National Security Cyberspace Institute, Inc. (NSCI)

Through the combination of research and education, NSCI supports public and private clients aiming to increase cyberspace awareness, interest, knowledge, and/or capabilities. NSCI is committed to helping increase security in cyberspace whenever and wherever possible. NSCI publishes a bi-weekly newsletter (*CyberPro*), has published numerous whitepapers on various cyberspace topics, maintains an online cyber reference library, and has established an email distribution list for sharing cyber-related resumes to interested parties. NSCI is a small, veteran-owned business headquartered in Virginia.

Issues

Although federal agencies and industry are seeing an increased demand for cyber talent, the number of qualified individuals is not sufficient to meet demand. We are also experiencing a decline in science, technology, engineering, and mathematics (STEM) skills. As a result of increasing demand and decreasing supply, organizations face many challenges in recruiting and retaining a cyber workforce.

James Gosler, a veteran cybersecurity specialist who has worked at the CIA, the National Security Agency and the Energy Department, says we do not have enough talented cyber workers coming into the field to support national security objectives. According to a recent article from National Public Radio, Gosler and SANS Research Director Alan Paller estimate that there are only 1,000 highly skilled cyberdefense specialists in the U.S., but that the nation needs 20,000 to 30,000 of these skilled workers to meet national computer security needs.[1]

The U.S. Cyber Command, which was scheduled to be fully operational by October 2010, has not yet reached full operating capability. In a congressional testimony last month, Cybercom commander Gen. Keith Alexander said his command staff is already in place, but that Cybercom is still struggling to fill 1,000 cyber positions.[2]

A recent report from the Center for Strategic & International Studies called *A Human Capital Crisis in Cybersecurity* says, "The cyber threat to the United States affects all aspects of society, business and government, but there is neither a broad cadre of cyber experts nor an established cyber career field to build upon, particularly within the Federal government." The CSIS report says that a critical element of a national cybersecurity strategy is to have skilled people at every level of cyber defense. According to the report, "We not only have a shortage of the highly technically-skilled people required to operate and support systems already deployed, but also an even more desperate shortage of people who can design secure systems, write safe computer code, and create the ever more sophisticated tools needed to prevent, detect, mitigate and reconstitute from damage due to system failures and malicious acts."[3]
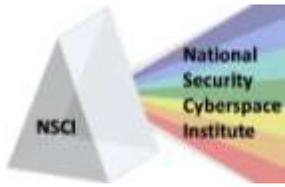
The September *GenTrends* newsletter from The Center for Generational Studies warns federal agency workers will most likely try to find new jobs in the private sector when the economy improves.[4] A recent report from the federal Chief Information Officers Council urges federal agencies to change their recruitment and retention policies in order to find and keep younger IT specialists. The Council writes that federal agencies will experience an "exodus of retiring computer specialists, scientists and engineers as well as electronics engineers and telecommunications specialists at a time when the government is pursuing large modernization programs and policies dependent on

[1] Gjelten, T. (2010, July 19). *Cyberwarrior Shortage Threatens U.S. Security.* Retrieved October 6, 2010, from National Public Radio: http://www.npr.org/templates/story/story.php?storyId=128574055s

[2] Baron, K. (2010, October 1). *Pentagon still reviewing command's 'full operating' status.* Retrieved October 6, 2010, from Stars and Stripes: http://www.stripes.com/blogs/stripes-central/stripes-central-1.8040/pentagon-still-reviewing-command-s-full-operating-status-1.120305

[3] Evans, K., & Reeder, F. (2010, July). *http://csis.org/files/publication/100720_Lewis_HumanCapital_WEB_BlkWhteVersion.pdf.* Retrieved October 6, 2010, from CSIS: http://csis.org/files/publication/100720_Lewis_HumanCapital_WEB_BlkWhteVersion.pdf

[4] Holmes, A. (2010, September 20). *Even When It's Good, It Isn't.* Retrieved September 25, 2010, from NextGov: http://wiredworkplace.nextgov.com/2010/09/agencies_may_find_it_difficult.php

