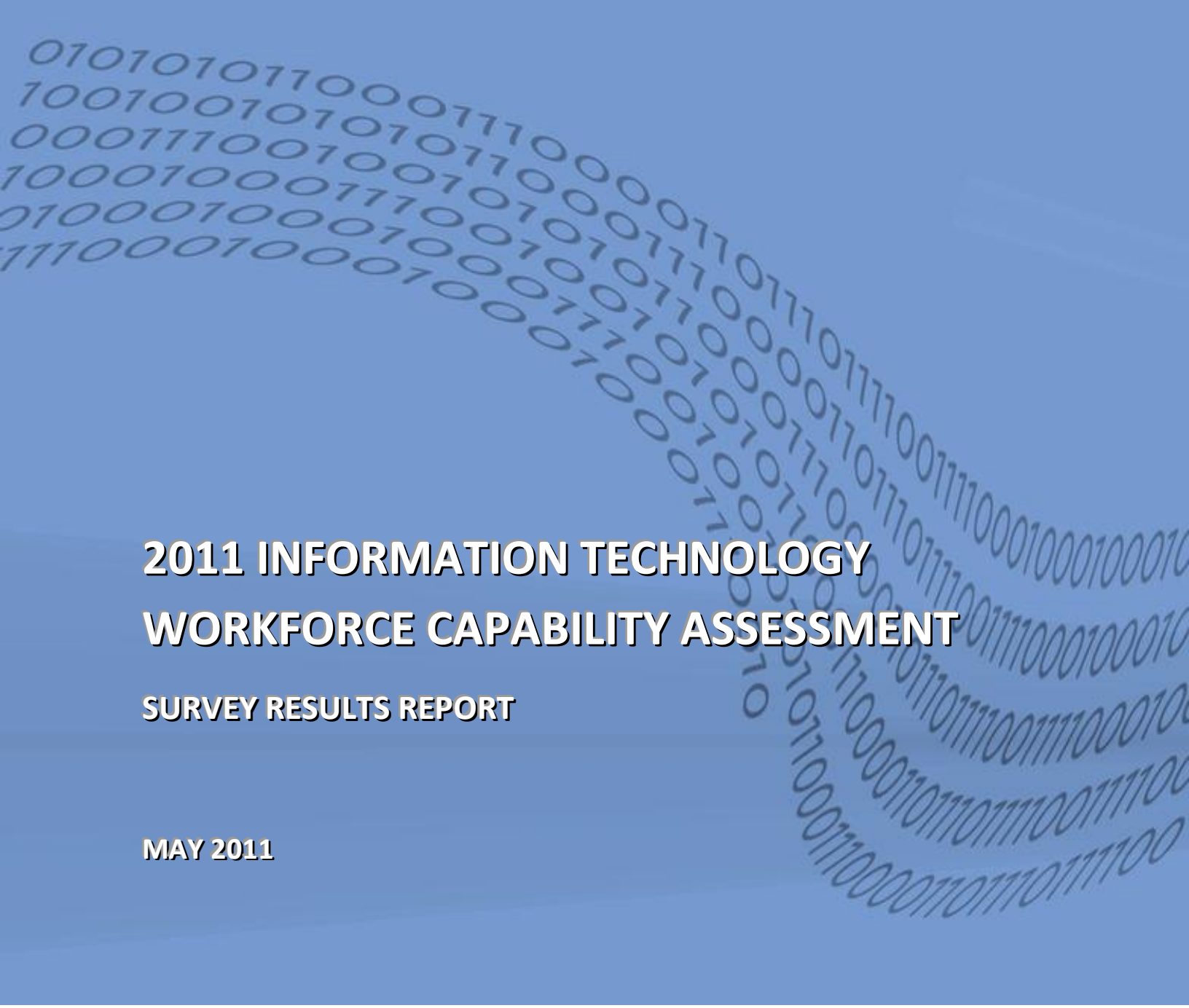

2011 INFORMATION TECHNOLOGY WORKFORCE CAPABILITY ASSESSMENT

SURVEY RESULTS REPORT

MAY 2011

CIO.GOV

CHIEF INFORMATION OFFICERS COUNCIL

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Executive Summary

The Federal Chief Information Officers Council (CIOC), in partnership with the U.S. Office of Personnel Management (OPM) administered the 2011 Information Technology Workforce Capability Assessment Survey (ITWCA) to federal civilian employees who regularly perform IT functions. The survey was administered to the federal workforce between January 18, 2011 and March 4, 2011.

Respondent Demographics at a Glance

DEMOGRAPHIC CHARACTERISTIC	SUMMARY
Participation	17,662 IT professionals representing 63 agencies completed the 2011 ITWCA. Most ITWCA respondents worked for cabinet-level agencies (86.6%) and another 11.9% of respondents worked for large agencies of more than 1,000 employees.
Occupational Series	68.5% of respondents belonged to the 2210 – IT Management occupational series. The next largest concentration of respondents identified themselves as 391 – Telecommunications series (3.9%) and as 1550 – Computer Science series (3.6%).
Age Range	44.3% of IT respondents are 51 years or older. The most commonly indicated age ranges were 46-50 years old (20.4%) and 51-55 years old (20.9%).
Years of Federal Government Employment	17,616 ITWCA respondents provided information on the total number of years worked either in the military or a civilian. "Over 20 years" was the most frequently selected response in 50.5% of cases.
Years of Public Sector IT Experience	16,870 ITWCA respondents provided information on their years of public sector IT experience. The most frequent response was "Over 20 years" in 21.3% of cases.
Retirement Exposure	19.2% of respondents are eligible for retirement within three years but only 11.4% of respondents intend to retire within that same period.
Cybersecurity Representation	7,449 of respondents (42.2%) indicated that they perform cybersecurity-related work activities.
IT Program Management Representation	4,583 of respondents (25.9%) indicated that they were IT Program Managers.

Key Findings

- ITWCA respondents had an opportunity in the Specialized Job Activities section to indicate how they spent time in their normal work among 18 different activities. Respondents most frequently spent time performing the following five activities. The percentage of those that spent a "Moderate" or "Extensive" amount of time performing that activity (n=17,662 respondents) is also provided. *Throughout the report, the number of respondents included as part of a specific chart or analysis is denoted as "n=".*

SPECIALIZED JOB ACTIVITY	% MODERATE OR EXTENSIVE TIME SPENT
1. Customer/End User Support	63.7%
2. IT Project Management	45.7%
3. Applications Software	40.8%
4. Systems Analysis	40.8%
5. IT Security/ Cybersecurity/ Information Assurance	40.5%

- ITWCA respondents had the opportunity to rate their proficiency in 54 Technical Competencies. In order, respondents most frequently rated themselves as "Advanced" or "Expert" in the following ten Technical Competencies. The percentage of ITWCA respondents who rated themselves as "Advanced" or "Expert" (n=17,662 respondents) is also provided:

TECHNICAL COMPETENCY	% ADVANCED OR EXPERT
1. Hardware	46.5%
2. Operating Systems	41.4%
3. Project Management	40.4%
4. Information Assurance	39.1%
5. Technical Documentation	38.7%

TECHNICAL COMPETENCY	% ADVANCED OR EXPERT
6. Configuration Management	38.6%
7. Technology Awareness	38.5%
8. Systems Life Cycle	38.0%
9. Standards	37.9%
10. Requirements Analysis	36.4%

- ITWCA respondents also had the opportunity to rate their proficiency in 77 IT Skills. In order, respondents most frequently rated themselves as "Advanced" or "Expert" in the following ten IT Skills. The percentage of ITWCA respondents who rated themselves as "Advanced" or "Expert" (n=17,662 respondents) is also provided:

IT SKILL	% ADVANCED OR EXPERT
1. Desktop Applications	58.5%
2. Microsoft Windows Desktop Operating Systems	50.3%
3. Systems Support and Helpdesk	31.9%
4. Client-Server	26.7%
5. Information Management	25.1%
6. Testing	24.0%
7. Requirements Management	23.7%
8. Continuity of Operations Planning	22.8%
9. System Analysis and Design	20.5%
10. Network Operating Systems	19.8%

- Overall 52.4% of ITWCA respondents have earned at least one certification or certificate within the last three years. Certifications are most frequently held in the Information Systems Security area (13.8% of ITWCA respondents); examples of these certifications are Information Systems Security Associate (ISSA) or Security Plus. Certifications in the Computing area were also frequently selected choices (held by 12.6% of ITWCA respondents); examples of Computing certifications are CompTIA A+ and Certified Computing Professional (Institute for Certification of Computing Professionals).

- ITWCA respondents were asked to identify competencies for which additional training would benefit their organization. The most frequently identified training needs along with the percentage of respondents who identified the need are provided. For General Business Competencies and Technical Competencies, n=17,662 respondents. For Cybersecurity Competencies, n=7,449 respondents.

GENERAL BUSINESS COMPETENCY TRAINING NEED	% OF RESPONDENTS
1. Team Building	32.9%
2. Leadership	29.4%
3. Administration and Management	27.0%
TECHNICAL COMPETENCY TRAINING NEED	**% OF RESPONDENTS**
1. Business Process Reengineering	14.3%
2. Project Management	**13.6%**
3. Cost-Benefit Analysis	13.6%
CYBERSECURITY COMPETENCY TRAINING NEED	**% OF CYBER RESPONDENTS**
1. Vulnerabilities Assessment	35.8%
2. Computer Network Defense	32.3%
3. Compliance	28.8%

Chapter I – Introduction

Background & Purpose

Since 2003, the Federal Chief Information Officers Council (CIOC), in partnership with the U.S. Office of Personnel Management (OPM) has developed and deployed a competency assessment survey to the federal civilian Information Technology (IT) workforce. As in 2003, 2004, and 2006, the 2011 IT Workforce Capability Assessment (ITWCA) is a web-based survey developed and administered by the Federal CIO Council as part of its mission to ensure information security, protect individual privacy, and save taxpayer dollars by creating a Federal Government that strategically, efficiently, and effectively uses IT to serve and protect U.S. citizens. Specifically, the ITWCA supports the CIOC's IT Workforce Committee goal to ensure that the Federal Government has a cadre of highly capable IT professionals with mission critical competencies to meet agency goals.

The 2011 ITWCA provides agencies with a method of gathering valuable workforce planning data and satisfies a number of regulatory requirements specific to the IT workforce. The ITWCA helps federal agencies address a number of guidelines, requirements, and mandates related to the strategic management of human capital, including the Clinger-Cohen Act, the E-Gov Act (Section 209), OPM guidelines on human capital management (the Human Capital Assessment and Accountability Framework, or HCAAF), and Government Accountability Office (GAO) guidance and reports on strategic human capital management.

The ITWCA provides every federal executive-branch IT employee with the opportunity to help shape the future of the IT workforce - not only in his or her agency, but also for the Federal Government as a whole. IT and human capital leadership will review the analysis and use the findings to make informed decisions on the capabilities, skills, and resources that the agency's IT workforce will need to achieve its vision. Analysis of the survey information will also contribute to strategies to recruit, retain, develop and manage a fully-trained and qualified IT workforce to meet current and future mission requirements.

Survey Objectives

The ITWCA is a unique opportunity for employees to share input and perspectives based on their experience in the IT profession. The information gathered benefits the IT workforce by identifying current strengths, prioritizing areas for future growth and development, and targeting resources to help employees meet current and future objectives and requirements.

Specifically, the objectives of the ITWCA from the employee-level to the organization-level to the government-wide level are to:

- Assist employees in long-term career planning by providing a template by way of the individual survey results to discuss with managers;
- Contribute to the progress of each agency's mission by providing a snapshot of the agency IT workforce in order to effectively plan for the future; and
- Provide a holistic view of the capabilities and skills across the federal IT workforce. The input provided by individuals is aggregated to identify the supply of IT expertise across the government workforce.

Strategy and Methodology

The Federal CIO Council IT Workforce Committee charted a project team to: develop survey content; interface with agency points of contacts (POCs) to identify the target IT workforce and drive participation; administer the ITWCA via a secure OPM website; and train agency representatives on how to access and analyze survey results. The ITWCA targeted all federal executive branch civilian employees

who performed IT functions regardless of their occupational series; contractors and active military were not included. As it was outside of the purview of the ITWCA project team to directly communicate to the federal executive branch IT workforce, agencies had full discretion on whether to participate in the survey and who within their organizations would receive marketing about the effort. The following occupational series were included as response options in the survey:

- 0301 - Miscellaneous Administration and Program
- 0332 - Computer Operation
- 0334 - Computer Specialist (replaced by 2210)
- 0335 - Computer Clerk and Assistant Series
- 0340 - Program Management
- 0343 - Management and Program Analysis
- 0390 - Telecommunications Processing Series
- 0391 - Telecommunications Series
- 0392 - General Telecommunication Series
- 0394 - Communications Clerical Series
- 0854 - Computer Engineering
- 0855 - Electronics Engineering
- 1410 - Librarian Series
- 1411 - Library Technician Series
- 1412 - Technical Information Services Series
- 1420 - Archivist Series
- 1421 - Archives Technician Series
- 1550 - Computer Science Series
- 2210 - Information Technology Management
- 2880 - Foreign Service
- 2882 - Foreign Service
- 2884 - Foreign Service
- Other (Respondents could enter a 4 digit occupational series into a text box)

The survey is comprised of five primary sections: Demographics, Specialized Job Activities, Competencies, IT Skills, and Certifications. The survey also includes two new supplemental sections (Cybersecurity and IT Program Management) that were intended to gather information on important segments of the IT workforce. These sections were only activated for those individuals performing significant work in these areas. Following is a description of each section:

1. Demographics: Workforce characteristics such as Series/Grade, IT parenthetical title, Age, Education
2. Specialized Job Activities: Typical functions/activities performed by the IT Workforce in regular work activities
3. Competencies: General Business Competencies are characteristics (e.g., knowledge, skills and abilities) needed to perform work roles; Technical Competencies are specific to the IT Workforce
4. Cybersecurity Competencies: Competencies specific to the Cybersecurity workforce
5. IT Program Management: Criteria and Competencies that define the IT Program Management Role
6. IT Skills: Specific products, technologies, and skills areas needed to perform IT functions
7. Certifications: Designations that relate to a specific product or general IT area

The IT Workforce Capability Assessment survey is administered using the Federal Competency Assessment Tool (FCAT). The FCAT was selected for the ITWCA because of its role as a common platform

and approach to conducting surveys across government agencies. The FCAT has been used in the past to survey federal acquisition professionals, human resources professionals and managers in several functional areas. The FCAT also provides a broad set of reports that are used to help understand the demographic profile and IT expertise of ITWCA survey respondents. All survey responses are kept anonymous. Participants were notified to take the survey by the designated point of contact (POC) from their respective agency. Once notified, respondents visited the survey website where they could complete the survey as a completely anonymous user or set up an account to access their in-progress survey at a later time. Surveys were considered valid when all five primary sections and the Cybersecurity Competency and IT Program Management sections (as applicable) were completed and the respondent acknowledge completion by clicking the "Submit" button. Accordingly, partial survey records are not part of the following analysis and were not supplied to the individual agencies.

Survey Results Report Overview

The 2011 IT Workforce Capability Assessment Results Report provides an overview of the survey effort conducted between August 2010 and May of 2011, summarizes survey data results, and highlights key findings as they describe important characteristics of the IT workforce. Detailed reports on survey results specific to each of the 18 Specialized Job Activities have also been developed are available under separate covers. Moreover, personally identifiable information was not attached to the survey database records or provided to agencies.

It is important to note that while the survey data was acquired from IT employees representing a large number of federal agencies, the analysis of the data and the accompanying results are summarized at the federal level and are not focused on any individual department or agency. The 2011 ITWCA Survey Results Report provides a snapshot-in-time of the current status of the IT workforce and identifies areas in which strengths may be leveraged as well as opportunities for improving certain capabilities. This report is a community-wide aggregate summary against which agencies may compare agency-specific results.

The ITWCA Survey Results Report is organized into nine chapters:

- Chapter I provides an introduction to the survey effort, methodology, and results report.
- Chapter II provides the demographic context for the ITWCA Survey Results Report. The demographic makeup of ITWCA respondents is important for readers to understand because the voluntary nature of the survey meant that respondents were self-selected and represent a representative though not necessarily a random sample.
- Chapter III presents the results for the General Business and Technical Competency section. Also included are the top competency training needs identified by ITWCA respondents
- Chapter IV presents the results for the IT Skills section.
- Chapter V reports the IT Certifications held by ITWCA respondents.
- Chapter VI provides a breakdown of IT expertise present by occupational series.
- Chapter VII introduces the content contained in the 18 Specialized Job Activity Reports and provides high level results across the SJAs.
- Chapter VIII provides the demographic profile of the cybersecurity workforce and presents the results for the cybersecurity section.
- Chapter IX provides the demographic profile of the IT Program Management workforce.

Chapter II – ITWCA Survey Respondents

The survey asked respondents to provide a self-assessment of their IT capabilities within the various ITWCA sections. Because these proficiencies were voluntarily self-reported, it is necessary to understand the background and potential biases held by the respondents when reading the results report.

A total of 17,662 IT professionals from 63 agencies across the executive branch of the government participated in the 2011 ITWCA. For 44 agencies, POCs provided estimates of their IT Workforce Population; the sum of these estimates was 79,977 employees, for which there were 17,078 respondents (21.4% participation rate). 584 additional ITWCA respondents belonged to agencies that either didn't provide an IT workforce estimate or indicated that they would not be marketing the ITWCA to employees. These respondents were included in the ITWCA results and analysis but are not included in the participation rate. Participation was achieved from Cabinet-level, Large, Medium, and Small Independent agencies, and ranged from a handful of participants to several thousand within each. Table 1 provides a comprehensive list of the agencies participating in the 2011 ITWCA organized by agency size (Cabinet as defined, Large Independent as 1,000+ employees, Medium Independent as 100-999 employees, Small Independent as less than 100 employees).

Table 1: Agency Participation Table

CABINET-LEVEL	15,294 respondents (86.6%)
▪ Agriculture, Department of	
▪ Commerce, Department of	
▪ Defense, Department of	
▪ Education, Department of	
▪ Energy, Department of	
▪ Health and Human Services, Department of	
▪ Homeland Security, Department of	
▪ Housing and Urban Development, Department of	
▪ Interior, Department of the	
▪ Justice, Department of	
▪ Labor, Department of	
▪ State, Department of	
▪ Transportation, Department of	
▪ Treasury, Department of the	
▪ Veterans Affairs, Department of	
LARGE INDEPENDENT	**2,110 respondents (11.9%)**
▪ Court Services and Offender Supervision Agency for the District of Columbia	
▪ Environmental Protection Agency	
▪ Equal Employment Opportunity Commission	
▪ Federal Communications Commission	
▪ Federal Reserve System	
▪ Federal Trade Commission	
▪ General Services Administration	
▪ Government Printing Office	
▪ National Aeronautics and Space Administration	
▪ National Archives and Records Administration	
▪ National Credit Union Administration	
▪ National Labor Relations Board	
▪ National Science Foundation	
▪ Nuclear Regulatory Commission	
▪ Office of Personnel Management	
▪ Postal Service	
▪ Securities and Exchange Commission	
▪ Small Business Administration	
▪ Smithsonian Institution	
▪ Social Security Administration	

- U.S. Agency for International Development

MEDIUM INDEPENDENT — **204 respondents (1.2%)**

- Armed Forces Retirement Home
- Executive Office of the President
- Export-Import Bank of the United States
- Farm Credit Administration
- Federal Election Commission
- Federal Energy Regulatory Commission
- Federal Housing Finance Agency
- Federal Labor Relations Authority
- Federal Maritime Commission
- Federal Mediation and Conciliation Service
- National Foundation on the Arts and the Humanities
- National Security Agency
- National Transportation Safety Board
- Overseas Private Investment Corporation
- Pension Benefit Guaranty Corporation
- Railroad Retirement Board
- Selective Service System

SMALL INDEPENDENT — **54 respondents (0.3%)**

- Access Board
- Arctic Research Commission
- Federal Judicial Center
- Medicare Payment Advisory Commission
- National Capital Planning Commission
- Occupational Safety and Health Review Commission
- Office of Government Ethics
- Office of Navajo and Hopi Indian Relocation
- Trade and Development Agency
- Vietnam Education Foundation

The majority of participants were from the Department of Defense (8,121 respondents, 46%), the Department of Homeland Security (1,939 respondents, 11%), the Department of Agriculture (1,470 respondents, 8%), and the Social Security Administration (703 respondents, 4%).

In looking at the ITWCA results report, it is important to qualify the respondents in the context of what is already known about the IT workforce. Based on December 2010 OPM FedScope information, Table 2 compares several key statistics between the 2210 FedScope population and the 2210 ITWCA respondents. Based on this comparison it was evidenced that ITWCA respondents were proportionally similar to the overall IT workforce indicated by FedScope based on occupational series, grade level, diversity, agency size, age range, and gender. However, years of federal experience is one key statistic that diverged between the two groups. For the ITWCA, 50.6% of the respondents had 20-plus years of federal service, whereas the composition of the 2210 series shown in FedScope is 38.5% of employees with 20-plus years of federal service. Agency decision-makers should consider this feature when applying the ITWCA results to make generalizations about the overall IT workforce.

Table 2: 2011 ITWCA 2210 Respondent Sample and 2010 OPM FedScope 2210 Population Comparison

PARTICIPANT PROFILE		2011 ITWCA (January-March, 2011) 2210 Respondent Sample 12,105 employees	OPM FedScope December 2010 2210 Population 79,405 employees
Series		2210 - Information Technology Management accounts for 68.5% of ITWCA participation (17,662 respondents)	2210 - Information Technology Management accounts for 76.9% of the estimated IT Workforce (103,322 employees)
Years of	Less than 20 years	5,930 respondents; 49.0%	48,823 employees; 61.5%

PARTICIPANT PROFILE		2011 ITWCA (January-March, 2011) 2210 Respondent Sample 12,105 employees	OPM FedScope December 2010 2210 Population 79,405 employees
Federal Service	More than 20 years	6,131 respondents; 50.6%	30,580 employees; 38.5%
	Unknown/ Unspecified	44 respondents: 0.4%	2 employees: 0.0%
Grade Level	GS 4 and below	32 respondents; 0.3%	4 employees; 0.0%
	GS 5-10	875 respondents; 7.2%	6,296 employees; 7.9%
	GS 11-13	7,610 respondents; 62.9%	51,427 employees; 64.8%
	GS 14-15	2,239 respondents; 18.5%	11,147 employees; 14.0%
	Decline to answer/Other/Non-GS	1,349 respondents; 11.1%	10,532 employees; 13.3%
Diversity	White	67.3%	67.7%
	Black/African American	13.9%	17.7%
	Asian	5.8%	7.1%
	Hispanic/Latino	4.3%	3.7%
	American Indian or Alaskan Native	1.1%	1.2%
	Native Hawaiian or other Pacific Islander	0.7%	0.3%
	All other respondents/employees	7.0 %	2.2 %
Agency Size		87.2% Cabinet; 11.5% Large; 1.3% Medium; 0.1 % Small	89.2% Cabinet; 9.8% Large; 0.9% Medium; 0.1% Small
Age Range		25 and under: 1.4% 26-35: 10.6% 36-45: 22.4% 46-55: 41.3% 56-60: 14.4 % Over 60: 9.0% Not Specified: 1.0%	Less than 25: 0.8% 25-34: 11.7% 35-44: 23.0% 45-54: 39.6% 55-59: 14.9% Over 60: 9.9% Not Specified: 0.0%
Percent Female		3,712 respondents; 30.7%	25,985 employees; 32.7%

Table 3 provides a profile of the average 2011 ITWCA participant based on the highest frequency of responses in each category. When taken as a group, these high frequency responses help illustrate the likely demographic profile of a federal IT employee if chosen at random from the ITWCA respondent pool. Overall, the 2011 profile is similar to the 2006 ITWCA participant profile, except that in the current survey there are noticeably fewer female respondents. However, this feature is consistent with the observation that there are fewer females in the IT Workforce over the same period. This was verified after a comparison between the September 2006 OPM FedScope and December 2010 OPM FedScope populations revealed a similar drop from 37.5% to 32.7% (- 4.8%) for the 2210 IT Management occupational series. The 2011 ITWCA also differs from the 2006 survey in that the typical respondent listed their primary parenthetical title as “Non-Applicable” (19.4% of responses) in 2006, whereas the Non-Applicable group only accounted for 6.3% in 2011.The change is likely due to more widespread adoption of parenthetical titles since 2006. The final difference between the two ITWCA administrations has to do with years of public sector IT experience. However a closer look at this variable shows that 21.3% of respondents in 2006 had less than 1 year of public sector IT experience and another 19.8% had 11-20 years of public sector IT experience. These ratios compare favorably with the experience profile in 2011 (19.4% and 18.3% respectively).

