive criminals of the tools and services they use to attack American families and businesses. Working with private sector partners, we seek to deny foreign governments the infrastructure they would use to conduct illegal influence operations. We seize or disable the servers, domain names, and other infrastructure that transnational criminals rely upon to penetrate our borders. We use legal authorities to take control of virtual infrastructure—such as networks of compromised computers called "botnets"—to prevent future victimization. We share information gathered during our investigations to help victims protect themselves. And we do all of these things to fight modern threats while remaining faithful to our Nation's respect for personal freedom, civil liberties, and the rule of law.

Where appropriate, we also work closely with our interagency partners to support financial, diplomatic, and military measures to bring all possible instruments of national power to bear against cyber threats. Other departments have the primary responsibility for helping victims recover from cyber-attacks; we have the primary responsibility for conducting the investigation into who is responsible. We do not have the federal government lead for assisting election officials in securing their systems, but we do have the primary responsibility for investigating our foreign adversaries' efforts to target election infrastructure.

Similarly, we do not have the government's lead role in protecting private or government networks, in designing security standards, or in regulating how the private sector must defend itself. Those are important functions for which other government departments take responsibility—often, with our support and assistance. Our mission is to enforce the law, to ensure public safety, and to seek just punishment.

How We Succeed

By faithfully executing the Department's crime-fighting mission, we have produced tangible and positive results for the American people. These results are reflected by the caliber of criminals we have taken offline and taken off the streets; the millions of computers we have liberated from botnets that harness their processing power for fraud and theft; the web cameras that no longer spy on unwitting victims; the dark markets selling illicit drugs, weapons, and child pornography we have disrupted and shuttered; the virtual currency we have seized from criminals; and the malicious software that is no longer offered for sale.

These tangible results have a secondary effect: deterrence. Deterrence is one of the primary objectives of criminal law, and it is a key factor in improving our Nation's cybersecurity. An effective deterrence policy requires us to have a credible capability to enforce the law, and therefore to deter offenders. A credible capability to enforce the law, in turn, requires the Department to be able to credibly investigate cybercrime. Without evidence, there is no attribution. Without attribution, there will be no consequences for offenders, and thus no deterrence.

Yet, the reality is that identity-masking technologies and international investigative barriers pose unique challenges for deterring cyber threats. This report details the ways in which we approach those challenges. We depend upon legal authorities to investigate computer crimes; upon the cooperation of the public and of the private sector to report crimes and to help identify cyber threats; and upon the assistance of international partners to gather foreign evidence, apprehend criminals, and extradite suspects. Often, those authorities are exclusive to the Department of Justice and other law enforcement agencies. For example, the Department has the authority to obtain the subpoenas, court orders, and search warrants that the law requires in order to compel online service providers to produce crucial records that can reveal criminal activity.

"Our mission is to enforce the law, to ensure public safety, and to seek just punishment."

Preserving these investigative authorities and capabilities, and using them responsibly and consistent with law, is therefore vital to the Nation's cybersecurity. It is also a Department priority. The Department's agents and prosecutors need the authority and tools to obtain evidence; the technical skill to understand it; and the ability to introduce that evidence at trial and explain what it means. Maintaining these capabilities is, in part, a question of making sure investigators retain the lawful authority to access evidence in a changing digital landscape. It is also a question of building and maintaining a talented and dedicated workforce.

The Department—along with the entire U.S. government—wants Americans to be able to

use their devices and computers secure in the knowledge that their data is safe. Many government departments and agencies are working toward that cybersecurity goal. And while this report catalogs the many ways that the Department is at the cutting edge of keeping Americans safe from cyber threats, we are also keenly aware that our tools and authorities are not sufficient by themselves to accomplish that goal. Our work is critical to cybersecurity, but our work, alone, is not enough to secure the Nation.

As Americans have shifted much of our economy, our communications, our news media, and our daily lives to the Internet, we are now discovering how vulnerable that shift makes us. To defend against cyberattacks from nation states and from equally sophisticated criminals, the American public should be able to turn to the government for leadership. This report details how the Department of Justice is responding to that call.

– Sujit Raman, *Chair,*
Attorney General's Cyber-Digital Task Force

Credit: Amy Mathers, U.S. Department of Justice

Attorney General Jeff Sessions announces law enforcement's July 2017 seizure of AlphaBay, what was then the world's largest "Dark Market." In addition to traditional criminal enforcement actions, disrupting and dismantling the illicit underworld's digital infrastructure is a major facet of the Department of Justice's broader fight against cybercrime.

Chapter 1
Countering Malign Foreign Influence Operations

Hostile foreign actors have long sought to influence, and to subvert, our Nation's democratic institutions. Modern technology—including the Internet and social media platforms—has both empowered and emboldened foreign governments and their agents in their attempts to affect U.S. attitudes, behaviors, and decisions in new and troubling ways.

The Department of Justice plays an important role in protecting the Nation's democratic processes from malign foreign influence operations. While the States, under the Constitution, have primary jurisdiction over the administration of elections,[1] the Department for decades has enforced federal criminal laws involving certain forms of ballot fraud.[2] We will continue our traditional commitment to combating such frauds, including any that foreign governments or their agents may attempt to perpetrate. (*See* page 4).

Foreign cyber-enabled and other active efforts to influence our democratic processes, including our elections, demand an urgent response. In the following pages, we provide background on malign foreign influence operations generally; outline five distinct types of foreign influence operations aimed at our elections or at broader political issues in the United States; and describe the Department's protective efforts with respect to such operations, including efforts designed to protect the upcoming 2018 midterm elections. We also announce a Department policy regarding the factors to be considered in disclosing malign foreign influence operations to victims, other affected individuals, and the public. This policy provides guideposts for Department action to expose and thereby counter foreign influence threats—consistent with the fundamental principle that we always must seek to act in ways that are politically neutral, compliant with the First Amendment, and designed to maintain the public trust.

Ultimately, one of the most effective ways to counter malign foreign influence operations is to shine a light on the activity and raise awareness of the threat. In order to prevail against our adversaries, all of society must work together: from government at all levels; to social media providers and others in the private sector; to political candidates and organizations; to, perhaps most significantly, an active and informed citizenry.

Malign Foreign Influence Operations

Foreign influence operations include covert actions by foreign governments intended to sow division in our society, undermine confidence in our democratic institutions, and otherwise affect political sentiment and public discourse to achieve strategic geopolitical objectives. Foreign influence operations can pose a threat to national security—and they can violate federal criminal law.[3] Operations

aimed at the United States are not new. These efforts have taken many forms across the decades, from funding communist newspapers and financing ostensibly independent nonprofit groups to promote favored policies, to more recent efforts at creating and operating false U.S. personas on Internet sites designed to attract U.S. audiences and spread divisive messages. The nature of the problem, however—and how the U.S. government must combat it—is changing, as advances in technology allow foreign actors to reach unprecedented numbers of Americans covertly and without setting foot on U.S. soil. Fabricated news stories and sensational headlines like those sometimes found on social media platforms are just the latest iteration of a practice foreign adversaries have long employed in an effort to discredit and undermine individuals and organizations in the United States. Although the tactics have evolved, the goals of these activities generally remain the same: to spread disinformation and to sow discord on a mass scale in order to weaken the U.S. democratic process, and ultimately to undermine the appeal of democracy itself.

Malign foreign influence operations need not favor one political figure, party, or point of view. Foreign adversaries can take advantage of social media platforms to send contrary (and sometimes false) messages simultaneously to different groups of users based on those users' political and demographic characteristics, with the goal of heightening tensions between different groups in our society. By exacerbating and inflaming existing divisions, foreign-promoted narratives seek to spread turmoil, mistrust, and acrimony. For example, Russian-affiliated social media activities have been detected promoting content on multiple sides of controversial issues including race relations and gun control.

As one component of this strategy, foreign influence operations have targeted U.S. elections. Elections are a particularly attractive target for foreign influence campaigns because they provide an opportunity to undermine confidence in a core element of our democracy: the process by which we select our leaders. As explained in a January 2017 Intelligence Community Assessment published by the Office of the Director of National Intelligence ("ODNI") addressing Russian interference in the 2016 U.S. presidential election, Russia has had a "longstanding desire to undermine the U.S.-led liberal democratic order," and that nation's recent election-focused "activities demonstrated a significant escalation in directness, level of activity, and scope of effort compared to previous operations."[4] Russia's foreign influence campaign, according to this assessment, "followed a longstanding Russian messaging strategy that blends covert intelligence operations—such as cyber activity—with overt efforts by Russian Government agencies, state-funded media, third-party intermediaries, and paid social media users or 'trolls.'" [5]

Malign foreign influence operations did not begin in 2016, but the Internet-facilitated operations in that year were unprecedented in scale. The threat such operations pose to our society is unlikely to diminish. As the Director of National Intelligence recently observed, "Influence operations, especially through cyber means, will remain a significant threat to U.S. interests as they are low-cost, relatively low-risk, and deniable ways to retaliate against adversaries, to shape foreign

perceptions, and to influence populations."[6] "Russia probably will be the most capable and aggressive source of this threat in 2018, although many countries and some nonstate actors are exploring ways to use influence operations, both domestically and abroad."[7] These actions require a strong and sustained response.

Types of Foreign Influence Operations Targeting Democratic and Electoral Processes

In advance of the 2018 midterm elections, the Department is mindful of ODNI's assessment that "Moscow will apply lessons learned from its campaign aimed at the U.S. presidential election to future influence efforts in the United States and worldwide, including against U.S. allies and their election processes."[8] The Intelligence Community ("IC") has recently assessed that Russia views the 2018 midterm elections as a potential target for continued influence operations.[9] Russia's strategy for conducting foreign influence operations against the United States, which may well inspire other countries to pursue similar operations, includes a broad spectrum of activity targeting U.S. democratic and electoral processes. We categorize such activity as follows:

1. Cyber operations targeting election infrastructure. Cyber operations could seek to undermine the integrity or availability of election-related data. For example, adversaries could employ cyber-enabled or other means to target election-associated infrastructure, such as voter registration databases and voting machines, or to target the power grid or other critical infrastructure in order to impair an election. Operations aimed at removing otherwise eligible voters from the rolls or attempting to manipulate the results of an election (or even simply spreading disinformation suggesting that such manipulation has occurred) could undermine the integrity and legitimacy of our free and fair elections, as well as public confidence in elec-

Identifying Potential Targets of Election Interference

Credit: Cyber Threat Intelligence Integration Center

Foreign adversaries could target these categories of potential targets—or others—to interfere in U.S. elections through cyber operations.

DEPARTMENT OF JUSTICE PROGRAM FOR COMBATING BALLOT FRAUD

"Every voter in a federal . . . election, . . . whether he votes for a candidate with little chance of winning or for one with little chance of losing, has a right under the Constitution to have his vote fairly counted, without its being distorted by fraudulently cast votes." *Anderson v. United States*, 417 U.S. 211, 227 (1974). The Department has a longstanding program for predicating, investigating, and prosecuting ballot fraud schemes—which may overlap with a criminal or national security investigation into a foreign influence operation. The Department's ballot fraud program brings together several components, including the Federal Bureau of Investigation ("FBI"); the Criminal Division's Public Integrity Section ("PIN"); United States Attorney's Offices around the nation; the Civil Rights Division ("CRT"); and the Department of Homeland Security ("DHS"). (Each component's specific role in the program is described in the endnotes.[16])

In the weeks and months leading up to the 2018 midterm elections, these components will plan responses to election-related issues and identify lines of coordination and communication. On Election Day, they and a commissioner from the U.S. Election Assistance Commission will arrange regular secure video teleconferences with Department leadership and other agencies, including the National Security Council. Other PIN and CRT managers and personnel also will be available throughout the period to answer telephone calls about suspected ballot fraud activity and to respond to questions from federal prosecutors and law enforcement agents, who in turn will be in close communication with state and local partners.

tion results. To our knowledge, no foreign government has succeeded in perpetrating ballot fraud, but the risk is real.

2. Cyber operations targeting political organizations, campaigns, and public officials. Cyber operations could also seek to compromise the confidentiality or integrity of targeted groups' or targeted individuals' private information. For example, adversaries could conduct cyber or other operations against U.S. political organizations and campaigns to steal confidential information and use that information, or alterations thereof, to discredit or embarrass candidates, undermine political organizations, or impugn the integrity of public officials. The IC has assessed that, during the 2016 election cycle, "Russia's intelligence services conducted cyber operations against targets associated with the 2016 U.S. presidential election, including targets associated with both major U.S. political parties."[10]

3. Covert influence operations to assist or harm political organizations, campaigns, and public officials. Adversaries could also conduct covert influence operations to pro-

vide assistance that is prohibited from foreign sources to American political organizations, campaigns, and government officials. These operations might involve covert offers of financial, logistical, or other campaign support to—or covert attempts to influence the policies, positions, or opinions of—unwitting politicians, party leaders, campaign officials, or the public. For example, a federal grand jury indictment in February 2018 of thirteen Russian nationals recounts, among other things, instances in which Russians allegedly provided covert assistance and financial support to unwitting U.S. persons, unwitting individuals associated with a presidential campaign, and other unwitting political activists seeking to coordinate political activities.[11] The indictment also alleges that the Russians sought to discourage some Americans from voting in the 2016 presidential election, and denigrated certain candidates while supporting others. Russian actors also allegedly staged political rallies inside the United States while posing as U.S. grassroots entities and organized rallies inside the United States *after* the presidential election, both in protest of the election results and in support of the results.[12] Such covert influence operations could be reinforced by the use of "bots," which are automated programs that can expand and amplify social media messaging and bolster desired narratives. These operations can also be amplified by stolen information illicitly acquired through illegal cyber operations targeting government institutions, media, and political organizations or campaigns. Foreign agents could then use this stolen information to reinforce divisive narratives through systematic, controlled leaks timed to maximize political damage.

4. Covert influence operations, including disinformation operations, to influence public opinion and sow division. Using false U.S. personas, adversaries could covertly create and operate social media pages and other forums designed to attract U.S. audiences and spread disinformation or divisive messages. This could happen in isolation or in combination with other operations, and could be intended to foster specific narratives that advance foreign political objectives, or could be intended simply to turn citizens against each other. These messages need not relate directly to political campaigns. They could seek to depress voter turnout among particular groups, encourage third-party voting, or convince the public of widespread voter fraud to undermine confidence in election results. These messages could target discrete U.S. populations based on their political and demographic characteristics. They may mobilize Americans to sign online petitions and join issue-related rallies and protests, or even to incite violence. For example, advertisements from at least 2015 to 2017 linked to a Russian organization called the Internet Research Agency focused on divisive issues, including illegal immigration and gun rights, among others, and targeted those messages to groups most likely to react.

5. Overt influence efforts, such as the use of lobbyists, foreign media outlets, and other organizations, to influence policymakers and the public. Finally, adversaries could use state-owned or state-influenced media outlets, or employ lobbyists or lobbying firms, to reach U.S. policymakers or the public. Foreign governments can disguise these efforts as independent while using them to promote

divisive narratives and political positions helpful to foreign objectives. Overt influence efforts by foreign governments—including by our adversaries—may not be illegal, provided they comply with the Foreign Agents Registration Act ("FARA"),[13] and with Federal Communications Commission regulations. However, the American people should be fully aware of any foreign government source of information so they can evaluate that source's credibility and significance for themselves.

The Department of Justice's Role in Countering Malign Foreign Influence Operations

The Department of Justice has a significant role in investigating and disrupting foreign government activity in the United States that threatens U.S. national security. In particular, the Department has an important role in identifying and combating malign foreign influence operations, and in enforcing federal laws that foreign agents may violate when engaging in such operations.

Consistent with its longstanding mission, the Department has broad authorities in this area that encompass both its law enforcement and counterintelligence responsibilities:

- The FBI is the primary investigative agency of the federal government and is authorized to investigate all violations of federal laws that are not exclusively assigned to another federal agency. *See* 28 U.S.C. § 533. In addition, 28 C.F.R. § 0.85(d) designates the FBI to take charge of investigative work in matters relating to espionage, sabotage, subversive activities, and related matters.

- Various federal statutes authorize the FBI to conduct investigations of federal crimes, make seizures and arrests, and serve warrants, both under national security authorities (title 50 of the U.S. Code) and law enforcement authorities (title 18 of the U.S. Code). For example, the FBI has primary investigative authority for all computer network intrusions relating to threats to national security, including "cases involving espionage, foreign counterintelligence, [and] information protected against unauthorized disclosure for reasons of national defense or foreign relations . . ." 18 U.S.C. § 1030(d)(2).

- Executive Order ("E.O.") 12333, as amended, establishes the FBI as the lead counterintelligence agency within the United States, and authorizes the FBI to conduct counterintelligence activities, collect foreign intelligence, or support foreign intelligence collection requirements of other agencies within the IC, and produce and disseminate foreign intelligence and counterintelligence. *See* E.O. 12333, § 1.7(g).

- These lead responsibilities are also reflected in presidential policies, such as Presidential Policy Directive ("PPD")-41 and PPD-21.

Working closely with our IC partners, the Department uses these authorities to identify, analyze, and disrupt the most significant threats from foreign influence operations. As explained below, the Department can act against these threats in several ways, either using its own authorities or supporting the

actions of other agencies. The Department also uses its investigative authority to develop information that can inform private sector efforts to guard against or deter foreign influence operations.

First, the Department's investigations may reveal conduct that warrants criminal charges. Criminal charges not only are a tool the Department uses to pursue justice, but also can help deter similar conduct in the future. We will work with our international partners to obtain custody of foreign defendants whenever possible. Those who seek to avoid justice in U.S. courts will find their freedom of travel significantly restricted. Criminal charges also provide the public with information about the illegal activities of foreign actors we seek to hold accountable.

Second, in some cases, the Department's investigations can support other U.S. government agencies' actions, such as financial sanctions or diplomatic and intelligence efforts. After a federal grand jury indicted thirteen Russians in connection with their alleged influence activities, for example, the Secretary of the Treasury imposed financial sanctions against those individuals under an executive order that authorizes sanctions for malicious cyber-enabled activity. The Department of the Treasury's actions blocked all property and interests in property of the designated persons subject to U.S. jurisdiction, and prohibited U.S. persons from engaging in transactions with the sanctioned individuals. In addition, the State Department often uses information from our investigations and criminal indictments in diplomatic efforts to attribute malign conduct to foreign adversaries, to build consensus with other nations to condemn such activities, and to build coalitions to counter such activities. Likewise, we work closely with DHS to share information about foreign influence operations in furtherance of DHS's election security mission.

Third, the Department's investigations produce information about threats and vulnerabilities that we can share with State and local election officials, political organizations, and other potential victims. Because these entities lack the FBI's investigative resources and legal authorities, sharing investigative information about the nature of the threat posed by foreign influence operations can help these entities detect and prevent operations that target them.

Fourth, the Department maintains strategic relationships with social media providers that reflect the private sector's critical role in addressing this threat. Social media providers have unique insight into their own networks and bear the primary responsibility for securing their own products, platforms, and services. The FBI can assist the providers' voluntary efforts to identify foreign influence activity and to enforce terms of service that prohibit the use of their platforms for such activities. This approach is similar to the Department's recent approaches in working with providers to address terrorist use of social media, and more traditional collaboration to combat child pornography, botnets, Internet fraud, and other misuse of digital infrastructure. By providing information about potential threats, the Department can help social media providers respond to malign use of their platforms, identify foreign influence

operations on those platforms, share information across diverse products and services, and better ensure their users are not exposed to unlawful foreign influence.

Finally, information developed in our investigations can be used—either by the Department or in coordination with the Intelligence Community and other government partners—to help protect the public by exposing the nature of the foreign influence threat. The Department may alert victims or targets about foreign influence operations consistent with its longstanding policies and practices. As discussed below, in certain circumstances, public disclosure and attribution can also be an important means of countering the threat and rendering those operations less effective.

The Department of Justice's Framework to Counter Malign Foreign Influence Operations

The Department is preparing ahead of the 2018 midterm elections to ensure that we address as effectively as possible the five distinct types of foreign influence operations described above. To underscore this priority, the FBI in November 2017 established the Foreign Influence Task Force ("FITF"), which serves as the central coordinating authority within the FBI for investigations concerning foreign influence operations. The FITF integrates the FBI's cyber, counterintelligence, counterterrorism, and criminal law enforcement resources to ensure that the Department better understands the threat presented by malign foreign influence operations. An important part of the FITF's responsibility is coordinating the Department's counter-foreign influence efforts with other federal agencies, including DHS, the State Department, the National Security Agency, and the Central Intelligence Agency. The FBI is also responsible for developing strategic relationships with state and local authorities, international partners, and the private sector, including social media and other technology companies, as part of a comprehensive approach to combating the foreign influence problem.

Armed with a deeper understanding of our foreign adversaries' operational methods and committed to leveraging the full range of our authorities, the Department has developed a strategic framework for countering foreign influence operations. *See* **Fig. 1**. This framework seeks to employ the Department's longstanding authorities proactively to pursue aggressive countermeasures—using traditional law enforcement tools, sharing information with potential victims and the private sector where appropriate, and exposing and attributing foreign influence operations where doing so is in the national interest. The Department's strategy aims to increase the resilience of democratic and election processes against the foreign influence threat, while recognizing that we cannot expect to eliminate those activities unless the responsible foreign governments alter their behavior.

