Pivoting: (This guide assumes that you have made your “root” reverse shell and upgraded it)

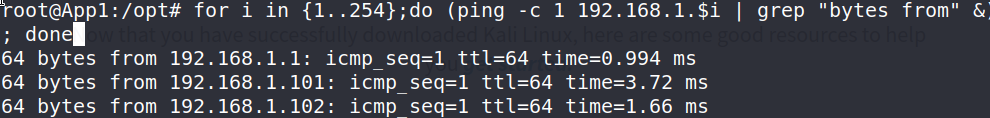
**Step 1. Ping Sweep**

We use a ping sweep to being to interact with local targets to find them. We accomplish with a command that is a bash one-liner that attempts to ping each IP address in the range 192.168.1.1 to 192.168.1.254  


Broken down:

* for i in {1..254}; do: This is a loop that iterates over the numbers from 1 to 254, and in each iteration, it assigns the current number to the variable i.
* (ping -c 1 192.168.1.$i | grep "bytes from" &): This is the command executed in each iteration of the loop.
  + ping -c 1 192.168.1.$i: This pings the IP address formed by appending the current value of i to the base IP address 192.168.1.. The -c 1 option specifies to send only one ping packet.
  + |: This is a pipe, which takes the output of the ping command and passes it as input to the next command.
  + grep "bytes from": This filters the output of the ping command to show only lines that contain the phrase "bytes from".
  + &: This puts the command in the background, allowing the loop to continue without waiting for the ping to complete.
* done: This keyword marks the end of the for loop.

The result should look like this:



What we have done is gotten a list of ip addresses that are active on the target network. We want to save this information, but not on the the device we are targeting, so….

**Step 2. Moving valuable information**

Move back to your Kali machine and use “nano ping\_sweep” and this will create a file that you can copy and paste the ping sweep information we just discovered:

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We then want to just get the information we need: We do so with Awk”



* Broken down: cat ping\_sweep: This uses the cat command to concatenate and display the content of the file named ping\_sweep.
* |: This is a pipe. It takes the output of the cat command and passes it as input to the next command.
* awk -F ":" '{print $1}': This uses the awk command to process the input with a specified field separator (-F ":"). In this case, the field separator is a colon (:). The command then prints the first field ($1) of each line.

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But want only the exact ip addresses, so we would use



awk -F " " '{print $4}': This awk command processes the input by considering spaces as field separators. It prints the fourth field ($4) of each line, assuming that the content after the IP address is structured in a way that the fourth field is the desired information.

And that leaves us with:

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You can use “sort” to rearrange the addresses as you like “sort -u” sorts by words, “sort -V” sorts by numbers

Use sort and then >> to create a file called targets.

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**Step 3. Making Target directories and Files**

We’re going to want to stay organized for every target we want to attack, and the best way is to make directories for each of them, and we’ll use xargs to do this:



Broken down:

* cat {file name}: This uses the cat command to display the contents of the specified file.
* |: This is a pipe, which takes the output of the cat command and passes it as input to the next command.
* xargs mkdir: The xargs command reads the input (which is the content of the file) and executes the mkdir command with each line as an argument. This effectively creates a directory for each line in the file.

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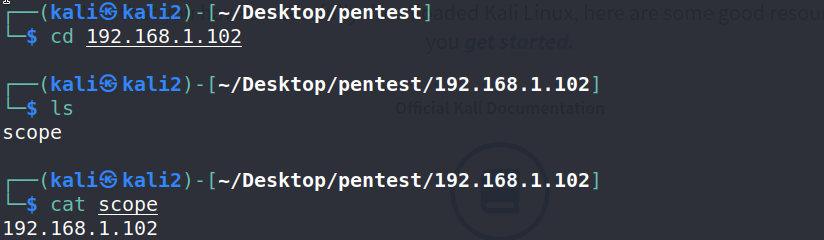
After this we’ll want a scope file for each IP address directory and we can accomplish this by:



Broken down:

* for i in 192.\*: This initializes a loop where the variable i iterates over files or directories in the current directory that match the pattern 192.\*. This typically selects files or directories whose names start with "192."
* do: Marks the beginning of the commands to be executed in each iteration of the loop.
* echo $i > /$i/scope: This command writes the value of i to a file named scope within a directory specified by /$i/. The > operator is used to redirect the output of the echo command to the specified file.
* done: Marks the end of the loop.

And this is the result:



**Step 4. Pivoting and SSH Remote Proxy**

Setting up a remote proxy through ssh is the same as setting up a reverse shell. You need a listener, port-forwarding, and a payload. First we open port 22 which is our SSH:



Feel free to check the status with replacing start w/ status

Next we need our firewall rule on the target network to forward the data to out listening port. Fortunately we have the firewall and familiarity with the rules section to add this:

A screenshot of a computer

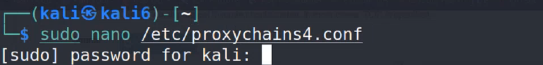
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The only thing that changes is our destination port range and the redirect target port, make sure you use the right IP address/ports and not mine. The WAN port that it uses is the port we choose, the internal port inside our network will be the SSH -22

That’s your port forwarding.

