UNIT 1

Introduction to CyberPatriot and Cybersecurity

Learning Objectives

- Participants will gain an understanding of the CyberPatriot competition
  - Overview
  - National Finals Competition
  - Team Structure
  - Scoring
  - Timeline
- Participants will gain a broad understanding of what cybersecurity is and why it is an important
  - Cybersecurity in Everyday Life
  - Cybersecurity in the World
  - Cybersecurity Careers

SECTION 1

CyberPatriot – National Youth Cyber Defense Competition

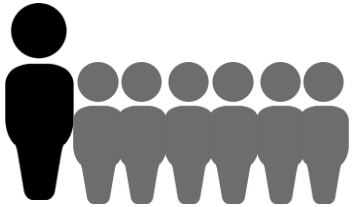
What is CyberPatriot?

Click here to play the CyberPatriot recruitment video:
https://www.youtube.com/watch?v=sesaiofAEWA

What is CyberPatriot?

- The National Youth Cyber Education Program
  - AFA CyberCamps
  - Elementary School Initiative
  - National Youth Cyber Defense Competition
- **Not** hacker training
  - Offensive behavior is not allowed
- Fun way to learn skills that will be useful in the future
  - Technical skills
  - Teamwork
  - Critical thinking

The National Youth Cyber Defense Competition



Registration

- Coach registers team
- 2-6 students per team
- Optional technical mentor

Training & Competition

- 10 online training modules
- 3+ online rounds

Scoring & Advancement

- Scored on remediation of cyber vulnerabilities and knowledge of secure networking.
- Top teams advance to Semifinals and National Finals

The National Finals Competition

- Top teams earn all-expenses-paid trips to Washington D.C. area
- More than just competing in front of a computer
  - National Finals includes the Network Security Master Challenge, Cisco Networking Challenge, and other additional components
- Opportunity to win scholarships, network with industry leaders, and enjoy media recognition

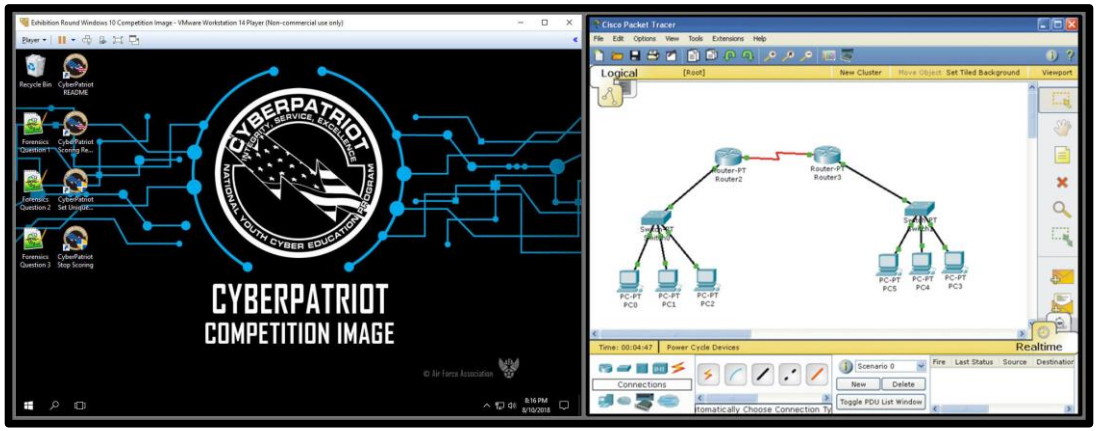
Team Structure

- Coaches are the administrative lead of the team
  - Supervise students
  - Are the main point of contact for CyberPatriot Program Office
  - Ensure integrity of the competition
  - Train teams for competition (if technically savvy)
- Technical Mentors volunteer to help Coaches train teams
  - Use industry expertise to teach students about cybersecurity
  - Guest lecture or work with team(s) on a regular basis
- Team Assistants volunteer to provide non-technical support and encouragement to the team
- Competitors work together to find and fix vulnerabilities in a simulated computer system and build secure virtual networks

Click here for more information: http://www.uscyberpatriot.org/competition/how-it-works/team-organization

Scoring

- Earn points by fixing vulnerabilities in a virtual machine (VM),* answering networking quiz questions and building secure virtual networks
  - Virtual machines (aka “images”) are software programs that simulate computer systems
  - Short quizzes are based on assigned materials
  - Virtual networks are built with Cisco’s Packet Tracer program

