accenture

Global Incident Report: Russia Ukraine Crisis March 2

Key Findings

- The Russian military action that began 24 February 2022 against Ukraine has cyber and information-warfare components.
- Residents in Ukraine, Belarus, and/or Russia have experienced disruptions of essential business and government services, including electricity, transportation, and payments services, and more disruptions will likely occur.
- Hacktivists sympathetic to Ukraine have targeted Russian entities.
- Russian ransomware operators have threatened to attack Western critical infrastructure and leak sensitive stolen data in retribution for perceived attacks on Russia.
- Entities in North Atlantic Treaty Organization (NATO) countries should expect potential disruptive activity and information operations with the goal of eroding popular sentiment and political will aligning with support for Ukraine. Such activity could include criminal ransomware, hacktivist or other disruptive attacks against government or critical infrastructure in NATO countries by threat actors aligning themselves with one side of the conflict or the other.
- Economic sanctions that countries have imposed against Russia could trigger retaliatory cyber threat activities by actors aligning themselves with Russian state interests.
- Numerous ransomware and distributed denial of service (DDoS) attacks have occurred after countries imposed sanctions on Russia; however, in some cases, only circumstantial evidence ties these to the Russia-Ukraine conflict.

Summary

After a several-month military buildup on Ukraine's borders, on 24 February 2022, Russian President Vladimir Putin sent Russian troops into Ukraine. This offensive also has a cyber component that could potentially affect parties in multiple locations, including Ukraine, NATO countries, and/or their allies, according to United States (US) and United Kingdom (UK) government assessments.

This report update includes information on incidents affecting the financial, automotive, communications, energy, and other sectors in multiple countries, as well as a new suspected Russian state-sponsored information operation using artificial intelligence (AI)-created faces, and studies on Border Gateway Protocol vulnerabilities and on the state of Ukraine's physical internet infrastructure.

MITIGATIONS are available at the end of this report.

Analysis

As part of the military confrontation, essential businesses and government services within Ukraine, such as commerce, electricity, and transportation, could experience not only kinetic disruptions but also cyber-enabled disruptions like those resulting from the CRASHOVERRIDE and Petya/NotPetya attacks of 2016-2017.

Threat groups aligned with Russian state interests, and Russian-based hacktivists, could also use cyber threat activity in an attempt to discredit the current Ukrainian government and undermine the population's will to fight. Other potential cyber activity could include Russia-based cyber criminals perpetrating ransomware or other disruptive attacks against government or critical infrastructure.

Depending upon how the crisis unfolds, Russian aligned activity could remain the greatest threat; however, other malicious actors may attempt to take advantage of the situation by increasing their activities, which could potentially include conducting false-flag operations.

As countries impose restrictive sanctions on Russia, anyone doing business with Russia could also experience economic activity disruptions. Further, organizations in, or doing business with, Russia or its neighboring countries might see the invocation of emergency censorship and restrictions on internet traffic.

Cyber-related Events Involving Ukraine, Russia and Belarus

Although this situation continues to evolve, several noteworthy cyber-related events have already occurred:

- On the night of 13-14 January 2022, the so-called WhisperGate attack disrupted 70 Ukrainian websites, severely damaged six and defaced 22, with the message: "Ukrainians! All information about you has become public... Be afraid and expect worse."[1]
  - On 15 January, Microsoft announced the discovery of a multi-stage destructive malware on dozens of Ukraine-based government, non-profit, and IT organizations. Although posing as ransomware, it lacks a ransom recovery mechanism and simply overwrites the Master Boot Record[2]. This tactic resembles that of the Russian military-linked NotPetya pseudo-ransomware operation in 2017[3]. The attackers reportedly exploited an OctoberCMS vulnerability (CVE-2021-32648) at an IT firm managing affected websites and had access to the networks

[1] https://www.theguardian.com/world/2022/jan/14/ukraine-massive-cyber-attack-government-websites-suspected-russian-hackers

[2] https://www.microsoft.com/security/blog/2022/01/15/destructive-malware-targeting-ukrainian-organizations/

[3] https://www.sentinelone.com/blog/dissecting-notpetya-so-you-thought-it-was-ransomware/

months before the attack, suggesting cyber espionage activity[4].

- On 15 February, a DDoS attack briefly disrupted two state-owned banks and two military websites in the country[5]. Ukrainian officials said the threat actors also spread text messages falsely claiming that ATMs belonging to those banks were down, commenting, "The purpose of this attack was to sow panic and destabilize the situation"[6].

  The US and UK governments subsequently attributed these operations to Russia's military intelligence service, the Main Directorate of the General Staff of the Armed Forces of the Russian Federation, which most refer to as the GRU[7]; and, on 19 February, the US Cybersecurity and Information Security Agency (CISA) issued an alert warning of foreign operations pairing cyber threat activity with disinformation to undermine security and hinder the functioning of critical infrastructure.[8]

- During the night of 17-18 February, cellphone service in several government-held cities in eastern Ukraine experienced disruptions for hours. The phone company attributed it to “vandalism” of the fiber optic lines[9]. Ukrainian journalist Margo Gontar quoted the Ukrainian Interior Ministry as having said "This is part of Russia's plan to destabilize situation in Ukraine. We must understand sabotage at communications facilities will continue."[10]

- **HermeticWiper:** On 23 February, cybersecurity firm ESET reported the discovery of a new data wiper malware on hundreds of machines in Ukraine[11]. Judging from one timestamp, threat actors have been deploying this malware since as early as December 2021. According to ESET, “The wiper abuses legitimate drivers from the EaseUS Partition Master software in order to corrupt data…” Samples of the wiper are present in Lithuania and Latvia[12]. Sentinel Labs has provided additional analysis and indicators of compromise (IOCs) of this malware, which it calls HermeticWiper.[13]

  In a 24 February report on HermeticWiper, Symantec noted it had found the malware targeting the financial, defense, aviation, and IT services sectors. The report additionally noted that “ransomware was also deployed against affected organizations at the same time as the wiper,” likely as a “decoy or distraction from the wiper attacks.” A screenshot of the ransom note shows it has a political message; its title begins: “The only thing that we learn from new elections is we learned nothing from the old!”[14].