Table 3: 2011 ITWCA Average Respondent Profile and 2006 Comparison

RESPONDENT PROFILE	2011 ITWCA	2006 ITWCA
Series	2210 - Information Technology Management	2210 - Information Technology Management
Primary Parenthetical Title	Customer Support	Non-Applicable
Grade Level	GS-12 or equivalent	GS-12 or equivalent
Years of IT Experience	Over 20 years public sector with less than 1 year private sector	Less than one year public sector with less than one year private sector
IT Certification	Information Systems Security (held by 13.8% of total respondents)	Computing (held by 9.0% of total respondents
Percent College Graduates	67.6%	67.5%
Age Range	51-55	51-55
Percent Female	30.8%	35.6%
Retirement Eligibility	11-20 years	11-20 years

Table 4 summarizes aggregate survey demographic characteristics that will be described in further detail in the remainder of this section as well as some characteristics that are only discussed in the periphery.

Table 4: Key Demographic Summary Table

KEY DEMOGRAPHIC SUMMARY TABLE
▪ **Federal Service** – 68.4% of respondents have worked in the Federal Government for 10 or more years when military and civilian careers are combined
▪ **Prior Participation** – 4,681 (26.5%) of respondents took the survey in 2006
▪ **Occupational Series** – 68.5% belong to the 2210 IT Management occupational series
▪ **Primary Parenthetical Title** – 32.2% of 2210 respondents were evenly split between Customer Support, Security, and IT Project Management titles
▪ **Age** – Most respondents (20.9%) are in the 51 to 55 age range, followed closely by those in the 46 to 50 age range (20.4%)
▪ **Retirement Eligibility** – 19.2% are eligible to retire within the next three years
▪ **Retirement Estimate** – 11.4% indicated that they plan to retire within the next three years
▪ **Turnover Estimate** – 13.3% indicated that they plan to leave the Federal IT workforce within the next three years
▪ **Cyber Workforce** – 7,449 (42.2%) identified as performing cybersecurity-related work activities
▪ **IT Project Management Workforce** – 8,859 (50.2%) identified project managers
▪ **IT Program Management Workforce** – 4,583 (25.9%) identified program managers

Occupational Series

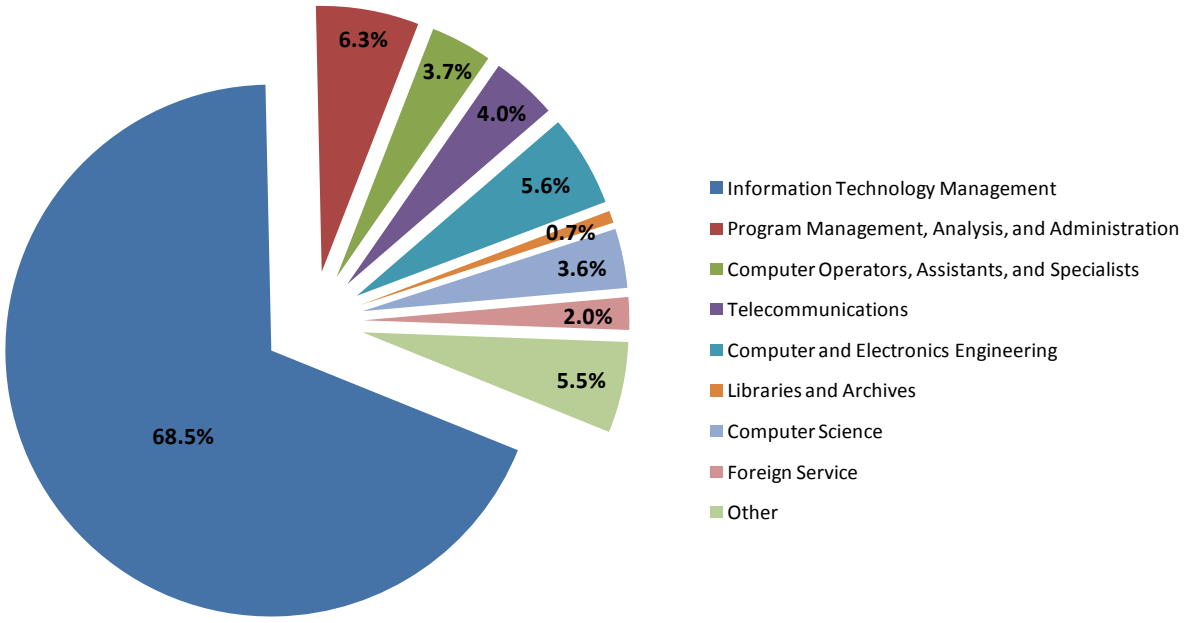
The overwhelming majority of respondents (68.5%) identified as belonging to the 2210 Information Technology Management occupational series. The next most numerous series were 0391 - Telecommunications series (682 respondents, 3.9%), 1550 - Computer Science series (637 respondents, 3.6%), 0855 - Electronics Engineering (576 respondents, 3.3%), and 0343 - Management and Program Analysis series (548 respondents, 3.1%). Although OPM has replaced the 0334 - Computer Specialist with the 2210 series, a notable group of 547 respondents (3.1%) identified themselves as belonging to the 0334 series. Table 5 shows how similar occupational series are grouped into occupational categories. These categories are used throughout the results report and in the Occupational Capability Profiles. To address the point that Federal employees may change jobs between occupational series but within the same category, it is useful to look at these groupings at the aggregate level (i.e., occupational category). Figure 1 provides a graphical representation of the occupational categories indicated by ITWCA respondents.

Table 5: Mapping of Occupational Series to Occupational Categories

Occupational Series	Occupational Category	Respondents	Percentage
2210 - Information Technology Management	Information Technology Management	12,105	68.5%
0301 - Miscellaneous Administration and Program	Program Management and Administration	1,106	6.3%
0340 - Program Management			
0343 - Management and Program Analysis			

Occupational Series	Occupational Category	Respondents	Percentage
0332 - Computer Operation	Computer Operators, Assistants, and Specialists	661	3.7%
0334 - Computer Specialist			
0335 - Computer Clerk and Assistant			
0390 - Telecommunications Processing Series	Telecommunications	710	4.0%
0391 - Telecommunications Series			
0392 - General Telecommunication Series			
0394 - Communications Clerical Series			
0854 - Computer Engineering	Computer and Electronics Engineers	985	5.6%
0855 - Electronics Engineering			
1410 - Librarian Series	Librarians and Archivists	131	0.7%
1411 - Library Technician Series			
1412 - Technical Information Services Series			
1420 - Archivist Series			
1421 - Archives Technician Series			
1550 - Computer Science Series	Computer Science	637	3.6%
2880 - Foreign Service	Foreign Service	350	2.0%
2882 - Foreign Service			
2884 - Foreign Service			
Other	Other	977	5.5%

Figure 1: Percentage of Responses by Occupational Categories



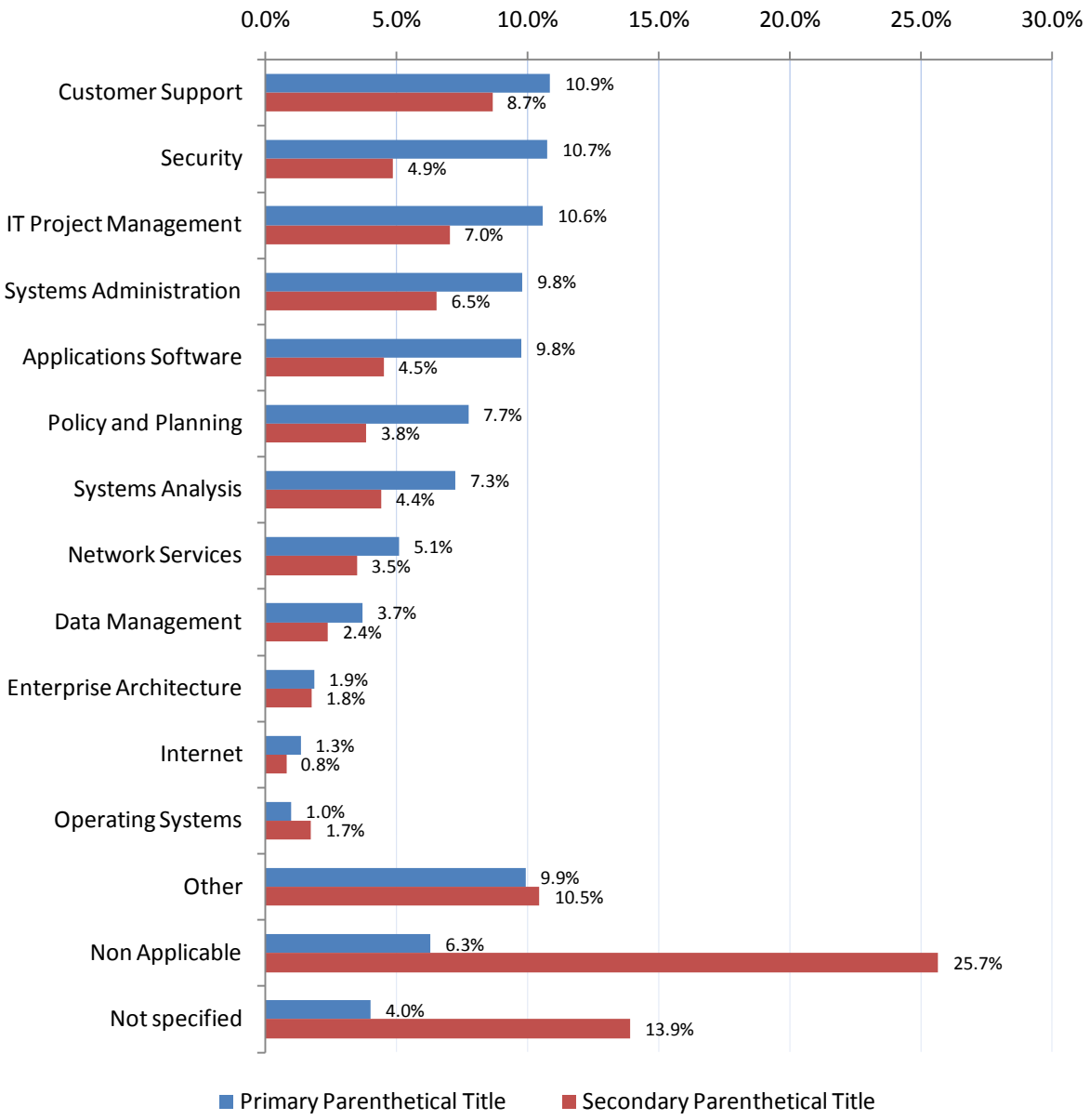
Parenthetical Titles for the 2210 Occupational Series

ITWCA respondents, who identified themselves as belonging to the 2210 occupational series, had the opportunity to select a primary parenthetical title and a secondary parenthetical title. Only federal employees that are part of the 2210 occupational series are assigned a parenthetical title. Some agencies formally assign parenthetical titles to their workforce and track this in HR information systems, while other agencies merely associate the titles during the hiring process and do not use them as part of an ongoing process.

OPM established the twelve parenthetical titles because the basic title for the 2210 occupational series (Information Technology Management) did not adequately describe all the facets of IT work. The twelve titles serve to further distinguish the duties and responsibilities part of the 2210 occupational series. Outside of the twelve parenthetical titles, respondents were also able to choose "Other", "Non Applicable", or leave the response blank "Not Specified". It should be noted that although there are exclusively twelve specific parenthetical titles, 10.5% of respondents chose "Other" as their primary title and another 9.9% chose "Other" as a secondary title. "Customer Support", "Security", and "IT Project Management" had nearly equal representation in the workforce. "Not Specified" and "Non Applicable" were largely represented as a secondary parenthetical title because many respondents did not closely identify with a secondary title.

Although many IT workers only associated with one parenthetical title, several frequent combinations did occur when two titles were indicated. For those that selected "Customer Support" as their primary title, "System Administration" was the most commonly selected secondary title in 15.2% of those cases. For those that selected "Systems Administration" as their primary title, "Network Services" was the most commonly selected secondary title in 9.8% of those cases. Where "Applications Software" was selected as the primary title, the most frequent combination occurred with "Systems Analysis" in 11.4% of those cases. When "IT Project Management" was the primary title selected, the most frequent combination occurred with "Policy and Planning" in 10.1% of those cases. Rounding out the top five, "Security" was coupled with "Policy and Planning" in 8.5% of those cases. Figure 2 details the primary and secondary parenthetical titles indicated by the 2210 workforce (n=12,105) when asked the question, "What is your primary IT parenthetical title?" and "What is your secondary parenthetical title?"

Figure 2: Primary & Secondary Parenthetical Titles

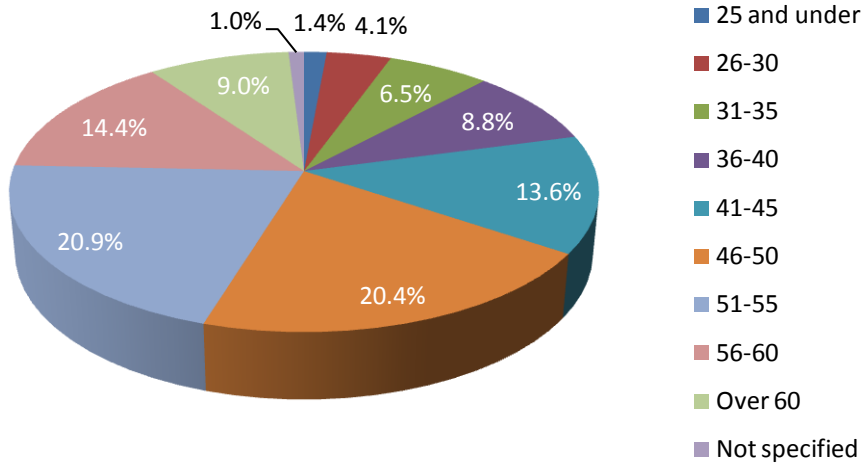


Age Range Distribution

Survey respondents were given the opportunity to indicate their age from a selection of age ranges; each age range choice covered five years. Overall 44.3% of ITWCA respondents are 51 years old or older, with the highest proportion of respondents (20.9%) falling in the 51 to 55 years old age range. The 46-50 age range was also frequently indicated (20.4%). At the other end of the age range are those respondents that are 30 years old and younger; this subgroup is commonly referred to as the Net Generation or Generation Y (born 1978-1994) because they are digital natives who first began using the internet from a very young age. A small proportion of ITWCA respondents are considered a part of the Net Generation. The 5.5% of respondents falling in the 30 and under age range are squarely part of the Net Generation; however to capture the oldest Net Gens, who would be 33 in 2011, a portion of the 31-35 year old range (6.5%) should be included. With this caveat, the 12.0% ITWCA respondents who are 35 years old and under, is consistent with the 10% Net Generation workforce that was estimated in the

Net Gen Guide from 2008. Moreover, the ratio of Net Generation ITWCA respondents is consistent with the expected ratio based on the IT Workforce population indicated in the December 2010 OPM FedScope data for 2210 employees. Figure 3 details the age range distribution for all ITWCA respondents.

Figure 3: ITWCA Respondent Age Range Distribution



Retirement

To evaluate the risk associated with workforce retirement, the ITWCA included two questions: "*How soon are you eligible for full retirement?*" and "*How soon do you plan on actually retiring?*" Table 6 and Table 7 display the results of those two questions by the four most frequently selected pay plans, namely GS (General Schedule), FS (Foreign Service – Various Agencies or Federal Aviation Administration Wage Supervisors - Department of Transportation), YA (Standard Career Group – Professional/Analytical Pay Schedule – Department of Defense), and YD (Scientific and Engineering Career Group – Professional Pay Schedule – Department of Defense). As shown in Table 6, most ITWCA respondents state that they are eligible for retirement in 11-20 years (28.9%), the next most sizeable group of respondents are eligible in 20 or more years (19.8%), and 7-10 years (16.4%). As shown in Table 7, most ITWCA respondents estimate that they will retire in 11-20 years (27.3%), the next most sizeable group of respondents estimate retirement in 20 or more years (20.3%) and 7-10 years (16.8%).

Table 6: Retirement Eligibility by Grade Level or Pay Band

GRADE/EQUIVALENT	< 1 YR	1-3 YRS	4-6 YRS	7-10 YRS	11-20 YRS	20+ YRS	UNDECIDED	TOTAL
GS – 4 or below	2	6	2	8	21	24	6	**69**
GS – 5 through GS – 10	104	75	108	164	370	460	78	**1,359**
GS - 11 or equivalent	150	131	196	329	658	460	108	**2,032**
GS - 12 or equivalent	434	300	435	616	1,133	730	185	**3,833**
GS - 13 or equivalent	446	301	446	651	1,058	633	148	**3,683**
GS - 14 or equivalent	280	206	255	349	617	354	99	**2,160**
GS - 15 or equivalent	171	108	125	171	258	85	35	**953**
FS - 1	7	3	3	2	0	0	0	**15**
FS - 2	31	14	12	8	9	2	0	**76**
FS - 3	14	15	18	30	40	7	1	**125**
FS - 4	5	3	5	15	47	16	3	**94**
FS - 5	0	0	0	1	14	1	0	**16**
YA – 1	1	0	0	2	3	3	1	**10**
YA – 2	33	22	28	47	85	51	16	**282**
YA – 3	8	3	12	12	17	10	1	**63**
YD – 1	1	0	0	0	7	25	2	**35**

GRADE/EQUIVALENT	< 1 YR	1-3 YRS	4-6 YRS	7-10 YRS	11-20 YRS	20+ YRS	UNDECIDED	TOTAL
YD -- 2	27	18	25	44	48	94	15	**271**
YD – 3	12	4	14	16	18	2	0	**66**
All Other Respondents	248	180	262	404	659	500	148	**2,401**
GRAND TOTAL	**1,974 (11.3%)**	**1,389 (7.9%)**	**1,946 (11.1%)**	**2,869 (16.4%)**	**5,062 (28.9%)**	**3,457 (19.7%)**	**846 (4.8%)**	**17,543 (100%)**

***These numbers are self-reported and expectedly are based on respondent's own understanding of the definition for retirement eligibility.**

Table 7: Retirement Estimate by Grade Level or Pay Band

GRADE/EQUIVALENT	< 1 YR	1-3 YRS	4-6 YRS	7-10 YRS	11-20 YRS	20+ YRS	UNDECIDED	TOTAL
GS – 4 or below	1	6	3	6	18	22	13	**69**
GS – 5 through GS – 10	45	67	118	163	304	464	201	**1,362**
GS - 11 or equivalent	31	139	202	319	590	484	270	**2,035**
GS - 12 or equivalent	100	338	463	627	1,071	745	491	**3,835**
GS - 13 or equivalent	93	367	472	670	1,015	651	428	**3,696**
GS - 14 or equivalent	53	217	291	365	625	347	268	**2,166**
GS - 15 or equivalent	34	126	151	206	256	90	91	**954**
FS - 1	0	3	7	4	1	0	0	**15**
FS - 2	3	16	14	18	21	1	3	**76**
FS - 3	3	11	19	25	39	15	13	**125**
FS - 4	1	3	6	9	39	23	13	**94**
FS - 5	0	0	0	1	6	8	1	**16**
YA – 1	0	0	0	2	3	3	2	**10**
YA – 2	8	29	30	52	81	58	23	**281**
YA – 3	1	3	11	9	25	9	5	**63**
YD – 1	0	1	0	0	3	25	6	**35**
YD -- 2	3	25	25	45	63	94	17	**272**
YD – 3	3	6	14	14	22	3	4	**66**
All Other Respondents	50	219	250	423	610	529	317	**2,398**
GRAND TOTAL	**429 (2.4%)**	**1,576 (9.0%)**	**2,076 (11.8%)**	**2,958 (16.8%)**	**4,792 (27.3%)**	**3,571 (20.3%)**	**2,166 (12.3%)**	**17,568 (100%)**

***These numbers are self-reported and expectedly are based on respondent's own understanding of the definition for retirement estimate.**

Figure 4 and Figure 5 provide a side-by-side comparison of the retirement eligibility and retirement estimates. Figure 4 displays the information as percentage, while Figure 5 displays the information as the number of survey responses.

As seen in Figure 4, most categories show high comparability between the two measures, except in the near-term, where 19.2% of the workforce is eligible for retirement within three years but only 11.4% of the workforce intends to retire within three years. Figure 4 includes the 17,543 retirement eligibility responses and the 17,568 retirement estimate responses. When interpreting this figure, decision makers should consider what portion of retirement eligible respondents are still undecided or did not indicate when they will actually retire. Across the workforce, there are 3,363 respondents that are eligible to retire in the next three years; of these 227 (6.7%) respondents did not indicate an estimate for when they will actually retire or chose not to answer.

Figure 4: Retirement Eligibility and Estimate Comparison Percentage

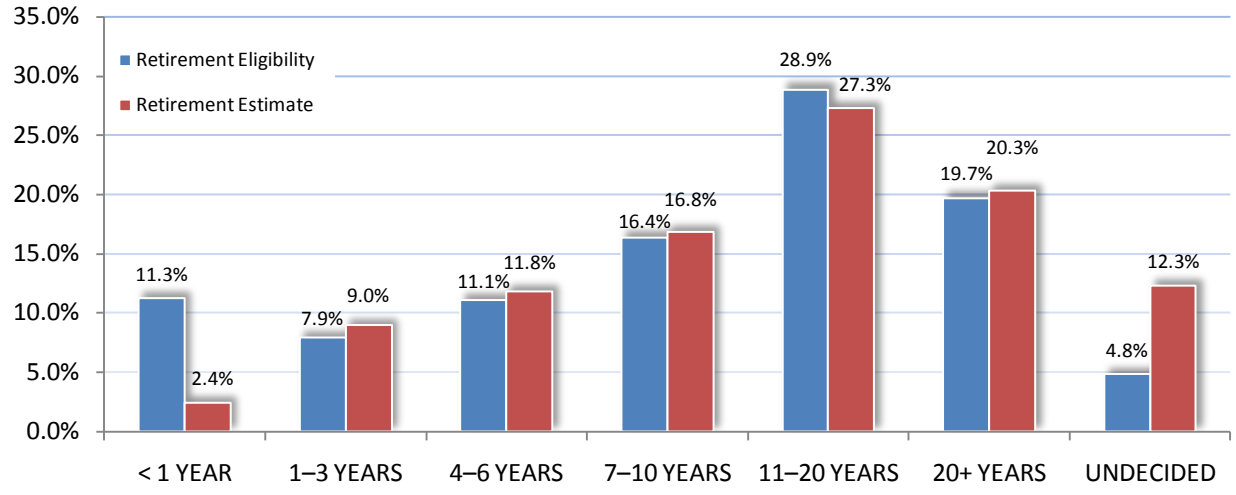
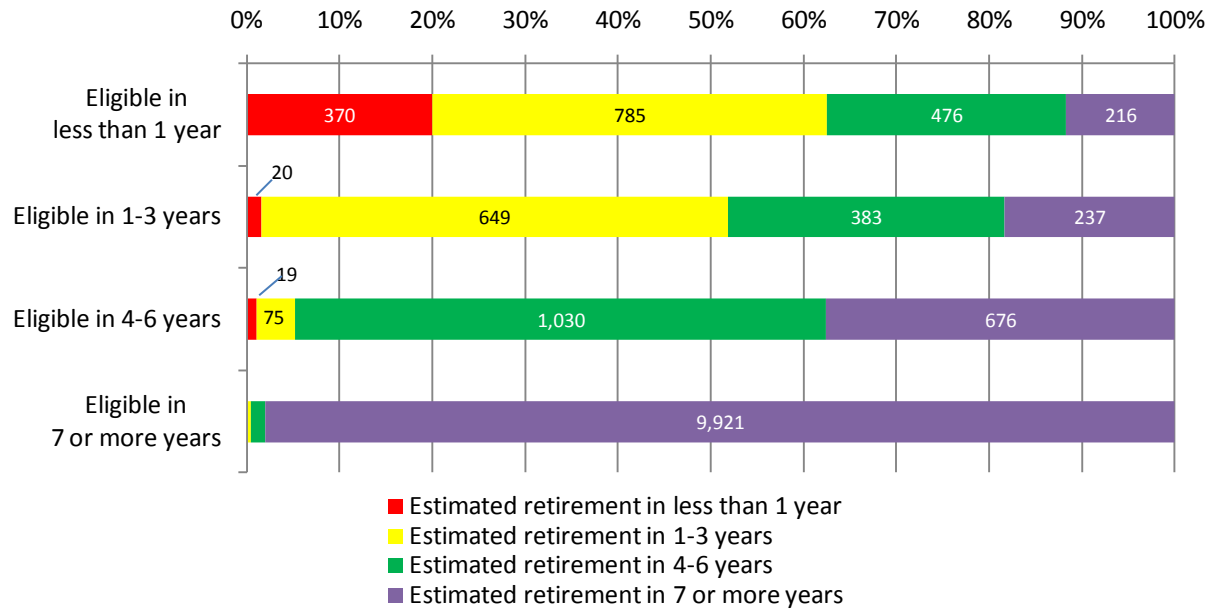


Figure 5 captures the 15,057 ITWCA who provided both responses for retirement eligibility and retirement estimate (i.e., blank responses or responses of unknown are not included). For Figure 5, of the 1,974 respondents who are eligible to retire within one year, 370 estimate that they will retire within one year, while 785 estimate that they will postpone retirement for 1-3 years. Of key interest for IT workforce planners are the respondents indicated in the green and blue bars (last two categories on the right); 476 estimated that they will wait to retire a full 4-6 years and 216 indicate that they will wait 7 or more years even though they are retirement eligible within one year.