Finally, the payload, (remember you want your target box to be higher the 7.6 and we go to our root terminal but first we have to configure the proxy config files (you’ll only have to do it once). a proxy chain is a sequence or series of proxy servers that are used to route internet traffic. Each proxy server in the chain acts as an intermediary between your device and the destination on the internet.

We start by entering the config file w/ nano:



First we uncomment dynamic chain and comment strict chain, there by reversing the config:

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* **Static Chain:** Fixed and unchanging sequence of proxy servers.
* **Dynamic Chain:** Variable sequence that can adapt based on certain conditions.

You also need to uncomment “quiet mode” (making the sequence less verbose) and comment “proxy DNS” (because we don’t want dns checks that might block us)

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The last step is to change the proxy list from socks4 to socks 5 and port 9050 to port 9080, this is simply to change it from the default TOR port which is often blocked.

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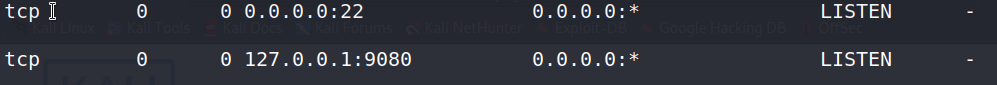
Now that this is done on your machine, you’re free to setup that payload on your target machine app1



Remember to use your port that you set on your fire wall. That being said here’s the break down:

* ssh: Initiates an SSH connection.
* -N: Tells SSH not to execute any commands on the remote host. This is often used when you only want to establish a tunnel and not run any commands on the remote machine.
* -f: Requests the SSH session to go to the background just before command execution.
* -R 127.0.0.1:9080: Sets up a reverse tunnel. Connections to port 9080 on the remote machine (192.168.122.209) will be forwarded through the secure tunnel and redirected to localhost (127.0.0.1) on the local machine.
* kali@192.168.122.209: Specifies the username (kali) and the IP address of the remote machine (192.168.122.209) to connect to.
* -p 55556: Specifies the port number (55556) to connect to on the remote machine. This is an alternative port number to the default SSH port (22).

Last thing to do is to validate the results with a good ol “netstat -natp”, and you should see something like:



Congratulations. You just set up your pivot!

**Step 5. Adding Target Information (and keeping it organized)**

Now we return to our Kali machine’s “Desktop/pentest” directory and we type these commands in each IP directory. Now that we have setup our tunnel, we can send from our target to our waiting directories.

To start will need to wrap nmap inside our proxy chains, to do so we start with this command inside one of our target IP address directories:



The break down:

* proxychains: Runs a command through a proxy or proxy chain. It's often used to route network traffic through one or more proxy servers.
* nmap: The network exploration tool used for port scanning and network discovery.
* -iL scope: Specifies a list of target IP addresses to scan. In this case, it's reading the IP addresses from the file named "scope."
* -F: Performs a fast scan. It scans only the most common 100 ports.
* -sT: Specifies the TCP connect scan mode. It attempts to establish a full TCP connection to each scanned port.
* -Pn: Treats all hosts as online, skipping host discovery. This is useful when you already know the hosts are up.
* |: The pipe symbol is used to redirect the output of the nmap command to the next command.
* tee fast\_scan: This command is used to both display the output of the nmap command on the screen and save it to a file named "fast\_scan."

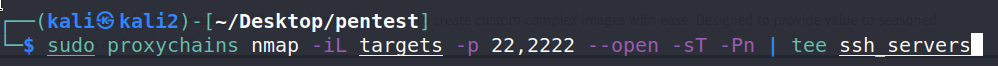
The result should look like this:

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Now there’s other scans to do, such as port, full, and service, but I’ll update it later, hopefully when I figure out how to upload this to GitHub.

But one that we should focus on is a scan that will categorize targets, let’s say we want to only scan for IPs that have SSH open. So, we target by “target service” rather than targets alone. Remember we have that “target” directory in our Pentest directory. Let’s use that:



The breakdown:

* proxychains: Executes a command through a proxy or proxy chain. In this context, it's used to route the network traffic through one or more proxy servers.
* nmap: The network exploration tool used for port scanning and network discovery.
* -iL targets: Specifies a list of target IP addresses to scan. It's reading the IP addresses from the file named "targets."
* -p 22,2222: Specifies the ports to scan. In this case, it scans for SSH servers on both port 22 and port 2222.
* --open: Only shows open ports. It filters the output to display only the ports that are open.
* -st: Performs a TCP connect scan. It attempts to establish a full TCP connection to each scanned port.
* -Pn: Treats all hosts as online, skipping host discovery. This is useful when you already know the hosts are up.
* |: The pipe symbol is used to redirect the output of the nmap command to the next command.
* tee ssh\_servers: Saves the output of the nmap command to a file named "ssh\_servers" and displays it on the screen.

So what we have done is scan those IP addresses in “targets” and weeded out the ones that did not have ports 22, 2222 open. Now we organize that data to be more readable to our machine:

A screen shot of a computer

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And we can further refine and group this by:



And that leaves us with:

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This concludes what Logan taught us about pivots and proxy chains. We now have an access door to other machines in our attack network. He began talking about Hydra at this point but didn’t continue. I’m going to research it and see if I can’t come up with another guide.