[4] https://blog.talosintelligence.com/2022/01/ukraine-campaign-delivers-defacement.html
[5] https://www.netscout.com/blog/asert/ddos-attack-campaign-targeting-multiple-organizations-ukraine
[6] https://twitter.com/ersincmt/status/1493940639649742853 and https://thedigital.gov.ua/news/mikhaylo-fedorov-ukraina-zmogla-vidbiti-naybilshu-za-vsyu-istoriyu-kraini-kiberataku
[7] https://www.reuters.com/world/us-says-russia-was-responsible-cyberattack-against-ukrainian-banks-2022-02-18/ and https://www.gov.uk/government/news/uk-assess-russian-involvement-in-cyber-attacks-on-ukraine
[8] https://www.cisa.gov/sites/default/files/publications/cisa_insight_mitigating_foreign_influence_508.pdf
[9] https://twitter.com/lapatina_/status/1494431566310916099 and https://abcnews.go.com/International/wireStory/ukraines-volatile-east-day-shelling-outages-fear-82976148
[10] https://twitter.com/MargoGontar/status/1494639246606581762
[11] https://twitter.com/esetresearch/status/1496581903205511181?s=21
[12] https://www.scmagazine.com/analysis/apt/ukraine-organizations-hit-by-new-wiper-malware
[13] https://www.sentinelone.com/labs/hermetic-wiper-ukraine-under-attack/
[14] https://symantec-enterprise-blogs.security.com/blogs/threat-intelligence/ukraine-wiper-malware-russia

- **Cyclops Blink:** On 23 February, the UK National Cyber Security Centre reported that US and UK officials identified a new SANDFISH malware called Cyclops Blink[15], which recruits compromised machines as botnets and appears to supersede the SANDFISH malware VPNFilter. A Shadowserver report provided additional IOCs[16].
  - In a 24 February report on Cyclops Blink[17], Shadowserver stated that as of 23 February 2022, more than half of the 1,573 possibly compromised WatchGuard network devices are in either the US (686), France (85), Italy (85), Canada (85) or Germany (74); Ukraine only has 14 WatchGuard devices with suspected infections.

- Also on 23 February, Ukraine's Ministry of Digital Transformation said a massive DDoS attack—the second in a week—had affected several government websites and banks that afternoon. Additionally, CNBC reported that websites for Ukraine's Foreign Ministry, Security Service, Cabinet of Ministers, and parliament were down.[18]

- In the early hours of 24 February, residents in the separatist-occupied city of Donetsk reported an electricity blackout and spotty internet coverage as armored columns moved into the city, according to social media accounts.[19]

- On 24 February, US media reported that President Biden was considering options for offensive cyber threat activity against Russia. "Among the options: disrupting internet connectivity across Russia, shutting off electric power, and tampering with railroad switches to hamper Russia's ability to re-supply its forces," MSN reported, citing three sources[20].

  However, White House spokeswoman Jen Psaki tweeted, "This report on cyber options being presented to @POTUS is off base and does not reflect what is actually being discussed in any shape or form."[21]

- On 24 February, Netblocks reported internet disruptions in Ukrainian cities of Kharkiv and Mariupol[22]. The Internet Protection Society, a Russian non-profit, listed the cities of Kyiv, Kharkiv, Donetsk, Kherson, Vinnitsyia, Luhansk, Sumy, and Khmelnytskyi as experiencing connectivity problems[23].
  - On 26 February, after continued Internet and phone disruptions in major Ukrainian cities, entrepreneur Elon Musk arranged to provide Starlink satellite Internet service in Ukraine[24].

- On 24 February, security experts Dmitri Alperovitch and Rob Lee both expressed surprise that the Russians had not undertaken more-active cyber threat or electronic warfare activity to disrupt Ukrainian military and civilian communications[25].

[15] https://www.ncsc.gov.uk/news/joint-advisory-shows-new-sandworm-malware-cyclops-blink-replaces-vpnfilter

[16] https://www.shadowserver.org/news/shadowserver-special-reports-cyclops-blink/

[17] https://www.shadowserver.org/news/shadowserver-special-reports-cyclops-blink/

[18] https://www.cnbc.com/2022/02/23/cyberattack-hits-ukrainian-banks-and-government-websites.html

[19] https://twitter.com/Blake_Allen13/status/1496572901717331971 and hxxps://t[.]me/itsdonetsk/9423

[20] https://www.msn.com/en-us/news/world/biden-has-been-presented-with-options-for-massive-cyberattacks-against-russia/ar-AAUghSb

[21] https://twitter.com/presssec/status/1496919281535111211?s=21

[22] https://netblocks.org/reports/internet-disruptions-registered-as-russia-moves-in-on-ukraine-W80p4k8K

[23] https://twitter.com/safe_runet/status/1497131808881795079

[24] https://twitter.com/elonmusk/status/1497701484003213317

[25] https://twitter.com/DAlperovitch/status/1497021630220218371

- On the evening of 24 February, the main Russian government website was unreachable; websites of the Kremlin and the Russian parliament were also down[26]. Initial Russian media reporting said it was a cyber-attack[27], but later the Kremlin spokesman said the Kremlin site was functioning and denied that a DDoS attack on the site had occurred.[28]

  Later that evening, these Russian government sites were functioning but inaccessible to IP addresses outside of Russia[29]. Cybersecurity analyst Thaddeus Grugq speculated that this selective unavailability could be related to Russia's effort to control cross-border internet traffic ostensibly for defensive purposes.[30]

- On the night of 24 February, Russian media outlet RT experienced brief DDoS activity. The hacktivist group Anonymous claimed responsibility, saying it was acting "in response to [sic] Kremlin's brutal invasion of #Ukraine"[31].

- **YourAnonTV:** On 25 February the account @YourAnonTV announced it would "intensify cyber-attacks on the Kremlin this afternoon"[32].
  - On 25 February, the YourAnonTV Twitter account published a link to a purported database with employees' private data on mil[.]ru, the Russian Defense Ministry website; however, Twitter removed the link early on 26 February[33].
  - Throughout the day on 26 February, numerous Russian government and state media sites were unavailable. At midnight, Russian state media outlet RIA Novosti reported (translated): "The Digital Ministry informs you that it is encountering an unprecedented scale of cyber-attacks, including a series of professional targeted attacks against the State Services portal. Security center specialists are successfully repelling all the attacks"[34]. The State Services portal was on the target list of the Ukrainian government-sponsored "IT Army," described below.

