Russian Cyber Espionage Campaign - *Sandworm* Team

Microsoft Windows Zero-day – Targeting NATO, EU, Telecom and Energy Sectors

CVE – 2014 - 4114

An iSIGHT Partners Overview

Key Points – *Sandworm* Campaign

- Cyber Espionage Campaign attributed to Russia
  - Targeting includes
    - NATO
    - Ukraine
    - Poland
    - European Union
    - European Telecommunications
    - Energy Sector
  - Attribution to one of 5 active Russian intrusion teams monitored by iSIGHT Partners
  - "Sandworm Team"
    - Named for its affinity for/coded references to science fiction series Dune
    - Campaign partially detailed by researchers at F-Secure and ESET – captured only a small component of targeting and missed critical elements

- Utilizing Zero-day flaw in Microsoft Windows (CVE-2014-4114)
  - Spear-phishing campaign using weaponized Microsoft Office documents
    - Visibility into multiple PowerPoint lures
  - Impacts *all* versions of Windows from Vista to 8.1
    - Windows Server 2008, 2012
    - Flaw has existed for years
  - Zero-day nature of vulnerability leads to conclusion that intrusion efforts were highly effective
  - Close collaboration between iSIGHT Partners and Microsoft - patch is being released on Tuesday, October 14th

Sandworm Campaign - Timeline of Events

- Monitoring Sandworm Team from late 2013 and throughout 2014
  - Genesis of team dates to as early as 2009
  - Increased activity throughout 2014
- Visibility into this specific campaign began in December of 2013
  - NATO alliance targeted as early as December 2013
  - GlobeSec attendees targeted in May 2014
  - June 2014
    - Western European government agency
    - Polish energy firm targeted using CVE-2013-3906
    - BlackEnergy variant configured with Base64-encoded reference to French telecommunications firm
  - Zero-day artifacts captured late August/early September (CVE-2014-4114)
    - Spear-phishing email and exploit targeting Ukranian government
    - Coinciding with NATO summit on Ukraine in Wales
    - At least one US organization fell victim – think tank/academia
- iSIGHT Partners labs team discovered use of zero-day vulnerability on September 3, 2014
- Immediately notified targeted parties, clients across multiple government and private sector domains
- Began working with Microsoft on September 5, 2014
  - Provided technical analysis of vulnerability and the malware used to exploit it
  - Coordinated tracking of campaign
    - Monitoring for broader targeting and victimization
    - Monitoring for broader use of zero-day exploit in the wild
- Purposely timing disclosure to coincide with the release of the patch
  - Minimizes potential for copy-cat exploit creation
  - Limits exposure to a broad reaching, severe vulnerability

Sandworm Campaign - Timeline of Events

2009 2013 2014

Genesis of Sand Worm Team dates to **as early as 2009**

Late 2013 and throughout 2014
- Monitoring of Sand Worm Team
  - Traced to 2009
- Increased activity throughout 2014

May 2014
GlobeSec attendees targeted

June 2014
- Western European government agency
- Polish energy firm targeted (CVE-2013-3906)
- BlackEnergy variant w/Base64-encoded reference to French telecomm firm

Purposely timed disclosure to coincide w/MSFT patch release
- Minimizes potential for copy-cat exploit creation
- Limits exposure to a broad reaching, severe vulnerability

Timeline

September 2014
- Zero-day artifacts captured (CVE-2014-4114)
- Spear-phishing email/exploit targeting Ukrainian government
- Coinciding with NATO summit on Ukraine in Wales
- At least one US org fell victim (think tank/academia

September 3, 2014
- iSIGHT Partners labs discovers zero-day vulnerability
- Immediately notified targeted parties and clients across government and private sector domains

September 5, 2014
- Began working with Microsoft
- Provided technical analysis of vulnerability and malware used in exploit
- Coordinated tracking of campaign
  - Monitoring for broader targeting and victimization
  - Monitoring for broader use of zero-day exploit in the wild