1. Cyber operations targeting election infrastructure. Although the States are responsible for administering elections, and DHS has the federal government lead for assisting election officials in securing their systems, the FBI has the primary responsibility for investigating our foreign adversaries'

Figure 1:

Department of Justice Framework to Counter Malign Foreign Influence Operations

Cyber operations targeting election infrastructure (integrity and availability of data)	Cyber operations targeting political parties, campaigns, and public officials (confidentiality of data)	Covert influence operations to assist or harm political organizations, campaigns and public officials	Covert influence operations to influence public opinion and sow division	Overt influence efforts to influence policymakers and the public
DOJ and FBI Actions • Identify threats and warn potential targets (state officials), with DHS. • Investigate and disrupt intrusions and attacks, alerting victims consistent with applicable guidance. • Prosecute where possible. • Respond to reports of election day crimes (e.g. voter suppression, computer intrusions).	**DOJ and FBI Actions** • Identify threats and warn potential targets, with DHS. • Investigate and disrupt intrusions and attacks, alerting victims consistent with applicable guidance. • Prosecute where possible. • Raise awareness about malicious cyber operations, mitigation, and maintaining "cyber hygiene."	**DOJ and FBI Actions** • Investigate and disrupt activity by unregistered foreign agents. • Brief potential targets, consistent with applicable guidance. • Prosecute where possible. • Raise awareness about malicious cyber operations, mitigation, and maintaining "cyber hygiene."	**DOJ and FBI Actions** • Investigate and, as appropriate, disrupt foreign influence operations. • Attribute and expose activity, consistent with applicable guidance. • Prosecute where possible. • Notify social media, other providers of foreign influence operations and other abuse of their platforms.	**DOJ and FBI Actions** • Investigate possible FARA violations. • Prosecute where possible. • Compel registration as appropriate.
Other Agencies and Their Activities • IC produces intelligence on malicious cyber operations. • DHS shares intelligence (warnings) and best practices with victims and assists with recovery efforts *after* an intrusion (if requested). • Possible diplomatic, financial, or operational responses.	**Other Agencies and Their Activities** • IC produces intelligence on malicious cyber operations. • DHS shares intelligence (warnings) and best practices with victims and assists with recovery efforts *after* an intrusion (if requested). • Possible diplomatic, financial, or operational responses.	**Other Agencies and Their Activities** • IC produces intelligence on foreign influence efforts, goals. • DHS and State Dept. conduct outreach on trends in influence operations to domestic and foreign audiences. • Possible diplomatic, financial, or operational responses.	**Other Agencies and Their Activities** • DHS and State Dept. conduct outreach on trends in influence operations to domestic and foreign audiences. • DHS provides tools to private industry to protect against malign influence. • Possible diplomatic, financial, or operational responses.	**Other Agencies and Their Activities** • DHS and State Dept. conduct outreach on trends in influence operations to domestic and foreign audiences. • State Dept. responds to violations of norms by foreign actors.
Key Considerations • States own the election systems and are responsible for their administration and security.	**Key Considerations** • Private parties own systems and data and are responsible for their security. • Limited ability to protect against misuse of stolen information.	**Key Considerations** • May require cooperation of affected individuals and organizations to counter the threat. • Many engagements with foreign governments are legitimate.	**Key Considerations** • Technology companies bear primary responsibility for securing their own products, platforms, and services.	**Key Considerations** • Open communications by registered foreign media may be lawful.

efforts to target election infrastructure. In the event of a known or suspected cyber incident, the FBI will investigate the intrusion and will alert targets of the intrusions where appropriate. Prosecutors will follow the *Principles of Federal Prosecution*[14] in determining whether federal criminal charges are appropriate. The FBI also may identify threats and vulnerabilities to election infrastructure in the course of other criminal or intelligence investigations. Consistent with the Department's disclosure policy (described below), it will attempt to warn State and local officials who operate election systems about attempts to penetrate their systems and to share appropriate information about vulnerabilities they should patch or mitigate. In this regard, the FBI works closely with DHS and with the U.S. Election Assistance Commission, which certifies voting systems and establishes voting system guidelines.

To that end, in February 2018, the FBI, together with DHS and the IC, provided classified briefings to election officials from all 50 States to help increase awareness of foreign adversary intent and capabilities against the States' election infrastructure, as well as actions State and local officials can undertake to mitigate those threats. Establishing close relationships with those officials, in partnership with DHS, is critical because the Department's ability to identify and disrupt cyber actors who target election infrastructure requires the officials who operate that infrastructure to promptly share threat information with the FBI. The Department has emphasized the need for State and local officials promptly to share threat information with the FBI's National Cyber Investigative Joint Task Force ("NCIJTF"). NCIJTF includes over 20 partnering agencies from across law enforcement, the IC, and the Department of Defense, with representatives who are co-located and work jointly to accomplish the organization's mission from a whole-of-government perspective.

Establishing close relationships with State and local officials is also important to enable the Department to respond quickly to a major cyber intrusion before or during an election. The Department works closely with DHS in connection with such incidents. The Department will continue to work with DHS and State and local officials to plan what they should do, whom they should contact, and what assistance they may seek in the event of a significant intrusion into their systems. The FBI's general incident response activities are described in greater detail in Chapter 4.

2. Cyber operations targeting political organizations, campaigns, and public officials. The FBI investigates computer intrusions and attacks against U.S. victims, using its broad investigative authority and leveraging its close relationship with other IC agencies that have the authority to collect foreign intelligence outside the United States. Federal prosecutors may then charge the perpetrators, as appropriate. The FBI also alerts victims where possible and helps them respond to intrusions, often working closely with DHS, and provides threat information when necessary to address a specific threat or incident.

The FBI is working with DHS to ensure that political organizations and individuals within such organizations whom foreign adversaries may target are aware of the specific cyber

DEPARTMENT OF JUSTICE POLICY REGARDING NON-INTERFERENCE WITH ELECTIONS

The Department of Justice has a strong interest in the prosecution of election-related crimes, such as those involving federal and State campaign finance laws, federal patronage laws, and corruption of the election process, and Department employees must safeguard the Department's reputation for fairness, neutrality, and non-partisanship.

Partisan political considersations must play no role in the decisions of federal investigators or prosecutors regarding any investigations or criminal charges. Law enforcement officers and prosecutors may never select the timing of investigative steps or criminal charges for the purpose of giving an advantage or disadvantage to any candidate or political party.

For further guidance, prosecutors and law enforcement officers may contact the Criminal Division's Public Integrity Section. More detailed guidance is also available in sections 1-4.000 and 9-85.000 of the United States Attorneys' Manual, and in a treatise published by the Department called FEDERAL PROSECUTION OF ELECTION OFFENSES (8th ed. 2017).[17]

threats and vulnerabilities we are monitoring. These efforts have included providing defensive briefings to major political organizations such as the Republican and Democratic National Committees.

3. Covert influence operations to assist or harm political organizations, campaigns, and government officials. The FBI counters the activities of foreign governments and their proxies by proactively investigating unregistered foreign agents in the United States, alerting these foreign agents' targets (or intended targets) where appropriate, and raising public awareness of foreign influence methods and effective countermeasures both through appropriate enforcement actions and through assistance to other federal agencies and State or local authorities with enforcement authority.

The Department will aggressively enforce federal laws that require foreign agents to register with the U.S. government and that prohibit foreign nationals from tricking unwitting Americans into participating in, or accepting support from, foreign influence efforts. Along those lines, the Department has stepped up enforcement efforts against individuals and entities that had not fulfilled their obligations under the Foreign Agents Registration Act ("FARA"), including by educating prosecutors and agents nationwide about the importance of the statute and how to investigate it; expanding our outreach to individuals and entities who may be required to register; and achieving the registrations of sophisticated individuals and entities that had not fulfilled their legal obligations, including the American agents of Russian state-funded media networks (RT and Sputnik). Going forward, we will increase FARA awareness and compliance through increased outreach,

by making additional advisory opinions public, and by issuing guidance if appropriate under Department policy. In addition, we will investigate and prosecute criminal violations of FARA and other laws that restrict the activities of foreign agents acting within the United States.

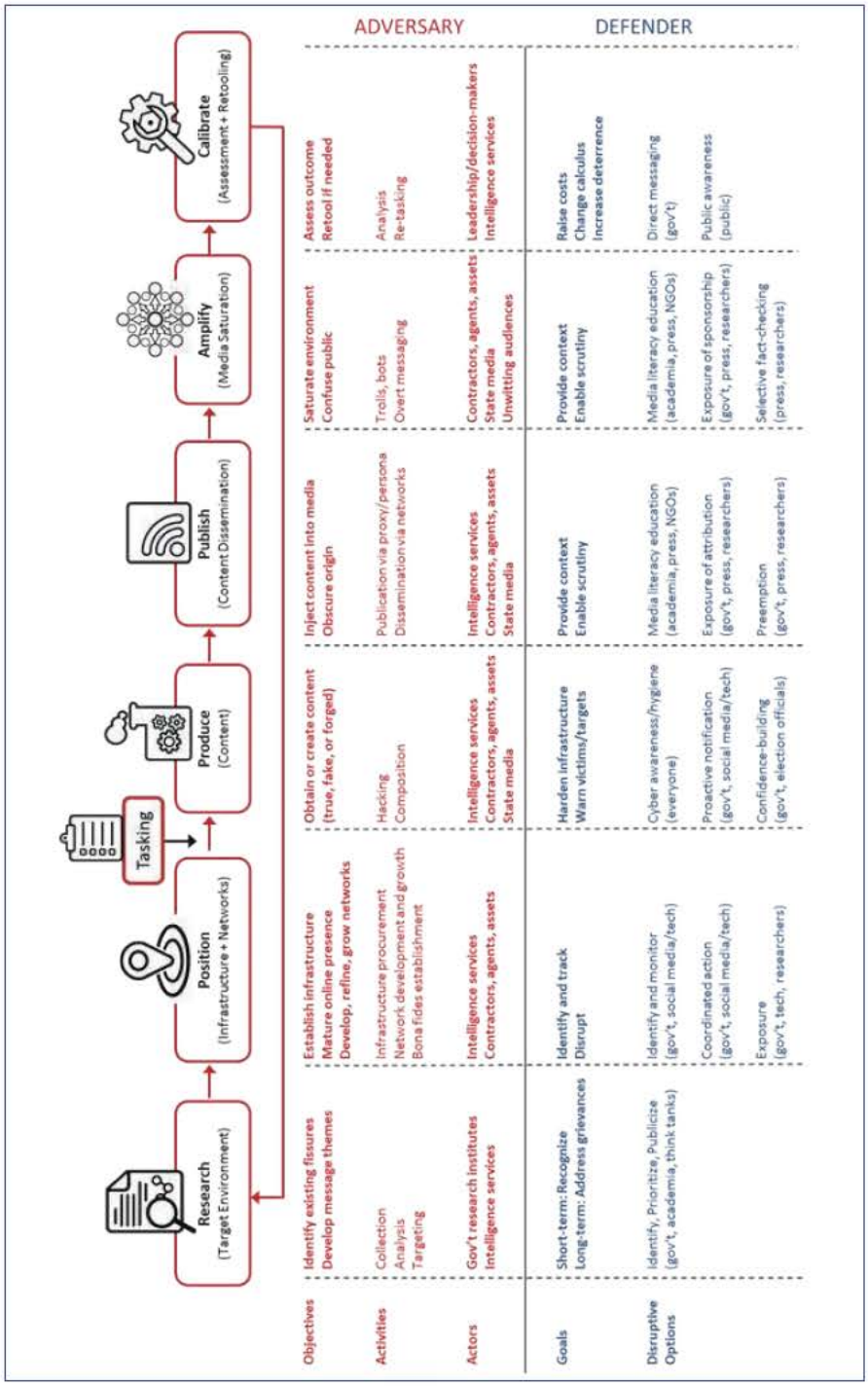
The Department also will seek to increase understanding of the foreign intelligence threat in order to reduce the effectiveness of covert activities and efforts to obscure the true motivation and origin of foreign influence operations. The FBI can provide defensive counterintelligence briefings to political organizations and campaigns as necessary to protect against and improve awareness of the foreign influence threat. In addition, the FBI continues to pursue criminal and traditional counterintelligence investigations to address the range of potential covert operations targeting political organizations.

4. Covert influence operations, including disinformation operations, to influence public opinion and sow division. Depending on the facts, a foreign government's efforts to use the Internet as part of a hostile effort to multiply its propaganda's malign influence on the American public may violate a number of federal laws on which the Department may base criminal investigations and prosecutions. The Department is also considering whether new criminal statutes aimed more directly at this type of activity are needed.

The Department has crafted a strategy to counter each phase of the foreign malign influence campaign cycle. *See* **Fig. 2**. While the success of a foreign influence campaign via the Internet and social media depends heavily on the adversary's ability to obscure the true motivation and origin of its activities—something the Internet can facilitate—the infrastructure of online accounts required to carry out such a campaign also provides the Department with opportunities for identification and disruption. For example, the FBI and IC partners may be able to identify and track foreign agents as they establish their infrastructure and mature their online presence, in which case authorities can work with social media companies to illuminate and ultimately disrupt those agents' activities, including through voluntary removal of accounts that violate a company's terms of service.

In addition to these activities, in some circumstances, public exposure and attribution of foreign influence operations, and of foreign governments' goals and methods in conducting them, can be an important means of countering the threat and rendering those operations less effective. Of course, partisan politics must play no role in the decision whether to disclose the existence of a foreign influence operation, and such disclosures must not be made for the purpose of conferring any advantage or disadvantage on any political or social group. In addition, the Department must seek to protect intelligence sources and methods and operational equities, and attribution itself may present challenges. It is also important not to take actions that merely exacerbate the impact of a foreign influence operation, or that re-victimize its victims. Given the competing in-

Figure 2: The Malign Foreign Influence Campaign Cycle



terests sometimes at stake, the Department has established a formal policy on the disclosure of foreign influence operations to guide its actions in this critically important area. That policy is found at pages 16–17.

5. Overt influence efforts, such as the use of foreign media outlets to influence policymakers and the public. Overt foreign government efforts to influence the American public or policymakers may be lawful so long as the relevant government complies with U.S. laws requiring public disclosure, along with other applicable laws. When foreign media outlets or lobbyists act as agents of foreign governments, they may be required to register as foreign agents under FARA. Media outlets with links to China, Japan, Russia, and South Korea have done so. Apart from enforcing such laws, the Department—in concert with the U.S. government as a whole, as well as with American society more broadly—can help increase public understanding of foreign influence operations.

Conclusion

The nature of foreign influence operations will continue to change as technology and our foreign adversaries' tactics change. Our adversaries will persist in seeking to exploit the diversity of today's information space, and the tactics and technology they employ will continue to evolve.

The Department plays an important role in combating foreign efforts to interfere in our elections, but it cannot alone solve the problem. There are limits to the Department's role—and the role of the U.S. government—in addressing foreign influence operations aimed at sowing discord and undermining our Nation's institutions. Combating foreign influence operations requires a whole-of-society approach that relies on coordinated actions by federal, State, and local government agencies; support from potential victims and the private sector; and the active engagement of an informed public.

Even so, investigating and prosecuting those who violate our laws, disrupting particular operations, and exposing covert foreign activities can be useful in defending against this threat. It is therefore critical that the Department consistently evaluate existing law and policy governing its actions, as well as its strategic approach to the problem. In the short term, the Department must use all current authorities to counter the foreign influence threat, working closely with the IC, DHS, State and local governments, and where appropriate, the private sector.

We also must ensure that we are sharing information about the threat with potential victims, other affected individuals, and the public, consistent with our policies and our national security interests. In the longer term, we must consider what additional authorities or policies would be useful and appropriate to enable us to respond as effectively as possible to the foreign influence threat.

* * *

The story is told that a woman named Elizabeth Powel approached Benjamin Franklin when he was walking home after the Constitutional Convention in the summer of 1787. Powel asked Franklin what type of govern-

ment the Founders had created. Franklin replied: "A republic, madam, if you can keep it." Powel's question illustrates that it was not inevitable that our Nation would begin as a democratic republic. Franklin's answer reminds us that it is not inevitable that we will remain a democratic republic.[15]

Our Nation's democratic processes are strong. But the Constitution comes with a condition: we need to keep it. We are all keepers of the republic, and it is incumbent upon all of us, as a society, to counter the foreign influence threat. The Department of Justice will certainly play its part.

DEPARTMENT OF JUSTICE POLICY ON DISCLOSURE OF FOREIGN INFLUENCE OPERATIONS

Foreign influence operations include covert actions by foreign governments intended to sow divisions in our society, undermine confidence in our democratic institutions, and otherwise affect political sentiment and public discourse to achieve strategic geopolitical objectives. Such operations are often empowered by modern technology that facilitates malicious cyber activity and covert or anonymous communications with U.S. audiences on a mass scale from abroad.

Our Nation's democratic processes and institutions are strong and must remain resilient in the face of this threat. It is the policy of the Department of Justice to investigate, disrupt, and prosecute the perpetrators of illegal foreign influence activities where feasible. It is also the Department's policy to alert the victims and unwitting targets of foreign influence activities, when appropriate and consistent with the Department's policies and practices, and with our national security interests.

It may not be possible or prudent to disclose foreign influence operations in certain contexts because of investigative or operational considerations, or other constraints. In some circumstances, however, public exposure and attribution of foreign influence operations can be an important means of countering the threat and rendering those operations less effective.

Information the Department of Justice collects concerning foreign influence operations may be disclosed as follows:

- To support arrests and charges for federal crimes arising out of foreign influence operations, such as hacking or malicious cyber activity, identity theft, and fraud.
- To alert victims of federal crimes arising out of foreign influence operations, consistent with Department guidelines on victim notification and assistance.[18]
- To alert unwitting recipients of foreign government-sponsored covert support, as necessary to assist in countering the threat.
- To alert technology companies or other private sector entities to foreign influence operations where their services are used to disseminate covert foreign government propaganda or disinformation, or to provide other covert support to political organizations or groups.

DEPARTMENT OF JUSTICE POLICY ON DISCLOSURE OF FOREIGN INFLUENCE OPERATIONS, *Continued*

- To alert relevant Congressional committees to significant intelligence activities, consistent with statutory reporting requirements and Executive Branch policies.

- To alert the public or other affected individuals, where the federal or national interests in doing so outweigh any countervailing considerations.[19]

In performing these functions, the Department will be mindful of the following principles and policies:

- Partisan political considerations must play no role in efforts to alert victims, other affected individuals, or the American public to foreign influence operations against the United States. Such efforts must not be for the purpose of conferring any advantage or disadvantage on any political or social group or any individual or organization.

- In considering whether and how to disclose foreign influence operations, or the details thereof, the Department will seek to protect intelligence sources and methods, investigations, and other U.S. government operations.

- Foreign influence operations will be publicly identified as such only when the Department can attribute those activities to a foreign government with high confidence. Disinformation or other support or influence by unknown or domestic sources not acting on behalf of a foreign government is beyond the scope of this policy.

- Where a criminal or national security investigation during an election cycle is at issue, the Department must also be careful to adhere to longstanding policies regarding the timing of charges or taking overt investigative steps.[20]

The Department (including the FBI) will not necessarily be the appropriate entity to disclose information publicly concerning a foreign influence operation. Where a Department component is considering whether to alert the general public to a specific foreign influence operation, consultation with the National Security Division is required. Nothing in this policy is intended to impair information sharing undertaken by Department components for investigative or intelligence purposes.

NOTES

[1] *See* U.S. Const. art. I, § 4 (Congressional elections) & art. II, § 4 (Presidential elections).

[2] The term "ballot fraud" in this context includes fraud in the processes by which voters are registered or by which votes are cast or tabulated.

[3] Foreign influence operations, while not always illegal, can implicate several U.S. federal criminal statutes, including (but not limited to): 18 U.S.C. § 371 (conspiracy); 18 U.S.C. § 951 (acting in the United States as an agent of a foreign government without prior notification to the Attorney General); 18 U.S.C. § 1001 (false statements); 18 U.S.C. § 1028A (aggravated identity theft); 18 U.S.C. § 1030 (computer fraud and abuse); 18 U.S.C. §§ 1343, 1344 (wire fraud and bank fraud); 18 U.S.C. § 1519 (destruction of evidence); 18 U.S.C. § 1546 (visa fraud); 22 U.S.C. § 618 (Foreign Agents Registration Act); 52 U.S.C. §§ 30109, 30121 (soliciting or making foreign contributions to influence federal elections, or donations to influence State or local elections).

[4] Office of the Director of National Intelligence, Background to "Assessing Russian Activities and Intentions in Recent U.S. Elections": The Analytic Process and Cyber Incident Attribution ii (Jan. 2017) ("ODNI Report"), available at: https://www.dni.gov/files/documents/ICA_2017_01.pdf (last accessed June 29, 2018).

[5] ODNI Report at 2; *see also* U.S. House of Representatives Permanent Select Committee on Intelligence, Report on Russian Active Measures viii (March 2018) ("In 2015, Russia began engaging in a covert influence campaign aimed at the U.S. presidential election. The Russian government, at the direction of Vladimir Putin, sought to sow discord in American society and undermine our faith in the democratic process."), available at: https://intelligence.house.gov/uploadedfiles/final_russia_investigation_report.pdf (last accessed June 29, 2018); Minority Members of the House Permanent Select Committee on Intelligence, Report on Russian Active Measures 12 (March 2018), available at: https://democrats-intelligence.house.gov/uploadedfiles/20180411_-_final_-_hpsci_minority_views_on_majority_report.pdf (last accessed June 29, 2018) (summarizing Russian covert cyber efforts and other intelligence and social media operations during the 2016 elections); U.S. Senate Select Committee on Intelligence, Russian Targeting of Election Infrastructure During the 2016 Election: Summary of Initial Findings and Recommendations 1 (May 2018) ("In 2016, cyber actors affiliated with the Russian Government conducted an unprecedented, coordinated cyber campaign against state election infrastructure . . . This activity was part of a larger campaign to prepare to undermine confidence in the voting process. The Committee has not seen any evidence that vote tallies were manipulated or that voter registration information was deleted or modified."), available at: https://www.burr.senate.gov/imo/media/doc/RussRptInstlmt1-%20ElecSec%20Findings,Recs2.pdf (last accessed June 29, 2018).

[6] Daniel R. Coats, Dir. of National Intelligence, "Statement for the Record: Worldwide Threat Assessment of the U.S. Intelligence Community," at 11 (Feb. 13, 2018), available at: https://www.dni.gov/files/documents/Newsroom/Testimonies/2018-ATA---Unclassified-SSCI.pdf (last accessed June 29, 2018).

[7] *Id.*

[8] ODNI Report at 5.

[9] Daniel R. Coats, Dir. of National Intelligence,

"Annual Threat Assessment: Opening Statement," *Worldwide Threats: Hearing Before the Senate Select Comm. on Intelligence*, 115TH CONG. (Feb. 13, 2018), at 18, available at: https://www.dni.gov/files/documents/Newsroom/Testimonies/ATA2018-asprepared.pdf (last accessed June 29, 2018).

[10] ODNI Report at 2.

