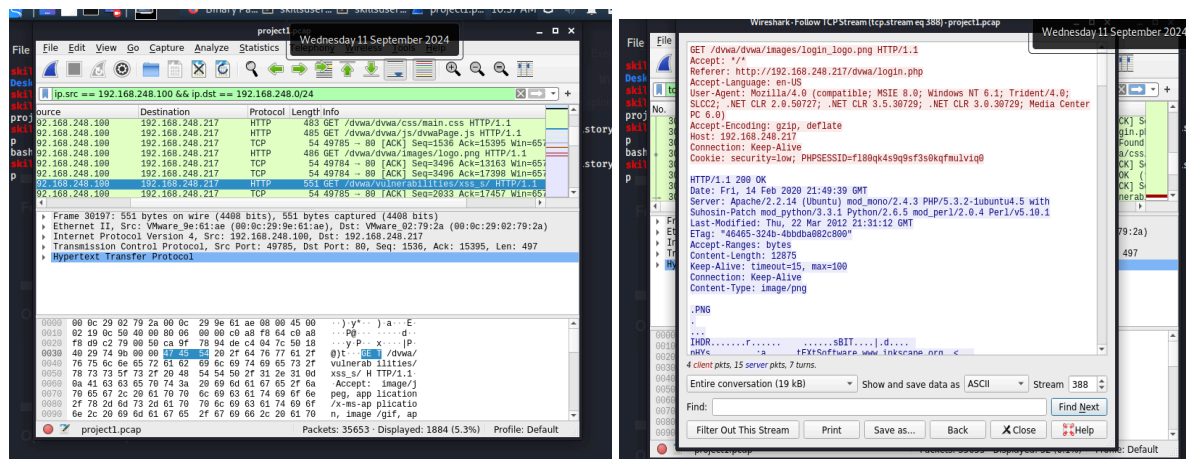


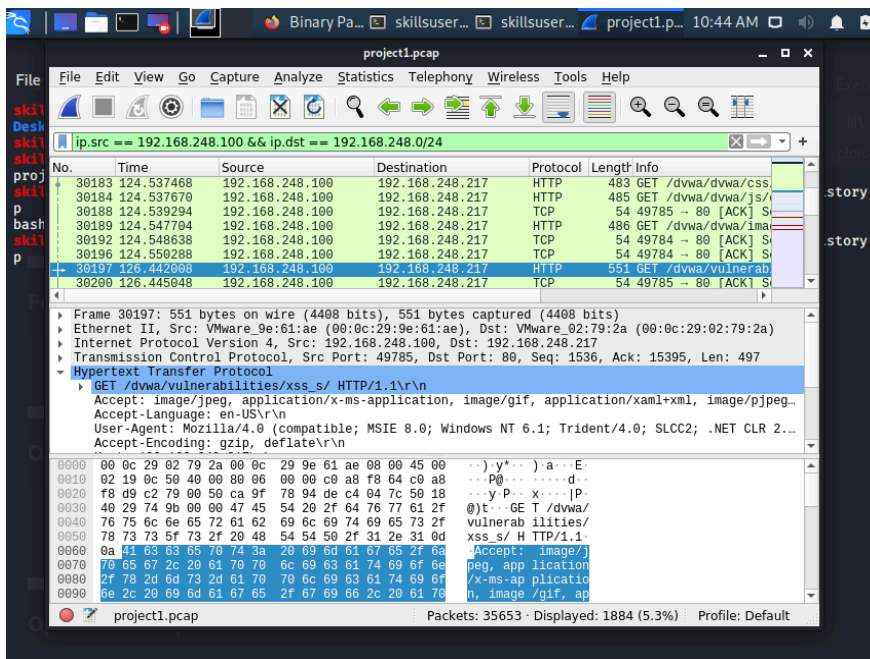
Project 1: Respond to an Incident Involving an Employee Being Compromised Using Tools to Practice Penetration Testing

