Modelo de Relatório Técnico – Lab Segmentação de Rede

Autor: Luiz Eduardo de Andrade

Data: 23/07/25 **Versão:** 1.0

Sumário Executivo

Temos três redes CorpNet, InfraNet e GuestNet, este relatório avalia a segurança da rede simulada, identificando vulnerabilidades como portas abertas em serviços como FTP, MySQL, SMB, LDAP e Zabbix, que podem ser exploradas por ameaças externas ou internas. Destacamos a necessidade de ações prioritárias, como remover a porta 21 do FTP e instalar um firewall para controlar o acesso, fortalecendo a proteção dos ativos. Essas medidas visam reduzir riscos operacionais e melhorar a segurança geral da rede.

Objetivo

Analisar a rede simulada para identificar exposição, segmentação e riscos operacionais.

O documento existe para mostrar as vulnerabilidades existentes através de portas que estão abertas e os riscos que elas representam e dar direcionamento para a mitigação destas vulnerabilidades.

Escopo

A Análise foi realizada no ambiente docker simulado com múltiplos hosts e 3redes segmentadas, divididas em CorpNet, InfraNet e GuestNet

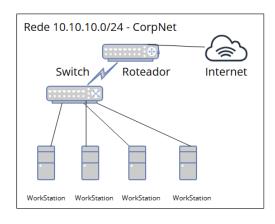
Os limites de atuação serão dentro destas 3 redes segmentadas fazendo coleta ativa de dados na rede para verificação de portas abertas e os serviços que rodam nestas portas.

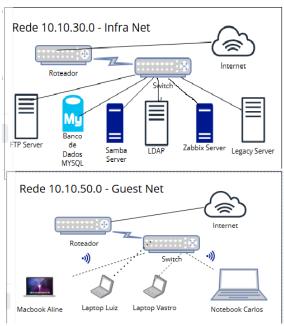
Metodologia

- Ferramentas: nmap, rustscan, netdiscover, ping, protocolo ARP, script anônimo de FTP, etc.
- Coleta ativa de dados de rede

Análise manual e documentada

Diagrama de Rede





Documentação de Redes Descobertas

Autor: Luiz Eduardo de Andrade

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Redes Identificadas

Nome Estimado	Subnet Descoberta	Finalidade Suposta
CorpNet	10.10.10.0/24	Rede Corporativa
InfraNet	10.10.30.0/24	Rede de Infraestrutura
GuestNet	10.10.50.0/24	Rede Convidado

Dispositivos por Rede

Rede Corporativa

IP	Função	Evidência	
10.10.10.1	Roteador	Portas fechadas	
10.10.10.2	Switch	Porta 48660 aberta	
10.10.10.10	Estação de Trabalho	Portas fechadas	
10.10.10.101	Estação de Trabalho	Portas fechadas	
10.10.10.127	Estação de Trabalho	Portas fechadas	
10.10.10.127	Estação de Trabalho	Portas fechadas	

Rede de Infraestrutura

IP	Função	Evidência	
10.10.30.1	Roteador	Portas fechadas	
10.10.30.2	Switch	Portas 41658 e 41910 abertas	
10.10.30.10	Server FTP	Porta 21 aberta FTP – Transferência de Arquivos	
10.10.30.11	Server MySQL	Portas 3306 e 33060 abertas MYSQL Banco de Dados	
10.10.30.15	Server Samba	Porta 139 e 445 abertas SMB compartilhamento de diretórios Windows	
10.10.30.17	OpenLDAP	Porta 636 aberta LDAP	
10.10.30.117	Server Zabbix	Porta 80, 10051 e 10052 abertas serviço web ZABBIX	
10.10.30.227	Server Legacy	Portas fechadas	

Rede de Convidados

IP	Função	Evidência
10.10.50.1	Roteador	Portas fechadas
10.10.50.2	Switch	Portas 33948 e 39470 abertas
10.10.50.3	Laptop Vastro	Portas fechadas
10.10.50.4	MacBook Aline	Portas fechadas
10.10.50.5	Laptop Luiz	Portas fechadas
10.10.50.6	Notebook Carlos	Portas fechadas

