



Cyber Threat Operations

Tactical Intelligence Bulletin

Sofacy Phishing

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TLP: WHITE

Background

Our analysts follow the activities of a number of threat groups with a wide range of motivations. In this bulletin we are sharing intelligence relating to a recent phishing campaign conducted by a group widely referred to as 'Sofacy', named after the antivirus¹ detection name for one of the malware families used by the group.

Over the years there have been a number of papers discussing variations to the malware used by the group, but little discussion of less sophisticated techniques employed by the same attackers.

Analysis

Sofacy has been discussed before as being used to target APEC members² and there has also been some prior analysis of the malware itself³. Variants of the malware have been in use for a considerable amount of time – for example, the screenshot below is from the decoy document loaded by one of the earliest versions present on ThreatExpert⁴, from February 2010.



Sample 5e3bea788e89e0814e898b4a648b93cob74f7e2c

Decoy documents are used in conjunction with malware droppers in order to make the target believe the file they have just opened is legitimate. The documents often give an indication of the attackers' intended targets.

More recently, ESET have reported⁵ on related spear phishes using NATO/Ukrainian conflict themes and watering hole attacks likely targeting the defence industry and a Polish finance company. It has been publicly speculated before that Sofacy malware is Russian in origin. Indicators found in the malware analysis referenced in the appendix, such as embedded resources and targeting would appear to support this theory.

¹ http://www.symantec.com/security_response/writeup.jsp?docid=2011-090714-2907-99

² <http://blog.trendmicro.com/trendlabs-security-intelligence/spoofed-apec-2013-email-mixes-old-threat-tricks/>

³ <http://thegoldenmessenger.blogspot.de/2012/12/3-disclosure-of-another-oday-malware.html>

⁴ <http://threatexpert.com/reports.aspx?find=netids.dll>

⁵ <http://welivesecurity.com/2014/10/08/sednit-espionage-group-now-using-custom-exploit-kit/>

Targeting

Recently, we observed a number of new domain registrations by the Sofacy attackers, all of which are closely related via shared WHOIS data and infrastructure. New domain registrations are usually indicative of a new campaign, and so we were eager to find new samples of the malware which connected to the infrastructure. The domain names chosen were almost identical to the legitimate domains of several organisations, a common technique and, like carefully chosen decoy documents, often gives clues as to the likely targets of the campaign. The new domain names mimicked organisations in the following categories:

- International and European diplomatic institutions
- Popular providers of web services
- Military institutions, contractors and conferences
- Energy companies
- News organisations based out of the United States and Central Europe

In addition to new malware samples, we also found examples where the attackers were using the simple technique of phishing for credentials. The usage of malware in targeted attacks to steal information of value to attackers has been widely reported, however the simple technique of phishing for credentials, whilst still relatively common in targeted attacks, is still more typically associated with criminal attackers involved in day to day cyber-fraud.

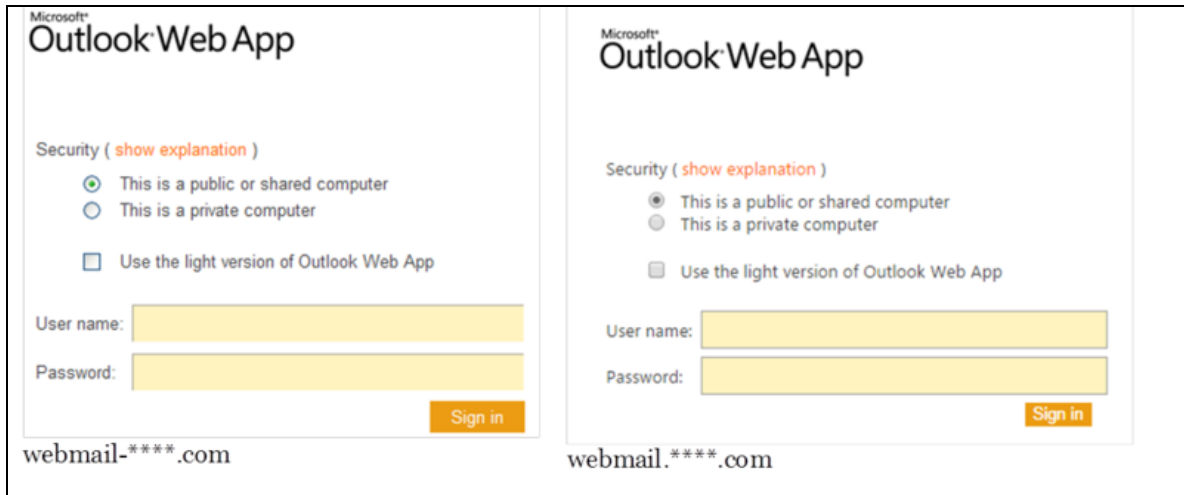
The pages used for phishing typically used obfuscated code to redirect the user to another webpage:

```
<script type="text/javascript">
  var _0x949d = ["\x6C\x6F\x63\x61\x74\x69\x6F\x6E",
    "\x6F\x70\x65\x6E\x65\x72",
    "\x68\x74\x74\x70\x73\x3A\x2F\x2F\x6C\x6F\x67\x69\x6E\x2D\x6F\x73\x63\x65\x2E\x6F\x72\x67\x2F",
    window[_0x949d[1]][_0x949d[0]] = _0x949d[2];
</script>
```

In some pages the malicious redirect was disabled by the attackers, by placing additional JavaScript on the page which would redirect users to a legitimate site preferentially.

