LEADERSHIP FOR IT SECURITY & PRIVACY ACROSS HHS

HHS CYBERSECURITY PROGRAM

OFFICE OF INFORMATION SECURITY

North Korean Cyber Activity

03/25/2021

TLP: WHITE, ID# ***202103251030***

Agenda

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- Timeline of Recent Activity
- Overview of DPRK APT Groups
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- Outlook

Slides Key:

Non-Technical: Managerial, strategic and high-level (general audience)

Technical: Tactical / IOCs; requiring in-depth knowledge (sysadmins, IRT)

DPRK National Interests

- North Korea, officially the Democratic People's Republic of Korea (DPRK)
- Supreme leader: Kim Jong-un (since 2011)
- Primary strategic goal: perpetual Kim family rule via development of economy and nuclear weapons
- Primary drivers of security strategy:
  - Deterring foreign intervention by obtaining nuclear capabilities
  - Eliminating perceived threats to Kim regime
  - Belief that North Korea is entitled to respect as a world power
- *"Cyberwarfare is an all-purpose sword that guarantees the North Korean People's Armed Forces ruthless striking capability, along with nuclear weapons and missiles." – Kim Jong-un (2013)*
- Reportedly has 7,000 cyber warriors
- 300% increase in the volume of activity to and from North Korean networks since 2017

Timeline of Recent Activity

Jan 2020
Two distinct clusters of DPRK cyber activity begin targeting healthcare & pharma

June 2020
North Korean state hackers sent COVID-19-themed phishing emails to 5 million entities in an attempt to steal personal and financial data

Aug 2020
USG exposed DPRK malware used in fake job posting campaign

Oct 2020
Russian and North Korean hackers targeted seven major companies involved in COVID-19 research

Nov 2020
North Korean hackers targeted a major COVID-19 vaccine developer

Jan 2021
North Korean social engineering campaign against cybersecurity researchers

Feb 2021
South Korean Intelligence claims DPRK targeted COVID-19 data at major pharma org

Feb 2021
Media reports on creation of North Korean hacking group specialized in stealing COVID-19 info

Feb 2021
North Korean Lazarus Group hackers indicted in the US

Overview of North Korean APT Groups

- HIDDEN COBRA is the general term that the US Government uses to refer to malicious cyber activity by the North Korean government
- North Korean APT groups are known to leverage cyberattacks to finance nuclear development, as well as for intelligence collection and espionage purposes
- DPRK cyber operators known to have previously supported operations for multiple APT groups
- North Korean APT groups likely share malware and resources, making attribution difficult

  - HIDDEN COBRA
  - Andariel
  - APT37
  - APT38
  - TEMP.Hermit
  - TEMP.Firework
  - Kimsuky
  - Bureau 121
  - Bureau 325

HIDDEN COBRA

Also known as: Lazarus Group, Guardians of Peace, ZINC, NICKEL ACADEMY

Suspected attribution: Democratic People's Republic of Korea

Target sectors: Finance, aerospace and defense, manufacturing, healthcare, banking, telecommunications, media

Overview: Since 2009, HIDDEN COBRA actors have leveraged their capabilities to target and compromise a range of victims, some resulting in the exfiltration of data while others have been disruptive in nature. HIDDEN COBRA actors are likely to continue to use cyber operations to advance their government's military and strategic objectives. HIDDEN COBRA is known for a campaign of coordinated DDoS attacks on South Korean media, financial, and critical infrastructure in 2011, as well as the Sony Breach in 2014 and various cryptocurrency attacks in 2017.

Associated malware: Copperhedge, Taintedscribe, Pebbledash, Destover, Wild Positron/Duuzer, Hangman, DeltaCharlie, WannaCry, RawDisk, Mimikatz, BADCALL, Volgmer, FALLCHILL, HOPLIGHT, FASTCash

Attack vectors: Adobe Flash player and Hangul Word Processor (HWP) vulnerabilities, social engineering and phishing with fake job offers via LinkedIn and WhatsApp, spear phishing emails containing malicious Microsoft Word vulnerabilities, zero day vulnerabilities

