

Open in app

Sign in

Medium

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.



Hunting in Active Directory: Unconstrained Delegation & Forests Trusts

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

works from an offensive perspective. He also covers specific configurations that can be used to exploit weaknesses in Active Directory. He also covers specific configurations that can be used to exploit weaknesses in Active Directory.

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

In this post, I will provide initial detective guidance against the attack variation explained in Will's post, focusing primarily on security events generated by the forced-machine-account-auth method in general. I will still provide a few specific indicators of compromise (IOCs) collected from Windows security events generated by Rubeus monitoring for TGTs and the execution of the only publicly available proof of concept code SpoolSample.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

ticket granting ticket (TGT) can be extracted on the attacker controlled server

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Understanding the Concepts Applied in the Attack

Before we start simulating and documenting the detection of this attack, it is very important to understand what the attacker does and why. In this section, I will provide several of the articles and documentation that helped me understand the attack a little bit better. A few things that stood up for me about the attack from [Will's post](#) were the following:

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our Privacy Policy , including cookie policy.		
		server. The server can then impersonate the user by using the user's TGT to authenticate to other services in the network.
Traditional Constrained	Service for User to Self (S4U2self) Service for User to Proxy (S4U2proxy)	Any accounts (user or computer) that have service principal names (SPNs) set in their msDS-AllowedToDelegateTo property can pretend to be any user in the domain (i.e. they can "delegate") to those specific SPNs.
Resource-Based Constrained		Implemented with a security descriptor on the target resource, instead of a list of SPNs on the "frontend"

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

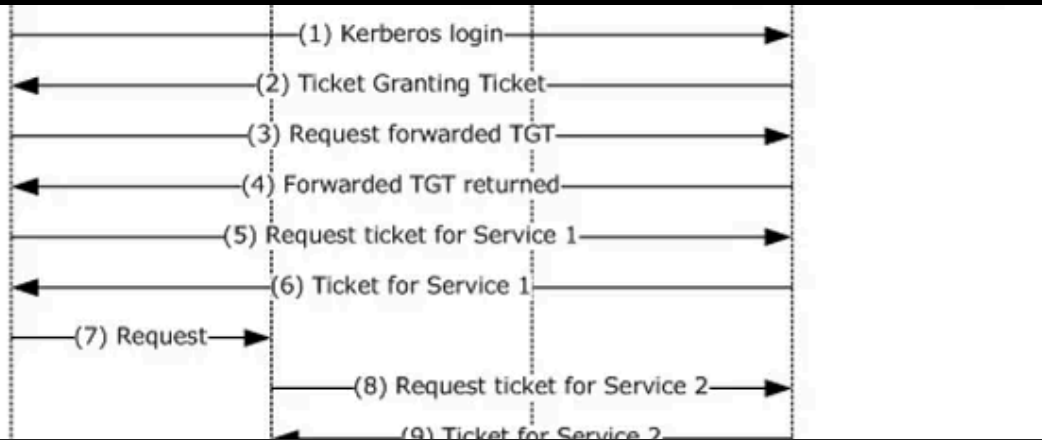
Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.



Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

5. The user makes a request for a service ticket to Service 1 using the TGT.

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

6. The ticket-granting service (TGS) returns the service ticket in a KRB_TGS_REP.

7. The user makes a request to Service 1 by sending a KRB_AP_REQ message, presenting the service ticket, the forwarded TGT, and the session key for the forwarded TGT.

8. To fulfill the user's request, Service 1 needs Service 2 to perform some

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

15. Service 1 can then continue to impersonate the user with Service N. This

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

16. Service N will respond to Service 1 as if it was the user's process.

The server, with unconstrained delegation configured, can ultimately use the forwarded TGT not only to access other non-requested services in the network, but to execute attacks such as DCSync if it is a Domain Controller TGT. You can read more about the details provided above in [here](#). As you

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

When a new domain is added to the root domain, two-way transitive trusts are

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

RpcRemoteFindFirstPrinterChangeNotification(Ex) method to force any
m
att

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

What is the [MS-RPRN] Print System Remote Protocol?