Improving the Future of Cyberspace...Issues, Ideas, Answers
110 Royal Aberdeen ● Smithfield, VA 23430 ● ph. (757) 871-3578

1

advanced Internet technologies." The report warns the demand for IT workers will continue to increase, as the private sector continues to hire more tech workers, making it more difficult for agencies to attract younger workers.[5]

Ideas

Recruitment

According to a report from Dice.com, a website that posts technology and engineering jobs, the increased demand for cyber workers has resulted in higher salaries and sign-on bonuses for technology job seekers. Technology workers are also increasingly asking for more flexible work options, including flexible schedules and telework. Dice reports that technology jobs with the option to telecommute have doubled over the last year.[6] In order to recruit young candidates for federal information technology jobs, federal agencies have begun to offer higher salaries and more flexible options and schedules.

Recruiters should make sure the mission and tasks of their organization, as well as the open positions, are clearly communicated; to include how the jobs fit into the organization as a whole. Net Generation workers should be given the opportunity to be heard right away, and given recognition for their contributions. Net Generation workers will most likely stay with a job that gives them constant feedback and recognition for their work, provides mentoring and training, and makes them feel valued.[7]

Attracting Younger Workers

Federal agencies and private sector employers must learn what is most valuable to potential cyber workers, and change recruitment practices to attract them. According to a recent article from Workforce.com, the younger generation is more active on social networking sites, and relies on the Internet and online technologies to find jobs and network. Koda, for example, is a year old social network and job board that helps young workers find open positions. Jeff Berger, the site's creator, says there was a need for a social network that helped college graduates find open jobs, since sites like LinkedIn are for people who are already working. Although industry experts report that most companies use sites such as Facebook, LinkedIn, and Twitter for recruiting, there has been an increase in small, niche-job websites such as Koda. Monster and other job-search engines are also adding new features targeted at 18- to 25-year old users. Dan Finnigan, CEO of recruiting software maker Jobvite, predicts the work and experience section of these sites will become very important over time, allowing users to post their professional profile and network.[8]

Andrew Chen, a senior product manager at job site SimplyHired, says younger workers are different from older workers, and they care about different things. Chen says younger workers care about a company's corporate culture and more about salary and benefits. Younger workers are also more interested in a company's extracurricular activities and community service programs.[9]
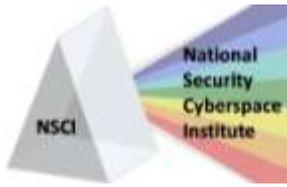
---

[5] Holmes, A. (2010, April 23). *Agencies urged to change workplace practices to attract young workers.* Retrieved September 20, 2010, from NextGov: http://www.nextgov.com/nextgov/ng_20100423_7313.php

[6] Holmes, A. (2010, September 8). *Techies Want Flexible Work Options.* Retrieved September 20, 2010, from NextGov: http://wiredworkplace.nextgov.com/2010/09/techies_want_flexible_work_options.php

[7] Federal Chief Information Officers Council. (n.d.). *Recruiting the Net Generation.* Retrieved September 20, 2010, from CIO.gov: http://www.cio.gov/Documents/NetGen.pdf

[8] Rafter, M. (2010, July). *Company Believes It Has Cracked the Code on Millennials' Job-Seeking Habits.* Retrieved September 22, 2010, from Workforce.com: http://www.workforce.com/section/recruiting-staffing/feature/company-believes-it-has-cracked-code-millennials/index.html

[9] Rafter, M. (2010, July). *Company Believes It Has Cracked the Code on Millennials' Job-Seeking Habits.* Retrieved September 22, 2010, from Workforce.com: http://www.workforce.com/section/recruiting-staffing/feature/company-believes-it-has-cracked-code-millennials/index.html

Improving the Future of Cyberspace...Issues, Ideas, Answers
110 Royal Aberdeen ● Smithfield, VA 23430 ● ph. (757) 871-3578