Andariel

Also known as: Silent Chollima, Dark Seoul, Rifle, Wassonite

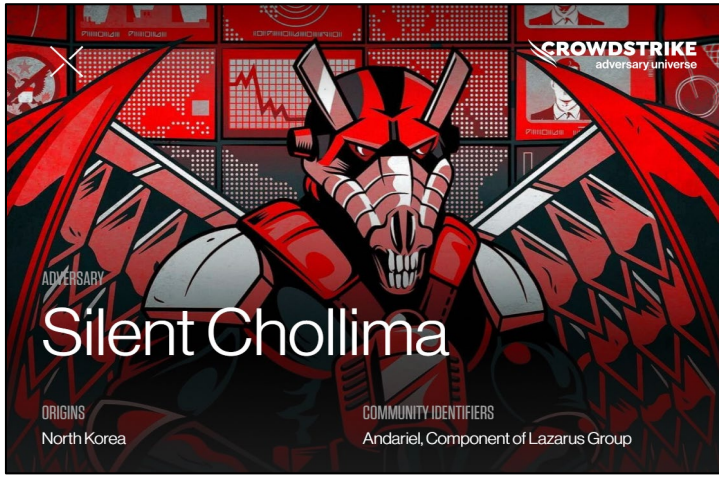
Suspected attribution: DPRK, Bureau 121

Target sectors: South Korean government and military, foreign businesses, government agencies, financial services infrastructure, private corporations, and businesses

Overview: Andariel is a sub-group of the Lazarus Group mainly focused on cyber espionage. The group was first seen around 2009 and has carried out numerous operations against the defense industry, mainly in South Korea. Andariel also focuses on conducting malicious cyber operations on foreign businesses, government agencies, financial services infrastructure, private corporations, and businesses. Andariel is also believed to conduct financially-motived computer intrusions.

Associated malware: Aryan, Gh0st RAT, Rifdoor, Phandoor, Andarat

Attack vectors: ActiveX, vulnerabilities in software local to South Korea, watering hole attacks, spear phishing (macro), IT management products (antivirus, PMS), supply chain (installers and updaters)



APT37

Also known as: Ricochet Chollima, Group 123, Reaper, THALLIUM, ScarCruft

Suspected attribution: Democratic People's Republic of Korea (DPRK)

Target sectors: Primarily South Korea – though also the U.S., Japan, Vietnam, and the Middle East – in various industry verticals, including chemicals, electronics, manufacturing, banking, aerospace, automotive, and healthcare

Overview: APT37 is a suspected North Korean state-sponsored cyber espionage group active since at least 2012. The group has previously used a range of zero day exploits to carry out attacks against victims of interest to the North Korean government, aligning with counterintelligence priorities.

Associated malware: APT37 employs a diverse suite of malware for initial intrusion and exfiltration. Their malware is characterized by a focus on stealing information from victims, with many set up to automatically exfiltrate data of interest. APT37 also has access to destructive malware. Some include DOGCALL, RUHAPPY, CORALDECK, SHUTTERSPEED, WINERACK, and several 0-day Flash and MS Office exploits.

Attack vectors: Social engineering tactics tailored specifically to desired targets, strategic web compromises typical of targeted cyberespionage operations, and the use of torrent file-sharing sites to distribute malware more indiscriminately.

APT38

Also known as: BlueNoroff, Stardust Chollima, BeagleBoyz, NICKEL GLADSTONE

Suspected attribution: DPRK, Reconnaissance General Bureau

Target sectors: Banks, financial institutions, cryptocurrency exchanges

Overview: APT38 is a financially-motivated threat group that is backed by the North Korean regime. The group mainly targets banks and financial institutions, and has targeted more than 16 organizations in at least 13 countries since at least 2014. The funds stolen by APT38 are likely channeled into the DPRK's missile and nuclear development programs. APT38 is known to share malware and other resources with TEMP.Hermit. In February 2021, three members of APT38 were indicted by the US DOJ.

Associated malware: DarkComet, Mimikatz, Net, NESTEGG, MACKTRUCK, WANNACRY, WHITEOUT, QUICKCAFE, RAWHIDE, SMOOTHRIDE, TightVNC, SORRYBRUTE, KEYLIME, SNAPSHOT, MAPMAKER, net.exe, sysmon, BOOTWRECK, CLEANTOAD, CLOSESHAVE, DYEPACK, Hermes, TwoPence, ELECTRICFISH, PowerRatankba, PowerSpritz

Attack vectors: Drive-by compromise, watering hole schemes, exploit insecure out-of-date version of Apache Struts2 to execute code on a system, strategic web compromise, access Linux servers

WannaCry Global Ransomware Attack in 2017

- WannaCry ransomware attack infected a quarter million machines in more than 150 countries in 2017
- Largest ransomware attack to date
- Impacted a national health service as well as a multinational pharmaceutical company's medical devices
- Affected hospitals, GP surgeries across England and Scotland
- Resulted in cancellation of thousands of appointments and operations
- Frantic relocation of emergency patients
- Reverted to pen and paper
- Most of the health service's devices infected with the ransomware were found to have been running the supported, but unpatched, Microsoft Windows 7 operating system
- Leveraged EternalBlue exploit
- Indictment of North Korean citizen Park Jin Hyok in 2018 worked for a front company
- Indicted again in February 2021
- Tied to Lazarus Group / APT38

WANTED BY THE FBI

PARK JIN HYOK

Conspiracy to Commit Wire Fraud and Bank Fraud; Conspiracy to Commit Computer-Related Fraud (Computer Intrusion)

DESCRIPTION

Aliases: Jin Hyok Park, Pak Jin Hek, Pak Kwang Jin	
Place of Birth: Democratic People's Republic of Korea (North Korea)	**Hair:** Black
Eyes: Brown	**Sex:** Male
Race: Asian	**Languages:** English, Korean, Mandarin Chinese

REMARKS

Park is a North Korean citizen last known to be in North Korea. Park has traveled to China in the past and has reported dates of birth in 1984 and 1981.

