Ex150 Report

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2022-12-12

Contents

Goal

The goal in this exercise was to get domain administrator through an SMB vulnerability on a new backup domain controller.

Technical Report

Finding: *Vulnerable version of SMB protocol on backup domain controller allows for arbitrary remote code execution via specially-crafted network packets, allowing for domain administrator privilege escalation*

Severity Rating: 10.0

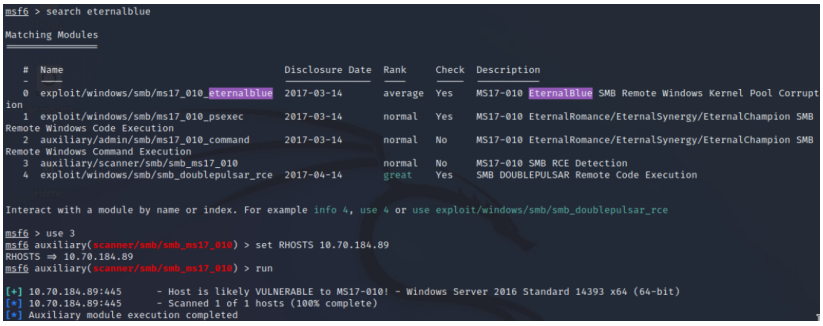
CVSS Base Severity Rating: 10.0 AV:A AC:L PR:N UI:N S:C C:H I:H A:L

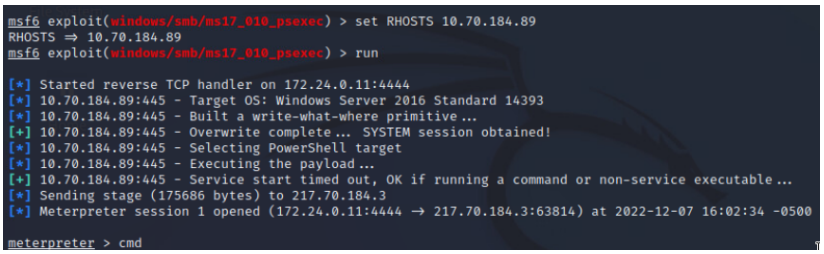
Vulnerability Description

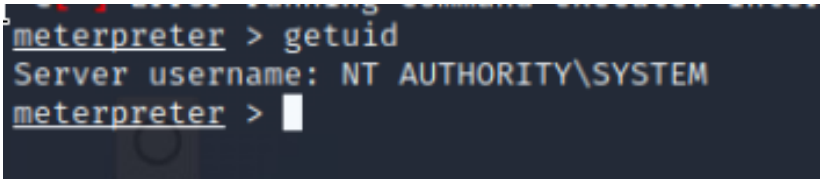
An backup domain controller was found at the IP address of 10.70.184.89 running an outdated version of the SMB protocol, typically used for network resource sharing across an organization. Due to a vulnerability in the way in which this version handles certain packets, an attacker may send a request that grants them arbitrary remote code execution on the machine, which can lead them to gain local administrative permissions.

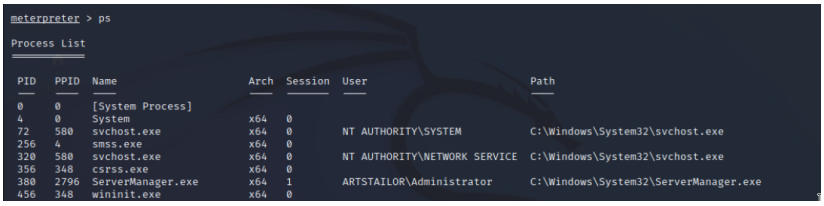
Because many of the processes on this domain controller run as the domain administrator user, a user is then easily able to migrate to those processes and subsequently gain complete domain administrator rights.

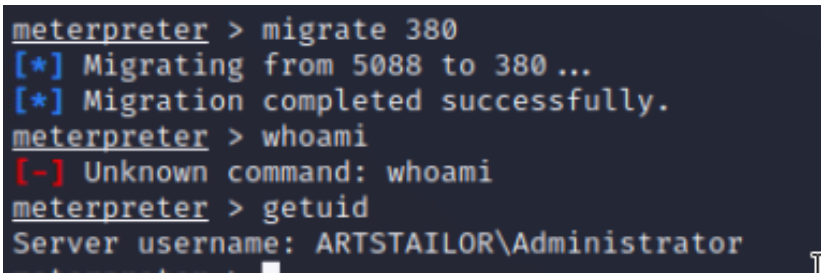
Confirmation method











Mitigation or Resolution Strategy

It is imperative to update the operating system version on the backup domain controller to the most recently issued version by Microsoft (usually done through the Start Menu → Settings → Windows Updates → Check for Update).