[11] Indictment in *United States v. Internet Research Agency*, et al., No. 18-cr-32-DLF (D.D.C. Feb. 16, 2018), available at: https://www.justice.gov/file/1035477/download (last accessed June 29, 2018).

[12] *Id.*

[13] 22 U.S.C. § 611 *et seq*.

[14] *See* "Principles of Federal Prosecution," U.S. ATTORNEYS' MANUAL, TITLE 9, SECTION 27.000, available at: https://www.justice.gov/usam/usam-9-27000-principles-federal-prosecution (last accessed June 29, 2018).

[15] This story and its associated lessons are recounted in Rod J. Rosenstein, Deputy Attorney General, "Constitution Day Address," National Constitution Center (Sept. 18, 2017), available at: https://www.justice.gov/opa/speech/deputy-attorney-general-rod-j-rosenstein-delivers-constitution-day-address (last accessed June 29, 2018).

[16] As part of the Department's ballot fraud program, the **FBI** must maintain an Election Crimes Coordinator ("ECC") in each of its Divisions. The ECCs are the Department's primary liaison with State and local police agencies, and election administrators, as well as with other federal agencies, in the field. They attend regular trainings, coordinate local task force communications with State and local counterparts during elections, and handle intake reporting of ballot fraud allegations from non-government groups or individuals. The FBI then investigates properly-predicated ballot fraud cases, in coordination with a local **U.S. Attorney's Office ("USAO")**. The FBI and USAO are free to exercise their discretion to conduct a preliminary investigation after assessing the case and ensuring non-interference with the election process. They may pursue a full field and grand jury investigation, and seek charges, after consultation with the Criminal Division's **Public Integry Section ("PIN")**. However, the FBI and other federal law enforcement agencies may not conduct investigations that would infringe the Department's non-interference with elections policy (*see* page 11), or that would unlawfully result in an armed federal presence at a polling site. *See* 18 U.S.C. § 592. For almost forty years, PIN has provided the field with an Election Crimes Branch Director. Pursuant to the United States Attorneys' Manual, the Director, assisted as needed by other managers and staff at PIN, functions as a mandatory consultant for the USAOs on all ballot fraud matters that progress beyond a preliminary investigation, see U.S.A.M. § 9-85.210, and as a subject matter expert available to provide advice and assistance to USAOs and the FBI. The Director coordinates and conducts mandatory live training with designated field personnel of the USAOs and FBI. The Director also leads an Election Day Watch program during federal election seasons to monitor and coordinate responses to election events while the polls are open on each federal election day. The Election Day Watch program is the Department's mechanism for ensuring consistent and efficient communication and coordination between interagency representatives, federal prosecutors and investigators in the field, and State and local partners. Each USAO must maintain a District Election Officer ("DEO") among its cadre of Assistant United States Attorneys. The DEOs are the Department's primary liaison with State and local counterparts in the field. They attend regular trainings, and as part of the Election Day

Watch program, coordinate local task force communications with State and local counterparts leading up to and during the elections. DEOs also coordinate press releases concerning election-day procedures to facilitate reporting to the federal government of ballot fraud allegations from non-government groups or individuals. The Voting Section and Criminal Section of the Department's **Civil Rights Division ("CRT")** coordinates regularly with PIN to ensure that ballot fraud allegations are routed to the best response entity. CRT maintains a hotline that operates all year, including throughout federal election days, to facilitate reporting of allegations of potential voting-related federal law violations. CRT's Voting Section also enforces the civil provisions of a wide range of federal statutes that protect the right to vote, including the Voting Rights Act; the National Voter Registration Act; the Uniformed and Overseas Citizens Absentee Voting Act; the Help America Vote Act; and the Civil Rights Act. CRT's Criminal Section enforces federal criminal statutes that prohibit voter intimidation and voter suppression based on race, color, national origin, or religion. Finally, the **Department of Homeland Security ("DHS")** recently has joined existing efforts to combat ballot fraud in the specific area of cyber threats. In particular, DHS provides advice and resources to State and local counterparts to assess the risks to their computer systems for voter registration, balloting, and tabulation. DHS also has certain resources for incident response, though the FBI has greater local resources and, under PPD-41, retains the lead on incident response.

[17] This treatise is available online at: https://www.justice.gov/criminal/file/1029066/download (last accessed June 29, 2018). The most relevant discussion can be found at pages 84-85: "The Justice Department's goals in the area of election crime are to prosecute those who violate federal criminal law and, through such prosecutions, deter corruption of future elections. The Department does not have a role in determining which candidate won a particular election, or whether another election should be held because of the impact of the alleged fraud on the election . . . . In investigating an election fraud matter, federal law enforcement personnel should carefully evaluate whether an investigative step under consideration has the potential to affect the election itself. Starting a public criminal investigation of alleged election fraud before the election to which the allegations pertain has been concluded runs the obvious risk of chilling legitimate voting and campaign activities. It also runs the significant risk of interjecting the investigation itself as an issue, both in the campaign and in the adjudication of any ensuing election contest . . . . Accordingly, overt criminal investigative measures ordinarily should not be taken in matters involving alleged fraud in the manner in which votes were cast or counted until the election in question has been concluded, its results certified, and all recounts and election contests concluded. Not only does such investigative restraint avoid interjecting the federal government into election campaigns, the voting process, and the adjudication of ensuing recounts and election contest litigation, but it also ensures that evidence developed during any election litigation is available to investigators, thereby minimizing the need to duplicate investigative efforts. Many election fraud issues are developed to the standards of factual predication for a federal criminal investigation during post-election litigation."

[18] *See Attorney General Guidelines for Victim and Witness Assistance* (May 2012), available at: https://www.justice.gov/sites/default/files/olp/docs/ag_guidelines2012.pdf (last accessed June 29, 2018); *see also* 42 U.S.C. § 10607 (Victims' Rights and Restitution Act).

[19] For example, there may be an important federal or national interest in publicly disclosing a foreign influence operation that threatens to un-

dermine confidence in the government or public institutions; risks inciting violence or other illegal actions; or may cause substantial harm, alarm, or confusion if left unaddressed. On the other hand, in some cases, public disclosure of a foreign influence operation may be counterproductive because it may amplify or otherwise exacerbate the foreign government's messaging, or may re-victimize the victim.

[20] *See,* e.g., U.S. DEPT. OF JUSTICE, FEDERAL PROSECUTION OF ELECTION OFFENSES 8-9, 84-85 (8th ed. 2017), quoted in *supra* note 17.

Chapter 2
Categorizing Sophisticated Cyber Schemes

Malign foreign influence operations represent a significant cyber-enabled threat to American society and national security. But they are not the only one. Every day, criminals and other hackers within the United States and around the world seek to use computers, smart devices, and other chip-enabled technology—as well as the networks that connect them—to victimize American consumers and businesses, or to do our government harm.

In this chapter, we describe some of the most prevalent and dangerous types of cybercrime schemes our Nation currently faces. Various actors, with varying motivations, perpetrate these schemes, targeting various categories of victims. All of these schemes, however, rely on the malicious, unauthorized use of computers to penetrate into another person's computer or network. This technical baseline provides a set of common operational techniques across the range of complicated cybercriminal plots. Indeed, in a threat landscape that constantly evolves and features a diverse set of actors, motivations, and targets, the prevalence of certain key techniques is a significant and rare constant.

Cybercrime Schemes

In the current landscape, cyber-enabled schemes tend to fall into one or more of five basic categories: (1) damage to computer systems; (2) data theft; (3) fraud/carding schemes; (4) crimes threatening personal privacy; and (5) crimes threatening critical infrastructure.

1. Damage to computer systems

Many cyber threats directly target computer systems and networks, seeking to damage the integrity or availability of data and services housed on those systems. For example, a **Distributed Denial of Service ("DDoS") attack** involves the orchestrated transmission of communications engineered to overwhelm the victim network's connection to the Internet in order to impair or disrupt that network's ability to send or receive communications. Because they require the near simultaneous and sustained sending of communications against a discrete target, DDoS attacks usually are launched by a large network of hijacked computers called a botnet. (For further discussion of botnets, see page 41.) Common targets of DDoS attacks include websites that the criminals wish to disable and push off-line, either because they disagree with the content, or because they wish to drive traffic to sites they prefer.

DDoS attacks can have crippling, far-reaching effects. In October 2016, for example, a massive DDoS attack targeting a U.S.-based company that controls much of the Internet's domain name system infrastructure brought down many of the world's best-known websites for several hours, including sites belong-

ing to Twitter, Pinterest, CNN, Fox News, and Netflix. The botnet used to launch this attack was originally created a few years before. The Department recently convicted the botnet's creators after the leader of the group admitted that he and his conspirators developed it in part to initiate powerful DDoS attacks "against business competitors and others against whom [they] held grudges."[1] They also used the botnet—which, in an alarming new twist, enlisted everyday so-called "Internet of Things" devices into its network of hijacked machines, thereby amplifying its strength by orders of magnitude[2]—to provide a source of revenue, either by renting it out to third-parties in exchange for payment, or by employing it to "extort hosting companies and others into paying protection money in order to avoid being targeted" by DDoS attacks.[3]

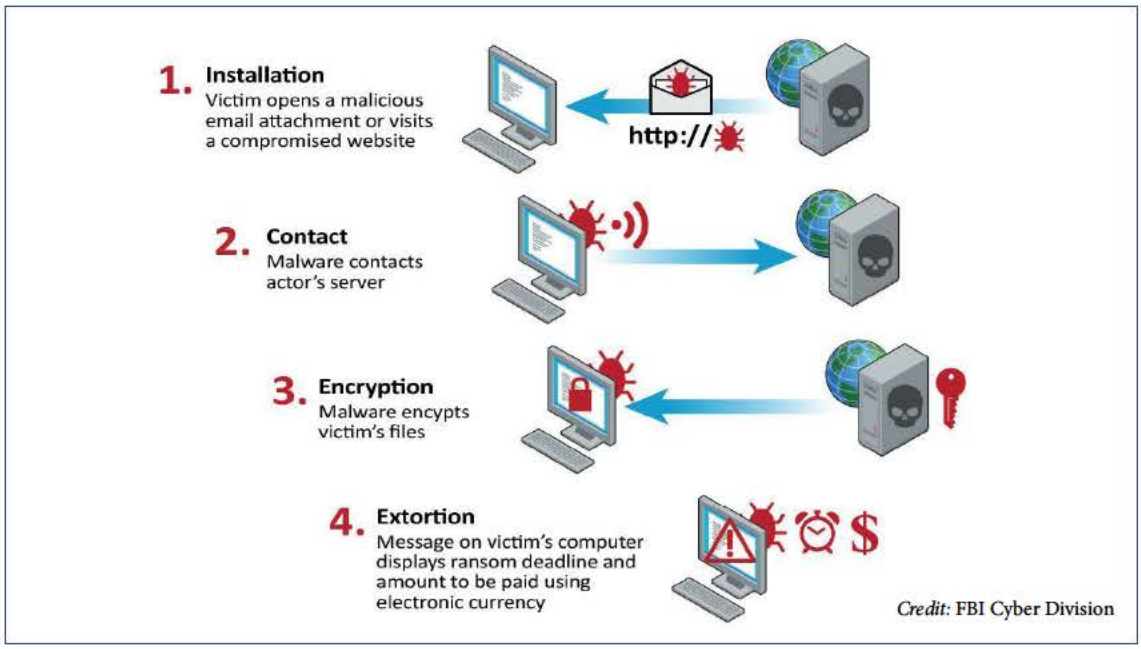
Hostile governments, too, may employ DDoS attacks to advance their geopolitical goals and undermine our national security. In March 2016, for example, a federal grand jury in New York indicted seven Iranian hackers belonging to two companies that worked for Iran's Islamic Revolutionary Guard Corps for their role in DDoS attacks targeting the public-facing websites of nearly fifty U.S. banks.[4] These DDoS attacks against the U.S. financial sector began in approximately December 2011, and occurred sporadically until September 2012, at which point they escalated in frequency to a near-weekly basis. On certain days during the DDoS campaign, victim computer servers were hit with massive amounts of traffic, which cut off hundreds of thousands of customers from online access to their bank accounts. These attacks collectively cost the banks tens of millions of dollars to remediate as they worked to neutralize and mitigate the attacks on their servers. In 2017, the Department of the Treasury added the seven hackers to the Office of Foreign Assets Control ("OFAC") Specially Designated National and Blocked Persons List.[5]

Malign actors also use **ransomware** to inflict damage to a victim's computer systems. Ransomware is malicious computer code (or "malware") that blocks a victim's access to data on its systems, typically by encrypting the data and demanding that the victim pay a ransom, often in the form of a difficult-to-trace virtual currency, to restore the data. *See* **Fig. 1**.

Ransomware can be delivered in a variety of ways, including through fraudulent e-mails. Such e-mails can be drafted to look like they are from trustworthy senders, containing malicious attachments or links that, once opened or clicked, activate the ransomware. Some variants also try, once they have gained a foothold in a victim's network, to spread laterally across the network to encrypt files on other computers or servers to which the victim's device has access. A second common method involves planting ransomware in hacked websites, which infect the computers of visitors to the sites. In addition, it is not uncommon for criminals to use botnet infrastructure and code to facilitate the widespread delivery of ransomware.

Like DDoS attacks, ransomware attacks can impose immense costs. For example, in 2017, the "WannaCry" ransomware attack spread rapidly and indiscriminately around the world over a mere four days. This campaign—which ultimately was attributed to

Figure 1: The Anatomy of a Ransomware Attack



the North Korean government—rendered useless "hundreds of thousands of computers in hospitals, schools, businesses, and homes in over 150 countries."[7] Total damages likely ran into the hundreds of millions of dollars. High-profile incidents such as the March 2018 attack that crippled Atlanta's city government make clear that ransomware schemes remain a threat.

Typically, cybercriminals run ransomware campaigns: the goal is to damage the victim's computer system in the short-term in order to get the victim to pay. If the scheme is to succeed, in other words, the victim needs to get their files back. By contrast, **destructive attacks**—another type of cyber threat that directly targets computer systems and networks—destroy the victim's data. For that reason, these attacks often are associated with nation states and other entities that have broader motivations. To be sure, destructive attacks may come disguised as ransomware campaigns; the malware linked to the notorious "NotPetya" attack launched by the Russian military in June 2017, for example, locked up its victims' files and purported to demand a ransom. It soon became clear, however, that this cyberattack was "meant to paralyze, not profit," as victims who tried to pay found it almost impossible to do so.[9] This attack, which was "part of the Kremlin's ongoing effort to destabilize Ukraine," resulted in "the most destructive and costly cyberattack in history," "causing billions of dollars in damage across Europe, Asia, and the Americas."[10] Similarly, the "WannaCry" attack described above did not prove to be very lucrative to the attackers. Rather, it was a reckless attack that resulted in havoc and

Credit: FBI Cyber Division

destruction; any money that was raised was purely a side benefit.[11]

Perhaps the most notorious example of a destructive attack launched against a U.S. company was the November 2014 cyberattack by North Korea on Sony Pictures Entertainment ("SPE"). This attack destroyed much of SPE's computer systems, compromised private information, released valuable corporate data and intellectual property, and threatened employees, customers, and film distributers with violence. The attackers stole a large number of files—which included private correspondence, unreleased films, salary records, and social security numbers—and released much of the information to the public, imposing significant financial and other consequences. The attack forced SPE to take its company-wide computer network offline and left thousands of its computers inoperable.

In response to the cyberattack on SPE, the U.S. government publicly attributed the incident to the North Korean government, and then sanctioned a North Korean government agency, two trading companies, and ten North Korean individuals.[13]

2. Data Theft

As the world grows increasingly reliant on digital technology, and as companies store ever larger quantities of data about their customers and other individuals, criminals have sought to steal and profit from control over that data. The past decade has witnessed numerous publicly reported instances of criminals hacking into computer systems and stealing **personally identifying information ("PII")** about hundreds of millions of individuals.

According to one report, there were at least 686 data breaches reported in the first quarter of 2018, resulting in the theft of as many as 1.4 billion records.[14] Stolen PII can include dates of birth, social security numbers, credit card numbers, e-mail addresses, drivers' license numbers, payroll and tax information, and even answers to security questions used to log into systems—namely, everything needed to misappropriate victims' identities, make fraudulent purchases (including filing fraudulent claims for tax refunds), and craft phishing and other social engineering attacks on specific targets. Breaches of major retailers can reveal transaction information and expose these companies to massive financial losses, while imposing upon members of the public the risk that their identities will be used to commit other financial crimes, with all of the associated impacts. Crimes of this sort are tremendously costly to all involved. According to one estimate, the average total cost in 2017 to a victim company from a data breach was approximately $7.35 million.[15] The Internet Crime Complaint Center ("IC3"), the FBI unit that receives and tracks cybercrime complaints from victims, received a total of 3,785 complaints of corporate data breach in 2017, with reported losses exceeding $60 million.[16]

Government agencies face similar threats. As agencies try to use new information technologies to make it easier for individuals and entities to submit and obtain information necessary for paying taxes, obtaining benefits, or providing services, the avenues for potential breaches dramatically increase. Of course, government agencies collect and store sensitive information concerning not only the general public, but also their own employees. This fact makes them valuable targets. For example, the U.S. Office of Personnel Management announced in 2015 it had been victimized through two separate but related cyberattacks that resulted in the theft of highly sensitive background investigation records of current, former, and prospective federal employees and contractors, as well as the theft of personnel data of over 21 million people.[17] Data breaches like these degrade public trust in government agencies.

Sometimes, nation states facilitate the work of criminals who seek to steal and profit from user data. In March 2017, the Department announced criminal charges against two officers of the Russian Federal Security Service ("FSB") and two additional conspirators involving computer hacking, economic espionage, and other offenses in connection with a conspiracy to access Yahoo's network as well as information concerning millions of individual webmail accounts.[18] Those charges revealed that officers from the FSB unit that serves as the FBI's point of contact in Moscow on cybercrime matters were using criminal hackers—one of whom already had been publicly charged in two separate investigations in the United States—to target American webmail providers and technology companies, among others.

The public revelation that FSB officers for years had worked with a wanted cybercriminal, and had allowed him to further victimize his targets (for example, by searching compromised accounts for credit card and other information that could be monetized), laid bare for the public and international com-

munity the nexus between the Russian state apparatus and the Russian criminal underworld. These charges also demonstrated that the Russian government has not always been a responsible stakeholder in the fight against international cybercrime. One of the indicted hackers was arrested in Canada and brought to the United States; he pled guilty to eight criminal counts in U.S. federal court in November 2017, and was sentenced to a five-year prison term in May 2018.[19] In December 2016, OFAC designated the FSB under a new executive order issued to expand the authority under E.O. 13694, which empowers the President to block the property of persons who engage in significant malicious cyber-enabled activities.[20] On March 15, 2018, the Department of the Treasury also designated the FSB pursuant to section 224 of the Countering America's Adversaries Through Sanctions Act, which targets cyber actors operating on behalf of the Russian government in particular.

Malign actors can also use data thefts to further terrorist acts. In June 2015, an ISIL-linked hacker named Ardit Ferizi stole PII belonging to tens of thousands of customers of a U.S. company, including members of the military and other government personnel. Ferizi subsequently culled the PII belonging to 1,300 particular individuals employed by the U.S. government and provided that information to Junaid Hussain, a now-deceased ISIL recruiter and attack facilitator. In August 2015, Hussain posted the names on Twitter in the name of the Islamic State Hacking Division with a message saying, in part: "We are in your emails and computer systems, watching and recording your every move, we have your names and addresses, we are in your emails and social media accounts, we are extracting confidential data and passing on your personal information to the soldiers of the khilafah, who soon with the permission of Allah will strike at your necks in your own lands!" Malaysian authorities detained Ferizi, who subsequently consented to extradition to the United States. He pleaded guilty and was sentenced to 20 years in prison for providing material support to ISIL, and for accessing a protected computer without authorization and obtaining information in order to provide material support to a designated foreign terrorist organization.[21]

THE COSTS OF INTELLECTUAL PROPERTY CRIME

Estimates vary regarding the size of economic loss that can be attributed to the theft of intellectual property and trade secrets. The Commission on the Theft of American Intellectual Property has estimated that the annual cost to the U.S. economy through the theft of trade secrets, and through counterfeit goods and pirated software, exceeds $225 billion and could be as high as $600 billion.[22] According to a cybersecurity industry report, the direct costs of cyber theft in 2014 for over 50 U.S.-based private and public sector organizations ranged from just under $2 million to $65 million each year per company, an increase of 82 percent over six years.[23] Pricewaterhouse Coopers estimated in 2014 that the United States lost between one and three percent of its gross domestic product each year due to trade secret theft.[24]

The **theft of intellectual property** represents another significant data theft problem. The two most notable types of cyber-enabled intellectual property crime are the infringement of copyrighted material over the Internet and the misappropriation of trade secrets stored in a digital format. Internet sites that profit from the unauthorized distribution of copyrighted movies, music, software, and other digital works can have a global reach, generate millions of dollars of illicit revenue for the operators, and cause extensive financial harm to the owners of the works being shared. While copyrighted works generally are intended to be accessible to the public under terms set by the copyright owner, trade secrets receive criminal protection specifically because they involve knowledge that is not known to the public and derive value from remaining secret.

Kim Dotcom, Finn Batato, Mathias Ortmann, Bram van der Kolk, and others are members of a worldwide criminal organization whose members allegedly engaged in criminal copyright infringement with estimated harm to copyright holders well in excess of $400 million, and which yielded over $175 million in illicit proceeds.[25] The conspirators operated a commercial website and service called Megaupload.com, which reproduced and distributed copies of popular copyrighted content without authorization and claimed at one time to account for four percent of total Internet traffic—including more than one billion total visits, 150 million registered users, and 50 million daily visitors. A federal grand jury charged members of the conspiracy with a number of conspiracy, racketeering, copyright infringement, money laundering, and fraud offenses. Dotcom and the others were arrested in 2012 in New Zealand, but their extraditions to the United States still remain on appeal in that nation. Despite delays in the criminal case, the Department of Justice has prevailed in a civil forfeiture action in U.S. federal court to forfeit the proceeds of the criminal conspiracy.

