



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



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- 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**

- Air Force Research Laboratory, Boeing, Microsoft and Raytheon



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**
 - exciting and fun to motivate achievement in cybersecurity and other STEM disciplines





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 in-person 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
- October 26



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



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- 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**





Recommendations



- **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**





Recommendations



- **1st Year**
 - Set expectations
 - Practice for following years
 - Get a mentor
 - Systems
 - XP
 - 2003 Server
 - Vista





Recommendations



-
- **2nd 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





Recommendations

- **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/#media-downloads>
- <http://labmice.techtarget.com/> (Older hardware)
 - XP / 2003 Server
- <http://csrc.nist.gov/publications/PubsSPs.html>
- <http://technet.microsoft.com/en-ca/library/cc751488.aspx#ECAAI>
- <http://technet.microsoft.com/en-us/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/I33-011R-2006.pdf
- http://support.microsoft.com/mats/windows_security_diagnostic/en-us



Questions



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