Fake login pages were observed both for webmail and two factor-authentication platforms. In the second case this would require the attackers to log in at the same time as affected victims, showing a level of dedication to the cause. As well as the domains used being similar to those of the targeted, the pages were also made to appear the same as their legitimate counterparts, making it difficult for end-users to tell they were being duped.

For example the screenshot below shows the contents of a credential phishing website designed to mimic the legitimate OWA site of a defence contractor. The attacker's version is on the left, the real version is on the right:



Two of the domains we identified have previously been associated in open source with credential phishing, although not attributed to this group of attackers:

- In October 2013 the domain [chmail\[.\]in](#) was reported⁶ as being used in widespread attacks against users of the Iranian mail service [chmail\[.\]ir](#)
- In January 2014 the domain [google-settings\[.\]com](#) was reported⁷ as being used in credential theft against some gmail users.

Recommended Actions

As ever with phishing attacks, one of the most important preventative steps you can take is to educate staff on how to identify suspicious emails – especially as there are fewer technical measures that can be taken to prevent low distribution phishing attacks which aim to steal credentials than there are for similar attacks involving malware.

Organisations with good logging for their e-mail data could attempt to detect activity relating to compromised accounts by alerting on “impossible journeys”, where locations from which users log in are monitored and where alerts are produced when a single user logs in from two separate countries in a short period of time.

Snort Signatures

We have developed some SNORT signatures to detect the current template used by the attackers in their phishing campaigns. The following signatures detect Javascript that is present on many obfuscated redirects, not necessarily related to this activity but which may be indicative of Sofacy phishing:

⁶ <http://www.asriran.com/fa/news/299798/%D8%A7%DB%8C%D9%85%DB%8C%D9%84-%DA%86%D8%A7%D9%BE%D8%A7%D8%B1-%D9%87%D8%AF%D9%81-%D8%AD%D9%85%D9%84%D9%87-%D9%87%DA%A9%D8%B1%D9%87%D8%A7-%D9%82%D8%B1%D8%A7%D8%B1-%DA%AF%D8%B1%D9%81%D8%AA>

⁷ <http://www.spamfighter.com/News-18805-Security-Researcher-Intercepted-Phishing-Email-Campaign-which-Aimed-at-Google-Users.htm>

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```
alert tcp $EXTERNAL_NET $HTTP_PORTS -> $HOME_NET any (msg:"Potential Sofacy Phishing Redirect";
flow:established,to_client; content:""\x6C\x6F\x63\x61\x74\x69\x6F\x6E"";
classtype:trojan-activity;
reference:url,http://pwc.blogs.com/cyber_security_updates/2014/10/phresh-phishing-against-
government-defence-and-energy.html; sid:xxxxxxx; rev:1;)
```

```
alert tcp $EXTERNAL_NET $HTTP_PORTS -> $HOME_NET any (msg:"Potential Sofacy Phishing Redirect";
flow:established,to_client; content:""\x6C\x6F\x63\x61\x74\x69\x6F\x6E""; classtype:trojan-activity;
reference:url,http://pwc.blogs.com/cyber_security_updates/2014/10/phresh-phishing-against-
government-defence-and-energy.html; sid:xxxxxxx; rev:1;)
```

The following comment occurs in many of the pages we've observed relating to this campaign, but can also appear in some legitimate sites:

```
alert tcp $EXTERNAL_NET $HTTP_PORTS -> $HOME_NET any (msg:"Potential Sofacy Phishing Redirect";
flow:established,to_client; content:"// stop for sometime if needed"; classtype:trojan-activity;
reference:url,http://pwc.blogs.com/cyber_security_updates/2014/10/phresh-phishing-against-
government-defence-and-energy.html; sid:xxxxxxx; rev:1;)
```

For more information on this threat actor and further indicators of compromise, please get in touch with us at threatintelligence@uk.pwc.com.

Appendix 1 - Domains

Domains involved in this phishing campaign and associated domains used by the same threat actor:

northropgrumman[.]org.uk
counterterorexpo[.]com
nato.nshq[.]in
bostodynamlcs[.]com
natoexhibitionff14[.]com
vice-news[.]com
world-oil-company[.]com
hushmali[.]com
mfanews[.]info
azureon-line[.]com
us-mg6mail-service[.]com
mail.telecharger-01[.]com
ns1.mfanews[.]org
updatepc[.]org
ya-support[.]com
changepassword-hotmail[.]com
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mrthelp[.]org
egreetingsfrom[.]us
kitegacc[.]net
kitegacc[.]com
mail.rnil[.]am
hothookup[.]net
NETSCHECKER[.]com
webmail-saic[.]com
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