Following the takedown of Megaupload.com, other online piracy sites grew in popularity. On July 20, 2016, Artem Vaulin of Ukraine was arrested in Poland based on U.S. federal charges for conspiracy to commit criminal copyright infringement, conspiracy to commit money laundering, and criminal copyright infringement.[26] Vaulin is alleged to have run one of the world's most visited illegal file-sharing websites, Kickass Torrents ("KAT"), which was seized as part of the operation. KAT enabled users to illegally reproduce and distribute hundreds of millions of copyrighted motion pictures, video games, television programs, musical recordings, and other electronic media. Initial investigation indicates that the copyrighted material was collectively valued at well over $1 billion, and that the site, which was in the top 100 most frequently visited sites on the Internet, received more than 50 million unique visitors each month.

On the trade secret front, the Department obtained a conviction in January 2018 in U.S. federal court against a China-based manufacturer and exporter of wind turbines that stole trade secrets from a U.S.-based company. The Chinese company, Sinovel Wind Group Co. Ltd., conspired with others to steal proprietary wind turbine technology from the American corporate victim in order to produce its own wind turbines and to retrofit

existing wind turbines with stolen technology. These crimes cost the victim more than $1 billion in shareholder equity and almost 700 jobs—over half its global workforce.[27]

In addition, the Department has pursued charges not only against criminals seeking monetary gain, but also against nation-state actors engaged in economic espionage through cyber means. In May 2014, for example, a federal grand jury indicted five uniformed members of the Chinese military on charges of hacking and conducting economic espionage against large U.S. entities in the nuclear power, metal, and solar energy industries. The lengthy statement of charges described numerous specific instances where officers of the People's Liberation Army ("PLA") were alleged to have hacked into the computer systems of U.S. victims to steal

Figure 2: Chinese Military Officers Charged with Hacking and Economic Espionage

trade secrets and sensitive, internal communications for commercial advantage or private financial gain. *See* **Fig. 2**. Although the five charged PLA officers remain at large, this case illustrated how the Department's independent investigations and actions can play an important role as part of a broader, coordinated approach designed to support American companies, deter our adversaries, and otherwise change their behavior.

The indictment sent a clear message that the state-sponsored theft of trade secrets or other confidential business information, with the intent of providing competitive advantages to companies or commercial sectors, is unacceptable. This norm thereafter gained widespread acceptance, most notably in a bilateral agreement between the United States and China in September 2015,[28] and among the G20 at the Antalya Summit in Turkey in November 2015.[29] Although some U.S. cybersecurity firms indicate that computer intrusions by Chinese state-sponsored hackers targeting U.S. firms have decreased since then,[30] the U.S. government continues to monitor China's compliance with the norm, and with that nation's September 2015 commitment to cooperate on investigations of crimes emanating from its territory. To that end, in late 2017, the Department charged three Chinese nationals who worked for the purported Internet security firm known as Boyusec with stealing trade secrets and other confidential information from American firms until as recently as May 2017—long after the Chinese commitments of September 2015.[31] After the Department sought assistance from the Chinese authorities in investigating the allegations and "received no meaningful response,"[32] the Department acknowledged as much and unsealed the indictment, providing insight into the status of China's adherence to norms it purportedly had embraced.

3. *Fraud/Carding Schemes*

At the core of fraud lies deceit. It can manifest in an intent to deceive by those one knows and trusts, or, as is often the case with cybercrime, by criminals defrauding victims by abusing the Internet's lack of a trusted and effective means to authenticate another's identity. Online systems with weak authentication and few indications for determining another's true identity have opened the door for fraudsters to commit numerous crimes by faking their online identities or fraudulently adopting the identities of others. Cyber fraud schemes take many forms, including Nigerian-letter scams in which fraudsters e-mail victims claiming to be Nigerian government officials in need of assistance in transferring stolen funds out of Nigeria. Recipients who respond are encouraged to cover upfront the supposed expenses for the transfers themselves, upon the fraudulent promise of later repayment, and to provide personal banking information and other identifying information—which is later used to drain victims' bank accounts.[33] Other forms include frauds that convince victims to donate to fake charities, especially after natural disasters, and fraudulent online transactions or exchanges in which no payment is made to, or no good or service is received by, the victim.[34]

Other schemes entice victims to purchase investment and financial instruments, often

marketed with misleading claims of offering low-risk, high-reward guaranteed returns or overly consistent returns. Examples include Ponzi schemes, advance fee frauds, pyramid schemes, and market manipulation frauds. These schemes can target members of affinity groups, such as groups with a common religion or ethnicity, in order to exploit that supposed connection to build trust and operate the investment fraud against the victim.[35] Carding schemes are another major financial threat. These schemes involve criminals selling and purchasing hacked credit card information, typically through dark markets devoted to criminal activity, that is then used to commit fraudulent ATM transactions, purchase pre-paid gift cards, and buy goods that are then re-shipped to criminal organizations. In just one example, a group of Russian criminals hacked into systems at credit card processors, banks, retailers, and other companies, and stole over 160 million credit card numbers.[36]

4. *Cyber-enabled crimes threatening personal privacy*

Criminals regularly abuse the global reach, connectivity, and anonymity of information technology services to commit a wide range of crimes targeting specific individuals. Many of these behaviors represent reprehensible and often dangerous violations of the victim's privacy rights, and can have lasting, damaging impact. Examples of these crimes include sextortion and non-consensual pornography (sometimes colloquially called "revenge porn"), as well as cyber-enabled harassment and stalking of victims. Criminals are using online tactics—including computer hacking, phishing attacks, and social media manipulation—to gain access to sensitive, often sexually explicit information that they use to extort, harass, or stalk all types of people, including vulnerable youth and young adults.

Sextortion fact patterns vary, but some typical scenarios have emerged. A common fact pattern involves a perpetrator demanding something of value, typically sexually explicit images, from a victim. The perpetrator enforces these demands through threats to distribute material that the victim seeks to keep private, such as embarrassing or sexually explicit images involving the victim, or through threats to harm the victim's friends or family, for example by using stolen account information to bankrupt them. A primary tactic that sextortionists use is to lure the victim to share a compromising image or information, which, once obtained, the criminal can use to blackmail the victim into providing additional images or videos. Often, criminals use social engineering tactics to target victims. A common approach is to misrepresent themselves as peers—for example, using profile photos or avatars on social media websites bearing images close in age to the victim—to convince victims they are communicating with an age-appropriate individual who is actually interested in them. By fraudulently building a rapport using flattery, romance, and manipulation, criminals are able to befriend victims and entice them to share sensitive images or information. Other criminals have presented themselves as representatives from a modeling agency that is interested in representing the victim; still others have successfully impersonated the victim's partner in order to trick the victim. In addition,

criminals also obtain material from victims' online social media accounts, such as personal information and "friends lists," which the criminals exploit to present themselves as acquaintances or someone with similar interests. Finally, some criminals simply hack into a victim's computer and install malware that controls the device's cameras, thereby surreptitiously capturing compromising or personal video footage of the victim. As major consumers of social media, children and young adults are particularly vulnerable to these types of offenses.

Non-consensual pornography describes the distribution of nude or sexually explicit images and videos of an individual without the victim's consent. Images taken consensually during an intimate relationship are released once the relationship ends. Other times, perpetrators obtain consensually produced images by hacking into systems, or obtain non-consensually produced imagery through hidden cameras or by recording sexual assaults. The images may be posted online, often with identifying information and links to social media profiles, or may be sent directly to the victim's co-workers, friends, and family.[37] Non-consensual pornography sometimes overlaps with sextortion, particularly when the perpetrator threatens to distribute sexually explicit images of the victim unless the victim provides additional images or some other thing of value.

Cyber-enabled stalking and **harassment** are other particularly pernicious cyber threats against individuals. These terms cover similar criminal activity that threatens victims, though only cyberstalking is explicitly defined in federal criminal law.[38] Cyberstalking includes any course of conduct or series of acts taken by the perpetrator that places the victim in reasonable fear of death or serious bodily injury, or causes, attempts to cause, or would reasonably be expected to cause substantial emotional distress to the victim or the victim's immediate family. Prohibited acts include repeated, unwanted, intrusive, and frightening communications from the perpetrator by phone, e-mail, or other forms of communication; harassment and threats communicated through the Internet, such as social media sites; and the posting of information or spreading rumors about the victim on the Internet. Cyber-enabled harassment, by contrast, involves more generalized threats to victims, and includes swatting and doxxing. **Swatting** involves deceiving emergency responders to dispatch a SWAT team or other police unit to the victim's home or location, purportedly because the victim has taken hostages or is otherwise armed and dangerous, which tragically has resulted in deadly outcomes. **Doxxing** involves broadcasting personal information about the victim on the Internet, exposing him or her to further harassment by others.

The Department vigorously pursues these acts when they rise to the level of federal crimes. As just one example, we prosecuted a Department of State employee at the U.S. Embassy in London for engaging in a widespread international computer hacking, cyberstalking, and sextortion campaign.[39] This defendant's scheme involved, among other steps, sending e-mails to thousands of potential victims pretending to be from his targets' e-mail provider. The defendant then used these e-mails to trick victims into revealing their account passwords, which

he then used to hack into the accounts and search for sexually explicit photographs. Once the defendant located private photos, he searched for additional personal information about his victims, such as addresses and family member names. Using this information and the stolen explicit images, he then engaged in a cyberstalking campaign, threatening to release the photos if victims did not comply with his demands. This defendant ultimately was sentenced to 57 months in federal prison.[40]

5. *Cyber-enabled crimes threatening critical infrastructure*

Our Nation's critical infrastructure provides the essential services that underpin American society and serves as the backbone of our economy, security, and health systems.[41] Critical infrastructure includes the financial services sector, the electrical grid, dams, electoral systems, and over a dozen other sectors of society whose assets, systems, and networks are considered so vital to the United States that their incapacitation or destruction would have a debilitating effect on our national security, national economic security, national public health or safety, or any combination thereof.[42] These sectors are highly reliant on IT systems and networks. As such, threats targeting critical infrastructure deserve particular attention. For example, major energy systems, such as pipelines and refineries, operate using networked industrial control systems that permit remote operation of massive, geographically dispersed facilities and machines. These systems rely on sophisticated computer and communication networks that adversaries target by seeking to identify vulnerabilities that can be used in the future to disrupt operations or to steal valuable proprietary information. In addition, perpetrators of ransomware schemes, as described above, have sought to exploit society's need for critical infrastructure to remain continuously operational by targeting (and extorting) hospitals, and other vital institutions, that cannot afford any downtime.

Increased connectivity has helped U.S. companies manage and monitor their businesses, but it also has made critical infrastructure vulnerable to cyberattack. Modernization has been a double-edged sword: while it has unlocked new potential for efficiency and performance, the resulting increased connectivity between devices and systems, and especially vital systems like the electrical grid and water treatment facilities, have also created new vulnerabilities and attack vectors that must be defended.[43] As a result, the industrial-control systems that manage and monitor many of our most important industrial facilities and systems are increasingly being targeted by adversaries intent on wreaking havoc.[44] This is not a hypothetical threat: one of the Iranian hackers indicted for the DDoS attacks against the U.S. financial sector is also alleged repeatedly to have gained access to the Supervisory Control and Data Acquisition ("SCADA") system of a dam in New York, allowing him to obtain information regarding the dam's status and operation. Had the system not been under maintenance at the time, the hacker would have been able to control the dam's sluice gate.[45]

Because private entities own and operate the vast majority of the Nation's critical infrastructure, the FBI works to make threat

information available to affected sectors through briefings and widely distributed technical alerts developed jointly with DHS. In March 2018, for example, the FBI and DHS announced that for at least two years, Russian government cyber actors had "targeted government entities and multiple U.S. critical infrastructure sectors, including the energy, nuclear, commercial facilities, water, aviation, and critical manufacturing sectors."[46] This technical alert described a multistage Russian intrusion campaign that compromised small commercial facilities' networks and used them to stage malware and to conduct spear-phishing attacks, which allowed the Russians to gain remote access into energy sector networks. The Russian cyber actors then conducted network reconnaissance, before moving laterally across the network and collecting information pertaining to Industrial Control Systems. U.S. Treasury Secretary Steven Mnuchin referenced this activity when announcing that OFAC had sanctioned five Russian entities and nineteen Russian individuals.[47]

Likewise, in May 2018, the FBI and DHS issued a technical alert notifying the public about the FBI's high confidence that malicious North Korean government cyber actors have been using malware since at least 2009 "to target multiple victims globally and in the United States," across various sectors—including critical infrastructure sectors.[48]

* * *

This non-exhaustive list highlights the varied nature of the most serious cyber threats our Nation faces. To the extent the Department's most important responsibility is to keep Americans safe, it must continue combating these threats and aggressively monitoring how they evolve. One of the most important ways we can stay abreast (if not ahead) of cybercriminals is to fully understand the techniques they use to cause harm. The threats themselves will likely change, but the methods and tools these criminals use to commit computer intrusions and to steal from others have shown remarkable resilience.

Techniques Used to Facilitate Cyber Attacks

The availability of sophisticated technology allows criminals to commit crimes from distant locations, and to avoid detection by victims and law enforcement. Indeed, these technologies greatly expand our adversaries' reach and impact, permitting a small number of criminals to execute intrusions, schemes, and attacks that affect millions of victims. Four of the most common tools that criminals exploit to increase the scale of their attacks include social engineering, malicious software, botnets, and criminal infrastructure.

1. Social Engineering

Social engineering is a tactic criminals use to convince or trick targets into engaging in a specific activity, often by adopting a false identity online of someone the target knows or otherwise believes to be innocuous. Unfortunately, because it preys upon widespread trust that online identities are legitimate, social engineering is surprisingly effective and

is a technique used in the vast majority of data breaches and online scams that the FBI investigates.[49]

In a **phishing** scam, for example, criminals impersonate a person or entity trusted by the victim in order to pressure the victim to engage in conduct that benefits the criminal. These schemes may involve sending fraudulent e-mails that appear to come from a legitimate source, such as a victim's bank or Internet Service Provider ("ISP"), requesting the recipient to click on a link to a website controlled by the criminals and to divulge personal account information, or seeking to get the victim to download malware under false pretenses.[50] Other fraudsters use intimidation and threats to entice the victim to act, such as by threatening to close an account, and often ask for usernames, passwords, dates of birth, Social Security numbers, bank numbers, PIN numbers, payment card numbers, or a mother's maiden name. The goal is to acquire PII that the fraudsters can then sell or use to commit other crimes, such as making fraudulent purchases, or to gain access to the victim's computer to steal information or install malware.

Business e-mail compromise ("BEC") scams are another variant of social engineering, where the goal is not to have the victim provide information, but rather to transfer money. Sometimes operating as part of sophisticated transnational criminal organizations, BEC scammers can send e-mails to employees with access to a company's financial system, tricking them into wiring payments to accounts controlled by the criminals. The e-mails often are designed to look as if they came directly from a senior executive, such as the company's Chief Executive Officer. In some cases, the scammers pick an address that does not belong to the executive but appears to be a real address for the executive, such as being off by one letter. In more sophisticated schemes, BEC fraudsters gain access to the victim company's e-mail system and send requests from the senior executive's actual e-mail account. In 2016, these schemes caused over $360 million of losses reported to the FBI—the largest of any category of cybercrime tracked by IC3.[52] In 2017, IC3 received over 15,000 BEC complaints with adjusted losses of over $675 million, which once again placed these schemes at the top of the loss list.[52]

2. Malware

Malware is malicious software that disrupts, damages, or otherwise compromises the integrity of computer systems and networks. It is frequently disseminated by fraudulently or otherwise unlawfully obtaining access to a victim's computer or system and then launching a malicious payload on the victim's system. Malware takes many different forms. Some versions are written to erase data or even render computers unusable, for example by overwriting critical information on their hard drives, thereby preventing the computers from starting. Other types of malware, such as ransomware programs (discussed above), render the data inaccessible by encrypting victims' systems and demanding a ransom with the promise of restoring the victims' data upon payment—a promise that is not always fulfilled. Spyware, including keyloggers, secretly record users' activities on computers, especially the entering of passwords, and transmit sensitive informa-

tion back to criminals for further exploitation. Any of these actions may be performed by Trojans, which are programs disguised as legitimate software that, once uploaded onto victims' systems, launch hidden malicious software that operates in the background without the victims' knowledge.

3. *Botnets*

Botnets are vast networks of malware-infected computers and devices that criminals remotely control to conduct a wide range of cybercrime, including sending malware and spam against targets, launching DDoS attacks, and providing infrastructure for ransomware schemes. Botnets—a shortening of "ro***bot net***works"—operate as force multipliers for criminals, giving them control of hundreds, thousands, or even millions of computers to advance their schemes. Because of the relatively low cost of attempting to infect computers with malware, even a comparatively low infection rate can populate a botnet with a vast haul of compromised computers. Further, botnets help criminals cover their tracks from law enforcement by creating an intermediary layer of remotely controlled compromised systems between the criminals and investigators, making it even more challenging for law enforcement to determine who controls the botnet. Moreover, criminals running botnets often are located abroad, which further protects them due to the numerous challenges the Department faces in investigating foreign threats: limited access to digital evidence; delays caused by reliance on mutual legal assistance processes; and the possibility of safe haven from arrest or prosecution in their country of residence. The threat from botnets has increased as individual hackers and organized criminal groups have used ever more sophisticated techniques to infect computers, encrypt communications, and avoid detection by investigators. Finally, as **Fig. 3** illustrates, the recent staggering growth in Internet-connected consumer devices—the so-called "Internet of Things"—has allowed malicious actors to build botnets from under-protected IoT devices to launch DDoS attacks.[53]

4. *Criminal Infrastructure*

Operating a criminal enterprise with some form of online presence requires a backend technical infrastructure that can be hidden from law enforcement. While some criminals may rely on their own computers and servers, more sophisticated operations lease services from "**bulletproof hosters**," that is, web hosting companies and data centers that purposefully are extremely lenient in what content they will host, make little to no effort to verify the true identity of their customers, and are designed to be unhelpful to law enforcement requests for information about their customers. Bulletproof hosters often are located in countries with less stringent cyber regulations and under-developed domestic cybercrime law enforcement capabilities, and are akin to digital safehouses where criminals can stash malware exploit kits, run botnets, and store PII stolen from hacked databases.

In addition to bulletproof hosters, cybercriminals regularly use the Dark Web, the collection of hidden sites and services that are only accessible to users of specific routing and anonymizing services and software. In recent years, criminals have launched so-

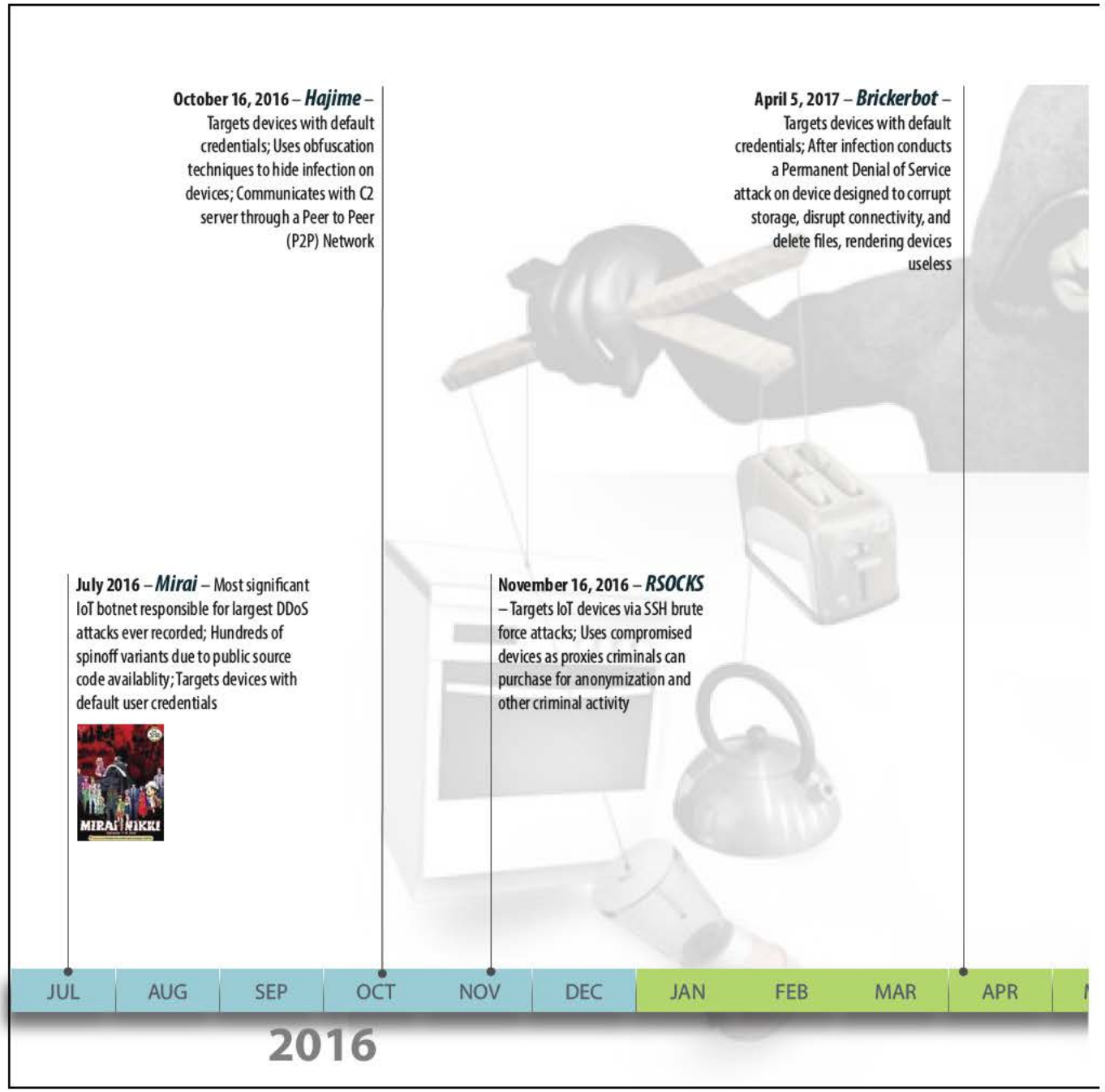


Figure 3: Significant Internet of Things (IoT) Botnets

August 2017 – *RouteX* – Targets a known vulnerability in Netgear routers; Turns infected devices into proxies for credential validation attacks targeting financial institution and brokerage customer accounts

November 23, 2017 – *Satori* – DDoS botnet; Targets a zero-day vulnerability in Huawei Home Gateway routers and customer-premises equipment; Programmed with 65,000 default credentials combinations

January 23, 2018 – *Pure Masuta* – DDoS botnet; Created by the same author as Satori/Masuta; Targets a flaw in D-Link routers and exploits a bug in the Home Network Administration Protocol

January 24, 2018 – *Hide'N Seek* – Primarily targets IP Cameras with open telnet ports; Uses P2P to spread to other devices

November 2017 – *Nexus_Mirai* – A variant of Masuta/Satori; Based on Mirai source code; Targets devices with default credentials; Named after author whose moniker is 'Nexus'

July 2017 – *Masuta* – DDoS botnet; Based off of Mirai; Targets default user credentials; Source code available in a Dark Market forum

September 13, 2017 – *Reaper* – First major IoT botnet to significantly vary from Mirai; Targets devices with 32 vulnerabilities, capable of more complex attacks, and scans devices less aggressively to avoid detection

January 14, 2018 – *Okiru* – DDoS botnet; Based off of Masuta; Targets IoT devices with ARC Processors, used in more than a billion products each year

February 1, 2018 – *Jen X* – Connected to a gaming server rental business; DDoS capabilities available for $20; Targets a vulnerability in Huawei routers and a vulnerability in the firmware component of a wireless chipset

Credit: FBI Cyber Division

called dark markets, that is, websites hosted on the Dark Web in which vendors and buyers congregate to buy, sell, and trade illicit goods such as narcotics, credit card numbers, hacking tools, and stolen PII in an environment that protects the vendors' and buyer's anonymity. In the midst of an ongoing opioid crisis, the open availability of dark markets where fentanyl and other illicit narcotics are available for purchase and are delivered direct to consumers in the United States poses a significant public health threat.