Observações de Risco

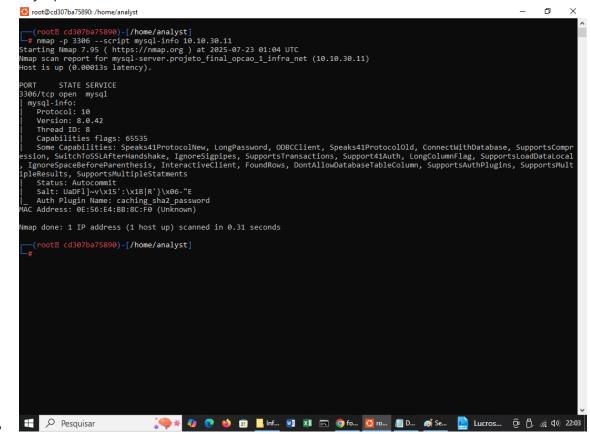
- A rede Infraestrutura é necessário colocar um firewall, para proteger as portas abertas.
- A rede Guest tem que ser segmentada, ou seja, separada das redes corp e infra para evitar movimentação lateral.
- Poucos serviços na rede Guest.
- Muitas portas fechadas na rede Corporativa.

Diagnóstico (Achados)

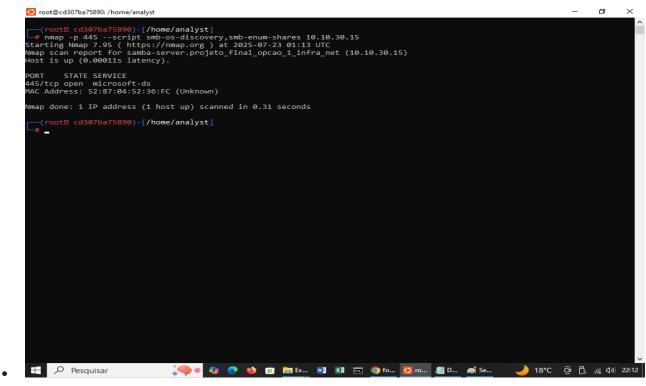
- 10.10.30.10 FTP 21
- Conseguir entrar no serviço ftp informando a porta aberta, no MACADDRESS

• 10.10.30.11 – MYSQL- 3306 e 33060

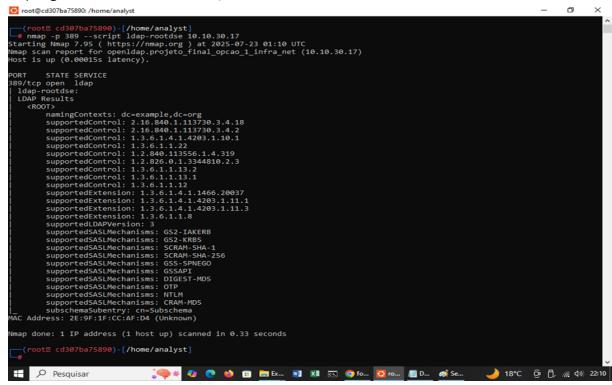
 Informações do serviço mysql que está rodando como a versão 8.0.42, com o método de autenticação sha2 podemos procurar na internet as vulnerabilidades desta versão e quebrar o sha2 para termos acesso ao mysql.



- 10.10.30.15 Protocolo SMB Portas 139 e 445
- O protocolo SMB pode ter algumas vulnerabilidades como execução remota de código, enumeração dos ativos



- 10.10.30.17 LDAP 389 e 636
- A porta do LDAP 389 está aberta e neste protocolo não possui criptografia onde a comunicação acontece em texto claro



- 10.10.30.117 Zabbix 80, 10051 e 10052
- Protocolo de comunicação do Zabbix

Recomendações

• Implantar firewall para filtrar as portas, desativar o login FTP anônimo,

Plano de Ação (80/20)

Ação	Impacto	Facilidade	Prioridade
Remover porta 21	Médio	Alta	Alta
Instalar Firewall	Alto	Média	Alta

Conclusão

[Resumo da exposição geral e próximos passos.]

Com base na análise realizada, ficou evidente que a rede simulada apresenta diversas vulnerabilidades, como portas abertas em serviços críticos (FTP, MySQL, SMB, LDAP e Zabbix), que podem ser exploradas por ameaças internas ou externas. Para fortalecer a segurança, recomenda-se a implementação de um

firewall para controlar o acesso às portas abertas, além de desativar o login anônimo no FTP. Essas ações, prioritárias e de fácil execução, são essenciais para reduzir riscos operacionais e proteger os ativos da rede, contribuindo para uma infraestrutura mais segura e resiliente.