- **"IT Army":** On 25 February, the Ukrainian government advertised on local hacker forums for volunteers to help it defend Ukrainian systems and to conduct espionage against Russian systems, according to media reports. Ukrainian cybersecurity firm Cyber Unit Technologies plans to coordinate the effort.[35]
  - On 26 February, the verified Twitter account of Ukraine's Minister of Digital Transformation, Mykhailov Fedorov, announced the creation of an "IT Army of Ukraine" to "fight on the cyber front."[36] Multiple social media outlets reposted an IT Army of Ukraine post that encouraged others to launch DDoS attacks or other mechanisms against the provided Russian state agencies and Kremlin-friendly companies.[37]

[26] https://twitter.com/safe_runet/status/1496876823979909126
[27] hxxps://ria[.]ru/20220224/kiberataki-1774863604.html
[28] hxxps://www.rbc[.]ru/politics/24/02/2022/6217ab749a79473b77b219d9
[29] https://twitter.com/olliecarroll/status/1496936638723006466
[30] https://twitter.com/thegrugq/status/1496906043636404236
[31] https://www.thedailybeast.com/anonymous-hackers-claim-responsibility-for-cyberattacks-against-russian-state-news-site-rtcom
[32] https://twitter.com/YourAnonTV/status/1497176425014648835
[33] https://twitter.com/YourAnonTV/status/1497273131567828992
[34] https://twitter.com/rianru/status/1497684385683935241
[35] https://www.jpost.com/international/article-698601
[36] https://twitter.com/FedorovMykhailo/status/1497642156076511233?cxt=HHwWgsC5meXm2MgpAAA
[37] https://pbs.twimg.com/media/FMkVCicVgAIFE4c.png

- On 27 February, the social media accounts of @itarmyofukraine and other groups posted numerous claims of cyber-attacks on Russian targets[38].
- On 28 February, Ukrainian officials posted on social media, asking readers to contribute information on vulnerabilities in Russian cyber defenses to its Cyber Front chatbox, @stop_russian_war_bot[39].
- On 28 February, Ukraine's Digital Ministry claimed that website of the Russian Federal Security Service FSB) is down. Kommersant and several other news sites were also down on 1 March[40].
- On 28 February, anti-Russian hacktivist groups announced operations against Russian targets, including the following:
  - Sberbank[41]
  - The Moscow Stock Exchange[42]
  - Petroleum and machinery company Severnaya Kompaniya[43]
  - Russian Railways[44]
  - Russian contractor “promen48[.]ru”[45]
  - The Joint Institute for Nuclear Research at State University Dubna[46]
  - Electric vehicle charging stations in Russia itself, which hacktivists have defaced to display crude messages about Putin[47]
  - Russian TV transmissions, which hacktivists have interrupted with the Ukrainian national anthem[48]
- On 1 March, Twitter user @Cyberknow20 listed 22 groups that have been carrying out cyber-attacks supporting Ukraine and nine groups carrying out cyber-attacks supporting Russia or Belarus[49].

On 25 February, the State Special Communications Service of Ukraine warned of a phishing attack in which Ukrainians received emails “with attached files of uncertain nature”[50]. Although the alert provided few specifics, one phishing campaign allegedly targeted Ukrainian soldiers’ private “i.ua” and “meta.ua” email accounts.

The malicious emails urge recipients to click a link and verify their contact information or risk the suspension of their email accounts. The Computer Emergency Response Team of Ukraine (CERT-UA) attributed that campaign to UNC1151, an espionage group that Ukrainian officials have also blamed for WhisperGate; many analysts also associate it with an information campaign called Ghostwriter. UNC1151 cooperates with Belarusian intelligence services, according to Mandiant research[51]. However, based on linguistic evidence in UNC1151 content, ACTI assesses it is likely a joint Russian-Belarusian group.

- On 28 February, RiskIQ reported additional phishing domains UNC1151 uses[52].

[38] https://twitter.com/itarmyofukraine
[39] https://t.me/SBUkr/3762 and https://twitter.com/dsszzi/status/1498245709031776258
[40] https://www.ukrinform.ru/rubric-technology/3415929-sajt-fsb-rossii-leg-mincifry.html
[41] https://twitter.com/YourAnonTV/status/1498031979555659776
[42] https://twitter.com/Cyberknow20/status/1498211564356194306
[43] https://twitter.com/xxNB65/status/1498221706263019520
[44] https://twitter.com/AgainstTheWest_/status/1498349260013813760
[45] https://twitter.com/AgainstTheWest_/status/1498351312110600200
[46] https://twitter.com/AgainstTheWest_/status/1498342663564804097
[47] https://www.hackread.com/anonymous-hack-russian-tv-electric-charging-station/
[48] https://www.hackread.com/anonymous-hack-russian-tv-electric-charging-station/
[49] https://twitter.com/Cyberknow20/status/1498620110000787458
[50] https://twitter.com/dsszzi/status/1497103078029291522
[51] https://www.bleepingcomputer.com/news/security/ukraine-links-phishing-targeting-military-to-belarusian-hackers/
[52] https://community.riskiq.com/article/e3a7ceea/description

  - On 28 February, Meta (formerly Facebook) reported on a suspected Ghostwriter campaign that used compromised email accounts to log into the Facebook accounts of Ukrainian politicians, military leaders, and journalists to spread pro-Russian propaganda. The campaign's tactics included the use of false profiles with AI-generated "deepfake" faces[53]. Google's Threat Analysis Group also observed and took action against this campaign[54].

- Also on 25 February, Ukrainian media sources, citing "intelligence sources," outlined "Russia's plan to seize Kyiv." In addition to kinetic attacks, the purported plan would involve sabotage to cut Kyiv's electricity and communications to cause panic, as well as a cyberattack on government websites[55].

- Additionally on 25 February, the Premise micro-tasking platform suspended operations in Ukraine after accusations of the platform's use to fine-tune Russian artillery targeting[56].

- On 26 February, Anonymous tweeted that the "Anonymous Liberland & the PWN-BAR Hack Team" had leaked purported Belarusian bomb blueprints to the DDoSecrets transparency website[57]. DDoSecrets' founder tweeted on 26 February that the leak had arrived almost a week previously[58] and noted that such posts should be approached with due skepticism[59]. One cybersecurity researcher cast doubt on the leak's veracity and noted that someone maliciously impersonated him in an email advertising the leak[60].