2

A recent study from the Federal CIO Council and the nGenera Corporation found that there are certain "norms" that characterize the Net Generation of workers and the expectation that these younger workers are bringing to the working world. Net Generation workers want more flexibility and freedom in the workplace, including more flexible schedules. Younger workers also want a job where they can customize their work or choose a specialized field that interests them. Net Generation workers also look for integrity and ethical practices in a potential employer, as well as transparency and trust at work. Younger workers are used to collaborative environments, and expect fast communication methods such as instant messaging to be available. Net Generation workers will usually choose an employer that will listen to their ideas, encourage innovation, and offer competitive compensation and benefits.[10]

Recruiting Through Social Networks

Social networking these days is considered to be one of the most sought out solutions for sourcing and recruiting employees in an organization by recruiters. Organizations must decide if it is the right time to move to recruitment through social networking rather than continuing to rely on more traditional recruitment methods. Connecting to a social site may give an organization or federal agency access to a wider pool of talent. There are also drawbacks to recruiting new workers from social network sites. Other than specific sites like LinkedIn, most users connect to a social network to strengthen friendships and relationships they already have offline. Most information shared online is personal in nature, which makes it difficult to determine the exact professional background or caliber of a potential candidate. It is also sometimes difficult to verify information about a candidate who is found on a networking site. It is important to not rely completely on information from a social network, although networking sites can be useful for advertising open positions and finding potential candidates.[11]

There are many advantages that come with online recruiting. The Internet is quickly becoming the most powerful tool in recruitment advertising, and can save employers money and time. Employers and federal agencies should take time to research the different online job boards and compare traffic information, cost and length of posting. Utilizing local and industry-specific sites can also narrow down the large number of candidates. Recruiters could use online banner advertisements, email campaigns and employer listings to help find job seekers.[12]

Process Improvements

A report from the federal Chief Information Officers Council recommends Federal managers develop programs that provide work experience that meets Net Generational workers' needs and provide training, alternative work schedules and quick advancement. The report also states it is important to recognize the dedication and commitment of the workforce. If workers feel that they are contributing and making a difference, they are more likely to stay with their employer.[13] The report from the federal Chief Information Officers Council says that federal agencies should prepare to work with technologies and online applications such as social networking sites and virtual worlds, which Net Generation workers are familiar and comfortable with.[14]
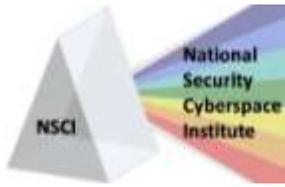
---

[10] Federal Chief Information Officers Council. (n.d.). *Recruiting the Net Generation.* Retrieved September 20, 2010, from CIO.gov: http://www.cio.gov/Documents/NetGen.pdf

[11] Bhagria, A. (2009, October 13). *Is Social Networking an Effective Recruitment Strategy?* Retrieved September 15, 2010, from Young HR Manager: http://www.younghrmanager.com/using-social-networking-as-arecruitment-strategy

[12] Milgram, R. (2008, August 8). *Leverage the Internet to Find the Perfect Employees.* Retrieved September 15, 2010, from EmploymentMetrix.com: http://www.employmentmetrix.com/blog/2008/08/leverage-the-in.html

[13] Federal Chief Information Officers Council. (n.d.). *Recruiting the Net Generation.* Retrieved September 20, 2010, from CIO.gov: http://www.cio.gov/Documents/NetGen.pdf

[14] Federal Chief Information Officers Council. (n.d.). *Recruiting the Net Generation.* Retrieved September 20, 2010, from CIO.gov: http://www.cio.gov/Documents/NetGen.pdf

Improving the Future of Cyberspace...Issues, Ideas, Answers
110 Royal Aberdeen ● Smithfield, VA 23430 ● ph. (757) 871-3578