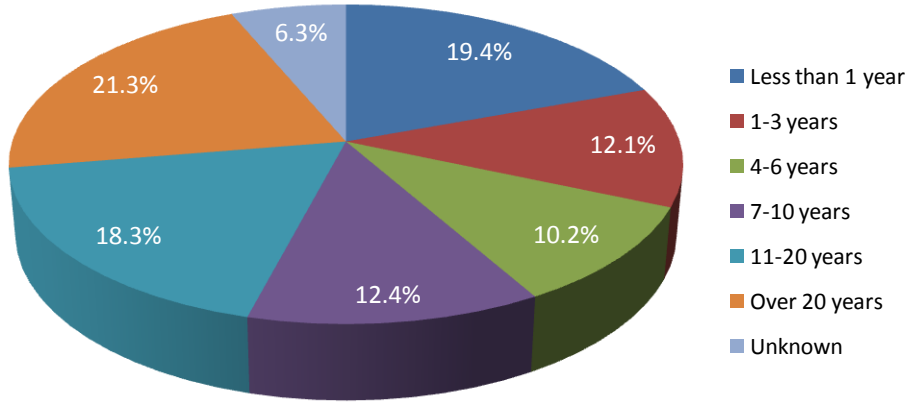
Figure 5: Retirement Eligibility and Estimate Comparison Count



Years of Public & Private IT Experience

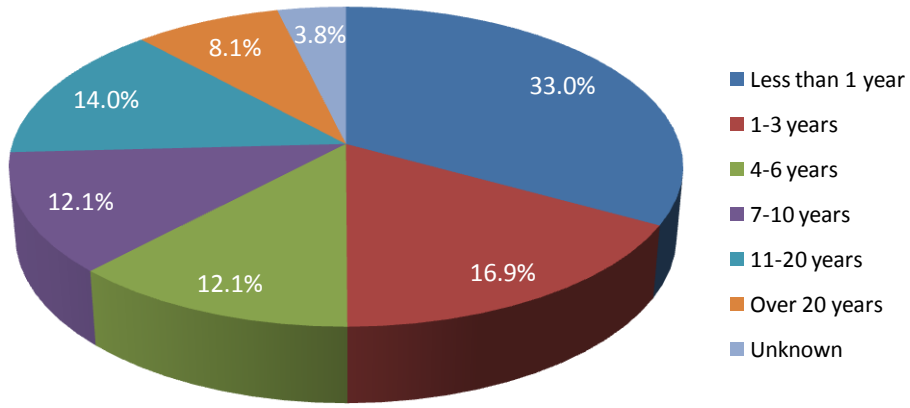
ITWCA respondents were asked to provide their years of experience. Given the nature of today's workforce, respondents answered two questions regarding past IT experience: "*How many years of public sector IT experience do you have?*" and "*How many years of private sector IT experience do you have?*" For Figure 6, 16,870 respondents provided information on their public sector IT experience; the top three responses were over 20 years (21.3%), less than 1 year (19.4%), and 11-20 years (18.3%). For Figure 7, 17,103 respondents provided information on their private sector IT experience; the top three responses were less than 1 year (33.0%), 1-3 years (16.9%), and 11-20 years (14.0%).

Figure 6: Years of Public Sector IT experience



16,870 Respondents

Figure 7: Years of Private Sector IT Experience



17,103 Respondents

Chapter III – IT Workforce General Business & Technical Competencies

OPM defines a competency as a measurable pattern of knowledge, skills, abilities, behaviors, and other characteristics that an individual needs to successfully perform work roles or occupational functions. ITWCA survey respondents assessed their current proficiency on a set of general and technical competencies. General Business Competencies are cross-functional in nature and are needed across the IT workforce regardless of the specific functional or technical work performed. Technical Competencies address job-specific IT functions.

The competencies included in the 2011 ITWCA were a subset of those developed by OPM for the 2210 occupational series. The competencies included 21 General Business and 54 Technical competencies and were chosen by a focus group of Subject Matter Experts (SMEs) based on relative importance in federal IT work. See **Appendix A** for the full listing of competency titles and definition for all competencies included in the survey.

The competency proficiency rating scale used for the 2011 ITWCA is detailed in Table 8. Average competency proficiency was calculated using only the ratings between 1-Basic and 5-Expert.

Table 8: ITWCA Competency Proficiency Scale

PROFICIENCY	DEFINITION
5 = Expert	▪ I am capable of handling all assignments involving this competency and may serve as a role model and/or coach to others.
4 = Advanced	▪ I am capable of handling most day-to-day assignments involving this competency, though may seek expert assistance with particularly difficult or unique situations.
3 = Intermediate	▪ I am capable of handling many day-to-day assignments involving this competency, but may seek assistance in difficult or new situations.
2 = Foundational	▪ I am capable of handling some assignments involving this competency, but need assistance beyond routine situations.
1 = Basic	▪ I am capable of handling the simplest of assignments involving this competency, but need significant assistance beyond the easiest solutions.
0 = None	▪ I do not possess proficiency in the competency.
Not Applicable	▪ Competency is not applicable.

General Business Competency Proficiency

Table 9 provides the average General Business Competency ratings for all 17,662 ITWCA respondents. The table also provides the percentage of the ITWCA respondent pool that indicated "Advanced" or "Expert" proficiency in a given competency (i.e., they marked themselves as a 4 or 5 on the response scale). Breakouts of average competency proficiency by Grade Level/Pay Plan and Occupational Series are provided elsewhere in the ITWCA Survey Results Report. The top-rated General Business Competencies are Interpersonal Skills (4.28), Customer Service (4.23), Flexibility (4.23), and Problem Solving (4.19); over 80% of respondents were rated as "Advanced" or "Expert" in these competencies.

Table 9: 2011 ITWCA General Business Competency Proficiency (sorted)

GENERAL BUSINESS COMPETENCY	2011 AVERAGE PROFICIENCY	% ADVANCED OR EXPERT
1. Interpersonal Skills	4.28	86.3%
2. Customer Service	4.23	81.0%
3. Flexibility	4.23	83.5%
4. Problem Solving	4.19	83.9%
5. Decision Making	4.07	78.1%
6. Reasoning	3.99	75.5%
7. Writing	3.98	74.2%
8. Information Management	3.94	71.6%
9. Oral Communication	3.93	72.4%
10. Leadership	3.90	68.5%
11. Planning and Evaluation	3.83	66.5%

GENERAL BUSINESS COMPETENCY	2011 AVERAGE PROFICIENCY	% ADVANCED OR EXPERT
12. Team Building	3.79	63.1%
13. Influencing/ Negotiating	3.74	62.9%
14. Administration and Management	3.65	57.3%
15. Organizational Awareness	3.65	60.4%
16. Strategic Thinking	3.53	49.7%
17. Managing Human Resources	3.36	40.6%
18. Public Safety and Security	3.05	31.8%
19. Financial Management	2.95	27.2%
20. Contracting/ Procurement	2.76	23.1%
21. Legal, Government and Jurisprudence	2.69	21.1%

Table 10 shows the average proficiency for General Business Competencies segmented by grade level along with the average proficiency across the ITWCA respondent pool. IT workforce managers may find this table a useful benchmark for identifying differences at the agency level. It should be noted that all IT professionals are not part of the General Schedule (GS) and therefore the number of respondents in the breakout does not add to 17,662. For each of the groupings, the top two General Business Competencies are as follows. For GS 4 and below: Interpersonal Skills (3.89), Flexibility (3.89), and Customer Service (3.75). For GS 5-10: Interpersonal Skills (4.23) and Customer Service (4.08). For GS 11-13: Interpersonal Skills (4.28) and Customer Service (4.26). For GS 14-15: Flexibility (4.45), Problem Solving (4.42), and Interpersonal Skills (4.42). Similar to the top rated competencies, there is high comparability among the bottom rated competencies; for example, Legal, Government and Jurisprudence, and Contracting/Procurement were the bottom rated for all but the GS 14-15 group.

Table 10: Average General Business Competency Proficiencies by Grade Level (sorted)

GENERAL BUSINESS COMPETENCY	PROFICIENCY ACROSS GRADE (n=17,662)	GS-4 AND BELOW PROFICIENCY (n=70)	GS 5-10 PROFICIENCY (n=1,371)	GS 11-13 PROFICIENCY (n=9,611)	GS 14-15 PROFICIENCY (n=3,141)
1. Interpersonal Skills	4.28	3.89	4.23	4.28	4.42
2. Customer Service	4.23	3.75	4.08	4.26	4.33
3. Flexibility	4.23	3.89	4.00	4.21	4.45
4. Problem Solving	4.19	3.58	3.85	4.16	4.42
5. Decision Making	4.07	3.53	3.69	4.03	4.41
6. Reasoning	3.99	3.26	3.64	3.95	4.26
7. Writing	3.98	3.65	3.71	3.95	4.21
8. Information Management	3.94	3.34	3.60	3.95	4.15
9. Oral Communication	3.93	3.39	3.64	3.90	4.23
10. Leadership	3.90	3.42	3.62	3.85	4.24
11. Planning and Evaluation	3.83	3.29	3.46	3.78	4.19
12. Team Building	3.79	3.23	3.45	3.75	4.12
13. Influencing/ Negotiating	3.74	3.29	3.42	3.70	4.08
14. Administration and Management	3.65	2.98	3.10	3.56	4.15
15. Organizational Awareness	3.65	3.01	3.29	3.62	3.99
16. Strategic Thinking	3.53	2.89	3.16	3.44	3.95
17. Managing Human Resources	3.36	2.64	2.96	3.26	3.78
18. Public Safety and Security	3.05	2.77	3.04	3.10	2.99
19. Financial Management	2.95	2.36	2.55	2.80	3.39
20. Contracting/ Procurement	2.76	2.11	2.48	2.63	3.18
21. Legal, Government and Jurisprudence	2.69	2.27	2.46	2.66	2.94

Technical Competency Proficiency

Table 11 provides the average Technical Competency ratings for all 17,662 ITWCA respondents. The table also provides the percentage of the ITWCA respondent pool that indicated "Advanced" or "Expert" proficiency in a given competency (i.e., they marked themselves as a 4 or 5 on the response scale). Breakouts of average competency proficiency by grade level/pay plan and occupational series are provided elsewhere in the ITWCA Survey Results Report. The top-rated Technical Competencies are Hardware (3.29), Project Management (3.22), and Technical Documentation (3.16). Operating Systems (3.15) is also worth noting because over 40% of the ITWCA respondents had "Advanced" or "Expert" proficiency in this competency.

Table 11: 2011 ITWCA Technical Competency Proficiency (sorted)

TECHNICAL COMPETENCY	2011 AVERAGE PROFICIENCY	% ADVANCED OR EXPERT
1. Hardware	3.29	46.5%
2. Project Management	3.22	40.4%
3. Technical Documentation	3.16	38.7%
4. Configuration Management	3.15	38.6%
5. Operating Systems	3.15	41.4%
6. Requirements Analysis	3.15	36.4%
7. Systems Life Cycle	3.15	38.0%
8. Technology Awareness	3.14	38.5%
9. Information Assurance	3.14	39.1%
10. Standards	3.11	37.9%
11. Quality Assurance	3.02	33.8%
12. Operations Support	3.01	32.3%
13. System Testing and Evaluation	2.99	31.3%
14. Knowledge Management	2.98	32.6%
15. Risk Management	2.98	31.6%
16. Systems Integration	2.94	29.8%
17. Software Development	2.93	29.0%
18. Product Evaluation	2.93	29.7%
19. Data Management	2.90	29.4%
20. Information Resources Strategy and Planning	2.89	28.4%
21. Accessibility	2.89	27.3%
22. Information Systems Security Certification	2.87	26.9%
23. Information Systems/Network Security	2.87	28.1%
24. Software Testing and Evaluation	2.87	27.0%
25. Information Technology Architecture	2.87	27.2%
26. Enterprise Architecture	2.81	25.8%
27. Organizational Development	2.81	24.1%
28. Network Management	2.81	26.0%
29. Infrastructure Design	2.79	25.6%
30. Capacity Management	2.78	23.0%
31. Process Control	2.75	22.9%
32. Information Technology Performance Assessment	2.75	23.1%
33. Business Process Reengineering	2.74	20.9%
34. Software Engineering	2.74	21.7%
35. Computer Languages	2.73	25.3%
36. Database Management Systems	2.72	23.6%
37. Cost-Benefit Analysis	2.72	22.3%
38. Hardware Engineering	2.72	21.4%
39. Telecommunications	2.71	22.0%
40. Web Technology	2.70	23.0%
41. Information Technology Research & Development	2.68	19.7%
42. Human Factors	2.67	18.9%
43. Distributed Systems	2.66	20.9%
44. Database Administration	2.65	20.8%
45. Multimedia Technologies	2.64	20.0%
46. Encryption	2.63	22.5%
47. Logical Systems Design	2.59	16.8%

TECHNICAL COMPETENCY	2011 AVERAGE PROFICIENCY	% ADVANCED OR EXPERT
48. Capital Planning and Investment Assessment	2.55	15.1%
49. Object Technology	2.47	14.9%
50. Electronic Commerce (e-Commerce)	2.47	14.6%
51. Computer Forensics	2.41	13.2%
52. Modeling and Simulation	2.40	11.4%
53. Artificial Intelligence	2.38	10.3%
54. Embedded Computers	2.24	7.4%

Table 12 shows the average proficiency for Technical Competencies segmented by grade level along with the average proficiency across the ITWCA respondent pool. IT workforce managers may find this table a useful benchmark for identifying differences at the agency level. It should be noted that all IT professionals are not part of the General Schedule (GS) and therefore the number of respondents in the breakout does not add to 17,662. For each of the groupings, the top two Technical Competencies are as follows. For GS 4 and below: Accessibility (3.02) and Hardware (2.92). For GS 5-10: Hardware (3.29) and Operating Systems (3.16). For GS 11-13: Hardware (3.32) and Operating Systems (3.22). For GS 14-15: Project Management (3.84) and Requirements Analysis (3.55).

Table 12: Average Technical Competency Proficiencies by Grade Level (sorted)

TECHNICAL COMPETENCY	PROFICIENCY ACROSS GRADE (n=17,662)	GS-4 AND BELOW PROFICIENCY (n=70)	GS 5-10 PROFICIENCY (n=1,371)	GS 11-13 PROFICIENCY (n=9,611)	GS 14-15 PROFICIENCY (n=3,141)
1. Hardware	3.29	2.92	3.29	3.32	3.19
2. Project Management	3.22	2.52	2.54	3.07	3.84
3. Technical Documentation	3.16	2.62	2.75	3.16	3.35
4. Configuration Management	3.15	2.68	2.77	3.16	3.30
5. Operating Systems	3.15	2.75	3.16	3.22	2.97
6. Requirements Analysis	3.15	2.52	2.55	3.07	3.55
7. Systems Life Cycle	3.15	2.46	2.64	3.09	3.54
8. Information Assurance	3.14	2.75	2.99	3.16	3.20
9. Technology Awareness	3.14	2.73	2.81	3.09	3.41
10. Standards	3.11	2.68	2.76	3.11	3.31
11. Quality Assurance	3.02	2.90	2.65	3.00	3.27
12. Operations Support	3.01	2.61	2.80	3.05	3.04
13. System Testing and Evaluation	2.99	2.43	2.56	2.99	3.12
14. Knowledge Management	2.98	2.56	2.79	3.00	3.10
15. Risk Management	2.98	2.47	2.58	2.90	3.37
16. Systems Integration	2.94	2.45	2.55	2.93	3.08
17. Product Evaluation	2.93	2.60	2.58	2.87	3.22
18. Software Development	2.93	2.42	2.49	2.94	3.03
19. Data Management	2.90	2.57	2.68	2.92	2.99
20. Accessibility	2.89	3.02	2.99	2.93	2.83
21. Information Resources Strategy and Planning	2.89	2.41	2.54	2.81	3.26
22. Information Systems Security Certification	2.87	2.40	2.68	2.87	2.98
23. Information Systems/Network Security	2.87	2.46	2.67	2.88	2.92
24. Information Technology Architecture	2.87	2.36	2.54	2.84	3.06
25. Software Testing and Evaluation	2.87	2.45	2.49	2.87	2.95
26. Enterprise Architecture	2.81	2.20	2.42	2.76	3.09
27. Network Management	2.81	2.69	2.66	2.83	2.79
28. Organizational Development	2.81	2.23	2.42	2.72	3.17
29. Infrastructure Design	2.79	2.39	2.56	2.77	2.89
30. Capacity Management	2.78	2.48	2.53	2.76	2.96
31. Information Technology Performance Assessment	2.75	2.18	2.49	2.72	2.95
32. Process Control	2.75	2.17	2.43	2.74	2.96
33. Business Process Reengineering	2.74	2.07	2.37	2.64	3.10

TECHNICAL COMPETENCY	PROFICIENCY ACROSS GRADE (n=17,662)	GS-4 AND BELOW PROFICIENCY (n=70)	GS 5-10 PROFICIENCY (n=1,371)	GS 11-13 PROFICIENCY (n=9,611)	GS 14-15 PROFICIENCY (n=3,141)
34. Software Engineering	2.74	2.26	2.35	2.69	2.90
35. Computer Languages	2.73	2.22	2.46	2.77	2.70
36. Cost-Benefit Analysis	2.72	2.34	2.33	2.61	3.12
37. Database Management Systems	2.72	2.21	2.57	2.76	2.73
38. Hardware Engineering	2.72	2.22	2.62	2.73	2.69
39. Telecommunications	2.71	2.46	2.52	2.71	2.76
40. Web Technology	2.70	2.41	2.51	2.69	2.85
41. Information Technology Research & Development	2.68	2.26	2.41	2.64	2.86
42. Human Factors	2.67	2.37	2.67	2.68	2.76
43. Distributed Systems	2.66	2.13	2.42	2.65	2.80
44. Database Administration	2.65	2.35	2.52	2.70	2.60
45. Multimedia Technologies	2.64	2.64	2.64	2.65	2.61
46. Encryption	2.63	2.33	2.59	2.66	2.61
47. Logical Systems Design	2.59	2.16	2.35	2.58	2.72
48. Capital Planning and Investment Assessment	2.55	2.03	2.20	2.39	2.98
49. Electronic Commerce (e-Commerce)	2.47	2.16	2.41	2.46	2.59
50. Object Technology	2.47	1.88	2.32	2.49	2.45
51. Computer Forensics	2.41	2.04	2.44	2.44	2.37
52. Modeling and Simulation	2.40	2.14	2.19	2.35	2.50
53. Artificial Intelligence	2.38	2.05	2.41	2.40	2.37
54. Embedded Computers	2.24	2.07	2.17	2.23	2.20

General Business & Technical Competency Training Needs

Survey participants identified up to five competencies where they thought additional training would be *beneficial to them*, and up to five competencies where they thought additional training would be *beneficial to their organizations*. The top ten General Business and Technical competencies selected in the 2011 ITWCA are shown in Table 13 and Table 14. Each table shows the number and percentage of the IT workforce that selected those competencies as training needs. Also provided is the average competency proficiency across the ITWCA respondent pool. This aggregated information on training needs may not reflect training needs specific enough for use at the agency level; in such cases, IT workforce managers should investigate training need results segmented by Specialized Job Activity.

For Table 13, the most frequently identified General Business Competency individual training needs were Contracting/ Procurement (39.5%) and Financial Management (33.1%), both of which were also among the bottom three lowest rated competencies. The most frequently identified General Business Competency organizational training needs were Team Building (32.9%) and Leadership (29.4%).

Table 13: Top Ten General Business Competency Training Needs

GENERAL BUSINESS COMPETENCIES			
INDIVIDUAL TRAINING NEED	NUMBER	PERCENT	AVERAGE PROFICIENCY
1. Contracting/ Procurement	6,976	39.5%	2.76
2. Financial Management	5,494	31.1%	2.95
3. Legal, Government and Jurisprudence	5,481	31.0%	2.69
4. Administration and Management	4,870	27.6%	3.65
5. Strategic Thinking	4,823	27.3%	3.53
6. Leadership	4,611	26.1%	3.90
7. Information Management	4,009	22.7%	3.94
8. Influencing/ Negotiating	3,826	21.7%	3.74
9. Planning and Evaluation	3,363	19.0%	3.83
10. Writing	3,107	17.6%	3.98

ORGANIZATIONAL TRAINING NEED	NUMBER	PERCENT	AVERAGE PROFICIENCY
1. Team Building	5,819	32.9%	3.79
2. Leadership	5,199	29.4%	3.90
3. Administration and Management	4,774	27.0%	3.65
4. Strategic Thinking	4,058	23.0%	3.53
5. Contracting/ Procurement	3,886	22.0%	2.76
6. Managing Human Resources	3,843	21.8%	3.36
7. Customer Service	3,620	20.5%	4.23
8. Interpersonal Skills	3,510	19.9%	4.28
9. Planning and Evaluation	3,349	19.0%	3.83
10. Decision Making	3,323	18.8%	4.07

For Table 14, the most frequently identified Technical Competency individual training needs were Computer Forensics (21.2%) and Web Technology (19.2%). The most frequently identified Technical Competency organizational training needs were Business Process Reengineering (14.3%), Project Management (13.6%) and Cost-Benefit Analysis (13.6%). When examining the results for Technical Competency training needs, IT workforce managers should consider that ITWCA respondents were only able to select five individual and five organizational training needs out of 54 Technical Competencies. In spite of this limitation or perhaps because of it, these training needs became the most prominent.

Table 14: Top Ten Technical Competency Training Needs

TECHNICAL COMPETENCIES			
INDIVIDUAL TRAINING NEED	NUMBER	PERCENT	AVERAGE PROFICIENCY
1. Computer Forensics	3,739	21.2%	2.73
2. Web Technology	3,389	19.2%	2.70
3. Project Management	2,793	15.8%	3.22
4. Cost-Benefit Analysis	2,404	13.6%	2.72
5. Enterprise Architecture	2,325	13.2%	2.81
6. Information Systems/Network Security	2,251	12.7%	2.87
7. Encryption	2,097	11.9%	2.63
8. Information Assurance	1,919	10.9%	3.14
9. Capital Planning and Investment Assessment	1,907	10.8%	2.55
10. Configuration Management	1,893	10.7%	3.15
ORGANIZATIONAL TRAINING NEED	**NUMBER**	**PERCENT**	**AVERAGE PROFICIENCY**
1. Business Process Reengineering	2,518	14.3%	2.74
2. Project Management	2,408	13.6%	3.22
3. Cost-Benefit Analysis	2,401	13.6%	2.72
4. Enterprise Architecture	2,324	13.2%	2.81
5. Configuration Management	2,249	12.7%	3.15
6. Capital Planning and Investment Assessment	2,029	11.5%	2.55
7. Knowledge Management	1,937	11.0%	2.98
8. Web Technology	1,822	10.3%	2.70
9. Information Assurance	1,796	10.2%	3.14
10. Human Factors	1,734	9.8%	2.67

Chapter IV – IT Skills

The ITWCA asked participants to rate their proficiency in performing specific jobs or functions in a set of 77 technical IT Skills. The ITWCA differentiates skills from competencies in a number of important ways. First, skills often relate to either specific products or technologies, whereas competencies are generally described in broader terms. IT Skill names and definitions appropriately reflect this. Additionally, skills

are more "granular" and discrete, and may actually relate to or be part of a broader competency. See **Appendix A** for the full listing of IT Skill titles and definition for all skills included in the survey.

The skill proficiency rating scale used for the 2011 ITWCA is detailed in Table 15. Average skill proficiency was calculated using only the ratings between 1-Basic and 5-Expert.

Table 15: ITWCA Skill Proficiency Scale

PROFICIENCY	DEFINITION
5 = Expert	▪ I am capable of handling all assignments involving this skill and may serve as a role model and/or coach to others.
4 = Advanced	▪ I am capable of handling most day-to-day assignments involving this skill, though may seek expert assistance with particularly difficult or unique situations.
3 = Intermediate	▪ I am capable of handling many day-to-day assignments involving this skill, but may seek assistance in difficult or new situations.
2 = Foundational	▪ I am capable of handling some assignments involving this skill, but need assistance beyond routine situations.
1 = Basic	▪ I am capable of handling the simplest of assignments involving this skill, but need significant assistance beyond the easiest solutions.
0 = None	▪ I do not possess proficiency in the skill.

IT Skill Proficiency

Table 16 provides the average IT Skill ratings for all 17,662 ITWCA respondents. The table also provides the percentage of the ITWCA respondent pool that indicated "Advanced" or "Expert" proficiency in a given IT Skill (i.e., they marked themselves as a 4 or 5 on the response scale). Breakouts of average IT Skill proficiency by grade level/pay plan and occupational series are provided elsewhere in the ITWCA Survey Results Report. The top-rated IT Skills are Desktop Applications (3.61) and Microsoft Windows Desktop Operating Systems (3.41); proficiency in both IT Skills was rated as "Advanced" or "Expert" by over 50% of respondents. Several IT Skills were new or modified in the 2011 ITWCA based on the shifting priorities or emergent technologies in the IT environment. Examples include: IT Governance (2.53), Network Security (2.52), Lifecycle Cost Estimation (2.33), Data Virtualization (2.30) Network-Based Intrusion Detection System (2.28), Host-Based Intrusion Detection System (2.22), and Server Virtualization (2.19).