Anexos

- Saída dos scans
- Prints de ferramentas
- Diagrama da rede

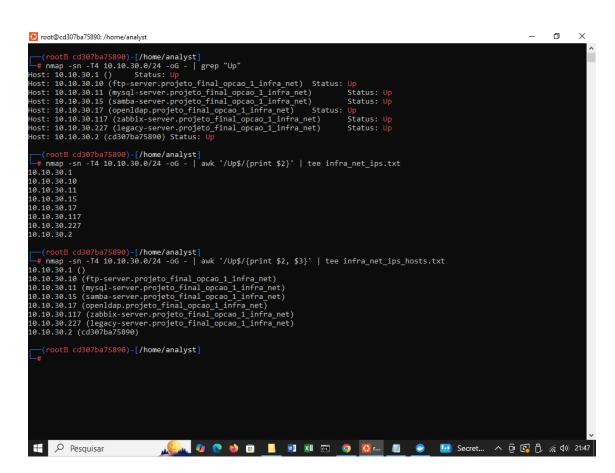
Redes Encontradas através do comando ip a

Ping em todas as redes

```
Croct@cd307ba75890; [/home/analyst]

# ping - c 3 19.10.10.1 # corp_net
10.30.1 # guest_net
10.30.30.1 # guest_net
10.30.1 # guest
```

Comandos NMAP

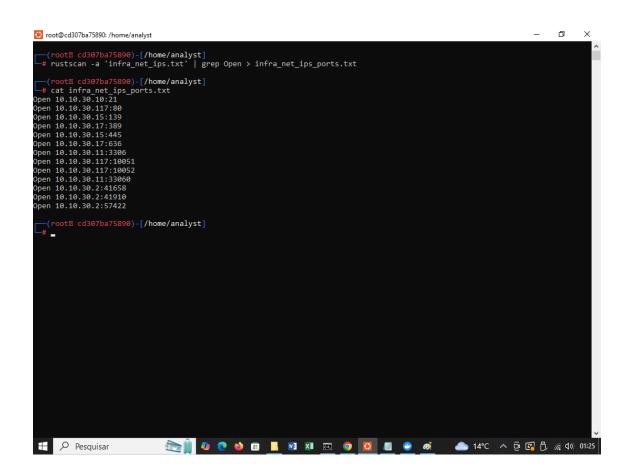


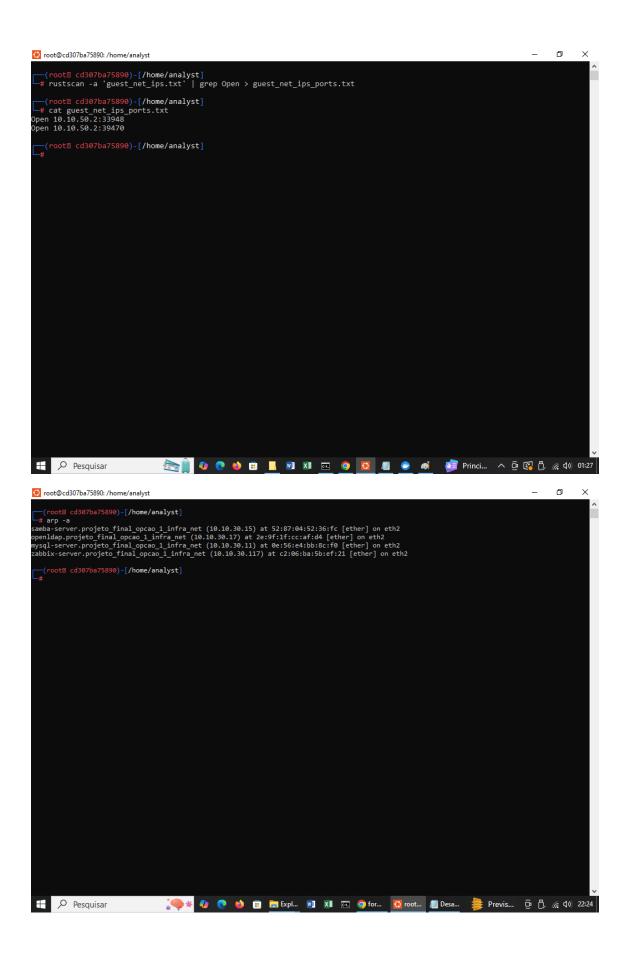
Comando Rustscan

```
(root@ cd307ba75890)-[/home/analyst]
# rustscan -a 'corp_net_ips.txt' | grep Open > corp_net_ips_ports.txt

(root@ cd307ba75890)-[/home/analyst/recon/corp_net]
# cat corp_net_ips_ports.txt

Open 10.10.10.2:48660
```