CAUTION

Park Jin Hyok is allegedly a state-sponsored North Korean computer programmer who is part of an alleged criminal conspiracy responsible for some of the costliest computer intrusions in history. These intrusions caused damage to computer systems of, and stole currency and virtual currency from, numerous victims.

Park was alleged to be a participant in a wide-ranging criminal conspiracy undertaken by a group of hackers of the North Korean government's Reconnaissance General Bureau (RGB). The conspiracy comprised North Korean hacking groups that some private cybersecurity researchers have labeled the "Lazarus Group" and Advanced Persistent Threat 38 (APT38). On December 8, 2020, a federal arrest warrant was issued for Park in the United States District Court, Central District of California, after he was charged with one count of conspiracy to commit wire fraud and bank fraud, and one count of conspiracy to commit computer fraud (computer intrusions). A federal arrest warrant was previously issued for Park on June 8, 2018, after he was charged with one count of conspiracy to commit wire fraud and one count of conspiracy to commit computer-related fraud (computer intrusion) in a federal criminal complaint.

If you have any information concerning this person, please contact your local FBI office or the nearest American Embassy or Consulate.

Field Office: Los Angeles

TEMP.Hermit

Also known as: N/A

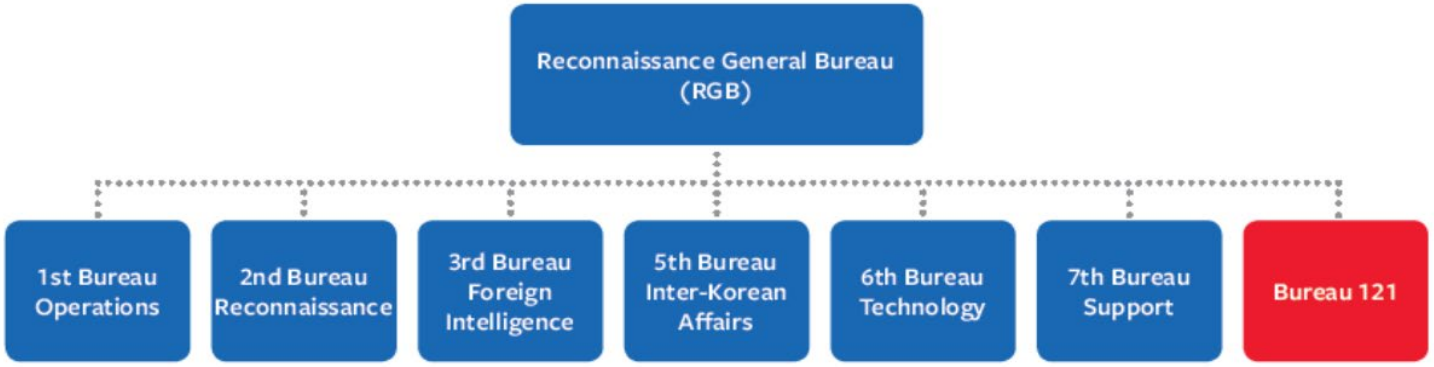
Suspected attribution: DPRK, Lab 110, 6th Technical Bureau of the Reconnaissance General Bureau (RGB)

Target sectors: Primarily government, defense, energy, and financial institutions in South Korea as well as targets worldwide aligned with DPRK affairs, including the United States

Overview: TEMP.Hermit is a cluster of cyber espionage activity tracked by FireEye that has been active since at least 2013. The group primarily targets the government, defense, energy, and financial sectors in South Korea, but also conducts operations against targets worldwide aligned with North Korean affairs. TEMP.Hermit is believed to share significant development resources with APT38.

Associated malware: MONKEYCHERRY, FALLCHILL

Attack vectors: Spear phishing, front organizations mainly located in northeast China



TEMP.Firework

Also known as: N/A

Suspected attribution: DPRK

Target sectors: Governments, think tanks, and universities; primarily in the U.S. and South Korea, but also Australia, Italy, India, Japan, Hong Kong, Hungary, and the Philippines.