Sandworm Campaign - Visible Targets

Sandworm Campaign - Spearfishing Lures


GLOBSEC 2014
14 - 16 MAY | BRATISLAVA
A LEADING FOREIGN POLICY AND SECURITY FORUM IN CENTRAL EUROPE

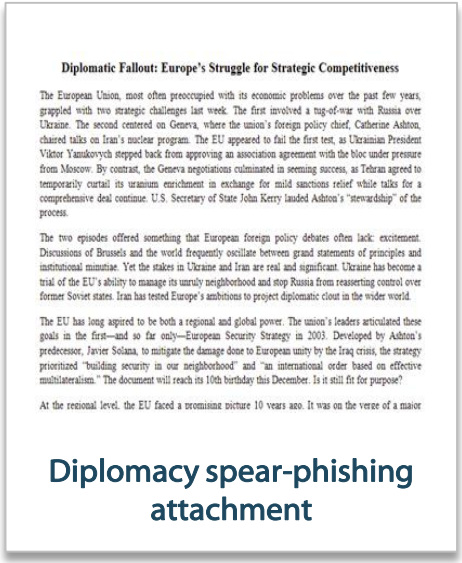
As has become a tradition, GLOBSEC will again try to push higher and further with the 2014 edition of what has become the largest security and policy forum in Central Europe.

The ninth annual GLOBSEC Forum, scheduled to take place between **14-16 May in Bratislava**, Slovakia, will explore, among other foreign policy and security issues, changes in the 21st century power balance, ability and political will of NATO member states to intervene and the consequences of the latest spying allegations.

GLOBSEC has grown into what US veteran analyst **Zbigniew Brzezinski** called a *"global operation"*, annually attracting over 800 participants from more than 60 countries.

GLOBSEC 2014 will feature the highest ministerial presence of any Central European conference. Among the confirmed guests are Slovak Prime Minister Robert Fico, his Hungarian counterpart Viktor Orbán, along with foreign ministers of Slovakia, Hungary and Sweden. On a non-governmental level, Liam Fox, former British Defence Secretary, UN Special Representative for Afghanistan Ján Kubiš, and Michael Chertoff, former US Secretary of Homeland Security are scheduled to participate.

Spear-phishing attachment GlobeSec Forum on Russia


Diplomatic Fallout: Europe's Struggle for Strategic Competitiveness

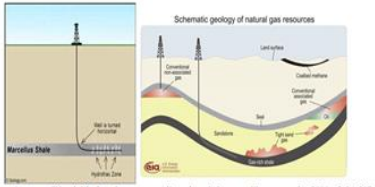
The European Union, most often preoccupied with its economic problems over the past few years, grappled with two strategic challenges last week. The first involved a tug-of-war with Russia over Ukraine. The second centered on Geneva, where the union's foreign policy chief, Catherine Ashton, chaired talks on Iran's nuclear program. The EU appeared to fail the first test, as Ukrainian President Viktor Yanukovych stepped back from approving an association agreement with the bloc under pressure from Moscow. By contrast, the Geneva negotiations culminated in seeming success, as Tehran agreed to temporarily curtail its uranium enrichment in exchange for mild sanctions relief while talks for a comprehensive deal continue. U.S. Secretary of State John Kerry lauded Ashton's "stewardship" of the process.

The two episodes offered something that European foreign policy debates often lack: excitement. Discussions of Brussels and the world frequently oscillate between grand statements of principles and institutional minutiae. Yet the stakes in Ukraine and Iran are real and significant. Ukraine has become a trial of the EU's ability to manage its unruly neighborhood and stop Russia from reasserting control over former Soviet states. Iran has tested Europe's ambitions to project diplomatic clout in the wider world.

The EU has long aspired to be both a regional and global power. The union's leaders articulated these goals in the first—and so far only—European Security Strategy in 2003. Developed by Ashton's predecessor, Javier Solana, to mitigate the damage done to European unity by the Iraq crisis, the strategy prioritized "building security in our neighborhood" and "an international order based on effective multilateralism." The document will reach its 10th birthday this December. Is it still fit for purpose?

