

# Requirement: A Cyber Workforce



- National cyber security can't exist without strong, indigenous cyber workforce
- We aren't graduating enough STEM scientists, technical grads, engineers, math majors, cyber experts
- We must motivate high-school youth to pursue STEM paths

When compared to other nations, the math and science achievement of U.S. pupils and the rate of STEM degree attainment appear inconsistent with a nation considered the world leader in scientific innovation. In a recent international assessment of 15-year-old students, the U.S. ranked 28th in math literacy and 24th in science literacy. Moreover, the U.S. ranks 20th among all nations in the proportion of 24-year-olds who earn degrees in natural science or engineering.

2008 Congressional Research Study "Science, Technology, Engineering, and Mathematics (STEM) Education: Background, Federal Policy, and Legislative Action"











# What is CyberPatriot



- CyberPatriot is the national high school cyber defense competition
- Created by the Air Force Association (AFA) to excite, educate, and motivate the next generation of cyber defenders and other science, technology, engineering, and mathematics (STEM) graduates our nation needs





# Why CyberPatriot



- Cyber Security
  - Top National Security Concern
- Lacking qualified people not technology
- Shortage of STEM graduates
- Competition designed to inspire high school students to pursue a career of service to their nation in the cyber security field



# **History of CyberPatriot**



### **2008**

- Phase 1
- Proof of Concept
- 2009
  - JROTC and CAP
  - 200 teams
- 2010 to present
  - Open to all high school students









## **Sponsors**



#### Founders

- AFA
- Center for Infrastructure Assurance and Security (CIAS) University of Texas
- Science Applications International Corporation (SAIC)
- CyberDiamond



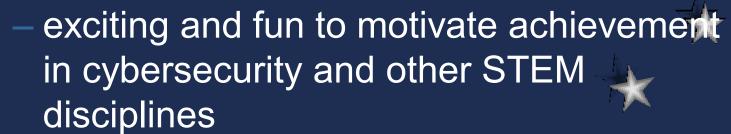




## Objectives



- Reach the largest number of students
  - increase the awareness of cybersecurity in the general population;
- Deliver a basic cybersecurity educational component to the widest audience possible
- Provide a competition experience







# **Objectives (Cont)**



- Enhance leadership, communication, and cooperation skills with a team competition format
- Attract under-represented segments of the population and women to technical careers







# What CyberPatriot Is Not



### Military recruitment program

 the national need for cybersecurity is much broader and larger than strictly military requirements

### Training program for hackers

 CyberPatriot is strictly a defensive program that promotes ethical and safe use of the Internet

A fix for cyber vulnerabilities





# **Competition Divisions**



### All Service

- Up to 1250 teams
- CAP/JROTC/Naval Sea Cadets
- Open Division
  - Up to 1250 teams
  - Any high school, Charter, Home
- Divisions do not compete together







## Cost/Fees



### \$375 per team

- Entry fee covers all direct costs, including transportation, food, and lodging for teams qualifying for the inperson competitions.
- Also provides access to licenses for Microsoft Academic Alliance Developer software package
- Participant kits (shirts, certificates, etc.) for up to ten competitors.



## Eligibility



- At least 13 years old and in grades 9-12 (or equivalent if home schooled/in a school that does not make this distinction) as of September 2012
- All Service
  - Must be in high school
  - Member of CAP/JROTC/Sea Cadets









# **Team Requirements**



- Coach/Teacher
- Minimum 2 students
  - Max of 5 primary
- May have more than one team
- Only participate on one team
- Must be from the same school







### Coach



- Doesn't have to be computer expert
- Must be a school employee
- Coordinate parental notifications and permissions
- Technical skill is far less important than desire to offer a unique and valuable educational experience to the students

Contact for all competition items

Acts as a proctor during competition





### **Mentors**



- Agrees to abide by the CyberPatriot Standards of Conduct
- Pass background check
- Is accepted by the coach, at his/her sole discretion
- Any coach can ask for a mentor or find his/her own







## Registration

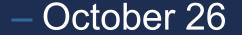


### Coaches

- https://www.uscyberpatriot.org/\_layouts/ cyberpatriot/coachregistration.aspx
- Or from www.uscyberpatriot.org
- Closes September 30

#### Students

Coaches register each student











## **Fees**



- \$375
- Practice rounds 1-12 October
- Due October 31







# **Technical Requirements**



### Online qualification rounds

- find and remediate vulnerabilities that are pre-configured into a VMware image
- The SAIC CyberNEXS competition platform used
- Assessed points by the CyberNEXS scoring system feedback is provided in near real time
- Each team will start the competition with identically mis-configured system(s)



# Technical Requirements



- VMware image refers to using virtualization technology to capture an entire operating system and resources as a file, which can be replayed (using VMware Player) on a host computer
- completely different computer system in a container, within the host operating system, will not harm host computer







# Computer Requirements



- 1 Ghz Intel x86 compatible 2 GB of RAM
- 20 GB of free disk space
- DSL or faster Network connection
- XGA (1024x768)
- Windows 2000 or later, OS X 10.4.11 or later, Linux 2.4.10/2.6.4 or later
- ZIP Client for encrypted ZIP files VMware Player (for Windows or Linux), VMware Fusion (for OS X)



## **Training**



- Install VMWare
- Use same computers for training/competition
- Download images
  - Cyberpatriot.org
  - Any other site







# **Pre-Competition**



 SAIC prepared several PDFs to assist you in getting ready for the competition rounds: (http://www.uscyberpatriot.org/CP5/prepcompetition.aspx)

- Validation System Configuration
- Download/load 7-Zip and winMD5
- Download/Install VMware Player
- Download/Install VMware Target Image
- Unzip/Install Competition Image
- Troubleshooting







# **Important Dates**



- Coach Registration Ends: September 30
- Students Registration Ends: October 26
- Team Registration Fees Due: October 31
- Practice Rounds: October 1-12, 2012
- Round 1: Nov 16-17, 2012
- Round 2: Dec 7-8, 2012
- Semi Finals: Jan 11-12, 2013

Alternate/Backup Jan 18-19, 2013









- Start preparing early
- Devote time each week
- Assign homework
  - Each student can research an area
  - Then prepare and give a briefing for fellow students
- Do trial runs of competition











### 1st Year

- Set expectations
- Practice for following years
- Get a mentor
- Systems
  - XP
  - 2003 Server
  - Vista











### 2<sup>nd</sup> and later Years

- Review last competition
- Students from previous year
- Get a mentor or more than one
- Systems
  - XP (always a favorite)
  - Servers
    - 2003/2008
    - SQL
  - Linux











#### Checklist

One for each operating system

#### Tools

- Find tools to help
- Make sure cadets understand the tools
- Can't be used in the finals

### Note takers

Alternates – feel involved







## Resources



- http://www.saic.com/cybernexs/#mediadownloads
- http://labmice.techtarget.com/ (Older hardware)
  - XP / 2003 Server
- http://csrc.nist.gov/publications/PubsSPs.html
- http://technet.microsoft.com/enca/library/cc751488.aspx#ECAAl
- http://technet.microsoft.com/enus/security/cc184924.aspx (MSBA)







## Resources (2)



- http://web.nvd.nist.gov/view/ncp/repository
- http://www.stanford.edu/group/security/secure computing/xp.html
- http://www.windowsecurity.com
- http://www.nsa.gov/ia/\_files/routers/C4-040R-02.pdf
- http://www.nsa.gov/ia/\_files/support/l33-011R-2006.pdf
  - http://support.microsoft.com/mats/windows\_security\_diagnostic/en-us





## Questions



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