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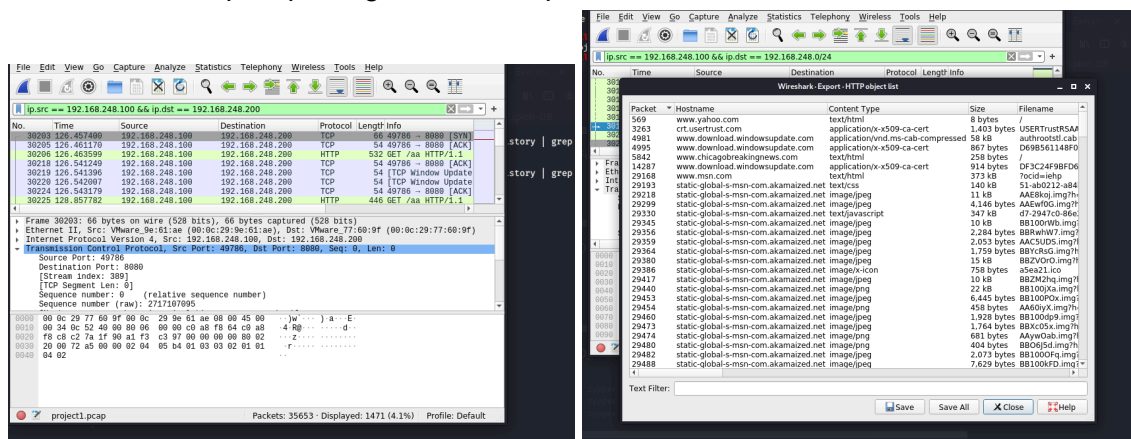
The customer has contacted us to find out whether or not they have been successfully breached. They sent some IT personnel to a Certified Ethical Hacker course recently and one of them downloaded a practice virtual machine from a popular Capture the Flag website. A few weeks later it came out that the site in question had been compromised months earlier and some of the VM's web applications might have been compromised by threat actors. The threat actors planted exploits via vulnerabilities like cross-site scripting (XSS) on some of the practice websites. These malicious drops or "watering hole" attacks point to IP addresses controlled by threat actors and are said to be hosting malicious code that could be used to take control of any computers that might visit the sites on the practice VM. You have just been provided with a current memory dump of the machine and a pcap file of traffic to and from the machine the suspected victim/IT employee was using. Using these artifacts, answer the following questions. You will need to use tools like Wireshark, Zeek, and Volatility to answer these questions. The suspected compromised machine's IP is 192.168.248.100



As we can see the IP address for the virtual machine hosting the malicious website is 192.168.248.217, since the client suggested the victim was "practicing" using a local VM, got to filter it in Wireshark as we got the source address. There was a connection between the 192.168.248.2 and 192.168.248.217, the destination IP is in the same network range as the source. Packet 30197 shows the vulnerable practice server was visited. We get to see the time and date stamp of the first connection between the threat actor and the victim and we can tell any traffic from the Victim's VM and the threat actor is bad.



The attacker's IP address is 192.168.248.200, after connecting to the web server, we can see the immediate connection to port 8080 on that IP address as well as port 4444 this is all happening in the same IP address, we get this from filtering the IP addresses, were you see the behavior and other connections between the two. For the malicious processes running on the suspected compromised device, I clicked on files, and export objective to get the malicious file, There were several including ghost.exe, eDqYEC.exe, HgRgTVSdX.exe, tior.exe, but I couldn't run it on Virustotal as with VM provided it will always be blank when I login into the page and with Hybrid analysis still did not give me the answers I needed with the known Metasploit privilege escalation process.