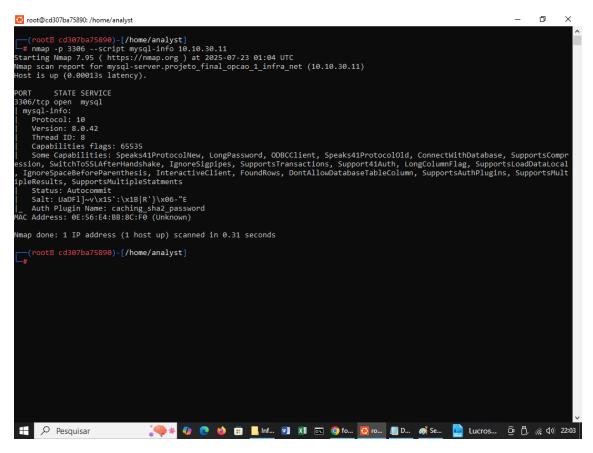
Comando NMAP LDAP

```
Coot@cd307ba75809)-[/home/analyst]

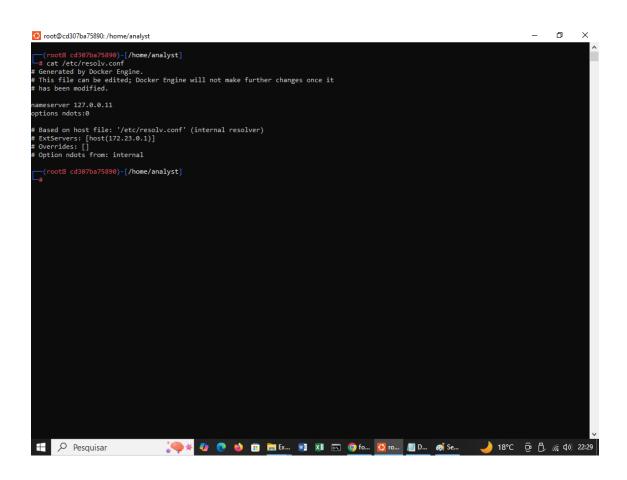
In map -p 389 -script | dap-rootdse | 10.10.30.17 |
Starting Nump 7.95 | https://map.org.go | x 2025-07-23 01:10 UTC |
Nump scan report for openidap.projeto_final_opcao_l_infra_net (10.10.30.17) |
Host is up (0.00015s | latency).

PORT STATE SERVICE
389/tcp open | Idap | | 1dap-rootdse: | 1dap-ro
```

