Developing and Hosting Your Own Cybersecurity Competition

Planning

What skills do you want students to master?

Be specific and limit your scope

What lab resources do you have available?

Physical or virtual? Use virtual when possible

Make sure the rules are clear

Ask students to acknowledge rules of the competition

Can be integrated into a class

A course that teaches cybersecurity or ethical hacking

Have some interesting prizes

Certification vouchers

Resources

Focus on Industry Certifications

- CompTIA Security +
- CompTIA PenTest +
- Certified Ethical Hacker (CEH)

Content Providers

- Cisco Networking Academy
- CompTIA Academy
- Network Development Group (NDG)
- Many others! Consider developing your own labs and content for students.

Creating a Lab Environment

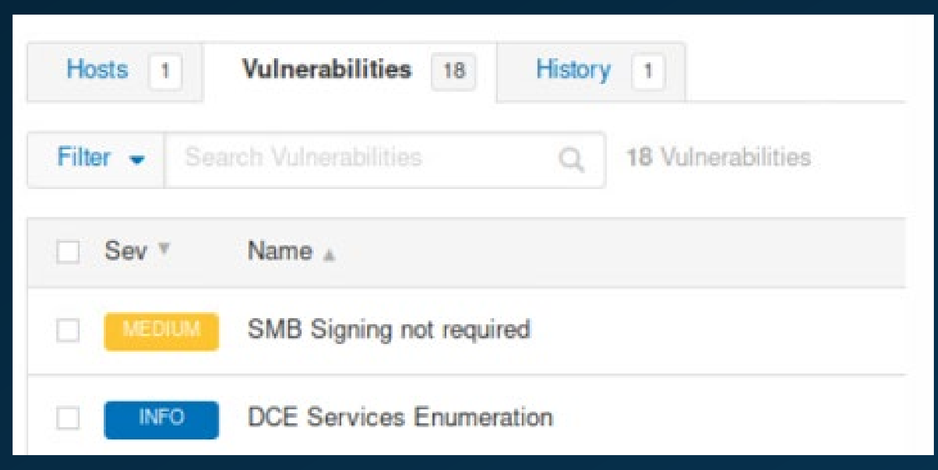
- Use virtualization for flexibility. Options include VMware vSphere and VirtualBox
- Build your vulnerable operating system—preference on using Windows 10 or 11
  - Check vulnerability databases for ideas: https://nvd.nist.gov/
- Use quality penetration testing tools such as Kali Linux
- Ensure the lab environment is isolated from other networks
- Make sure and test thoroughly! Students will be trying many methods that could break things.

Penetration Testing Tools to Get Started

Nessus

https://www.tenable.com/tenable-for-education/nessus-essentials

Vulnerability scanner
Free education version for students



Nmap

https://nmap.org/

Used for network discovery tasks such as locating live clients and open ports

```
hack1@Kali:~$ sudo nmap -Pn 192.168.32.1-254
Starting Nmap 7.80 ( https://nmap.org ) at 2020-08-26 09:38 CDT
Nmap scan report for 192.168.32.10
Host is up (0.00047s latency).
Not shown: 996 filtered ports
PORT    STATE SERVICE
53/tcp  open  domain
135/tcp open  msrpc
139/tcp open  netbios-ssn
445/tcp open  microsoft-ds
MAC Address: 00:50:56:AF:29:D4 (VMware)
```

Metasploit

https://www.metasploit.com/

Used to exploit system vulnerabilities

```
msf5 exploit(multi/handler) > exploit

[*] Started reverse TCP handler on 192.168.32.40:8080
[*] Sending encoded stage (267 bytes) to 192.168.32.41
[*] Command shell session 2 opened (192.168.32.40:8080 →
```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