- On 27 February 2022, *POLITICO* magazine reported that a suspected Russian cyber-attack took down websites and email servers of Ukrainian embassies and consulates around the world, on the same day that Ukrainian president Zelensky had invited foreigners to contact Ukrainian embassies if they wanted to join a foreign legion to defend Ukraine.

- On 28 February Ukrainian officials warned that the FSB is sending central government agencies emails masquerading as Ukraine's SBU domestic intelligence service claiming to provide details about evacuation plans[61].

- On 28 February, Curated Intelligence, an international intelligence-sharing project, announced a GitHub platform providing free threat intelligence (threat reports, vendor support, and open-source intelligence sources) to help organizations in Ukraine[62].

[53] https://www.nbcnews.com/tech/internet/facebook-twitter-remove-disinformation-accounts-targeting-ukrainians-rcna17880, https://www.politico.com/news/2022/02/28/meta-belarus-hacking-campaign-ukraine-00012214
[54] https://twitter.com/ShaneHuntley/status/1498382034732937217
[55] https://twitter.com/KyivIndependent/status/1497086361509187584
[56] https://www.premise.com/blog/premises-response-to-allegations-of-influence-in-ukraine/
[57] https://twitter.com/YourAnonNews/status/1497532671269945345
[58] https://twitter.com/NatSecGeek/status/1497684185552769038
[59] https://twitter.com/NatSecGeek/status/1497587401501327361/photo/1
[60] https://twitter.com/juanandres_gs/status/1497673732181184516
[61] https://ua.interfax.com.ua/news/general/803862.html, https://www.unian.net/techno/okkupanty-ot-imeni-sbu-rassylayut-pisma-ob-evakuacii-v-centralnye-organy-vlasti-11722078.html
[62] https://github.com/curated-intel/Ukraine-Cyber-Operations

- On 28 February, a RIPE (Réseaux IP Européens) Network Coordination Center study, using Atlas internet connectivity probes, concluded that the physical internet infrastructure in Ukraine "has been mostly intact and functioning since the start of the conflict"[63].

Cyber-related Events in Other Countries

- On 19 January 2022, a cyber-attack disabled certain functions of Global Affairs Canada, the country's diplomatic and external affairs agency, after Canadian officials extended their support to Ukraine. Canadian officials refrained from making an attribution, but an unnamed Canadian national security source blamed Russian-backed actors.[64]

- In late January, ransomware incidents affected logistics and port companies in Germany, Belgium, and the Netherlands and related to the petrochemical industry, disrupting automated loading and unloading systems and forcing client companies to reroute supplies[65].

  The incidents involved BlackCat and Conti ransomware. Dutch and Belgian officials said they had no evidence of state links as of 4 February[66], but the ransomware gangs that control the BlackCat and Conti ransomware are based in Russia[67]

- On 24 February, threat actor DataFor posted on the XSS underground forum, claiming to have 90,000 records of alleged US intelligence officers. The actor, who emerged on the forum in early 2021, has a low reputation score but has repeatedly posted anti-Ukrainian threads on XSS and has shared data leaks in the past. ACTI has no evidence regarding the validity of the alleged leak but notes that the threat actor was sharing it without asking for money, suggesting a political rather than financial motivation.

- On 25 February, hacktivists opposed to the Russian military buildup unleashed ransomware on Belarus Railways, hoping to slow troops' movements[68]
  - On 27 February, the hacktivists renewed their attack.[69]

- On 25 February, Polish officials reported that unknown actors targeted government email servers, the website of the national payment clearing system, and networks at Poland's top power utility.[70]

[63] https://labs.ripe.net/author/emileaben/the-ukrainian-internet/
[64] https://globalnews.ca/news/8533835/global-affairs-hit-with-significant-multi-day-disruption-to-it-networks-sources/
[65] https://www.vrt.be/vrtnws/nl/2022/02/01/verschillende-havenbedrijven-slachtoffer-van-cyberaanval/ and https://www.bleepingcomputer.com/news/security/german-petrol-supply-firm-oiltanking-paralyzed-by-cyber-attack
[66] https://therecord.media/string-of-cyberattacks-on-european-oil-and-chemical-sectors-likely-not-coordinated-officials-say/
[67] https://therecord.media/an-alphv-blackcat-representative-discusses-the-groups-plans-for-a-ransomware-meta-universe/
[68] https://www.wired.com/story/belarus-railways-ransomware-hack-cyber-partisans/
[69] https://twitter.com/cpartisans/status/1497930273425661958
[70] https://reuters.com/technology/poland-sees-more-cyberattacks-government-servers-official-says-2022-02-25/

- **Snatch:** On 25 February, the Russian-language Snatch ransomware team announced a leak of stolen data from McDonald's on its victims list[71]. The Snatch team has stolen national security-related data from US and German government contractors in the past[72], and it sometimes gives away data for free, suggesting its motives are less financial than political. Whether financially or politically motivated, the 25 February data leak from an iconic American restaurant has the effect of a symbolic strike against the US.
    - On 28 February, the founder of the DDOSecrets transparency website tweeted that the Snatch Team had just "dropped" data it had stolen from a Swedish automaker and a US-based aerospace company[73]. The data may have come from a December 2021 Snatch operation against the same carmaker, suggesting that the Snatch group may have held the leak in reserve until after the sanctions announcement.[74]