Overview: TEMP.Firework primarily targets governments, think tanks, and universities focused on DPRK strategic issues such as nuclear security, nonproliferation, and U.S.-South Korea military capabilities. The group typically operates between 0700 and 1900 KST (GMT +9) Monday to Friday and has only once been observed operating outside of this schedule. In some recent operations, TEMP.Firework was called out for cyber campaigns leading up to the US 2020 Election and conducted spear phishing to gain access to multiple pharmaceutical companies and medical centers.

Associated malware: LATEOP, TROIBOMB, Mshta, TeamViewer, Mimikatz, LOGCABIN, and built-in Windows commands

Attack vectors: Spear phishing emails, stolen credentials

Kimsuky

Also known as: Velvet Chollima, Group G0094

Suspected attribution: North Korea (DPRK)

Target sectors: Individuals and experts in various fields, think tanks, government entities in South Korea, Japan, and the United States as well as universities with biomedical engineering expertise

Overview: The Kimsuky APT group has most likely been active since 2012 and is most likely tasked by the North Korean regime with a global intelligence gathering mission. Kimsuky has reused infrastructure from previous campaigns in the past.

Associated malware: BabyShark, GREASE, Win7Elevate, HWP document malware, malicious Google Chrome extension

Attack vectors: Kimsuky employs common social engineering tactics, spear phishing, and watering hole attacks to exfiltrate desired information from victims.

Bureau 121

Also known as: N/A

Suspected attribution: DPRK, Reconnaissance General Bureau

Target sectors: Major biotechnology companies, pharmaceutical manufacturers, research institutions, IT companies and government organizations in South Korea, China, and the United States.

Overview: Bureau 121 is considered the cyber warfare guidance unit of the DPRK. Most cyber operations take place, or are coordinated, within this unit. There are reportedly over 6,000 members in Bureau 121, with many of them operating in other countries, such as Belarus, China, India, Malaysia, and Russia. There are four subordinate units below Bureau 121: the Andariel Group, The Bluenoroff Group, an Electronic Warfare Jamming Regiment, and the Lazarus Group.

Associated malware: N/A

Attack vectors: N/A

Bureau 325

Also known as: 325 국 (possibly related to Cerium)

Suspected attribution: DPRK, Reconnaissance General Bureau

Target sectors: Major biotechnology companies, pharmaceutical manufacturers, research institutions, IT companies and government organizations in South Korea, China, and the United States.

Overview: Bureau 325 was allegedly established on January 3, 2021 under the Reconnaissance General Bureau (RGB) (Korean: 정찰총국) and receives direct instructions from Kim Jong Un. The group is mainly focused on stealing information on vaccine technology related to COVID-19, and is composed of hackers from various existing DPRK cyber units plus recent grads in IT and computer science. The unit reportedly consists of five teams: with three research institutes overseas (charged with stealing information) and two research centers inside the country (analyzing the hacked data).

Associated malware: Unknown

Attack vectors: Unknown


3/11/2021 코로나 정보 전문 탈취 정찰총국 325국, 김정은 직접 챙긴다 - DailyNK

코로나 정보 전문 탈취 정찰총국 325국, 김정은 직접 챙긴다

소식통 "기존 해킹 부대원 중 실력자만 선별 배치… 광명성절 이후 활동 본격화"

By 장슬기 기자 · 2021.02.04 3:39 오후

2차 북미 정상회담을 앞두고 북한으로 추정되는 해커들의 공격이 활발해지고 있는 것으로 전해졌다. / 사진=pixabay

Recommendations

- Assume press attention affiliating your organization with COVID-19 research will lead to increased interest and activity by nation state and cyber criminal actors to penetrate your network.
- Patch critical vulnerabilities on all systems. Prioritize patching of Internet-connected servers for known vulnerabilities as well as software that processes Internet data, such as web browsers, browser plugins, and document readers.
- Actively scan and monitor web applications for unauthorized access, modification, and anomalous activities.
- Strengthen credential requirements and implement multi-factor authentication to protect individual accounts. Change passwords and do not use the same passwords for multiple accounts.
- Identify unusual activity and suspend access of users exhibiting illicit, potentially compromising, or uniquely suspicious behavior.
- Network device management interfaces such as Telnet, SSH, Winbox, and HTTP should be turned off for wide-area network (WAN) interfaces, and secured with strong passwords and encryption when enabled.
- When possible, store critical information on air-gapped systems. Use strict access control measures for critical data.
- Be mindful of new and existing information technology systems for work and bioscience collaborations.

- It is highly likely that multiple North Korean cyber espionage operators have expanded targeting to pharmaceutical research and organizations involved in the COVID-19 response.
- Continue to leverage common spear phishing and social engineering techniques (fake job lures) as well as custom (even destructive) and publicly available tools.

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Questions

Upcoming Briefs

- New Ryuk Variant (4/8)
- TBD (4/22)

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