Attack Narrative

Scanning the network for the new DC

To enumerate Art's network in search for the new backup Domain Controller, we performed the usual steps of setting up a SOCKS proxy on the `costumes.artstailor.com` machine, in which we still have an administrator account under the `pr0b3` username. Having done this, we are now able to run an nmap scan to look for open AD-related ports with

```
nmap -Pn 10.70.184.0/24 -p 135,445.
```

Having done so, we were able to find an intriguing host right before the Primary Domain Controller (PDC) IP address with those very ports open:

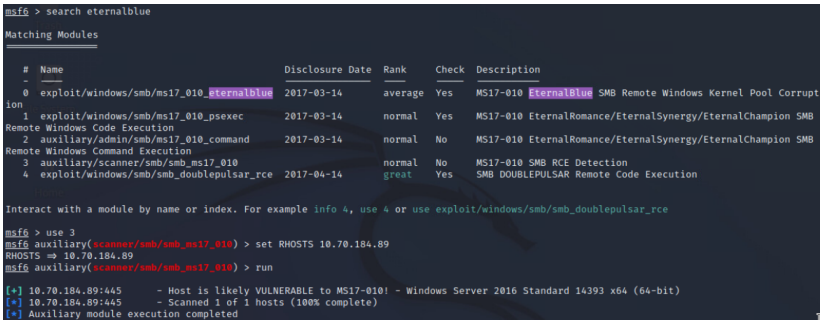
```
Nmap scan report for 10.70.184.89
Host is up (0.0039s latency).
Scanned at 2022-12-07 15:36:12 EST for 93s

PORT    STATE SERVICE
139/tcp open  netbios-ssn
445/tcp open  microsoft-ds
Final times for host: srtt: 3931 rttvar: 3953  to: 100000

Nmap scan report for pdc.artstailor.com (10.70.184.90)
Host is up (0.0034s latency).
Scanned at 2022-12-07 15:35:16 EST for 57s

PORT    STATE SERVICE
139/tcp open  netbios-ssn
445/tcp open  microsoft-ds
```

Since this seems like a good candidate for the backup domain controller, we proceed to scan for an SMB-related vulnerability on it.

Scanning for an SMB-related vulnerability

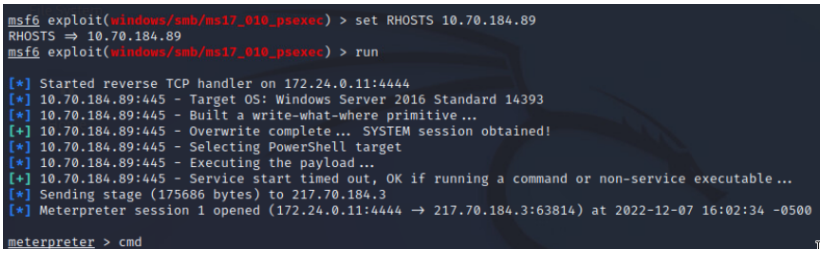
Using the search functionality within the Metasploit framework, we find a few potential modules that may be of help. The one that ended up providing us information about a vulnerability was `scanner/smb/smb_ms17_010`, letting us know that this backup domain controller may in fact be vulnerable to the famous **EternalBlue** exploit (CVE-2017-0144) that targets a vulnerable version of the SMBv1 protocol implementation.

The screenshot below demonstrates the script along with its results:

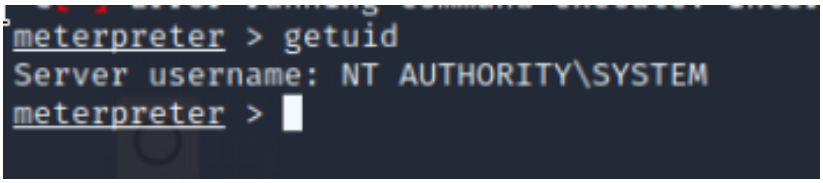


Carrying out the EternalBlue exploit

Now, we proceed to exploiting the vulnerability itself. Although there are a few different available modules for EternalBlue, we were able to successfully obtain a shell with `exploit/smb/smb_ms17_010_psexec`:

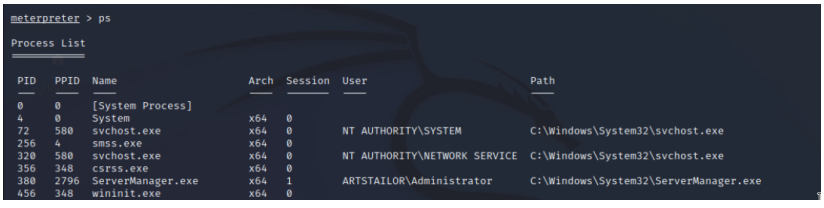


However, as we can see in the below screenshot, we do not yet have domain administrator privileges, only local Administrator privileges:

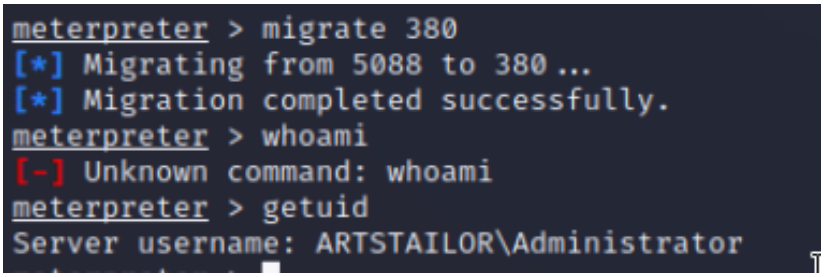


Escalating privileges to domain admin

Running `ps` within our meterpreter shell, we are able to list the current system processes along with the user whom they are running as.



Fortunately, there are a few processes running as `ARTSTAILOR Administrator`, the domain administrator account. Using the `migrate` command in Metasploit, we can attempt to migrate our shell over to these process IDs.



As shown in the above screenshot, we were able to successfully migrate our shell over to the process running as domain administrator, and subsequently obtain domain administrator privileges ourselves.

MITRE ATT&CK Framework TTPs

TA007: Discovery
- **T1046:** Network Service Discovery
  - **NA:** NA

TA008: Lateral Movement
- **T1210:** Exploitation of Remote Services
  - **NA:** NA