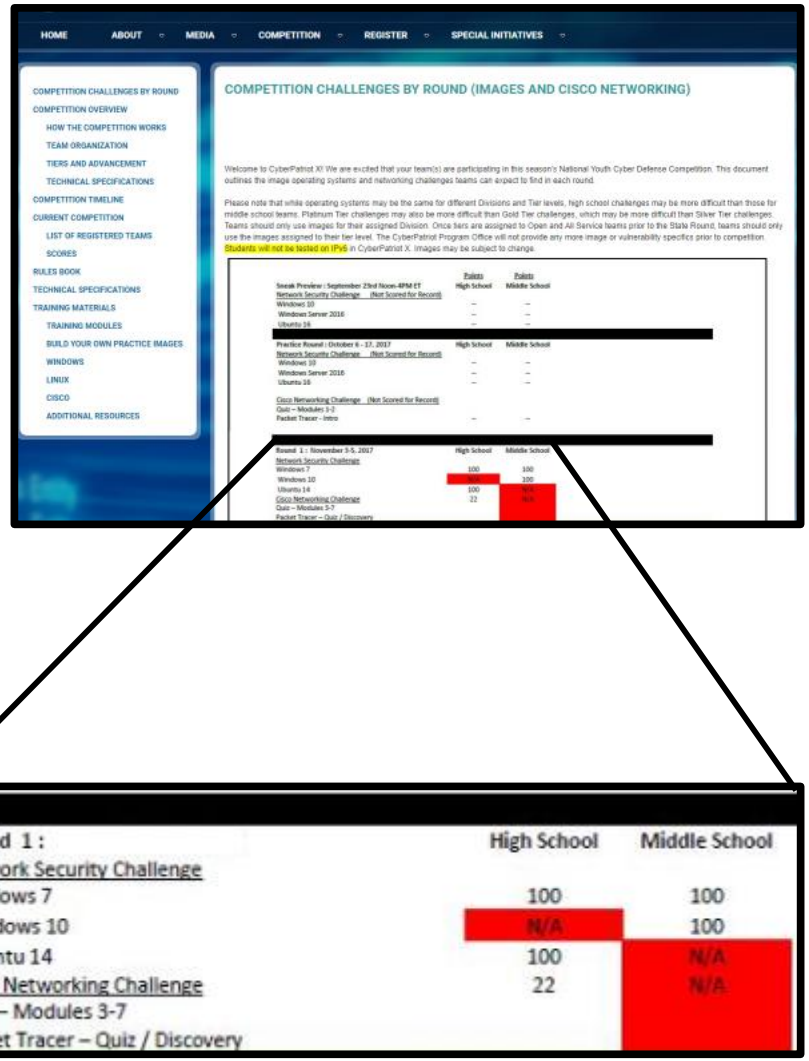


- Lose points for making the system less secure

*More information on VMs is available in Unit Five of these training materials

Train and Prepare

- **READ** scheduled competition round challenges on CyberPatriot website
- **TRAIN** with training materials, operating systems, and Cisco Networking assignments prior to round
- **PARTICIPATE** in the unscored
  - Exhibition Rounds
  - Training Rounds (answer keys provided)
  - Practice Rounds
- **PREPARE** hardware, software, and network for competition to technical specifications on CyberPatriot website
- **Download** password-protected competition images from links in the download instructions email



Competing

- **EXTRACT** and open images with password provided in StartEx email
- **IDENTIFY** team with Unique ID
- **FIX**

Harden your system and defend against outside attacks by starting with hints and the scenario in the ReadMe file on the desktop