At the regional level, the EU faced a promising picture 10 years ago. It was on the verge of a major

Diplomacy spear-phishing attachment



A recent Wood Mackenzie report predicts that shale gas will account for 30% of the US markets by 2020. Other industry experts, such as T. Boone Pickens, are more optimistic and predict that shale gas will account for over 50% of the US market. Even at the low estimate of 30%, shale gas will have a major impact on the industry and the geopolitics of gas. The new reality is that the conventional exporters of natural gas, the Middle East and Russia are receiving less for their gas and are losing market share. Shale projects have contributed to a drop in U.S. gas prices from $13.69 per million British thermal units in 2008 to an average of about $4.00 in 2010.
Gazprom has delayed developing the massive Shtokman Arctic gas field until 2016, largely because of the low natural gas price and the surge in US Supply, which has lowered US demand for foreign gas.

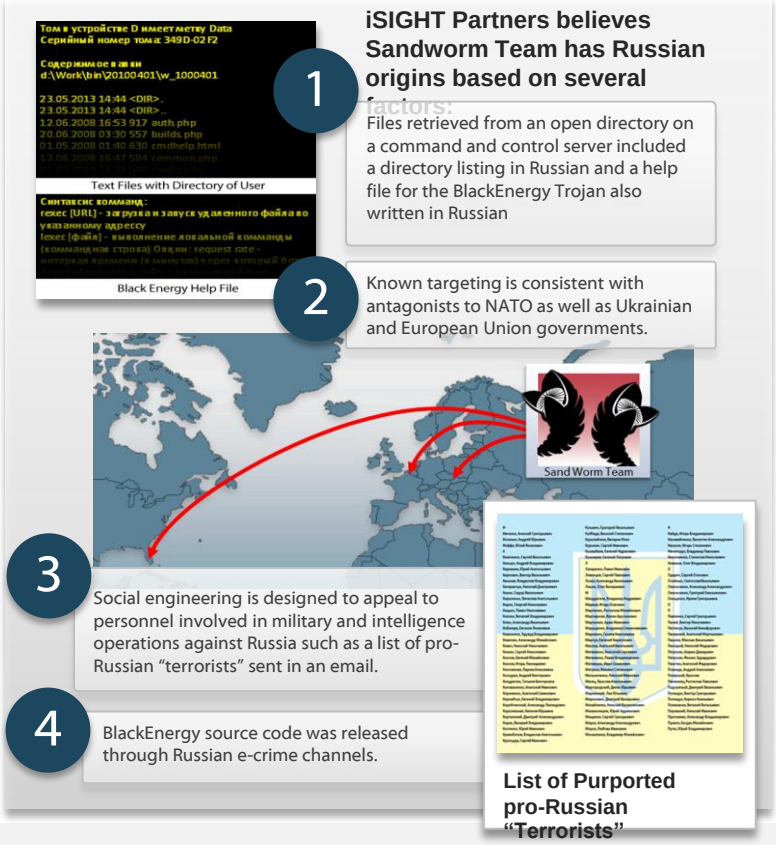
EIA Energy Mix to 2035

Energy spear-phishing attachment, specifically crafted for Polish audience

Zero-day spear-phishing attachment, purported list of Russian sympathizers/ "terrorist" actors

Sandworm Campaign - Attribution
Russian Cyber Espionage

- Marked increase in cyber espionage activities linked to Russia
  - Russia is increasing its cyber-espionage focus and the volume is up in 2014
  - iSIGHT recently detailed activities of Tsar Team
    - Mobile malware targeting multiple platforms
      - Android, Windows, IOS
    - Targets include
      - Foreign militaries
      - Defense contractors
      - Ministries of foreign affairs
      - News organizations
      - NGOs and multilaterals
      - Jihadists
- Sandworm is one of 5 active cyber intrusion teams linked to Russia being monitored by iSIGHT Partners
  - Activities date back as far as 2009
  - Identified through overlapping infrastructure, use of traditional crimeware, unique references to Dune
  - Team has an affinity for using traditional cyber crime tools as a component of its activities
    - BlackEnergy malware
      - Used at least 2 versions of BlackEnergy
        - » BlackEnergy 2 – traditional crimeware
        - » BlackEnergy 3 (Lite)
          - No documented use in crime – may have been purpose built for Sandworm
      - Samples tied on basis of configuration to same combination of internal proxies
        - Up to 7 proxies in common