3

Relationship Improvements

A recent study from the Partnership for Public Service includes interviews with 68 federal chief human capital officers, who identified five main obstacles in recruiting and retaining a talented workforce: "pay, classification and performance management systems; a sometimes tense relationship with the Office of Personnel Management; the leadership capabilities of federal managers; substandard HR information technology systems; and labor relations." According to this report, federal agencies must begin to focus on the end result of recruitment by becoming more flexible and making changes to the recruitment process rather than just focusing on speeding it up. The report also recommends that federal agencies improve the capabilities of federal managers and HR staffs, and also promote greater collaboration within the federal government on HR issues.[15]

There are several challenges in many hiring processes that must be overcome in order to fill IT positions and effectively recruit workers. Since current large-scale hiring systems most likely need to be completely retooled, CIO organizations should also focus on their relationship with the HR community, and their own role in the hiring process. A strong partnership with HR can help improve job marketing, compensation and the best use of recruitment resources. Retention is especially important to agencies that will face not only the retirement of Baby Boomer workers, but could also face rapid turnover from the younger generation.
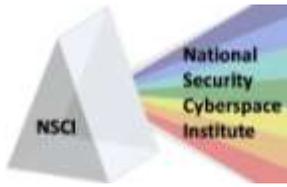
Answers

Recruitment

There are several things that organizations can do to become more attractive to cyber workers. It is always important to offer competitive salary rates, especially when attracting IT workers who generally believe they would make more money in the private sector. Agencies could consider offering sign-on bonuses for new workers, and offering non-traditional benefits at work such as access to social networking and online applications. Young workers may also be offered scholarships or certification training. Organizations should also consider offering a worker job security, flexible work arrangements, student loan forgiveness, opportunity for quick advancement, meaningful and challenging work, and collaboration with private industry, academia, and governmental organizations.[16]

Many companies and federal agencies are also recognizing the recruitment opportunities on social networking sites such as LinkedIn, Facebook and Twitter. There are a couple of best practices that can help organizations and federal agencies properly focus their time and resources for social networking recruitment. Many organizations choose to focus their attention on just one social network, and thoroughly explore only that channel. Regardless of the number of social networking sites leveraged, it is important to "listen" to discussions that take place on the network, and determine the best way to present job opportunities to avoid losing the perfect candidate due to poor communication. Promoting your presence on social networking sites can help to grow your network and pool of future candidates. Many organizations and federal agencies may also want to look into recruitment software platforms that offer the ability to automate a lot of the recruitment work on a social network, from responding to candidates to searching for new talent.[17]

---

[15] Ballenstedt, B. (2010, August 18). *HR Chiefs Find Lots to Worry About.* Retrieved September 20, 2010, from NextGov: http://wiredworkplace.nextgov.com/2010/08/top_hr_challenges.php

[16] Federal Chief Information Officers Council. (n.d.). *Recruiting the Net Generation.* Retrieved September 20, 2010, from CIO.gov: http://www.cio.gov/Documents/NetGen.pdf

[17] *5 Social Networking Recruitment Best Practices.* (n.d.). Retrieved September 15, 2010 , from Bond Talent: http://www.bondtalent-us.com/resource-library/recruitement-best-practices-social-networking.html

Improving the Future of Cyberspace...Issues, Ideas, Answers
110 Royal Aberdeen ● Smithfield, VA 23430 ● ph. (757) 871-3578

4

Retention

Retention is especially important for federal agencies, who must keep workers who are hired and trained to replace Baby Boomers nearing retirement. There are several ways that agencies can retain young workers. Agencies should offer competency development, work-based training and certification programs, mentoring, support for educational and training programs, collaboration, and recognition of innovation and valuable contributions. Agencies may also provide academic incentive programs, retention bonuses or additional annual leave for employees.

Net Generation workers have grown up around collaborative online tools, social media and instant messaging and these tools have also shaped their expectations in the workplace. The 21st-century workplace is becoming increasingly reliant on information technology to fulfill its many missions, and leaders must now focus on leveraging this environment in developing and recruiting talent that can operate and manage cyberspace.

Improving the Future of Cyberspace...Issues, Ideas, Answers
110 Royal Aberdeen ● Smithfield, VA 23430 ● ph. (757) 871-3578

5