Table 16: 2011 ITWCA IT Skill Proficiency (sorted)

IT SKILL	2011 AVERAGE PROFICIENCY	% ADVANCED OR EXPERT
1. Desktop Applications	3.61	58.5%
2. Microsoft Windows Desktop Operating Systems	3.41	50.3%
3. Systems Support and Helpdesk	2.96	31.9%
4. Client-Server	2.78	26.7%
5. Testing	2.72	24.0%
6. Information Management	2.71	25.1%
7. Requirements Management	2.71	23.7%
8. Continuity of Operations Planning	2.68	22.8%
9. System Analysis and Design	2.60	20.5%
10. Test Plan Development	2.58	19.0%
11. Test Planning	2.57	18.8%
12. Network Operating Systems	2.56	19.8%
13. Data Analysis and Reporting	2.54	18.4%
14. IT Governance	2.53	17.8%
15. Systems Engineering	2.53	18.0%
16. Network Security	2.52	19.4%
17. Broadband	2.47	16.7%
18. Collaboration Software	2.47	16.1%
19. Relational Database Management Systems (RDBMS)	2.46	16.3%
20. IT Portfolio Management	2.45	14.2%

IT SKILL	2011 AVERAGE PROFICIENCY	% ADVANCED OR EXPERT
21. Performance Testing	2.45	15.9%
22. Network Architecture and Design	2.44	16.1%
23. Network Configuration and Implementation	2.44	15.9%
24. Legacy Computer Languages	2.43	15.5%
25. Multimedia	2.42	16.1%
26. Development Languages	2.41	15.8%
27. Structured Query Language (SQL)	2.40	16.0%
28. Capability Maturity Models	2.38	12.8%
29. Systems Security Applications	2.35	14.3%
30. Data Modeling	2.34	13.2%
31. Process Design	2.34	12.3%
32. Legacy Operating Systems	2.33	13.1%
33. Lifecycle Cost Estimation	2.33	13.2%
34. Usability Testing	2.33	12.5%
35. Wireless Technologies	2.33	14.0%
36. Records Management	2.32	13.7%
37. Cryptology	2.31	12.3%
38. Enterprise Directory Services (EDS)	2.31	11.6%
39. Web Site Management	2.31	13.0%
40. Data Virtualization	2.30	11.9%
41. Firewalls	2.28	13.9%
42. Network-Based Intrusion Detection System	2.28	11.5%
43. Data Warehousing	2.27	11.8%
44. Security Testing	2.27	11.5%
45. Public Key Infrastructure (PKI)	2.25	12.8%
46. Storage Technologies (SAN, NFS, RAID, SCSI, IP Storage)	2.24	11.0%
47. UNIX Operating System	2.24	12.0%
48. Web-enabled Application Design and Development	2.24	11.1%
49. Mainframe Operating Systems	2.23	11.6%
50. Mainframes	2.23	11.6%
51. Object-Oriented Languages	2.23	11.3%
52. Host-Based Intrusion Detection System	2.22	9.7%
53. Network-Based Intrusion Prevention System	2.22	9.9%
54. .Net	2.21	10.5%
55. Mobile Network Technology	2.20	9.6%
56. Server Virtualization	2.19	9.4%
57. Enterprise Resource Planning (ERP)	2.17	8.8%
58. Linux Operating System	2.17	9.8%
59. Telephony/PBX	2.15	8.5%
60. Network Voice/Data Integration	2.14	7.9%
61. Federal/OMB Enterprise Architecture	2.13	7.5%
62. Satellite Communications	2.13	6.9%
63. Network Behavior Analysis	2.12	7.8%
64. Scripting/Metadata	2.12	8.3%
65. Web Portal Development	2.12	8.7%
66. Joint Application Development/Rapid Application Development (JAD/RAD)/Agile	2.11	6.2%
67. Wireless-Based Intrusion Detection System	2.08	7.0%
68. Extensible Markup Language (XML)	2.06	7.9%
69. Digital Forensics	2.05	6.6%
70. MacOS/MacOSX Operating System	2.05	6.9%
71. Secure Coding	2.03	5.8%
72. Unified Modeling Language (UML)	2.02	4.8%
73. Biometrics	2.01	5.0%
74. Geographic Information Systems (GIS)	2.01	5.7%
75. Mobile Application Development	1.98	5.1%
76. Java/J2EE	1.94	6.0%
77. Radio Frequency Identification (RFID)	1.93	5.0%

Table 17 shows the average proficiency for IT Skills segmented by grade level along with the average proficiency across the ITWCA respondent pool. IT workforce managers may find this table a useful benchmark for identifying differences at the agency level. It should be noted that all IT professionals are not part of the General Schedule (GS) and therefore the number of respondents in the breakout does not add to 17,662. For each of the groupings, the top two IT Skills by far were Microsoft Windows Desktop Operating Systems and Desktop Applications. The next two IT Skills (number three and four) were as follows. For GS 4 and below: Systems Support and Helpdesk (2.65) and Multimedia (2.54). For GS 5-10: Systems Support and Helpdesk (2.96) and Multimedia (2.53). For GS 11-13: Systems Support and Helpdesk (3.03) and Client-Server (2.80). For GS 14-15: Requirements Management (3.13) and IT Governance (3.06).

Table 17: Average IT Skill Proficiency by Grade Level (sorted)

IT SKILL	PROFICIENCY ACROSS GRADE (n=17,662)	GS-4 AND BELOW PROFICIENCY (n=70)	GS 5-10 PROFICIENCY (n=1,371)	GS 11-13 PROFICIENCY (n=9,611)	GS 14-15 PROFICIENCY (n=3,141)
1. Desktop Applications	3.61	3.31	3.58	3.62	3.59
2. Microsoft Windows Desktop Operating Systems	3.41	3.56	3.50	3.46	3.23
3. Systems Support and Helpdesk	2.96	2.65	2.96	3.03	2.88
4. Client-Server	2.78	2.49	2.52	2.80	2.80
5. Testing	2.72	2.30	2.31	2.70	2.88
6. Information Management	2.71	2.29	2.46	2.71	2.86
7. Requirements Management	2.71	2.34	2.17	2.61	3.13
8. Continuity of Operations Planning	2.68	2.07	2.20	2.63	2.99
9. System Analysis and Design	2.60	1.89	2.09	2.56	2.89
10. Test Plan Development	2.58	2.27	2.06	2.52	2.81
11. Test Planning	2.57	2.20	2.09	2.51	2.82
12. Network Operating Systems	2.56	2.29	2.39	2.59	2.52
13. Data Analysis and Reporting	2.54	2.02	2.21	2.52	2.72
14. IT Governance	2.53	1.95	2.08	2.35	3.06
15. Systems Engineering	2.53	1.93	2.00	2.41	2.83
16. Network Security	2.52	2.23	2.36	2.53	2.56
17. Broadband	2.47	2.43	2.44	2.49	2.45
18. Collaboration Software	2.47	2.14	2.28	2.44	2.64
19. Relational Database Management Systems (RDBMS)	2.46	2.17	2.22	2.46	2.54
20. IT Portfolio Management	2.45	1.89	2.00	2.25	2.95
21. Performance Testing	2.45	2.04	2.19	2.45	2.53
22. Network Architecture and Design	2.44	2.10	2.25	2.41	2.54
23. Network Configuration and Implementation	2.44	2.13	2.29	2.43	2.49
24. Legacy Computer Languages	2.43	2.13	2.00	2.45	2.52
25. Multimedia	2.42	2.54	2.53	2.44	2.37
26. Development Languages	2.41	2.23	2.14	2.42	2.39
27. Structured Query Language (SQL)	2.40	2.05	2.12	2.43	2.46
28. Capability Maturity Models	2.38	2.06	2.01	2.30	2.65
29. Systems Security Applications	2.35	2.00	2.10	2.36	2.42
30. Data Modeling	2.34	1.69	2.08	2.33	2.48
31. Process Design	2.34	1.60	1.95	2.28	2.60
32. Legacy Operating Systems	2.33	1.98	2.19	2.35	2.36
33. Lifecycle Cost Estimation	2.33	1.91	1.90	2.21	2.73
34. Usability Testing	2.33	1.84	2.09	2.30	2.50
35. Wireless Technologies	2.33	2.17	2.33	2.34	2.33
36. Records Management	2.32	2.18	2.34	2.33	2.35
37. Cryptology	2.31	2.11	2.14	2.30	2.34

IT SKILL	PROFICIENCY ACROSS GRADE (n=17,662)	GS-4 AND BELOW PROFICIENCY (n=70)	GS 5-10 PROFICIENCY (n=1,371)	GS 11-13 PROFICIENCY (n=9,611)	GS 14-15 PROFICIENCY (n=3,141)
38. Enterprise Directory Services (EDS)	2.31	1.90	2.21	2.34	2.30
39. Web Site Management	2.31	1.95	2.19	2.31	2.36
40. Data Virtualization	2.30	1.79	2.11	2.30	2.35
41. Firewalls	2.28	1.87	2.20	2.26	2.36
42. Network-Based Intrusion Detection System	2.28	1.94	2.15	2.27	2.38
43. Data Warehousing	2.27	1.82	2.07	2.27	2.36
44. Security Testing	2.27	1.88	2.01	2.25	2.42
45. Public Key Infrastructure (PKI)	2.25	1.98	2.23	2.27	2.25
46. Storage Technologies (SAN, NFS, RAID, SCSI, IP Storage)	2.24	1.86	2.08	2.26	2.26
47. UNIX Operating System	2.24	1.86	2.01	2.22	2.30
48. Web-enabled Application Design and Development	2.24	2.00	2.06	2.23	2.33
49. Mainframe Operating Systems	2.23	1.85	2.12	2.29	2.19
50. Mainframes	2.23	1.73	2.06	2.29	2.18
51. Object-Oriented Languages	2.23	1.83	2.09	2.22	2.18
52. Host-Based Intrusion Detection System	2.22	1.85	2.11	2.21	2.32
53. Network-Based Intrusion Prevention System	2.22	1.89	2.10	2.21	2.31
54. .Net	2.21	2.29	2.26	2.25	2.08
55. Mobile Network Technology	2.20	2.08	2.18	2.21	2.21
56. Server Virtualization	2.19	2.03	2.00	2.18	2.26
57. Enterprise Resource Planning (ERP)	2.17	1.59	1.97	2.12	2.35
58. Linux Operating System	2.17	1.98	2.05	2.13	2.25
59. Telephony/PBX	2.15	1.83	2.10	2.17	2.14
60. Network Voice/Data Integration	2.14	2.03	2.02	2.14	2.17
61. Federal/OMB Enterprise Architecture	2.13	1.69	1.79	1.96	2.51
62. Satellite Communications	2.13	1.61	1.98	2.14	2.15
63. Network Behavior Analysis	2.12	1.83	2.01	2.12	2.22
64. Scripting/Metadata	2.12	1.88	1.94	2.11	2.19
65. Web Portal Development	2.12	1.85	1.99	2.09	2.23
66. Joint Application Development/Rapid Application Development (JAD/RAD)/Agile	2.11	1.68	1.83	2.07	2.27
67. Wireless-Based Intrusion Detection System	2.08	1.80	2.01	2.08	2.15
68. Extensible Markup Language (XML)	2.06	1.54	1.92	2.05	2.10
69. Digital Forensics	2.05	1.87	1.99	2.03	2.13
70. MacOS/MacOSX Operating System	2.05	2.12	2.01	2.00	2.16
71. Secure Coding	2.03	1.57	1.89	2.03	2.07
72. Unified Modeling Language (UML)	2.02	1.91	1.91	1.97	2.13
73. Biometrics	2.01	1.73	2.02	2.01	2.01
74. Geographic Information Systems (GIS)	2.01	2.09	1.94	1.98	2.05
75. Mobile Application Development	1.98	2.00	2.01	1.99	2.01
76. Java/J2EE	1.94	1.69	1.90	1.94	1.92
77. Radio Frequency Identification (RFID)	1.93	1.68	1.89	1.93	1.96

Chapter V – Certifications

The survey asked respondents to list the professional certifications or certificates that they currently hold that were obtained within the past 3 years or valid certifications that they currently hold. Certifications differ from certificate programs because certifications, by definition, include work experience. Certificate programs, on the other hand, award certificates once the course of study has been completed and do not require previous work experience. See **Appendix A** for a full list of the certification areas and specific certifications that exemplify each area.

Table 18 lists the percentage of the ITWCA respondent pool (n=17,662) with a certification or certificate in each given area. Information is also provided for the ITWCA respondents who had the certification in 2006. The trend indicator is displayed when the difference between 2011 and 2006 vary by more than 0.3%. Generally IT Certifications have become more widespread since 2006. For 2011, the most frequently selected certification areas were Information Systems Security (13.8%), Computing (12.6%), and Project Management (8.7%); Computing was the only certification area to have a repeat top three rating from 2006 when 9.0% held that designation. Process Improvement and Telecommunications & Networking are new certification areas for the 2011 ITWCA. When reviewing the IT Certification results, IT workforce managers should consider that the examples for many certification areas were more detailed in the 2011 ITWCA. In addition, some organizations have mandated certifications, particularly in Information Technology Security, which may be responsible for the adoption of certifications since 2006.

Table 18: Percentage of IT Certifications held by 2011 ITWCA Respondents versus 2006 ITWCA Respondents

CERTIFICATION	2011 RESPONDENTS WITH CERTIFICATION (%)	2006 RESPONDENTS WITH CERTIFICATION (%)	TREND
1. Information Systems Security	13.8%	5.9%	↑
2. Computing	12.6%	9.0%	↑
3. Project Management	8.7%	6.7%	↑
4. Operating Systems	7.9%	7.8%	=
5. Network Support	7.4%	8.3%	↓
6. IT Infrastructure Library (ITIL)	6.8%	1.5%	↑
7. Information Systems	5.8%	5.2%	↑
8. IT Project Management	5.4%	4.1%	↑
9. Network Security	4.9%	3.4%	↑
10. Process Improvement	2.4%	-	-
11. Database	2.4%	2.9%	↓
12. Business Applications	1.7%	2.6%	↓
13. Software Development	1.6%	1.7%	=
14. CIO	1.5%	1.4%	=
15. Training	1.5%	1.6%	=
16. Engineering	1.4%	1.0%	↑
17. Web	1.2%	1.4%	=
18. Telecommunications & Networking	0.9%	-	-
19. Quality	0.9%	1.0%	=
20. Enterprise Architecture	0.9%	0.5%	↑
21. Policy and Planning	0.6%	0.7%	=
22. Evidence Collection	0.4%	0.2%	=
23. Healthcare	0.3%	0.3%	=
24. Mechanical	0.1%	0.1%	=

* 9,570 2011 ITWCA respondents indicated that they are currently possess or are seeking a certification or certificate

Certifications Subject to Retirement

Table 19 shows how near-term estimated retirements may affect the percentage of the federal IT workforce possessing certain certifications. Each certification area is listed, along with the number of

ITWCA respondents possessing a given certification and the number/percentage of the certified employees who indicated that they plan to retire in less than three years. Each certification area is listed in alphabetical order. Given that 11.4% of the total IT workforce plans to retire over the next 3 years, this percentage can be compared to the total percentage of the IT workforce that possess each certification.

Table 19: IT Certifications by Retirement Eligibility

CERTIFICATION AREA	TOTAL CERTIFIED	# RETIRING WITHIN 3 YEARS	% RETIRING WITHIN 3 YEARS
Information Systems Security	2,434	323	13.3%
Computing	2,230	273	12.2%
Project Management	1,542	279	18.1%
Operating Systems	1,403	144	10.3%
Network Support	1,310	105	8.0%
IT Infrastructure Library (ITIL)	1,196	167	14.0%
Information Systems	1,030	136	13.2%
IT Project Management	950	183	19.3%
Network Security	862	80	9.3%
Process Improvement	429	66	15.4%
Database	415	73	17.6%
Business Applications	307	37	12.1%
Software Development	285	34	11.9%
CIO	272	77	28.3%
Training	259	37	14.3%
Engineering	239	43	18.0%
Web	214	30	14.0%
Telecommunications & Networking	165	18	10.9%
Quality	163	26	16.0%
Enterprise Architecture	155	34	21.9%
Policy and Planning	97	24	24.7%
Evidence Collection	73	8	11.0%
Healthcare	52	9	17.3%
Mechanical	16	6	37.5%

Chapter VI – Occupational Capability Profiles

Occupational Capability Profile Overview

In many cases, IT workforce planners will find it useful to look at workforce capabilities in the context of occupational series. The ITWCA allowed respondents to identify themselves as one of 22 occupational series. With nearly 70% of respondents belonging to the 2210 Information Technology Management series, there was a limited distribution among the remaining series. To make the analysis of Occupational Series statistically robust, the results for several occupational series have been grouped into Occupational Categories and are presented in this chapter. See Table 20 below (a duplicate of Table 5 on page 12) for a detail of which occupational series are associated with each Occupational Capability Profile.

Table 20: Mapping of Occupational Series to Occupational Categories

Occupational Series	Occupational Category	Respondents	Percentage
2210 - Information Technology Management	Information Technology Management	12,105	68.5%
0301 - Miscellaneous Administration and Program	Program Management and Administration	1,106	6.3%
0340 - Program Management			
0343 - Management and Program Analysis			
0332 - Computer Operation	Computer Operators, Assistants, and Specialists	661	3.7%
0334 - Computer Specialist			
0335 - Computer Clerk and Assistant			
0390 - Telecommunications Processing Series	Telecommunications	710	4.0%
0391 - Telecommunications Series			
0392 - General Telecommunication Series			
0394 - Communications Clerical Series			
0854 - Computer Engineering	Computer and Electronics Engineers	985	5.6%
0855 - Electronics Engineering			
1410 - Librarian Series	Librarians and Archivists	131	0.7%
1411 - Library Technician Series			
1412 - Technical Information Services Series			
1420 - Archivist Series			
1421 - Archives Technician Series			
1550 - Computer Science Series	Computer Science	637	3.6%
2880 - Foreign Service	Foreign Service	350	2.0%
2882 - Foreign Service			
2884 - Foreign Service			
Other	Other	977	5.5%

Each of the eight Occupational Capability Profiles contains the top rated General Business Competencies, Technical Competencies, IT Skills, Certifications, and Training Needs. 977 ITWCA respondents (5.5%) did not select one of the provided occupational series response options. In such cases, the "Other" response option was selected, at which point they were prompted to enter a four-digit occupational series. Due to the heterogeneous nature of those that fall into this organizational category, a catch-all Occupational Capability Profile for "Other" is not provided.

Information Technology Management Occupational Capability Profile

The Information Technology Management Occupational Category included 12,105 IT professionals (68.5% of ITWCA respondents) and covered the following occupational series:

- 2210 - Information Technology Management (12,105 respondents)

Table 21: Top Rated Characteristics for Information Technology Management Occupational Category

Top 5 General Competencies	Top 10 Technical Competencies	Top 10 IT Skills	Top 5 IT Certifications	Top 5 Training Needs (Individual Training Need)	Top 5 Training Needs (Organizational Training Need)
1. Customer Service 2. Interpersonal Skills 3. Flexibility 4. Problem Solving 5. Information Management	1. Hardware 2. Operating Systems 3. Network Management 4. Information Assurance 5. Tele-communications 6. Operations Support 7. Configuration Management 8. Information Systems/Network Security 9. Technology Awareness 10. Infrastructure Design	1. Microsoft Windows Desktop Operating Systems 2. Desktop Applications 3. Client-Server 4. Systems Support and Helpdesk 5. Network Operating Systems 6. Information Management 7. Broadband 8. Network Security 9. Cryptology 10. Network Configuration and Implementation	1. Computing 2. Operating Systems 3. Network Support 4. Information Systems Security 5. Information Systems	1. Contracting/ Procurement 2. Forensics 3. Administration and Management 4. Computer Network Defense 5. Financial Management	1. Administration and Management 2. Information Management 3. Computer Network Defense 4. Leadership 5. Communications Security Management

Program Management and Administration Occupational Capability Profile

The Program Management and Administration Occupational Category included 1,106 IT professionals (6.3% of ITWCA respondents) and covered the following occupational series:

- 0301 – Miscellaneous Administration and Program (455 respondents)
- 0340 – Program Management (103 respondents)
- 0343 – Management and Program Analysis (548 respondents)

Table 22: Top Rated Characteristics for Program Management and Administration Occupational Category

Top 5 General Competencies	Top 10 Technical Competencies	Top 10 IT Skills	Top 5 IT Certifications	Top 5 Training Needs (Individual Training Need)	Top 5 Training Needs (Organizational Training Need)
1. Interpersonal Skills 2. Flexibility 3. Customer Service 4. Problem Solving 5. Writing	1. Project Management 2. Requirements Analysis 3. Knowledge Management 4. Business Process Reengineering 5. Organizational Development 6. Systems Life Cycle 7. Cost-Benefit Analysis 8. Quality Assurance 9. Risk Management 10. Capital Planning and Investment Assessment	1. Desktop Applications 2. Microsoft Windows Desktop Operating Systems 3. Requirements Management 4. IT Portfolio Management 5. IT Governance 6. Information Management 7. Testing 8. Data Analysis and Reporting 9. Continuity of Operations Planning 10. Test Plan Development	1. Project Management 2. IT Project Management 3. IT Infrastructure Library (ITIL) 4. Computing 5. Information Systems Security	1. Contracting/ Procurement 2. Financial Management 3. Legal, Government and Jurisprudence 4. Information Management 5. Strategic Thinking	1. Team Building 2. Leadership 3. Strategic Thinking 4. Contracting/ Procurement 5. Information Management

Computer Operators, Assistants, and Specialists Occupation Capability Profile

The Computer Operators, Assistants, and Specialist Occupational Category included 661 IT professionals (3.7% of ITWCA respondents) and covered the following occupational series:

- 0332 - Computer Operation (33 respondents)
- 0334 - Computer Specialist (547 respondents)
- 0335 - Computer Clerk and Assistant (81 respondents)

Table 23: Top Rated Characteristics for Computer Operators, Assistants and Specialists Occupational Category

Top 5 General Competencies	Top 10 Technical Competencies	Top 10 IT Skills	Top 5 IT Certifications	Top 5 Training Needs (Individual Training Need)	Top 5 Training Needs (Organizational Training Need)
1. Customer Service 2. Interpersonal Skills 3. Flexibility 4. Problem Solving 5. Decision Making	1. Hardware 2. Configuration Management 3. Project Management 4. Operating Systems 5. Systems Life Cycle 6. Technical Documentation 7. Operations Support 8. Requirements Analysis 9. Technology Awareness 10. Standards	1. Desktop Applications 2. Microsoft Windows Desktop Operating Systems 3. Systems Support and Helpdesk 4. Client-Server 5. Testing 6. Requirements Management 7. Systems Analysis and Design 8. Information Management 9. Continuity of Operations Planning 10. Test Plan Development	1. Computing 2. Project Management 3. IT Infrastructure Library (ITIL) 4. Information Systems Security 5. Network Support	1. Information Management 2. Contracting/ Procurement 3. Leadership 4. Strategic Thinking 5. Legal, Government and Jurisprudence	1. Team Building 2. Leadership 3. Information Management 4. Administration and Management 5. Interpersonal Skills

Telecommunications Occupational Capability Profile

The Telecommunications Occupational Category included 710 IT professionals (4.0% of ITWCA respondents) and covered the following occupational series:

- 0390 - Telecommunications Processing Series (13 respondents)
- 0391 - Telecommunications Series (682 respondents)
- 0392 - General Telecommunication Series (7 respondents)
- 0394 - Communications Clerical Series (8 respondents)

Table 24: Top Rated Characteristics for Telecommunications Occupational Category

Top 5 General Competencies	Top 10 Technical Competencies	Top 10 IT Skills	Top 5 IT Certifications	Top 5 Training Needs (Individual Training Need)	Top 5 Training Needs (Organizational Training Need)
1. Interpersonal Skills 2. Customer Service 3. Flexibility 4. Decision Making 5. Problem Solving	1. Tele-communications 2. Project Management 3. Network Management 4. Quality Assurance 5. Hardware 6. Requirements Analysis 7. Accessibility 8. Technology Awareness 9. Standards 10. Infrastructure Design	1. Desktop Applications 2. Broadband 3. Telephony/PBX 4. Satellite Communications 5. Microsoft Windows Desktop Operating Systems 6. Continuity of Operations Planning 7. Cryptology 8. Network Voice/Data Integration 9. Wireless Technologies 10. Testing	1. IT Infrastructure Library (ITIL) 2. Computing 3. Information Systems Security 4. Project Management 5. Tele-communications & Networking	1. Contracting/ Procurement 2. Legal, Government and Jurisprudence 3. Information Management 4. Financial Management 5. Strategic Thinking	1. Administration and Management 2. Information Management 3. Leadership 4. Team Building 5. Contracting/ Procurement