Another persistent problem on the Dark Web are online child exploitation communities where like-minded sex offenders gather to promote the sexual abuse of children, provide an environment where such conduct seems "normal," educate each other about how to perpetrate child sex abuse without getting caught, incentivize the production of images that document child sex abuse, and share images and videos depicting the sexual abuse and exploitation of children as young as infants and toddlers. Such communities are disturbingly commonplace, and frequently involve tens of thousands of members.

The growth and continued operation of these sites and communities is made possible by anonymizing technology that effectively hides the servers hosting the sites, as well as users, from normal law enforcement techniques. The best-known technology of this type is free software called The Onion Router ("Tor"). Tor transmits internet traffic through a global volunteer network of thousands of relays (i.e., proxy computers), using layers of encryption to obscure users' identities and geographical locations. Tor not only

THE ONION ROUTER (TOR)

Tor operates by routing encrypted communications through a series of relay computers. This obscures the route of the communications, thereby frustrating monitoring by third-parties, such as law enforcement. Communications sent from a computer using Tor are bounced through a series of intermediary servers, known as relays or nodes, chosen from among thousands of servers located throughout the world that individuals have volunteered to be part of the Tor network. Communications sent through these nodes—known as the Guard, Relay, and Exit nodes—are encrypted in a manner that conceals both the contents of the communication and the IP address of the computer that sent the communication. Each node knows only which other node gave it data, and which node is receiving data. None of the intermediate Tor nodes ever has access to both the sender's true IP address and the actual content of the communication.

anonymizes criminals' Internet traffic, but also allows them to host websites, called Hidden Services, on servers whose location is similarly masked using Tor. Criminals have exploited Hidden Services to facilitate numerous forms of illicit commercial and other criminal activity. Some of the most infamous Hidden Services are dark markets, including the now-shuttered Silk Road and AlphaBay, as well as notorious child exploitation communities. The Department's successes in shutting down these illicit marketplaces are described in further detail in Chapter 3.

Criminals' exploitation of increasingly sophisticated technologies to cover their tracks and avoid being caught represents a significant challenge to law enforcement. Criminals executing ransomware schemes often use anonymizing networks such as Tor to communicate with victims, even going so far as to set up Tor Hidden Services websites to answer victims' questions and to facilitate payment. In addition, the use of anonymizing proxy networks interferes with law enforcement's ability to trace these communications and identify the actors running the ransomware. Criminals also increasingly require payments to be made using virtual currencies or other mechanisms that complicate law enforcement efforts to track those payments. We discuss the impact of such anonymizing technologies on our investigations in Chapter 3. For now, suffice it to say that no discussion of the cyber threats our Nation confronts would be complete without the simple observation that as the Department continues to wage battle against cybercriminals, it will need to adequately meet the challenges posed by anonymizing technologies.

NOTES

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Chapter 3
Detecting, Deterring, and Disrupting Cyber Threats

The Department of Justice plays an essential role in detecting, deterring, and disrupting cyber threats. As the Nation's chief law enforcement officer, the Attorney General leads the Department's criminal and national security initiatives. Working with and through the Criminal Division, the National Security Division, and the 93 U.S. Attorney's Offices across the country, the Attorney General sets priorities for how those activities are conducted.[1]

Since the early 1990s, when the commercial Internet was in its infancy, the Department has combated computer crime. In the intervening years, the Department has expanded its focus to address burgeoning threats to public safety, economic security, and national security flowing from the widespread adoption of the Internet. Today, the Department deters and disrupts a broad spectrum of the Nation's cyber threats by enforcing federal laws through the array of legal tools and capabilities that its investigators and prosecutors have at their disposal.

In this chapter, we describe the key methods investigators and prosecutors use to gather evidence about cyber threats. We then explain the key legal authorities the Department applies to bring perpetrators to justice, or otherwise to disrupt and dismantle malicious cyber activity.

Key Investigative Techniques

To successfully bring malign cyber actors to justice, law enforcement first must gather evidence of their criminal activity and attribute that activity to particular individuals, organizations, or nation states. The key methods and sources of evidence for disrupting cyber threats include: gathering materials during incident response; reviewing open source data; conducting online reconnaissance; searching records from online providers; undertaking undercover investigations; engaging in authorized electronic surveillance; tracing financial transactions; searching storage media; and applying a variety of special techniques. Often, investigators also must work cooperatively with foreign partners to access evidence and disrupt transnational cyber threats.

1. Evidence Collection During Incident Response

Often the first evidence collected in an investigation concerning a cyber threat comes from the victim as part of the incident response. The Department encourages victims to contact law enforcement as soon as they believe they are the victim of a computer intrusion. Although many victims will simply provide consent to investigators collecting

digital evidence on scene, subpoenas and search warrants can be obtained if the victim prefers. In either case, investigators are committed to working collaboratively with victims to minimize any disruption to business during an investigation.

After obtaining digital copies of any affected devices, investigators may then turn to other devices in the victim's architecture, including firewalls, log servers, and routers, to look for additional evidence of the perpetrator's presence. Investigators will also image these devices, as needed, and forensically examine them. Such devices often contain traces of a criminal's passage through the infrastructure on the way to the affected device. In particular, many devices maintain log files that show when, and from where, the device was accessed. In addition to preserving and copying digital evidence, investigators may interview employees (especially those tasked with responding to cyber threats or securing infrastructure), regular users of the affected systems, and management.

2. *Online Data Review and Reconnaissance*

After reviewing information obtained from a victim or other primary sources of information regarding a cyberattack, investigators frequently will review online data, which may be open source, to determine their next investigative steps. In undertaking these actions, as with all their actions, investigators are trained to act consistently with our Nation's rule of law principles, and with our society's foundational respect for civil rights and civil liberties.[2]

The first step in online reconnaissance often involves use of the Internet Corporation for Assigned Names and Numbers' WHOIS database.[3] WHOIS is a directory of all of the IP addresses and domains on the Internet. WHOIS records usually display the name and contact information of the registrar (the business that sold the IP address or domain). Investigators can use the contact information to send legal process to the registrar in order to discover more information about the registrant (the user of the IP address or domain). WHOIS often contains self-reported information about the registrant, as well. In addition, an investigator often can tell from WHOIS and related information where a website is being hosted or who is hosting the e-mail server for a website, either (or both) of which can provide additional avenues for investigation.

After consulting WHOIS, investigators often perform online reconnaissance of the identifiers they have collected. This reconnaissance includes web searches looking for whether the identifiers have been used elsewhere and searches of social media to determine whether the identifiers are related to any accounts.

3. *Searching Records from Online Providers*

Successful WHOIS searches and online reconnaissance often results in the identification of e-mail providers, social media companies, registrars, and web hosting and computer hosting companies that may control additional evidence about a subject or

target of an investigation. At this stage, an investigator will rely heavily on the provisions of the Electronic Communications Privacy Act ("ECPA"),[4] which specifically permits investigators to request evidence from providers of electronic communications and computer processing. Investigative teams may issue subpoenas to collect basic information about a subscriber to an identified account. Investigators also may use court orders issued under the authority of section 2703(d) of title 18, United States Code, which allows them to access additional non-content records for online accounts, such as log files or the e-mail addresses of others with whom the subscriber has corresponded.

Finally, with probable cause, investigators can seek a search warrant from a judge to obtain the contents of accounts, including copies of e-mails, photographs, text messages, and any other files stored with a provider up to and including the contents of an entire computer belonging to a target of the investigation and hosted with the provider.[5] Because cyber threat actors often communicate with each other using electronic communications to plan and execute their activities, these accounts can contain vast quantities of useful evidence. In addition, cyber threat actors sometimes keep other evidence in the contents of their accounts, such as records of their criminal activities, pictures that place them at the scene or with other members of the conspiracy, and other evidence that can help identify the actors and connect them to the illicit activity.

4. Online Undercover Operations

In order to investigate cyber threat activity, investigators may establish covert personas or consensually assume the accounts and identities of victims or cooperators to communicate online with the targets of the investigation. From such undercover operations, investigators gather inculpatory contents from communications, additional accounts, IP addresses, criminal proceeds, and records of criminal transactions such as the purchase of malware, botnets, or stolen credit cards.

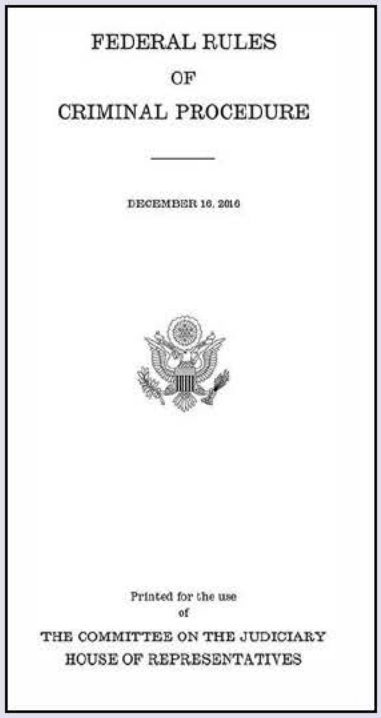
5. Electronic Surveillance

Investigators may also need to conduct online surveillance on their targets. There are three federal statutes that authorize the collection of data on a real-time basis: the pen register and trap and trace ("PRTT") statute,[6] the wiretap statute,[7] and the Foreign Intelligence Surveillance Act ("FISA").[8] All three generally require investigators to obtain court authorization.

A PRTT allows investigators to obtain the dialing, routing, addressing, and signaling information of communications, including dialed calls, IP addresses, and e-mail headers. PRTTs can be obtained for cell phones, e-mail accounts, and other social media or messaging applications. Although a PRTT does not obtain the content of any communications, it can be useful in determining whether an account is still being used for criminal purposes, to help identify co-conspirators, or to locate a target.

(NEW) RULE 41(b)(6)

Under Rule 41(b)(6) of the Federal Rules of Criminal Procedure, which went into effect in December 2016, "a magistrate judge with authority in any district where activities related to a crime may have occurred has authority to issue a warrant to use remote access to search electronic media and to seize or copy electronically stored information located within or outside that district if: (A) the district where the media or information is located has been concealed through technological means; or (B) in an investigation of a violation of 18 U.S.C. § 1030(a)(5), the media are protected computers that have been damaged without authorization and are located in five or more districts."


FEDERAL RULES
OF
CRIMINAL PROCEDURE

DECEMBER 10, 2016

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HOUSE OF REPRESENTATIVES

This provision makes two narrow, but important, changes in the law. First, where a suspect has hidden the location of his or her computer using technological means, the new Rule ensures that federal agents know which judge to go to in order to apply for a warrant. Second, where the crime involves the hacking of computers located in five or more different judicial districts, the new Rule ensures that federal agents may identify one judge to review an application for a search warrant rather than having to submit separate warrant applications in each judicial district across the nation—up to 94—where a computer is affected. In sum, Rule 41(b)(6) addresses the unique challenges created by botnet activity by clarifying that courts may issue warrants authorizing the search of multiple computers when the identified computers are located in multiple judicial districts.

Court-authorized wiretaps under the Wiretap Act or FISA permit investigators to listen to or observe the contents of communications in or near real time. For example, investigators can intercept wire and electronic communications over a target's cell phone or read the target's e-mail as it is sent, allowing them to locate targets, confirm relationships within a conspiracy, disrupt new criminal activity, and confirm previous activity. Every federal wiretap application must be approved by a senior Department official before it is submitted to a court. Federal courts, in turn, apply rigorous standards both in authorizing and supervising wiretaps.

6. Special Techniques

Cyber threat actors often try to hide their identities by disguising their IP address. A common way to do this is by using a proxy computer, which sits between the actor and his victim, to obfuscate the actor's IP address. As described in Chapter 2, threat actors also will often use The Onion Router ("Tor"), which is a particularly sophisticated network of relay computers, to hide their true IP address. To circumvent the challenges presented by threat actors' use of proxies and Tor, investigators can use **Network Investigative Techniques ("NITs")**. NITs include computer code that investigators can send covertly to a device that is hidden behind proxies. Once installed, a NIT can send law enforcement particular information, often including the device's true IP address—which investigators then can use to identify the subscriber and user of the device.

As described in Chapter 2, botnets pose unique challenges for law enforcement and so require special techniques to investigate and disrupt them. Identifying victim computers (or "bots") can be very difficult because the bots may be spread throughout the world. Criminal dark markets that rent or sell botnet access often obfuscate the location and other identifying information about individual bots. Until recently, this posed a significant jurisdictional hurdle, as an investigator had to know the location of a bot to get a search warrant for it. Now, thanks to a recent Department-led initiative to amend the Federal Rules of Criminal Procedure (see page 52), magistrate judges can authorize search warrants even if the location of the subject of the warrant is unknown. Botnets are controlled by command and control servers ("C2 servers"), which periodically issue orders to the bots. One way to disrupt a botnet is to seize control of the C2 server. Investigators can use criminal authorities to seize C2 servers; they can also use civil injunctive authority to seek the redirection of computers under the control of the botnet to a server controlled by the court, instead of by the threat actor's C2 server.

7. Tracing Financial Transactions

Pursuing illicit assets is an important part of any fraud investigation, and computer crime cases are no exception. To pursue traditional bank accounts, the United States has made extensive use of asset forfeiture authorities, including seizures involving correspondent bank accounts, as well as of sanctions programs, including the Global Magnitsky sanctions authority, to keep tainted funds out of the U.S. financial system. Yet, cybercriminals increasingly use **virtual currencies** to advance their activities and to conceal their assets. Because most virtual currencies lack any central authority, seizing them requires different approaches.

In recent years, the Department has relied on a variety of legal authorities to seize virtual currency that has been derived from illegal activity. These authorities include civil forfeiture orders, seizure warrants, and search warrants. Where, for instance, a target of an investigation stores virtual currency with a third-party service—typically, a virtual currency exchanger—investigators may seize that virtual currency by obtaining a seizure warrant for the user's account at that

VIRTUAL CURRENCIES

"Virtual currencies" such as Bitcoin, Ether, and Monero are electronic assets that are circulated over the Internet as a form of value but are not backed by any government. Though virtual currencies have legitimate uses, they also often enable individuals to transfer money with high levels of anonymity to other users worldwide. Cyber criminals frequently transact in virtual currencies, and online criminal markets rely on virtual currencies to enable the purchase and sale of a wide variety of illegal goods and services. While law enforcement has made strides in its ability to trace virtual currency transactions, criminals often launder their virtual currency by mixing one user's money with multiple other users', or sending their virtual currency through a convoluted series of transactions, a process often called "mixing" or "tumbling."

third-party service. If the target stores the virtual currency locally (for example, on his own electronic devices, or on servers he controls), or even by printing the private keys onto a physical medium, investigators may seize the virtual currency through a traditional search warrant that allows the government to learn the private key. The seizure of virtual currency requires transferring the virtual currency to a government-controlled virtual currency wallet. If the virtual currency is stored with an overseas exchange, the Department will work with our foreign counterparts to effect the seizure.

Because of the risks that early conversion may pose, in most cases, virtual currency the government seizes is kept in the form it was seized and not liquidated (*i.e.*, converted to fiat currency or other virtual currency) until a final order of forfeiture is entered or an administrative forfeiture is final.[9] Agencies or prosecutors may, however, seek an order for the interlocutory sale of virtual currency at the request and/or consent of all parties with an ownership interest. Consultation with the Criminal Division's Money Laundering and Asset Recovery Section is required prior to any pre-forfeiture conversion, or seeking an order for interlocutory sale of virtual currency.

Any liquidation of virtual currency should be executed according to established written policies of the seizing agency and the U.S. Marshals Service.[10] The Department is developing guidance regarding disposition of alternative virtual currencies (*i.e.*, anonymity enhanced cryptocurrencies and ICO tokens) for which the Marshals Service does not yet have a process in place to take custody or liquidate via auction.

As detailed above, the Department in recent years has regularly used civil forfeiture au-

thorities[11] and seizure warrants to seize virtual currency derived from malicious cyber activity associated with the Dark Web and botnets. More recently, in July 2017, the Department announced the indictment of a Russian national and an organization he allegedly operated, BTC-e, for facilitating transactions for international cybercriminals, and for receiving the criminal proceeds of numerous computer intrusions and hacking incidents, as well as of other crimes.[12] According to the indictment, BTC-e's virtual currency exchange allegedly did not require users to validate their identity, obscured and anonymized transactions and source of funds, and eschewed any anti-money laundering processes. Perhaps unsurprisingly, the exchange is alleged to have become popular with criminals. At the time of the indictment, the investigation revealed that BTC-e was alleged to have received more than $4 billion worth of virtual currency through its operation.

In parallel with the Department's actions, the Financial Crimes Enforcement Network ("FinCEN") assessed a $110 million civil money penalty against BTC-e for willfully violating U.S. anti-money laundering laws. The operator of the exchange was assessed a $12 million penalty for his role in the violations. FinCEN's announcement underscored the importance of the Department's partnerships with regulatory agencies in seeking to deter those who facilitate ransomware, dark net drug sales, and other illicit activity using virtual currency.

Just as virtual currencies have provided a new way for criminals to launder money, they also provide another avenue for **tax evasion**. In particular, evaders can abuse the anonymous and decentralized structure of virtual currencies in an attempt to conceal their income and assets. The relative lack of reporting requirements for virtual currency also contributes to its secrecy and thus to its usefulness in committing tax crimes. And with the increase in value of virtual currencies in recent years, this anonymity and secrecy may tempt individuals not to report as income their gains from the sale of virtual currency.

This is a particularly novel area for tax enforcement. But investigators pursuing tax investigations involving virtual currency can employ many of the techniques learned from money laundering investigations involving virtual currency. For instance, investigators can track the movement of funds across the public ledger of a virtual currency and identify when money moves into or out of virtual currency through exchanges and other parties. Moreover, the Internal Revenue Service ("IRS") Criminal Investigation division is making criminal tax evasion using virtual currencies a focus of its efforts, and the IRS is also pursuing civil and administrative remedies. Within the Department, the Tax Division is partnering with the IRS and U.S. Attorneys' Offices to investigate and prosecute tax crimes involving virtual currencies, and to litigate civil enforcement actions. Recently, the Tax Division, working with the IRS, issued and enforced the first virtual-currency-related "John Doe" summons to Coinbase, one of the largest virtual currency exchanges in the world.[13] As a result of this civil enforcement action, in March 2018, the exchange turned over to the IRS information

regarding accounts "with at least the equivalent of $20,000 in any one transaction (buy, sell, send, or receive) in any one year during the 2013-2015 period."[14] This information should be useful in identifying particular individuals and transactions for further investigation.

In addition, Tax Division prosecutors are working with investigators and attorneys at IRS, as well as at the Department's Computer Crime and Intellectual Property section, to develop training and guidance for criminal tax cases involving virtual currencies. Because the tax treatment of virtual currencies is a new area, there are many uncertainties in the law that investigators and prosecutors will need to navigate. The Tax Division's trial attorneys also have worked with the FinCEN Intelligence, Cyber & Emerging Technology Section to identify appropriate techniques for civil tax investigations and litigation.

8. *Traditional and Forensic Searches Involving Storage Media*

Once a criminal is identified and arrested, investigators will seek electronic evidence from his personal storage media, including his laptops and phones. Such storage media often contain records that link the target to the evidence collected from providers or the victim, such as matching IP addresses, e-mail accounts, and photos and other personal identifiers. This evidence completes the connection between the criminal activity and the target. Such a search usually requires a traditional search warrant, based on probable cause. Investigators also will search a target's residence, business, or automobile, looking for storage media that may contain evidence of the cyber threat. As with storage media collected during the initial incident response, investigators will image any electronic storage media before searching it, to preserve the contents for future searches and for use in court.

9. *Cooperation with Foreign Governments*

Cyber threats often emanate from international locations and use criminal networks that stretch across jurisdictions, many of which are not friendly to the rule of law or democratic values. At the same time, foreign sovereigns—including some of our closest allies—put limits on our government's ability to act on its own in every investigation where the targets, or evidence of their crimes, are located in another jurisdiction. Fortunately, the Department has built relationships with its counterparts around the world, that facilitate nimble information sharing in the event of an incident. This information sharing enables mitigation of the incident, and also promotes the preservation of evidence, even in situations where the evidence (or the perpetrators) are located outside the United States.