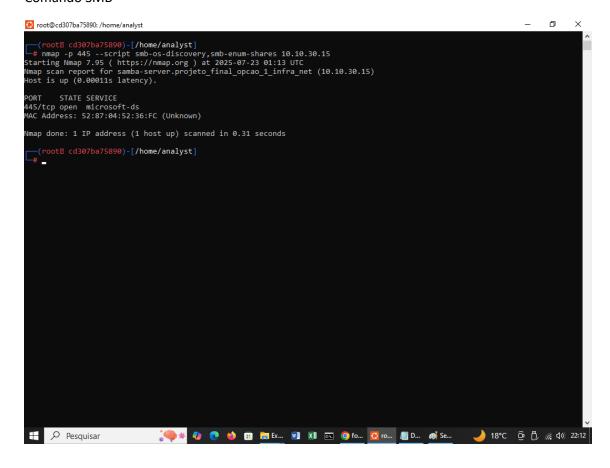
Comando NMAP MYSQL



Comando resolv.conf



Comando SMB



NMAP para encontrar o S.O

```
(rootE cd307ba75890)-[/home/analyst/recon/corp_net]
# nmap -A 10.10.10.0/24

Starting Nmap 7.95 ( https://nmap.org ) at 2025-07-24 03:36 UTC
Nmap scan report for 10.10.10.1

Host is up (0.000082s latency).
All 1000 scanned ports on 10.10.10.1 are in ignored states.
Not shown: 1000 closed tcp ports (reset)
NAC Address: E4:EE:79:79:97:04 (Unknown)
Too many fingerprints match this host to give specific OS details
Network Distance: 1 hop

TRACEROUTE
HOP RIT ADDRESS
1 0.08 ms 10.10.10.1

Numap scan report for WS_001.projeto_final_opcao_1_corp_net (10.10.10.10)
Host is up (0.0000085 latency).
All 1000 scanned ports on WS_001.projeto_final_opcao_1_corp_net (10.10.10.10) are in ignored states.
Not shown: 1000 closed tcp ports (reset)
MAC Address: 64:F9:28:FC:CE:30 (Unknown)
Too many fingerprints match this host to give specific OS details
Network Distance: 1 hop

TRACEROUTE
HOP RIT ADDRESS
1 0.06 ms WS_001.projeto_final_opcao_1_corp_net (10.10.10.10)
Nmap scan report for WS_002.projeto_final_opcao_1_corp_net (10.10.10.10)
TRACEROUTE
HOP RIT ADDRESS
1 0.06 ms WS_001.projeto_final_opcao_1_corp_net (10.10.10.10)
Nmap scan report for WS_002.projeto_final_opcao_1_corp_net (10.10.10.10)
Nmap scan report for WS_002.projeto_final_opcao_1_corp_net (10.10.10.10)
TRACEROUTE
HOP RIT ADDRESS
1 0.00 doublests latency).
All 1000 scanned ports on WS_002.projeto_final_opcao_1_corp_net (10.10.10.10)
Trace and the provent is the provent is
```

```
TRACEROUTE
HOP RTT ADDRESS
1 0.05 ms W5_002.projeto_final_opcao_1_corp_net (10.10.10.10)
Nmap scan report for W5_003.projeto_final_opcao_1_corp_net (10.10.10.127)
Host is up (0.000052s latency).
All 1000 scanned ports on W5_003.projeto_final_opcao_1_corp_net (10.10.10.127) are in ignored states.
Not shown: 1000 closed tcp ports (reset)
MAC Address: 44:810.276.724.6C (Unknown)
Too many fingerprints match this host to give specific OS details
Network Distance: 1 hop

TRACEROUTE
HOP RTT ADDRESS
1 0.05 ms W5_003.projeto_final_opcao_1_corp_net (10.10.10.127)
Nmap scan report for W5_004.projeto_final_opcao_1_corp_net (10.10.10.222)
Host is up (0.000053s latency).
All 1000 scanned ports on W5_004.projeto_final_opcao_1_corp_net (10.10.10.222) are in ignored states.
Not shown: 1000 closed tcp ports (reset)
MAC Address: Ca:SC:06:91:56:16 (Unknown)
Too many fingerprints match this host to give specific OS details
Network Distance: 1 hop

TRACEROUTE
HOP RTT ADDRESS
1 0.05 ms W5_004.projeto_final_opcao_1_corp_net (10.10.10.222)
Nmap scan report for cd307ba75890 (10.10.10.2)
Nmap scan report for cd307ba75890 (10.10.10.2)
Host is up (0.000056s latency).
All 1000 scanned ports on cd307ba75890 (10.10.10.2) are in ignored states.
Not shown: 1000 closed tcp ports (reset)
Too many fingerprints match this host to give specific OS details
Network Distance: 0 hops

OS and Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 256 IP addresses (6 hosts up) scanned in 9.54 seconds
```

```
TRACEROUTE
HOP RTT ADDRESS
1 0.06 ms macbook-aline.projeto_final_opcao_1_guest_net (10.10.50.3)
Nmap scan report for laptop-luiz.projeto_final_opcao_1_guest_net (10.10.50.4)
Host is up (0.000061s latency).
All 1000 scanned ports on laptop-luiz.projeto_final_opcao_1_guest_net (10.10.50.4) are in ignored states.
Not shown: 1000 closed trp ports (reset)
MAC Address: 22:73:46:13:(4:(4 (Unknown)
TO many fingerprints match this host to give specific OS details
Network Distance: 1 hop

TRACEROUTE
HOP RTT ADDRESS
1 0.06 ms laptop-luiz.projeto_final_opcao_1_guest_net (10.10.50.4)
Nmap scan report for laptop-vastro.projeto_final_opcao_1_guest_net (10.10.50.5)
Host is up (0.000070s latency).
All 1000 scanned ports on laptop-vastro.projeto_final_opcao_1_guest_net (10.10.50.5) are in ignored states.
Not shown: 1000 closed tcp ports (reset)
MAC Address: Ax8:07:33:53:56:(C (unknown)
Too many fingerprints match this host to give specific OS details
Network Distance: 1 hop

TRACEROUTE
HOP RTT ADDRESS
1 0.07 ms laptop-vastro.projeto_final_opcao_1_guest_net (10.10.50.5)
Nmap scan report for cd307ba75890 (10.10.50.6)