Computer and Electronics Engineers Occupational Capability Profile

The Computer and Electronics Engineers Occupational Category included 985 IT professionals (5.6% of ITWCA respondents) and covered the following occupational series:

- 0854 - Computer Engineering (409 respondents)
- 0855 - Electronics Engineering (576 respondents)

Table 25: Top Rated Characteristics for Computer and Electronics Engineers Occupational Category

Top 5 General Competencies	Top 10 Technical Competencies	Top 10 IT Skills	Top 5 IT Certifications	Top 5 Training Needs (Individual Training Need)	Top 5 Training Needs (Organizational Training Need)
1. Problem Solving 2. Reasoning 3. Writing 4. Interpersonal Skills 5. Flexibility	1. Hardware 2. Requirements Analysis 3. Project Management 4. Technology Awareness 5. Software Development 6. Technical Documentation 7. Hardware Engineering 8. Systems Integration 9. Configuration Management 10. Systems Life Cycle	1. Desktop Applications 2. Microsoft Windows Desktop Operating Systems 3. Systems Engineering 4. Testing 5. Test Plan Development 6. Test Planning 7. Development Languages 8. Requirements Management 9. Capability Maturity Models 10. Performance Testing	1. Project Management 2. Information Systems Security 3. Engineering 4. Computing 5. Operating Systems	1. Contracting/ Procurement 2. Financial Management 3. Leadership 4. Strategic Thinking 5. Legal, Government and Jurisprudence	1. Team Building 2. Leadership 3. Information Management 4. Strategic Thinking 5. Contracting/ Procurement

Librarians and Archivists Occupational Capability Profile

The Librarians and Archivists Occupational Category included 131 IT professionals (0.7% of ITWCA respondents) and covered the following occupational series:

- 1410 - Librarian Series (58 respondents)
- 1411 - Library Technician Series (32 respondents)
- 1412 - Technical Information Services Series (28 respondents)
- 1420 - Archivist Series (11 respondents)
- 1421 - Archives Technician Series (2 respondents)

Table 26: Top Rated Characteristics for Librarians and Archivists Occupational Category

Top 5 General Competencies	Top 10 Technical Competencies	Top 10 IT Skills	Top 5 IT Certifications	Top 5 Training Needs (Individual Training Need)	Top 5 Training Needs (Organizational Training Need)
1. Customer Service 2. Interpersonal Skills 3. Flexibility 4. Problem Solving 5. Decision Making	1. Hardware 2. Configuration Management 3. Project Management 4. Operating Systems 5. Systems Life Cycle 6. Technical Documentation 7. Operations Support 8. Requirements Analysis 9. Technology Awareness 10. Standards	1. Desktop Applications 2. Microsoft Windows Desktop Operating Systems 3. Systems Support and Helpdesk 4. Client-Server 5. Testing 6. Requirements Management 7. Systems Analysis and Design 8. Information Management 9. Continuity of Operations Planning 10. Test Plan Development	1. Computing 2. Project Management 3. IT Infrastructure Library (ITIL) 4. Information Systems Security 5. Network Support	1. Information Management 2. Contracting/ Procurement 3. Leadership 4. Strategic Thinking 5. Legal, Government and Jurisprudence	1. Team Building 2. Leadership 3. Information Management 4. Administration and Management 5. Interpersonal Skills

Computer Science Occupational Capability Profile

The Computer Science Occupational Category included 637 IT professionals (3.6% of ITWCA respondents) and covered the following occupational series:

- 1550 - Computer Science Series (637 respondents)

Table 27: Top Rated Characteristics for Computer Science Occupational Category

Top 5 General Competencies	Top 10 Technical Competencies	Top 10 IT Skills	Top 5 IT Certifications	Top 5 Training Needs (Individual Training Need)	Top 5 Training Needs (Organizational Training Need)
1. Problem Solving 2. Flexibility 3. Interpersonal Skills 4. Reasoning 5. Writing	1. Software Development 2. Computer Languages 3. Software Engineering 4. Software Testing and Evaluation 5. Configuration Management 6. Requirements Analysis 7. Operating Systems 8. Technical Documentation 9. Technology Awareness 10. System Testing and Evaluation	1. Desktop Applications 2. Microsoft Windows Desktop Operating Systems 3. Development Languages 4. Object-Oriented Languages 5. Testing 6. Client-Server 7. Systems Engineering 8. UNIX Operating System 9. Requirements Management 10. Test Planning	1. Information Systems Security 2. Computing 3. Operating Systems 4. Project Management 5. Network Security	1. Contracting/ Procurement 2. Leadership 3. Financial Management 4. Legal, Government and Jurisprudence 5. Strategic Thinking	1. Team Building 2. Leadership 3. Information Management 4. Administration and Management 5. Strategic Thinking

Foreign Service Occupational Capability Profile

The Foreign Service Occupational Category included 350 IT professionals (2.0% of ITWCA respondents) and covered the following occupational series:

- 2880 - Foreign Service (201 respondents)
- 2882 - Foreign Service (60 respondents)
- 2884 - Foreign Service (89 respondents)

Table 28: Top Rated Characteristics for Foreign Service Occupational Category

Top 5 General Competencies	Top 10 Technical Competencies	Top 10 IT Skills	Top 5 IT Certifications	Top 5 Training Needs (Individual Training Need)	Top 5 Training Needs (Organizational Training Need)
1. Customer Service 2. Interpersonal Skills 3. Flexibility 4. Problem Solving 5. Information Management	1. Hardware 2. Operating Systems 3. Network Management 4. Information Assurance 5. Tele-communications 6. Operations Support 7. Configuration Management 8. Information Systems/Network Security 9. Technology Awareness 10. Infrastructure Design	1. Microsoft Windows Desktop Operating Systems 2. Desktop Applications 3. Client-Server 4. Systems Support and Helpdesk 5. Network Operating Systems 6. Information Management 7. Broadband 8. Network Security 9. Cryptology 10. Network Configuration and Implementation	1. Computing 2. Operating Systems 3. Network Support 4. Information Systems Security 5. Information Systems	1. Contracting/ Procurement 2. Forensics 3. Administration and Management 4. Computer Network Defense 5. Financial Management	1. Administration and Management 2. Information Management 3. Computer Network Defense 4. Leadership 5. Communications Security Management

Chapter VII – Specialized Job Activities (SJAs)

Introduction and Background

This section provides high level information to help interpret the individual Specialized Job Activities (SJA) reports (provided separately from this document).

ITWCA respondents were asked to estimate the amount of time they spend on 18 different SJAs (as part of their normal duties and responsibilities). Whereas the parenthetical titles associated with the 2210 IT workforce may indicate the work that IT professionals were initially assigned, these SJAs are more closely related to the work actually being performed on a daily basis. Furthermore, because the SJAs designations are not limited to the 2210 IT Management occupational series, IT workforce managers could examine their organization for trends and capabilities not readily apparent through other analysis. These Specialized Job Activities include the twelve parenthetical titles in the 2210 Occupational Series, and six other job activities deemed important in the Federal IT community. See **Appendix A** for a full listing of SJA definitions included in the 2011 ITWCA. Respondents used the following scale in estimating their time spent performing each SJA:

Table 29: SJA Time Spent Scale

TIME ESTIMATE	DEFINITION
3 = Extensive	▪ I spend most of my time on this job activity in my normal work activities.
2 = Moderate	▪ I spend a moderate amount of time on this activity in my normal work activities.
1 = Minimal	▪ I spend very little time on this job activity in my normal work activities.
0 = None	▪ I do not spend any time on this job activity in my normal work activities.

Table 30 details the average time spent for each of the Specialized Job Activities as well as count and percentage of those that spent a "Moderate" or "Extensive" amount of time performing the given activity in a given day.

Table 30: Average Time Spent for Specialized Job Activities (sorted)

SPECIALIZED JOB ACTIVITY	AVG. TIME SPENT	COUNT OF MODERATE	% OF MODERATE	COUNT OF EXTENSIVE	% OF EXTENSIVE	COUNT MOD & EXT	% MOD & EXT
1. Customer/End User Support	1.84	5,145	29.1%	6,107	34.6%	11,252	63.7%
2. IT Project Management	1.37	4,591	26.0%	3,472	19.7%	8,063	45.7%
3. IT Security/ Cybersecurity/ Information Assurance	1.31	4,123	23.3%	3,036	17.2%	7,159	40.5%
4. Applications Software	1.29	3,707	21.0%	3,499	19.8%	7,206	40.8%
5. Systems Analysis	1.26	4,893	27.7%	2,316	13.1%	7,209	40.8%
6. Policy and Planning	1.23	4,423	25.0%	2,547	14.4%	6,970	39.5%
7. Data Management	1.21	4,425	25.1%	2,140	12.1%	6,565	37.2%
8. Systems Administration	1.16	3,456	19.6%	2,911	16.5%	6,367	36.0%
9. Knowledge Management	1.14	4,645	26.3%	1,583	9.0%	6,228	35.3%
10. Internet	1.11	3,834	21.7%	2,057	11.6%	5,891	33.4%
11. Operating Systems	1.03	3,442	19.5%	2,112	12.0%	5,554	31.4%
12. Records Management	0.97	3,264	18.5%	1,129	6.4%	4,393	24.9%
13. E-Government	0.96	3,350	19.0%	1,582	9.0%	4,932	27.9%
14. Enterprise Architecture (EA)	0.89	3,180	18.0%	1,235	7.0%	4,415	25.0%
15. Network Services	0.89	2,967	16.8%	1,561	8.8%	4,528	25.6%
16. IT Workforce Management/ Development	0.81	2,756	15.6%	1,276	7.2%	4,032	22.8%
17. Telecommunications	0.80	2,352	13.3%	1,621	9.2%	3,973	22.5%
18. Capital Planning and Investment Control	0.77	2,714	15.4%	913	5.2%	3,627	20.5%

Table 31 details the percentage of the workforce that spent a "Moderate" or "Extensive" amount of time performing a given SJA. For each of the groupings the top two SJAs are given. For GS 4 and below: Customer/End User Support (54.3%) and Applications Software (35.7%). For GS 5-10: Customer/End User Support: (65.9%) and Systems Administration (39.3%). For GS 11-13: Customer/End User Support (68.8%) and Applications Software (44.7%). For GS 14-15: IT Project Management (71.4%) and Policy and Planning (65.2%). As expected IT Project Management, Policy and Planning, and IT Workforce Management, and Capital Planning and Investment Control are primarily performed by GS 14-15 employees as is demonstrated by the step change from the time spent on these activities by other grade level employees. Conversely, Customer/End User Support and Internet are more extensively performed by less senior workforce.

Table 31: Percentage of workforce who spent a moderate to extensive amount of time performing each Job Activity by Grade Level (sorted)

SPECIALIZED JOB ACTIVITY	TIME SPENT ACROSS GRADE (n=17,662)	GS 4 AND BELOW PROFICIENCY (n=70)	GS 5-10 PROFICIENCY (n=1,371)	GS 11-13 PROFICIENCY (n=9,611)	GS 14-15 PROFICIENCY (n=3,141)
1. Customer/End User Support	1.84	54.3%	65.9%	68.8%	52.3%
2. IT Project Management	1.37	21.4%	18.5%	41.0%	71.4%
3. IT Security/ Cybersecurity/ Information Assurance	1.31	24.3%	34.4%	40.5%	41.9%
4. Applications Software	1.29	35.7%	37.1%	44.7%	31.1%
5. Systems Analysis	1.26	18.6%	23.1%	41.5%	47.8%
6. Policy and Planning	1.23	17.1%	19.0%	34.9%	65.2%
7. Data Management	1.21	34.3%	35.4%	38.8%	33.7%
8. Systems Administration	1.16	28.6%	39.3%	40.4%	22.9%
9. Knowledge Management	1.14	24.3%	32.2%	34.7%	40.7%
10. Internet	1.11	30.0%	35.0%	33.4%	33.1%
11. Operating Systems	1.03	28.6%	34.0%	34.3%	22.3%
12. Records Management	0.97	22.9%	30.1%	26.1%	21.7%
13. E-Government	0.96	20.0%	26.1%	27.0%	32.8%
14. Enterprise Architecture (EA)	0.89	15.7%	12.4%	22.4%	38.7%
15. Network Services	0.89	17.1%	22.6%	26.6%	23.0%
16. IT Workforce Management/ Development	0.81	12.9%	10.8%	18.2%	39.6%
17. Telecommunications	0.8	22.9%	20.9%	23.6%	19.5%
18. Capital Planning and Investment Control	0.77	8.6%	9.0%	15.5%	41.1%

Individual Specialized Job Activity Report Contents

In addition to the ITWCA Survey Results Report, there are reports for each of the 18 Specialized Job Activities. Below is an overview of the content that be found in each of the reports. It should be noted that respondents who reported that they spend "None" or "Minimal" time in any one SJA were excluded from the results of that Specialized Job Activity, on the assumption that those employees who do not do that work, or who do that work to a minimal extent, did not *specialize* in the given activity.

SJA Introduction

- SJA Introduction

Individual SJA Findings

- SJA Definition
- SJA Overview provides context for the activity such as occupational series representation and how many ITWCA components are mapped to the activity
- Time Spent Results include a breakdown of how often the activity is performed across ITWCA respondent pool

- Demographic Profile of respondents who spend a “Moderate” or “Extensive” amount of time performing the SJA
- Competency Proficiencies specific to the SJA (Technical, and Cybersecurity where applicable)
- IT Skills Proficiencies specific to the SJA
- Certification Area Results
- Training Needs Results
- Appendix listing the proficiency levels for the full inventory of Technical Competencies, Cybersecurity Competencies (where applicable), and IT Skills filtered for the workforce that indicated a “Moderate” or “Extensive” amount of time spent.

Chapter VIII – Cybersecurity

OPM, working with the National Initiative for Cybersecurity Education (NICE), has produced a competency model for cybersecurity professionals to support agency human resource initiatives. As part of this work, the cybersecurity workforce previously completed a survey to validate an occupational-series based competency and task inventory model for cyber professionals. This cybersecurity content was added to the 2011 ITWCA by incorporating the Technical Competency components. In addition, several Cybersecurity Technical Competencies already appeared in the 2210 competency model so IT workforce managers should consult the Technical Competency section of this results report for information on those items depending on the items that are relevant to the occupational series and grade levels of interest. See **Appendix A** for a full listing of Cybersecurity Competency titles and definitions included in the survey. Only ITWCA respondents who identified themselves as performing cyber work were given the opportunity to assess on the new section specifically dedicated to cybersecurity competencies.

Cybersecurity Workforce Demographics

- The 2210 Information Technology occupational series accounted for 75.5% of the cyber workforce, which is notably more than the 68.5% represented across the entire ITWCA sample.
- A larger percentage of the cyber workforce was not associated with a primary or secondary parenthetical Title (indicated as "Non Applicable" or "Not Specified"). 31.2% of the cyber workforce was not associated with a primary parenthetical title, while 51.8% of the cyber workforce was not associated with a secondary parenthetical title; this compares to 10.3% (primary) and 39.6% (secondary) demonstrated in the overall IT Workforce who were not associated with a parenthetical title. Where the cyber workforce was associated, the top four parenthetical titles were shared with the overall workforce.
- There were no notable differences in the percentage of employees who were part of the four grade levels groupings when the cyber workforce was compared to the overall ITWCA respondent pool.
- The vast majority (49.8%, 3,703 respondents) of the cyber workforce had over 20 years tenure with the Federal Government when counting military and civilian years. An additional 18.8% or 1,398 of respondents had 11-20 years tenure with the Federal Government.
- The most commonly held IT Certifications were similar between the cyber workforce and the overall ITWCA workforce. However, the cyber workforce generally had greater a percentage of certified employees in any given area.
- The cyber workforce had noticeably lower female representation (23.1%) when contrasted with the overall ITWCA workforce (-7.6%).
- For near-term retirement risk, 16.2% of the cyber workforce is eligible for retirement within three years, but only 9.2% of the same workforce intends to retire within three years. This compares to 19.2% and 11.4% seen in the overall ITWCA respondent pool.

Table 32 provides a profile of the average 2011 ITWCA cybersecurity respondent based on the highest frequency of responses in each demographic category. When taken as a group, these high frequency responses help illustrate the likely demographic profile of a cyber workforce employee if chosen at random from the ITWCA respondent pool.

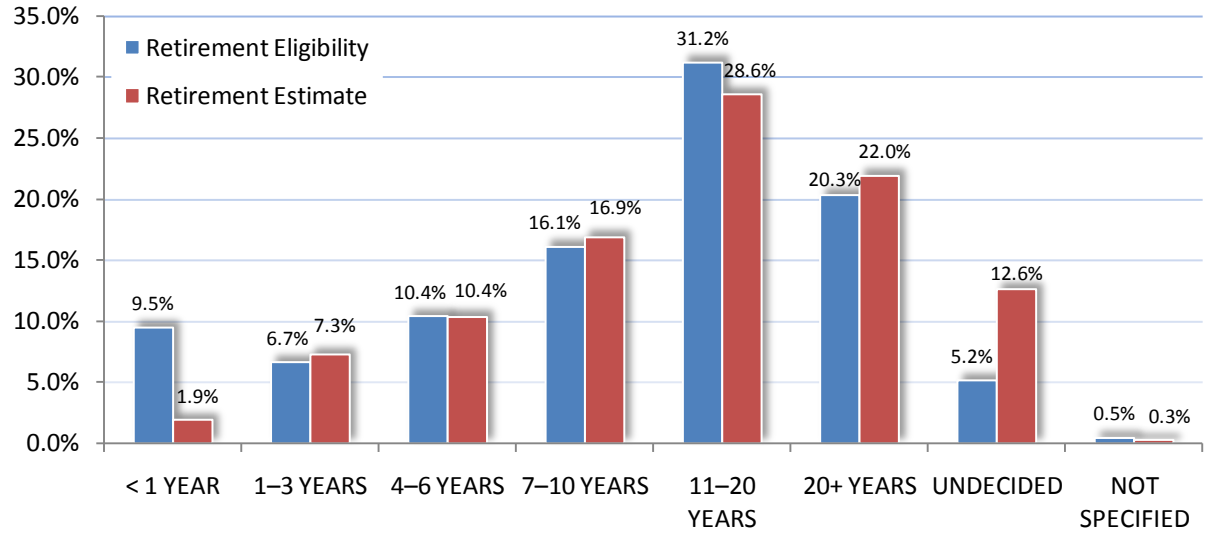
Table 32: Average Cybersecurity Respondent Profile and Average ITWCA Respondent Profile Comparison

PARTICIPANT PROFILE:	2011 Cybersecurity Workforce 7,449 respondents	2011 ITWCA Sample 17,662 respondents
Series	2210 - Information Technology Management	2210 - Information Technology Management
Top Three Primary Parenthetical Titles	Security (16.0%) Systems Administration (9.9%)	Customer Support (10.9%) Security (10.7%)

PARTICIPANT PROFILE:	2011 Cybersecurity Workforce 7,449 respondents	2011 ITWCA Sample 17,662 respondents
	Customer Support (7.9%)	IT Project Management (10.6%)
Grade Level	GS-12 or equivalent (21.6%) GS-13 or equivalent (19.4%)	GS-12 or equivalent (21.8%) GS-13 or equivalent (21.0%)
Years of IT Experience	Over 20 years public sector with less than 1 year private sector	Over 20 years public sector with less than 1 year private sector
IT Certification	Information Systems Security (held by 24.9% of cyber workforce)	Information Systems Security (held by 13.8% of total respondents)
Percent College Graduates	66.3%	67.6%
Age Range	46-50 (20.5%) 51-55 (20.4%)	46-50 (20.4%) 51-55 (20.9%)
Percent Female	23.1%	30.8%
Retirement Eligibility	11-20 years	11-20 years

Figure 8 provides a side-by-side comparison of the retirement eligibility and retirement estimates based on the responses given by the cyber workforce.

Figure 8: Retirement Eligibility and Estimate Comparison Percentage (Cybersecurity Only)



*Percentage based on the 7,449 ITWCA respondents who identified themselves as part of the cyber workforce.

Cybersecurity Competency Proficiency

The cyber competency proficiency rating scale used for the 2011 ITWCA is detailed below. Average competency proficiency was calculated using on the ratings between 1-Basic and 5-Expert.

Table 33: ITWCA Cybersecurity Competency Proficiency Scale

PROFICIENCY	DEFINITION
5 = Expert	▪ I am capable of handling all assignments involving this competency and may serve as a role model and/or coach to others.
4 = Advanced	▪ I am capable of handling most day-to-day assignments involving this competency, though may seek expert assistance with particularly difficult or unique situations.
3 = Intermediate	▪ I am capable of handling many day-to-day assignments involving this competency, but may seek assistance in difficult or new situations.
2 = Foundational	▪ I am capable of handling some assignments involving this competency, but need assistance beyond routine situations.
1 = Basic	▪ I am capable of handling the simplest of assignments involving this competency, but need significant assistance beyond the easiest solutions.

PROFICIENCY	DEFINITION
0 = None	▪ I do not possess proficiency in the competency.
Not Applicable	▪ Competency is not applicable.

Table 34 provides the average competency ratings for the 7,449 ITWCA respondents who perform cybersecurity work. The table also provides the percentage of the cyber workforce pool that indicated "Advanced" or "Expert" proficiency in a given competency (i.e., they marked themselves as a 4 or 5 on the response scale). Breakouts of average competency proficiency by grade level/pay plan and occupational series are provided elsewhere in the ITWCA Survey Results Report. The top-rated Cybersecurity Competencies are Information Management (3.36), Communications Security Management (3.31) and Compliance (3.23).

Table 34: 2011 ITWCA Cybersecurity Competency Proficiencies (sorted)

CYBERSECURITY COMPETENCY	2011 AVERAGE PROFICIENCY	% ADVANCED OR EXPERT
1. Information Management*	3.36	49.7%
2. Communications Security Management	3.31	45.6%
3. Compliance	3.23	42.7%
4. Security	3.20	43.3%
5. Physical Security	3.19	42.3%
6. Computer Network Defense	3.09	37.8%
7. Vulnerabilities Assessment	3.02	35.0%
8. Internal Controls	3.00	33.4%
9. Personnel Security and Safety	2.99	34.3%
10. Incident Management	2.90	30.7%
11. Identity Management	2.84	28.3%
12. Criminal Investigation	2.53	15.9%
13. Surveillance	2.42	12.9%
14. Forensics	2.24	10.3%
15. Criminal Law	2.18	8.1%

*The 2011 ITWCA used the competency titles and definitions provided by OPM in the 2010 Cybersecurity Job Analysis Survey – Employees (dated September 15, 2010). The Information Management Cybersecurity Competency listed in that document was renamed later to Information Assurance in the Competency Model for Cybersecurity (dated February 11, 2011). When reviewing the Cybersecurity portion of this report, readers should keep in mind that the term "Information Management" used here refers to the commonly known Information Assurance Competency.

Table 35 shows the average proficiency for Cybersecurity Competencies segmented by grade level along with the average proficiency across the cyber workforce. IT workforce managers may find this table a useful benchmark for identifying differences at the agency level. It should be noted that all cyber professionals are not part of the General Schedule (GS) and therefore the number of respondents in the breakout does not add to 7,499. For each of the groupings, the top two Cybersecurity Competencies are as follows. For GS 4 and below: Information Management (2.86) and Communications Security Management (2.81). For GS 5-10: Physical Security (3.05) and Information Management (3.01). For GS 11-13: Information Management (3.34) and Communications Security Management (3.31). For GS 14-15: Information Management (3.60) and Compliance (3.51). Surveillance, Forensics, and Criminal Law were consistently the bottom rated among the GS groups.

Table 35: Cybersecurity Proficiencies by Grade Level (sorted)

CYBERSECURITY COMPETENCY	AVERAGE PROFICIENCY ACROSS GRADE (n=7,499)	GS-4 AND BELOW AVERAGE PROFICIENCY (n=21)	GS 5-10 AVERAGE PROFICIENCY (n=508)	GS 11-13 AVERAGE PROFICIENCY (n=4,007)	GS 14-15 AVERAGE PROFICIENCY (n=1,308)
1. Information Management	3.36	2.86	3.01	3.34	3.60
2. Communications Security Management	3.31	2.81	2.99	3.31	3.43
3. Compliance	3.23	2.62	2.86	3.19	3.51

CYBERSECURITY COMPETENCY	AVERAGE PROFICIENCY ACROSS GRADE (n=7,499)	GS-4 AND BELOW AVERAGE PROFICIENCY (n=21)	GS 5-10 AVERAGE PROFICIENCY (n=508)	GS 11-13 AVERAGE PROFICIENCY (n=4,007)	GS 14-15 AVERAGE PROFICIENCY (n=1,308)
4. Security	3.20	2.71	2.97	3.17	3.38
5. Physical Security	3.19	2.76	3.05	3.23	3.19
6. Computer Network Defense	3.09	2.57	2.81	3.09	3.25
7. Vulnerabilities Assessment	3.02	2.57	2.68	3.00	3.29
8. Internal Controls	3.00	2.45	2.64	2.96	3.29
9. Personnel Security and Safety	2.99	2.81	2.83	3.01	3.10
10. Incident Management	2.90	2.45	2.66	2.87	3.17
11. Identity Management	2.84	2.35	2.64	2.84	2.98
12. Criminal Investigation	2.53	2.00	2.43	2.54	2.64
13. Surveillance	2.42	1.89	2.39	2.42	2.53
14. Forensics	2.24	1.84	2.26	2.22	2.39
15. Criminal Law	2.18	2.13	2.21	2.16	2.29

Cybersecurity Competency Training Needs

Survey participants identified up to five competencies where they thought additional training would be beneficial to them and up to five competencies where they thought additional training would be beneficial to organizations. The top ten Cybersecurity Competencies selected in the 2011 ITWCA are shown in Table 36. This table shows the number and percentage of the cyber workforce that selected those competencies as training needs. Also provided is the average competency proficiency across the cyber workforce respondent pool.