The malicious processes running are actively connected, as we can see that ghost.exe, mXvtj.exe, and the HgTg.exe. We got this by running netscan plugin in volatility and then grepping each rogue process. With the results, we could also analyze that the connection port is connected through, for ghost.exe on port 7777, mXvtj.exe on port 4444 and HgRg.exe on port 9999 they all in the same IP address 192.168.248.200

```

skillsuser@IRskills: ~/project1
File Actions Edit View Help Analyze Statistics Telephony Wireless Tools Help

skillsuser@IRskills:~/project1$ volatility -f project1.raw --profile=Win7SP0x86 netscan | grep ghost
Volatility Foundation Volatility Framework 2.6
ERROR : volatility.debug : Invalid profile Win7SP0x86 selected
skillsuser@IRskills:~/project1$ volatility -f project1.raw --profile=Win7SP0x86 netscan | grep ghost
Volatility Foundation Volatility Framework 2.6
0x5f8bd2b8 TCPv4 192.168.248.100:49793 192.168.248.200:7777 ESTABLISHED 3132 ghost.exe
e
skillsuser@IRskills:~/project1$ volatility -f project1.raw --profile=Win7SP0x86 netscan | grep eDqYEC
Volatility Foundation Volatility Framework 2.6
skillsuser@IRskills:~/project1$ volatility -f project1.raw --profile=Win7SP0x86 netscan | grep mXvtj
Volatility Foundation Volatility Framework 2.6
0x5e5b4d40 TCPv4 192.168.248.100:49792 192.168.248.200:4444 ESTABLISHED 2644 mXvtj.exe
e
skillsuser@IRskills:~/project1$ volatility -f project1.raw --profile=Win7SP0x86 netscan | grep HgRg
Volatility Foundation Volatility Framework 2.6
0x5fb22df8 TCPv4 192.168.248.100:49794 192.168.248.200:9999 ESTABLISHED 3324 HgRgTVSd
X.exe
skillsuser@IRskills:~/project1$ volatility -f project1.raw --profile=Win7SP0x86 netscan | grep tior
Volatility Foundation Volatility Framework 2.6
skillsuser@IRskills:~/project1$

```

```

skillsuser@IRskills: ~/project1
File Actions Edit View Help Analyze Statistics Telephony Wireless Tools Help

volatility: error: no such option: -D
skillsuser@IRskills:~/project1$ volatility -f project1.raw --profile=Win7SP0x86 proddump /tmp 3132
Volatility Foundation Volatility Framework 2.6
ERROR : volatility.debug : You must specify something to do (try -h)
skillsuser@IRskills:~/project1$ volatility -h
Volatility Foundation Volatility Framework 2.6
Usage: Volatility - A memory forensics analysis platform.

Options:
-h, --help                list all available options and their default values.
                          Default values may be set in the configuration file
                          (/etc/volatilityrc)
--conf-file=/home/skillsuser/.volatilityrc User based configuration file
-d, --debug                Debug volatility
--plugins=PLUGINS          Additional plugin directories to use (colon separated)
--info                     Print information about all registered objects
--cache-directory=/home/skillsuser/.cache/volatility Directory where cache files are stored
--cache                    Use caching
--tz=TZ                    Sets the (Olson) timezone for displaying timestamps
                          using pytz (if installed) or tzset
-f FILENAME, --filename=FILENAME Filename to use when opening an image
--profile=WinXPSP2x86      Name of the profile to load (use --info to see a list
                          of supported profiles)
-l LOCATION, --location=LOCATION A URN location from which to load an address space
-w, --write                Enable write support
--dtb=DTB                  DTB Address
--shift=SHIFT              Mac KASLR shift address
--output=text              Output in this format (support is module specific, see
                          the Module Output Options below)
--output-file=OUTPUT_FILE Write output in this file
-v, --verbose              Verbose information
--physical_shift=PHYSICAL_SHIFT Linux kernel physical shift address
--virtual_shift=VIRTUAL_SHIFT Linux kernel virtual shift address
-g KDBG, --kdbg=KDBG       Specify a KDBG virtual address (Note: for 64-bit
                          Windows 8 and above this is the address of
                          KdCopyDataBlock)
--force                    Force utilization of suspect profile
-k KPCR, --kpcr=KPCR       Specify a specific KPCR address
--cookie=COOKIE            Specify the address of nt!ObHeaderCookie (valid for
                          Windows 10 only)

Supported Plugin Commands:

```

Lol, I did run into some issues, also make sure you spell everything correctly .