Host is up (0.000071s latency).
All 1000 scanned ports on cd307ba75890 (10.10.50.6)
Host is up (0.000071s latency).
All 1000 scanned ports on cd307ba75890 (10.10.50.6)
Host is up (0.000071s latency).
All 1000 scanned ports on cd307ba75890 (10.10.50.6)
Host is up (0.000071s latency).
All 1000 scanned ports on cd307ba75890 (10.10.50.6)
Host is up (0.000071s latency).
All 1000 scanned ports on cd307ba75890 (10.10.50.6)
Host is up (0.000071s latency).
All 1000 scanned ports on cd307ba75890 (10.10.50.6)
Host is up (0.000071s latency).
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Host is up (0.000071s latency).
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Host is up (0.000071s latency).
All 1000 scanned ports on cd307ba75890 (10.10.50.6)
Host is up (0.000071s latency).
All 1000 scanned ports on cd307ba75890 (10.10.50.6)
Host is up (0.000071s latency).
```

```
(root@ cd307ba75890)-[/home/analyst/recon/infra_net]
## mmap -A 10.10.30.0/24

starting Nmap 7.95 ( https://nmap.org ) at 2025-07-24 02:45 UTC

Nmap scan report for 10.10.30.1

Host is up (0.000036s latency).

All 1000 scanned ports on 10.10.30.1 are in ignored states.

Not shown: 1000 closed tcp ports (reset)

MAC Address: 82:A9:1D:34:7E:95 (Unknown)

Too many fingerprints match this host to give specific OS details

Network Distance: 1 hop

TRACEROUTE

HOP RTT ADDRESS

1 0.04 ms 10.10.30.1

Nmap scan report for ftp-server.projeto_final_opcao_1_infra_net (10.10.30.10)

Host is up (0.000097s latency).

Not shown: 999 closed tcp ports (reset)

PORT STATE SERVICE VERSION

21/tcp open ftp Pure-FTPd

MAC Address: 8E:11:66:81:40:62 (Unknown)

Device type: general purpose|router

Running: Linux 4.X|S.X, MikroTik RouterOS 7.X

OS CPE: cpe:/o:linux:linux_kernel:4 cpe:/o:linux:linux_kernel:5 cpe:/o:mikrotik:routeros:7 cpe:/o:linux:linux_kernel:5.6.3

OS details: Linux 4.15 - 5.19, OpenMrt 21.02 (Linux 5.4), MikroTik RouterOS 7.2 - 7.5 (Linux 5.6.3)

Network Distance: 1 hop
```

```
(noot@ cd307ba75890).[/home/analyst/recon/guest_net]

# nmap - A 10.10.50.0/24

Starting Nmap 7.95 ( https://nmap.org ) at 2025-07-24 03:46 UTC

Nmap scan report for 10.10.50.1

Not shown: 1000 closed tcp ports (reset)

MAC Address: 56:31:22:E0:88:12 (Unknown)

TO omany fingerprints match this host to give specific OS details

Network Distance: 1 hop

TRACEROUTE

HOP RIT ADDRESS

1 0.12 ms 10.10.50.1

Nmap scan report for notebook-carlos.projeto_final_opcao_1_guest_net (10.10.50.2) are in ignored states.

Not shown: 1000 closed tcp ports (reset)

MAC Address: 46:75(:8:F7:79:F9 (Unknown)

Too many fingerprints match this host to give specific OS details

Network Distance: 1 hop

TRACEROUTE

HOP RIT ADDRESS

1 0.12 ms 10.10.50.1

Nmap scan report for notebook-carlos.projeto_final_opcao_1_guest_net (10.10.50.2) are in ignored states.

Not shown: 1000 closed tcp ports (reset)

MAC Address: 46:75(:8:F7:79:F9 (Unknown)

Too many fingerprints match this host to give specific OS details

Network Distance: 1 hop

TRACEROUTE

HOP RIT ADDRESS

1 0.07 ms notebook-carlos.projeto_final_opcao_1_guest_net (10.10.50.3)

Nmap scan report for macbook-aline.projeto_final_opcao_1_guest_net (10.10.50.3)

Nmap scan report for macbook-aline.projeto_final_opcao_1_guest_net (10.10.50.3)

Not shown: 1000 closed tcp ports (reset)

MAC Address: 56:30:FC:90:78:58 (Unknown)

Too many fingerprints match this host to give specific OS details
```

```
TRACEROUTE
HOP RTT ADDRESS

1 0.08 ms mysql-server.projeto_final_opcao_1_infra_net (10.10.30.11)

Nmap scan report for samba-server.projeto_final_opcao_1_infra_net (10.10.30.15)
Host is up (0.0000662s latency).
Not shown: 998 closed tcp ports (reset)
PORT STATE SERVICE VERSION
139/tcp open netbios-ssn Samba smbd 4
445/tcp open netbios-ssn Samba smbd 4
MAC Address: 36:CD:1C:95:2F:00 (Unknown)
Device type: general purpose
Running: Linux 4.X|5.X
OS CPE: cpe:/o:linux:linux_kernel:4 cpe:/o:linux:linux_kernel:5
OS details: Linux 4.15 - 5.19, OpenWrt 21.02 (Linux 5.4)
Network Distance: 1 hop

Host script results:
| smb2-security-mode:
| 3:1:1:
| Message signing enabled but not required
| smb2-time:
| date: 2025-07-24T02:45:27
| start_date: N/A
```