The most frequently identified Cybersecurity Competency individual training needs were Forensics (44.4%) and Computer Network Defense (42.9%). The most frequently identified Cybersecurity Competency organizational training needs were Vulnerabilities Assessment (35.8%) and Computer Network Defense (32.3%).

Table 36: Top Ten Cybersecurity Competency Training Needs

CYBERSECURITY COMPETENCIES			
INDIVIDUAL TRAINING NEED	NUMBER	PERCENT	AVERAGE PROFICIENCY
1. Forensics	3,306	44.4%	3.09
2. Computer Network Defense	3,193	42.9%	3.23
3. Vulnerabilities Assessment	2,952	39.6%	2.18
4. Communications Security Management	2,093	28.1%	3.36
5. Incident Management	1,852	24.9%	3.00
6. Surveillance	1,769	23.7%	2.24
7. Criminal Investigation	1,738	23.3%	3.20
8. Criminal Law	1,659	22.3%	3.19
9. Information Management	1,583	21.3%	2.99
10. Security	1,426	19.1%	2.42
ORGANIZATIONAL TRAINING NEED	NUMBER	PERCENT	AVERAGE PROFICIENCY
1. Vulnerabilities Assessment	2,670	35.8%	2.18
2. Computer Network Defense	2,407	32.3%	3.23
3. Compliance	2,146	28.8%	3.31
4. Communications Security Management	2,054	27.6%	3.36
5. Incident Management	1,920	25.8%	3.00
6. Information Management	1,768	23.7%	2.99
7. Forensics	1,690	22.7%	3.09
8. Internal Controls	1,592	21.4%	2.90
9. Security	1,471	19.7%	2.42
10. Identity Management	1,325	17.8%	3.02

Chapter IX – IT Program Management

The IT Program Management section aligns the ITWCA with the 25-Point Implementation Plan to Reform Federal IT Management (the 25-Point Plan). The 25-Point Plan unveiled on December 9, 2010, lays out an 18-month strategy to improve Government efficiency, effectiveness, and service delivery. The ITWCA addresses section B of the 25-Point Plan, which is to strengthen IT Program Management (IT PM). Often IT Program Managers are assigned on a temporary basis and sourced from various functions, which has led to increased turnover and decreased bench strength in this occupation. OPM is using the information from the ITWCA as part of an ongoing effort to create a specialized career path for IT Program Managers.

For purposes of the ITWCA, respondents identified themselves as IT Project Managers and IT Program Managers by selecting a box for each of the following statements that corresponded to their IT experience:

> *IT Project Management is the discipline of organizing and managing resources in such a way that these resources deliver all the work required to complete an IT project within defined scope, time, and cost constraints. This activity typically involves exercising centralized authority and responsibility for planning, organizing, staffing, and controlling efforts of participating personnel and organizations for management of an IT project throughout the project life cycle (from initiation to deployment and project closeout). An IT project is a specific IT investment having defined goals, objectives, requirements, lifecycle cost, and a beginning and an end that delivers a specific IT product, service, or result.*
>
> *IT Program Management is the discipline of organizing and managing resources for more than one IT project, which together advance accomplishment of one or more strategic goals of the organization.*

Respondents who identified themselves as IT Program Managers were asked to rate how important 43 items were to the role of Program Management. OPM and the Federal CIO established the IT Program Management items from a subset of General and Technical Competencies and questions specific to the inquiry, such as:

- How important is the number program/project staff to the IT PM role
- How important is the interdependence of projects managed under the program to the IT PM role
- How important is the competency of Contracting/Procurement to the IT PM role

See **Appendix A** for a full listing of the IT Program Management items and response scale. See http://www.CIO.gov for more information about the 25-Point Plan and updates about the specialized career path for IT Program Management. Because the 25-Point Plan is an ongoing effort, the ITWCA Survey Results Report does not include an analysis of the IT Program Management items. The following section provides a demographic overview of respondents who identified themselves as IT Program Managers.

IT Program Management Workforce Demographics

Table 37 outlines the number and percentage of ITWCA respondents who worked in an IT Project Management or IT Program Management role.

Table 37: Breakdown of IT Program Managers and IT Project Managers present in the IT Workforce

ROLE	Not a Program Manager	Is a Program Manager
Not a Project Manager	7,490 resp. (42.4%,)	1,313 resp. (7.4%)
Is a Project Manager	5,589 resp. (31.6%,)	3,270 resp. (18.5%)

*In total 4,583 ITWCA respondent identified themselves as IT Program Managers.

- 73.5% of IT Program Managers belonged to the 2210 - Information Technology Management series. "Other" was listed by 177 respondents (3.9% of IT Program Managers). Rounding out the top three, 0391 - Telecommunications was listed by 176 respondents (3.8% of IT Program Managers). For the 0340 - Program Managers who participated in the ITWCA, only 43 out of the 103 identified themselves as IT Program Managers.
- 28.8% of IT Program Managers (1,313 respondents) did not specify a primary parenthetical title, making this the frequently selected response chosen. This finding contrasts with the overall ITWCA respondent pool, where only 4.0% chose to not specify a primary parenthetical title. When "Other", "Non Applicable", and "Not Specified" are combined, 41.3% of IT Program Managers did not associate themselves with a primary parenthetical title, compared to 20.3% of the overall respondent pool who did not associate with a primary title. Rounding out the top primary parenthetical titles are IT Project Management (604 respondents, 13.2%), Policy and Planning (425 respondents, 9.3%), Security (397 respondents, 8.7%), and Other (374 respondents, 8.2%).
- As expected based on the representation of 2210 – Information Technology Management series, 79.2% of IT Program Managers belong to the General Schedule (GS) Pay Plan. The breakdown as a percentage of IT Program Managers is as follows: GS 4 and below (0.3%), GS 5-10 (3.0%), GS 11 (7.2%), GS 12 (15.4%), GS 13 (20.5%), GS 14 (19.7%) and GS 15 (12.9%). FS was also frequently selected with 3.3% of IT Program Managers belonging to this pay plan.
- The top three choices for Private Sector IT Experience were consistent between IT Program Managers and the overall ITWCA respondent pool: Less than 1 year (1,242 respondents, 27.1%), 1-3 years (785 respondents, 17.1%), and 11-20 years (16.7%).
- The selected responses for Public Sector IT Experience were mostly consistent between IT Program Managers and the overall ITWCA respondent pool: Over 20 years (1,192 respondents, 26.0%), 11-20 years (931 respondents, 20.3%), and less than 1 year (687 respondents, 15.0%).
- 64.5% of IT Program Managers held a certification in at least one certification area, which was noticeably more than the 54.2% certification rate seen in the overall ITWCA respondent pool. 17.1% of IT Program Managers were certified in Project Management and 16.1% were certified in Information Systems Security.
- 72.9% of IT Program Managers held a four-year degree or higher. Bachelor's degrees were held by the most IT Program Managers (38.8%), Master's degrees were the second most frequently selected response for level of education (32.4%), and Associate's degrees rounded to the top three chosen responses (11.7%).
- The age range of IT Program Managers followed the same pattern seen in the overall ITWCA respondent pool. The top responses were: 51-55 years (23.0%), 46-50 years (21.9%), 56-60 years (15.0%), and 41-45 years (14.5%).
- 26.6% of IT Program Managers identified themselves as female compared to 30.8% in the overall ITWCA respondent pool.

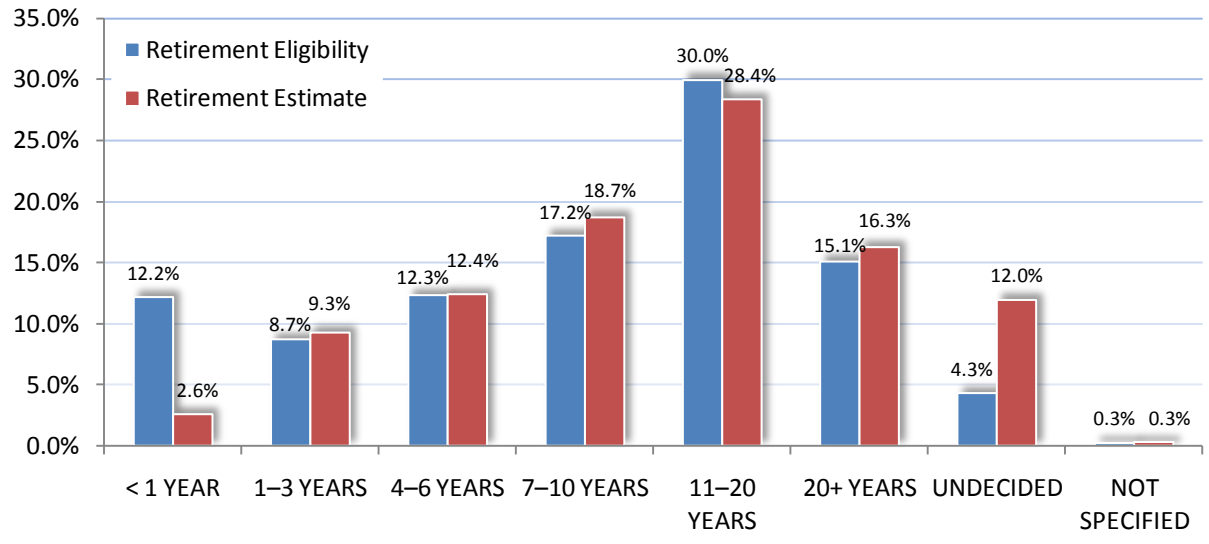
Table 38 provides an overview of the Average IT Program Manager (based on high-frequency responses) and compares this typical Program Manager to the typical ITWCA respondent.

Table 38: Average IT Program Manager Profile and Average ITWCA Respondent Profile Comparison

PARTICIPANT PROFILE	2011 IT Program Management Workforce 4,583 respondents	2011 ITWCA Sample 17,662 respondents
Series	2210 - Information Technology Management	2210 - Information Technology Management
Top Three Primary Parenthetical Titles	Not Specified (blank response) (28.8%) IT Project Management (13.2%) Policy and Planning (9.3%)	Customer Support (10.9%) Security (10.7%) IT Project Management (10.6%)
Grade Level	GS-13 (20.5%) GS-14 (19.7%)	GS-12 (21.8%) GS-13 (21.0%)
Years of IT Experience	Over 20 years public sector with less than 1 year private sector	Over 20 years public sector with less than 1 year private sector
IT Certification	Project Management (held by 17.1% IT Program Managers)	Information Systems Security (held by 13.8% of total respondents)
Percent College Graduates	72.9%	67.6%
Age	46-50 (21.9%) 51-55 (23.0%)	46-50 (20.4%) 51-55 (20.9%)
Percent Female	26.6%	30.8%
Retirement Eligibility	11-20 years	11-20 years

Figure 9 provides a side-by-side comparison of the retirement eligibility and retirement estimates based on the responses given by the cyber workforce. For near-term retirement risk, 20.9.2% of the IT Program Management workforce is eligible for retirement within three years, but only 11.9% of the same workforce intends to retire within three years. This compares to 19.2% and 11.4% seen in the overall ITWCA respondent pool.

Figure 9: Retirement Eligibility and Estimate Comparison Percentage (IT Program Management Only)



*Percentage based on the 4,583 ITWCA respondents who identified themselves as part of the IT Program Management workforce.

Appendix A: 2011 IT Workforce Capability Assessment Content Document

INTRODUCTION

Welcome to the 2011 Information Technology Workforce Capability Assessment (ITWCA)! The ITWCA is a dynamic, web-based survey used to determine the government-wide skill level of IT professionals. The Federal IT workforce uses the results of the assessment to support competency development, strategic workforce planning, and other employee development initiatives.

The survey is voluntary and can be submitted anonymously. This survey is estimated to take between 40 and 60 minutes to complete. The data you provide (your survey responses) will be used by your agency as well as collectively by the Federal Government to determine the degree to which certain competencies, skills, and certifications (as applicable) are resident in the Federal IT workforce. **Please be assured that your responses will be completely anonymous.**

Thank you in advance for taking time out to participate in this important effort!

DEMOGRAPHICS

Instructions: Please select the appropriate answers to the questions below, then click "**Save and Continue**" to move to the next set of questions.

Please identify the Agency/Department, Component, Office, and Sub-office(s) that you currently work in. (Note: Agencies are listed alphabetically) *Drop down menu selections must accommodate 5 levels of organizational structure.*

DQ1 REQUIRED**: Agency/Department (Variable: Agency_Department)**
DQ2 REQUIRED**: Component (Variable: Component)**
DQ3 REQUIRED**: Office (Variable: Office)**
DQ4 REQUIRED**: Sub-office 1 (Variable: Sub_office1)**
DQ5 REQUIRED**: Sub-office 2 (Variable: Sub_office2)**

- Agency/Department
- Component
- Office
- Sub-office 1
- Sub-office 2

DQ6 REQUIRED**: What is your current occupational series? (Variable: Series)**

- 0301
- 0332
- 0334
- 0335
- 0340
- 0343
- 0390
- 0391
- 0394
- 0854
- 0855
- 1410
- 1411
- 1412
- 1420
- 1421
- 1550
- 2210 ***(If "2210" is selected, branch to items DQ7A and DQ7B.)***
- 2880
- 2882

- 2884
- Other ***(If "Other" is selected, branch to DQ6A and open text entry box where 4 digit occupational series can be entered.)***

DQ6A[OPTIONAL]: Enter the 4 digits of your occupational series in the space provided (use numbers only). **(Variable: SeriesOther)**

DQ7A[OPTIONAL]: **What is your primary IT parenthetical title? (Variable: Parenthetical_1)** The basic title for the GS-2210 is IT Specialist. Since this title does not adequately describe all the facets of IT work, parenthetical titles are used with the basic title to further identify the duties and responsibilities performed and the special knowledge and skills needed. Any combination of two parenthetical specialty titles may be used in official position titles; Please choose one or two parenthetical title(s) designated to you from the drop-down list. If you do not have a designated parenthetical title, please select "Non-applicable" from the response options and continue.

1. Applications Software
2. Customer Support
3. Data Management
4. Enterprise Architecture
5. Internet
6. IT Project Management
7. Network Services
8. Operating Systems
9. Policy and Planning
10. Security
11. Systems Administration
12. Systems Analysis
13. Other
14. Not Applicable

DQ7B[OPTIONAL]: **What is your secondary IT parenthetical title? (Variable: Parenthetical_2)**

1. Applications Software
2. Customer Support
3. Data Management
4. Enterprise Architecture
5. Internet
6. IT Project Management
7. Network Services
8. Operating Systems
9. Policy and Planning
10. Security
11. Systems Administration
12. Systems Analysis
13. Other
14. Not Applicable

DQ8[REQUIRED]: **What is your current pay plan? (Variable: PayPlan)**

1. CG
2. CM
3. CU
4. EM
5. ES
6. EV
7. EX
8. FG
9. FS
10. FV
11. GG
12. GM
13. GS
14. GW

15. NB
16. O
17. SSP
18. SV
19. VH
20. W
21. WD
22. WG
23. WL
24. WN
25. WO
26. WS
27. YA
28. YC
29. YD
30. YF
31. YG
32. YH
33. YJ
34. YK
35. YL
36. YN
37. Other

DQ9[REQUIRED]**: What is your current pay grade? (Variable: PayGrade)**

1. 01
2. 02
3. 03
4. 04
5. 05
6. 06
7. 07
8. 08
9. 09
10. 10
11. 11
12. 12
13. 13
14. 14
15. 15
16. 16
17. 17
18. 18
19. 19
20. 38
21. 39
22. 40
23. 41
24. 42
25. 43
26. 44
27. 1E
28. 2E
29. 3E
30. I
31. II
32. III
33. IV

34. V
35. VI
36. VII
37. VIII
38. IX
39. C
40. D
41. E
42. F
43. G
44. H
45. J
46. K
47. L
48. MC
49. OC
50. SSP
51. YA1
52. YA2
53. YA3
54. YC1
55. YC2
56. YC3
57. Other
58. Not Applicable

DQ10[OPTIONAL]: What is the highest level of education you have completed? (Variable: Education)

1. High school/ GED
2. Associates
3. Bachelors
4. Masters
5. PhD
6. Other

DQ11[OPTIONAL]: How many years have you worked for the Federal Government (military and civilian years should be combined)? (Variable: YearsFedService)

1. Less than 1 year
2. 1-3 years
3. 4-6 years
4. 7-10 years
5. 11-20 years
6. Over 20 years
7. Unknown

DQ12[OPTIONAL]: How many years of private sector IT experience do you have? (Variable: YearsExtITExp)

1. Less than 1 year
2. 1-3 years
3. 4-6 years
4. 7-10 years
5. 11-20 years
6. Over 20 years
7. Unknown

DQ13[OPTIONAL]: How many years of public sector IT experience do you have? (Variable: YearsPublicITExp)

1. Less than 1 year
2. 1-3 years

3. 4-6 years
4. 7-10 years
5. 11-20 years
6. Over 20 years
7. Unknown

DQ14[OPTIONAL]: How long do you expect to continue to work for the Federal Government in IT-related work? (Variable: FederalITWorkEst)

1. Less than 1 year
2. 1-3 years
3. 4-6 years
4. 7-10 years
5. 11-20 years
6. Over 20 years
7. Unknown

DQ15[OPTIONAL]: How long do you expect to continue to work for your Current Agency in IT-related work? (Variable: AgencyITWorkEst)

1. Less than 1 year
2. 1-3 years
3. 4-6 years
4. 7-10 years
5. 11-20 years
6. Over 20 years
7. Unknown

DQ16[OPTIONAL]: How soon are you eligible for full retirement? (Variable: RetirementEligibility)

1. Less than 1 year
2. 1-3 years
3. 4-6 years
4. 7-10 years
5. 11-20 years
6. Over 20 years
7. Unknown

DQ17[OPTIONAL]: How soon do you plan on actually retiring? (Variable: RetirementEstimate)

1. Less than 1 year
2. 1-3 years
3. 4-6 years
4. 7-10 years
5. 11-20 years
6. Over 20 years
7. Unknown

DQ18 OPTIONAL: **Please select your current age from the ranges provided. (Variable: Age)**

1. 25 and under
2. 26-30
3. 31-35
4. 36-40
5. 41-45
6. 46-50
7. 51-55
8. 56-60
9. Over 60

DQ19 OPTIONAL: **Please select your gender from the options provided. (Variable: Gender)**

1. Female
2. Male

DQ20 OPTIONAL: **Please select your race/national origin from the options provided. (Variable: RNO)**

1. American Indian or Alaskan Native
2. Asian
3. Black or African American
4. Hispanic Latino
5. Native Hawaiian or other Pacific Islander
6. White
7. Unspecified

DQ21 OPTIONAL: **If you were employed by a U.S. government agency in 2006, did you take the IT Workforce Capability Assessment?**
(Variable: 2006Participant)

1. Yes
2. No
3. Unsure
4. I was not employed by a U.S. government agency in 2006

DQ22 OPTIONAL: **How did you hear about the 2011 IT Workforce Capability Assessment? (Variable: LearnedAbout)**

1. Word of Mouth
2. Flyer
3. Email
4. Newsletter
5. Media Publication
6. Other

DQ23 REQUIRED: For the purpose of this survey, cybersecurity is defined as any work which involves the security of and operations in cyberspace and encompasses the full range of threat reduction, vulnerability reduction, deterrence, international engagement, incident response, resiliency, and recovery activities, including computer network operations, information assurance, diplomacy, military, and intelligence missions as they relate to securing the global information and communication infrastructure.

Based on this definition, do you perform cybersecurity work?

1. Yes
2. No

DQ24 REQUIRED: IT Project Management is the discipline of organizing and managing resources in such a way that these resources deliver all the work required to complete an IT project within defined scope, time, and cost constraints. This activity typically

involves exercising centralized authority and responsibility for planning, organizing, staffing, and controlling efforts of participating personnel and organizations for management of an IT project throughout the project life cycle (from initiation to deployment and project closeout). An IT project is a specific IT investment having defined goals, objectives, requirements, lifecycle cost, and a beginning and an end that delivers a specific IT product, service, or result.

IT Program Management is the discipline of organizing and managing resources for more than one IT project, which together advance accomplishment of one or more strategic goals of the organization.

Check the box next to the statement or statements that describe your experience in IT Project and/or Program Management. If neither statement applies to you, click "Save and Continue".

1. I am or have been an IT Project Manager
2. I am or have been an IT Program Manager

Responses to this item and other related survey content will assist the Office of Personnel Management in developing a specialized career path for IT Program Managers as part of the 25-Point Implementation Plan to Reform Federal Information Technology Management.

SPECIALIZED JOB ACTIVITIES

Instructions: Specialized job activities are typical functions or activities performed by the IT workforce. These are the tasks you may find yourself performing on any given day. This list is not intended to be exhaustive; rather it is intended to provide a summary of the type of work most typically performed among the IT workforce that is of great importance to the Federal Government.

Please indicate the amount of time you spend on a daily basis performing the following specialized job activities. Use your best judgment and follow the key below to determine your time estimations:

- ***EXTENSIVE*** - I spend most of my time on this job activity in my normal work activities.
- ***MODERATE*** - I spend a moderate amount of time on this activity in my normal work activities.
- ***MINIMAL*** - I spend very little time on this job activity in my normal work activities.
- ***NONE*** - I do not spend any time on this job activity in my normal work activities.

SPECIALIZED JOB ACTIVITY	DEFINITION
1. Applications Software	This activity involves the design, development, modification, installation, implementation, and support of new or existing applications software (computer programs designed to perform a specific function directly for the user or, in some cases, for another application program) and may also include: analyzing and refining system requirements; translating system requirements into application prototypes; writing, debugging and maintaining code; determining output media/formats; designing user interfaces; working with customers to test applications; assuring software and systems quality and functionality; integrating hardware and software components; writing and maintaining program documentation; and evaluating new applications software technologies.
2. Capital Planning and Investment Control	Capital Planning and Investment Control (CPIC), also known as Capital Programming, is a decision-making process for ensuring IT investments integrate strategic planning, budgeting, procurement, and the management of IT in support of agency missions and business needs.
3. Customer/End User Support	This activity involves the planning and delivery of end user support services for IT systems and applications, including installation, configuration, troubleshooting, customer assistance, and/or training, in response to end user requirements. This may include: diagnosing and resolving problems in response to customer reported incidents; researching, evaluating, and providing feedback on problematic trends and patterns in end user requirements; developing and maintaining problem tracking and resolution databases; installing, configuring, troubleshooting, and maintaining end user hardware and software; developing and managing customer service performance requirements; and providing end user training.
4. Data Management	This activity includes analyzing and defining data requirements and specifications; designing, normalizing, developing, installing, and implementing databases; maintaining, monitoring, performance tuning, backup, and recovery of databases; installing, configuring, and maintaining database management systems software; developing and administering data standards, policies, and procedures; developing and implementing data mining and data warehousing programs; and evaluating and providing recommendations on new database technologies and architectures.
5. E-Government	This activity involves the use of web-based Internet applications and other information technologies, combined with processes that implement these technologies, to: (1) enhance the access to and delivery of Government information and services (including shared services); and (2) bring about improvements in Government operations. This includes the development, implementation, and use of Web 2.0, social media, and open government activities.
6. Enterprise Architecture (EA)	This activity links the business mission, strategy, and processes of an organization to its IT strategy. An EA is documented using multiple architectural models or views that show how the current and future needs of an organization will be met. It establishes an agency-wide roadmap to achieve the agency's mission through optimal performance of its core business processes within an efficient IT environment. This activity also includes Solutions Architecture, which is concerned with designing solutions for a single system, department, or solution area within the greater agency.