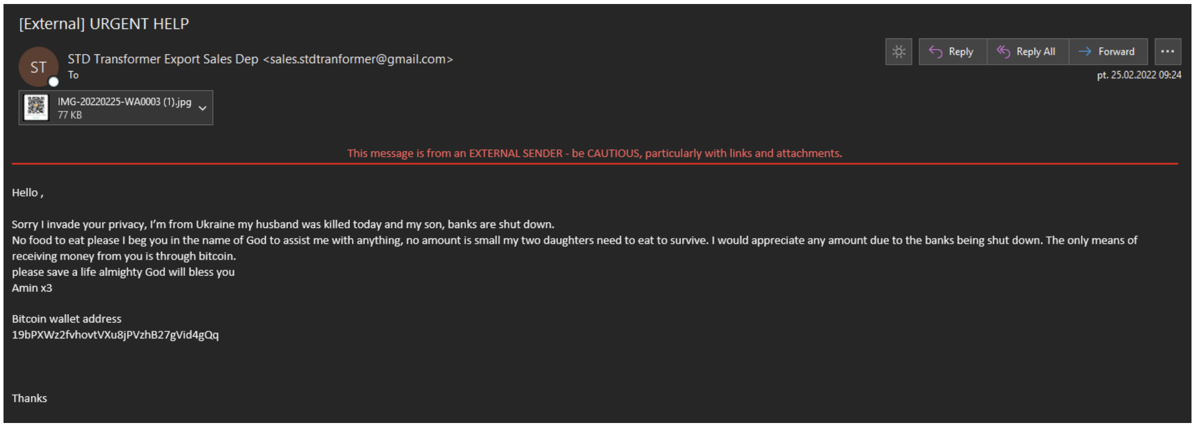
- **Conti:** In a 25 February posting on its website, the Conti ransomware group wrote, "The Conti Team is officially announcing a full support of Russian government. If anybody will decide to organize a cyber-attack or any war activities against Russia, we are going to use our all possible resources to strike back at the critical infrastructures of an enemy [sic]," according to screenshots several researchers have posted[75].

  The message appears to have caused dissension within the cyber criminal ranks. The group has subsequently modified its message to remove the threat against critical infrastructure and to say the group does "not ally with any government and we condemn the ongoing war."[76]
    - On 27 February, vx-underground, a clearinghouse for malware code and analysis, posted a message purportedly from a Conti member who broke with the group's pro-Russian stance. The message announces a leak of chats among purported Conti group members and concludes with: "Glory to Ukraine!"[77].
    - Nevertheless, the threat of retaliatory action by ransomware actors remains. The US government warned in September 2021 that Conti operators have targeted national security-related entities[78]. Other ransomware actors have also explicitly encouraged targeting of the US; a REvil spokesperson did so in June 2021[79]. Wazawaka, a LockBit actor who also appears to be behind Babuk ransomware activity, said in January 2022: "I declare war on the USA!"[80]. Over the years, ACTI has also observed underground forum actors specifically seeking to buy compromised credentials from US government and critical infrastructure entities or threatening to send sensitive stolen data to Russian intelligence services.

[71] https://www.dailymail.co.uk/news/article-10553013/Russia-linked-hacker-gang-claims-ransomware-attack-McDonalds.html
[72] https://ddosecrets.com/wiki/Perceptics
[73] https://twitter.com/NatSecGeek/status/1498395468514144263
[74] https://cisomag.eccouncil.org/did-snatch-ransomware-snitch-volvo-cars-rd-data/
[75] https://www.vice.com/en/article/y3vxnm/russian-ransomware-gang-says-it-will-support-russian-government
[76] https://cyberscoop.com/conti-ransomware-russia-ukraine-critical-infrastructure.
[77] https://twitter.com/vxunderground/status/1498060366445613056
[78] https://www.cisa.gov/news/2021/09/22/cisa-fbi-and-nsa-release-conti-ransomware-advisory-help-organizations-reduce-risk
[79] http://web.archive.org/web/*/https://t.me/Russian_OSINT/791
[80] https://krebsonsecurity.com/2022/02/wazawaka-goes-waka-waka/

- Messages in the leaked chats prove that the Conti group takes orders from the FSB, according to investigative group Bellingcat.[81]

On 25 February 2022, Poland-based employees of a large multinational received Ukrainian crisis-themed phishing emails. One such email purported to be from a woman whose husband and son had just died and who could not withdraw money because the banks were shut down. The sender begged for a Bitcoin donation (Exhibit 1). In addition, ACTI has observed multiple social media postings purporting to raise money for Ukraine; their veracity could not be determined.



[External] URGENT HELP

STD Transformer Export Sales Dep <sales.stdtranformer@gmail.com>
To

IMG-20220225-WA0003 (1).jpg
77 KB

pt. 25.02.2022 09:24

This message is from an EXTERNAL SENDER - be CAUTIOUS, particularly with links and attachments.

Hello ,

Sorry I invade your privacy, I'm from Ukraine my husband was killed today and my son, banks are shut down.
No food to eat please I beg you in the name of God to assist me with anything, no amount is small my two daughters need to eat to survive. I would appreciate any amount due to the banks being shut down. The only means of receiving money from you is through bitcoin.
please save a life almighty God will bless you
Amin x3

Bitcoin wallet address
19bPXWz2fvhovtVXu8jPVzhB27gVid4gQq

Thanks

Exhibit 1: Phishing Email from 25 February 2022 Targeting Poland-based employees

On 27 February, LockBit operators wrote on their Tor leak site: "Warning: Official Statement on the Cyber Threat to Russia: ALL AVAILABLE DATA WILL BE PUBLISHED!"[82] It is unclear whether the LockBit operators are referring to the ongoing attacks on Russia by Anonymous and the Ukraine IT Army or to the reports that President Biden was considering offensive cyber activity against Russian critical infrastructure, reports that US officials have denied, as the above describes. This threat is consistent with LockBit actor wazawaka's declaration of war against the US described above.

On 27 February, CERT-EU issued TLP:Green Security Guidance 22-002, "Hardening Signal." In this document, CERT-EU reports "sustained nation-state activity against Signal," a secure instant message service. CERT-EU urges Signal users to download Signal apps only from official websites; regularly update apps; verify the identity of anyone who requests to become a contact; enable registration lock and screen lock; activate notification privacy and disappearing messages features; and reboot their phones at least once a day.

On 27 February, LockBit's leaks site announced it had stolen data from First Financial Credit Union, a New Mexico bank, and would publish it if they did not receive a ransom payment by 6 March.[83] However, later that day LockBit operators backtracked as Conti had, writing: "For us it is just business and we are all apolitical....We will never, under any circumstances, take part in cyber-attacks on

[81] https://twitter.com/christogrozev/status/1498387134604001285
[82] https://twitter.com/AShukuhi/status/1497973628993945612/photo/1
[83] https://twitter.com/IntelStrike/status/1497979609874419716

critical infrastructures of any country in the world or engage in any international conflicts"[84].