According to [Microsoft Docs](#), it is based on the Remote Procedure Call (RPC) protocol that supports synchronous printing and spooling operations between a client and server, including print job control and print system management. In addition, the Print System Remote Protocol uses RPC over

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

server) is all it takes for the “printer bug” to work. When the `RpcOpenPrinter` m
th

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

return values. Lee’s POC monitors for the two following return ERROR values and provides the following messages:

- **ERROR_ACCESS_DENIED:** *“Target server attempted authentication and got an access denied. If coercing authentication to an NTLM challenge-response capture tool (e.g. responder/inveigh/MSF SMB capture), this is expected and indicates the coerced authentication worked”*

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

Domain Controller (DC) of the root domain and used it against another

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

A victim forest

- A Domain Controller (**rikers.cyberpartners.local**) as the victim since we want its TGT to then perform a DCSync attack from the compromised DC with unconstrained delegation configured.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

rikers\$ was forced to authenticate to our server with unconstrained delegation

de

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

The named pipe share named IPC\$ is accessed on hydrogen covertius local
by
cli

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

localadmin from COVERTIUS and not rikers\$ (delegation)

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

step fails, then it could be that the user running rubens might not have the pr

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

was meant to document the security events generated during the main steps of

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Initial Detection Recommendations:

Rubeus

- Rubeus was executed on disk for this proof of concept so you can build a basic signature based on the command line arguments. Keep in mind that command line values have a high attacker influence rating, which means that the command arguments can be manipulated by the attacker

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

This specific variation of the attack forces Domain Controllers to

au

co

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

ce

of events, expect **SID filtering** events (Security event 4675) on the unconstrained server with **filtered SIDs matching Enterprise Domain Controllers (S-1-5-9)**.

- Get a list of servers with unconstrained delegation configured and stack each instance of **Security event 4675**.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

spoofss service over IPC\$ from unconstrained server covers just this

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

. . .

I hope this post was helpful for those that just read about the awesome “Not a Security Boundary: Breaking Forests Trusts” blog post from my teammate Will, and wanted to learn more about most of the data generated at the endpoint level when the attack is executed. This post covered only one

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

<https://www.harmj0y.net/blog/redteaming/another-word-on-delegation/>

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

<https://www.harmj0y.net/blog/redteaming/a-guide-to-attacking-domain-trusts/>

<https://www.harmj0y.net/blog/redteaming/a-guide-to-attacking-domain-trusts/>

[https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2003/cc775736\(v=ws.10\)#trust-types-1](https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2003/cc775736(v=ws.10)#trust-types-1)

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

[https://docs.microsoft.com/en-us/previous-versions/windows/it-](https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2003/cc755427(v=ws.10))

pr To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy. s

[https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2003/cc755427\(v=ws.10\).](https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2003/cc755427(v=ws.10))

[https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2012-R2-and-2012/dn745899\(v=ws.11\).](https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2012-R2-and-2012/dn745899(v=ws.11))

[https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2012-R2-and-2012/dn745899\(v=ws.11\).](https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2012-R2-and-2012/dn745899(v=ws.11))

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Written by Roberto Rodriguez

1.6K Followers · Writer for Posts By SpecterOps Team Members

Follow



Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.



Hope Walk... in Posts By SpecterOps Team Memb...

An Introduction to Manual Active Directory Querying with Dsquery...

Introduction



Roberto Rodri... in Posts By SpecterOps Team Me...

Threat Hunting with Jupyter Notebooks— Part 1: Your First...

When it comes to threat detection, how many

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free



Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.



Kostas in Detect FYI

Unintentional Evasion: Investigating How CMD...

Discover how CMD command fragmentation



MatSec

OSCP 2024: A New Era in Cybersecurity Certification

As of November 1, 2024, the Offensive

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free



Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.



Bytesofinfosec in CyberScribers

Cyber Incident Management: A Comprehensive Overview

Introduction



Satyam Pathania

Microsoft SC-900: Handwritten Notes You'll Actually Use

Grab My Handwritten Notes and Ace the

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free



Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month

To make Medium work, we log user data. By using Medium, you agree to our [Privacy Policy](#), including cookie policy.

Medium

Sign up to discover human stories that deepen your understanding of the world.

Free

- ✓ Distraction-free reading. No ads.
- ✓ Organize your knowledge with lists and highlights.
- ✓ Tell your story. Find your audience.

Sign up for free

✦ Membership

- ✓ Read member-only stories
- ✓ Support writers you read most
- ✓ Earn money for your writing
- ✓ Listen to audio narrations
- ✓ Read offline with the Medium app

Try for 5 \$/month