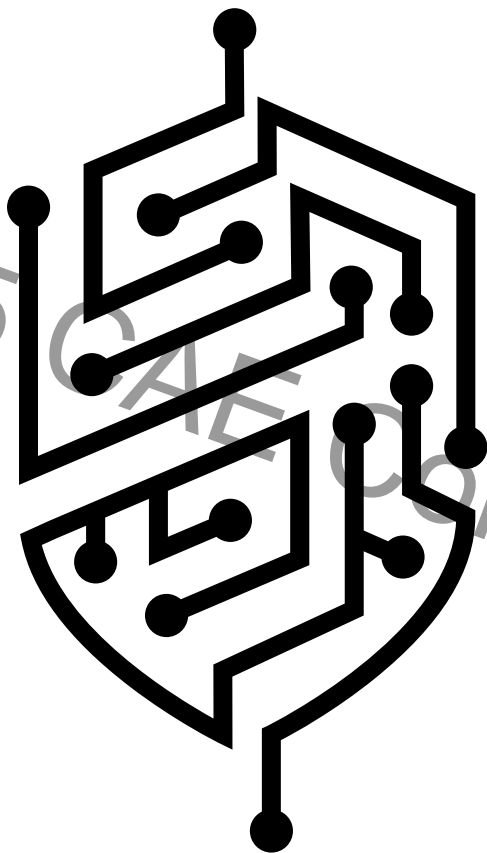




CENTRAL ILLINOIS HIGH SCHOOL CYBER SECURITY COMPETITION

ILLINOIS STATE UNIVERSITY • SCHOOL OF IT

Presented by Dmitry Zhdanov
2025 CAE Symposium



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Industry Partner Support

- State Farm
- AFNI

2025 CAE Community Symposium

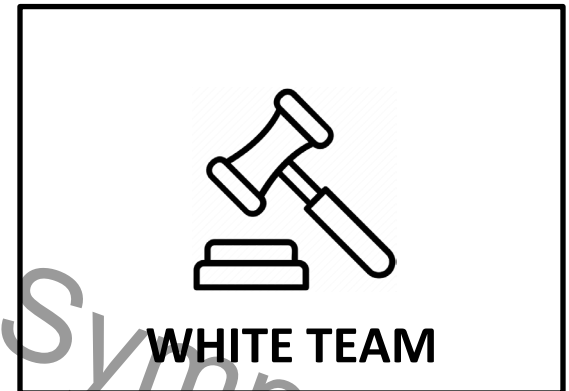
Competition Structure



Offense



Defense



Management



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Blue Teams

1. Brimfield High School (**The Dream Team**)
2. Brimfield High School (**Renegade Dolphin**)
3. Normal Community High School (**NCHS Team 1**)
4. Normal Community High School (**NCHS Team 2**)
5. Pekin Community High School (**DNS**)
6. Pekin Community High School (**Dog4Shell**)
7. Wheaton Warrenville South High School (**Terrific Technological Tigers**)
8. Wheaton Warrenville South High School (**Ideal Data Collection**)
9. Illinois Valley Central High School (**Grey Ghosts**)
10. Gen Cyber Program (**Team GenCyber**)

Red Team

Professionals from State Farm, and Illinois
State University



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White Team

School of IT Cybesecurity Faculty

School of IT Staff

School of IT Student Volunteers



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Scenario

Your team was just hired to work for a company, and you are inheriting the company network from some recently fired consultants (**red team**), who left on bad terms. Because of this, you are not really sure how secure the network is.

Your job is to evaluate the security of your network and protect its assets.