Score

Compare

Login

Open

Ask

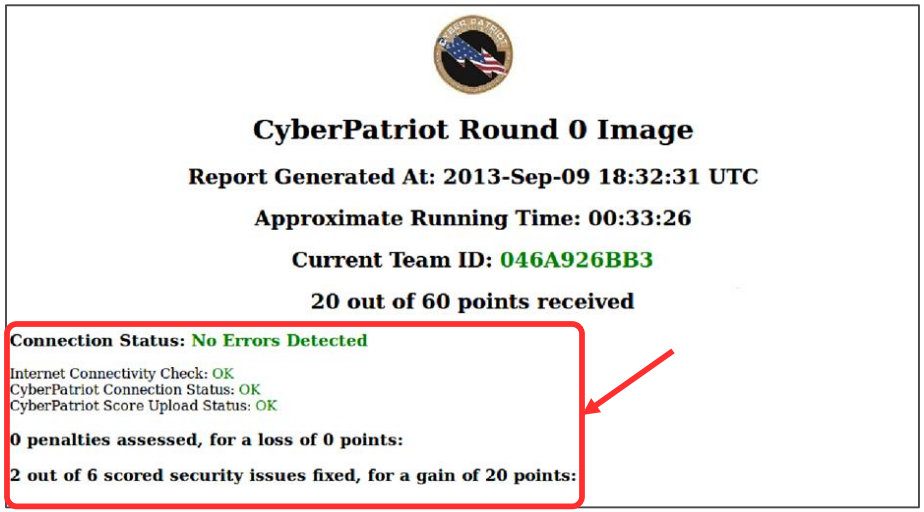
- Not all vulnerabilities are scored or hinted at in the ReadMe

Scoring – How to Score

- Prepare – read scheduled competition round challenges on CyberPatriot Website
- Study operating systems and Cisco Networking assignments
- Harden your system and defend against outside attacks by starting with hints and the scenario in the ReadMe file on the desktop
- Not all vulnerabilities are scored or hinted at in the ReadMe
  - The goal of the competition is to harden the system as completely as possible in the provided time
  - You might do something that improves the system, but does not earn your team points

CyberPatriot Competition System (CCS)

- The CyberPatriot Competition System (CCS) automatically transmits your team's progress in the competition image (VM) to the CyberPatriot scoring server
- Use the CyberPatriot Scoring Report to check your score and your connection status and score
- A chime will play when you gain points and a buzzer will sound when you lose points
- Do not open, modify, or delete anything in the "CyberPatriot" folder of any image
  - Doing so could cause you to lose your progress in the image