- On 28 February, a major Japanese carmaker announced it was halting production due to a cyber-attack on a company that supplies the carmaker with plastic parts. The Japanese Prime Minister, responding to questions about a possible link to Japanese sanctions on Russia, said: "It's hard to answer without thoroughly checking."[85] Other sources do mention suspicions of Russian involvement but have not identified any concrete proof.[86]

- On 28 February, a US satellite communications firm suffered a DDoS attack that appeared linked to the 23 February DDoS attack on Ukrainian websites preceding the Russian invasion.[87]

- On 28 February, a major German wind turbine maker lost remote control capabilities for 5,800 turbines due to a "massive disruption" of satellite connections on 24 February, the same date in which the Russian invasion of Ukraine began. The satellite company is a subsidiary of the above-mentioned US-based company that suffered the DDoS attack. Experts told media outlet Handelsblatt that the wind farm incident could have originated from a cyber attack, deliberate electronic interference, or a missile attack on a satellite system ground station. The satellite disruption also affected a company that provides "connection services and solutions for industrial applications and safety-critical infrastructures."[88]

- On 28 February, Microsoft announced that just hours before Russia invaded Ukraine, it detected a malware package it calls FoxBlade. The destructive malware, "precisely targeted" at Ukraine's digital infrastructure, can use a victim's PC to carry out DDoS attacks. Microsoft has since updated its Windows Defender anti-malware service[89] in response.

- On 28 February, the Kremlin promised a "harsh response" to "EU citizens and structures involved in supplying lethal weapons and fuel and lubricants to the Armed Forces of Ukraine"[90]. This "harsh response" could include cyber threat activity targeting energy and transportation companies and infrastructure.

- On 28 February, cybersecurity firm CheckPoint reported a 196 percent uptick in cyber-attacks on Ukraine's government (time period unknown)[91]. However, the pro-

[84] https://twitter.com/GossiTheDog/status/1498011275506458627
[85] https://uk.news.yahoo.com/toyota-halts-japan-plants-reported-105523941.html
[86] https://www.forbes.com/sites/peterlyon/2022/02/28/russia-is-suspect-in-cyberattack-that-will-force-toyota-to-shut-down-plants-in-japan/?sh=98e0414563a0
[87] https://news.sky.com/story/satellite-giant-viasat-probes-suspected-broadband-cyberattack-amid-russia-fears-12554004
[88] https://web.archive.org/web/20220228160735/https://app.handelsblatt.com/unternehmen/energie/erneuerbare-energien-massive-stoerung-der-satellitenverbindung-enercon-meldet-fast-6000-betroffene-windanlagen/28114360.html
[89] https://www.geekwire.com/2022/microsoft-detected-destructive-cyberattacks-against-ukraine-several-hours-before-russian-invasion-began/
[90] https://www.currenttime.tv/a/russia-ukraine-war/31726786.html and https://www.dailymail.co.uk/news/article-10562199/Russia-promises-EU-face-harsh-response-support-Ukraine.html
[91] https://twitter.com/joetidy/status/1498281962422910976

Ukrainian IT Army and Cyber Front attacks attract more attention because they publicize themselves.[92]

Fall Out from Sanctions

The ever-widening list of sanctions against Russia, particularly the move to ban some Russian banks from the SWIFT international payments system and the curb on certain transactions of the Russian central bank, has raised fears that Russia will undertake cyber threat activity in retaliation[93]. After Iran's expulsion from SWIFT in 2012, massive DDoS attacks originating from Iran hit US banks in 2012-2013 in what analysts see as a retaliatory action[94].

- On 26 February, the Internet Protection Society (IPS), a Russian internet-freedom advocacy group, released a purported message that Russia's Ministry of Digital Development, Communications, and Mass Media had sent to software developers and government entities within Russia[95].

  This purported Russian government warning to Russian government and IT entities cited the risk of internet cutoffs and of poisoned software updates or code libraries. According to the (translated) posting, the ministry urged recipients to "immediately download from GitHub, global repositories, foreign open-source software sites and similar resources everything they need to allow them to continue designing and developing their own software under conditions in which access to these resources will be closed off, or in which deliberately compromised materials will be uploaded. They are afraid it will come to that."

  This appears to reflect a fear that the broad sanctions Western countries adopted on 26 February could include disconnection from GitHub and other repositories[96]. Alternatively, it could be a warning that the Russian government might proactively isolate itself from the global internet. Russian authorities have already selectively blocked access to international platforms Twitter and Meta[97]. More broadly, Russia's government has been developing the legal foundation and technical capability to cut its entire internet segment off from the rest of the world, ostensibly to defend against massive outside attacks[98].

- As of 27 February, ACTI has not yet observed a major uptick in sanctions-related threat activity aside from the LockBit attack on the New Mexico financial institution, which is not necessarily directly tied to Western financial sanctions on Russia. Numerous attacks have occurred since countries imposed harsh sanctions on Russia; these appear in the sections above. In many cases, only circumstantial evidence ties them to the Russia-Ukraine conflict.

[92] https://twitter.com/campuscodi/status/1498283610092277774
[93] https://www.reuters.com/markets/europe/us-banks-prepare-cyber-attacks-after-latest-russia-sanctions-2022-02-27/
[94] https://www.justsecurity.org/61067/planning-cyber-fallout-iranian-nuclear-deal/
[95] https://twitter.com/safe_runet/status/1497560901519646730/photo/1
[96] https://dgap.org/en/research/publications/russias-quest-digital-sovereignty
[97] https://twitter.com/netblocks/status/1497941791177416711
[98] https://dgap.org/en/research/publications/russias-quest-digital-sovereignty

Related Threat Groups and Capabilities

Several threat groups aligned with Russian interests are active against Ukraine and Eastern European targets. Notably, some groups do carry out destructive attacks, primarily against Eastern Europe critical infrastructure. Although these groups are highly regimented in their missions and target sets, the spillover from these events could affect organizations outside of their traditional target sets, as seen with the NotPetya attacks in 2017, the fallout of which was partly due to the potency of ShadowBroker exploits that facilitated an extremely wormable potentially exploitable in a way that would spread malware in an automatic, self-sustaining way[99] wiper campaign. Russia-sympathetic cyber crime operators and the presence of cyber crime operations in Ukraine present additional opportunities for criminal actors to be involved in threat activity.

Primary State-Sponsored Groups

Accenture Cyber Threat Intelligence (ACTI) assesses the following groups are most active within Ukraine and Eastern Europe:

- **SANDFISH (a.k.a. Sandworm, TeleBots, Quedagh, BlackEnergy, Voodoo Bear, TEMP.Noble, GreyEnergy)**: This threat group has carried out a wide variety of attacks, targeting political entities, the press, and critical infrastructure. These attacks include the 2015 and 2016 blackouts in Ukraine and the June 2017 NotPetya pseudo-ransomware campaign.