Zabbix

```
TRACEROUTE
HOP RTT ADDRESS
1 0.05 ms zabbix-server.projeto_final_opcao_1_infra_net (10.10.30.117)

Nmap scan report for legacy-server.projeto_final_opcao_1_infra_net (10.10.30.227)
Host is up (0.000085s latency).
All 1000 scanned ports on legacy-server.projeto_final_opcao_1_infra_net (10.10.30.227) are in ignored states.
Not shown: 1000 closed tcp ports (reset)
MAC Address: E6:93:15:C8:0A:38 (Unknown)
Too many fingerprints match this host to give specific OS details
Network Distance: 1 hop

TRACEROUTE
HOP RTT ADDRESS
1 0.09 ms legacy-server.projeto_final_opcao_1_infra_net (10.10.30.227)
Nmap scan report for cd307ba75890 (10.10.30.2)
Host is up (0.000068s latency).
All 1000 scanned ports on cd307ba75890 (10.10.30.2) are in ignored states.
Not shown: 1000 closed tcp ports (reset)
Too many fingerprints match this host to give specific OS details
Network Distance: 0 hops

OS and Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 256 IP addresses (8 hosts up) scanned in 25.54 seconds
```

Endereço MAC CORPNET com o comando ARP

```
— (root@ cd307ba75890)-[/home/analyst]

# arp-scan 10.10.10.0/24
Interface: eth0, type: EN10MB, MAC: fa:79:11:e5:50:e1, IPv4: 10.10.30.2
WARNING: Cannot open MAC/Vendor file ieee-oui.txt: Permission denied
WARNING: Cannot open MAC/Vendor file mac-vendor.txt: Permission denied
Starting arp-scan 1.10.0 with 256 hosts (https://github.com/royhills/arp-scan)
10.10.10.1 9a:ed:f8:4f:36:41 (Unknown: locally administered)

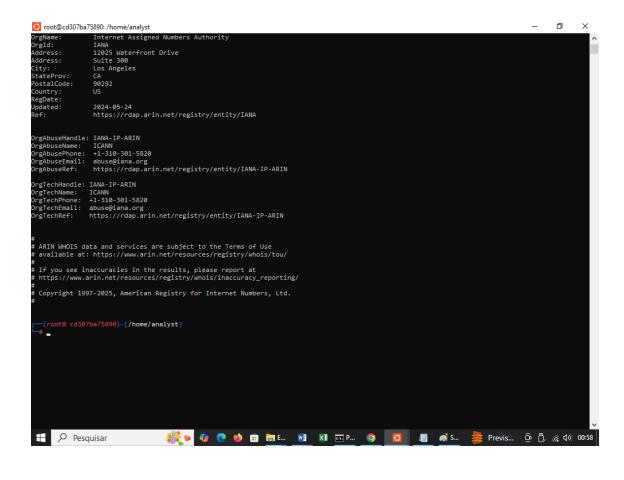
1 packets received by filter, 0 packets dropped by kernel
Ending arp-scan 1.10.0: 256 hosts scanned in 1.849 seconds (138.45 hosts/sec). 1 responded
```