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Topology and Services



Assets - Service Flags

Confirm through Win 10 External VM

Virtual Machine	Firewall Port	Flag (Text or file that must be present to be scored)
Ubuntu 18 Web	80	String cihscdc_white must exist in page service_check.html
Ubuntu 18 Web	22	File cihscdc_white.txt must exist in /home/cihscdc_white when logging in as "cihscdc_white"
Ubuntu 20 Client	222	File cihscdc_white.txt must exist in /home/cihscdc_white when logging in as "cihscdc_white"
Ubuntu 20 LAMP	800	String cihscdc_white must exist in page service_check.html
Win 2012 Web	220	File cihscdc_white.txt must exist in inetpub/ftproot
	8800	String cihscdc_white must exist in page service_check.html
Win 2012 WP	280	String cihscdc_white must exist in page service_check.html
Win 10 WAMP	8080	String cihscdc_white must exist in page service_check.html



Red Team Goal

- Change or delete the flags being served by various servers, listed in your team packet
- Launch other exploits



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Scoring

- 33% - Services uptime
- 33% - Inject completion
- 33% - Defense against red team exploits



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Injects

- Timed challenges from the White Team
- Goal is to
 - Find a flag hidden/encrypted in a file, code, or website
 - Install/configure/write a report
- Sent via Discord on your team's channel after 10:30 am
- Submit via your team's inject submission channel on Discord
 - Late submissions will have penalty



Injects details

- SSH attack
- Wireshark analysis
- File analysis
- Cryptanalysis (x2)
- Password cracking
- Resource inventory

Rules

- Don't change IP Addresses of VMs or chiscdc_white passwords
- Professional behavior at all times
- No assistance from anyone outside team
- No attacks on other teams, including white and red



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Tips to be successful

- Pick a captain
- Delegate duties
- “Area” experts
 - Linux, Windows, Firewall, networking, injects
- Have a plan!



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Host Hardening

- Protect your VMs from red team's attacks
 - Change weak passwords
 - Update old versions of software that are vulnerable to attacks
 - Malware could be installed — check and remove!
 - Router and host firewall misconfigurations: verify!
 - Shut down unneeded services!



Remove Unnecessary services

- There could be vulnerable or malicious services opening ports
- You may close/delete unnecessary services
- Use a port scanner to detect what is listening



```
root@kali:~/home/ghost# nmap -sV scanme.nmap.org -oA /home/ghost/scanResults.txt --
Starting Nmap 7.80 ( https://nmap.org ) at 2021-01-16 23:29:48
Nmap scan report for scanme.nmap.org (45.33.32.156)
Host is up (0.21s latency).
Other addresses for scanme.nmap.org (not scanned): 255.255.255.255
Not shown: 597 closed ports
PORT      STATE SERVICE
22/tcp    open  ssh
80/tcp    open  http
113/tcp   filtered netbios-ssn
135/tcp   filtered wsdisc
139/tcp   filtered netbios-ssn
443/tcp   filtered microsoft-ds
593/tcp   filtered http-rpc-ssrnp
1044/tcp  filtered snmp-bulk
4444/tcp  filtered xmb24
5000/tcp  filtered xrt-http
5000/tcp  filtered xrt
5000/tcp  open  xrt-http
5113/tcp  open  tomcat80
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

Service detection performed. Please report any incorrect results at https://nmap.org/submit/.
Nmap done: 1 IP address (1 host) scanned in 39.35 seconds
```

Be Proactive

- What did you miss in your strategy?
- Use a vulnerability scanner to discover existing threats
- Nessus is a free and easy to use scanner



Nessus
vulnerability scanner

White Team Volunteers

- Each team will have ISU white team volunteer helpers over the day
- Get them involved
- ASK QUESTIONS!



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Event Schedule

[Venue: Julian 26-30]

10:00 a.m. – Competition begins

10:15 a.m. – Refreshments

11:00 a.m. – Red team starts hacking

12:00 p.m. – 1:00 p.m. – Lunch

1:00 p.m. – Competition resumes

3:00 p.m. – Competition ends

[Venue: STV 401]

3:30 – 4:00 p.m. – Awards ceremony, Red team reflection



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CIHSCDC Winners

Dog4 Shell (Pekin Community High School)

Team GenCyber

Normal Community High School
Team 1



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Questions?

Thank you!



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