For more formal use of the information (e.g., to support charges and hold criminal actors accountable), the Department employs a vast network of international treaties and other relationships. The Criminal Division's Office of International Affairs ("OIA"), for example, leverages extradition treaties, mutual legal assistance treaties ("MLATs"), and other in-

The CLOUD Act

Due in part to the large volume of foreign government requests seeking electronic evidence in the custody or control of U.S.-based service providers, and the pressure those requests were placing on the smooth functioning of the MLAT process, the U.S. Congress, in March 2018, enacted, and the President signed into law, a statute called the Clarifying Lawful Overseas Use of Data (CLOUD) Act.

The CLOUD Act has two major effects. First, it clarifies that all warrants, subpoenas, and court orders issued pursuant to the Stored Communications Act, 18 U.S.C. § 2701 *et seq*—the law that governs the disclsoure of stored communicatons and transactional records held by third-party Internet service providers—apply to all data within a provider's possession, custody, or control, regardless of whether the data is stored inside or outside the United States. Second, it allows for bilateral treaties between the United States and foreign countries for the direct sharing of electronic evidence, without needing to use the MLAT process. The CLOUD Act incorporates safeguards to assure that such agreements are entered into only with countries with robust privacy and civil liberties protections, and that adhere to the rule of law.

The CLOUD Act represents a major commitment by the American government to continue the global fight against crime by ensuring that rights-respecting and privacy-protecting foreign governments gain access to the electronic evidence they need to pursue their own investigations of serious crime, even as the Act reduces pressure on the MLAT process generally, and encourages higher privacy and civil liberties standards around the world.

struments and available legal tools to support U.S. investigations and prosecutions of cybercriminals by returning fugitives to the United States to face trial, and by obtaining the evidence located overseas that is needed to build a case against them. OIA also facilitates the extradition of fugitives located in the United States and transfers evidence to foreign partners for those nations' criminal investigations.

When a criminal located overseas is wanted for prosecution or to serve a criminal sentence in the United States, OIA uses all the legal tools at its disposal—extradition, deportation, and other lawful measures—to ensure that the defendant will be transferred to the United States to stand trial in a U.S. court and be held accountable. The processes that must be followed to effectuate this result vary greatly in each case and depend on a range of factors, including, among others, the location of the criminal actor, his or her nationality, our law enforcement relationship with the host country, and the alleged criminal conduct at issue.

The United States currently has bilateral **extradition** treaties with over 100 countries.[15] These treaties, which establish reciprocal obligations to extradite persons charged with or convicted of certain crimes, contain varying features, including some that give the requested state the discretion to decline to extradite its nationals. Other common treaty provisions can affect the charges an individual may face after extradition. These include the statute of limitations, assurances against the imposition of a capital sentence, and the rule of specialty. Extradition requests that result in defendants facing trial in the United States or serving a U.S. criminal sentence generally require carefully prepared documentary submissions and extensive coordination between OIA, U.S. prosecutors, and law enforcement, including the FBI, U.S. Marshals Service, the State Department, and the foreign government.

The ease and speed with which fugitives can travel across jurisdictions highlight the importance of a treaty-based mechanism known as a provisional arrest. When the United States learns that a fugitive will be traveling to—or through—a country with which it has an extradition treaty, there often is not enough time to assemble and submit a formal request for extradition. Where time is of the essence, OIA can submit a provisional arrest request, which will enable the foreign partner to arrest and detain the fugitive for a short period of time until OIA submits the formal extradition request.

There are also countries with which the United States does not maintain an extradition treaty. In cases where the United States seeks the return of a fugitive from a non-treaty partner, OIA attempts to accomplish this through other legal means, including, where possible, securing extradition under the domestic law of the foreign country, and requests for deportation, expulsion, or other lawful transfer. The range of options available varies from case to case, including using lawful measures to ensure the wanted person's transit to a country from which the United States can secure his extradition.

EXTRADITIONS

Successfully prosecuting international computer crime cases has been notoriously difficult. Fortunately, the Department's international outreach has made it easier. In addition, the Department has relied on longstanding tools and processes, such as extradition treaties and alternatives to extradition, to ensure that some of the most notorious cybercriminals face justice in the United States.

In August 2016, for example, a U.S. federal court jury convicted **Roman Seleznev,** a Russian national, of various crimes associated with his theft and sale on the black market of tens of thousands of credit card numbers, which resulted in over $170 million in fraudulent purchases. A "pioneer" cybercriminal who became "one of the most revered point-of-sale hackers in the criminal underworld," Seleznev is the "highest profile long-term cybercriminal ever convicted by an American jury."[16] Seleznev was arrested in the Maldives in July 2014 and was subsequently expelled to the United States, where he is currently serving a 27-year federal sentence for his hacking crimes, concurrent to a 14-year federal sentence stemming from his involvement in a $50 million cyberfraud ring.[17]

More recently, in February 2018, the alleged creator of the Kelihos botnet (see Appendix 2), a Russian national named **Peter Levashov,** was extradited from Spain, and in March 2018, **Yevgeniy Nikulin,** of Moscow, made his initial appearance in U.S. federal court following his extradition from the Czech Republic to face allegations that he illegally accessed computers belonging to LinkedIn, Dropbox, and Formspring.

As these cases and others like them demonstrate, we have successfully dismantled international criminal rings and apprehended some of the most notorious international cybercriminals. At times, we have received valuable evidence from foreign authorities, including Russian law enforcement. But challenges remain, including an increased willingness by the Russian government to protect its nationals from extradition or other removal to the United States when its nationals are located in a third country. In such circumstances, Russia has applied pressure on the U.S. partner, seeking to thwart the U.S. extradition or other removal request. This practice is yet another factor that complicates our efforts to bring international cybercriminals to justice in the United States.

In sum, cybercriminals should not be immune from justice simply because they operate outside of U.S. borders. Although there are state sovereignty principles that limit our ability to act unilaterally, OIA has a diverse toolkit that it can use to obtain foreign countries' cooperation and ensure that cybercriminals face justice in U.S. courts.

Investigating and prosecuting cyber criminals often also requires access to evidence located in foreign jurisdictions and assistance from foreign governments. This evidence and assistance may include electronic records, bank and business records, witness interviews, public records, investigative materials, and seizure of assets, to name a few examples. Each year, OIA receives thousands of such requests for mutual legal assistance from both domestic and foreign prosecutors seeking important evidence that may break open an investigative dead-end or secure a criminal conviction. Such requests for assistance to foreign governments are typically made pursuant to bilateral MLATs, regional instruments, or multilateral conventions, such as the international Convention on Cybercrime (known as the Budapest Convention). As the Central Authority for the United States under international instruments, OIA makes requests for assistance to treaty partners on behalf of U.S. prosecutors and executes requests it receives from abroad.

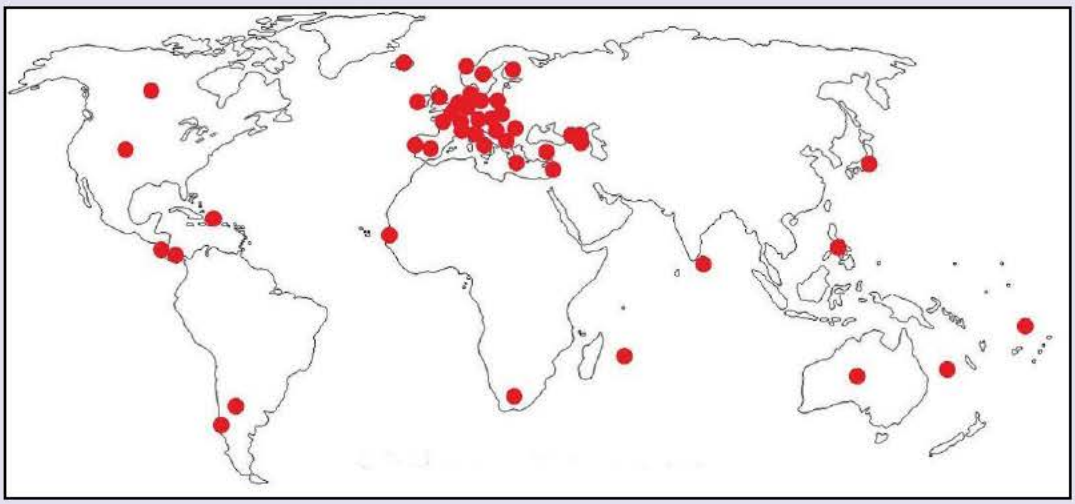
Many of the world's communications service providers are U.S. companies, and electronic records in their custody or control are often critical to cybercrime investigations, as well as other types of criminal and national security cases such as those targeting violent crime, terrorism, child exploitation, and criminal organizations using the Dark Web. As a result, OIA receives a high-volume of requests for electronic records in the custody or control of U.S. providers. OIA executes these requests—many of which concern cases involving foreign actors whose schemes have victimized U.S. citizens—as appropriate and pursuant to its treaty obligations. Doing so both increases the likelihood that foreign governments will be able to disrupt the illegal conduct and ensures their reciprocal cooperation when needed for the United States to obtain assistance from abroad.

Importantly, these cross-border requests for electronic evidence typically must meet the legal requirements of the requested state. In the United States, this means that for requests seeking the contents, say, of an e-mail account, a Department of Justice attorney—usually from OIA but sometimes from a partner U.S. Attorney's Office—must obtain a search warrant from a U.S. court on the foreign government's behalf. Probable cause is a distinctly American concept, and many countries struggle to articulate a sufficient basis in their requests to meet this legal standard. OIA works closely with requesting state partners to develop, where possible, the necessary basis to obtain a search warrant. Other U.S. legal requirements, including the "filtering" of any resulting productions, add to the complexity of this practice.

Because there are few rules governing most providers' retention of data in the normal course, it is important that electronic records associated with targeted accounts be "preserved" before they are deleted. Pursu-

THE BUDAPEST CONVENTION

The Budapest Convention (official name: the Council of Europe's Convention on Cybercrime) is a multilateral treaty that enhances international cooperation in cases involving computer-related crime. The treaty entered into force in 2004, requires Parties to have a basic level of domestic criminal law in the cyber field, and provides a platform for transnational law enforcement cooperation in investigations, evidence sharing, and extradition. The Convention also requires Parties to criminalize computer-related crimes such as computer hacking, fraud, and child sexual exploitation, and requires that Parties have the ability to effectively investigate computer-related crime through the collection and sharing of electronic evidence. Membership in the Convention is open to any nation. To date, nearly 60 countries spanning Europe, Asia, Australia, Africa, and North and South America have fully ratified the treaty, as illustrated below. The United States participated in the drafting of the Convention and became a Party to it in 2006.



ant to U.S. law, U.S. investigators and prosecutors preserve targeted account data prior to obtaining a search warrant or other legal process for its disclosure. OIA and the Department's Computer Crime and Intellectual Property section routinely assist prosecutors and law enforcement around the world in performing this early, but important, investigative step.

10. Joint or Parallel Investigations

Law enforcement agencies from separate countries may wish to cooperatively investigate crimes having relevance and jurisdiction in both countries through joint or parallel investigations. Although these investigations may be established in the absence of a treaty, a number of existing treaties address the

creation of joint investigative teams ("JITs"), thereby highlighting the potentially useful impact of such arrangements. These include, for example, global multilateral instruments like the 2000 United Nations Convention against Transnational Organized Crime,[18] and, in the case of the United States and the European Union, the 2003 Agreement on Mutual Legal Assistance between the United States of America and the European Union.[19] JITs can be useful tools to conduct joint operations, facilitate information sharing, and thwart criminal conduct. However, they are not perfect solutions for all cases with multi-jurisdictional dimensions. U.S. criminal law and practice differ in significant respects from that of foreign partners, and as a result, the prudent course is to assess opportunities for JITs on a case-by-case basis and to fashion cooperative efforts in a manner that works for all relevant participants.

Key Prosecution Tools

Once investigators have gathered evidence of cyber threat activity, the Department's prosecuting attorneys then determine whether that evidence is sufficient to bring charges under U.S. federal law. Cyber threat activity is a U.S. federal crime if it violates one or more of the following statutes, among others:

1. *Computer Fraud and Abuse Act: 18 U.S.C. § 1030*

The Computer Fraud and Abuse Act ("CFAA")[20] remains the U.S. government's principal tool for prosecuting computer crimes. In lay terms, the CFAA gives the owners of computers the right to control who may access their computers, take information from them, change how the computers work, or delete information on them. Just as the criminal laws against trespassing protect property rights in land, the CFAA protects property rights in computers. As such, the CFAA commits the United States to a cybersecurity policy that is founded on private property rights, and backed by enforcement of criminal law. The CFAA defines multiple crimes, and assigns each a different statutory maximum penalty.

Although a detailed description and analysis of each offense established by section 1030(a) is beyond the scope of this report,[21] below we provide a high-level overview of how the CFAA combats cyber threats.

Accessing a Computer and Obtaining Information: 18 U.S.C. § 1030(a)(2)

Section 1030(a)(2) protects the privacy of information stored on computers by criminalizing the act of accessing such information without authorization. The statute sets forth three distinct but overlapping crimes that collectively prohibit the unauthorized accessing of certain financial records stored on computers of financial institutions, of information from U.S. government computers, and of information from computers used in or affecting interstate or foreign commerce (for example, computers connected to the Internet). This provision applies both to outside hackers who gain access to victim computers without authorization from anywhere around the world, and to those who have

some authorization to access a computer, but who intentionally exceed that access.[22]

To violate section 1030(a)(2), a person must access, and thereby obtain, the prohibited information "intentionally." Mere mistake, inadvertence, or carelessness is insufficient.[23] Additionally, to be charged, the defendant must have understood that the access was unauthorized. Accordingly, federal prosecutions focus on hackers and insiders whose conduct evidences a clear intent to enter, without proper authorization, computer files or data belonging to another.

Damaging a Computer: 18 U.S.C. § 1030(a)(5)

Section 1030(a)(5) is a critical tool for prosecuting criminals who "damage" computers protected under the CFAA by causing computers to fail to operate as their owners intended. Section 1030(a)(5) is used to prosecute hackers or intruders who gain unauthorized access to a computer and commit criminal acts that, in any way, impair the integrity of data, a program, a system, or information, as well as change the way a computer is intended to operate. The statute extends to intruders who gain unauthorized access to a computer and send commands that delete files or shut the computer down. Subsection (a)(5) also may be used against cybercriminals who install malicious software that compromises a computer's integrity. Thus, installing remote access tools, bot code, and other attempts to persist on a victim's system are all chargeable under section 1030(a)(5). This provision is also an important tool for prosecuting criminals who cause intentional damage to computers by flooding an Internet connection with data during a distributed denial of service ("DDoS") attack.

Accessing a Computer to Defraud and Obtain Value: 18 U.S.C. § 1030(a)(4)

Section 1030(a)(4) establishes a felony offense that prosecutors use against hackers who access a protected computer without appropriate authorization in furtherance of a fraud to obtain something of value. The section bears similarities to the federal mail and wire fraud statutes (discussed below), but has a narrower jurisdictional scope by requiring that the cybercriminal victimize a protected computer without authorization or in excess of authorization.

Prosecutors use this provision against defendants who obtain information from a computer, and then later use that information to commit fraud. For example, section 1030(a)(4) was charged in a case involving a defendant who accessed a telephone company's computer without authorization, obtained calling card numbers, and then used those calling card numbers to make free long-distance telephone calls.[24] The provision also may be used to prosecute a defendant who alters or deletes records on a computer, and then receives something of value from an individual who relied on the accuracy of those altered or deleted records.[25]

Threatening to Damage a Computer: 18 U.S.C. § 1030(a)(7)

To deter high-tech attempts to commit old-fashioned extortion, section 1030(a)(7)

criminalizes threats to interfere in any way with the normal operation of a protected computer or system, as well as threats to compromise the confidentiality or integrity of information contained therein. This provision encompasses threats by criminals to deny access to authorized users, erase or corrupt data or programs, or slow down or shutdown the operation of the computer system, such as via a DDoS attack. The provision also reaches threats to steal confidential data.

Charging Policies

The Department's decisions about when to open an investigation or charge a case under the CFAA are guided by the Intake and Charging Policy for Computer Crime Matters.[26] As the policy explains, prosecutors must consider a number of factors in order to ensure that charges are brought only in cases that serve a substantial federal interest.[27] The policy also requires prosecutors to conduct certain consultations to assure consistent practice across the Department. In particular, prosecutors must consult with the Department's Computer Crime and Intellectual Property section before bringing charges under the CFAA.

2. Wire Fraud: 18 U.S.C. § 1343

The wire fraud statute is another particularly powerful and commonly applicable charge in computer crime cases involving fraud. Indeed, courts long have recognized that e-mails and other forms of Internet transmissions constitute "wire, radio, or television communication[s]" that may be punished under a wire fraud charge.[28] Section 1343 shares a number of common proof elements with section 1030(a)(4) of the CFAA, including the requirement that a defendant act with fraudulent intent; however, the wire fraud statute authorizes more punitive penalties that may be more commensurate to the harm suffered by victims in cases involving significant loss amounts. Section 1343 violations also can serve as a predicate for the Racketeer Influenced and Corrupt Organizations Act ("RICO") and money laundering charges, whereas most CFAA violations cannot.[29] Accordingly, the wire fraud statute is a particularly effective tool for prosecuting intricate networks of criminal hacker groups engaged in transnational organized crime.[30]

3. Identity Theft: 18 U.S.C. §§ 1028(a)(7) and 1028A

Cybercriminals often commit computer intrusions to compromise and steal PII that may be sold on the black market, or directly used to commit other crimes, such as wire fraud. A criminal who misuses or traffics in stolen PII often violates a variety of identity theft statutes, including 18 U.S.C. §§ 1028(a)(7) and 1028A.

In relevant part, section 1028(a)(7) criminalizes the unauthorized transfer, possession, or use of a "means of identification of another person" with the intent to commit (or aid and abet) a violation of federal law, or any State or local felony. The term "means of identification," in turn, broadly refers to "any name or number that may be used, alone or

in conjunction with any other information, to identify a specific individual."[31]

In computer intrusion cases, the Department also uses section 1028A (the "aggravated" identity theft statute) to prosecute individuals who engage in the unauthorized transfer, possession, or use of a "means of identification of another person" during and in relation to felony violations of certain enumerated federal offenses that are commonly associated with computer crime.[32] For example, "carders" who sell or trade stolen credit or debit card account information on online forums, or "phishers" who obtain the same type of information via fraudulent e-mails, often violate a predicate crime for a section 1028A violation. Similarly, defendants who violate the CFAA and obtain identity or account information may also violate this section. Although section 1028A is limited to a far narrower list of predicate offenses than section 1028(a)(7), it is an important and powerful tool in the Department's prosecutions of cybercriminals because those who are convicted of section 1028A are subject to a mandatory minimum two-year term of imprisonment.[33]

4. *Economic Espionage and Theft of Trade Secrets: 18 U.S.C. §§ 1831-32*

Trade secret law prohibits the unauthorized disclosure of confidential and proprietary information (for example, a formula or compilation of information) when that information possesses an independent economic value because it is secret, and the owner has taken reasonable measures to keep it secret.[34] Although the problem of trade secret theft predates the modern era of cybercrime, the increased digitalization of trade secrets, the rise of cyber espionage, and the global expansion of online marketplaces that traffic in intellectual property, have significantly magnified the threats that insiders, hackers, and nation states present to U.S. individuals and companies who maintain valuable trade secrets.[35] Indeed, in recent years, businesses across key sectors of the U.S. economy have suffered sophisticated and systematic cyber intrusions designed to steal sensitive commercial data from compromised networks, including research and design data, software source code, and plans for commercial and military systems.

The Department's principal tool for preventing and deterring serious instances of trade secret theft is the Economic Espionage Act ("EEA"). The EEA criminalizes two types of trade secret misappropriation: economic espionage under section 1831, and trade secret theft under section 1832. The economic espionage provision prohibits the theft of trade secrets for the benefit of a foreign government, instrumentality, or agent. The theft of trade secrets provision prohibits the commercial theft of trade secrets to benefit someone other than the owner. Although the provisions define separate offenses, they share a number of common proof elements. Notably, conviction under either statute requires the government to demonstrate beyond a reasonable doubt that: (1) the defendant misappropriated information; (2) the defendant knew or believed this information was proprietary and that he had no claim to it; and (3) the information was in fact a trade secret (unless the crime charged is a conspir-

acy or an attempt). Further, both provisions are subject to the EEA's broad definition of a "trade secret," which includes all types of information that the owner has taken reasonable measures to keep secret and that itself has independent economic value.[36] Both provisions also punish attempts and conspiracies to misappropriate trade secrets.[37] To promote enforcement, federal law provides special protections to victims in trade secret cases to ensure that the confidentiality of trade secret information is preserved during the course of criminal proceedings.[38]

5. *Criminal Copyright: 17 U.S.C. § 506*

Copyright law provides federal protection against infringement of certain exclusive rights, such as reproduction and distribution, of "original works of authorship," including computer software, literary works, musical works, and motion pictures.[39] As with trade secrets, the increased digitalization of copyrighted materials, as well as the global expansion of online marketplaces that traffic in intellectual property, have enhanced their attractiveness and, in turn, vulnerability to cybercriminals.

The Department's principal tool for preventing and deterring serious instances of copyright infringement is section 506(a) of title 17, United States Code, which criminalizes willful copyright infringement if committed "for purposes of commercial advantage or private financial gain," or "by the reproduction or distribution" of copyrighted works during a 180-day period that satisfies the statute's minimum retail value. Section 506(a)(1)(C) also makes it a crime to pre-release copyrighted materials, such as a commercial film, song, video game, or software, that are still "being prepared for commercial distribution," by making the material "available on a computer network accessible to members of the public."