SPECIALIZED JOB ACTIVITY	DEFINITION
7. Internet	This activity includes the application of technical knowledge of Internet systems, services, and technologies. In most cases, the term Internet is used to refer generically to Internet, intranet, and extranet applications development and technical management of Web sites, systems, and services. Functions may include: determining overall technical design and structure of Internet services; monitoring functionality, security, and integrity of Internet services; troubleshooting and resolving technical problems with the design and delivery of Internet services; collecting and analyzing usage and performance statistics; evaluating new services and technologies; and providing technical advice to Internet content providers.
8. IT Project Management	IT project management is the discipline of organizing and managing resources in such a way that these resources deliver all the work required to complete an IT project within defined scope, time, and cost constraints. This activity typically involves exercising centralized authority and responsibility for planning, organizing, staffing, and controlling efforts of participating personnel and organizations for management of an IT project throughout the project life cycle (from initiation to deployment and project closeout). An IT project is a specific IT investment having defined goals, objectives, requirements, lifecycle cost, and a beginning and an end that delivers a specific IT product, service, or result.
9. IT Security/ Cybersecurity/ Information Assurance	This activity involves ensuring the integrity, availability, and confidentiality of information and information systems through: developing policies, practices, and procedures; participating in network and systems design; reporting and investigating incidents; conducting risk and vulnerability assessments; promoting awareness and appropriate application of security policies/procedures; conducting systems security evaluations, audits, and reviews; developing systems contingency plans and disaster recovery procedures; monitoring and controlling how Personal Identifiable Information (PII) is collected, used, stored, transferred, and destroyed; implementation of the Privacy Act; and authenticating and validating system user qualifications. This includes prevention of damage to, protection of, and restoration of computers, electronic and wire communications systems and services.
10. IT Workforce Management/ Development	This activity involves IT workforce planning, assessing talent, and addressing human capital workforce issues for the enterprise. This can include recruitment, retention, and development strategies, and providing training and developmental opportunities to ensure that current and future workforce needs are met.
11. Knowledge Management	This activity involves the use of disciplined processes (to include taxonomies, classification, tagging, and other supporting tools) to optimize application of knowledge in support of the organization's overall mission. Knowledge management is getting the right information to the right people at the right time, and helping people create knowledge and share and act upon information in ways that will measurably improve the performance of the organization.
12. Network Services	This activity includes analyzing and defining network requirements; designing and maintaining network architecture and infrastructure; configuring and optimizing network servers, hubs, routers, and switches; analyzing network workload; monitoring network capacity and performance; diagnosing and resolving network problems; developing network backup and recovery procedures; and installing, testing, maintaining, and upgrading network operating systems software.
13. Operating Systems	This activity includes the planning, installation, configuration, testing, implementation, and management of operating systems; analyzing systems requirements in response to business requirements, risks, and costs; integration of operating systems with other software packages; and updating operating systems with fixes and patches.
14. Policy and Planning	This activity involves a wide range of IT management activities that typically extend and apply to an entire organization or major components of an organization. This includes strategic planning; defining current and future business environments; assessing policy needs; developing and/or implementing policies to govern IT activities; providing policy implementation guidance; developing technical standards; preparing IT budgets; and conducting assessments of IT programs and projects.
15. Records Management	This activity includes the management of the full life cycle of information; this includes planning, controlling, directing, organizing, and other activities involved in records creation, maintenance, preservation, use, and disposition; assuring the confidentiality, integrity and availability of records; and assessing the impact of records and information management on systems design, integrity, and authenticity in compliance with FOIA and other records management statutory requirements.

SPECIALIZED JOB ACTIVITY	DEFINITION
16. Systems Administration	This activity includes planning and scheduling the installation of new or modified hardware, operating systems, and applications software; managing accounts, network rights, and access to systems and equipment; implementing security procedures and tools; developing and documenting systems administration standard operating procedures; resolving hardware/software interface and interoperability problems; ensuring systems availability, functionality, integrity, and efficiency; maintaining systems configuration; and managing the installation and integration of system fixes, updates, and enhancements.
17. Systems Analysis	This activity includes performing needs analyses to define opportunities for new or improved business process solutions; consulting with customers to identify and specify requirements; developing overall functional and systems requirements and specifications; conducting business process reengineering; conducting feasibility studies; preparing business cases; defining systems scope and objectives; developing cost estimates; ensuring the integration of all systems components; and planning systems implementation.
18. Telecommunications	This activity includes performing the operations, administration, maintenance, and provisioning of telecommunications services and circuits to meet specific or general mission and/or program needs. This activity includes the planning, development, acquisition, testing, integration, installation, utilization, or modification of telecommunications systems, backbone infrastructure, facilities, services, or procedures. This includes spectrum, capacity, and configuration management, and Voice over Internet Protocol (VOIP) Services, video-teleconferencing (VTC) support.

COMPETENCIES

Instructions: Competencies are a measurable pattern of knowledge, skills, abilities, behaviors, and other characteristics that an individual needs to perform work roles or occupational functions successfully (Source: Office of Personnel Management). There are two types of competencies you will be rating in this section: General and Technical. Additionally, if you indicated that you perform cybersecurity work based on your response in the Demographic section, you will also be asked to rate your proficiency in a set of cybersecurity competencies.

Please assess your current level of proficiency in each of the competencies using the competency definition to guide you. Please use your best judgment and follow the key below to determine your current level of proficiency:

- ***EXPERT*** - I am capable of handling all assignments involving this competency and may serve as a role model and/or coach to others.
- ***ADVANCED*** - I am capable of handling most day-to-day assignments involving this competency, though may seek expert assistance with particularly difficult or unique situations.
- ***INTERMEDIATE*** - I am capable of handling many day-to-day assignments involving this competency, but may seek assistance in difficult or new situations.
- ***FOUNDATIONAL*** - I am capable of handling some assignments involving this competency, but need assistance beyond routine situations.
- ***BASIC*** - I am capable of handling the simplest of assignments involving this competency, but need significant assistance beyond the easiest solutions
- ***NONE*** - I do not possess proficiency in the competency
- ***NOT APPLICABLE*** - Competency is not applicable.

At the end of each competency section, you will be asked to identify up to 5 competencies for which you think additional training would be a benefit to you. You will also select up to 5 competencies for which you think additional training would benefit your organization. Your organization includes other IT professionals in your office or agency. Your input will help your agency better target training and development needs for the broader Information Technology workforce.

General Competency Inventory

ITEM	GENERAL COMPETENCY	DEFINITION
1.	**Administration and Management**	Knowledge of planning, coordination, and execution of business functions, resource allocation, and production.
2.	**Contracting/ Procurement**	Knowledge of various types of contracts, techniques for contracting or procurement, and contract negotiation and administration.
3.	**Customer Service**	Works with clients and customers (that is, any individuals who use or receive the services or products that your work unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) to assess their needs, provide information or assistance, resolve their problems, or satisfy their expectations; knows about available products and services; is committed to providing quality products and services.
4.	**Decision Making**	Makes sound, well-informed, and objective decisions; perceives the impact and implications of decisions; commits to action, even in uncertain situations, to accomplish organizational goals; causes change.
5.	**Financial Management**	Prepares, justifies, and/or administers the budget for program areas; plans, administers, and monitors expenditures to ensure cost-effective support of programs and policies; assesses financial condition of an organization.
6.	**Flexibility**	Is open to change and new information; adapts behavior or work methods in response to new information, changing conditions, or unexpected obstacles; effectively deals with ambiguity.
7.	**Influencing/ Negotiating**	Persuades others to accept recommendations, cooperate, or change their behavior; works with others towards an agreement; negotiates to find mutually acceptable solutions.
8.	**Information Management**	Identifies a need for and knows where or how to gather information; organizes and maintains information or information management systems.
9.	**Interpersonal Skills**	Shows understanding, friendliness, courtesy, tact, empathy, concern, and politeness to others; develops and maintains effective relationships with others; may include effectively dealing with individuals who are difficult, hostile, or distressed; relates well to people from varied backgrounds and different situations; is sensitive to cultural diversity, race, gender, disabilities, and other individual differences.
10.	**Leadership**	Influences, motivates, and challenges others; adapts leadership styles to a variety of situations.
11.	**Legal, Government and Jurisprudence**	Knowledge of laws, legal codes, court procedures, precedents, legal practices and documents, government regulations, executive orders, agency rules, government organization and functions, and the democratic political process.
12.	**Managing Human Resources**	Plans, distributes, coordinates, and monitors work assignments of others; evaluates work performance and provides feedback to others on their performance; ensures that staff are appropriately selected, utilized, and developed, and that they are treated in a fair and equitable manner.
13.	**Oral Communication**	Expresses information (for example, ideas or facts) to individuals or groups effectively, taking into account the audience and nature of the information (for example, technical, sensitive, controversial); makes clear and convincing oral presentations; listens to others, attends to nonverbal cues, and responds appropriately.
14.	**Organizational Awareness**	Knows the organization's mission and functions, and how its social, political, and technological systems work and operates effectively within them; this includes the programs, policies, procedures, rules, and regulations of the organization.
15.	**Planning and Evaluation**	Organizes work, sets priorities, and determines resource requirements; determines short- or long-term goals and strategies to achieve them; coordinates with other organizations or parts of the organization to accomplish goals; monitors progress and evaluates outcomes.
16.	**Problem Solving**	Identifies problems; determines accuracy and relevance of information; uses sound judgment to generate and evaluate alternatives, and to make recommendations.
17.	**Public Safety and Security**	Knowledge of the military, weaponry, and intelligence operations; public safety and security operations; occupational health and safety; investigation and inspection techniques; or rules, regulations, precautions, and prevention techniques for the protection of people, data, and property.

ITEM	GENERAL COMPETENCY	DEFINITION
18.	**Reasoning**	Identifies rules, principles, or relationships that explain facts, data, or other information; analyzes information and makes correct inferences or draws accurate conclusions.
19.	**Strategic Thinking**	Formulates effective strategies consistent with the business and competitive strategy of the organization in a global economy. Examines policy issues and strategic planning with a long-term perspective. Determines objectives and sets priorities; anticipates potential threats or opportunities.
20.	**Team Building**	Inspires, motivates, and guides others toward goal accomplishments. Consistently develops and sustains cooperative working relationships. Encourages and facilitates cooperation within the organization and with customer groups; fosters commitment, team spirit, pride, trust. Develops leadership in others through coaching, mentoring, rewarding and guiding employees.
21.	**Writing**	Recognizes or uses correct English grammar, punctuation, and spelling; communicates information (for example, facts, ideas, or messages) in a succinct and organized manner; produces written information, which may include technical material, that is appropriate for the intended audience.

Technical Competency Inventory

ITEM	TECHNICAL COMPETENCY	DEFINITION
1.	**Accessibility**	Knowledge of tools, equipment, and technologies used to help individuals with disabilities use computer equipment and software.
2.	**Artificial Intelligence**	Knowledge of the principles, methods, and tools used to design systems that perform human intelligence functions.
3.	**Business Process Reengineering**	Knowledge of methods, metrics, tools, and techniques of Business Process Reengineering.
4.	**Capacity Management**	Knowledge of the principles and methods for monitoring, estimating, or reporting actual performance or the performance capability of information systems or components.
5.	**Capital Planning and Investment Assessment**	Knowledge of the principles and methods of capital investment analysis or business case analysis, including return on investment analysis.
6.	**Computer Forensics**	Knowledge of tools and techniques used in data recovery and preservation of electronic evidence.
7.	**Computer Languages**	Knowledge of computer languages and their applications to enable a system to perform specific functions.
8.	**Configuration Management**	Knowledge of the principles and methods for planning or managing the implementation, update, or integration of information systems components.
9.	**Cost-Benefit Analysis**	Knowledge of the principles and methods of cost-benefit analysis, including the time value of money, present value concepts, and quantifying tangible and intangible benefits.
10.	**Data Management**	Knowledge of the principles, procedures, and tools of data management, such as modeling techniques, data backup, data recovery, data dictionaries, data warehousing, data mining, data disposal, and data standardization processes.
11.	**Database Administration**	Knowledge of the principles, methods, and tools for automating, developing, implementing, or administering database systems.
12.	**Database Management Systems**	Knowledge of the uses of database management systems and software to control the organization, storage, retrieval, security, and integrity of data.
13.	**Distributed Systems**	Knowledge of the principles, theoretical concepts, and tools underlying distributed computing systems, including their associated components and communication standards.
14.	**Electronic Commerce (e-Commerce)**	Knowledge of the principles, methods, and tools for conducting business online, including electronic data interchange.
15.	**Embedded Computers**	Knowledge of specifications and uses of specialized computer systems used to control devices (for example, automobiles, helicopters), including the appropriate programming languages.
16.	**Encryption**	Knowledge of procedures, tools, and applications used to keep data or information secure, including public key infrastructure, point-to-point encryption, and smart cards.
17.	**Enterprise Architecture**	Knowledge of principles, concepts, and methods of enterprise architecture to align information technology (IT) strategy, plans, and systems with the mission, goals, structure, and processes of the organization.
18.	**Hardware**	Knowledge of specifications, uses, and types of computer or computer-related equipment.
19.	**Hardware Engineering**	Knowledge of the principles, methods, and tools for designing, developing, and testing computer or computer-related equipment.
20.	**Human Factors**	Knowledge of the principles, methods, and tools used to identify and apply information about human behavior, abilities, limitations, and other characteristics to the design of tools, machines, systems, tasks, jobs, and environments for effective human use.
21.	**Information Assurance**	Knowledge of methods and procedures to protect information systems and data by ensuring their availability, authentication, confidentiality, and integrity.
22.	**Information Resources Strategy and Planning**	Knowledge of the principles, methods, and techniques of information technology (IT) assessment, planning, management, monitoring, and evaluation, such as IT baseline assessment, interagency functional analysis, contingency planning, and disaster recovery.
23.	**Information Systems Security Certification**	Knowledge of the principles, methods, and tools for evaluating information systems security features against a set of specified security requirements.

ITEM	TECHNICAL COMPETENCY	DEFINITION
24.	**Information Systems/Network Security**	Knowledge of methods, tools, and procedures, including development of information security plans, to prevent information systems vulnerabilities, and provide or restore security of information systems and network services.
25.	**Information Technology Architecture**	Knowledge of architectural methodologies used in the design and development of information systems, including the physical structure of a system's internal operations and interactions with other systems.
26.	**Information Technology Performance Assessment**	Knowledge of the principles, methods, and tools (for example, surveys, system performance measures) to assess the effectiveness and practicality of information technology systems.
27.	**Information Technology Research & Development**	Knowledge of scientific principles, methods, and tools of basic and applied research used to conduct a systematic inquiry into a subject matter area.
28.	**Infrastructure Design**	Knowledge of the architecture and typology of software, hardware, and networks, including LANS, WANS, and telecommunications systems, their components and associated protocols and standards, and how they operate and integrate with one another and with associated controlling software.
29.	**Knowledge Management**	Knowledge of the value of collected information and the methods of sharing that information throughout an organization.
30.	**Logical Systems Design**	Knowledge of the principles and methods for designing business logic components, system processes and outputs, user interfaces, data inputs, and productivity tools (for example, CASE).
31.	**Modeling and Simulation**	Knowledge of mathematical modeling and simulation tools and techniques to plan and conduct test and evaluation programs, characterize systems support decisions involving requirements, evaluate design alternatives, or support operational preparation.
32.	**Multimedia Technologies**	Knowledge of the principles, methods, tools, and techniques of developing or applying technology using text, audio, graphics, or other media.
33.	**Network Management**	Knowledge of the operation, management, and maintenance of network and telecommunication systems and linked systems and peripherals.
34.	**Object Technology**	Knowledge of the principles, methods, tools, and techniques that use object-oriented languages, analysis, and design methodologies.
35.	**Operating Systems**	Knowledge of computer network, desktop, and mainframe operating systems and their applications.
36.	**Operations Support**	Knowledge of procedures to ensure production or delivery of products and services, including tools and mechanisms for distributing new or enhanced software.
37.	**Organizational Development**	Knowledge of the principles of organizational development and change management theories, and their applications.
38.	**Process Control**	Knowledge of the principles, methods, and procedures used for the automated control of a process, including the design, development, and maintenance of associated software, hardware, and systems.
39.	**Product Evaluation**	Knowledge of methods for researching and analyzing external products to determine their potential for meeting organizational standards and business needs.
40.	**Project Management**	Knowledge of the principles, methods, or tools for developing, scheduling, coordinating, and managing projects and resources, including monitoring and inspecting costs, work, and contractor performance.
41.	**Quality Assurance**	Knowledge of the principles, methods, and tools of quality assurance and quality control used to ensure a product fulfills functional requirements and standards.
42.	**Requirements Analysis**	Knowledge of the principles and methods to identify, analyze, specify, design, and manage functional and infrastructure requirements; includes translating functional requirements into technical requirements used for logical design or presenting alternative technologies or approaches.
43.	**Risk Management**	Knowledge of methods and tools used for risk assessment and mitigation of risk.
44.	**Software Development**	Knowledge of the principles, methods, and tools for designing, developing, and testing software in a given environment.
45.	**Software Engineering**	Knowledge of software engineering design and development methodologies, paradigms, and tools; the software life cycle; software reusability; and software reliability metrics.
46.	**Software Testing and Evaluation**	Knowledge of the principles, methods, and tools for analyzing and developing software test and evaluation procedures.

ITEM	TECHNICAL COMPETENCY	DEFINITION
47.	**Standards**	Knowledge of standards that either are compliant with or derived from established standards or guidelines.
48.	**System Testing and Evaluation**	Knowledge of the principles, methods, and tools for analyzing and developing systems test and evaluation procedures and technical characteristics of IT systems, including identifying critical operational issues.
49.	**Systems Integration**	Knowledge of the principles, methods, and procedures for installing, integrating, and optimizing information systems components.
50.	**Systems Life Cycle**	Knowledge of systems life cycle management concepts used to plan, develop, implement, operate, and maintain information systems.
51.	**Technical Documentation**	Knowledge of procedures for developing technical and operational support documentation.
52.	**Technology Awareness**	Knowledge of developments and new applications of information technology (hardware, software, telecommunications), emerging technologies and their applications to business processes, and applications and implementation of information systems to meet organizational requirements.
53.	**Telecommunications**	Knowledge of transmissions, broadcasting, switching, control, and operation of telecommunications systems.
54.	**Web Technology**	Knowledge of the principles and methods of web technologies, tools, and delivery systems, including web security, privacy policy practices, and user interface issues.

Cybersecurity Competency Inventory

ITEM	CYBERSECURITY COMPETENCY	DEFINITION
1.	**Communications Security Management**	Knowledge of the principles, policies, and procedures involved in ensuring the security of communications services and data, and in maintaining the communications environment on which it resides.
2.	**Compliance**	Knowledge of procedures for assessing, evaluating, and monitoring programs or projects for compliance with Federal laws, regulations, and guidance.
3.	**Computer Network Defense**	Knowledge of defensive measures to detect, respond, and protect information, information systems, and networks from threats.
4.	**Criminal Investigation**	Identifies a need for and knows where or how to gather information; organizes and maintains information or information management systems.
5.	**Criminal Law**	Knowledge of state and Federal criminal laws, including procedures, regulations, guidelines, and precedents related to admissibility of evidence and prosecution.
6.	**Forensics**	Knowledge of procedures of civil, criminal, or administrative hearings, evidence collection, including the delivery and receipt of evidence, classes of evidence, and rules of evidence and legal procedures.
7.	**Identity Management**	Knowledge of methods and controls to validate the identity of individuals to verify access approval and level, and monitor activity to ensure that only authorized access is taking place.
8.	**Incident Management**	Knowledge of the tactics, technologies, principles, and processes to detect, analyze, prioritize, and handle incidents.
9.	**Information Management**	Knowledge of methods and procedures to protect information systems and data by ensuring their availability, authentication, confidentiality, and integrity.
10.	**Internal Controls**	Knowledge of the principles, methods, and techniques for establishing internal control activities (for example, authorizations, verifications, reconciliations), monitoring their use, and evaluating their performance (for example, identification of material weaknesses or significant deficiencies).
11.	**Personnel Security and Safety**	Knowledge of methods and controls of personnel, public safety, and security operations; investigation and inspection techniques; or rules, regulations, precautions, and prevention techniques for the protection of people, data, or property.
12.	**Physical Security**	Knowledge of methods and controls to protect an organization from natural or man-made threats to physical locations where information systems equipment is located or work is performed (e.g. computer rooms, work locations, and equipment rooms).
13.	**Security**	Knowledge of the laws, regulations, and guidelines related to securing personnel, facilities, and information, including the requirements for handling, transporting, and protecting classified information and proper reporting of security incidents.
14.	**Surveillance**	Knowledge of surveillance and counter-surveillance techniques, policies, and laws, including overt and covert methods and electronic, optical, and video surveillance methods and tools.
15.	**Vulnerabilities Assessment**	Knowledge of the principles, methods, and tools for assessing vulnerabilities, and developing or recommending appropriate mitigation countermeasures.

IT PROGRAM MANAGEMENT

Instructions: The following items address the emerging area of IT Program Management.

The following list contains criteria and competencies that may define an IT Program Manager. Please rate each item on its importance to the role of IT Program Management using the following scale.

- ***EXTREMELY IMPORTANT***
- ***VERY IMPORTANT***
- ***IMPORTANT***
- ***SOMEWHAT IMPORTANT***
- ***NOT AT ALL IMPORTANT***

ITEM	DESCRIPTION
1.	Number of projects managed under the program
2.	Interdependence of projects managed under the program
3.	Complexity of technical areas covered by program
4.	Number of program/project staff
5.	Budget of program/projects managed
6.	Cost and schedule performance
7.	Program risk management
8.	Knowledge of and/or experience with private sector program management
9.	Knowledge of and/or experience with public sector program management
10.	Education, training, or certification in Program Management

ITEM	IT PM COMPETENCY	DEFINITION
1.	**Customer Service**	Works with clients and customers (that is, any individuals who use or receive the services or products that your work unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) to assess their needs, provide information or assistance, resolve their problems, or satisfy their expectations; knows about available products and services; is committed to providing quality products and services.
2.	**Decision Making**	Makes sound, well-informed, and objective decisions; perceives the impact and implications of decisions; commits to action, even in uncertain situations, to accomplish organizational goals; causes change.
3.	**Flexibility**	Is open to change and new information; adapts behavior or work methods in response to new information, changing conditions, or unexpected obstacles; effectively deals with ambiguity.
4.	**Interpersonal Skills**	Shows understanding, friendliness, courtesy, tact, empathy, concern, and politeness to others; develops and maintains effective relationships with others; may include effectively dealing with individuals who are difficult, hostile, or distressed; relates well to people from varied backgrounds and different situations; is sensitive to cultural diversity, race, gender, disabilities, and other individual differences.
5.	**Leadership**	Influences, motivates, and challenges others; adapts leadership styles to a variety of situations.
6.	**Legal, Government and Jurisprudence**	Knowledge of laws, legal codes, court procedures, precedents, legal practices and documents, Government regulations, Executive orders, agency rules, Government organization and functions, and the democratic political process.
7.	**Oral Communication**	Expresses information (for example, ideas or facts) to individuals or groups effectively, taking into account the audience and nature of the information (for example, technical, sensitive, controversial); makes clear and convincing oral presentations; listens to others, attends to nonverbal cues, and responds appropriately.
8.	**Organizational Awareness**	Knows the organization's mission and functions, and how its social, political, and technological systems work and operates effectively within them; this includes the programs, policies, procedures, rules, and regulations of the organization.
9.	**Problem Solving**	Identifies problems; determines accuracy and relevance of information; uses sound judgment to generate and evaluate alternatives, and to make recommendations.

ITEM	IT PM COMPETENCY	DEFINITION
10.	**Reasoning**	Identifies rules, principles, or relationships that explain facts, data, or other information; analyzes information and makes correct inferences or draws accurate conclusions.
11.	**Team Building**	Inspires, motivates, and guides others toward goal accomplishments. Consistently develops and sustains cooperative working relationships. Encourages and facilitates cooperation within the organization and with customer groups; fosters commitment, team spirit, pride, trust. Develops leadership in others through coaching, mentoring, rewarding and guiding employees.
12.	**Writing**	Recognizes or uses correct English grammar, punctuation, and spelling; communicates information (for example, facts, ideas, or messages) in a succinct and organized manner; produces written information, which may include technical material, that is appropriate for the intended audience.
13.	**Business Process Reengineering**	Knowledge of methods, metrics, tools, and techniques of Business Process Reengineering.
14.	**Capital Planning and Investment Assessment**	Knowledge of the principles and methods of capital investment analysis or business case analysis, including return on investment analysis.
15.	**Contracting/Procurement**	Knowledge of various types of contracts, techniques for contracting or procurement, and contract negotiation and administration.
16.	**Cost-Benefit Analysis**	Knowledge of the principles and methods of cost-benefit analysis, including the time value of money, present value concepts, and quantifying tangible and intangible benefits.
17.	**Financial Management**	Prepares, justifies, and/or administers the budget for program areas; plans, administers, and monitors expenditures to ensure cost-effective support of programs and policies; assesses financial condition of an organization.
18.	**Planning and Evaluating**	Organizes work, sets priorities, and determines resource requirements; determines short- or long-term goals and strategies to achieve them; coordinates with other organizations or parts of the organization to accomplish goals; monitors progress and evaluates outcomes.
19.	**Project Management**	Knowledge of the principles, methods, or tools for developing, scheduling, coordinating, and managing projects and resources, including monitoring and inspecting costs, work, and contractor performance.
20.	**Quality Assurance**	Knowledge of the principles, methods, and tools of quality assurance and quality control used to ensure a product fulfills functional requirements and standards.
21.	**Requirements Analysis**	Knowledge of the principles and methods to identify, analyze, specify, design, and manage functional and infrastructure requirements; includes translating functional requirements into technical requirements used for logical design or presenting alternative technologies or approaches.
22.	**Risk Management**	Knowledge of methods and tools used for risk assessment and mitigation of risk.
23.	**Configuration Management**	Knowledge of the principles and methods for planning or managing the implementation, update, or integration of information systems components.
24.	**Data Management**	Knowledge of the principles, procedures, and tools of data management, such as modeling techniques, data backup, data recovery, data dictionaries, data warehousing, data mining, data disposal, and data standardization processes.
25.	**Information Management**	Identifies a need for and knows where or how to gather information; organizes and maintains information or information management systems.
26.	**Information Resources Strategy and Planning**	Knowledge of the principles, methods, and techniques of information technology (IT) assessment, planning, management, monitoring, and evaluation, such as IT baseline assessment, interagency functional analysis, contingency planning, and disaster recovery.
27.	**Information Systems/Network Security**	Knowledge of methods, tools, and procedures, including development of information security plans, to prevent information systems vulnerabilities, and provide or restore security of information systems and network services.
28.	**Information Technology Architecture**	Knowledge of architectural methodologies used in the design and development of information systems, including the physical structure of a system's internal operations and interactions with other systems.

