The US Cyber Challenge

US Cyber Challenge:
Developing the Next Generation of Cyber Guardians

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FISSEA Conference

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Agenda

- The Critical Shortage of Technical Talent
- Which skills matter most
- Can Competitions Find Talent
- The U.S. Cyber Challenge
How Critical is the Shortage?

- Jim Gosler (first director of the CIA’s Clandestine Information Technology Office) in a meeting in the Pentagon (October 08) with senior NSA, DoD, SANS and White House officials:

  “The US has no more than 1,000 people with the advanced security skills to compete in cyberspace at world class levels— we need 20,000 to 30,000!”

- No one disagreed!
Which Skills Matter Most?
"We don’t know who’s inside our networks. We don’t know what information has been stolen. We need to get serious about this threat to our national security."

- State Dept witness: Don Reid, Senior Coordinator for Security Infrastructure

- Commerce Department witness: Dave Jarrell, Manager, Critical Infrastructure Protection Program
<table>
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<tr>
<th>Commerce</th>
<th>State</th>
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<tr>
<td>1. No idea when it got in, how it got in, or where it spread</td>
<td>1. Detected it immediately</td>
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<td>2. Took 8 days to filter (ineffective)</td>
<td>2. Put effective filter in place within 24 hours; shared filter with other agencies</td>
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<td>3. Unable to clean the systems; forced to replace them</td>
<td>3. Found two zero-days</td>
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<td>4. Do not know whether they have found or gotten rid of the infections</td>
<td>4. Helped Microsoft and AV companies create patches and signatures</td>
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<td>5. Cleaned infected systems, confident all had been found</td>
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What was the Difference?

- Was it tools? No
  - Almost same commercial tools - Commerce had more commercial IPS/IDS

- Was it skills? Yes
  - Commerce - only experience was firewall operations not even firewall engineering. No training other than prep for Security + and later for CISSP
  - State - experience and training in forensics, vulnerabilities and exploits, deep packet inspection, log analysis, script development, secure coding, reverse engineering. Plus counter intelligence. And managers with strong technical security skills
Which Skills Matter Most?

- **Security skills:**
  - System forensics; network forensics and deep packet inspection; Windows, UNIX, and PDA defensive configuration; log analysis; script development; exploits and penetration testing; secure coding; reverse engineering.
  - Plus counter intelligence

- **Foundations:**
  - Networking and network administration; computer operations and system administration; Java and C/C++ programming including the 25 most dangerous programming errors
Prepare for Fast Growing Jobs

- Network, systems, and data communications analysts (53%)
- Computer software engineers: applications (34%)
- Computer software engineers: systems software (30%)
Great job opportunities: #2, 15 and 24 on the “30 Fastest Growing Occupations”

Employment Projections

Fastest growing occupations

This table also can be found in the article, “Occupational Employment Projections to 2018,” published in the November 2009 Monthly Labor Review.

Other available formats: [PDF] [XLS]

Table 1.3 Fastest growing occupations, 2008 and projected 2018
(Numbers in thousands)

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<tr>
<td>Biomedical engineers</td>
<td>Professional and related</td>
<td>16.0</td>
<td>27.6</td>
<td>11.6</td>
<td>72.02</td>
<td>VH</td>
<td>Bachelor’s degree</td>
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<tr>
<td>Network systems and data communications analysts</td>
<td>Professional and related</td>
<td>292.0</td>
<td>447.8</td>
<td>155.8</td>
<td>53.36</td>
<td>VH</td>
<td>Bachelor’s degree</td>
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<td>Home health aides</td>
<td>Service</td>
<td>921.7</td>
<td>1382.6</td>
<td>460.9</td>
<td>50.01</td>
<td>VL</td>
<td>Short-term on-the-job training</td>
<td></td>
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<td>Personal and home care aides</td>
<td>Service</td>
<td>817.2</td>
<td>1,193.0</td>
<td>375.8</td>
<td>45.99</td>
<td>VL</td>
<td>Short-term on-the-job training</td>
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The U.S. Cyber Challenge
Identifying and Nurturing
10,000 Very Talented People
Q. You’re in your senior year in high school – had you already taken computer courses at school?
A. I enrolled to take Introduction to Programming this year, but they cancelled it; they couldn’t find a suitable teacher.

Q. How do people demonstrate and test their skills if they do not have the opportunity to play in the NetWars rounds?
A. There aren’t many options for kids with lots of cyber skill to be able to exercise and further develop those skills. Most would just simply target random servers and hack illegally, so it was great that I found NetWars.
Who is supporting the U.S. Cyber Challenge?
Proposed U.S. Cyber Challenge Framework

- Virtual Community “Future Cyber Professionals”
- Competitions
  - Camps
  - Weekend Programs
  - Pathway to: Scholarships Internships Jobs
  - Talent Bank
- Skills Needed
  - Public Sector
  - Private Sector
  - Critical Infrastructure
  - Tech Industry

K-12
Communities
Colleges
Universities
Activities

- Forensics Challenge (DoD Cyber Crime Center)
- CyberPatriot Defense Competition (AFA)
- NetWars Challenge (SANS)
- Cyber Quest (SANS)
- Cyber Foundations (SANS and CKSF.org)

- Cyber Camps
- Courses and Exercises
- Tournaments

- Internships
- Scholarships

- Connect with Employers
- Talented Cyber Security People
Cyber Security Foundations

- A series of quizzes (March/April 2011)
- Tutorials with videos and questions on a special web site
- Networking; systems (including finding hidden bad stuff), secure programming
- Prizes, awards and recognition
- Progressively more challenging competitions to develop and demonstrate your skills
- 18 States with 135 schools registered
Cyber Quest Competition

- A first quest in a series: March 16
- Target system to analyze
- Demonstrates your ability in vulnerability analysis skills; forensic analysis; packet capture analysis
- Prizes, awards and recognition
- Progressively more challenging competitions to develop and demonstrate your skills
- Challenge for Cyber Camp invitation: April 18
Building the Highway: Action Plan

- Encourage talented kids to compete
- Support a high school program
- Serve as a teacher/aid at the summer camps
- Build a competition
- Support a college team
- Sponsor a summer camp
- Sponsor a college
- Sponsor the U.S. Cyber Challenge
TAKE THE CHALLENGE

http://www.uscyberchallenge.org