6. *Access Device Fraud: 18 U.S.C. § 1029*

Section 1029 of title 18, United States Code, broadly prohibits the production, use, possession, or trafficking of unauthorized or counterfeit "access devices," such as PII, instrument identifiers, or other means of account access that may be used "to obtain money, goods, services, or any other thing of value, or that can be used to initiate a transfer of funds." Prosecutors commonly bring charges under section 1029 in "phishing" cases, in which a cybercriminal uses fraudulent e-mails to obtain bank account numbers and passwords. Section 1029 also is an effective tool in "carding" cases where a defendant purchases, sells, or transfers stolen bank account, credit card, or debit account information. Forfeiture is also available in many cases.[40]

7. *Racketeer Influenced and Corrupt Organizations (RICO) Act: 18 U.S.C. §§ 1961–1968*

Computer hacking conducted by transnational criminal groups poses a significant threat to American cybersecurity. Equipped with sizable funds, organized criminal groups operating abroad employ highly sophisticated malicious software, spear-phish-

ing campaigns, and other hacking tools—some of which rival in sophistication those that nation states use—to hack into sensitive financial systems, conduct massive data breaches, spread ransomware, attack critical infrastructure, and steal critical intellectual property. For transnational cybercrime rings engaged in "racketeering" activity, such as identity theft, access device fraud, or wire fraud, a RICO charge may be a particularly effective tool for prosecuting individual members of the group. For instance, the RICO statute authorizes more severe penalties than the CFAA, including maximum sentences of 20 years or more depending on the nature of the predicate offense,[41] consecutive sentencing for RICO substantive and conspiracy convictions or violations of two substantive RICO subsections,[42] and forfeiture of all reasonably foreseeable proceeds of racketeering activity on a joint and several basis.[43] Section 1963(d)(2) of title 18, United States Code, also empowers prosecutors to obtain a pre-trial restraining order that preserves any assets that may be subject to forfeiture following conviction. In addition, a RICO conspiracy charge under section 1962(d) of title 18 allows prosecutors to hold one defendant responsible for the conduct of the enterprise.

8. Wiretap Act: 18 U.S.C. § 2511

The same surveillance statutes that empower law enforcement to collect evidence also protect the privacy of innocent Americans by criminalizing the unlawful collection of private communications. For example, the Wiretap Act shields private wire, oral, or electronic communications from illegal interception by another,[44] prohibits disclosure of any illegally intercepted communication,[45] and criminalizes unlawful use of that communication.[46] The Wiretap Act has proven to be an especially valuable tool for prosecuting cases involving spyware users and manufacturers, intruders using packet sniffers (i.e., tools that intercept data flowing in a network), persons improperly cloning e-mail accounts, and other cases involving the surreptitious collection of communications from a victim's computer.

To prosecute a defendant under this statute, however, federal courts have generally required that the "intercepted" communications be acquired "contemporaneously" or at approximately the same time as their transmission.[47] Accordingly, merely obtaining a copy of the contents of a recorded communication—for example, a year-old e-mail on a mail server—is not necessarily a criminal "intercept[ion]" of the communication under the Wiretap Act, though such an action may violate other provisions of law, including the Stored Communications Act, 18 U.S.C. § 2701.[48]

9. Money Laundering: 18 U.S.C. §§ 1956, 1957

Cybercrimes are often committed for financial gain. And as with other crimes, those committing cybercrimes will seek ways to conceal and spend their ill-gotten gains. Federal money laundering laws are thus an important tool for combatting cybercrime. These laws criminalize certain transactions undertaken with the proceeds of designated crimes, referred to as "specified unlawful ac-

tivity" ("SUA").[49] Crimes classified as SUAs include many common charges brought in cybercrime cases, such as violations of the CFAA and wire fraud.

Section 1956 of title 18, United States Code, is the main money laundering charge. Among other things, this statute makes it a crime for a person to carry out a financial transaction involving SUA proceeds when the person knows the transaction involves illicit proceeds of some kind, and the transaction is designed to promote the carrying on of an SUA,[50] or to conceal "the nature, the location, the source, the ownership, or the control of the proceeds"[51] of the predicate crime. Section 1957 prohibits knowingly conducting certain monetary transactions involving SUA proceeds when the value is greater than $10,000.

Courts have broadly interpreted the scope of the transactions covered by the money laundering laws. In particular, courts have upheld the use of money laundering charges involving transactions in virtual currencies.[52]

10. Controlling the Assault of Non-Solicited Pornography and Marketing Act: 18 U.S.C. § 1037

The Controlling the Assault of Non-Solicited Pornography and Marketing ("CAN-SPAM") Act of 2003[53] provides a means for prosecuting those responsible for sending large amounts of unsolicited commercial e-mail messages (i.e., "spam"), including messages sent on social media sites. Although civil and regulatory provisions are the Act's primary enforcement mechanisms, it also created several new criminal offenses. Section 1037 addresses more egregious violations of the CAN-SPAM Act, particularly where the perpetrator has taken significant steps to hide his or her identity, or the source of the spam, from recipients, ISPs, or law enforcement agencies. Prosecutors have used this statute in the context of disrupting or dismantling botnets.

11. National Security Statutes

Some statutes that protect sensitive national security information are implicated in computer hacking investigations, when that information is targeted or stolen. For example, defense articles and services listed on the U.S. munitions list, 22 C.F.R. § 121.1, cannot be exported without a license without violating the Arms Export Control Act, 22 U.S.C. § 2778 ("AECA"). Other U.S.-origin items and related technology that have both commercial and military applications or otherwise warrant control are subject to the Export Administration Regulations ("EAR"), 15 C.F.R. pts. 730-74, and may require a license for export to certain countries or for certain uses. The statute that criminalizes violation of the EAR (among other regulations) is the International Emergency Economic Powers Act, 50 U.S.C. § 1705 ("IEEPA"). A Chinese aerospace engineer was recently convicted of violating AECA for helping hackers in the Chinese air force choose which defense contractors to target and which files related to military projects

to steal;[54] and a network of Iranian computer hackers (one of whom was apprehended) was charged with violating AECA and Iranian sanctions under IEEPA for stealing specialized software from the networks of American software companies, which the defendants are alleged to have resold for profit to Iranian government entities.[55] Classified information and national defense information, too, are protected by a number of criminal statutes. The CFAA specifically prohibits obtaining certain restricted data and information protected against disclosure for reasons of national defense or foreign relations through unauthorized access to a computer, *see* 18 U.S.C. § 1030(a)(1), and espionage statutes prohibit the unauthorized retention of national defense information or its dissemination to an unauthorized person (whatever the means of doing so). *See* 18 U.S.C. §§ 793 & 794.

Finally, material support to terrorists is likewise prohibited, even if that support is provided online. *See* 18 U.S.C. §§ 2339A, 2339B. As discussed in Chapter 2, for example, Ardit Ferizi was an Islamic State of Iraq and the Levant ("ISIL")-linked hacker living in Malaysia who may never have met ISIL recruiters in Iraq. But when Ferizi broke into the networks of an American retailer, stole PII for thousands of U.S. persons, and culled that list down to approximately 1,300 military and other government personnel that he shared with ISIL for purposes of publishing a kill list and enabling ISIL to "hit them hard," he provided such support. Ferizi was apprehended, brought to the United States, and is now serving a 20-year sentence for providing material support to ISIL.[56]

Other Means of Dismantling, Disrupting, and Deterring Computer Crimes

While criminal prosecutions of malicious cyber activity (and seizing the ill-gotten gains of such activity) are an important aspect of the Department's approach to combating cybercrime, we recognize that the United States cannot simply prosecute its way out of the problem. Instead, the Department has embraced a comprehensive approach to deterring cyber threats that builds upon a broad array of criminal, civil, and national security authorities, tools, and capabilities. Indeed, the government as a whole relies on a range of civil and administrative tools to raise the costs associated with malicious cyber activity, and to disrupt ongoing activities in the cyber underworld.

To support this broader approach, we work to interdict cyber threats before they become actual incidents by denying malign actors access to infrastructure, tools, funds, and victims, as well as by working with international partners and members of the private sector, who often may be better positioned to prevent cybercrime.

Congress has given the Department the legal authority to disrupt, dismantle, and deter cyber threats through a blend of civil,

criminal, and administrative powers beyond traditional prosecution. As a result, the Department has been a driving force behind the U.S. government's most notable and effective measures to disrupt online crime. As mentioned above, the Department often uses civil injunctions, as well as seizure and forfeiture authorities, to disrupt cybercriminal groups by seizing the computer servers and domain names those actors use to operate botnets. In cases where the actors cannot quickly be identified, such tools—exercised with proper judicial oversight—have helped the Department disrupt and dismantle ongoing criminal schemes, thereby protecting the public from further victimization. Finally, the Department, with the assistance of other U.S. government and international partners, also executes trade actions, and participates in various cyber operations designed to neutralize and eradicate international cyber threats.

1. Disrupting and Disabling International Botnets

In recent years, the Department has successfully disrupted and disabled a number of international botnets not only by arresting and prosecuting the criminals involved in their creation and administration, but also by leveraging other civil, criminal, and administrative authorities. For instance, the Department uses civil injunctive authority under section 1345 (injunctions against fraud) and section 2521 (injunctions against illegal interception) to authorize actions—such as seizing domains the botnet is using to communicate with command-and-control servers—to disrupt and disable a botnet's ongoing commission of fraud crimes or illegal wiretapping. Accompanying temporary restraining orders ("TROs") secured under Rule 65 of the Federal Rules of Civil Procedure also are important to disrupting

Figure 1: Recent Department efforts to dismantle botnets and dark markets.

a botnet, and taking immediate steps to prevent it from reconstituting.

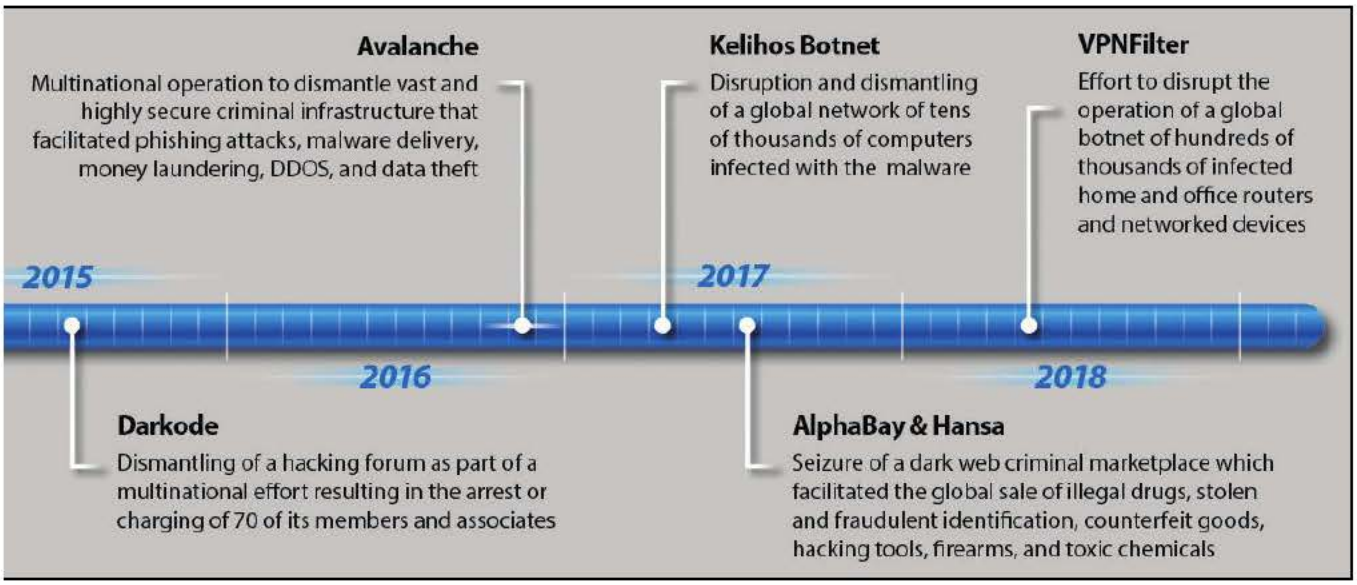
Further, as discussed above, if law enforcement is able to take over the command-and-control structure of a botnet, the Department may now use the recently promulgated venue provision of criminal Rule 41(b)(6)(B) to issue commands to bots across a number of districts. For example, law enforcement may obtain identifying information from affected bot computers in order to contact owners and warn them of the infection. In addition, law enforcement might engage in an online operation designed to disrupt the botnet and restore full control over computers to their legal owners. Rule 41(b)(6)(B) allows the government to apply for warrants in a single judicial district to use these techniques.

Several successful examples of the Department's strategy for disrupting and disabling botnets are illustrated in **Fig. 1,** and described in greater detail in Appendix 2.

2. *Dark Web Disruptions*

In recent years, the Dark Web's anonymity and low barriers to entry have attracted scores of criminals to Dark Web markets, including those trafficking in child pornography, illicit firearms, illegal drugs, murder-for-hire, and human trafficking. Sophisticated hackers also frequent Dark Web forums for the newest malware or stolen data, and might use the Tor network to host botnet command-and-control infrastructure that is more resistant to disruption and take-downs.

Despite the many challenges the Dark Web poses, law enforcement around the world have successfully disrupted criminals operating in the cyber underground by de-anonymizing users engaging in illegal activity;



seizing their websites, domains, servers, and ill-gotten gains; and criminally prosecuting them. For instance, to pierce the Dark Web's anonymizing technology, the Department diligently pursues traditional investigative techniques, studies patterns of criminal activity, collaborates with international law enforcement partners, and develops human sources. Further, where anonymizing technologies make less intrusive investigative options ineffective, the Department also obtains warrants to perform remote searches using network investigative techniques under limited circumstances.[57] For example, appropriate scenarios for seeking a warrant to authorize a remote search include, but are not limited to: (1) obtaining stored content from a hidden provider by using a username and password; (2) identifying a criminal using a web-based e-mail account by sending a NIT to the criminal's e-mail account; and (3) identifying users of a hidden child pornography forum by sending a NIT to each computer used to log on to the website.

Once the cloak of anonymity has been pulled back, the Department leverages a range of civil and criminal tools, including civil and criminal forfeiture authorities, seizure warrants, and requests under mutual legal assistance agreements to dismantle the infrastructure undergirding the Dark Web systems and recover the proceeds of these illegal activities. Further, in many instances, individuals responsible for creating, operating, and using Dark Web forums and marketplaces are also criminally prosecuted. We describe in Appendix 3 some recent prominent examples of the Department's comprehensive strategy to combat malicious activity on the Dark Web.

3. *Sanctions and Designations*

To ensure that investigative information is used effectively to protect the Nation, the Department regularly interacts with the Departments of Commerce, Treasury, and State, as well as with other agencies and regulatory bodies, to support those departments' actions to identify and impose sanctions on malicious cyber actors.

Sanctions imposed by the Office of Foreign Assets Control at the Department of the Treasury can deprive subjects of their access to the U.S. financial system and their ability to do business with U.S. persons, and can be particularly effective in reaching foreign companies that benefit from stolen information. Since 2011, the Treasury Department has had the authority to block the property of transnational criminal organizations under Executive Order 13581 ("Blocking Property of Transnational Criminal Organizations"). Treasury also makes use of country-specific regimes to respond to nation-state behavior. As mentioned in Chapter 2, following North Korea's destructive malware attack on Sony Pictures Entertainment, the President in 2015 issued Executive Order 13687 ("Imposing Additional Sanctions with Respect to North Korea"). Using this new sanction authority, the Treasury Department designated three entities for being "controlled entities of the Government of North Korea" and ten

individuals for being "agencies or officials of the North Korean government."[58]

In 2015, the President also issued Executive Order 13694 ("Blocking the Property of Certain Persons Engaging in Significant Malicious Cyber-Enabled Activities"), which authorized the Secretary of the Treasury, in consultation with the Attorney General and the Secretary of State, to impose sanctions on individuals or entities that engage in malicious cyber-enabled activity that results in, or materially contributes to, a significant threat to the national security, foreign policy, or economic health or financial stability of the United States.[59] In December 2016, the President amended this executive order in "order to take additional steps to deal with the national emergency with respect to significant malicious cyber-enabled activities . . . in view of the increasing use of such activities to undermine democratic processes or institutions."[60] The 2016 amendment expanded cyber-related sanctions and in an annex designated five Russian entities—including that nation's domestic and foreign intelligence services—and four Russian individuals who were determined to have interfered with or undermined U.S. election processes or institutions.[61] The list of designated parties was expanded again on March 15, 2018,[62] and yet again on June 11, 2018.[63]

Designations under E.O. 13694 are not limited to Russian actors. On March 23, 2018, in consultation with the Department, OFAC designated an Iranian entity, the Mabna Institute, and ten Iranian individuals who

Credit: Amy Mathers, U.S. Department of Justice

Deputy Attorney General Rod Rosenstein announces on March 23, 2018 the filing of criminal charges against nine Iranians alleged to have conducted a massive cyber theft campaign on behalf of the Islamic Revolutionary Guard Corps. The Treasury Department imposed sanctions the same day.

engaged in theft of valuable intellectual property and data from hundreds of U.S. and third-country universities and a media company for private financial gain.[64] (That same day, the Department unsealed criminal charges against the same entity and nine individuals.[65] *See* page 73.)

The Department will continue to support sanctions under such authorities by helping the Treasury Department draft sanction nomination packages based on the information gathered during our investigations. Where, for example, investigations identify hackers who victimize U.S. individuals or companies, or those who profit from criminal hacking by using stolen personal information or trade secrets, the Department works with the Treasury Department to craft appropriate sanctions against those responsible.

Similarly, the Commerce Department can place persons and companies on its Entity List if it finds that they are engaged in activities that are contrary to U.S. national security or foreign policy interests.[66] Persons and entities on the Entity List are subject to special licensing requirements for the export, re-export, and/or transfer (in-country) of items listed in the EAR. In 2014, for example, in addition to the Department of Justice's prosecution of a Chinese engineer for consulting with Chinese military hackers who stole aerospace technology, the Commerce Department placed his company on the Entity List, based on the FBI's nomination.[67] Such a listing can have dramatic consequences, cutting the firm off from U.S. exports and causing U.S. and foreign businesses to reconsider doing business with the designated entity.

4. Trade Actions

The Office of the United States Trade Representative ("USTR") can raise the issue of foreign cyber intrusions against American businesses in the context of its trade actions under various U.S. laws or trade agreements. As declared in a USTR report made public in April 2017, "The United States uses all trade tools available to ensure that its trading partners provide robust protection for trade secrets and enforce trade secrets laws."[68] The Department has worked closely with USTR to ensure that the Trade Representative is appropriately informed about cyber-enabled activity by nation states that may be actionable under U.S. trade laws.

Due in part to China's cyber-enabled theft of U.S. intellectual property and sensitive commercial information, the U.S. government in March 2018 announced various tariffs against China and various restrictions on Chinese investments.[69] The announcement came after USTR released a comprehensive public report as part of its investigation under section 301 of the Trade Act of 1974.[70] The USTR report establishes a clear record of China's cyber intrusions and cyber theft based on information provided by the Department, among other parts of the U.S. government. The report indicates that the Chinese government has used cyber intrusions to serve its strategic economic objectives and that "incidents of China's cyber intrusions against U.S. commercial entities align closely with China's industrial policy objectives."[71] For example, the PLA's theft of trade secrets from Westinghouse, Inc., as documented in an indictment brought by the Depart-

ment, illustrates how China uses cyber-enabled theft as one of multiple instruments to achieve its state-led technology development goals.[72] Likewise, the USTR report noted that "[i]n September 2017, the Department filed an indictment against three Chinese nationals who were owners, employees, and associates of the Guangzhou Bo Yu Information Technology Company Limited ("Boyusec"), a company that cybersecurity firms have linked to the Chinese government."[73] The USTR report contains other examples that illustrate how China uses cyber-enabled intrusions to further the commercial interests of Chinese state-owned enterprises, to the detriment of its foreign partners and competitors. Available evidence also indicates that China uses its cyber capabilities as an instrument to achieve its industrial policy and science and technology objectives. The Department has played an important role in bringing these threats to our national security to light.

5. *Cyber Operations*

Finally, the Department also assists other agencies in analyzing the legal and policy implications of operations conducted through cyberspace, and ensuring that these operations comply with the Constitution and applicable law. Where additional authority or injunctive relief is required to address conduct within the United States, the Department works with investigators and, as appropriate, the U.S. Attorney community, to pursue it. Intelligence gathered by the FBI using its national security investigative authorities may also assist agencies in planning or carrying out such operations.

NOTES

[1] The Department components responsible for this work are described in Chapter 5.

[2] For example, the FBI, as the federal government's primary investigative agency, must comply with *The Attorney General's Guidelines for Domestic FBI Operations*, available at: https://www.justice.gov/archive/opa/docs/guidelines.pdf (last accessed June 29, 2018), and the *FBI Domestic Investigations and Operations Guide*, available at: https://vault.fbi.gov/FBI%20Domestic%20Investigations%20and%20Operations%20Guide%20%28DIOG%29/fbi-domestic-investigations-and-operations-guide-diog-2013-version/FBI%20Domestic%20Investigations%20and%20Operations%20Guide%20%28DIOG%29%202013%20Version%20Part%2001%20of%2001/view (last accessed June 29, 2018), which standardizes the FBI's criminal, national security, and foreign intelligence investigative activities. The *Attorney General's Guidelines* establish a set of basic principles that serve as the foundation for all FBI mission-related activities, and the professional identity of each FBI agent, including: (1) protecting the public includes protecting their rights and liberties; (2) investigating only for a proper and authorized law enforcement, national security, or foreign intelligence purpose; (3) ensuring that an independent, authorized law enforcement or national security purpose exists for initiating investigative activity—race, ethnicity, religion, or national origin alone can never constitute the sole basis for initiating investigative activity; (4) performing only authorized activities in pursuit of investigative activities; (5) employing the least intrusive means for investigation that do not otherwise compromise FBI operations; and (6) applying best judgment to the circumstances at hand to select the most appropriate investigative means to achieve the investigative goal.

[3] *See* ICANN WHOIS, available at: https://whois.icann.org/en (last accessed June 29, 2018).

[4] Pub. L. No. 99–508, 100 Stat. 1848 (1986) (codified at 18 U.S.C. § 2510 *et seq.*).

[5] *See* 18 U.S.C. § 2703.

[6] *Id.* § 3121 *et seq.*

[7] *Id.* § 2510 *et seq.*

[8] 50 U.S.C. § 1801 *et seq.*

Virtual currency seizures with a value of $500,000 or more must be forfeited judicially. The value is assessed on the date of agency seizure.