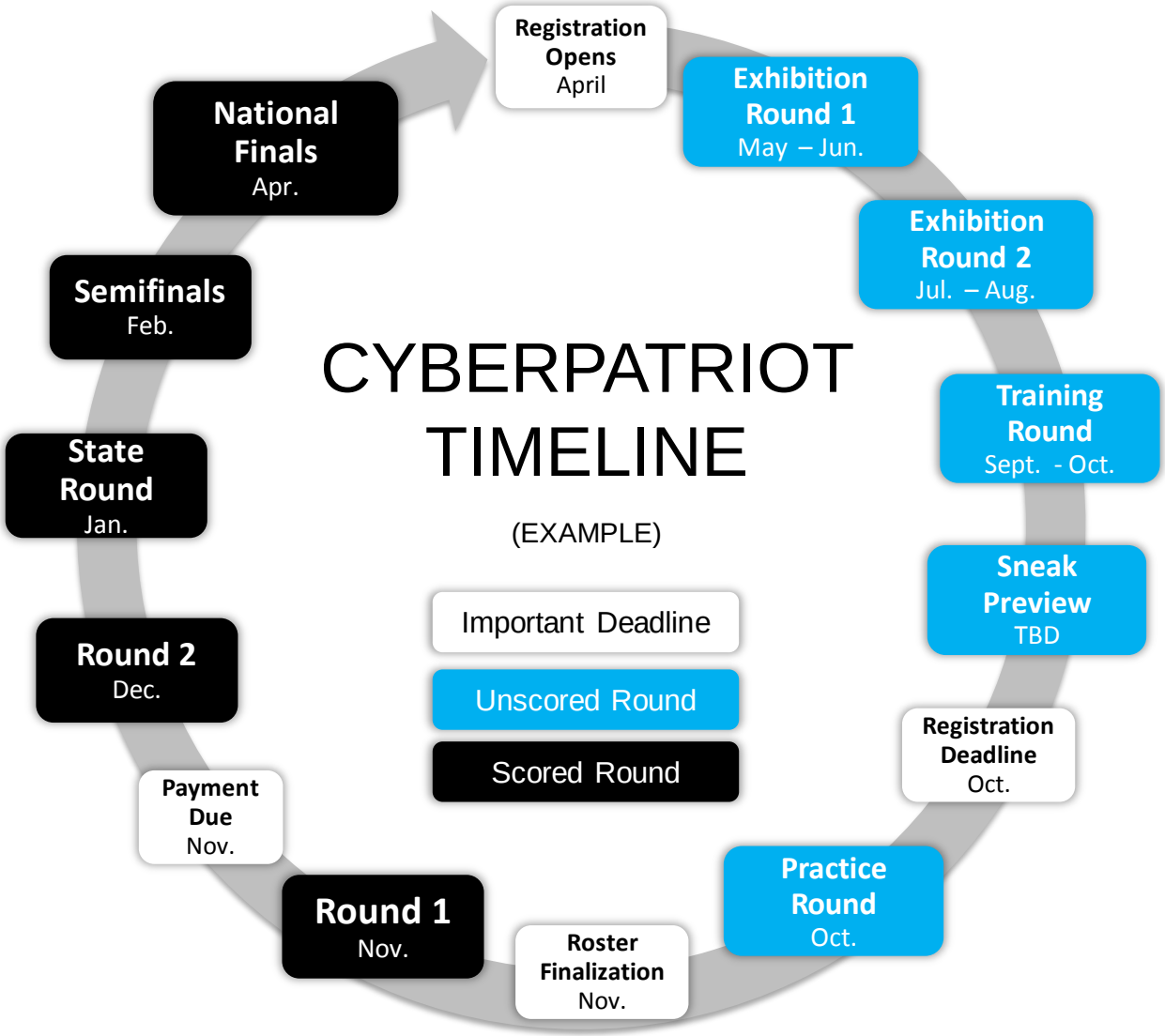
Competition Deployment

SAMPLE SCHEDULE:

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11 StartEx Email sent	12
13	14 Image Download and Instructions Email sent	15	16	17	18 COMPETITION	19
20 ROUND	21	22	23	24	25	26
27	28	29 Round Results Email sent	30	1	2	3

- Competition emails are only sent to registered Coaches
- Image Download and Instructions email includes download links and thorough instructions for the round.
- StartEx contains password to unzip images and log into user account.
- Teams choose a six-consecutive-hour window during the competition weekend to compete. Six-hours must fall between support times posted by CPOC.
- Later rounds have a Preliminary Results email sent to Coaches for review prior to general score release

CyberPatriot XI Timeline



SECTION 2

Introduction to Cybersecurity

What is Cybersecurity?

All the tools we use and actions we take to keep computers, networks, and information safe and available for those who need it, and unavailable for those who should not have it.

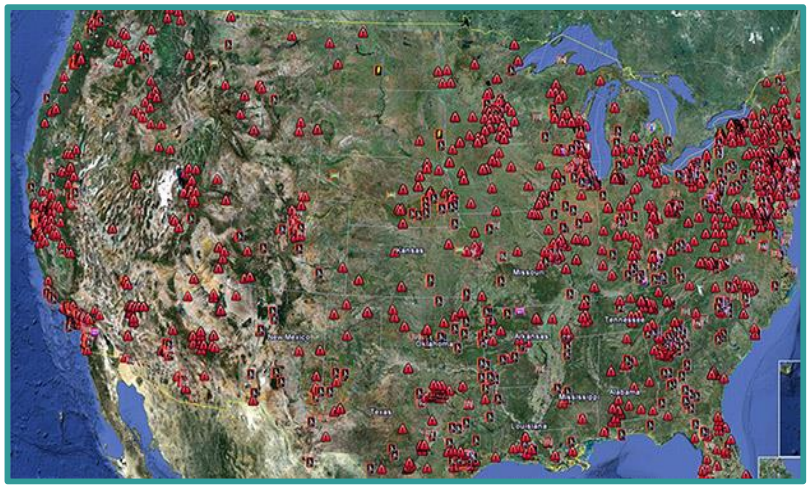
That means protecting hardware and data from everything from hacktivists to earthquakes.

Source: www.UMUC.edu

Why is Cybersecurity Important?

Things that rely on computers:

- Banks
- Social Media
- Schools
- Airlines and Railroads
- Stores
- Police and fire departments
- Military and government systems
- Doctors' offices



Source: US Department of Homeland Security

7,200+ critical American industrial control systems are linked to the Internet, and therefore vulnerable to attack

Cybersecurity isn't just about protecting computers.
Almost everything relies on or could be affected by a computer.

