



Cybersecurity Workforce Structure

Briefing to the
Federal Information Systems Security
Educators' Association (FISSEA)

Maureen B. Higgins
Assistant Director, Agency Support &
Technical Assistance
Office of Personnel Management
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Drivers and Direction

[We] will be unable to combat...threats without a more coordinated, sustained effort to increase cybersecurity expertise in the federal workforce.

Partnership for Public Service

All the Services are desperately short of people who have defensive and offensive cybersecurity war skills

Defense Secretary Robert Gates

Only about 1,000 people in the entire United States with the skills needed for...frontline cyber defense, but 20 or 30 times that many are needed.

NPR's Morning Edition 7/19/10

“Develop a strategy to expand and train the workforce, including attracting and retaining cybersecurity expertise in the Federal government” (Cyberspace Policy Review, May 2009)

Approach

Objective: Ensure Federal agencies have HR tools needed to attract, hire and retain a skilled cybersecurity workforce

Phase 1	Phase 2	Phase 3	Phase 4
•Define Cybersecurity Work	•Develop Competency Models	•Analyze issues, challenges, successful practices	• Review and revise HR policies and strategies
• <i>On-going</i>	• <i>On-going</i>	• <i>On-going</i>	• <i>Future</i>

Collaboration and input from Federal agencies are critical

Phase 1 – Define the Work

- Group cybersecurity work into 3 categories:
 - Network Operations and Defense
 - Law Enforcement and Counterintelligence
 - Specialized Computer Network Operations
- Ensure consistency and common taxonomy across NICE Tracks
- Challenges remain to scoping the overall workforce

Challenges

Defining the Workforce

- Positions not easily identified in HR databases
- Federal employment data by occupation series
- Cybersecurity positions classified in at least 18 different series
- Only some jobs in any series are cybersecurity

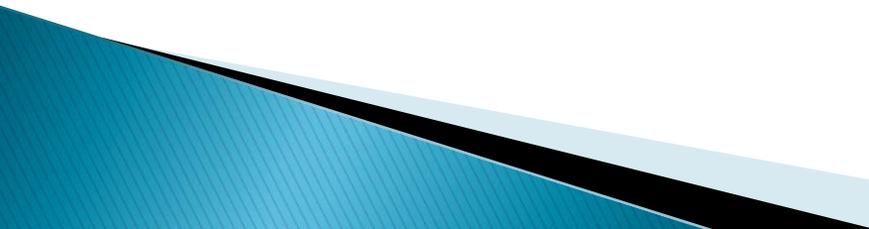
Many Occupations

- ▶ IT management
- ▶ Criminal investigator
- ▶ Computer engineer
- ▶ Computer scientist
- ▶ Electronics engineer
- ▶ Digital forensics
- ▶ Telecommunications
- ▶ Network administrator
- ▶ Security administration
- ▶ Intelligence analyst
- ▶ Program management
- ▶ Acquisition Specialist

Phase 2 – Develop Competency Models

- ▶ Analyzed cybersecurity jobs, tasks, skill requirements and competencies (Jan 2010)
 - ▶ Subject matter experts reviewed tasks and competencies (June 2010)
 - ▶ Linked tasks to competencies
 - ▶ Workforce survey (Oct 2010)
 - ▶ Analyzed survey data (Nov 2010)
 - ▶ Competency Model published (Feb 2011)
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Phase 3 – Analyze Workforce Issues

- Working with agencies to identify and analyze barriers, challenges and successful practices
 - Focus groups with hiring managers, employees, recruiters and cybersecurity experts
 - Held 6 sessions in August, October & November (24 agencies, 90+ participants)
 - Discussed challenges, successful practices and possible strategies
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Phase 4 – Develop HR Strategies

- Supporting agencies' current requirements:
 - Schedule A hiring authority granted to several agencies
 - Use of hiring flexibilities for recruitment needs
 - Direct Hire Authority for 2210, Information Security
- Future work includes assessing changes that may be needed for classification, recruitment, staffing and other HR policies



Cybersecurity Competency Model Study

Jacqueline A. Caldwell

Personnel Research Psychologist

Office of Personnel Management

March 15, 2011

Employee Survey Response

- ▶ Sent 50,000+ invitations
 - ▶ Got 17, 329 hits on the website
 - ▶ 8,826 said they perform cybersecurity work
 - ▶ 5,674 usable surveys
 - ▶ 32.7%
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Supervisor Survey Response