[10] *See, e.g.*, "For Sale Approximately 3,813.0481935 Bitcoins," U.S. MARSHALS SERVICE (Jan. 2018), available at: https://www.usmarshals.gov/assets/2018/bitcoinauction/ (last accessed June 29, 2018).

[11] 18 U.S.C. §§ 981-983.

[12] *See* Press Release, "Russian National And Bitcoin Exchange Charged In 21-Count Indictment For Operating Alleged International Money Laundering Scheme And Allegedly Laundering Funds From Hack Of Mt. Gox," U.S. DEPT. OF JUSTICE (July 26, 2017), available at: https://www.justice.gov/usao-ndca/pr/russian-national-and-bitcoin-exchange-charged-21-count-indictment-operating-alleged (last accessed June 29, 2018).

[13] A "John Doe" summons is an administrative summons that may be used, with court approval, to seek information about an ascertainable group or class of persons who may be involved in violating federal tax laws. *See* 26 U.S.C. § 7609(f) (2012).

[14] *United States* v. *Coinbase, Inc. et al.*, Order Regarding Petition to Enforce IRS Summons at 14 (Doc. 78), Case No. 3:17-cv-01431 (N.D. Cal.).

[15] *See* 18 U.S.C. § 3181 note (listing the countries with which the United States currently has a bilateral extradition agreement).

[16] Quoted from the United States's sentencing memorandum in *United States* v. *Roman Seleznev*, No. 11-CRM-007 (W.D. Wa., Apr. 14, 2017), available at: https://assets.documentcloud.org/documents/3673513/Seleznev-US-Atty-Sentencing-Memo.pdf (last accessed June 29, 2018).

[17] *See* Press Release, "Russian Cyber-Criminal Sentenced to 14 Years in Prison for Role in Organized Cybercrime Ring Responsible for $50 million in Online Identity Theft and $9 Million Bank Fraud Conspiracy," U.S. DEPT. OF JUSTICE (Nov. 30, 2017) (describing all of Seleznev's federal sentences), available at: https://www.justice.gov/opa/pr/russian-cyber-criminal-sentenced-14-years-prison-role-organized-cybercrime-ring-responsible (last accessed June 29, 2018).

[18] https://www.unodc.org/documents/middleeastandnorthafrica/organised-crime/UNITED_NATIONS_CONVENTION_AGAINST_TRANSNATIONAL_ORGANIZED_CRIME_AND_THE_PROTOCOLS_THERETO.pdf (Art. XIX) (last accessed June 29, 2018).

[19] https://www.state.gov/documents/organization/180815.pdf (Art. V) (last accessed June 29, 2018).

[20] Although the CFAA is primarily a criminal statute, individuals and companies may also bring private civil suits against CFAA violators. *See* 18 U.S.C. § 1030(g). This report does not address the civil provisions of the statute except as they may pertain to the criminal provisions.

[21] More specific guidance on the CFAA is available at: https://www.justice.gov/sites/default/files/criminal-ccips/legacy/2015/01/14/ccmanual.pdf (last accessed June 29, 2018).

[22] In the Second, Fourth, and Ninth Circuits, significant recent decisions have limited the definition of "exceeds authorized access" in 18 U.S.C. § 1030(e)(6) "to violations of restrictions on *access* to information, and not restrictions on its *use*." *See, e.g.*, *United States v. Nosal*, 676 F.3d 854, 863-64 (9th Cir. 2012). Other language in *Nosal* suggests that the Ninth Circuit's ultimate holding is broader: that an individual can "exceed[] authorized access" only by accessing data that he or she was never authorized to access, under any circumstances. Accordingly, in those circuits, the Department recommends against charging any case that relies on the definition of "exceeds authorized access" in 18 U.S.C. § 1030(e)(6), unless it can be proven that the computer user had *absolutely no authorization to access the relevant information.*

[23] *See, e.g.*, S. Rep. No. 432, 99th Cong., 2d Sess., *reprinted in* 1986 U.S.C.C.A.N. 2479, 2483.

[24] *See United States* v. *Lindsley*, 254 F.3d 71 (5th Cir. 2001).

[25] *See, e.g.*, *United States* v. *Butler*, 16 Fed. Appx. 99 (4th Cir. 2001) (unpublished).

[26] *See* Memorandum from Eric Holder, Attorney General, "Intake and Charging Policy for Computer Crime Matters," (Sept. 11, 2014), available at: https://www.justice.gov/criminal-ccips/file/904941/download (last accessed June 29, 2018).

[27] *See id.*

[28] *See, e.g.*, *United States* v. *Selby*, 557 F.3d 968, 978-79 (9th Cir. 2009) (finding defendant's act of

sending a single e-mail "sufficient to establish the element of the use of the wires in furtherance of the scheme"); *United States* v. *Drummond*, 255 Fed. Appx. 60, 64 (6th Cir. 2007) (unpublished) (affirming wire fraud conviction where defendant made airline reservation with stolen credit card over the Internet).

[29] As explained below, exceptions exist for terrorism-related violations of section 1030(a)(1) and 1030(a)(5)(A).

[30] The United States Attorneys' Manual provides further guidance regarding wire fraud charges, *see* U.S. DEPT. OF JUSTICE, UNITED STATES ATTORNEYS' MANUAL, § 9-43.000, as does the manual, IDENTITY THEFT AND SOCIAL SECURITY FRAUD (Office of Legal Education 2004).

[31] 18 U.S.C. § 1028(d)(7). Although there is little dispute about classifying a unique identifier, such as a social security number, as a "means of identification," some courts have questioned whether non-unique identifiers, such as names or birthdates, qualify as a "means of identification" when standing alone. *Compare United States v. Silva*, 554 F.3d 13, 23 n.4 (1st Cir. 2009) (finding doctor's signature constitutes a "means of identification"), *with United States v. Mitchell*, 518 F.3d 230, 232-36 (4th Cir. 2008) (requiring that non-unique identifiers be combined with additional information that permits the identification of a specific person).

[32] *E.g.*, 18 U.S.C. §§ 1028(a)(1)-(6), (8), 1029, 1030, 1037, 1343.

[33] 18 U.S.C. § 1028A(a)(1); *see also id.* § 1028A(a)(2) (providing a minimum five-year term for terrorism-related aggravated identity theft).

[34] *See* 18 U.S.C. §§ 1831, 1832.

[35] *Combating Economic Espionage and Trade Secret Theft, Hearing Before the S. Judiciary Comm., Subcomm. on Crime and Terrorism of the S. Judiciary Comm.*, 113 Cong. 4 (2016) (statement of Randall C. Coleman, Assistant Dir., Counterintelligence Div. FBI), available at: https://www.govinfo.gov/content/pkg/CHRG-113shrg96009/pdf/CHRG-113shrg96009.pdf (last accessed June 29, 2018).

[36] 18 U.S.C. § 1839(3).

[37] *See id.* §§ 1831(a)(4)-(5), 1832(a)(4)-(5). For an attempt, the defendant must (1) have the intent needed to commit one of the two crimes, and (2) perform an act amounting to a "substantial step" toward the commission of that crime. *United States* v. *Hsu*, 185 F.R.D. 192, 202 (E.D. Pa. 1999). For a conspiracy, the defendant must agree with one or more people to commit a violation, and one or more of the co-conspirators must commit an overt act to effect the object of the conspiracy. 18 U.S.C. §§ 1831(a)(5), 1832(a)(5).

[38] *See id.* § 1835.

[39] *See* 17 U.S.C. §§ 102(a), 106 (2012).

[40] *See* 18 U.S.C. § 1029(c)(1)(C), (c)(2).

[41] *Id.* § 1963(a).

[42] Organized Crime & Gang Section, U.S. DEPT. OF JUSTICE, CRIMINAL RICO: 18 U.S.C. §§1961-1968, A MANUAL FOR FEDERAL PROSECUTORS (May 2016), https://www.justice.gov/usam/file/870856/download (last visited June 29, 2018).

[43] *Id.* at 238-39.

[44] 18 U.S.C. § 2511(1)(a) & (b).

[45] *Id.* § 2511(1)(c) § (e).

[46] *Id.* § 2511(1)(d).

[47] *See, e.g., In re Pharmatrak, Inc. Privacy Litig.*, 329 F.3d 9, 21 (1st Cir. 2003).

[48] Similarly, other surveillance statutes like the Pen Trap Act and FISA criminalize violations of their provisions. *See* 18 U.S.C. § 3121 (Pen Trap Act); 50 U.S.C. § 1809 (FISA).

[49] 18 U.S.C. § 1956(c)(7) (defining SUA).

[50] *Id.* § 1956(a)(1)(A)(i).

[51] *Id.* § 1956(a)(1)(B)(i).

[52] *See United States* v. *Budovsky*, 2015 WL 5602853, at *12-13 (S.D.N.Y. Sept. 23, 2015) (holding that virtual currency created by Liberty Reserve constituted funds within the meaning of § 1956); *United States* v. *Ulbricht*, 31 F. Supp. 3d 540, 569-70 (S.D.N.Y. 2014) (holding that transactions involving Bitcoin were financial transactions within the scope of § 1956).

[53] Pub. L. No. 108-187, 117 Stat. 2699 (2003).

[54] Press Release, "Chinese National Who Conspired to Hack into U.S. Defense Contractors' Systems Sentenced to 46 Months in Federal Prison," U.S. DEPT. OF JUSTICE (July 13, 2016), available at: https://www.justice.gov/opa/pr/chinese-national-who-conspired-hack-us-defense-contractors-systems-sentenced-46-months (last accessed June 15, 2018).

[55] Press Release, "Two Iranian Nationals Charged in Hacking of Vermont Software Company," U.S. DEPT. OF JUSTICE (July 17, 2017), available at: https://www.justice.gov/opa/pr/two-iranian-nationals-charged-hacking-vermont-software-company (last accessed June 15, 2018).

[56] Press Release, "ISIL-Linked Kosovo Hacker Sentenced to 20 Years in Prison," U.S. DEPT. OF JUSTICE (Sept. 23, 2016), available at: https://www.justice.gov/opa/pr/isil-linked-kosovo-hacker-sentenced-20-years-prison (last accessed June 15, 2018).

[57] As with all investigative techniques, Department personnel are trained to use remote search tools appropriately and lawfully. Additionally, the FBI is required to adhere to the Attorney General's *Guidelines for Domestic FBI Operations* and the FBI's *Domestic Investigations and Operations Guide* in conducting remote searches and seizures; *see supra* note 2. These documents require the FBI to use the least intrusive method that is feasible when conducting a search. *See Guidelines for Domestic FBI Operations*, § 1(c)(2)(A); *Domestic Investigations and Operations Guide*, § 18.2.

[58] Press Release, "Treasury Sanctions Additional North Korean Officials and Entities in Response to the Regime's Serious Human Rights Abuses and Censorship Activities," U.S. DEPT. OF THE TREASURY (Oct. 26, 2017), available at: https://www.treasury.gov/press-center/press-releases/Pages/sm0191.aspx (last accessed June 29, 2018).

[59] Exec. Order No. 13694, 3 C.F.R. 297 (2016).

[60] Exec. Order No. 13757, 3 C.F.R. 1 (2017).

[61] *Id.*

[62] Press Release, "Treasury Sanctions Russian Cyber Actors for Interference with the 2016 U.S. Elections and Malicious Cyber-Attacks," U.S. DEPT. OF TREASURY (March 15, 2018), available at: https://home.treasury.gov/index.php/news/press-releases/sm0312 (last accessed June 29, 2018).

[63] Press Release, "Treasury Sanctions Russian Federal Security Service Enablers," U.S. Dept. of Treasury (June 11, 2018), available at: https://home.treasury.gov/news/press-releases/sm0410 (last accessed June 29, 2018).

[64] Press Release, "Treasury Sanctions Iranian Cyber Actors for Malicious Cyber-Enabled Activities Targeting Hundreds of Universities," U.S. DEPT. OF TREASURY (March 23, 2018), available

at: https://home.treasury.gov/news/press-releases/sm0332 (last accessed June 29, 2018).

[65] Press Release, "Nine Iranians Charged With Conducting Massive Cyber Theft Campaign on Behalf of the Islamic Revolutionary Guard Corps," U.S. Dept. of Justice (March 23, 2018), available at: https://www.justice.gov/opa/pr/nine-iranians-charged-conducting-massive-cyber-theft-campaign-behalf-islamic-revolutionary (last accessed June 29, 2018).

[66] Export Administration Regulations, Control Policy: End-User and End-Use Based, 15 C.F.R. §§ 744.1–.22 (2016), available at: https://www.gpo.gov/fdsys/pkg/CFR-2016-title15-vol2/xml/CFR-2016-title15-vol2-part744.xml (last accessed June 29, 2018).

[67] "Addition of Certain Persons to the Entity List," 79 Fed. Reg. 44680 (Aug. 1, 2014), available at: https://www.gpo.gov/fdsys/pkg/FR-2014-08-01/pdf/2014-17960.pdf (last accessed June 29, 2018) (adding PRC Lode Technology Corporation, a company owned by Su Bin, a Chinese national serving a prison term for conspiring with Chinese air force officers to exploit computer systems of U.S. companies and of DoD contractors to illicitly obtain and export information, including controlled technology, related to military projects).

[68] "2017 Special 301 Report," Office of the United States Trade Representative at 18 (April 2017), available at: https://ustr.gov/sites/default/files/301/2017%20Special%20301%20Report%20FINAL.PDF (last accessed June 29, 2018).

[69] *See* "Remarks by President Trump at Signing of a Presidential Memorandum Targeting China's Economic Aggression," The White House (March 22, 2018), available at: https://www.whitehouse.gov/briefings-statements/remarks-president-trump-signing-presidential-memorandum-targeting-chinas-economic-aggression/ (last accessed June 29, 2018).

[70] "Findings of the Investigation into China's Acts, Policies, and Practices related to Technology Transfer, Intellectual Property, and Innovation under Section 301 of the Trade Act of 1974," Office of the United States Trade Representative (March 22, 2018), available at: https://ustr.gov/sites/default/files/Section%20301%20FINAL.PDF (last accessed June 29, 2018).

[71] *Id.* at 153.

[72] *Id.* at 166.

[73] *Id.* at 168.

Chapter 4
Responding to Cyber Incidents

As discussed in Chapter 3, the Department's role in disrupting and preventing cyber threats not only embraces the traditional model of criminal law enforcement—which involves arresting suspected criminals and imprisoning offenders after they have been convicted—but also extends beyond that model to the use of non-criminal authorities and remedies.

In this chapter, we discuss other non-criminal, yet critically important, aspects of the Department's overall cyber mission: responding to, preventing, and managing cyber incidents.

Building Relationships and Sharing Cyber Threat Information

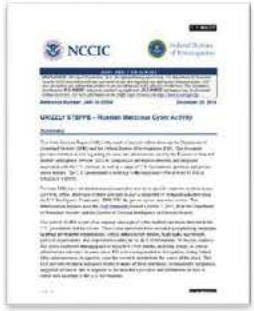
When responding to cyber incidents, preparation is key. Preparation will help victims of cyber attacks speed their response, lessen the effects of exploitation, and hasten recovery. In order to best assist potential victims of cyber threats, the Department needs to prepare, too. Our preparation efforts involve relationship building, routine information sharing, and engaging with organizations and sectors that are at particular risk. And when incidents do occur, open lines of communication enable reporting and facilitate response efforts.

1. Operational Engagement

In building relationships with potential victims of cyberattacks, the FBI employs "operational engagement"—that is, tailored and targeted outreach. Building trust is fundamental to this approach, which initially may seem difficult to achieve, given concerns about privacy, legal privileges, and the protection of sensitive information. To address these concerns, the FBI as a first step seeks to share its own information with industry, through a variety of outreach initiatives and information sharing programs.

The FBI disseminates numerous reports geared directly to the private sector regarding cyber threats. *See* **Fig. 1.** Common FBI-issued reports include Private Industry Notifications ("PINs"), which provide contextual information about ongoing or emerging cyber threats, and FBI Liaison Alert System ("FLASH") reports, which provide technical indicators gleaned through investigations or intelligence. These communication methods facilitate information sharing with either a broad or sector-specific audience, and provide recipients with actionable intelligence to protect against cyber threats and to detect ongoing exploitation. The FBI also often collaborates with other government agencies, including DHS, to release joint products, such as Joint Analysis Reports ("JARs") and Joint Technical Advisories ("JTAs").

Figure 1: FBI Product Lines



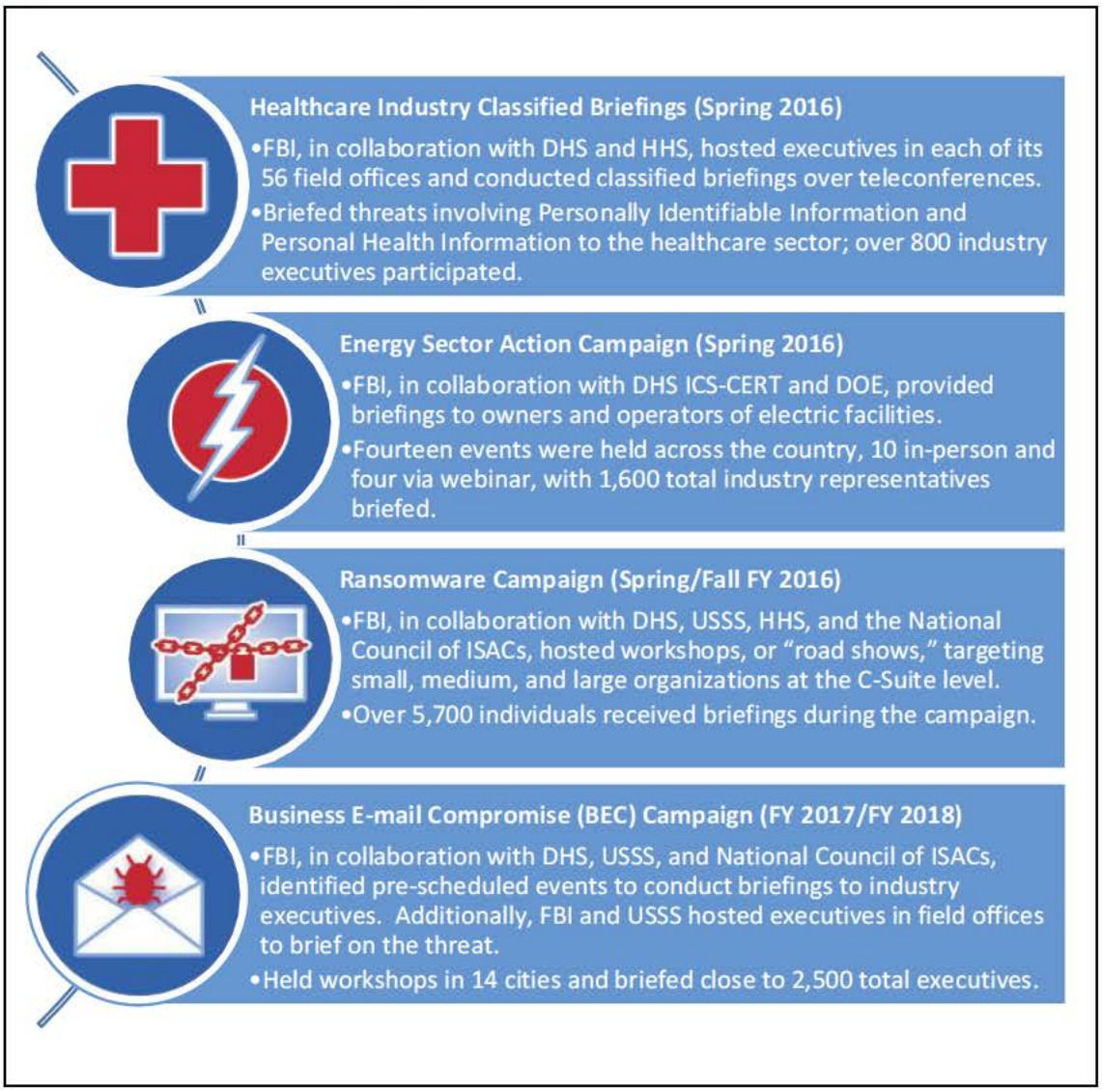
Product	**Private Industry Notification (PIN)**	**FBI Liaison Alert System (FLASH)**	**Public Service Announcement (PSA)**	**Joint Analysis Report/ Joint Technical Alert**
Author	FBI	FBI	FBI	FBI/DHS/Other Government Partners
Content	Provides contextual information about ongoing or emerging cyber threats	Provides technical indicators gleaned through investigations or intelligence	Provides information related to general cyber threats to the public	Provides technical details and indicators gleaned through joint analytic efforts.
Audience	Private Industry	Selected Partners/Target Industries	General Public	Private Industry

In certain circumstances, the FBI will join with sector-specific agencies[1] to execute an "action campaign" to quickly and efficiently advise a defined group of stakeholders of a particular cyber threat requiring their attention. *See* **Fig. 2.** These efforts serve a dual purpose of helping potentially targeted entities and advancing the FBI's cyber threat investigations.

The FBI also hosts targeted engagement events intended to bring together C-suite executives with government subject matter experts in order to build partnerships, encourage information sharing, and better understand the challenges the private sector faces in protecting against cyber threats.

In 2015, the FBI's Cyber Division began hosting a semi-annual Chief Information Security Officers ("CISO") Academy at the FBI Academy in Quantico, Virginia. The Academy seeks to enhance participants' understanding of the government and its functions by hosting approximately 30 CISOs representing key critical infrastructure sectors for a three-day training session. The event's sessions provide the latest information and intelligence on cyber threats, explain how the government interacts with private industry before, during, and after a cyberattack, explore investigative case studies, and engage participants in tabletop exercises. As of April 2018, the FBI had hosted four CISO Academies with over 120 total participants.

Figure 2: Recent FBI "action campaigns"



In addition, the FBI's Cyber Division, in collaboration with a host FBI field office and U.S. Attorney's Office, organizes one-day General Counsel Cyber Summits to bring corporate attorneys and CISOs together with Department personnel. At these summits, participants discuss how to overcome obstacles in information sharing and how best to work with the U.S. government when responding to a cyber incident. To date, the FBI has conducted four summits with over 500 total attendees.