Why is Cybersecurity Important?

- **2006:** 26.5 million veterans' personal information is compromised after the theft of a Veteran Affairs employee's laptop. The employee thought it was safe to bring home VA records on an unsecure drive.
- **2009:** Coca-Cola executive clicks link in spoof email allowing attackers to steal confidential files on $2.4 billion business deal with Chinese juice company.
- **2011:** DHS plants USB drives and CDs outside of government and government contractor buildings. The majority are picked up by employees and inserted directly into their organization's computers.

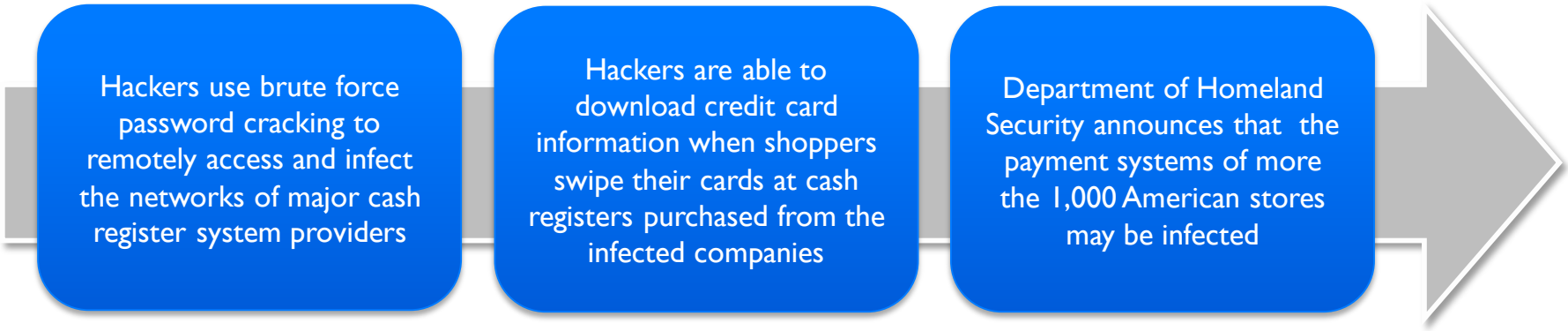
People make mistakes.
Cybersecurity is often about protecting organizations and individuals from themselves.

Sources: CSO magazine, www.csoonline.com, Bloomberg News, www.bloomberg.com, GCN Magazine, www.gcn.com

Why is Cybersecurity Important?

Case: Backoff Malware Attacks Targeted cash registers and payment systems sold by seven different companies

- Impacted major retail companies like Target, Dairy Queen, and UPS



We're all connected

A weakness in one system can be exploited by attackers to target another system.

Source: New York Times, http://bits.blogs.nytimes.com/2014/08/22/secret-service-warns-1000-businesses-on-hack-that-affected-target/

Who's Hiring?

- Nearly every organization needs cybersecurity professionals
- Cybersecurity jobs are better paid that computer jobs in general. In 2018 the average computer job paid ~$90,000. People in cybersecurity-specific jobs earned an average salary of over $100,000.

Source: Computer World, http://www.computerworld.com/s/article/9237394/Demand_for_IT_security_experts_outstrips_supply?pageNumber=2

Cyber Career Opportunities

- Cyber workers
  - Employees that maintain day-to-day security and strengthen their organization's protection
- Cyber defenders
  - Government or contractor employees that protect American networks and information from attacks
- Cyber sleuths
  - Professionals that watch for espionage and insider threats and perform digital forensics for law enforcement
- Cyber leaders
  - Industry veterans that decide company security policies, train new employees, and conduct R&D

Important Resources

These training materials are only intended to provide basic training for the competition. Coaches and Mentors can be great resources, but the below links may help as well:

- The CyberPatriot Rules Book
  - Click here: http://www.uscyberpatriot.org/competition/rules-book
- Additional Windows resources
  - Click here: http://www.uscyberpatriot.org/competition/training-materials/windows
- Additional Linux resources
  - Click here: http://www.uscyberpatriot.org/competition/training-materials/linux
- Ubuntu practice images and Windows scoring engine provided by Texas A&M Corpus Christi
  - Click here: http://www.uscyberpatriot.org/competition/training-materials/practice-images