- ▶ Asked employees to forward survey to their supervisors
 - ▶ Got 6,832 hits on the website
 - ▶ 1,201 usable surveys
 - ▶ 17.5% response rate
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Series & Grades

▶ Studied:

- General Schedule Grades 5 – 15
- 24 Series

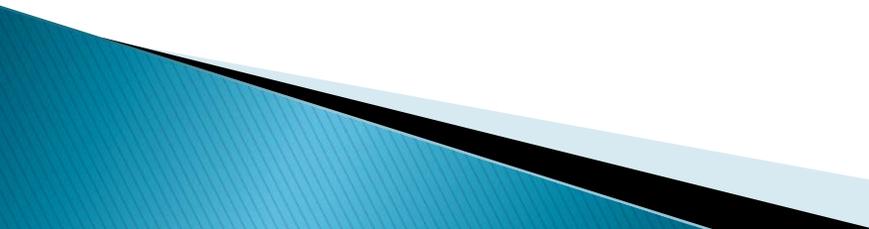
▶ Results:

- 2210 IT Management Series 9 – 15
- 0855 Electronics Engineering Series 12 – 15
- 0854 Computer Engineering Series 12 – 15
- 0391 Telecommunications Series 9 – 13

Core General Competencies

- ▶ Integrity/Honesty
 - ▶ Computer Skills
 - ▶ Technical Competence
 - ▶ Teamwork
 - ▶ Attention to Detail
 - ▶ Interpersonal Skills
 - ▶ Self-Management
 - ▶ Customer Service
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Core Technical Competencies

- ▶ Communications Security Management
 - ▶ Information Assurance
 - ▶ Computer Network Defense
 - ▶ Security
 - ▶ Information Management
 - ▶ Configuration Management
 - ▶ Information Systems/Network Security
 - ▶ Encryption
 - ▶ Operating Systems
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Current and Future Importance

- ▶ Top 10 rankings remained nearly the same
- ▶ Technical competencies had more changes:
 - Communications Security Management 7 to 5
 - Information Assurance 11 to 8
 - Computer Network Defense 21 to 18
 - Configuration Management 30 to 28
 - Encryption 34 to 30

Proficiency Levels – General

- ▶ Attention to Detail
 - ▶ Computer Skills
 - ▶ Customer Service
 - ▶ Integrity/Honesty
 - ▶ Interpersonal Skills
 - ▶ Reading
 - ▶ Reasoning
 - ▶ Self-Management
 - ▶ Technical Competence
 - ▶ Teamwork
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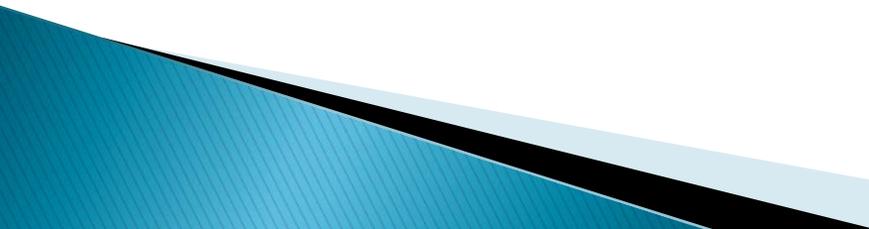
Proficiency Levels – Technical

- ▶ Communications Security Management
 - ▶ Compliance
 - ▶ Computer Network Defense
 - ▶ Configuration Management
 - ▶ Hardware
 - ▶ Information Assurance
 - ▶ Information Systems/Network Security
 - ▶ Information Systems Security Certification
 - ▶ Operating Systems
 - ▶ Security
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Certification