Cyber Espionage, Cyber Crime and Hacktivism…
Blurring of Lines in Russia

- Growing trend of blurred lines across cyber threat domains
  - Not just in Russia but more pronounced here recently
- Russian overlap
  - Links between criminal activity and cyber espionage activity is not uncommon
    - Tools
    - Talent
  - Some examples…
    - Zeus used in massive espionage campaign against US Government in 2008 and again in 2012
    - Pro-Russian hacktivism used BlackEnergy in the past during Georgian conflict
    - Russians allegedly contracted a cyber crime actor in Georbot campaign against Georgia
      - Attributed to Eshkinkot – Russian national named Vladimir A. Lenskij
      - Georgie CERT claimed to have captured e-mail messages and docs from Russian handlers
        - » Instructing on how to use malware to record audio
        - » Capture screen shots
        - » Exfiltrate data
    - TEMP.Noble (another Russian intrusion actor monitored by iSIGHT)
      - Sensitive source indicates that malware components were developed through for hire cyber crime forum
  - BlackEnergy
    - Criminal actors
    - Sandworm Team

Details - Microsoft Windows Zero Day
CVE – 2014 – 4114

- Affects all supported versions of Microsoft Windows
  - Windows Vista x64 Service Pack 2
  - Windows Vista Service Pack 2
  - Windows Server 2008 R2 x6 Service pack 1
  - Windows Server 2008 Services Pack 2
  - Windows Sever 2008 x64 Service Pack 2
  - Windows Server 2012
  - Windows Server 2012 R2
  - Windows 7 Service pack 1
  - Windows 7 x64 Service Pack 1
  - Windows 8 x64
  - Windows 8
  - Windows 8.1 x64
  - Windows 8.1
  - Windows RT
  - Windows RT 8.1
- Does not appear to affect Windows XP

- Exposed, dangerous method vulnerability
  - OLE package manager in Microsoft Windows and Server
  - Vulnerability allows an attacker to remotely execute arbitrary code
  - Windows allows OLE packager (packager .dll) to download and execute INF files
  - In case of observed exploit, specifically when handling Microsoft PowerPoint files:
    - Packager allows a Package OLE object to reference arbitrary external files (such as INF) from untrusted sources
    - Causes referenced files to be downloaded and executed with specific commands
    - Attacker can exploit to execute arbitrary code
    - Needs specifically crafted file and social engineering methods to convince user to open

Collaboration with Microsoft

- iSIGHT Partners follows Responsible disclosure procedures
  - Targeted entities
  - Government and Law Enforcement
  - Impacted Software vendor(s)
    - Microsoft
- Disclosed identification of zero-day 2 days after analysis
  - Began immediate collaboration with Microsoft
    - Supporting development of a patch
    - Tracking utilization of the vulnerability in the wild
- Timed disclosure to minimize the potential for broader victimization
  - Patch ready for release Tuesday, October 14th
  - "Break in case of emergency" plan in place for past 5 weeks
    - Trigger: Broader propagation of malware targeting vulnerability
    - Trigger: Evidence of broader victimization

Workarounds - Microsoft Windows Zero Day
CVE – 2014 – 4114

- Disable the WebClient Service
  - Impact
    - Web Disributed Authoring and Versioning (WebDAV) requests are not transmitted
    - Any service depending on Web Client service will not start
- Block TCP ports 139 and 445
  - Impact
    - Ports 139 and 445 are used for additional services including Common Internet File System (CIFS), DNS Administration, NetBT service sessions, printer sharing sessions and more
    - Disabling could affect functionality of those services
- Block launching of Executables via Setup Information Files
  - Impact
    - Applications that rely on the use of .INF file to execute an installer application may not automatically execute