- **WINTERFLOUNDER (a.k.a. Gamaredon Group, Calisto Group, Dancing Salome)**: ACTI has traced this group's activity back to 2013 when the group's social engineering campaigns targeted the Ukrainian government, military, and law enforcement agencies. These campaigns continued through 2014 and 2015, reaching peaks during the heaviest fighting between Ukrainian national forces and pro-Russian separatists. In fact, many decoy documents dropped by WINTERFLOUNDER campaigns leveraged related topics, such as Ukraine and Russia casualty reports, troop movements, etc. More-recent targeting by WINTERFLOUNDER suggests Ukrainian collection is still a priority. However, ACTI has also observed additional targeting to include other nations in Eastern Europe, suggesting WINTERFLOUNDER's scope may widen as tensions increase.

- **WALLEYE (a.k.a. Zebrocy, Earworm):** Based on its victims since as early as 2018, WALLEYE's traditional intelligence mission focuses on gathering intelligence against state institutions, security bodies, and military industries in Eastern Europe, the Middle East, and South and Central Asia. While WALLEYE may sometimes share infrastructure with other Russia-based groups, WALLEYE's toolset and targeting remains distinct. In fact, unlike other Russia-based groups, there is little known WALLEYE targeting of Western European or North American countries, which is likely due to WALLEYE's mission, which appears to be aligned with that of a different part of a military and security establishment than, for example, SNAKEMACKEREL's (a.k.a.

[99] https://nakedsecurity.sophos.com/2022/01/12/wormable-windows-http-hole-what-you-need-to-know/

APT28, Swallowtail, Sofacy, Fancy Bear) mission.

ACTI assesses the following groups are most active in targeting critical infrastructure:

- **BLACK GHOST KNIFEFISH (a.k.a. Dragonfly, Berserk Bear, Energetic Bear):** This group, which the US government has linked to the Russian government, is known for targeting energy entities in multiple countries[100]. In March 2018, the US Department of Homeland Security's (DHS') CISA wrote that "Russian government cyber actors" had "gained remote access into energy sector networks" and accessed a human machine interface.[101] An April 2018 US and UK government alert warned of additional BLACK GHOST KNIFEFISH[102] targeting of network infrastructure devices (such as routers, switches, firewalls, and network intrusion detection systems) enabled with the generic routing encapsulation protocol, Cisco Smart Install feature, or simple network management protocol. The threat actors conducted man-in-the-middle attacks for espionage, to steal intellectual property, and potentially to prepare for future disruptive or destructive activity.

  Signs of cooperation exist between BLACK GHOST KNIFEFISH and BELUGASTURGEON (a.k.a. Turla), according to US and UK officials. BELUGASTURGEON's targets are mostly political entities but have included the Armenian natural resources ministry[103]. UK and US officials have alleged that the threat group has carried out false-flag operations framing Iranian threat actors[104]

- **ZANDER:** This group carried out the August 2017 Triton malware attack on the operational technology (OT) systems of a refinery in Saudi Arabia, which, if it had been successful, could have endangered human lives[105]. The US government has linked ZANDER to the Central Research Institute for Chemistry and Mechanics (TsNIIKhM) under Russia's Defense Ministry[106]. ZANDER has also searched for remote login portals and vulnerabilities in the networks of at least 20 targets in electricity generation, transmission, and distribution systems in the US and elsewhere.

- **Pseudo- and Hybrid Ransomware:** The WhisperGate campaign this report describes below appears to be pseudo-ransomware its developers created with purely disruptive rather than money-making intentions. ACTI assesses that some ransomware criminals may choose targets and timing that align with Russian state priorities due to patriotic motives, law enforcement pressure to cooperate, or hope to avoid punishment through patriotic gestures. The US Department of the Treasury has stated that HighRollers (a.k.a. Evil Corp) boss Maksim Yakubets has worked for the FSB[107]. WIRED, citing leaked private chats, alleged that TrickBot ransomware operators have at times received targeting guidance from members of

[100] https://www.cisa.gov/uscert/ncas/alerts/TA18-074A
[101] https://www.cisa.gov/uscert/ncas/alerts/TA18-074A
[102] https://www.cisa.gov/uscert/ncas/alerts/TA18-106A
[103] https://www.welivesecurity.com/2020/03/12/tracking-turla-new-backdoor-armenian-watering-holes
[104] https://www.ncsc.gov.uk/news/turla-group-behind-cyber-attack and https://www.ncsc.gov.uk/news/turla-group-exploits-iran-apt-to-expand-coverage-of-victims
[105] https://www.slideshare.net/JoeSlowik/past-and-future-of-integrity-based-attacks-in-ics-environments
[106] https://home.treasury.gov/news/press-releases/sm1162
[107] https://home.treasury.gov/news/press-releases/sm845

JACKMACKEREL (a.k.a. Cozy Bear), a group the US has linked to Russia's Foreign Intelligence Service[108].

Recent WhisperGate Activity

Based on ACTI analysis, there are a few similarities between the mid-January 2022 WhisperGate campaign and SANDFISH's June 2017 NotPetya campaign. Both campaigns masqueraded as ransomware campaigns and employed a chain of compromise that several cyber criminal groups have leveraged. In particular, artifacts from both campaigns suggest a victim can recover files by paying a ransom when in fact the malicious code runs a Master Boot Record (MBR) wiper and a file corrupter makes files on the victim system unrecoverable. Although there are similarities, ACTI assesses this general overlap in modus operandi across the WhisperGate and NotPetya campaigns is insufficient to draw any further conclusions, as such overlaps could occur across many wiper or corrupter campaigns.