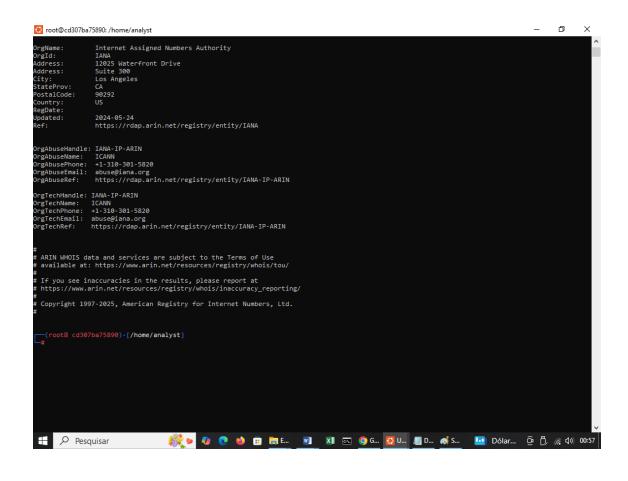
Endereço MAC INFRANET com o comando ARP

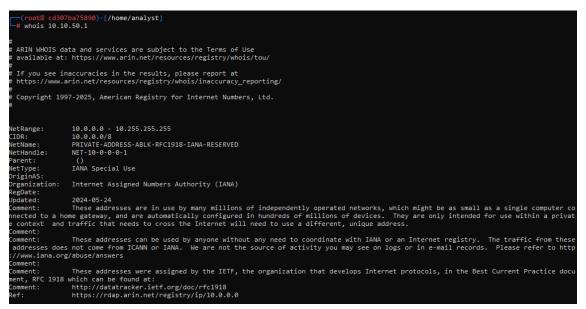
```
(root@ cd307ba75890)-[/home/analyst]
# arp-scan 10.10.50.0/24
Interface: eth0, type: EN10MB, MAC: fa:79:11:e5:50:e1, IPv4: 10.10.30.2
WARNING: Cannot open MAC/Vendor file ieee-oui.txt: Permission denied
WARNING: Cannot open MAC/Vendor file mac-vendor.txt: Permission denied
Starting arp-scan 1.10.0 with 256 hosts (https://github.com/royhills/arp-scan)
10.10.50.1 9a:ed:f8:4f:36:41 (Unknown: locally administered)

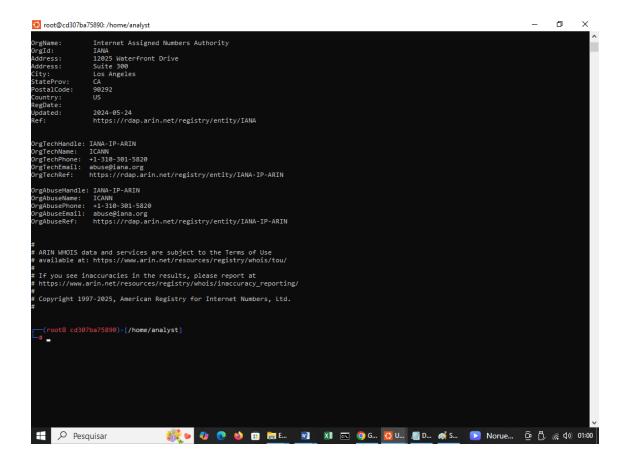
1 packets received by filter, 0 packets dropped by kernel
Ending arp-scan 1.10.0: 256 hosts scanned in 1.837 seconds (139.36 hosts/sec). 1 responded
```

Comando Whois









Netdiscover

Netdiscover da Rede CorpNet

```
Currently scanning: Finished! | Screen View: Unique Hosts

1 Captured ARP Req/Rep packets, from 1 hosts. Total size: 42

IP At MAC Address Count Len MAC Vendor / Hostname

10.10.30.1 26:24:7d:ee:a6:56 1 42 Unknown vendor
```

```
Currently scanning: Finished! | Screen View: Unique Hosts

1 Captured ARP Req/Rep packets, from 1 hosts. Total size: 42

IP At MAC Address Count Len MAC Vendor / Hostname

10.10.50.1 26:24:7d:ee:a6:56 1 42 Unknown vendor
```

Traceroute

```
(root@ cd307ba75890) - [/home/analyst]
# traceroute 10.10.10.0/24
10.10.10.0/24: Name or service not known
Cannot handle "host" cmdline arg `10.10.10.0/24' on position 1 (argc 1)

(root@ cd307ba75890) - [/home/analyst]
# traceroute 10.10.10.1
traceroute to 10.10.11 (10.10.10.1), 30 hops max, 60 byte packets
1 10.10.10.1 (10.10.10.1) 1.690 ms 1.425 ms 1.329 ms

(root@ cd307ba75890) - [/home/analyst]
# traceroute to 10.10.30.1
traceroute to 10.10.30.1) 0.287 ms 0.051 ms 0.047 ms

(root@ cd307ba75890) - [/home/analyst]
# traceroute 10.10.30.1 (10.10.30.1), 30 hops max, 60 byte packets
1 10.10.30.1 (10.10.30.1) 0.287 ms 0.051 ms 0.047 ms

(root@ cd307ba75890) - [/home/analyst]
# traceroute to 10.10.50.1 (10.10.50.1), 30 hops max, 60 byte packets
1 10.10.50.1 (10.10.50.1) 1.014 ms 0.799 ms 0.726 ms
```