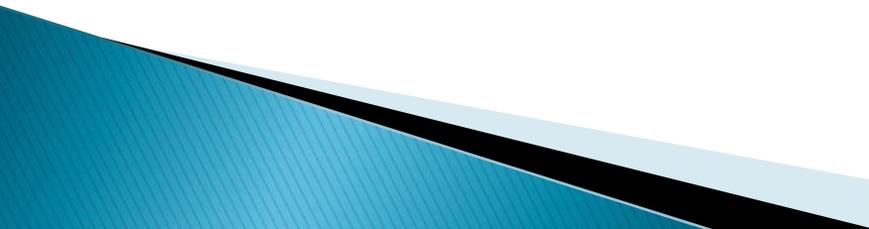
- ▶ 57% of respondents have 1 or more certifications
 - IT security 49%
 - IT technical 19%
 - Physical security-related 10%
 - Technical area (non-IT) 12%
 - Project management 10%

Core Tasks

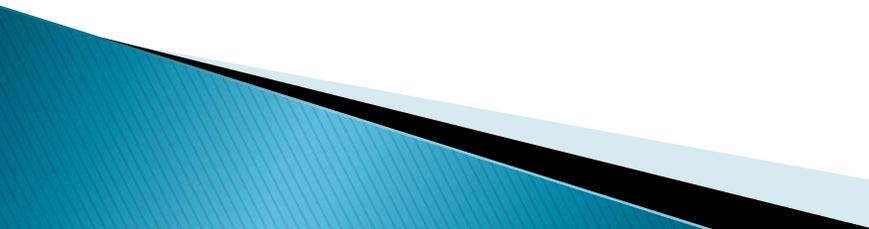
- ▶ Makes improvements, solves problems, or takes corrective action when problems arise.
 - ▶ Recommends improvements or solutions to problems, or determines appropriate actions.
 - ▶ Identifies or anticipates needs or problems.
 - ▶ Monitors own progress on work products against goals.
 - ▶ Promotes or develops and maintains good working relationships with key individuals or groups.
 - ▶ Develops and maintains relationships with customers with diverse needs.
 - ▶ Uses computer systems or applications to access, create, send, retrieve, or manipulate data, files, or other information.
 - ▶ Provides technical advice or assistance to others.
 - ▶ Collaborates with others or works on teams to accomplish work-related activities.
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0391 – Telecommunications Series

Tasks

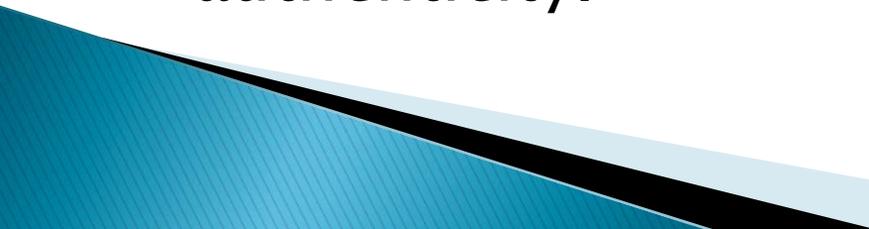
- ▶ Enters data or other information into a computer.
 - ▶ Evaluates and provides feedback on others performance.
 - ▶ Attends briefings, meetings, conferences, or hearings.
 - ▶ Schedules work assignments, sets priorities, and coordinates the work of staff.
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0854– Computer Engineering Series Tasks

- ▶ Keeps abreast of latest technology, information, research, etc., to maintain knowledge in field of expertise (for example, reads trade journals, participates in professional/technical associations, maintains credentials).
 - ▶ Evaluates vendors, products, services, systems, or proposals to make recommendations for contracting (including licensing agreements).
 - ▶ Provides technical advice or assistance to others.
 - ▶ Gives presentations or briefings
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0855 Electronic Engineering Series

Tasks

- ▶ Justifies and explains decisions, conclusions, findings, or recommendations.
 - ▶ Reviews and provides feedback on the content of complex information (for example, research on contract proposals, financial, technical, or management reports).
 - ▶ Analyzes or interprets data or other information.
 - ▶ Reviews reports, documents, records, data, or other materials to verify completeness, correctness, consistency, compliance, or authenticity.
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Summary

- Continue partnering to ensure Federal agencies can attract, recruit and retain skilled employees to accomplish cybersecurity missions
- Let OPM know about recruitment and retention challenges and successes:
 - Maureen.higgins@opm.gov, (202)606-2855
 - Jacque.Caldwell@opm.gov , (202) 606-2308

NATIONAL INITIATIVE FOR
CYBERSECURITY EDUCATION (NICE)



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Questions?



A New Day for the Civil Service