Mitigations

To mitigate the risk of potential cyber threats stemming from Russia's invasion of Ukraine, Accenture's Cyber Investigation and Forensics Response (CIFR) team suggests the following high-priority tactical mitigations and secondary strategic mitigations. Following these are suggested urgent measures organizations can take in the case of a crisis:

High-priority tactical mitigations:

- Patching externally facing infrastructure (virtual private network appliances, firewalls, web servers, load balancers, etc.) to the latest supported vendor releases, as threat actors often exploit vulnerabilities in externally facing infrastructure to gain initial access to an environment.
- Auditing domain controllers to log successful Kerberos TGS (ticket-granting service) requests and monitoring such events for anomalous activity.
- Having an adequate incidence response (IR) retainer in place to provide necessary surge support and domain-level IR expertise in the event of an incident.
- Treating malware detections for Cobalt Strike and webshells with high priority, as an attacker could use them for lateral movement and persistence.
- Testing and conducting backup procedures on a frequent, regular basis and isolating backups from network connections that could enable malware spreading.

Secondary strategic mitigations:
To mitigate the threat of cyber threats stemming from hostilities between Russia and Ukraine, CIFR treating the following mitigation suggestions with a strategic mindset:

[108] https://www.wired.com/story/trickbot-malware-group-internal-messages/ and https://www.cisa.gov/uscert/ncas/alerts/aa21-116a

- Monitoring service accounts and administrator accounts for signs of credential misuse and abuse, especially for accounts that should not have interactive logon rights.
- Monitoring installation of file transfer tools such as FileZilla and rclone as well as the processes associated with compression or archival tools.
- Creating, maintaining, and periodically exercising a cyber incident response and continuity of operations plan.
- Identifying a resilience plan that addresses how to operate, given a loss of access to or control of an information technology (IT) and/or operational technology (OT) environment.
- Implementing network segmentation between IT and OT networks, where appropriate.
- Implementing effective credential and password policies, rejecting weak passwords, or enforcing strong password rules.
- Implementing strong encryption procedures to prevent threat actors from accessing sensitive data.
- Implementing email anomaly detection systems to detect spear-phishing links.

Government-provided Mitigations
In addition to CIFR's secondary strategic mitigations, ACTI suggests that organizations consult relevant government alerts for guidance; for the US, these include the following:

- "Understanding and Mitigating Russian State-Sponsored Cyber Threats to US Critical Infrastructure" (https://www.cisa.gov/uscert/ncas/alerts/aa22-011a).
- "Preparing for and Mitigating Foreign Influence Operations Targeting Critical Infrastructure" (https://www.cisa.gov/sites/default/files/publications/cisa_insight_mitigating_foreign_influence_508.pdf).

Crisis Recommendations for Cybersecurity Leadership

Immediate
CIFR suggests that immediately after an incident, cybersecurity leadership:

- Review all escalation lists, contact information, and plans, and distribute hard copies of those plans to critical delivery teams.
- Review plans and playbooks for disruptive/destructive attacks.
- Ensure that an out-of-band communications capability is in place and practiced, especially for clients of cloud-delivered mail and domain services.
- Communicate workforce safety measures.

- Communicate the need for heightened awareness and vigilance for new attacks and inbound threats, including phishing campaigns and attacks against potential external vulnerabilities. Scrutinize events and infrastructure, including administrative actions, and search for:
    - Known bad indicator (e.g., an attack will most likely not originate from a Russian or even foreign IP address).
    - Anomalous behavior (e.g., hosts acting out of the norm but not necessarily demonstrating malicious and/or odd administrative activity).
    - Suspicious activity (e.g., with respect to users or administrators).
- Identify critical supply chain vendors.

Week One
CIFR suggests that within the first week after an incident, cybersecurity leadership:

- Communicate to cybersecurity delivery leads the need to review current telemetry (hunt) for potentially missed IOCs related to Russian threat actors.
- Build a critical threats watchlist for known tactics, techniques, and procedures (TTPs) and ATT&CK model vectors.
- Review and prioritize BC/DR critical-asset lists to support potential response efforts.
- Review IT/OT cybersecurity vision completeness.
- Review availability of current staffing and delivery team to ensure capacity for major disruptions. Maintain IR teams with relevant IT and/or OT capabilities. In the event of suspicious activity or an attack, it is crucial to have the following types of third parties on standby:
    - One or more threat intelligence partners to receive bulletins and updates and validate findings.
    - One or more IR partner(s) to handle surge capacity in the event of an attack or to validate security operations center findings.
- Contact critical supply chain vendors to ensure both awareness and review of "ideal versus actual" process efficacy (e.g., use of multi-factor authentication and VPNs, and insider threat mitigations).

Long-term
In the long-term after an incident, CIFR suggests that to better mitigate future incidents, cybersecurity leadership practice recovery plans for all areas of the business, ensuring:

- Administrators have secured immutable backups offline.
- Restoration bandwidth can support domain-wide impacts.
- Awareness of potential physical impacts.
- Review of IT/OT response plans for currency and completeness and ensure that staffing and controls are sufficient to address known Russian TTPs and relevant industry threats.

- The right parties have access to multiple threat intelligence sources and relevant leadership and technical ingestion capabilities exist.
- Close monitoring of social media, news outlets, and threat intelligence partner bulletins for advance warnings of attacks.

Crisis Recommendations for Cybersecurity Operations and Delivery Teams

Immediate
CIFR suggests that immediately after an incident, cybersecurity operations and delivery teams:

- Print and distribute IR planning and contact information.
- Review delivery team staffing and availability.
- Ensure retro-hunting of all published IOCs-or, at minimum, six months back-to help determine that there are no active threats.
- Increase escalation points of contact to ensure timely and comprehensive understanding of suspected or detected malicious events.
- Validate knowledge, labeling, and cataloging of the enterprise's high-value assets for heightened monitoring.
- Communicate preparedness plans upward to C-suite and other executives.

Week One
CIFR suggests that within the first week after an incident, cybersecurity operations and delivery teams:

- Review published TTPs and validate that existing controls can detect them.
- Initiate critical resource backups and configuration preservation, if not current, and ensure critical systems are ready for restoration.
- Review/renew peer and law enforcement intelligence and notification relationships to support information sharing.

Long-term
In the long-term after an incident, CIFR suggests that to better mitigate future incidents, cybersecurity operations and delivery teams practice recovery plans for all areas of the business, ensuring:

- Close identification of detection gaps.
- Alignment of security controls and content development to proactive threat intelligence sources.
- Completely offline storage of critical information and contacts (email addresses and phone numbers) necessary to use in a crisis, as threat actors could target these contacts to complicate response efforts if such contact information is accessible online.

- Practice of two scenarios—internet down and destructive attacks—that would involve changing or wiping out critical data.
- Close partnerships with physical security teams.

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