With the virustotal.com or other malware detector, you will be able to get more information from the feedback they give you when you generate the file also make sure it is not the organization's data cause now you exposing them. To get feedback from Virustotal.com, you will have to extract each file using procdump , upload the extracted file on the virustotal.com

```

skillsuser@IRskills:~$ cd project1
skillsuser@IRskills:~/project1$ volatility -f project.raw --profile=Win7SP0x86 procdump -D /tmp -p 3132
Volatility Foundation Volatility Framework 2.6
ERROR : volatility.debug : The requested file doesn't exist
skillsuser@IRskills:~/project1$ volatility -f project1.raw --profile=Win7SP0x86 procdump -D /tmp -p 3132
Volatility Foundation Volatility Framework 2.6
Process(V) ImageBase Name Result
-----
0x84816030 0x00400000 ghost.exe OK: executable.3132.exe
skillsuser@IRskills:~/project1$ volatility -f project1.raw --profile=Win7SP0x86 procdump -D /tmp -p 2644
Volatility Foundation Volatility Framework 2.6
Process(V) ImageBase Name Result
-----
0x85ea33a8 0x00400000 mXvtj.exe OK: executable.2644.exe
skillsuser@IRskills:~/project1$ volatility -f project1.raw --profile=Win7SP0x86 procdump -D /tmp -p 3324
Volatility Foundation Volatility Framework 2.6
Process(V) ImageBase Name Result
-----
0x849a6030 0x00400000 HgRgTVSdX.exe OK: executable.3324.exe
skillsuser@IRskills:~/project1$

```

The attacker had system-level privileges as we got to figure out this through the running the volatility plugin getsids and grep 5 - 1 - 5 - 18

```

File Actions Edit View Help
skillsuser@IRskills:~/project1$ volatility -f project1.raw --profile=Win7SP0x86 getsids | grep 5 - 1 - 5 - 18
Volatility Foundation Volatility Framework 2.6
(standard input):System (4): S-1-5-18 (Local System)
(standard input):System (4): S-1-5-32-544 (Administrators)
(standard input):System (4): S-1-5-11 (Authenticated Users)
(standard input):smss.exe (268): S-1-5-18 (Local System)
(standard input):smss.exe (268): S-1-5-32-544 (Administrators)
(standard input):smss.exe (268): S-1-5-11 (Authenticated Users)
(standard input):csrss.exe (352): S-1-5-18 (Local System)
(standard input):csrss.exe (352): S-1-5-32-544 (Administrators)
(standard input):csrss.exe (352): S-1-1-0 (Everyone)
(standard input):csrss.exe (352): S-1-5-11 (Authenticated Users)
(standard input):csrss.exe (352): S-1-16-16384 (System Mandatory Level)
(standard input):wininit.exe (392): S-1-5-18 (Local System)
(standard input):wininit.exe (392): S-1-5-32-544 (Administrators)
(standard input):wininit.exe (392): S-1-5-11 (Authenticated Users)
(standard input):csrss.exe (400): S-1-5-18 (Local System)
(standard input):csrss.exe (400): S-1-5-32-544 (Administrators)
(standard input):csrss.exe (400): S-1-5-11 (Authenticated Users)
(standard input):winlogon.exe (448): S-1-5-18 (Local System)
(standard input):winlogon.exe (448): S-1-5-32-544 (Administrators)
(standard input):winlogon.exe (448): S-1-5-11 (Authenticated Users)
(standard input):services.exe (492): S-1-5-18 (Local System)
(standard input):services.exe (492): S-1-5-32-544 (Administrators)
(standard input):services.exe (492): S-1-5-11 (Authenticated Users)
(standard input):lsass.exe (500): S-1-5-18 (Local System)
(standard input):lsass.exe (500): S-1-5-32-544 (Administrators)
(standard input):lsass.exe (500): S-1-1-0 (Everyone)
(standard input):lsass.exe (500): S-1-5-11 (Authenticated Users)
(standard input):lsass.exe (500): S-1-16-16384 (System Mandatory Level)
(standard input):lsm.exe (508): S-1-5-18 (Local System)
(standard input):lsm.exe (508): S-1-5-32-544 (Administrators)
(standard input):lsm.exe (508): S-1-1-0 (Everyone)
(standard input):lsm.exe (508): S-1-5-11 (Authenticated Users)
(standard input):lsm.exe (508): S-1-16-16384 (System Mandatory Level)
(standard input):svchost.exe (612): S-1-5-18 (Local System)

```