ITEM	IT PM COMPETENCY	DEFINITION
29.	**Information Technology Performance Assessment**	Knowledge of the principles, methods, and tools (for example, surveys, system performance measures) to assess the effectiveness and practicality of information technology systems.
30.	**Infrastructure Design**	Knowledge of the architecture and typology of software, hardware, and networks, including LANS, WANS, and telecommunications systems, their components and associated protocols and standards, and how they operate and integrate with one another and with associated controlling software.
31.	**Systems Integration**	Knowledge of the principles, methods, and procedures for installing, integrating, and optimizing information systems components.
32.	**Systems Life Cycle**	Knowledge of systems life cycle management concepts used to plan, develop, implement, operate, and maintain information systems.
33.	**Technology Awareness**	Knowledge of developments and new applications of information technology (hardware, software, telecommunications), emerging technologies and their applications to business processes, and applications and implementation of information systems to meet organizational requirements.

IT SKILLS

Instructions: The following set of questions asks you to rate your proficiency in your ability to perform specific jobs or functions in the technical skill areas or using the technical products listed below. This survey differentiates skills from competencies in a number of important ways. First, skills often relate to either specific products or technologies, whereas competencies are generally described in broader terms. You will note that the skill names and definitions appropriately reflect this. Also, skills are more "granular" and discrete, and may actually relate to or be part of a broader competency.

Please assess your current level of proficiency in each of the IT skills using the skill definition to guide you. Your assessment should reflect your practical, "hands-on" application of the skill, on-the-job experience, and any education or training you have received. Please use your best judgment and follow the key below to determine your current level of proficiency:

- ***EXPERT*** - I am capable of handling all assignments involving this skill and may serve as a role model and/or coach to others.
- ***ADVANCED*** - I am capable of handling most day-to-day assignments involving this skill, though may seek expert assistance with particularly difficult or unique situations.
- ***INTERMEDIATE*** - I am capable of handling many day-to-day assignments involving this skill, but may seek assistance in difficult or new situations.
- ***FOUNDATIONAL*** - I am capable of handling some assignments involving this skill, but need assistance beyond routine situations.
- ***BASIC*** - I am capable of handling the simplest of assignments involving this skill, but need significant assistance beyond the easiest solutions
- ***NONE*** - I do not possess proficiency in the skill

IT Skills Inventory

IT SKILL	DESCRIPTION
1. .Net	Software framework for Microsoft Windows operating systems.
2. Biometrics	Technological methods of identifying individuals via biological traits, such as retinal or iris scanning, fingerprints, or face recognition.
3. Broadband	Telecommunications technologies in which a wide band of frequencies is available to transmit information. This allows information to be multiplexed and sent on many different frequencies or channels within the band concurrently, allowing more information to be transmitted in a given amount of time.
4. Capability Maturity Models	Models of how Information Technology organizations can improve, over time, in their ability to improve their organizational business processes. These models typically provide a basis for assessment, comparison, and process improvement. Examples include Carnegie Mellon Software Engineering Institute's (SEI) 5-stage model for software development, and the General Accountability Office's (GAO) IT Investment Management (ITIM) framework, among others.
5. Client-Server	Software programs that are used to contact and obtain data from a server software program on another computer, often across a great distance. Each client program is designed to work with one or more specific kinds of server programs, and each server typically requires a specific kind of client.
6. Collaboration Software	Software or tools that integrate work on a single project by several concurrent users at separated workstations (also known as groupware). Examples include SharePoint and Web 2.0 applications.
7. Continuity of Operations Planning	Contingencies and strategies for minimizing financial and operational losses following service interruptions caused by natural, technological, and attack-related emergencies. Such planning includes the safety of employees, information, and services. This also includes disaster recovery.
8. Cryptology	Methods of transforming data for secure storage and transmission purposes. Such activities make it difficult or impossible for unauthorized individuals to access confidential or sensitive data.
9. Data Analysis and Reporting	Analysis of data in a database using tools that look for trends or anomalies, establish relationships, and predict future patterns among events. Includes statistical software (such as SAS and SPSS) to generate reports.
10. Data Modeling	Analysis of data objects that are used in a business or other context and the identification of the relationships among these data objects; creating graphical representations of the entities, and the relationships among entities, within an information system; diagramming assists in planning the database model and communicating its design to an end user.

IT SKILL	DESCRIPTION
11. Data Virtualization	Includes the combining and storing of information into collected data sets that can be accessed and manipulated through computer based networking in the same fashion as if the user had their own local copy of the information.
12. Data Warehousing	Central repository for all, or significant parts of, data that an enterprise's various business systems collect. Also includes the migration of data from legacy databases into a data warehouse.
13. Desktop Applications	Widely-used end-user applications such as Microsoft Office, Visio, etc.
14. Development Languages	Writing or authoring code in a variety of programming languages other than .Net, XML, Java/J2EE, or UML
15. Digital Forensics	Actions taken to discover, recover and preserve electronic evidence.
16. Enterprise Directory Services (EDS)	Enterprise Directory Service (EDS) identifies all resources (e.g., email addresses, computers, printers, databases) on a network and makes them accessible to users and applications. An EDS offers a unique way of naming, describing, and locating resources on a network.
17. Enterprise Resource Planning (ERP)	Integration of all departments and functions across a company onto a single computer system that can serve all those different departments' particular needs (e.g., PeopleSoft, SAP). Integration can include databases, tools, interfaces, and applications.
18. Extensible Markup Language (XML)	Widely used system for defining data formats. XML provides a rich system to define complex documents and data structures. As long as a programmer has the XML definition for a collection of data (often called a "schema") then they can create a program to reliably process any data formatted according to those rules.
19. Federal/OMB Enterprise Architecture	Business-based framework developed by the Office of Management and Budget (OMB) for Government-wide improvement. The architecture is being constructed through a collection of interrelated "reference models" designed to facilitate cross-agency analysis and the identification of duplicative investments, gaps, and opportunities for collaboration within and across Federal Agencies.
20. Firewalls	Combination of hardware and software that separates a network into two or more parts for security purposes.
21. Geographic Information Systems (GIS)	Computer software capable of capturing, storing, analyzing, and displaying geographically referenced information. Layers of information about cities, countries, or other locations may include bodies of water, roadways, agriculture, natural resources, and commerce.
22. Host-Based Intrusion Detection System	Technologies used to monitor the characteristics of a single host and the events occurring within that host for suspicious activity. Examples of the types of characteristics a host-based IDPS might monitor are network traffic (only for that host), system logs, running processes, application activity, file access and modification, and system and application configuration changes.
23. Information Management	Computerized management of electronic and paper-based files. Includes capabilities related to records and content management practices.
24. IT Governance	Applying structure around how organizations align IT strategy with business strategy, ensuring that companies stay on track to achieve their strategies and goals, and implementing good ways to measure IT performance. Governance ensures that all stakeholders' interests are taken into account and that processes provide measurable results. An IT governance framework should answer some key questions, such as how the IT department is functioning overall, what key metrics management needs and what return IT is giving back to the business from the investment it's making.
25. IT Portfolio Management	Management of IT resources, as one would manage investments in a real estate or stock portfolio. The IT portfolio facilitates the alignment of technology investments with agency business needs and the analysis and proper mitigation of IT investment risks.
26. Java/J2EE	Java/J2EE is a multi-tiered platform and language that can be used to provided transactional processing within a network or computer system. One such usage is the Service Oriented Architecture (SOA) capabilities provided by a server to a user.
27. Joint Application Development/Rapid Application Development (JAD/RAD)/Agile	Methodology that involves the client or end user in the design and development of an application, through a succession of collaborative workshops called "JAD sessions" or "scrums". A variation on JAD, Rapid Application Development (RAD) creates an application more quickly through such strategies as using fewer formal methodologies and reusing software components.
28. Legacy Computer Languages	Examples include COBOL, FORTRAN, RPG, and others.

IT SKILL	DESCRIPTION
29. Legacy Operating Systems	Legacy operating systems such as OS/2.
30. Lifecycle Cost Estimation	The process to determine the full cost of a system from conception to retirement as well as the economic viability of executing a program. Cost estimation provides decision makers with important financial insight allowing for more effective management of costs and resources, justification of the budget and funding requests, and more informed programmatic decision-making.
31. Linux Operating System	Widely used open source Unix-like operating system that performs basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers.
32. MacOS/MacOSX Operating System	Operating system behind many Macintosh computers that performs basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers.
33. Mainframe Operating Systems	Mainframe operating systems perform basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers.
34. Mainframes	Computers for large-scale computing purposes. Historically, a mainframe is associated with centralized rather than distributed computing, and is able to handle hundreds, or even thousands, of users simultaneously.
35. Microsoft Windows Desktop Operating Systems	Operating system behind all Microsoft Windows-configured computers that performs basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers.
36. Mobile Application Development	Mobile application development is the process which results in applications for handheld devices such as personal digital assistants, enterprise digital devices, mobile phones or other hand held communications devices. This process uses emerging software environments and languages such as Windows Mobile, JAVA ME and specifically developed applications software. Additionally, this environment supports multiplexed communications systems used in mobile radio communications and mobile biometrics devices used for fingerprinting, iris scanning or facial recognition.
37. Mobile Network Technology	Wireless communications network architecture that typically provides computer and telephonic communications serviced by a cellular telecommunications provider or base station.
38. Multimedia	Software tools to capture, store, manipulate, and display text, audio, still images, animation, video, and interactivity content forms.
39. Network Architecture and Design	Structure and design of networks to support the success of an organization, making the right connections for the Internet, intranets, and extranets, including designing and maintaining local area networks and wide area networks.
40. Network-Based Intrusion Detection System	Use of technologies to detect malicious behaviors that compromise the security and trust of a computer system. This includes network attacks on vulnerable services, data driven attacks on applications, host-based attacks such as privilege escalation, unauthorized logins and access to sensitive files, and malware (viruses, Trojan horses and worms).
41. Network-Based Intrusion Prevention System	Use of technologies that have all the capabilities of an intrusion detection system and can also prevent or stop possible incidents.
42. Network Behavior Analysis	Use of technologies to monitor network traffic patterns or using packet analysis to identify threats that generate unusual traffic flows, such as distributed denial of service attacks, certain forms of malware, and policy violations (e.g., a client system providing network services to other systems).
43. Network Configuration and Implementation	Layout and settings of the computers and equipment on an enterprise's local area network (LAN) or intranet. This includes devices like routers and gateways that interconnect the LAN with other LANS or the Internet (Internet Protocol).
44. Network Operating Systems	Network operating systems allow shared access among computers in a network, typically a local area network (LAN), a private network, or to network. Examples include Novell and Windows Server.
45. Network Security	Provisions, practices, and policies to prevent and monitor unauthorized access, misuse, modification, or denial of the computer network and network-accessible resources.

IT SKILL	DESCRIPTION
46. Network Voice/Data Integration	Packetizing and carrying normal telephony-style voice over a network circuit or channel (e.g., VOIP), similar to, and often interspersed with, data packets.
47. Object-Oriented Languages	Object-oriented languages are organized around "objects" rather than "actions" and data rather than logic. Programmers define not only the data type of a data structure, but also the types of operations (functions) that can be applied to the data structure. Also, programmers can create relationships between objects. Examples of object-oriented languages include C++ and Java.
48. Performance Testing	The actions required to verify and validate the operational and functional capabilities of a product, subsystem, system or network to ensure it is applicable to the mission needs.
49. Process Design	Strategic establishment of the flow of information, control or materials from one activity to another. Examples of graphical representations of process design include the Business Process Modeling Notation (BPMN) and the Integrated Computer Aided Manufacturing Definition (IDEF).
50. Public Key Infrastructure (PKI)	Use of an unsecured public network, such as the Internet, to securely and privately exchange data and money through the use of a public and a private cryptographic key pair that is obtained and shared through a trusted authority.
51. Radio Frequency Identification (RFID)	Short for radio frequency identification, a technology similar in theory to bar code identification. With RFID, the electromagnetic or electrostatic coupling in the RF portion of the electromagnetic spectrum is used to transmit signals. An RFID system consists of an antenna and a transceiver, which read the radio frequency and transfer the information to a processing device, and a transponder, or tag, which is an integrated circuit containing the RF circuitry and information to be transmitted.
52. Records Management	Skills related to physical or digital maintenance of public records, from creation through destruction.
53. Relational Database Management Systems (RDBMS)	Programs that let you create, update, and administer a relational database. Examples include Oracle, IBM's DB2 and Microsoft's SQL Server.
54. Requirements Management	The process of identifying, eliciting, documenting, analyzing, tracing, prioritizing and agreeing on requirements and then controlling change and communicating to relevant stakeholders. It is a continuous process throughout a project. A requirement is a capability to which a project outcome (product or service) should conform.
55. Satellite Communications	Utilization of geostationary orbiting satellites to relay the transmission received from one earth station to one or more earth stations. They are the outcome of research in the area of communications whose objective is to achieve ever-increasing ranges and capacities with the lowest possible costs.
56. Scripting/Metadata	Metadata describes how, when and by whom a particular set of data was collected, and how the data is formatted. Metadata is essential for understanding information stored in data warehouses
57. Secure Coding	The process and methodology used to ensure software code generated during the development process is absent of errors, malevolent procedural steps and vulnerabilities to software attack vectors both internal (e.g., trapdoors or default passwords) or external (e.g., external-application modification of computer code steps, data blocks, write/read protections or interrupt trapping). This effort requires adherence to the SDLC quality assurance and testing protocols during the development phases and formal configuration management constraints during implementation and operations.
58. Security Testing	Security testing is the actions required to verify and validate that the operational safeguards are implemented and functioning properly to ensure the confidentiality, integrity and availability of a computer system, network or facility is secure from compromise.
59. Server Virtualization	Virtual version of an operating system, a server, and a storage device or network resource that allows for partial autonomic computing so that IT environment is able to manage itself based on perceived activity. Virtualization centralizes administrative tasks while improving scalability and workloads.
60. Storage Technologies (SAN, NFS, RAID, SCSI, IP Storage)	The technologies, equipment, and organization for providing the memory capability required by computers to store instructions and data for processing at high electronic speeds.
61. Structured Query Language (SQL)	Standardized query language for requesting information from a database.

IT SKILL	DESCRIPTION
62. System Analysis and Design	Design, specification, feasibility, cost, and implementation of a computer system for business; development and implementation process, metrics and tools for analysis, design and project management, quality factors and post evaluation techniques.
63. Systems Engineering	Systems engineering is an interdisciplinary approach encompassing the entire technical effort to evolve and verify an integrated and total life-cycle balanced set of system, people, and process solutions that satisfy customer needs. Systems engineering is the integrating mechanism across the technical efforts related to the development, manufacturing, verification, deployment, operations, support, disposal of, and user training for systems and their life cycle processes. Systems engineering develops technical information to support the program management decision-making process. For example, systems engineers manage and control the definition and management of the system configuration and the translation of the system definition into work breakdown structures.
64. Systems Security Applications	Applications and tools that administrators use to manage various users, roles and groups to implement access and privilege controls for certain applications or against operating system resources.
65. Systems Support and Helpdesk	Enterprise's physical or online resource center for assistance with desktop, network, hardware, and software questions and issues.
66. Telephony/PBX	Telephone network used within an enterprise. Users of the PBX share a certain number of outside lines for making telephone calls external to the PBX. It allows a small number of outside lines to be shared among all of the people of the organization.
67. Test Plan Development	Procedure used to systematically analyze and find the shortcomings in a technical system or product. Through experimental runs of the unit, this process is used to ensure that the unit can function at full capacity, both effectively and efficiently, once it is in full operation. The test plan establishes how the unit/system will be tested, what aspects of it will be tested, who will perform the tests, where and for how long the testing will occur and the overall effectiveness of such testing.
68. Test Planning	The analysis of the design across the phases of the SDLC; construction of the policies, practices and procedures to be used to verify that the designed end product is compliant with the requirements, specifications, user operations and performance expectations by documenting those actions in to a timeline of events matching the SDLC phases.
69. Testing	Determining whether objectives are being met during hardware/software development. Testing can take place at a variety of levels such as the module, component, or system levels. Testing is also related to the various types of verification, validation and evaluation of whether or not a system satisfies its acceptance criteria. This process enables the customer to determine whether or not to accept the system. This includes Systems/Integration Testing and Unit Testing.
70. Unified Modeling Language (UML)	Industry-standard for specifying, visualizing, constructing, and documenting the artifacts of software systems. It simplifies the complex process of software design, making a "blueprint" for construction.
71. UNIX Operating System	UNIX operating system that performs basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers. Unix is designed for use by many people at the same time (it is multi-user) and has TCP/IP built-in. UNIX is the most common operating system for servers on the Internet.
72. Usability Testing	Measures how well users can actually use web pages, computer interfaces, documents, or other IT products, given the intended purpose. It allows testers to observe the user in realistic simulations, in order to discover errors and uncover areas of improvement. Includes Section 508 compliance testing.
73. Web Portal Development	Web-based framework for agency resources (e.g., email, news, search engine, policies). A portal is a single point of access for all employees in an enterprise, providing access to specific information and services.
74. Web Site Management	Management and maintenance of an enterprise's web site or portal. Activities include developing web pages, performing backups and ensuring user access to the site, monitoring site traffic and helping scale site capacity meet traffic demands.
75. Web-enabled Application Design and Development	Web-enabled applications that provide certain functionality automate certain processes or provide access to or interface with legacy applications. Includes designing the look and feel of the application and ensuring accessibility to site content for individuals with disabilities.

IT SKILL	DESCRIPTION
76. Wireless-Based Intrusion Detection System	Use of technologies to monitor wireless network traffic and analyze it to identify suspicious activity involving the wireless networking protocols.
77. Wireless Technologies	Technology that transmits information signals via radio waves rather than cables or wires, where individual units are connected to a network, such as networked laptops.

CERTIFICATIONS

The following questions relate to the professional certifications or certificates that you currently hold that were obtained within the past 3 years. Certifications differ from certificate programs because certifications, by definition, include work experience. Certificate programs, on the other hand, award certificates once the course of study has been completed and do not require previous work experience.

Please indicate the type(s) of certifications or certificates you have by clicking the check box next to each of the certification areas. Examples of certifications that relate to the certification areas are provided. As it is not possible to list every potential type of certification or certificate available, please check the box for a relevant area if you have an equivalent. For example, if you have a certification that relates to a specific product or general IT area that is not specifically covered in the examples, select the most appropriate match.

CQ1 REQUIRED**: Do you currently possess any professional certifications or certificates? (Variable: Certifications)**

1. Yes
2. No

IF YES IS SELECTED DISPLAY THE TEXT BELOW AND ACTIVATE THE 'CERTIFICATION AREA' TABLE BELOW
Please indicate the type(s) of certifications or certificates you have by clicking the check box next to each of the certification areas.

If you **do not** currently possess any professional certifications or certificates, do not select any and simply click the **"Save and Continue"** button.

CERTIFICATION AREA	DESCRIPTION
Business Applications (Variable: CertBusinessApp)	PeopleSoft, SAP, Oracle, Lotus, Citrix, or equivalent.
CIO (Variable: CertCIO)	CIO University, CIO Certificate (NDU/IRMC), or equivalent.
Computing (Variable: CertComputing)	Computer Service, Repair, Data Processing, Document Imaging, CompTIA A+, Certified Computing Professional (Institute for Certification of Computing Professionals), or equivalent.
Database (Variable: CertDatabase)	Microsoft MCDBA, Oracle Certified Database Administrator, IBM DB2 Database Administrator, or equivalent.
Engineering (Variable: CertEngineering)	Licensed Engineer or equivalent.
Enterprise Architecture (Variable: CertEnterpriseArch)	EA Certificate (NDU/IRMC, USDA Graduate School, FEAC) or equivalent.
Evidence Collection (Variable: CertEvidenceCollection)	Certified Electronic Evidence Collection Specialist, or equivalent.
Healthcare (Variable: CertHealthcare)	Certified Professional in Healthcare Information and Management Systems, or equivalent.
Information Systems (Variable: CertInfoSys)	CISA (Certified Information Systems Auditor), Certified System Professional, Certified Administrator, Certified Systems Engineer, Certified Solutions Architect, Microsoft MCSD, Dell DCSE, Certified Java Developer, GIAC Systems and Network Auditor (GSNA), or equivalent.
Information Systems Security (Variable: CertInfoSysSecurity)	Information Systems Security Professional (CISSP), Information Systems Security Associate (ISSA), Systems Security Certified Practitioner (SSCP), Systems Security Professional, Certified Information Security Manager (CISM), NDU/IRMC IA Certificate Program (NSTISSI No. 4011, CNSSI No. 4012, or Chief Information Security Officer), Federal IT Security Institute (FITSP-Manager), (FITSP-Auditor), (FITSP-Designer), (FITSP-Operator), Security Plus, Certified Ethical Hacker (CEH), GIAC Information Security Fundamentals (GISF), or equivalent.
IT Infrastructure Library (ITIL) (Variable: CertITIL)	ITIL Service Management, ITIL Application Management, ICT Infrastructure Management, or equivalent.

CERTIFICATION AREA	DESCRIPTION
IT Project Management (Variable: CertITProjectMgmt)	IT-PM Certificate (NDU/IRMC), commercial IT-PM certificate programs, or equivalent.
Mechanical (Variable: CertMechanical)	Certified Mechanical Inspector or equivalent.
Network Security (Variable: CertNetworkSecurity)	Security Certified Network Architect, Security Certified Network Professional, Certified Network Support/Administration, Certified Firewall Analyst, Certified Intrusion Analyst (GCIA), Certified Incident Handler (CSIH, GCIH), Certified Windows Security Administrator, Certified UNIX Security Administrator, Network Plus, GIAC Security Expert (GSE), GIAC Security Essentials Certification (GSEC), or equivalent.
Network Support (Variable: CertNetworkSupport)	Certified Professional, Certified Call Center Manager, Certified Help Desk Director, Certified Help Desk Manager, Certified Help Desk Professional, Certified Network Administrator, Novell (various), Netware, Cisco (various), Microsoft MCSE, or equivalent.
Operating Systems (Variable: CertOperatingSys)	Microsoft MCSE, IBM AIX, Sun Solaris, HP-UX, Linux, Red Hat Certified Engineer, SCO Certification, or equivalent.
Policy and Planning (Variable: CertPolicyPlan)	Advanced Management Program (AMP) (NDU/IRMC), eGovernment Certificate Program (NDU/IRMC), or equivalent.
Process Improvement (Variable: CertProcImprovement)	Six Sigma, International Software Process Improvement Certification, ProcessModel Business Process Improvement Certification, or equivalent.
Project Management (Variable: CertProjectMgmt)	Project Management Professional (PMP), Certified Associate Project Manager (CAPM), Defense Acquisition University (DAU), Federal Acquisition Institute FAC-PPM, Cost Estimating and Analysis/ Life Cycle Cost Estimating certifications (Society for Cost Estimation and Analysis), or equivalent.
Quality (Variable: CertQuality)	Certified Quality Auditor, Certified Quality Auditor - Hazard Analysis Critical Control Point, Certified Quality Engineer, Certified Quality Improvement Associate, Certified Quality Technician, Certified Reliability Engineer, Certified Software Quality Engineer, Strategic & Tactical Advocates for Results, or equivalent.
Software Development (Variable: CertSoftDev)	Agile Certification, Certified Software Development Professional, Microsoft MCSD, Certified Java Developer, (ISC)2 Certified Secure Software Lifecycle Professional (CSSLP), SANS Software Security Institute GIAC Secure Software Programmer (GSSP), or equivalent.
Telecommunications & Networking (Variable: CertTelecomNetworking)	BICSI Certified RCDD (Registered Communications Distribution Designer) or equivalent.
Training (Variable: CertTraining)	Certified Technology Trainer, Microsoft Certified Trainer, or equivalent.
Web (Variable: CertWeb)	USDA Graduate School Webmaster Certification, HyCurve Web Design Specialist, Prosoft CIW (Certified Internet Webmaster), Master Certified Webmaster, or equivalent.